PUBLIC WORKS

December 30, 2016

Talia Baker, Administrative Support
Capital Projects Review Board
Project Review Committee
PO Box 41476
Olympia WA 98504-1476

Sent via email to talia.baker@des.wa.gov

Subject: City of Everett Application for Project Approval Using Design-Build (D-B)
Water Filtration Plant East Clearwell Roof Replacement

Dear Ms. Baker:

Through recent inspections of the existing 33 year old roof system covering one of the City's two water filtration plant clearwells was found in very poor structural condition. The dilapidated roof poses structural integrity concerns such that it is unsafe for our people to walk on the roof and exposes the roof to collapse should we receive above normal snow loading. The preferred solution is installation of a new 140' by 260' roof system.

The City has concluded that Design-Build (D-B) delivery represents the approach that best serves the public interest. The east clearwell is a critical component of the City's water infrastructure in protecting the health and welfare of its citizens and wholesale customers. Construction methodologies associated with designing and installing this highly specialized roof system must be exceptionally well coordinated between the roof vendor and the installation contractor to ensure successful construction and long-term operation. Furthermore, given the dilapidated condition, early contractor involvement will be critical to establish the sequence of work to ensure that the project can be completed in as quickly and efficiently as possible. With D-B delivery, the roof vendor and installing contractor will be a single contracting entity that can efficiently coordinate essential installation and scheduling details.

These and other reasons supporting the use of D-B delivery are further elaborated in the attached application, and we believe this project fully meets the requirements for using D-B set forth in RCW 39.10. We look forward to successfully executing this D-B project by leveraging the City project manager's past experience with successful D-B delivery, the City's experience from the recent GC/CM project at the wastewater plant and the exceptional D-B experience of Brown and Caldwell, our consultant for the project.

Thank you for this opportunity and your consideration. We look forward to presenting our project approval application to the PRC at the January 26, 2017 meeting.

Sincerely,

Richard Hefti, P.E.
Senior Engineer

cc: Dave Davis, P.E., Public Works Director
Nancy Deakins, P.E., CPARB

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 Questions 1-8 and 10 should not exceed 20 pages *(font size 11 or larger)*. Provide no more than six sketches, diagrams or drawings under Question 9. A Public Body that is ***certified*** to use the DB procedure and is seeking approval to use this procedure on a DB project with a total project cost of less than ***$10 million*** is not required to submit information for Questions 7 or 8.

1. Identification of Applicant

(a) Legal name of Public Body (your organization): **City of Everett Public Works**
(b) Address: **3200 Cedar St, Everett, WA 98201**
(c) Contact Person Name: **Richard Hefti, PE** Title: **Senior Engineer**
(d) Phone Number: **425-257-7215** Fax: **425-257-8882** E-mail: **rhefti@everettwa.gov**

2. Brief Description of Proposed Project

Please describe the project in no more than two short paragraphs.

(See Attachment A for an example.)

The City of Everett owns and operates the potable water system that serves over 500,000 customers. One critical component of the water system is the east clearwell of the Water Filtration Plant. The proposed project includes replacing the existing dilapidated roof over the east clearwell. The clearwell structure is 140' x 260' and was constructed in 1983. Recent inspections of the roof note severe deterioration of the metal connections to the existing glulam timber beams, along with significant breakdown of the existing glulam timber beams. The deterioration is severe enough inspections were halted due to safety concerns.
The City proposes to use Design-Build to replace the existing roof with a new aluminum, steel or concrete roof. The City has successfully used this method previously to replace the existing deteriorating roofs on the two potable water storage tanks comprising Reservoir 6.

3. Projected Total Cost for the Project:

A. Project Budget

Costs for Professional Services (A/E, Legal etc.)	$*200,000*
Estimated project construction costs (including construction contingencies):	$*2,000,000*
Equipment and furnishing costs	$*0*
Off-site costs	$*0*
Contract administration costs (owner, cm etc.)	$*250,000*
Contingencies (design & owner)	$*300,000*
Other related project costs (briefly describe) – Special Inspections	$*50,000*
Sales Tax (8.3%)	$*166,000*
Total	***$2,966,000***

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

The project is being funded through the City's Water Enterprise Fund.

4. Anticipated Project Design and Construction Schedule

Please provide:

- The anticipated project design and construction schedule, including (1) procurement; (2) hiring consultants if not already hired; and (3) employing staff or hiring consultants to manage the project if not already employed or hired.
  (See Attachment B for an example schedule.)

Task	Start Date	Due Date
Hiring of Owner's Advisor	December 2016	January 1, 2017
Project Review Committee Process	December 2016	January 26, 2017
Procurement Process / D-B Selection and Contract Execution	February 1, 2017	August 25, 2017
Design and Fabrication	September 27, 2017	February 16, 2018
Roof Demo and Install	January 15, 2018	May 18, 2018
Site Cleanup/Demobilization	May 21, 2018	June 15, 2018

5. 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?

  The east clearwell is a critical component of the City's water infrastructure. In protecting the health and welfare of its citizens it needs to have a high quality roof with a long service life. Construction around an operating potable water system represents higher risk since mishaps can potentially impact the entire water system. A mishap or an unsuccessful roof installation could lead to polluted water leaking into the potable water system.

  Methodologies associated with designing and installing this highly specialized roof must be exceptionally well coordinated between the roof vendor and the installing contractor to ensure a successful installation.

  For this type of work, much of the design is accomplished by the fabricator / vendor of the roof system. D-B provides the opportunity for roof fabricator / vendors to team with their preferred installation contractor or contractors. The roof designer / fabricator / vendor and installation contractor will be contractually bound as a single D-B entity to coordinate design, fabrication and installation details that will lead to a successful installation and long term operation. In the DBB approach, there is a greater potential for disputes between the designer, roof vendor / fabricator, and installation contractor if problems arise since they will not be acting as a single entity. .

  It also is likely that there will be unforeseen conditions which will need to be addressed during design and construction such as asbestos and associated debris disposal, the suitability of existing surfaces and structures for new roof connections, and code revisions activated as part of modifying the structures. These conditions are difficult to precisely describe as would be required in a DBB construction contract. With a D-B contract using performance based specifications and clear risk allocation, these unforeseen conditions can be more effectively and cooperatively managed. This is especially important on this project given the construction schedule constraints (identified below) and the sensitivity of construction around a public water system.

- If the project provides opportunity for greater innovation and efficiencies between designer and builder, describe these opportunities for innovation and efficiencies. Greater efficiencies should result from a team that includes the roof designer/fabricator/ vendor coupled with its preferred installation contractor.

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

With the east clearwell roof in such bad shape, the City doesn't believe it is prudent to continuing using it, and is currently operating on its west clearwell only. The east clearwell is a critical component for operation as it not only provides redundancy, it is absolutely necessary to be on-line in order for the plant to perform critical maintenance operations. For example, the water filtration basins' intake valves need replacing. In order to do so the filters must be shut down. The plant can provide an adequate water supply to the city's customers as long as both clearwells are operational.

At minimum, D-B will eliminate the need for two procurement processes for design and construction, which should save about two months. In addition, with D-B the roof vendor and installation contractor will act as a single contractually responsible entity to coordinate the work sequence so that the demolition, fabrication, installation, clean-up, and commissioning phases of work are orchestrated in order to bring the east clearwell back into service as soon as possible. The D-B approach is advantageous in that early on in the project it brings the D-B team (roof vendor and contractor) together so that all parties are made aware of the schedule constraints as soon as possible to allow ample time to coordinate activities. This provides a significant schedule advantage over the DBB approach where the vendor and contractor interaction would occur later in the project.

6. 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.

With D-B, the City will be able to select the most qualified DB entity at the best value for the project rather than solely based on the lowest price. As described earlier, the east clearwell is a critical component of the water infrastructure in protecting the health and welfare of the City's citizens. It is of utmost importance that a highly qualified D-B contractor team conducts this specialized work and that it be well coordinated with the operational needs of the City's water system.

It is expected that there will be at least three DB entities submitting on the project. With this competitive environment, the initial capital cost should be no greater than what a DBB bid would provide. In addition, the long term fiscal benefit to the City is enhanced due to the reduced risk of problems arising from defective or poorly coordinated design and/or construction. The impact of poor construction may not be evident until years down the road, well after the contractor is off-site. Remedying such a situation would be very costly and present difficult scheduling issues. Therefore, the City believes that assuring a highly qualified contractor is hired for the project, provides an overall fiscal benefit. The other potential benefit from a D-B type competition may come from considering the proposer's ability to provide enhanced, long-term warranties as part of the "best value" competition.

The D-B approach also allows for greater flexibility on behalf of the contractor to develop solutions that meet the City's specified performance criteria. As compared to a DBB approach that is more prescriptive in the materials and design, the City gets the benefit of professional roof system designer / fabricator / vendors and installation contractors who have the freedom to innovate custom solutions that could save the City money. Since price will play a factor in the selection, they will be motivated to devise the best low-cost alternative that meets the project performance and technical criteria.

Another consideration is that the D-B team will likely include firms and individuals that are highly motivated to provide high quality work and efficient dispute resolution as compared to a low bidding contractor – all which result in a fiscal benefit to the City. The Reservoir 6 Roof Replacement Project resulted in some damage done to the existing concrete floor during roof demolition. The damage went unnoticed until refilling the tank. As a result of the D-B process, the City expended very little resources in getting the D-B contractor to make repairs without any cost to the City.

