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April 30, 2008

03-Pla-28-1.2/15.1, 16.6/17.8
03-2A9404
ACSTP-P028(009)E

Addendum No. 1

Dear Contractor:

This addendum is being issued to the contract for construction on State highway in PLACER COUNTY FROM 0.1 KM WEST OF TAHOE STATE PARK DRIVE TO 0.1 KM EAST OF ROUTE 267 AND AT KINGS BEACH FROM CHIPMUNK STREET TO THE NEVADA STATE LINE.

Submit bids for this work with the understanding and full consideration of this addendum. The revisions declared in this addendum are an essential part of the contract.

Bids for this work will be opened on May 13, 2008.

This addendum is being issued to revise the Project Plans, the Notice to Contractors and Special Provisions, and the Proposal and Contract.

Project Plan Sheets 104, 148, 185, 186, 187, 188, 189, 191, 192, 197, 200, 215, 224, 227, 228, 229, 231, 232, 233, 237, 238, 244, 247, 248, 249, 251, 253, 254, 255, 256, 260, 263, 264, 269, 270, 273, 274, 275, 278, 279, 281, 282, 283, 284, 291, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 312, 313, 314, 315, 317, 318, 319, 320, 321, 325, 326, 327, 328, 329, 331, 333, 335, 337, 339, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 422, 424, 425, 435, 556, 563, 564, 596, and 597 are revised. Half-sized copies of the revised sheets are attached for substitution for the like-numbered sheets.

Project Plan Sheets 307A and 599A are added. Half-sized copies of the added sheets are attached for addition to the project plans.

Project Plan Sheets 136 and 138 are deleted.

On Project Plan Sheet 285, in the "INVERT PAVING" detail, the call out for "MINOR CONCRETE (INVERT PAVING)" is revised to read "MINOR CONCRETE (MINOR STRUCTURE)".

On Project Plan Sheet 594, in the plan view layout, where the existing Roadside Weather Information System is shown, the call out "SEE E-30 FOR INSTALLATION OF MVDS AT THIS LOCATION" is deleted.

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In the Special Provisions, Section 4, "BEGINNING OF WORK, TIME OF COMPLETION, AND LIQUIDATED DAMAGES," the first paragraph is revised as follows:

"The first working day is the eighty-fifth day after contract approval."

In the Special Provisions, Section 4, "BEGINNING OF WORK, TIME OF COMPLETION, AND LIQUIDATED DAMAGES," the fourth paragraph is revised as follows:

"The Contractor may begin work at the job site before the eighty-fifth day after contract approval if:
1. The Contractor submits and obtains required approvals for the submittals before the eighty-fifth day
2. Authorized by the Engineer in writing"

In the Special Provisions, Section 10-1.01, "ORDER OF WORK," is revised as attached.

In the Special Provisions, Section 10-1.23, "OBSTRUCTIONS," the following paragraphs are added after the third paragraph:

"Existing utilities will be relocated during construction and prior to October 15, 2009 at the following locations:

Owner	Utility	Location (Station)
North Tahoe PUD	Water line	92+35Lt
North Tahoe PUD	Water line	94+55Lt
Sierra Pacific Power Co.	Utility pole	99+80Lt
Sierra Pacific Power Co.	Utility pole	100+05Lt
Sierra Pacific Power Co.	Utility pole	107+30Lt
Sierra Pacific Power Co.	Utility pole	107+70Lt
Sierra Pacific Power Co.	Utility pole	114+60Lt
Sierra Pacific Power Co.	Utility pole	116+50Lt
Sierra Pacific Power Co.	Utility pole	116+95Lt
North Tahoe PUD	Water line	129+10Rt
Sierra Pacific Power Co.	Utility pole	132+05Lt
AT&T	Utility pole	133+75Rt
Sierra Pacific Power Co.	Utility pole	144+25Lt

At Sta 112+22 Rt and 116+80 Rt, the Contractor shall notify the Engineer 10 working days prior to any excavation and allow 5 working days for the North Tahoe Public Utility District to protect their sewer line after excavation for sand vault is complete and shoring is in place.

At Sta 149+10 Rt, the Contractor shall notify the Engineer 10 working days prior to any excavation and allow 2 working days for Sierra Pacific Power Company to protect their electrical line after excavation for drainage inlet is complete. "

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In the Special Provisions, Section 10-1.28, "MAINTAINING TRAFFIC," the ninth paragraph is revised as follows:

"No more than 2 separate stationary lane closures will be allowed at one time."

In the Special Provisions, Section 10-1.58, "STRUCTURAL CONCRETE, BARRIER SLAB," the entire subsection "CONCRETE," is revised as follows:

"Concrete shall conform to the provisions in Section 51, "Concrete Structures," of the Standard Specifications and these special provisions.

Shotcrete shall not be used as an alternative construction method for reinforced concrete members unless otherwise specified.

Concrete shall contain not less than 400 kilograms of cementitious material per cubic meter and shall be air-entrained as provided under "Materials" of these special provisions."

In the Special Provisions, Section 10-1.58, "STRUCTURAL CONCRETE, BARRIER SLAB," subsection "MEASUREMENT AND PAYMENT," the second paragraph is revised as follows:

"The contract price paid per cubic meter for structural concrete, barrier slab shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing the barrier slab, complete in place, including structure backfill and structure excavation, and epoxy coated bar reinforcing steel, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer."

In the Special Provisions, Section 10-1.59, "FURNISH AND INSTALL PRECAST SAND VAULT," is revised as attached.

