

Work Plan No B.33-01 Final Design and Bid Support for Downtown Berkeley Station Elevator Project

Scope:

Project management

- Project management support from site survey to bid support services
- Coordinate HDR's project staff with Lerch Bates' project staff
- Coordinate weekly design meetings with design team and BART project staff
 - a) Take meeting minutes
- Arrange kick-off meeting
- Maintain Document control system to keep incoming client information and outgoing deliverables organized.

Risk Management

- Providing risk management services for Cost and Schedule Risk Analysis (CSRA) to identify project risks (threats and opportunities) and to determine the appropriate amount of a potential risk reserve or other risk-sharing strategy for the project.
 - a) To be updated and submitted monthly to BART as a progress update

Conceptual Engineering Report

- Preliminary review of client-provided documents applicable to scope of work. Documents may include as-built drawings and other design documents, previous reports, and/or past repair records.
- Attend one site visit/survey with Lerch Bates, HDR and BART staff
 - a) BART to provide escorts/staff in-charge to preform site survey
 - b) BART provide approval for technical staff to travel prior to site survey
 - c) Conduct a survey of the existing accessible equipment to determine its condition, remaining service life, and potential for reuse. The survey will include, but not limited to:
 - (1) Machine Room: Hoist machine, power unit, power conversion unit, governor, and controller.
 - (2) Hoistway: Guide rails/brackets, car sling and platform, counterweight, guide shoes, safety, buffers, car door operating equipment, sheaves, hoistway door operating equipment, cables, wiring, switches, sills and supports.
 - (3) Corridor: Pushbuttons, signal fixtures, and hoistway entrances.
 - (4) Car Enclosure: Pushbuttons, signal fixtures, emergency lighting, ventilation, normal lighting, car door protection, and interior finishes
 - (5) Conduct one visual-only observation of the existing conditions of the elevator pits and determine the project scope.
 - (6) Site visit will include visual isolated leak assessment.
 - (7) OPTIONAL: If necessary/possible, LB will perform leak replication testing per ASTM E2128-17, by spraying select enclosure components with water from a Monarch Nozzle. (*Will require additional follow-up site visit to perform*)
 - (8) Other: Elevator integration with fire/life safety provisions, architectural finishes, security features, and monitoring panels.

- Coordinate and develop a conceptual engineering report that includes:
 - a) Existing equipment disposition.
 - (1) Recommendations on the type of equipment needed for modernization to comply with BART Facility Standards.
 - (2) A summary of the present equipment which has potential for reuse.
 - b) Replacement options.
 - c) Current prevailing Elevator Code requirements, non-complying building conditions, and handicapped accessibility requirements relative to the equipment surveyed.
 - d) Related work required by other trades.
 - e) Conceptual Plan and Section drawings of the existing equipment and proposed solutions.
 - (1) Arch Plan & Layout
 - (2) Civil Plan
 - (3) Structural Plan & Layout
 - f) Water Intrusion Survey
 - g) Provide sections in report to include the following:
 - (1) Summary of observations and findings
 - (2) Discussion of conclusions
 - (3) Recommendations for BART to review and approve as to move forward with final design.
- Conceptual Engineering Report Meeting
 - a) Meet with BART at BART headquarters (in-person with teleconference with staff) to discuss the findings and report recommendations.
 - b) The purpose of this meeting will be to set goals for cost, performance, maintenance, and aesthetics. LB will also provide options for consideration (where they exist) regarding the areas of repair, the scope of repair, material selection, and project logistics.
 - c) BART to approve the Conceptual Engineering Report and direct HDR with alternative to move forward with prior to HDR advancing with the project's final design intent and budget parameters.
 - (1) If scope alternates or changes arise, such as the BART's request of seismic retrofit or machine room relocation, HDR to review and provide amendment for the necessary requested scope tasks from BART.
 - (2) Additional hours estimate subject to revision based on finding of conceptual engineering report.

Design Services – 65%, 95% & 100%/IFB Designs (Without machine room relocation):

- Architecture Support
 - a) Provide code compliance review and design of ADA concerning the immediate area of the new elevators. (Lerch Bates/HDR)
 - (1) Architectural code review of exits, egress, illumination
 - (2) Architectural code compliance/modification letter
 - (3) Provide necessary plans, notes, details and schedules.
 - b) Review selection of building materials and elevator cab finishes and define its extent of application according to BFS.
 - c) Review and coordinate concerning ADA, elevator code, and gurney access. LB will evaluate gurney access and provide BART with options and recommendations. (Lerch Bates/HDR)
 - d) Review and coordinate with fire protection engineer, Fire, Life Safety compliance.