In summary, the City desires the highest quality roof possible at a competitive price. This objective is supported by the D-B approach by tapping into the creativity and cost optimization available when the designer and contractor are a single entity.

7. Public Body Qualifications

Please provide:

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

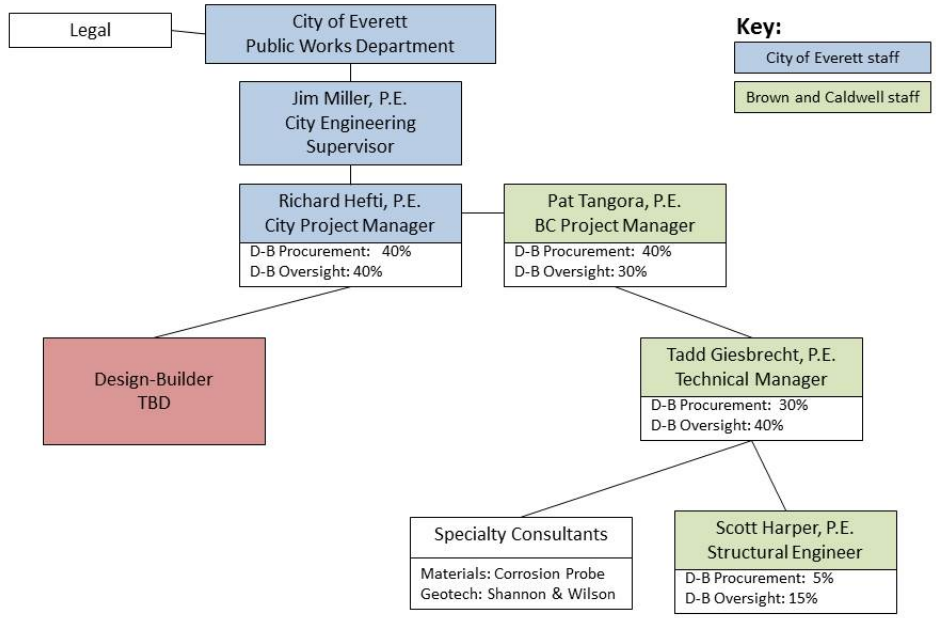
  The City of Everett has been conducting and managing major construction projects for many years using in-house resources. The Public Works department has 15 licensed engineers, of which 8 have facilities construction experience. The City has successfully completed two GC/CM projects on the City's Water Pollution Control Facility (WPCF), Phase A & B Expansions. While the D-B approach and GC/CM approach are quite different, the City has clearly demonstrated its ability to effectively use alternative delivery under the requirements of RCW 39.10.

  The City's Project Manager, Richard Hefti, P.E., has recently completed two D-B projects for the City of Everett, Reservoir 6 Roof Replacement (2014) and Transmission Line 5 Open Trench Crossing the Pilchuck River (2014). Prior to that Mr. Hefti had D-B experience from being the D-B civil site design engineer on two federally funded D-B VA Hospital expansion projects.

  The City has hired Brown and Caldwell to be the Owner's Advisor during this D-B project. Pat Tangora and Tadd Giesbriecht with Brown and Caldwell assisted the City on the previous Reservoir 6 roof replacement D-B project and have experience on more than 20 alternative delivery projects, including a number of D-B and GC/CM projects in Washington State such as the Seattle Public Utilities Tolt and Cedar Water Treatment Facilities, the Tacoma Central Treatment Plant Upgrade, Joint Base Lewis McChord Wastewater Treatment Plant Upgrade (D-B), and the City of Walla Walla Water Treatment Plant Upgrade (GC/CM). Pat Tangora has also worked as a key member of a D-B delivery team for a new water supply and treatment facility for the City of Santa Fe, New Mexico.

- *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.)*



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

Richard Hefti, P.E. – Senior Engineer
Role: City of Everett Project Manager
Relevant Experience: Richard has been with the City for 7 years and has 39 years' experience in the public and private sector designing and managing public improvement projects. Richard was project manager for both of Everett's recent D-B projects; Reservoir 6 Roof Replacement (2014) and Transmission Line 5 Open Trench Crossing the Pilchuck River (2014). He was the civil site design engineer for the D-B team for the new Spinal Cord Injury Treatment building at the Minneapolis, MN VA Hospital (2006). This was a $50,000,000 project with Walsh Construction of Chicago, IL as the contractor and Smith Group of Chicago, IL as the A/E. He was also the civil site design engineer for the D-B team for the VA Hospital Extended Care Facility expansion for the Des Moines, IA VA Hospital (2007). This was a $27,000,000 project with Russell Construction of Des Moines, IA as the contractor and Environmental Design Group, Ltd of West Des Moines, IA as the A/E. As part of the Russell/EDG D-B team, Richard attended a two day workshop conducted by DBIA for the D-B team.

Jim Miller, P.E. – Engineering Supervisor
Role: General project oversight
Relevant Experience: Jim has 45 years' experience in the public and private sectors as an engineering manager, designer and construction manager. He is an expert in water resource and water supply issues, and is the Engineering Superintendent at the City of Everett. Mr. Miller supervised the City's GC/CM projects for the WPCF Phase A Expansion and Phase C Expansion. Mr. Miller led the Local Government Caucus in the Chelan Process working with state, tribal, and other water-related interests to develop a watershed approach for cooperatively solving regional water issues. He is the former Chair of the Washington Water Utility Council (WWUC). Presently, he is the Chair of the WWUC Water Rights Committee.

Pat Tangora, P.E. – Project Manager
Role: Project Manager for Brown and Caldwell for this project.
Relevant Experience: For over 25 years, Pat has worked closely with water, wastewater, and solid waste utilities as owner's advisor to implement alternative contracting, including D-B, DBO, CM-at-risk, and service contracts. She has worked on a number of D-B and GC/CM projects complying with RCW 39.10 requirements. She has helped develop procurement and negotiations strategies, define technical requirements, evaluate SOQs and proposals, support negotiations, and oversee performance through design, construction, and operations. Highlights of her alternative delivery experience include:

- D-B advisor for City of Everett's Reservoir 6 Roof Replacement Project
- D-B advisor for Joint Base Lewis McChord's WWTP Upgrade Project
- Project manager for the OA team assisting with the City of Walla Walla's WTP Upgrade ($20M)
- Project manager for the OA team assisting with the Tacoma Central Treatment Plant $70M project (D-B).
- Senior consultant for the Everett Wastewater Treatment Plant $75M project (GC/CM).
- Project manager for the OA team assisting with the Seattle Public Utilities Cedar Water Treatment Plant project (DBO).
- Senior consultant for the OA team assisting with the Seattle Public Utilities Tolt Water Treatment Plant project (DBO).

Pat's experience also includes acting as the commercial manager on the D-B delivery team for a new $190 million 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. – Water Group Manager
Role: Technical Manager during procurement and D-B activities.
Relevant Experience: Tadd is the water group manager for Brown and Caldwell's Seattle office. Tadd has long-standing relationships with top Brown and Caldwell staff resources and will bring them to bear in specifying performance criteria in the D-B RFP. Tadd worked with Pat Tangora on the OA team advising the City of Everett during the Reservoir 6 Roof Replacement Project. Tadd also worked with Pat Tangora on the OA team advising the City of Tacoma during the Central Treatment Plant D-B project. He's also worked on a number of City of Everett design projects at both the water and

wastewater treatment plants and knows City protocols. In addition, he understands Department of Health requirements for conducting potable water projects.

- *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.)*

Refer to Attachment B for additional team experience on alternative delivery 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.*

The project manager, Richard Hefti, has worked for the City of Everett for over 6 years. Richard was project manager for two City of Everett D-B projects. Prior to joining the City, Richard was the D-B civil site design engineer on two federally funded D-B VA Hospital expansion projects.

The City's owner's advisor project manager, Pat Tangora, has worked on alternative delivery projects for the past 25 years. Through this experience, she has gained significant understanding of the D-B process and has successfully executed a number of D-B projects. She is committed to overseeing this project and working closely with Richard Hefti to execute the work. Brown and Caldwell is currently under contract with the City and will begin work on project procurement immediately following project approval by the PRC.

Jim Miller evaluated the GC/CM process for the WPCF Phase A and Phase C Expansion. Mr. Miller oversaw the contractor selection process and continued to provide oversight and direction, including negotiation of the MACC for both.

- *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.*

  Not applicable. Richard Hefti is a full-time City employee and the Owner's Advisor (Brown and Caldwell) contract has been funded through the City's Water Enterprise Fund. Brown and Caldwell's contract has been executed and commits the firm to working on the project through construction phase services.
- *A brief summary of the construction experience of your organization's project management team that is relevant to the project.*

  Attachment D summarizes the relevant construction practices from question 8 that involved the project management team.
- *A description of the controls your organization will have in place to ensure that the project is adequately managed.*

  The City of Everett Public Works Department developed a comprehensive manual, "Project Manager Handbook," to review the project management design/construction process for Public Works projects to ensure that they are adequately managed. Attachment E includes an introduction describing the manual and a flowchart from the manual for the Project Construction process.
- *A brief description of your planned DB procurement process.*
  - **Planned D-B Procurement Process**

    The City's selection process will be based on modifying the D-B contract agreement and general conditions developed by legal counsel for the City's previous two D-B projects.

