EVERETT
WASHINGTON

August 18, 2020

Attn: Talia Baker
PRC, Administrative Support
Dept. of Enterprise Services
Engineering & Architectural Services
Post Office Box 41476
Olympia, WA 98504-1476

Dear Members of the Project Review Committee:

We have attached the City of Everett's application to the Project Review Committee (PRC) to use the Progressive Design-Build (PDB) project delivery method for the City's Reservoir 3 Structural Repairs project. This project is a great candidate for PDB and fits well within the criteria identified in RCW 39.10.300. Some reasons for this include:

1. **Phasing of Work.** Some of the repairs that are required are well-known and relatively simple to execute, while other repairs are complex, specialized repairs that depend on construction methodologies and extensive contractor field investigation. Using PDB allows early work packages to begin while the team works collaboratively to determine the best approach for dealing with the unknown conditions that exist inside the reservoir.

2. **Difficult Access/Limited Clearances.** Reservoir 3 is a 20-million-gallon in-ground tank that covers an area of 4 acres and has only two small openings for access. Many repair locations have very little space in which to complete the repairs, while others must be done more than 20 feet above the reservoir floor. These limitations increase the importance of coordination and collaboration between the City, Designer, and Contractor.

3. **Short Construction Schedule.** Reservoir 3 is a distribution hub for much of our water system, and can only be taken offline for a limited amount of time. Given the scale and complexity of the project and the infeasibility of providing designers and/or contractors sufficient access to the reservoir in advance of construction, we believe the PDB method is key to meeting the needed scheduling requirements for the project.

4. **Critical Infrastructure.** It is difficult to overstate the importance of Reservoir 3 to our water distribution system – a system that 675,000 people depend on every day. The PDB delivery method allows for selection that is focused on qualifications and past experience on similar projects, which better ensures this facility will be returned to service on schedule.

Public Works

3200 Cedar Street
Everett, WA 98201

425.257.8800
425.257.8882 fax

everettpw@everettwa.gov
everettwa.gov/pw

Thank you for your consideration of our application to use an alternative project delivery method for this important project. We look forward to the opportunity to share more about this project at the PRC meeting on September 24, 2020. If you need any additional information in advance of that meeting, please contact our Project Manager, John Nottingham at (425) 257-8844.

Sincerely,

Ryan L. Sass, P.E.
Public Works Director
City of Everett

Enclosure: City of Everett PDB Application, Including Attachments

State of Washington
Capital Projects Advisory Review Board (CPARB)
PROJECT REVIEW COMMITTEE (PRC)

APPLICATION FOR PROJECT APPROVAL

To Use the Design-Build (DB)
Alternative Contracting Procedure

The CPARB PRC will only consider complete applications: Incomplete applications may result in delay of action on your application. Responses to sections 1-7 and 9 should not exceed 20 pages *(font size 11 or larger)*. Provide no more than six sketches, diagrams or drawings under Section 8.

Identification of Applicant

a) Legal name of Public Body (your organization): City of Everett
b) Address: 3200 Cedar Street, Everett, WA 98201
c) Contact Person Name: John Nottingham, P.E. Title: Principal Engineer
d) Phone Number: 425-257-8844 E-mail: jnottingham@everettwa.gov

1. Brief Description of Proposed Project

a) Name of Project: Reservoir 3 Structural Repairs
b) County of Project Location: Snohomish
c) Please describe the project in no more than two short paragraphs. *(See Attachment A for an example.)*

The City of Everett owns and operates a regional water distribution system that serves more than 615,000 customers, which includes several in-town reservoirs. Reservoir 3 is a 20-million-gallon water reservoir that was originally constructed as an open-air reservoir in the 1920s and was subsequently covered with a concrete roof structure in 1987. The structure covers an area of approximately 3.8 acres. Reservoir 3 is a central distribution hub that connects the City's Transmission Line 5 to the in-town water distribution network and wholesale customers. Reservoir 3 is a critical component of the City's water distribution system.

The concrete structure covering the reservoir is in need of repairs. The corrosive environment inside the reservoir, which was built with no ventilation, has led to significant damage to several structural concrete members and supports. A detailed structural inspection was performed In September 2019, and a preliminary structural design for the repairs was completed over the following months. In addition, a seismic evaluation of the reservoir has been completed, noting several seismic deficiencies. The proposed project includes:

A. Completion of structural repairs design (pre-design already completed)
B. Design of seismic improvements
C. Construction of repairs, seismic improvements, and addition of passive ventilation system.

2. Projected Total Cost for the Project:

A. Project Budget

Costs for Professional Services (A/E, Legal etc.)	$335,000
Estimated project construction costs *(including construction contingencies)*:	$2,550,000
Contract administration costs (owner, cm etc.)	$240,000
Contingencies (design & owner)	$65,000
Sales Tax	$236,600
Total	**$3,426,600**

B. Funding Status

Please describe the funding status for the whole project. *Note: If funding is not available, please explain how and when funding is anticipated*

This project is funded through the City's capital project reserves and has been accounted for in the 2020-2021 Capital Improvement Project planning and budgeting.

3. Anticipated Project Design and Construction Schedule

Please provide *(See Attachment B for an example schedule.)*:

The anticipated project design and construction schedule, including:

- ✓ Procurement;
- ✓ Hiring consultants if not already hired; and
- ✓ Employing staff or hiring consultants to manage the project if not already employed or hired.

The anticipated project milestones are as follows:

• Complete Structural Repairs Predesign	Completed (by CG Engineering)
• Procure DB Owner Advisor Consultant	Completed – Brown & Caldwell
• CPARB Project Review Committee Presentation	9/24/20
• DB RFQ Announcement	10/26/20
• DB SOQs Due	11/20/20
• RFP Announce/Shortlist (3 max)	12/07/20
• Proposals Due	1/16/21
• Selection	2/10/21
• NTP	4/18/21
• Start Construction – Early Work Package	6/01/21
• Reservoir Shutdown	9/15/21
• Start Construction – Inside Reservoir	9/20/21
• Substantial Completion - Reservoir Back Online	2/04/21

4. Explain why the DB Contracting Procedure is Appropriate for this Project

Please provide a detailed explanation of why use of the contracting procedure is appropriate for the proposed project. Please address the following, as appropriate:

- ➢ If the construction activities are highly specialized and a DB approach is critical in developing the construction methodology (1) What are these highly specialized activities, and (2) Why is DB critical in the development of them?

1. Overall Phasing of Work

Progressive Design-Build (PDB) will allow the City to work with the selected Design-Builder to evaluate design and construction options for one type of repair and then proceed with that repair while evaluating design and construction options for the next type of repair required for the Project. With either Fixed Price DB or traditional Design-Bid-Build, the City would need to fully describe what is needed for the entire Project (either in a project requirements document or bid set, respectively). As discussed below, significant Project requirements will remain unknown until the reservoir is taken offline and construction activities begin.

2. Difficult Access & Limited Clearances

Many of the structural repairs identified and developed in the predesign effort occur in areas of the reservoir with very limited clearances. In addition, the reservoir is a completely enclosed space, the only openings being two small hatches in the roof.

The following is an example that illustrates the type of repair that will be required for this project. Figure 1 shows a pile-supported concrete grade beam that is spalling at the location where it supports a concrete girder. The girder connection supports a large load and the clearance between the ground and the underside of the girder is about 2'-6". All repairs (piles, grade beams, etc.) must be constructed in this small area. Additionally, the repair location is more than 200' away from an opening in the reservoir.

A Progressive Design-Build (PDB) approach is necessary because the limited access and tight clearances result in work for which the exact approach and details are highly dependent on construction methodology, and on the Design-Builder's ability to evaluate the construction and design issues in detail. A traditional project delivery would unnecessarily constrain the contractor to one solution that is potentially less effective, less economical, and more disruptive than other approaches.

Both the Fixed-Price DB and DBB approaches would necessitate allowing DB proposers access to the reservoir to be able to provide a fixed price. As discussed below, providing adequate access for development of a fixed price is not feasible. We estimate that providing this level of access would cost the City an additional $150,000 or more and would unnecessarily delay the construction of these urgent repairs.

Figure 1 – Typical Girder Support Repair Location

3. Existing Reservoir Liner.

The reservoir floor (including the inclined sides) is covered with an impermeable Hypalon liner that was installed in 2008 (see Figure 2). This liner is a necessary component of the reservoir, as it contains the water inside the reservoir while preventing groundwater from entering the reservoir. The Hypalon liner is watertight, and is inspected regularly for damage. At the completion of the project, the liner must be watertight prior to final acceptance and filling the reservoir.

Figure 2 – Existing Hypalon Liner

The project involves work that has the potential to damage the existing liner system. Concrete demolition and repair work will be performed more than 20' above the bottom of the reservoir floor. Concrete debris and tools that fall and impact the liner have the potential to tear or damage the liner. It is assumed that the work will require scaffolding or vertical access lifts, which also have the potential to damage the liner system.

Since the liner is relatively new and would cost about $1.5M to replace in its entirety, a requirement of the project will be that the liner is protected in place or partially removed and repaired. The liner system requires highly specialized means and methods, as well as a thorough assessment of risk involved with working on and around the existing liner system. The construction methodologies are likely to depend on how the contractor decides to handle the reservoir liner system. PDB allows the City to have input to the Contractor's recommended methodology for protecting the liner system – a critical component of the City's water delivery infrastructure.

- If the project provides opportunity for greater innovation and efficiencies between designer and builder, describe these opportunities for innovation and efficiencies.

1. **Contractor and Designer Coordination.**
   This project has unique difficulties that necessitate a high degree of coordination and collaboration between the designer and contractor. A PDB delivery provides opportunity for the contractor to have input throughout the design process and vice-versa. Since much of the work involves highly specialized and difficult work, this enhanced collaboration will result in a more effective design.

   A predominant challenge of this project is constructability. The design team will benefit from contractor involvement, as constructability reviews will ensure that contractor methodology are accounted for in the design.

   One aspect of the project that makes constructability a primary concern is the limited accessibility of the site for thorough investigation, measurement, and documentation prior to construction. The reservoir is a sanitary environment – water that passes through the reservoir receives no additional treatment prior to being delivered to customers. For Fixed-Price DB delivery, the DB proposer teams can only be given limited access to the reservoir during the proposal process. For traditional delivery, bidding contractors would also only be provided with limited opportunities for access.

   Given these access limitations, the PDB approach allows pricing of some work elements to be developed after the reservoir is fully accessible and results in more timely resolution of design changes that are needed to accommodate conditions that vary from what was anticipated.

2. **Short Construction Schedule.**
   Reservoir 3 is an active drinking water Reservoir that is a critical to the City's ability to deliver water to direct and wholesale customers. Given that more than 70% of all water produced at the City's filtration plant flows through Reservoir 3, it is the City's **most** critical reservoir.

   Operating the City's water system without Reservoir 3 is difficult, costly, and jeopardizes the City's ability to reliably meet water demands. Reliably delivering water to customers is a legal responsibility of the City. The City's filtration plant operators rely on the active storage capacity of reservoir 3 to accommodate demand surges and large draws from our wholesale customers. Since it takes hours for filtered water to travel the 23 miles from the filtration plant (near Sultan) to in-town connections, Reservoir 3's active storage capacity provides buffer storage necessary to ensure an adequate supply of water.

   Construction of the needed reservoir repairs requires the reservoir be taken offline for the duration of the project. The City has developed an operational scheme that will be used to meet water demands while the reservoir is offline and installed a new system valve in April 2020 to make the concept feasible. In order to ensure reliable water supply and prevent pressure surges in the system, the work must occur between mid-September and mid-April when the water consumption is lower. The operational scheme that has been developed will only be sufficient for the low-demand season, meaning the City can only take the reservoir offline during this time. Construction delays that push the project completion beyond this timeframe are not acceptable, as they would jeopardize the City's ability to reliably supply water to its customers.

   Working solely within the low-demand season (subtracting schedule needed to drain, commission, sanitize, and refill the reservoir) leaves around 5 months to complete the project, including any

project delays. This is an aggressive schedule given the complexity of the work and the challenging environment the work will be performed in. By using the PDB delivery method, the contractor, design team, and the City can all work collaboratively and initiate certain construction activities once the design and pricing for other portions of the work are complete – which will help ensure the short construction window is attainable.

3. **Some Repair Scope is Difficult to Quantify.**
   The project involves rehabilitation of spalling concrete at various locations throughout the reservoir. Areas of spalling have been identified based on a visual assessment. Because the reservoir cannot be taken offline until construction begins, it is not possible to probe or break off unsound concrete to determine the actual depth and extents of concrete removal and patching. In turn, it is difficult to quantify the scope of work for a contractor using a traditional delivery method. A partnership between the contractor and designer, as is provided for with PDB, is beneficial because it allows for greater collaboration in adjusting to actual conditions once the reservoir is taken offline.

- If significant savings in project delivery time would be realized, explain how DB can achieve time savings on this project.

  Several of the previous answers touch on this, but the team-oriented and streamlined process that PDB offers is a source of significant schedule savings for this project. As described above, the project must be completed within 5 months, which makes schedule the most critical aspect of this project.

  By using PDB, we can take advantage of collaboration between the contractor and designer and begin construction work on easily-defined project elements while the more challenging or coordination-intensive portions are worked through. PDB also allows for the advance procurement of any long-lead time items or materials.

5. Public Benefit

In addition to the above information, please provide information on how use of the DB contracting procedure will serve the public interest. For example, your description must address, but is not limited to:

- How this contracting method provides a substantial fiscal benefit; or
- How the use of the traditional method of awarding contracts in a lump sum *(the "design-bid-build method")* is not practical for meeting desired quality standards or delivery schedules.

1. By following a 2-stage selection process, the selection can be focused on qualifications, past experience on projects of similar complexity/difficulty, and project approach. This is a benefit over traditional DBB delivery because it better ensures that the selected team will have the experience, qualifications, and key personnel required to make the project a success. This better ensures that the facility will be restored to operational status on-schedule. It is also a benefit over Fixed-Price DB, where extensive project requirement documents would need to be prepared by the City in order to support fixed pricing.

