



**REQUEST FOR PROPOSALS
FOR
INSTALLATION OF
DIGITAL VIDEO RECORDING SYSTEMS (DVRs)
ON LOCOMOTIVES**

10-PCJPB-M-062

RFP Issued:	March 3, 2011
Pre-Proposal Conference:	March 17, 2011 at 9:00 a.m.
Questions, and Requests for Clarifications (RFCs) Due:	March 24, 2011 at 5:00 p.m.
Proposals Due:	April 12, 2011 at 2:00 p.m.

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NOTICE IS HEREBY GIVEN THAT Proposals will be received by the Contracts & Procurement Department of the Peninsula Corridor Joint Powers Board (JPB) at 1250 San Carlos Avenue, San Carlos, CA 94070-1306, until **2:00 p.m. April, 12, 2011** for the following:

**REQUEST FOR PROPOSALS
10-PCJPB-M-062
INSTALLATION OF DIGITAL VIDEO RECORDING SYSTEMS (DVRS) ON LOCOMOTIVES**

The JPB will hold a **Pre-Proposal Conference** commencing promptly at **9:00 a.m. on March 17, 2011** at the JPB's Administrative Offices, 1250 San Carlos Avenue, San Carlos, CA 94070-1306. **Attendance at this meeting is not mandatory; however, Proposer attendance is highly recommended** as JPB Staff will be available to answer questions pertaining to the Contract Documents and Technical Specifications. The Pre-Proposal Conference should last approximately one hour and will be followed by an Inspection Session/Site Visit at the JPB's Centralized Equipment Maintenance and Operations Facility (CEMOF), 585 Lenzen Avenue, San Jose, CA 95126, where Proposers will be allowed to inspect representative samples of locomotives and cab control cars.

Signs will be posted in the lobby to direct Proposers to the pre-proposal conference room location. All prospective Proposers attending the meeting will be required to register at the lobby guard station. Proposers should therefore allow ample time to register prior to the meeting start time.

All Questions and Requests for Clarifications during the solicitation phase of this project shall be directed in writing to Luis F. Velásquez, Contract Officer, in the Contracts & Procurement Department at 1250 San Carlos Avenue, San Carlos, CA 94070-1306 or by email to velasquezl@samtrans.com. Proposers may also fax written requests to 650-508-6498. All Questions and Requests for Clarifications concerning this project **must be received in writing by the JPB no later than 5:00 p.m. on March 24, 2011**. The JPB's written response to Questions and Requests for Clarifications shall be posted on the JPB's Web site, **www.caltrain.com**, no later than midnight **March 31, 2011**.

Only signed Addenda issued by the Contracts & Procurement Department's authorized personnel are binding. Proposers are required to acknowledge receipt of all Addenda, if any, with their Proposals.

All written Proposals (**one original, three hard copies and seven soft copies in a searchable Microsoft Word or Adobe PDF format on a CD-ROM**) shall be submitted in securely sealed packages, which shall include the name and address of the Proposer and shall reference solicitation number **10-PCJPB-M-062**.

Proposals shall be on the JPB's Proposal Forms included in the Solicitation Documents, be plainly marked with Proposer's name and contact information; and shall include signed acknowledgments of Addenda, if any.

Whether mailed or personally delivered, Proposals shall be addressed to Luis F. Velásquez, Contract Officer, Peninsula Corridor Joint Powers Board, Contracts & Procurement at 1250 San Carlos Ave., San Carlos, CA 94070-1306 by the date and time set forth in the Solicitation Documents and noted above. If hand delivering Proposals, please allow adequate time to sign in at the JPB's security station located on the first floor of the Administrative offices.

Following the initial review and screening of all timely submitted, responsive and responsible proposals, one or more firms may be invited to participate in an oral interview. Oral interviews, if conducted, tentatively would take place **April 26, 2011**.

Submission of a proposal shall constitute a firm offer to the JPB. **No Proposer may withdraw its proposal for a period of 120 calendar days after the proposal submission due date.** Proposals will be examined and reported to the JPB Board of Directors within **120 calendar days of the proposal submission due date**. The **JPB** reserves the right to reject any or all proposals, to waive any irregularity or informality in any proposal or in the proposal procedure; and reserves the right to negotiate with any qualified individual or firm. Each Proposer will be notified in writing of the JPB's intent to award a Contract prior to the JPB Board meeting.

The JPB hereby notifies all Proposers that it is the policy of the JPB to ensure nondiscrimination on the basis of race, color, sex, national origin, religion, age, disability, ancestry, medical condition, sexual orientation, or marital status in the award and administration of contracts that it awards.

Although no specific goal for Disadvantaged Business Enterprises (DBE) participation has been set for this Contract, it is the intention of The successful Proposer shall cooperate with the JPB in meeting its commitments and objectives with regard to insuring non-discrimination in the award and administration of JPB contracts and shall use its best efforts to insure that barriers to participation of Disadvantaged Business Enterprises do not exist. For DBE assistance, please contact the JPB, DBE Program Office at 650-508-7939.

In connection with the performance of this Contract, full compliance with all applicable Safety and Health Standards and with all applicable laws and regulations concerning Equal Employment Opportunity and DBEs will be required. The major provisions of the JPB policy are outlined in these Contract Specifications.

March 3, 2011
Date

/s/ Luis F. Velásquez
Contract Officer, Contracts & Procurement

PART 1 – GENERAL REQUIREMENTS

1. INTRODUCTION

A. Purpose/Project Definition/Contract Type

The Peninsula Corridor Joint Powers Board (JPB) is seeking proposals from qualified firms (Contractor) to provide, install, and commission forward-facing, Digital Video Recording Systems (DVRs) on locomotives, bi-level cab control cars and gallery cab control cars of the JPB-owned, Caltrain passenger commuter railroad.

The DVRs shall include, but not be limited to hardware (Digital Video Cameras (DVCs), Digital Video Recorders (DVRs), and microphones), software and other necessary and ancillary equipment and parts as further detailed in Part 2, Scope of Services, Exhibit 1, Technical Specifications.

The JPB anticipates awarding a **not to exceed price** Agreement for these services.

B. Background Information

Peninsula Corridor Joint Powers Board

The JPB is a joint powers agency whose membership is comprised of the San Mateo County Transit District, the City and County of San Francisco and the Santa Clara Valley Transportation Authority and provides passenger rail service between San Francisco and Gilroy known as Caltrain. During Fiscal Year 1992-93, the San Mateo County Transit District (District), the Santa Clara Valley Transportation Authority, and the City and County of San Francisco assumed full responsibility for Caltrain from the California Department of Transportation. Acting as the JPB's operating arm, District staff took on the day-to-day and long-term responsibility for Caltrain management. The JPB owns the rolling stock, right-of-way, and station facilities between San Francisco and San Jose with operating rights on Union Pacific trackage to Gilroy. Through an operating agreement with the JPB, Amtrak currently provides passenger train service on the corridor between San Francisco and Gilroy. Caltrain serves 32 stations along the 77-mile corridor, running approximately 90 weekday trains which include baby bullet, limited, and local trains. Additional information about the JPB can be found at www.caltrain.com.

C. Performance Period

The JPB anticipates awarding a Contract for the provisioning, installing, testing and commissioning of:

- a. **Base Services:** 22 DVRs: 10 on locomotives, 10 on cab control cars, and two DVRs as spares. The Contract will contain one, one-year option to purchase, install and commission up to an additional 48 DVRs (Option).
- b. **Optional Services:** the Option shall be exercisable at the sole discretion of the JPB by giving written notice to Contractor no later than 30 days prior to expiration of the option term.

Unless otherwise agreed in writing, the Contractor shall have **30 contiguous calendar days** from receipt of the JPB's Limited Notice to Proceed (LNTP) to provide all submittals and **120 contiguous calendar days** from receipt of the JPB's written Notice to Proceed (NTP) to complete the Base Services under the Contract. The Performance Period, submittal deadlines, and deliverables for the Option shall be mutually determined and agreed to by the JPB and CONTRACTOR prior to the commencement of any work under the Option.

2. SOLICITATION PROCESS AND PROPOSAL EVALUATION

A. Solicitation Timeline

The JPB intends to adhere to the following timeline, but it is subject to change at the discretion of the JPB:

<u>Activity</u>	<u>Date</u>
RFP Issued.....	March 03, 2011
Pre-Proposal Conference and Site Visit	March 17, 2011 at 9:00 a.m.
Questions and Requests for Clarifications (RFCs) Due	March 31, 2011 at 5:00 p.m.
JPB's Response to Questions and RFCs	March 22, 2011
Proposals Due	April 12, 2011 at 2:00 p.m.
Interviews / Oral Presentations (if required, tentatively).....	April 26, 2011
Contract Award (tentative).....	June 2, 2011
Notice to Proceed (tentative).....	June 30, 2011

B. Proposer's Qualifications and Experience

i. Company Qualifications, Experience & References

In order to be considered for selection for award of a contract, each Proposer must provide information about its company so that the JPB can evaluate the firm's stability and ability to support the commitments set forth in response to the RFP. The JPB, at its option, may require a Proposer to provide additional information and/or clarify requested information. To be considered qualified for consideration of award of a contract by the JPB, Proposer(s) shall have previous successful experience and verifiable history in providing, installing, testing, commissioning and maintaining on-board vehicle surveillance systems in the public transit industry with particular emphasis on railroad locomotive digital video recording systems similar in scope and technical specifications as those of this solicitation.

Proposers shall describe their experience in providing the specified services for similar operations and/or entities, including public transportation agencies, if any. Additionally, Proposers shall provide **three references** of recent clients for similar services. The Proposer must have provided services for the reference within the past five (5) years. For each client submitted as a reference, Proposers shall supply a brief description of the services provided, the timeframe services were provided, and client contact information (refer to Section 5, Exhibit C. Reference Form).

Proposers shall also provide the size and structure of the firm as evidenced by an organizational chart, relevant to its client base.

ii. Financial Qualifications

Each Proposer must possess sufficient financial strength, resources and capability to support and enable the work to be performed and to complete the Agreement in a satisfactory manner, as measured by Proposer's financial statements for the last **two years** prepared in accordance with generally accepted accounting principles (GAAP) of the jurisdiction in which the Proposer is located, and audited by an independent certified public accountant. Unaudited financial statements will be accepted if they are prepared in accordance with GAAP and accompanied by a statement from a duly authorized corporate officer stating that the statements accurately represent the Proposer's financial resources and capability.

Proposer's must demonstrate their ability to obtain required bonding and insurance with coverage values that meet minimum requirements evidenced by a letter or written statement or Certificate of Liability Insurance from an insurance underwriter, company, agent, or broker confirming that the Proposer can be insured for the required amounts (refer to Appendix A, Agreement for Services, Section 12, Insurance).

iii. Qualifications and Experience of Key Personnel

Each Proposer shall submit resumes of Key Personnel and an organization chart that identifies the proposed team's structure and reporting responsibilities. If the Proposer is a multi-firm team, describe the organizational arrangement and roles and responsibilities between the firms. Work that subcontractors will perform, if any, should be indicated on a task basis.

This information shall indicate sufficient evidence satisfactory to the JPB that proposed staff of the Contractor have the skills, qualifications, and experience to successfully complete the requested services. Principal participants shall have previous experience in a similar position on **at least three other projects** similar in scope. Alternatively, Proposers may define and state depth and quality of experience in the on-board vehicle surveillance and/or locomotive DVRs industry of the identified principal participants and years performing the requested services.

For purposes of this clause, "Key Personnel" is defined as those principal participants who are essential to the successful completion and execution of this project. Key Personnel must be available for the duration of the engagement and may not be substituted without prior written approval by the JPB. The JPB reserves the right to direct the removal of any individual, including Key Personnel, assigned to this project.

iv. Use of Subcontractors/Subconsultants

A Proposer intending to use any subcontractors/subconsultants must identify them on the Designation of Sub-Contractors and Sub-bidders/DBE and Subcontractor Questionnaire, and include these forms with its proposal (refer to Section 5, Exhibit B, DBE Forms). Use of any and all subcontractors/subconsultants must be approved in writing by the JPB's authorized representative.

v. Licenses and Certifications

The Contractor hold and be able to provide proof of any necessary and required licenses/certifications necessary to successfully complete the work required by the JPB as contained in the solicitation documents and as further detailed in the Scope of Services, DVRs Technical Specifications, Cab Equipment Installation/Integration Analysis, Railroad Vehicle Workmanship and Materials Guidelines; and Work Site Safety and Security Guidelines.

C. Pre-Proposal Conference

A Pre-Proposal Conference will be held **March 17, 2011** commencing promptly at **9:00 a.m.** at the JPB's Administrative Offices, 1250 San Carlos Avenue, San Carlos, CA. Signs will be posted in the first floor lobby to direct you to the conference room location. All prospective Proposers attending the meeting will be required to register at the lobby guard station, please allow ample time to register prior to the meeting start time. Members of the JPB's staff will review the requirements of this Solicitation and be available to answer questions.

A Site Visit to the JPB/Caltrain Centralized Equipment Maintenance and Operations Facility (CEMOF) at 585 Lenzen Avenue, San Jose, CA will follow at **12:00 p.m.** Representative Locomotives, Gallery and Cab Cars will be available for Proposer's inspection and staff will be available to answer questions.

Attendees will be required to provide their own Personal Protection Equipment (PPE): hard hats, safety glasses, and closed-toe/steel-toe boots/shoes.

While attendance at these meetings is not mandatory, it is **highly recommended**.

D. Submission of Questions and Requests for Clarification

Any questions and/or requests for clarification regarding this RFP shall be mailed to Luis F. Velásquez, Contract Officer, Peninsula Corridor Joint Powers Board, 1250 San Carlos Avenue, San Carlos, CA 94070, faxed to 650-508-5498, or emailed to velasquezl@samtrans.com for receipt no later than 5:00 p.m. **March 24, 2011**. The JPB's reply to questions and/or requests for clarification will be posted to the JPB's website (www.caltrain.com) by **March 31, 2011**.

E. Ex-Parte Communications

Proposers and Proposers' representatives may not communicate with the JPB's Board members except in writing and if the communication is made public. Proposers and Proposers' representatives must communicate in the manner set forth in this RFP. All such communication shall be directed to the Contract Officer named in this RFP or the Director, Contracts and Procurement, until after a Letter of Transmittal of the Effective Date has been issued by the JPB. There shall be no communication with any officer, director, employee, or agent of the JPB, except as may be reasonably necessary to carry out the procedures specified in this RFP.

Nothing herein prohibits Proposers and their representatives from making oral statements or presentations in public to one or more representatives of the JPB during a public meeting.

F. Addenda to RFP

The JPB reserves the right to amend this RFP at any time in accordance with Section 2.A., Solicitation Timeline. Any amendments to or interpretations of the RFP shall be described in written addenda.

Each prospective Proposer receiving these solicitation documents will be sent an electronic notification of the posting of clarifications. Failure of any prospective Proposer to receive the notification or addenda shall not relieve the Proposer from any obligation under the RFP as clarified, interpreted or modified. All addenda issued shall become part of the RFP. Proposers shall acknowledge the receipt of each individual addendum in their proposals on the Acknowledgement of Addenda form. Failure to acknowledge in their proposals receipt of addenda may at the JPB's sole option disqualify the proposal.

If the JPB determines that the addenda may require significant changes in the preparation of proposals, the deadline for submitting the proposals may be postponed by the number of days that the JPB determines will allow Proposers sufficient time to revise their proposals. Any new due date shall be included in the addenda.

G. Evaluation of Proposals and Selection Process

Proposers who are involved in current or pending bankruptcy proceedings may be rejected at this stage of the process. The JPB reserves the right to request clarifications from any or all proposers regarding their proposals.

i. Evaluation Committee

An Evaluation Committee (Committee), which will include members of JPB staff and possibly one or more outside experts, will review and screen the proposals submitted according to the weighted

criteria set forth below. While cost is one basic determinant for award, it is not the sole consideration.

Each member of the Committee will first read, evaluate, and score all proposals by each of the criteria described in this section. The Committee will then discuss these evaluations, ultimately combining the individual scores to arrive at a composite score for each firm. Firms found to be in the "competitive range" and may be invited to an oral interview. However, a Proposer may be awarded a contract based solely on the competitiveness of its proposal.

ii. Evaluation Criteria

The capabilities of each Proposer will be evaluated in these specific areas:

a. Project Understanding and Approach 0-20 points

The Proposer's overall approach to successfully providing services will be assessed for its feasibility, responsiveness to the Scope of Services, effectiveness and thoroughness:

- Understanding of Scope of Services
- Approach to Project (Methodology and Management)
 - o Project Deployment / Schedule
 - o Final Project Closeout and Acceptance Procedure
- Demonstrated ability to meet Milestone Schedule

b. Qualifications and Experience of Firm and Key Personnel 0-30 points

- Financial Qualifications – reference 2.B ii.
- Successful experience and verifiable history in the on-board vehicle surveillance industry for the public transportation sector
- Successful experience and verifiable history in the locomotive DVRs industry

c. DVRs Hardware, Software and Warranty 0-20 points

- DVRs Equipment/Hardware
- DVRs Firmware/Software
- Warranty

d. Testing and Training Procedures 0-10 points

- Procedure for testing and acceptance of Prototype DVRs units
- Procedure for testing and acceptance of Production DVRs units
- Procedure for testing and acceptance of DVRs firmware/software
- Final Complete DVRs System Functionality Test
- Procedure for Final Project Closeout and Acceptance by JPB
- Training – including, but not limited to, viewing and downloading of images; HD "hot-swap," and system trouble shooting

e. Cost Proposal 0-20 points

This portion of the proposal will be evaluated based on the **total not-to-exceed cost for the Contract (Base Services plus the total cost of 48 additional DVRs, "Optional Services") (Total Cost Proposal)** as submitted by the Proposer on the Cost Proposal form provided in this

solicitation. A Proposer's failure to submit a completed Cost Proposal may result in the JPB's determination that the proposal is non-responsive.

As specified below, the proposed price will be assigned a maximum of 20 points. The price will be evaluated in the following manner:

1. The responsive proposal with the lowest Total Cost Proposal will be given the full weight of 20 points assigned to the cost criterion.
2. Every other responsive proposal will be given points proportionately in relation to the lowest cost. This point total will be calculated by dividing the lowest proposed cost by the total proposed cost of the proposal being evaluated with the result multiplied by the maximum weight for cost (20 points) to arrive at a cost score of less than the full score for price.

Example:
$$\frac{\text{Lowest Total Proposed Cost}}{\text{Proposer's Total Proposed Cost}} \times \text{Total Points for Cost} = \text{Cost Score}$$

The application of the above formula will result in a fair and uniform assignment of points relative to the criterion of cost. Unless specifically requested in this RFP, Proposers shall not submit alternative cost proposals.

H. Interviews and Product Demonstrations

Following the initial review and screening of proposals, one or more Proposers may be invited to participate in the final selection process. The final selection process may include the submission of additional information, as described below, and/or participation in an oral interview which may include a demonstration of similar projects or deliverables as called for by these solicitation documents. If the JPB conducts interviews/demonstrations, it will do so with those Proposers found to be within the "competitive range." Interviews/demonstrations, if held, are tentatively scheduled for **April 26, 2011** and will be held at the JPB's Administrative Offices, 1250 San Carlos Avenue, San Carlos, California. This date is subject to change. Attendees at an interview/demonstration should be restricted to those individuals who will have direct involvement with the project. The JPB expects that at a minimum the proposed project manager and key project personnel members will attend the oral interview.

I. Revised Proposals, Site Visits (as required), Negotiations, Best and Final Offers

The JPB reserves the right to negotiate with any individual or qualified firm, to request revised proposals, to visit the Proposer's site(s), to interview or not, or to request best and final offers if it is in the best interest of the JPB to do so. The JPB, however, may award a contract without conducting interviews or negotiations, so Proposers are encouraged to submit their best proposal.

Upon completion of this final selection process, the Committee will rank the remaining firms in accordance with the evaluation criteria set forth above. The JPB may accept the proposal or negotiate the terms and conditions of the agreement with the highest-ranked firm. If negotiations are unsuccessful, the JPB will terminate the negotiations with that firm and may open negotiations with the next-highest firm. If negotiations with this firm are also not successful, the JPB may repeat the negotiations process with the next-highest ranked firm or, at its sole discretion, the JPB may reject all remaining proposals.

J. Confidentiality

The California Public Records Act (Cal. Govt. Code Sections 6250 et seq.) mandates public access to government records. Therefore, unless the information is exempt from disclosure by law, the content of any proposal, request for explanation, exception, or substitution, response to these specifications,

protest, or any other written communication between the JPB and any Proposer regarding the procurement, shall be available to the public.

If Proposer believes any communication contains trade secrets or other proprietary information that the Proposer believes would cause substantial injury to the Proposer's competitive position if disclosed, the Proposer shall request that the JPB withhold from disclosure the proprietary information by marking each page containing such proprietary information as confidential. **Proposer may not designate its entire Proposal as confidential nor designate its Cost Proposal as confidential.**

If Proposer requests that the JPB withhold from disclosure information identified as confidential, and the JPB complies with the Proposer's request, Proposer shall assume all responsibility for any challenges resulting from the non-disclosure, indemnify and hold harmless the JPB from and against all damages (including but not limited to Legal Counsel fees that may be awarded to the party requesting the Proposer information), and pay any and all costs and expenses related to the withholding of Proposer information. Proposer shall not make a claim, sue, or maintain any legal action against the JPB or its directors, officers, employees, or agents concerning the withholding from disclosure of Proposer information.

If Proposer does not request that the JPB withhold from disclosure information identified as confidential, the JPB shall have no obligation to withhold the information from disclosure and may release the information sought without any liability to the JPB.

K. JPB Rights

The JPB reserves the right to cancel the procurement in whole or in part, at its sole discretion, at any time before the Agreement is fully executed and approved on behalf of the JPB.

This RFP does not commit the JPB to award an Agreement(s), to pay any costs incurred in the preparation of the proposal for this request, or to procure or contract for services. The JPB reserves the right to modify or cancel in whole or in part this RFP, to reject any and all proposals, to accept the proposal it considers most favorable to the JPB's interest in its sole discretion, and to waive irregularities or informalities in any proposal or in the proposal procedures. The JPB further reserves the right to reject all proposals and seek new proposals when the JPB considers such procedure to be in its best interest.

If there is any evidence indicating that two or more Proposers are in collusion to restrict competition or are otherwise engaged in anti-competitive practices, the proposals of all such Proposers shall be rejected, and such evidence may be a cause for disqualification of the participants in any future solicitations undertaken by the JPB.

L. Contract Award

The Committee will make a recommendation of award of a contract(s), if any, to the JPB's Board of Directors. All Proposers will be notified of the recommended award(s) by mail. No contract will be in force until issuance of a written transmittal issued by the Director, Contracts and Procurement, or a designee.

The Proposer to whom award is made, shall execute a written **Agreement for Services** and shall furnish required contract documents (e.g., certificates of insurance, performance bond) within 14 calendar days after receiving from the JPB the Agreement for Services form for execution (reference Section 3. Contractual Information).

M. Protest Procedures

The JPB maintains written procedures that must be followed for all protests. Protests based upon restrictive specifications or alleged improprieties in the proposal procedure which are apparent or reasonably should have been discovered prior to receipt of proposals shall be filed in writing with the Director, Contracts & Procurement, at least 5 calendar days prior to receipt of proposals. The protest must clearly specify in writing the grounds and evidence on which the protest is based.

Protests based upon alleged improprieties that are not apparent or which could not reasonably have been discovered prior to submission date of the proposals, such as disputes over the staff recommendation for contract award, shall be submitted in writing to the Director, Contracts and Procurement, within 5 days from receipt of the notice from the JPB advising of staff's recommendation for award of contract. The protest must clearly specify in writing the grounds and evidence on which the protest is based. The Director, Contracts and Procurement, will respond to the protest in writing at least 3 days prior to the meeting at which staff's recommendation to the JPB's Board of Directors will be considered. Should Proposer decide to appeal the response of the Director, Contracts and Procurement, and pursue its protest at the Board meeting, it will notify the Director, Contracts and Procurement, of its intention at least 2 days prior to the scheduled meeting(s).

Failure to comply with the rules set forth herein may result in rejection of the protest.

Copies of the complete protest procedures are available from the office of Contracts and Procurement.

3. CONTRACTUAL INFORMATION

A. Agreement for Services

The selected Proposer will be required to execute an Agreement for Services with the JPB describing the Scope of Services to be performed, the schedule for completion of work, compensation, insurance requirements and other pertinent provisions. This contract shall follow the sample form of Agreement attached hereto as Appendix A. All Proposers are directed to review all of the terms and conditions set forth in the sample Agreement, particularly the indemnification, insurance requirements and liquidated damages provisions.

Submittal of a proposal shall be deemed acceptance of all the terms and conditions set forth in this RFP and the sample Agreement for Services, Appendix A, unless the Proposer includes with their proposal, in writing, any modifications requested by the Proposer to the Agreement.

B. Disadvantaged Business Enterprises (DBE) Policy

The JPB is a recipient of Federal financial assistance from the Federal Transit Administration (FTA) and the Federal Highway Administration (FHWA), and is committed to and has adopted a Disadvantaged Business Enterprise Program for Contracts in accordance with Federal regulations 49 CFR Part 26, issued by the U.S. Department of Transportation (DOT).

It is the policy of the JPB to ensure non-discrimination in the award and administration of all contracts and to create a level playing field on which Disadvantaged Business Enterprises (DBE) can compete fairly for contracts and subcontracts relating to the JPB's construction, procurement, and professional services activities. To this end, the JPB has developed procedures to remove barriers to DBE participation in the bidding and award process and to assist DBEs to develop and compete successfully outside of the DBE Program. In connection with the performance of this contract, the Contractor will cooperate with the JPB in meeting these commitments and objectives.

Pursuant to 49 CFR Part 26.13, and as a material term of any Agreement with the JPB, the Contractor hereby makes the following assurance and agrees to include this assurance in any Agreements it makes with subcontractors in the performance of this contract:

"The Contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The Contractor or subcontractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of U.S. DOT-assisted contracts. Failure by the Contractor or subcontractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy, as the JPB deems appropriate."

Although no specific DBE goal has been established for this contract, Proposers shall cooperate with the JPB in meeting its commitments and objectives with regard to ensuring non-discrimination in the award and administration of contracts and shall use its best efforts to ensure that barriers to participation for DBEs do not exist. To better help the JPB record such information and encourage DBE participation, all Proposers must complete the Subcontractor/DEB form included herewith (reference Part 1, Section 5, Exhibit B).

By submitting a proposal, a Proposer is deemed to have made the foregoing assurance and to be bound by its terms.

C. Performance Security

The Proposer awarded a Contract shall furnish at its own expense a Performance Bond completed on the JPB's form, a sample of which is included in this RFP as Appendix B. The Performance Bond shall be executed as surety by a corporation authorized to issue surety bonds in the State of California. The bond shall be in **an amount equal to 100% of the total amount of the Base Services provided under the Contract**, as a guarantee of good faith on behalf of the Contractor that the terms of this Contract shall be complied with in every particular. Said bond shall remain in full force and effect in the appropriate amount until such time work is completed by the Contractor and the JPB inspects and issues its written Final Acceptance. Upon Final Acceptance of the Systems, at Contractor's request, the Performance Bond **may be reduced to 20% of the original Performance Bond** amount and shall continue in force in that amount until the end of the three-year warranty period

In the event the JPB exercises its option to procure Optional Services (the provision, installation, testing and commissioning of up to an estimated additional 48 DVRs), the Contractor will be required to furnish, at its own expense, a Performance Bond, meeting the requirements set forth in the above paragraph. The amount of the Performance Bond will be 100% of the additional DVRs units procured by the JPB.

The Performance Bond amount may be reduced to 20% of the cost of the Optional Services upon Final Acceptance issued by the JPB and will continue in force in that amount until the end of the three-year warranty period.

Proposers are notified that no additional compensation shall be paid to Contractor for the furnishing of Performance Bonds for the Base Services and Optional Services. Any and all costs for such bonds shall be incorporated into Proposers' Cost Proposals.

D. Levine Act

The Levine Act (Government Code 84308) is part of the Fair Political Practices Act. The Levine Act prohibits any JPB Board Member from participating in or influencing the decision on awarding a contract with the JPB to anyone who has contributed \$250.00 or more to the Board Member within the previous twelve months. The Levine Act also requires a member of the JPB Board who has received such a contribution to disclose the contribution on the record of the proceeding. In addition, JPB Board

Members are prohibited from soliciting or accepting a contribution from a party applying for a contract while the matter of awarding the contract is pending before the JPB or for three months following the date a final decision concerning the contract has been made.

Proposers must complete and submit with their proposal the California Levine Act Statement, a copy of which is included in this RFP.

E. Conflict of Interest

The JPB currently has long-term contracts with consulting firms that are assisting the JPB in areas related to the project that is the subject of this RFP. These contractors are **LTK Engineering Services of Ambler, PA** and **National Railroad Passenger Corporation (Amtrak), Washington, D.C.** These firms, as well as subcontractors supporting them on JPB projects, are not eligible to submit proposals in response to this RFP.

The firm selected to serve as the Contractor through this RFP shall not be prohibited from working under separate contract with the JPB, unless such work creates a conflict of interest, real or apparent, that would render the Proposer ineligible to undertake such work during the term of the Contract.

By submitting a proposal, the Proposer represents and warrants that no director, officer or employee of the JPB is in any manner interested directly or indirectly in the proposal or in the Contract which may be made under it or in any expected profits to arise therefrom, as set forth in Article 4, Division 4, Title I (commencing with Sec. 1090) of the Government Code of the State of California. The Proposer warrants and represents that it presently has no interest and agrees that it will not acquire any interest which would present a conflict of interest under California Government Code sections 1090 *et seq.* or sections 87100 *et seq.* during the performance of services under this Agreement. The Proposer further covenants that it will not knowingly employ any person having such an interest in the performance of this Agreement. Violation of this provision may result in this Agreement being deemed void and unenforceable. Additional Conflict of Interest requirements will apply during the term of any contract awarded; Proposer's attention is directed to the Sample Agreement for Services.

F. Disclosure of Governmental Positions

Depending on the nature of the work performed, a Contractor to the JPB may be subject to the same conflict of interest prohibitions established by the Federal Transit Administration, Federal Highway Administration and California law that govern JPB employees and officers (Cal. Gov. Code Section 1090 *et seq.* and Cal Govt. Code Section 87100 *et seq.*). In order to analyze possible conflicts that might prevent a Contractor from acting on behalf of the JPB or other governmental entity prior to contract award, the JPB requires that all prospective Proposers disclose in their proposals any positions that they hold as directors, officers, or employees of any governmental entity. Additional disclosure may be required prior to contract award or during the term of the contract. Responses will be kept confidential to the extent permitted by law. Therefore, each Proposer shall disclose whether any owner or employee of the firm currently hold positions as directors, officers, or employees of a governmental entity or held such positions in the past twelve months using the attached "Disclosure of Government Positions Form."

The JPB is responsible for retaining the certification records of the Contractor who is, in turn, responsible for keeping the disclosure forms of subcontractors/subsubconsultants.

- continued on next page -

4. APPENDICES

- A. Agreement for Services (sample)
- B. Certificate of Liability Insurance (sample)
- C. Performance Guaranty – Performance Bond

5. EXHIBITS

- A. Cost Proposal Form
- B. Disadvantaged Business Enterprises (DBE) Reporting Forms
- C. Reference Form
- D. California Levine Act
- E. Disclosure of Governmental Positions

Note: Appendices and Exhibits are located at end of Part 3, Proposal Content and Submission.

- END PART 1 – GENERAL REQUIREMENTS -

PART 2 – SCOPE OF SERVICES

1. INTRODUCTION

The JPB operates daily commuter railroad services along a 77 mile railroad-right-of-way from San Francisco, CA in the north to Gilroy, CA in the south. This service, Caltrain, is a “push-pull system” whereby on the south-bound trips the train consists are pulled by diesel locomotives; and on the north-bound trips, the train consists are pushed by the locomotives which are controlled from a cab control car on the north-facing end of the train consist. Caltrain operates three types of locomotives and two types of cab control cars.