    The City plans to provide a $10,000 honorarium to each proposing short-listed team that is not ultimately selected to be the D-B contractor. The City believes this will provide for meaningful competition. The City has had preliminary discussions with roof

vendor/fabricators who will likely be the lead or a key member of proposing D-B teams. These vendors have indicated that honoraria are not customary in their industry. However, an honorarium would encourage wider competition such as teams led by general contractors. The City has selected the $10,000 honorarium level considering the size of the project and the City's intent to conduct a streamlined procurement process that minimizes the need for extensive submittal requirements with proposals.

1. Request for Qualifications / SOQ / Short-listing
    a. RFQ Contents
        i. Project Description
        ii. Reasons for Using DB
        iii. Required Qualifications, Experience, and Past Performance (including accident prevention program)
        iv. Procurement Process Overview (SOQs and Proposals)
            1. SOQ Evaluation Criteria (including technical qualifications, capability to perform, past performance, and other criteria to be determined) and weighting
            2. Proposal Evaluation Criteria (including SOQ evaluation criteria, technical approach / design concept, ability of professional personnel; past performance on similar projects; ability to meet time and budget requirements, ability to provide payment and performance bonds; projected workload; cost; and other criteria to be determined) and weighting
            3. Procurement Schedule
        v. Submittal Requirements including identification of team, team member firms qualifications and experience, key individuals qualifications and experience, past performance, references, and others to be determined
        vi. City Rights and Procurement Process Limitations including Protest Procedures
        vii. Form of Contract
        viii. Honorarium
    b. SOQ Evaluation Process
        i. Evaluation Committee
        ii. Evaluation of Proposed team including references against established criteria/weighting
        iii. Short-listing and notification

2. Request for Proposals (issued to short-listed firms)/Proposals/Selection
    a. RFP Contents
        i. Detailed project description including program of requirements, technical standards, and performance standards for all systems
        ii. Proposal evaluation criteria
        iii. Submittal requirements including technical and managerial approach, schematics, proposed schedule, price proposal, evidence of ability to provide payment and performance and others to be determined.
        iv. Contract
    b. Oral presentation (optional)
    c. Proposal evaluation process
        i. Evaluation committee
        ii. Evaluation proposal against established criteria/weighting
        iii. Selection and notification

The selection process, scoring criteria, selection committee make up and other details will be fully detailed in the initial RFQ, reviewed to ensure consistency with RCW 39.10 requirements and followed carefully throughout procurement.

Design and Construction Phase

Once the procurement process is complete and a D-B contract is in place, the design / fabrication planning process will begin. The role of the City will be to ensure that the contractor meets the contract terms by providing project oversight during the design and construction phase. The City has planned ahead to have staff and consultant resources available to provide sufficient review and input into the following anticipated activities:

- Review of contractor design submittals
- Review of contractor certifications for prefabricated structures
- Inspection of prefabricated structures prior to delivery to site
- Review of project schedules and requests for payment
- Review of construction sequencing
- Quality assurance monitoring
- Review of contractor acceptance test protocol
- Startup/acceptance testing and commissioning reviews

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

  The City's legal counsel, with outside legal assistance, prepared the D-B contract terms for the City's previous two D-B projects.

8. 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

Refer to Attachment E for the matrix summary.

9. 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.*

Attachment F includes a draft report on the roof assessment. Page 3 of that report contains a site aerial of the East Clearwell Building. Also included is a figure taken from Google Earth depicting the site area.

10. Resolution of Audit Findings on Previous Public Works Projects

If your organization had audit findings on ***any*** project identified in your response to Question 8, please specify the project, briefly state those findings, and describe how your organization resolved them.

There are no Audit Findings on any of the projects identified in this application.

CAUTION TO APPLICANTS

The definition of the project is at the applicant's discretion. The entire project, including all components, must meet the criteria 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 shall render your application incomplete.

Should the PRC approve 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: _____

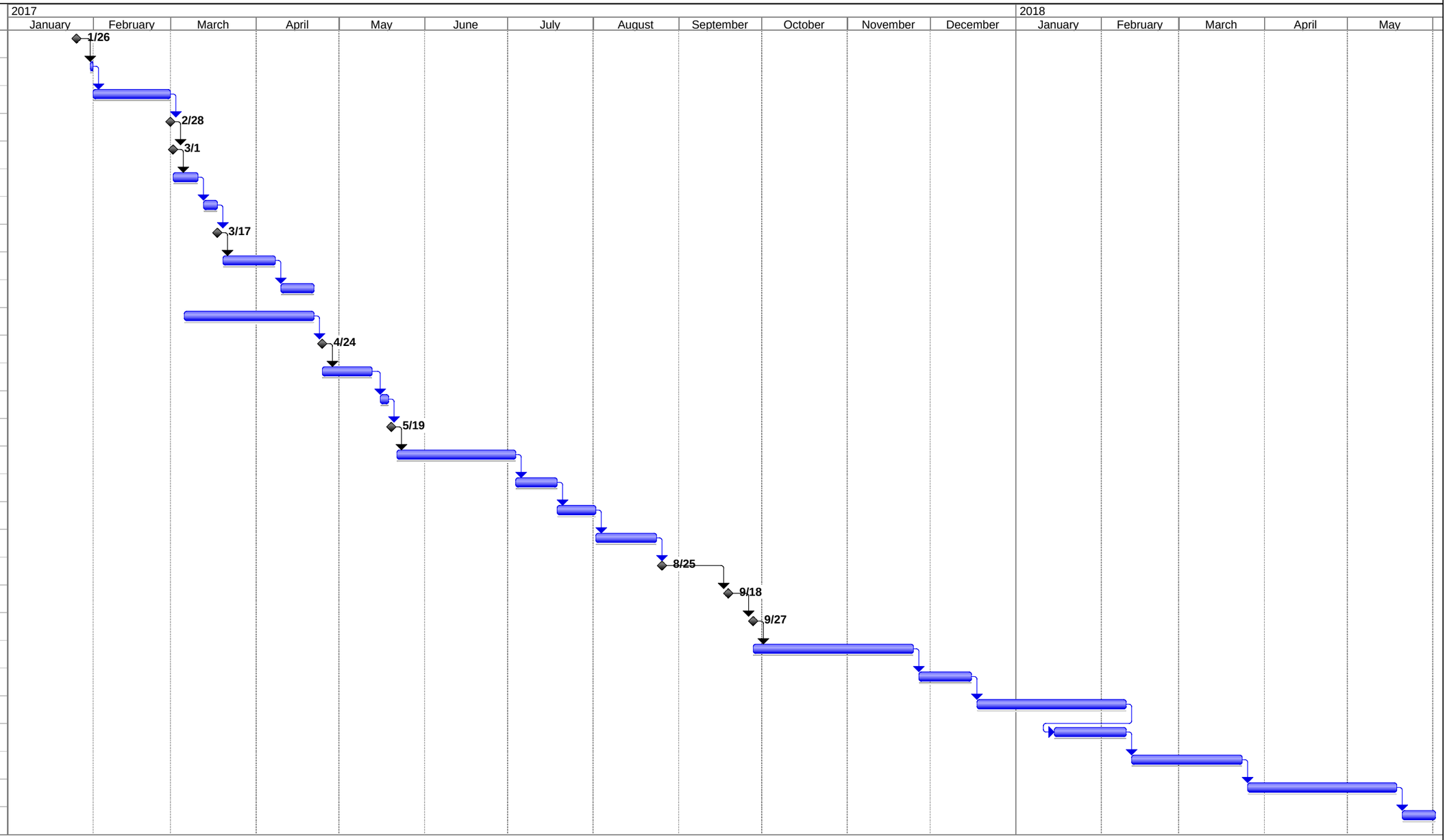
Name *(please print)*: Dave Davis

Title: Public Works Director

Date: 12-29-2016

ATTACHMENT B
PROJECT SCHEDULE

ID	Task Name
1	PRC Approval
2	Procurement Workshop
3	Develop RFQ
4	Draft RFQ
5	Council Call for Bids
6	City and Attorney Review
7	Address Comments
8	Issue RFQ
9	Advertise RFQ
10	Review/Shortlist
11	Develop RFP
12	Draft RFP
13	Finalize RFP
14	City and Attorney Review
15	Issue D-B RFP
16	Advertise RFP
17	Select D-B
18	D-B Contract Negotiations
19	Council Approval
20	Notice of Award
21	Notice to Proceed
22	Preconstruction Mtg
23	Design/Submittal Drawings
24	Brown & Caldwell Review
25	Fabrication
26	Demolition
27	Tank prep for New Roof
28	Install Roof
29	Site Cleanup



