Exhibit G

Scope of Work

Sections

0. Project Map and Background
1. SD-453 Alameda Interceptor Scope of Work
2. SD-456 South Interceptor Scope of Work
3. SD-458 North Interceptor Scope of Work

Exhibit G - Table of Contents

Items in **red** are attached as a separate file to minimize file size.

EBMUD 2024 Interceptor Rehabilitation Design Project Summary Map for RFP

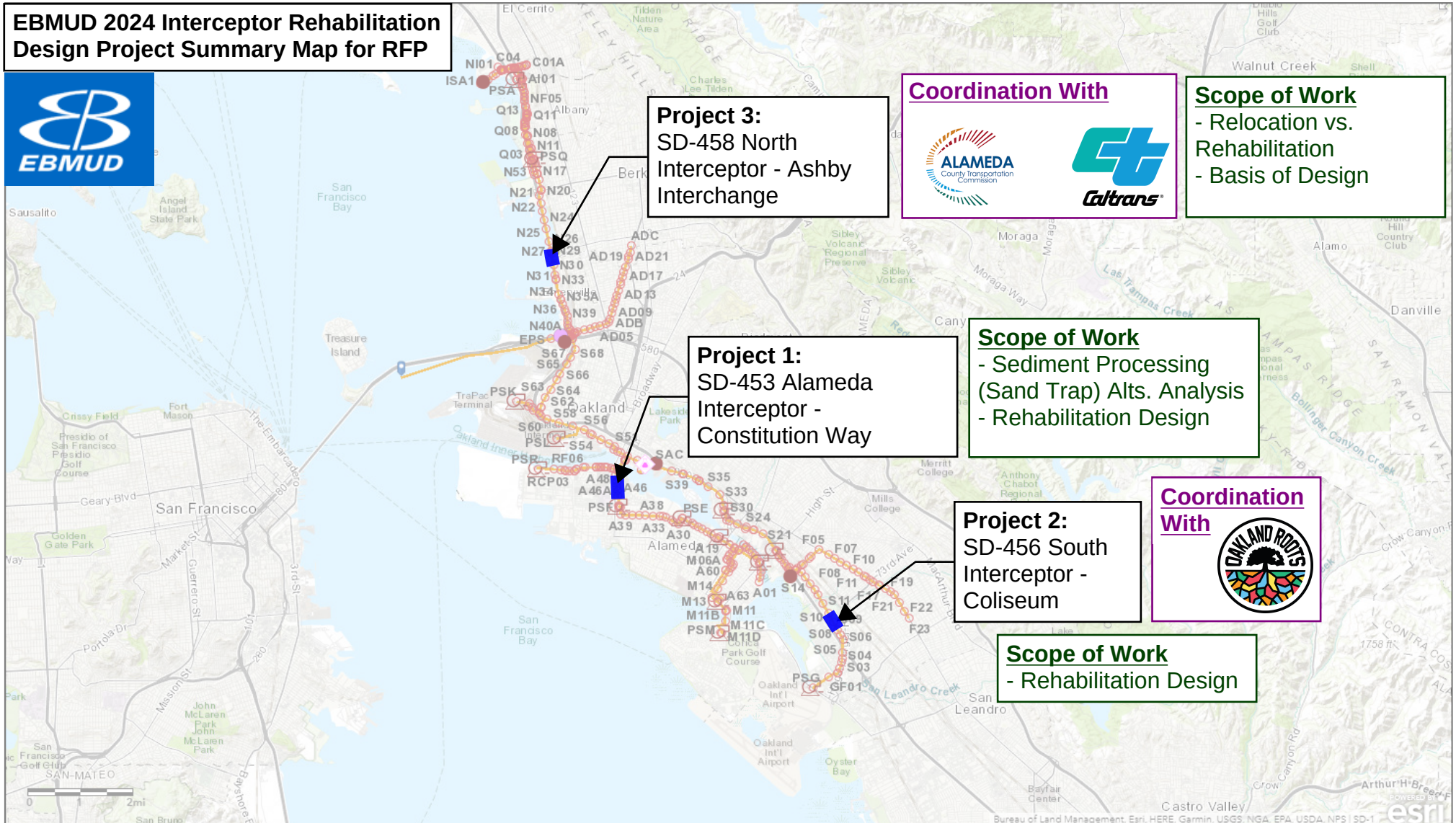


Exhibit G-0

PROJECT BACKGROUND

Background

The District owns, operates, and maintains approximately 29 miles of large diameter interceptor gravity pipelines which collect and convey sewage from cities in the East Bay to the Main Wastewater Treatment Plant. There are three main interceptors, the North Interceptor, South Interceptor, and Alameda Interceptor, in addition to two smaller relief sewers. This interceptor system was largely constructed in the 1950s and is showing signs of deterioration. In 2022 there were two sinkholes in the South Interceptor and the District made emergency repairs at three other locations, one on each of the main Interceptors at a cost of $17.3 million. This was in addition the SD-404 Special Structures project ($21.6 million) which repaired three of the most severely corroded manholes/structures on the South Interceptor.

At this time, the emergency repairs have been addressed but there are a number of segments with severe corrosion that need to be addressed as soon as possible. The District has a prioritized list of interceptor repairs that was developed during past assessments, and there are at least three segments where repairs are recommended within the next two years. The District is currently embarking on an update to the Interceptor System Master Plan and there may be additional segments added to this list.

The existing interceptor pipelines are reinforced concrete with, nominal, eight feet between joints. They typically include an unreinforced concrete cradle which extends up to the pipe springline. Construction drawings include provisions for pile supports but most of the interceptors do not appear to include piles. Most of the manhole structures are pile supported. Original construction drawings are included in Exhibit G.

The three interceptor segments included in this RFP are considered the next highest priority for rehabilitation. The District has limited resources inhouse for these projects and is seeking Consultant support for design and construction services. Additional segments identified as needing urgent rehabilitation may be included in future RFP efforts.

Table 1: Summary – Anticipated Scope

Project No.	Interceptor	Manholes (US-DS)*	Approx. Length (ft.)	Internal Diam. (in.)	Scope
SD-453	Alameda Interceptor	A45-A48	2,700	60	Manholes and interceptor rehabilitation
SD-456	South Interceptor	S07-S10	2,000	42, 51, 63	Manholes and interceptor rehabilitation
SD-458	North Interceptor	N26-N30	3,000	66	Interceptor relocation

* US – upstream, DS - downstream

Table 2: Construction Costs, Design and Construction Schedule

Project No.	Interceptor	Est. Constr. Cost	NTP Consultant	Final Deliverable*	Complete Construction
SD-453	Alameda Interceptor	$6-8M	Aug. 2024	Apr. 2025	Oct. 2026
SD-456	South Interceptor	$5-7M	Aug. 2024	Apr. 2025	Oct. 2026
SD-458	North Interceptor	$10-30M	Aug. 2024	Dec. 2024 (BOD Only)	TBD

*May vary depending on negotiated scope and project approach. Proposers should submit schedules that reflect realistic timelines based on their proposed approach. Proposers adhering to the dates provided without justification or backup may not necessarily rank higher.

Table 3: Interceptor Flows (Typical Value over Range) mgd

Project No.	Interceptor	Manholes	Average Dry Weather Flow ADWF (mgd)	Peak Dry Weather Flow PDWF (mgd)	Peak Wet Weather Flow PWWF (mgd)
SD-453	Alameda Interceptor	A37-A38	5.8 (4.5-7.4)	8.1 (6.6-9.0)	25 (12-29)
SD-456	South Interceptor	S08-S09	3.7 (3.0-4.0)	5.6 (4.2-7.0)	30 (11-36)
SD-456	South Interceptor	S09-S10	5.5 (4.5-6.0)	8.5 (6.0-9.0)	42 (19-45)
SD-458	North Interceptor	N29-N30	9.5 (8.0-11.4)	20.0 (12.5-25.0)	72 (32-75)

Typical Corrosion

Based on past interceptor inspections corrosion takes two forms, localized corrosion due to turbulent flows and uniform corrosion in pipe reaches between manholes. The worst corrosion discovered to date involves localized corrosion (20 to 100 feet downstream and less upstream) at manholes where incoming flows from laterals cause turbulence. Corrosion is typically also significant at these manholes. Localized corrosion may also occur at siphon structures, bends, or locations with changes in flow direction. In uniform corrosion, large stretches of piping are exposed to high levels of hydrogen sulfide in the head space.

Pipeline Rehabilitation

Technology	Experience with Technology	Detail
Sliplining with fiberglass polymer mortar (FRPM) pipe/glassfiber reinforced plastic (GRP) pipe	Yes, most commonly used	The District has commonly used fiberglass reinforced polymer mortar sliplining (FRPM) pipe for a majority of the piping repairs on both emergency and recent capital improvements projects.
Sliplining with PVC slipliner	Yes, one time, many challenges	The District has had challenges with PVC slipliners.
Cured-in-place pipe (CIPP)	Yes, a couple times	The District has had challenges with bypassing pumping.
Open cut with polymer concrete	Yes, one time	The District has done open cut at one location using precast polymer concrete sections immediately upstream and downstream of an existing storm drain.
Spiral-wound liners	No	N/A

Sliplining can be installed without interrupting flow but reduces the inner diameter by approximately 6-inches. CIPP repair has the least hydraulic impact but requires bypassing, which adds a significant cost and is a risky undertaking at the high flows typical of District interceptors. Spiral-wound liners require flow depths that are below what's commonly observed in the District's interceptors.

Manhole Rehabilitation

The District has used a number of approaches for manhole repair in the past but has not standardized on a particular method. The District has used polyurethane, epoxy, PVC lining, and other methods, but they each have their drawbacks and unique features that make them not applicable in all circumstances. The majority of the District's manholes are box shaped and not standardized. Challenges the District has seen with recent projects include spray applied linings delaminating from repair mortar, difficulty meeting dry-film thicknesses in the Specifications or as recommended by the manufacturer, difficulty maintaining environmental controls, and inconsistent application of coatings in hard-to-reach places. Additional quality control measures may be necessary to ensure proper installation.

Condition Assessment

The District has used manned entry, CCTV, CCTV with GoPro, LiDAR/laser, sonar, and multi-sensor inspection (MSI) to inspect manholes and interceptor segments of concern. The District is standardizing on GoPro for remote inspections. Consultant should understand the advantages, disadvantages, purpose, and accuracies or each method, and be able to identify defects in accordance with NASSCO PACP or MACP guidelines.

The below project challenges and project specific scope of work (Exhibits G1, G2, G3) may not fully capture the scope needed to develop a design package for each project. The scope and structure of services will be detailed further with the selected Proposer(s) during the negotiations phase.

SD-453 Alameda Interceptor at Constitution Way Rehabilitation

The segment of the Alameda Interceptor between manholes A45 and A48 suffers from widespread corrosion due to high levels of hydrogen sulfide in the head space (uniform corrosion). There is minimal slope on this interceptor which results in the accumulation of sand along the invert. Manned entry inspections have identified between six to nine inches of sand in the Alameda interceptor. The long residence times of submerged sediments provide surface area for sulfur reducing bacteria to grow which exacerbates the buildup of hydrogen sulfide. A majority of this interceptor upstream has been rehabilitated with FRPM sliplining pipe. Prior to sliplining, the contractor cleaned the interceptor by dragging a metal sled along the invert of the host pipe. The continuous accumulation of sand made it difficult to clean. The provided SD-453 construction estimates assume that rehabilitation will use sliplining. Proposers are encouraged to propose the technologies they feel would work best for rehabilitating the pipe segments and manholes included. Proposers should justify their approach with real experience or technical background.

Project Challenges:

A conceptual design is available for this project, but there are a number of challenges that the consultant will be required to address and coordinate with including:

- Coordination with the City of Alameda, local agencies, and utilities in the area.
- Coordination with day care at manhole A46. The manhole is in the center of the day care play yard.
- Coordinate with the District on property rights. A portion of the alignment extends through undeveloped lots that were once railroad rights-of-way.
- Explore the possibility of converting one of the sliplining access pits to a permanent access for use in cleaning the sand from the interceptor.

See Exhibit G1 for additional scope of work pertaining to this work.

SD-456 South Interceptor at Oakland Coliseum Rehabilitation

This segment of the South Interceptor includes two locations where emergency repairs were made in 2022. Reinforced concrete caps, 20 to 30-feet downstream of manholes S08 and S09, were required to make immediate, temporary repairs to the severely corroded pipe crown at both locations. This next phase of repairs will fully address corrosion in the interceptor between manholes S07 and S10.

Project Challenges:

A preliminary design has been prepared but the District is seeking a consultant to reevaluate the existing design and address the following before finalizing the design:

- Determine the best method for pipeline and manhole repair. The pipeline is hydraulically limited between S08 and S09, so sliplining will require consideration of approaches to minimize hydraulic impacts.

- Hydraulic evaluation – the District is currently working with a consultant that has developed a hydraulic model of the interceptor system. This model can be used to assist with evaluation of the hydraulic impacts of modifications to the South Interceptor in this area. The consultant hired for this project will have to coordinate with the hydraulic modeling consultant and will be given access to a modified output of the current interceptor hydraulic model (in PDF form) to evaluate impacts of the proposed repairs and modifications.
- Proximity to Elmhurst Creek –the work adjacent to Elmhurst Creek may require coordination with BCDC.
- Environmental documentation – assist with assessing any environmental impacts of the project.
- Oakland Coliseum, Oakland Roots, and other stakeholders – coordinate with the Oakland Coliseum and any other agencies that may have jurisdiction and interests in the area of the work. The Oakland Roots soccer team has expressed an interest in building a stadium in the parking lot (referred to as the Malibu Lot) between S08 and S09.
- City of Oakland – coordinate with the City of Oakland engineering department to address any impacts of the proposed work on their connecting main sewer pipelines, which are fairly significant in this area.
- Existing utilities – coordinate with existing utility companies that may have facilities in the area. There are some overhead high voltage power lines in the area.
- Geotechnical investigation – provide geotechnical investigation as needed for the new work. This may include assessment of soil contamination assessment of the soils and groundwater that may affect the construction, especially in the area of the access pits.

SD-458 North Interceptor Relocation at Ashby Avenue Interchange

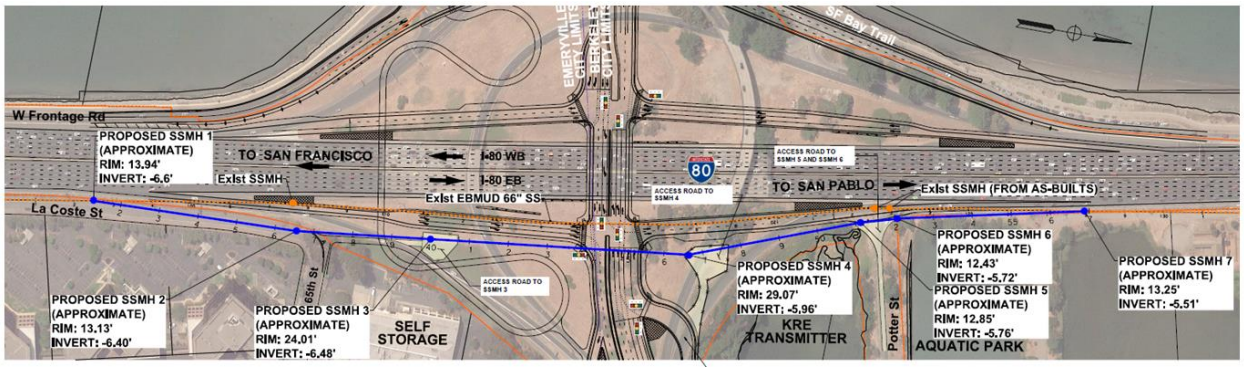
The California Department of Transportation (Caltrans) in partnership with local agency Alameda County Transportation Commission (ACTC) is realigning the Interstate 80 (I-80) at the interchange with Ashby Avenue. Caltrans/ACTC has a design of the realignment but the project is on hold pending funding. The District intends to retain a Consultant to evaluate the realignment design and decide on an approach for rehabilitating or relocating its interceptor at this location. The Consultant will need to coordinate with Caltrans/ACTC on schedule (when their project will be restarted), to communicate District needs, and to sequence construction activities (if applicable). The District's initial plan is to relocate approximately 3,000-feet of the North Interceptor in this area. However, with the delayed schedule, the Consultant should also evaluate the cost-benefit of rehabilitation versus relocation for the interceptor. The project location is shown on Figure 1.

The North Interceptor collects sewage from the cities of Richmond, Albany, El Cerrito, Berkeley, Emeryville and Oakland, and conveys it to the Main Wastewater Treatment Plant (MWWTP). Each city is responsible for operation and maintenance of their respective collection system while the District operates and maintains the interceptor system. The North Interceptor alignment is parallel to and immediately adjacent to the Caltrans I-80 right of way.

The Consultant will only be expected to complete a basis of design (BOD) or predesign for this project. If the schedule accelerates, there may be an opportunity to continue working on the detailed design but that is not included in this RFP. The Consultant is expected to lead conversations with Caltrans and other stakeholders to clearly identify next steps for the District to move forward on this project after the BOD. The Consultant should identify whether a separate Environmental Impact Report would be needed for the approach selected.

Figure 1. Area Map – I-80 and Ashby Avenue Interchange Improvements

Figure 2. New North Interceptor alignment proposed by Caltrans/ACTC, July 2023



Project Challenges:

A conceptual design was prepared by the District and then forwarded to Caltrans/ACTC to incorporate in the preliminary design by their consultant.