Caltrain has determined it requires a system for capturing/recording **safety critical information** as train consists travel along the railroad-right-of-way and has therefore issued this Request For Proposals.

2. SCOPE OF SERVICES AND DELIVERABLES

The JPB is seeking proposals from qualified Contractors to:

- A. provide, install, and commission forward-facing, Digital Video Recording Systems (DVRs or Systems) on Caltrain locomotives; and bi-level and gallery cab control cars,
- B. provide training to JPB/Caltrain staff and designated staff of the contracted operator of Caltrain passenger commuter railroad services, and
- C. provide warranty and repair services for the installed Systems.

The Systems shall include, but not be limited to, hardware (Digital Video Cameras (DVCs), Digital Video Recorders (DVRs), and microphones); administrative and recording/viewing/downloading software; and other necessary and ancillary equipment, parts and materials as further detailed in attached Exhibit 1, Technical Specifications, and Exhibit 2, Cab Equipment Installation / Integration Analysis.

The Scope of Services consists of (1) Base Services: the provision, installation, testing and commissioning of 22 DVRs and (2) Optional Services: the provision, installation, testing and commissioning of up to an estimated additional 48 DVRs. While the estimated amount of Optional Services will be used as the basis for evaluating Cost Proposals, the JPB does not guarantee, either expressly or by implication, to purchase the estimated quantity. The JPB reserves the right to purchase any lesser quantity and to procure goods or services covered by this Contract from other contractors.

3. EXHIBITS

- 1. DVRs - Technical Specifications
- 2. Cab Equipment Installation / Integration Analysis
- 3. Railroad Vehicle Workmanship and Materials
- 4. Work Site Safety and Security
- 5. Milestone Payment Schedule
- 6. Deliverables
- 7. Components and Spare Parts List

Note: Appendices and Exhibits are located at end of Part 3, Proposal Content and Submission.

- END PART 2 – SCOPE OF SERVICES -

PART 3 – PROPOSAL CONTENT AND SUBMISSION

1. PROPOSAL CONTENT

The intent of this RFP is to encourage responses that clearly communicate the Proposer's understanding of the contract requirements and the Agreement for Services and its implementation. Submission of a proposal indicates acceptance by a firm of the conditions contained in this RFP unless clearly and specifically noted in the proposal submitted and confirmed in the Contract between the JPB and the firm(s) selected.

In order to facilitate the Proposer's preparation of its proposal and the JPB's review of same, all proposals shall be limited to **35 pages**, not including the cover letter, table of contents, single page resumes of key nominated personnel, and other required appendices and forms. Proposals should be prepared on recycled content paper and pages should be printed double-sided. Proposals should provide the requested information in a concise, well-organized manner and should follow the format outlined below.

A. Cover Letter

The signed cover letter should be on company letterhead clearly stating the name of the Proposer's firm, business address, telephone and fax numbers, and email address. The following information should be provided:

- i. Introduce the firm and summarize its qualifications;
- ii. Indicate that the Proposer is prepared to sign the Agreement for Services (Appendix A) without alterations or exceptions or whether it is requesting modifications to the Agreement. Exceptions or modifications, if any, should be clearly identified and submitted as stated below in Section J.
- iii. A statement that binds the Proposer to the proposed Scope of Services and Cost Proposal for **120 contiguous calendar days** from the proposal submittal due date;
- iv. The letter must be signed by an individual(s) authorized to bind the Proposer to the proposal and contract, if awarded, and must affirmatively state that the individual(s) has read, understood, and will comply with all the terms and conditions set forth in these contract documents;
- v. Indicate whether the Proposer agrees to abide by the requirements of the JPB's DBE standards as detailed in Section 1, Exhibit B.

B. Table of Contents

Include a Table of Contents displaying the organization of the proposal being submitted.

C. Proposer's Qualifications and Experience

The following information should be included in the proposal:

i. Company Qualifications, Experience and References

Describe the firm, its size and organization, the number and location of offices, and general operational structure, as well as its management and technical personnel. Identify similar projects the firm has performed for other entities.

Describe those aspects of the firm that pertain to the ability to provide superior service for the scope of services described under this RFP.

Additionally, provide contact information for **three client references** for which the Proposer has provided similar services within the past **three years**. For each client submitted as a reference, Proposer shall supply a brief description of the work performed, including names of contact persons, addresses, telephone numbers and email addresses. Do not use the San Mateo County Transit District or the Peninsula Corridor Joint Powers Board as references. This section should be no longer than **one page per client**.

ii. Financial Qualifications

Provide evidence of your firm's financial strength, stability, capacity, and resources. Provide the last three years audited financial statement(s) and any other pertinent information, such as internal unaudited financial statements and financial references, to allow the JPB to reasonably formulate a determination about the financial stability and strength of your firm. Describe any administrative proceedings, claims, lawsuits, settlements, or other liability exposures pending against your firm.

iii. Qualifications and Experience of Key Personnel

Provide the names of individuals who would be directly engaged in performance of the scope of services. Identify the key personnel and outline the Proposer team's capacity to successfully perform the desired services. The Proposer's Project Manager and key individuals who will be assigned to the project will be an important factor considered by the Evaluation Committee. There can be no change of key personnel once the proposal is accepted for contract award without the prior approval of the JPB's Project Manager or Contract Administrator. For each of these individuals, please submit:

- a. The number of years of experience in providing the desired service;
- b. A list of references, including a brief description of the nature of the work performed by the individual;
- c. A summary of their experience performing services for public agency clients, and transportation agencies, if any.
- d. Examples of similar projects completed by the Proposer's team members, key personnel and Proposer's Project Manager.
- e. Provide resumes for key nominated personnel. Resumes shall not count toward the 35-page proposal limit.

iv. Use of Subcontractors/Subconsultants

If subcontractors/subconsultants are proposed for this RFP, describe the products or services provided by the subcontractor(s) /subconsultant(s), the value of each subcontract, and the Proposer's contract management process for subcontractors/subconsultants included in the proposal.

v. Licenses and Certifications

Provide proof of any applicable and required licenses and certifications needed to complete the work called for under this RFP.

D. Evidence of Ability to Provide Insurance

Insurance requirements for this scope of services are detailed in Section 12 of the sample Agreement for Services. Exceptions to the insurance requirements, if any, must be specified in Proposer's proposal as further detailed below in Section J, Exceptions to Agreement.

This proof shall take the form of a current Certificate of Liability Insurance (COLI) reflecting the insurance requirements as stated in Section 12 of the sample Agreement for Services or a letter or written statement from Proposer's insurance agent or broker certifying that such insurance requirements can be obtained prior to work commencing on the Contract. If the certificate does not cover the requirements as specified in the Sample Agreement for Services, verification of availability of required insurance must otherwise be provided.

E. Project Understanding and Approach

Include a statement and work plan that clearly shows and confirms the Proposer's understanding of the project scope and timeline. The work plan should also include a detailed explanation of the approach/methodology to be followed for performing the services required in Part 2, Section 2, Scope of Services and Deliverables.

Implementation and functionality of tasks and deliverables to be addressed should include, but not be limited to:

- Project Management Plan
- Installation and Inspection Plan
 - o Prototype DVRs
 - o Production DVRs
- Response to Technical Specifications/Features
 - o DVRs Equipment Hardware
 - o DVRs Firmware and Software
- Testing and Training Plan / Procedures
 - o Final Complete System Functionality Test
 - o Training of JPB Staff
- Warranty
- Value Added or Unique Services

F. Organization Chart

Provide an organization chart that identifies the proposed team. Identify the primary staff person who will oversee the JPB's account and a listing of the names and titles of the staff who will support the account, and the manner in which direction and supervision shall be exercised over the team by the firm's management.

G. Project Schedule

Provide an estimated master project timeline to complete the project services; use **June 30, 2011** as an anticipated project start date.

H. Milestone Payment Schedule

Provide a statement confirming Proposer's agreement with and ability to comply with the Milestone Payment Schedule provided in the Sample Agreement.

Alternatively, Proposers may propose a schedule for JPB comment and acceptance.

I. Cost Proposal

Proposers must complete and submit the Cost Proposal form, attached to this RFP. Pricing should be based on **the Proposer's solution to the stated requirements of this solicitation**. Costs shall include, but not be limited to, labor, materials, supplies, taxes, overhead, insurance, software, bonding, training, warranty and profit. A Proposer's failure to submit a Cost Proposal may result in rejection of the proposal as non-responsive.

J. Exceptions to Agreement

Submittal of a proposal shall be deemed acceptance of all the terms set forth in this RFP and the sample Agreement for Services unless the Proposer includes with its proposal, in writing, any exceptions or modifications requested by the Proposer to the proposed Agreement.

K. Warranty

Describe your firm's warranty, including coverage for third-party equipment. At a minimum, the warranty must meet the requirements specified in Exhibit 1, Technical Specifications of the RFP for **a period equal to or greater than three years** from date of the JPB's Final Project Closeout and Acceptance. Please provide copies of any applicable manufacturers' warranties.

All warranties shall commence upon the JPB's written Final Project Closeout and Acceptance of the installed and spare DVRs/Systems.

L. Joint Venture Agreement, if applicable

If the Proposer is a joint venture, an executed copy of the Joint Venture Agreement shall be included with the proposal. The specific areas of responsibility (including administrative, technical, and financial) for each member of the Joint Venture shall be outlined.

M. Acknowledgement of Addenda, if any

Submit the Acknowledgment of Addenda form(s).

N. All Other Required Forms

Submit all the required forms provided in this solicitation as set forth below in Section 2, FORMS.

O. DVRs Equipment, Hardware, Firmware and Software

Describe your firm's reasoning for selection of proposed DVRs equipment, hardware, firmware and software. Provide copies of equipment manuals and software license agreements.

-continued on next page -

2. LIST OF REQUIRED FORMS

1. **Appendix B.** Certificate(s) of Liability Insurance
2. **Exhibit A.** Cost Proposal Form
3. **Exhibit B.** DBE Reporting Forms
4. **Exhibit C.** Reference Form
5. **Exhibit D.** California Levine Act
6. **Exhibit E.** Disclosure of Governmental Positions

3. PROPOSAL SUBMISSION

A. Submission of Proposals Information

Proposers shall submit their proposal, clearly identified with **RFP 10-PCJPB-M-062, Installation of DVRs on Trains**, in a sealed envelope or package to:

Luis F. Velásquez
Contract Officer
Contracts and Procurement Department
Peninsula Corridor Joint Powers Board
1250 San Carlos Avenue
San Carlos, CA 94070-1306

Proposals must be received in the Contracts and Procurement Department **before 2:00 p.m., April 12, 2011**. If personally delivering your proposal, please allow adequate time for signing in at the security desk in the first floor lobby. Proposals received after this time or at any other location will not be accepted.

1. **Hard Copies**

Proposers must submit **one** original and **three** hard copies of their proposal.

2. **CD-ROMs**

Proposers shall submit **seven** (CD-ROM(s) containing their proposal document(s) in a searchable Microsoft Word and/or Adobe PDF format.

3. **User and Technical Manuals**

Proposers shall include all user and technical manuals, if any, needed to properly evaluate the proposal.

B. Cost of Proposal Development

This RFP does not commit the JPB to enter into an Agreement, to pay any costs incurred in the preparation or presentation of a proposal, nor to procure or contract for any services.

C. Validity of Proposals

Submission of a proposal shall constitute a firm offer valid to the JPB for **120 contiguous calendar days** from the submission deadline for proposals.

D. Withdrawal of Proposals

A Proposer may withdraw its proposal anytime before the date and time when proposals are due, without prejudice, by submitting a written request for its withdrawal to . A telephone or email request is not acceptable. The withdrawal of a proposal does not prejudice the right of a Proposer to submit another proposal within the time set for receipt of proposals.

After the proposal due date, a proposal may be withdrawn only if the JPB fails to award the Agreement within the proposal validity period prescribed above in Section 3.C., Validity of Proposals, or any agreed-upon extension thereof.

E. District Holidays

The normal flow of operations at the District's Administrative Office and at its North and South Base Maintenance Operations Buildings shall not be disrupted while Contractor is conducting the inventory.

Contractor shall observe only those holidays observed by the District, which are as follows:

1. New Year's Day (January 1)
2. Martin Luther King, Jr. Day (3rd Monday in January), North and South Base Maintenance and Operations Buildings excluded (Services to be Maintained).
3. Memorial Day (last Monday in May)
4. Independence Day (July 4)
5. Labor Day (1st Monday in September)
6. Thanksgiving Day (4th Thursday in November)
7. Christmas Day (December 25th)

- continued on next page -

F. Proposal Content Checklist

The following checklist is provided as a guide to ensure all required documentation is included in Proposer's submittal:

- ☐ Cover Letter
 - o summarizing Proposer's qualifications, experience and unique service proposition
 - o binding the Proposer for 120 days
 - o confirming willingness to sign the Agreement of Services
 - o confirming willingness to abide by the District's DBE standards
- ☐ Table of Contents
- ☐ Proposers Qualifications and Experience
 - o qualifications, experience and references
 - o financial qualifications(see below)
 - o qualifications and experience of key personnel
 - o use of Subcontractors/Subconsultants, if applicable
 - o licenses, certifications and/or registrations
- ☐ Evidence of Ability to Provide Insurance
 - o letter or verification of insurance certificate from the Proposer's insurance agent or broker
- ☐ Project Understanding and Approach
- ☐ Organization Chart
- ☐ Project Schedule
- ☐ Milestone Payment Schedule
- ☐ Cost Proposal
- ☐ Exceptions to Agreement, if any
- ☐ Warranty
- ☐ Joint Venture Agreement, if applicable
- ☐ Acknowledgement of Addenda, if any
- ☐ Financial Statements
- ☐ All Other Forms
- ☐ DVRs Equipment, Hardware, Firmware and Software
 - o User and Training Manuals
 - o Software License Agreements

Proposer's are reminded to 1) submit **one original and three hard copies** of their proposal plus **seven** CD-ROM(s) containing a copy of their complete Proposal in a searchable Microsoft Word and/or Adobe PDF format; and 2) identify any proprietary, trade secret or other confidential information in the Proposal.

APPENDICES AND EXHIBITS

PART 1 – GENERAL REQUIREMENTS

APPENDICES	PAGE
☐ Appendix A Agreement for Services – sample.....	APX A - 1
☐ Appendix B Certificate of Liability Insurance – sample	APX B - 1
☐ Appendix C Performance Guaranty – sample	APX C - 1

EXHIBITS	
☐ Exhibit A Cost Proposal Form	EXH A - 1
☐ Exhibit B Disadvantaged Business Enterprises (DBE) Reporting Forms.....	EXH B - 1
☐ Exhibit C Reference Form	EXH C - 1
☐ Exhibit D California Levine Act	EXH D - 1
☐ Exhibit E Disclosure of Government Positions	EXH E - 1

PART 2 – SCOPE OF SERVICES

EXHIBITS	PAGE
☐ Exhibit 1 DVRs Technical Specifications	EXH 1 - 1
☐ Exhibit 2 Cab Equipment Installation / Integration Analysis	EXH 2 - 1
☐ Exhibit 3 Railroad Vehicle Workmanship and Materials	EXH 3 - 1
☐ Exhibit 4 Work Site Safety and Security	EXH 4 - 1
☐ Exhibit 5 Milestone Payment Schedules.....	EXH 5 - 1
☐ Exhibit 6 Deliverables	EXH 6 - 1
☐ Exhibit 7 Components and Spare Parts List.....	EXH 7 - 1

AGREEMENT
BETWEEN THE PENINSULA CORRIDOR JOINT POWERS BOARD (JPB)
AND
_____ **(CONTRACTOR)**

AGREEMENT SUMMARY

Board of Directors' Date of Award: _____, 2011

Resolution Number: 2011- _____

Effective date of the Agreement: _____, 2011

Services to be Performed (Section 1)

The Services to be performed under this Agreement are:

1. **Base Services:** provide, install, test, and commission 22 Digital Video Recording Systems (DVRs) on Caltrain locomotives and cab control cabs.
2. **Optional Services:** an Option for the provision, installation, testing, and commissioning of up to 48 additional DVRs on Caltrain locomotives and cab control cars.

Term of Agreement (Section 3):

The term of the provision of the Base Services of this Agreement will commence upon the Effective Date of the Agreement and will expire upon the completion of a three-year warranty period following Final Acceptance.

During the first year of the Agreement term, the JPB reserves the right, in its sole discretion, to exercise the Optional Services by giving written notice to the Contractor no later than thirty (30) days prior to the expiration of said one year period.

In the event the District exercises the Optional Services, the term of this Agreement shall then continue until all services required pursuant to such Optional Services are complete, including the completion of a three-year warranty period following Final Acceptance

Compensation (Section 5)

The aggregate amount of this Contract for the Base Services shall not exceed the Board-Approved amount of \$ _____; the aggregate amount for Optional Services shall not exceed the Board-Approved amount of \$ _____.

Contractor's Key Representative (Section 7)

Name: _____ Title: _____

Address: _____

Tel. _____ Fax _____ eMail _____

NOW, THEREFORE, THE PARTIES AGREE AS FOLLOWS:

1. SCOPE OF SERVICES

The Contractor agrees to provide, install, test, and commission DVRS for locomotive and cab control cabs to the JPB in accordance with the terms and conditions of this Agreement and as set forth in the RFP dated March 3, 2011 (including applicable appendices, exhibits and amendments, if any) incorporated herein as **Exhibit A**; as supplemented by CONTRACTOR's written proposal incorporated herein as **Exhibit B**.

In the performance of its work and provision of the DVRS, the CONTRACTOR represents that it and any of its subcontractors (1) has and will exercise the degree of professional care, skill, efficiency, and judgment of contractors with special expertise in providing DVRS to the railroad industry; (2) carries all applicable licenses, certificates, and registrations in current and good standing that may be required to perform the work; and (3) will retain all such licenses, certificates, and registrations in active status throughout the duration of this engagement.

2. AGREEMENT DOCUMENTS:

This Agreement consists of the following documents:

- (1) This Agreement
- (2) Exhibit A, Requests For Proposals
- (3) Exhibit B, Contractor's Written Proposal

In the event of conflict between or among the terms of the Agreement documents, the order of precedence shall be (1) this Agreement, (2) Exhibit A, and (3) Exhibit B.

3. TERM OF AGREEMENT

The term of the provision of the Base Services of this Agreement will commence upon the Effective Date of the Agreement, as determined by the Parties, and will expire upon the completion of a three-year warranty period. The three-year warranty period shall commence upon Final Acceptance issued by the JPB.

During the first year of the Agreement term, commencing upon the Effective Date of the Agreement, the JPB reserves the right, in its sole discretion, to exercise the Optional Services by giving written notice to the Contractor no later than thirty (30) days prior to the expiration of said one year period. In the event the District exercises the Optional Services, the term of this Agreement shall also continue until all services required pursuant to such Optional Services are complete, including the completion of a three-year warranty period following Final Acceptance issued by the JPB.

It is understood that the term of the Agreement, and any Option granted thereto as specified herein are subject to the JPB's right to terminate the Agreement in accordance with Section 23 of this Agreement.

4. SCHEDULE AND TIME OF COMPLETION

No site work shall begin prior to JPB's receipt of all properly executed Contract documents and JPB's issuance of a Notice to Proceed. All Base Services to be performed pursuant to this Agreement shall be completed within 120 contiguous calendar days of the JPB's issuance of Limited Notice to

Proceed unless the Agreement is terminated sooner in accordance with the terms this Agreement. Within 30 days of JPB issuance of a Limited Notice to Proceed, and as set forth in Exhibit A, CONTRACTOR shall submit, for JPB review and approval, a detailed project schedule that will describe the detailed schedule for provision of the work.

The schedule and time of completion for the Optional Services shall be mutually agreed upon by the Parties within 30 days of the JPB's written notice to CONTRACTOR of the JPB's intent to exercise the Optional Services.

5. COMPENSATION

A. Base Services

The CONTRACTOR agrees to perform all of the Base Services, comprised of the provision, installation, testing and commissioning of 22 DVRs, including a three-year warranty, for a fixed price of _____, (\$ _____), in accordance with Exhibits A and B. The three-year warranty period shall commence upon Final Acceptance, which will be issued by the JPB.

The total all inclusive sum shall include all labor, materials, taxes, profit, overhead, insurance, bonding, software, training, warranty subcontractor/subconsultant costs and all other costs and expenses incurred by the CONTRACTOR.

B. Optional Services

The CONTRACTOR agrees to perform the Optional Services, comprised of the provision, installation, testing and commissioning of up to an estimated additional 48 DVRs, including a three-year warranty, for a fixed unit price of _____, (\$ _____), in accordance with Exhibits A and B. The three-year warranty period shall commence upon Final Acceptance, which will be issued by the JPB. The JPB will determine the number of units it requires and does not guarantee, either expressly or by implication, to purchase the estimated quantity.

The total all inclusive unit price shall include all labor, materials, taxes, profit, overhead, insurance, bonding, software, training, warranty subcontractor/subconsultant costs and all other costs and expenses incurred by the CONTRACTOR.

6. MANNER OF PAYMENT

JPB will pay CONTRACTOR according to the following **Milestone Payment Schedule**:

BASE SERVICES – 22 DVRs				
MILESTONE	DESCRIPTION	DELIVERABLES	PERCENT OF TOTAL CONTRACT PRICE	CUMULATIVE PERCENT
1	Project Kick-Off Meeting completed. Submittals required for NTP received, modified and approved.	- Detailed Final Project Schedule - Detailed Testing, Inspection and Acceptance Manual for: a) Prototype DVRs and b) remaining DVRs units	5%	5%

BASE SERVICES – 22 DVRs (continued)				
MILESTONE	DESCRIPTION	DELIVERABLES	PERCENT OF TOTAL CONTRACT PRICE	CUMULATIVE PERCENT
2	Delivery and installation of prototype units	Prototype installed, tested, and accepted by JPB per the detailed prototype testing procedure.	15%	20%
3	Delivery and installation of 10 DVRs units	50% of the DVRs units delivered, installed, and tested. - JPB accepts per the detailed inspection and acceptance procedure.	20%	40%
4	Delivery and installation of remaining DVRs units	- Remaining DVRs units delivered, installed, and tested. - JPB accepts per the detailed inspection and acceptance procedure	20%	60%
5	Delivery of two spare DVRs units with all necessary parts and materials	Spare DVRs units delivered and accepted by the JPB	10%	70%
6	Software installed and tested	Software delivered, installed, tested, and accepted by JPB	10%	80%
7	Training completed	- Training of JPB staff completed - All manuals received, reviewed and accepted by JPB	10%	90%
8	- Project Close Out and Final Acceptance - Warranty Period	- Project Completed by Contractor and Accepted by JPB - Warranty Period Begins		
9	Warranty Completion, Retention Release	Retention released upon completion of warranty period	10%	100%

A Milestone Payment Schedule applicable to the Optional Services shall be determined by the Parties at such time as the JPB determines the number of additional DVRs units it requires. The Optional Services Milestone Payment Schedule shall be modeled on the Milestone Payment Schedule set forth above for the Base Services

Invoices shall be submitted to the JPB by CONTRACTOR based on the completion of the above tasks. Each invoice shall reference the contract number, specify the completed task number, describe with specificity the tasks completed for which payment is being requested and state the amount of payment requested. If work leading to a particular milestone includes items for which California sales tax is due, CONTRACTOR may add applicable sales tax to the invoice for that milestone.

CONTRACTOR shall only submit invoices for services performed and costs incurred in accordance with the above Milestone and Payment Schedule, in the performance of this Agreement, not for advance costs. Upon payment for materials and equipment purchased, JPB is granted ownership and title to such materials and equipment. Transfer of title shall be free of all encumbrances. Furthermore, CONTRACTOR shall bear the risk of any loss or damage to the materials and equipment until the JPB issues its written Final Acceptance, even though the JPB holds title to the materials and equipment prior to said issuance. Notwithstanding the foregoing, the risk of any loss or damage to materials and equipment that is installed on JPB premises shall be borne by the JPB, with the exception of any loss or damage to materials or equipment resulting from Contractor's negligence. Transferring title and/or the risk of any loss or damage to the JPB for such materials and equipment does not trigger the commencement of the warranty term, which commences upon Final Acceptance.

JPB will pay approved invoices/billing statements within 30 calendar days of their receipt. JPB reserves the right to withhold payment to the CONTRACTOR if JPB determines that the quantity or quality of the work performed is unacceptable. JPB shall provide written notice to the CONTRACTOR within 10 business days of JPB's decision not to pay and the reason(s) for non-payment.

If work leading to a particular milestone includes items for which California sales tax is due, Contractor may add applicable sales tax to the invoice for that milestone.

Invoices should be sent to: Peninsula Corridor Joint Powers Board
Attn: Accounts Payable
1250 San Carlos Avenue
San Carlos, CA 94070-1306

or

AccountsPayable@smctd.com

7. CONTRACTOR'S KEY PERSONNEL

It is understood and agreed by the parties that at all times during the term of this Agreement that shall serve as the primary staff person of CONTRACTOR to undertake, render, and oversee all of the services under this Agreement. Upon written notice by the Contractor and approval by the JPB, which will not be unreasonably withheld, the CONTRACTOR may substitute this person with another person, who shall possess similar qualifications and experience for this position.

8. NOTICES

All communications relating to the day-to-day activities of the provided services shall be exchanged between the JPB's Project Manager or designee, and the CONTRACTOR's Project Manager or designee.

All other notices and communications deemed by either party to be necessary or desirable to be given to the other party shall be in writing and may be given by personal delivery to a representative of the parties or by mailing the same postage prepaid, addressed as follows:

If to the JPB: Executive Director
Peninsula Corridor Joint Powers Board
1250 San Carlos Avenue
San Carlos, CA 94070-1306

With a copy to: Director, Contracts and Procurement
Peninsula Corridor Joint Powers Board
1250 San Carlos Avenue
San Carlos, CA 94070-1306

If to the CONTRACTOR:

Attn: _____

9. **OWNERSHIP OF WORK**

A. General

All reports, designs, drawings, plans, specifications, schedules, and other materials prepared, or in the process of being prepared for the services to be performed by CONTRACTOR shall be and are the property of the JPB. The JPB shall be entitled to copies and access to these materials during the progress of the work. Any such materials remaining in the hands of the CONTRACTOR or in the hands of any subcontractor upon completion or termination of the work shall be immediately delivered to the JPB. If any materials are lost, damaged, or destroyed before final delivery to the JPB, the CONTRACTOR shall replace them at its own expense and the CONTRACTOR assumes all risks of loss, damage, or destruction of or to such materials. The CONTRACTOR may retain a copy of all material produced under this Agreement for its use in its general business activities.

Any and all rights, title, and interest (including without limitation copyright and any other intellectual-property or proprietary right) to materials prepared under this Agreement are hereby assigned to the JPB. The CONTRACTOR agrees to execute any additional documents which may be necessary to evidence such assignment.

The CONTRACTOR represents and warrants that all materials prepared under this Agreement are original or developed from materials in the public domain (or both) and that all materials prepared under and services provided under this Agreement do not infringe or violate any copyright, trademark, patent, trade secret, or other intellectual-property or proprietary right of any third party.

B. Intellectual Property Provisions

1. Definitions

The term "Contractor Software" means any software reasonably necessary to operate or maintain any portions of the System that is a product or application of CONTRACTOR that pre-existed the execution of this Agreement.

The term "Contractor Software Customizations" means any software reasonably necessary to operate or maintain any portions of the System that is a customization, modification, or other change or addition of or to Contractor Software made under this Agreement.

The term "Third Party Software" means any software reasonably necessary to operate or maintain any portions of the System that does not constitute Contractor Software or Contractor Software Customizations.

The term "Materials" means any recorded information, whether or not copyrighted, that is delivered or specified to be delivered under the Agreement—with examples including, but not being limited to: computer software documentation; change logs; engineering drawings; specifications; standards; process sheets; manuals; technical reports; catalog item identifications; and related information—and for clarity, excluding financial, administrative, and cost and pricing information incidental to the work.

2. Grant of License

The CONTRACTOR grants to the JPB a perpetual, unlimited, royalty-free, non-exclusive and irrevocable license for JPB (including without limitation its officers, directors, employees, and agents) to install, use, copy, modify, and maintain the Contractor Software and the Contractor Software Customizations, with no limitation on the number of sites or users.

In providing the System, the CONTRACTOR will use only that Third Party Software that has been expressly approved in writing by JPB. CONTRACTOR will procure, maintain, and otherwise be responsible for all licenses for JPB, in JPB'S name, for any such Third Party Software reasonably necessary to operate or maintain the System. CONTRACTOR shall provide to JPB copies of such licenses, along with any related software or license documentation.

To the extent that any other licenses or permissions are reasonably desirable or necessary for JPB to operate or maintain the System, CONTRACTOR hereby grants to JPB to the maximum extent within its rights—or will procure for JPB, in JPB'S name, to the maximum extent reasonably negotiable—any such licenses and permissions.

All rights and licenses granted under or pursuant to this Agreement are and shall be deemed to be, for purposes of Section 365(n) of the U.S. Bankruptcy Code, licenses of rights to "intellectual property," as defined under Section 101 of the U.S. Bankruptcy Code. The parties agree that the JPB, as a licensee of such rights under this Agreement, shall retain and may fully exercise all of its rights and elections under the U.S. Bankruptcy Code; however, nothing herein shall be deemed to constitute a present exercise of such rights and elections.

3. Patent and Copyright Warranties

The CONTRACTOR represents and warrants that any use of the System (or any portion of the System) by JPB (or its officers, directors, agents, employees, or transit users) will not infringe or violate the patent, copyright, trade-secret, or other intellectual-property or proprietary rights of any third party.

The CONTRACTOR further represents and warrants that it has or will have all appropriate licenses, agreements, or ownership rights pertaining to all patent, copyright, trade-secret, or other intellectual-property or proprietary rights needed for the performance of its obligations under this Agreement—including without limitation that it will have all necessary rights to use patentable or copyrightable materials, equipment, devices, or processes not furnished by the JPB used on or incorporated in the work under this Agreement. The CONTRACTOR assumes all risks arising from the use of any such patented or copyrighted materials, equipment, devices, or processes.

4. Indemnification

The CONTRACTOR shall indemnify, defend and hold harmless the JPB, its directors, officers, agents, and employees against any liability, including costs and expenses, arising out of, resulting from, or in connection with any act or omission of the CONTRACTOR affecting the proprietary rights of third parties, including liability arising out of the publication, translation, reproduction, delivery, use, or disposition of any work furnished under this Agreement.

The CONTRACTOR shall indemnify, defend and hold harmless the JPB (and its officers, directors, agents, employees, or transit users) to the maximum extent permitted by law from and against any and all claims, liabilities, losses, damages or expenses (including attorneys' fees and related costs, whether or not litigation has commenced), whether direct or indirect, arising out of, relating to, or in connection with any claim or allegation that the ownership, possession, or use of any software, materials, equipment, devices, processes, or other materials provided by CONTRACTOR relating to the System infringe or violate the patent, copyright, trade-secret, or other intellectual-property or proprietary rights of any third party. In case any such software, materials, equipment, devices, processes, or other materials are held to constitute an infringement and their use enjoined, the CONTRACTOR, at CONTRACTOR'S sole cost and expense shall: (a) secure for the JPB the right to continue using the materials, equipment, devices or processes by suspension of the injunction or by procuring a royalty-free license, or licenses, or (b) replace such materials, equipment, devices, or processes with non-infringing materials, equipment, devices, or processes, or (c) modify them so that they become non-infringing or remove the enjoined materials, equipment, devices or processes and refund the sums paid for them without prejudice to any other rights of the JPB. If the amount of time necessary to proceed with one of these options is deemed excessive by the JPB, the JPB may direct the CONTRACTOR to select another option or risk default.

