REQUEST for PROPOSAL #917

PROFESSIONAL, TECHNICAL AND EXPERT SERVICES

Clark County Washington

RELEASE DATE: WEDNESDAY, MARCH 19, 2025
DUE DATE: WEDNESDAY, APRIL 16, 2025 by 1:30 pm

Request for Proposal for:

BRIDGE DESIGN and PERMITTING – LEWISVILLE PARK

SUBMIT:
One (1) Original
Two (2) Complete Copies

of the Proposal to:

Shipping Method of your Choice or Hand Delivery	**United States Postal Service**
Clark County ATTN: Office of Purchasing 1300 Franklin Street, 6th Floor, Suite 650 Vancouver WA 98660 564-397-2323	Clark County ATTN: Office of Purchasing PO Box 5000 Vancouver WA 98666-5000 564-397-2323

Office Hours: 8:00 am – 3:00 pm, Monday – Friday, except Legal Holidays.
No electronic submissions.

*****Proposals must be delivered to the Purchasing office – No Exceptions***
*****Proposals must be date and time stamped by Purchasing staff by 1:30 pm on due date.***
****Proposal shall be sealed and clearly marked on the package cover with RFP #, Title & Company Name**

Refer Questions to Project Manager:

Evelyn Ives
Capital Project Manager / Public Works – Parks and Nature Division
Evelyn.Ives@clark.wa.gov
360-213-6478

ADMINISTRATIVE REQUIREMENTS - Contractors shall comply with all management and administrative requirements established by Washington Administrative Code (WAC), the Revised Code of the State of Washington (RCW), and any subsequent amendments or modifications, as applicable to providers licensed in the State of Washington.

ALL proposals submitted become the property of Clark County. It is understood and agreed that the prospective Proposer claims no proprietary rights to the ideas and written materials contained in or attached to the proposal submitted. Clark County has the right to reject or accept proprietary information.

AUTHORSHIP - Applicants must identify any assistance provided by agencies or individuals outside the proposers own organization in preparing the proposal. No contingent fees for such assistance will be allowed to be paid under any contract resulting from this RFP.

CANCELLATION OF AWARD - Clark County reserves the right to immediately cancel an award if the contractual agreement has not been entered into by both parties or if new state regulations or policy make it necessary to change the program purpose or content, discontinue such programs, or impose funding reductions. In those cases where negotiation of contract activities are necessary, Clark County reserves the right to limit the period of negotiation to sixty (60) days after which time funds may be unencumbered.

CONFIDENTIALLY - Proposer shall comply with all applicable state and federal laws governing the confidentiality of information.

CONFLICT OF INTEREST - All proposals submitted must contain a statement disclosing or denying any interest, financial or otherwise, that any employee or official of Clark County or the appropriate Advisory Board may have in the proposing agency or proposed project.

CONSORTIUM OF AGENCIES - Any consortium of companies or agencies submitting a proposal must certify that each company or agency of the consortium can meet the requirements set forth in the RFP.

COST OF PROPOSAL & AWARD - The contract award will not be final until Clark County and the prospective contractor have executed a contractual agreement. The contractual agreement consists of the following parts: (a) the basic provisions and general terms and conditions, (b) the special terms and conditions, (c) the project description and goals (Statement of Work), and (d) the budget and payment terms. Clark County is not responsible for any costs incurred prior to the effective date of the contract. Clark County reserves the right to make an award without further negotiation of the proposal submitted. Therefore, the proposal should be submitted in final form from a budgetary, technical, and programmatic standpoint.

DISPUTES - Clark County encourages the use of informal resolution to address complaints or disputes arising over any actions in implementing the provisions of this RFP. Written complaints should be addressed to Clark County – Purchasing, P.O. Box 5000, Vancouver, Washington 98666-5000.

DIVERSITY IN EMPLOYMENT AND CONTRACTING REQUIREMENTS - It is the policy of Clark County to require equal opportunity in employment and services subject to eligibility standards that may be required for a specific program. Clark County is an equal opportunity employer and is committed to providing equal opportunity in employment and in access to the provision of all county services. Clark County's Equal Employment Opportunity Plan is available at http://www.clark.wa.gov/hr/documents.html. This commitment applies regardless of race, color, religion, creed, sex, marital status, national origin, disability, age, veteran status, on-the-job injury, or sexual orientation. Employment decisions are made without consideration of these or any other factors that are prohibited by law. In compliance with department of Labor Regulations implementing Section 504 of the rehabilitation Act of 1973, as amended, no qualified handicapped individual shall be discriminated against in admission or access to any program or activity. The prospective contractor must agree to provide equal opportunity in the administration of the contract, and its subcontracts or other agreements.

MUNICIPAL RESEARCH and SERVICE CENTER - Clark County (WA) contracts with the Municipal Research and Service Center (MRSC) to maintain our Consultant, Small Works and Vendor rosters. To be eligible to participate in this Clark County public solicitation and the resulting contract, your business must be registered with the MRSC Rosters. Failure to register may result in your proposal being marked nonresponsive. Be sure to select Clark County in your application. If you have questions about the registration process, contact the MRSC Rosters at 206-436-3798 or https://mrscrosters.org/businesses/business-membership/

INDEPENDENT PRICE DETERMINATION - The prospective contractor guarantees that, in connection with this proposal, the prices and/or cost data have been arrived at independently, without consultation, communication, or agreement for the purpose of restricting competition. This does not preclude or impede the formation of a consortium of companies and/or agencies for purposes of engaging in jointly sponsored proposals.

INTERLOCAL AGREEMENT - Clark County has made this RFP subject to Washington State statute RCW 39.34. Therefore, the proposer may, at the proposers option, extend identical prices and services to other public agencies wishing to participate in this RFP. Each public agency wishing to utilize this RFP will issue a purchase order (or contract) binding only their agency. Each contract is between the proposer and the individual agency with no liability to Clark County.

LIMITATION - This RFP does not commit Clark County to award a contract, to pay any costs incurred in the preparation of a response to this RFP, or to procure or contract for services or supplies.

LATE PROPOSALS - A proposal received after the date and time indicated above will not be accepted. No exceptions will be made.

ORAL PRESENTATIONS - An oral presentation may be required of those prospective contractors whose proposals are under consideration. Prospective contractors may be informed that an oral presentation is desired and will be notified of the date, time and location the oral presentation is to be conducted.

OTHER AUDIT/MONITORING REQUIREMENTS - In addition, auditing or monitoring for the following purposes will be conducted at the discretion of Clark County: Fund accountability; Contract compliance; and Program performance.

PRICE WARRANT - The proposer shall warrant that the costs quoted for services in response to the RFP are not in excess of those which would be charged any other individual or entity for the same services performed by the prospective contractor, in a similar socioeconomic, geographical region.

PROTESTS - Must be submitted to the Purchasing Department.

PUBLIC SAFETY - May require limiting access to public work sites, public facilities, and public offices, sometimes without advance notice. The successful Proposer's employees and agents shall carry sufficient identification to show by whom they are employed and display it upon request to security personnel. County project managers have discretion to require the successful Proposer's employees and agents to be escorted to and from any public office, facility or work site if national or local security appears to require it.

ACCEPTANCE or REJECTION OF PROPOSALS - Clark County reserves the right to accept or reject any or all proposals received as a result of this RFP, to negotiate with any or all prospective contractors on modifications to proposals, to waive formalities, to postpone award, or to cancel in part or in its entirety this RFP if it is in the best interest of Clark County to do so.

SUBCONTRACTING - No activities or services included as a part of this proposal may be subcontracted to another organization, firm, or individual without the approval of Clark County. Such intent to subcontract shall be clearly identified in the proposal. It is understood that the contractor is held responsible for the satisfactory accomplishment of the service or activities included in a subcontract.

VERBAL PROPOSALS - Verbal proposals will not be considered in making the award of any contract as a result of this RFP.

WORKERS COMPENSATION INSURANCE – The contractor shall comply with R.C.W. Title 51- with minimum coverage limits of $500,000 for each accident, or provide evidence that State law does not require such coverage.

FOR ALTERNATIVE FORMATS
Clark County ADA Office: V: 564-397-2322
ADA@clark.wa.gov

Request for Proposals
Table of Contents

C. Load Rating Memoranda
D. Preliminary Retrofit Design Memorandum
E. Lewisville Park Traffic Bridge No. 1 Substructure Memorandum
F. Example: Professional Services Agreement

Request for Proposal # 917
Bridge Design and Permitting – Lewisville Park

Part I Proposal Requirements

Section IA	**General Information**
1. Introduction	The purpose of this RFP is to permit the consultant community to suggest various approaches to meet this defined need. This RFP will identify a service or need where no specific method has been chosen. Clark County Parks & Nature is soliciting submittals of qualification for bridge design and environmental permitting services for one (1) vehicle bridge and one (1) pedestrian bridge within the County's Lewisville Regional Park. The bridges are used primarily by park users who are driving or walking onto the "island section" of the park and by County maintenance staff. The County is seeking a firm or team of firms who are experienced in bridge design, environmental permitting and construction management to develop plans, specifications, engineer's estimates, and applicable environmental permitting documentation to replace these aging bridges. This RFP is a qualifications based selection process, do not submit costs in proposal. Clark County (WA) contracts with the Municipal Research and Service Center (MRSC) to maintain our Consultant, Small Works and Vendor Rosters. To be eligible to participate in this Clark County public solicitation and the resulting contract your business must be registered with the MRSC Rosters. Failure to register may result in your proposal being marked nonresponsive. Be sure to select Clark County in your application. If you have questions about the registration process, contact the MRSC Rosters at 206-436-3798 or https://mrscrosters.org/businesses/business-membership/ If your company contact details ***are not*** on the Plan Holder List at https://clark.wa.gov/internal-services/request-proposal-1 **Attachment B**, Letter of Interest must be submitted to participate in this RFP. Proposers shall respond to all sections to be considered. Clark County has made this Request for Proposal subject to Washington State statute RCW 39.34 Interlocal Cooperation Act. The proposer may opt to extend identical services and prices to qualified public agencies. Each contract is between the proposer and individual agency binding only their agency, with no liability to Clark County.
2. Background	A map of the bridge's location is included in **Exhibit A**. The two bridge's structures were identified as deficient in 2023 when the bridge was inspected and load rated; the evaluation reports are included in **Exhibits B** and **C**. In addition to bridge inspection and load rating, a consultant provided varying options for bridge replacement, which are provided in **Exhibit D**. And an additional bridge foundation assessment was conducted in 2024 to determine whether existing foundations could be reused if the County replaced only bridge superstructures. This foundation assessment is provided in **Exhibit E**. (Costs listed in exhibits are provided to assist in the development of proposals – Do not submit cost or pricing for services in your proposal.)
3. Scope of Project	Anticipated Consultant Services may include: • Topographic survey • Hydraulic engineering and scour evaluations of East Fork Lewis River, as needed • Structural engineering

	• Archaeological/cultural resources predetermination report and potential survey, as needed • Identify and prepare permitting documents that meet the requirements of applicable federal, state, and local regulations. These will be reviewed and submitted by the County. • Plans, Specifications, and Estimates at permit-level, 90%, and final construction-ready packages for replacing the Lewisville bridges • Construction engineering support, including but not limited to: o Review and respond to contractor submittals o Respond to requests for information (RFI) o Construction observation/meetings, as needed and/or directed by the County
4. Project Funding	The Project's budget will use local funding. Allocation of funds for this RFP will be established based on the funds requested in the selected proposal.
5. Title VI Statement	**Title VI Statement** Clark County, in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 U.S.C. §§ 2000d to 2000d-4) and the Regulations, hereby notifies all bidders that it will affirmatively ensure that any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full and fair opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award. El Condado de Clark, de acuerdo con las disposiciones del Título VI de la Ley de Derechos Civiles de 1964 (78 Stat. 252, 42 U.S.C. §§ 2000d a 2000d-4) y el Reglamento, por la presente notifica a todos los postores que se asegurará afirmativamente de que cualquier contrato celebrado de conformidad con este anuncio, las empresas comerciales desfavorecidas tendrán la oportunidad plena y justa de presentar ofertas en respuesta a esta invitación y no serán discriminadas por motivos de raza, color u origen nacional en consideración a un laudo. La políza del condado de Clark es garantizar que ninguna persona por motivos de raza, color, origen nacional o sexo según lo dispuesto en el Title VI of the Civil Rights Act de 1964, según enmendada, sea excluida por participar en, ser negado los beneficios de, o ser discriminado por cualquier programa o actividad patrocinada por el condado. Para preguntas relacionadas con el programa de Title VI de Obras Públicas del condado de Clark, o para servicios de interpretación o traducción para personas que no hablan inglés. O para que los materiales estén disponibles en un formato alternativo, comuníquese con el coordinador del Title VI de Obras Públicas del condado de Clark por correo electrónico a CCPW-TitleVI@clark.wa.gov o por teléfono a 564-397-4944. Las personas con problemas de audición / habla pueden llamar a Washington Relay Center al 711. For questions regarding Clark County Public Works' Title VI Program, or for interpretation or translation services for non-English speakers, or otherwise making materials available in an alternate format, contact Clark County Public Works' Title VI Coordinator via email at CCPW-TitleVI@clark.wa.gov or phone at 564-397-4944. Hearing/speech impaired may call the Washington Relay Center at 711.

<table>
<tr><td>6. Timeline for Selection</td><td>The following dates are the <u>intended</u> timeline:

<table><tr><td>Deadline for Questions and Answers</td><td>April 9, 2025 at 12:00 pm</td></tr><tr><td>Final date for Addendum, if needed</td><td>April 10, 2025</td></tr><tr><td>Proposals Dues</td><td>April 16, 2025 at 1:30 pm</td></tr><tr><td>Proposal Review/Evaluation Period</td><td>April 16 - 25, 2025</td></tr><tr><td>Selection Committee Recommendation</td><td>April 28, 2025</td></tr><tr><td>Contract Negotiation/Execution</td><td>May 30, 2025</td></tr><tr><td>Contract Intended to Begin</td><td>June 1, 2025</td></tr></table></td></tr>
<tr><td>7. Employment Verification</td><td>The Proposer, if awarded the Contract, shall register and enter into a Memorandum of Understanding (MOU) with the Department of Homeland Security E-Verify program before execution of the Contract. The Contractor shall ensure all Contractor employees and any sub-contractor(s) assigned to perform work under this Agreement are eligible to work in the United States. The Contractor shall provide verification of compliance upon County request. Failure by Contractor to comply with this subsection shall be considered a material breach.

(Sole Proprietors must submit a letter stating such.)</td></tr>
<tr><td>Section IB</td><td>Work Requirements</td></tr>
<tr><td>1. Required Services</td><td>See Scope of Work in Section 1A.</td></tr>
<tr><td>2. County Performed Work</td><td>The County will review and provide comments and/or approvals on all work deliverables before finalized. The County will rely on consultant for final project quality assurance and quality control.

During construction, the County will provide construction inspection and management, that will be supported by the Consultant. The County will conduct all public outreach regarding this project. The County will assign a project manager and an environmental permit coordinator to lead this project team.</td></tr>
<tr><td>3. Deliverables & Schedule</td><td>This is a suggested schedule and is subject to change:

The County would like to complete permitting and design in 2025 and 2026 so that construction of the bridge replacements could be completed in 2027.</td></tr>
<tr><td>4. Place of Performance</td><td>Contract performance may take place in the County’s park, the Consultant’s facility, a third-party location or any combination thereof.</td></tr>
</table>

5. Period of Performance	A contract awarded as a result of this RFP will be for two (2) years and seven (7) months and is intended to begin on June 1, 2025 and end December 31, 2027. Clark County reserves the right to extend the contract resulting from this RFP for a period of two (2) additional years, in one (1) year increments, with the same terms and conditions, with the exception of cost, by service of a written notice of its intention to do so prior to the contract termination date. Cost for additional option year(s) shall be reviewed prior to extension of the contract. The county also reserves the right to terminate the contract, with thirty (30) days written notice, at any time if the requirements of the contract are not being met satisfactorily, solely in the county's judgment.
6. Prevailing Wage Applicable to all public work as defined in RCW 39.04.010(4) Public Works Definition	Pursuant to Washington State RCW 39.12 PREVAILING WAGES ON PUBLIC WORKS all work identified in this project as a public work requires the contractor to pay Washington State prevailing wages and file all affidavits of intent to pay with the WA State Dept of Labor & Industries. Contractors shall meet the requirements for Prevailing Wage and public works requirements, per RCW 39.04.350 BIDDER RESPONSIBILITY CRITERIA – SWORN STATMENT – SUPPLEMENTAL CRITERIA. For this project select the Clark County rates that apply on the proposal closing date from either of these sites: **http://www.wsdot.wa.gov/Design/ProjectDev/WageRates/default.htm** **http://www.lni.wa.gov/TradesLicensing/PrevWage/WageRates** Before payment is made by the Local Agency of any sums due under this contract, the Local Agency must receive from the Contractor and each Subcontractor a copy of "Statement of Intent to Pay Prevailing Wages" (Form L & I Number 700-29) approved by the Washington State Department of Labor and Industries. A fee of $45.00 per each "Statement of Intent to Pay Prevailing Wages" and "Affidavit of Wages Paid" is required to accompany each form submitted to this Department of Labor and Industries. The Contractor is responsible for payment of these fees and shall make all applications directly to the Department of Labor and Industries. These fees shall be incidental to all the proposed items of this contract.
7. Debarred/Suspended	Federally or Washington State debarred or suspended suppliers may not participate in this Request for Proposal. All proposers must fill out, sign and submit the "Certification Regarding Debarment, Suspension, and Other Responsibility Matters" form with their proposal to be eligible to participate.
8. Americans with Disabilities Act (ADA) Information	Clark County in accordance with Section 504 of the Rehabilitation Act (Section 504) and the Americans with Disabilities Act (ADA), commits to nondiscrimination on the basis of disability, in all of its programs and activities. This material can be made available in an alternate format by emailing ADA@clark.wa.gov or by calling 564-397-2322.

9. Public Disclosure	This procurement is subject to the Washington Public Records Act (the "Act"), chapter 42.56 RCW. Once in the County's possession, all of the RFP Submittals shall be considered public records and available for public records inspection and copying, unless exempt under the Act. If a Respondent or Proposer considers any portion of an RFP Submittal to be protected under the law, whether in electronic or hard copy form, the Respondent or Proposer shall clearly identify each such portion with the word "PROPRIETARY". The County will notify the Respondent or Proposer in writing of the request and allow the Respondent or Proposer ten (10) days to obtain a court order enjoining release of the record(s). If the Respondent or Proposer does not take such action within the ten (10) day period, the County will release the portions of the RFP Submittal deemed subject to disclosure. All Respondents and Proposers who provide RFP Submittals for this procurement accept the procedures described above and agree that the County shall not be responsible or liable in any way for any losses that the party may incur from the disclosure of records to a third party who requests them.
10. Insurance/Bond	**A. Waiver of Subrogation** All insurance coverage maintained or procured pursuant to this agreement shall be endorsed to waive subrogation against County, its elected or appointed officers, agents, officials, employees and volunteers or shall specifically allow Contractor or others providing insurance evidence in compliance with these specifications to waive their right of subrogation prior to a loss. Contractor hereby waives its own right of subrogation against County and shall require similar written express waivers and insurance clauses from each of its subcontractors. **B. Proof of Insurance** Proof of Insurance shall be provided prior to the starting of the contract performance. Proof will be on an ACORD Certificate(s) of Liability Insurance, which the Proposer shall provide to Clark County. Each certificate will show the coverage, deductible and policy period. Policies shall be endorsed to state that coverage will not be suspended, voided, canceled or reduced without a 30-day written notice by mail to the County. It is the Proposers responsibility to provide evidence of continuing coverage during the overlap periods of the policy and the contract. **C. Worker's Compensation** As required by the industrial insurance laws of the State of Washington. **D. Automobile** If the Proposer or its employees use motor vehicles in conducting activities under this Contract, liability insurance covering bodily injury and property damage shall be provided by the Proposer through a commercial automobile insurance policy. The policy shall cover all owned and non-owned vehicles. Such insurance shall have minimum limits of $1,000,000 per occurrence, combined single limit for bodily injury liability and property damage liability with a $1,000,000 annual aggregate limit. If the Proposer does not use motor vehicles in conducting activities under this Contract, then written confirmation to that effect on Proposer letterhead shall be submitted by the Proposer. **E. Commercial General Liability (CGL) Insurance** Written under ISO Form CG0001 or its latest equivalent with minimum limits of $1,000,000 per occurrence and in the aggregate for each one-year policy period. Personal and Advertising Injury $1,000,000 and General Aggregate $2,000,000. This policy must renew annually. This coverage may be any combination of primary, umbrella or excess liability coverage affording total liability limits of not less than $1,000,000 per occurrence and in the aggregate. However, if other policies are added they must be a follow-form policy in language, renewal date, and have no more exclusions than the underlying coverage. Products and Completed Operations coverage shall be provided for a period of three years following Substantial Completion of the Work. The deductible will not be more than $50,000 unless prior arrangements are made with Clark County on a case-by-case basis; the criterion is the Contractor's liquidity and ability to pay

	from its own resources regardless of coverage status due to cancellation, reservation of rights, or other no-coverage-enforce reason. Coverage shall not contain any endorsement(s) excluding nor limiting Product/Completed Operations, Contractual Liability or Cross Liability. Clark County needs to be listed as additional insured. **F. Professional Liability (aka Errors and Omissions)** The Proposer shall obtain, at Proposers expense, and keep in force during the term of this contract Professional Liability insurance policy to protect against legal liability arising out of contract activity. Such insurance shall provide a minimum of $1,000,000 per occurrence. The deductible will not be more than $25,000 unless prior arrangements are made with Clark County on a case-by-case basis; the criterion is the Proposers liquidity and ability to pay from its own resources. It should be an "Occurrence Form" policy. If the policy is "Claims Made", then Extended Reporting Period Coverage (Tail coverage) shall be purchased for three (3) years after the end of the contract. **G. Umbrella Liability Coverage** Umbrella Coverage in the amount of $1,000,000 shall be provided and will apply over all liability policies without exception, including Commercial General Liability and Automobile Liability. **H. Additional Insured** Clark County, its officers, employees and agents, will be named on all policies of contractor and any subcontractors as an additional insured, with no restrictions or limitations concerning products and completed operations. This coverage shall be primary coverage and noncontributory to any coverage maintained by Clark County. The contractor shall provide Clark County with verification of insurance and endorsements required by this agreement. Clark County reserves the right to require complete, certified copies of all required insurance policies at any time. All insurance shall be obtained from an insurance company authorized to do business in the State of Washington. All policies must have a Best's Rating of A-VII or better.
11. Plan Holders List	All proposers are required to be listed on the plan holders list. ✓ Prior to submission of proposal, confirm your organization is on the Plan Holders List below: To view the Plan Holders List, click on the link below or copy and paste into your browser. Clark County RFP site: https://clark.wa.gov/internal-services/purchasing-overview • If your organization is NOT listed, submit **Attachment B** - Letter of Interest to ensure your inclusion. • Proposals received by Clark County by proposers not included on the Plan Holders List may be considered non-responsive.