Some of the challenges with the design include:

- Caltrans/ACTC have prepared a design, which may make any District initiated design changes difficult. The consultant will be required to assess the Caltrans/ACTC design and make recommendations to the District for changes.
- Hydraulics – the new alignment cannot impact the existing North Interceptor hydraulics. District's consultant Brown & Caldwell has developed an InfoSWMM hydraulic model for the interceptor system that can be used for this project. The consultant will be required to use this model to test the various hydraulic conditions relevant to this project. The Consultant may have to use computational fluid dynamics to model headloss at the connection between existing and relocated interceptor, and at the storm drain undercrossing (if Proposer believes this is necessary, please include as an optional scope item).
- Environmental documentation – assist with assessing any environmental impacts of the project.
- Other agencies – coordinate with any agencies that may have jurisdiction over the work. For example, the work on the banks of the Aquatic Park ponds may require coordination with BCDC.
- Geotechnical investigation – provide geotechnical investigation as needed for the new work. This may include assessment of the soils and groundwater that may affect the construction
- Technical details – custom fabricated structural sections may be needed to tie existing and new pipe segments or new manhole structures together. Consultant will review available alternatives (materials, manufacturers, etc.) and provide preliminary mechanical and structural calculations to verify design loads and approximate footprints.
- Cities of Berkeley and Emeryville – both of these cities have jurisdiction in the area of the project and their collection systems tie into the North Interceptor. The storm drain crossing at Potter Street, between manholes N27 and N28, will have to coordinated with the City of Berkeley.
- Existing utilities – coordinate with existing utility companies that may have facilities in the area. The District has not done a utility investigation of the project area.

Exhibit G-1

SD-453 Alameda Interceptor Rehabilitation Phase 3

Constitution Way

1. Scope of Work
2. Condition Summary
3. Conceptual Drawings and As-builts
4. Reference Material List

Exhibit G-1.1

SCOPE OF SERVICES

Consultant Engineering Services for

SD-453 Alameda Interceptor Rehabilitation Phase 3

Constitution Way

The scope provided is illustrative only. The actual scope will be developed with the selected Proposer.

PROJECT UNDERSTANDING

The District inspected its 60-inch (I.D.) reinforced concrete gravity interceptor in June 2022 and found approximately 700 feet of severely corroded pipe needing rehabilitation. The pipe is located between MHs A47 and A48 in Alameda, CA. The SD-453 Alameda Interceptor Rehabilitation Phase 3 project is a capital improvement project to rehabilitate the most deteriorated sections of the District's Alameda Interceptor.

Additional, less-severely-corroded pipe was found between MHs A45A and A46A. A preliminary design is needed to determine the rehabilitation extent between A44 and A48. See Exhibit G-1.2 Condition Summary for more information. CCTV inspection videos are also available (see Exhibit G-1.4). The design scope will include interceptor rehabilitation and MH lining.

The District sliplined approximately 4,200 feet of the Alameda Interceptor upstream of this project in early 2023. The contractor found approximately one-quarter of the pipe to be full of debris, mainly sand, when cleaning. The District wants to review whether a sand trap of some sort would be beneficial for the maintenance of the Alameda Interceptor. The facility would be built over a sliplining access pit (used for the rehabilitation), likely near A48, and either serve as an access point for manual cleaning with a hydrojetter or bucket (sled), or mechanically trap heavy sediments and periodically remove them from the pipe invert. A planning level study is needed to evaluate alternatives, capital and operational costs, community impacts, and feasibility. The design scope will depend on the District's decision on the rehabilitation extent and sediment processing facility.

DEFINITIONS

- District or EBMUD – East Bay Municipal Utility District
- Consultant – The individual, partnership, joint venture, or corporation with whom the contract is made by the District
- Work, Task, or Subtask – All labor, material, equipment, submittal, and appurtenances required to be completed or furnished by the Consultant under the contract documents
- Contract – Agreement between the Consultant and District describing the terms and conditions for services provided
- Deliverable – Item to be prepared by the Consultant and submitted to the District, as described in the Scope of Work
- MWWTP – Main Wastewater Treatment Plant
- MH – Manhole (Maintenance hole)
- I.D. – Inner diameter
- P.E. – professional engineer licensed in the state of California

SCOPE OF WORK

Summary of Tasks	
Task	**Description**
1	Project Management
2	Predesign (10%)
3	50% Design
4	90% Design
5	Final Design
6	Bid Period Services
7	Engineering Services During Construction
Optional Tasks	
8	Allowance for Condition Assessment
9	Allowance for Site Investigation
10	Allowance for Traffic Engineering
11	Allowance for Intermediate Design Submittals

ANTICIPATED SCHEDULE

EVENT	DATE
Project Kickoff	August 2024
Predesign Submittal	October 2024
50% Design Submittal	January 2025
90% Design Submittal	February 2025
Final Design Submittal	March 2025
Construction Bid Advertisement	April 2025
Estimated Construction Completion*	October 2026

*not including scope for sand trap or sediment processing facility.

Task 1 – Project Management

1.1. Project Management

The Consultant shall designate a project manager (PM) who will oversee administration and management for this Project. The Consultant PM will oversee the Consultant's staff and any subconsultants under Contract with the Consultant. The Consultant shall provide continuity of workflow and designate a new PM if the Consultant PM is to change during the duration of the contract.

Assumptions:

- This task includes the preparation of subconsultant contracts and development of project control tools.

1.2. Invoicing, Progress Reports, and Schedule Updates

The Consultant shall prepare a monthly invoice including the following:

- Progress Report summarizing the percent completion by budget expenditures and work activities completed. Each monthly Progress Report will include at minimum key items outlined for each Task.
- Updated Schedule with milestones broken down by Task and Subtasks. The schedule shall be a Microsoft Project Gannt Chart, including a column showing the percent complete for each task.
- Project tracking by Task and Subtask based on monthly burn rate and progress (i.e. s-curve). Task orders may be issued to reallocate budget between tasks.

Assumptions:

- Consultant billing rates may be adjusted annually.

Deliverables:

- Monthly invoices with progress reports and schedule updates in PDF format.

1.3. Bi-Weekly Progress Meetings and Kick-off Meeting

The Consultant PM shall participate in biweekly progress meetings through Bid Period Services (Task 6), monthly progress meetings through Construction (Task 7), and user group meetings. More frequent meetings may be held between District and Consultant staff. The Consultant PM and key staff shall attend a kick-off meeting and prepare agenda, minutes, and action items. Separate User Group meetings will also be held at each design milestone with the User Group and with the Department Management Team; design submittal User Group meetings are

budgeted under their respective tasks.

Deliverables:

- Biweekly meetings agendas and minutes, including action items, as PDF files.
- Kick-off meeting Powerpoint, agenda and minutes, including action items, as PDF files.

1.4. QA/QC

The Consultant PM shall implement internal quality assurance and quality control reviews of each deliverable prior to submission to the District. Specifications shall be reviewed by a document processer familiar with Construction Specifications Institute (CSI) MasterFormat. The Consultant shall review design deliverables for conformance with standard District wastewater guidelines.

Task 2 – Predesign (10%)

2.1 Review Existing Documents

Consultant shall perform a comprehensive review of existing documents. These include the following:

- CCTV and inspection media
- As-built drawings
- Conceptual design drawings
- Master front-end and technical specifications
- Utility and right-of-way maps
- Data (flows, sediment levels, survey)
- Vendor cutsheets and product literature

Assumptions:

- District provided reference documents have not been verified for accuracy. Consultant shall be responsible for verifying the accuracy in field.

2.2 Predesign Report

Consultant shall prepare draft and final Predesign Report with an alternatives analysis on the rehabilitation scope between A44 and A48, and whether a sediment processing facility (or sand trap) would be beneficial to the maintenance of the Alameda Interceptor.

Rehabilitation scope between A44 and A48:

- Review a menu of rehabilitation technologies with the District during the Kick-off meeting for interceptor rehabilitation and MH lining. District will advise on which technologies to evaluate for the predesign.
- Evaluate cost (net present value), public impacts, permitting, risk of failure, long-term implication, operational impacts, and other factors to determine the rehabilitation extents. At minimum, the pipe between A47 and A48 shall be included in the rehabilitation.
- Provide a recommendation for the rehabilitation technology and scope. If certain reaches are not included in the rehabilitation, provide a recommendation for future routine inspection and rehabilitation approach.
- Identify external stakeholders, encroachment permits needed, and coordination activities (i.e. projects with overlapping schedules) with other agencies.
- Review odor control when slipline insertion pits are open.

Sediment Processing Facility:

- Present successful examples of how sediment in large diameter sewers (above 48-inch I.D.) is managed at other agencies. Note, hydrojetting has not been successfully used on the District's interceptor.
- Provide a discussion on whether a new sediment processing facility would be practical for removing interceptor debris if included as part of the rehabilitation. This assumes an excavation would be needed for the rehabilitation near A48. Evaluate different technologies, hydraulics, capital and operational cost, property acquisition, impacts to the public, and long-term benefits to maintenance of the Alameda Interceptor.
- Prepare a workplan for CEQA documentation (if applicable).
- Provide a recommendation for maintenance of sewer debris in the Alameda Interceptor.

Assumptions:

- District will prepare one set of coordinated review comments based on Draft Report submittal. Consultant will respond to comments and prepare final Report within one review cycle (typical for all deliverable reviews).
- Final report shall be stamped by Consultant P.E.

Deliverables:

- Draft and Final Predesign Report in PDF format.
- Response to comments in Excel spreadsheet format.

2.3 User Group Meeting – Predesign

Consultant shall lead a User Group meeting (O&M staff, end-users, engineering) to summarize findings, as follows:

- Consultant shall prepare and present PowerPoint slides for the meeting.
- Consultant shall prepare meeting agenda, minutes, and action items.
- District shall provide feedback on rehabilitation scope and interceptor sediment management

Assumptions:

- User Group meeting will be held via conference call (or at the District MMWTP).

Deliverables:

- Meeting PowerPoint slides, agenda, and minutes, including action items.

General Requirements for Detailed Design (Task 3, 4, and 5) include:

1. Drawings shall be submitted in AutoCAD or MicroStation format at each design phase and comply with EBMUD's "Wastewater Department Computer Aided Design and Drafting (CADD) Standard Guidelines". Drawing submittals will also be submitted in PDF format.
2. Specifications will be prepared using the modified Construction Specifications Institute (CSI) format. Specifications shall be submitted in both MS Word and PDF formats.
3. Consultant shall provide updated record drawings that match field observations. The District will provide record drawings for use as background files. The District has not confirmed the accuracy of these drawings. The District will provide coordinated review comments for draft submittals in the form of drawing markups and tabulated specification comments to the Consultant within 3 weeks of each design submittal (except for the Final design submittal). The Consultant will prepare responses for each review comment, describing the action taken and noting if any follow-up discussion is necessary. Responses to comments will be provided to the District in Excel spreadsheet format.
4. The District reserves the ability to shift budget between Tasks and Subtasks as needed to complete the overall design or other Tasks. Unused monies in allowances or optional items shall be returned to the District.

Task 3 – 50% Design

The 50% Design deliverable will include plans and specifications for the selected technology

for interceptor pipe rehabilitation and MH lining (for corrosion prevention). If excavations are needed (i.e. slipline pipe insertion pits), consultant will provide a recommendation for excavation locations to minimize cost and public impacts. Consultant will support the District in coordination activities with external stakeholders (i.e. attending meetings, preparing markups, responding to questions). Consultant will lead a User Group meeting to solicit feedback on the 50% design submittal and attend a District management briefing.

Assumptions:

- The District will provide standard "front-end" specifications (Divisions 00 and 01). The Consultant is responsible for reviewing and updating the front-end specifications to ensure consistency in the contract documents. The Consultant shall provide detailed recommendations for these sections including the bid schedule, work restrictions, special project procedures, safety and environmental requirements, etc.

Deliverables:

- User Group Meeting PowerPoint slides, agenda, and minutes, including action items.
- Drawings and specifications in PDF format. Drawings will also be submitted in AutoCAD. Full drawing list will be provided but some drawings may be incomplete.
- Cost estimate and schedule.
- Design criteria.
- Identify if major equipment will need to be sole sourced.
- Response to comments in Excel spreadsheet format.

Task 4 – 90% Design

Consultant will submit an updated set of plans and specifications based on review comments from the previous milestone. Consultant will lead a User Group meeting to solicit feedback on the 90% design submittal and attend a District management briefing.

Deliverables:

- User Group Meeting PowerPoint slides, agenda, and minutes, including action items
- Drawings and specifications in PDF format. Drawings will also be submitted in AutoCAD format. Drawings will be complete and biddable. Specifications will include reviewed and revised versions of the District's front-end specifications including finalized bid schedule, project constraints, and environmental requirements.
- AACE Class 2 Cost estimate and schedule. (AACE - Association for the Advancement of Cost Engineering)
- Response to comments in Excel spreadsheet format.

Task 5 – Final Design

Consultant will submit an updated set of plans and specifications based on review

comments from the previous milestone. Consultant will lead a User Group meeting to solicit feedback on the Final design submittal and attend a District management briefing.

Deliverables:

- User Group Meeting PowerPoint slides, agenda, and minutes, including action items.
- Drawings and specifications in PDF format. Drawings will also be submitted in AutoCAD or MicroStation format. Drawings and specifications will be stamped (by licensed Professional Engineers in California) by both the Consultant and District and will be suitable for bid advertisement.
- AACE Class 1 Cost estimate and schedule.
- Response to District comments in Excel spreadsheet format.

Task 6 – Bid Period Services

This task includes technical support for the District during the bidding process.

6.1 Prebid Meeting and Addenda

Consultant shall prepare bid document addenda to address revisions to the design.

Assumptions:

- District will prepare and distribute hard copies of the Bid Documents.
- Consultant will attend one pre-bid meeting.
- Consultant will respond to questions.
- It is assumed that no major drawing revisions will be required. Consultant may mark-up drawings in response to bidders' questions.

Deliverables:

- Up to Three Addenda

6.2 Prepare Conformed Set

Consultant shall prepare conformed contract documents incorporating addenda issued during the bid period.

Assumptions:

- District will distribute hard copies of the Conformed Set.

Deliverables:

- Conformed Plans and Specifications in PDF format. Drawings will also be submitted in AutoCAD format.
- Conformed documents will be stripped of Consultant signatures and marked as Conformed.

Task 7 – Engineering Services During Construction

This task includes engineering services during construction (ESDC). It is assumed that the District Construction Manager (CM) will be responsible for oversight and management of construction and will initiate, input, review, and meet with Consultant as needed throughout the project. When necessary, it is assumed that the CM will be responsible for communicating and obtaining input or direction from the District and/or Contractor. It is also assumed that the CM will be responsible for all inspection, special inspection, field testing, and witnessed factory and performance testing as required by the Contract Documents, and no such services are included in this Scope of Work, unless otherwise indicated.

Consultant will review submittals, change orders, and clarification requests during construction as described in the following sections. The Consultant will receive change orders, RFIs, and other construction related documents and submit responses through a District-provided construction management software, Kahua.

7.1 Review Submittals

Consultant will review Contractor submittals. Consultant will prepare written engineer's review comments for each submittal.

7.2 Respond to Requests for Information

Consultant will answer questions from the Contractor and CM to clarify the contract documents and design intent.

7.3 Prepare Construction Change Documents

Consultant will answer questions from the Contractor and CM to clarify the contract documents and design intent.

7.4 Field Services and Progress Meetings

Consultant will virtually attend regular weekly construction meetings and special as-needed construction meetings, and perform site visits as needed, to observe construction, provide input to the District/CM for consideration in directing the Contractor, and/or resolve issues related to change orders/clarifications.

7.5 Start-up and Commissioning, Operation & Maintenance Training

(for Sediment Processing Facility ONLY)

Consultant will support start-up testing for the Sediment Processing Facility.

Deliverables:

- Brief written documentation of witnessed activities, including record of issues

for resolution.

7.6 Record Drawings

This subtask consists of the preparation of the final record drawings for the project. Based on information provided by the District and Contractor. Consultant will modify the project drawings to reflect Contractor's redlined drawings.

OPTIONAL TASKS

The Proposer may propose additional tasks as optional services to the District in their Proposal. Explain the added value and reasoning for any additional tasks.

The District reserves the option to request additional services from the Consultant, including, but not limited to the following:

Task 8 – Allowance for Condition Assessment

Consultant may be required to perform condition assessment of the Alameda Interceptor by manned or unmanned methods throughout the project. For manned entry into the interceptor, Consultant shall submit job hazard analysis, work plan, and certificates of staff entering the interceptor. Consultant will also prepare any encroachment permits, traffic control, and other materials as needed to perform condition assessment as it pertains to the other Tasks. Unmanned condition assessment may include but is not limited to CCTV inspection or multi-sensor inspection.

Task 9 – Allowance for Site Investigation

Consultant may be required to perform utility investigation, geotechnical analyses, or hazardous waste characterization to verify site conditions for its design. The consultant may lead potholing, ground penetrating radar, boring, and other investigations to identify site conditions for the project.

Task 10 – Allowance for Traffic Engineering

Preparation of traffic control plans or reports may be necessary for design or permitting activities. Consultant will prepare stamped traffic engineering documents if needed.