5. Source Code

The CONTRACTOR agrees that as a condition of final acceptance, it will deposit the source code for any Contractor Software and Contractor Software Customizations into escrow (including all updates, versions, releases, and upgrades licensed under this Agreement or any related maintenance agreements between CONTRACTOR and JPB), with a source code agent capable of providing Level 2 certification/verification. Deposit shall be at reasonable periodic intervals based generally on the pace at which the software is being developed or changed and shall include any and all subsequent updates, versions, releases, and upgrades licensed under this Agreement or any related maintenance agreements between CONTRACTOR and JPB. The source code escrow agreement shall remain in place, and source code deposits shall be updated and maintained, for as long as the JPB and CONTRACTOR have entered into a software maintenance or support agreement. The applicable source code will be released to the JPB (or any contractor acting on its behalf) in the event of CONTRACTOR's nonperformance or the inability of CONTRACTOR to execute or maintain the portion of the System controlled by or through its applicable software. Such conditions of release include, but are not limited to (1) CONTRACTOR's bankruptcy, (2) CONTRACTOR's cessation of business, or (3) failure of CONTRACTOR to support, execute, maintain or provide enhancements in a timely manner to the portion of the System controlled by or through its applicable software. CONTRACTOR agrees that the JPB (or any contractor acting on its behalf) may use the source code to maintain, fix, or modify the Contractor Software and the Contractor Software Customizations as reasonably necessary to operate or maintain any portions of the System. CONTRACTOR and the JPB will separately document an escrow agreement concurrently with this Agreement. The CONTRACTOR shall be responsible for any costs related to the escrow.

6. Patent Rights

If any invention, improvement, or discovery of CONTRACTOR is conceived or first actually reduced to practice in the course of or under this Agreement, which invention, improvement, or

discovery may be patentable under the Patent Laws of the United States or any foreign country, CONTRACTOR shall immediately notify JPB and provide a detailed report. The rights and responsibilities of JPB, CONTRACTOR [and the federal government (if federally-funded)] with respect to such invention will be determined in accordance with applicable federal laws, regulations, policies and any waivers thereof.

7. Non-Compete Clauses Waived

In the event that any of the release conditions set forth in any source code escrow agreement between the parties are satisfied and the source code is released to the JPB, the JPB shall have the right to hire CONTRACTOR's personnel or subcontractors for any reason related to the maintenance and operation of the System. The CONTRACTOR shall not interfere with any such efforts to hire any of CONTRACTOR's personnel. CONTRACTOR agreements with personnel and/or subcontractors that restrict employment by the JPB shall be waived under such circumstances.

8. Precedence

In the event of any conflict between the provisions of this Section 9 and the provisions of any separate software license, escrow, or otherwise related agreement, this Section 9 shall take precedence.

10. **CHANGES**

The JPB may at any time, by written order, make changes within the scope of work and services described in this Agreement. If such changes cause an increase or decrease in the budgeted cost of or the time required for performance of the agreed upon work, an equitable adjustment as mutually agreed shall be made in the limit on compensation as set forth in Section 5 or in the time of required performance as set forth in Section 3, or both. In the event that CONTRACTOR encounters any unanticipated conditions or contingencies that may affect the scope of work or services and result in an adjustment in the amount of compensation specified herein, or identifies any JPB conduct (including actions, inaction, and written or oral communications other than a formal contract modification) that the CONTRACTOR regards as a change to the contract terms and conditions, CONTRACTOR shall so advise the JPB immediately upon notice of such condition or contingency. The written notice shall explain the circumstances giving rise to the unforeseen condition or contingency and shall set forth the proposed adjustment in compensation. This notice shall be given to the JPB prior to the time that CONTRACTOR performs work or services related to the proposed adjustment in compensation. The pertinent changes shall be expressed in a written supplement to this Agreement issued by the Contracts and Procurement Department prior to implementation of such changes. Failure to provide written notice and receive JPB approval for extra work prior to performing extra work may, at the JPB's sole discretion, result in nonpayment of the invoices reflecting such work.

11. **RESPONSIBILITY; INDEMNIFICATION**

The CONTRACTOR shall indemnify, keep and save harmless the JPB, the San Mateo County Transit District, the City and County of San Francisco, the Santa Clara Valley Transportation Authority, the National Railroad Passenger Corporation (Amtrak) or successor Operator of Record, the Union Pacific Railroad Company (collectively "Indemnities"), and their respective directors, officers, agents and employees against any and all suits, claims or actions arising out of any injury to persons or property that may occur, or that may be alleged to have occurred, arising from the performance of this Agreement by the CONTRACTOR caused by a negligent act or omission of the CONTRACTOR or its employees, sub-Contractors, or agents. The CONTRACTOR further agrees to defend any and all such actions, suits, or claims and pay all charges of attorneys and all other incurred costs and expenses. If any judgment is rendered against the Indemnities or any of the other individuals enumerated above in any such action,

CONTRACTOR shall, at its expense, satisfy and discharge the same. This indemnification shall survive termination or expiration of the Agreement.

12. INSURANCE

The insurance requirements specified in this Section shall cover CONTRACTOR's own liability and any liability arising out of work or services performed under this Agreement by any subcontractors, subconsultants, suppliers, temporary workers, independent contractors, leased employees, or any other persons, firms or corporations (hereinafter collectively referred to as "Agents") that CONTRACTOR authorizes to work under this Agreement. CONTRACTOR is required to procure and maintain at its sole cost and expense the insurance coverages subject to all of the requirements set forth below. Such insurance shall remain in full force and effect throughout the term of this Agreement. CONTRACTOR is also required to assess the risks associated with work to be performed by Agents under subcontract and to include in every subcontract the requirement that the Agent maintain adequate insurance coverages with appropriate limits and endorsements to cover such risks; the limit for the Commercial General Liability insurance in each subcontract shall not be less than \$2 million. To the extent that any Agent does not procure and maintain such insurance coverage, CONTRACTOR shall be responsible for said coverage and assume any and all costs and expenses that may be incurred in securing said coverage or in fulfilling CONTRACTOR's indemnity obligation as to itself or any of its Agents in the absence of coverage. In the event CONTRACTOR or its Agents procure excess or umbrella coverage to maintain certain requirements outlined below, these policies shall also satisfy all specified endorsements and stipulations, including provisions that the CONTRACTOR's insurance be primary without any right of contribution from the JPB. Prior to beginning work under this Agreement, CONTRACTOR shall provide the JPB with satisfactory evidence of compliance with the insurance requirements of this Section.

A. MINIMUM TYPES AND SCOPE OF INSURANCE

1. Workers' Compensation and Employer's Liability Insurance.

- a. Workers' Compensation with Statutory Limits and/or Federal Employer's Liability ("FELA") coverage (whichever is applicable) to its employees, as required by the Federal Employer's Liability Act of 1908, applying to Interstate railroad employees, or, as required by Section 3700 et seq. of the California Labor Code, or any subsequent amendments or successor acts thereto, governing the liability of employers to their employees.
- b. If FELA applies, it shall be in accordance with federal statutes and have minimum limits of \$10,000,000 per occurrence.
- c. If the California Labor Code requiring Workers' Compensation applies, the CONTRACTOR shall also maintain Employer's Liability coverage with minimum limits of \$2 million.
- d. Such insurance shall include the following endorsement as further detailed in the Endorsements Section below:
 - Waiver of Subrogation.

2. Commercial General Liability Insurance.

Commercial General Liability insurance for bodily injury and property damage coverage of at least \$2 million per occurrence or claim and a general aggregate limit of at least \$2 million. Such insurance shall cover all of CONTRACTOR's operations both at and away from the project site. Such insurance shall not have any exclusion for Cross Liability or Cross-Suits. In addition, for any construction and public works projects, the insurance shall not have any exclusion for

Explosion, Collapse and Underground perils (xcu).

- a. This insurance shall include coverage for, but not be limited to:
 - Premises and operations.
 - Products and completed operations.
 - Personal injury.
 - Advertising injury.
- b. Such insurance shall include the following endorsements as further detailed in the Endorsements Section below:
 - Additional Insured.
 - Separation of Insureds Clause.
 - Primary and Non-Contributory wording.
 - Waiver of Subrogation.

Products and completed operations insurance shall be maintained for three (3) years following termination of this Agreement.

3. Business Automobile Liability Insurance.

Business Automobile Liability insurance providing bodily injury and property damage coverage with a combined single limit of at least \$2 million per accident or loss.

- a. This insurance shall include coverage for, but not be limited to:
 - All owned vehicles.
 - Non-owned vehicles.
 - Hired or rental vehicles.
- b. Such insurance shall include the following endorsements as further detailed in the Endorsements Section below:
 - Additional Insured.
 - Primary and Non-Contributory wording.
 - Waiver of Subrogation.

4. Property Insurance.

Property insurance with Special Form coverage including theft, but excluding earthquake, with limits at least equal to the replacement cost of the property described below.

- a. This insurance shall include coverage for, but not be limited to:
 - CONTRACTOR's own business personal property and equipment to be used in performance of this Agreement.
 - Materials or property to be purchased and/or installed on behalf of the JPB, if any.
 - Builders risk for property in the course of construction.
- b. Such insurance shall include the following endorsement as further detailed in the Endorsements Section below:
 - Waiver of Subrogation.

B. ENDORSEMENTS

1. Additional Insured.

The referenced policies and any Excess or Umbrella policies shall include as Additional Insureds the Peninsula Corridor Joint Powers Board, the San Mateo County Transit District, the Santa Clara Valley Transportation Authority, the City and County of San Francisco, the National Railroad Passenger Corporation or any successor Operator of Record, and the Union Pacific Railroad Company and their respective directors, officers, employees, volunteers and agents while acting in such capacity, and their successors or assignees, as they now, or as they may hereafter be constituted, singly, jointly or severally.

2. Waiver of Subrogation.

The referenced policies and any Excess or Umbrella policies shall contain a waiver of subrogation in favor of the Peninsula Corridor Joint Powers Board, the San Mateo County Transit District, the Santa Clara Valley Transportation Authority, the City and County of San Francisco, the National Railroad Passenger Corporation or any successor Operator of Record, and the Union Pacific Railroad Company and their respective directors, officers, employees, volunteers and agents while acting in such capacity, and their successors or assignees, as they now, or as they may hereafter be constituted, singly, jointly or severally.

3. Primary Insurance.

The referenced policies and any Excess and Umbrella policies shall indicate that they are primary to any other insurance and the insurance company(ies) providing such policy(ies) shall be liable thereunder for the full amount of any loss or claim, up to and including the total limit of liability, without right of contribution from any of the insurance effected or which may be effected by the JPB.

4. Separation of Insureds.

The referenced policies and any Excess or Umbrella policies shall contain a Separation of Insureds Clause and stipulate that inclusion of the Peninsula Corridor Joint Powers Board, the San Mateo County Transit District, the Santa Clara Valley Transportation Authority, the City and County of San Francisco, the National Railroad Passenger Corporation or any successor Operator of Record, and the Union Pacific Railroad Company as Additional Insureds shall not in any way affect the JPB's rights either as respects any claim, demand, suit or judgment made, brought or recovered against the CONTRACTOR. The purpose of this coverage is to protect CONTRACTOR and the JPB in the same manner as though a separate policy had been issued to each, but nothing in said policy shall operate to increase the insurance company's liability as set forth in its policy beyond the amount or amounts shown or to which the insurance company would have been liable if only one interest had been named as an insured.

C. EVIDENCE OF INSURANCE

All Coverages.

Prior to commencing work or entering onto the Property, CONTRACTOR shall provide the JPB's Contracts and Procurement Department with a certificate evidencing coverage, and upon request, a certified duplicate original of the policy. The certificate shall also show that the CONTRACTOR's policy(ies) will not be cancelled without 30 days' prior written notice to the JPB's Contracts and Procurement Department.

D. GENERAL PROVISIONS

1. Notice of Cancellation.

The policies shall provide that the CONTRACTOR's policies will not be cancelled without 30 days' prior written notice to the JPB's Contracts and Procurement Department.

2. Acceptable Insurers.

All policies will be issued by insurers acceptable to the JPB (generally with a Best's Rating of A- 10 or better).

3. Self-insurance.

Upon evidence of financial capacity satisfactory to the JPB and CONTRACTOR's agreement to waive subrogation against the JPB respecting any and all claims that may arise, CONTRACTOR's obligation hereunder may be satisfied in whole or in part by adequately funded self-insurance.

4. Failure to Maintain Insurance.

All insurance specified above shall remain in force until all work to be performed is satisfactorily completed, all of CONTRACTOR's personnel and equipment have been removed from the JPB property, and the work has been formally accepted. The failure to procure or maintain required insurance and/or an adequately funded self-insurance program will constitute a material breach of this Agreement.

5. Claims Made Coverage.

If any insurance specified above shall be provided on a claim-made basis, then in addition to coverage requirements above, such policy shall provide that:

- (a) Policy retroactive date coincides with or precedes the CONTRACTOR's start of work (including subsequent policies purchased as renewals or replacements).
- (b) CONTRACTOR shall make every effort to maintain similar insurance for at least three (3) years following project completion, including the requirement of adding all additional insureds.
- (c) If insurance is terminated for any reason, CONTRACTOR agrees to purchase an extended reporting provision of at least three (3) years to report claims arising from work performed in connection with this Agreement.
- (d) Policy allows for reporting of circumstances or incidents that might give rise to future claims.

6. Deductibles and Retentions.

CONTRACTOR shall be responsible for payment of any deductible or retention on CONTRACTOR's policies without right of contribution from the JPB. Deductible and retention provisions shall not contain any restrictions as to how or by whom the deductible or retention is paid. Any deductible or retention provision limiting payment to the Named Insured is unacceptable.

In the event that the policy of the CONTRACTOR or any subcontractor contains a deductible or self-insured retention, and in the event that the JPB seeks coverage under such policy as an additional insured, CONTRACTOR shall satisfy such deductible or self-insured retention to the extent of loss covered by such policy for a lawsuit arising from or connected with any alleged act or omission of CONTRACTOR, subcontractor, or any of their officers, directors, employees, agents, or suppliers, even if CONTRACTOR or subcontractor is not a named defendant in the lawsuit.

13. CONTRACT BONDS

13.1 Performance Bond. Prior to JPB issuance of a Notice to Proceed, the CONTRACTOR shall provide a Performance Bond in an amount of not less than 100% of the Total Contract Price. The Performance Bond shall guarantee the CONTRACTOR's faithful performance of the Contract in compliance with all terms, conditions and requirements specified in this Agreement. The Performance Bond shall remain in full force and effect until completion of the warranty period, and satisfactory resolution of all outstanding warranty claims. Upon reaching the milestone of **Project Closeout and Final Acceptance**, the CONTRACTOR may reduce the Performance Bond such that it is in an amount of not less than 20% of the Total Contract Price.

13.2 The Performance Bond shall be on forms approved by JPB and shall be executed as surety by a corporation or corporations acceptable to JPB which is admitted and authorized to issue surety bonds in the State of California. The bond must allow for all alterations, extensions of time, extra and additional work, and other changes authorized by the Agreement to be made without securing the consent of the surety or sureties on the Contract bonds while continuing to provide security for such work.

13.3 In the event the JPB exercises its option to procure Optional Services (the provision, installation, testing and commissioning of up to an estimated additional 48 DVRs), the Contractor will be required to furnish, at its own expense, a Performance Bond, meeting the requirements set forth in the above paragraphs. The amount of the Performance Bond will be 100% of the additional DVRs units procured by the JPB. The Performance Bond amount may be reduced to 20% of the cost of the Optional Services upon Final Acceptance issued by the JPB and will continue in force in that amount until the end of the three-year warranty period.

Proposers are notified that no additional compensation shall be paid to Contractor for the furnishing of Performance Bonds for the Base Services and Optional Services. Any and all costs for such bonds shall be incorporated into Proposers' Cost Proposals.

14. USE OF SUBCONTRACTORS

The CONTRACTOR shall not subcontract any services to be performed by it under this Agreement without the prior written approval of the JPB, except for service firms engaged in drawing, reprographics, typing, and printing. Any subcontractors/subconsultants must be engaged under written contract with the CONTRACTOR with provisions allowing the CONTRACTOR to comply with all requirements of this Agreement, including without limitation the "Ownership of Work" provisions in Section 8. The CONTRACTOR shall be solely responsible for reimbursing any subcontractors/subconsultants and the JPB shall have no obligation to them.

15. CONTRACTOR'S STATUS

Neither the CONTRACTOR nor any party contracting with the CONTRACTOR shall be deemed to be an agent or employee of the JPB. The CONTRACTOR is and shall be an independent CONTRACTOR and the legal relationship of any person performing services for the CONTRACTOR shall be one solely between that person and the CONTRACTOR.

16. ASSIGNMENT

The CONTRACTOR shall not assign any of its rights nor transfer any of its obligations under this Agreement without the prior written consent of the JPB.

17. JPB WARRANTIES

The JPB makes no warranties, representations, or agreements, either express or implied, beyond such as are explicitly stated in this Agreement.

18. JPB REPRESENTATIVE

Except when approval or other action is required to be given or taken by the Board of Directors of the JPB, the JPB's Executive Director or Deputy CEO, or such person or persons as they shall designate in writing from time to time, shall represent and act for the JPB.

19. WARRANTY OF SERVICES

A. CONTRACTOR warrants that its services will be performed in accordance with the standards of practices of comparable DVRs design and installation firms at the time the services are rendered. In addition, CONTRACTOR shall provide such specific warranties as may be set forth by the manufacturers of the equipment, parts, materials, firmware, and software provided as part of the services under this Agreement.

B. In the event that any services provided by the CONTRACTOR hereunder are deficient because of CONTRACTOR's or subcontractors failure to perform said services in accordance with the warranty standards set forth above, the JPB shall report such deficiencies in writing to the CONTRACTOR within a reasonable time. The JPB thereafter shall have:

1. The right to have the CONTRACTOR re-perform such services at the CONTRACTOR's expense; or
2. The right to have such services done by others and the costs thereof charged to and collected from the CONTRACTOR if within 30 days after written notice to the CONTRACTOR requiring such re-performance, CONTRACTOR fails to give satisfactory evidence to the JPB that it has undertaken said re-performance.
3. The right to terminate the Agreement for default.

CONTRACTOR shall be responsible for all errors and omissions and is expected to pay for all warranty and/or required third-party repair work as a result of errors and omissions.

20. CLAIMS OR DISPUTES

The CONTRACTOR shall be solely responsible for providing timely written notice to JPB of any claims for additional compensation and/or time in accordance with the provisions of this Agreement. It is the JPB's intent to investigate and attempt to resolve any CONTRACTOR claims before the CONTRACTOR has performed any disputed work. Therefore, CONTRACTOR's failure to provide timely notice shall constitute a waiver of CONTRACTOR's claims for additional compensation and/or time.

The CONTRACTOR shall not be entitled to the payment of any additional compensation for any cause, including any act, or failure to act, by the JPB, or the failure or refusal to issue a modification, or the happening of any event, thing, or occurrence, unless it has given the JPB due written notice of a potential claim. The potential claim shall set forth the reasons for which the CONTRACTOR believes additional compensation may be due, the nature of the costs involved, and the amount of the potential claim.

If based on an act or failure to act by the JPB, such notice shall be given to the JPB prior to the time that the CONTRACTOR has started performance of the work giving rise to the potential claim for

additional compensation. In all other cases, notice shall be given within 10 days after the happening of the event or occurrence giving rise to the potential claim.

If there is a dispute over any claim, the CONTRACTOR shall continue to work during the dispute resolution process in a diligent and timely manner as directed by the JPB, and shall be governed by all applicable provisions of the Agreement. The CONTRACTOR shall maintain cost records of all work that is the basis of any dispute.

If an agreement can be reached which resolves the CONTRACTOR claim, the parties will execute an Agreement modification to document the resolution of the claim. If the parties cannot reach an agreement with respect to the CONTRACTOR claim, they may choose to pursue a dispute resolution process or termination of the Agreement.

21. REMEDIES

In the event the CONTRACTOR fails to comply with the requirements of this Agreement in any way, the JPB reserves the right to implement administrative remedies which may include, but are not limited to, withholding of progress payments and contract retentions, and termination of the Agreement in whole or in part.

22. TEMPORARY SUSPENSION OF WORK

The JPB, in its sole discretion, reserves the right to stop or suspend all or any portion of the work for such period as JPB may deem necessary. The suspension may be due to the failure on the part of the CONTRACTOR to carry out orders given or to perform any provision of the Agreement or to factors that are not the responsibility of the CONTRACTOR. The CONTRACTOR shall comply immediately with the written order of JPB to suspend the work wholly or in part. The suspended work shall be resumed when the CONTRACTOR is provided with written direction from JPB to resume the work.

If the suspension is due to the CONTRACTOR's failure to perform work or carry out its responsibilities in accordance with this Agreement, or other action or omission on the part of the CONTRACTOR, all costs shall be at CONTRACTOR's expense and no schedule extensions will be provided by JPB.

In the event of a suspension of the work, the CONTRACTOR shall not be relieved of the CONTRACTOR's responsibilities under this Agreement, except the obligations to perform the work which the JPB has specifically directed CONTRACTOR to suspend under this section.

If the suspension is not the responsibility of the CONTRACTOR, suspension of all or any portion of the work under this Section may entitle the CONTRACTOR to compensation and/or schedule extensions subject to the Agreement requirements.

23. TERMINATION

The JPB shall have the right to terminate this Agreement at any time for cause or convenience by giving written notice to the CONTRACTOR. Upon receipt of such notice, the CONTRACTOR shall not commit itself to any further expenditure of time or resources.

If the Agreement is terminated for any reason other than a breach or default by CONTRACTOR, the JPB shall pay to the CONTRACTOR in accordance with the provisions of Sections 5 and 6 of this Agreement all sums actually due and owing from the JPB for all services performed and all expenses incurred up to the day written notice of termination is given, plus any costs reasonably and necessarily incurred by CONTRACTOR to effect such suspension or termination. If the Agreement is terminated for

breach or default, the JPB shall remit final payment to CONTRACTOR in an amount to cover only those services performed and expenses incurred in full accordance with the terms and conditions of this Agreement up to the effective date of termination.

The JPB shall not in any manner be liable for the CONTRACTOR's actual or projected lost profits had the CONTRACTOR completed the services required by this Agreement.

24. LIQUIDATED DAMAGES

TIME IS OF THE ESSENCE IN THIS AGREEMENT. In accordance with the Request for Proposals, and pursuant to Government Code Section 53069.85, the parties agree that the JPB will incur damages that are difficult to ascertain in the event that CONTRACTOR does not . Accordingly, CONTRACTOR agrees to pay, as liquidated damages and not as a penalty, \$1,500 per calendar day for each day of delay of individual DVRS installation, test, and commissioning and for each day of overall project delay, if in the JPB's sole determination, such delays negatively impact or interrupt Caltrain service.

The CONTRACTOR will be granted an extension of time and will not be assessed with liquidated damages for delays caused by acts of God or of the public enemy, fire, floods, epidemics, quarantine, restrictions, strikes, labor disputes, shortage of materials and freight embargoes, or other causes deemed by the JPB to be beyond the reasonable control of the CONTRACTOR, provided CONTRACTOR notifies the Director, Contracts & Procurement in writing of the causes of delay within **five calendar days** from the beginning of any such delay.

The Director, Contracts & Procurement, shall ascertain the nature of the delay and determine whether an extension of time is warranted, which determination shall be final and conclusive. CONTRACTOR has the burden of proof that the delay was beyond its control.

The JPB shall deduct from any money due or to become due the Contractor the accrued liquidated damages. Such deductions shall occur with the submission of each invoice by the Contractor, and each invoice shall be reduced by the amount of accrued liquidated damages. Should the money due the Contractor be insufficient, then the Contractor shall promptly pay the insufficiency to the JPB.

Such deductions shall not be considered to be a penalty, but as agreed-upon monetary damages sustained by the JPB because the Contractor was unable to provide the DVRS units, parts, material, software and related items, and product support in accordance with this Contract.

The liquidated damages set forth in this Section 24 shall be the JPB's exclusive remedy for any damages resulting from the failure of CONTRACTOR to meet the deadlines set forth herein.

25. MAINTENANCE, AUDIT AND INSPECTION OF RECORDS

All CONTRACTOR and subcontractor/subconsultant costs incurred in the performance of this Agreement will be subject to audit. The CONTRACTOR and its subcontractors/subconsultants shall permit the JPB, or its authorized representatives to inspect, examine, make excerpts from, transcribe, and copy the CONTRACTOR's books, work, documents, papers, materials, payrolls records, accounts, and any and all data relevant to the Agreement at any reasonable time, and to audit and verify statements, invoices or bills submitted by the CONTRACTOR pursuant to this Agreement. The CONTRACTOR shall also provide such assistance as may be required in the course of such audit. The CONTRACTOR shall retain these records and make them available for inspection hereunder for a period of four years after expiration or termination of the Agreement.

If, as a result of the audit, it is determined by the JPB's auditor or staff that reimbursement of any costs including profit or fee under this Agreement was in excess of that represented and relied upon during price negotiations or represented as a basis for payment, the CONTRACTOR agrees to reimburse the JPB for those costs within sixty (60) days of written notification by the JPB.

26. NON-DISCRIMINATION ASSURANCE - TITLE VI OF THE CIVIL RIGHTS ACT

The CONTRACTOR shall not discriminate on the basis of race, color, creed, national origin, sex, or age in the performance of this Agreement. The CONTRACTOR shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of U.S. DOT-assisted contracts. Further, the CONTRACTOR agrees to comply with all provisions prohibiting discrimination on the basis of race, color, or national origin of Title VI of the Civil Rights Act of 1964, as amended, 42 U.S.C. §§ 2000d *et seq.*, and with U.S. DOT regulations, "Nondiscrimination in Federally-Assisted Programs of the Department of Transportation – Effectuation of Title VI of the Civil Rights Act," 49 C.F.R. Part 21. The CONTRACTOR shall obtain the same assurances from its joint venture partners, subcontractors, and subconsultants by including this assurance in all subcontracts entered into under this Agreement. Failure by the CONTRACTOR to carry out these requirements is a material breach of this Agreement, which may result in the termination of this Agreement or such other remedy as the JPB deems appropriate.

27. EQUAL EMPLOYMENT OPPORTUNITY (EEO)

In connection with the performance of this Agreement the CONTRACTOR shall not discriminate against any employee or applicant for employment because of race, color, religion, national origin, ancestry, sex, gender, sexual orientation, age (over 40), marital status, pregnancy, medical condition, or disability as specified in federal, State, and local laws. The CONTRACTOR shall take affirmative actions to ensure that applicants are employed, and that employees are treated during their employment, without regard to their race, religion, color, sex, disability, or national origin. Such actions shall include, but not be limited to, the following: employment, upgrading, demotion, transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training, including apprenticeship. CONTRACTOR further agrees to insert a similar provision in all subcontracts, except subcontracts for standard commercial supplies or raw materials.

28. CONFLICT OF INTEREST

Exhibit A sets forth important Conflict of Interest rules that will be in force throughout the term of this Agreement. In addition to those provisions, the following also apply:

A. General

Depending on the nature of the work performed, a CONTRACTOR of the JPB may be subject to the same conflict of interest prohibitions established by California law that govern JPB's employees and officials (Cal. Govt. Code Section 1090 *et seq.* and Cal. Govt. Code Section 87100 *et seq.*). During the proposal process or the term of the Agreement, CONTRACTOR and its employees may be required to disclose financial interests.

The CONTRACTOR warrants and represents that it presently has no interest and agrees that it will not acquire any interest that would present a conflict of interest under California Government Code §1090 *et seq.* or §87100 *et seq.* during the performance of services under this Agreement. The CONTRACTOR further covenants that it will not knowingly employ any person having such an interest in the performance of this Agreement. Violation of this provision may result in this Agreement being deemed void and unenforceable.

Depending on the nature of the work performed, CONTRACTOR may be required to publicly disclose financial interests under the JPB's Conflict of Interest Code. Upon receipt, the CONTRACTOR agrees to promptly submit a Statement of Economic Interest on the form provided by JPB.

No person previously in the position of Director, Officer, employee or agent of the JPB shall have any interest, direct or indirect, in this Agreement or the proceeds under this Agreement, nor may any such person act as an agent or attorney for, or otherwise represent the CONTRACTOR by making any formal or informal appearance, or any oral or written communication, before the JPB, or any Officer or employee of the JPB, for a period of twelve (12) months after leaving office or employment with the JPB if the appearance or communication is made for the purpose of influencing any action involving the issuance, amendment, award or revocation of a permit, license, grant, or contract.

B. Organizational Conflicts of Interest

CONTRACTOR shall take all reasonable measures to preclude the existence or development of an organizational conflict of interest in connection with work performed under this Agreement and other solicitations. An organizational conflict of interest occurs when, due to other activities, relationships, or contracts, a firm or person is unable, or potentially unable, to render impartial assistance or advice to the JPB; a firm or person's objectivity in performing the contract work is or might be impaired; or a firm or person has an unfair competitive advantage in proposing for award of a contract as a result of information gained in performance of this or some other Agreement.

CONTRACTOR shall not engage the services of any Subconsultant or independent consultant on any work related to this Agreement if the Subconsultant or independent consultant, or any employee of the Subconsultant or independent consultant, has an actual or apparent organizational conflict of interest related to work or services contemplated under this Agreement.

If at any time during the term of this Agreement CONTRACTOR becomes aware of an organizational conflict of interest in connection with the work performed hereunder, CONTRACTOR immediately shall provide the JPB with written notice of the facts and circumstances giving rise to this organizational conflict of interest. CONTRACTOR's written notice will also propose alternatives for addressing or eliminating the organizational conflict of interest.

If at any time during the term of this Agreement, JPB becomes aware of an organizational conflict of interest in connection with CONTRACTOR's performance of the work hereunder, JPB shall similarly notify CONTRACTOR.

In the event a conflict is presented, whether disclosed by CONTRACTOR or discovered by JPB, the JPB will consider the conflict presented and any alternatives proposed and meet with the CONTRACTOR to determine an appropriate course of action. The JPB's determination as to the manner in which to address the conflict shall be final.

During the term of this Agreement, CONTRACTOR must maintain lists of its employees, and the Subconsultants and independent consultants used and their employees. CONTRACTOR must provide this information to the JPB upon request. However, submittal of such lists does not relieve the CONTRACTOR of its obligation to assure that no organizational conflicts of interest exist. CONTRACTOR shall retain this record for five (5) years after the JPB makes final payment under this Agreement. Such lists may be published as part of future JPB solicitations.

CONTRACTOR shall maintain written policies prohibiting organizational conflicts of interest and shall ensure that its employees are fully familiar with these policies. CONTRACTOR shall monitor and enforce these policies and shall require any subconsultants and affiliates to maintain, monitor and enforce policies prohibiting organizational conflicts of interest.

Failure to comply with this section may subject the CONTRACTOR to damages incurred by the JPB in addressing organizational conflicts that arise out of work performed by CONTRACTOR, or to termination of this Agreement for breach.

29. PROHIBITED INTEREST

No member, officer, or employee of the JPB during his or her tenure or for one year after that tenure shall have any interest, direct or indirect, in this Agreement or the proceeds under this Agreement.

30. ATTORNEYS' FEES

If any legal proceeding should be instituted by either of the parties to enforce the terms of this Agreement or to determine the rights of the parties under this Agreement, the prevailing party in said proceeding shall recover reasonable attorneys' fees, in addition to all court costs.

31. WAIVER

Any waiver of any breach or covenant of this Agreement must be in a writing executed by a duly authorized representative of the party waiving the breach. A waiver by any of the parties of a breach or covenant of this Agreement shall not be construed to be a waiver of any succeeding breach or any other covenant unless specifically and explicitly stated in such waiver.