ATTACHMENT D

Team Experience with Alternative Delivery Projects							
Name	Experience	Org	Projects	Construction amount	Project type	Role during project phases	
						Design	Const.
James Miller, P.E.	45 years' experience in the public and private sectors as an engineering manager, designer and construction manager	City of Everett	WPCF Phase A & Phase C Expansion Reservoir 6 Roof Replacement Transmission Line 5 Crossing Pilchuck River	$36 million Ph A $24 million Ph C $5 million $3.5 million	GC/CM GC/CM D-B D-B	EM	EM
Richard Hefti, P.E.	39 years' experience in the public and private sectors leading design and construction efforts	City of Everett	Reservoir 6 Roof Replacement Transmission Line 5 Crossing Pilchuck River Spinal Cord Injury Treatment Center, Minneapolis, MN VA Hospital; Extended Care Facility Expansion, Des Moines, IA VA Hospital.	$5 million $3.5 million $50 million $27 million	D-B	PM PM Civil Site PM Civil Site PM	PM PM Civil Site CM Civil Site CM
Pat Tangora, P.E.	Over 33 years' experience as a consulting engineer providing alternative delivery and utility planning	Brown and Caldwell (BC)	City of Everett Reservoir 6 Roof Replacement	$4 million	D-B	Consultant PM	Consultant PM
			Tacoma Central Treatment Plant Expansion	$70 million	D-B	Consultant PM	Consultant PM
			Santa Fe Buckman Direct Diversion	$190 million	D-B	Commercial Manager	Commercial Manager
			Seattle Public Utilities South Transfer Station	$50 million	D-B	Consultant PM	Consultant PM
			Seattle Public Utilities Cedar Water Treatment Plant	$78 million	DBO	Consultant PM	Consultant PM
			Seattle Public Utilities Tolt Water Treatment Plant	$70 million	DBO	Consultant PM	Consultant PM
Tadd Giesbrecht, P.E.	18 years' experience in water/wastewater planning and design	Brown and Caldwell (BC)	City of Everett Reservoir 6 Roof Replacement	$4 million	D-B	Consultant APM	Consultant APM
			Tacoma Central Treatment Plant Expansion	$70 million	D-B	NA	Consultant (BC) PM

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

ATTACHMENT E

City of Everett - Construction History for Projects > $1,000,000 Past 6 Years

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	Sewer "F" Improvements , Sched B (WO# - 3302-2)	Construct approx. 7,400 linear feet of combined sewer main, including side sewers and appurtenances. Approx. 1,600 linear feet installed using pipe bursting.	D B B	8/23/2010	200	Working	280	$3,228,945.00	$3,133,253.80	Time overrun resulting from changed conditions.
2	41st St/Broadway Arterial (WO# - 3174A&B)	Construction of additional driving lanes, signal, drainage, curb, sidewalk, structural wall and pavement marking improvements.	D B B	7/5/2011	260	Working	273	$3,770,119.70	$3,717,519.20	Change Order Work allowed for a decrease in contract cost however extra days were needed to complete the extra work.
3	Lake Chaplain Recovered Water Outfall Improvement (WO# - UP3347)	Construct approximately 210 LF of 24" dia steel pipe and fittings, approximately 3870 LF of 28" dia HDPE pipe with attached anchors within Lake Chaplin, and replace 3 recovery water vertical pumps, meters, and pump station building improvements.	D B B	6/28/2010	240	Working	270	$1,182,307.31	$1,173,580.24	Additional working days due to bad weather and additional work requests involving long lead time parts.
4	Water Transmission Line 2, Phase 8B (WO# - UP3333)	Replacement of 5,100 feet of existing 48-in dia steel pipeline and appurtenances within same alignment.	D B B	6/1/2010	240	Working	196	$2,706,420.60	$2,593,267.88	N/A
5	River Front Surcharge Phase 3 (WO# - RD3316-31)	Continuation of Proj No 9 & 18	D B B	7/6/2010	89	Calendar	89	$2,967,195.01	$2,741,368.27	N/A
6	Water Pollution Control Facility Phase B-2 - (WO# - UP3358)	Headworks structure modifications, sluice gate installation, trickling filter effluent (TFE) pipe repairs, finished effluent pump station modifications, slip lining of 2 existing submerged 54-inch reinforced concrete pipes, installation of sound enclosure over existing positive displacement blower, and fill placement and preload for future digestors.	D B B	4/18/2011	270	Calendar	378	$2,519,729.94	$2,954,949.95	Corp of Engineers permit took longer than expected to be issued. Budget and schedule overruns caused by the addition of 5 change orders, which provided for additional and modified work in asphalt patching, replacement and repair work on screw pumps, replace grit piping and 90 degree bends as well as other miscellaneous work to grit piping, provide 54-inch plug from DSO to headworks to stop flow at gate G-17, and install 2 new stainless steel 54 inch ale sluice gates.
7	Water Tranmission Line 3, Phase 7 (WO# - 3437)	Replacement of 3,820 feet of existing 48-in dia steel pipeline on new steel pilings and appurtenances within same alignment.	D B B	6/27/2011	248	Working	229	$6,174,996.00	$6,016,122.70	N/A
8	Water Transmission Line 4, Cathodic Protection Project - (WO# - 3432)	Provide electronic continuity bonding, test stations, and four deep anode ground beds for Water Transmission Line 4.	D B B	1/9/2012	150	Working	128	$1,260,726.60	$1,167,510.83	N/A

ATTACHMENT E

City of Everett - Construction History for Projects > $1,000,000 Past 6 Years

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	2011 Hot Mix Overlay (WO# - 3346)	Construction of HMA 1 1/2 in thick, on selected streets & utility adjustment.	D B B	8/19/2011	50	Working	46	$1,193,644.79	$1,151,956.49	N/A
10	Hoyt Street Landscape Improvements (WO# PW3353)	Reconstruct Hoyt Ave, Wall St and California St with PCC concrete pavement, raised planters, new street lights, cement concrete sidewalk, and landscaping.	D B B	9/7/2010	85	Working	111.5	$3,717,771.00	$3,905,730.39	Modified irrigation, overran quantities for flagging, crushed rock, sewer main work, remove and replace concrete roadway.
11	Sewer "L" Improvements (WO# - 3398)	Construct approximately 8,600 LF of 12-inch to 30-inch dia. combined sewer and reconnection of over 150 existing side sewers; construction of over 25 manhole structures (48-inch to 96-inch dia.); replacement of over 1,600 LF of 8-inch drainage pipe and over 70 catch basin structures; concrete and asphalt street restoration with curb, gutter, and sidewalk reconstruction.	D B B	2/14/2011	180	Working	158	$3,224,841.20	$3,356,592.52	Overruns caused by 2 change orders. Original contract did not include concrete pavement work on 13th St, 14th St, or at 15th St and Oakes intersections. An additional amount of concrete pavement was added in the 1300 block of Oakes. Overruns also for traffic control labor and concrete sidewalk.

ATTACHMENT E

City of Everett - Construction History for Projects > $1,000,000 Past 6 Years

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
12	Sewer "M" Improvements - Phase 1 (WO# - 3470)	Construction of approximately; 9200 LF of 8-inch to 36-inch diameter combined sewer and replacement of over 250 existing side sewers; construction of over 37 manhole structures (48-inch to 60-inch dia.); construction of approximately 14,100 LF of 8-inch to 36-inch diameter storm drainage pipe and over 248 catch basin structures; construction of 36-inch diameter outlet storm drain control structure with weir and motor-actuated, 18-inch slide gate; construction of below-grade flow measurement weir structure with 16-foot length weir; concrete and asphalt street restoration associated with new storm and sewer pipe network; asphalt overlay; curb, curb ramps, and associated sidewalk reconstruction; asphalt alley reconstruction; concrete-encased conduit duct banks with buried duct bank consisting of 1" and 2" PVC conduit; miscellaneous aboveground RGS conduits and metal junction boxes to connect duct banks to panelboards and controls enclosures; concrete junction boxes; LV circuit breakers; controls enclosures; miscellaneous power and controls wires to service slide gate actuator, PLC, pump, and water level sensors; grounding electrode system for controls shed.	D B B	2/14/2011	260	Working	300	$9,924,064.00	$10,975,189.68	Overruns caused by 2 change orders increasing the scope of work as a result of accelerating a portion of Phase 2 and including additional poor condition sewer main incurred during construction.
13	Water Main Improvement K & Sanitary Sewer Replacement (WO#-3443)	Construct approximately 9,350 linear feet of water main and appurtenances and approximately 1,100 linear feet of sanitary sewer main and appurtenances within City paved roadways	D B B	5/7/2012	110	Working	110	$2,496,273.27	$2,597,622.40	Overruns on some restoration quantities.
14	Water Main Replacement M (WO#-3518)	5,100 feet of new 8-in and 12-in diameter ductile iron water main and appurtenances.	D B B	10/21/2013	90	Working	90	$1,204,423.04	$1,256,820.16	Budget overrun due to increase in quantities.
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.