Part II Proposal Preparation and Submittal

Section IIA	Pre-Submittal Meeting / Clarification
1. Pre-Submittal Meeting	There are no plans to hold a pre-submittal meeting.
2. Proposal Clarification	Questions and Requests for Clarification regarding this Request for Proposal must be directed in writing, via email, to the person listed on the cover page. The deadline for submitting such questions/clarifications is April 9, 2025 by 12:00 pm. An addendum will be issued no later than April 10, 2025 to all recorded holders of the RFP if a substantive clarification is in order. The Questions & Answers/Clarifications are available for review at the link below. Each proposer is strongly encouraged to review this document prior to submitting their proposal. Clark County RFP site: **https://clark.wa.gov/internal-services/request-proposal-1**
Section IIB	**Proposal Submission**
1. Proposals Due	Sealed proposals must be received no later than the date, time and location specified on the cover of this document. **The outside of the envelope/package shall clearly identify:** **1. RFP Number and;** **2. TITLE and;** **3. Name and Address of the Proposer.** Responses received after submittal time will not be considered and will be returned to the Proposer - unopened. Proposals received with insufficient copies (as noted on the cover of this document) cannot be properly disseminated to the Review Committee and other reviewers for necessary action, therefore, may not be accepted.
2. Proposal	Proposals must be clear, succinct and not exceed ten (10) pages, excluding resumes, coversheet and debarment form. Proposers who submit more than the pages indicated may not have the additional pages of the proposal read or considered. For purposes of review and in the interest of the County, the County encourages the use of submittal materials (i.e. paper, dividers, binders, brochures, etc.) that contain post-consumer recycled content and are readily recyclable. The County discourages the use of materials that cannot be readily recycled such as PVC (vinyl) binders, spiral bindings, and plastic or glossy covers or dividers. Alternative bindings such as reusable/recyclable binding posts, reusable binder clips or binder rings, and recyclable cardboard/paperboard binders are examples of preferable submittal materials.

	Proposers are encouraged to print/copy on both sides of a single sheet of paper wherever applicable; if sheets are printed on both sides, it is considered to be two pages. Color is acceptable, but content should not be lost by black-and-white printing or copying. All submittals will be evaluated on the completeness and quality of the content. Only those Proposers providing complete information as required will be considered for evaluation. The ability to follow these instructions demonstrates attention to detail. Additional support documents, such as sales brochures, should not be included with each copy unless otherwise specified.
Section IIC	**Proposal Content**
1. Cover Sheet	This form is to be used as your proposal Cover Sheet. See Cover Sheet - **Attachment A**
2. Project Team	Identify the prime and sub-consultants and how the team will work together to deliver on this project.
3. Management Approach	Identify the proposed project manager and key personnel of the project team including the relevant experience, qualifications and project roles of each member. For each member, describe their experience as relevant to this project.
4. Respondent's Capabilities	Please provide the following information for no more than three relevant projects with similar scope and size that have been completed or are currently being led by members of the consultant design team. 1. Name of project 2. Picture of project 3. Brief project description highlighting special attributes/features of the project 4. Project design team 5. Construction cost All costs for developing submittals in response to this RFP are the obligation of the consultant and are not chargeable to the county. All submittals will become property of the county and will not be returned. Submittals may be withdrawn at any time prior to the published close date, provided notification is made in writing.
5. Project Approach and Understanding	Describe your understanding of the project and how your qualifications will inform your approach for the project, including considerations for constructability and cost saving approaches. (Discuss approaches only, do not provide cost for services in this RFP.) By using prior experience, please identify the environmental permitting approach and the related challenges or opportunities that are present with respect to this project.
6. Proposed Cost	This is a qualifications-based selection process, do not submit cost with proposal.

Part III Proposal Evaluation & Contract Award

<table>
<tr><th>Section IIIA</th><th>Proposal Review and Selection</th></tr>
<tr><td>1. Evaluation and Selection:</td><td>The county intends to enter into an agreement with the consultant who provides a proposal that, in the opinion of the selection committee, best meets all the evaluation criteria listed below (receives the highest score), as determined by the county's selection committee. Selected firms may be invited to participate in an interview.</td></tr>
<tr><td>2. Evaluation Criteria Scoring</td><td>Each proposal received in response to the RFP will be objectively evaluated and rated according to a specified point system.

A one hundred (100) point system will be used, weighted against the following criteria:

<table>
<tr><td>Demonstrated excellence in design, specifications, and budgeting and understanding of bridge engineering.</td><td>20</td></tr>
<tr><td>Qualifications of key personnel and project team.</td><td>10</td></tr>
<tr><td>Demonstrated experience with environmental permitting for bridge repair/replacement projects.</td><td>10</td></tr>
<tr><td>Demonstrated experience with construction support for bridge repair/replacement projects.</td><td>10</td></tr>
<tr><td>Thoroughness of proposed approach and understanding of County's project needs</td><td>20</td></tr>
<tr><td>Experience with projects of similar scale & scope</td><td>20</td></tr>
<tr><td>Overall quality of content and responsiveness to RFP requirements</td><td>10</td></tr>
<tr><td>Total Points</td><td>100</td></tr>
</table>
</td></tr>
<tr><th>Section IIIB</th><th>Contract Award</th></tr>
<tr><td>1. Consultant Selection</td><td>The County will determine the most qualified proposer based on the evaluation criteria listed using predetermined weights, the attributes of the Proposers and the overall responsiveness of the Proposal. If the County does not reach a favorable agreement with the top Proposer, the County shall terminate negotiations and begin negotiations with the next qualified Proposer. If the County is unable to reach agreeable terms with either Proposer, they may opt to void the RFP and determine next steps.

Clark County reserves the right to accept or reject any or all proposals received, to negotiate with any or all prospective contractors on modifications to proposals, to waive formalities, to postpone award, or to cancel in part or in its entirety this RFP. Clark County reserves the right to award the contract based on the best interests of the County.</td></tr>
</table>

2. Contract Development	Upon selection of a consultant, the county intends to enter into an agreement with the consultant using its standard Professional Services Agreement (See **Exhibit F**) The proposal and all responses provided by the successful Proposer may become a part of the final contract.
3. Award Review	The public may view Request for Proposal documents by submitting a public records request at www.clark.wa.gov .
4. Orientation/Kick-off Meeting	A project kick-off meeting with be held two (2) weeks after the contract has been fully executed.

Request for Proposal # 917
Bridge Design and Permitting – Lewisville Park

Attachment A: COVER SHEET

General Information:

Legal Name of Proposing Firm	
Street Address	
City | State | Zip Code	
Contact Person | Title	
Phone	
Program Location (if different than above)	
Email Address	
Tax Identification Number	

ADDENDUM:

Proposer shall acknowledge receipt of Addenda by checking the appropriate box(es).

None ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐

NOTE: Failure to do so, shall render the proposer non-responsive and therefore be rejected.

I certify that to the best of my knowledge the information contained in this proposal is accurate and complete and that I have the legal authority to commit this agency to a contractual agreement. I realize the final funding for any service is based upon funding levels, and the approval of the Clark County Council and required approvals.

Authorized Signature of Proposing Firm

Date

Printed Name

Title

Request for Proposal # 917
Bridge Design and Permitting – Lewisville Park

Attachment B: LETTER OF INTEREST

Legal Name of Proposing Firm	
Street Address	
City | State | Zip Code	
Contact Person | Title	
Phone	
Program Location (if different than above)	
Email Address	

- All proposers are required to be included on the plan holders list.
- If your organization is NOT listed, submit the 'Letter of Interest" to ensure your inclusion.

Email Letter of Interest to*: Koni.Odell@clark.wa.gov and Priscilla.Mason@clark.wa.gov*

Clark County web link: https://clark.wa.gov/internal-services/request-proposal-1

This document will only be used to add a proposer to the plan holders list. Submitting this document does not commit proposer to provide services to Clark County, nor is it required to be submitted with proposal.

Proposals may be considered non-responsive if the Proposer is not listed on the plan holders list.

Request for Proposal # 917
Bridge Design and Permitting – Lewisville Park

Attachment C

Clark County, Washington

Certification Regarding
Debarment, Suspension and Other Responsibility Matters

The prospective participant certifies to the best of its knowledge and belief that it and its principals:

(a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal, State or local department or agency;

(b) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(c) Are not presently indicted for or otherwise criminally or civilly charged by a government entity (Federal, State, or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and

(d) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State, or local) terminated for cause or default.

I understand that a false statement on this certification may be grounds for rejection of this proposal or termination of the award. In addition, under 18 USC Sec. 1001, a false statement may result in a fine of up to $10,000 or imprisonment for up to 5 years, or both.

_____
Company Name

_____
Typed Name & Title of Authorized Representative

_____ _____
Signature of Authorized Representative Date

☐ I am unable to certify to the above statements. My explanation is attached.

EXHIBIT A: Lewisville Park Bridges Vicinity and Site Map

Vicinity & Site Map

EXHIBIT B

Bridge Inspection Memorandum
Lewisville Park

To:	Evelyn Ives, Project Manager, Clark County
From:	Bruce Johnson, Project Manager, Otak
Copies:	
Date:	February 16, 2024
Subject:	Inspection Reports for Lewisville Park
Project No.:	Clark County Park Bridges Inspection and Load Rating, 021253.000

This memorandum transmits the bridge inspection report portion of the contracted work performed at Lewisville Regional Park, 26411 NE Lewisville Hwy, Battle Ground, WA 98604.

In summary, Lewisville Bridge No 1 (vehicle and pedestrian traffic) was found to be in fair condition with some problems with some rotten timber in the deck and corrosion on the railroad flatcar.

The Lewisville Bridge No 2 (pedestrian traffic) was found to be in poor condition with serious advanced flaking corrosion and section loss and some rotten timber in the deck.

Detailed inspection reports are attached.

Client: Clark County
Clark County Parks and Lands Division

Bridge No. Lewisville 1

BRIDGE INSPECTION SUMMARY

Bridge No.	L1
Bridge Name:	Lewisville No 1 over Creek
Location:	Lewisville Regional Park
Drainage:	Creek, tributary, EF Lewis R.
Bridge Type:	Railroad Car – Vehicles/Peds
Span Length:	37 feet

Description:

The bridge is comprised of an old steel railcar 50' in length (span length – 37') with two main built up riveted girder elements tapered from 12.5" deep to 31.25" deep and two constant depth side girders, rolled channel 12"x3.5". The deck is 4"x12" timber deck plans supported directly on the top flange of the girders.
The deck has 6"x6" timber felloe guards and a timber rail with 6"x6" posts (at approximately 8' spacing) and 4 - 2"x6" rails. The approach alignment is curved on the West approach and serves a parking lot on the East approach with no approach guardrail.

Condition:

- Steel coating has failed and peeled off.
- Corrosion, pitting, and early signs of delamination are present on the steel.
- Deck planks are decayed (10 of 40) and split (3 of 40).
- Rail car is tilted slightly to the south due to rot in the abutment cap and timber sill under the exterior beams.
- Approach alignment has a tight turn on the West and into a parking lot on the East.
- Some drift in channel.
- Rock wingwalls and rock fill between abutment columns is loose, with missing rocks.

Recommendations:

- Clean, sandblast and paint the rail car to stop further corrosion and section loss.
- Replace rotten and split timber deck planks.
- Clean debris from the abutment seats and girder bearing area.
- Replace the rotten timber sills under the exterior beams and rotate the rail car to a horizontal oriertation.
- Add riprap to the abutments and wing area.
- Repair rock wingwalls and rock fill between abutment columns.

Date Inspected:	12/08/2023
Inspecting Firm:	Otak
Inspectors:	B. Johnson & I. Parker

BRIDGE NO. Lewisville 1

BRIDGE TYPE	RR FLATCAR		45.816189		
CROSSING	CREEK		LAT -122.542661	INSPECTOR	BRUCE JOHNSON, ISAAC PARKER
YEAR BUILT	1936 (ESTIMATED)		LONG	DATE	12-08-2023
				STR. NO.	L1

OBSERVATIONS

SUBSTRUCTURE		
1. END BENTS	Abutments	Fair
	Piles	N/A
	Footings	Fair
	Footing Piles	N/A
	Caps	Poor
	Wings	Fair
	Backwalls, Bulkheads	Fair
.2. Debris on Seats		Poor
3. Paint		Failed
4. Collision Damage		Fair
5. Scour		Fair
6. Settlement		Fair
1-Abut, spill-through with rock fill		
1-Footings, minor erosion		
1-Caps, 10"x10" timber, 50-70% rot		
1-Wings, rock wing some sloughing		
2.Signigicant debris		
3-paint gone with heavy corrosion		
4-minor scrapes and gouges		
5-stream is stable heavy rock bed and isolated heavy rocks on banks		
CHANNEL & CHAN. PROTECT.		
1. Channel Scour		Fair
2. Embankment Erosion		Fair
3. Vegetation		Good
4. Channel Change		N/A
5. Riprap		N/A
Overall condition, Fair		

SUPERSTRUCTURE	TYPE / SIZE
1. Stringers	N/A
2. Girder or Beams	Fair
3. Floor Beams	Fair
.	
5. Diaphragms, Bridging	Poor
6. Bearing Devices	N/A
7. Alignment of Members	Fair
8. Rivets or Bolts	Fair
9. Welds	Fair
10. Flange	
11. Stiffeners	
2-Railcar is tilted slightly to the south due to rot in the timber sills.	
Overall Condition, Fair, Phi(c)=0.90	

DECK	Condition Rating
1. Deck — Structural Condition	Poor
2. Wearing Surface	N/A
3. Deck Joints	N/A
4. Curbs, Felloe Guards	Poor
5. Sidewalks	Fair
6. Railing, Posts	Poor
1. 40 4"x12" deck planks, 10 with rot, 3 sever splits	
2. Bare deck	
3. Steel plate over gap between deck plank and back-wall	
4. 6"x6" felloe at curb is Fair, Sidewalk to road is poor	
5. Bare deck	
6. One loose post on N side	
APPROACH CONDITION	
1. Pavement & Embankment	Fair
2. Shoulder Embankment	Fair
3. Railing	N/A
APPR. ALINE.	
SIGNING	
1. Posted Loading, 5 ton gross	Fair
2. Legibility	Good
3. Visibility	Good
Overall Deck Condition	Poor

REMARKS AND RECOMMENDATIONS ARE ATTACHED

BRIDGE INSPECTION REMARKS

NAME Lewisville Park Bridge No. 1
TYPE Flatcar NUMBER 1
INSPECTORS B. Johnson & I. Parker
DATE 12/08/2023
YEAR BUILT 1936 (ESTIMATED)

58 (DECK)

Deck is comprised of pressure treated dimension lumber with (40) total 4”x12” running boards placed transversely across the main girders and side girders. The curb is comprised of 6”x6” timber nailed to the deck. Pedestrian rail shows signs of splits, loose connections, and splintering typical.

59 (SUPERSTRUCTURE)

The superstructure is comprised of a steel rail car with two primary beams and two side beams connected with overhang brackets or diaphragms. The structure has a 40' overall length with the main elements tapered from about 12.5" deep to about 31.5" deep. Corrosion, pitting, and early signs of delamination are present on the steel. Ref. Photo 4. Areas of local distortions (bends) and holes (burned through, not rusted) through members and broken transverse connection plates are present, however none appeared to be service related. The felloe guard between the sidewalk and roadway is split and rotting. Ref Photo 1.

60 (SUBSTRUCTURE)

Concrete abutment has three concrete shafts or piling with a 10”x10” timber cap. The two main girders bear directly on the timber cap and two outside beams on a 12”x12” timber sill. The timber sill shows signs of decay up to 70% of the length with about ¼” of crush under the main center girder and the timber sills are decayed causing a rotation of the railcar to the south. Ref. Photo 3. Spalling, exposed aggregate, and cracking is typical. Debris on seats typical.

65 (APPROACH)

Approach alignment exhibits tight turns onto the bridge from the West and a parking lot on the East.

OTHER

Some drift in channel.

BRIDGE MAINTENANCE RECOMMENDATIONS

NAME Lewisville Park Bridge No. 1
TYPE Rail car NUMBER 1
INSPECTORS B. Johnson & I. Parker
DATE 12/08/2023
YEAR BUILT 1936 (estimated)

58 (DECK)

Replace at least 10 rotten and 3 split deck planks.
Replace the felloe guard between the sidewalk and roadway due to rot and splitting.
Consider application of a timber sealer to protect the railing.
Tighten bolts connecting the timber deck to the rail car.

59 (SUPERSTRUCTURE)

Monitor condition of rail car corrosion.
Conduct NDE testing of fatigue prone details on the rail car.
Repair broken transverse connection plates and clean and paint the steel rail car to preserve it and retard corrosion.
Remove debris and vegetation from top flanges of floorbeams, girders, and below.

60 (SUBSTRUCTURE)

Replace the timber cap and timber sills that shows signs of rot and crush under the main girders.
Correct the rotation to the south when caps and sills are replaced.
Clear debris and vegetation from seats.
Add riprap to the abutments and wing area.

65 (APPROACH)

Consider extending the railing onto the approaches.
Consider updating the load restriction sign to the new calculated load limit.

OTHER

Trim back vegetation.

Photo 1 - Lewisville No 1 Approach and Deck view.

Photo 2 - Lewisville No 1 Elevation view.

Photo 3 - Lewisville No 1 Timber Cap with rot and crush

Photo 4 - Lewisville No 1 Corrosion, pitting and early signs od delaminating steel

Photo 5 - Lewisville No 1 Rock filled spill through abutment with minor erosion.

Clark County
Department of Public Works

Bridge No. Lewisville 2

BRIDGE INSPECTION SUMMARY

Bridge No.	L2
Bridge Name:	Lewisville No 2 over Creek
Location:	Lewisville Regional Park
Drainage:	Creek, tributary, EF Lewis R.
Bridge Type:	Railroad Car – Pedestrian/Bike
Span Length:	36 feet

Description:

The bridge is comprised of an old steel railcar 41' in length (span length – 36') with two main built-up riveted I-girder elements tapered from 20" deep to 30.5" deep and two rolled C-channel edge girders tapered from 11" to 23.5". The deck is 2"x12" timber deck plans supported directly on the top flange of the girders.

The deck has 5"x5" timber felloe guards and a timber rail with 3"x3" posts, 2"x6" rails, and 2"x4" verticals. The approach alignment is curved on the East approach and serves a parking lot on the West approach with no approach guardrail.

Condition:

- Steel coating has failed and peeled off.
- Severe corrosion, deep pitting, and heavy delamination of the steel with significant section loss are present on main structural elements.
- Deck planks are decayed (22 of 40).
- Approach alignment has a tight turn on the West and into a parking lot on the East.
- Rock wingwalls and rock fill between abutment columns is loose, with missing rocks.
- Some drift in channel.

Recommendations:

- Option 1: Replace the steel rail car superstructure due to section loss and severe flaking corrosion.
- Option 2: Clean, sandblast and paint the rail car to stop further corrosion and section loss.
    - Clean the steel connections and clean debris from the abutment seats and girder bearing area.
    - Add riprap to the abutments and wing area.
    - Repair rock wingwalls and rock fill between abutment columns.

Date Inspected: 12/08/2023
Inspecting Firm: Otak
Inspectors: B. Johnson & I. Parker

BRIDGE NO. Lewisville 2

BRIDGE TYPE	RR FLATCAR		45.816354		
CROSSING	CREEK		LAT	INSPECTOR	BRUCE JOHNSON, ISAAC PARKER
			-122.542804		
YEAR BUILT	1936 (ESTIMATED)		LONG	DATE	12-08-2023
				STR. NO.	L2

OBSERVATIONS

SUBSTRUCTURE		
1. END BENTS	Abutments	Fair
	Piles	N/A
	Footings	Fair
	Footing Piles	N/A
	Caps	Poor
	Wings	Fair
	Backwalls, Bulkheads	Fair
.2. Debris on Seats		Poor
3. Paint		Failed
4. Collision Damage		Fair
5. Scour		Poor
6. Settlement		Fair
1-Abut, spill-through with rock fill		
1-Footings, minor undermining		
1-Caps, 12"x12" timber, 50-70% rot		
1-Wings, rock wing some sloughing		
2.Signigicant debris		
3-paint gone with heavy corrosion		
4-minor scrapes and gouges		
5-stream is stable heavy rock bed and isolated heavy rocks on banks		
CHANNEL & CHAN. PROTECT.		
1. Channel Scour		Fair
2. Embankment Erosion		Fair
3. Vegetation		Good
4. Channel Change		N/A
5. Riprap		N/A
Overall Condition - Poor		

SUPERSTRUCTURE	TYPE / SIZE
1. Stringers	Fair
2. Girder or Beams	Poor
3. Floor Beams	Poor
5. Diaphragms, Bridging	Poor
6. Bearing Devices	N/A
7. Alignment of Members	Poor
8. Rivets or Bolts	Poor
9. Welds	Fair
10. Flange	Poor
11. Stiffeners	Fair
2-15% section loss outside G.	
10-50% section loss inside G.	
Overall Condition – Poor, Phi(c)=0.85	

DECK	Condition Rating
1. Deck — Structural Condition	Poor
2. Wearing Surface	N/A
3. Deck Joints	N/A
4. Curbs, Felloe Guards	Poor
5. Sidewalks	Fair
6. Railing, Posts	Poor
1. 40 4"x12" deck planks, 10 with rot, 3 sever splits	
2. Bare deck	
3. Steel plate over gap between deck plank and back-wall	
4. 5"x5" felloe at curb and between sidewalk and deck	
5. Bare deck	
6. One loose post on N side	
APPROACH CONDITION	
1. Pavement & Embankment	Fair
2. Shoulder Embankment	Fair
3. Railing	N/A
APPR. ALINE.	
SIGNING	
1. Posted Loading	N/A
2. Legibility	Good
3. Visibility	Good
Overall Deck Condition - Poor	

REMARKS AND RECOMMENDATIONS ARE ATTACHED

BRIDGE INSPECTION REMARKS

NAME Lewisville Park Bridge No. 2
TYPE Flatcar NUMBER 2
INSPECTORS B. Johnson & I. Parker
DATE 12/08/2023
YEAR BUILT 1936 (ESTIMATED)

58 (DECK)

Deck is comprised of pressure treated dimension lumber with (40) total 2”x12” running boards placed transversely across the main girders and side girders. The curb is comprised of 5”x5” timber nailed to the deck. Pedestrian rail shows signs of splits, loose connections, and splintering typical.

59 (SUPERSTRUCTURE)

The superstructure is comprised of a steel rail car with two primary beams and two side beams connected with overhang brackets or diaphragms. The structure has a 41' overall length with the main elements tapered from about 20" deep to about 30.5" deep. Edge beams are rolled 16”x4”x0.458” C-channels tapered from 11” to 23.5”. Severe corrosion, deep pitting, and heavy delamination with 50% loss of section on the interior flanges and 15% on the exterior webs are present. Areas of local distortions (bends) and holes (burned through, not rusted) through members are present, however none appeared to be service related.

60 (SUBSTRUCTURE)

The concrete abutment has three concrete shafts or piling with a 10”x10” timber cap. The two main girders and edge beams bear directly on the timber cap. Spalling, exposed aggregate, and cracking is typical. Debris on seats typical.
The abutment slope protection slab has undermining along 80% of the length. Ref: Photo 5.

65 (APPROACH)

Approach alignment exhibits tight turns onto the bridge from the East and a parking lot on the West.

OTHER

Some drift in channel.