32. SEVERABILITY

If any provision of this Agreement shall be deemed invalid or unenforceable, that provision shall be reformed and/or construed consistently with applicable law as nearly as possible to reflect the original intentions of this Agreement, and in any event, the remaining provisions of this Agreement shall remain in full force and effect.

33. NO THIRD PARTY BENEFICIARIES

This Agreement is not for the benefit of any person or entity other than the parties.

34. CONFIDENTIALITY

Any JPB materials to which the CONTRACTOR has access or materials prepared by the CONTRACTOR during the course of this Agreement ("confidential information") shall be held in confidence by the CONTRACTOR, who shall exercise all reasonable precautions to prevent the disclosure of confidential information to anyone except the officers, employees and agents of the CONTRACTOR as necessary to accomplish the rendition of services set forth in Section 2 of this Agreement.

The CONTRACTOR, its employees, subcontractors and agents, shall not release any reports, information, or other materials prepared in connection with this Agreement, whether deemed confidential or not, without the approval of the JPB's Executive Director or designee.

Additionally, the California Public Records Act (Cal. Govt. Code Sections 6250 et seq.) mandates public access to government records. Therefore, unless the information is exempt from disclosure by law, the content of any written communication between the JPB and CONTRACTOR shall be available to the public.

If CONTRACTOR requests that the JPB withhold from disclosure information identified as confidential, and the JPB complies with the CONTRACTOR's request, CONTRACTOR shall assume all

responsibility for any challenges resulting from the non-disclosure, indemnify and hold harmless the JPB from and against all damages (including but not limited to Legal Counsel fees that may be awarded to the party requesting the CONTRACTOR information), and pay any and all cost and expenses related to the withholding of CONTRACTOR information. CONTRACTOR shall not make a claim, sue, or maintain any legal action against the JPB or its directors, officers, employees, or agents concerning the withholding from disclosure of CONTRACTOR information.

If CONTRACTOR does not request that the JPB withhold from disclosure information identified as confidential, the JPB shall have no obligation to withhold the information from disclosure and may release the information sought without any liability to the JPB.

35. APPLICABLE LAW

This Agreement, its interpretation and all work performed under it shall be governed by the laws of the State of California. Venue of any action brought with regard to this Agreement shall be in San Mateo County, California. The CONTRACTOR must comply with all federal, State, and local laws, rules, and regulations applicable to the Agreement and to the work to be done hereunder, including all rules and regulations of the JPB.

36. RIGHTS AND REMEDIES OF THE JPB

The rights and remedies of the JPB provided herein shall not be exclusive and are in addition to any other rights and remedies provided by law or under the Agreement.

37. BINDING ON SUCCESSORS

All of the terms, provisions, and conditions of this Agreement shall be binding upon and inure to the benefit of the parties and their respective successors, assigns and legal representatives.

38. ENTIRE AGREEMENT; MODIFICATION

This Agreement for Services, including any attachments, constitutes the complete Agreement between the Parties and supersedes any prior written or oral communications. This Agreement may be modified or amended only by written instrument signed by both the CONTRACTOR and the JPB. In the event of a conflict between the terms and conditions of this Agreement and the attachments, the terms of this Agreement will prevail.

- continued on next page -

IN WITNESS WHEREOF, the parties hereto have executed this Agreement by their duly authorized officers as of the Effective Date.

PENINSULA CORRIDOR JOINT POWERS BOARD:

CONTRACTOR: (See footnote below)*

By: _____

By: _____

Title: Executive Director

Title: _____

ATTEST:

By: _____

By: _____

JPB Secretary

Title: _____

APPROVED AS TO FORM:

By: _____

Attorney for the JPB

Note: If the CONTRACTOR is a Corporation, this Agreement must be executed by two Corporate Officers, consisting of:

- (1) the President, Vice President or Chair of the Board, and
- (2) the Secretary, Assistant Secretary, Chief Financial Officer, Assistant Chief Financial Officer, Treasurer, or Assistant Treasurer.

In the alternative, this Agreement may be executed by a single Officer or a person other than an Officer provided that evidence satisfactory to the JPB is provided demonstrating that such individual is authorized to bind the Corporation (e.g. a copy of a certified resolution from the Corporation's Board or a copy of the Corporation's bylaws).

CERTIFICATE OF LIABILITY INSURANCE - SAMPLE

ACORD - CERTIFICATE OF LIABILITY INSURANCE				DATE (MM/DD/YYYY) 10/3/2008		
PRODUCER (415) 957-0600 FAX: (415) 957-0577 MOC Insurance Services License No. 0589960 44 Montgomery St., 17th Fl. San Francisco CA 94104			THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.			
INSURED ABC Company 123 Main Street San Carlos, CA 94070			INSURERS AFFORDING COVERAGE INSURER A: Everest Indemnity Ins. INSURER B: Allied Group INSURER C: Everest National INSURER D: Hartford INSURER E:		NAIC #	
COVERAGES THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.						
INSR ADD'L LTR	INSRD	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YYYY)	POLICY EXPIRATION DATE (MM/DD/YYYY)	LIMITS
A		GENERAL LIABILITY ☒ COMMERCIAL GENERAL LIABILITY ☐ CLAIMS MADE ☒ OCCUR ☒ Professional Liab. GEN'L AGGREGATE LIMIT APPLIES PER: ☒ POLICY ☐ PRO-JECT ☐ LOC	51GL001814081	5/5/2008	5/5/2009	EACH OCCURRENCE \$ 1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 50,000 MED EXP (Any one person) \$ 5,000 PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 5,000,000 PRODUCTS - COMP/OP AGG \$ 1,000,000
B		AUTOMOBILE LIABILITY ☒ ANY AUTO ☐ ALL OWNED AUTOS ☐ SCHEDULED AUTOS ☐ HIRED AUTOS ☐ NON-OWNED AUTOS ☒ Comp Ded \$500 ☒ Coll Ded \$500	ACP 7803433895	6/1/2008	6/1/2009	COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$
		GARAGE LIABILITY ☐ ANY AUTO				AUTO ONLY - EA ACCIDENT \$ OTHER THAN EA ACC \$ AUTO ONLY: AGG \$
A		EXCESS/UMBRELLA LIABILITY ☒ OCCUR ☐ CLAIMS MADE ☒ DEDUCTIBLE RETENTION \$ 10,000	51CC001038-081	09/18/2008	5/5/2009	EACH OCCURRENCE \$ 1,000,000 AGGREGATE \$ 1,000,000 \$ \$
C		WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? If yes, describe under SPECIAL PROVISIONS below	5300000911071	11/16/2007	11/16/2008	☒ NO STAT/LIMITS ☐ OTHER E.L. EACH ACCIDENT \$ 1,000,000 E.L. DISEASE - EA EMPLOYEE \$ 1,000,000 E.L. DISEASE - POLICY LIMIT \$ 1,000,000
D		OTHER Commercial Crime	57BDDEF3550	9/25/2008	9/25/2009	Limit \$500,000 Deductible \$5,000
D		Commercial Property	57SBAAZ2072	7/5/2008	7/5/2009	Business Person Prop \$100,000
DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/EXCLUSIONS ADDED BY ENDORSEMENT/SPECIAL PROVISIONS Peninsula Corridor Joint Powers Board, respective Directors, Officers, Employees, Volunteers & Agents are named as Additional Insured with respect to the insured's operations. Per endt CG2010 10/01 attached. Waiver of Subrogation applies. RE:						
Contract 10-PJCPB-M-0XX						

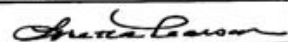
CERTIFICATE HOLDER

Peninsula Corridor Joint Powers Board,
respective Directors, Officers, Employees
Volunteers & Agents
1250 San Carlos Avenue
San Carlos, CA 94070

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE
Loretta Pearson/LPE



ACORD 25 (2001/08)

INR07K 01/01/01

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Page 1 of 1

PERFORMANCE GUARANTY – SAMPLE

KNOW ALL PERSONS BY THESE PRESENTS, that

WHEREAS THE PENINSULA CORRIDOR JOINT POWERS BOARD (hereinafter referred to as JPB) has entered into a Contract with _____ (hereinafter referred to as Principal) for the **provision, installation, testing and commissioning of Digital Video Recording Systems (DVRs) on Caltrain locomotives and cab control cars at the JPB/Caltrain Centralized Equipment Maintenance and Operations Facility (the Contract);** and

WHEREAS said Principal is required under the terms of said Contract to furnish a bond of faithful performance of said Contract,

NOW, THEREFORE, we, the undersigned Principal, and _____, as Surety, are held and firmly bound unto the JPB, in the sum of _____ Dollars (\$ _____) lawful money of the United States, to be paid to the JPB or its successors and assigns; for which payment, we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that if the above-bound Principal, or its heirs, executors, administrators, successors, or assigns approved by the JPB, shall promptly and faithfully perform the covenants, conditions and agreements in the Contract, including Principal's obligations to defend, indemnify, and hold harmless the JPB from intellectual property infringement claims, during the original term and any extensions thereof as may be granted by the JPB, with or without notice to Surety, and during the period of any guarantees or warranties required under the Contract, and shall also promptly and faithfully perform all the covenants, conditions, and agreements of any alteration of the Contract made as therein provided, notice of which alterations to Surety being hereby waived, on Principal's part to be kept and performed at the time and in the manner therein specified, and in all respects according to their true intent and meaning, and shall indemnify, defend, protect, and hold harmless the JPB as stipulated in the Contract, then this obligation shall become and be null and void; otherwise it shall be and remain in full force and effect.

No extension of time, change, alteration, modification, or addition to the Contract, or of the work required thereunder, shall release or exonerate Surety on this bond or in any way affect the obligation of this bond; and Surety does hereby waive notice of any such extension of time, change, alteration, modification, or addition.

As a condition precedent to satisfactory completion of the said Contract, the above obligations may be reduced to the amount of _____ Dollars, (\$ _____ USD), being not less than twenty percent (20%) of the total amount payable under the Contract, and shall hold for a period of three (3) calendar years after the Final Acceptance of said work, during which time if the above bounded Principal shall fail to make full, complete and satisfactory repair and replacement or totally protect the JPB from loss or damage made evident during said period of three years (3) years from the date of Final Acceptance of said work, and resulting from or caused by defective materials or faulty workmanship in the prosecution of the work done, the above obligations in the said sum of (\$ _____ USD) shall remain in full force and virtue; otherwise the above obligation shall be void.

Whenever Principal shall be and declared by the JPB to be in default under the Contract, Surety shall promptly remedy the default, or shall promptly do one of the following at the JPB's election:

1. Undertake through its agents or independent Contractors, reasonably acceptable to the JPB, to complete the Contract in accordance with its terms and conditions and to pay and perform all

obligations of Principal under the Contract, including without limitation, all obligations with respect to warranties, guarantees, and the payment of liquidated damages.

2. Reimburse the JPB for all costs the JPB incurs in completing the Contract, and in correcting, repairing or replacing any defects in materials or workmanship and/or materials and workmanship which do not conform to the specifications in the Contract.

Surety's obligations hereunder are independent of the obligations of any other surety for the performance of the Contract, and suit may be brought against Surety and such other sureties, jointly and severally, or against any one or more of them, or against less than all of them without impairing the JPB's rights against the others.

No right of action shall accrue on this bond to or for the use of any person or corporation other than the JPB or its successors or assigns.

In the event suit is brought upon this bond by the JPB, Surety shall pay reasonable attorney's fees and costs incurred by the JPB in such suit.

IN WITNESS WHEREOF, the above-bound parties have executed this instrument under their seals this _____ day of _____, 20____, the name and corporate seal of each corporate party being hereto affixed and these presents duly executed by its undersigned representative, pursuant to authority of its governing body.

(Principal)

By _____

Note:

*To be executed by Principal
and Surety with acknowledgment
and notarial seal attached.*

By _____

(Surety)

Address)

By _____

By _____

STATE OF CALIFORNIA)
)
CITY AND COUNTY OF _____) ss.

On _____, 20__ before me, _____, Notary Public, personally appeared _____, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

Witness my hand and official seal.

Notary Public

COST PROPOSAL FORM

I. DIGITAL VIDEO RECORDING SYSTEMS: BASE AND OPTIONAL SERVICES

BASE SERVICES - 22 DVRs				
Unit Price by Type of DVRs Application				
Description	Locomotives	Bi-Level Cab Car	Gallery Cab Car	Spares ¹
Quantity (i)	10	9	1	2
DVRs ²	\$ _____	\$ _____	\$ _____	\$ _____
Software	\$ _____	\$ _____	\$ _____	\$ _____
Installation	\$ _____	\$ _____	\$ _____	\$ _____
Training	\$ _____	\$ _____	\$ _____	\$ _____
Warranty	\$ _____	\$ _____	\$ _____	\$ _____
Other ³				
Subtotal Unit Price	\$ _____	\$ _____	\$ _____	\$ _____
Optional Wireless Access and Download Solution ⁴	\$ _____	\$ _____	\$ _____	\$ _____
Total Unit Price by DVRs Type (ii)^{5,6}	\$ _____	\$ _____	\$ _____	\$ _____
Total by DVRs Type (i x ii)^{5,6}	\$ _____	\$ _____	\$ _____	\$ _____
	(iii)	(iv)	(v)	(vi)

A. Base Services Cost⁶	\$ _____
--	----------

(iii) + (iv) + (v) + (vi)

NOTES

¹ Each Spare DVRs shall consist of a DVC, DVR, microphone, Media Hard-Disk.

² DVR, DVC, Microphone, Mounting Brackets, Cables, Mounting Brackets, etc. (refer to page RFP Part 2, Scope of Services, Section 3 Exhibits, Exhibit 1, DVRs Technical Specifications)

³ Please explain: _____
(Attach additional explanatory documents, if necessary).

⁴ Provide the cost to include as part of the DVRs applications the ability to establish a wireless connection to the DVRs for wireless transmission of live and stored images (download); refer to page RFP Part 2, Scope of Services, Section 3 Exhibits, Exhibit 1, DVRs Technical Specifications.

⁵ If the Extended Cost and the Quantity (Qty) multiplied by the Unit Price for any items above and as calculated by the Proposer do not equal/agree, the Unit Price, as applicable, alone will be considered representing the Proposer's intention. Any mathematical errors that appear on the Cost Proposal Form will be corrected by JPB staff; and the JPB will use the corrected Base Contract Cost, Option Cost, Wireless Access Cost, if applicable, and Total Cost Proposal for evaluation and contract purposes.

⁶ Do not include applicable sales tax in your cost proposal. Sales tax of 9.25% will be added at time of invoicing.

OPTIONAL SERVICES - UP TO 48 DVRs

Unit Price by Type of DVRs Application				
Description	Locomotives	Bi-Level Cab Car	Gallery Cab Car	Spares
Quantity (a)	19	zero/none	26	3
DVRs	\$ _____	\$ _____	\$ _____	\$ _____
Software	\$ _____	\$ _____	\$ _____	\$ _____
Installation	\$ _____	\$ _____	\$ _____	\$ _____
Training	\$ _____	\$ _____	\$ _____	\$ _____
Travel / Misc.	\$ _____	\$ _____	\$ _____	\$ _____
Warranty	\$ _____	\$ _____	\$ _____	\$ _____
Subtotal Unit Price	\$ _____	\$ _____	\$ _____	\$ _____
Optional Wireless Access and Download Solution	\$ _____	\$ _____	\$ _____	\$ _____
Total Unit Price by DVRs Type (b)	\$ _____	\$ _____	\$ _____	\$ _____
Total by DVRs Type (a x b)	\$ _____	\$ _____	\$ _____	\$ _____
	(c)	(d)	(e)	(f)

**B. Optional
Services
Cost**

\$ _____

(c) + (d) + (e) + (f)

NOTE: remember to not include applicable sales tax in your cost proposal. Sales tax of 9.25% will be added at time of invoicing. **Total Cost Proposal** is the sum of the Base Services Cost (A) plus the Optional Services Cost (B).

**C. Total
Cost
Proposal**

\$ _____

A + B

DBE Questionnaire

1. Is your firm a registered Disadvantaged Business Enterprise (DBE)?

Yes _____ No _____

If the answer is “**Yes**”, please fill in your DBE Certification Number: _____

2. Does your firm plan to subcontract any of the work or services required under this contract to any subcontractors or sub-consultants, or procure items from suppliers?

Yes _____ No _____

If the answer is “**Yes**”, please continue with completing this questionnaire.

If the answer is “**No**”, you may stop here and you do not need to continue to Question 3. Please sign and submit this page and return the *Designation of Subcontractors and Sub-bidders* form marked “No Subcontractors”.

3. Describe briefly how your firm solicited small businesses, including DBEs, to participate on this contract.

4. Identify the portion(s) of the work or service that were selected for subcontracting and explain why these portions of work were selected:

5. Explain the reasons for rejecting bids and accepting the bids from the selected subcontractor, subconsultant or supplier:

6. Describe any efforts your firm made to assist small businesses, including DBEs, in obtaining (1) adequate information about this solicitation, and (2) necessary equipment, supplies, bonding, or insurance, among other requirements, to perform this contract:

7. Describe any other steps your firm used to encourage or select small businesses, including DBEs:

The undersigned certifies that the above narrative is true and accurate and may be relied upon by the Agency in evaluating the Proposer’s compliance with the proposal requirements.

Signature of Owner or Authorized Representative

Title

Date

Designation of Subcontractors and Sub-bidders

Proposer's Name: _____

Is your firm a Disadvantaged Business Enterprise: Yes _____ No _____

Address: _____

Firm's Annual Gross Receipts: _____ Age of Firm: _____

Phone: () _____ Fax: () _____

Instructions: Bidder MUST provide information below for ALL subcontractors/subconsultants/suppliers ("sub-bidders") that provided Bidder a bid, quote, or proposal for work, services or supplies associated with this contract. This information shall be provided for all sub-bidders regardless of tier for both DBEs and non-DBEs alike. Include all bid acceptance(s) AND rejection(s). Please state "None" if there are no sub-bids, sign and return this form.

Subcontractor/Subconsultant/Supplier Firm Name/Address/Phone/Fax/Contact Person		DBE? (Yes/No)	Description of Work, Services, or Supplies	Dollar Amount of Work, Services, or Supplies	Bid/Quote Accepted? (Yes/No)
1					
2					
3					
4					
5					

Note: Do not indicate more than one "Yes" in the column "Bid/Quote Accepted" for alternative subcontractors for the same work. Use additional sheets if necessary.

The undersigned will enter into a formal agreement with the subcontractor(s), subconsultant(s) and/or supplier(s) whose bid/quote was accepted conditioned upon execution of a contract with the AGENCY. The undersigned certifies that any DBE listed whose quote was accepted will be performing a commercially useful function on the contract. I certify under penalty of perjury that the information included on this form is accurate and true.

Signature of Owner or Authorized Representative

Print Name

Date

REFERENCE FORM

Proposers shall list the company name and contact information as well as the status of contract(s) where the firm has either provided services as a prime contractor or as a subcontractor during the past five years. A separate form must be provided for each contract the Proposer held/holds with the same company. A minimum of three different references/companies must be provided for whom similar products and/or services were provided.

If contract was terminated, Proposer shall list the reason for termination. Proposer also must identify and state the status of any litigation, claims or settlement agreements related to any of the identified contracts. Each form must be signed by an officer of the Proposing firm confirming that the information is true and accurate.

Company

Project Description

Address

\$
Project / Contract Value

City, State, Zip

Award Date / End Date

Contact Name

()
Telephone

()
Fax

Contact Title

Email

Term and Status of Contract: _____

Other: _____

By signing this Form entitled, I affirm that all information provided herein is true and accurate.

Signature

Date

Name

Title

Note: *please complete this form for each reference provided.*

CALIFORNIA LEVINE ACT STATEMENT

California Government Code Section 84308, commonly referred to as the "Levine Act," prohibits any Peninsula Corridor Joint Powers Board (JPB) Board Member from participating in any action related to a contract if he or she receives any political contributions totaling more than \$250 within the previous twelve months, and for three months following the date a final decision concerning the contract has been made, from the person or company awarded the contract. The Levine Act also requires a member of the JPB Board who has received such a contribution to disclose the contribution on the record of the proceeding.

The JPB's 2011 Board Members are:

Omar Ahmad	Liz Kniss
Jose Cisneros	Arthur L. Lloyd
Sean Elsberno	Adrienne Tissier
Nathaniel P. Ford, Sr.	Ted Yeager
Ash Kalra	

1. Have you or your company, or any agent on behalf of you or your company, made any political contributions of more than \$250 to any JPB Board Member in the 12 months preceding the date of the submission of your proposals or the anticipated date of any Board action related to this contract?

___ YES ___ NO

if yes, please identify the Board Member(s): _____

2. Do you or your company, or any agency on behalf of you or your company, anticipate or plan to make any political contribution of more than \$250 to any JPB Board Member in the three months following any Board action related to this contract?

___ YES ___ NO

if yes, please identify the Board Member(s): _____

Answering yes to either of the two questions above does not preclude the District from awarding a contract to your firm or any taking any subsequent action related to the contract. It does, however, preclude the identified Board Member(s) from participating in any actions related to this contract.

Date

Signature of authorized individual

Type or write name of authorized individual

Type or write name of company

DISCLOSURE OF GOVERNMENT POSITIONS

The PROPOSER hereby discloses that the following officers and employees of the PROPOSER's firm currently hold the following positions with the identified governmental agency or held such position in the past 12 months.

<u>Name of Owner/Employee</u>	<u>Name of the Governmental Agency</u>	<u>Complete Address of Gov't Agency</u>	<u>Governmental Position</u> (e.g. Director, Officer, or Employee)
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
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_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Signature: _____

Title: _____

Firm: _____

Date: _____

EXHIBIT 1

DVRs TECHNICAL SPECIFICATIONS

Attached as Exhibit 1: (16 pages)

EXHIBIT 1

DIGITAL VIDEO RECORDING SYSTEM (DVRS) – TECHNICAL SPECIFICATIONS

1.0 GENERAL

- 1.1 Exhibit 1 contains a description of and the technical specifications for the forward-facing, Digital Video Recording System(s) (DVRS or System(s)) to be installed in Caltrain locomotives and cab cars.
- 1.2 Caltrain operates three types of locomotives and two types of cab cars:
- Locomotives:
- BLC F40PH - manufactured by Boise Locomotive Company (BLC)
 - EMD F40PH - manufactured by Electro Motive Division of General Motors (EMD)
 - MP3600 – manufactured by Motive Power Incorporated (MP)
- :
- F = full-width cab; 40 = 40 series; P = Passenger; H = Head-end Power
- Cab Cars
- Bi-Level Cab Cars manufactured by Bombardier
 - Gallery Cab Cars manufactured by Nippon Sharyo
- 1.3 Camera installation will be implemented in phases with priority placed on MP3600 locomotives and Bi-level Bombardier cab cars. The remaining implementation will be based on equipment age.
- 1.4 The DVRS is intended to record **safety critical information** immediately in front of the locomotive or cab car while stopped or in motion; and is intended to aid in JPB investigations of incidents and/or accidents along the Caltrain right of way.

2.0 SYSTEM DESCRIPTION

The DVRS shall include, but not be limited to, a forward-facing digital video camera (DVC), digital video recorder (DVR), an external, weather-proof microphone, and all required mounting hardware, wires, cables, conduits and connectors to make the DVRS operational. The DVRS shall be functionally tested and ready for use prior to final acceptance by the JPB/Caltrain.

- 2.1 The forward-facing DVRS must be able to clearly record railroad signal colors, at a minimum of 2,000 ft. in front of the locomotive or cab car, grade crossings in all weather conditions, and be able to clearly record the right-of-way. Note that railroad signals may be located at or near ground level, on either side of the track, on poles or overhead structures.
- 2.2 These specifications are intended to be descriptive, but not restrictive, and are solely for the purpose of indicating the type, quality and quantity of equipment that will be accepted by the JPB/Caltrain.
- 2.3 The DVRS shall be designed to comply with any and all governmental regulations and laws pertaining to environmental regulations and/or occupational safety matters, which are in existence at the time of delivery. Including but not limited to, Federal Railway Administration (FRA), Association of American Railway (AAR), Environmental Protection Agency (EPA), National Institute of Occupational Safety and Health (NIOSH), Federal Communications Committee (FCC), Occupational Safety and Health Administration (OSHA) and American Public Transportation Association (APTA) regulations.

- 2.4 The DVRS shall be designed such that it may be installed on any locomotive or cab car that Caltrain operates. The installation of the DVRS shall not in anyway interfere with the operation or maintenance of the locomotive or cab car in which it is installed.
- 2.5 All parts shall be new and the Contractor shall provide installation, testing, and commissioning on all units.
- 2.6 The DVRS will not be a "beta" or test system. The DVRS must have past successful proven use within the railroad industry. Railroad video samples of the system will be required and compared.
- 2.7 It shall be the responsibility of the Contractor to make certain that all parts and components fit and function together properly.
- 2.8 The DVRS shall include without omissions all of the parts necessary to perform the work intended. Plus additional equipment as this specification requires.
- 2.9 Only equipment that meets or exceeds the required parameters shall be accepted.
- 2.10 The JPB shall be the final authority for deciding whether a competitive item conforms to these requirements and complies with the intention of these specifications.
- 2.11 The work shall start within 30 days of LNTP and shall be completed within 120 days of NTP, unless mutually agreed upon. The Contractor shall plan on availability of at least one locomotive or cab car at a time out of service for the work. Availability will be Monday thru Friday from 8:00 a.m. to 2:00 p.m.; Monday thru Thursday from 8:00 p.m. to 3:00 a.m.; and Friday thru Sunday from 8:00 p.m. to 3:00 a.m.
- 2.12 The Contractor shall provide training to JPB/Caltrain and/or designee. Said training shall consist of, but not be limited to, operating, testing, trouble shooting, component change, basic repairs, and as further detailed in section 14.0, Training

3.0 CHARACTERISTICS AND REQUIREMENTS

3.1 COMPONENTS

The complete DVRS shall be comprised of, but not limited to, the following components; however, note that depending on the installation type (locomotive vs. cab car) some components may not be required:

Main Components:

- A. DVR unit (approved and proven for railroad locomotive application),
- B. removable media hard disk in metal tray,
- C. forward-facing, color digital video cameras with enclosures, and
- D. weatherproof microphones with enclosures

Accessories:

- A. all necessary camera and microphone connection/power cables,
- B. enclosure for the DVR where required,
- C. all necessary heating and cooling elements,
- D. DC-DC power supply,

Additional materials:

- A. computer interface cables
- B. all necessary software
- C. protective carry cases for hard drives
- D. any and all additional equipment, materials, and parts to ensure that the Systems operate as required.

3.2 Digital Video Recorder (DVR)

The DVR unit at minimum shall:

- A. Utilize heavy duty military specification video camera connections.
- B. Have four or more heavy duty co-axial (camera independent) audio channels for microphone input.
- C. Be able to power four to eight cameras. The cameras shall not require power external to the DVRs.
- D. Record a minimum of four camera inputs; two at 30 Image Per Second (IPS) each at 704x288 video resolution, or four at 15 IPS each at 704x288 video resolution.
- E. Have a display resolution of 720 x 480.
- F. Have dimensions not exceeding 14.5" x 5.9" x 17.8" (W x H x D).
- G. Have quick disconnect, heavy-duty cables for easy component replacement.
- H. Have positive locking military specification, four pin Amphenol video connections for an external monitor for real-time video playback.
- I. Have one network connection to an external computer (RJ45-10/100Mbps). The network connection must allow the DVR to remotely communicate through the supplied software to a computer directly (for face-to-face connections) as well as through a network (for remote connections).
- J. Come with one attached RSS RJ45S 841 – 3M cable in the DVR enclosure. This cable will allow connection of a laptop computer or a network device (ex: hub or switch) directly to the DVR.
- K. Be equipped with key-lock mechanisms. All DVR units will be keyed alike and each DVR will come with a key.
- L. Have at least two LED indicators on its front face, one for verification of power to the DVR, the other for indication of recording.
- M. Be able to be mounted on the ceiling, floor, or its side using a shock absorbing method.
- N. Come with all shock mounting hardware necessary for installation.
- O. Have a quick release mounting plate for ease of service.

- P. Must operate in the specified -20°F to +120°F temperature range. If the DVR requires power for internal heating systems, the allowable voltage inputs will be 74VDC. The current draw for 74V heaters may not exceed 1.3A. The heater power rating shall not exceed 100W. If heaters are used, then they should be equipped with a thermostat to turn off the heaters when the DVR has warmed up to a minimum operating temperature (typical hard-disk operating temperature is above freezing temperature; e.i., greater than -32°F).
- Q. Have four configurable alarm inputs; normally open or normally closed. These inputs can be used to trigger recording or to log events.
- R. Keep an internal log of events such as alarm inputs, system shutdown and startup, administrative software access, and motion detection.
- S. Have at least two relay type alarm outputs for external devices.
- T. Have a back-buffer to record at all times even when there is no motion detected from the cameras or alarm input. When motion or alarm input is detected, the contents of the back-buffer shall be transferred to the media hard disk and the DVR will begin normal recording operations. The back-buffer shall be able to hold as much as five minutes of digital video images.
- U. Have an internal clock and calendar that can be synchronized via administrative software and/or with GPS time when utilizing the optional GPS antenna.
- V. The DVRs operating system must be able to interface with a Microsoft Windows based computer, reside on the main board (not on the hard drive), and have a self-healing filing system for the video files.
- W. Have a remotely located push-to-test red LED indicator light that will be used for daily inspections. The button shall be either mounted on the DVR enclosure or within up to six feet of the DVR. The button will function as follows: if the DVR is not recording the camera input, then the light will glow red. When the button is pressed, then the DVR will begin recording the camera input and the red light will turn off. If the light is off (System recording) and the button is pressed, then the light will turn on temporarily to indicate System is working and then turn off.

3.3 Media Hard-Disks (HDs) or Solid State Drives (SSDs)

The Media Hard-Disk or Solid State Drives at a minimum shall:

- A. Come with one removable media hard-disk; the media hard-disk will be used for video and audio recording only and shall not contain the DVRs' operating system or configuration information (that information will be stored internally in the DVR).
- B. Have a minimum storage capacity of 250GB (Giga-Byte). This capacity shall be able to store at least two weeks (14 consecutive calendar days) of video feed for at least four cameras, two recorded at 704 x 288 resolution and 30ips or four at 704x288 resolution and 15ips
- C. Have the capability of accepting larger hard-disks up to and including 2 TB (Terra Byte) if in the future Caltrain decides to upgrade the DVRs capacity. The hard-disk shall be interchangeable between all DVRs manufactured by the same vendor at the time of purchase.

- D. Be available as an upgradeable option with protective flame retardant wrap to enhance the crash worthy standards of the unit at a minimum of 250G.
- E. Be operational using the same software and hardware without requiring equipment change out to interchange memory platforms.
- F. Will be held inside a shock-mounted metal enclosure that can be inserted directly into the DVR. The hard disks are never to be removed from their shock-mounted enclosures.
- G. Be able to be read at a remote location without the DVR unit (via provided software and a converter cable that converts the hard-disk signal to a standard input signal such as USB). 15 of these converter cables will be ordered along with the entire order of DVR units.
- H. Allow for quick removal and be "hot-swappable;" and are to be interchangeable between DVR units.
- I. Be locked into the DVR unit using the same key that opens the DVR enclosure. When the storage media is locked inside the DVR, the unit will turn on. When the DVR is unlocked, the media hard-disk then can be removed.
- J. Have a chain-of-custody label. This label will be used to document car number, actions done with the hard drive, the personnel that performed actions, and when they were performed. The label will be signed by Caltrain employees or designees as the hard drive is transferred between employees. The Contractor will work with Caltrain to determine the fields and format of this label.
- K. Caltrain may order spare media hard-disks with metal enclosure.