Task 11 – Allowance for Intermediate Design Deliverables

District may request the consultant to package its latest design documents into a complete checkset including plans and specifications for review in addition to the 50%, 90%, and Final Design deliverables.

Exhibit G-1.2 Condition Summary

SD-453 Alameda Interceptor - Constitution Way
A44 (Upstream MH)
A48 (Downstream MH)

C rating - some corrosion observed
D rating - circumferential reinforcing steel visible (may be for short or long stretches of pipe)

2010-2022 CCTV Inspection

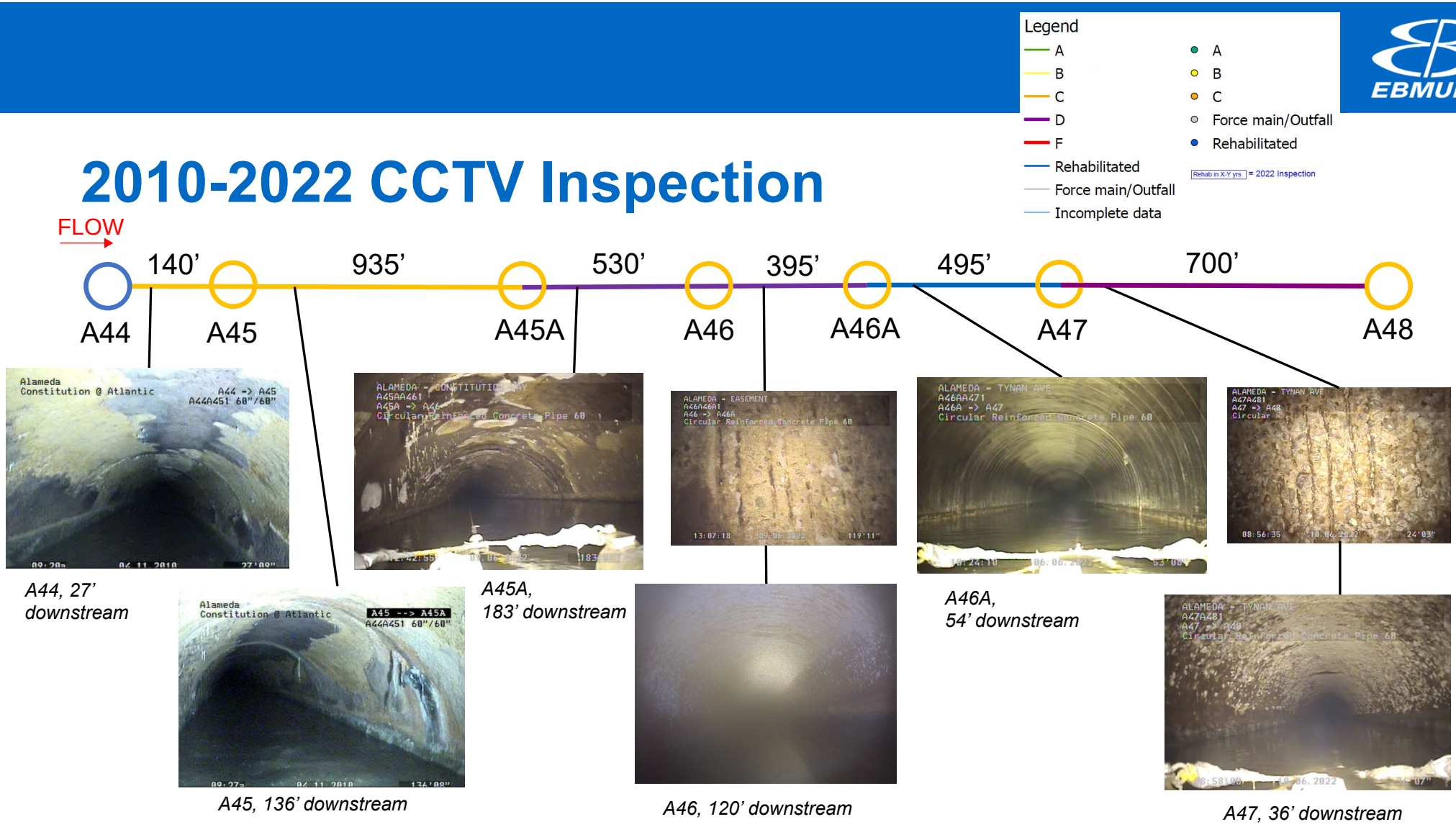


Exhibit G-1.4 Reference Material List

The following is a list of reference material that is not included in the RFP but can be provided if requested by the Proposer. Please email john.law@ebmud.com to obtain a sharepoint link to the material requested.

Raw CCTV Files

Notation (upstream MH)(downstream MH); MH – manhole (maintenance hole). The letter in front of each MH represents the interceptor name (i.e. A = Alameda Interceptor, S = South Interceptor). Typically, MH numbers increase going downstream – this is not always the case for new MHs.

- A44A45 from 2010
- A45A45A from 2010
- A45AA46 from 2022
- A46A46A from 2022
- A46AA47 from 2022
- A47A48 from 2022
- A48A52 from 2018

Exhibit G-2

SD-456 South Interceptor Rehabilitation

Coliseum

1. Scope of Work
2. Condition Summary
    A. S08S10 CCTV Reports (Raw)
    B. V&A S08S09 Assessment Report October 2023
    C. S08S10 Alternatives Review (High level)
3. Conceptual Drawings and As-builts
4. Reference Material List

Exhibit G-2.1

SCOPE OF SERVICES

Consultant Engineering Services for

SD-456 South Interceptor Rehabilitation

Coliseum

The scope provided is illustrative only. The actual scope will be developed with the selected Proposer.

PROJECT UNDERSTANDING

In January 2022, a sinkhole was found over the District's 63-inch (I.D.) South Interceptor near the Oakland Coliseum by Elmhurst Creek. The District repaired the sinkhole with a concrete cap and an additional section of pipe with a fiberglass reinforced plastic (FRP) liner. Inspection of the upstream 51-inch I.D. pipe showed severe signs of corrosion.

The Oakland Roots is planning to construct a pro soccer stadium at the Oakland Coliseum Malibu Lot on top of the District's interceptor at this location. The District may need to start rehabilitation of the South Interceptor after the Roots Stadium is constructed. The District has done some preliminary hydraulic evaluation. Due to hydraulic limitations in this reach, the Consultant will need to review alternatives that minimize the reduction of hydraulic diameter. Technologies may include modified sliplining techniques or cured-in-place pipe. The Consultant will provide plans and specifications using the selected rehabilitation method(s) for:

- the rehabilitation of interceptor pipe between S08 and S10,
- MH lining for S08, S09 and S10.

DEFINITIONS

- District or EBMUD – East Bay Municipal Utility District
- Consultant – The individual, partnership, joint venture, or corporation with whom the contract is made by the District
- Work, Task, or Subtask – All labor, material, equipment, submittal, and appurtenances required to be completed or furnished by the Consultant under the contract documents
- Contract – Agreement between the Consultant and District describing the terms and conditions for services provided
- Deliverable – Item to be prepared by the Consultant and submitted to the District, as described in the Scope of Work
- MWWTP – Main Wastewater Treatment Plant
- MH – Manhole (Maintenance hole)
- I.D. – Inner diameter
- P.E. – professional engineer licensed in the state of California

SCOPE OF WORK

Summary of Tasks	
Task	**Description**
1	Project Management
2	Predesign (10%)
3	50% Design
4	90% Design
5	Final Design
6	Bid Period Services
7	Engineering Services During Construction
Optional Tasks	
8	Allowance for Condition Assessment
9	Allowance for Utility Investigation
10	Allowance for Traffic Engineering
11	Allowance for Intermediate Design Submittals

ANTICIPATED SCHEDULE

EVENT	DATE
Project Kickoff	August 2024
Predesign Submittal	October 2024
50% Design Submittal	January 2025
90% Design Submittal	February 2025
Final Design Submittal	March 2025
Construction Bid Advertisement	April 2025
Estimated Construction Completion	October 2026

Task 1 – Project Management

1.1. Project Management

The Consultant shall designate a project manager (PM) who will oversee administration and management for this Project. The Consultant PM will oversee the Consultant's staff and any subconsultants under Contract with the Consultant. The Consultant shall provide continuity of workflow and designate a new PM if the Consultant PM is to change during the duration of the contract.

Assumptions:

- This task includes the preparation of subconsultant contracts and development of project control tools.

1.2. Invoicing, Progress Reports, and Schedule Updates

The Consultant shall prepare a monthly invoice including the following:

- Progress Report summarizing the percent completion by budget expenditures and work activities completed. Each monthly Progress Report will include at minimum key items outlined for each Task.
- Updated Schedule with milestones broken down by Task and Subtasks. The schedule shall be a Microsoft Project Gannt Chart, including a column showing the percent complete for each task.
- Project tracking by Task and Subtask based on monthly burn rate and progress (i.e. s-curve). Task orders may be issued to reallocate budget between tasks.

Assumptions:

- Consultant billing rates may be adjusted annually.

Deliverables:

- Monthly invoices with progress reports and schedule updates in PDF format.

1.3. Bi-Weekly Progress Meetings and Kick-off Meeting

The Consultant PM shall participate in biweekly progress meetings through Bid Period Services (Task 6), monthly progress meetings through Construction (Task 7), and user group meetings. More frequent meetings may be held between District and Consultant staff. The Consultant PM and key staff shall attend a kick-off meeting and prepare agenda, minutes, and action items. Separate User Group meetings will also be held at each design milestone with the User Group and with the Department Management Team; design submittal User Group meetings are

budgeted under their respective tasks.

Deliverables:

- Biweekly meetings agendas and minutes, including action items, as PDF files.
- Kick-off meeting Powerpoint, agenda and minutes, including action items, as PDF files.

1.4. QA/QC

The Consultant PM shall implement internal quality assurance and quality control reviews of each deliverable prior to submission to the District. Specifications shall be reviewed by a document processer familiar with Construction Specifications Institute (CSI) MasterFormat. The Consultant shall review design deliverables for conformance with standard District wastewater guidelines.

Task 2 – Predesign (10%)

2.1 Review Existing Documents

Consultant shall perform a comprehensive review of existing documents. These include the following:

- CCTV and inspection media
- As-built drawings
- Conceptual design drawings
- Master front-end and technical specifications
- Utility and right-of-way maps
- Data (flows, sediment levels, survey)
- Vendor cutsheets and product literature

Assumptions:

- District provided reference documents have not been verified for accuracy. Consultant shall be responsible for verifying the accuracy in field.

2.2 Predesign Report

Consultant shall prepare draft and final Predesign Report reviewing the hydraulic impacts of sliplining (using information from the District's model provided by others), discussion on recommended rehabilitation scope, and costs. The Consultant will also provide a discussion, including input from fiberglass reinforced polymer mortar pipe (FRPMP) or glass reinforced plastic (GRP) pipe manufacturers, of installing a slipline pipe with only a 2-inch annular space

between the slipline pipe and host pipe (consultant may need to coordinate LiDAR of the pipe). If slipline pipe with a stiffness below 42 psi is used, submit load calculations assuming a fully deteriorated pipe. The Consultant will summarize its recommendations for interceptor rehabilitation and MH lining, and review the risks and tradeoffs for each alternative.

Assumptions:

- District will prepare one set of coordinated review comments based on Draft Report submittal. Consultant will respond to comments and prepare final Report within one review cycle (typical for all deliverable reviews).
- Final report shall be stamped by Consultant P.E.

Deliverables:

- Draft and Final Predesign Report in PDF format.
- Response to comments in Excel spreadsheet format.

2.3 User Group Meeting – Predesign

Consultant shall lead a User Group meeting (O&M staff, end-users, engineering) to summarize findings, as follows:

- Consultant shall prepare and present PowerPoint slides for the meeting.
- Consultant shall prepare meeting agenda, minutes, and action items.
- District shall provide feedback on rehabilitation scope and interceptor sediment management.

Assumptions:

- User Group meeting will be held at via Conference Call (or at the District).

Deliverables:

- Meeting PowerPoint slides, agenda, and minutes, including action items.

General Requirements for Detailed Design (Task 3, 4, and 5) include:

1. Drawings shall be submitted in AutoCAD or Microstation format at each design phase and comply with EBMUD's "Wastewater Department Computer Aided Design and Drafting (CADD) Standard Guidelines". Drawing submittals will also be submitted in PDF format.
2. Specifications will be prepared using the modified Construction Specifications Institute (CSI) format. Specifications shall be submitted in both MS Word and PDF formats.
3. Consultant shall provide updated record drawings that match field observations.

The District will provide record drawings for use as background files. The District has not confirmed the accuracy of these drawings. The District will provide coordinated review comments for draft submittals in the form of drawing markups and tabulated specification comments to the Consultant within 3 weeks of each design submittal (except for the Final design submittal). The Consultant will prepare responses for each review comment, describing the action taken and noting if any follow-up discussion is necessary. Responses to comments will be provided to the District in Excel spreadsheet format.

4. The District reserves the ability to shift budget between Tasks and Subtasks as needed to complete the overall design or other Tasks. Unused monies in allowances or optional items shall be returned to the District.

Task 3 – 50% Design

The 50% design will include plans and specifications for the selected technology for interceptor pipe rehabilitation and MH lining (for corrosion prevention). The deliverables will depend on the type of rehabilitation technology selected. If excavations are needed, consultant will provide a recommendation for excavation locations to minimize cost and public impacts. If sewer bypass pumping is required, Consultant will provide live flow monitoring (for up to 2-months) and provide a full design for a bypass pumping system. Consultant will lead the User Group meeting to solicit feedback on the 50% design submittal and attend a District management briefing.

Assumptions:

- The District will provide standard "front-end" specifications (Divisions 00 and 01). The Consultant is responsible for reviewing and updating the front-end specifications to ensure consistency in the contract documents. The Consultant shall provide detailed recommendations for these sections including the bid schedule, work restrictions, special project procedures, safety and environmental requirements, etc.

Deliverables:

- User Group Meeting PowerPoint slides, agenda, and minutes, including action items.
- Drawings and specifications in PDF format. Drawings will also be submitted in AutoCAD. Full drawing list will be provided but some drawings may be incomplete.
- Cost estimate and schedule.
- Design criteria.
- Identify if major equipment will need to be sole sourced.
- Response to comments in Excel spreadsheet format.

Task 4 – 90% Design

Consultant will submit an updated set of plans and specifications based on review

comments from the previous milestone. Consultant will lead the User Group meeting to solicit feedback on the 90% design submittal and attend a District management briefing.

Deliverables:

- User Group Meeting PowerPoint slides, agenda, and minutes, including action items
- Drawings and specifications in PDF format. Drawings will also be submitted in AutoCAD format. Drawings will be complete and biddable. Specifications will include reviewed and revised versions of the District's front-end specifications including finalized bid schedule, project constraints, and environmental requirements.
- AACE Class 2 Cost estimate and schedule.
- Response to comments in Excel spreadsheet format.

Task 5 – Final Design

Consultant will submit an updated set of plans and specifications based on review comments from the previous milestone. Consultant will lead the User Group meeting to solicit feedback on the Final design submittal and attend a District management briefing and Board award meeting.

Deliverables:

- User Group Meeting PowerPoint slides, agenda, and minutes, including action items.
- Drawings and specifications in PDF format. Drawings will also be submitted in Microstation format. Drawings and specifications will be stamped (by licensed Professional Engineers in California) by the Consultant and will be suitable for bid advertisement.
- AACE Class 1 Cost estimate and schedule.
- Response to District comments in Excel spreadsheet format.

Task 6 – Bid Period Services

This task includes technical support for the District during the bidding process.

6.1 Prebid Meeting and Addenda

Consultant shall prepare bid document addenda to address revisions to the design.

Assumptions:

- District will prepare and distribute hard copies of the Bid Documents.
- Consultant will attend one pre-bid meeting.
- Consultant will respond to questions.
- It is assumed that no major drawing revisions will be required. Consultant may mark-up drawings in response to bidders' questions.

Deliverables:

- Up to Three Addenda

6.2 Prepare Conformed Set

Consultant shall prepare conformed contract documents incorporating addenda issued during the bid period.

Assumptions:

- District will distribute hard copies of the Conformed Set.

Deliverables:

- Conformed Plans and Specifications in PDF format. Drawings will also be submitted in AutoCAD format.
- Conformed documents will be stripped of Consultant signatures and marked as Conformed.

Task 7 – Engineering Services During Construction

This task includes engineering services during construction (ESDC). It is assumed that the District Construction Manager (CM) will be responsible for oversight and management of construction and will initiate, input, review, and meet with Consultant as needed throughout the project. When necessary, it is assumed that the CM will be responsible for communicating and obtaining input or direction from the District and/or Contractor. It is also assumed that the CM will be responsible for all inspection, special inspection, field testing, and witnessed factory and performance testing as required by the Contract Documents, and no such services are included in this Scope of Work, unless otherwise indicated.

Consultant will review submittals, change orders, and clarification requests during construction as described in the following sections. The Consultant will receive change orders, RFIs, and other construction related documents and submit responses through a District-provided construction management software. This software is subject to change, but in the past the District has typically used Kahua.

7.1 Review Submittals

Consultant will review Contractor submittals. Consultant will prepare written engineer's review comments for each submittal.

7.2 Respond to Requests for Information

Consultant will answer questions from the Contractor and CM to clarify the contract documents and design intent.

7.3 Prepare Construction Change Documents

Consultant will answer questions from the Contractor and CM to clarify the contract documents and design intent.