2. PDB allows the owner and PDB team to evaluate preliminary project costs in advance of finalizing the design so that project scope can be revised or adjusted to fit the needs of the City. This allows the City to complete the project without unnecessary budget overruns and takes advantage of the contractor's constructability expertise throughout the design process.

3. The project involves an unusual amount of risk. In a DBB delivery, the contractor will either assume the risk and inflate pricing or minimize risk in order to be the low bidder. PDB allows the allocation of risk to be negotiated with the contractor, as the City balances project goals and cost. This will lead to reduced project costs and a better end product.

4. Enables the PDB team to negotiate early work packages in order to begin work sooner than if the design had to be completed first. This will be critical to accomplishing the work in the available

shut-down period.

5. Using the PDB process on a project that is this difficult to quantify and scope will reduce the number of change orders. This will reduce the overall project cost.

6. Public Body Qualifications

Please provide:

- A description of your organization's qualifications to use the DB contracting procedure.

The City of Everett Public Works Department manages an extensive network of utilities and roadways and a large annual capital improvement program budget. We operate and manage a water filtration plant capable of delivering 140MGD of drinking water, a wastewater treatment plant that can process more than 40MGD of sewage, more than 100 miles of large-diameter water transmission lines, lift stations, water reservoirs, and hundreds of miles of water, sewer, and storm drain pipes.

Everett Public Works employs approximately 20 licensed engineers who are responsible for managing and designing a wide variety of infrastructure improvement projects. We are well-networked with leading A/E firms that we call on to assist with larger projects, or those that require specialized experience or capabilities. We have hired Brown & Caldwell to serve as an owner advisor to the City throughout the PDB contract document development and procurement process for this project.

The City of Everett Public Works Department has a track record of successful completion of projects using alternative delivery methods. Recently completed projects include:

Project Name	Delivery Method	Cost	Comp. Date
East Clearwell Roof Replacement	Fixed-Price Design-Build	$3.1M	11/2018
Reservoir 6 Roof Replacement	Fixed-Price Design-Build	$5.1M	10/2016
Transmission Line #5 Replacement	Fixed-Price Design-Build	$3.6M	12/2015
WPCF Expansion – Phase C	GC/CM	$24M	3/2016

- A project organizational chart, showing all existing or planned staff and consultant roles.

Note: The organizational chart must show the level of involvement and main responsibilities anticipated for each position throughout the project (for example, full-time project manager). If acronyms are used, a key should be provided. (See Attachment C for an example.)

See Appendix A for the project organizational chart.

- Staff and consultant short biographies that demonstrate experience with DB contracting and projects (not complete résumés).

PROJECT MANAGEMENT

John Nottingham, P.E.
Senior Project Manager

Role: Collaborate closely with the Project Manager on an ongoing basis throughout the Project to provide PDB-related strategic advice based on state law, contract terms, best practices, and lessons learned. Help guide the City through the PDB selection process; Serve as a key negotiator of preconstruction services amount; review preconstruction deliverables including but not limited to subcontracting plan, estimates, and schedule; assist in GMP package negotiations including Negotiated Support Services;

review of change orders and monthly pay estimates to ensure consistency with provisions of PDB contract.

Relevant Experience: John has worked for the City of Everett for the past 9 years as a Project Manager. His primary role has been the Project Manager for the larger projects at the City's Water Filtration Plant and the Water Pollution Control Facility. John was originally hired to manage the City's $24 million Phase C project, which was a GC/CM project at the Water Pollution Control Facility. This project was approved by the PRC on July 22, 2010. John managed this GC/CM project from the point of 30% design to completion of the project. This included overseeing and conducting the GC/CM selection process, managing the Pre-Construction phase with the GC/CM and the Design Engineers, and being the on-site Project Manager during the two-year construction period. John has also managed various smaller projects during his time with the City. Prior to working for the City, John was a Principal Engineer/Partner of an engineering firm with close to 30 people. His prior work experience includes the design and management of multiple water and wastewater projects. John also has a depth of experience with writing comprehensive plans, securing project funding, and the management of permitting efforts for public works construction projects. He has an AA degree from Bellevue College in Pre-Engineering, and a BA degree in Civil Engineering from the University of Washington. John is a licensed Professional Engineer in the State of Washington.

Randy Loveless, P.E.
Project Manager

Role: Collaborate closely with the Senior Project manager on an ongoing basis throughout the project. Assist with development of the PDB RFQ and RFP, development of the PDB contract documents, and selection and procurement of the PDB team. Manage technical direction of project throughout the design process. On-site Project Management during construction. Assist the Senior Project Manager in PDB contract management.

Relevant Experience: Randy has worked for the City since 2019 as a Design Engineer and Project Manager on various utility and infrastructure projects. Prior to working for the City of Everett, Randy worked for Reid Middleton as a Project Manager and Structural Engineer for 10 years. His design experience focused largely on designing seismic and other improvements to critical lifeline facilities and schools. Projects included major airport terminal buildings, hospitals, oil pipelines, elevated water tanks, mission-critical military structures, historic buildings, and pedestrian bridges. Randy also helped write several Design-Build RFPs for military clients. Randy has a BS degree in Civil Engineering from the University of Washington and is a licensed Professional Engineer in Washington State.

Bill Fisher
Construction Inspector

Role: During design: Plan and specification review, constructability review, and coordination with City forces. During construction: Onsite City representative assisting with construction management, inspection, and reviewing work performed by testing agencies, special inspectors and surveyors.

Relevant Experience: Bill has worked as a construction inspector for the City for 26 years. Prior to starting with the City, he worked for eight years for WSDOT doing structural and civil site inspection, and spent four years prior to that with Reid Middleton working on a survey crew. His experience and responsibilities with the City includes contract administration, inspection, oversight of testing agencies and special inspections, review of survey layout, constructability reviews, and preparing record drawings. Bill was the City's inspector on the GC/CM Water Pollution Control Facility project, and has served in a similar role on multiple other building and water related projects, including a number of other multimillion dollar public works contracts.

PDB PROCUREMENT AND CONTRACTING

Pat Tangora, P.E.

PDB Procurement and Contracting Consultant – Lead Advisor

Relevant Experience: For 30 years, Pat has worked closely with water, wastewater, and solid waste utilities as owner's advisor to implement progressive DB, fixed-price DB, DBO, CM-at-risk, and service contract projects. She helps clients tailor delivery methods to the specific needs of their organizations and projects. She has helped develop procurement and negotiations strategies, define technical requirements, evaluate proposals, support negotiations, and oversee performance through design, construction, and operations. Highlights of her experience include:

- Lead Owner's Advisor for the City of Tacoma's Jefferson-Hood Street Interceptor PDB project. This project is currently in design.
- Lead Owner's Advisor for the City of Nampa, ID's Wastewater Treatment Plant Upgrade PDB project. This project has completed the procurement process and is entering into design.
- Senior advisor for the City of Lewiston, ID's Water Treatment Plant Upgrade PDB project. This project is in the procurement process.
- Lead Owner's Advisor for Louisville Jefferson County Metropolitan Sewer District's Southwestern Parkway PDB Project. This Project has completed construction and was awarded DBIA's top National Award of Excellence for 2019 in the water / wastewater category.
- Lead Owner's Advisor for the City of San Jose's Digested Sludge Dewatering PDB project. This project is currently in design.
- Lead Owner's Advisor for the City of Walla Walla's Water Treatment Plant GC/CM project. This project is wrapping up construction.
- Lead Owner's Advisor for Silicon Valley Clean Water's Front of Plant project and pump station improvements projects. These projects are under construction.
- Lead Owner's Advisor for Cincinnati MSD's Mill Creep WWTP Diversion Project. This project is now under construction.
- Senior consultant for the Seattle Public Utilities' Tolt and Cedar Water Treatment projects (DBO). These projects are in operation.

Pat's experience also includes acting as the commercial manager on the D-B delivery team for a new $190M water supply and treatment facility for the City of Santa Fe. In this role, she was responsible for contract compliance, risk management, controls, and procurement.

Tadd Giesbrecht, P.E.

PDB Procurement and Contracting Consultant – Contracts and Procurement Advisor

Relevant Experience: Tadd was the technical manager for the City's Reservoir 6 Roof Replacement D-B project and the project manager for the Water Filtration Plant East Clearwell Roof Replacement project. Tadd worked with Pat Tangora on the City of Tacoma's Central Treatment Plant fixed price DB project. Tadd has managed and been the principal in charge for multiple Energy Services Company (ESCO) projects, which is a form of DB delivery. He has worked on several City of Everett design projects at both the water and wastewater treatment plants and knows City protocols, including Department of Health requirements for conducting potable water projects.

Patrick Weber, P.E.

PDB Procurement and Contracting Consultant – Technical Advisor

Relevant Experience: Patrick was the technical lead for the City's Water Filtration Plant East Clearwell Roof Replacement project. In addition, Patrick has worked extensively with Pat Tangora on a number of recent PDB projects, including the Walla Walla Water Treatment Plant GC/CM project, and the City of Tacoma's Jefferson-Hood Street Interceptor Project. He has also worked on a number of City of Everett design projects at both the water and wastewater treatment plants and knows City protocols and

requirements. Patrick is currently managing the City's Water Filtration Plant facility plan and understands Department of Health requirements for conducting potable water projects.

Tim Benedict
Deputy City Attorney (City of Everett)

Role: Provide legal guidance and advice for the Project with respect to RCW 39.10 compliance, procurement, negotiation, contracting, and contract administration.

Relevant Experience: Tim has served as the legal advisor to City of Everett's Public Works Department for twelve years. He has been practicing law in Washington since 2000. After graduating from University of Washington Law School, he worked for 8 years as an attorney at Hillis Clark Martin & Peterson in Seattle. Tim was the legal advisor on one of the City's GC/CM projects (Water Pollution Control Facility, Phase C), and on City Design-Build projects (Reservoir 6 Roof Replacement, and Transmission Line 5 Replacement)

MANAGEMENT AND OVERSIGHT (City of Everett)

Jim Miller, PE
Engineering Superintendent, Public Works

Role: With previous Design Build and GC/CM experience, Jim will provide general program oversight for the project.

Relevant Experience: Jim has more than 40 years of experience in the public and private sectors as an engineering manager, designer and construction manager, and has been with the City of Everett for 21 years with responsibility for water, sewer, and surface water planning, Capital Improvement Program (CIP), project management, construction management, surface water management, and information services including mapping, GIS, and records. He is an expert in water resource and water supply issues. Jim supervised the City of Everett's two GC/CM projects for the Water Pollution Control Facility: the Phase A Expansion and the current Phase C Expansion. He is the former Chair of the Washington Water Utility Council (WWUC). Presently, he is the Chair of the WWUC Water Rights Committee. Prior to his employment with the City, Jim was the Water Resource Program Manager for Parametrix, a local engineering consulting firm. He has an undergraduate degree in civil engineering from Seattle University and a master's degree in Water Resource Management from the University of Washington.

- Provide the ***experience and role on previous DB projects*** delivered under RCW 39.10 or equivalent experience for each staff member or consultant in key positions on the proposed project. (*See Attachment D for an example. The applicant shall use the abbreviations as identified in the example in the attachment.)*

  See Appendix B for key team member experience and role on previous DB projects.

- The qualifications of the existing or planned project manager and consultants.
  Note: For design-build projects, you must have personnel who are independent of the design-build team, knowledgeable in the design-build process, and able to oversee and administer the contract.

  See above biographies for relevant information regarding qualifications of key team members. All team members are (and will be) independent of the PDB team.

- If the project manager is interim until your organization has employed staff or hired a consultant as the project manager indicate whether sufficient funds are available for this purpose and how long it is anticipated the interim project manager will serve.

  The City's Senior Project Manager, John Nottingham, P.E., is anticipated to actively manage and oversee the project until its completion.

- A brief summary of the construction experience of your organization's project management team that is relevant to the project.

  See Appendix B for relevant project experience.

- A description of the controls your organization will have in place to ensure that the project is adequately managed.

  The City of Everett's Public Works Department has established project management processes and controls that are designed to ensure projects are being properly managed. These systems have been key to the City's ability to successfully manage and deliver public works projects on time and within budget. The City has also engaged with Brown & Caldwell as an Owner Representative on the project. Their vast experience in managing projects with alternate delivery methods makes them a valuable asset to the project team and increases the team's effectiveness in managing this project.

  City Project Management controls and processes include:

  - ✓ A comprehensive project management handbook. This handbook documents established and expected project management processes for our projects.
  - ✓ Weekly coordination meetings for key staff members. Staff are expected to regularly update others on the status of their projects.
  - ✓ Monthly resource group technical review meetings. Public Works staff meets in larger groups on a monthly basis to comprehensively review all projects and outstanding issues related to particular systems and teams (i.e., water, sewer, drainage, etc.). These meetings help ensure that projects are moving forward, that technical questions are resolved, and that key stakeholders remain informed and provide input on a continuous basis.
  - ✓ Internal construction management staff capable of handling inspections, documentation, pay apps, etc. on projects of all sizes.
  - ✓ Strict budgetary controls and approval processes.

- A brief description of your planned DB procurement process.

  We anticipate that we will use a two-stage procurement process. We will publicly announce a project RFQ, inviting qualified participants to submit qualifications. Based on the submissions for this first stage, we will develop a shortlist of 2 to 3 firms who will be invited to submit proposals. We will issue RFPs to the shortlisted firms and select one firm based on the scoring of the proposals. At this stage, we anticipate that the RFP will primarily ask for pricing factors (pricing for design, for general conditions and fee for overhead and profit) and for other information required under RCW 39.10. This will allow us to complete the procurement process relatively quickly so that the City can move on with developing and evaluating design/construction approaches with the Design-Builder. See above for overall project schedule.

- Verification that your organization has already developed (or provide your plan to develop) specific DB contract terms.