3.4 Cameras (Forward-facing unit)

The forward-facing cameras at minimum shall:

- A. The color capture quality of the cameras must be as such that the railroad signal light aspect colors at a minimum 2,000 ft. can be clearly seen and discerned during DVR playback (for all weather conditions) Sample videos will be required (See 8.3).
- B. Caltrain will evaluate the quality of the cameras based on provided video samples and prototype testing period (See 7.0). Failure to provide clear and discernable signal color will be cause for Contractor disqualification (See 7.4).
- C. Come pre-configured for each type of equipment. The Contractor will work with Caltrain to determine the best settings of each type of camera (e.g., zoom, focal length, etc.). The Contractor will then ship a mutually agreed upon number of pre-configured cameras for each type of locomotive and cab car Caltrain operates. These numbers and settings will be determined during the prototype testing (See 7.0).
- D. Have a BNC co-axial connection for video.
- E. Be able to be powered by the DVR unit at 12VDC $\pm$ 2VDC.
- F. The camera power connection will be screw-type or locking so it is secured to prevent vibration-caused disconnection.

- G. Have threaded mounting holes for installation (C-mount).
- H. Use the NTSC color system.
- I. Be RGB 3CCD imaging system (Charge Coupled Device, "three chip").
- J. Be equipped with a 15mm 3CCD lens. The properties of the 3CCD lens must equal the properties of the 3CCD camera prism. The light transfer must not exceed the light speed of the camera prism. There may be a different lens requirement for each type of locomotive and cab car that Caltrain operates. These requirements will be determined during prototype testing.
- K. Have effective pixels of the camera's image be at least 720 (horizontal) x 480 (vertical).
- L. Have horizontal resolution of at least 800 lines.
- M. Have an automatic white balance feature.
- N. Have a six-vector color corrector that allows for the independent adjustment of the hue and saturation of the primary and secondary colors in order to maintain optimum color fidelity.
- O. Be able to maintain proper color saturation in scenes with high luminous levels such as during dawn and sunset.
- P. Have signal-to-noise ratio of at least 60dB.
- Q. Operate within the specified temperature range of -20°F to +120°F.
- R. Be no larger than 3.5" x 2.5" x 2.5".

Caltrain may order spare cameras.

3.5 Microphones

The microphones at minimum shall:

- A. Depending on locomotive or cab car requirements, be placed on the exterior of locomotives and cab cars. The microphone will be used for recording bell and horn sounds.
- B. Be housed inside NEMA-rated weatherproof enclosures. The enclosures will be no larger than 3" max height x 3.5" max width x 4" max length.
- C. The enclosures will have base mounting flanges that can accommodate four mounting screws.
- D. The microphone enclosures will be magnetically shielded to prevent interference from external magnetic fields (traction motors, 1,500VAC wiring, etc.)
- E. Be powered by 12VDC, provided by the DVR unit and will not draw more than 0.02A each.
- F. Be equipped with an adjustable gain knob, limiter, and treble boost.

- G. Have a receiving frequency range of at least 100Hz to 10kHz (with treble boost off).
- H. Have a receiving frequency range of at least 100Hz to 20kHz (with treble boost on).
- I. Have a signal-to-noise ratio of at least 60dB.
- J. Caltrain may order additional microphones.

3.6 Wiring

The Systems will be shipped with all component-interconnect wires. All wiring at minimum shall:

- A. All interconnect wires will be Exane (polyolefin) or equivalent, jacketed and shielded. Unless, it can be proven that a specific type of cable is not available in said jacketing. Wiring shall meet current flame, smoke and toxicity requirements for passenger railroads.
- B. The maximum interconnect wire lengths for cameras and microphones shall be designed to accommodate lengths of up to 85 feet depending upon DVRS installation.
- C. The wire connectors that will connect to each device will be applied (ex: crimped) by the Contractor. The other end (BNC) will be applied by the Contractor as well. The Contractor will supply the required connectors for each DVRS.
- D. All connectors will be secured to prevent vibration-caused disconnecting, BNC connectors are required.
- E. The contractor will determine proper wire lengths, for each type of Caltrain unit, during the prototype testing phase.

3.7 Computer Connection Kits

The connection kits shall:

- A. Allow the connecting of the removable media hard-disk to a desktop or laptop computer.
- B. Be shipped with one media hard-disk adaptor each. The adaptor will convert hard-disk interface (IDE) to USB 2.0.
- C. Be shipped with a proper USB cable to connect the hard-disk adaptor to a computer.
- D. Be shipped with a 120VAC power converter to be used with the hard-disk/USB adaptor.

Caltrain will order up to six computer connection kits with an option for additional kits at the time of order.

3.8 Software

The DVRS shall come with two types of software for external computer interface. The minimum computer requirements should be 1GB or higher RAM, Intel Pentium III or better

processor, 8MB of video card memory or better, MS Windows XP operating system. One type of software will be used for the **administration of the DVR**. The other type of software will be used for **reviewing and downloading video** from the media hard-disks.

A. **Administrative Software** shall:

- a. Allow a user to administer settings, view recorded video, or watch live video with a computer connected directly to the DVR. The software shall also have the capability for wireless transmission of video feeds to a remote workstation.
- b. Allow for the setup a username and password for each DVR.
- c. Allow for time and date synchronization with the computer time. The software will also show the time difference between the DVR time and the computer time.
- d. Have the capability of GPS synchronized time.
- e. Have Google mapping capabilities.
- f. Allow for the upgrading of DVR firmware patches and new versions as they become available.
- g. Show which cameras, microphones and alarms are currently providing an input signal.
- h. Allow the live viewing and playback of up to four cameras simultaneously on one workstation with the viewer choosing between watching four and one camera.
- i. Allow for image adjust options when watching live or recorded video (e.g., brightness, contrast, hue, and saturation).
- j. Allow for the enabling of the output alarm while watching live video.
- k. Allow for a full or partial download of video from the DVR.
- l. Allow the user to perform calendar based, time based, and event based searching of recorded video. GPS location based and GPS Speed based shall be available when utilizing optional GPS antenna.
- m. Allow the user to play, pause, fast-forward, rewind, view video frame-by-frame (forward and backward), and stop the video.
- n. Allow the user to zoom in and out, up to five times (5X), while watching recorded video.
- o. Allow the user to save the video as an AVI (Audio Video Interleave) file using MPEG4 compression.
- p. Allow the user to save a still image from the recorded video on the DVR as a JPEG (JPG) file.
- q. Allow the user to save the video as a digitally watermarked, 128-bit encrypted, self-executable (EXE) file. This file should be able to be opened on

any MS Windows (2000 or better) computer. The self-executable file will have video controls such as play, pause, fast-forward, rewind, frame-by-frame movement (forward and backward), volume control (including mute), brightness adjustment, export a frame to a picture file (.BMP bitmap file), and export a frame to the default printer along with video information (time, date, camera name, location). The self-executable file will show all relevant information in its window: the named location of the video (name of Caltrain unit, ex: JPB 505), the start and stop times of the video, the current time and date (of the playing video).

- r. Allow for free upgrades from the manufacturer or Contractor for patches and new versions as they become available.
- s. Be free to install on as many computers as Caltrain deems necessary.

B. Review/Download Software shall:

- a. Work with a media hard-disk to USB adapter (computer connection kit) to view and download video from the media hard-disk at a stationary location (e.g., desktop or laptop at a train yard office, corporate headquarters, etc.).
- b. Allow for a full or partial download of the media hard-disk.
- c. Allow for calendar and time based searching of video contents.
- d. Allow for real-time playback of all video feeds (all four synchronized or separate based on user choice).
- e. Allow the user to play, pause, fast-forward, rewind, view video frame-by-frame (forward and backward), and stop the video.
- f. Allow the user to zoom in and out, up to five times (5X), while watching recorded video.
- g. Allow the user to adjust brightness, blur, sharpen, and interpolate while watching video.
- h. Allow the user to save the video as an AVI (Audio Video Interleave) file using MPEG4 compression.
- i. Allow the user to save a still image from the recorded video on the DVR as a JPEG (JPG) file.
- j. Allow the user to save up to 16 cameras at one time as a digitally watermarked, 128-bit encrypted, self-executable (EXE) file. This file should be able to be opened on any MS Windows (2000 or better) computer. The self-executable file will have video controls such as play, pause, fast-forward, rewind, frame-by-frame movement (forward and backward), volume control (including mute), brightness adjustment, export a frame to a picture file (.BMP bitmap file), and export a frame to the default printer along with video information (time, date, camera name, location). The self-executable file will show all relevant information in its window: the named location of the video (name of Caltrain unit, ex: JPB 505), the start and stop times of the video, the current time and date of the playing video.

- k. Allow for free upgrades from the manufacturer or Contractor for patches and new versions as they become available.
- l. Be free to install on as many computers as Caltrain deems necessary.

3.9 Wireless Option

The Contractor shall provide a detailed description and pricing of an optional wireless solution to be used generally for wireless transmission of live and stored video to a fixed end (e.g. remote network, laptop or desktop computer). The wireless option shall at minimum:

- A. Provide a video feed with separate video quality and frame rate settings to optimize viewing quality based on network bandwidth.
- B. Allow for connection via a Wi-Fi "Hot Spot" and/or remote computer to allow for remote access via Internet access through a secure individual IP address for each installation.
- C. Have the capability to generate an e-mail notification regarding status of cameras, hard-disks and DVR (such as camera obstruction, hard disk percentage of failure, DVR over-temperature).
- D. Capable of transmitting video log files every locomotive and cab car that has a DVRs installed.
- E. Capable of handling "breaks" in communication between the DVRs and the fixed end such that if a video feed is only partially transmitted before a break in communication occurs, the system's software will be automatically be able to "restart" the transmission where it left off.
- F. Allow for determination of security for access at time of DVRs installation.

The Contractor shall conduct a site wireless test to prove/confirm functionality of the proposed wireless option.

3.10 ELECTRICAL

- A. Contractor shall supply a DC to DC power supply, if required, sized to be able to operate the DVRs (except heaters) at its required voltage.
- B. The current draw of the DVRs at 13.8VDC must never exceed 5A when initially powering up and booting.
- C. The DVRs should draw a lower current (less than 3.5A at 13.8VDC) in its normal operation (recording) mode.
- D. The DVRs heater system shall not draw more than 2A at 74VDC and 3A at 32VDC.
- E. The power connections should be protected from accidental grounding.
- F. The power connections should also be protected from accidental reverse polarity connections.
- G. All wiring to be installed on a Caltrain unit and provided by the Contractor must be Exane (polyolefin or polyrad) jacketed.

4.0 PERFORMANCE

- 4.1 The DVR shall be able to accept both NTSC and PAL camera signals without user selection (auto-select).
- 4.2 The DVR shall be able to record video at a rate of 30ips and 704 x 288 video resolutions for at least two cameras. The other cameras are to be able to record video at a minimum rate of 15ips at 704 x 288 video resolutions.
- 4.3 The DVR must have the capability of running 24 hours a days, 7days a week in continuous mode as a maximum, or run on a user-configurable motion sensing auto-record mode.
- 4.4 The video compression method used to save video shall be MPEG-4.
- 4.5 The DVR shall be key-locked in an “always-on” mode to prevent tampering, as well as media hard-disk removal.
- 4.6 The DVR and cameras shall withstand the shock/vibration that is associated with typical railroad operations without negative effect to its performance. The DVR and DVRs must meet AAR S-5702 requirements (for shock and vibration). The DVRs must come with all necessary hardware to ensure that these requirements are met.
- 4.7 The DVR and DVRs must meet railroad operating temperature range requirements: -20°F to +120°F.
- 4.8 The video feeds recorded must be digitally watermarked (securely and tamper-proof) with the date and time of day.
- 4.9 Each DVRs (including all components) will be shipped pre-configured to Caltrain specific settings as described herein. The configurations will be dependent on which type of locomotive or cab car the DVRs will be installed. The Contractor will work with Caltrain during prototype testing to determine which settings work best for each series of locomotive or cab car.

5.0 MANUALS

Prior to shipment of the first DVRs the contractor shall provide copies of the following:

- 5.1 **Documents** pertaining to the design, engineering, installation, software function, and performance of the proposed DVRs.
- 5.2 **Operating Manual** that includes all information regarding the operation of the DVRs. This includes complete step-by-step instructions (with associated screenshots) for how to perform operations such as swapping media hard-disks, downloading video from the DVR and through the computer connection kit, and any other practices that would be necessary to the operation of the DVRs and its components (e.g., DVC, DVR, and other integral parts and components).
- 5.3 **Replacement Parts Manual** enumerates and describes every part to the lowest level of replaceable component. It shall include component name, symbol, function, rating, tolerance, manufacturer name and address, manufacturer's part number, commercial equivalents and quantity per assembly or sub-assembly.
- 5.4 **Drawings** pertaining to the design, engineering, installation, and performance of the proposed DVRs.

6.0 INSPECTION AND TESTING

All the parts and components in the DVRs shall be thoroughly inspected and tested prior to shipment. The contractor's inspection and testing procedures shall be submitted to Caltrain for review and approval prior to the shipment of the first DVRs. Inspection and test reports shall accompany each subsequent DVRs shipped and shall include all component serial numbers as applicable.

7.0 PROTOTYPE TESTING

- 7.1 Caltrain, at its option, will initially order one prototype DVRs for each type of locomotive and cab car from the Contractor. The prototype DVRs will be installed and tested by the Contractor with on-site inspection from Caltrain personnel.
- 7.2 The prototype Systems must be complete Systems and must exactly match the DVRs proposed by the Contractor in response to Caltrain's request for proposal and the associated technical specifications as contained herein.
- 7.3 If the prototypes are determined to be successful, Caltrain (at its own discretion) will order the additional Systems for installation on the balance of the locomotives and cab cars, as well as a pre-determined and mutually agreed-upon spare DVRs.
- 7.4 If the prototypes are found to be unsatisfactory, for any or all of the following reasons; and provided the Contractor is not able to rectify the problem(s) with the prototype(s) and prove the satisfactory functionality of the DVRs within 14 days of the JPB providing the Contractor notice of prototype DVRs failure, then the JPB shall have the right to cancel the Contract:
 - A. System failure within the first ten days of prototype operation.
 - B. If the Contractor does not respond within 72 hours of a JPB/Caltrain's or designee's notification of a prototype DVRs failure.
 - C. If the System is found not to meet the minimum requirements set by the technical specifications contained herein and as otherwise address in the solicitation documents.
- 7.5 The cost to repair, modify and/or replace a prototype DVRs during Caltrain's field testing shall be performed by the Contractor at its own expense.

8.0 FUNCTIONALITY TESTING

The Contractor must provide Caltrain with a written Functionality Testing Method (FTM) for its prior approval before any DVRs (including prototypes) may be installed on locomotives or cab control cars:

- 8.1 The FTM shall provide testing results for the temperature range -20°F to +120°F verifying the operation of each entire DVRs (DVC, DVR, and microphone). These results must be detailed, and include all necessary plots, graphs, and charts. The test period must be at least 24 hours at -20°F and 24 hours at +120°F as well as temperatures in between.
- 8.2 At minimum the FTM shall reference the date and time of the test, identify the DVRs tested (identified by a unique DVRs number and/or component serial numbers) along with the items identified in B above

9.0 DOCUMENTATION

In order to be deemed responsive and responsible, in addition to other required documentation listed in the solicitation documents, proposers shall include the following with their proposals:

- 9.1 Detailed description of the DVRs proposed. This shall include all information regarding the design, engineering, installation, and performance of the proposed DVRs testing shall be performed and completed at CEMOF.
- 9.2 All drawings pertaining to the design, engineering, installation, and performance of the proposed DVRs.
- 9.3 A parts list shall also be included by the Contractor.
- 9.4 Operations manual(s) for the DVRs and principal components (e.g., DVC, DVR, microphone, HDs and SSDs).

10.0 SAMPLES

- 10.1 The Contractor shall provide representative video clips captured from the proposed DVRs. These sample video clips shall at minimum:
 - A. Be recorded at 30ips and 720 x 288 video resolution (or better) for two cameras, and 15 ips and 720 x 288 video resolution for the other cameras (the same type of cameras is to be provided with the DVR in prototype and final installation phases).
 - B. Be provided as five minute sample clips in length. All weather conditions are required (sun, overcast, rain and snow if possible) as well as all times of day (dawn, midday, afternoon, evening, night).
 - C. Be provided as MS Windows 2000 readable CDs or DVDs.
 - D. Be in AVI format, encoded with MPEG4 compression.
 - E. Match the typical performance cycle of a DVRs as Caltrain plans to use it.
Railroad road/right-of-way video clips are required.
 - F. Show how the cameras can record color changes versus distance changes (e.g., as can be seen when approaching railroad signals).
 - G. Caltrain will assess the quality of the video clips to determine whether or not they are of a quality sufficient in meeting the requirements listed in these technical specifications and as further detailed in the solicitation documents.
- 10.2 The Contractor must also provide a demonstration of the proposed recording, review/download software and administration software. This may be done via an actual software demonstration or a detailed manual showing screenshots and explaining software functionality (e.g. power point presentation).

11.0 SHIPPING AND DELIVERY

All Systems (including prototypes) shall be delivered (FOB) to:

Caltrain
Centralized Equipment Maintenance and Operations Facility
585 Lenzen Avenue, San Jose, CA 95126

Attn: Steve Coleman

- A. The Contractor shall be responsible for all shipping costs associated with the delivery of the Systems. Risk of loss shall lie with the Contractor until final acceptance by Caltrain of each fully installed, tested, and commissioned DVRs.
- B. The Contractor shall deliver a prototype DVRs within no more than four weeks (28 calendar days) from the date the JPB issues its written Notice to Proceed.
- C. The System must be delivered complete and ready for installation on a locomotive or car upon receipt. This includes all parts, documentation, and equipment specified.

12.0 DELIVERY AND WORK-TIME HOURS

The Work-Time Period allowed for the Contractor at the CEMOF site shall be:

- 12.1 All installation and functionality testing shall be performed and completed at CEMOF.
- 12.2 Monday thru Friday 8:00 a.m. to 2:00 p.m., and Monday thru Thursday 8:00 p.m. to 3:00 a.m.(Friday); Friday thru Sunday, Friday 8:00 p.m. thru 3:00 a.m.(Monday)
- 12.3 One to two locomotives and/or cab control cars shall be provided to the Contractor for the application of the specified DVRs at a given time working with the Contract Operators' scheduled requirements for service.
- 12.4 Upon completion of the application of the equipment by the Contractor additional Locomotive(s) and/or Cab Control Car(s) shall be Blue Signal Protected by the Contract Operator, and the Contractor shall be allowed to apply the Camera equipment on the vehicle(s), providing completion of the application, and delivery back of the vehicle to the Contract Operator is accomplished at a minimum one (1) hour prior to the required equipment turn-over from the Mechanical Department, to the Operations Department as required for service. The Contractor shall be notified by the Contract Operator of this time-line restriction at the time of delivery of the vehicle to the Contractor.
- 12.5 During the Saturday and Sunday layover periods substantial equipment consists lay-over at CEMOF. The Contractor shall coordinate with the Caltrain Contract Operator and the JPB staff by making contact and requesting the amount of equipment, by specific Locomotive and/or Cab Control Car I.D. number so that the equipment can be made available for the Contractor during the long week-end layovers.

13.0 WARRANTY

The Contractor shall warranty the Systems as follows and as further detailed in the Agreement:

- 13.1 The Contractor shall repair and/or replace at its own expense (without charge to the JPB), any DVRs (including labor, parts or material) for a period of three years. The warranty

period shall begin on the date of JPB/Caltrain's final acceptance of all DVRs upon final completion of the project.

- 13.2 The Contractor will replace all of the delivered Systems, installed or uninstalled, under warranty if more than 15% of the total Systems installed and under warranty fail or do not function as intended or as required by the manufacturer and/or these technical specifications.
- 13.3 The Contractor shall provide support and trouble shooting for the administrative and review/download software as needed.

14.0 TRAINING

The Contractor shall provide at minimum 24 hours of training including training material for employees of JPB/Caltrain, and designated employees of the JPB's contracted commuter rail service operator (presently the National Railroad Passenger Corporation, aka Amtrak). Training will be performed at CEMOF and at minimum shall cover:

- 14.1 DVRs Operation
e.g., operating the DVRs and all major components; testing, trouble-shooting; using administrative and/or review/download software for operating, administering and viewing, reviewing and downloading of videos images, accordingly.
- 14.2 DVRs Maintenance
e.g., diagnosing, trouble-shooting, and testing technical issues with the DVRs and its components; component change (swap outs) and basic repairs

15.0 COMPONENT AND PARTS LIST

A Component and Parts List is included in page 16 below.

16.0 GLOSSARY

AAR – Association of American Railroad
BNC
APTA – American Public Transportation Association
CEMOF – Centralized Equipment Maintenance and Operations Facility
DVC – Digital Video Camera
DVR – Digital Video Recorder
DVRs – Digital Video Recording System
EPA – Environmental Protection Agency
FCC – Federal Communications Committee
FOB – Free On Board
FRA – Federal Railroad Administration
HD – Media Hard Disk
JPB – Joint Powers Board
NIOSH – National Institute of Occupational Health and Safety
NTSC
OSHA – Occupational Safety and Healthy Administration
PAL
SSD – Solid State Drive

EXHIBIT 2

CAB EQUIPMENT INSTALLATION / INTEGRATION ANALYSIS

Prepared September 30, 2010 by LTK Engineering Services

Attached as Exhibit 2: Cover, TOC, Analysis (55 pages)

Cab Equipment Installation / Integration Analysis

Revision 1

Draft Submittal

September 30, 2010



Peninsula Corridor Joint Powers Board



Revision History

Rev. #	Section	Description	Date	Approved
0		Draft Submittal	9-11-10	DAD
1		Revised to Caltrain Comments	9-30-10	DAD

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1. Executive Summary

Caltrain has three projects concurrently in the proposal or implementation phase that will occupy for cab space and electrical resources. The purpose of this report is to establish basic cab requirements and identify potential conflicts. This analysis is a planning tool for Caltrain. Survey of proposed equipment help eliminate random installation locations and procedures, given the spatial limitations of the cab and short nose. Further, improper installation can cause physical hazards to operating crew and maintenance personnel. The models and mock-ups used in this report represent typical installations and sizes.

Each of the three projects represents an improvement and will create immediate value for the Caltrain fleet. The greatest challenge will come with the PTC equipment electronics. It will likely require space for convection cooling, access for maintenance and room for expansion. Advanced planning, of the type documented in this report, will prevent displacement of cab appliances and overloading of electrical circuits. After evaluation of all three projects, there were no significant limitations preventing installation. The cameras depicted in this document illustrate a camera box mounted to a pedestal. It may be possible to solicit for a dome camera to mount on the ceiling panel above the operator. Also, a new conduit run must be added in the gallery car for installation of the PTC equipment. At best the Camera system could use existing DC power to the cab ceiling lights. There may be several spares wires within the conduit or Cab which may need to be pulled. This will greatly aid the completion and ease of new circuit installation.

2. Proposed Locomotive and Cab Car Projects

The proposed projects all serve to enhance the operation of Caltrain. As a group, they will provide enhanced scheduling, reduce train accidents, and provide a silent witness to accident investigations. Each of the projects will be implemented and installed over a 3 year period and are listed below in a suggested order of implementation.

Automatic Vehicle Location (AVL) System:

AVL is a predictive arrival departure tool using GPS. The system will be used to automatically transmit to the server a locomotive's GPS coordinate. The server at Rail Operations Center will use for predictions for the train arrival times to passengers at station banners. A single system is needed per train consist installed on locomotive or Cab Car. The project is now implemented with a pilot program for each of the three locomotive types.

Forward Facing Cameras:

Caltrain is in the process of preparing a Request for Proposals (RFP) to install forward facing cameras. Included in the specification are minimum requirements for the system. As implied the forward cameras are intended to record the activity immediately in front of the cab car or locomotive as seen by the operator. As described in section 3.4 of the proposal the camera shall be a Hitachi RVS-CC800 or equivalent. Cameras recording the activities directly in front of the locomotive while stopped or in motion, will greatly aid in accident investigations. The camera system will be equipped with an external microphone to record the horn and bell use. The cameras may include an interface with the event recorder as an option. Installation is planned for early 2011.

Positive Train Control (PTC)

PTC is a requirement for all railroads by December 31, 2015 and mandated by 49 CFR part 236. The Caltrain PTC System will provide automatic enforcement against stop signal overrun, train-to-train collisions, over speed, and incursions into work zones. With respect to this document the focus will remain on the PTC Onboard System. PTC designs are rapidly evolving. The list shown for PTC in Table 1 will require updating as PTC equipment is developed. The "Typical Characteristics" column is used as a reference as the components may change slightly in size and number. This study is based on power requirements and sized as exhibited with current technology (See Appendix C). The use of a common enclosure, containing all of the on-board PTC components (minus the CDU, circuit breakers, and antennas), is considered best type of installation across all of the Caltrain Locomotives and Cab Cars. The circuit breaker panel of each locomotive type was evaluated for spare capability with the assumption that three (3) circuit breakers will be required for the on-board PTC equipment. The rating of each breaker listed below, are suggestions based on developing PTC systems.

Table 1 - Proposed Equipment List

Equipment List					
PTC		AVL		Camera	
	Typical Characteristics		Typical Characteristics		Typical Characteristics
Computer Control Unit	12" x 12" x 10"	DC-DC Converter	2" x 7" x 9"	Camera	3.5" x 2.5" x 2.5"
Power Supply	7" x 10" x 3"	GPS Receiver	6.5" x 6" x 1.5"	DVR	14.5" x 5.9" x 17.8"
Data Radio	TBD	Cabling/ Connectors	A/R	Wiring	A/R
Interface Unit	8" x 12" x 10"	GPS Antenna	1" x 2.75" Dia	Circuit Breaker	5 - 10 amp
Cabling/Connectors	TBD			Power Supply	2" x 2" x 7"
**Mode Switch	TBD				
Central Display Unit	12" x 10" x 5"				
Data Radio Antenna	5" x 7" x 17"				
GPS Antenna	1" x 3" Diameter				
Cut-out Switch	6" x 6" x 7"				
Circuit Breakers					
PTC Communications	20-30 amp				
PTC Computer Control	10-15 amp				
PTC Event Recorder	5 to 10 amp				
**Event Recorder	13" x 10" x 5"				
WiFi Antenna	1.5" x 3.0" Dia				
Speed Sensor	Axle Hung				
**Thermal Imaging Printer	TBD				

** Denotes - Requirement to be determined

Not all cabs cars and locomotives will be equipped with all three systems. As shown in Table 2, equipment that is powered or operating in a leading position with cab controls, are included. The AVL equipment is planned for the road locomotives. Camera installation will be implemented in phases with priority placed on the MP36 locomotives and Bi-Level Cab cars targeted for installation. The remaining implementation will be based on equipment age. No trailer cars are summarized in this report.

Table 2 - Caltrain Equipment Proposed Installation Plan

Caltrain Equipment						
Road Number	Builder	Year Built	Equipment Type	AVL	PTC	Camera
900 - 919	(EMD) Electro Motive Division	1985-1987	F40PH Locomotive	X	X	*
920 - 922	(BLC) Boise Locomotive Co.	1998	F40PH Locomotive	X	X	*
923 - 928	(MPI) Motive Power Inc	2003	MP36 Locomotive	X	X	X
4000 - 4020	Nippon Sharyo	1985	Gallery Style Cab Car		X	*
4021 - 4026	Nippon Sharyo	1999-2000	Gallery Style Cab Car		X	*
112 - 118	Bombardier	2001-2002	Cab Car		X	X
119-120	Bombardier	2008	Cab Car		X	X
500 & 501	(EMD) Electro Motive Division	1954	GP 9 Locomotive		X	
503 & 504	(EMD) Electro Motive Division	1974	MP 15 Locomotive		X	
505	Budd Rail Car	1980	T10 Track Inspection Car		X	

X denotes planned project

* Staggered Installations (Phase 1) MP36 and Bombardiers Bi-Level Cars have priority

With all planned installations, the wiring and cables must be secure and within a conduit run where possible. In most cases the power will come directly from a newly installed circuit breaker dedicated to the particular circuit. The AVL equipment will draw less than two amps and will be powered by the existing "Lighting" circuit breaker. The breaker is normally closed when the locomotive is in service.

Essentially the system will be active at all times. Similarly, the PTC equipment will be powered and operable when the locomotive or Cab Car is in a lead and controlling position.

3. Locomotives

As shown in Table 2, Caltrain operates five types of locomotives, three of which are used in passenger train sets. The remaining two are used solely for yard and special non passenger trains. This report will expand on the three types which currently are scheduled for AVL, Forward Facing Cameras and PTC Equipment. There are two models of the F40PH and an MP36. All of which have a full width cab and carbody. Personnel enter through doors on the side or through the door at the rear of the cab. The EMD F40PH is similar to the Boise Locomotive Company (BLC) version, both of which have a full width cab (F), 40 series, (P) Passenger, and (H) Head End Power. The variances will be depicted as required in this report. The MP36 is a 3600 horsepower locomotive built by Motive Power Incorporated with a full width cab that meets recent FRA crashworthiness regulations. All of the passenger locomotives use the same control voltage and DC traction system. All locomotives models share some commonality among the propulsion systems and have easy access to the battery leads at the knife switch behind the circuit breaker panels

3.1. Cab Space Overview (Locomotives 900-919)

There are several variations of the F40 locomotives, which is the purpose of the distinguishing by road number. Locomotives 900 - 919 built are an F40PH-2 by were built by Electro Motive Division of GM in 1985 for passenger haul equipment. They are equipped with control stands with 26L brake equipment mounted at left side of the operator. The short nose of the "F" end is equipped with a toilet and has an access door. A circuit breaker panel is located in the electrical cabinet behind the operator.

3.1.1. AVL Equipment

The AVL equipment is a compact system intended to be installed on the bulkhead space immediately behind the number board as shown in Figure 1. The number signage board is constructed of plastic and can be removed and easily accessed by loosening thumb screws and lifting the number frame. The installation changed slightly from the original plan, which had each mounted separately behind the left and right side number signage. This will not affect the operation and will allow ease of servicing when removing the number board. The intent is to use existing lighting circuit at terminal board (16) which is also located in the same compartment, for electrical supply of the DC-DC converter. The AVL system requires less than 2 amps and will be attached with "fast-ons" at the terminal board.

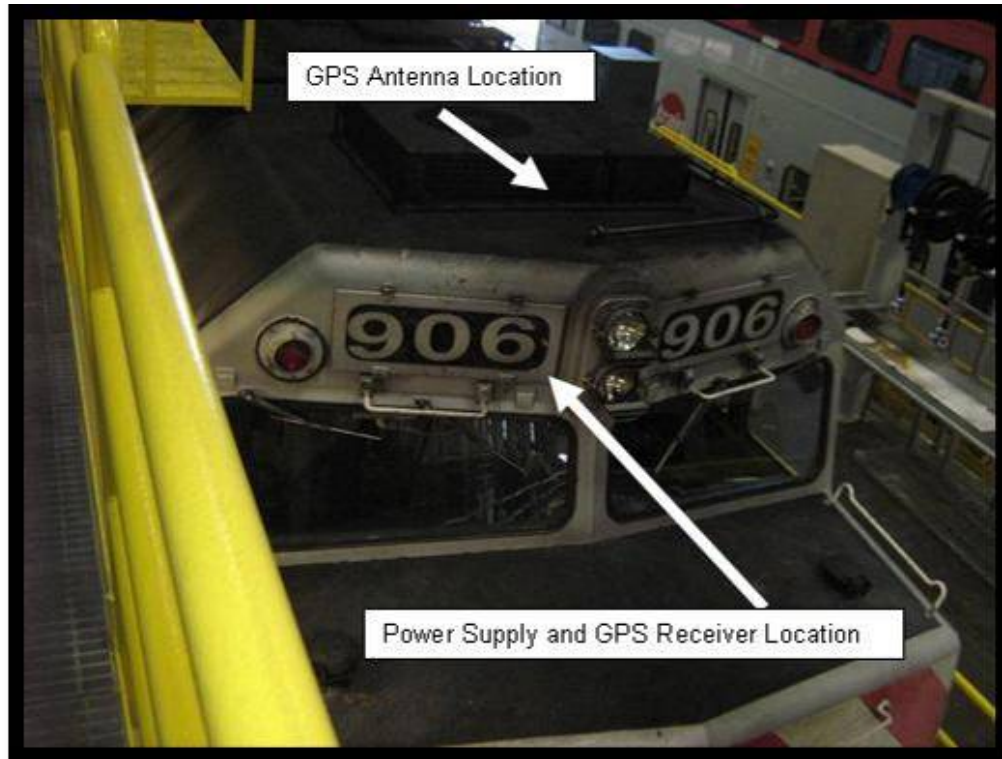


Figure 1 - AVL Equipment Access F40 Locomotives

3.1.2. Forward Facing Cameras

Camera

The F40PH dash surface at the front windows as shown in Figure 2 allows easy mounting for a camera seated on a pedestal. The camera shown in Figure 3 is a typical dash mount installation.