In the Special Provisions, Section 10-1.61, "REINFORCEMENT," the following paragraph is added after the first paragraph:

"All reinforcement shall be epoxy coated."

In the Special Provisions, Section 10-1.73, "MISCELLANEOUS FACILITIES," the last paragraph is revised as follows:

"The contract unit price paid for sluice gate shall include full compensation for furnishing all labor, materials, including cast wall thimble, trash rack, stainless steel cap, reinforced concrete collar and anchor bolts, tools, equipment, and incidentals, and for doing all the work involved in sluice gates, complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer."

In the Special Provisions, Section 10-1.775, "MISCELLANEOUS METAL (BRIDGE)," is added as attached.

In the Special Provisions, Section 10-1.83, "METAL BEAM GUARD RAILING," the fourth paragraph is revised as follows:

"All guardrail metal elements shall be acid-etched. A sample is available for the Contractor to view at the Tahoe City Maintenance Station at 553 River Road, Tahoe City, CA. Please call (530) 583-3201 to make arrangements to view the sample."

In the Special Provisions, Section 10-3.17, "MODIFY HIGHWAY ADVISORY RADIO SYSTEM," is revised as attached.

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In the Proposal and Contract, the Engineer's Estimate Items 28, 52, 69, 70, 73, 74, 75, 95, 97, 98, 99, 110, 118, 119, 124, 127, 133, 136, and 137 are revised as attached.

To Proposal and Contract book holders:

Replace pages 4, 5, 6, 7, 8, and 9 of the Engineer's Estimate in the Proposal with the attached revised pages 4, 5, 6, 7, 8, and 9 of the Engineer's Estimate. The revised Engineer's Estimate is to be used in the bid.

Inquiries or questions in regard to this addendum must be communicated as a bidder inquiry and must be made as noted in the NOTICE TO CONTRACTORS section of the Notice to Contractors and Special Provisions.

Indicate receipt of this addendum by filling in the number of this addendum in the space provided on the signature page of the proposal.

Submit bids in the Proposal and Contract book you now possess. Holders who have already mailed their book will be contacted to arrange for the return of their book.

Inform subcontractors and suppliers as necessary.

This office is sending this addendum by GSO overnight mail to all book holders to ensure that each receives it. A copy of this addendum is available for the contractor's use on the Internet Site:

http://www.dot.ca.gov/hq/esc/oe/weekly_ads/addendum_page.html

If you are not a Proposal and Contract book holder, but request a book to bid on this project, you must comply with the requirements of this letter before submitting your bid.

Sincerely,

ORIGINAL SIGNED BY

REBECCA D. HARNAGEL, Chief
Office of Plans, Specifications & Estimates
Division of Engineering Services - Office Engineer

Attachments

10-1.01 ORDER OF WORK

Order of work shall conform to the provisions in Section 5-1.05, "Order of Work," of the Standard Specifications and these special provisions.

All rock material (gravel, cobble, and boulders) shall be clean and thoroughly washed prior to arrival at the site to ensure that the rock is free of any silt or clay particles.

The Contractor shall inform the Traffic Office of Truck Services at (916) 322-4957 and the Engineer, 15 days in advance of narrowing the traveled way open to public traffic to less than 4.88 m wide when the vertical clearances are less than 5.5 m.

The Contractor shall maintain access on State Route 28 for permit loads during the work shifts. Permit loads are defined as overweight or oversized vehicles that have an approved permit for traveling this route.

The closure of the westbound lane at KP 13.7, between Station 138+70 and 141+30, may be allowed for one consecutive thirty day period. This closure may only be done from May 1st to June 30th or the day after Labor Day to October 15th.

Lane Closure Chart No. 8, the maximum length of closure for placing the sand vault on westbound lane at KP 13.7 is limited to 260 meters.

Access to local businesses, cross streets, driveways and private property on State Route 28 must be maintained during closures in accordance with Section 7-1.08 of the Standard Specifications.

From May 1st to May 31st and from the day after Labor Day to October 15th, the Contractor can perform culvert installation during the hours as indicated in Lane Closure Charts No. 2 and No. 10. These charts are only applicable for culvert installation work from KP 1.2 to KP 12.6. During the culvert installation work, traffic must be allowed through the closure using reversible traffic control. The maximum length of this closure is limited to 100 meters. This closure can only be used for one location at a time within the project limits.

From the day after Labor Day to October 15th, the Contractor can perform additional daytime paving operations during the hours as indicated in Lane Closure Charts No. 3 and No. 11. These charts are only applicable for paving operation work from KP 1.2 to KP 12.6 and from KP 16.6 to KP 17.8. During the paving operation, traffic must be allowed through the closure using reversible traffic control. The maximum length of this closure is limited to 800 meters. This closure can only be used for one location at a time within the project limits.

The Contractor shall submit a sample of acid-etched guardrail, access hatch door and bridge rail to the Engineer for approval 10 days prior to placing guardrail, access hatch doors and bridge rail within the project limits.

No soil disturbance shall occur between October 16th and April 30th of any year.

Rock check dams shall be placed prior to any earth disturbances at Station 14+40 to 16+60 and at Station 25+00 to 28+50.

A first order of work for the Contractor shall be discussing the tree removal time frame with the Engineer. The Contractor shall notify the Engineer 15 working days prior to removing any trees. Between March 1st and August 15th, the Contractor shall provide a qualified Biologist to perform a pre-construction survey for nesting birds. Also at this time, the Engineer shall notify the TRPA Coordinator to conduct an over-the-phone Pre-Grade Inspection with TRPA. No trees shall be removed until approval of the over-the-phone Pre-Grade Inspection has been obtained. Trees at station 107+10, 114+50, 114+70, 116+90, 117+00 shall be removed prior to May 1, 2009 to facilitate utility pole relocations.