BRIDGE MAINTENANCE RECOMMENDATIONS

NAME Lewisville Park Bridge No. 2
TYPE Rail car NUMBER 2
INSPECTORS S. Lozano & D. Bong
DATE 11/08/2023
YEAR BUILT 2002

58 (DECK)

Replace at least thirteen of the deck planks with rot or severe splits.
Clean rail and felloe to remove mold and moss and apply sealer.

59 (SUPERSTRUCTURE)

Monitor condition of rail car corrosion.
Remove debris and vegetation from top flanges of floorbeams, girders, and below.
Clean and paint steel railroad car.
Repair loss of section with supplemental flanges or web material on main and side girders.
Conduct NDE testing of fatigue prone details on the rail car.

60 (SUBSTRUCTURE)

Clear debris and vegetation from seats.
Add riprap to the abutments and wing area.
Repair undermined abutment slope paving.
Add riprap to the abutments and wing area.

65 (APPROACH)

Re-grade approach to remove small bump at bridge ends.

OTHER

Trim back vegetation.

Photo 1 - Lewisville No 2 Approach and Deck view.

Photo 2 - Lewisville No 2 Elevation view.

Photo 3 - Lewisville No 2 Timber Cap with rot and crush

Photo 4 - Lewisville No 2 Corrosion, pitting, delaminating steel and loss of section

Photo 5 - Lewisville No 2 Rock filled spill through abutment with undermining.

Load Rating Memorandum
Lewisville Park

To: Evelyn Ives, Project Manager, Clark County

From: Bruce Johnson, Project Manager, Otak

Copies:

Date: February 5, 2024

Subject: Lewisville No. 1 Vehicle/Pedestrian Bridge Load Rating

Project No.: Clark County Park Bridges Inspection and Load Rating, 021253.000

This memorandum summarizes the load rating portion of the contracted work performed at the vehicle/pedestrian bridge No. 1 at Lewisville Regional Park, 26411 NE Lewisville Hwy, Battle Ground, WA 98604.

The conclusion of the analysis is that the structure, in its current condition, is not adequate to transport the AASHTO Legal Trucks, the single unit special haul vehicles or the EV2 (2 axles, 28 tons) or EV3 (3 axles, 43 tons) without restriction under the WSDOT guidelines for bridge rating. The structure should be posted for a maximum 12 tons for the Type 3, 18 tons for Type 3S2, 24 tons for the 3-3, as noted in the following pages.

Recommended Posting Sign

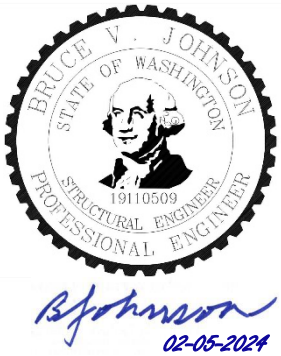
Alternate Gross Load Sign

Attachments
Load rating summary
Load rating calculations

Prepared by: Bruce Johnson, P.E.
Reviewed by: Doug Sarkkinen, P.E.

Attachment A, Load Rating Summary Report

Evelyn Ives
Clark County Parks and Lands Division
Otak Project
021253.000



Bridge Rating Summary

Bridge Name:	Lewisville Bridge No. 1
Bridge Number:	1
Span Type:	50' Rail car
Design Load:	Unknown
Rating By:	Bruce Johnson, P.E., S.E. (Checked By: Doug Sarkkinen, P.E.)
Date:	January 2024

Truck	Rating Factor	Load Factor	Tons	Controlling Point
AASHTO1 (Type 3)	0.71	1.30	17	Stress at mid-span
AASHTO2 (Type 3S2)	0.74	1.30	26	Stress at mid-span
AASHTO3 (Type 3-3)	0.87	1.30	34	Stress at mid-span
Special Haul Veh's	0.49	1.30	19	Stress at mid-span
Emerg. Veh.2	0.58	1.30	16	Deck Shear
Emerg. Veh. 3	0.39	1.30	16	Stress at mid-span

Remarks:

1. Rating by AASHTO Load and Resistance Factor Design Method
2. Ratings are controlled by and reported for the inside girders. The exterior beams have higher ratings.

Condition Summary Considered in the Load Rating

This summary is based on the inspection performed on December 15, 2023, and documented in a separate report:

Ten of the timber deck planks showed signs of decay and three had significant splits and was found to be in poor condition overall. The girders and braces showed signs of corrosion, with minor section loss in certain areas and was found to be in fair condition overall. There was almost no paint left on the superstructure and rust had formed on the exterior of all members. Dirt and debris and accumulated on the girder flanges and in small gaps between members. Without maintenance over time the corrosion can be anticipated to advance and will reduce the load carrying capacity of the bridge.

Load Rating Procedure

The structure was load rated for the three AASHTO legal trucks, type 3 (25 tons), type 3S2 (72 tons), and type 3-3 (80 tons), the notional single unit vehicles loading (80 tons) and both the EV2 (2 axles, 28 tons) and EV3 (3 axles, 43 tons) type vehicles using the LRFR method per the *WSDOT Bridge Design Manual* (*WSDOT BDM*).

Since no drawings were available for the existing structure, all dimensions and member sizes are based on field measurements. Dead loads for the steel superstructure were estimated based on the typical weight of a flatcar bridge given by a private company specializing in flatcar bridge construction and scaled to the span length of the Lewisville No. 1 Bridge. The referenced document is attached. Yield strength of steel in the superstructure was estimated based on data provided in the report *Railroad Flatcar Bridges for Economical Bridge Replacement Systems*; by Doornik, Wipf, and Klaiber; published in 2003 by Iowa State University.

Our calculations show that in it's current condition the Lewisville No. 1 Bridge does not meet AASHTO and WSDOT requirements to be able to support full Legal Vehicles, SUV's, or the EV2 and EV3 vehicles, with recommended postings between 16 and 34 Tons as shown in Attachment A, Load Rating Summary Report.

Impact for legal on spans greater than 40-feet is based on the structure approach, joints and deck condition. It is a fixed percentage from 10% to 30%. Since traffic speeds across the bridge are restricted to 5 mph or less, it is reasonable to assume there would be low dynamic load on the structure, so a value of 10% or 1.1 was used in the final rating calculations for the superstructure. A factor of 1.0 is used for timber decks.

The adequacy or inadequacy of a structural element to carry a specified truck load will be indicated by the value of its rating factor (RF); if it is greater than 1.0, the bridge is adequate to carry that truck.

Typically, only superstructure elements are rated. If conditions warrant, substructure elements can be rated. Typically bridge decks will not require rating unless the deck is timber. Bridge decks with poor condition may be load rated at the discretion of the engineer.

For roadway widths less than 18', one lane is used for all trucks.

The following PHI (Condition Factor) was used:

Structural Condition of Member	Inspection Condition	φ_c
Good or Satisfactory	>7	1.00
Fair	5, 6	0.90
Poor	<4	0.85

Section 1. *Appendix A*

Load Rating Calculations

BRIDGE INFORMATION **Lewisville No 1 - Vehicle bridge**

Number of spans	N=	1	Span 1			
Span length (Ft)	L_{span}=	37.1	37.1	L out to out		39.9
Unbraced length	L_b=	12.17	ft			
Structural steel yield strength	F_y=	36	ksi	Assume		MBE Table 6A.6.2.1-1
Steel modulus of elasticity	Es=	29000	ksi		Wc=	
					f'c =	

SECTION PROPERTY - Main Interior U-Girder

Mid-span deep section - inverted U (Hat) shape					Shallow end section
Top Flange width	bt_f=	20.50	in		20.5
Top Flange thickness	tt_f=	0.500	in		0.5
Bottom Flange width	bb_f=	14.000	in		14
Bottom Flange thickness	tb_f=	0.500	in		0.5
Web thickness	t_w=	0.500	in		0.5
Total depth	h=	31.25	in		12.50
Fillet radius	R=	0.31	in	Assume	
Web depth	D=	30.25	in		11.5
Steel Sectional area	A=	47.50	in^2		28.75
Steel Eccentricity e from bottom of girder	e=	16.68			6.93
Steel Moment of Inertia	I=	6331.89	in^4		734.51
Elastic section modulus Top	St=	434.49	in^3	Compression	106.02
Elastic section modulus bottom	Sb=	379.68	in^4	Tension Positive Moment	131.83
Plastic section modulus	Z=	380.00	in^3	Estimated	131.00

Side Beam - constand depth Channel section

Top Flange width	bt_f=	3.50	in
Top Flange thickness	tt_f=	0.350	in
Bottom Flange width	bb_f=	3.500	in
Bottom Flange thickness	tb_f=	0.350	in
Web thickness	t_w=	0.350	in
Total depth	h=	12.00	in
Fillet radius	R=	0.31	in
Web depth	D=	11.30	in
Steel Sectional area	A=	10.36	in^2
Steel Eccentricity e	e=	6.00	
Steel Moment of Inertia	I=	167.30	in^4
Elastic section modulus Top	St=	27.88	in^3
Elastic section modulus bottom	Sb=	27.88	in^4
Plastic section modulus	Z=	27.00	in^3

Ratio of Main Girder Modulus to Total Modulus — Ratio= 0.87 > 0.8

Ignore Side beams for main girder calc - use 0.13 for side beam DL

FLEXURE AT STRENGTH LIMIT STATE
Main Interior U-Girder
Check section proportion limits
Web proportion without longitudinal stiffeners

$$\frac{D}{t_w} \le 150$$

D=	30.25	in	LRFD 6.10.2
t_w=	0.50	in	
D/t_w=	60.50	OK	

Unbraced length of compression less than Lp (limit for use of EQ 6.10.8.2.3-1 for Allowable comression stress in flanges

Flange proportion
Compression and tension flange

$$\frac{b_f}{2t_f} \le 12.0, \qquad b_f \ge D/6, \qquad t_f > 1.1t$$

b_{f_c}=	12.50	in		AASHTO 6.10.2.2
t_{f_c}=	0.50	in	<=70.0ksi	OK
$b_{f\_c}/2t_{f\_c}$=	12.50	OK	12.5 Close enough to 12.0 - OK	
b_{f_c}-D/6=	7.46	OK		
t_{f_c}-1.1t_w=	-0.05	OK, close e	Apprendix A6 may apply	
b_{f_t}=	7.00	in		
t_{f_t}=	0.50	in		

$t_f \ge 1.1t_w$,

$b_{f\_t}/2t_{f\_t}$=	7.00	OK	
b_{f_t}-D/6=	1.96	OK	
t_{f_t}-1.1t_w=	-0.05	OK, close enough	
I_{yc}=	81.38	in^4	
I_{yt}=	14.29	in^4	
I_{yc}/I_{yt}=	5.69	OK	

$$0.1 \le \frac{I_{yc}}{I_{yt}} \le 10$$

Determine if section is compact or noncompact AASHTO 6.5.4.2

Use 80% Fy due to torsion and lateral bending

Flange yield strength F_{yf}=	29	ksi	AASHTO 6.10.8
Check web noncompact slenderness limit D/t_w=	60.50	OK	
Depth of web in compression in elastic range D_c=	15.13	in	
$2D_c/t_w$=	60.50	OK	AASHTO 6.10.9.2
$5.7\sqrt{(E/F_{yc})}$=	161.78		
Check flange and recall I_{yc}/I_{yt} I_{yc}/I_{yt}=	5.69	>=0.3ksi	
Depth of web in compression at Mp D_{cp}=	15.125	in	
$2D_{cp}/t_w$=	60.50	Compact	
$3.76\sqrt{(E/F_{yc})}$=	106.72		

$$\frac{2D_c}{t_w} < 5.7\sqrt{\frac{E}{F_{yc}}}$$

$$\frac{2D_{cp}}{t_w} \le 3.76\sqrt{\frac{E}{F_{yc}}}$$

The web section is therefore considered to be compact.

Compute plastic moment capacity - Center U Girder

The plastic moment M_p=	918.33	kip-ft	
Resistance factor for flexure ϕ_f=	1.00		Unstiffened
Factored flexure resistance for the noncomposite secti $\phi_f M_p$=	918.33	kip-ft	

FLEXURE AT STRENGTH LIMIT STATE

Exterior side beam

Check section proportion limits

Web proportion without longitudinal stiffeners

D=	12.00	in	LRFD 6.10.2
t_w=	0.35	in	
D/t_w=	34.29	OK	

$$\frac{D}{t_w} \le 150$$

Unbraced length of compression less than Lp (limit for use of EQ 6.10.8.2.3-1 for Allowable comression stress in flanges

Flange proportion

Compression and tension flange

b_{f_c}=	3.50	in		AASHTO 6.10.2.2
t_{f_c}=	0.35	in	<=70.0ksi	OK
$b_{f\_c}/2t_{f\_c}$=	5.00	OK		
b_{f_c}-D/6=	1.50	OK		
t_{f_c}-1.1t_w=	-0.04	OK, close e	Apprendix A6 may apply	
b_{f_t}=	3.50	in		
t_{f_t}=	0.35	in		
$b_{f\_t}/2t_{f\_t}$=	5.00	OK		
b_{f_t}-D/6=	1.50	OK		
t_{f_t}-1.1t_w=	-0.04	OK, close enough		
I_{yc}=	1.25	in^4		
I_{yt}=	1.25	in^4		
I_{yc}/I_{yt}=	1.00	OK		

$$\frac{b_f}{2t_f} \le 12.0,$$

$$b_f \ge D/6,$$

$$t_f \ge 1.1t_w,$$

$$0.1 \le \frac{I_{yc}}{I_{yt}} \le 10$$

Determine if section is compact or noncompact AASHTO 6.5.4.2

Use 80% Fy due to torsion and lateral bending

Flange yield strength F_{yf}=	29	ksi	AASHTO 6.10.8
Check web noncompact slenderness limit D/t_w=	34.29	OK	
Depth of web in compression in elastic range D_c=	0.25	in	
$2D_c/t_w$=	1.43	OK	AASHTO 6.10.9.2
$5.7\sqrt{(E/F_{yc})}$=	161.78		
Check flange and recall I_{yc}/I_{yt} I_{yc}/I_{yt}=	1.00	>=0.3ksi	
Depth of web in compression at Mp D_{cp}=	0.25	in	
$2D_{cp}/t_w$=	1.43	Compact	
$3.76\sqrt{(E/F_{yc})}$=	106.72		

$$\frac{2D_c}{t_w} < 5.7\sqrt{\frac{E}{F_{yc}}}$$

$$\frac{2D_{cp}}{t_w} \le 3.76\sqrt{\frac{E}{F_{yc}}}$$

The web section is therefore considered to be compact.

Compute plastic moment capacity - Center U Girder

The plastic moment	M_p=	65.25	kip-ft	
Resistance factor for flexure	ϕ_f=	1.00		Unstiffened
Factored flexure resistance for the noncomposite secti	$\phi_f M_p$=	65.25	kip-ft	

SHEAR - END PANEL

Shallow section at Girder End

Recall web depth	D=	12.50	in	
Recall web thickness	t_w=	0.50	in	AASHTO 6.5.4.2
Recall yield strength of web	F_{yw}=	29	ksi	
Plastic shear force	$Vp=0.58F_{yw}Dt_w$=	105.13	kip	
Calculate ratio C				
Steel modulus of elasticity	E=	29000	ksi	
Shear-buckling coefficient	k=	5.00		
	D/tw=	25.00		
	$1.12\sqrt{(Ek/F_{yw})}$=	79.20		
	$1.40\sqrt{(Ek/F_{yw})}$=	98.99		Assume
	C=	1.00		
Nominal shear resistance of the web end panel	$V_n=CV_p$=	105.13	kip	
Resistance factor for flexure	ϕ_v=	1.00		
Factored shear resistance of the web end panel	$V_r=\phi_v V_n$=	105.13	kip	

SHEAR - END PANEL

Side Beam Channel Section

Recall web depth	D=	12.00	in	
Recall web thickness	t_w=	0.35	in	AASHTO 6.5.4.2
Recall yield strength of web	F_{yw}=	29	ksi	
Plastic shear force	$Vp=0.58F_{yw}Dt_w$=	70.64	kip	
Calculate ratio C				
Steel modulus of elasticity	E=	29000	ksi	
Shear-buckling coefficient	k=	5.00		
	D/tw=	34.29		
	$1.12\sqrt{(Ek/F_{yw})}$=	79.20		
	$1.40\sqrt{(Ek/F_{yw})}$=	98.99		Assume
	C=	1.00		
Nominal shear resistance of the web end panel	$V_n=CV_p$=	70.64	kip	
Resistance factor for flexure	ϕ_v=	1.00		
Factored shear resistance of the web end panel	$V_r=\phi_v V_n$=	70.64	kip	
Ratio of Main Girder Modulus to Total Modulus	Ratio=	0.43	>	0.8 Include side beam capacity

SECTION PROPERTY - Main Girders — Controls

Main girder shallow section — Estimated

Top Flange width	bt_f=	20.50	in	
Top Flange thickness	tt_f=	0.500	in	
Bottom Flange width	bb_f=	14.000	in	
Bottom Flange thickness	tb_f=	0.500	in	
Web thickness	t_w=	0.500	in	
Total depth	h=	12.00	in	
Fillet radius	R=	0.31	in	
Web depth	D=	11.00	in	AASHTO 6.10.2.1
Steel Sectional area	A=	28.25	in^2	
Steel Eccentricity e	e=	6.66		
Steel Moment of Inertia	I=	668.88	in^4	
Elastic section modulus Top	St=	100.41	in^3	
Elastic section modulus Bottom	Sb=	125.29	in^4	AASHTO 6.10.2.2
Plastic section modulus	Z=	125.00	in^3	

Side Beam - constand depth section

Top Flange width	bt_f=	3.50	in	
Top Flange thickness	tt_f=	0.350	in	
Bottom Flange width	bb_f=	3.500	in	

Bottom Flange thickness	tb_f=	0.350	in		
Web thickness	t_w=	0.350	in		
Total depth	h=	12.00	in		
Fillet radius	R=	0.31	in		
Web depth	D=	11.30	in		
Steel Sectional area	A=	10.36	in^2		
Steel Eccentricity e	e=	6.00			
Steel Moment of Inertia	I=	167.30	in^4		
Elastic section modulus Top	St=	27.88	in^3		
Elastic section modulus bottom	Sb=	27.88	in^3		
Plastic section modulus	Z=	27.00	in^3		
Ratio of Main Girder Modulus to Total Modulus	Ratio=	0.69	>	0.8	Include side beams

FLEXURE AT STRENGTH LIMIT STATE

Main girder shallow section

Check section proportion limits

Web proportion without longitudinal stiffeners

$$\frac{D}{t_w} \le 150$$

D=	12.00	in	
t_w=	0.50	in	
D/t_w=	24.00	OK	

Flange proportion

Compression and tension flange

$$\frac{b_f}{2t_f} \le 12.0,$$

$$b_f \ge D/6,$$

$$t_f \ge 1.1t_w,$$

$$0.1 \le \frac{I_{yc}}{I_{yt}} \le 10$$

b_{f_c}=	12.50	in		AASHTO 6.10.6.2.2
t_{f_c}=	0.50	in	<=70.0ksi	OK
$b_{f\_c}/2t_{f\_c}$=	12.50	OK, close enough		
b_{f_c}-D/6=	10.50	OK	Recall from previous calculation	
t_{f_c}-1.1t_w=	-0.05	OK, close e	Apprendix A6 may apply	
b_{f_t}=	7.00	in		
t_{f_t}=	0.50	in	OK	
$b_{f\_t}/2t_{f\_t}$=	7.00	OK	Recall from calculations for Mp	
b_{f_t}-D/6=	5.00	OK		
t_{f_t}-1.1t_w=	-0.05	OK, close enough		
I_{yc}=	81.38	in^4		
I_{yt}=	14.29	in^4		
I_{yc}/I_{yt}=	5.69	OK		

Determine if section is compact or noncompact AASHTO 6.5.4.2

Flange yield strength	F_{yf}=	29	ksi	AASHTO 6.10.8
Check web noncompact slenderness limit	D/t_w=	24.00	OK	
Depth of web in compression in elastic range	D_c=	6.00	in	
$\frac{2D_c}{t_w} < 5.7\sqrt{\frac{E}{F_{yc}}}$	$2D_c/t_w$=	24.00	OK	AASHTO 6.10.9.2
	$5.7\sqrt{(E/F_{yc})}$=	161.78		
Check flange and recall I_{yc}/I_{yt}	I_{yc}/I_{yt}=	5.69	>=0.3ksi	
Depth of web in compression at Mp $\frac{2D_{cp}}{t_w} \le 3.76\sqrt{\frac{E}{F_{yc}}}$	D_{cp}=	6	in	
	$2D_{cp}/t_w$=	24.00	Compact	
	$\sqrt{(E/F_{yc})}$=	106.72		

The web section is therefore considered to be compact.