  The City of Everett currently has its own Design-Build contract that it has developed and successfully used on past project. These contract documents are currently being modified for use as a PDB contract, an effort that will be completed to facilitate this project.

7. **Public Body (your organization) Construction History:**
Provide a matrix summary of your organization's construction activity for the past six years outlining project data in content and format per the attached sample provided: *(See Attachment E. The applicant shall use the abbreviations as identified in the example in the attachment.)*

- Project Number, Name, and Description
- Contracting method used
- Planned start and finish dates
- Actual start and finish dates
- Planned and actual budget amounts
- Reasons for budget or schedule overruns

See Appendix C for Construction History matrix

8. **Preliminary Concepts, sketches or plans depicting the project**
To assist the PRC with understanding your proposed project, please provide a combination of up to six concepts, drawings, sketches, diagrams, or plan/section documents which best depict your project. In electronic submissions these documents must be provided in a PDF or JPEG format for easy distribution. Some examples are included in attachments E1 thru E6. At a minimum, please try to include the following:

- A overview site plan *(indicating existing structure and new structures)*
- Plan or section views which show existing vs. renovation plans particularly for areas that will remain occupied during construction.
Note: applicant may utilize photos to further depict project issues during their presentation to the PRC

See Appendix D for project sketches and design concepts

9. **Resolution of Audit Findings On Previous Public Works Projects**
If your organization had audit findings on any project identified in your response to Question 7, please specify the project, briefly state those findings, and describe how your organization resolved them.

N/A – the City has no audit findings to report.

10. **Subcontractor Outreach**
Please describe your subcontractor outreach and how the public body will encourage small, women and minority-owned business participation.

The current version of our Fixed-Price Design-Build contract General Conditions includes the following requirement (the PDB contract being developed will include a similar clause):

"Design-Builder shall actively and in good faith solicit the employment of minority group members and bids for the supply of goods or subcontracting of services from qualified minority businesses. Design-Builder shall consider granting contracts to possible minority suppliers and Subcontractors on the basis of substantially equal proposals in the light most favorable to the minority businesses. As requested by Owner, Design-Builder shall furnish evidence of its compliance with these requirements. As used in this section, the term "minority business" means a business at least 51% of which is owned by minority group members. Minority group members include, but are not limited to, African Americans, Women, Native Americans, Asian/Pacific Islander-Americans, and Hispanic-Americans."

CAUTION TO APPLICANTS
The definition of the project is at the applicant's discretion. The entire project, including all components, must meet the criteria of RCW 39.10.300 to be approved.

SIGNATURE OF AUTHORIZED REPRESENTATIVE

In submitting this application, you, as the authorized representative of your organization, understand that: (1) the PRC may request additional information about your organization, its construction history, and the proposed project; and (2) your organization is required to submit the information requested by the PRC. You agree to submit this information in a timely manner and understand that failure to do so may delay action on your application.

PRC strongly encourages all project team members to read the Design-Build Best Practices Guidelines as developed by CPARB, and attend any relevant applicable training. If the PRC approves your request to use the DB contracting procedure, you also understand that: (1) your organization is required to participate in brief, state-sponsored surveys at the beginning and the end of your approved project; and (2) the data collected in these surveys will be used in a study by the state to evaluate the effectiveness of the DB process. You also agree that your organization will complete these surveys within the time required by CPARB.

I have carefully reviewed the information provided and attest that this is a complete, correct and true application.

Signature: _____

Name: *(please print)* Ryan L. Sass, P.E.. *(public body personnel)*

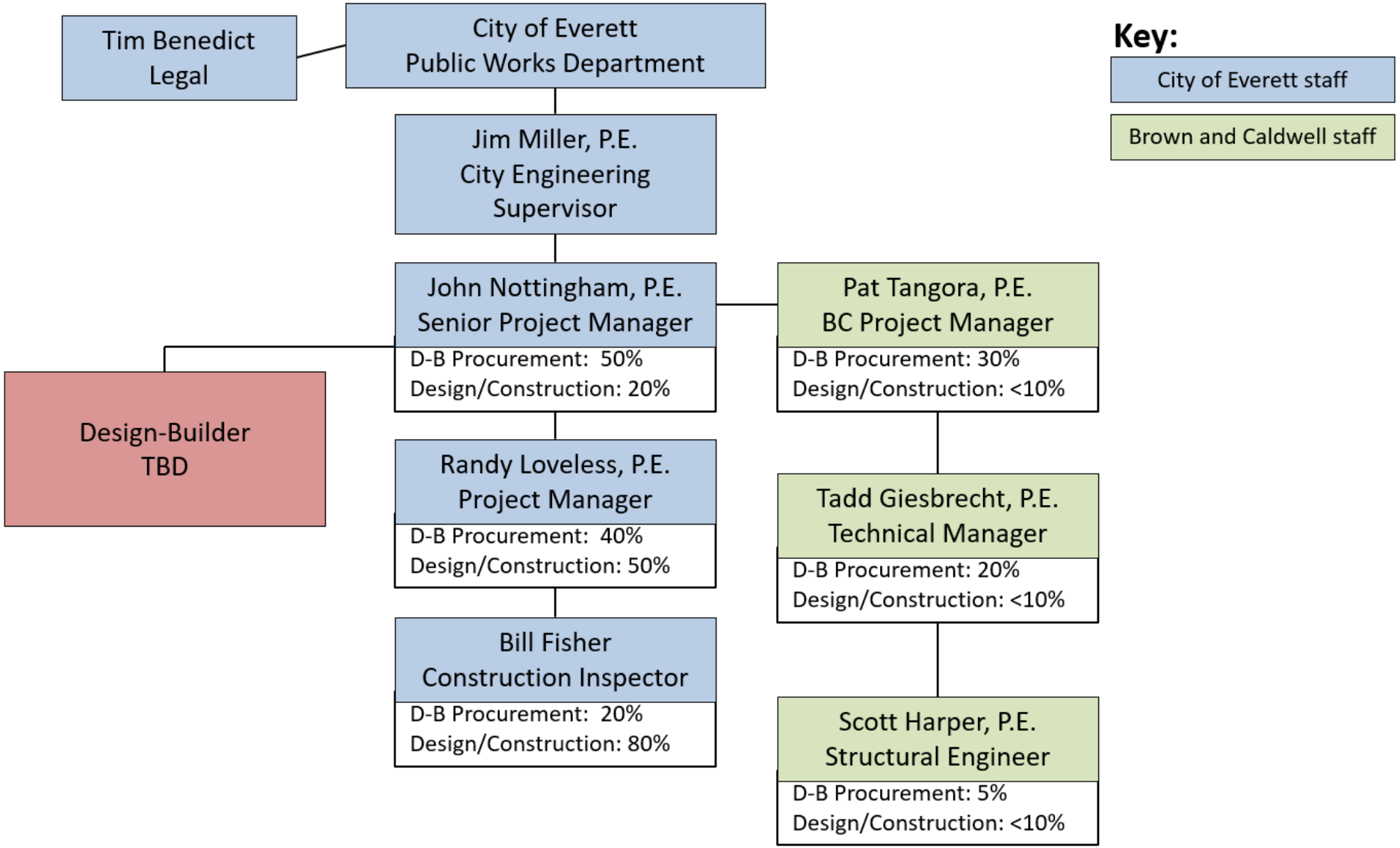
Title: Public Works Director

Date: 8-18-2020

APPENDIX A
Project Organizational Chart

EVERETT PUBLIC WORKS

RESERVOIR 3 STRUCTURAL REPAIRS
Washington State CPARB PRC Application



APPENDIX B
Key Staff Experience Matrix

Key Team Member Experience with Alternative Delivery Projects							
Name	Experience	Org	Projects	Cost	Project delivery method	Role during project phases	
						Design	Const.
James Miller, P.E.	Nearly 50 years' experience in the public and private sectors as an engineering manager, designer and construction manager	City of Everett	East Clearwell Roof Replacement WPCF Phase A & Phase C Expansion Reservoir 6 Roof Replacement Transmission Line 5 Crossing Pilchuck River	$3.1m $36m Ph A $24m Ph C $5m $3.5m	D-B GC/CM GC/CM D-B D-B	EM	EM
John Nottingham, P.E.	More than 10 years as PM for the government agencies, plus 12 years as a consulting engineer and manager of an engineering consulting firm.	City of Everett	WPCF Phase C Expansion East Clearwell Roof Replacement	$24m $3.1m	GC/CM D-B	PM Owner Rep	PM N/A
Bill Fisher	Nearly 30 years as a construction inspector for the City.	City of Everett	WPCF Phase C Expansion East Clearwell Roof Replacement	$24m $3.1m	GC/CM D—B	Owner Rep Owner Rep	CM CM
Pat Tangora, P.E.	Over 30 years experience as a consulting engineer providing owner's advisor services for alternative delivery projects	Brown and Caldwell (BC)	Tacoma Jefferson-Hood Street Interceptor Project	$25 million	PDB	Consultant PM, advisor during DB procurement process,, oversight of design-builder	NA – project not yet in construction
			Tacoma Central Treatment Plant Expansion Fixed Price DB Project	$70 million	DB	Consultant PM, advisor during DB procurement process, oversight of design-builder	Consultant PM, oversight of design-builder
			City of Nampa, ID Wastewater Treatment Plant Project Group F	$160 million	PDB	Lead owner's advisor during DB procurement and first phase of PDB design development	NA – project not yet in construction
			City of Lewiston, ID Water Treatment Plant Upgrade	$28 million	PDB	Senior advisor during DB procurement	NA – project not yet in construction
			City of San Jose, CA Biosolids Dewatering Project	$120 million	PDB	Consultant PM, advisor during DB procurement process,, oversight of design-builder	NA – project not yet in construction

Key Team Member Experience with Alternative Delivery Projects							
Name	Experience	Org	Projects	Cost	Project delivery method	Role during project phases	
						Design	Const.
			Louisville Jefferson County MSD, KY Southwestern Parkway CSO Basin Project	$78 million	PDB	Senior advisor during DB procurement process, oversight of design-builder, lead for GMP amendment negotiations	Senior advisor
			Soquel Creek Treatment Plant	$75 million	PDB	Senior advisor during DB procurement process,	NA – not currently in construction
			Greater Cincinnati MSD Mill Creek WWTP Diversion Project	$35 million	PDB	Senior advisor during DB procurement process, oversight of design-builder,	Senior advisor
			Silicon Valley Clean Water, CA Front of Plant Project	$122 million	PDB	Senior advisor during DB procurement process	Senior advisor
			City of Everett, WA Reservoir 6	$4 million	Fixed Price DB	Consultant PM, advisor during DB procurement process, oversight of design-builder during design	Senior advisor to City
			City of Walla Walla, WA Water Treatment Plant Upgrade	$16 million	GC/CM	Consultant PM, advisor during GC/CM procurement process, advisor during design	Advisor during construction
			City of Everett, WA Clearwell Roof Replacement	$3 million	Fixed Price DB	Senior advisor during procurement and design	Senior advisor
			Tacoma Central Treatment Plant	$70 million	Fixed Price DB	Consultant PM, advisor during DB procurement process,, oversight of design-builder	Consultant PM; oversight of design-builder
			Santa Fe Buckman Direct Diversion	$190 million	Fixed Price DB	Commercial Manager on DB team	Commercial Manager on DB team
			Seattle Public Utilities Cedar Water Treatment Plant	$78 million	DBO	Consultant PM, advisor during DB procurement process,, oversight of design-builder	Consultant PM; oversight of design-builder

Key Team Member Experience with Alternative Delivery Projects							
Name	Experience	Org	Projects	Cost	Project delivery method	Role during project phases	
						Design	Const.
			Seattle Public Utilities Tolt Water Treatment Plant	$70 million	DBO	Advisor during DB procurement process, oversight of design-builder	Oversight of design-builder
Tadd Giesbrecht, P.E.	22 years experience in water/wastewater planning and design	Brown and Caldwell	Everett Reservoir 6	$4 million	Fixed Price DB	Consultant PM	Consultant PM
			Everett Clearwell	$3 million	Fixed Price DB	Consultant PM	Consultant PM
			Tacoma Central Treatment Plant Expansion	$70 million	Fixed Price DB	NA	Subconsultant (BC) PM
Patrick Weber, P.E.	14 years experience in water/wastewater planning and design	Brown and Caldwell	Everett Clearwell	$3 million	Fixed Price DB	Consultant technical lead	Consultant technical lead
			Tacoma Jefferson-Hood Street Interceptor Project	$25 million	PDB	Procurement document lead during DB procurement process,, oversight of design-builder	NA – project not yet in construction
			Greater Cincinnati MSD Mill Creek WWTP Diversion Project	$35 M	PDB	Technical lead during DB procurement process, oversight of design-builder,	Advisor
			City of Walla Walla, WA Water Treatment Plant Upgrade	$16 million	GC/CM	Development of procurement documents during GC/CM procurement process, advisor during design	Advisor during construction
			Soquel Creek Treatment Plant	$75 million	PDB	Technical advisor during DB procurement process,	NA – not currently in construction

Abbreviations: EM – Engineering Manager, PM – Project Manager, APM – Assistant PM, CM – Construction Manager