7.4 Field Services and Progress Meetings

Consultant will virtually attend regular weekly construction meetings and special as-needed construction meetings, and perform site visits before or after these meetings, as needed, to observe construction, provide input to the District/CM for consideration in directing the Contractor, and/or resolve issues related to change orders/clarifications.

7.5 Start-up and Commissioning, Operation & Maintenance Training

(only for Temporary Bypass Pumping System)

Consultant will support start-up testing for the control systems. Consultant will assist the District in preparing/reviewing start-up testing checklists, emergency response plans, O&M manuals, and training documentation.

Deliverables:

- Brief written documentation of witnessed activities, including record of issues for resolution.

7.6 Record Drawings

This subtask consists of the preparation of the final record drawings for the project. Based on information provided by the District and Contractor. Consultant will modify the project drawings to reflect Contractor's redlined drawings.

OPTIONAL TASKS

The Proposer may propose additional tasks as optional services to the District in their Proposal. Explain the added value and reasoning for any additional tasks.

The District reserves the option to request additional services from the Consultant, including, but not limited to the following:

Task 8 – Allowance for Condition Assessment

Consultant may be required to perform condition assessment of the South Interceptor by manned or unmanned methods throughout the project. For manned entry into the interceptor, Consultant shall submit job hazard analysis, work plan, and certificates of staff entering the interceptor. Consultant will also prepare any encroachment permits, traffic control, and other materials as needed to perform condition assessment as it pertains to the other Tasks. Unmanned condition assessment may include but is not

limited to CCTV inspection (with Go-Pro inset) or multi-sensor inspection. Inspection may include other utilities owned by other agencies that may be affected by the work.

Task 9 – Allowance for Site Investigations
Consultant may be required to perform utility investigation, geotechnical analyses, or hazardous waste characterization to verify site conditions for its design. The consultant may lead potholing, ground penetrating radar, boring, and other investigations to identify site conditions for the project.

Task 10 – Allowance for Traffic Engineering
Preparation of traffic control plans or reports may be necessary for design or permitting activities. Consultant will prepare stamped traffic engineering documents if needed.

Task 11 – Allowance for Intermediate Design Submittals
District may request the consultant to package its latest design documents into a complete design submittal including plans and specifications for review in addition to the 50%, 90%, and Final Design deliverables.

S08S09

PDSM SOFTWARE

Project Information			
Surveyor Name	RAYMON MOORE	**Certificate Number**	U-619-70306155
Owner		**Customer**	EBMUD
Drainage Area		**PO Number**	
Pipe Segment Reference	S8-S9	**Date**	1/7/2022 09:43
Street	LOT C	**City**	OAKLAND
Comments			
Manhole			
Upstream MH	S8	**Rim to Invert (U)**	
Grade to Invert (U)		**Rim to Grade (U)**	
Downstream MH	S9	**Rim to Invert (D)**	
Grade to Invert (D)		**Rim to Grade (D)**	
Pipe Use	Sanitary Sewage Pipe	**Direction of Survey**	Downstream
Pipe			
Height (Diameter)	63	**Width**	
Shape	Circular	**Material**	Concrete Pipe (non-reinforced)
Lining Method		**Pipe Joint Length**	
Total Length		**Length Surveyed**	383
Year Constructed		**Year Renewed**	
Misc			
Flow Control	Not Controlled	**Media Label**	DVD
Purpose	Maintenance Related	**Consequence of Failure**	
Pre-Cleaning	No Pre-Cleaning	**Date Cleaned**	
Weather	Dry - No Precipitation During Survey	**Location Code**	
Additional Info		**Location Details**	
Custom			
Custom 1		**Custom 2**	
Custom 3		**Custom 4**	
Custom 5		**Custom 6**	
Custom 7		**Custom 8**	
Custom 9		**Custom 10**	
Project			
Reverse Setup ID		**Sheet (Group) Number**	
Imperial Units (US)	True	**Pressure Value**	
Work Order		**Project**	15000
Coating Method		**Completed**	No

Insp Tech Used

CCTV	Yes	**Laser**	No
Sidewall	No	**Sonar**	No
Zoom	No	**Other**	No

Inspection

Inspection Status	Complete Inspection		
Reviewed By		**Reviewer Certificate Number**	

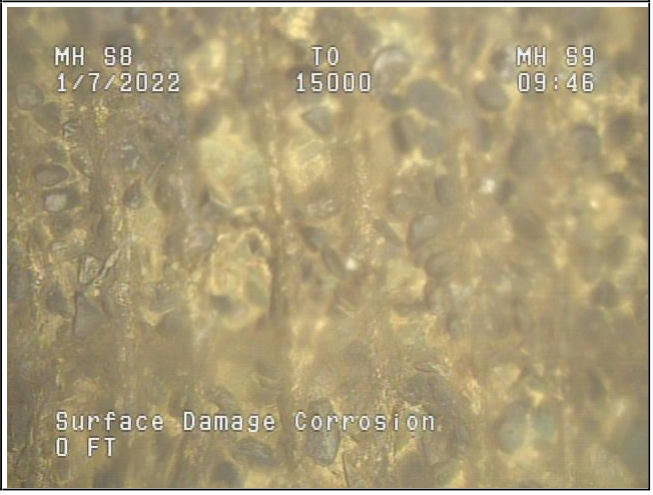
Count Groups

Taps	0	**Roots**	0
Cracks / Fractures	0	**Broken / Holes / Collapse**	0
Deposits	0	**Obstruction**	0
Abandoned Survey	1		

Scores

Structure Peak Score	3	**Structure Peak Grade**	2
Structure Mean Score	0.01	**Structure Mean Grade**	1
Service Peak Score	0	**Service Peak Grade**	1
Service Mean Score	0	**Service Mean Grade**	1

Project: 15000	
Date: 1/7/2022 9:43:00 AM	**Pipe Segment Reference:** S8-S9
Street: LOT C	**Upstream MH:** S8
Length Surveyed: 383	**Downstream MH:** S9
Run Number:	**Direction of Survey:** Downstream
Height (Diameter): 63	**Material:** Concrete Pipe (non-reinforced)

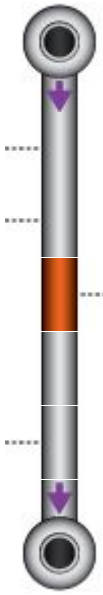
Distance	Fault Observation	Time	Picture
0.0	**Access Point Manhole** **Severity: None** **Remarks: S8**	00:00:10	
0.0	**Miscellaneous Water Level** **Severity: None** **Percent: 40**	00:00:22	
0.0	**Surface Damage Corrosion** **Position: 7 To 6** **Severity: None** **Struct Weight: 3**	00:01:39	

Distance	Fault Observation	Time	Picture
383.0	Miscellaneous Abandoned Survey Severity: None Remarks: HEAVY DEBRIS	00:32:47	

Created with the POSM report generator

Project: 15000	
Date: 1/7/2022 9:43:00 AM	**Pipe Segment Reference:** S8-S9
Street: LOT C	**Upstream MH:** S8
Length Surveyed: 383	**Downstream MH:** S9
Run Number:	**Direction of Survey:** Downstream
Height (Diameter): 63	**Material:** Concrete Pipe (non-reinforced)

Severity
Light–1
Moderate–2
Average–3
Heavy–4
Severe–5



ID Number: S8

(0.0) AMH - Access Point Manhole Remark: S8

(0.0) MWL - Miscellaneous Water Level

(0.0) SCP - Surface Damage Corrosion - Position: 7 To 6

(383.0) MSA - Miscellaneous Abandoned Survey Remark: HEAVY DEBRIS

Total Distance: 383

ID Number: S9

Created with the **report generator**

Nassco C.C.T.V. Defect Code Information

Grade	Structural	O&M	Overall
5	0	0	0
4	0	0	0
3	0	0	0
2	0	0	0
1	0	0	0
Overall	0	0	0
Number of Defects	0	0	0
Pipe Rating			
Pipe Ratings Index	0	0	0

Nassco C.C.T.V. Defect Code Information

Distance	Video Ref	Code	Cont Defect	Value			Joint	Circumferential Location	
				Dimension		%		At / From	To
				1st	2nd				
0	10	AMH - Access Point Manhole							
		S8							
0	22	MWL - Miscellaneous Water Level				40			
0	99	SCP - Surface Damage Corrosion						7	6
383	1967	MSA - Miscellaneous Abandoned Survey							
		HEAVY DEBRIS							

S09S10

Project Information

Surveyor Name	RAYMON MOORE	**Certificate Number**	U-619-70306155
Owner		**Customer**	EBMUD
Drainage Area		**PO Number**	
Pipe Segment Reference	S09-S10	**Date**	1/7/2022 07:20
Street	LOT C	**City**	OAKLAND
Comments			

Manhole

Upstream MH	S09	**Rim to Invert (U)**	
Grade to Invert (U)		**Rim to Grade (U)**	
Downstream MH	S10	**Rim to Invert (D)**	
Grade to Invert (D)		**Rim to Grade (D)**	
Pipe Use	Sanitary Sewage Pipe	**Direction of Survey**	Upstream

Pipe

Height (Diameter)	63	**Width**	
Shape	Circular	**Material**	Concrete Pipe (non-reinforced)
Lining Method		**Pipe Joint Length**	
Total Length		**Length Surveyed**	219.6
Year Constructed		**Year Renewed**	

Misc

Flow Control	Not Controlled	**Media Label**	DVD
Purpose	Maintenance Related	**Consequence of Failure**	
Pre-Cleaning	No Pre-Cleaning	**Date Cleaned**	
Weather	Dry - No Precipitation During Survey	**Location Code**	
Additional Info		**Location Details**	

Custom

Custom 1		**Custom 2**	
Custom 3		**Custom 4**	
Custom 5		**Custom 6**	
Custom 7		**Custom 8**	
Custom 9		**Custom 10**	

Project

Reverse Setup ID		**Sheet (Group) Number**	
Imperial Units (US)	True	**Pressure Value**	
Work Order		**Project**	15000
Coating Method		**Completed**	No

Insp Tech Used

CCTV	Yes	**Laser**	No
Sidewall	No	**Sonar**	No
Zoom	No	**Other**	No

Inspection

Inspection Status	Complete Inspection		
Reviewed By		**Reviewer Certificate Number**	

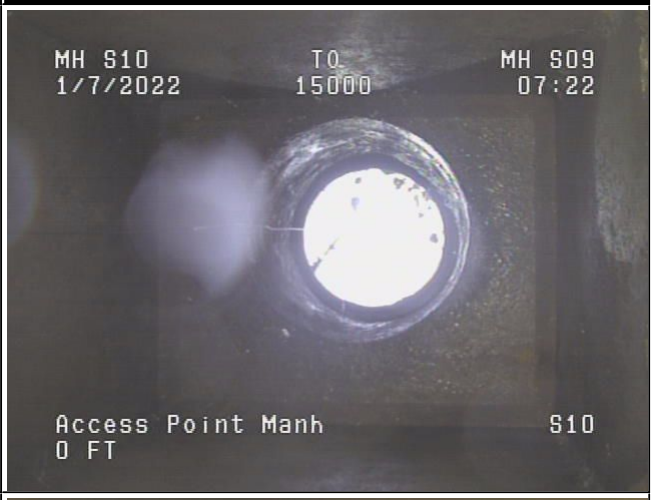
Count Groups

Taps	2	**Roots**	0
Cracks / Fractures	0	**Broken / Holes / Collapse**	0
Deposits	0	**Obstruction**	0
Abandoned Survey	1		

Scores

Structure Peak Score	0	**Structure Peak Grade**	1
Structure Mean Score	0	**Structure Mean Grade**	1
Service Peak Score	0	**Service Peak Grade**	1
Service Mean Score	0	**Service Mean Grade**	1

Project: 15000	
Date: 1/7/2022 7:20:00 AM	**Pipe Segment Reference:** S09-S10
Street: LOT C	**Upstream MH:** S09
Length Surveyed: 219.6	**Downstream MH:** S10
Run Number:	**Direction of Survey:** Upstream
Height (Diameter): 63	**Material:** Concrete Pipe (non-reinforced)

Distance	Fault Observation	Time	Picture
0.0	**Access Point Manhole** **Severity: None** **Remarks: S10**	00:00:12	
0.0	**Miscellaneous Water Level** **Severity: None** **Percent: 35**	00:00:26	
0.0	**Tap Factory** **Position: 3** **Severity: None** **Size: 4**	00:01:59	

Distance	Fault Observation	Time	Picture
0.0	Tap Factory Position: 3 Severity: None Size: 4	00:02:36	
219.6	Miscellaneous Abandoned Survey Severity: None Remarks: COULD NOT COMPLETE REVERSAL	00:35:47	

Project: 15000	
Date: 1/7/2022 7:20:00 AM	**Pipe Segment Reference:** S09-S10
Street: LOT C	**Upstream MH:** S09
Length Surveyed: 219.6	**Downstream MH:** S10
Run Number:	**Direction of Survey:** Upstream
Height (Diameter): 63	**Material:** Concrete Pipe (non-reinforced)

Severity
Light–1
Moderate–2
Average–3
Heavy–4
Severe–5

ID Number: S10

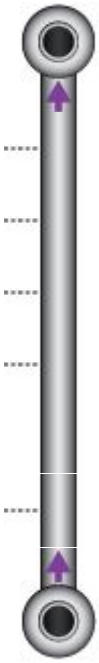
(0.0) AMH - Access Point Manhole Remark: S10

(0.0) MWL - Miscellaneous Water Level

(0.0) TF - Tap Factory - Position: 3

(0.0) TF - Tap Factory - Position: 3

(219.6) MSA - Miscellaneous Abandoned Survey Remark: COULD NOT COMPLETE REVERSAL



Total Distance: 219.6

ID Number: S09

Created with the POSM report generator

S10S11

POSM SOFTWARE

Project Information			
Surveyor Name	RAYMON MOORE	**Certificate Number**	U-619-70306155
Owner		**Customer**	EBMUD
Drainage Area		**PO Number**	
Pipe Segment Reference	S10-S11	**Date**	1/7/2022 08:18
Street	LOT C	**City**	OAKLAND
Comments			
Manhole			
Upstream MH	S10	**Rim to Invert (U)**	
Grade to Invert (U)		**Rim to Grade (U)**	
Downstream MH	S11	**Rim to Invert (D)**	
Grade to Invert (D)		**Rim to Grade (D)**	
Pipe Use	Sanitary Sewage Pipe	**Direction of Survey**	Downstream
Pipe			
Height (Diameter)	63	**Width**	
Shape	Circular	**Material**	Concrete Pipe (non-reinforced)
Lining Method		**Pipe Joint Length**	
Total Length		**Length Surveyed**	26.1
Year Constructed		**Year Renewed**	
Misc			
Flow Control	Not Controlled	**Media Label**	DVD
Purpose	Maintenance Related	**Consequence of Failure**	
Pre-Cleaning	No Pre-Cleaning	**Date Cleaned**	
Weather	Dry - No Precipitation During Survey	**Location Code**	
Additional Info		**Location Details**	
Custom			
Custom 1		**Custom 2**	
Custom 3		**Custom 4**	
Custom 5		**Custom 6**	
Custom 7		**Custom 8**	
Custom 9		**Custom 10**	
Project			
Reverse Setup ID		**Sheet (Group) Number**	
Imperial Units (US)	True	**Pressure Value**	
Work Order		**Project**	15000
Coating Method		**Completed**	No

Insp Tech Used

CCTV	Yes	**Laser**	No
Sidewall	No	**Sonar**	No
Zoom	No	**Other**	No

Inspection

Inspection Status	Complete Inspection		
Reviewed By		**Reviewer Certificate Number**	

Count Groups

Taps	0	**Roots**	0
Cracks / Fractures	0	**Broken / Holes / Collapse**	0
Deposits	0	**Obstruction**	0
Abandoned Survey	1		

Scores

Structure Peak Score	0	**Structure Peak Grade**	1
Structure Mean Score	0	**Structure Mean Grade**	1
Service Peak Score	3	**Service Peak Grade**	5.8
Service Mean Score	0.11	**Service Mean Grade**	1

Project: 15000	
Date: 1/7/2022 8:18:00 AM	**Pipe Segment Reference:** S10-S11
Street: LOT C	**Upstream MH:** S10
Length Surveyed: 26.1	**Downstream MH:** S11
Run Number:	**Direction of Survey:** Downstream
Height (Diameter): 63	**Material:** Concrete Pipe (non-reinforced)

Distance	Fault Observation	Time	Picture
0.0	**Access Point Manhole** **Severity: None** **Remarks: S10**	00:00:11	
0.0	**Miscellaneous Water Level** **Severity: None** **Percent: 35**	00:00:23	
2.7	**Infiltration Dripper Joint** **Position: 11 To 12** **Severity: None** **Joint** **Maint Weight: 3**	00:00:52	

Distance	Fault Observation	Time	Picture
26.1	Miscellaneous Abandoned Survey Severity: None Remarks: SURVEY COMPLETE	00:01:43	

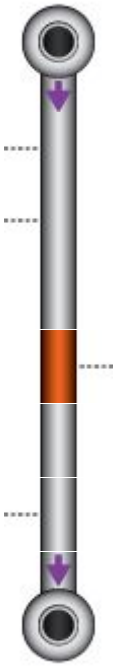
Project: 15000	
Date: 1/7/2022 8:18:00 AM	**Pipe Segment Reference:** S10-S11
Street: LOT C	**Upstream MH:** S10
Length Surveyed: 26.1	**Downstream MH:** S11
Run Number:	**Direction of Survey:** Downstream
Height (Diameter): 63	**Material:** Concrete Pipe (non-reinforced)

Severity
Light-1
Moderate-2
Average-3
Heavy-4
Severe-5

ID Number: S10

(0.0) AMH - Access Point Manhole Remark: S10

(0.0) MWL - Miscellaneous Water Level



(2.7) IDJ - Infiltration Dripper Joint - Position: 11 To 12

(26.1) MSA - Miscellaneous Abandoned Survey Remark: SURVEY COMPLETE

Total Distance: 26.1

ID Number: S11

Created with the POSM report generator

Nassco C.C.T.V. Defect Code Information

Grade	Structural	O&M	Overall
5	0	0	0
4	0	0	0
3	3	0	3
2	0	0	0
1	0	0	0
Overall	3	0	3
Number of Defects	1	0	1
Pipe Rating	3100	0000	3100
Pipe Ratings Index	3	0	3

Nassco C.C.T.V. Defect Code Information

Distance	Video Ref	Code	Cont Defect	Value			Joint	Circumferential Location	
				Dimension		%		At / From	To
				1st	2nd				
0	11	AMH - Access Point Manhole							
		S10							
0	23	MWL - Miscellaneous Water Level				35			
2.7	52	IDJ - Infiltration Dripper Joint					X	11	12
26.1	103	MSA - Miscellaneous Abandoned Survey							
		SURVEY COMPLETE							

South Interceptor Emergency Condition Assessment

East Bay Municipal Utility District

Prepared for:

Matt Hoeft
Supervisor of Wastewater Planning
EBMUD
375 11th Street
Oakland, CA 94607

Date: October 2, 2023

Revision: Final

Prepared by:

V&A consulting engineers

Job No. 22-0018

Introduction

V&A Consulting Engineers, Inc. (V&A) was retained by the East Bay Municipal Utility District (EBMUD) to conduct a condition assessment of the South Interceptor located in Oakland, California. A CCTV inspection revealed severe concrete degradation and exposed reinforcing steel between Manhole (MH) S08 and S09 of the 51-inch diameter reinforced concrete pipe (RCP). EBMUD was in the process of excavating and reinforcing the deteriorated section with a concrete cap over the pipe during the condition assessment.