Compute plastic moment capacity

The plastic moment	M_p=	16.10	kip-ft	
Resistance factor for flexure	ϕ_f=	1.00		Unstiffened
Factored flexure resistance for the noncomposite secti	$\phi_f M_p$=	16.10	kip-ft	

SHEAR - END PANEL

Recall web depth	D=	12.00	in	
Recall web thickness	t_w=	0.50	in	
Recall yield strength of web	F_{yw}=	29	ksi	
Plastic shear force	$Vp=0.58F_{yw}Dt_w$=	100.92	kip	

Calculate ratio C

Steel modulus of elasticity	E=	29000	ksi
Shear-buckling coefficient	k=	5.00	
	D/tw=	24.00	

	$1.12\sqrt{(Ek/F_{yw})}=$	79.20
	$1.40\sqrt{(Ek/F_{yw})}=$	98.99
	$C=$	1.00

Nominal shear resistance of the web end panel	$V_n=CV_p=$	100.92	kip
Resistance factor for flexure	$\phi_v=$	1.00	
Factored shear resistance of the web end panel	$V_r=\phi_v V_n=$	100.92	kip

Loading from Qbridge Moving Load Analysis

Moment, ft-k at Mid-span

DL	Ped Loading (90 psf)	Loading H5	Type 3	Type 3S2	Typw 3-3	Notional SUV	EV2	EV3
151.4	45.1	61	307	293.4	248.6	440.6	365.8	551.7

Shear, ft-k at end span

DL	Ped Loading (90 psf)	Loading H5	Type 3	Type 3S2	Typw 3-3	Notional SUV	EV2	EV3
16.3	4.9	8.1	35.6	31.4	32.1	44.2	43.9	62.8

Rating Factors for 37.1' RR Flat Car - Fy=36 ksi, Phi(f) = 1.0, Phi(v) = 1.0 - Main Girder
DF (single lane = 0.81)

$$RF = \frac{(C)(PHIc)-(\gamma_{DC})(DC)-(\gamma_{DW})(DW)}{(\gamma_{LL})(LL+IM)(DF)}$$

Inputs and Constants Main Girder (Interior)							
Flexure				Shear			
ϕMn	918	k-ft		ϕVn	96	k	
DC	151.4	k-ft		DC	16.3	k	
DW		k-ft		DW		k	
LL Design		k-ft		LL Design		k	
LL Type 3	307.00	k-ft		LL Type 3	35.60	k	
LL Type 3S2	293.40	k-ft		LL Type 3S2	31.40	k	
LL Type 3-3	248.60	k-ft		LL Type 3-3	32.10	k	
Notional SU	440.60	k-ft		Not. SU6	44.20	k	
EV2+I	365.80	k-ft		EV2+I	43.90	k	
EV3	551.70	k-ft		EV3	62.80	k	
LL ped loading	45.1	k-ft			4.9	k	
Strength I Factors				Strength I Factors			
γ_{DC}	1.25			γ_{DC}	1.25		
γ_{DW}	1.5			γ_{DW}	1.5		
$\gamma_{LL\ (Design)}$	1.75			$\gamma_{LL\ (Design)}$	1.75		
$\gamma_{LL\ (Legal)}$	1.3			$\gamma_{LL\ (Legal)}$	1.3		
IM (Design)	1.33			IM (Design)	1.33		
IM (Legal)	1.1			IM (Legal)	1.1		
Dist. Factor	1.4			Dist. Factor	1.4		
PHI (Condition factor)	0.9			PHI (Condition Factor)	0.9		
Service II Factors				Service II Factors			
γ_{DC}	1			γ_{DC}	1		
γ_{DW}	1			γ_{DW}	1		
$\gamma_{LL\ (Design)}$	1.3			$\gamma_{LL\ (Design)}$	1.3		
$\gamma_{LL\ (Legal)}$	1.3			$\gamma_{LL\ (Legal)}$	1.3		
IM (Design)	1.33			IM (Design)	1.33		
IM (Legal)	1.1			IM (Legal)	1.1		
Dist. Factor	1.4			Dist. Factor	1.4		
Flexure Rating Factors				**Shear Rating Factors**			
Strength I				Strength I			
Design	#DIV/0!			Design	#DIV/0!		
Type 3	1.036			Type 3	0.926		
Type 3S2	1.084			Type 3S2	1.050		
Type 3-3	1.280			Type 3-3	1.027		
Not. SU	0.722			Not. SU	0.855		
EV2	0.870			EV2	0.751		
EV3	0.577			EV3	0.525		
Ped L Only	7.054			Ped L Only	6.731		
Service II				Service II			
Design	#DIV/0!			Design	#DIV/0!		
Type 3	1.098			Type 3	0.984		
Type 3S2	1.149			Type 3S2	1.115		
Type 3-3	1.356			Type 3-3	1.091		

	Posting Recommendation			
Gross Load, k	Type		Calc, k	**Required Posting Limit, T**
50		3	46.32	**20 Tons**
72		3S2	75.62	**33 Tons**
80		3-3	82.19	**36 Tons**
80		Nottional. SU	57.77	**25 Tons**
57.5		EV2	43.20	**19 Tons**
86		EV3	45.16	**20 Tons**
50		3	49.18	**21 Tons**
72		3S2	80.29	**35 Tons**
80		3-3	87.26	**38 Tons**

Use DL ratio = 0.13

Inputs and Constants Side Girder (Exterior)

Flexure			Shear		
ϕMn	65	k-ft	ϕVn	70	k
DC	151.4	k-ft	DC	16.3	k
DW		k-ft	DW		k
LL Design		k-ft	LL Design		k
LL Type 3	307.00	k-ft	LL Type 3	35.60	k
LL Type 3S2	293.40	k-ft	LL Type 3S2	31.40	k
LL Type 3-3	248.60	k-ft	LL Type 3-3	32.10	k
Notional SU	440.60	k-ft	Not. SU6	44.20	k
EV2+I	365.80	k-ft	EV2+I	43.90	k
EV3	551.70	k-ft	EV3	62.80	k
LL ped loading	45.10	k-ft		4.90	k
Strength I Factors			Strength I Factors		
γ_{DC}	1.25		γ_{DC}	1.25	
γ_{DW}	1.5		γ_{DW}	1.5	
$\gamma_{LL\ (Design)}$	1.75		$\gamma_{LL\ (Design)}$	1.75	
$\gamma_{LL\ (Legal)}$	1.3		$\gamma_{LL\ (Legal)}$	1.3	
IM (Design)	1.33		IM (Design)	1.33	
IM (Legal)	1.1		IM (Legal)	1.1	
Dist. Factor	0.13		Dist. Factor	0.13	
PHI (Condition factor)	0.9		PHI (Condition Factor)	0.9	
Service II Factors			Service II Factors		
γ_{DC}	1		γ_{DC}	1	
γ_{DW}	1		γ_{DW}	1	
$\gamma_{LL\ (Design)}$	1.3		$\gamma_{LL\ (Design)}$	1.3	
$\gamma_{LL\ (Legal)}$	1.3		$\gamma_{LL\ (Legal)}$	1.3	
IM (Design)	1.33		IM (Design)	1.33	
IM (Legal)	1.1		IM (Legal)	1.1	
Dist. Factor	0.5		Dist. Factor	0.5	

Flexure Rating Factors Truck + Ped L

	Strength I
Design	#DIV/0!
Type 3	0.708
Type 3S2	0.741
Type 3-3	0.874
SU6	0.493
EV2	0.594
EV3	0.394
Ped L Only	4.818
	Service II
Design	#DIV/0!
Type 3	1.098
Type 3S2	1.149
Type 3-3	1.356

Shear Rating Factors

	Strength I
Design	#DIV/0!
Type 3	9.119
Type 3S2	10.339
Type 3-3	10.114
Not. SU	7.345
EV2	7.395
EV3	5.169
Ped L Only	66.254
	Service II
Design	#DIV/0!
Type 3	0.984
Type 3S2	1.115
Type 3-3	1.091

Posting Recommendation

Gross Load	Type	Calc	Required Posting
50	3	35.39	**17 Tons**
72	3S2	53.33	**26 Tons**
80	3-3	69.93	**34 Tons**
80	SU6	39.46	**19 Tons**
57.5	EV2	34.16	**17 Tons**
86	EV3	33.87	**16 Tons**

BRIDGE INFORMATION **Lewisville No 1 - Vehicle bridge timber deck**

Transverse Deck Planks 4x12 treated timber (assume Douglas Fir, Fb=1500 psi, Fv=180 psi

Assume 10" x 20" wheel load spread over 2 - 3.5" planks

Number of spans	N=	3	Shorter Span	Overhang2	
Span length (Ft)	L_{span}=	47	12.5	25.8	in
Phi (flexure)	Phi =	0.85			
Phi (shear)	Phi =	0.75			
Timber size		11.5	in X	3.5	in
tkimber Type	assume	Douglas Fir (Larch)	WCLIB/WWPA Graded "Dimension >/= 2"		
Timber basic tabular flexu	Fbo=	1.5	ksi		
Timber basic tabular shea	Fvo=	0.18	ksi		
Strength Modificatoion Factors		Flexure	Shear		
Format Conversi	Ckf=	2.94	3.33		
Size Factor	Cf=	0.79	1.00		
Wet service factc	Cm=	0.85	0.97		
Volume factor	Cv=	1.00			
Flat-use factor	Cfu=	1.00			
Incizing factor	Ci=	0.80	0.8		
Deck factor	Cd=	1.50			
Time effect factc	C(gamma)=	1.00	1		
Design Flexure Strength	Fb=	4.50			
Design Shear Strength	Fv=	0.47			

FLRXURE

Area	bd=	40.25	square inches	
Moment of inertial	I=	143.810	in4	
Centroid	y=	1.750		
Section Modulus	S=	82.177	in^3	
Plastic section modulus	Z=	83.00	in^3	
CL = ((1+A)/1.9)+SqRt(((1	CL=	1		depth < width
Conditoin Factor Phi (poc	Phi=	0.85		
Flexure Capacity	Phi Mn=	22.3	ft-k	

SHEAR

Recall plank depth	D=	in	in
Recall plank width	t_w=	11.50	in
Recall yield strength of ti	Fv=	0.47	ksi
Shear Capacity	Phi Vn=	9.37	kip

Load Rating: Lewisville L1 Bridge Deck

Transverse Deck Planks 4x12 treated timber (assume Douglas Fir, Fb=1500 psi, Fv=180 psi

Member 3: Deck

Unfactored Load Effect:			γ by Limit State				
	M (k-ft)	V (k)	STR I	STR II	IM	LLDF M	LLDF V
DC	0.124	0.245	1.25	1.25			
DW			1.50	1.50			
P			1.00	1.00			
LL: Type 3	6.5	12.5	1.30	1.30	1	0.5	0.5
Type 3S2	5.6	10.7	1.30	1.30	1	0.5	0.5
Type 3-3	6	11.4	1.30	1.30	1	0.5	0.5
Notional SUV	6.5	12.1	1.30	1.30	1	0.5	0.5
EV2	12.5	23.9	1.30	1.30	1	0.5	0.5
EV3	11.6	22.1	1.30	1.30	1	0.5	0.5
H5			1.30	1.30	1	0.5	0.5
Condition Factor	0.85	0.85		-			

ϕMn	22.26	(k-ft)
ϕVn	9.37	(k)

$$RF = \frac{(C - \gamma_{DC}\,DC - \gamma_{DW}\,DW \pm \gamma_p\,P)}{\gamma_{LL}\,LL\,(1+IM)(LLDF)}$$

	RF	Posting	Flexure		Shear		Truck Gros	Type	Calc, k	Required Posting Limit, T
		Tons	STR I	STR II	STR I	STR II				
Type 3	1.12	56	5.23	-	1.12	-	50	3	55.78	**26 Tons**
Type 3S2	1.30	94	6.07	-	1.30	-	72	3S2	93.83	**36 Tons**
Type 3-3	1.22	98	5.67		1.22		80	3-3	97.86	**40 Tons**
Notional SU	1.15	92	5.23		1.15		80	ttional. SU	92.20	**40 Tons**
EV2	0.58	34	2.72		0.58		57.5	EV2	33.55	**16 Tons**
EV3	0.63	54	2.93		0.63		86	EV3	54.26	**27 Tons**
H5	1.00	5	1.00		1.00		5	H5	5.00	**5 Tons**

Rating Factor Summary

Strength 1

Live Load Type	Lowest RF (Overall)	Member
HL-93	#DIV/0!	Ext Beam - Flexure
Type 3	0.708	Ext Beam - Flexure
Type 3S2	0.741	Ext Beam - Flexure
Type 3-3	0.874	Ext Beam - Flexure
Notional SU	0.493	Ext Beam - Flexure
EV2	0.583	Deck- Shear
EV3	0.394	EXt Beam - Flexure

Service

Live Load T ype	Lowest RF (Overall)	Member
HL-93	0.739	Ext Beam - Flexure
Type 3	0.984	Ext Beam - Flexure
Type 3S2	1.115	Ext Beam - Flexure
Type 3-3	1.091	Ext Beam - Flexure

Posting Recommendation

Gross Load		Calc	Required Posting Limit
50	Type 3	35.39	**17 Tons**
72	Type 3S2	53.33	**26 Tons**
80	Type 3S3	69.93	**34 Tons**
80	SU6	39.46	**19 Tons**
57.5	EV2	33.55	**16 Tons**
86	EV3	33.87	**16 Tons**

Load Rating Memorandum
Lewisville Park

To: Evelyn Ives, Project Manager, Clark County

From: Bruce Johnson, Project Manager, Otak

Copies:

Date: January 29, 2024

Subject: Lewisville No. 2 Pedestrian/Bike Bridge Load Rating

Project No.: Clark County Park Bridges Inspection and Load Rating, 021253.000

This memorandum summarizes the load rating portion of the contracted work performed at the pedestrian/bike bridge No. 2 at Lewisville Regional Park, 26411 NE Lewisville Hwy, Battle Ground, WA 98604.

The conclusion of the analysis is that the structure, in its current condition, is not adequate for 5-ton service vehicle use but is adequate to remain in-service for a 2-ton vehicle and for full AASHTO pedestrian loading. A sign limiting the weight of the service vehicle is suggested. The rating is controlled by the timber deck.

Recommended Posting Sign

Attachments:
Load rating summary
Load rating calculations

Prepared by: Bruce Johnson, P.E.
Reviewed by:

Attachment A, Load Rating Summary Report

Evelyn Ives
Clark County Parks and Lands Division
Otak Project 021253.000

02-05-2024

Bridge Rating Summary

Bridge Name:	Lewisville Bridge No. 2
Bridge Number:	22
Span Type:	41' Rail car
Design Load:	Unknown
Rating By:	Bruce Johnson, P.E., S.E. (Checked By: Doug Sarkkinen, P.E.)
Date:	January 29, 2024

Truck	Rating Factor	Load Factor	Weight	Controlling Point
Service Vehicle	0.50	1.30	2 Tons	Stress at mid-span
Pedestrian Loading	3.1	1.30	90 PSF	Stress at mid-span

Remarks:

1. Rating by AASHTO Load and Resistance Factor Design Method
2. Ratings are controlled by and reported for the inside girders. The exterior beams have higher ratings.

Condition Summary Considered in the Load Rating

Based on the inspection performed on December 15, 2023 and documented in a separate report:

The timber deck was in poor condition and showed some rot and splitting. Ten of the timber deck planks showed signs of decay and three had significant splits. The girders and braces showed signs of corrosion, with an estimated 1/16" to 1/8" section loss in certain areas. There was almost no paint left on the superstructure and rust had formed on the exterior of all members. Dirt and debris and accumulated on the girder flanges and in small gaps between members. Without maintenance over time the corrosion can be anticipated to advance and will reduce the load carrying capacity of the bridge.

Load Rating Procedure

The structure was load rated for the AASHTO Pedestrian Loading (90 PSF) and a H5 Service Vehicle (5 tons) using the LRFR method per the *WSDOT Bridge Design Manual* (*WSDOT BDM*).

Since no drawings were available for the existing structure, all dimensions and member sizes are based on field measurements. Dead loads for the steel superstructure were estimated based on the typical weight of a flatcar bridge given by a private company specializing in flatcar bridge construction and scaled to the span length of the Oberreuter Bridge. The referenced document is attached. Yield strength of steel in the superstructure was estimated based on data provided in the report *Railroad Flatcar Bridges for Economical Bridge Replacement Systems*; by Doornik, Wipf, and Klaiber; published in 2003 by Iowa State University.

Our calculations show that in it's current condition the Lewisville No. 2 Bridge does not meet AASHTO and WSDOT requirements to be able to support the full pedestrian loading or the full 5 ton service vehicle. Restrictions are recommended with postings to limit the number of users and limit the service vehicle to 3 Tons as shown in the attached load rating summary table.

The calculations used a Dynamic Load Allowance (Impact Factor) of 33%, or 1.33, as required by the *WSDOT BDM* for spans less than 40 ft. However, since traffic speeds across the bridge are restricted to 5 mph or less, it is reasonable to assume there would be less dynamic load on the structure, so a value of 10% or 1.1 was used in the final H5 rating calculations.

The adequacy or inadequacy of a structural element to carry a specified truck load will be indicated by the value of its rating factor (RF); if it is greater than 1.0, the bridge is adequate to carry that truck.

Typically, only superstructure elements are rated. If conditions warrant, substructure elements can be rated. Typically bridge decks will not require rating unless the deck is post-tensioned. Bridge decks with poor condition may be load rated at the discretion of the engineer.

The following PHI (Condition Factor) was used:

Structural Condition of Member	Inspection Condition	φ_c
Good or Satisfactory	>7	1.00
Fair	5, 6	0.90
Poor	<4	0.85

Section 1. *Appendix A*

Load Rating Calculations

BRIDGE INFORMATION — **Lewisville No 2 - Ped/Bike bridge**

Number of spans	N=	1	Span 1				
Span length (Ft)	L_{span}=	35.58		40.83	L out to out		35.58
Girder spacing (interior)	Si=	4.96	ft				
Girder spacing (exterior)	Se=	1.88	ft				
Unbraced length	L_b=	6.17	ft				
Structural steel yield strength	F_y=	36	ksi		Assume		MBE Table 6A.6.2.1-1
Steel modulus of elasticity	Es=	29000	ksi			Wc=	
Concrete modulus of elasticity	Ec=	1213854660.16	ksi			f'c =	

SECTION PROPERTY - Main Girders

Interior I-girder shape		Deep Section - Mid-span			Shallow end section	
Top Flange width	bt_f=	7.20	in	10% section loss, 8*0.9=7.2"	7.2	in
Top Flange thickness	tt_f=	0.450	in		0.45	in
Bottom Flange width	bb_f=	3.200	in	60% section loss, 8*0.4=3.2"	3.2	in
Bottom Flange thickness	tb_f=	0.450	in		0.45	in
Web thickness	t_w=	0.450	in		0.45	in
Total depth	h=	30.50	in		20.00	in
Fillet radius	R=	0.31	in	Assume	0.31	in
Web depth	D=	29.60	in		19.1	in
Steel Sectional area	A=	31.32	in^2		21.87	in^2
Steel Eccentricity e	e=	16.11			10.80	
Steel Moment of Inertia	I=	2978.23	in^4		955.61	in^4
Elastic section modulus Top	St=	184.83	in^3	Compression	88.45	in^3
Elastic section modulus bottom	Sb=	207.02	in^4	Tension Positive Moment	103.92	in^4
Plastic section modulus	Z=	214.00	in^3	Estimated	108.00	in^3

SECTION PROPERTY - Exterior Side Channel Beams

Side Beam - tapered variable depth Channel section					Shallow end section	
Top Flange width	bt_f=	4.25	in		4.25	in
Top Flange thickness	tt_f=	0.390	in		0.390	in
Bottom Flange width	bb_f=	4.250	in		4.250	in
Bottom Flange thickness	tb_f=	0.390	in		0.390	in
Web thickness	t_w=	0.312	in	20% section loss, .39*0.8=.312"	0.312	in
Total depth	h=	23.50	in		11.00	in
Fillet radius	R=	0.31	in		0.31	in
Web depth	D=	22.72	in		10.22	in
Steel Sectional area	A=	17.49	in^2		9.69	in^2
Steel Eccentricity e	e=	11.75			5.50	
Steel Moment of Inertia	I=	1052.47	in^4		148.80	in^4
Elastic section modulus Top	St=	89.57	in^3		27.05	in^3
Elastic section modulus bottom	Sb=	89.57	in^4		27.05	in^4
Plastic section modulus	Z=	89.00	in^3		27.00	in^3

Ratio of Main Girder Modulus to Total Modulus	Ratio=	0.70	<	0.8	Include edge beams	
Distribution factor for pedestrain loading	Ped LLDF=	0.35	Interior	0.15	Exterior	Moment and Shear
Distribution Factor for Service Truck loading	Truck LLDF=	0.74	interior	0.28	Exterior	Moment and Shear

FLEXURE AT STRENGTH LIMIT STATE

Interior I-girder shape

Check section proportion limits

Web proportion without longitudinal stiffeners

$$\frac{D}{t_w} \le 150$$

D=	29.60	in	
t_w=	0.45	in	
D/t_w=	65.78	OK	

Flange proportion

Compression and tension flange

$$\frac{b_f}{2t_f} \le 12.0,$$

$$b_f \ge D/6,$$

$$t_f \ge 1.1t_w,$$

$$0.1 \le \frac{I_{yc}}{I_{yt}} \le 10$$

b_{f_c}=	7.20	in		AASHTO 6.10.6.2.2	
t_{f_c}=	0.45	in	<=70.0ksi	OK	
$b_{f\_c}/2t_{f\_c=}$	8.00	OK			
b_{f_c}-D/6=	2.27	OK	Recall from previous calculation		
t_{f_c}-1.1t_w=	-0.05	OK, close	Apprendix A6 may apply		
b_{f_t}=	7.20	in			
t_{f_t}=	0.45	in	OK		
$b_{f\_t}/2t_{f\_t=}$	8.00	OK	Recall from calculations for Mp		
b_{f_t}-D/6=	2.27	OK			
t_{f_t}-1.1t_w=	-0.05	OK, close			
I_{yc}=	14.00	in^4			
I_{yt}=	14.00	in^4			

	I_{yc}/I_{yt}=	1.00	OK		
Determine if section is compact or noncompact					AASHTO 6.5.4.2
Flange yield strength	F_{yf}=	36	ksi		AASHTO 6.10.8
Check web noncompact slenderness limit	D/t_w=	65.78	OK		
Depth of web in compression in elastic range	D_c=	14.80	in		
$\frac{2D_c}{t_w} < 5.7\sqrt{\frac{E}{F_{yc}}}$	$2D_c/t_w$=	65.78	OK		AASHTO 6.10.9.2
	$5.7\sqrt{(E/F_{yc})}$=	161.78			
Check flange and recall I_{yc}/I_{yt}	I_{yc}/I_{yt}=	1.00	>=0.3ksi		
Depth of web in compression at Mp	D_{cp}=	14.8	in		
$\frac{2D_{cp}}{t_w} \le 3.76\sqrt{\frac{E}{F_{yc}}}$	$2D_{cp}/t_w$=	65.78	Compact		
	$\sqrt{(E/F_{yc})}$=	106.72			
The web section is therefore considered to be compact.					
Compute plastic moment capacity					
The plastic moment	M_p=	642.00	kip-ft		
Resistance factor for flexure	ϕ_f=	1.00		Unstiffened	
Factored flexure resistance for the noncomposite secti	$\phi_f M_p$=	642.00	kip-ft		
SHEAR - END PANEL					
Shallow section at Interior I- Girder End					
Recall web depth	D=	30.50	in		
Recall web thickness	t_w=	0.45	in		AASHTO 6.5.4.2
Recall yield strength of web	F_{yw}=	36	ksi		
Plastic shear force	$Vp=0.58F_{yw}Dt_w$=	286.58	kip		
Calculate ratio C					
Steel modulus of elasticity	E=	29000	ksi		
Shear-buckling coefficient	k=	5.00			
	D/tw=	67.78			
	$1.12\sqrt{(Ek/F_{yw})}$=	71.08			
	$1.40\sqrt{(Ek/F_{yw})}$=	88.85		Assume	
	C=	1.00			
Nominal shear resistance of the web end panel	$V_n=CV_p$=	286.58	kip		
Resistance factor for flexure	ϕ_v=	1.00			
Factored shear resistance of the web end panel	$V_r=\phi_v V_n$=	286.58	kip		
SHEAR - END PANEL					
Side Beam Channel Section					
Recall web depth	D=	11.00	in		
Recall web thickness	t_w=	0.31	in		AASHTO 6.5.4.2
Recall yield strength of web	F_{yw}=	36	ksi		
Plastic shear force	$Vp=0.58F_{yw}Dt_w$=	71.66	kip		
Calculate ratio C					
Steel modulus of elasticity	E=	29000	ksi		
Shear-buckling coefficient	k=	5.00			
	D/tw=	35.26			
	$1.12\sqrt{(Ek/F_{yw})}$=	71.08			
	$1.40\sqrt{(Ek/F_{yw})}$=	88.85		Assume	
	C=	1.00			
Nominal shear resistance of the web end panel	$V_n=CV_p$=	71.66	kip		
Resistance factor for flexure	ϕ_v=	1.00			
Factored shear resistance of the web end panel	$V_r=\phi_v V_n$=	71.66	kip		
Ratio of Main Girder Modulus to Total Modulus	Ratio=	0.67	>	0.8	Include side beam capacity
SECTION PROPERTY - Exterior Side Beams				Controls	
Side Beam Deep section				Estimated	
Top Flange width	bt_f=	4.25	in		
Top Flange thickness	tt_f=	0.390	in		
Bottom Flange width	bb_f=	4.250	in		
Bottom Flange thickness	tb_f=	0.390	in		
Web thickness	t_w=	0.312	in	20% section loss, .39*0.8=.312"	
Total depth	h=	23.50	in		
Fillet radius	R=	0.31	in		
Web depth	D=	22.72	in		AASHTO 6.10.2.1