Figure 2 - Dash Area F40PH for Forward Facing Cameras

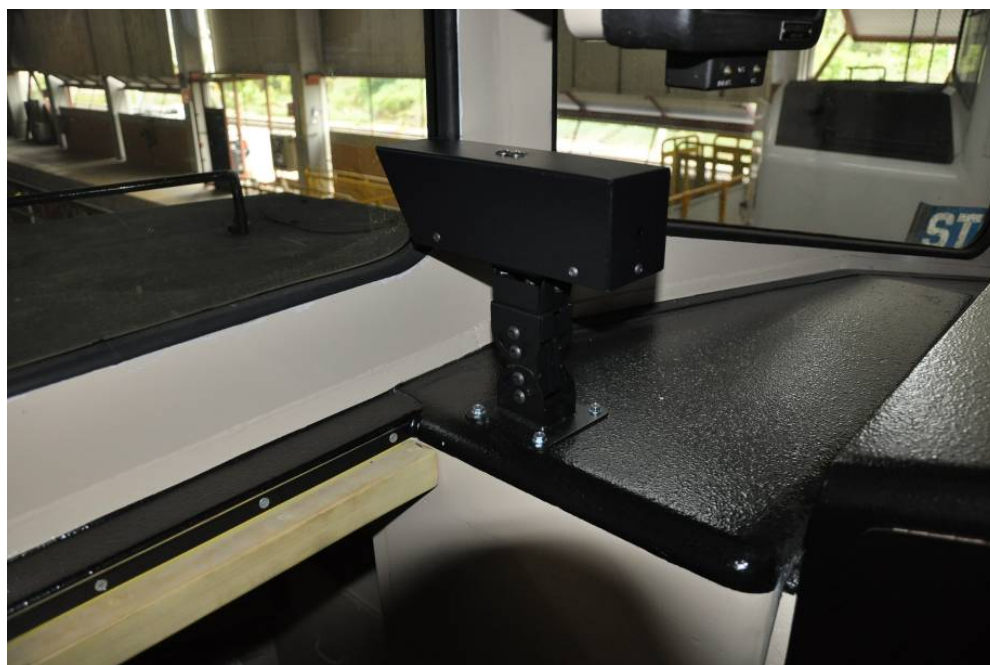


Figure 3 - Typical Dash Mounted Forward Facing Camera

Digital Video Recorder

As shown in Figure 4 below, the DVR will have an enclosure which is no larger than 14.5" x 5.9 x 17.8" as specified by Caltrain. The DVR will supply power for up to four cameras and a microphone. It is locked in an enclosure and rugged



Figure 4 - Typical DVR with Locked Enclosure

There is convenient space available within the confines of a storage area in the front of the cab. The area shown in Figure 5 extends into the short nose and is typically used for train number placard storage. The useable space is 12" x 15" x 19" which is suitable for the maximum dimensions of the DVR specified. The conduit run from the backside of the enclosure can be easily routed to the electrical cabinet and camera which will be adjacent. The enclosure is entirely constructed from sheet and plate steel and has no limiting feature preventing welding or modification including tapped holes on rear plate. The side and back can be removed to modify and enlarge.



Storage Area (Short Nose)

Door Open to Storage

Figure 5 - Storage Area in EMD F40PH-2 Cab (DVR Proposed)

Based on the Caltrain specification, a survey was conducted of similar camera systems meeting the basic requirements. The forward camera is powered by the DVR at 12VD and must not exceed 5 amps of maximum current draw. In addition, the system will be equipped with a single exterior microphone also powered by the DVR. The total load on the locomotive will likely draw approximately no more than 4 amps of current at 74 V. Rather than use an existing circuit the system should have separate wiring, conduit, and be protected by a circuit breaker. This would require installation of a 10 amp circuit breaker which is a commonly stocked item. As an example, shown in Figure 6, a circuit breaker can be installed in existing blank slot marked "Electronic Device". Circuit breakers can be easily requisitioned from the Amtrak Supply Department. A listing of breakers which can be mounted in the circuit breaker panel is referenced in Appendix B.



Figure 6 - Circuit Breaker Panel EMD F40PH-2

3.1.3. PTC Equipment

The PTC electronic equipment still requires an accepted application design. The equipment is new and while the project remains under development no comparative installations are available. The PTC system will likely require an additional three circuit breakers. The circuit breaker panel will require some modification in order to install the any additional breakers. As shown in Figure 6 there are two slots available and additional space at lower right side of panel. The PTC electronics equipment will be mounted in an enclosure in the short nose of the locomotive on the right side. An existing toilet seat sanity cover dispenser will require relocation. Otherwise, the area is clear of any other obstructions and provides easy routing of cables and interfacing with the air brake rack located below the cab flooring. As listed in the potential equipment matrix, a printer for this application should prove to be very portable. Given the design of the F40 cab it is suggested that the printer be mounted to the wall of the equipment

enclosure or on a dedicated shelf in the nose of the locomotive. In either application, foam padding or other appropriate material will be required between the printer mounting bracket and enclosure to minimize vibration. The proposed enclosure is in the short nose as depicted in Figure 7. For all installations the PTC system will require an interface with the air system to enforce a brake application. In most cases on the 40 series there is room to add electro-pneumatic valves adjacent to existing safety control under the floor.



Figure 7 - Location of Equipment Enclosure- EMD F40PH-2

The short nose section may require tabs to be welded along the nose near floor to attach clamps for the conduit. The wiring will route up into the operator's control stand and a conduit run to the electrical cabinet.

The CDU can potentially mount below the dash adjacent to the cab heater, as shown in Figure 8. This location would not obstruct the operator's field of vision and provide for an "eyes forward" perspective. As an alternative, the CDU can also mount to the wall directly in front of the operator near the heater. The model is intended to represent the typical size of a Central Display Unit screen with soft keys included in the face.



Figure 8 - Potential CDU Locations - EMD F40PH-2

The PTC and mode switch are both shown in Figure 9 below for reference. The mode switch, if desired, can be mounted on the control stand at the operators left side. The PTC cut out is much larger and is intended to house up to three sealed switches for the PTC equipment. A model of the PTC Cut-Out switch is shown on the right side wall in the short nose.



Figure 9 - Potential Location for PTC Activation Switches - EMD F40PH-2

3.2. Cab Space (Locomotives 920 - 922)

The BLC F40PH-2C is very similar to the EMD F40PH-2. It has a new locomotive body, new wiring and rebuilt traction components and prime mover. The cab is equipped with a desktop controller with a desktop mounted brake valve. Like the EMD version, has a full width cab, and a toilet within the short hood nose. The locomotive control voltages are identical to the EMD with many interchangeable electrical components. While the cab is similar, the operator's control stand is a desktop style and spreads across the breadth of the operator's area. The circuit breaker panel is complete with identical circuit protection; however, there are no available slots within the circuit breaker cabinet. With modification the cabinet can be used and new breaker(s) installed just below the "Cab Heater" circuit breaker shown in Figure 10. Two to three dedicated circuit breakers (as required) must be installed to protect the PTC system and camera circuitry respectively.

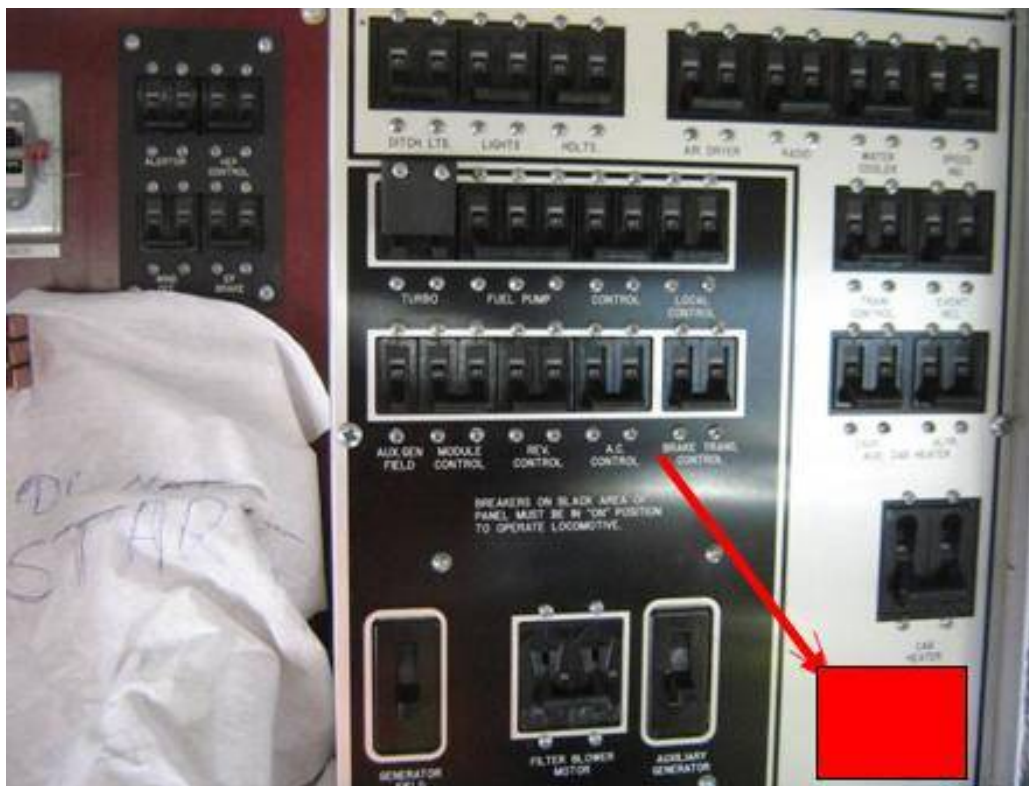


Figure 10 - Circuit Breaker Panel BLC F40PH-2C

3.2.1. AVL Equipment

The AVL equipment installation on the BLC F40PH-2C is identical to the EMD F40PH. Similarly, the installation plan was modified so the components were mounted in proximity to each other. The DC-DC

power supply and GPS receiver are shown installed on the bulkhead wall in Figure 11. The GPS antenna also shown as installed.





Figure 11 - AVL Equipment Installed

3.2.2. Forward Facing Cameras

Camera

The camera on the BLC F40PH can be mounted on the dash, consistent and identical with the EMD F40PH. The selected location must be just left of the window panel. The console dash of the engineers side becomes dual walled just forward of the control console. The wiring will require a conduit with liquid tight connectors to be run under the sub-base floor to the rear of the cab where conduit passes in or through bulkheads.

Digital Video Recorder

The DVR can be mounted at the rear of the cab in the small alcove storage area currently used for water and number placards as shown in Figure 12. The space shown below the existing rack has a useable depth of 20" without interference from the door. The existing door stop (shown within the balloon) will prevent any physical damage to the DVR from excessive force during opening of cab door. The main electrical cabinet is adjacent to left side of alcove to route the wiring from the circuit breaker.



Figure 12 - Potential DVR location BLC F40PH

3.2.3. PTC Equipment

PTC car borne electronics equipment components (excluding antennas, and CDU) will be mounted within an enclosure in the short nose and will interface to the display unit in the cab. As a requirement the operator must have a Central Display Unit (CDU) to interact and acknowledge annunciations from wayside, employee in charge and dispatching. The (CDU) can be mounted on the console of the BLC F40PH as shown in Figure 13. The CDU placement is one potential location which can utilize the cab center, which separate the two windows. The section is a location the operator has an obstructed view. As an alternative the desktop console would require modification, lowering the CDU into a more recessed mounting.



Figure 13 - Potential CDU Locations - BLC F40PH

The PTC equipment in normal operation will be "on" unless otherwise rendered inoperable while away from the initial terminal. As yet to be determined the system may require a stand alone "cut-out" switch enclosure or a simple PTC mode switch. The Cut-Out switch box would have space to mount several switches if required. The system "mode" switch can be installed on the control stand near the operator radio handset or stand alone "cut-out" switch mounted in the vestibule wall on the right side of the locomotive as shown.

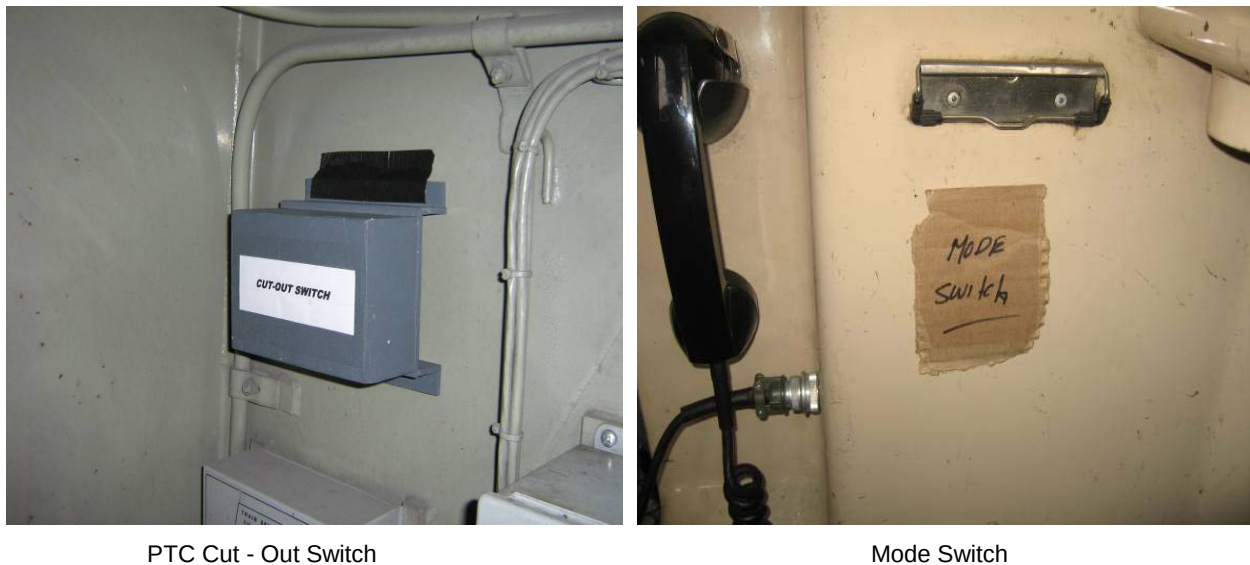


Figure 14 - PTC Settings Switches - BLC F40PH-2C

The short nose of the "F" end is selected for the equipment enclosure to house the electronics. The illustration shown is against the front nose wall of the locomotive. A fuse holder shown covered by the mock-up can be relocated. As previously mentioned a printer for this application should prove to be very portable. Given the design of the F40 cab it is suggested that the printer be mounted to the wall of the equipment enclosure or on a dedicated shelf in the nose of the locomotive. In either application, foam padding or other appropriate material will be required between the printer mounting bracket and enclosure to minimize vibration.



Figure 15 - Proposed Equipment Enclosure - BLC F40PH-2

3.3. Cab Space (Locomotives 923 - 928)

The MP36 is the most restrictive for Cab Space. The cab layout includes a desk section at engineer's and observer's work stations. The cab and short nose are more modern with more structural members to add strength for collision. The circuit breaker panel in the electrical cabinet has seven available slots to add circuit breakers for PTC and Cameras. As shown in Figure 16, there are seven slots available with removable covers and are suitable for the camera equipment circuit breakers as well as the PTC without any modification. As previously suggested, 10 to 30 amp circuit breakers are readily available.



Figure 16 - MP36 Circuit Breaker Panel

3.3.1. AVL Equipment

During the preparation of this report, a location was selected for the DC-DC power supply, GPS Antenna and Receiver. As stated in the ARINIC document based on a previous site study the power supply (DC-DC Converter) and the GPS receiver can be mounted within the #1 electrical cabinet. An installation of the Power Supply is shown mounted to the top of the cabinet in Figure 17. The GPS receiver is also mounted immediately to the right of the power supply. The power was drawn from the lighting circuit directly at the "Lighting" circuit breaker with lugged terminals. A GPS antenna mounted to the roof with antenna cable enclosed in conduit to the back of the electrical cabinet in the generator room is shown in Figure 18. The conduit is terminated at an existing junction box at the back of the electrical cabinet. Note a previous antenna installation cabling loosely draped from the top of the hatch.



Figure 17 - Installed AVL Equipment - MP36



GPS Antenna



GPS Antenna Junction Box

Figure 18 - AVL GPS Antenna Installed - MP36

3.3.2. Forward Facing Cameras

Camera

The forward facing camera should be mounted on the dash of the MP36 preferably as close to the window as possible. The MP36 dash pad (grey blanket) is captured by a metal border fixed to the dash with rivets. The blanket serves to deaden some of the noise in the cab produced by exterior sources. As shown in Figure 19, the observer's side console area allows for mounting of the camera. The top of the operator's console on the right, also visible in the photograph, should remain clear for installation of PTC equipment.



Figure 19 - MP36 Dash and Front Windshields

Digital Video Recorder

The placement of the DVR has several options, all of which may require some modification with the installation of mounting brackets. The most suitable mounting for a DVR with a standard Hard Disc Drive is horizontal in a shock free environment. The 16" x 16" x 21" space below the refrigerator is a storage area commonly used for tools. The door may require complete removal in order to install and service the DVR. The two proposed locations are shown in Figure 20. The figure shown in the right of Figure 21 is the sub-base floor with an access panel removed. Although the space under the floor is adequate, it is considered less desirable as it is subject to more dust.

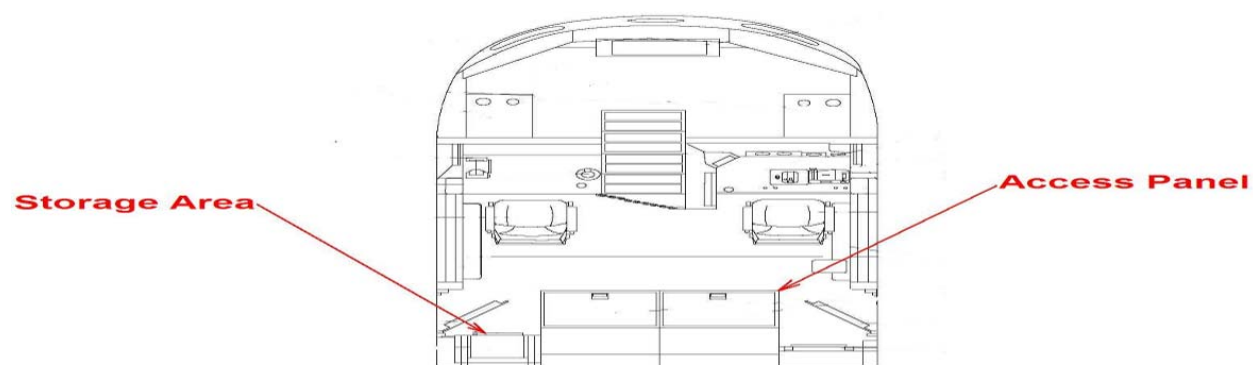


Figure 20 - MP36 Cab Layout Top View



Storage Area - Existing Cabinet



Sub Floor (Access Panel Removed)

Figure 21 - Potential DVR Installation - MP36

3.3.3. PTC Equipment

The electronics equipment enclosure can be mounted to the left side wall of the short nose. An existing air transducer will need to be relocated approximately 4" to the right. Once relocated, support strapping can be installed and stitch welded to the top and bottom areas. A mock-up of the proposed enclosure is depicted in Figure 22. The conduit can be routed up to the existing channel in the short nose to the control stand. From there it will be routed through the sub base to the electrical cabinet and up to the circuit breaker panel. Figure 21 shows the existing conduit to the control stand, similar to the routing described.

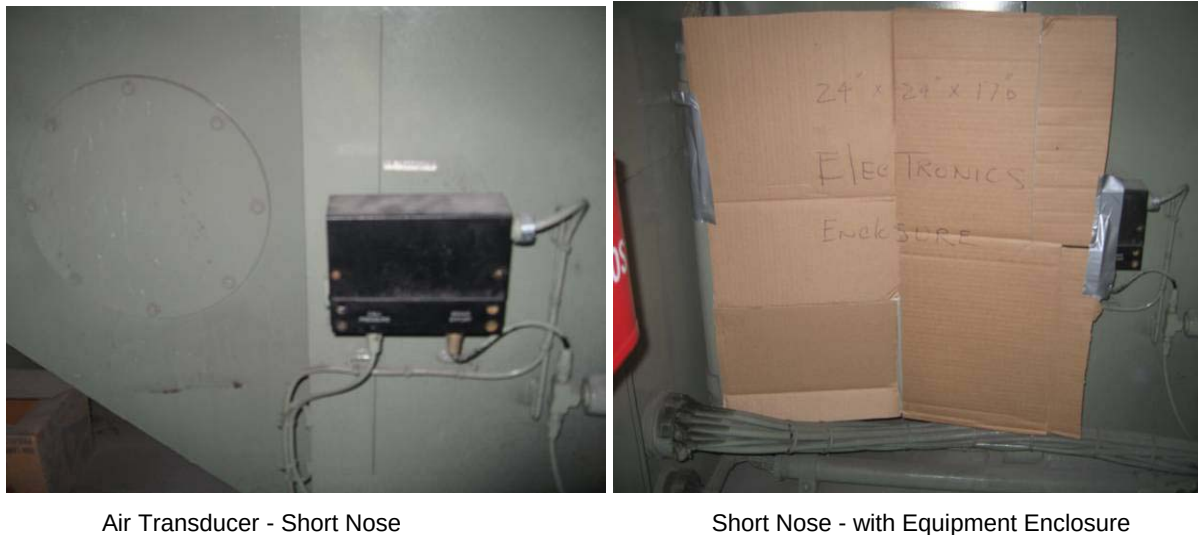
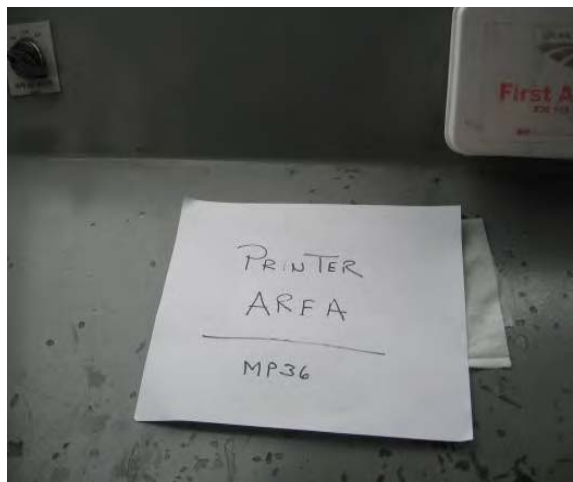


Figure 22 - Proposed Equipment Enclosure MP36

The MP36 has a desktop control stand for the operator and a work station desk top for the observer (layout visible in figure 20). The desktop design allows the installation of the CDU, which should not obstruct the operator's field of vision. The CDU mounts to a fixture on the top of the control stand the power and control harness will be routed through the control stand base and out to the short nose. The desktop console shown in Figure 23 on the observer's side is the preferred location for the thermal imaging printer. The proposed location allows easy access to the printer for the operator or observer.



Observers Work Station



Potential Location for Printer

Figure 23 - Potential Printer Location - MP36**Figure 24 - Potential CDU Location - MP36**

3.4. Cab Space (Locomotives 500 - 504)

These locomotives are exclusively used as yard switch engines and moving MOW equipment. Due to limited service of the locomotives, the forward facing cameras and the AVL equipment are not needed. The PTC equipment is required. The locomotives, switch engines built by EMD, are a GP9 and an MP15. As shown in Figure 25, each of the respective circuit breaker panels has no available slots. Additional circuit breakers can be added with modification to the panel. The MP15 cabinet is shown in the right hand figure with additional non original circuit breakers added to the side.



GP9 Circuit Breaker Panel



MP15 Circuit Breaker Panel

Figure 25 - Circuit Breaker Panels - Switch Engines

3.4.1. PTC Equipment

The GP9 remains in the original built form with a high hood short nose. The operator has a single window directly in front of the operator's space. The high hood does not afford the operator with a clear field of vision across the width cab. The CDU can potentially be mounted in the cab as shown in Figure 26. If the view out the left side of the cab of the GP9 is obscured by the display the CDU can be moved slightly to the right to the center of the control stand and over the gauges. The figure on the left shows the GP9 proposed installation. The illustration shown in the right hand is of the MP15. The vacant housing shown below the CDU model can be removed. Each of the two locomotives will have an equipment enclosure for the electronics. The GP9 cab area wall at the immediate left of the short nose access door has space to mount an enclosure. The cable will be run under the floor to the back wall and up to the circuit breaker panel. To minimize wiring runs the equipment enclosure on the MP15 should be mounted in the toilet room area. As a minimum, the toilet will require relocation approximately 5" toward the generator blower intake. With the addition of the PTC electronics the use of the toilet room will be more uncomfortable and confined.



CDU Location - GP9



CDU Location - MP 15

Figure 26 - Potential CDU Locations - GP9 and MP15

GP9 Equipment Enclosure Area

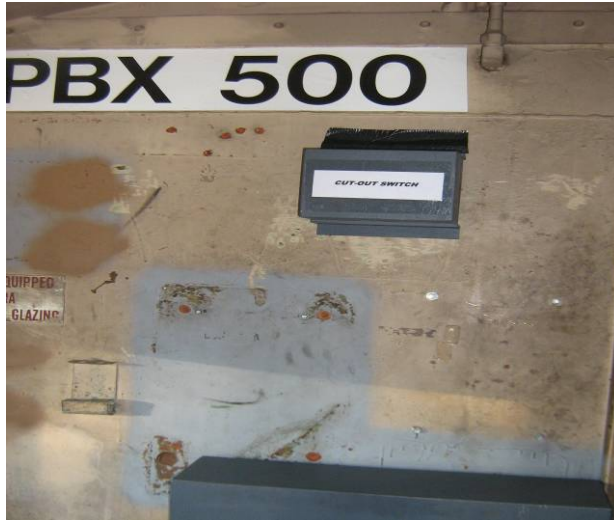


MP15 Equipment Enclosure Area

Figure 27 - Proposed PTC Electronics Equipment Enclosures - GP9 and MP15

As PTC equipment is in development, the components are becoming more defined spatially. In general the PTC equipment enclosure can be installed in the cab of the GP9 against the front bulkhead wall. The Cut Out switches on both locomotives can be mounted near the operators stand. The GP9 is shown with the switch mounted to the back wall. The switch for the MP15 is mounted to the front of the cab wall to the long hood and behind the control stand.

Thermal printers if required can mount within the cab on a dedicated shelf. A shelf is shown just below the cut out switch shown for the MP15 locomotive.



GP 9 cab Wall with cut out switch



Cut-Out Switch - MP15

Figure 28 - Proposed Cut-Out Switch Locations - GP9 and MP15

4. Cab Space (Track Inspection Car 505)

Caltrain owns a track inspection car which has an operating control stand and operates in push pull when married to locomotive. Built by Budd Railcar in 1980 it primarily transported personnel and equipment to survey and inspect track over great distances. Originally the car was self propelled. The propulsion equipment has since been removed. The car has a retrofitted operational control stand for trainline control of a locomotive. The car is also equipped with a diesel generator, water systems and appliances to provide a self equipped vehicle to travel long distances. The car has seating for up to four or more persons in the forward area.



Figure 29 - JPBX 505 - Track Inspection Car

In a typical operating scenario the inspection car will be connected to a locomotive and operate as a lead control in one direction. The car is used a minimum of four times a year and is currently not included in the PTCIP. An industry standard may prevail and as such may not require PTC on this test equipment. Due to the limited duty, the car should be scheduled in the latter stages of implementation. It may be a decision Caltrain can make at a later date during the progress report of the PTCIP as to a status of equipping PTC in vehicles with limited service. As an alternative, the track car could be married between two locomotives and not used as the controlling end. In that operating scenario the car would not be required to be equipped with the PTC electronics. However, it may be less useful as an observation car. In order to remain consistent this report included the track inspection car and a brief analysis for PTC equipment.

As the car is currently equipped with lockers, racks, and tool cabinets, provisions can be easily made to use an existing cabinet. As a recommendation, the PTC electronics equipment can be installed in an equipment locker at mid car. The location currently has a locker installed is used for storage of office

supplies. Directly across from the proposed enclosure is a circuit breaker panel. New conduit can be run under the floor beams from the control stand to the mid car locker. Interface for the PTC with the brake valve is within the operators control stand.



Figure 30 - Potential CDU Location - T-10 Car

This particular car may require a special package for the power supply. The car has a stand alone generator set. It has a 480 V output which is also split and used for a 120 supply. In all other cars the supply DC is 74 V in the locomotive or the Low Voltage Power Supply in the cars.

5. Cab Cars

The fleet of Cab Cars currently is scheduled for installation of PTC car borne equipment. Caltrain operates two types of car sets. A Gallery style car passenger car built by Nippon Sharyo and a Bi-Level built by Bombardier. The Bombardier cab car is significantly easier to mount new equipment. Cab space, although more confined, is available for a dome mounted camera and PTC equipment in an adjacent locker.

5.1. Gallery Cars (Cab Cars 4000 -4026)

Gallery style cab cars were delivered in two separate build dates, 1985 and 2000. There are differences between the two cab cars in the control stand along with some more modern features. A distinct complication is the use of the existing circuit breaker cabinet. Located on the lower level, the electrical lockers contain the circuit breakers for the cab equipment. As shown in Figure 31, the electrical lockers of the two cab cars are similar; however there is only a single slot available in the older style (road numbers 4000-4020) as indicated by the pointer. The newer cars, while similar in electrical locker layout, do not have any free breaker space. A new panel can be fabricated which allows a new circuit breaker to be installed on the rail. There may be several spares wires within the conduit of the Cab in which pull wires may exist, however, the conduit from the B-R locker is full. The wire must be run within the conduit from mid car floor from the DC Buss up to the Cab. The Camera system could use existing DC power to the cab ceiling lights on the conductor's side. There is an approximately 3 amp load for lighting, which currently uses a 10 amp circuit breaker for protection of the wiring to the lighting. The duty cycle of the lighting on the observer's side is very limited since light would be normally not in use. There are no event recorders installed in the Gallery Cab Cars. As a requirement to record safety critical information, all will need event recorders as a component of the PTC.



Breaker Panel (Cars 4000-4020)



Breaker Panel (Cars 4021-4026)

Figure 31 - Nippon Sharyo Cab Car Breaker Panels

5.1.1. PTC Equipment

Available space in the cab area of a gallery cab car is at a premium, therefore it is suggested that a storage container is manufactured. The storage container, complete with lockable door will be accessed only by Caltrain Staff. The Gallery cars are all similar behind the operator's cabin and should have the storage container mount on the handrail/support structure below the luggage storage area, located directly behind the cab back wall. This location will accommodate the anticipated 24" x 24" x 17" enclosure and provide direct access to the cab for the required interfaces. A mock-up of the enclosure is depicted in Figure 32. The illustrations shown are representative of cars 4000 - 4020 which have handrails. The newer cars (4021 - 4026) can have a similar lockable storage container built on the existing luggage rack.