EBMUD contracted V&A to determine the pipe's remaining wall thickness and presence of reinforcing steel along a 40 foot to 45-foot section of 51-inch diameter RCP. The assessment of the interceptor was conducted on February 4, 2022.

V&A assessed the condition of the pipe using the following methods:

- Surface penetrating radar (SPR) to measure the remaining wall thickness and location of the reinforcing steel
- Visual assessment and standardized rating of pipe defects using National Association of Sewer Service Companies (NASSCO) codes and VANDA® Concrete Condition Index.

The results of the field testing, including photographic documentation of existing conditions, field data, and condition ratings, are presented in this report along with a summary of V&A's conclusions. The location of the interceptor excavation site is shown in Figure 1-1.

Figure 1-1. Aerial view of Interceptor Excavation Site

1 Approach

V&A's approach for the condition assessment of the RCP focused on assessing the existing condition of the concrete. V&A used both qualitative and quantitative means to evaluate the pipe. The methods and techniques used to assess the condition of the RCP are described in this section.

1.1 Visual Assessment

Qualitative visual evaluations were conducted from outside of the assessed pipeline, focusing on the condition of the concrete surface. Cracks, delamination, corrosion, and other concrete defects referenced in American Concrete Institute (ACI) 201.1R-92, "Guide for Making a Condition Survey of Concrete in Service" were documented with digital, still photographs. It should be noted that much of the visual assessment data is subjective and is based upon V&A's extensive experience evaluating concrete structures in the water and wastewater industries. Standardized ratings used to characterize conditions were assigned based on the VANDA Concrete Index, as shown in the subsequent section.

1.1.1 VANDA Concrete Condition Index

V&A created the VANDA Concrete Condition Index (Table 1-1) to provide consistent reporting of corrosion damage based on objective criteria. Concrete condition is rated from Level 1 to Level 5 based upon field observations and measurements, with Level 1 indicating the little or no damage and Level 5 indicating severe damage. The individual criteria are applied based on engineering judgment to arrive at the overall rating.

Table 1-1. VANDA Concrete Condition Index

Condition Rating	Description	Representative Photograph
Level 1	**Little or no damage to concrete** ▪ Hardness ..... hard surface ▪ Surface profile ..... smooth, apparently intact ▪ Cracks ..... hairline width, minimal frequency ▪ Spalling ..... none ▪ Reinforcement ..... not exposed or damaged	
Level 2	**Minor surface damage** ▪ Hardness ..... soft surface layer to 1/8-inch depth ▪ Surface profile ..... fine aggregate exposed ▪ Cracks ..... hairline width, moderate frequency ▪ Spalling ..... shallow spalling, minimal frequency ▪ Reinforcement ..... not exposed or damaged	
Level 3	**Moderate surface damage** ▪ Hardness ..... soft surface layer to ¼-inch depth ▪ Surface profile ..... large aggregate exposed or protruding ▪ Cracks ..... up to 1/32-inch width, moderate frequency ▪ Spalling ..... shallow spalling, minimal frequency ▪ Reinforcement ..... exposed; minor damage, minimal frequency	
Level 4	**Loss of concrete mortar and damage to reinforcement** ▪ Hardness ..... soft paste beyond ¼-inch depth ▪ Surface profile ..... large aggregate exposed, loose, or missing ▪ Cracks ..... 1/8- to ¼-inch width, moderate frequency ▪ Spalling ..... deep spalling, moderate frequency ▪ Reinforcement ..... exposed with damage, moderate frequency	
Level 5	**Bulk loss of concrete and reinforcement** ▪ Hardness ..... soft paste beyond 1-inch depth ▪ Surface profile ..... large aggregate exposed, loose, or missing ▪ Cracks ..... over ½-inch width, or narrower and frequent ▪ Spalling ..... deep spalling, high frequency ▪ Reinforcement ..... consumed; loss of structural integrity	

1.2 Concrete Assessment Methods

V&A used various methods to evaluate the concrete condition by testing the concrete surface. The test methods used are described in this section.

1.2.1 Surface Penetrating Radar (SPR)

Concrete cover depth is an important element in corrosion protection of reinforced concrete structures. The greater the thickness of the concrete cover, the less likely that corrosive constituents have reached the embedded reinforcing steel. Per AWWA C302, the minimum distance between the circumferential steel reinforcement and the interior and exterior surface of the pipe is 1 inch. The longitudinal bar spacing must not exceed 42 inches. This minimum is also called out in the EBMUD South Interceptor record drawings.

Surface penetrating radar (SPR) was used to measure the circumferential reinforcing steel placement and identify coarse voids and defects within the evaluated concrete pipe. A radar beam scans up to 16 inches into the concrete. The unit generates a 2-dimensional image of the underlying concrete member based on the measured radar reflections. The accuracy of depth and spacing measurements are no better than 1/4-inch. Figure 1-2 shows a sample 2-dimensional image of the SPR scan with the distance scanned plotted on the x-axis and the depth scanned plotted on the y-axis.

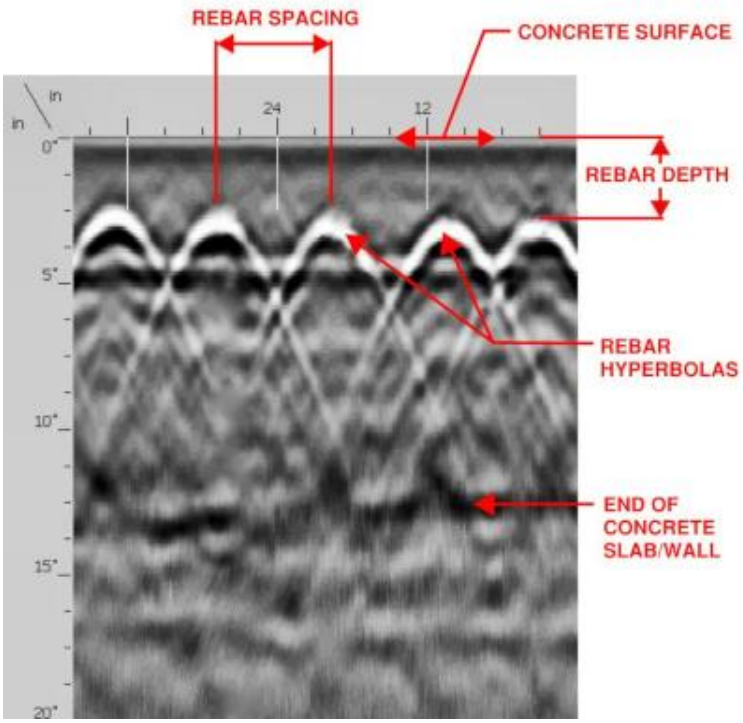


Figure 1-2. Sample Surface Penetrating Radar (SPR) Scan

2 Findings

2.1 South Interceptor

The South Interceptor RCP, between MH S08 and MH S09, was constructed in 1954 with an inside diameter of 51 inches. Downstream of MH S08, the pipe diameter is 51 inches and increases to 63 inches at MH S09, approximately 900 feet downstream. The bottom half of the pipe was encased in concrete in order to support the pipe in shallow groundwater environments. The circumferential steel reinforcement of the pipe is in an elliptical shape along the length of the pipe. According to the record drawings, the circumferential bars are approximately 3 inches apart and the minimum concrete cover over the reinforcing steel is 1 inch. There are tongue and groove pipe joints every 8 feet and the minimum wall thickness is 4.25 inches. A drawing demonstrating the reinforcements elliptical shape is shown in Figure 2-1. Stationing for the assessment was labeled from MH S08 heading downstream.

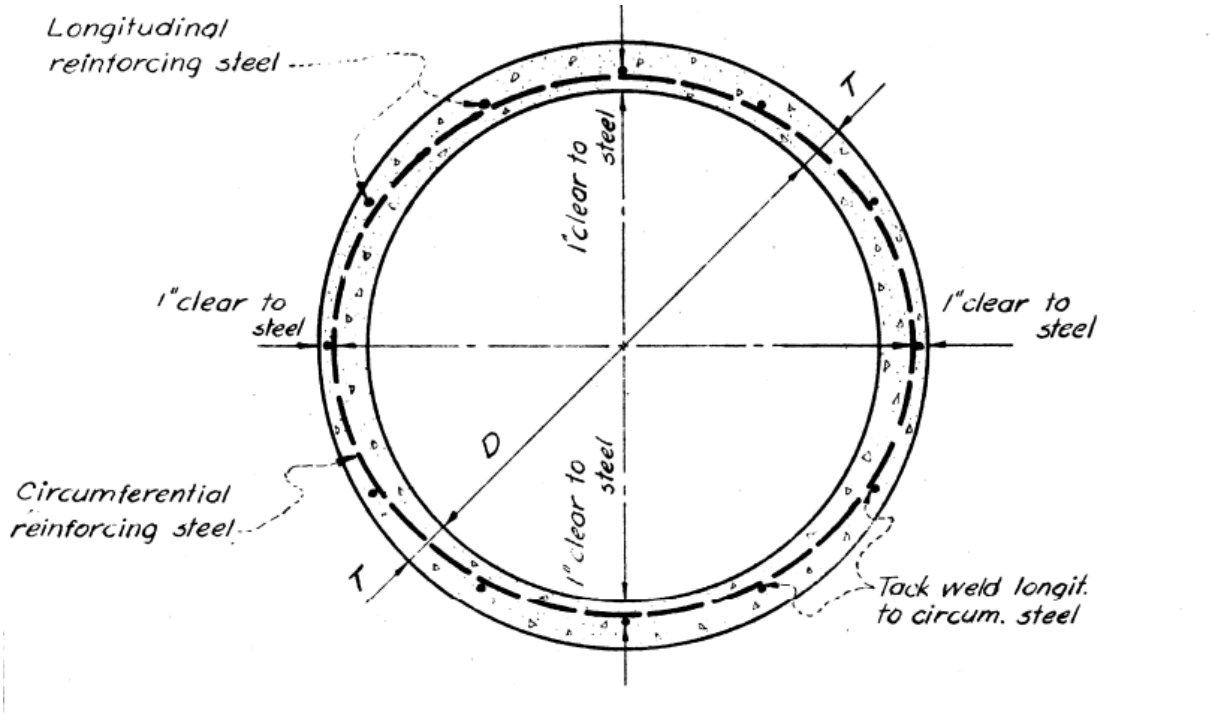


Figure 2-1. Drawing of Interceptor elliptical shaped reinforcement

2.1.1 Review of CCTV Investigation (Station 0+00 to 2+00)

On January 25, 2022, a CCTV video inspection was conducted on the first 200 feet downstream of MH S08 in order to document the extent of interior concrete deterioration. Photo 2-1 through Photo 2-5 show the areas with extensive corrosion of the exposed reinforcing steel from the 8:00 to the 4:00 position. Downstream of Stn. 0+40, the severity of deterioration decreases from a VANDA Level 5 to between a Level 3 to Level 4, as seen in Photo 2-6. The pipe surfaces are generally in VANDA Level 3 condition from Stn. 0+50 to Stn. 2+00 as seen in Photo 2-7. The pipe condition improves to a VANDA Level 2 condition at Stn. 1+99 through Stn. 3+56.6 as seen in Photo 2-8 through Photo 2-10.

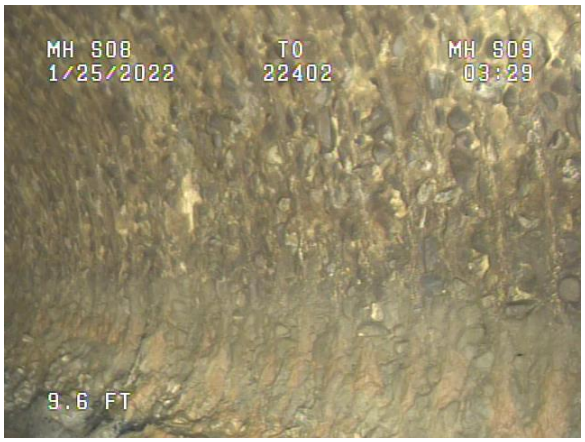


Photo 2-1. The pipe is in VANDA Level 5 condition at Stn. 0+09.6 from the 8:00 to 4:00 position.

Photo 2-2. The pipe is in VANDA Level 5 condition from the 8:00 to 4:00 position at Stn. 0+17.3.

Photo 2-3. VANDA Level 5 condition at Stn. 0+15.1 from the 8:00 to 4:00 position.

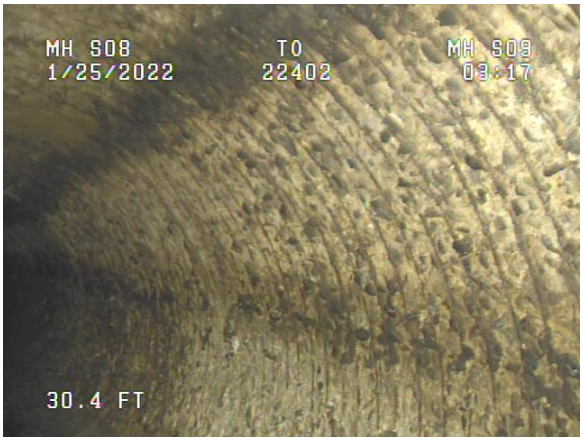


Photo 2-4. Exposed reinforcing steel at the 12:00 at Stn. 0+30.4.

Photo 2-5. The pipe is in VANDA Level 4 condition from the 8:00 to 4:00 position at Stn. 0+39.7.

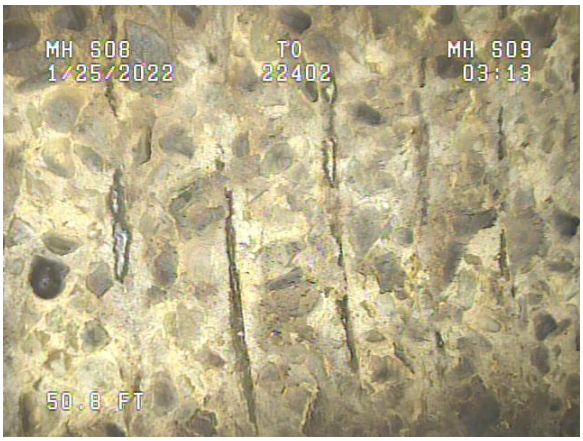


Photo 2-6. Exposed reinforcing steel at the 12:00 position at Stn. 0+50.8.

Photo 2-7. The pipe is in VANDA Level 3 condition at Stn. 0+79.3.

Photo 2-8.The pipe is in VANDA Level 2 condition at Stn. 1+98.8.

Photo 2-9. The pipe is in VANDA Level 2 condition at Stn. 3+01.5.

Photo 2-10. The pipe is in VANDA Level 2 condition at Stn. 3+56.6.

V&A has provided a NASSCO Quick Rating and Rating Index for the pipelines and manholes that were assessed. The higher the number is on the NASSCO Rating, the more deterioration there is on the pipeline. The VANDA Rating is also provided to complement the NASSCO ratings. Table 2-1 summarizes the results of the CCTV review using NASSCO defect codes. The pipe condition improves downstream of Stn. 2+00.