Steel Sectional area	A=	17.49	in^2		
Steel Eccentricity e	e=	11.75			
Steel Moment of Inertia	I=	1052.47	in^4		
Elastic section modulus Top	St=	89.57	in^3		
Elastic section modulus Bottom	Sb=	89.57	in^4		AASHTO 6.10.2.2
Plastic section modulus	Z=	89.00	in^3		
Side Beam - shallow depth end section					
Top Flange width	bt_f=	4.25	in		
Top Flange thickness	tt_f=	0.390	in		
Bottom Flange width	bb_f=	4.250	in		
Bottom Flange thickness	tb_f=	0.390	in		
Web thickness	t_w=	0.312	in	20% section loss, .39*0.8=.312"	
Total depth	h=	11.00	in		
Fillet radius	R=	0.31	in		
Web depth	D=	10.22	in		
Steel Sectional area	A=	9.69	in^2		
Steel Eccentricity e	e=	5.50			
Steel Moment of Inertia	I=	148.80	in^4		
Elastic section modulus Top	St=	27.05	in^3		
Elastic section modulus bottom	Sb=	27.05	in^4		
Plastic section modulus	Z=	27.00	in^3		
Ratio of Main Girder Modulus to Total Modulus	Ratio=	0.62	>	0.8	Include side beams

FLEXURE AT STRENGTH LIMIT STATE
Exterior Side Beam
Check section proportion limits
Web proportion without longitudinal stiffeners

$$\frac{D}{t_w} \le 150$$

D=	23.50	in		
t_w=	0.31	in		
D/t_w=	75.32	OK		

Flange proportion
Compression and tension flange

$$\frac{b_f}{2t_f} \le 12.0, \qquad b_f \ge D/6, \qquad t_f \ge 1.1t_w, \qquad 0.1 \le \frac{I_{yc}}{I_{yt}} \le 10$$

b_{f_c}=	4.25	in		AASHTO 6.10.6.2.2
t_{f_c}=	0.39	in	<=70.0ksi	OK
$b_{f\_c}/2t_{f\_c}$=	5.45	OK		
b_{f_c}-D/6=	0.33	OK	Recall from previous calculation	
t_{f_c}-1.1t_w=	0.05	OK, close	Apprendix A6 may apply	
b_{f_t}=	4.25	in		
t_{f_t}=	0.39	in	OK	
$b_{f\_t}/2t_{f\_t}$=	5.45	OK	Recall from calculations for Mp	
b_{f_t}-D/6=	0.33	OK		
t_{f_t}-1.1t_w=	0.05	OK, close		
I_{yc}=	2.49	in^4		
I_{yt}=	2.49	in^4		
I_{yc}/I_{yt}=	1.00	OK		

Determine if section is compact or noncompact — AASHTO 6.5.4.2
Flange yield strength — F_{yf}= 36 ksi — AASHTO 6.10.8
Check web noncompact slenderness limit — D/t_w= 75.32 OK
Depth of web in compression in elastic range — D_c= 11.75 in

$$\frac{2D_c}{t_w} < 5.7\sqrt{\frac{E}{F_{yc}}}$$

$2D_c/t_w$=	75.32	OK	AASHTO 6.10.9.2
$5.7\sqrt{(E/F_{yc})}$=	161.78		
Check flange and recall I_{yc}/I_{yt} — I_{yc}/I_{yt}=	1.00	>=0.3ksi	
Depth of web in compression at Mp — D_{cp}=	11.75	in	

$$\frac{2D_{cp}}{t_w} \le 3.76\sqrt{\frac{E}{F_{yc}}}$$

$2D_{cp}/t_w$=	75.32	Compact
$\sqrt{(E/F_{yc})}$=	106.72	

The web section is therefore considered to be compact.

Compute plastic moment capacity

The plastic moment	M_p=	267.00	kip-ft	
Resistance factor for flexure	ϕ_f=	1.00		Unstiffened
Factored flexure resistance for the noncomposite secti	$\phi_f M_p$=	267.00	kip-ft	

SHEAR - END PANEL
Exterior Side Beam

Recall web depth	D=	11.00	in
Recall web thickness	t_w=	0.31	in

Recall yield strength of web	F_{yw}=	36	ksi
Plastic shear force	$Vp=0.58F_{yw}Dt_w$=	71.66	kip

Calculate ratio C

Steel modulus of elasticity	E=	29000	ksi
Shear-buckling coefficient	k=	5.00	
	D/tw=	35.26	
	$1.12\sqrt{(Ek/F_{yw})}$=	71.08	
	$1.40\sqrt{(Ek/F_{yw})}$=	88.85	
	C=	1.00	

Nominal shear resistance of the web end panel	$V_n=CV_p$=	71.66	kip
Resistance factor for flexure	ϕ_v=	1.00	
Factored shear resistance of the web end panel	$V_r=\phi_v V_n$=	71.66	kip

Rating Factors for 35.58' RR Flat Car - Fy=36 ksi, Phi(f) = 1.0, Phi(v) = 1.0
DF (single lane = 1.0)

$$RF = \frac{C-(\gamma_{DC})(DC)-(\gamma_{DW})(DW)}{(\gamma_{LL})(LL+IM)(DF)}$$

Inputs and Constants					
Flexure			Shear		
ϕMn	267	k-ft	ϕVn	71	k
DC	139.3	k-ft	DC	15.7	k
DW		k-ft	DW	0	k
Service Truck	73.80	k-ft	Serv Truck	9.10	k
LL Ped loading	113.3	k-ft	LL Ped	12.7	k
Strength I Factors			Strength I Factors		
γ_{DC}	1.25		γ_{DC}	1.25	
γ_{DW}	1.5		γ_{DW}	1.5	
γped	1		γped	1	
$\gamma_{LL\ (Service\ Tr)}$	1.3		$\gamma_{LL\ (Service\ Tr)}$	1.3	
IM (Service Tr)	1.25		IM (Service Tr)	1.25	
Serv Truck LL Dist Factor	0.28		T LLDF	0.28	
Ped LL Dist. Factor	0.15		P LLDF	0.15	
Phi (Condition Factor)	0.85		Phi	0.85	
Service II Factors			Service II Factors		
γ_{DC}	1		γ_{DC}	1	
γ_{DW}	1		γ_{DW}	1	
$\gamma_{LL\ (Design)}$	1.3		$\gamma_{LL\ (Design)}$	1.3	
$\gamma_{LL\ (Legal)}$	1.3		$\gamma_{LL\ (Legal)}$	1.3	
IM (Design)	1.33		IM (Design)	1.33	
IM (Legal)	1.25		IM (Legal)	1.25	
Serv Truck LL Dist. Factor	0.28		T LLDF	0.28	

Flexure Rating Factors		Shear Rating Factors		Posting Recommendation Kips or PSF		Posting Recommendation Tons or PSF
	Strength I		Strength I			
Service Truck	1.573	Serv Trusk	9.836	10	15.7	**5 Tons**
Ped L Only	3.108	Ped L Only	21.378	90	279.7	**90 PSF**
	Service II		Service II			
Service Truck	2.610	Serv Truck	10.784	10	26.1	**5 Tons**

Rating Factors for W18 x 40 Rolled Beams - Fy=36 ksi, Phi(f) = 1.0, Phi(v) = 1.0
DF (single lane = 0.673, multiple lanes = 0.601)

$$RF = \frac{C-(\gamma_{DC})(DC)-(\gamma_{DW})(DW)}{(\gamma_{LL})(LL+IM)(DF)}$$

Inputs and Constants					
Flexure - Max Positive M			Shear - Max End Shear		
ϕMn	642	k-ft	ϕVn	71	k
DC	139.3	k-ft	DC	15.7	k
DW	0	k-ft	DW	0	k
Service Truck	73.8	k-ft	Serv Truck	9.1	k
LL Ped	113.3	k-ft	LL Ped	12.7	k
Strength I Factors			Strength I Factors		
γ_{DC}	1.25		γ_{DC}	1.25	
γ_{DW}	1.5		γ_{DW}	1.5	
$\gamma_{LL\ (Ped)}$	1		$\gamma_{LL\ (Ped)}$	1	
$\gamma_{LL\ (serv)}$	1.3		$\gamma_{LL\ (serv)}$	1.3	
IM (serv)	1.25		IM (sev)	1.25	
Serv Truck LL Dist Factor	0.74		T LLDF	0.74	
Ped LL Dist. Factor	0.35		P LLDF	0.35	
Phi (Conditoin Factor)	0.85		Phi	0.85	
Service II Factors			Service II Factors		
γ_{DC}	1		γ_{DC}	1	
γ_{DW}	1		γ_{DW}	1	
$\gamma_{LL\ (Ped)}$	1		$\gamma_{LL\ (Ped)}$	1	
$\gamma_{LL\ (Serv)}$	1.3		$\gamma_{LL\ (Serv)}$	1.3	
IM (Serv)	1.25		IM (Serv)	1.25	
Serv Truck LL Dist Factor	0.74		T LLDF	0.74	
Ped LL Dist. Factor	0.35		P LLDF	0.35	
Phi	0.85		Phi	0.85	
Flexure Rating Factors			**Shear Rating Factors**		
	Strength I			Strength I	
Service Truck	4.187		Serv Truck	3.722	
LL Ped	9.370		LL Ped	9.162	
	Service II			Service II	
Service Trusk	9.682		Serv Truck	10.784	

	Posting Recommendation Kips or PSF	Posting Recommendation Tons or PSF
10	37.2	**5 Tons**
90	824.6	**90 PSF**
10	96.8	**5 Tons**

BRIDGE INFORMATION **Lewisville No 2 - Pedestrian bridge timber deck**

Transverse Deck Planks 2x12 treated timber (assume Douglas Fir, Fb=1500 psi, Fv=180 psi

Assume 10" x 20" wheel load spread over 1 - 11.5" plank, LL DF= 1.0

Number of spans	N=	3	Shorter Span	Overhang2	
Span length (Ft)	L_{span}=	47	22.5	59.5	in
Phi (flexure)	Phi =	0.85			
Phi (shear)	Phi =	0.75			
Timber size		11.5	in X	1.5	in
tkimber Type	assume	Douglas Fir (Larch)	WCLIB/WWPA Graded "Dimension >/= 2"		
Timber basic tabular flexu	Fbo=	1.5	ksi		
Timber basic tabular shea	Fvo=	0.18	ksi		
Strength Modificatoion Factors		Flexure	Shear		
Format Conversio	Ckf=	2.94	3.33		
Size Factor	Cf=	0.79	1.00		
Wet service factor	Cm=	0.85	0.97		
Volume factor	Cv=	1.00			
Flat-use factor	Cfu=	1.00			
Incizing factor	Ci=	0.80	0.8		
Deck factor	Cd=	1.50			
Time effect factor	C(gamma)=	1.00	1		
Design Flexure Strength	Fb=	4.50			
Design Shear Strength	Fv=	0.47			

FLRXURE

Area	bd=	17.25	square inches	
Moment of inertial	I=	4.852	in4	
Centroid	y=	0.750		
Section Modulus	S=	6.469	in^3	
Plastic section modulus	Z=	6.40	in^3	
CL = ((1+A)/1.9)+SqRt(((1+	CL=	1		depth < width
Conditoin Factor Phi (pool	Phi=	0.85		
Flexure Capacity	Phi Mn=	1.8	ft-k	

SHEAR

Recall plank depth	D=	1.50	in
Recall plank width	t_w=	11.50	in
Recall yield strength of tin	Fv=	0.47	ksi
Shear Capacity	Phi Vn=	4.02	kip

Load Rating Lewisville No 2, Pedestrian Bridge

Transverse Deck Planks 2x12 treated timber (assume Douglas Fir, Fb=1500 psi, Fv=180 psi

Member 3: Deck

Unfactored Load Effect:			γ by Limit State				
	M (k-ft)	V (k)	STR I	STR II	IM	LLDF M	LLDF V
DC	0.008	0.03	1.25	1.25			
DW			1.50	1.50			
LL: H5 Serv Veh	3	4.4	1.30	1.30	1	1	1
Ped LL	0.12	0.4	1.00	1.00	1	1	1
Condition Factor	0.85	0.85		-			

ϕMn	1.75	(k-ft)
ϕVn	4.02	(k)

$$RF = \frac{(C - \gamma_{DC}\, DC - \gamma_{DW}\, DW \pm \gamma_p\, P)}{\gamma_{LL}\, LL\, (1+IM)(LLDF)}$$

	RF	Posting	Flexure		Shear	
		Tons	STR I	STR II	STR I	STR II
H5 Serv Veh	0.45	4	0.45	-	0.70	-
Ped LL	9.95	90	14.52	-	9.95	-

Truck Gros	Type	Calc, k	**Required Posting Limit, T, or PSF**
10	H5 Serv Ve	4.47	**2 Tons**
90	Ped LL	895.12	**90 PSF**

Rating Factor Summary

Strength 1

Live Load Type	Lowest RF (Overall)	Member
H5 Serv Veh	0.447	Deck Flexure
Ped LL	3.108	Ext Beam - Flexure

Service

Live Load T ype	Lowest RF (Overall)	Member
H5 Serv Veh	2.610	Int Beam - Flexure

Posting Recommendation

Gross Load		Calc, k	**Required Posting Limit**
10	H5 Serv Veh	4.47	**2 Tons**
90	Ped LL	279.74	**90 PSF**

EXHIBIT D

Preliminary Retrofit Design Memorandum for the Clark County Park Bridges Assessment Project

Lewisville Park

To: Evelyn Ives and David Stipe, Clark County

From: Bruce Johnson and Doug Sarkkinen, Otak

Date: June 10, 2024

Subject: Clark County Parks Bridge Assessment Project – Retrofit Cost Estimate and Permitting

Project No.: Clark County Agreement Purchase No. SCN00002863; Otak No. 21253.000

1.0 Introduction

This memorandum summarizes the preliminary study that was performed on two bridges in Lewisville Regional Park that are in moderate to severe states of deterioration. The study included condition inspection, load rating, and preliminary design of repairs or replacement. The preliminary design reviewed two alternatives for each bridge, with the first alternative being a repair or rehabilitation to increase the load capacities and extend the service life and the second alternative being complete replacement of the bridge. No bridge plans or previous inspection data are available. The field inspections included measurements and development of sketches of the major components of the bridges to support the load rating analysis. Field inspection to document bridge condition was completed in December 2023. Load ratings were completed in March 2024.

The repair or rehabilitation schemes that were developed were based on brief evaluation of the capacities needed, and presentation of a general concept that could be used for repair. It should be noted that in-depth analysis or repair design was not performed, and that the design presented is at a concept level only. The two options that were presented were 1). Steel member strengthening and preservation or 2). Prefabricated steel or prestressed concrete superstructures on new or existing substructures. In all cases, the capacity of the substructures was briefly reviewed, and it was determined that the substructures had adequate capacity for the additional loads.

The bridge replacement schemes that were developed for this study involved a brief review of the new required widths and span lengths. The widths were determined by the existing roadway or trail widths and varied between 12 feet for the bike/ped bridges and 30 feet wide for the vehicle bridge. The length of the new bridge was determined by first estimating the bank full width of the stream using photographs (no field measurements were taken) and then factors applied to account for clearance for scour protection and slopes up to the abutment. Standard precast concrete bridge sections were assumed for the replacements.

The preliminary costs presented are concept level only and are based on standard unit costs expected for 2025. Corrections should be added to account for future planning level costs. The costs also assumed normal environmental clearances would be obtained, and that there are no major wetland impacts, stream issues or archeological issues that would adversely impact the project.

The following contains a section for each bridge stating the current load ratings, a description of the bridge, and a brief description of the repair and replacement scheme considered. Also included is a preliminary breakdown of the costs presented for each bridge.

2.0 Project Description

The planned bridge repairs are intended to repair damaged and deteriorated elements and strengthen bridge members when needed. The bridges are currently structurally deficient meaning there is deterioration that reduces the original design capacity. Proposed repair work includes replacing in-kind damaged or deteriorated structural members, such as rail car girders and beams, deck planks, pile caps, and shims and mitigation of scour damage. Sketches showing the existing bridge cross section and elevation views are included in Attachment C.

Most of the work would occur to the rail car, deck and foundations. Repairs to the rail car and deck will not have permanent impacts to the stream, but there will likely be temporary impacts due to contractor access. The scour mitigation may have long term impacts to the stream will be require permits for work within the ordinary high-water mark (OHWM) and wetlands at the stream crossings. All repairs will be completed using the same material and within the same footprint as the existing bridge components. The scour repairs may result in an increased permanent disturbance in regulated environmentally sensitive areas. Most contractor access and project-related ground disturbances are temporary in nature and will be restored following the structural repairs.

2.1 Assumptions

- Replacement options were based on a length of 1.2 times the existing bridge length. Replacement width based on assumed bike/pedestrian combination width of 12 feet.
- No survey data was performed. Existing bridge dimensions and member sizes were measured in the field.
- No hydraulic analysis was performed, but pier locations were assessed visually in comparison to the observed active stream channel widths.
- Existing foundations were not investigated but were assumed adequate for the existing span length and superstructure weight based on observed performance.
- Permit cost and timeframes assumes there is no Federal funding or Federal nexus for the rehab or replacement projects.

2.2 Work Area Best Management Practices and Impacts Minimization Measures

Construction best management practices (BMPs) and temporary erosion and sediment control (TESC) measures will be installed before starting construction to minimize project impacts. These measures include:

- Minimizing disturbed areas and protecting existing vegetation.
- Restoring all disturbed areas and stabilizing with seeding.
- Protecting adjacent trees and shrubs and avoiding tree or shrub removal.
- Installing silt fencing along aquatic resource boundaries and high visibility fencing to demarcate project limits and avoid unnecessary trampling and vegetation disturbance.
- Work within the OHWM will occur during the in-water work window approved by the Washington Department of Fish and Wildlife (WDFW).
- Isolating posting piles that will be replaced within or at stream OHWM, and pumping water from the isolated work areas to sediment bags located in upland locations.

3.0 Bridge Condition and Load Rating Summary

Bridge[1]	Bridge Condition Summary		Bridge Load Rating Summary
	Controlling Issues	Overall Rating	
Bridge L1 – Vehicle Bridge	Main RR car beams, abutment cap, deck	Fair	Recommended Posting 16 tons gross load. No restrictions for pedestrians.
Bridge L2 – Ped/Bike Bridge	Main RR car beams, abutment cap, deck, scour	Poor	Recommended Limit for Maint. Vehicle 2 tons. No restrictions for pedestrians.

3.1 Specific Repairs Planned for Each Bridge

The proposed bridge repairs at each location are generally described below. Work elements and the number of structural replacements may change as deterioration of the steel rail cars progresses or additional scour occurs.

3.1.1 Proposed Retrofit Design at Bridge L1

- Blast cleaning the steel and repaint with containment.
- Repair bent and broken steel sections by field welding and heat straightening and strengthen by adding cover plates and replacing the deck with glu-laminated deck planks, or repair but exclude strengthening.
- Replace rotten timber sills at the abutments and clean debris from the bridge seats.
- Reset the rail car to plumb position after timber sills are replaced.
- Replace rotten and split/checked timber deck planks.
- Repair rock wingwalls and add riprap around the abutments for scour protection.
- Option 1: without strengthening. Option 2: includes strengthening.

Construction time 10-12 weeks. Traffic closure time 8 weeks or add a temporary detour bridge on the south side. Service life increase from 10 years without rehab to 40 years with rehab.

3.1.2 Proposed Replacement Design at Bridge L1

- Install a temporary detour bridge on the south side.
- Remove the existing bridge including the abutments that currently encroach into the channel.
- Install new spread footing foundations and reinforced concrete abutments.
- Option 1A – Place 5-50’ long precast prestressed slab units for a total width of 20’, including a 10’ vehicle road and an 8’ pedestrian path plus railing with a road closure.
- Option 2A - Place 8-50’ long precast prestressed slab units for a total width of 32’, including a 16’ vehicle road and a 12’ pedestrian path, plus railing, with road closure.
- Options 1B or 2B uses a temporary bypass bridge on the south side instead of road closure.
- Option 3 to potentially simplify permitting: perform evaluation of capacity of existing abutments and foundations. If feasible, re-use existing foundations after placing concrete infill between columns and new concrete wingwalls. Reconfigure the bridge seat to 16’ wide to accommodate 4 – 40’ new precast prestressed concrete slabs.

Construction time 6 months. Service life 75 years for full replacement. Service life 50 years for new superstructure on existing foundations and abutments.

3.2.1 Proposed Retrofit Design at Bridge L2

- Blast cleaning the steel and repaint with containment.
- Repair missing flanges and bent/broken steel sections by field welding new flanges and heat straightening bent members.
- Replace rotten timber sills at the abutments and clean debris from the bridge seats.
- Replace rotten and split/checked timber deck planks.
- Grout repair the undermining of the footings, repair rock wingwalls and add riprap around the abutments for scour protection.
- Sub-option strengthening includes adding steel cover plates and replacing the deck with glu-laminated deck planks.

Construction time 10-12 weeks. Traffic closure time 8 weeks or add a temporary detour bridge on the south side. Service life increase from 5 years without rehab to 40 years with rehab.

3.2.2 Proposed Replacement Design at Bridge L2

- Remove existing bridge including abutments that currently encroach into the channel and are undermined.

- Install new spread footing foundations and reinforced concrete abutments.
- Place a 50’ by 8’ wide or 12’ wide prefabricated steel truss pedestrian bridge and precast concrete deck panels.

Construction time 4 months. Service life 75 years.

4.0 Preliminary Cost Estimates

4.1.1 Preliminary Retrofit or Replacement Cost Estimates

Clark County Parks Bridges Preliminary Design Cost Estimates			
		Construction	Total Project
Lewisville No 1 (Vehicle)	Rehabilitation without Strengthening	$464,000	$593,000
	Rehabilitation with Strengthening	$568,000	$728,000
	Replacement 20' Wide	$423,000	$571,000
	Replacement 20' Wide with temp bridge	$523,000	$691,000
	Replacement 32' Wide	$481,000	$649,000
	Replacement 32' Wide with temp bridge	$581,000	$769,000
	New superstructure on existing foundations	$322,000	$386,000
Lewisville No 2 (Ped/Bike)	Rehabilitation	$572,000	$721,000
	Replacement 8' Wide	$284,000	$383,000
	Replacement 12' Wide	$348,000	$470,000

5.0 Permitting Needs Assessment

Temporary impacts to critical areas regulated under CCC 40.440 (Habitat Conservation) are anticipated during construction at both bridges. All critical area impacts from ground disturbing activities are considered temporary in nature for the rehab and replace sub-option for the vehicle bridge. The replace options for both bridges would have permanent impacts that would improve the stream flow. Woody vegetation and tree removal will not be required to complete the structural repairs or for site access, and any temporary clearing to repair the scour at L2. All new piles and new abutments will be placed back behind the existing abutments and the channel spill slopes will be graded to better match the natural banks. Any temporarily cleared vegetation and exposed soils will be seeded following completion of the rehab and replacement construction.