ATTACHMENT E

City of Everett - Construction History for Projects > $1,000,000 Past 6 Years

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
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.
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	

ATTACHMENT F

ROOF ASSESSMENT REPORT

Everett Water Filtration Plant

East Clearwell Building

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Sultan, WA 98294

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Capital Architects Group PC
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Everett, WA 98201
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CG Project No.: 15237.001
December 7, 2016

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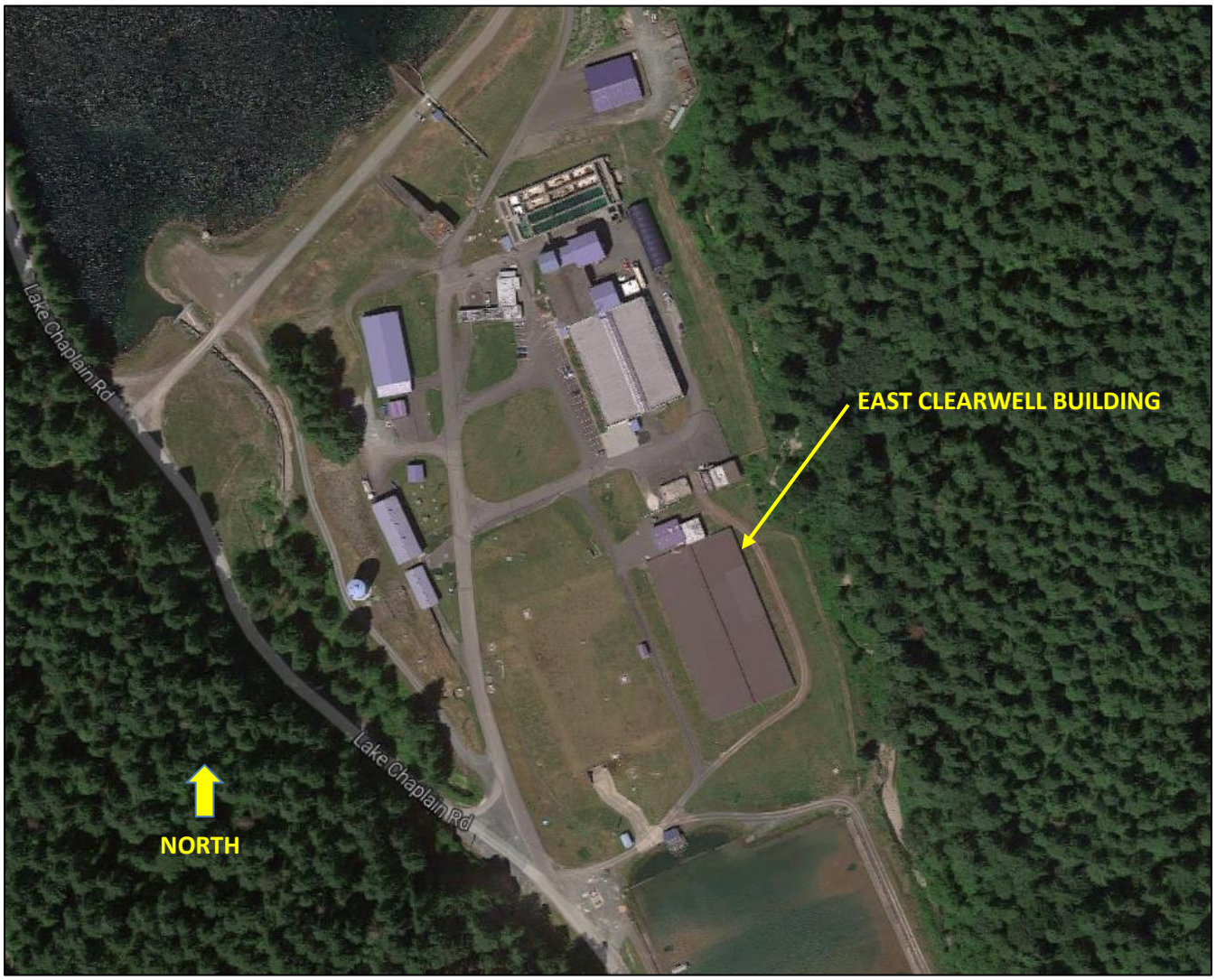
ROOF ASSESSMENT NARRATIVE

PURPOSE AND SCOPE

CG Engineering was retained by the City of Everett to perform an assessment of the roof system for the East Clearwell Building at the Water Filtration Plant. The purpose of the assessment is to help the City plan and budget for future repair and/or replacement of the roof system. It is our understanding that the current plan is to replace the roofing two years from now (Fall 2018). Because the roof is framed with wood beams and steel connectors that have been susceptible to water damage, a structural condition assessment is included as part of this assessment. CG Engineering retained Capital Architects Group as a sub-consultant to perform an assessment of the architectural components of the roof system, while CG Engineering performed an assessment of the structural components of the roof system. The findings are summarized in this report.



Site Aerial

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BUILDING DESCRIPTION

The East Clearwell building was built in the early 1980's to store treated drinking water for the City of Everett. The overall building dimensions are 140'-0" x 268'-0". The building is buried 14'-0" below grade and extends up 7'-6" above grade. The roof structure consists of 6 3/4 "x 18" glulam beams at 7'-0" O.C. which run in the north/south direction, supported by 10 ¾" x 31 ½" glulam beams at 32'-0" O.C. typically (with 38'-0" O.C. at either end) which run in the east/west direction. These beams are supported by concrete retaining walls on the perimeter of the building as well as support columns at 35'-0" O.C. in the east/west direction and 32'-0" O.C. typically (with 38'-0" O.C. at either end) in the north south direction. On top of these glulam beams is a v-beam aluminum deck at .040 metal thickness. This appears to be the original roofing, which would make it approximately 30 years old. The v-beam metal deck is attached with exposed fasteners. The roof structure is designed to slope at 2% from the east and west sides, with a ridge roof structure with venting in the center of the roof, which runs in the north/south direction. The roof has a 1'-0" overhang on the east and west with no overhang at the north and south elevations. The V-beam metal is continued as siding on the north and south elevations with v notch metal flashing at the corner. Foam eave filler strips and spray polyurethane foam are used to seal the gaps. On the east and west the roof has gutters attached with metal hangers at the end of the metal decking. The downspouts are located roughly 24'-0" O.C. all along the east and west elevation ending on splash blocks.

The original metal flashings are field painted aluminum, and the newer flashings associated with metal roofing are pre-finished steel with an organic coating. For the most part, the field applied paint has all but faded away, which has allowed the aluminum to become corroded in some areas. The roof has two Bilco hatch penetrations at 3'-0" x 3'-6" and one equipment hatch penetration at 3'-6" x 6'-0" for access, and one long ridge vent in the middle running north and south. The hatches and ridge vent are flashed with .040 aluminum sheet to match the roofing.

Roof Venting System: The structure is vented in two areas, at the center of the roof running in the north/south direction and along the bottom edge of the roof structure on the east/west walls. The ridge roof structure with venting at the center of the roof is made up of 4x6 beams supported by 4x4 posts with 2x6 cross bracing at 8'-0" O.C. In between the posts is a crimped woven metal wire screen over an insect screening mesh for protection against birds and insects. Along the bottom edge of the roof structure is another set of screens for venting attached to a 4x6 beam supported with 4x4 posts at 8'-0" O.C.

Roof Drainage System: Two (2) existing 6" aluminum gutters are located on the east and west edges of the roof. The downspouts are located roughly 24'-0" O.C. with some ending on plastic splash blocks, while others have no splash blocks. The gutters appear to be free flowing, with the exception of a small amount of debris build-up in some areas. Minimal ponding (standing water) and mold/mildew was present in the ends of the gutters during our site visit, most likely because of debris blocking the downspouts and lack of slope towards the downspouts especially at the ends.

The roof does not include any "fall protection" systems.

"Flat" Roof Area: 37,520 sq. ft.

CURRENT CONDITION

During our site visit on 08/10/16, two aluminum deck panels were removed at the northwest corner of the building to observe the condition of the structure. Corrosion of the panel edges and at the fastener connections was visible in several places. The wood framing members supporting the aluminum decking were soaked from the condensation accumulating on the underside of the decking. As the second panel was being removed from the north side around the access hatches, there was sinking of the structure of the roof as some of the hangers were missing. Repairs had to be made before the inspection could continue. After the repairs to the access hatches had been made, an additional site visit was made on 10/18/16 where the panels at the south end of the building were removed to observe the condition of the structure. The general contractor, K-A General Construction, also took pictures of the framing and connectors from inside the building on 10/19/16 for our review.

Architectural Observations

- Flashing and Caulking
  The flashing around the access hatches was in poor condition and had been patched using caulk. The exposed fasteners throughout the roof showed evidence of being overdriven and had been caulked over to fix leakage.

- Beam Preservative Treatment
  The exposed ends of the structural glulam beams showed that there was significant condensation on the decking that concentrated on the beams and travelled down the slope. The preservative treatment applied to the glulam beams was being pulled along the beam by the condensation and exiting at the ends of the beams along the concrete walls creating copper streaks down the wall.

- Foam Filler
  The foam eave filler strips were missing in various areas and were shrinking because of heat. Spray polyurethane foam was used to seal these gaps throughout the roof.

- Condensation
  According to on-site personnel, this roof does not have any active leaks, yet there is significant condensation present on the underside of the existing decking year-round.

Structural Observations

- Metal Roof Decking
  The roof decking observed was in fair to poor condition, with several corroded areas located around the fastener attachment points at the panel edges.

- Siding Rim/Skirt for Siding Attachment
  Fasteners attaching a continuous 2x6 rim along the top of the building were completely corroded leaving the rim detached.

- Roof Decking Ledger

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The roof decking at the center ridge is supported by a continuous 2x4 ledger fastened to the face of the glulam purlins with nails. Many of the nails have been completely corroded leaving the ledger completely detached in some cases.

- Glulam Purlins
  All of the observed purlins had considerable delamination between plies. The delamination appeared to be concentrated near the supports and was fairly consistent on all of the purlins. Additionally, a considerable amount of moisture was observed at the beam ends and it appeared that much of the preservative treatment had been washed off. The preservative treatment appeared be ACZA, as evidenced by its green color. Although the preservative treatment appeared to be mostly leeched out from the wood, we observed negligible decay in the glulam purlins. However, it is likely that decay is present in the ends of the purlins where the hanger corrosion was observed.

- Glulam Girders
  The glulam girders running east/west were observed to have delamination at the exposed ends at the exterior walls. Decay of up to 1" deep was observed at the beam ends.