No work shall be performed within fish bearing drainages within the project area until flows are at their seasonal low or have ceased and the streambed is dry. It is predicted that in most years, the seasonal dry period of these drainages occurs between July 15th and October 15th, however work within these drainages will be subject to stream conditions and permit restrictions.

All work within the temporary construction easement at Station 99+10, left, shall be within five consecutive working days.

Work in the following easements shall be completed in 30 consecutive working days: Station 95+80 to 97+10, 99+10, 116+85, 118+60, and 120+30.

Work in the following easements shall be completed in 90 consecutive working days: Station 121+30, 121+90.

No work shall occur in the temporary construction easement or drainage easement at Station 69+30, 116+85, or between Station 118+66 and 118+92 from the 3rd Friday in June through Labor Day of any year.

All work within the easement at Station 121+70 shall be completed between September 8, 2009 and October 15, 2009.

Existing utilities will be relocated between KP 6.4 (PM 4.0) and KP 15.1 (PM 9.4) during construction and prior to October 15, 2009. Work within these limits shall not commence until May 1, 2010, except as otherwise directed in these special provisions, or approved by the Engineer. The Contractor shall limit the amount of work started in any year. All items of work started on a section of roadway shall be completed and fully functional prior to October 15 of that same year, except as otherwise approved by the Engineer.

Placement of the portion of the rock check dams inside the ESA from Station 26+50Lt to 28+60Lt shall be done from outside the ESA.

45+80R to 47+10R shall be placed with tracked equipment with a ground pressure not exceeding 55 Kpa unloaded. Trees greater than 150 mm in diameter shall not be damaged.

All work within the easements at Station 106+20 Rt and 121+70Rt shall be completed in 2009.

Exposed galvanized portions of the basin drains and bypass drains shall be acid etched per the requirements in metal beam guard rail elsewhere in these special provisions.

Residual sand from winter maintenance operations shall be removed at the locations directed by the Engineer. Sand removal shall be paid for as extra work, as provided in Section 4-1.03D of the Standard Specifications. Cleaning of culverts covered under specific items of work will not be paid for as extra work.

Ground water and/or seepage water may be encountered in excavations. Difficult excavation may be anticipated due to boulders and/or bedrock.

Attention is directed to the Tahoe Regional Planning Agency permit for information regarding a Pre-Grade inspection requirement that shall be conducted with Tahoe Regional Planning Agency Environmental Compliance prior to the start of construction. For a project requiring more than one construction season for completion, a Pre-Grade inspection will be required at the beginning of each construction season prior to continuing the work. Upon approval of the over-the-phone Pre-Grade Inspection for tree removal, identified trees shall be removed before proceeding with the Pre-Grade (field) inspection for construction of the project.

All off-road construction equipment shall be cleaned of noxious weed sources (mud and vegetation) before the entry into the project area and the Lake Tahoe basin, as well as after entering potentially infested areas and before moving on to another area, to help ensure that noxious weeds are not introduced into the project area. The Contractor shall employ whatever cleaning methods (typically the use of a high pressure water hose) are necessary to ensure that the equipment is free of noxious weeds. Equipment shall be considered free of soils, seeds, and other such debris when a visible inspection does not disclose such material. Disassembly of equipment components or specialized inspection tools are not required. Equipment washing stations shall be placed in areas that afford easy containment and monitoring and that do not drain into the forest or sensitive (riparian, wetlands and Stream Environment Zones) areas. The aforementioned noxious weed conditions shall also apply to entering and leaving any staging areas. Whenever possible staging areas shall be in weed free areas.

Attention is directed to "Miscellaneous Concrete Construction" of these special provisions regarding constructing a 600 mm by 600 mm test panel prior to constructing curb ramps with detectable warning surfaces.

Temporary railing (Type K) and temporary crash cushions shall be secured in place prior to commencing work for which the temporary railing and crash cushions are required.

Attention is directed to "Environmentally Sensitive Area" and "Temporary Fence (Type ESA)" of these special provisions. Prior to beginning work, the boundaries of the Environmentally Sensitive Areas (ESA) shall be clearly delineated in the field. The boundaries shall be delineated by the installation of temporary fence (Type ESA).

Attention is directed to "Water Pollution Control" of these special provisions regarding the submittal and approval of the Storm Water Pollution Prevention Plan prior to performing work having potential to cause water polution.

The uppermost layer of new pavement shall not be placed until all underlying conduits and loop detectors have been installed.

Cold planed sections of the roadway (greater than 20 mm deep) shall be paved with asphalt concrete within the same week that it is exposed.

Attention is directed to "Maintaining Traffic" and "Temporary Pavement Delineation" of these special provisions and to the stage construction (Traffic Handling Plan) sheets of the plans.

Attention is directed to "Progress Schedule (Critical Path Method)" of these special provisions regarding the submittal of a general time-scaled logic diagram within 10 days after approval of the contract. The diagram shall be submitted prior to performing any work that may be affected by any proposed deviations to the construction staging of the project.

The first order of work shall be the removal of existing pavement delineation shall be as required by the planned work and as directed by the Engineer. Pavement delineation removal shall be coordinated with new delineation so that lane lines are provided at all times on traveled ways open to public traffic.