Table 2-1. Summary of CCTV Results per NASSCO Codes

Survey Date	Survey Time	From	To	Survey Length (ft)	NASSCO Quick Rating	NASSCO Pipe Rating Index	V&A Rating
1/7/22	9:44	MH S08	MH S09	383	5B4H	2.91	2 to 5
1/25/22	2:55	MH S08	MH S09	204	503D	3.58	3 to 5

2.1.2 Station 0+00 to 0+10

2.1.2.1 Visual Assessment

The top of the pipe was approximately 13 feet below grade and required trench shoring while excavation and repairs were performed. Approximately 6 feet downstream from the outer wall of MH S08, a 1 foot by 1-foot section of the pipe had collapsed during the excavation. The hole in the pipe was observed at the 2:30 clock position of the pipe at Stn. 0+06 as shown in Photo 2-11 and Photo 2-12.

EBMUD retained the services of Picon FRP, Inc. to install four fiberglass reinforcing layers on the first 13 feet of pipe downstream of MH S08 on Friday, February 4, 2022. Due to the visible cracking observed downstream of the first wrapped section, two fiberglass reinforcing layers were installed from Stn. 0+13 to Stn. 0+36 at the start of the following week before the concrete cap was installed over the pipe.

Photo 2-11. The pipe wall at the 2:30 position at Sta. 0+06 was severely deteriorated and damaged.

Photo 2-12. Patch over concrete breach before fiberglass repair.

Photo 2-13. Fiberglass wrap layers were installed to reinforce the pipe.

Photo 2-14. Up to 13 feet of pipe were wrapped with 4 layers of fiberglass reinforcing.

2.1.2.2 Surface Penetrating Radar

Determining the amount of concrete cover over the reinforcing steel in a corrosive environment is critical to estimating the remaining life of a structure. V&A used SPR to scan the concrete to determine the remaining concrete cover and spacing of the reinforcing steel. Table 2-2 summarizes the results of the circumferential and longitudinal reinforcing steel depth and spacing SPR scans for Stn. 0+00 to Stn. 0+010.

The original concrete cover of the reinforcement varied from a range of 1-inch to 2-inches due to the elliptical shape. Originally the reinforcement met the design minimum of 1-inch concrete cover; however, substantial corrosion was identified along the pipe, with sections of complete failure of the longitudinal and circumferential bars. The 8:00 to 4:00 clock positions showed complete loss of the circumferential reinforcement. Station 0+04 through 0+10 exhibited complete loss of the section's circumferential bars and is indicated by blank rows in Table 2-2. The longitudinal reinforcement was present along a majority of the section with complete loss at stations 0+05, 0+06, and 0+10.

Table 2-2. Station 0+00 – 0+10 SPR Summary

Station*	Clock Position	Bar Direction	Depth Max	Depth Avg	Depth Min	Space Max	Space Avg	Space Min
0+01	3 to 9	Longitudinal	1.4	1.3	1.2	14.6	14.6	14.6
0+02	3 to 9	Longitudinal	1.6	1.4	1.2	16.5	15.5	14.5
0+03	3 to 9	Longitudinal	1.8	1.6	1.3	16.2	14.7	13.3
0+04	3 to 9	Longitudinal	2.6	2.1	1.3	17.4	15.4	13.3
0+05	3 to 9	Longitudinal	-	-	-	-	-	-
0+06	3 to 9	Longitudinal	-	-	-	-	-	-
0+07	3 to 9	Longitudinal	1.7	1.7	1.7	16.2	14.7	13.3
0+08	3 to 9	Longitudinal	2.0	2.0	1.9	16.6	16.6	16.6
0+09	3 to 9	Longitudinal	2.3	1.7	1.2	18.1	16.4	14.7
0+10	3 to 9	Longitudinal	-	-	-	-	-	-
0+00 - 0+10	3:00	Circumferential	-	-	-	-	-	-
0+00 - 0+10	2:00	Circumferential	4.0	3.4	2.8	8.3	3.3	1.9
0+00 - 0+10	1:00	Circumferential	-	-	-	-	-	-
0+00 - 0+10	12:00	Circumferential	-	-	-	-	-	-
0+00 - 0+10	11:00	Circumferential	-	-	-	-	-	-
0+00 - 0+10	10:00	Circumferential	1.9	1.3	1.0	16.6	3.5	2.3
0+00 - 0+10	9:30	Circumferential	2.4	1.9	1.5	11.6	3.4	2.0

**Stationing for the assessment was referenced from Manhole S08 (Stn. 0+00) and moved downstream.*

Table 2-3 summarizes the wall thickness measurements that were collected with the SPR scanner from Stn. 0+00 to Stn. 0+10. The minimum wall thickness decreases farther downstream, which is due to the biogenic corrosion that has occurred on the interior surfaces. From Stn. 0+00 to Stn. 0+10, there was an average pipe wall thickness loss of 62%.

Table 2-3. Station 0+00 – 0+10 Wall Thickness Results

	Clock Position	Thickness Maximum (inches)	Thickness Average (inches)	Thickness Minimum (inches)
0+01	3 to 9	2.67	2.17	1.75
0+02	3 to 9	2.56	2.10	1.69
0+03	3 to 9	2.31	1.94	1.69
0+04	3 to 9	4.08	2.53	1.39
0+05	3 to 9	2.84	1.87	0.93
0+06	3 to 9	2.95	1.83	0.71
0+07	3 to 9	2.14	1.37	0.54
0+08	3 to 9	2.68	1.44	0.60
0+09	3 to 9	2.74	1.58	0.54
0+10	3 to 9	2.57	1.55	0.71

2.1.3 Station 0+11 to 0+40

2.1.3.1 Visual Assessment

The exterior concrete surface of the interceptor was overall in VANDA Level 1 condition. The surface of the pipe exhibited no defects with minor deposits of dirt on the surface in the crack locations, as shown in Photo 2-15. The concrete cradle of the pipe was in good condition with no signs or concrete degradation, as shown in Photo 2-16. Before and after the exterior of the pipe was washed down, several longitudinal cracks were observed from Stn. 0+13 to Stn. 0+36 as shown in Photo 2-17 and Photo 2-18. The cracks were mostly between the 12:00 and 3:00 positions.

Photo 2-15.Exterior surface of pipe was in good condition.

Photo 2-16 Pipe support cradle was in good condition.

Photo 2-17. Overall view of longitudinal cracks at the 12:00 to 3:00 position from Stn. 0+13 to Stn. 0+36.

Photo 2-18. Longitudinal cracks at the 1:00 to 2:00 from Stn. 0+28 to Stn. 0+36.

2.1.3.2 Surface Penetrating Radar

Table 2-4 summarizes the result of the SPR scans for stations 0+11 to 0+40. The original concrete cover of the reinforcement varied from a range of 1-inch to 2-inches due to the elliptical shape. In general, the reinforcement met the design minimum requirement of 2-inches of concrete cover.

Table 2-4. Station 0+11 to 0+40 SPR Summary

Station	Clock Position	Bar Direction	Depth Max	Depth Avg	Depth Min	Space Max	Space Avg	Space Min
0+11	-	Longitudinal	2.3	2.0	1.3	16.2	14.2	11.5
0+12	-	Longitudinal	2.3	1.8	0.9	17.7	14.8	11.7
0+13	-	Longitudinal	1.9	1.6	1.0	18.1	14.9	11.0
0+14	-	Longitudinal	2.2	1.9	1.7	17.6	14.2	10.6
0+15	-	Longitudinal	2.1	1.7	0.9	17.1	14.5	10.6
0+16	-	Longitudinal	2.2	1.8	1.1	17.6	14.6	10.7
0+17	-	Longitudinal	2.0	1.7	1.0	17.2	14.9	11.2
0+18	-	Longitudinal	2.0	1.7	1.3	17.4	14.9	11.5
0+19	-	Longitudinal	1.9	1.8	1.4	17.4	14.7	10.1
0+20	-	Longitudinal	2.3	1.6	0.8	18.8	15.4	11.9
0+21	-	Longitudinal	2.0	1.3	0.9	16.5	14.3	11.6
0+22	-	Longitudinal	2.1	1.4	0.9	20.8	15.6	10.9
0+23	-	Longitudinal	2.1	1.5	0.8	20.3	15.4	9.9
0+24	-	Longitudinal	2.1	1.4	0.9	16.9	14.1	10.7
0+25	-	Longitudinal	2.0	1.4	0.9	16.0	14.2	10.9
0+26	-	Longitudinal	2.0	1.7	1.2	20.4	16.0	10.6
0+27	-	Longitudinal	2.1	1.7	1.4	18.3	15.5	11.5
0+28	-	Longitudinal	2.3	1.8	1.3	18.0	15.2	11.2
0+29	-	Longitudinal	1.9	1.6	1.3	18.3	15.7	11.2
0+30	-	Longitudinal	2.0	1.7	1.5	17.5	15.0	10.6
0+31	-	Longitudinal	2.0	1.6	1.3	16.1	14.3	9.4
0+32	-	Longitudinal	2.1	1.6	1.3	17.8	15.0	10.5
0+33	-	Longitudinal	2.1	1.7	1.4	17.7	15.1	10.2
0+34	-	Longitudinal	2.1	1.7	1.3	17.7	14.5	10.2
0+35	-	Longitudinal	2.1	1.6	1.2	20.7	17.7	15.9
0+36	-	Longitudinal	2.1	1.7	1.2	17.7	15.3	11.9
0+37	-	Longitudinal	2.5	2.0	1.5	19.9	15.5	10.4
0+38	-	Longitudinal	2.3	1.9	1.6	19.0	14.1	10.3
0+39	-	Longitudinal	2.1	1.7	1.1	19.8	15.7	11.0
0+40	-	Longitudinal	2.2	1.9	1.5	20.2	15.1	10.3
0+11 - 0+40	2:30	Circumferential	2.2	2.0	1.7	3.5	2.7	2.1
0+11 - 0+40	2:00	Circumferential	2.4	2.1	1.8	12.1	3.8	2.3
0+11 - 0+40	1:00	Circumferential	3.4	3.0	2.7	5.3	3.0	1.8
0+11 - 0+40	12:00	Circumferential	2.7	2.4	2.3	5.9	3.1	2.2
0+11 - 0+40	11:00	Circumferential	1.9	1.3	1.0	16.6	3.5	2.3
0+11 - 0+40	10:00	Circumferential	1.7	1.7	1.7	5.5	3.2	2.5
0+11 - 0+40	9:15	Circumferential	1.8	1.6	1.3	3.3	2.9	2.5

Table 2-5 summarizes the wall thickness measurements that were collected with the SPR scanner from Stn. 0+11 to Stn. 0+40. The minimum wall thickness increases farther downstream, which may be due to less turbulence in the flow and off-gassing. From Stn. 0+11 to Stn. 0+40, there was an average pipe wall thickness loss of 45%. Most of the wall thickness loss was generally between the 1:00 to 4:00 positions and the 8:00 to 11:00 positions which is likely due to the bacteria attack generated by the fluctuating flow levels.

Table 2-5. Station 0+11 – 0+40 Wall Thickness Results

	Clock Position	Thickness Maximum (inches)	Thickness Average (inches)	Thickness Minimum (inches)
0+11	3 to 9	3.27	2.44	1.65
0+12	3 to 9	3.81	2.86	1.54
0+13	3 to 9	2.79	2.04	1.59
0+14	3 to 9	3.11	2.13	1.54
0+15	3 to 9	3.11	2.36	1.43
0+16	3 to 9	3.49	2.46	1.65
0+17	3 to 9	3.17	2.47	1.87
0+18	3 to 9	3.54	2.41	1.92
0+19	3 to 9	2.79	2.34	1.92
0+20	3 to 9	3.54	2.23	1.48
0+21	3 to 9	3.27	2.04	1.43
0+22	3 to 9	2.79	2.05	1.59
0+23	3 to 9	2.90	2.17	1.59
0+24	3 to 9	2.46	1.96	1.59
0+25	3 to 9	2.63	2.02	1.54
0+26	3 to 9	2.95	2.21	1.70
0+27	3 to 9	2.79	2.23	1.76
0+28	3 to 9	3.33	2.38	1.48
0+29	3 to 9	2.95	2.36	1.43
0+30	3 to 9	2.68	2.23	1.54
0+31	3 to 9	2.86	2.10	1.74
0+32	3 to 9	2.90	2.20	1.76
0+33	3 to 9	3.33	2.27	1.87
0+34	3 to 9	3.17	2.36	1.97
0+35	3 to 9	2.79	2.21	1.87
0+36	3 to 9	3.06	2.36	1.87
0+37	3 to 9	4.07	3.60	3.27
0+38	3 to 9	3.81	3.45	2.79
0+39	3 to 9	3.17	2.61	2.19
0+40	3 to 9	3.22	2.48	1.92

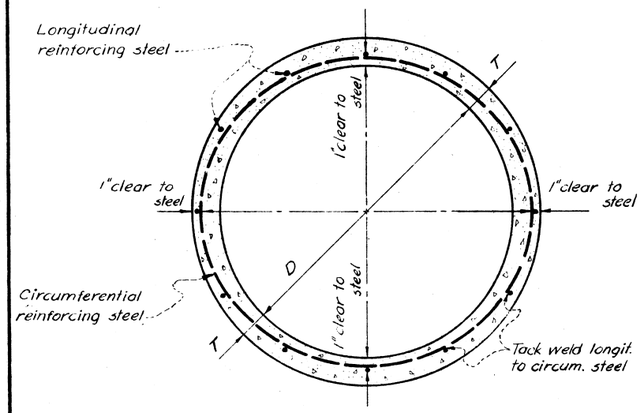
3 Conclusions

1. The interior surface of the pipe from Stn. 0+00 to Stn. 0+10 was in VANDA Level 4 or 5 condition.
2. The interior surface of the pipe from Stn. 0+11 to Stn. 200 was in VANDA Level 3 or 4 condition.
3. The CCTV video and SPR data indicate substantial reinforcement loss from station 0+00 to station 0+10. The average wall loss is 62% in this segment.
4. The CCTV video and SPR data indicate less reinforcement loss from Station 0+11 to 0+40. The average wall loss is 45% in this segment.
5. The fiberglass reinforcement of the pipe before the installation of the concrete cap will extend the life of the pipe.

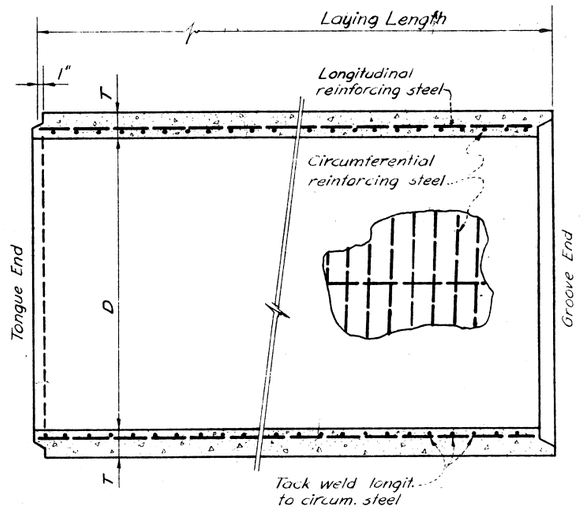
4 Recommendations

1. Remove the sediment from the pipe with a closed loop pipe cleaning system.
2. Install a cured-in-place pipe (CIPP) liner at a minimum of 200 feet. Install a Weko Seal at the termination point of the CIPP.

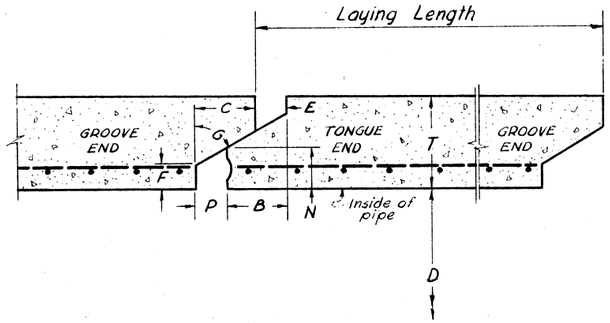
Appendix A- Drawings



TRANSVERSE PIPE SECTION



LONGITUDINAL PIPE SECTION



DETAILS OF TONGUE AND GROOVE ENDS

Inside Diameter of Pipe D	Minimum Wall Thickness T	D-Load[1]	Minimum Reinforcing Steel: Circumferential Elliptical Area in sq.ins. per foot (longit.) of pipe wall.	Minimum Reinforcing Steel: Longitudinal Number of Bars	Minimum Reinforcing Steel: Longitudinal Diameter of Bars	Tongue and Groove Ends: B	C	E	F	G	N	P	Laying Lengths in Feet
42"	3 3/4"	1000	0.25	10	3/8"	2"	1 7/8"	1"	1 1/16"	60°	1 9/16"	7/8"	8' or 16'
51"	4 1/4"	1000	0.32	12	3/8"	2"	2"	1"	1 1/4"	60°	1 13/16"	1"	8' or 16'
63"	5 1/4"	1000	0.43	12	1/2"	2"	2"	1"	1 3/4"	60°	2 5/16"	1"	8' or 16'

[1] D-Load is load in pounds per foot of diameter per foot of pipe to which pipe must be subjected in 3-edge bearing test before appearance of 0.01" wide x 12" long cracks.