- Glulam Hangers and Fasteners
  In general, most of the hangers and their fasteners had substantial corrosion. In some cases the fasteners had been completely corroded through, leaving the hangers detached. However, the glulam purlin hangers that are embedded in the top of the concrete wall along the south side of the building were observed to be in good condition with little to no corrosion.

- Access Hatches
  The blocking hangers and fasteners supporting the access hatches were found to be substantially corroded and in some cases completely detached.

- Concrete Wall Joints
  The concrete walls have deflected up to approximately one inch in some places over time, which may have compromised the sealant on the interior side of the walls. The foam filler was compromised on the outside of joints in some places

Structural Analysis of Framing Members

A structural analysis of the current roof framing members was performed to determine their compliance with International Building Code (IBC) 2015 and ASCE 7-10. The design roof snow load used was 37.2 lbs per square foot (psf) which is based on 2% annual probability of being exceeded within a 50-year interval, and was obtained from the website, "snowload.atcouncil.org", at the direction of the Snohomish County building department. Additionally, snow drift was considered assuming a ground snow load of 20 psf per Figure 7.1 of ASCE7-10. The building Risk Category of III was used as defined for water treatment facilities with potable water. Our analysis was based on the allowable stresses provided in the ANSI/AWC NDS-2015 (National Design Specification for Wood Construction), and did not account for any loss of strength that may have resulted from delamination or degradation of materials.

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In general, typical interior purlins and girders were determined to have some reserve capacity under the design snow load. The purlins and girders located on the north and south end bays near the ridge line were determined to be slightly overstressed at 105% and 102%, respectively, under design snow loads. However, up to 105% utilization is considered within a reasonable margin of error for this type of analysis, and does not necessarily mean the member would fail under the design snow load. All the remaining end bay purlins and girders were determined to be stressed at nearly 100% capacity.

The structural analysis assumed that all the wood framing members currently retain 100% of their original design strength. It is difficult to quantify the reduction in strength due to delamination of the glulam purlins. However, since the purlins are currently at 100% of their design capacity, and the observed delamination has reduced their load-carrying capacity, it is reasonable to assume that some of the glulam beams would be overstressed under the design snow load. If the delamination of the plies continues it can be expected that purlins will continue to lose strength. It is our opinion that the existing roof purlins will not outlast a new 30-year roof.

RECOMMENDATIONS

We have determined that the interior moisture has damaged the structural members and connectors over time, and has created unsafe conditions for City personnel. We recommend that no personnel be allowed on the roof until the roof is replaced. The interior moisture has become the priority concern as all construction assemblies will be affected by the moisture over time. Our recommendations include two parts. The first is the temporary repair until the roof is replaced in 2018, and the second part includes recommendations for a proposed replacement. Drawings of both schemes are attached for reference.

Service Life

Due to the condition of the structure, and the presumed age of the roof, we agree that the remaining service life is approximately 2 years, with the installation of the recommended temporary repairs and regular maintenance.

PART 1 – TEMPORARY REPAIR

ESTIMATED COST: $540,000

The following repairs are intended only to ensure the structural integrity of the roof is maintained until the roof is replaced, and should be completed within the next 6 months. We recommend that the repairs be completed from inside the building where possible to ensure worker safety.

- The 2x4 ledger supporting the metal roof decking on either side of the ridge is completely detached in some locations. It is possible that the unsupported decking could collapse under the weight of personnel or even a design snow load event. We recommend that the existing 2x4 ledger be reattached with corrosion resistant fasteners. We recommend that a second 2x4 ledger be sistered to the existing ledger to provide additional support for the edge of the metal decking.

- The hangers supporting the access hatch blocking members should be removed and replaced.

- The 2x6 rim/skirt attachment should be reattached to the ends of the glulam to provide secure support of the metal siding.

- All corroded hangers and fasteners supporting the purlins, blocking, and pop-up ridge structure should be replaced. Alternatively, temporary steel supports could be attached beneath the corroded hangers. A structural engineer should be retained to provide a design of the steel supports and their attachments.

- We recommend passive air flow at the interior of the structure and where possible in the roof assembly. Roof jacks at each structural bay will create a natural escape to warm air and resist condensation build up in the assembly. Roof Jacks locations are shown on the existing roof framing plan.

- We recommend that multiple interior surveillance cameras replace the tasks of any employee observation at the ridge of the existing roof. This action will assist in minimizing additional failure due to failure of the structure over the next two years.

We further recommend the following items to help ensure no further water damage to the existing members occurs. These should be considered less critical than the previously stated items, and are not necessarily required for a repair that only needs to last two years. As such, the City may consider omitting these items from the temporary repair scope of work.

- We recommend a waterproofing membrane wrapping the existing beams and structure creating a complete surface at the underside of the existing structure. This surface will separate the moisture at the interior from the structure over. Based upon manufacturer's recommendations, we believe that this membrane will not require an additional diaphragm to adhere to, rather, its pliant properties will allow a wrapping of structure with positive mechanically fastened connections. We would recommend Sikaplan WT 4220 Sheet Membrane or similar installed only by an approved and trained installer. The manufacturer we recommend, provides mechanically fastened connections that are then covered by heat welding. The membrane must be non-hazardous, non-toxic, solvent free and safe for use around potable water.

- As an option to the membrane, we recommend a spray on weather seal, such as Sika Permacor liquid applied membrane, Sani-Tred Permaflex coating, or similar products. These sealant coatings must be non-hazardous, non-toxic, solvent free and safe for use around potable water.

PART 2 – ROOF REPLACEMENT

We recommend a complete new structural system, such as a steel open web truss system that would be supported on the existing concrete columns, walls, and foundation. We recommend passive or mechanical ventilation in the new roof truss assembly, with an eave height allowing area for air access. With a truss

system, which slopes, the pitch will aid in allowing air to escape naturally at the ridge vent area. The replacement work should also include re-sealing all of the concrete wall joints.

We also recommend installation of a fall protection (restraint) system, including anchor posts and/or wire cable for attachment of workers' safety harness and lanyard.

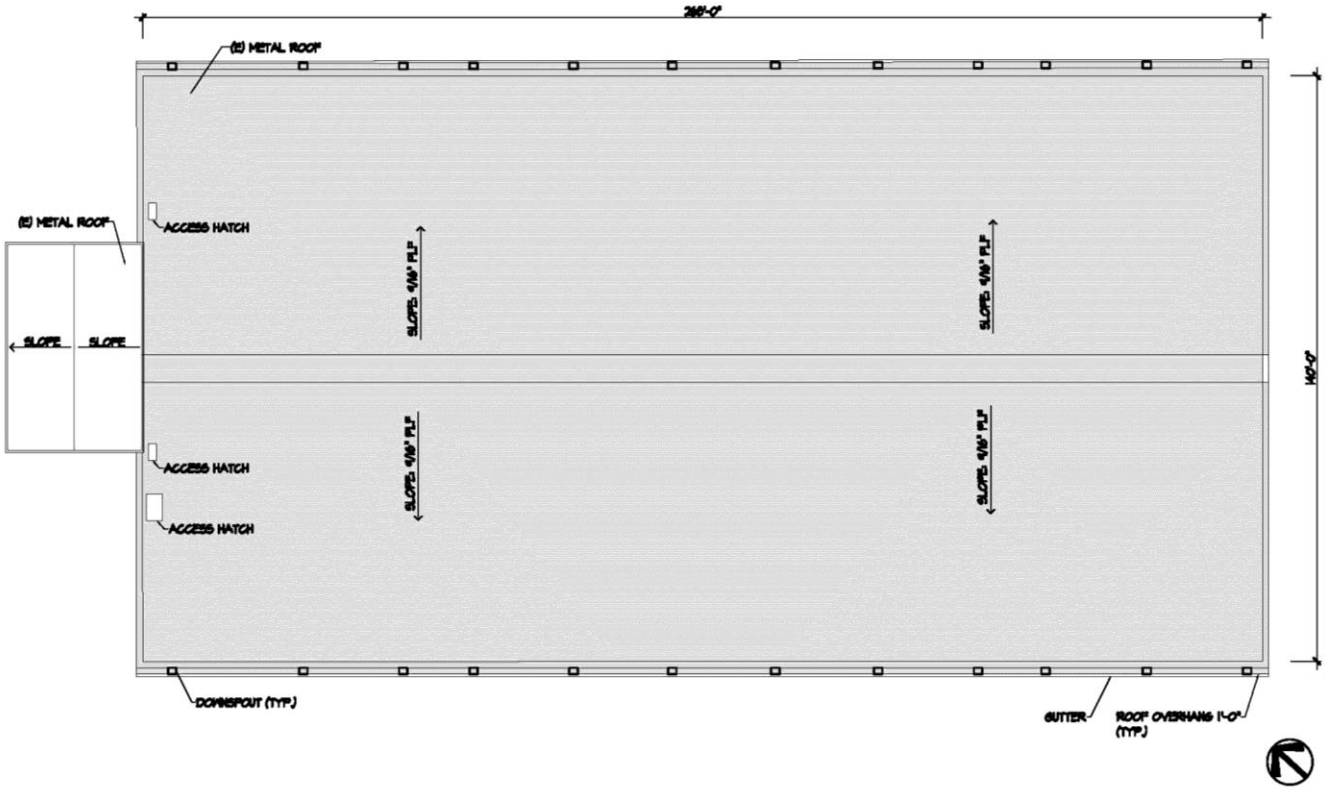
OPTION 1:
ESTIMATED COST: $1,800,000

The structural system will be protected on the underside with a waterproofing membrane, mechanically fastened to the bottom chord diaphragm of the truss. We do not recommend insulation within the roof cavity. We further recommend a light weight metal roof over the truss system.