The following compliance and permitting needs assessment for the planned structural bridge rehab or replacement is based on the planned activities and anticipated impacts to regulated areas. Recommended permitting needs are our professional opinion and have not been verified with local, state, and federal regulatory agencies.

5.1 USACE

Both bridges, including the projects with work below the OHWMs, would require Section 404/401 CWA permitting with the USACE for the replacement options. The rehab options would be exempt. The

USACE typically requires applicants to seek permits for work that involves discharge of dredged or fill material into U.S. waters; however, these rehab projects are exempt per Code of Federal Regulations (CFR) 323.4. Discharges within WOTUS that are not prohibited or otherwise subject to regulation under Section 404 include CFR 323.4(a)(2): “Maintenance, including emergency reconstruction of recently damaged parts, of currently serviceable structures such as dikes, dams, levees, groins, riprap, breakwaters, causeways, bridge abutments or approaches, and transportation structures. Maintenance does not include any modification that changes the character, scope or size of the original fill design.”

As such, the proposed scour repair within the OHWMs at Bridge L2 does not change the character, scope or size of the original fill design since they will be replaced with the same material (e.g., wood), size, and location as the existing features. In addition, no activities are proposed within Traditional Navigable Waters (TNWs) regulated under Section 10 of the Rivers and Harbors Act (there are no exempted activities in TNWs).

5.2 WDFW HPA

Clark County Public Works has a Programmatic HPA with WDFW (HPA #2021-5-2+01, issued January 26, 2021) for normal maintenance and repair of existing transportation infrastructure. Bridge superstructure maintenance is covered by the programmatic HPA. However, the proposed structural repairs to the bridge substructures will require permits. Substructure work, including repair or replacement of bridge bents and post piles, does not qualify for the Programmatic HPA. A single HPA will be prepared for both crossings for the proposed in water and over water work.

5.3 SEPA

The projects appear to be exempt from a SEPA threshold determination according to CCC 40.570.090(A) and WAC 197-11-800 (27): “Structurally deficient city, town and county bridges. The repair, reconstruction, restoration, retrofitting, or replacement of a structurally deficient city, town or county bridge shall be exempt as long as the action:

(a) Occurs within the existing right of way and in a manner that substantially conforms to the preexisting design, function, and location as the original except to meet current engineering standards or environmental permit requirements; and

(b) The action does not result in addition of automobile lanes, a change in capacity, or a change in functional use of the facility”

"Structurally deficient" means a bridge that is classified as in poor condition under the state bridge condition rating system and is reported by the state to the national bridge inventory as having a deck, superstructure, or substructure rating of four or below. Structurally deficient bridges are characterized by deteriorated conditions of significant bridge elements and potentially reduced load-carrying capacity. Bridges deemed structurally deficient typically require significant maintenance and repair to remain in service, and require major rehabilitation or replacement to address the underlying deficiency”.

Both bridges classify as structurally deficient per the bridge inspection reports, and the proposed structural repairs are designed to address the deficiencies.

5.4 County Wetland, Habitat, and Shoreline Permitting

The rehab options for bridges L1 and L2 are within shoreline jurisdiction and qualify for the five-year Clark County Public Works Programmatic Shoreline Exemption (#SHL2020-00033). The replacement options include work below the OHWM of the adjacent streams and will require permitting.

Wetland and habitat permits are not expected to be required because woody vegetation removal within these critical areas at the two stream crossings will not be required. There will be no mechanical or mechanized clearing and the projects will entail use of foot access routes and manual labor. The dominant vegetation across all habitats near the bridges is herbaceous and woody vegetation clearing will not be necessary.

These two projects are exempt from clearing review under the maintenance exemption per CCC 40.440.010 (D) Table 1 and CCC 40.450.010(C)(h). Table 1 states that “clearing for operation, maintenance or repair of existing utilities or public facilities that does not further increase the impact to, or encroach further within the habitat area” is exempt from a clearing review. CCC 40.450.010(C)(h) states that the following developments, activities, and associated uses shall be exempt from the provisions of this chapter; provided, that they are otherwise consistent with the provisions of other local, state, and federal laws and requirements: “clearing for operation, maintenance, or repair of existing utilities or public facilities that does not further increase the impact to, or encroach further within, the wetland or wetland buffer.” Clearing review by the Clark County Department of Community Development is therefore not required.

5.4 Permitting Timeframe

The time required for review and issuance of permits for rehabilitation and replacement of vehicle and pedestrian bridges may vary depending on the sensitivity of the stream and its value as fish habitat, the presence of endangered species, and the amount of temporary or permanent fill or removal below the ordinary high water or within wetlands.

The time required to conduct delineation studies, hydraulic analysis, and design studies is 3-4 months for simple bridges and could be 4-6 months for more complex bridges. Once a permit application is submitted, resource agencies are required to seek public input and input from affected parties, including tribal agencies. The minimum review time if agencies have time and resources is about 3 months, but could routinely be 6-9 months to collect comments, review the impacts, and prepare an authorization document. Approximate timeframes for the Lewisville vehicle bridges are shown in the decision matrix in Attachment E.

Attachments

Attachment A: Vicinity and Site Map

Figure 1 – Vicinity and Site Map

Attachment B: Site Photographs

Lewisville No 1 Photo
Lewisville No 2 Photo

Attachment C: Cross Section and Elevation Sketches

Lewisville No 1 Vehicle Bridge Cross Section and Elevation Sketch
Lewisville No 2 Pedestrian Bridge Cross Section and Elevation Sketch

Attachment D: Detailed Cost Estimates

Lewisville No 1 Rehabilitation without strengthening.
Lewisville No 1 Rehabilitation with strengthening.
Lewisville No 1 Replacement 18’ Wide
Lewisville No 1 Replacement 32’ Wide
Lewisville No 2 Rehabilitation
Lewisville No 2 Replacement 8’ wide
Lewisville No 2 Replacement 12’ Wide

Attachment E: Decision Matrix for Rehabilkitation and Replacement Options

Attachment A: Vicinity and Site Map

Vicinity & Site Map

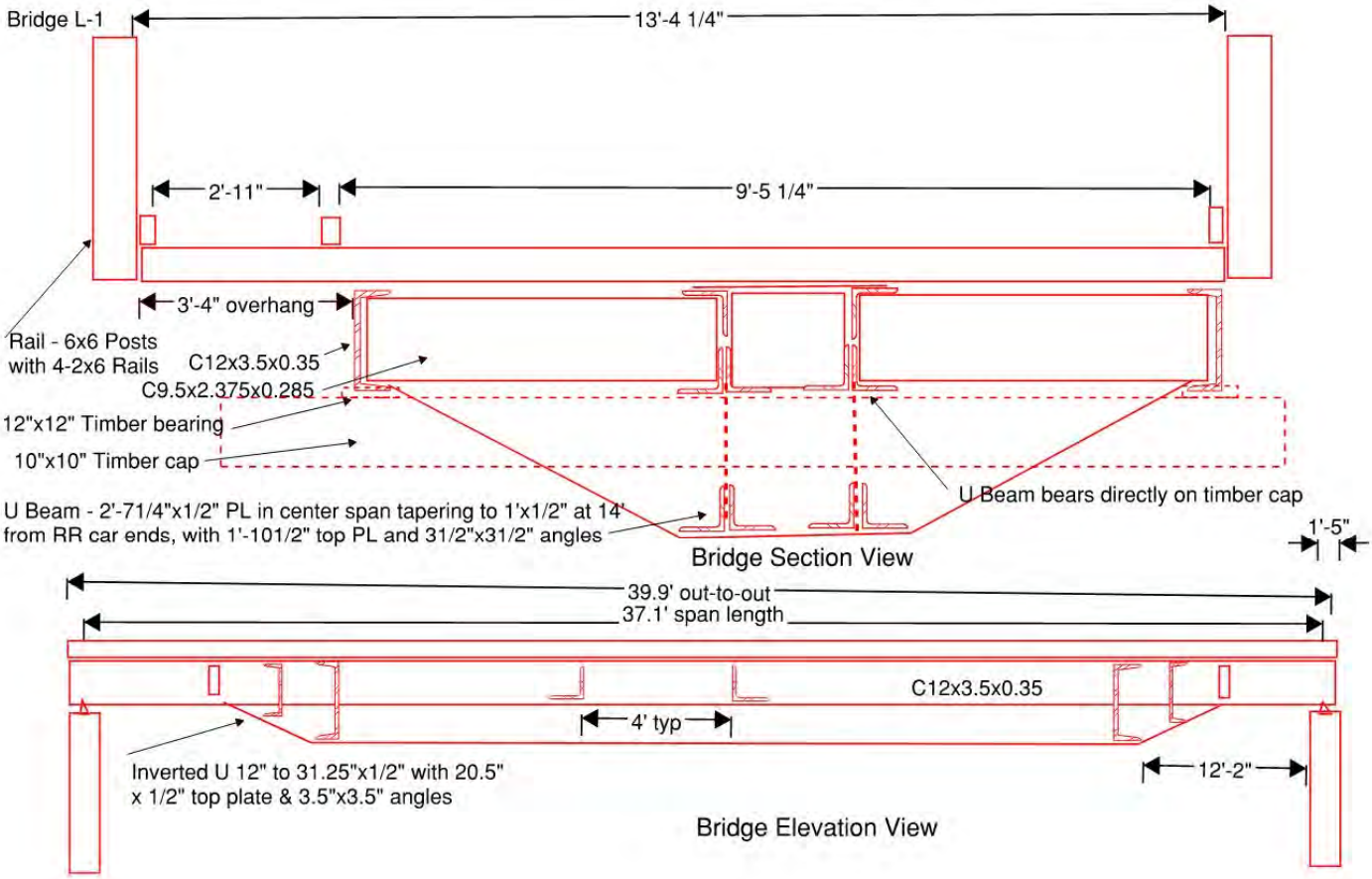
Attachment B: Site Photographs

Photo 1, Lewisville No 1, Vehicle Bridge

Photo 2, Lewisville No 2, Pedestrian Bridge

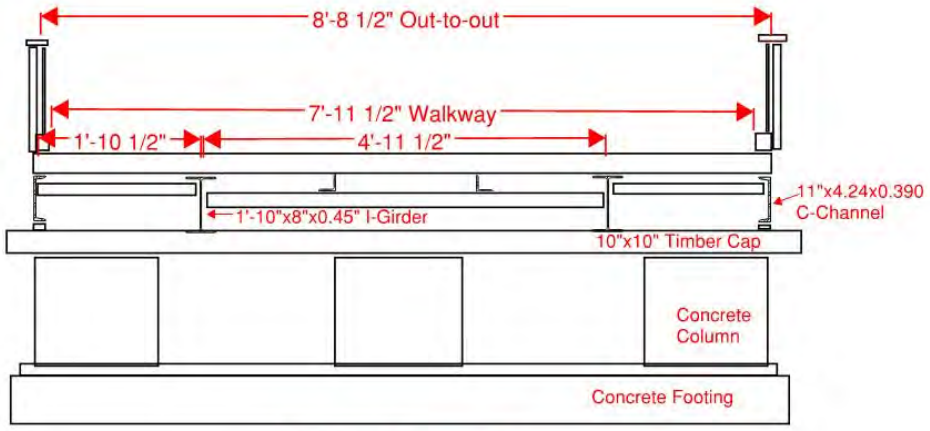
Attachment C: Site Sketches

Cross Section and Elevation Sketch – Bridge 1

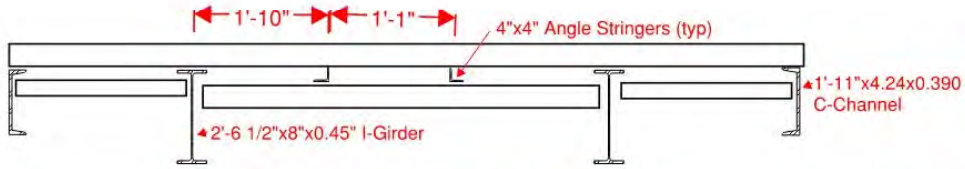


Cross Section and Elevation Sketch – Bridge 2

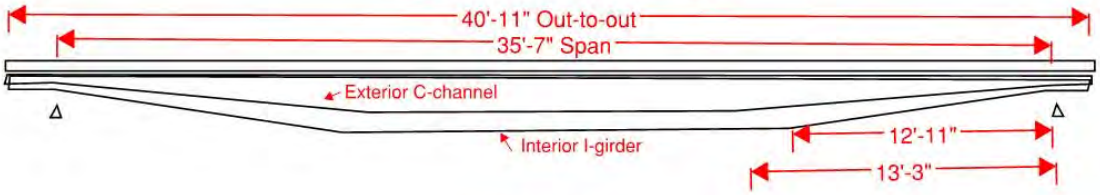
Bridge L2



Bridge Cross Section near Pier



Bridge Cross Section near Center of Span



Longitudinal Section

Attachment D: Detailed Cost Estimates

Detailed Cost Estimate Lewisville No 1 Rehabilitation without strengthening.

Lewisville No 1, Road Bridge Repair		**Lewisville Park**	**Clark Co**	
KIND OF WORK	**LENGTH**	**DATE**	**DESIGNER**	
Structure Rehab - without strengthening	**50**	**1-Apr-24**		
ITEM DESCRIPTION	**UNIT**	**UNIT COST**	**TOTAL AMOUNT**	**TOTAL COST**
MOBILIZATION	LS	$ 40,000.00	1	$40,000.00
TEMPORARY PROTECTION AND DIRECTION OF TRAFFIC	LS	$ 3,000.00	1	$3,000.00
FLAGGING	HOUR	$ 75.00	24	$1,800.00
EROSION CONTROL	LS	$ 5,000.00	1	$5,000.00
WORK CONTAINMENT PLAN	LS	$ 2,000.00	1	$2,000.00
REMOVING PORTION OF EXISTING BRIDGE - 2 TIMBER CAPS & 10 DECK PLANKS	LS	$ 28,000.00	1	$28,000.00
STEEL REPAIR	LB	$ 15.00	2,000	$30,000.00
PAINT STEEL RAIL CAR BRIDGE	SF	$ 50.00	4,000	$200,000.00
TIMBER AND LUMBER - CREOSOTE TREATED	LS	$ 6,000.00	1	$6,000.00
WORK ACCESS AND CONTAINMENT	LS	$ 35,000.00	1	$35,000.00
RIP RAP	CY	$ 1,000.00	20	$ 20,000
			SUBTOTAL, Construction Items	$370,800.00
			Contingency (15%)	$55,700.00
			Sales Tax (8.7%)	$37,105.50
			CONSTRUCTION TOTAL	$463,605.50
			Preliminary Engineering (20%)	$74,160.00
			Construction engineering (15%)	$55,620.00
			TOTAL	**$593,385.50**

Detailed Cost Estimate Lewisville No 1 Rehabilitation with strengthening.

Lewisville No 1, Road Bridge Repair		**Lewisville Park**	**Clark Co**	
KIND OF WORK	**LENGTH**	**DATE**	**DESIGNER**	
Structure Rehab with strengthening	**50**	**1-Apr-24**		
ITEM DESCRIPTION	**UNIT**	**UNIT COST**	**TOTAL AMOUNT**	**TOTAL COST**
MOBILIZATION	LS	$ 45,000.00	1	$45,000.00
TEMPORARY PROTECTION AND DIRECTION OF TRAFFIC	LS	$ 3,000.00	1	$3,000.00
FLAGGING	HOUR	$ 75.00	24	$1,800.00
EROSION CONTROL	LS	$ 5,000.00	1	$5,000.00
WORK CONTAINMENT PLAN	LS	$ 2,000.00	1	$2,000.00
REMOVING PORTION OF EXISTING BRIDGE - 2 TIMBER CAPS & 10 DECK PLANKS	LS	$ 28,000.00	1	$28,000.00
STEEL REPAIR AND STRENGTHENING	LB	$ 15.00	6,000	$90,000.00
PAINT STEEL RAIL CAR BRIDGE	SF	$ 50.00	4,000	$200,000.00
TIMBER AND LUMBER AND GLU-LAM DECK	LS	$ 25,000.00	1	$25,000.00
WORK ACCESS AND CONTAINMENT	LS	$ 35,000.00	1	$35,000.00
RIP RAP	CY	$ 1,000.00	20	$ 20,000
			SUBTOTAL, Construction Items	$454,800.00
			Contingency (15%)	$68,300.00
			Sales Tax (8.7%)	$45,509.70
			CONSTRUCTION TOTAL	$568,609.70
			Preliminary Engineering (20%)	$90,960.00
			Construction engineering (15%)	$68,220.00
			TOTAL	**$727,789.70**

Detailed Cost Estimate Lewisville No 1 Replacement 20' Wide

Preliminary Design - COST ESTIMATE - 2024 Items					
Clark County parks					
SECTION			HWY	COUNTY	M.P. to M.P.
Lewisville Park No 1, Vehicle Bridge Replacement 20' Wide*				Clark	
KEY NUMBER	KIND OF WORK	LENGTH	DATE	ROADWAY DESIGNER	
	Structure Replacement		1-May-24		
ITEM NUMBER	ITEM DESCRIPTION	UNIT	UNIT COST	TOTAL AMOUNT	TOTAL COST
TEMPORARY FEATURES AND APPURTENANCES					
	MOBILIZATION	LS	$ 35,000.00	1	$ 35,000
	Clearing and Grubbing	LS	$ 15,000.00	1	$ 15,000
	Excavation	LS	$ 15,000.00	1	$ 15,000
	TEMPORARY PROTECTION AND DIRECTION OF TRAFFIC	LS	$ 5,000.00	1	$ 5,000
	TEMPORARY SIGNS	SQFT	$ 17.85	20	$ 357
	TEMPORARY BARRICADES, TYPE III	EACH	$ 112.88	4	$ 452
	EROSION CONTROL	LS	$ 2,000.00	1	$ 2,000
	WORK CONTAINMENT PLAN	LS	$ 2,000.00	1	$ 2,000
BRIDGES					
	BRIDGE REMOVAL WORK	LS	$ 25,000.00	1	$ 25,000
	Granular Wall Backfil	LS	$ 120.00	40	$ 4,800
	21" Prestressed Slabs	LS	$ 45,000.00	1	$ 45,000
	Structural Concrete Class 4000	LS	$ 20,000.00	1	$ 20,000
	Reinforcement	LS	$ 8,000.00	1	$ 8,000
	Waterproof Membrane	LS	$ 15,000.00	1	$ 15,000
	AC overlay	LS	$ 18,000.00	1	$ 18,000
	Bridge Rail	FT	$ 350.00	120	$ 42,000
	Pedestruian Rail	FT	$ 350.00	60	$ 21,000
	Work Containment	LS	$ 10,000.00	1	$ 10,000
	Construction Access	LS	$ 20,000.00	1	$ 20,000
	AC Approaches	LS	$ 20,000.00	1	$ 20,000
	Landscaping and Stream Restoration	LS	$ 15,000.00	1	$ 15,000
				SUBTOTAL, Construction Items	$ 338,609
				Contingency (15%)	$ 50,800
				Sales Tax (8.7%)	$ 33,879
				CONSTRUCTION TOTAL	$ 423,287
				Construction engineering (20%)	$ 84,700
				Prelimninary Engineering (15%)	$ 63,500
				TOTAL	**$ 571,487**

* Estimate assumes bridge closure and no public vehicle access to the island. If temporary access is desired, add $100,000 to the estimate.

Detailed Cost Estimate Lewisville No 1 Replacement 32’ Wide

Preliminary Design - COST ESTIMATE - 2024 Items					
Clark County parks					
SECTION			HWY	COUNTY	M.P. to M.P.
Lewisville Park No 1, Vehicle Bridge Replacement 32' Wide				Clark	
KEY NUMBER	KIND OF WORK	LENGTH	DATE	ROADWAY DESIGNER	
	Structure Replacement		1-May-24		
ITEM NUMBER	ITEM DESCRIPTION	UNIT	UNIT COST	TOTAL AMOUNT	TOTAL COST
TEMPORARY FEATURES AND APPURTENANCES					
	MOBILIZATION	LS	$ 40,000.00	1	$ 40,000
	Clearing and Grubbing	LS	$ 15,000.00	1	$ 15,000
	Excavation	LS	$ 15,000.00	1	$ 15,000
	TEMPORARY PROTECTION AND DIRECTION OF TRAFFIC	LS	$ 5,000.00	1	$ 5,000
	TEMPORARY SIGNS	SQFT	$ 17.85	20	$ 357
	TEMPORARY BARRICADES, TYPE III	EACH	$ 112.88	4	$ 452
	EROSION CONTROL	LS	$ 2,000.00	1	$ 2,000
	WORK CONTAINMENT PLAN	LS	$ 2,000.00	1	$ 2,000
BRIDGES					
	BRIDGE REMOVAL WORK	LS	$ 25,000.00	1	$ 25,000
	Granular Wall Backfil	LS	$ 120.00	40	$ 4,800
	21" Prestressed Slabs	LS	$ 60,000.00	1	$ 60,000
	Structural Concrete Class 4000	LS	$ 30,000.00	1	$ 30,000
	Reinforcement	LS	$ 12,000.00	1	$ 12,000
	Waterproof Membrane	LS	$ 20,000.00	1	$ 20,000
	AC overlay	LS	$ 25,000.00	1	$ 25,000
	Bridge Rail	FT	$ 350.00	120	$ 42,000
	Pedestruian Rail	FT	$ 350.00	60	$ 21,000
	Work Containment	LS	$ 10,000.00	1	$ 10,000
	Construction Access	LS	$ 20,000.00	1	$ 20,000
	AC Approaches	LS	$ 20,000.00	1	$ 20,000
	Landscaping and Stream Restoration	LS	$ 15,000.00	1	$ 15,000
				SUBTOTAL, Construction Items	$ 384,609
				Contingency (15%)	$ 57,700
				Sales Tax (8.7%)	$ 38,481
				CONSTRUCTION TOTAL	$ 480,789
				Construction engineering (20%)	$ 96,200
				Prelimninary Engineering (15%)	$ 72,200
				TOTAL	**$ 649,189**

* Estimate assumes bridge closure and no public vehicle access to the island. If temporary access is desired, add $100,000 to the estimate.