APPROVED _____ RE 648
MGR. SEWAGE DISPOSAL ENGINEERING AND CONSTRUCTION

ASSUME AS-BUILT 5-25-54

EAST BAY MUNICIPAL UTILITY DISTRICT
SPECIAL DISTRICT NO. 1
OAKLAND, CALIFORNIA

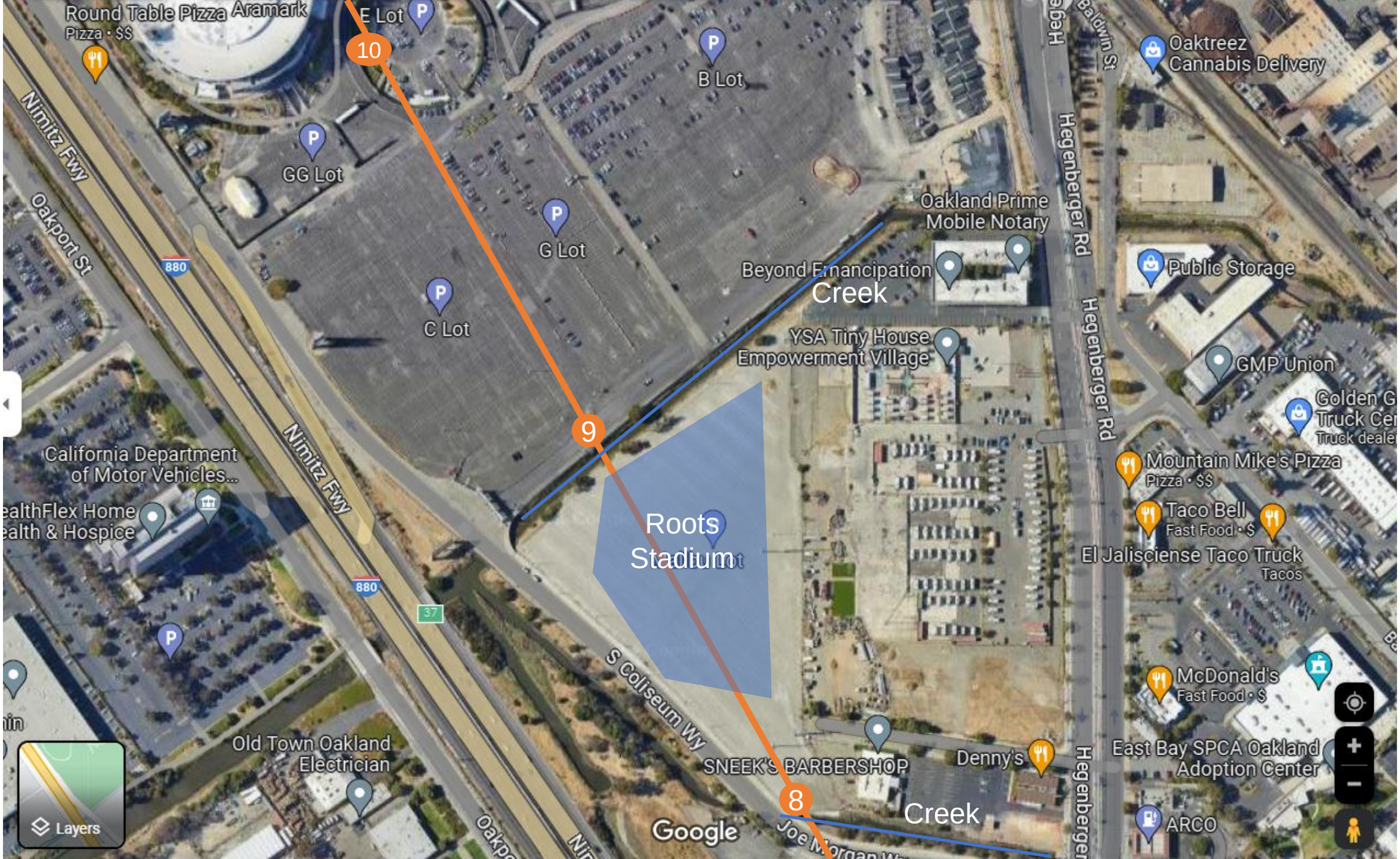
SOUTH INTERCEPTOR
SECTION I
REINFORCED CONCRETE PIPE
DETAILS

DRAWN BY KORETSKY
TRACED BY MACIEL
CHECKED BY E.B. Grieve
APPROVED BY P.A. Root
SCALE NONE
DATE 1-5-50
No. VG 850

Exhibit G-2.2C
Alternatives Review

SD-456 South Interceptor Coliseum

(S08-S10) Rehabilitation


Round Table Pizza
Pizza • $$
Aramark
E Lot
B Lot
GG Lot
G Lot
C Lot
Nimitz Fwy
Oakport St
880
37
Oakland Prime
Mobile Notary
Beyond Emancipation
Creek
YSA Tiny House
Empowerment Village
Roots
Stadium
Hegenberger Rd
Baldwin St
Oaktreez
Cannabis Delivery
Public Storage
GMP Union
Mountain Mike's Pizza
Pizza • $$
Taco Bell
Fast Food • $
El Jalisciense Taco Truck
Tacos
McDonald's
Fast Food • $
East Bay SPCA Oakland
Adoption Center
ARCO
California Department
of Motor Vehicles...
S Coliseum Wy
SNEEK'S BARBERSHOP
Denny's
Old Town Oakland
Electrician
Creek
Google
Layers
10
9
8

Alternatives

Parameter	Sliplining	CIPP
Hydraulics	Adds headloss	✓
Live flow	✓	Bypass
Leaks okay	✓	Leak sealing
Creeks okay	✓	Creek crossing
MH rehab	Wet rehab	✓

Or **slipline S09S10** (larger diameter), **CIPP S08S09**

Hydraulic modeling: 1952 design storm

Alternative	Overflow (gal)
No action	90,000
Sliplining	90,000
CIPP	80,000

Caveats:

- Model not calibrated to overflows
- Model assume no tidal backpressure

Hydraulic modeling: FY23 storms

Alternative	Overflow (gal)
No action	2,600,000
Sliplining	2,890,000
CIPP	2,790,000

Caveats:

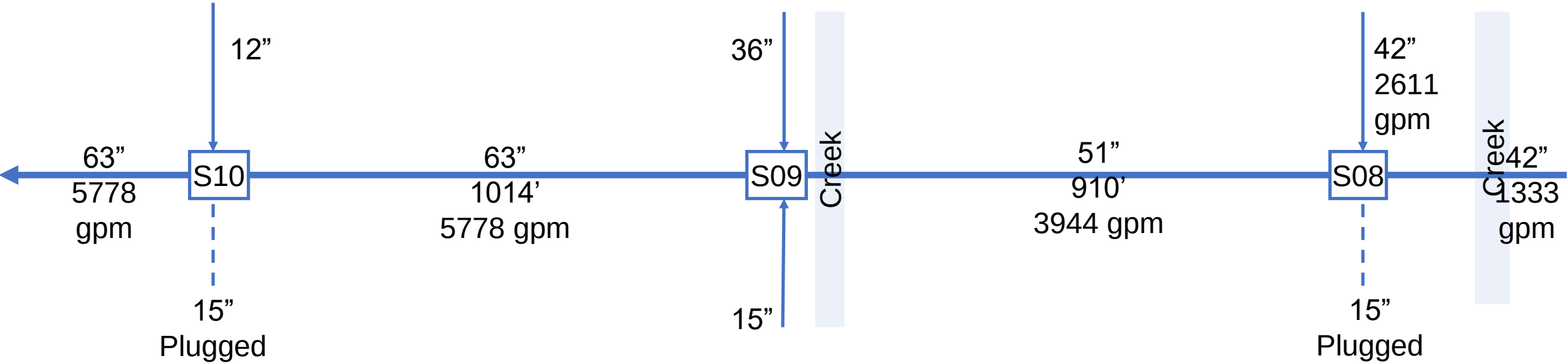
- Model not calibrated to overflows
- Model assume no tidal backpressure

Hydraulic modeling: FY23 model vs actual

Location	Modeled overflow (gal)	Actual overflow (gal)
ELM	1,480,000	0
SLC	1,120,000	633,000

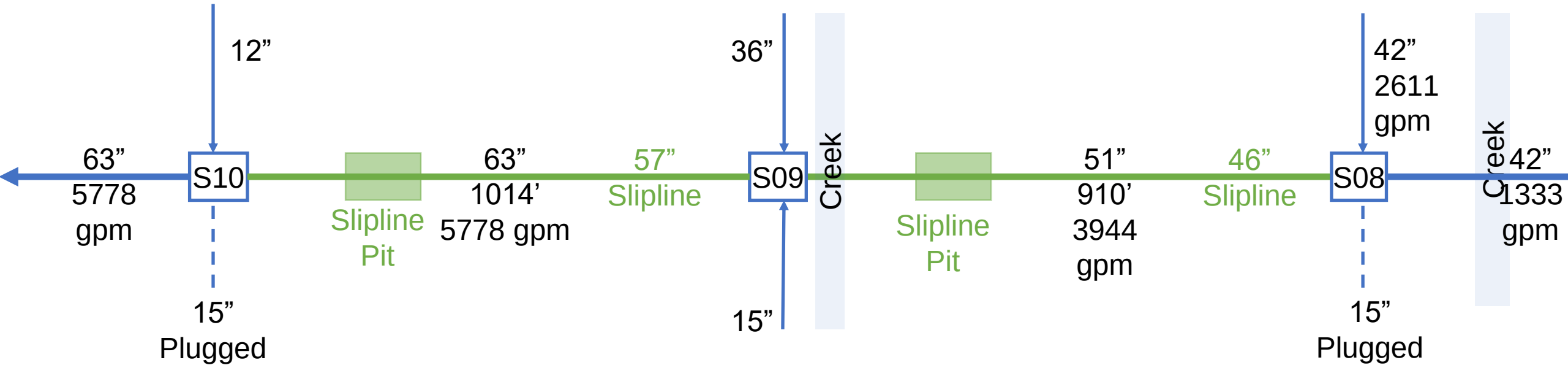
Conclusion: it may not make sense to base decision on model

Process flow diagram



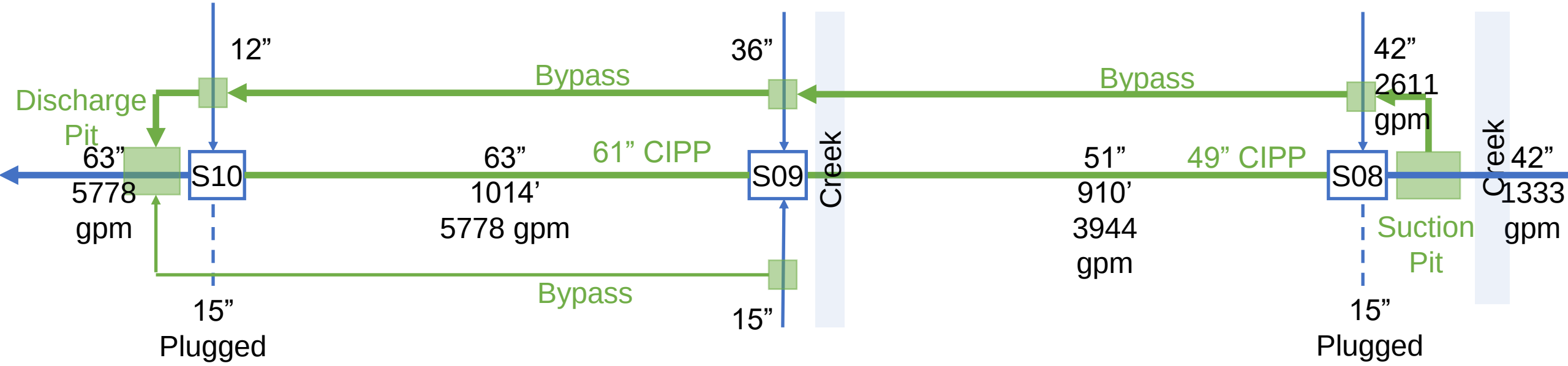
Box = MH
Smaller lines = laterals

Sliplining (wet manhole rehab)

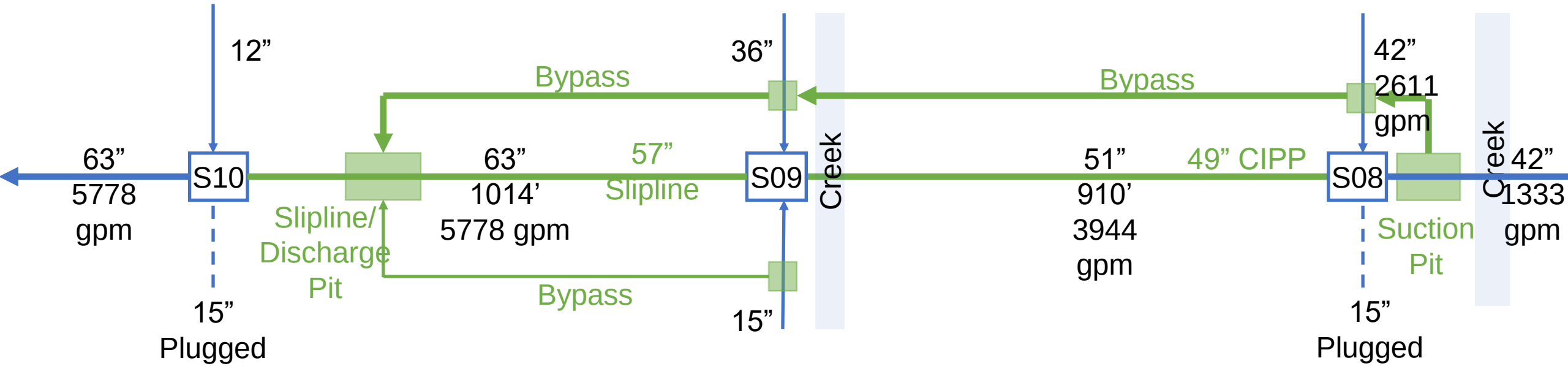


Note: location pit adjacent to MH to allow for weir for grouting?

CIPP (dry manhole rehab)



CIPP S08S09 Slipline S09S10 (dry MH rehab)



Note: location pit adjacent to MH to allow for weir for grouting?

Manhole Inspection

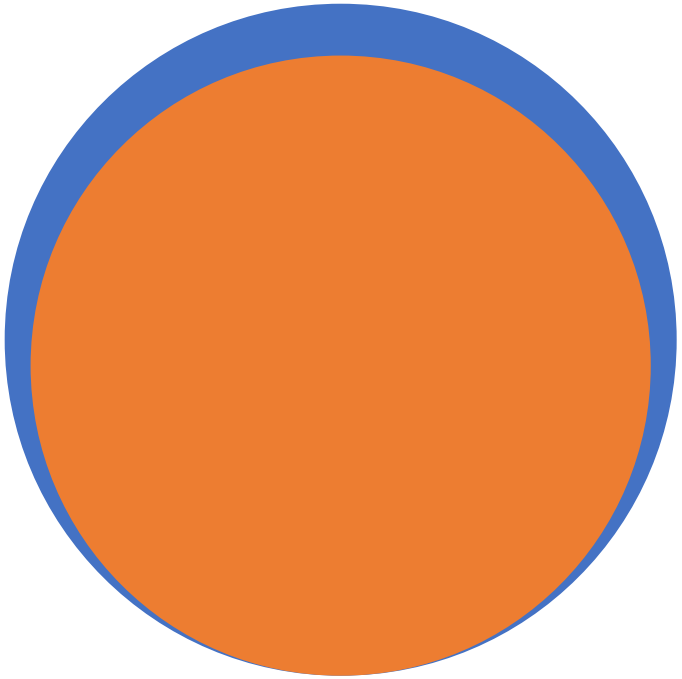
Manhole	Loss (in.)	Unsound (in.)	Loss + Unsound (in.)	Notes
S08	1-1.5	~1	2-2.5	
S09	~2	~1	3	Deck rebar exposed
S10	0	~0.5	0.5	

Modified Slipline with larger pipe

- Can we slipline with a larger pipe?
- Channeline makes custom pipe size
- 1” annular minimum space?
- 1” thick slipline pipe
- 3” reduction in diameter (versus 6”)
- Construction risks
- To-do: Multiple Sensor Inspection (to identify impediments)
- Does channeline care what our grout density is?
- Can we get our structural engineers to specify a minimum grout density strength?

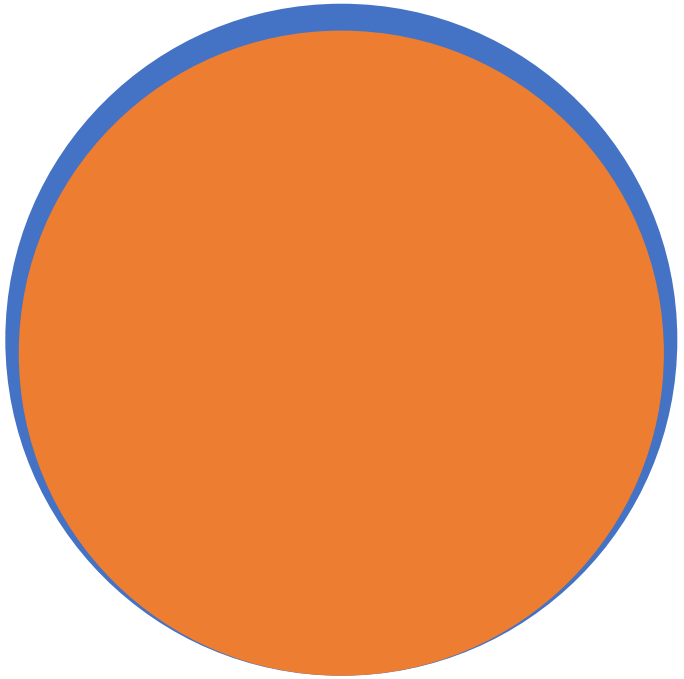
Smaller annular space

Typical Slipline



6” ID->ID, assuming 1” thick
(4” annular space)

Modified Slipline



2” annular space
(0.98” thick)

Area reduced by half

Exhibit G-2.4 Reference Material List

The following is a list of reference material that is not included in the RFP but can be provided if requested by the Proposer. Please email john.law@ebmud.com to obtain a sharepoint link to the material requested.