APPENDIX C
Construction History

RESERVOIR 3 STRUCTURAL REPAIRS
Washington State CPARB PRC Application

Project No.	Project Name	Project Description	Contracting Method	Date of Notice to Proceed	Start Contract Duration	Working or Calendar Days	Actual Contract Duration	Planned Budget Amounts	Actual Budget Amount	Reason for Budget and Schedule Overruns
1	Grand Ave Park Bridge	Construction of a 283-foot pedestrian bridge that connects the Grand Avenue neighborhood to the waterfront area. The bridge, which crosses the railroad and West Marine View Drive, also carries large utilitiy pipelines that had previously been supported on a steep slope.	DBB	8/28/2017	360	Working	TBD	$13,789,438.50	TBD	Project is not yet complete, and final schedule/cost information is not yet available.
2	Everett Downtown Streetscape Improvement Project	Construction of frontage and street improvements required to achieve overall redevelopment goals for the City of Everett.	DBB	7/8/2019	150	Working	TBD	$9,577,841.02	TBD	Project is not yet complete, and final schedule/cost information is not yet available.
3	Three Lakes Valve Bypass	Install 36-inch diameter bypass pipe around an existing vault that will allow maintenance on the valve/vault structure without shutting down Transmission Line 5.	DBB	10/16/2017	201	calendar	254	1,217.490.34	$1,306,828.14	Some design changes were necessary, relating to safety and constructability issues. Contractor earned an incentive bonus for limiting transmission line shutdown time. Schedule was extended due to increased scope and weather delays.
4	Hayes Street Regulator & CSO Controls (UP 3398-31)	Sewer Improvements	DBB	5/8/2017	244	calendar	289	$3,034,395.00	$3,112,368.08	Additional quntities of grading/paving needed over what was included in original contract, design changes needed to accommodate geometric constraints. Additional time addetd to schedule to acomomodate.
5	Sewer Regulators R4 & R39 Modifications (UP 3633)	Sewer Hydraulic and Flow Improvements	DBB	8/28/2017	115	working	115	$1,098,104.63	$1,155,037.44	Change order related to design changes.
6	Riverfront Lift Stations 33, 43, & 21 (UP 3314)	Construct 3 new sewer lift stations	DBB	5/11/2015	275	working	344	$6,800,000.00	$6,550,732.53	Design changes
7	Watermain Replacement "R" (UP 3646)	Replacement of old watermain	DBB	5/2/2017	N/A	Calendar	269	$1,700,000.00	$1,252,714.73	
8	East Clearwell Roof Replacement (UP 3662)	Replace failing roof on an existing finished water storage reservoir (clearwell) at Everett's Water Filtration Plant	DB	10/10/2017	248	calendar	307	$3,022,197.06	$3,116,022.97	Additional investigation, design, and construction scope was required to address severl conditions that were not observable or forseeable prior to construction

RESERVOIR 3 STRUCTURAL REPAIRS
Washington State CPARB PRC Application

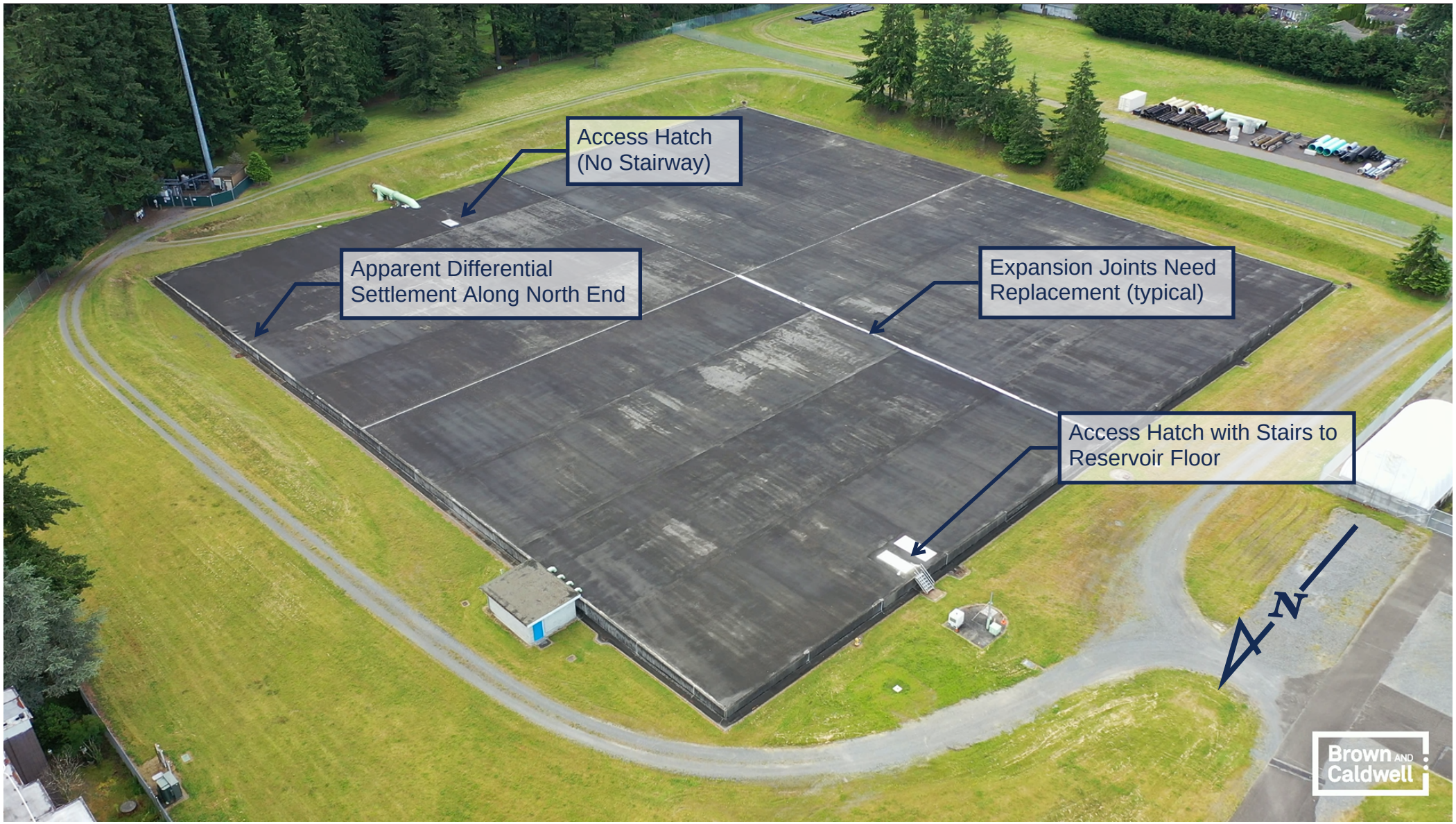
Project No.	Project Name	Project Description	Contracting Method	Date of Notice to Proceed	Start Contract Duration	Working or Calendar Days	Actual Contract Duration	Planned Budget Amounts	Actual Budget Amount	Reason for Budget and Schedule Overruns
9	E Grand SS Replacement & Stormwater Separation (UP 3398)	Improvements to sanitary sewer system and separation of sewer and storm flows along East Grand Ave.	DBB	10/20/2014	260	Working	288	$5,797,021.15	$6,149,491.15	Design changes
10	Water Pollution Control Facility Phase C1 (UP 3412-17)	Waste water plant improvements to increase liquid capacity including , construction of a new trickling filter, expansion of the existing aeration basins, a new secondary clarifier and one additional 5 MGD effluent pump.	GC/CM	10/17/2012	N/A	4.5 yrs	N/A	$31,312,618.00	$23,697,103.30	Using GC/CM process led to more work being performed than was planned at a lower cost than planned.
11	Sewer M Phase I (UP 3470)	Sewer Improvements	DBB	3/20/2015	260	Working	300	$11,500,000.00	$11,398,259.79	Scope of project increased during construction due to City pursuing additional improvements.
12	Shore Ave Storm Water Outfall (UP 3118)	Stormwater system improvements, including cathodic protection.	DBB	8/5/2015	100	working	185	$2,300,000.00	$1,919,191.94	Additional time needed for ordering of long-lead items and various design changes.
13	Broadway Bridge Replacement (PW 3395)	Replacement of Broadway Ave bridge over BNSF railroad	DBB	12/1/2014	280	working	263	$7,958,188.85	$7,800,022.66	Contract extended to accommodate additioanl work not anticipated druing the design.
14	Sewer Lift Station #24 (UP 3313)			7/11/2012	N/A	N/A	N/A	$5,000,000.00	$4,402,894.56	
15	Water Main Replacement N (WO#- 3569)	4,400 feet of existing 6-in. and 8-in diameter water main and appurtenances with new 8-in. and 12-in. water main and new appurtenances.	D B B	8/11/2014	120	Working	134	$1,062,406.59	$995,407.73	Time extension granted due to adding additional work.
16	Reservoir 6 Roof Replacement (WO# - 3500)	Replace, with Acceptable Roof Systems, the existing roof structures on two, 32- year old, 238' diameter, concrete potable water storage tanks (the Reservoir 6 Tanks) located within the City of Everett.	D B	3/11/2014	430	Calendar	584	$4,569,715.00	$5,055,455.52	Unforeseen demo costs for steel standpipe removal & installing new perimeter seals & construction joints inside tank, addition of another standpipe demo resulted in additional cost and time.

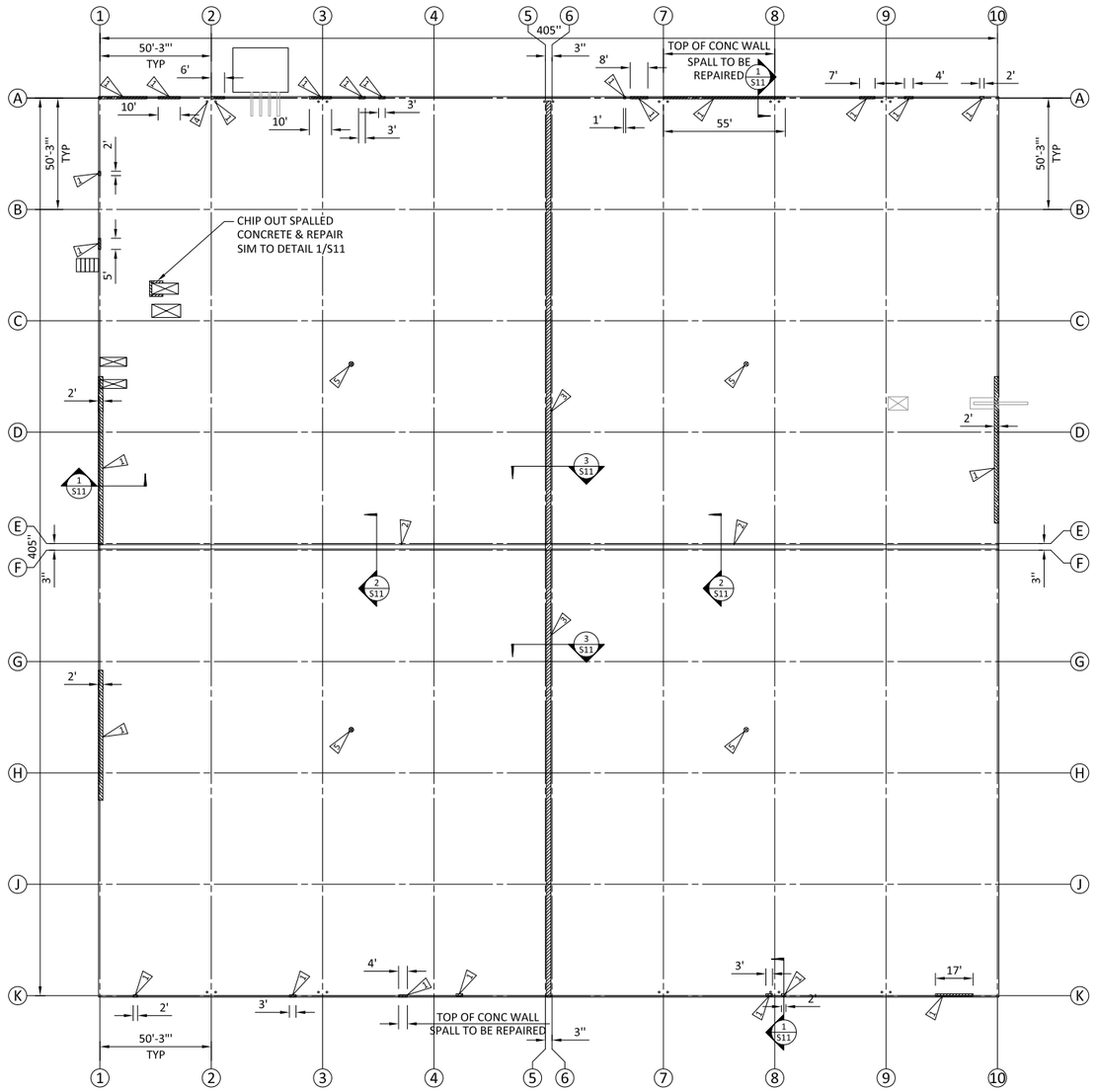
RESERVOIR 3 STRUCTURAL REPAIRS
Washington State CPARB PRC Application

Project No.	Project Name	Project Description	Contracting Method	Date of Notice to Proceed	Start Contract Duration	Working or Calendar Days	Actual Contract Duration	Planned Budget Amounts	Actual Budget Amount	Reason for Budget and Schedule Overruns
17	Transmission Line 5 Crossing Pilchuck River (WO# - 3521)	Install a new replacement segment of 51-in welded steel pipeline beneath the Pilchuck River, just downstream of the existing crossing and much deeper using an open trench water crossing.	D B	7/1/2014	7/1/2014	NA	12/31/2015	$3,292,000.00	$3,609,685.00	DNR required existing pipe removal under the river that was added to the contract.
18	Water Pollution Control Facility Phase C - (WO# - UP3412)	Project includes expansion of the existing Aeration Basin by 30%, construction of a new Trickling Filter with a feed pump, construction of a new Secondary Clarifier, one additional 5 MGD Pump at the South Effluent Pump Station, relocation and increased capacity of the 3W Pump Station, relocation and increased capacity of the 3W Pump Station, and, extensive electrical control upgrades throughout the plant.	GC/CM	3/14/2014	3/14/2014	2 years	2 years	$31,300,000.00	$24,000,000.00	

APPENDIX D
Design Concepts & Images

Figure 1: Aerial Photo of Reservoir





1 S4 LID REPAIR PLAN
SCALE: 1" = 30'

15'-0" 0 15'-0" 30'-0"

LID REPAIR PLAN NOTES:

1. TOPPING SLAB REPAIR PER DETAIL 1/S11.
2. REPAIR EXPANSION JOINT PER DETAIL 2/S11 FOR FULL 405'-0" LENGTH.
3. REPAIR EXPANSION JOINT PER DETAIL 3/S11 FOR FULL 405'-0" LENGTH.
4. CORE HOLE FOR MIRCOPILES PER DETAILS 1/S9 & 4/S11 (22 LOCATIONS).
5. CORE HOLE FOR NEW ROOF VENTS PER SHEETS C1 AND S5-S8 (4 LOCATIONS).