Before obliterating any pavement delineation (traffic stripes, pavement markings, and pavement markers) that is to be replaced on the same alignment and location, as determined by the Engineer, the pavement delineation shall be referenced by the Contractor, with a sufficient number of control points to reestablish the alignment and location of the new pavement delineation. The references shall include the limits or changes in striping pattern, including one- and 2-way barrier lines, limit lines, crosswalks and other pavement markings. Full compensation for referencing existing pavement delineation shall be considered as included in the contract prices paid for new pavement delineation and no additional compensation will be allowed therefore.

Prior to applying asphaltic emulsion (paint binder), the Contractor shall cover all manholes, valve and monument covers, grates, or other exposed facilities located within the area of application, using a plastic or oil resistant construction paper secured to the facility being covered by tape or adhesive. The covered facilities shall be referenced by the Contractor, with a sufficient number of control points to relocate the facilities after the surface layer of the asphalt concrete has been placed. After completion of the paving operation, all covers shall be removed and disposed of in a manner satisfactory to the Engineer. Full compensation for covering manholes, valve and monument covers, grates, or other exposed facilities, referencing, and removing temporary cover shall be considered as included in the contract price paid per tonne for asphalt concrete, and no additional compensation will be allowed therefore.

The Contractor shall provide 2 portable changeable message signs to be placed at locations designated by the Engineer to provide advanced warning of construction operation. These 2 portable changeable message signs are in addition to the signs required for lane and shoulder closures. These signs will be operated and maintained in accordance with "Portable Changeable Message Signs" of these special provisions.

At the end of each working day if a difference in excess of 0.046-meter exists between the elevation of the existing pavement and the elevation of excavations within 1.5 m of the traveled way, material shall be placed and compacted against the vertical cuts adjacent to the traveled way. During excavation operations, native material may be used for this purpose; however, once placing of the structural section commences, structural material shall be used. The material shall be placed to the level of the elevation of the top of existing pavement and tapered at a slope of 1:4 (vertical:horizontal) or flatter to the bottom of the excavation. Full compensation for placing the material on a 1:4 slope, regardless of the number of times the material is required, and subsequent removing or reshaping of the material to the lines and grades shown on the plans shall be considered as included in the contract price paid for the materials involved and no additional compensation will be allowed therefore. No payment will be made for material placed in excess of that required for the structural section.

At those locations exposed to public traffic where guard railings or barriers are to be constructed, reconstructed, or removed and replaced, the Contractor shall schedule operations so that at the end of each working day there shall be no post holes open nor shall there be any railing or barrier posts installed without the blocks and rail elements assembled and mounted thereon and terminal sections temporarily attached to exposed ends of the railing elements.

At the end of each working day, there shall be no gap left between the reconstructed metal beam guard railing and the existing metal beam guard railing.

Attention is directed to "Temporary Crash Cushion (Type ABSORB 350)" of these special provisions.

Not less than 120 days prior to applying seed, pine needles and erosion control (sod strips), the Contractor shall furnish the Engineer a statement from the vendor that the order for the seed , pine needles and erosion control (sod strips) required for this contract has been received and accepted by the vendor. The statement from the vendor shall include the names and quantity of seed, pine needles and erosion control (sod strips) ordered and the anticipated date of delivery.

The Engineer designates ground locations of erosion control by directing the placing of stakes or other suitable markers before application of erosion control materials as specified under "Erosion Control (Type D)," "Erosion Control (Type I)," "Erosion Control (Compost Blanket) of these special provisions.

Attention is directed to "Move-in/Move-out" of these special provisions regarding the application of erosion control may require several move-in/move-outs of erosion control equipment.

Attention is directed to "Clearing and Grubbing" of these special provisions.

Attention is directed to "Earthwork" of these special provisions.

Attention is directed to "Erosion Control (Sod Strips)" of these special provisions.

Once Contour Grading, Erosion Control (Type I), Boulder Placement, Log Placement, Erosion Control (Type D), Coir Mesh, and Irrigation System work at bioswale and basin sites has commenced, said work shall be completed by August 1st of the same calendar year.

10-1.59 FURNISH AND INSTALL PRECAST SAND VAULT

This work shall consist of furnishing and constructing sand vaults in conformance with the details shown on the plans, the provisions in Sections 19, "Earthwork, 26, "Aggregate Bases," 51, "Concrete Structures," 52, "Reinforcement," and 75-1.03, "Miscellaneous Bridge Metal," of the Standard Specifications and these special provisions.

Sand vaults, at the option of the Contractor, may be constructed as cast-in-place units, provided the sand vaults substantially conform to combined precast and cast-in-place construction as shown on the plans, specified in the Standard Specifications and in these special provisions.

Before fabricating well screen, the Contractor shall submit 2 sets of working drawings to the Engineer in conformance with the provisions in Section 5-1.02, "Plans and Working Drawings," of the Standard Specifications. Working drawings shall include wire dimensions and spacing, pipe lengths, support heights and dimensions, anchorage layouts, pattern for anchor bolts, and bolted connections.

The Engineer will have 15 working days to review the well screen working drawings after a complete submittal has been received. No fabrication or installation of well screen shall be performed until the working drawings are approved in writing by the Engineer.

Should the Engineer fail to complete the review within the time allowance and if, in the opinion of the Engineer, the Contractor's controlling operation is delayed or interfered with by reason of the delay in reviewing the well screen working drawings, the delay will be considered a right of way delay in conformance with the provisions in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

Shotcrete shall not be used as an alternative construction method for reinforced concrete members unless otherwise specified.