- e) Maintain fire protection rating of the existing elevator shaft after renovation of the elevators.
- Electrical Support
 - a) Plan review and support of the design team related to renovating the elevators and machine rooms.
 - b) Check code compliance and BFS compliance.
 - c) Power Distribution to support Elevator Replacement - The existing main electrical distribution system will be analyzed for power capacity to support the new elevator machines/controllers. Branch circuit panels will be evaluated for capacity to serve the life safety circuits for the elevator cab and code required lighting and receptacles circuits needed for the elevator machine room, pit, and shaft.
 - d) The existing machine rooms will be surveyed to confirm if they are CEC compliant and meet working clearance requirements for the new machinery. If the existing machine room is inadequate, HDR will consult with BART for feasible alternative locations.
 - e) Lighting - The lighting will be upgraded to new LED lighting and controls suited to the current elevator code required illumination levels for the machine rooms, elevator shaft and pits.
- Fire Life Safety & Fire Protection
 - a) Provide plan review and support for the design team during the elevator and machine room renovation project.
 - b) Check code compliance and BFS compliance throughout the design process.
 - c) Conduct a site visit for data collection and assessing existing conditions, including the current fire alarm system, sprinkler protection, and fire extinguisher systems. This information will be used to inform the design and installation of the emergency systems.
 - d) Integrate the existing fire alarm system with the new elevator controls to comply with code requirements for emergency recall operation (Phase I and Phase II) and in-car operation.
 - e) Connect new elevators' and machine room's fire alarm system to existing fire alarm system. (If identified during site survey assessment.)
 - f) Fire sprinkler head and heat detector in the elevator pit will be evaluated for replacement during conceptual engineering phase. Replacement shall be made in-kind with same capabilities as existing.
 - g) Sprinklers not permitted in machine rooms per BFS
 - h) Provide fire extinguishers in the Elevator Machine Room as required to meet current code requirements.
 - i) In situations where there are no existing fire alarm or fire suppression systems, the project will establish the fire alarm and fire suppression requirements for the new elevators. These requirements will then be incorporated into future fire alarm and fire suppression projects as part of other projects provided by others.
 - j) Include necessary drawings, details, and specifications for the installation and integration of the emergency recall operation and in-car operation, fire alarm system devices and relays, sprinkler protection, and fire extinguishers needed to comply with applicable codes and standards (BFS).
 - k) In cases where existing buildings and equipment are approved but non-conforming conditions, failing to meet current codes and BFS requirements, the design will assess the existing conditions, safety levels, and the feasibility of upgrades to align with current codes. Where meeting current codes is impractical; enhancements will be made with AHJ approval such that the level of safety is equal to or greater than the building's current safety level. BASED on discussion with BART, all non-conforming designs will go through the proper variance request process with BART and other agencies (as needed). BART will confirm and formally approve these variances prior to design progress goes into 65% design.

- l) Provide project procurement support.
- Communications Support
 - a) Plan review and support of the design team related to renovating the elevators and machine rooms.
 - b) Coordinate and support of the design of communications with SCADA, and RMS system (if needed).
 - c) Coordinate with BART to provide SCADA that is ready for future monitoring system by others.
 - d) Check code compliance and BSF compliance.
 - e) Site visit for data collection and assessing existing conditions.
 - f) Develop conceptual Communications engineering plans consisting of the following:
 - (1) General Drawings
 - (2) SCADA Block Diagram
 - (3) Video Surveillance System Block Diagram
 - (4) Public Emergency Intercom Diagram
 - g) Client coordination meetings
- Mechanical Support
 - a) Plan review and support of the design team related to renovating the elevators and machine rooms.
 - b) Check code compliance and BFS compliance.
 - c) New mechanical cooling/heating units for each elevator machine room.
 - d) Sump pump and oil discharge management system for each elevator shaft where feasible.
 - e) Discharge piping from each sump to local drywell, where feasible; this design will be coordinated with BART to comply with MS4 requirements.
 - f) CAD drawings to be traced from PDF as-builts into CAD when the original as-built CADD files are not available.
- Structural Support
 - a) Plan review and support of the design team related to renovating the elevators and machine rooms.
 - b) Check code compliance and BSF compliance.
 - c) Elevator No. 44
 - (1) Hydraulic Elevator: Assume elevator will be replaced in kind and that elevator capacity and speed will be the same as existing. Assume existing elevator guide rails, hydraulic pistons and piston support structures will remain and no modification of the station structure will be required. If the structure requires modifications, if guide rails, hydraulic pistons and piston support structures will be replaced. or if the elevator type needs to be changed to traction type, then additional hours for structural assessment and seismic evaluation will be required as outlined below.
 - d) Elevator No. 45
 - (1) Traction Elevator: Assume elevator will be replaced in kind and that elevator capacity and speed will be the same as existing. Assume elevator manufacturer will design elevator structural members and that existing elevator guide rails, sheave/overhead beams, and machinery will remain and no modification of the station structure will be required. If the structure requires modifications, if guide rails and sheave/overhead beams will be replaced, or if the elevator type needs to be changed to hydraulic type, then additional hours for structural assessment and seismic evaluation will be required as outlined below.