NO.	DATE	APRVD	REVISION

PLANS ISSUED FOR

BID			CONST			RECORD		
ACTION	DATE	APRVD	ACTION	DATE	APRVD	ACTION	DATE	APRVD

Designed
Drawn
Checked
Design Review Level
90%

PRELIMINARY NOT FOR CONSTRUCTION

GREG GUILLEN STATE OF WASHINGTON 22000 PROFESSIONAL ENGINEER

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RESERVOIR 3 COVER REPAIRS

WORK ORDER UT3739-1

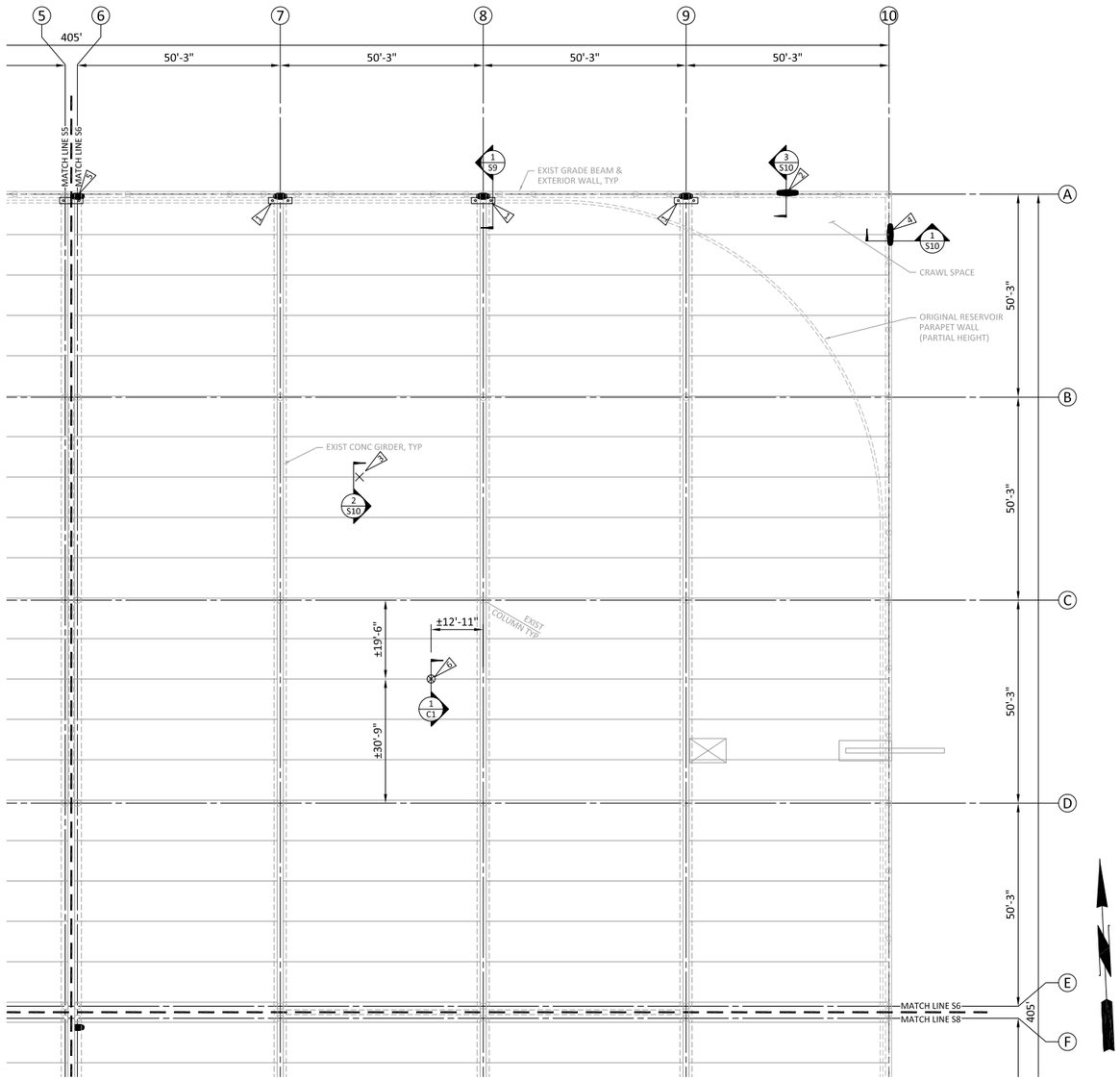
S-STRUCTURAL

LID REPAIR PLAN

Drawing S4
Sheet No. 8
15 Of Total

PLAN FLAG NOTES:

1. LOCATION OF SPALLING GIRDER AND/OR GRADE BEAM SUPPORT. PERMANENTLY SHORE GIRDER WITH GRADE BEAM AND MICROPILES PER DETAIL 1/S9, (3) LOCATIONS THIS PLAN.
2. EXISTING SPALLING DOUBLE-TEE JOIST WEB CONNECTOR PLATE TO EXTERIOR WALL. CONTRACTOR TO CLEAN AND REPAIR SPALL WITH PATCHING MORTAR PER DETAIL 3/S10, (1) LOCATION THIS PLAN.
3. EXISTING DOUBLE-TEE JOIST WEB REBAR CONNECTIONS AT 6'-0" ON CENTER. CONTRACTOR TO CLEAN AND INSPECT REBAR CONNECTIONS PER DETAIL 2/S10, (625) LOCATIONS THIS PLAN.
4. LOCATION OF SPALLING DOUBLE-TEE JOIST AND/OR GRADE BEAM SUPPORT. PERMANENTLY SHORE JOIST WITH STEEL SUPPORT AND PATCH SPALL WITH CONCRETE REPAIR MIX PER DETAIL 1/S10, (1) LOCATION THIS PLAN.
5. LOCATION OF SPALLING AT TOP OF GIRDER. REMOVE SPALLED CONCRETE AND REPAIR WITH CONCRETE REPAIR MIX PER DETAIL 2/S9, (1) LOCATION THIS PLAN.
6. NEW 24"Ø ROUGH OPENING FOR VENTILATION. NEW OPENING SHALL BE CENTERED ON DOUBLE-TEE JOIST JOINT. REFER TO SHEET C1 FOR VENT DETAILS, (1) LOCATION THIS PLAN.
7. NOT USED ON THIS PLAN.
8. NOT USED ON THIS PLAN.
9. NOT USED ON THIS PLAN.
10. FIELD SPALL OF DOUBLE-TEE REPAIR PER DETAIL 4/S8.



1 S6 NORTHEAST QUADRANT FRAMING PLAN
SCALE: 1/16" = 1'-0"

15'-0" 0 15'-0" 30'-0"

NO.	DATE	APRVD	REVISION

PLANS ISSUED FOR

BID			CONST			RECORD		
ACTION	DATE	APRVD	ACTION	DATE	APRVD	ACTION	DATE	APRVD

Designed
Drawn
Checked
Design Review Level
90%

PRELIMINARY NOT FOR CONSTRUCTION

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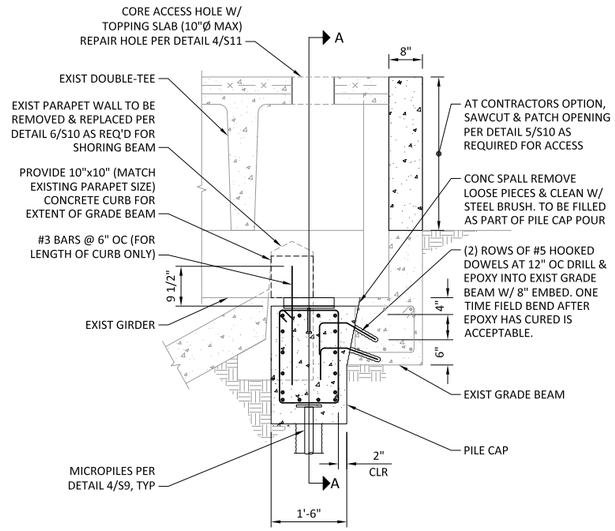
RESERVOIR 3 COVER REPAIRS

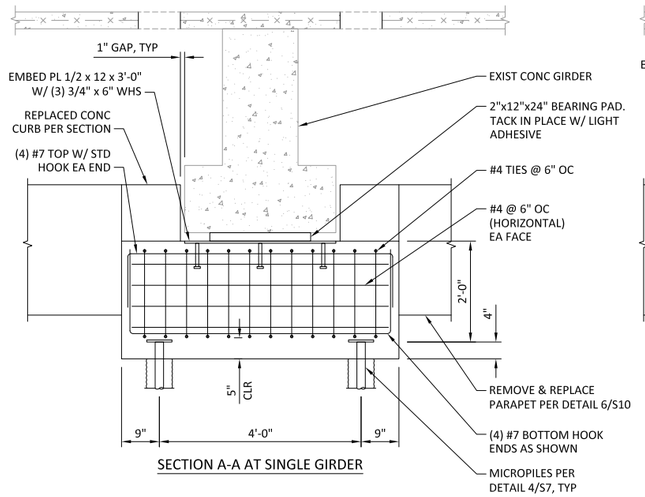
WORK ORDER UT3739-1

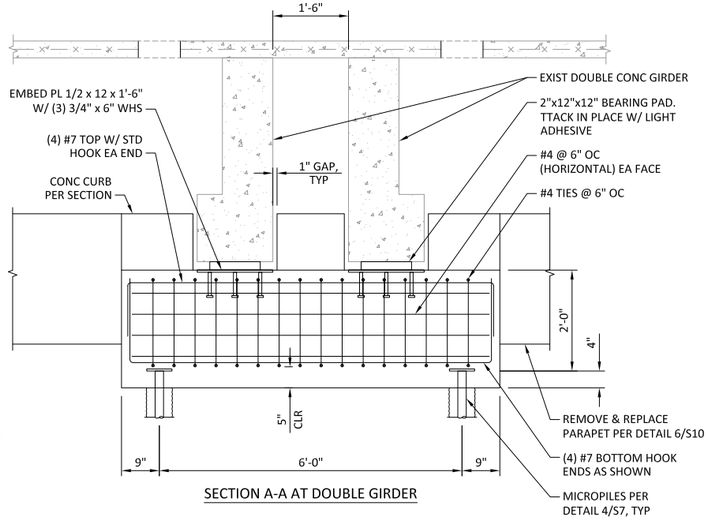
S-STRUCTURAL

NE QUADRANT FRAMING PLAN

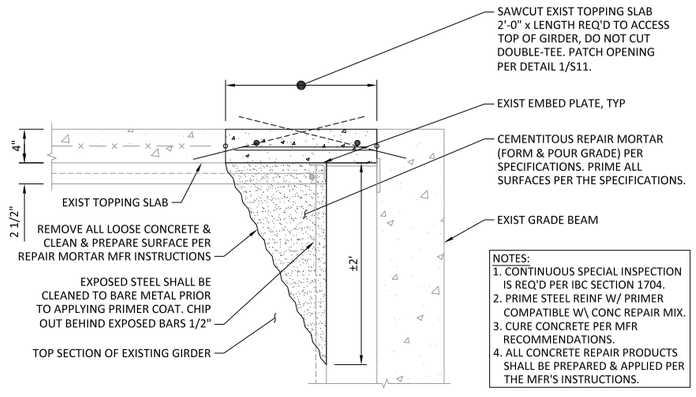
Drawing S6
Sheet No. 10 of 15 Total



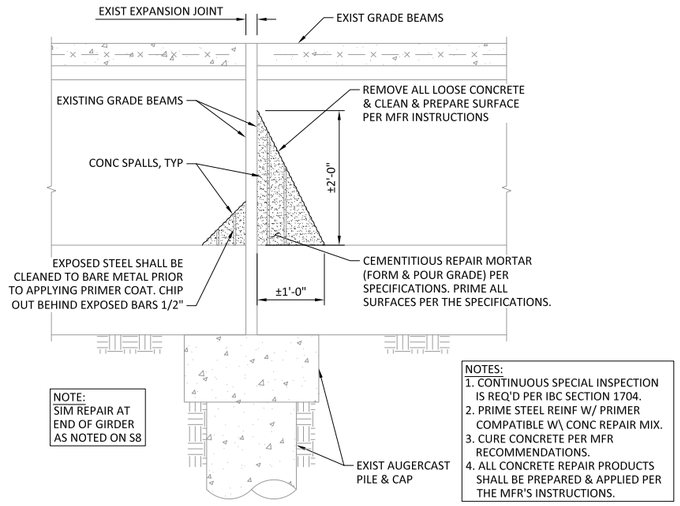




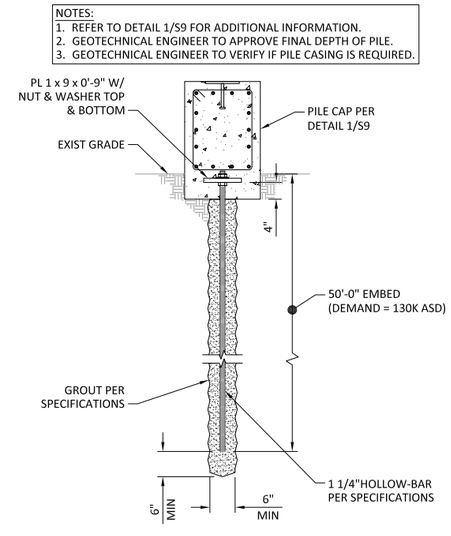
1 / S9 GIRDER SHORING & REPAIR SECTION
SCALE: 3/4" = 1'-0"