OPTION 2:
ESTIMATED COST: $2,300,000

Over the course of our research, we come to believe that this is the optimal choice. The structural system will be protected on the underside with a waterproofing membrane, mechanically fastened to the bottom chord diaphragm of the truss. On top of the new structure, we recommend using a light weight metal roof with Duro-shield roofing system or similar. The Duro-shield roofing system consists of double insulation over the metal deck covered by a prefabricated membrane mechanically fastened to the deck over the insulation. Prefabricated flashings for all penetrations installed with heat welding are recommended per manufacturer's warranty guidelines.

EXISTING ROOF PLAN



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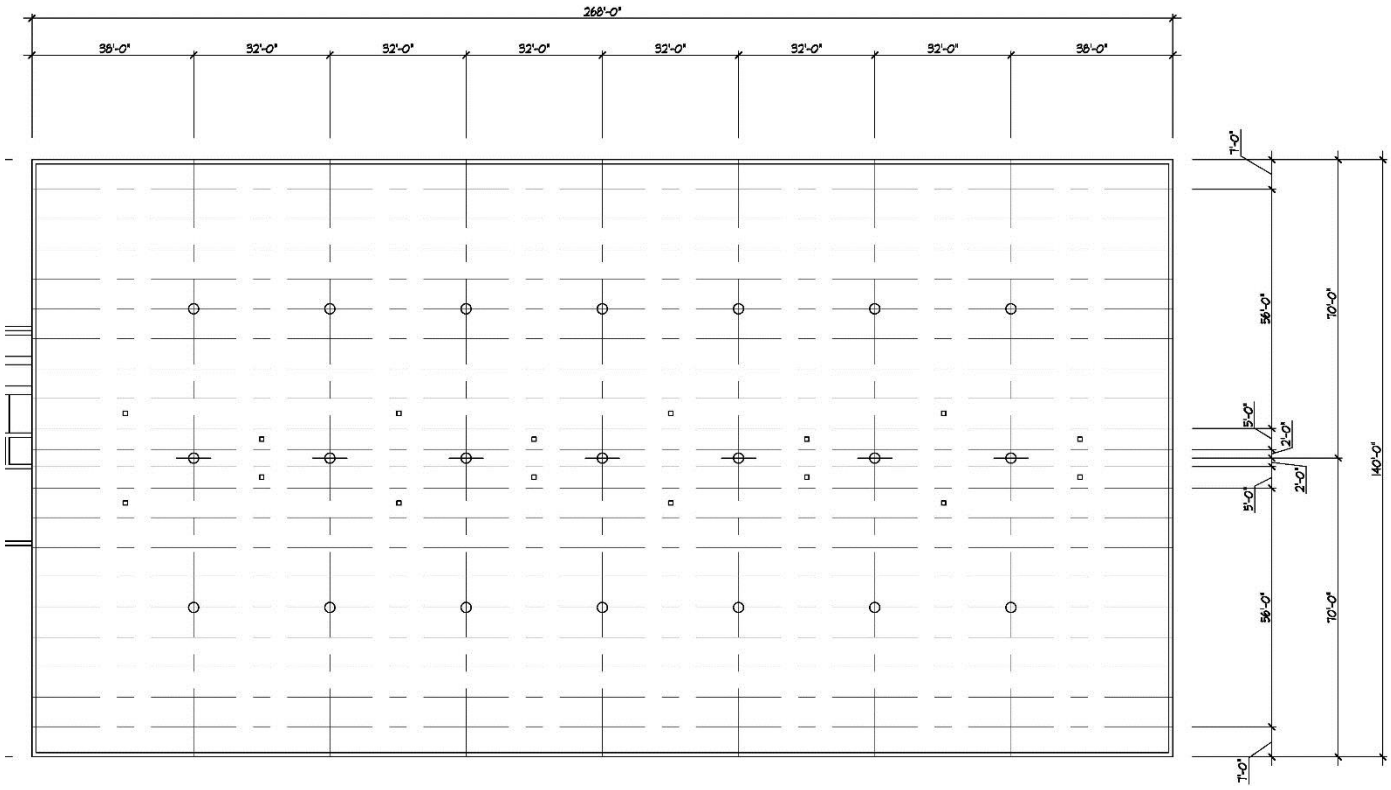
EXISTING ROOF FRAMING PLAN
(With added roof jacks for temporary repair)



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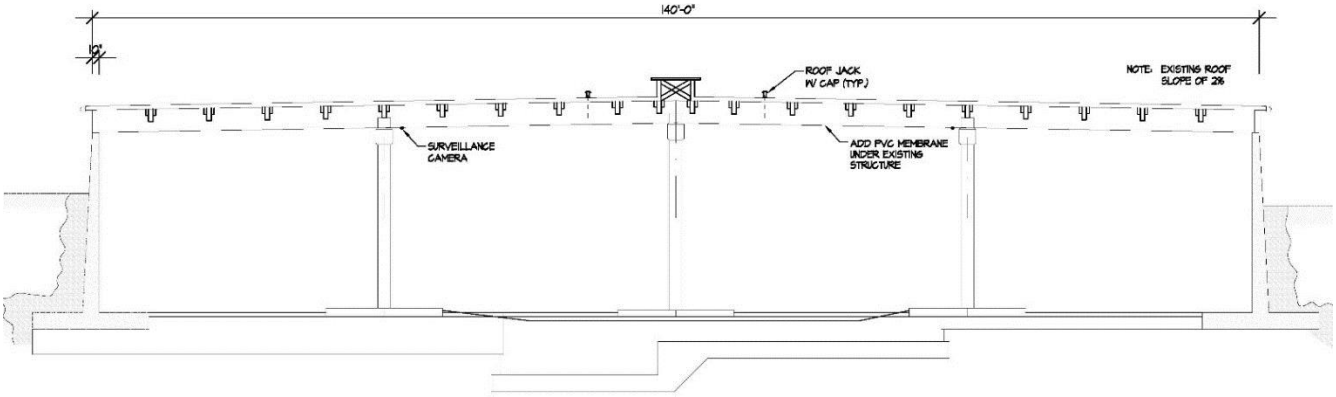
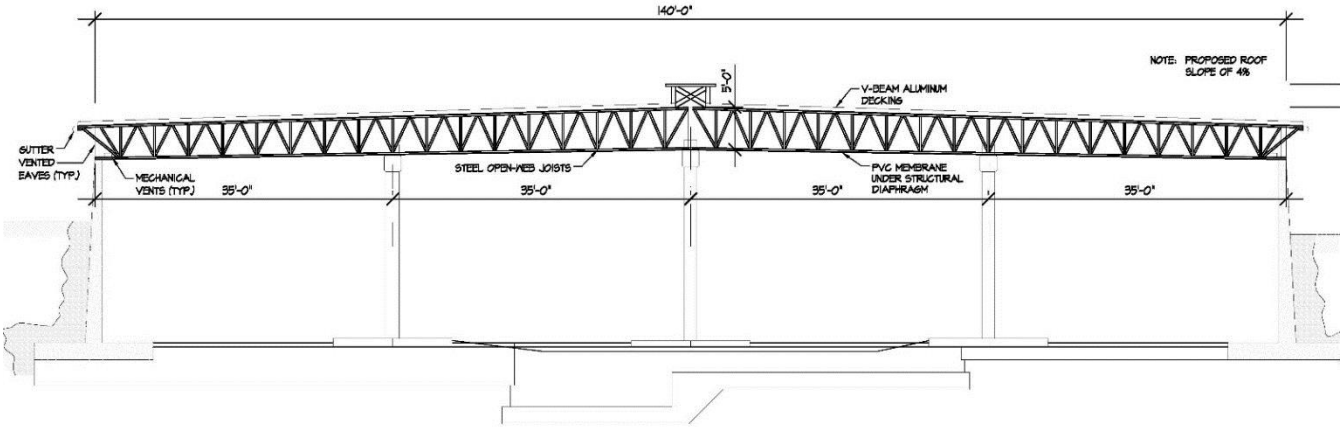
TEMPORARY ROOF REPAIR SECTION



PROPOSED ROOF REPLACEMENT SECTION



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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			$30,000.00	$30,000.00	$30,000.00	$30,000.00
Mobilization	1	ls			$10,000.00	$10,000.00	$10,000.00	$10,000.00
Waterproof membrane	37520	sf	$2.00	$75,040.00	$6.00	$225,120.00	$8.00	$300,160.00
Secure 2x4 ledger	536	lf	$0.25	$134.00	$10.00	$5,360.00	$10.25	$5,494.00
Add new 2x4 ledger	536	lf	$0.75	$402.00	$10.00	$5,360.00	$10.75	$5,762.00
Replace access hatch hangers	16	ea	$5.00	$80.00	$20.00	$320.00	$25.00	$400.00
Reattach 2x6 skirt support member	280	lf	$0.25	$70.00	$5.00	$1,400.00	$5.25	$1,470.00
Add aluminum brackets beneath corroded purlin hangers	266	ea	$200.00	$53,200.00	$50.00	$13,300.00	$250.00	$66,500.00
Roof jacks, min 16"	16	ea	$100.00	$1,600.00	$50.00	$800.00	$150.00	$2,400.00
Surveillance cameras	8	ea	$300.00	$2,400.00	$150.00	$1,200.00	$450.00	$3,600.00
Dump Fees	37520	sf	$0.05	$1,876.00			$0.05	$1,876.00
						Subtotal		$427,662.00
						O & P	15%	$64,149.30
						Contingency	20%	$42,766.20
						TOTAL		$534,577.50