Figure 32 - Proposed PTC Electronics Equipment - Gallery Cars

Similar to proposed locations for the locomotive, the CDU the preferred location is in a direct line of sight for the operator and is easily accessible. The most suitable location for Cab Cars 4000-4026 is directly in place or above the existing speedometer as shown in Figure 33. The speedometer in Cab Cars 4000-4026 could be retrofitted with a smaller replacement model. In order to maintain consistency, it is preferred to have all installations located in same manner.



Cab Cars (4000-4026)

Figure 33 - Potential CDU Placement - Gallery Style Cab Cars

For simplicity, only the PTC Cut-Out switch is shown in Figure 34. The Cut-Out switch is larger due to the intended mounting enclosure with three sealed switches. Each are mounted adjacent to or on the back wall which separates the cab from the intended PTC equipment enclosure. The mode switch if required can be easily mounted on the control stands of each Cab Car.



PTC Cut - Out Switch Cab Cars (Cars 4000-4020)



PTC Cut-Out switch Cab Cars (4021-4026)

Figure 34 - Proposed PTC Cut-Out Switch - Gallery Style Cab Cars

5.1.2. Forward Facing Cameras

Camera Installation in the gallery cab cars will require no modification. The camera can be mounted on the observer's side. The DVR, in a locked enclosure, can be mounted on the floor or in the luggage area near the PTC electronic enclosure. The lack of a central circuit breaker cabinet and adequate DC power will require either a new segment of wiring brought up to the cab or use of an existing ceiling light circuit. The gallery cars use a 74 V DC supply for the overhead ceiling lights. The supply is on a dedicated circuit breaker with a separate switch control for the operator's side and observer's side respectively. Due to the relative lack of use of the observer's side lighting the duty cycle would be limited. As a recommendation the lighting supply and return wiring to the cab light switch on the **Observer's side** should be located and used. In the example shown in Figure 35, the pointer is directed at terminals 65 and 66 of the 80P terminal boards located in the Cab Car. The specific terminals located with the pointer are for the ceiling lights. A single leg (wire labeled 51-4) will go directly to the ceiling light switch. The return comes back through wire 94 which is the adjacent terminal #66. The entire circuit is protected by a 10 Amp circuit breaker located in the B-L locker.

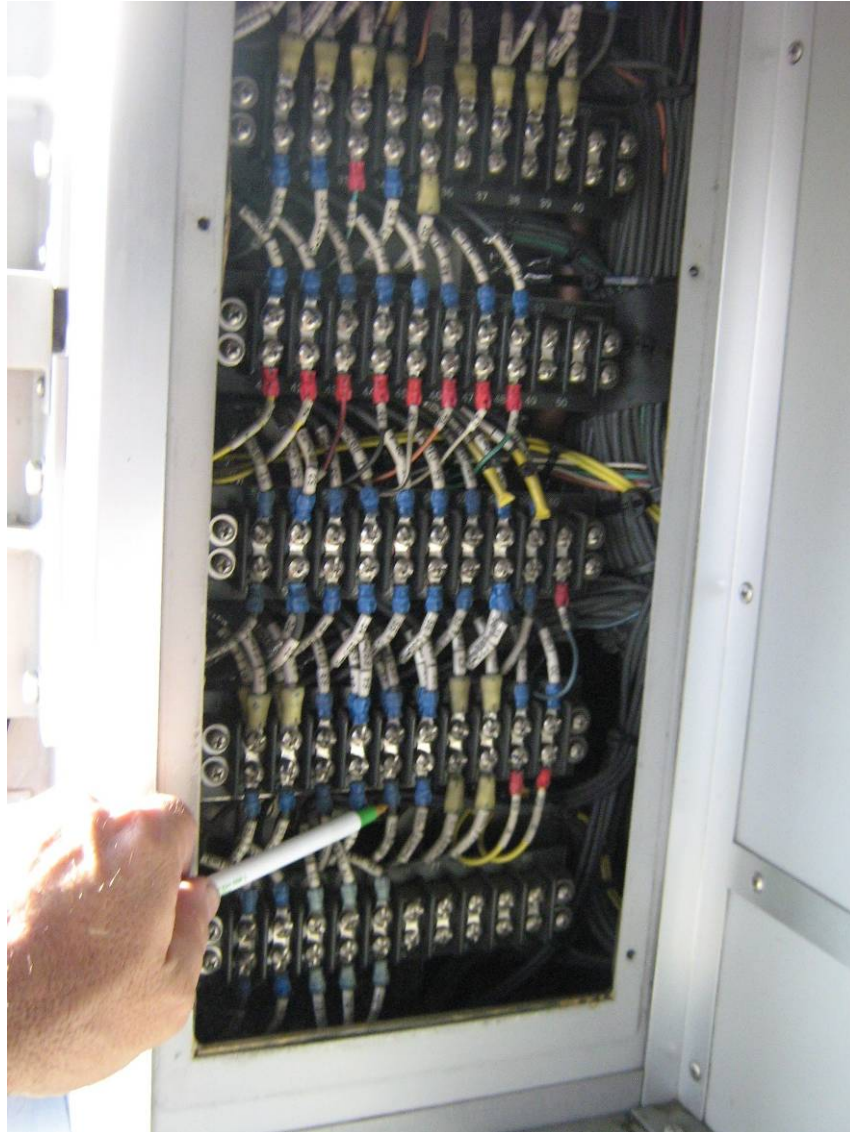


Figure 35 - 80P Terminal Boards - Gallery Cabs

5.2. Bombardier Bi-Level (Cab Cars 112-120)

The Bombardier bi-level cab is equipped with a small single occupant operator's cabin and is also equipped with a locker immediately behind the operator's cab. The locker can be easily accessed for installation of DVR equipment and the PTC enclosure. The circuit breaker panel has two available slots for dual pole circuit breakers, as shown in Figure 36, which can accommodate standard off the shelf circuit breakers rated up to 20 amp ratings (See Appendix B). The circuit breaker panel is in the operator's compartment and is easily accessible from the equipment locker. The additional PTC electronics will require two or more dedicated breakers.

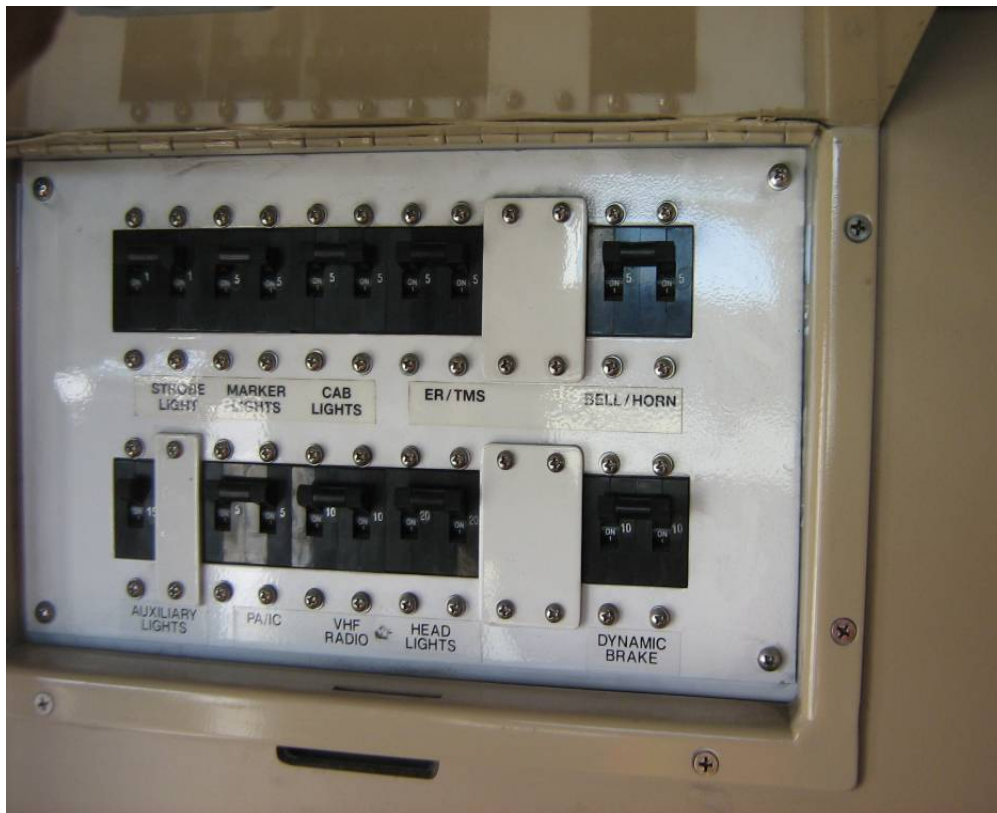


Figure 36 - Circuit Breaker Panel - Bombardier Cab Cars

5.2.1. Forward Facing Cameras

The first installations of forward facing cameras on Cab Cars are planned for Bombardier Bi-Levels. Although the left side of the operators console appears ideal, it is adjacent the cab side wall panel. The cab side wall panel has switches and lights and will potentially have a Central Display Unit mounted as shown in Figures 37 and 40. The panel is hinged and opens toward the front console. If a camera mounted to the dash were used the camera would impede the opening and free movement of the panel for servicing. In addition a camera on the dash may be an obstruction for operator. Above the operator

on the interior ceiling of the cab may be suitable for a dome camera. If mounted at far right side shown in Figure 38 the installation may not require provisions for quick removal. The CDU while intended to be recessed will extend outward from the side panel slightly.



Figure 37 - Cab Console - Bombardier Bi-Level

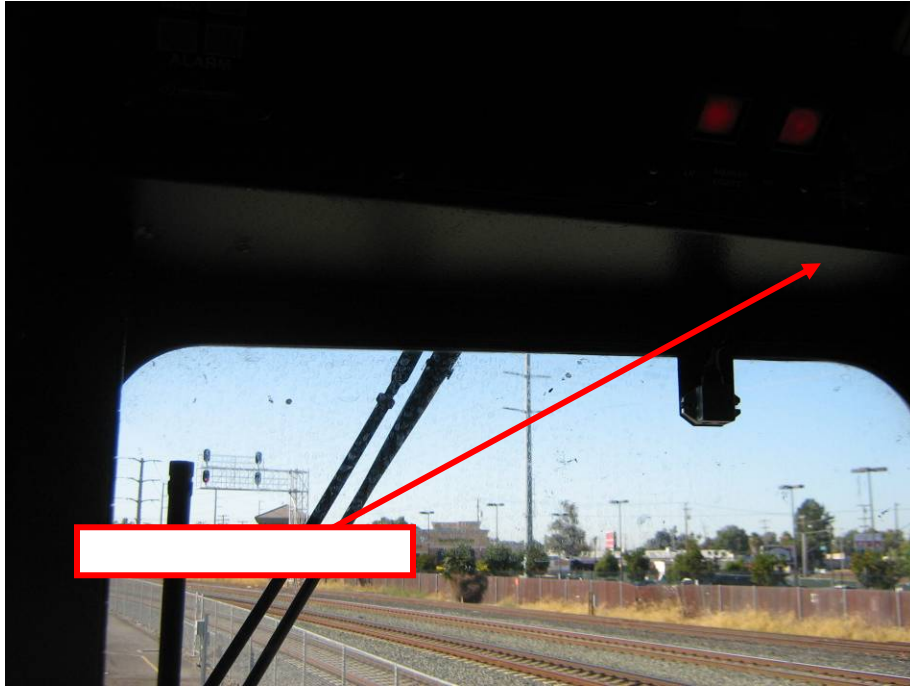


Figure 38 - Potential Location for Dome Camera

5.2.2. PTC Equipment

The PTC system in cab cars will have equipment identical to the locomotives. The equipment locker discussed in section 5.2 is shown in Figure 39. Located directly behind the operator's cab, the area is suited for installation of the electronics equipment enclosure. It also provides for direct access to the cab and various other interfaces.



Figure 39 - Equipment Locker - Bombardier Cab Car

The operator's compartment contains the control switches for train operation. The vital nature of the CDU will require placement in the cab in sight and reach of the operator. The proposed location of the CDU is on the left side wall panel as shown in Figure 40. A communications instructional placard will need to be relocated. Additionally, the operator will need to cut out the PTC with a mode switch or separate "Cut-Out" switch in the cab. In order to minimize wiring a switch could be located below the paper towel dispenser in the cab.



Side Wall Placard to Remove



CDU Mock-Up

Figure 40 - CDU Proposed Location - Bombardier Cab Cars

6. Conclusions

The greatest challenge in implementing the three projects described in this report will be installation of PTC electronic equipment. It will likely require space for convective cooling, access for maintenance, and room for expansion. The most important factor is the mandated date of the PTC equipment installations. The system is required to be installed and active by December 31, 2015. The AVL system and forward facing camera projects are underway in advance of any PTC proposals. Advanced planning, proven with this report will prevent displacement of cab appliances and overloading of electrical circuits. All of the projects will require reference to the recommendations provided in this report which will greatly aid the completion and ease of new circuit installation. Table 3 summarizes each installation.

Table 3 - Cab Equipment Summary

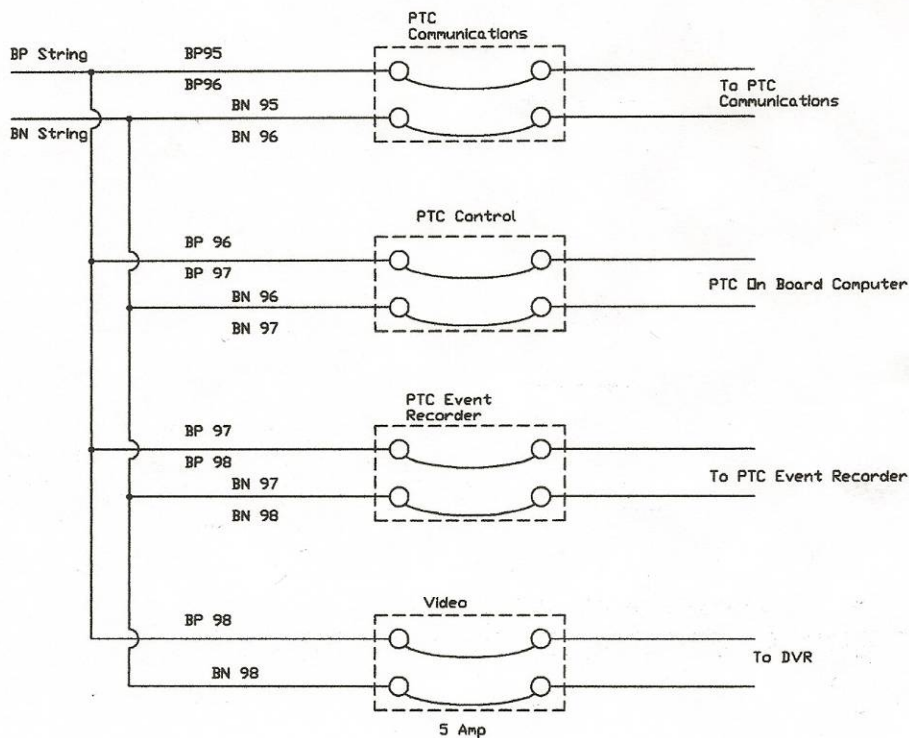
Vehicle	AVL	Camera	PTC
F40PH EMD	Current installation plan is acceptable.	Camera mounted on dash, DVR in short hood storage area, circuit breaker slot available.	CDU above control stand, electronic enclosure in short hood, circuit breaker slots available.
F40PH BLC	Current installation plan is acceptable.	Camera mounted on dash, DVR in placard storage area, circuit breaker slot must be cut into panel.	CDU on top of console, electronic enclosure in short hood, circuit breaker slot must be cut into panel.
MP36	Current installation plan is acceptable.	Camera mounted on dash, DVR in tool storage area, circuit breaker slot available.	CDU on top of console, electronic enclosure in short hood, circuit breaker slots available.
Switch Engines	NA	NA	CDU mounted above control stand, electronic enclosure on cab front wall or toilet room, circuit breaker slots must be cut into panel.
Track Inspection Car	NA	NA	If PTC required - CDU mounted over radio. Electronic Enclosure mounted mid car interior right side wall
Gallery – Older	NA	Camera mounted in observer's area, DVR in luggage area, use existing ceiling lighting circuit to provide power circuit	CDU above speed indicator (must be replaced), electronic enclosure in luggage area, breaker slot available.
Gallery – Newer	NA	Camera mounted in observer's area, DVR in luggage area, use existing ceiling lighting to provide power for circuit.	CDU above speed indicator (must be replaced), electronic enclosure in luggage area, breaker slot must be cut into panel.
Bi-level – Older	NA	Camera cannot be mounted with pedestal, DVR in equipment locker, breaker slot available.	CDU replaced COMM placard, electronic enclosure in equipment locker, breaker slots available. Will require more circuit breakers in a new panel.
Bi-level - Newer	NA	Same as older cab	Same as older cab

Appendix A - Electrical Diagrams

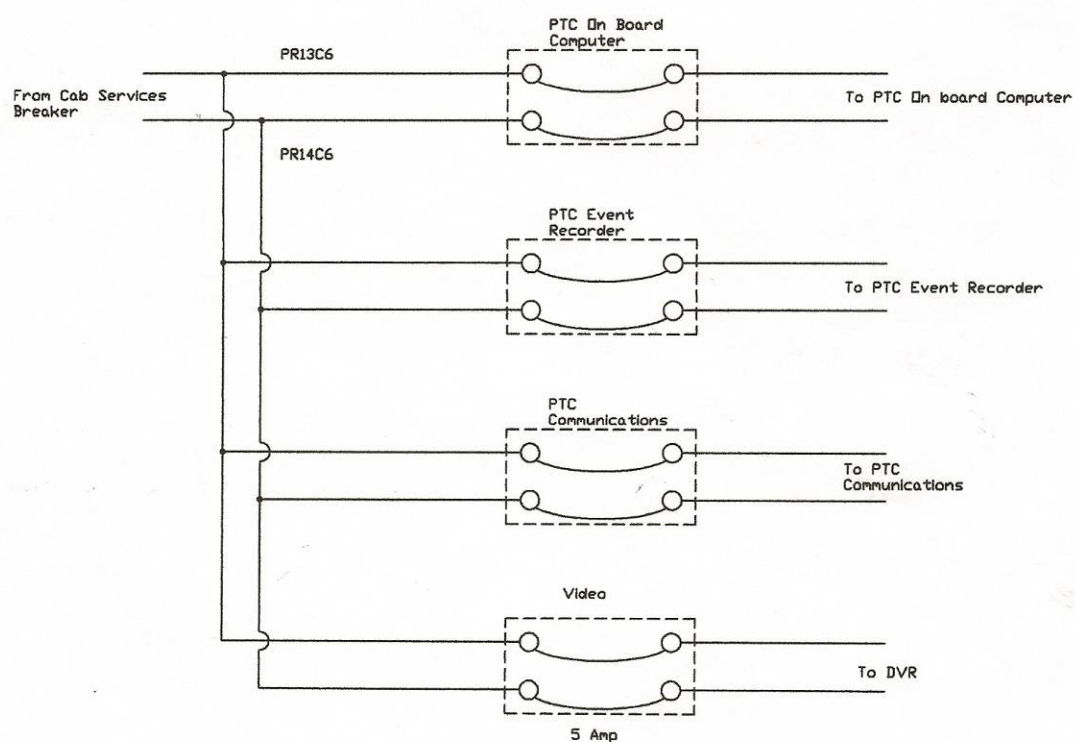
Recommended Circuit Breaker Additions

All Locomotives: Wiring as labeled

Note: BP95 & BN95 (8) Gauge Wiring

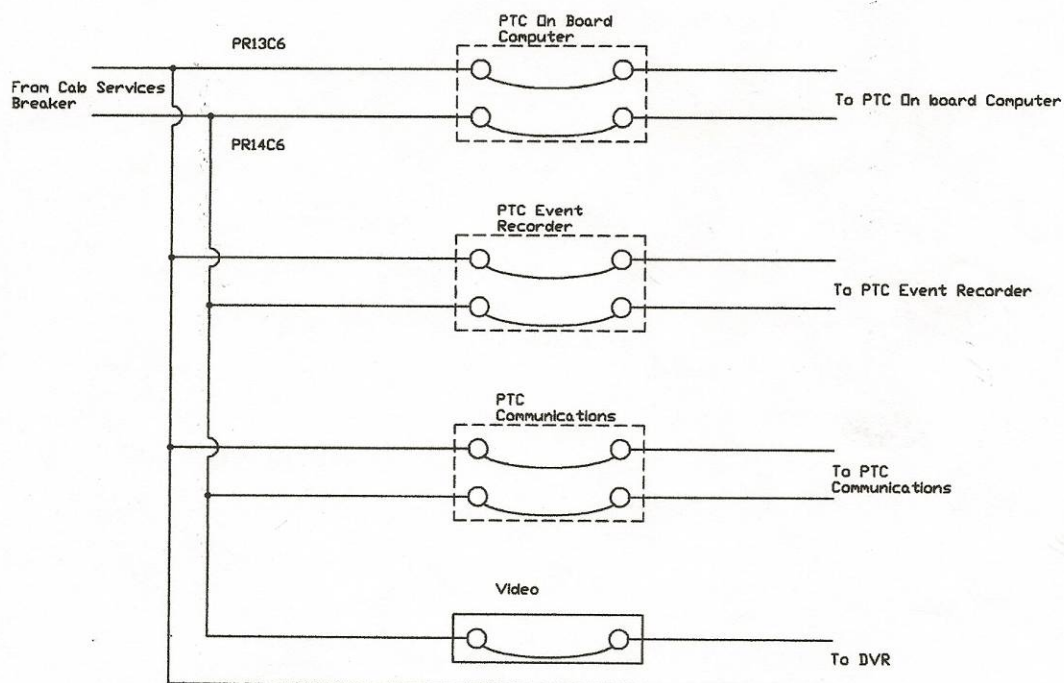


Recommended Circuit Breaker Additions All Bombardier Cars



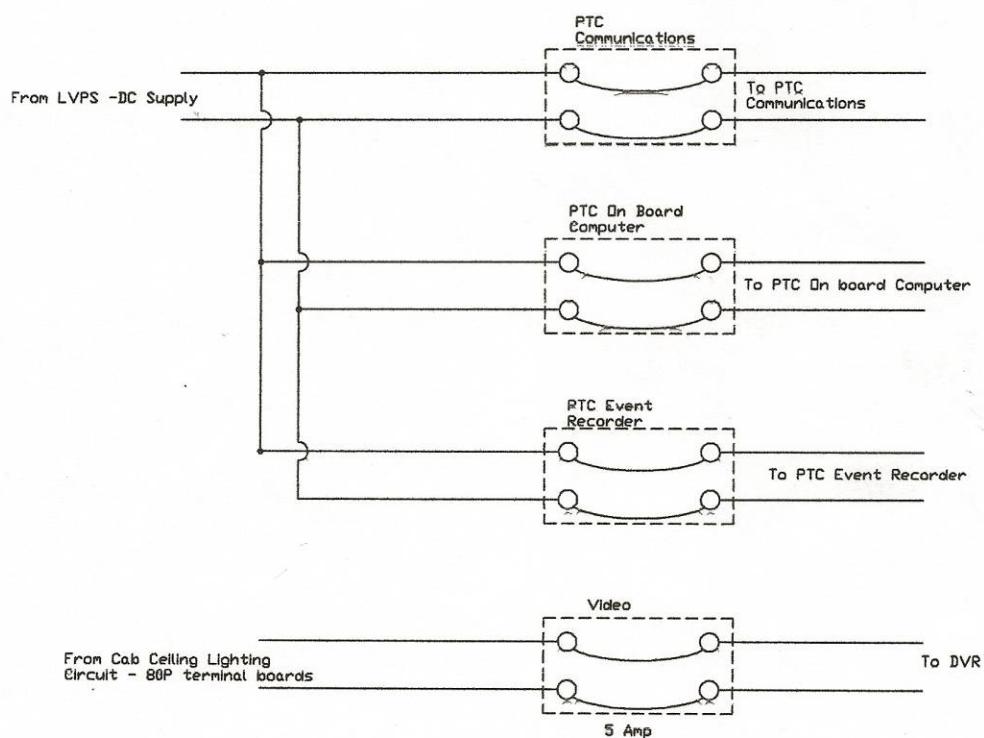
Recommended Circuit Breaker Additions All Bombardier Cars

Option: Use of Single Pole Protection
on Video Equipment



Recommended Circuit Breaker Additions

All Nippon Sharyo Cars



Appendix B - Common Circuit Breakers

Circuit Breakers - Reference

Locomotives - All

EMD P/N	Rating	Description
8458735	3 Amp 74VDC	Dual Pole
9322826	10 Amp - 74VDC	Dual Pole
8458739	15 Amp - 74VDC	Dual Pole
8458724	30 Amp - 74VDC	Dual Pole

Bombardier Cab Cars

Bombardier P/N	Rating	Description
83032482S	5 Amp - 80VDC	Dual Pole
83032484S	10 Amp - 80VDC	Dual Pole
83032498S	15 Amp - 80VDC	Dual Pole
83030040S	20 Amp - 80VDC	Dual Pole

Nippon Sharyo Gallery Style Cab Cars

Westinghouse P/N	Rating	Description
EB2005	5 Amp - 240 VAC	Dual Pole
QC2010	10 Amp - 240 VAC	Dual Pole
EHD1015	15 Amp -277 VAC	Single Pole
EHD2020	20 Amp - 240 Vac	Dual Pole
EHB2060	60 Amp - V	Dual Pole
Q2025T	25 Amp - 120/240 VAC	Dual Pole

Appendix C - Typical PTC Components



PTC - On Board Computer



Typical Central Display Unit (CDU)



Typical PTC Radio Interface and Control Unit



Typical PTC GPS Interface and Control Unit



Typical GPS Antenna



Typical 220 MHz Low Band Antenna



Typical 802.11 - 900 Mhz High Band Antenna



Typical end of Axle Mounted Axle Drives (speed sensor)

EXHIBIT 3

DRVS ON TRAINS RAILROAD VEHICLE WORKMANSHIP AND MATERIALS SPECIFICATIONS

Attached as Exhibit 3: Cover, TOC, Specifications (15 pages)



DVRS ON TRAINS

RAILROAD VEHICLE WORKMANSHIP AND MATERIALS SPECIFICATIONS

**Final Draft
March 3, 2011**

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SECTION ONE - GENERAL

1. OBJECT

- 1.1. Peninsula Corridor Joint Powers Board (JPB) requires that work performed on its railroad vehicles to be done in a manner that assures a high level of reliable performance, ease of maintainability with low lifecycle cost. The Contractor shall conform to applicable standards, APTA guidelines and these specifications in designing and implementing its application of Cameras On Trains equipment to Caltrain's fleet of railroad vehicles.

2. GENERAL

- 2.1. The various types of railroad vehicle rolling stock used by Caltrain are identified in the Contract Scope of Work and further described in Part X, Exhibit X of the RFP package. The requirements provided by this specification are applicable to all of the identified vehicle types.
- 2.2. All locomotive work shall be performed at a Caltrain facility that will be in accordance with schedule determined by Caltrain. The Contractor shall plan work to minimize transportation and travel charges.
- 2.3. The Contractor shall clean and inspect for correct operation all components in the cabinets and areas of the train where it will be performing work to implement Cameras on Trains equipment on the vehicles, as agreed with Caltrain/JPB.
- 2.4. The Contractor shall be responsible for the disposal and/or disposition of any equipment permanently removed from the locomotives and cabcars. The Contractor shall submit a Materials Disposal/Disposition plan to Caltrain/JPB for approval. The Contractor shall bear all disposal fees.
- 2.5. The Contractor shall supply updates to Caltrain documentation which shall include, but are not be limited to, the operating manual, maintenance manuals, parts catalog, schematics, drawings, and piping diagrams, if different from the original design.

3. INSTALLATION

- 3.1. All installation work shall be performed in accordance with the requirements of the Workmanship, Process, Materials, and applicable standards and the APTA guidelines.

4. CARBODY REPAIRS

- 4.1. Any damage to carbody panels and/or hatches caused by the Contractor at any time during the removal, replacement, and testing of the Cameras on Trains equipment until acceptance by Caltrain/JPB, shall be the responsibility of the Contractor to repair, replace, and/or repaint as required.

5. ABBREVIATIONS USED IN THE SPECIFICATION

AAR	Association of American Railroads
AISI	American Iron and Steel Institute
ANSI	American National Standards Institute
APTA	American Public Transportation Association
ASA	American Standards Association
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing Materials
AWS	American Welding Society
EPA	Environmental Protection Agency
FRA	Federal Railway Administration
LDVR	Locomotive Digital Video Recorder
IEEE	Institute of Electrical and Electronics Engineers
IFI	Industrial Fasteners Institute
LAHT	Low Alloy High Tensile
MIL-STD	Military Standard
NECS	National Electrical Code Standard
NFPA	National Fire Protection Association
OEM	Original Equipment Manufacture
SAE	Society of Automotive Engineers

END OF SECTION ONE

SECTION TWO -WORKMANSHIP, PROCESS, MATERIALS, AND STANDARDS

1. GENERAL

1.1. Quality

- 1.1.1. All materials used in the manufacture and construction of the new Cameras On Trains equipment shall be generally accepted in the industry and conform to the requirements of this specification.
- 1.1.2. All workmanship shall conform to the best manufacturing practices in all respects.
- 1.1.3. This section shall be applicable to all new work applied to or installed on the locomotive whether furnished by the Contractor or by any of its suppliers. Replacement of parts in kind from OEM or other authorized suppliers with ISO 9000 certification is deemed to be in compliance with this section.
- 1.1.4. Accordingly, all of the requirements of this Section shall apply to the internal design and construction of equipment furnished by suppliers.
- 1.1.5. Materials or equipment substitutions proposed by the Contractor shall be secured by written approval of Caltrain prior to making the substitution.

1.2. Standard

- 1.2.1. Unless otherwise specified, all materials shall conform to AAR, APTA, ANSI, ASME, AISI, FRA, IEEE and/or ASTM Specifications.
- 1.2.2. Threaded fastenings and other standard machine elements shall conform to ANSI standards.
- 1.2.3. Metric threads shall not be used without written Caltrain approval for each specific application.
- 1.2.4. Inclusion of a material or method in this Section does not indicate approval for application or use in a specific situation. When a material or method is specified in this Section, this Section shall be applicable. However, specific requirements detailed in appropriate Technical Specifications take precedence over this Section.

1.3. Marking

- 1.3.1. All new materials intended for use in the application of Cameras On Trains equipment to Caltrain's railroad vehicles shall be marked or stored so as to be readily identified, and shall be adequately protected during handling and storage.
- 1.3.2. Rejected material shall be clearly marked and stored in an area specifically designed for that purpose. Rejected material shall remain "unavailable for use" until documented disposition is approved by Caltrain.

2. JOINTING AND FASTENINGS

2.1. General

- 2.1.1. Certain combinations of materials shall require particular care in joining to avoid the possibility of dissimilar corrosion materials.
- 2.1.2. Extreme care shall be exercised in joining materials or components to ensure that the finished product is free from rattles and objectionable noises.