- Civil Support
 - a) Plan review and support of the design team related to renovating the elevators and machine rooms.
 - b) Check code compliance and BFS compliance.
 - c) Attend site visits and up to three (3) meetings with the Client.

Bid Support Services

- Bid Support Services for elevators (Lerch Bates), electrical, communications/scada, mechanical, structural, fire life safety, civil, and architectural.
- Per direction from BART, bid support services to last about 10-12 months after BART's approval of IFB set of plans.

Assumptions:

- General:
 - a) Expected NTP to be 30days from approval of this Work Plan
 - b) The project design approach is assumed as replace in-kind (if feasible), current code (to extent as possible) and standards that are not compliant will require code/design variance from BART.
 - (1) When replace in kind is not possible, additional discussions and coordination will be needed with BART to get approval on the system that BART would like to proceed with. In this case additional fee might need to be discussed based on the extent of change.
 - c) Assume the BART's code/design variance process effort is limited to a description of non-compliant code, reason(s) for the non-compliant, identifying BART as-built drawing(s) and proposed design drawing(s).
 - (1) Assume code/design variance approvals are only through BART.
 - (2) Assume code/design variance needing outside agency approvals will be handled by BART staff.
 - d) Assume one day (8hrs) for site survey, one person per design discipline to attend.
 - (1) Additional site visits to be needed if relocation of machine room and/or seismic retrofit is required.
 - (2) Site Survey will only require Site Specific Work Plan (SSWP) developed by HDR.
 - (3) SSWP to allow for future site visits, as needed in the case that machine room relocation and /or seismic retrofit is required.
 - e) If during site survey, equipment/site is not accessible, then condition will be based on remaining service life.
 - f) Safety training will be provided to HDR by BART prior to HDR staff entering the ROW.
 - g) Railroad Protective Liability insurance is not required for this work.
 - h) One flight is budgeted to perform field inspection. If track time or weather do not allow for work to be completed within the proposed working window additional fee will be required.
 - i) BART will provide as-built drawings for elevators and related disciplines.
 - j) Assuming BART will provide as-built drawings and other related documents for these locations. These as-builts will be field verified for accuracy with existing site conditions. If as-builts drawings are not complete, additional services and fees to be added.
 - k) BART will provide AutoCAD base files of the station to be used in plan development.
 - l) Assume one round of comment resolution meetings for each of the following milestone submittals:
 - (1) 65% of drawings and specifications