2 / S9 TOP OF GIRDER REPAIR SECTION
SCALE: 1 1/2" = 1'-0"



3 / S9 GRADE BEAM/EXTERIOR WALL REPAIR ELEVATION
SCALE: 1" = 1'-0"



4 / S9 MICROPILE DETAIL
SCALE: 3/4" = 1'-0"

NO.	DATE	APRVD	REVISION
			PLANS ISSUED FOR
BID ACTION	DATE	APRVD	CONST ACTION / DATE / APRVD; RECORD ACTION / DATE / APRVD

Designed
Drawn
Checked
Design Review Level 90%

PRELIMINARY NOT FOR CONSTRUCTION

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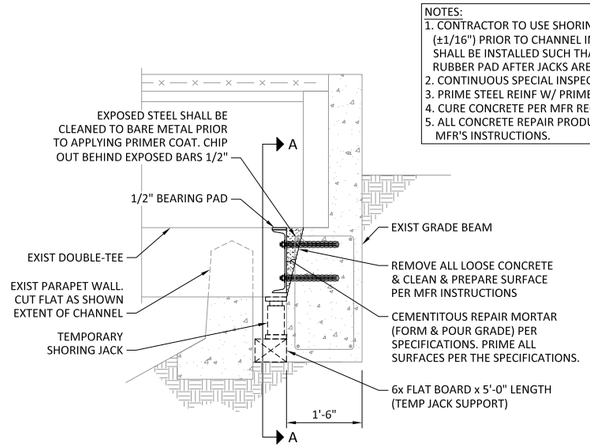
RESERVOIR 3 COVER REPAIRS

WORK ORDER UT3739-1

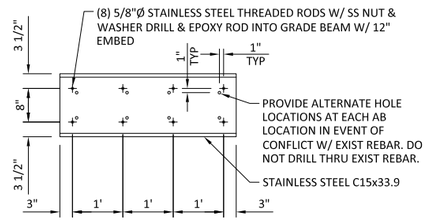
S-STRUCTURAL

STRUCTURAL DETAILS

Drawing S9
Sheet No. 13 / 15 Of Total

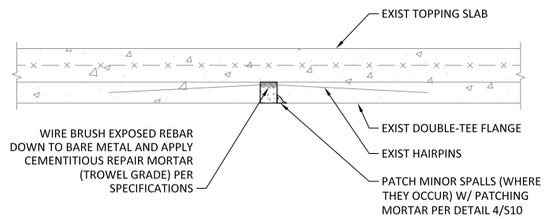


NOTES:
1. CONTRACTOR TO USE SHORING JACKS TO LIFT DOUBLE-TEE SLIGHTLY (±1/16") PRIOR TO CHANNEL INSTALLATION. CHANNEL & BEARING PAD SHALL BE INSTALLED SUCH THAT DOUBLE-TEE WEB HAS FULL BEARING OF RUBBER PAD AFTER JACKS ARE REMOVED.
2. CONTINUOUS SPECIAL INSPECTION IS REQ'D PER IBC SECTION 1704.
3. PRIME STEEL REINF W/ PRIMER COMPATIBLE W\ CONC REPAIR MIX.
4. CURE CONCRETE PER MFR RECOMMENDATIONS PRIOR TO JACK REMOVAL.
5. ALL CONCRETE REPAIR PRODUCTS SHALL BE PREPARED & APPLIED PER THE MFR'S INSTRUCTIONS.

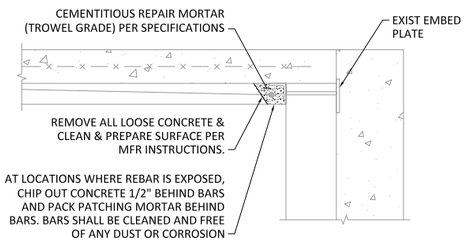


SECTION A-A

1 S10 DOUBLE-TEE SHORING & SUPPORT REPAIR SECTION
SCALE: 3/4" = 1'-0"

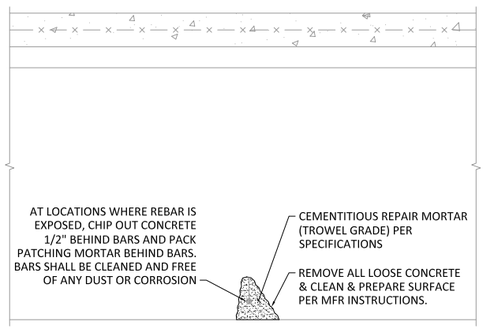


2 S10 DOUBLE-TEE HAIRPIN CONNECTION REPAIR SECTION
SCALE: 1 1/2" = 1'-0"



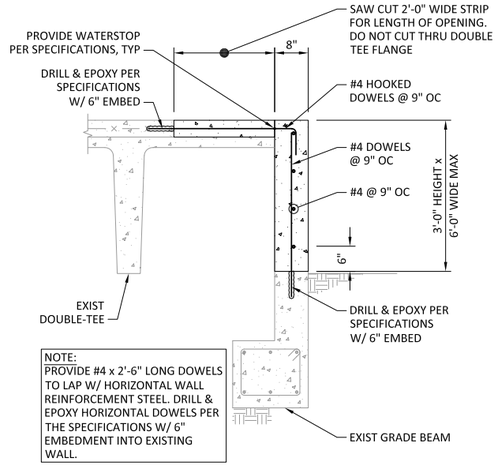
NOTES:
1. CONTINUOUS SPECIAL INSPECTION IS REQ'D PER IBC SECTION 1704.
2. PRIME STEEL REINF W/ PRIMER COMPATIBLE W/ PATCHING MORTAR.

3 S10 DOUBLE-TEE WALL CONNECTOR REPAIR SECTION
SCALE: 1 1/2" = 1'-0"



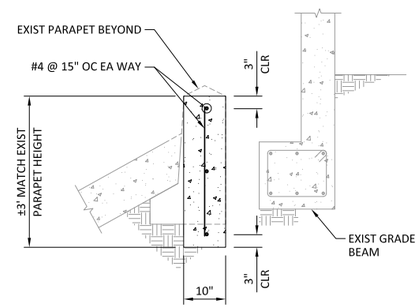
NOTES:
1. CONTINUOUS SPECIAL INSPECTION IS REQ'D PER IBC SECTION 1704.
2. PRIME STEEL REINF W/ PRIMER COMPATIBLE W/ PATCHING MORTAR.

4 S10 DOUBLE-TEE FIELD SPALL ELEVATION
SCALE: 1 1/2" = 1'-0"



NOTE:
PROVIDE #4 x 2'-6" LONG DOWELS TO LAP W/ HORIZONTAL WALL REINFORCEMENT STEEL. DRILL & EPOXY HORIZONTAL DOWELS PER THE SPECIFICATIONS W/ 6" EMBEDMENT INTO EXISTING WALL.

5 S10 WALL REPAIR SECTION
SCALE: 3/4" = 1'-0"



6 S10 PARAPET REPAIR SECTION
SCALE: 3/4" = 1'-0"

NO.	DATE	APRVD	REVISION

PLANS ISSUED FOR

BID			CONST			RECORD		
ACTION	DATE	APRVD	ACTION	DATE	APRVD	ACTION	DATE	APRVD

Designed
Drawn
Checked
Design Review Level
90%

PRELIMINARY NOT FOR CONSTRUCTION

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EVERETT PUBLIC WORKS
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Everett, WA 98201
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RESERVOIR 3 COVER REPAIRS

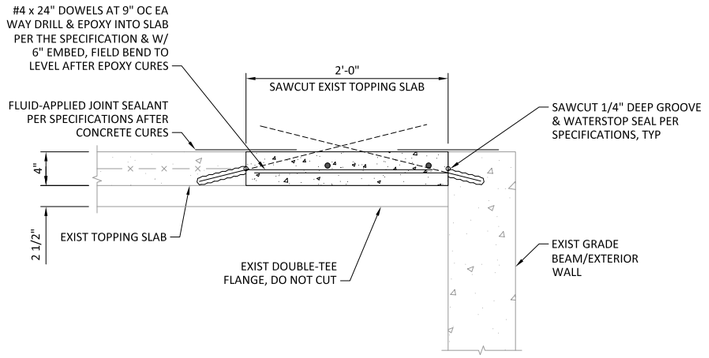
WORK ORDER UT3739-1

S-STRUCTURAL

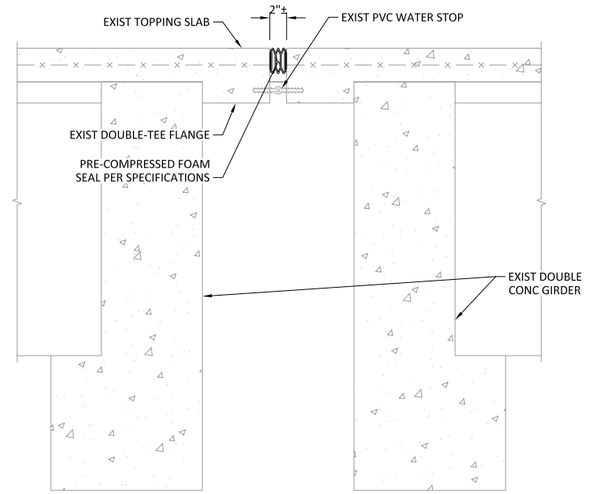
STRUCTURAL DETAILS

Drawing S10

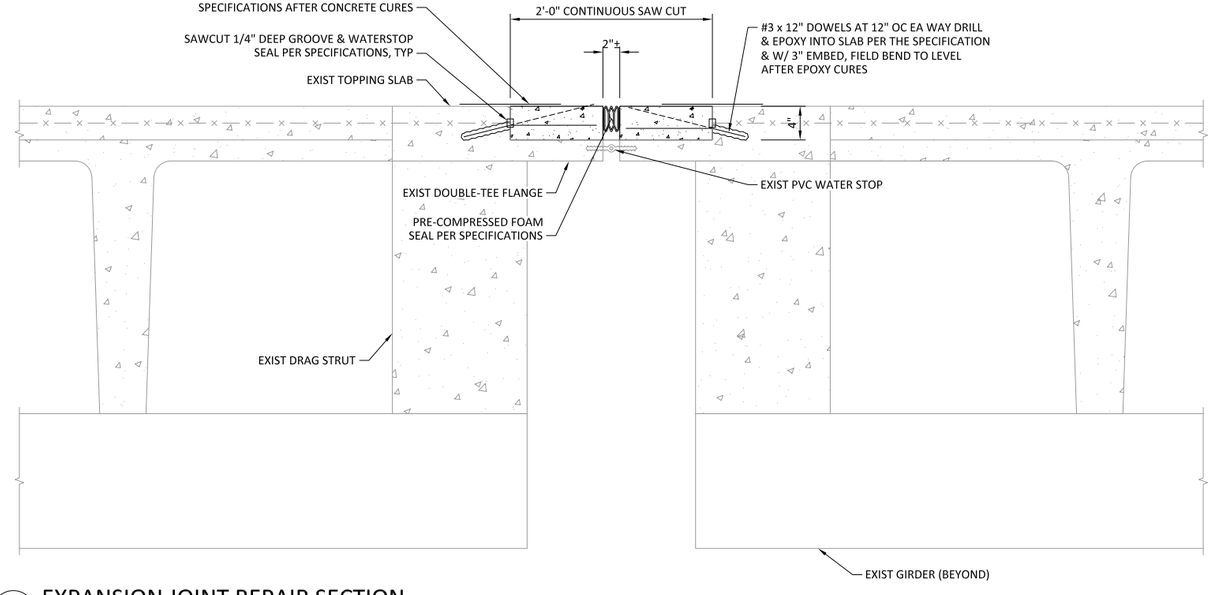
Sheet No. 14 / 15 Of Total



1 S11 TOPPING SLAB REPAIR SECTION
SCALE: 1 1/2" = 1'-0"



2 S11 EXPANSION JOINT REPAIR SECTION
SCALE: 1 1/2" = 1'-0"



3 S11 EXPANSION JOINT REPAIR SECTION
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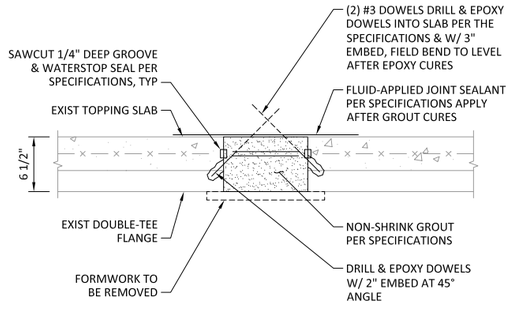

4 S11 CORE HOLE PLUG SECTION
SCALE: 1 1/2" = 1'-0"

NO.	DATE	APRVD	REVISION
			PLANS ISSUED FOR
BID ACTION			CONST ACTION / DATE / APRVD	RECORD ACTION / DATE / APRVD

Designed
Drawn
Checked
Design Review Level 90%

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RESERVOIR 3 COVER REPAIRS

WORK ORDER UT3739-1

S-STRUCTURAL

STRUCTURAL DETAILS

Drawing S11
Sheet No. 15 / 15 Of Total

APPENDIX E

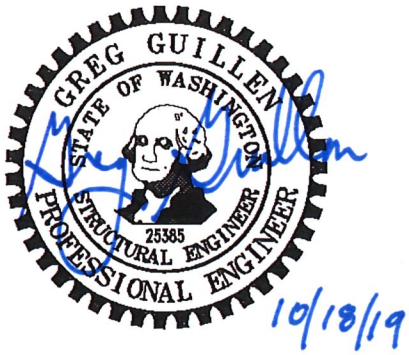
2019 Structural Inspection Report - CG Engineering