When a roughened concrete surface is shown on the plans, the existing concrete surface shall be roughened to a full amplitude of approximately 6 mm by abrasive blasting, water blasting, or mechanical equipment.

Concrete used in sand vaults shall contain not less than 400 kilograms of cementitious material per cubic meter. An air-entraining admixture conforming to the provisions in Section 90-4, "Admixtures," of the Standard Specifications shall be added to the concrete at the rate required to result in an air content of 6 ± 1.5 percent in the freshly mixed concrete.

Access hatches shall be factory fabricated, spring assist hatches that provides smooth, controlled operation of the lid while opening and closing the hatch. Hatches shall have a hold open arm and hold down latch that can be operated from below when hatch is closed. Access hatches shall be either Type 1 or Type 2 as shown on the plans and one of the types listed or equivalent:

Type 1:

1. The BILCO Company. Type HLC
2. U.S.F Fabrication , Inc. Model DT-AHS or ALH
3. Neenah Foundry Company. Series R-3498, R-6662 or R-6663.
4. East Jordan Iron Works, Inc..Series 8090

Type 2:

1. The BILCO Company. Type JAL-
2. U.S.F Fabrication, Inc. Model AHS
3. East Jordan Iron Works, Inc. Series AHS

Hatch drains, if present, shall be placed at the lowest corner of the hatch and drain to the inlet chamber. Exposes fasteners shall be tamper proof. Type 1 hatches shall be recessed 5 mm below vault top/

The access hatch shall be installed in accordance with the manufacturer's instructions. All areas of steel diamond plate access hatches that will be visible when closed shall be acid-etched in conformance with the provisions for galvanized steel rails in "Metal Beam Guard Railing" of these special provisions or otherwise treated to provide a low-sheen appearance .

The well screen, brackets, concrete anchorage devices, and all appurtenances shall be constructed of stainless steel. Stainless steel pipes and plates shall conform to the requirements of ASTM Designation: A 240/A 240M, Type 304, with a #2B finish. Fasteners, resin capsules, mechanical expansion anchor bolts, and cast-in-place anchor bolts shall be Type 304 stainless steel, conforming to the requirements in Section 75-1.03, "Miscellaneous Bridge Metal," of the Standard Specifications and these special provisions. Debris float shall be 2 lb. Density polyurethane foam. Check valve shall be 52 mm minimum diameter flap swing, "duckbill" or similar check valve. Minimum cracking pressure shall not exceed 0.04 Bar.

Valve shall be capable of functioning with soiled water and manufactured with components that resist corrosion from water high in sodium chloride.

The well screen shall be new and shall be manufactured of Type 304 stainless steel wire spirally wrapped on Type 304 stainless steel rods, providing a continuous-slot opening. The wire shall be of a general keystone shape. The wire configuration shall produce inlet slots with sharp outer edges, widening inwardly so as to minimize clogging. All intake openings shall be free from jagged edges, irregularities, or other defects.

Finished screens shall be descaled by immersion in a nitric/hydrofluoric acid bath, rinsed, and air dried to achieve passivation.

Welding of stainless steel shall conform to the requirements of AWS D1.6.

Installation of well screen, supports, and other ancillary features related to the construction of the well screen shall be in conformance with the provisions in Sections 55-3.16, "Assembly," and 75-1.03, "Miscellaneous Bridge Metal," of the Standard Specifications.

Permeable material within the limits of the sand vaults shall be Class 1, conforming to the provisions in Section 68-1.025, "Permeable Material," of the Standard Specifications.

Rock slope protection fabric used for weep holes of sand vaults shall be rock slope protection fabric, type B non-woven, conforming to Section 88-1.04, "Engineering Fabrics," of the Standard Specifications.

MEASUREMENT AND PAYMENT

Measurement and payment for concrete in precast sand vaults shall conform to the provisions in Section 51-1.22, "Measurement," and Section 51-1.23, "Payment," of the Standard Specifications and these special provisions. Measurement and payment for miscellaneous metal in sand vaults shall conform to the provisions in Section 75-1.06, "Measurement," and Section 75-1.07, "Payment," of the Standard Specifications and these special provisions.

Precast portions of sand vaults will be measured and paid for by the unit for furnish precast concrete sand vault of the types listed in the Engineers estimate and by the unit for install precast concrete sand vault of the types listed in the Engineers estimate.

Pervious backfill material placed within the limits of payment for sand vaults will be measured and paid for as structure backfill (sand vault).

The contract unit price paid for furnish precast concrete sand vault shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing the sand vault, including plastic pipe located within limits of sand vaults, check valves, ladders, debris floats, weir and filter fabric, complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

Full compensation for furnishing and installing snow pole pockets, complete in place, as shown on the plans, shall be considered as included in the contract price paid for various items of concrete work, and no separate payment will be made therefore.

10-1.775 MISCELLANEOUS METAL (BRIDGE)

Miscellaneous metal (bridge) shall conform to the provisions for miscellaneous bridge metal in Section 75, "Miscellaneous Metal," of the Standard Specifications and these special provisions.

Attention is directed to "Welding" of these special provisions.

Miscellaneous metal (bridge) shall consist of the miscellaneous bridge metal items listed in Section 75-1.03, "Miscellaneous Bridge Metal," of the Standard Specifications, and the following:

A. Access Hatch
B. Wedge Wire Well Screen

10-3.17 MODIFY HIGHWAY ADVISORY RADIO SYSTEM

DESCRIPTION

Modify highway advisory radio (HAR) system shall consist of relocating HAR station equipment for a fixed location as shown on the plans.