Raw CCTV Files

Notation (upstream MH)(downstream MH); MH – manhole (maintenance hole). The letter in front of each MH represents the interceptor name (i.e. A = Alameda Interceptor, S = South Interceptor). Typically, MH numbers increase going downstream – this is not always the case for new MHs.

- S08S09 from 2022
- S09S10 from 2022
- GoPro drop inspections for S08, S09, S10

Record Drawings

- SD-443 South Interceptor Sinkhole Repairs at MH S09 (Emergency)

Exhibit G-3

SD-458 North Interceptor

Ashby Interchange

1. Scope of Work
2. Condition Summary
    A. See G-0.C V&A Report for Summary. No specific condition summary is provided.
3. Conceptual Drawings and As-builts
4. Reference Material List

Exhibit G-3.1

SCOPE OF SERVICES

Consultant Engineering Services for

SD-458 North Interceptor

Ashby Interchange

The scope provided is illustrative only. The actual scope will be developed with the selected Proposer.

PROJECT UNDERSTANDING

The Alameda County Transportation Commission (ACTC) and California Department of Transportation (Caltrans) are implementing the I-80/Ashby Avenue (SR-13) Interchange Improvements project (link). The District's North Interceptor runs underneath the proposed interchange structure and planning is needed to ensure that District assets are not adversely impacted by the project. This project is currently on hold as the ACTC attempts to identify additional funding sources needed to complete the project, and close coordination will be needed between the District and ACTC/Caltrans team on schedule and outcomes.

The interceptor at this location is between N26 and N30. A planning level analysis will be needed to evaluate the tradeoffs between relocation and rehabilitation. The worst corrosion in this reach is in the downstream end (south). The District's goals for this project are:

- Maintain future accessibility to this reach for maintenance activities such as interceptor cleaning or inspection without the need for extensive permitting, coordination, and traffic impacts.
- Identify sustainable funding sources or implement cost sharing.
- Mitigate risk of pipe failure by rehabilitating or rebuilding the interceptor. If rehabilitating only, ensure the District has options to relocate the interceptor in the future (50+ years).
- Collaborate closely with stakeholders to ensure needs are communicated and met.

A preliminary list of project challenges is provided in Exhibit G-0, Background, under the SD-458 North Interceptor Relocation section. At a high level, some of the challenges that will need to be addressed are:

- Coordination of design with ACTC/Caltrans's design
- Site conditions – hydraulics, utilities, Geotech, survey, water bodies
- Coordination with agencies – permitting, traffic control, special work constraints
- Sequencing – construction schedule, identifying long lead-time items, keeping updated on ACTC's schedule and any other conflicting work
- Environmental documentation
- Technical – structure connection details, pipe crossing under existing storm drain, access to interceptor for inspection or construction, alternatives analysis of technologies, excavation footprints, earthwork, bypass pumping, abandonment of existing sewer
- Risk – cost, schedule, likelihood of failure, consequence of failure
- Coordination with District's SD-454 North Interceptor Rehabilitation Emeryville Project between N31 and N35, immediately downstream.

The Consultant will prepare a predesign report with an alternatives analysis of different approaches and technologies. The Consultant will recommend an approach to the District for approval. The Consultant will prepare a design for the selected approach and coordinate with external stakeholders. The construction of the SD-458 project may depend on the start of the I-80 Ashby Interchange project, which may be delayed for an unknown period. The Consultant may provide optional services to complete the remaining design, bid period services, and ESDC for the project (with terms to be negotiated depending on approach and ACTC schedule). The Consultant is expected to have a strong, committed project manager who can leverage diverse team resources to meet the complexity of this project.

DEFINITIONS

- District or EBMUD – East Bay Municipal Utility District
- Consultant – The individual, partnership, joint venture, or corporation with whom the contract is made by the District
- Work, Task, or Subtask – All labor, material, equipment, submittal, and appurtenances required to be completed or furnished by the Consultant under the contract documents
- Contract – Agreement between the Consultant and District describing the terms and conditions for services provided
- Deliverable – Item to be prepared by the Consultant and submitted to the District, as described in the Scope of Work
- MWWTP – Main Wastewater Treatment Plant
- MH – Manhole (Maintenance hole)
- I.D. – Inner diameter
- P.E. – professional engineer licensed in the state of California
- CEQA – California Environmental Quality Act
- EIR – Environmental Impact Report

SCOPE OF WORK

Summary of Tasks	
Task	**Description**
1	Project Management
2	Relocation vs. Rehabilitation Report
3	Predesign (10%)
Optional Tasks	
4	Allowance for Condition Assessment
5	Allowance for Utility Investigation
6	Allowance for Traffic Engineering
7	Allowance for Detailed Design (as-needed)

ANTICIPATED SCHEDULE

EVENT	DATE
Project Kickoff	August 2024
Relocation vs. Rehabilitation	January 2025
Predesign Submittal*	March 2025

*Milestone dates dependent on if EIR is included as part of this contract.

Task 1 – Project Management

1.1 Project Management

The Consultant shall designate a project manager (PM) who will oversee administration and management for this Project. The Consultant PM will oversee the Consultant's staff and any subconsultants under Contract with the Consultant. The Consultant shall provide continuity of workflow and designate a new PM if the Consultant PM is to change during the duration of the contract.

Assumptions:

- This task includes the preparation of subconsultant contracts and development of project control tools.

1.2 Invoicing, Progress Reports, and Schedule Updates

The Consultant shall prepare a monthly invoice including the following:

- Progress Report summarizing the percent completion by budget expenditures and work activities completed. Each monthly Progress Report will include at minimum key items outlined for each Task.
- Updated Schedule with milestones broken down by Task and Subtasks. The schedule shall be a Microsoft Project Gannt Chart, including a column showing the percent complete for each task.
- Project tracking by Task and Subtask based on monthly burn rate and progress (i.e. s-curve). Task orders may be issued to reallocate budget between tasks.

Assumptions:

- Consultant billing rates may be adjusted annually.

Deliverables:

- Monthly invoices with progress reports and schedule updates in PDF format.

1.3 Bi-Weekly Progress Meetings and Kick-off Meeting

The Consultant PM shall participate in biweekly progress. More frequent meetings may be held between District and Consultant staff. The Consultant PM and key staff shall attend a kick-off meeting and prepare agenda, minutes, and action items. Separate User Group meetings will also be held at each design milestone with the User Group and with the Department Management Team; design submittal User Group meetings are budgeted under their respective tasks.

Deliverables:

- Biweekly meetings agendas and minutes, including action items, as PDF files.
- Kick-off meeting Powerpoint, agenda and minutes, including action items, as PDF files.

1.4 Coordination with External Stakeholders

The Consultant will lead bimonthly meetings with key external stakeholders including ACTC, Caltrans, the City of Berkeley, the City of Emeryville, and other agencies to review schedule, project approach, and coordination items. The Consultant will develop a sequence of construction activities around the I-80 Ashby project's schedule. The Consultant may need to meet more frequently and directly with other agencies for coordination of specific items as the project progresses. The Consultant will provide a monthly update on coordination items to the District.

1.5 QA/QC

The Consultant PM shall implement internal quality assurance and quality control reviews of each deliverable prior to submission to the District. Specifications shall be reviewed by a document processer familiar with Construction Specifications Institute (CSI) MasterFormat. The Consultant shall review design deliverables for conformance with standard District wastewater guidelines.

Task 2 – Relocation vs. Rehabilitation Report

2.1 Review Existing Documents

Consultant shall perform a comprehensive review of existing documents. These include the following:

- ACTC Environmental Documentation (link)
- ACTC design drawings and specifications
- CCTV and inspection media
- As-built drawings
- Conceptual design drawings
- Master front-end and technical specifications
- Utility and right-of-way maps
- Data (flows, sediment levels, survey)
- Vendor cutsheets and product literature

Assumptions:

- District provided reference documents have not been verified for accuracy. Consultant shall be responsible for verifying the accuracy.

2.2 Relocation vs. Rehabilitation Report

The Consultant shall prepare a report evaluating relocation of the interceptor at this location as compared to rehabilitation of the existing interceptor only. The Consultant will prepare an outline of the alternatives it will evaluate at the Kick-off meeting. Discussion in the report may include:

- Evaluation of potential alternatives: do nothing, rehabilitation, partial relocation, relocation, etc.
- Net present value cost estimate comparisons.
- Schedule and construction sequencing.
- Discussion of future accessibility, District's ability to perform maintenance activities, and risk. The discussion should be in the context of the I-80 Ashby project's schedule (i.e. if the Ashby project is not completed in the next 5, 10, or 20 years, what's the risk of a sinkhole or failure developing). The discussion should also present the drawbacks of only rehabilitating the pipe, if the District needed access for future rehabilitation or relocation in 50+ years.
- Potential funding sources or cost sharing options if relocation is selected.
- Overview of project challenges: interceptor crossing underneath storm drain, traffic control, environmental, etc.
- Review hydraulic impacts of both alternatives (impact to hydraulic gradeline and sanitary sewer overflow risk upstream, impact to wet weather facility discharge volume)

Deliverables:

- Draft and Final Report in PDF format. Calculations in PDF format.
- Response to comments in Excel spreadsheet format.

Task 3 – Predesign (10%)

3.1 Predesign Report

Consultant shall prepare draft and final Predesign Report of the selected approach. The Consultant will summarize its recommendations for interceptor rehabilitation (or relocation) and MH work, and review the risks and tradeoffs for each alternative. The Consultant will perform any site investigations needed to verify site conditions.

Assumptions:

- District will prepare one set of coordinated review comments based on Draft Report submittal. Consultant will respond to comments and prepare final Report within one review cycle (typical for all deliverable reviews).
- Final report shall be stamped by Consultant P.E.

Deliverables:

- Draft and Final Predesign Report in PDF format.
- Response to comments in Excel spreadsheet format.

3.2 User Group Meeting – Predesign

Consultant shall lead a User Group meeting (O&M staff, end-users, engineering) to summarize findings, as follows:

- Consultant shall prepare and present PowerPoint slides for the meeting.
- Consultant shall prepare meeting agenda, minutes, and action items.
- District shall provide feedback on rehabilitation scope and interceptor sediment management.

Assumptions:

- User Group meeting will be held at via Conference Call (or at the District).

Deliverables:

- Meeting PowerPoint slides, agenda, and minutes, including action items.

3.3 CEQA Documentation (OPTIONAL)

Consultant will advise on whether the SD-458 project is exempt from CEQA reporting. If the project is not exempt, then the Consultant will review whether the project falls under negative declaration or if an Environmental Impact Report (EIR) is needed. Consultant will prepare documentation and technical reports necessary for District to submit CEQA documentation to state and local agencies. (Scope to be further defined and structured with selected Proposer during negotiations).

OPTIONAL TASKS

The Proposer may propose additional tasks as optional services to the District in their Proposal. Explain the added value and reasoning for any additional tasks.

The District reserves the option to request additional services from the Consultant, including, but not limited to the following:

Task 4 – Allowance for Condition Assessment

Consultant may be required to perform condition assessment of the interceptor by manned or unmanned methods throughout the project. For manned entry into the interceptor, Consultant shall submit job hazard analysis, work plan, and certificates of staff entering the interceptor. Consultant will also prepare any encroachment permits, traffic control, and other materials as needed to perform condition assessment as it pertains to the other Tasks. Unmanned condition assessment may include but is not limited to CCTV inspection (with Go-Pro inset) or multi-sensor inspection. Inspection may include other utilities owned by other agencies that may be affected by the work.

A. Interceptor and Storm Drain Inspection and Documentation: The consultant will have to mobilize subconsultants or subcontractors to inspect the interior of the existing interceptor piping in the area of the proposed realignment as well as other utilities such as the storm drain crossing at Potter Street as part of the design phase. The North Interceptor in this area is difficult to access because manholes are in the should of the onramp and freeway, and therefore require special permitting from Caltrans.

B. Inspection and documentation will require CCTV services. The District is interested in getting higher resolution images for inspection purposes. The resolution of most of the current CCTV equipment is not adequate for detailed examination of the existing facilities.

Task 5 – Allowance for Site Investigations

Consultant may be required to perform utility investigation, geotechnical analyses, or hazardous waste characterization to verify site conditions for its design. The consultant may lead potholing, ground penetrating radar, boring, and other investigations to identify site conditions for the project.

A. Geotechnical and Contamination Investigations: The consultant will be required to provide subsurface investigations as part of the design effort. Geotechnical investigations will be required as part of the design effort for support of the new piping. Geotechnical investigations will also be required to document possible lead or other contamination of soils along the route of

the new piping and possible contamination of groundwater that may affect dewatering requirements during construction.

B. Environmental Impacts Review: The consultant will be required to evaluate the environmental impacts of the proposed the new North Interceptor alignment. This is likely to involve evaluation of construction activities through the banks of the Aquatic Park ponds. This effort is likely to involve field investigation activities.

C. Surveying and Land Rights: The District will address documentation and recording of property rights for the new alignment.

Task 6 – Allowance for Traffic Engineering

Preparation of traffic control plans or reports may be necessary for design or permitting activities. Consultant will prepare stamped traffic engineering documents if needed.

A. Traffic Control Design: The consultant may be required to provide traffic control design services depending on final scope of design and ACTC coordination.

Task 7 – Allowance for Detailed Design

District may request for the Consultant to develop limited or complete design drawings and specifications for the project as the ACTC's schedule becomes more defined. District may also request drawings or calculations for specific parts of the design such as transition details between existing and new interceptor, jack and bore drawings and specifications, etc. Work under this allowance will be negotiated on an as-needed basis.

G-3.2 North Interceptor Condition Summary

See G-0C (under Background), V&A-EBMUD Interceptor Assessment Project Report page 53, Section 5 North Interceptor. Most of the corrosion is located between N29 and N30.

An overview of the defects from CCTV/GoPro inspection is provided below. Note, the stationing was not verified and may not be accurate; the CCTV also mislabels the upstream/downstream manholes.

N29N30, approximately 112’ downstream N29

N29N30, 528’ approximately downstream of N29

Exhibit G-3.4 Reference Material List

The following is a list of reference material that is not included in the RFP but can be provided if requested by the Proposer. Please email john.law@ebmud.com to obtain a sharepoint link to the material requested.

Raw CCTV Files

Notation (upstream MH)(downstream MH); MH – manhole (maintenance hole). The letter in front of each MH represents the interceptor name (i.e. A = Alameda Interceptor, S = South Interceptor, N = North Interceptor). Typically, MH numbers increase going downstream – this is not always the case for new MHs.

- N26N27 from 2022
- N27N28 from 2022
- N28N29 from 2022
- N29N30 from 2022
- N30N31 from 2022

ACTC/Caltrans Ashby Interchange Information

- Environmental Document – Mitigated Neg Dec and Env Assessment (link)
- Commission Agenda Packet with information on I-80 Ashby Interchange Improvements Project (a286d288-a6a2-11ed-8145-0050569183fa-abb6aa12-d2c6-4f47-b79b-94121c557222-1701982877.pdf (d3n9y02raazwpg.cloudfront.net))

Table 2: Conditional Extension
Projects here are identified as having significant funding shortfalls and critical implementation issues.
In order to ensure deliverability, Project Sponsor is required to return to the Commission in 2024 with viable project delivery plan.

TEP ID	Sponsor	Title	Total Measure BB Commitment	Total Allocation To Date	Expended to Date	Anticipated Environmental Approval Date	Full Funding Plan Status
14	Alameda	Alameda to Fruitvale BART Rapid Bus	$ 9,000,000	$ 1,350,000	$ -	Summer 2025	Under Development
17	Fremont	Irvington BART Station	$ 120,000,000	$ 26,710,000	$ 18,086,614	Completed in 2006	Under Development
30	Alameda CTC	I-80 Ashby Interchange Improvements	$ 52,000,000	$ 18,000,000	$ 9,244,065	Early 2024	Under Development

Sponsor is currently completing environmental. This project currently contains a significant $105M funding shortfall against $157M total project costs. Sponsor is exploring funding opportunities to complete construction of a fundable project; which may include possible project segmentation to identify an initial usable segment that is consistent with the environmental document and can be funded. Possible segmentation may include separate components for an interchange modernization project and a pedestrian overcrossing.	Project Sponsor is required to provide project specific information to Alameda CTC by July 1, 2024 with project status update and a detailed project delivery plan. Project sponsor must define a viable segment with a viable full funding plan for implementation.

- Conceptual Flyby: https://vimeo.com/659482958/1ac4de7fcc