EVERETT

ROOF ASSESSMENT REPORT

Everett Reservoir #3

6003 Evergreen Way
Everett, WA 9203



10/18/19

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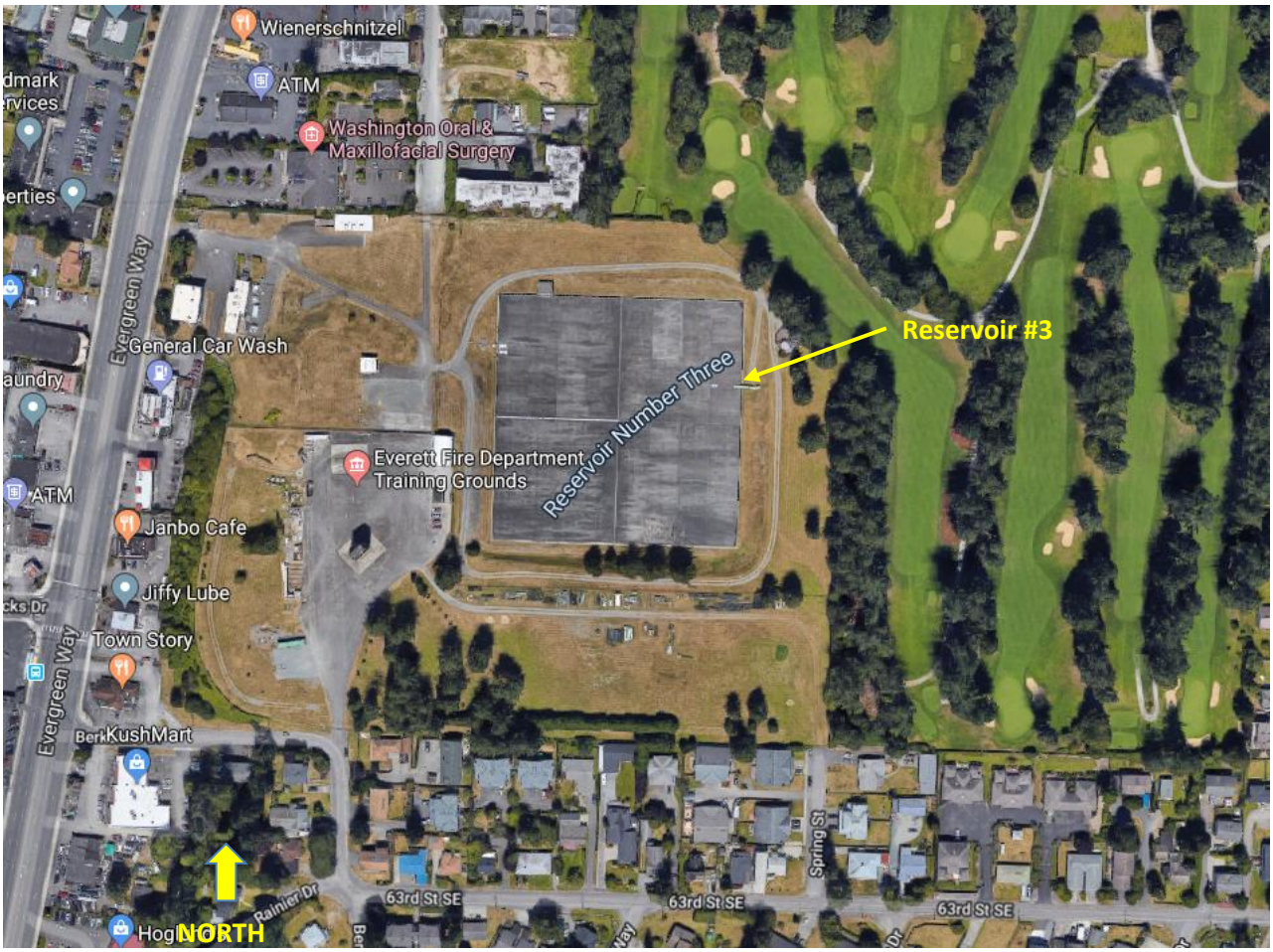
CG Project No.: 18297.10
October 18, 2019

TABLE OF CONTENTS

PURPOSE AND SCOPE

CG Engineering was retained by the City of Everett to perform an assessment of the roof system for Reservoir Number Three. The purpose of the assessment is to help the City plan and budget for future repair and/or replacement of the roof system. CG Engineering performed a site visit on **September 18, 2019** to observe the condition of the existing structure. The findings are summarized in this report.



Site Aerial

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STRUCTURE DESCRIPTION

The Everett Reservoir #3 is used to store treated drinking water for the City of Everett. The original reservoir was built in the 1920's and the current roof structure was completed around 1989. The overall reservoir roof dimensions are approximately 406'-0" square and it encapsulates the original reservoir. The original reservoir itself is a stadium shape with sloped sides. A partial height concrete wall (part of original reservoir) runs around the upper perimeter/berm of the reservoir. Crawlspaces exist at each corner of the roof, beyond the edge of the reservoir wall. The roof elevation is between 26'-0" - 27'-0" above the slab of the reservoir bottom and approximately 6-feet above the surrounding grade.

The roof structure is framed with a 4" concrete topping slab over precast double-tee sections supported on precast inverted tee girders. The exterior wall of the roof is concrete and supported on a continuous precast grade beam and auger-cast piles. The girders are supported by concrete grade beams on the perimeter of the building as well as interior concrete columns and spread footings at 50'-3" on center in the east/west and north/south direction. The double-tee joists are supported by grade beams at the exterior walls. The observed precast members were connected via welded steel embedded plates.

The roof structure is designed to slope at 0.8% in the east/west direction with the ridge located along the north/south centerline of the structure. The roof slope is achieved through sloping of the framing.

The reservoir is accessed by an aluminum roof hatch on the west side of the structure. The opening provides access to stairs that run down to the bottom of the reservoir.

Roof Venting System: The roof has no known venting systems.

Roof Drainage System: The water flows off the sloped roof to the adjacent lower grade into concrete gutters.

"Flat" Roof Area: 164,840 sq. ft.

CURRENT CONDITION

During our site visit, representatives of CG Engineering accessed all areas under the reservoir roof by boat. As the reservoir was full, we were unable to view the interior columns and foundations. The following structural and non-structural observations were made. A roof framing schematic, showing the observed areas of damage has been provided. Additionally, photos taken during the site visit have been included at the end of the report.

STRUCTURAL OBSERVATIONS

1. Cracking/Spalling of top side of concrete topping slab
   Cracking (and in some cases spalling) of the concrete topping slab at the exterior wall/slab joint was observed in several locations. It appeared that some of the cracking material was a previous repair patch. The cracking suggests differential movement between the supporting structural members and exterior walls. The worst areas of damage were observed in the northeastern quadrant, near Grid A-8.

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2. Concrete girder and grade beam support spalling
   Significant spalling of both the concrete girder ends and their grade beam supports was observed. In general, enough concrete had spalled away to expose the reinforcing steel and steel embedment plates that anchor the girders to the foundation. Additionally, some spalling of the girder end at the center of the structure was observed. Significant corrosion of all the exposed reinforcing steel was observed. Refer to the attached roof plan for a summary of observed girder spalling.

   In some cases, the grade beam support had spalled away leaving very little bearing area for the girder. Typical spalling of the supports left 1 inch or less of bearing at some locations. Specifically, the girder support located at Grid A-8 has completely spalled away and the bottom of the girder appears to have settled below the top of the grade beam by ± 2 inches. This location also corresponds to the observed areas of slab cracking above (see previous section).

3. Concrete double-tee joists spalling at support
   Similar to the concrete girders, several of the double-tee joists had spalling at the end of the members as well as their supports. The spalling exposed the reinforcing steel which was observed to be corroded. The existing concrete cover was observed to have been less than ¼" at some locations.

4. Concrete double-tee flange spalling at "non-bearing" support
   Some spalling was observed around the steel embedment plates that connect the double-tee joists to the exterior wall. The connectors themselves were observed to have substantial corrosion.

5. Double-tee joist connectors
   Substantial corrosion or rust was observed at all hairpin connectors between the joist flanges. Additionally, some minor cracking of the concrete was observed at several of these connections. The joists are connected together by welded rebar hairpins spaced at 8'-0" oc. We estimate there are 2,160 joist connectors total.

6. Hairline cracks and efflorescence in double-tee joist flange
   At several locations, cracks and efflorescence was observed on the underside of the double-tee joist flanges. Efflorescence is result of water intrusion through the cracks in the concrete.

7. Undermined reservoir concrete wall
   A portion of the grade beam in the northwest corner was observed to be undermined. It was unclear what the caused the displacement of the soil.

8. Differential settlement of exterior wall/grade beam
   Some concrete edge spalling was observed at the grade beam/wall construction joint in the northwest corner, near Grid A-1. The construction joint appeared to be located directly over a

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concrete pile cap. It appeared that the grade beam had some vertical displacement as the double-tee joists was only bearing on one web. It is unclear what caused the differential movement.

9. Spalling at grade beam corner connection
   Some minor spalling around the steel embedment plates connecting the precast grade beams at the corners was observed.

10. Rusted stainless-steel brace frames
    The interior brace frames were observed to have substantial rust spots. The rust was observed running into the reservoir. We were only able to view the portion of the frames above the waterline.

NON-STRUCTURAL OBSERVATIONS

1. Standing water in crawlspace floor
   Significant amount of standing water was observed in the crawlspace areas at each corner. In some cases, the depth of the water was several inches. The foundation system utilizes auger-cast piles and it's unlikely the standing water will adversely affect the structural capacity of the system. However, the City may want to consider installing drainage system in these areas to eliminate the standing water.

2. Condensation and lack of venting
   Significant condensation was observed on the underside of the roof structure. No apparent ventilation system was observed.

3. Damaged joint sealant/foam between grade beams/ exterior walls
   At some locations the sealant/foam between the exterior wall construction joints was observed to be damaged or missing, with daylight visible through the joint.

4. Damaged joint sealant between roof expansion joints
   The joint sealant between roof expansion joints, which separate the roof into quarters, was observed to be damaged or missing at the south joint.

5. Damaged/Failed water stops between expansion joints
   The water stops, located on the underside of the roof expansion joists, were observed to be damaged, particularly on the west joint. It appeared that the water stop had failed either due to spalling concrete at the joint or was possibly just installed incorrectly.

6. Corroded reservoir liner plate and anchor bolts
   The continuous steel plate and anchor bolts pinning down the reservoir liner was observed to have significant rust but still appeared functional. The continuous plate runs around the perimeter of the reservoir just above the water line.

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7. Corroded embedded Unistrut and vertical threaded rod hangers
   At several locations, extremely corroded embedded Unistrut channels and threaded hanger rods were observed. In some cases, the rods had completely rusted through and dropped away. It appears the Unistrut/rod systems were intended to hang MEP utility water lines but had been abandoned.

STRUCTURAL ANALYSIS

A structural analysis of the existing concrete girder and joist bearing conditions was performed to determine the minimum required bearing area of those members. The structural analysis was based on the reservoir drawings provided and as-built information gathered during our site visit. The following information summarizes the basis for our analysis.

- The compressive strength of concrete was assumed to be 4000 psi, as noted on the original reservoir drawings.
- The dead load of the structure was assumed to be the self-weight of the structure and was calculated to be 175 psf.
- The roof snow load is 25 psf.
- The width of the girder is 36 inches and the width of each double-tee web is 5½ inches.

Based on the above assumptions, we determined that the minimum required bearing lengths for the girders and double-tee joists to be 3.2 inches and 1.9 inches respectively.

RECOMMENDATIONS

GENERAL

We have determined that the interior moisture and chlorine has caused significant corrosion and spalling on the concrete members and their connections and has begun to corrode the steel elements. In some cases, the spalling has caused the girder support connections to fail. In most cases of support spalling the remaining girder support was measured less than 3.2 inches required by calculation. It is likely that the girder supports will continue to further spall, causing the girders to settle further. We recommend that repairs of the girders and their supports be carried out as soon as possible to prevent further settlement and continued damage to the roof slab and supporting framing.

Ideally, ventilation would be added to minimize the saturated condition inside the structure. However, due to the size of the space to be ventilated and the need to minimize the intrusion of foreign materials, a ventilation system may not be feasible. However, we recommend that a mechanical engineer evaluate the feasibility of adding ventilation. Additionally, it is our understanding that waterproofing the structure with a roofing membrane system would be cost-prohibitive. Considering the amount of condensation observed on the underside the roof framing, waterproofing from the exterior would be ineffective in protecting the existing concrete members.

Our repair recommendations include two parts; the first is the temporary repair until the roof is replaced, and the second part includes recommendations for a proposed replacement.

PART 1 – TEMPORARY REPAIR

ESTIMATED COST: $456,000.00
CONSTRUCTION DURATION: 2-3 MONTHS

It is our opinion that the repairs could extend the lifespan of the existing roof 10-15 years. A large contingency (30%) is included in the estimate due to the difficult nature of the repair work. Workers will need to access tight spaces and there is a possibility that additional damaged areas will be discovered once work has begun. The following recommendations are for planning purposes only. Structural construction documents prepared by a licensed professional engineer would be required, which are excluded from the scope of this report.

- All exposed reinforcing steel should be cleaned down to bare metal with sand blasting. After the steel has been cleaned is should be protected with a two-part epoxy primer coating (or similar product). Compatibility between the primer coating and the concrete repair material (see next section) should be verified.

- All areas of spalled concrete should be removed/chipped out down to sound concrete. At locations where steel reinforcing is partially exposed, concrete shall be chipped away around the whole bar a minimum of 1". All steel shall be primed as noted in the previous section. For spalls less than 3", a concrete patching mortar applied by hand could be used to repair the concrete. For spalls greater than 3", a concrete/cement repair mix should be formed and poured for the repair.

  The same repair as noted above should be carried out for damaged areas of the concrete topping slab near the slab/wall joint. A flexible sealant should be used at the wall/slab joint.

- All steel embedment plates should be cleaned down to bare metal by sand blasting. This includes girder support connections (top & bottom), the joist support connections (top & bottom), the connectors between the joist flanges, connectors between the joist flanges and the exterior walls, connectors between the grade beams and connectors between the grade beams and pile caps. Connectors that are observed to have a significant portion of the steel removed by the cleaning operations should be evaluated by a structural engineer for possible a repair. After the connectors are cleaned, they should be protected with a galvanizing paint.