2.2. Fastenings

- 2.2.1. All new fasteners must meet the requirements of 15 CFR Part 280, Fastener Quality.
- 2.2.2. No protruding screws, mounting bolts or similar items shall be permitted on the cameras, LDVRs, and microphones, other than those appointments, which can be built into the structure in no other manner.
- 2.2.3. All exposed flat, pan, or oval head screws shall be stainless steel, unless otherwise specified, and shall be of the cross-recessed type.
- 2.2.4. At least 1½ screw threads shall be visible beyond all nuts. When used without elastic stop nuts, bolts shall not project more than 1½ threads plus ¼ inch (6 mm) for bolts ¼ inch (6 mm) diameter or less and shall not project more than eight (8) threads for larger diameter bolts. With elastic stop nuts, bolt threads shall not project more than ¼ inch (6.4mm), regardless of bolt size.
- 2.2.5. Screws, bolts and nuts shall conform to ANSI and shall be zinc plated or approved equivalent, unless otherwise specified. Cadmium plating is prohibited.
- 2.2.6. Self-locking nuts shall be used throughout where practical.
- 2.2.7. Self-tapping screws shall not be used in the areas requiring dismantling for servicing.
- 2.2.8. When bolts are used to secure apparatus and the bolt head is inaccessible, a mechanical locking device shall be used to prevent the bolt head from turning when the nut is being applied or removed.
- 2.2.9. When nuts are inaccessible, a mechanical locking device shall be used or the nuts may be carefully welded in place.
- 2.2.10. Where rows of inaccessible bolt fastenings are required, a tapped stainless steel plate with a minimum thickness of 0.375 inches (10 mm) shall be welded to the supporting structure.
- 2.2.11. All holes shall be drilled using the minimum practical hole size compatible with fastener employed.

2.3. Torque Specs

- 2.3.1. All safety related fasteners, including all fasteners exposed to fatigue loads shall be torqued to a minimum preload equal to seventy-five (75) percent of

their proof load and "torque striped" by paint or other approved method after being torqued. All other fasteners shall be torqued so that they do not loosen in service.

- 2.3.2. Fastener installation torque for standard bolts with standard or heavy hex nuts may be calculated from IFI Fastener Standards, 5th Edition, 1970 equations using torque coefficient ("K") values of 0.18 for unplated, oiled, or waxed threads and 0.15 for plated threads that are also waxed or oiled. Locknuts shall be torqued in accordance with their manufacturer's recommendations or the Contractor may conduct tests to determine installation torque. For special nuts or bolts requiring "torque striping", bolt torque-tension tests may be required to verify that the installed preload is equivalent to seventy-five (75) percent of the proof loads.

2.4. Plating

- 2.4.1. Zinc plating conforming to the latest revision of ASTM Specification A165, Type NS, shall be required on fasteners not exposed to view.
- 2.4.2. Cadmium plating is prohibited.

2.5. Cleaning

- 2.5.1. Where metal is welded, riveted, or bolted to metal in the locomotive structure, contact surfaces shall be free of dirt, grease, rust, and scale and shall be coated, except for stainless steel parts, with a suitable metal base primer which will not interfere with later enamel or lacquer paint applications.

2.6. Coating

- 2.6.1. When refurbishment, modification and/or replacement results in exposed surfaces of uncoated metal except for stainless steel, it shall be given one (1) heavy coat of an approved base primer and one (1) coat of an approved sealer.

2.7. Sealant

- 2.7.1. Unless otherwise recommended by the sealant manufacturer, a single general purpose sealing compound shall be used.
- 2.7.2. The sealant shall have superior metal adhesive properties over which the specified paints can be successfully applied.

3. STAINLESS STEEL

3.1. Type

- 3.1.1. This Specification covers AISI Types 201, 202, 301, 302, 304, 430 and Allegheny Ludlum Type 363 stainless steels.
- 3.1.2. Only low carbon stainless steel shall be used for major structural fabrications and other highly stressed components.
- 3.1.3. Certifications by the stainless steel supplier and its application by the Contractor (or fabricator) shall be required.

3.2. Physical Properties

- 3.2.1. It shall be the responsibility of the Contractor to ensure that all material for each use shall be of uniform strength and quality in accordance with AISI Standards.

3.3. Gauge Tolerance

- 3.3.1. Standard industrial tolerances or better shall be acceptable in material coils and sheets.

3.4. Buffing and Polishing

- 3.4.1. Buffing and polishing of stainless steel, where required, shall be done in an approved manner and without the use of any composition containing iron or iron oxide.

3.5. Finish

- 3.5.1. Stainless steel in locations to be painted shall be given a #36 grit finish using a belt sander or similar tool.
- 3.5.2. Stainless steel in locations to be unpainted shall be arranged with a brush finish.
- 3.5.3. Unpainted stainless steel frames, boxes, and other assemblies shall be constructed from No. 1 or No. 2 matte finish sheets.

4. LOW ALLOY HIGH TENSILE STEEL

4.1. General

- 4.1.1. Low-alloy high-tensile (LAHT) steel shall be a nickel-containing low alloy, corrosion-resistant steel with a high tensile strength.
- 4.1.2. LAHT steel shall conform to ASTM Specification A-242, and shall have a smooth surface free from pitting.

4.2. Manufacture

- 4.2.1. Cor-Ten, furnished by United States Steel Corporation; Mayari R., as manufactured by the Bethlehem Steel Company; Yoloy, as manufactured by the Youngstown Sheet and Tube Company; Armco HT50, as manufactured by the Armco Corporation; Republic 65, as manufactured by Republic Steel Corporation; or accepted equal, shall be acceptable for such applications, except where a particular low-alloy high-tensile steel is called for in this Specification.

5. STEEL CASTINGS

5.1. Quality

- 5.1.1. All new castings, unless otherwise specified, shall meet the requirements of AAR Specification M-201 Grade B.
- 5.1.2. Steel castings shall be sound throughout within Specification requirements and/or for the purpose intended.
- 5.1.3. The Manufacturer shall prove his manufacturing procedure by either destructive or non-destructive means.
- 5.1.4. Following the establishment of a satisfactory test procedure, quality control shall be maintained by testing one or more of each lot at a frequency mutual acceptable to the Engineer, the Contractor, and the foundry. The test frequency shall be influenced by the critical requirements of the part.
- 5.1.5. If new castings are found to be porous or otherwise unsound, the castings shall be destroyed and replacements shall be provided at no cost to Caltrain.

5.2. Heat Treating

- 5.2.1. All new steel castings shall be made of heat-treated electric furnace or controlled open-hearth steel.
- 5.2.2. Where physical strength is gained by heat-treating, a physical test shall be conducted on each treating charge, of each heat of castings.
- 5.2.3. Where more than one (1) heat is represented in a treating charge, a physical test shall be conducted on each heat represented in each treating charge.

5.3. Castings

- 5.3.1. Steel castings used in locations not referred to herein shall be selected for composition and characteristics best suited to the application, by the Manufacturer or Contractor concerned, but shall be subject to review by the Caltrain.

5.4. Magnetic Particle Inspection

- 5.4.1. Magnetic particle inspections of all surfaces of each casting to be conducted in accordance with ASTM E personnel certified to MIL-STD-410. With respect to structural castings, the maximum permissible magnetic particle indication shall be one-quarter ($\frac{1}{4}$) inch in the direction transverse to the usual direction of loading, and three-quarter ($\frac{3}{4}$) inch in the direction parallel to the usual direction of loading.

5.5. Radiographic Inspection

- 5.5.1. Radiographic inspection shall be conducted in accordance with the requirements of standard ASTM E 94 using reference radiograph to ASTM E 446. A sampling frequency shall be proposed by the Contractor and submitted for Engineer approval. Structural castings shall not exceed severity level three

(3) of ASTM E 446 in all critical areas of such castings and shall not exceed level five (5) in all other areas of the castings.

5.6. Welding

5.6.1. Welding required on castings is permitted provided the Contractor performs all weld repairs in accordance with an approved written procedure and uses AWS certified welders or welders qualified to ASTM A 488.

5.6.2. Prior to receiving approval, the supplier shall provide certified results for Weld Procedure Qualifications, Personnel Qualifications, and Materials and Equipment Qualifications.

6. ELASTOMERS

6.1. General

6.1.1. All elastomeric parts specified herein shall be of neoprene so compounded and cured that it will perform satisfactorily in locomotive operation at any temperature between -40°F and 120°F (-40°C and 48.9°C) and shall have the longest possible commercial life consistent with the characteristics specified.

6.2. Metal Parts

6.2.1. Unless otherwise specifically provided or agreed upon between the Contractor and Caltrain, metal parts to which neoprene is cured shall be made of SAE 1020 hot rolled steel and shall be suitable for brass plating after pickling.

6.3. Substitute Materials

6.3.1. Alternative materials will be considered provided the Contractor demonstrates to Caltrain that the alternative material shall provide equal or better performance than the specified material.

7. PIPING

7.1. Threaded Connections

7.1.1. The use of sealing tape (plumber's tape, Teflon tape, etc.) is forbidden in threaded pipe connections.

8. WIRE AND CABLE

8.1. General

8.1.1. All conductors shall be soft annealed copper tinned and stranded per AAR Specification S502 (former No. 589), and jacketed with cross-linked polyethylene (Flammanol XL), radiation cross linked polyolefin (Exane) or Caltrain approved equal and shall have properties and characteristics as specified in AAR Specification S501.

8.2. Heater Connections

8.2.1. Only high temperature insulated wire shall be used for interconnection of heater elements and units.

8.2.2. Heater connections shall be of silicone insulated wire conforming to AAR Standard S-503.

8.3. Resistor Connections

8.3.1. Wire shall be silicone insulated conforming to AAR Standard S-503.

8.4. Aluminum Wire and Cable

8.4.1. The use of aluminum wire and/or cable shall be prohibited.

9. WIRING

9.1. Application and Installation of wire:

9.1.1. All wiring shall be performed by or under the direction of experienced wiremen.

9.1.2. Wiremen shall be provided with appropriate tools for skinning insulation, cutting, tinning, soldering, and attaching mechanical or compression type terminals to the conductors.

9.1.3. Care must be taken in removing insulation from the conductor to avoid nicking of the wire or strands of the conductor cable.

9.1.4. Wire in ducts and conduit shall be free of kinks, insulation abrasions and insulation skinning.

9.1.5. Locomotive wiring methods and materials shall be in accordance with Chapter 3 of the NFPA Publication NFPA No. 70 (NECS) current issue, except where otherwise required by the Specification, or where approved by Caltrain, and except that all wire shall be stranded.

9.1.6. The layout of wiring shall be designed in advance of its installation and in cooperation with those furnishing the related equipment.

9.1.7. Insofar as practicable, all wiring shall be fabricated on the bench into convenient units and installed in prefabricated groupings and standardized locations.

9.1.8. All wire and cabling shall have appropriate service loops, drip loops, strain relief and sufficient material for a minimum of three (3) re-terminations.

9.1.9. Spare terminations and conductors should be provided on terminal boards, in connectors, and in wire bundles and multi-conductor cables between major panels and junction boxes. A minimum of ten (10) percent, but not less than one (1), shall be provided.

9.1.10. Grounding connection pads shall be brazed, welded, or silver soldered to the frame. Connections shall be stud or bolt mounted.

- 9.1.11. All equipment enclosures and shock-mounted equipment shall be grounded with flexible, strap-type, grounding leads bolted between a car body grounding pad and the Cameras on Trains equipment grounding pads.
 - 9.1.12. Mounting bolts or other connections shall not be used for grounding connections.
- 9.2. Solder
 - 9.2.1. Solder for electrical connections, where permitted, shall be in accordance with ANSI No. 1, Class B.
 - 9.2.2. Non-corrosive flux shall be applied immediately before soldering.
 - 9.2.3. An automatic temperature controlled solder pot shall be used.
- 9.3. Tape
 - 9.3.1. Polyvinyl chloride or Nomex electrical tapes with Buna "S" type adhesive, 0.010 inches (0.254 mm) in over-all thickness, or approved equal, shall be applied.
 - 9.3.2. The above materials shall be suitable for use with the conductor insulation without discoloring or corroding the copper wire and shall provide 600 V minimum insulation.
- 9.4. Splices
 - 9.4.1. Splices shall not be permitted.
- 9.5. Terminals
 - 9.5.1. Conductors shall be fastened to terminals and connectors by accepted mechanical methods. Soldering of conductors shall be allowed at selected locations only with prior written approval of Caltrain.
 - 9.5.2. Conductors, which will be subjected to motion relative to the terminal, shall be protected by suitable means to minimize breakage of the conductor at or near the terminal.
 - 9.5.3. Crimp terminals shall be used on all wiring operating at 64 V or higher.
 - 9.5.4. In general, connections shall be made by means of terminal blocks.
 - 9.5.5. Only ring tongue terminals are acceptable unless specifically approved by Caltrain. The use of spade type and "fast-on" terminals shall be prohibited.
 - 9.5.6. Solder connections shall be permitted on printed circuit boards.
- 9.6. Terminal Manufacturer
 - 9.6.1. Mechanical or compression type connectors and terminals shall be AMP standard connectors and terminals.

9.7. Conduit

- 9.7.1. Existing conduit requiring replacement or reconfiguration shall be of similar composition as that removed.
- 9.7.2. All conduit couplings shall be of an ANSI approved type. Conduit shall be standard weight, galvanized steel with threaded fittings. All conduit ends shall be deburred inside and out to remove sharp edges and all pieces shall be blown out with compressed air and cleaned before installation to remove filings and other foreign material.
- 9.7.3. Rigid aluminum conduit shall consist of seamless, rigid aluminum alloy conforming to ANSI C-80.5 and to the requirements of Standard UL-6. All threads shall be covered with an oxidation-inhibiting compound. Aluminum fittings shall be used to assemble aluminum conduit and shall be made to the same grade and alloy as the conduit.
- 9.7.4. Steel conduit shall be mild steel in standard lengths with threaded ends and hot-dipped zinc-coated exterior and interior surfaces. It shall be free of burrs and projections, circular in cross-section, of uniform wall thickness and shall conform to the requirements of ANSI Standard 80.1. The threads per inch and length of threading shall conform to ANSI Standard B-2.1 on pipe threads.
- 9.7.5. Steel fittings shall be used to assemble steel conduit. Elbows, nipples, and couplings shall be made of the same grade of steel as that employed in the conduit. All fittings shall be treated, coated, and threaded according to the requirements for zinc-coated, rigid steel conduit and shall conform to Underwriters Laboratory Standard UL-6.
- 9.7.6. Flexible conduit shall be an ANSI approved type, and shall be of the highest grade and quality. It shall be watertight, interlocking steel strip-protected, with an approved rust resistive coating.
- 9.7.7. The internal diameter of conduit shall be selected such that the sum of the cross-sectional areas of the conductors and their insulation does not exceed forty (40) percent of the cross-sectional area of the conduit for three (3) or more conductors. For two (2) conductors, a limit of thirty-one (31) percent shall be used, while for a single conductor a limit of fifty-three (53) percent will be permitted. For conduits having a length not exceeding twenty four (24) inches without bends of more than fifteen (15) degrees between enclosures, a maximum fill of sixty (60) percent shall be permitted.
- 9.7.8. A run of conduit between junction boxes and/or pulling outlets shall not contain more than the equivalent of four (4) quarter bends (360 degrees total) including the outlet fittings. Bend radii at the inner surface of the bend shall be no less than eight (8) times the nominal inside diameter of the conduit.
- 9.7.9. All conduit bends and offsets used shall be made by the use of special forms or tools and shall have the largest radius possible so that wires can be drawn in and out without the use of tackle or power.
- 9.7.10. Conduits shall be securely clamped with all runs electrically grounded to make a continuous ground. Suitable insulation shall be provided to prevent electrolysis where aluminum may come in contact with other metals.

- 9.7.11. All conduits shall be arranged to prevent moisture traps and shall drain toward control boxes, except that all open-ended conduits shall be installed in a manner to ensure gravity drainage of moisture out of the end.
- 9.7.12. The conduit fittings and junction boxes shall be as manufactured by the Contractor or by a supplier of a comprehensive line of parts. All conduit fittings and junction boxes shall be provided with gaskets.
- 9.7.13. All exterior junction boxes shall be fabricated of steel with a minimum wall thickness of fourteen (14) gauge. All exterior junction boxes shall be waterproof and shall be connected in such a way that drainage shall not pass through the conduit into the junction boxes. Interiors of all junction boxes shall be primed and then protected with a white, insulating epoxy powder coating.
- 9.7.14. The open ends of conduits shall be provided with strain relief type fittings with extended rubber bushings, bell-mouth fittings or insulated throat box connections. All conduit entries into removable equipment boxes shall be made through watertight access panels secured by captive screw fasteners.
- 9.7.15. All junction box covers shall be secured with compressive spring-type latches or captive screws. All fasteners used in junction boxes shall be stainless steel. All covers shall be designed to accept or mate with a bulb-type clamp-on seal.

10. WELDING

10.1. Responsibility

- 10.1.1. The Contractor shall be responsible for the quality of the welding done by its organization and subcontractors. All welders employed in the making of welds on structures or products built under this Specification shall be tested to determine their ability to operate the welding equipment used during production and to determine their ability to produce satisfactory welds of the types required herein.
- 10.1.2. The Contractor shall submit test procedures for Caltrain review and approval.
- 10.1.3. Welders shall have minimum qualifications as identified by ASME Code "Welding and Brazing Procedures and Performance Qualifications" or equivalent AWS procedures.

10.2. Weld Rod

- 10.2.1. Welding rod, wire, or filler metal shall be chosen with respect to make, type, and size by the Contractor for the specific application.
- 10.2.2. Should the suitability of welding rods, wire electrodes, or filler metal be questioned, the provisions of Chapter 95 of the AWS Welding Handbook shall govern.

10.3. Heat Treating

- 10.3.1. Parts rotating at high speeds or parts subject to shock and/or vibration shall be stress relieved after welding.

10.4. Welding Procedure

- 10.4.1. All welded connections shall be described on the construction drawings prepared by the Contractor and submitted for Caltrain review and approval.
- 10.4.2. Standard weld symbols shall be used to define type, pattern, and size for each weld.
- 10.4.3. Stainless steel parts shall be joined by resistance welding or by arc welding.
- 10.4.4. Resistance welding procedures shall employ accurate control of current, time, electrode, size and shape, and tip force to produce uniform welds of specified strength, which will not be subject to surface corrosion.
- 10.4.5. The strength of all resistance welds shall exceed the AWS Standards by a minimum of twenty (20) percent.
- 10.4.6. The Contractor shall treat surface marks resulting from welding to eliminate, to the extent possible, visible defects and discoloration in the finish surface.
- 10.5. In areas where space is restricted, resistance welding of components may be replaced with Huck bolted connections. Each location shall be subject to prior Caltrain review and approval.
- 10.6. The Contractor shall submit the design of individual connections for acceptance.
- 10.7. Torch cutting holes is prohibited.

11. PAINT AND PAINTING

- 11.1. Painting including symbols, lettering, and logos shall be in accordance with requirements of this Specification.

12. CLEANING AND PREPARATION MATERIALS

- 12.1. All debris from mechanical cleaning of components such as sandblast grit, and all debris resulting from building operations, such as scrap, shavings, and insulation, shall promptly be removed.
- 12.2. All compounds and liquids used in cleaning and preparation operations shall be promptly removed, and flushed.
- 12.3. Every effort shall be made to remove all debris at regular intervals to prevent it from becoming lodged in inaccessible areas.

13. ASBESTOS

- 13.1. The use of asbestos or asbestos-based products is prohibited.

END OF SECTION TWO

EXHIBIT 4

WORK SITE SAFETY AND SECURITY

Attached as Exhibit 4 (5 pages)

EXHIBIT 4

WORK SITE SAFETY AND SECURITY

PART 1 – GENERAL

1.01 DESCRIPTION

- A. Section includes work site safety and security requirements for work performed in or about the Agencies' property(ies) and the PCJPB / Caltrain railroad-right-of way.

1.02 GENERAL

- A. The Contractor shall comply with all safety and security requirements included in this section and in the solicitation documents which are incorporated by reference herewith and as otherwise provided from time-to-time by the Agencies' Project Manager or his designee.
- B. Compliance with requirements of this section shall not relieve the Contractor from other obligations imposed elsewhere in the Contract, by law and by regulation.

1.03 SUBMITTALS

- A. Roadway Worker Protection (RWP) Training Records: Submit within **two (2) business days** after each RWP training session.
- B. Health and Safety Plan (HASP): Submit within **21 business days** of effective date of Notice to Proceed for review and acceptance by the Project Manager or his designee.
- C. Material Safety Data Sheet (MSDS): Submit prior to delivery or use of hazardous material at work site.

1.04 REGULATIONS FOR WORKING WITHIN RAILROAD RIGHT-OF-WAY

- A. The codes and regulations listed herein apply to work at the Agencies' property(ties) and within the Caltrain railroad-right-of-way. Contractor shall comply with the requirements contained in the latest edition of the listed publications. Updates for Caltrain On-Track Safety Plan are available at www.CaltrainTraining.com.
- B. PCJPB:
 - 1. Caltrain On-Track Safety Plan consisting of the following current documents:
 - a. Caltrain Roadway Worker On-Track Safety Protection Plan
 - b. Caltrain On-Protection Good Faith Challenge Form

- c. Peninsula Caltrain District Timetable
 - d. Peninsula Caltrain District Timetable Special Instructions for Air Brake and Train Handling Rules
 - e. Peninsula Caltrain District General Orders
 - f. General Code of Operating Rules for Maintenance of Way Employees
 - g. Peninsula Caltrain District Maintenance of Way General Orders
 - h. Zero Tolerance – Joint Policy Statement
 - i. Individual Train Detection Statement of On-Track Safety
 - j. Federal Railroad Administration (FRA) Part 220 – Railroad Communications
 - k. Caltrain Advisory
 - l. PCJPB Bridge Worker Safety Policy
- C. Others:
- 1. FRA Track Safety Standards, and FRA Railroad Workplace Safety, Title 49 CFR 213 and 214
 - 2. California Public Utilities Commission General Orders 26-D and 118
 - 3. UPRR Roadway Worker Protection Rules

1.05 CONSTRUCTION AND SAFETY PROCEDURES

- A. Each Manager, Superintendent, Supervisor, Foreman or Contractor personnel responsible for the safety of employees engaged in the work must have readily available to himself, and to those for which he is responsible, a copy of an up-to-date Caltrain On-Track Safety Plan. The contents of this Manual will be made available to the Contractor at the Kick-Off meeting or within seven (7) business days thereafter. The regulations and instructions contained in these documents must be strictly adhered to in the performance of the work. This manual must be made available to the Contractor's employee(s) and to the Project Manager or his designee for review at any time during working hours.
- B. Contractor's site personnel, including Subcontractors, suppliers, and visitors, may not enter or work on Caltrain's railroad right-of-way without prior Roadway Worker Protection training in accordance with 49CFR Part 214 Subpart C.
- C. The Contractor may be required to stop work when trains are passing on adjacent tracks in accordance with Roadway Worker Protection rules. Work may resume when trains have passed.

- D. Standard Operating Procedures (SOP): At Project Manager or his designee's request, Contractor shall provide SOP's with respect to its work tasks and related procedures that are deemed by the Agencies to be safety critical. SOP's shall be submitted in accordance with the Agencies' format for SOP's, to be provided upon request.

1.06 ROADWAY WORKER PROTECTION (RWP) TRAINING

- A. The Contractor shall be responsible for providing RWP training to all site personnel, including Subcontractors, suppliers, and visitors. Contractor shall designate personnel as trainers to be responsible for RWP training. RWP training curriculum and materials shall be provided by the PCJPB. The PCJPB shall provide Advance Roadway Worker Protection training for Contractor's trainer(s) within seven (7) business days of the effective date of the Notice to Proceed or as otherwise mutually agreed by the Contractor and the Agencies provided that such training is held prior to commencement of any work within Caltrain's railroad right-of-way. Contractor's trainers shall assume responsibility for RWP training prior to proceeding with any work within the PCJPB's right-of-way.
- B. The Contractor shall provide hard hat stickers to each worker trained for RWP. The stickers shall be numbered and shall identify the training expiration date. The sticker shall be displayed on each worker's hard hat when entering the worksite or the Owner's right-of-way. The Contractor shall provide a copy of the current RWP training records to the Project Manager or his designee after each training session. The RWP training records shall be a summary log form and at a minimum list each employee's name, sticker number, latest date trained, and level or type of training received. The records shall be listed alphabetically by employee's last name.

1.07 CONTRACTOR'S HEALTH AND SAFETY PROGRAM

- A. Submit written Health and Safety Plan (HASP), developed in accordance with California Health and Safety Code, including Contractor's standard safety practices and procedures, and emergency response procedures. Contractor is responsible for worker health and safety as provided for in the Contractor's Health and Safety Plan.
- B. The Contractor's standard HASP shall be amended to include project specific conditions and procedures, including organizational structure, special work procedures, local emergency response procedures, and project specific training requirements.
- C. The HASP shall be amended to incorporate any changed conditions as they occur. All amendments shall be submitted to the Project Manager or his designee for review and acceptance.

1.08 MATERIAL SAFETY DATA SHEET (MSDS)

- A. The Material Safety Data Sheet is prepared by manufacturers and suppliers of products that contain hazardous materials. Hazardous material is defined as any substance which is a physical or health hazard, or is included in the Cal-OSHA

Director's List of Hazardous Substances, or is listed in Title 22 of the California Code of Regulations, Section 12000, Chemicals Known to the State to Cause Cancer or Reproductive Toxicity (Proposition 65 Substances).

- B. No hazardous materials shall be delivered, stored, or used at any work site or facility unless they are properly labeled, tagged, or marked and a copy of the MSDS has been provided to the Project Manager or his designee. A copy of any new or updated MSDSs shall be provided to the Project Manager or his designee immediately.
- C. The Contractor shall maintain a current file of relevant MSDSs at the work site.

1.09 NOTICE OF INCIDENT OR INJURY

- A. Report immediately to the Project Manager or his designee any incident occurring on or in the vicinity of the work site(s) involving any employees or equipment of the Contractor, its Subcontractors, suppliers, or visitors; Agencies' employees, representatives or equipment; or any other personnel, property or equipment associated with the Work which results in personal injury to any person or damage to any property. Also, report immediately to the Project Manager or his designee any incident resulting in no injury or no damage, but which had potential to result in injury or damage to persons or property ("close call" incidents).
- B. Fully investigate all incidents, injuries, accidents, or "close call" incidents, document facts, develop and take appropriate corrective or disciplinary action. A notice summarizing the incident, injury, or accident shall be submitted to the Project Manager or his designee **within twelve (12) hours of the occurrence, followed by submittal of a detailed written report seventy-two (72) hours from the time of the occurrence.** A safety meeting shall be held by the Contractor at the earliest opportunity to discuss the incident or injury and to determine preventative measures to preclude recurrences of such incident or injury. The Project Manager or his designee shall be included at the meeting.
- C. Maintain a log of all reportable incidents, accidents or injuries, listing all pertinent data associated with the occurrence as well as preventative measures taken. This log shall be made available for review by the Project Manager or his designee at any time.
- D. The Contractor shall be responsible for reporting to OSHA any injuries found reportable under OSHA regulations. A copy of all reports shall be submitted to the Project Manager or his designee. The PCJPB will be responsible for reporting of incidents to FRA under 49 CFR Part 225.

1.10 TAILGATE HEALTH AND SAFETY MEETINGS

- A. Conduct a daily tailgate health and safety meeting for Contractor personnel including mandatory Job Briefing by the Contractor or it's designee as set forth in the Caltrain On-track Safety Plan.

1.11 WORK SITE SECURITY

- A. The Contractor shall assume full responsibility for protection and safekeeping of tools, materials, equipment, and the Work under this Contract. Contractor shall not be entitled to reimbursement for incidents of vandalism and theft.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

END OF EXHIBIT 4 - WORK SITE SAFETY AND SECURITY

EXHIBIT 5

MILESTONE AND PAYMENT SCHEDULES

Attached as Exhibit 5 (2 pages)

EXHIBIT 5

MILESTONE PAYMENT SCHEDULE : BASE SERVICES – 22 DVRs				
MILESTONE	DESCRIPTION	DELIVERABLES	PERCENT OF TOTAL CONTRACT PRICE	CUMULATIVE PERCENT
1	Project Kick-Off Meeting completed. Submittals required for NTP received, modified and approved.	- Detailed Final Project Schedule - Detailed Testing, Inspection and Acceptance Manual for: a) Prototype DVRs and b) remaining DVRs units	5%	5%
2	Delivery and installation of prototype units	Prototype installed, tested, and accepted by JPB per the detailed prototype testing procedure.	15%	20%
3	Delivery and installation of 10 DVRs units	50% of the DVRs units delivered, installed, and tested. - JPB accepts per the detailed inspection and acceptance procedure.	20%	40%
4	Delivery and installation of remaining DVRs units	- Remaining DVRs units delivered, installed, and tested. - JPB accepts per the detailed inspection and acceptance procedure	20%	60%
5	Delivery of two spare DVRs units with all necessary parts and materials	Spare DVRs units delivered and accepted by the JPB	10%	70%
6	Software installed and tested	Software delivered, installed, tested, and accepted by JPB	10%	80%
7	Training completed	- Training of JPB staff completed - All manuals received, reviewed and accepted by JPB	10%	90%

MILESTONE PAYMENT SCHEDULE : BASE SERVICES – 22 DVRs (continued)				
MILESTONE	DESCRIPTION	DELIVERABLES	PERCENT OF TOTAL CONTRACT PRICE	CUMULATIVE PERCENT
8	- Project Close Out and Final Acceptance - Warranty Period	- Project Completed by Contractor and Accepted by JPB - Warranty Period Begins		
9	Warranty Completion, Retention Release	Retention released upon completion of warranty period	10%	100%

EXHIBIT 6

DELIVERABLES

Attached as Exhibit 6 (1 page)

EXHIBIT 6

DELIVERABLES

1. Documents Pertaining to Proposed System
2. System Operating Manual
3. Replacement Parts Manual
4. Drawings of Proposed System
5. Software Operating Manual
6. System Testing and Acceptance Plan
7. Prototype Testing Manual
8. Detailed Project Schedule
9. Prototype Installation and Testing Manual
10. DVRs Installation and Testing Manual
11. DVRs Maintenance and Trouble Shooting Manual
12. Final As-Built Drawings of System Wiring
13. Final Project Closeout and Acceptance Procedure/Process

EXHIBIT 7
COMPONENTS AND SPARE PARTS LIST

Attached as Exhibit 7 (1 page)

EXHIBIT 7

COMPONENTS AND SPARE PARTS LIST					
BASE SERVICES			OPTIONAL SERVICES		
TO BE INSTALLED			TO BE INSTALLED		
Item	Description	QTY	Item	Description	QTY
1	Forward Facing Camera	20	1	Forward Facing Camera	45
2	Digital Video Recorder	20	2	Digital Video Recorder	45
3	Hard Drive	20	3	Hard Drive	45
4	Microphone	20	4	Microphone	45
5	Enclosures (for Microphone, Camera, and DVR)	20	5	Enclosures (for Microphone, Camera, and DVR)	45
6	Connection Cables (for Microphone, Camera, and DVR)	20	6	Connection Cables (for Microphone, Camera, and DVR)	45
7	Wiring per locomotive / cab car	20	7	Wiring per locomotive / cab car	45
8	Power Supply	20	8	Power Supply	45
9	Heating and Cooling Elements	20	9	Heating and Cooling Elements	45
10	Computer Interface Cables / Computer Connection Kits	6			
11	Administrative Software *	1			
12	Review / Download Software *	1			
13	Protective Carrying Cases for Hard Drives	10			
SPARES			SPARES		
Item	Description	QTY	Item	Description	QTY
1	Forward Facing Camera	2	1	Forward Facing Camera	3
2	Digital Video Recorder	2	2	Digital Video Recorder	3
3	Hard Drive	2	3	Hard Drive	3
4	Microphone	2	4	Microphone	3
5	Enclosures (for Microphone, Camera, and DVR)	2	5	Enclosures (for Microphone, Camera, and DVR)	3
6	Connection Cables (for Microphone, Camera, and DVR)	2	6	Connection Cables (for Microphone, Camera, and DVR)	3
7	Wiring per locomotive / cab car	2	7	Wiring per locomotive / cab car	3
8	Power Supply	2	8	Power Supply	3
9	Heating and Cooling Elements	2	9	Heating and Cooling Elements	3