Detailed Cost Estimate Lewisville No1 Replacement on Existing Foundations

Preliminary Design - COST ESTIMATE - 2024 Items					
Clark County parks					
SECTION			HWY	COUNTY	M.P. to M.P.
Lewisville Park No 1, Vehicle Bridge Replacement				Clark	
KEY NUMBER	KIND OF WORK	LENGTH	DATE	ROADWAY DESIGNER	
	Structure Replacement - Option 3 on Existing Foundations		1-May-24		
ITEM NUMBER	ITEM DESCRIPTION	UNIT	UNIT COST	TOTAL AMOUNT	TOTAL COST
TEMPORARY FEATURES AND APPURTENANCES					
	MOBILIZATION	LS	$ 28,000.00	1	$ 28,000
	Clearing and Grubbing	LS	$ 20,000.00	1	$ 20,000
	Excavation	LS	$ 30,000.00	1	$ 30,000
	TEMPORARY PROTECTION AND DIRECTION OF TRAFFIC	LS	$ 5,000.00	1	$ 5,000
	TEMPORARY SIGNS	SQFT	$ 17.85	20	$ 357
	TEMPORARY BARRICADES, TYPE III	EACH	$ 112.88	4	$ 452
	WORK CONTAINMENT PLAN	LS	$ 2,000.00	1	$ 2,000
	WORK CONTAINMENT PLAN	LS	$ 2,000.00	1	$ 2,000
BRIDGES					
	BRIDGE REMOVAL WORK	LS	$ 25,000.00	1	$ 25,000
	Granular Wall Backfil	LS	$ 120.00	40	$ 4,800
	21" Prestressed Slabs 40 FT length	LS	$ 30,000.00	1	$ 30,000
	Structural Concrete Class 4000	LS	$ 5,000.00	1	$ 5,000
	Reinforcement	LS	$ 2,000.00	1	$ 2,000
	Waterproof Membrane	LS	$ 12,000.00	1	$ 12,000
	AC overlay	LS	$ 14,000.00	1	$ 14,000
	Bridge Rail	FT	$ 350.00	100	$ 35,000
	Pedestruian Rail	FT	$ 350.00	40	$ 14,000
	Work Containment	LS	$ 10,000.00	1	$ 10,000
	Construction Access	LS	$ 20,000.00	1	$ 20,000
	AC Approaches	LS	$ 20,000.00	1	$ 20,000
				SUBTOTAL, Construction Items	$ 279,609
				Contingency (15%)	$ 42,000
				CONSTRUCTION TOTAL	$ 321,609
				Construction engineering (20%)	$ 64,400
				Prelimninary Engineering (15%)	$ 48,300
				TOTAL	**$ 386,009**

Detailed Cost Estimate Lewisville No 2 Rehabilitation

Lewisville No2, Ped Bridge Repair		**Lewisville Park**	**Clark Co**	
KIND OF WORK	**LENGTH**	**DATE**	**DESIGNER**	
Structure Rehab & Strengthening	**50**	**1-Apr-24**		
ITEM DESCRIPTION	**UNIT**	**UNIT COST**	**TOTAL AMOUNT**	**TOTAL COST**
MOBILIZATION	LS	$ 50,000.00	1	$50,000.00
TEMPORARY PROTECTION AND DIRECTION OF TRAFFIC	LS	$ 2,000.00	1	$2,000.00
EROSION CONTROL	LS	$ 2,000.00	1	$2,000.00
WORK CONTAINMENT PLAN	LS	$ 2,000.00	1	$2,000.00
REMOVING PORTION OF EXISTING BRIDGE - 2 TIMBER CAPS & 10 DECK PLANKS	LS	$ 40,000.00	1	$40,000.00
STEEL REPAIR ABD STRENGTHENING	LB	$ 15.00	8,000	$120,000.00
PAINT STEEL RAIL CAR BRIDGE	SF	$ 50.00	4,000	$200,000.00
TIMBER AND LUMBER - CREOSOTE TREATED	MBM	$ 6,000.00	1	$6,000.00
WORK ACCESS AND CONTAINMENT	LS	$ 35,000.00	1	$35,000.00
RIP RAP	CY	$ 2,000.00	20	$ 40,000
			SUBTOTAL, Construction Items	$497,000.00
			Contingency (15%)	$74,600.00
			CONSTRUCTION TOTAL	$571,600.00
			Preliminary Engineering (15%)	$74,550.00
			Construction engineering (15%)	$74,550.00
			TOTAL	**$720,700.00**

Detailed Cost Estimate Lewisville No 2 Replacement 8’ Wide

Preliminary Design - COST ESTIMATE - 2024 Items					
Clark County Parks					
SECTION			HWY	COUNTY	M.P. to M.P.
Lewisville Park No 2, Pedestrian Bridge Replacement				Clark	
KEY NUMBER	KIND OF WORK	LENGTH	DATE	ROADWAY DESIGNER	
	Structure Replacement 8' Wide		1-May-24		
ITEM NUMBER	ITEM DESCRIPTION	UNIT	UNIT COST	TOTAL AMOUNT	TOTAL COST
TEMPORARY FEATURES AND APPURTENANCES					
	MOBILIZATION	LS	$ 25,000.00	1	$ 25,000
	TEMPORARY PROTECTION AND DIRECTION OF TRAFFIC	LS	$ 1,000.00	1	$ 1,000
	TEMPORARY SIGNS	SQFT	$ 17.85	2	$ 36
	TEMPORARY BARRICADES, TYPE III	EACH	$ 112.88	2	$ 226
	EROSION CONTROL	LS	$ 5,000.00	1	$ 5,000
	WORK CONTAINMENT PLAN	LS	$ 2,000.00	1	$ 2,000
BRIDGES					
	BRIDGE REMOVAL WORK	LS	$ 25,000.00	1	$ 25,000
	Prefabricated steel pedestrian bridge	LS	$ 80,000.00	1	$ 80,000
	Structural Concrete Class 4000	LS	$ 16,000.00	1	$ 16,000
	Reinforcement	LS	$ 7,500.00	1	$ 7,500
	Deck Concrete	LS	$ 30,000.00	1	$ 30,000
	Work Containment	LS	$ 10,000.00	1	$ 10,000
	Construction Access	LS	$ 10,000.00	1	$ 10,000
	Landscaping and stream restoration	LS	$ 15,000.00	1	$ 15,000
				SUBTOTAL, Construction Items	$ 226,761
				Contingency (15%)	$ 34,100
				Sales Tax (8.7%)	$ 22,695
				CONSTRUCTION TOTAL	$ 283,556
				Construction engineering (15%)	$ 42,600
				Prelimninary Engineering (20%)	$ 56,800
				TOTAL	**$ 382,956**

Detailed Cost Estimate Lewisville No 2 Replacement 12’ Wide

Preliminary Design - COST ESTIMATE - 2024 Items					
Clark County Parks					
SECTION			HWY	COUNTY	M.P. to M.P.
Lewisville Park No 2, Pedestrian Bridge Replacement				Clark	
KEY NUMBER	KIND OF WORK	LENGTH	DATE	ROADWAY DESIGNER	
	Structure Replacement 12' Wide		1-May-24		
ITEM NUMBER	ITEM DESCRIPTION	UNIT	UNIT COST	TOTAL AMOUNT	TOTAL COST
TEMPORARY FEATURES AND APPURTENANCES					
	MOBILIZATION	LS	$ 30,000.00	1	$ 30,000
	TEMPORARY PROTECTION AND DIRECTION OF TRAFFIC	LS	$ 1,000.00	1	$ 1,000
	TEMPORARY SIGNS	SQFT	$ 17.85	2	$ 36
	TEMPORARY BARRICADES, TYPE III	EACH	$ 112.88	2	$ 226
	EROSION CONTROL	LS	$ 5,000.00	1	$ 5,000
	WORK CONTAINMENT PLAN	LS	$ 2,000.00	1	$ 2,000
BRIDGES					
	BRIDGE REMOVAL WORK	LS	$ 25,000.00	1	$ 25,000
	Prefabricated steel pedestrian bridge	LS	$ 120,000.00	1	$ 120,000
	Structural Concrete Class 4000	LS	$ 20,000.00	1	$ 20,000
	Reinforcement	LS	$ 10,000.00	1	$ 10,000
	Deck Concrete	LS	$ 30,000.00	1	$ 30,000
	Work Containment	LS	$ 10,000.00	1	$ 10,000
	Construction Access	LS	$ 10,000.00	1	$ 10,000
	Landscaping and stream restoration	LS	$ 15,000.00	1	$ 15,000
				SUBTOTAL, Construction Items	$ 278,261
				Contingency (15%)	$ 41,800
				Sales Tax (8.7%)	$ 27,845
				CONSTRUCTION TOTAL	$ 347,907
				Construction engineering (15%)	$ 52,200
				Prelimninary Engineering (20%)	$ 69,600
				TOTAL	**$ 469,707**

Attachment E: **Decision Matrix for Rehabilkitation and Replacement Options**

Lewisville Regional Park Vehicle Bridge Decision Matrix

	Description	Construction timeframe	Traffic Closure	Service life increase	Construction Cost	Permitting Cost*	Total Cost	Incremental Cost Increase (Decrease) Compared to Rehab Option 1	Permitting timeline - Months
Rehabilitation Option 1	Clean and repaint steel, repair steel sections, replace timber in abutment, and add scour protection without strenghthening	8-10 weeks	6 weeks	20 years	$ 464,000	$ 40,000	$ 593,000	NA	6 - 9
Rehabilitation Option 2	Clean and repaint steel, repair steel sections, replace timber in abutment, and add scour protection with strengthening.	10-12 weeks	8 weeks	30 years	$ 568,000	$ 40,000	$ 728,000	$ 135,000	6 - 9
Replacement Option 1A	Full replacement of 20' wide sub and super structures	6 months	Road clsoure	75 years	$ 423,000	$ 50,000	$ 571,000	$ (22,000)	9 - 12
Replacement Option 1B	Full replacement of 20' wide sub and super structures	6 months	Temporary bridge crossing	75 years	$ 523,000	$ 50,000	$ 691,000	$ 98,000	9 - 12
Replacement Option 2A	Full replacement of 32' wide sub and super structures	6 months	Road closure	75 years	$ 481,000	$ 50,000	$ 649,000	$ 56,000	9 - 12
Replacement Option 2B	Full replacement of 32' wide sub and super structures	6 months	Temporary bridge crossing	75 years	$ 581,000	$ 50,000	$ 769,000	$ 176,000	9 - 12
Replacement Option 3	New superstructure on existing foundations	4 months	8 weeks	40 years	$ 322,000	$ 40,000	$ 386,000	$ (207,000)	6 - 9

*** Permitting cost assumes no Federal funding or Federal nexus applies.**

EXHIBIT E

Lewisville Park Traffic Bridge No. 1 Substructure Memorandum
Clark County Park Bridges Assessment Project

To: Evelyn Ives and David Stipe, Clark County

From: Bruce Johnson and Doug Sarkkinen, Otak

Date: December 20, 2024

Subject: Lewisville Park Bridge No. 1 Substructure Investigation and Evaluation

Project No.: Clark County Agreement Purchase No. SCN00002863; Otak No. 21253.000

1.0 Introduction

This memorandum summarizes the investigation and evaluation that was performed on the existing foundations at Lewisville Park Bridge No. 1. This bridge is a refurbished railroad flatcar with a timber deck. The previous work on this project determined that the bridge superstructure is in a deteriorated condition and warrants replacement. Previous replacement options studied included complete bridge replacement as well as an option to repair the superstructure. An additional option being considered is to retain the existing foundations and replace only the superstructure. The work under Amendment 1 of this contract includes investigation of the foundations and evaluation of options for reuse. The investigation scope of work not only included measuring and documenting the condition of the bridge foundations but also shallow geotechnical explorations and the establishment of an allowable soil bearing pressure for the foundations.

2.0 Investigation

As described in previous reports, the bridge is approximately 40 feet long and 13 feet wide, with an approximate 9 foot wide vehicular travel lane and a 3 foot wide walking lane separated by a wooden curb. The foundations at each end of the bridge consist of a 12 foot by 6 foot footing that is approximately 12 inches thick. On top of the footings are three round 22 inch diameter concrete piers approximately 4 feet high. On top of the piers is a timber crossbeam, and the main steel bearing beams of the bridge superstructure rest on the timber crossbeam.

In between the concrete piers and extending laterally out past the bridge, stacked rock is used to retain the soil under the roadway and alongside the roadway, with the exception of the northwest corner which is a short cast-in-place retaining wall. A drawing of the existing foundation configuration is shown in Attachment A, and photographs are included in Attachment E.

Of particular note is that the center of the foundations does not line up with the overall longitudinal center line of the bridge. They line up with the steel flat car structure, but the sidewalk area cantilevers beyond the main flatcar structure.

Site investigation consisted of measuring the foundations and reviewing the condition of the concrete. Included in the measuring was a small excavation at the southwest corner of the bridge in order to

determine the width of the footing, as the back part of it was buried. The conditions of the concrete were satisfactory, meaning that is, suitable for reuse.

A geotechnical investigation was performed that included boring with small hand augers in the vicinity and review of the site conditions. In general, it was determined the foundation substrate in this condition could be analyzed using an allowable bearing pressure of 3000 psf. A copy of the geotechnical report is included in Attachment F.

3.0 Evaluation

The loading criteria used for evaluation of the foundations was the typical dead load for a 40 foot bridge plus a live load of HS-20, which is 72,000 lbs. or 36 tons, with axle spacings as noted in the AASHTO Code. The analysis shows that for a 15 foot wide bridge (centered on the existing roadway), the calculated soil pressures under the footing are less than 3000 psf. This includes eccentricity from the offset superstructure. For re-use of the existing foundations, it is recommended that the new bridge be no wider than 15 feet if the roadway is not shifted.

We did not perform an in-depth hydraulic analysis that evaluated potential stream scour and lateral channel migration. However, our review of the site indicated the footings, although bearing several feet above the bottom of the channel, appear to have been in place for more than 60 or 70 years, are setback from the channel and appear to be stable. Re-use of the existing foundations would preclude doing work below the ordinary high water mark of the channel and would streamline permitting.

In between the concrete piers and extending beyond the bridge are short rock retaining walls. They consist of large, stacked rock that hold back the roadway fill, and appear to be in fair to good condition.

4.0 Options

Based on the above investigation, two additional options were studied. Since it was determined that the existing soil conditions could support spread footings without the use of piling, the first option utilizes the existing foundation, and the second option uses a longer bridge with new spread footings beyond the existing abutments. Both options keep all of the work above the Ordinary High Water Mark of the stream. Attachments B and C are preliminary drawings of Options 1 and 2, respectively.

The first option consists of removing the existing bridge and placing a new bridge on the existing footings. The rock walls would be partially removed and reconstructed. The new bridge structure would consist of steel beams spanning the creek with a metal deck placed over the beams, and then concrete placed over the top to create the bridge deck surface. The fill and asphalt behind the existing abutment would be partially removed and then replaced. A concrete curb and steel handrail would be placed on each side of the bridge. Overall bridge width would be 15 feet, and it would line up with the existing roadway. Construction costs for this option are estimated to be in the range of $240,000, with total project costs (including design, permitting, construction management) being in the range of $340,000. Attachment D has a breakdown of expected costs.

The second option consists of removing the existing bridge then excavating down behind to at or below the existing foundation elevation. Then a new concrete abutment and footing would be constructed, leaving part of the rock walls and existing footing. The piers would remain in place. Once the new abutment is a complete, a prefabricated bridge structure could be lifted into place. The new bridge structure has steel beams and prefabricated deck panels complete with concrete curbs and handrails. This option would also be 15 feet wide and line up with the existing roadway geometry. Estimated

construction and total projects costs for this option are slightly higher than Option 1, in the range of an additional 10%.

Attachments

Attachment A: **Drawing Sheet 1, Existing Foundation Plan**

Attachment B: **Drawing Sheet 2, Option 1**

Attachment C: **Drawing Sheet 3, Option 2**

Attachment D: **Preliminary Cost Estimates**

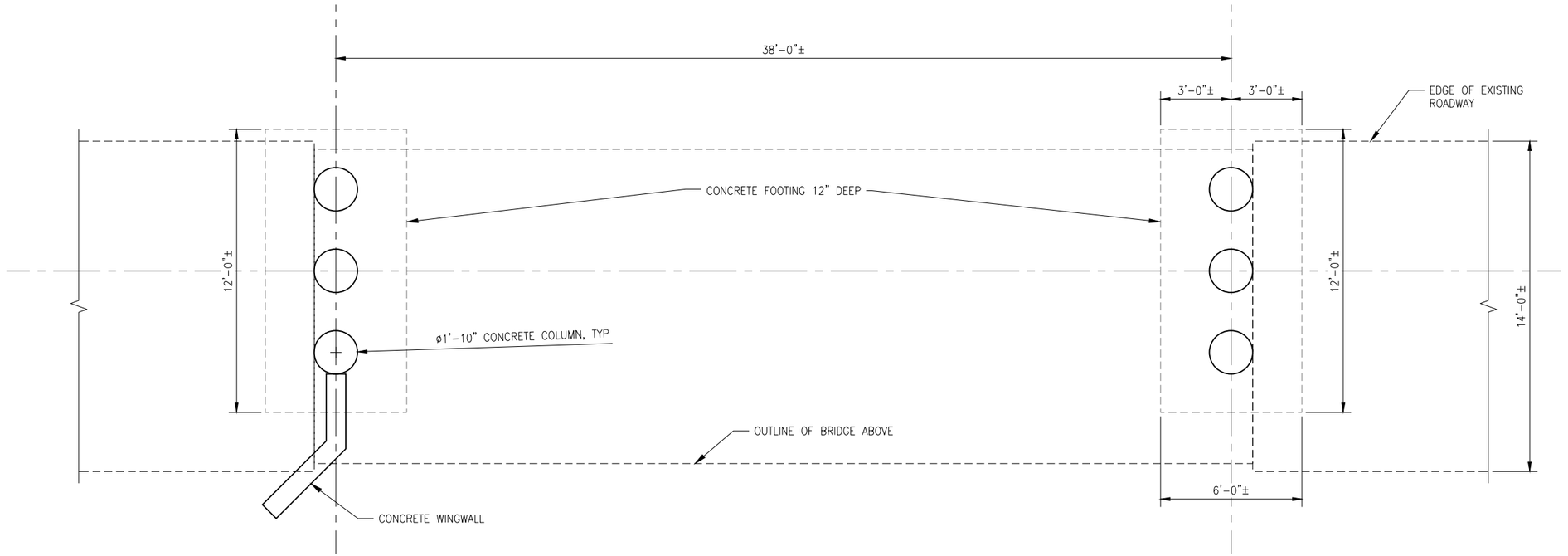
Attachment E: **Photographs**

Attachment F: **Geotechnical Investigation Report by Columbia West Engineering, Inc. dated October 23, 2024**

12-20-2024

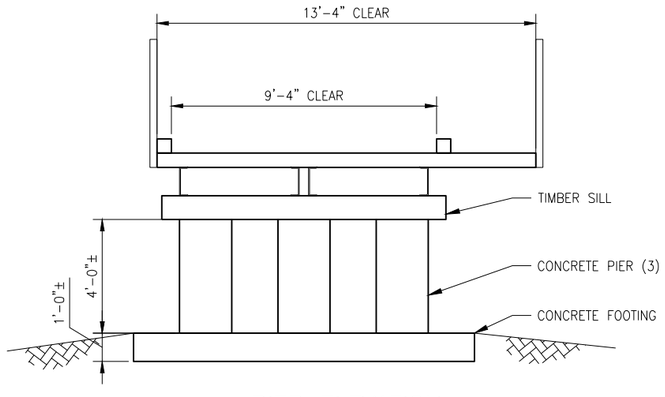
Attachment A

Existing Foundation Plan – Drawing Sheet 1



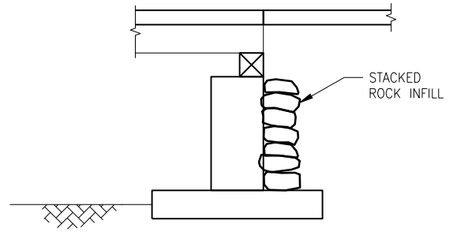
EXISTING BRIDGE FOUNDATION LAYOUT

3/8" = 1'-0"



PIER ELEVATION

3/8" = 1'-0"



PIER END SECTION

3/8" = 1'-0"

LOCATIONS OF EXISTING UTILITIES ARE APPROXIMATE AND MAY BE INCOMPLETE

CALL 48 HOURS BEFORE YOU DIG 1-800-424-5555 "It's the Law" NORTHWEST UTILITIES NOTIFICATION CENTER

CLARK COUNTY, WASHINGTON

Otak

LEWISVILLE PARK ROAD BRIDGE

EXISTING FOUNDATION PLAN

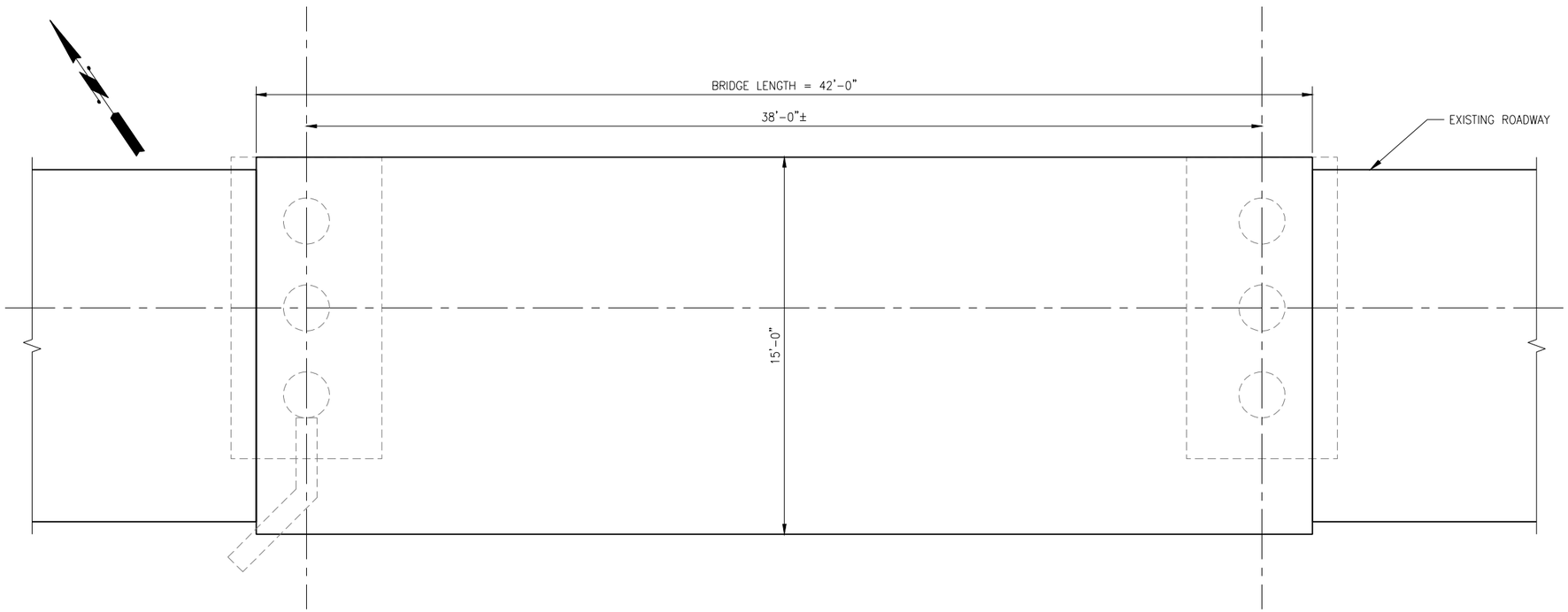
DATE 12/06/2024

1

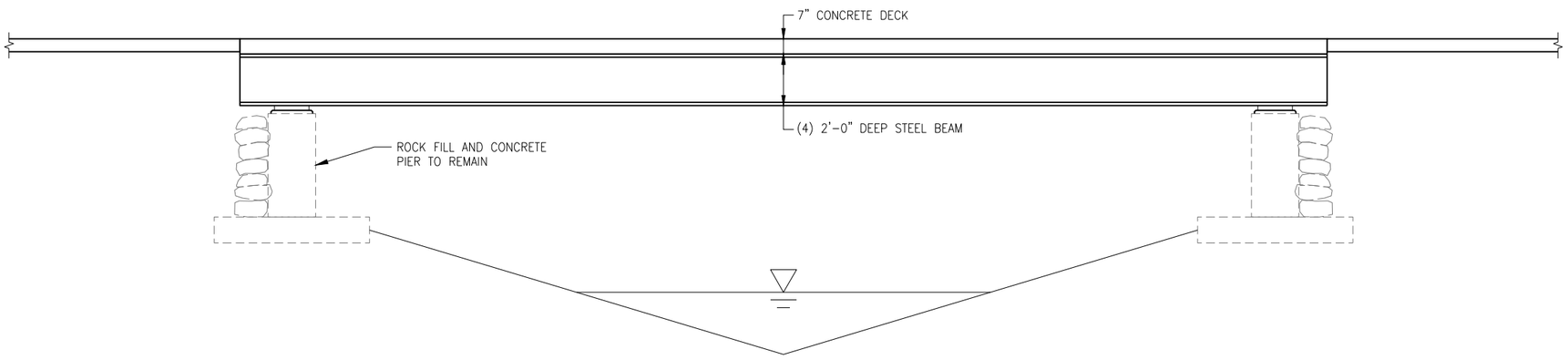
1 OF 3

Attachment B

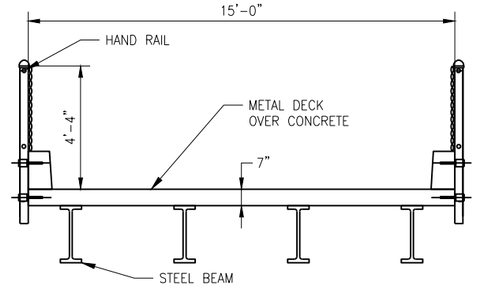
Option 1 - Drawing Sheet 2



BRIDGE PLAN
3/8" = 1'-0"