GROUND SYSTEM

The ground system shall be the ground rod type, as shown on the plans and described in these special provisions.

The ground system shall allow the maximum FCC field strength to be achieved on any frequency from 530 kHz to 1710 kHz with 10 W or less of output power.

Triad Ground System.—The triad ground system shall use three 50 mm x 6.1 m copper pipes placed in 150 mm, minimum, vertically drilled holes and backfilled with bentonite slurry.

Each ground rod shall be a UL listed ground electrode designed for the purpose. The Contractor shall provide the Engineer with a certificate of compliance from the manufacturer in accordance with the provisions of Section 6-1.07, "Certificates of Compliance," of the Standard Specifications for the ground rods and bentonite backfill material. The certificate of compliance shall be provided to the Engineer for approval, prior to ordering or shipping the material.

Each ground rod shall be a 50 mm outside diameter hollow tube of Type K copper, with nominal 2 mm wall thickness, 6.1 m in length. The top end of each rod shall have a shop welded ground connection with a 4/0 gage, minimum, copper pigtail. The ends of the rods shall have a press-on end caps.

The breather and weep holes on the top and bottom of the rods, as shown on the plans, shall be protected with tape until the installation of the rod. The Contractor shall remove the tapes and provide them to the Engineer before installation.

The drilled hole shall be backfilled with 100 percent bentonite clay slurry and consolidated around the rod. The bentonite slurry shall be placed in the presence of the Engineer. Two working days notice shall be provided to the Engineer prior to backfilling.

The bentonite backfill material shall be a natural volcanic, non-corrosive form of bentonite clay grout. The backfill material shall be capable of absorbing 53 L of water per 22.7 kilogram to obtain an optimal 30 percent solids density. The pH value shall be 8-10 with maximum resistivity of 3 Ω·m at 30 percent solids density.

The ground rods shall be connected to surge arrestor ground lugs. The ground wire splice to the pigtails shall be made by a UL listed exothermic (Cadweld, or similar) connection method. Soldering, brazing, or field welding will not be acceptable.

The ground rods shall be filled with non-hazardous Calsolyte to enhance grounding performance. The filler shall hygroscopically extract moisture from the air to activate the electrolytic process, improving ground performance. The ground rods system shall be 100 percent self-activating and maintenance free. No additions of chemicals or water solutions shall be required.

Protective Pull Box.—The protective pull box shall be made of reinforced concrete with lift holes and a vented cast iron grate cover to permit air circulation into the "breather" holes of the ground rod(s).

ANTENNA COAXIAL CABLE

The antenna coaxial cable (ACC) shall consist of an RG-8/U single foil single braid flexible coaxial cable with a solid bare copper center conductor, Cellular Polyethylene dielectric, 97 percent tinned copper braid, and 100 percent shield coverage and shall conform to the following requirements:

Electrical Characteristics	
Capacitance	75 pF/m (nominal)
Impedance	50 Ω (nominal)
Velocity of propagation	78% (nominal)
DC loop resistance	3.9 mΩ/m (nominal) @ 20°C

Attenuation at 20° C.	
Frequency (MHz)	Nominal dB/100 m
10.0	1.64
50.0	3.94
100.0	5.25
200.0	7.87

Physical Dimensions	
	Nominal OD (mm)
Center conductor	2.62
Dielectric	7.24
Outer jacket	10.29

COAXIAL CABLE CONNECTORS

Coaxial cable connectors for attaching Type ACC including the reducing adapter shall be UHF Standard and meet the following requirements:

Electrical Characteristics	
Impedance:	50 Ω (nominal)
Frequency range:	0 - 300 MHz
Voltage rating:	500 V (peak)

Mechanical	
Mating:	Standard size: 5/8- 24 threaded coupling. Push-on mates with any standard size threaded receptacle
Method of attachment:	Clamp and Crimp.
Composition:	Bodies- Brass or die cast zinc Contacts- brass, silver plated Insulators- TFC, copolymer of styrene, polystyrene, mica-filled phenolic and/or, PBT polyester or equal Plating- ASTRO plate and silver Other metal parts- Brass

Environmental	
Temperature	-55°C to +165°C
Moisture	Weather resistant design.

SYSTEM TESTING

Ground System Testing.—The Contractor shall take certified measurements after the installation of the ground system.

The testing shall utilize an earth resistance meter and be conducted in accordance with IEEE Standard 3-point fall of potential method.

The Contractor provide all test equipment, take and document resistivity measurements on the grounding system as specified elsewhere in these special provisions and submit them to the Engineer for approval.

Cable Testing—The antenna coaxial cable (ACC) shall be tested utilizing a time domain reflectometer. Those cables found to have faults shall be replaced.

A fault in a length of cable is defined as any of the following:

A. A return loss measurement indicating that there is a short in the cable.
B. A return loss measurement indicating a cut or open circuit in the cable.
C. A visual inspection which reveals exposure or damage to the cable shielding.