- (2) 95% of drawings and specifications
 - (3) 100%/IFB of drawings and specifications.
 - m) BART to review and approve comment responses and design changes due to comments prior to advancing to next submittal milestone.
 - n) BART review period for each design submittal not to exceed 20 workdays.
 - o) Technical design review meetings not to exceed 8hrs.
 - p) This is a single procurement package.
 - q) City of Berkeley interface and permits not assumed and not included as part of this scope, since BART will be permitting this set of drawings.
 - (1) In the case that design coordination with BART triggers the need for approval from the local fire department based on modifications to the existing fire suppression system or coordination with City of Berkeley for construction lay down areas in the street level sidewalk, then additional services and fees will be added. These are just examples of possible permits that might be needed and not limited to these.
 - (2) Based on current discussions with BART, the direction is that if there is no existing sump pump, and a sump pump cannot be added, then we will not add a sprinkler system in the elevator pit. In that case, the design team will obtain a code variance to exclude the sprinkler system from the elevator.
 - r) VT sheets are will not be signed and seal drawings, future elevator supplier/contractor will sign and seal with their selected equipment. (BART confirmed other elevator projects VT sheets are not signed and sealed)
 - s) Client will provide detailed list of points to monitor on the elevator and what communication protocol is required.
 - t) Drawings will be in AutoCAD following BART CAD Manual, backgrounds to be provided to Lerch Bates.
 - u) Lerch Bates will work with HDR during the design phase to identify the interface point between the elevators and Communications.
 - v) When current BFS codes and standards cannot be met due to spatial constraints, then we assume code and design variance will be acceptable to BART. BART will coordinate other agencies/departments needed to approve these variances.
 - w) Based on the signed date of contract for this project being signed and NTP, the issued for construction plans will be developed using the 2022 California Building Codes.
 - x) If design development goes beyond January 1st, 2026, then the project team (BART, HDR and other necessary parties) will discuss if design should adopt future 2025 California buildings codes within the design of IFC.
 - y) Work plan and fee for the "additional design support if relocation of machine room and seismic retrofit is needed" are based on preliminary estimates. Scope and fee to be further evaluated once site survey, review of BART as-builts and conceptual engineering report is completed. If scope and fee is determined to be different than this preliminary work plan and estimate, a project addendum will be submitted for BART approval prior to performing this work.
 - z) Design support during construction is not included within this scope and fee..
 - aa) Construction Administration is not included in the fee estimate.
- Architecture:
 - a) ADA and access upgrades outside of elevator shaft not included in this scope of work.
 - b) Renderings not included in the scope of work.
 - c) Additional renderings requests not included in the scope of work.

- d) Street level updates of surrounding architectural elements are not included.
- e) Construction Staging is not included in this scope and fee.
- f) Signage not included in this scope and fee.
- g) BART to provide transition plan for ADA compliance during elevator construction.
- Electrical:
 - a) Bid support is to be 80 hours.
- Fire Life Safety & Fire Protection
 - a) Fee assumes the Fire Protection and Fire Alarm delegated design and specifications will cover modifications limited to areas impacted by the Scope of Work
 - b) Fee is based on modifying the existing Automatic Sprinkler System and will be delegated designs using client specs with detailed design layouts and final hydraulic calculations provided by the awarded contractor as part of deferred submittal process during construction. Drawings will provide system zoning and classification, performance notes, primary equipment locations, utility connections, and preliminary device layouts for coordination and bidding clarity.
 - c) Fee assumes the Fire Protection and Fire Alarm delegated design and specifications will cover modifications limited to areas impacted by the Scope of Work.
 - d) Fee assumes the Fire & Life Safety plans will be limited to new areas impacted by the Scope of Work.
 - e) Fee does not include performing a current Hydrant flow test(s) in accordance with NFPA 291.
 - f) Design of an alternative automatic fire-extinguishing systems are not included in this proposal.
 - g) Functional testing of the existing Fire Pumps, Fire Suppression, Fire Alarm/Mass Notification Systems are not included in this proposal. If identified during the site investigation that active testing is required, the testing will need to be performed by others (local fire protection contractor) under the direction of HDR and will require additional effort and a modification to the scope/fee.
 - h) Fee assumes existing fire alarm panels (EST3, Notifier Alarm Panels), are capable to support fire alarm system modifications and new components.
 - i) Fee assumes that no fire & life safety upgrades to the existing fire protection and fire alarm systems serving the existing building/Station (e.g. areas outside the elevator remodel).
 - j) The fire alarm system will be replaced by another project with TBD design and construction schedule according to BART. The scope of this Berkeley Elevator Renovation project is to identify the capabilities the existing fire alarm system and fire suppression system needs.
- Communications:
 - a) Bid support is to be 60 hours.
 - b) Cameras outside elevators are not part of the scope of this project.
- Mechanical:
 - a) Total Hour Estimate includes Design Hours (drawings, specs, CER report) and non-design hours (site visits, review periods, comment responses, and QC hours).
 - b) Approximately 12 sheets are required, 6 sheets for each elevator location
 - c) Design to comply with current CBC requirements and BART design standards.
 - d) Two (2) 1-day site visits are assumed.
 - e) One (1) hour weekly internal meeting is assumed.
- Civil:
 - a) Civil scope assumes minimal grading is needed. Considerable grading and drainage modifications are not within this scope.