PART 2 – ROOF REPLACEMENT
OPTION 1

	NUMBER	UNIT	UNIT COST	TOTAL	UNIT COST	TOTAL	UNIT COST	TOTAL
Construction Documents	1	ls			$100,000.00	$100,000.00	$100,000.00	$100,000.00
Mobilization	1	ls			$50,000.00	$50,000.00	$50,000.00	$50,000.00
Demo existing metal roof	37520	sf			$2.00	$75,040.00	$2.00	$75,040.00
Demo glulam beams	37520	sf			$2.00	$75,040.00	$2.00	$75,040.00
Hauling and dumping/recycling	3	ls	$5,000.00	$15,000.00			$5,000.00	$15,000.00
Perimeter nailers	816	lf	$2.00	$1,632.00	$3.00	$2,448.00	$5.00	$4,080.00
New column caps with epoxy anchors	21	ea	$200.00	$4,200.00	$200.00	$4,200.00	$400.00	$8,400.00
New perimeter structural fasteners	54	lf	$100.00	$5,400.00	$100.00	$5,400.00	$200.00	$10,800.00
Girder trusses	980	lf	$9.00	$8,820.00	$10.00	$9,800.00	$19.00	$18,620.00
Purlin trusses	5896	lf	$6.00	$35,376.00	$10.00	$58,960.00	$16.00	$94,336.00
Bracing for structure	6876	lf	$1.00	$6,876.00	$2.00	$13,752.00	$3.00	$20,628.00
Ridge vent framing	1608	ea	$2.00	$3,216.00	$3.00	$4,824.00	$5.00	$8,040.00
Metal deck with concealed fasteners	37520	sf	$5.00	$187,600.00	$7.00	$262,640.00	$12.00	$450,240.00
Metal deck side panels	5060	sf	$5.00	$25,300.00	$7.00	$35,420.00	$12.00	$60,720.00
5/8" Plywood Sheathing	37520	sf	$0.50	$18,760.00	$2.00	$75,040.00	$2.50	$93,800.00
Ridge vent screening (3')	2448	sf	$4.00	$9,792.00	$5.00	$12,240.00	$9.00	$22,032.00
Install waterproof membrane under structure	37520	sf	$4.00	$150,080.00	$2.00	$75,040.00	$6.00	$225,120.00
Eave venting	536	lf	$2.00	$1,072.00	$3.00	$1,608.00	$5.00	$2,680.00
Gutters K-Line extruded 5"/DS	536	lf	$4.00	$2,144.00	$4.00	$2,144.00	$8.00	$4,288.00
Roof jacks, min 16"	32	ea	$100.00	$3,200.00	$45.00	$1,440.00	$145.00	$4,640.00
Fall Protection tie off anchors	37520	sf	$0.05	$1,876.00	$0.05	$1,876.00	$0.10	$3,752.00
Forced air fans	6	ea	$1,000.00	$6,000.00	$250.00	$1,500.00	$1,250.00	$7,500.00
Power	6	ea	$200.00	$1,200.00	$150.00	$900.00	$350.00	$2,100.00
Service to building/conduit runs to fans	904	lf	$8.00	$7,232.00	$4.00	$3,616.00	$12.00	$10,848.00
Re-seal all vertical joints	1	ls	$10,000.00	$10,000.00	$20,000.00	$20,000.00	$30,000.00	$30,000.00
						Subtotal		$1,397,704.00
						O & P	15%	$209,655.60
						Contingency	20%	$139,770.40
						TOTAL		$1,747,130.00

ESTIMATE OF PROBABLE COSTS (CONTINUED)

PART 2 – ROOF REPLACEMENT
OPTION 2

	NUMBER	UNIT	UNIT COST	TOTAL	UNIT COST	TOTAL	UNIT COST	TOTAL
Construction Documents	1	ls			$100,000.00	$100,000.00	$100,000.00	$100,000.00
Mobilization	1	ls			$50,000.00	$50,000.00	$50,000.00	$50,000.00
Demo existing metal roof	37520	sf			$2.00	$75,040.00	$2.00	$75,040.00
Demo glulam beams	37520	sf			$2.00	$75,040.00	$2.00	$75,040.00
Hauling and dumping/recycling	3	ls	$5,000.00	$15,000.00			$5,000.00	$15,000.00
Perimeter nailers	816	lf	$2.00	$1,632.00	$3.00	$2,448.00	$5.00	$4,080.00
New column caps with epoxy anchors	21	ea	$200.00	$4,200.00	$200.00	$4,200.00	$400.00	$8,400.00
New perimeter structural fasteners	54	lf	$100.00	$5,400.00	$100.00	$5,400.00	$200.00	$10,800.00
Girder trusses	980	lf	$9.00	$8,820.00	$10.00	$9,800.00	$19.00	$18,620.00
Purlin trusses	5896	lf	$6.00	$35,376.00	$10.00	$58,960.00	$16.00	$94,336.00
Bracing for structure	6876	lf	$1.00	$6,876.00	$2.00	$13,752.00	$3.00	$20,628.00
Ridge vent framing	1608	ea	$2.00	$3,216.00	$3.00	$4,824.00	$5.00	$8,040.00
Metal deck with concealed fasteners	37520	sf	$5.00	$187,600.00	$7.00	$262,640.00	$12.00	$450,240.00
Metal deck side panels	5060	sf	$5.00	$25,300.00	$7.00	$35,420.00	$12.00	$60,720.00
5/8" Plywood Sheathing	37520	sf	$0.50	$18,760.00	$2.00	$75,040.00	$2.50	$93,800.00
Ridge vent screening (3')	2448	sf	$4.00	$9,792.00	$5.00	$12,240.00	$9.00	$22,032.00
Install waterproof membrane under structure	37520	sf	$4.00	$150,080.00	$2.00	$75,040.00	$6.00	$225,120.00
Install Duro-Shield System over metal deck	37520	sf	$5.00	$187,600.00	$5.00	$187,600.00	$10.00	$375,200.00
Eave venting	536	lf	$2.00	$1,072.00	$3.00	$1,608.00	$5.00	$2,680.00
Gutters K-Line extruded 5"/DS	536	lf	$4.00	$2,144.00	$4.00	$2,144.00	$8.00	$4,288.00
Roof jacks, min 16"	32	ea	$100.00	$3,200.00	$45.00	$1,440.00	$145.00	$4,640.00
Fall Protection tie off anchors	37520	sf	$0.05	$1,876.00	$0.05	$1,876.00	$0.10	$3,752.00
Forced air fans	6	ea	$1,000.00	$6,000.00	$250.00	$1,500.00	$1,250.00	$7,500.00
Power	6	ea	$200.00	$1,200.00	$150.00	$900.00	$350.00	$2,100.00
Service to building/conduit runs to fans	904	lf	$8.00	$7,232.00	$4.00	$3,616.00	$12.00	$10,848.00
Re-seal all vertical joints	1	ls	$10,000.00	$10,000.00	$20,000.00	$20,000.00	$30,000.00	$30,000.00
						Subtotal		$1,772,904.00
						O & P	15%	$265,935.60
						Contingency	20%	$177,290.40
						TOTAL		$2,216,130.00

SITE PHOTOS OF EXISTING CONDITIONS

View Looking Southeast

Gutter at Northwest Corner

Exposed Fasteners Caulked Over (typ.)

Foam Eave Filler/Spray Polyurethane Foam (typ.)

Mold/Mildew at Equipment Hatch Flashing

Rust at Access Hatch in Northwest Corner

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Edmonds, WA 98020
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View Looking South

View of Ridge Vent Structure at South Elevation

View of North Corner Looking West

View of Roof Deck Looking West

Gutter and Downspout Attached to Posts

Downspouts and Plastic Splash Blocks (typ.)

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View from North at Center Ridge Looking East

Foam Eave Filler at North Elevation Flashing

Northwest Corner Panel Removal

North Panel Removal around Access Hatch

Northwest Corner Panel Removal

Southwest Corner Panel Removal

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View of Ridge Vent Flashing and Structure Looking North

View of South Elevation / Removal of Siding and Flashing

Corroded Metal Decking Panels at Fastener Attachment Points

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2x6 Siding Rim

Detached 2x4 Decking Support Ledger at Rim

Typical Corroded Hanger and Fasteners at Ridge

Typical Corroded Hanger and Fasteners at Pop-up Ridge Structure

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Edmonds, WA 98020
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www.cgengineering.com

Typical Corroded Hanger and Fasteners at Girder Support Column

Typical Corroded Hanger and Fasteners at Blocking

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www.cgengineering.com

Typical Corroded Purlin Hanger

Corroded Hangers at Access Hatch Blocking

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ph. 425.778.8500 | f. 425.778.5536
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Typical Delamination of Glulam Purlins

Typical Delamination of Glulam Purlins

Typical Purlin Support Hanger at Wall

Signs of Corrosion in Perimeter Glulam Beam

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