PAYMENT

The contract lump sum price paid for modify highway advisory radio system shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in modify highway advisory radio system, complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

ENGINEER'S ESTIMATE
03-2A9404

Item No.	Item Code	Item Description	Unit of Measure	Estimated Quantity	Unit Price	Item Total
21 (S)	120149	TEMPORARY PAVEMENT MARKING (PAINT)	M2	600		
22 (S)	120151	TEMPORARY TRAFFIC STRIPE (TAPE)	M	47 700		
23 (S)	120159	TEMPORARY TRAFFIC STRIPE (PAINT)	M	51 500		
24 (S)	012094	TRAFFIC PLASTIC DRUM	EA	450		
25 (S)	128650	PORTABLE CHANGEABLE MESSAGE SIGN	LS	LUMP SUM	LUMP SUM	
26 (S)	129000	TEMPORARY RAILING (TYPE K)	M	1310		
27 (S)	129100	TEMPORARY CRASH CUSHION MODULE	EA	310		
28 (S)	012095	TEMPORARY CRASH CUSHION (ABSORB 350)	EA	36		
29	150206	ABANDON CULVERT	M	140		
30 (S)	150662	REMOVE METAL BEAM GUARD RAILING	M	980		
31	150668	REMOVE FLARED END SECTION	EA	6		
32	012096	REMOVE WELL	EA	16		
33 (S)	150704	REMOVE YELLOW THERMOPLASTIC TRAFFIC STRIPE	M	5150		
34 (S)	150711	REMOVE PAINTED TRAFFIC STRIPE	M	6440		
35 (S)	150712	REMOVE PAINTED PAVEMENT MARKING	M2	90		
36	150742	REMOVE ROADSIDE SIGN	EA	250		
37	150748	REMOVE ROADSIDE SIGN PANEL	EA	6		
38	150769	REMOVE ASPHALT CONCRETE	M3	1070		
39	150771	REMOVE ASPHALT CONCRETE DIKE	M	3540		
40	012097	REMOVE GRATED LINE DRAIN	M	10		

ENGINEER'S ESTIMATE
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Item No.	Item Code	Item Description	Unit of Measure	Estimated Quantity	Unit Price	Item Total
41	150805	REMOVE CULVERT	M	1690		
42	150820	REMOVE INLET	EA	61		
43	150821	REMOVE HEADWALL	EA	23		
44	012098	REMOVE SAND TRAP	EA	8		
45	012099	CLEANING, PREPARATION OF EXISTING PIPE AND PRELIMINARY INSPECTION	M	58		
46	150826	REMOVE MANHOLE	EA	3		
47	012100	RECONSTRUCT FENCE (SPLIT RAIL)	M	23		
48	012101	RECONSTRUCT FENCE (WIRE MESH)	M	18		
49	012102	RESET PAVING BLOCKS	M2	110		
50 (S)	152320	RESET ROADSIDE SIGN	EA	30		
51	152402	ADJUST WATER VALVE COVER TO GRADE	EA	47		
52	012103	ADJUST INLET TO GRADE	EA	17		
53	152440	ADJUST MANHOLE TO GRADE	EA	140		
54	012104	ADJUST ELECTRICAL MANHOLE TO GRADE	EA	2		
55	012105	ADJUST STORM DRAIN MANHOLE TO GRADE	EA	4		
56	012106	ADJUST TELEPHONE MANHOLE TO GRADE	EA	20		
57	012107	ADJUST GAS VALVE COVER TO GRADE	EA	2		
58	012108	ADJUST UTILITY BOX TO GRADE (WATER/SEWER)	EA	6		
59	012109	MODIFY PIPE INLET	EA	4		
60	152610	MODIFY MANHOLE	EA	14		

ENGINEER'S ESTIMATE
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Item No.	Item Code	Item Description	Unit of Measure	Estimated Quantity	Unit Price	Item Total
61	012110	800 MM PLASTIC PIPE-LINER (SDR 32.5)	M	26		
62	012111	375 MM PLASTIC PIPE-LINER (SDR 32.5)	M	29		
63	012112	525 MM PLASTIC PIPE-LINER (SDR 32.5)	M	85		
64	012113	600 MM CURED-IN-PLACE PIPE LINER	M	18		
65	012114	750 MM CURED-IN-PLACE PIPE LINER	M	40		
66 (S)	153103	COLD PLANE ASPHALT CONCRETE PAVEMENT	M2	159 000		
67	153210	REMOVE CONCRETE	M3	14		
68	160101	CLEARING AND GRUBBING	LS	LUMP SUM	LUMP SUM	
69	190101	ROADWAY EXCAVATION	M3	10 300		
70	012115	ROADWAY EXCAVATION (BIOSWALE)	M3	2940		
71	012116	SOIL REINFORCEMENT	M2	950		
72	190110	LEAD COMPLIANCE PLAN	LS	LUMP SUM	LUMP SUM	
73 (F)	192001	STRUCTURE EXCAVATION	M3	733		
74 (F)	192020	STRUCTURE EXCAVATION (TYPE D)	M3	557		
75 (F)	193001	STRUCTURE BACKFILL	M3	415		
76	193114	SAND BACKFILL	M3	21		
77 (S)	203001	EROSION CONTROL (BLANKET)	M2	140		
78 (S)	203016	EROSION CONTROL (TYPE D)	M2	60 000		
79 (S)	012117	BOULDER PLACEMENT	EA	200		
80 (S)	012118	EROSION CONTROL (SOD STRIP)	M2	140		