- The continuous stainless-steel liner anchor plate and its anchor bolts should be cleaned as necessary to remove rust spots and streaks.

- The stainless-steel braced frames should be cleaned as necessary to remove rust spots, streaks or areas of corrosion. If areas of significant corrosion are discovered while cleaning below the waterline, a structural engineer should be retained to provide additional evaluation.

- All corroded embedded Unistrut channels and threaded rod hangers should be removed. As the channels are embedded in the concrete double-tee members, care should be taken when

removing the channels to avoid damaging the concrete. If the concrete joist reinforcing is exposed after the removal of the channel, the steel and concrete should be coated and repaired as noted above.

- Joint foam sealants between the grade beam/exterior wall construction joints should be removed and replaced with like kind.

- Joint sealant at the south slab expansion joint should be removed and replaced in similar fashion to the other expansion joints. The spalled concrete topping slab along the joint should be repaired prior to applying the joint sealant, similar to the slab edge repair described previously. It is our understanding that a portion of the expansion joint sealants were recently replaced and appear to be in good condition.

- A steel shim plate should be added underneath the partially bearing joint web near Grid A-1. Additionally, the spalled wall edge should be repaired as noted above. It is unclear what cause the differential movement between the grade beam/walls as both grade beams are supported on the same pile cap. We recommend that the City occasionally monitor the condition for continue movement and/or damage.

- The undermined reservoir wall should be infilled with CDF or similar material to provide full bearing of the concrete.

PART 2 – ROOF REPLACEMENT

ESTIMATED COST: TO BE DETERMINED
CONSTRUCTION DURATION: 1 YEAR

The roof system would be new precast concrete joists, girders and grade beams supported the existing columns and foundations. The precast members could utilize epoxied coated reinforcing bars and concrete additives for added protection against the highly corrosive environment. The new roof system could also incorporate ventilation to help reduce the likelihood of corrosion and damage to the concrete structure.

Prior to replacement of the roof lid, a full structural analysis of the existing grade beams, piles, columns and footings should be carried out to evaluate the strength of the existing structure. Additionally, an assessment of the structural elements below the waterline should be carried out when the reservoir is scheduled to be emptied. Additional upgrades to these systems maybe required if they are determined to be insufficient to support the loads imposed by current building codes.

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ESTIMATE OF PROBABLE COSTS

PART 1 – TEMPORARY REPAIR

DESCRIPTION	QUANTITY		MATERIAL COST		LABOR COST		ENGINEERING ESTIMATE	
	NUMBER	UNIT	UNIT COST	TOTAL	UNIT COST	TOTAL	UNIT COST	TOTAL
Construction Documents	1	ls			$15,000.00	$15,000.00	$15,000.00	$15,000.00
Mobilization	1	ls			$10,000.00	$10,000.00	$10,000.00	$10,000.00
Spall Repairs (girders, grade beams & t-joists)								
Chipping & cleaning surface	15	ea			$1,000.00	$15,000.00	$1,000.00	$15,000.00
Epoxy coating / priming rebar	15	ea	$250.00	$3,750.00	$500.00	$7,500.00	$750.00	$11,250.00
Form & pour concret repair	15	ea	$500.00	$7,500.00	$2,000.00	$30,000.00	$2,500.00	$37,500.00
Misc. Minor Spall/Exposed Steel Patching	50	ea	$100.00	$5,000.00	$100.00	$5,000.00	$200.00	$10,000.00
Exterior Perimeter Joint Repair								
Chip & cleaning surface	400	lf	$10.00	$4,000.00	$10.00	$4,000.00	$20.00	$8,000.00
Pour concrete slab patch	400	lf	$10.00	$4,000.00	$10.00	$4,000.00	$20.00	$8,000.00
Sealing perimeter	1600	lf	$2.00	$3,200.00	$2.00	$3,200.00	$4.00	$6,400.00
Spray-on Galvanization of all Exposed Steel Connectors (including set-up & sand-blasting)								
Girder & Beam Support Connectors[1]	300	ea	$3.00	$900.00	$15.00	$4,500.00	$18.00	$5,400.00
Double-Tee Connectors[2]	2160	ea	$3.00	$6,480.00	$60.00	$129,600.00	$63.00	$136,080.00
Grade Beam/Wall Connectors[3]	50	ea	$3.00	$150.00	$15.00	$750.00	$18.00	$900.00
Grade Beam to Pile Cap Connectors[4]	192	ea	$3.00	$576.00	$15.00	$2,880.00	$18.00	$3,456.00
Repair/Replace Existing Wall Joint Sealant	10	ea	$250.00	$2,500.00	$200.00	$2,000.00	$450.00	$4,500.00
Expansion Joint Repair/Replacement	200	lf	$1.00	$200.00	$10.00	$2,000.00	$11.00	$2,200.00
Remove Corroded Unistrut	1	ls			$4,000.00	$4,000.00	$4,000.00	$4,000.00
Cleaning of Continuous Liner Anchor Plate	1	ls			$4,000.00	$4,000.00	$4,000.00	$4,000.00
Cleaning of Stainless-Steel Braced Frames	1	ls			$6,500.00	$6,500.00	$6,500.00	$6,500.00
CDF Fill under Reservoir Perimeter Wall	1	ls	$2,000.00	$2,000.00	$2,500.00	$2,500.00	$4,500.00	$4,500.00
Concrete Disposal	1	ls			$2,000.00	$2,000.00	$2,000.00	$2,000.00
Cleanup	1	ls			$10,000.00	$10,000.00	$10,000.00	$10,000.00
De-Mobilization	1	ls			$10,000.00	$10,000.00	$10,000.00	$10,000.00
						Subtotal		$314,686.00
						O & P	15%	$47,202.90
						Contingency	30%	$94,405.80
						TOTAL		$456,294.70

[1](2) worker @ $60/hr and (8) connectors per hour (sand blast and two coats)
[2](4) worker @ $60/hr and (4) connectors per hour (move scaffolding, sand blast and two coats)
[3](2) worker @ $60/hr and (8) connectors per hour (sand blast and two coats)
[4](2)worker @ $60/hr and (8) connectors per hour (sand blast and two coats)

SITE PHOTOS OF EXISTING INTERIOR CONDITIONS

Photo 1 - Spalling at top of girder (typical condition)

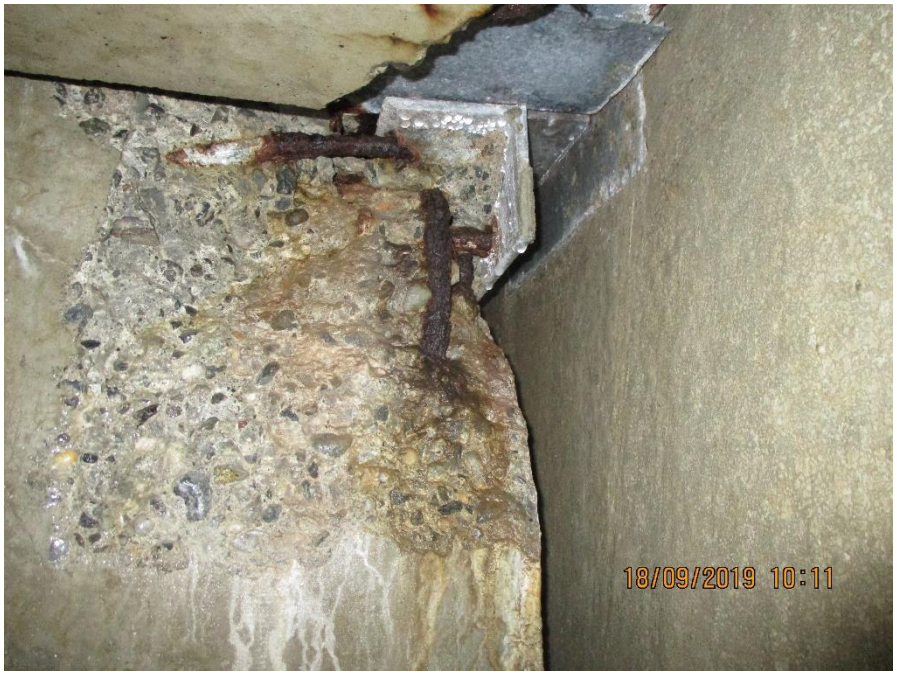

Photo 2 - Spalling at top of girder and exposed reinforcing steel (typical condition)

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Photo 3 - Spalling of girder and its support (typical condition)

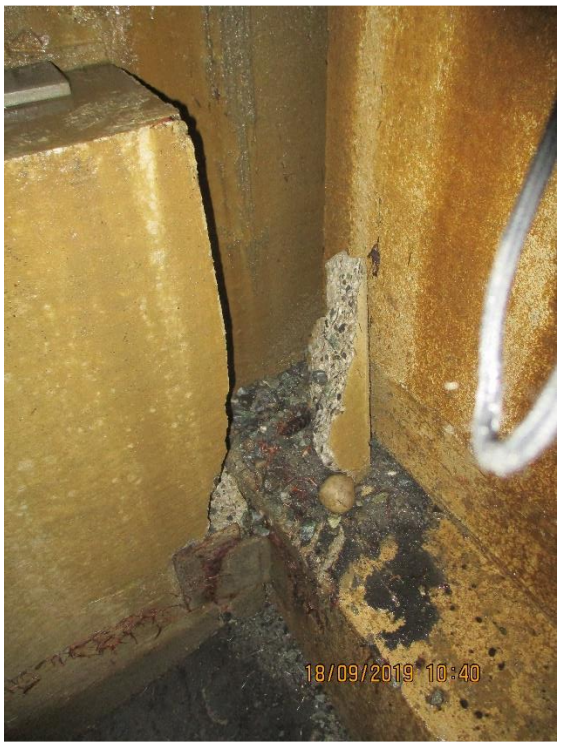

Photo 4- Spalling grade beam connection (typical condition)

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Photo 5 - Concrete girder support at Grid A-8 and 2" settlement

Photo 6 - Concrete girder support at Grid A-8 (opposite side as previous photo)

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Photo 7 - Spalling at grade beam girder support (typical condition)

Photo 8 - Spalling at grade beam girder support (typical condition)

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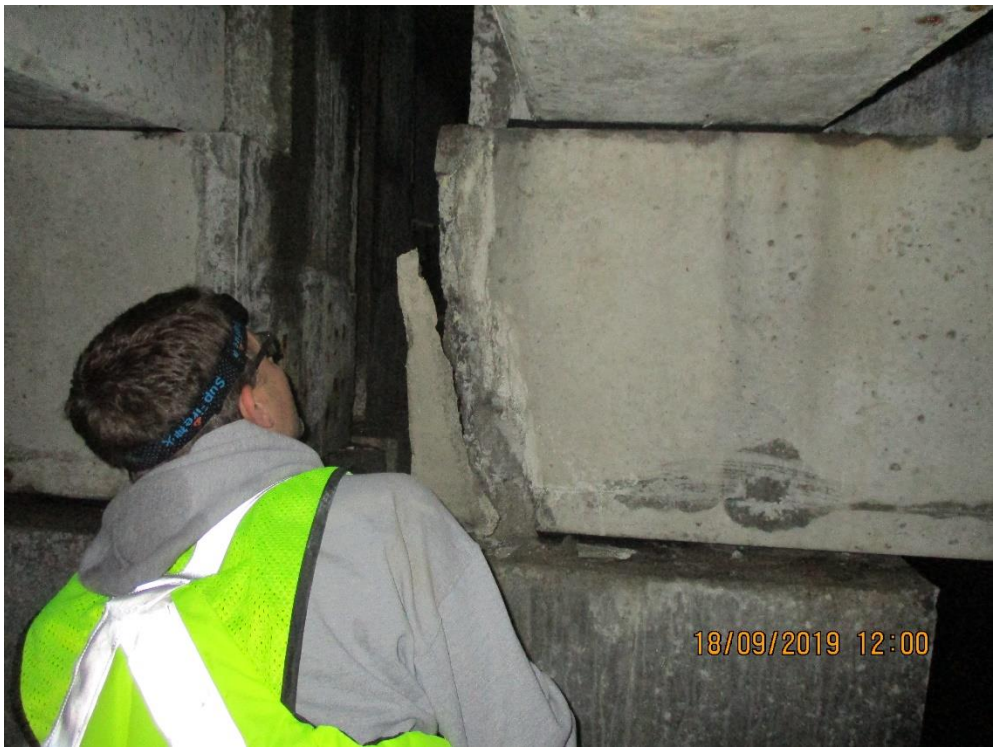

Photo 9 - Spalling of girder at interior support

Photo 10 - Spalling of girder at interior support

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Photo 11 - Spalling of double-tee joist and its support (typical condition)

Photo 12 - Spalling of double-tee joist and exposed reinforcing steel

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Photo 13 - Corroded steel rebar connection between joists

Photo 14 - Corroded steel rebar connection between joists

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Photo 15 - Corroded double-tee joist flange at "non-bearing" wall support

Photo 16 - Corroded double-tee joist connector at "non-bearing" exterior wall support

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Photo 17 - Minor spalling around steel connectors at grade beam corner connection

Photo 18 - Spalling around steel connectors at grade beam corner connection

Photo 19 - Spalling and exposed reinforcing steel at exterior wall construction joint at northwest corner

Photo 20 - Spalling and at exterior wall construction joint (same location as previous photo)

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Photo 21 - Standing water at corner crawlspace (typical condition)

Photo 22 - Undermined reservoir wall located on west side of structure

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Photo 23 - Standing water at corner crawlspace (typical condition)

Photo 24 – Previous double-tee support repair near Grid A/B-8

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25 - View from center of roof, looking west

26 - Expansion joint at roof center

27 - View from south edge of roof, looking north

31 - Cracking of topping slab/wall joint at NE

29 - Cracking of topping slab/wall joint at NW corner

30 - Cracking of topping slab/wall joint at south side

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