- b) BART will provide input on standards for fencing, signage, and striping, etc., if needed.
- c) Construction support is not part of this scope.
- d) Design will not include access road design, temporary structures/access, or additional designs to accommodate construction.
- e) It is assumed no traffic control will be needed outside of BART property.
- Structural:
 - a) Estimated hours for Elevators No. 44 and 45 assume the following: (1) the elevator manufacturer will design elevator structural members (2) existing elevator guide rails, sheave/overhead beams, machinery, and hydraulic pistons and piston support structures will remain (3) no modification of the station structure will be required (4) elevator capacity and elevator speed will remain the same as existing
 - b) Estimated hours assume BART will provide as-built drawings showing structural member sizes, material strengths, structural dimensions, structural connection details, and existing elevator design loading. If existing elevator design loads are not provided, then additional hours for analysis will be required.
 - c) Assume new elevator cab is able to be installed without alteration of the existing structure
 - d) Assume elevator capacity and elevator speed to remain the same as existing.
 - e) Bid support services will be limited to RFI responses and design coordination meetings with the design team
 - f) Design support during construction (DSDC) services are not part of this scope.
 - g) Assume 3 sheets per elevator for a total of 6 sheets for additional machine room relocation and seismic evaluation. Seismic evaluation will be limited to the elevator shaft and machine room locations. Full station seismic evaluation is not included in the provided hours.
 - h) Per direction from BART on Wednesday, 7/31/2024 per email, the design team will move forward with the traction power type of elevator replacement and having the machine room stay at the current existing location.**
 - (1) additional hours for machine room relocation and seismic evaluation previously assumed have been removed from this work plan proposal. If the project warrants elevator relocation due to unforeseen conditions and BART provides direction to investigate relocating the machine room, then HDR will discuss, and coordinate efforts and estimate needed to complete such tasks.
 - (2) Additional Design Support if relocation of machine room and seismic retrofit is needed:
 - (a) **Architecture Support**
 - (i) *provide design support for the relocation/enlargement of elevator machine rooms.*
 - (ii) *provide design support for seismic upgrades of the elevator shaft.*
 - (iii) *Additional site survey to be needed.*
 - (b) **Electrical Support**
 - (i) *Power Distribution to support Elevator Replacement - The existing main electrical distribution system will be analyzed for power capacity to support the new elevator machines/controllers. Additional branch circuit panels will be evaluated for capacity to serve the life safety circuits for the elevator cab and code required lighting and receptacles circuits needed for the relocated elevator machine room.*

- (ii) The relocated machine rooms will be surveyed to confirm if they are CEC compliant and meet working clearance requirements for the new machinery. If the existing machine room is inadequate, HDR will consult with BART for feasible alternative locations.*
- (c) Fire Life Safety & Fire Protection**
 - (i) Expand the existing fire alarm system as needed to meet current code requirements for elevator upgrades and machine room relocation, including the installation of additional fire alarm system devices and relays.*
 - (ii) Extend the building/station fire suppression system to provide sprinkler protection in the hoist way pit, and Elevator Lobbies, as required to meet current code requirements.*
 - (iii) Provide fire extinguishers in the relocated Elevator Machine Room as required to meet current code requirements.*
- (d) Communications**
 - (i) Develop additional conceptual communications engineering plans*
- (e) Mechanical/Plumbing support**
 - (i) Analysis of existing mechanical/plumbing equipment required for seismic upgrades.*
 - (ii) New floor drains for each machine room.*
 - (iii) Additional coordination with trades for new room location and envelope requirements.*
 - (iv) New sanitary sewer piping and connection to the main sewer line.*
- (f) Structural support**
 - (i) Additional Site Survey to be needed.*
 - (ii) Additional hours for machine room relocation and seismic evaluation. Assume 3 plan sheets will be required. The engineer will design the guide rail connection to the existing wall and check the hydraulic jack support load on the existing footing. Guide rail connections and strengthening at the existing walls and footing will be detailed if required. Hours assume that Per California Existing Building Code 2022 Section (BS) 503.4 the elevator seismic load does not exceed 10% of existing elevator load. If the altered elevator structure or elevator machine room seismic demand to capacity ratios exceed 10 percent of the unaltered demand to capacity ratio, additional design hours will need to be negotiated to retrofit the existing.*
- (g) Civil support**
 - (i) Coordinate with the Client and other disciplines to provide civil support for a relocated machine room.*
 - (ii) Details are presented on one (1) cadd sheet regarding access, paving, grading, signing, striping, and fencing.*
 - (iii) Additional Site Survey.*

Subconsultant	Amount	DBE (Y/N)	SBE (Y/N)
Lerch Bates, Inc.	\$ 171,624	N	N

Total Work Plan Value: \$ 1,503,970