ENGINEER'S ESTIMATE
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Item No.	Item Code	Item Description	Unit of Measure	Estimated Quantity	Unit Price	Item Total
81 (S)	203026	MOVE-IN/MOVE-OUT (EROSION CONTROL)	EA	9		
82 (S)	012119	COIR MESH	M2	13 600		
83 (S)	012120	EROSION CONTROL (TYPE I)	M2	33 000		
84 (S)	012121	ROCK COLORATION	LS	LUMP SUM	LUMP SUM	
85 (S)	012122	CONCRETE COLORATION	LS	LUMP SUM	LUMP SUM	
86 (S)	204099	PLANT ESTABLISHMENT WORK	LS	LUMP SUM	LUMP SUM	
87 (S)	208000	IRRIGATION SYSTEM	LS	LUMP SUM	LUMP SUM	
88	260201	CLASS 2 AGGREGATE BASE	M3	3000		
89	374002	ASPHALTIC EMULSION (FOG SEAL COAT)	TONN	0.1		
90	390095	REPLACE ASPHALT CONCRETE SURFACING	M3	22		
91	390104	ASPHALT CONCRETE	TONN	39 800		
92	012123	ASPHALT CONCRETE (TYPE A, 12.5-MM MAXIMUM, MEDIUM GRADING)	TONN	2980		
93	394002	PLACE ASPHALT CONCRETE (MISCELLANEOUS AREA)	M2	270		
94	394049	PLACE ASPHALT CONCRETE DIKE (TYPE F)	M	240		
95 (F)	012124	STRUCTURAL CONCRETE, SAND COLLECTION VAULT	M3	80		
96 (F)	510072	STRUCTURAL CONCRETE, BARRIER SLAB	M3	47		
97 (F)	510502	MINOR CONCRETE (MINOR STRUCTURE)	M3	133		
98	012125	FURNISH PRECAST SAND VAULT	EA	35		
99 (S)	012126	INSTALL PRECAST SAND VAULT	EA	35		
100 (S-F)	012127	ARCHITECTURAL TREATMENT (DRYSTACK ROCK TEXTURE)	M2	57		

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Item No.	Item Code	Item Description	Unit of Measure	Estimated Quantity	Unit Price	Item Total
101 (S-F)	520106	BAR REINFORCING STEEL (EPOXY COATED)	KG	17 992		
102	566011	ROADSIDE SIGN - ONE POST	EA	320		
103	566012	ROADSIDE SIGN - TWO POST	EA	23		
104	568001	INSTALL SIGN (STRAP AND SADDLE BRACKET METHOD)	EA	7		
105 (S)	012128	TIMBER BOARDWALK	EA	1		
106	597601	PREPARE AND STAIN CONCRETE	M2	31		
107	012129	200 MM PERFORATED ALTERNATIVE PIPE CULVERT	M	74		
108	620904	300 MM ALTERNATIVE PIPE CULVERT	M	14		
109	620909	450 MM ALTERNATIVE PIPE CULVERT	M	2210		
110	620913	600 MM ALTERNATIVE PIPE CULVERT	M	440		
111	620919	750 MM ALTERNATIVE PIPE CULVERT	M	82		
112	620924	900 MM ALTERNATIVE PIPE CULVERT	M	25		
113	012130	300 MM HIGH DENSITY POLYETHYLENE PIPE	M	3.2		
114	012131	450 MM HIGH DENSITY POLYETHYLENE PIPE	M	160		
115	012132	600 MM HIGH DENSITY POLYETHYLENE PIPE	M	120		
116	012133	200 MM POLYVINYL CHLORIDE PIPE	M	34		
117	665729	300 MM SLOTTED CORRUGATED STEEL PIPE (2.01 MM THICK)	M	190		
118 (F)	682001	PERMEABLE MATERIAL	M3	226		
119	700659	900 MM CORRUGATED STEEL PIPE INLET (2.77 MM THICK)	M	220		
120	012134	200 MM SLUICE GATE	EA	8		

ENGINEER'S ESTIMATE
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Item No.	Item Code	Item Description	Unit of Measure	Estimated Quantity	Unit Price	Item Total
121	012135	BULK HEAD REDUCER	EA	1		
122	705334	300 MM ALTERNATIVE FLARED END SECTION	EA	6		
123	705336	450 MM ALTERNATIVE FLARED END SECTION	EA	50		
124	705337	600 MM ALTERNATIVE FLARED END SECTION	EA	13		
125	705339	900 MM ALTERNATIVE FLARED END SECTION	EA	1		
126	707247	1200 MM PRECAST CONCRETE PIPE MANHOLE	EA	3		
127	719598	CLASS 4 CONCRETE (BACKFILL)	M3	410		
128	721008	ROCK SLOPE PROTECTION (LIGHT, METHOD B)	M3	1620		
129	721009	ROCK SLOPE PROTECTION (FACING, METHOD B)	M3	320		
130	721011	ROCK SLOPE PROTECTION (BACKING NO. 2, METHOD B)	M3	3030		
131	721023	ROCK SLOPE PROTECTION (1/2T, METHOD B)	M3	1410		
132	721024	ROCK SLOPE PROTECTION (1/4T, METHOD B)	M3	880		
133	729010	ROCK SLOPE PROTECTION FABRIC	M2	270		
134	731502	MINOR CONCRETE (MISCELLANEOUS CONSTRUCTION)	M3	1780		
135	731519	MINOR CONCRETE (STAMPED CONCRETE)	M2	200		
136 (S-F)	750001	MISCELLANEOUS IRON AND STEEL	KG	36 343		
137 (S-F)	750501	MISCELLANEOUS METAL (BRIDGE)	KG	11 130		
138 (S)	012136	CHAIN BARRICADE	EA	1		
139 (S)	012137	FENCE (SPLIT RAIL, TYPE 1)	M	99		
140 (S)	012138	FENCE (SPLIT RAIL, TYPE 2)	M	74		