BRIDGE PROFILE
3/8" = 1'-0"



BRIDGE SECTION
3/8" = 1'-0"

LOCATIONS OF EXISTING UTILITIES ARE APPROXIMATE AND MAY BE INCOMPLETE

CALL 48 HOURS BEFORE YOU DIG 1-800-424-5555 "It's the Law" NORTHWEST UTILITIES NOTIFICATION CENTER

CLARK COUNTY, WASHINGTON

Otak

LEWISVILLE PARK ROAD BRIDGE

BRIDGE REPLACMENT OPTION 1

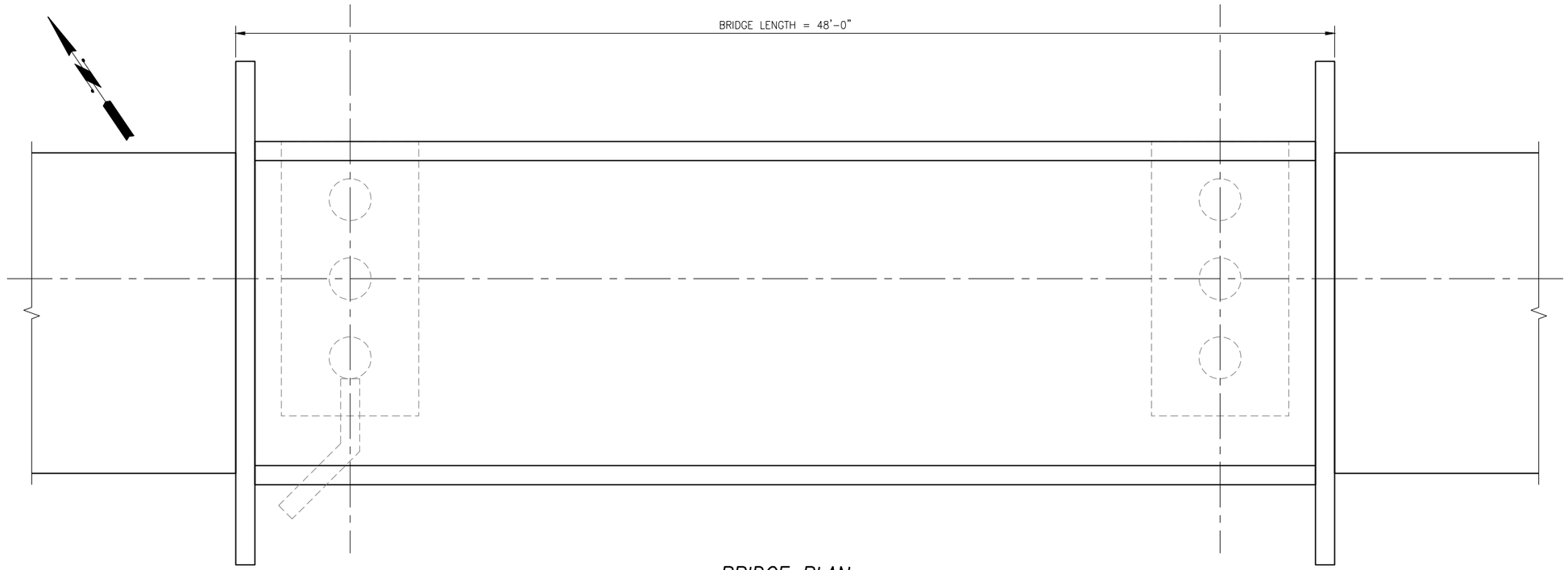
DATE 12/06/2024

2

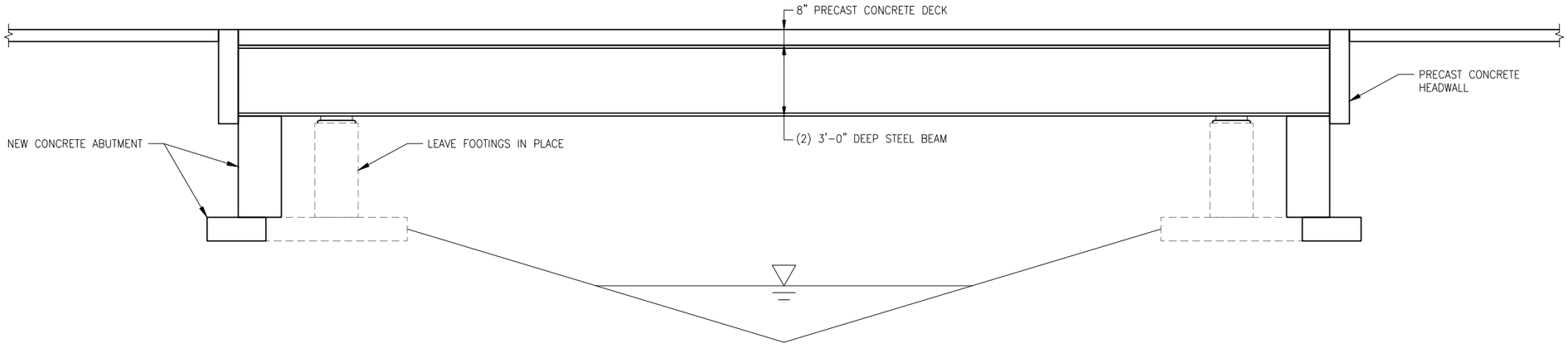
2 OF 3

Attachment C

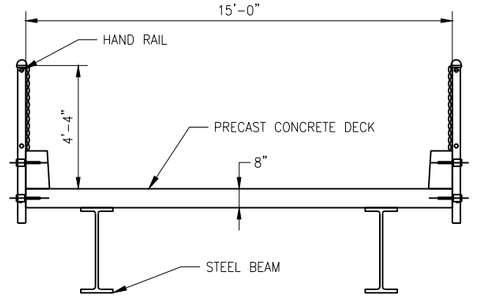
Option 2 - Drawing Sheet 3



BRIDGE PLAN
3/8" = 1'-0"



BRIDGE PROFILE
3/8" = 1'-0"



BRIDGE SECTION
3/8" = 1'-0"

LOCATIONS OF EXISTING UTILITIES ARE APPROXIMATE AND MAY BE INCOMPLETE

CALL 48 HOURS BEFORE YOU DIG 1-800-424-5555 "It's the Law" NORTHWEST UTILITIES NOTIFICATION CENTER

CLARK COUNTY, WASHINGTON

Otak

LEWISVILLE PARK ROAD BRIDGE

BRIDGE REPLACMENT OPTION 2

DATE 12/06/2024

3

3 OF 3

Attachment D

Preliminary Cost Estimates

Lewisville Park Bridge No. 1
Preliminary Construction Cost Estimates
Clark County, WA
Agreement Purchase No. SCN00002863

Otak Project No. 021253.000
Updated: 12/9/2024
Prepared by Otak, Inc.

Option 1: New bridge structure on existing foundation			
Item	**Description**		**Lump Sum Cost**
1	Mobilization		$20,000
2	Erosion Control		$3,000
3	Excavation		$3,000
4	Removal of Asphalt		$3,000
5	Removal of Exist. Bridge		$18,000
6	Modify Existing Piers		$4,000
7	New Bridge Structure		$105,000
8	Concrete Deck and Curbs		$32,000
9	Handrail		$12,000
10	Backfill		$3,000
11	Asphalt paving		$3,000
12	Restoration Planting		$4,000
		Subtotal	**$210,000**
		Contingency	$31,500.00
		Total	**$241,500**

Option 2: New bridge structure on new spread footing foundations			
Item	**Description**		**Lump Sum Cost**
1	Mobilization		$23,000
2	Erosion Control		$3,000
3	Excavation		$6,000
4	Removal of Asphalt		$3,000
5	Removal of Exist. Bridge		$18,000
6	Concrete foundations		$35,000
7	Prefab Bridge Supply		$115,000
8	Bridge Erection		$18,000
9	Backfill		$3,000
10	Asphalt paving		$3,000
11	Restoration Planting		$4,000
		Subtotal	$231,000
		Contingency	$34,650
		Total	**$265,650**

Attachment E

Photographs

Lewisville Park Traffic Bridge No. 1 Photographs

View looking north

Steam under the bridge

South abutment

North abutment

Attachment F

Geotechnical Investigation Report by
Columbia West Engineering, Inc. dated October 23, 2024

Report of Geotechnical Engineering Services

Lewisville Park Bridge Assessments

Clark County, Washington

October 23, 2024

Geotechnical ■ Environmental ■ Special Inspections

Columbia West

Engineering, Inc

www.columbiawestengineering.com

Geotechnical ▪ Environmental ▪ Special Inspections
Columbia West Engineering, Inc

Vancouver, Washington • Phone: 360-823-2900
Portland, Oregon • Phone: 971-384-1666
www.columbiawestengineering.com

October 23, 2024

Clark County Parks
c/o Otak, Inc.
808 SW 3rd Avenue, #800
Portland, OR 97204

Attn: Doug Sarkkinen, PE

Re: Report of Geotechnical Engineering Services
Lewisville Park Bridge Assessments
Clark County, Washington
CWE Project: Otak-4-01-1

Columbia West Engineering, Inc. (Columbia West) is pleased to present this geotechnical engineering report for the Lewisville Park Bridge Assessments project in Clark County, Washington. Our services were conducted in accordance with the Subconsultant Agreement between Otak, Inc. and Columbia West dated October 7, 2024.

We appreciate the opportunity to work on the project. Please contact us if you have any questions regarding this report.

Sincerely,

Nick Paveglio, PE
Principal Engineer

NNP:kat
Attachments
Document ID: Otak-4-01-1-102324-geor.docx

Signed 10/23/2024

TABLE OF CONTENTS

ABBREVIATIONS AND ACRONYMS

AASHTO	American Association of State Highway and Transportation Officials
ASTM	American Society for Testing and Materials
BGS	below ground surface
g	gravitational acceleration (32.2 feet/second^2)
H:V	horizontal to vertical
OSHA	Occupational Safety and Health Administration
pcf	pounds per cubic foot
PGA	peak ground acceleration
psf	pounds per square foot
WSDOT	Washington State Department of Transportation
WSS	Washington Standard Specifications for Road, Bridge, and Municipal Construction (2024)

REPORT OF GEOTECHNICAL ENGINEERING SERVICES
LEWISVILLE PARK BRIDGE ASSESSMENTS
CLARK COUNTY, WASHINGTON

1.0 INTRODUCTION

Columbia West is pleased to submit this geotechnical engineering report for the Lewisville Park Bridge Assessments project in Clark County, Washington. The site is shown relative to surrounding physical features on Figure 1. Figure 2 shows the existing conditions of the site.

The proposed project consists of repair or replacement of two bridges that cross seasonal drainages within Lewisville Park. The first bridge is located in the southwest portion of the park and is used for pedestrians and occasion vehicle traffic. The superstructure of this bridge and existing footings may be reused; however, it is possible that new footings and a superstructure may also be constructed. The second bridge is located in the central portion of the park and is used for pedestrian traffic only. We understand this bridge will be completely replaced (superstructure and footings). The approximate bridge locations are shown on Figure 2.

2.0 PURPOSE AND SCOPE

The purpose of our services was to provide geotechnical engineering recommendations for use in foundation design of the bridges. Specifically, we completed the following tasks:

- Reviewed information available in Columbia West's files for the site vicinity.
- Completed eight hand auger borings (four at each bridge) to refusal on dense soil at depths between 0.25 foot and 1.5 feet BGS.
- Maintained a log of encountered soil and groundwater conditions in the explorations.
- Prepared this geotechnical engineering report with the following information:
  - Summary of soil and groundwater conditions at the site
  - Recommendations for shallow spread footings
  - Seismic design parameters
  - Earthwork recommendations
  - Code-based seismic design parameters in accordance with AASHTO (2020)

3.0 SITE CONDITIONS

3.1 GEOLOGY

The near-surface soil at the site is mapped as Holocene-aged, young alluvium consisting of loose bouldery, cobbly gravel that is present along streams and floodplains. The material is mainly subrounded volcanic rocks derived from the Skamania Volcanics. The thickness of the layer is generally mapped as 15 to 30 feet. The alluvium is underlain by the Troutdale Formation or basalt (Howard, 1987).

3.2 SUBSURFACE CONDITIONS

3.2.1 General

Subsurface conditions at each bridge location were evaluated by completing four hand auger borings (eight total) to refusal at depths between 0.25 foot and 1.5 feet BGS. Two of the borings were completed near the top of the bridge at the bridge deck elevations and two were completed at the bottom of the bridge near the existing footings. The exploration locations are

shown on Figure 2. A description of our field exploration program and the exploration logs are presented in Appendix A. A summary of the subsurface conditions is presented below.

3.2.2 Pedestrian and Vehicle Bridge

Four hand auger borings (HA-1 through HA-4) were completed near the pedestrian and vehicle bridge. Hand auger borings HA-1 and HA-3 were completed at the top of the bridge near the existing bridge deck grade. Subsurface conditions at the bridge deck grade consist of fill associated with the existing bridge that is comprised of silty gravel with sand and cobbles.

Hand auger borings near the base of the bridge at the foundation level (HA-2 and HA-4) encountered native alluvial soil consisting of dense, gray-brown silty gravel with sand and cobbles. The gravel is moist and extends to the maximum depth explored.

As requested by Otak, Columbia West investigated the depths of the existing footings supporting the pedestrian and vehicle bridge using a shovel and pickaxe. Based on exploration and measurements, the depth of the existing footings is 6 feet (perpendicular to the channel).

3.2.3 Pedestrian Only Bridge

Four hand auger borings (HA-5 through HA-8) were completed near the pedestrian only bridge. Hand auger borings HA-5 and HA-7 were completed at the top of the bridge near the bridge deck grade. Subsurface conditions at the bridge deck grade consist of fill associated with the existing bridge that is comprised of silty gravel with sand and cobbles.

Hand auger borings near the base of the bridge at the foundation level (HA-6 and HA-8) encountered native alluvial soil consisting of dense, gray-brown silty gravel with sand and cobbles or silty sand with gravel and cobbles. The gravel and sand are moist and extend to the maximum depth explored.

3.2.4 Groundwater

Groundwater was not encountered in the hand auger borings at the site. We anticipate groundwater will be relatively shallow at the site and highest when the seasonal drainages below the bridges are flowing with water.

4.0 DESIGN

4.1 FOUNDATION SUPPORT

4.1.1 General

We understand the superstructure and existing footings for the pedestrian and vehicle bridge may be reused; however, it is possible that new footings and a superstructure may also be constructed. The pedestrian only bridge will be completely replaced with new footings and a superstructure.

Based on explorations, existing and new bridge footings can be supported on the native sand and gravel, provided scour prevention is incorporated into the design of the bridges.

4.1.2 Dimensions and Capacities

Footings for existing or new foundations should be proportioned for an allowable bearing pressure of 3,000 psf. This value is a net bearing pressure; the weight of the footing and overlying backfill can be ignored in calculating footing sizes. The recommended allowable bearing pressure applies to the total of dead plus long-term live loads and can be increased by one-third for short-term loads resulting from wind or seismic forces. Continuous footings should be a minimum of 24 inches wide. The bottom of exterior footings should be at least 18 inches below the lowest adjacent exterior grade.

Due to the presence of cobbles and boulders, excavations to the planned footing elevations may be irregular. If irregular surfaces are present, we recommend a leveling course of compacted crushed rock be placed at the base of the footings. If cobbles or boulders extend above the planned finished footing elevations, they should be removed and replaced with imported granular material compacted as described in Section 5.4 (Materials).

If footings are designed as recommended, total post-construction consolidation settlement is expected to be less than 1.0 inch with differential settlement less than 0.5 inch over a 50-foot span.

4.1.3 Resistance to Sliding

Lateral loads on footings can be resisted by passive earth pressure on the sides of structures and by friction on the base of footings. Our analysis indicates that the available passive earth pressure for footings confined by native soil and structural fill is 300 pcf, modeled as an equivalent fluid pressure. Typically, the movement required to develop the available passive resistance may be relatively large; therefore, we recommend using a reduced passive equivalent fluid pressure of 250 pcf. The upper 12-inch depth of unpaved areas should not be considered when calculating passive resistance. In addition, in order to rely on passive resistance, a minimum of 5 feet of horizontal clearance must exist between the face of the footings and any adjacent down slopes. Passive pressures should consider the potential for scour.

An allowable coefficient of friction equal to 0.4 can be used for footings supported on native soil or crushed rock.

4.1.4 Subgrade Observation and Preparation

All footing subgrade should be evaluated by a representative of Columbia West to confirm suitable bearing conditions. Observations should also confirm that loose or soft material, organic material, unsuitable fill, prior topsoil zones, and softened subgrade (if present) have been removed. Localized deepening of footing excavations may be required to penetrate any deleterious or soft material, particularly during wet weather conditions.

4.1.5 Foundation Armoring

Foundations for the bridges should be appropriately armored to prevent erosion beneath footings. Boulders from the area or imported rip rap material is suitable for armoring. The bridge designer should determine the extents of the armoring.

4.2 SEISMIC DESIGN CRITERIA

We anticipate structures at the site will be designed in accordance with the WSDOT BDM (WSDOT, 2024b), WSDOT GDM (WSDOT, 2022), and AASHTO LRFD Bridge Design Specifications (AASHTO, 2020). Based on the subsurface conditions, the appropriate seismic Site Class is C. According to the WSDOT GDM, structures at the site are to be designed considering a seismic event with a return period of approximately 1,000 years (7 percent in 75 years). Table 1 provides the recommended seismic design parameters for structures associated with the project.

Table 1. Seismic Design Parameters in Accordance with AASHTO LRFD

Parameter	Value
Return Period	1,000 years
PGA	0.246 g
S_S	0.580 g
S_1	0.206 g
Site Class	C
F_{PGA}	1.154
F_a	1.168
F_v	1.594
S_{DS}	0.678 g
S_{D1}	0.328 g
A_S	0.284 g

4.3 PERMANENT CUT AND FILL SLOPES

Permanent cut and fill slopes adjacent to the bridges should not exceed 2H:1V. Slopes that will be maintained by mowing should not be constructed steeper than 3H:1V.

5.0 CONSTRUCTION

5.1 SITE PREPARATION

Earthwork should be performed in accordance with the requirements specified in WSS, with exceptions noted in this report. Site preparation should be observed and documented by Columbia West.

5.2 EXCAVATION

5.2.1 General

Subsurface conditions at the bridges consist of sand and gravel with variable proportions of silt, cobbles, and potentially boulders. Static groundwater is expected to be below the base of footings; however, perched groundwater will likely be present in the wet season, particularly near the drainage channel.

Due to the presence of sand and gravel, temporary excavations could ravel at all depths. Temporary excavations should be 1H:1V or flatter if groundwater seepage does not occur. Excavations should be flattened to 1.5H:1V or flatter if excessive sloughing occurs.

If shoring is used, we recommend the type and design of the shoring system be the responsibility of the contractor, who is in the best position to choose a system that fits the overall plan of operation.

All excavations should be made in accordance with applicable OSHA requirements and regulations of the state, county, and local jurisdiction. While this report describes certain approaches to excavation and dewatering, the contract documents should specify that the contractor is responsible for selecting the excavation and dewatering methods, monitoring the excavations for safety, and providing shoring (as required) to protect personnel and adjacent structural elements.

5.2.2 Cobbles and Boulders

Cobbles were encountered in the explorations at the site. We anticipate that boulders also be present at the site. Construction considerations associated with cobbles and boulders include the following:

- Excavations can become difficult, if not impossible, with conventional equipment.
- Excavation volumes may be greater than anticipated due to sloughing and the need to remove oversized material.
- We recommend that project bid documents include a contingency for boulder removal.

Cobbles and boulders encountered above the planned elevation of footings should be removed and replaced with imported granular material compacted as described in Section 5.4 (Materials).

5.3 CONSTRUCTION DEWATERING

The contractor should be responsible for temporary drainage of surface water, perched water, and groundwater as necessary to prevent standing water and/or erosion at the working surface. If necessary, dewatering should be capable of maintaining groundwater levels at least 2 feet below the base of excavations.

5.4 MATERIALS

5.4.1 Structural Fill

5.4.1.1 General

Areas proposed for fill placement should be appropriately prepared as described in Section 5.1 (Site Preparation). Engineered fill placement should be observed by Columbia West. Compaction of engineered structural fill should be verified by proof rolling or nuclear gauge field compaction testing performed in accordance with ASTM D698. Field compaction testing should be performed for each vertical foot of engineered fill placed.

Various materials may be acceptable for use as structural fill. Structural fill should be free of organic material or other unsuitable material and should meet the specifications provided in the following sections. Representative samples of proposed engineered structural fill should be submitted for laboratory testing and approval by Columbia West prior to placement. All structural fill should be free of organic material and have a particle size of less than 4 inches.

5.4.1.2 On-Site Soil

The near-surface soil at the site consists predominately of sand and gravel with cobbles and silt that is suitable for use as general structural fill, provided they are adequately dried or moisture conditioned; they are free of organic material, debris, and particles over 4 inches in diameter; and they meet the specifications in WSS 9-03.14(3) – Common Borrow.

On-site soil used as structural fill should be placed in loose lifts not exceeding 8 inches in thickness and compacted using standard conventional compaction equipment. The soil moisture content should be within a few percentage points of optimum conditions. The soil should be compacted to at least 95 percent of maximum dry density as determined by AASHTO T 180. Compacted on-site fill soil should be covered shortly after placement.

5.4.1.3 Imported Granular Material

Imported granular material should be pit- or quarry-run rock, crushed rock, or crushed gravel and sand and should meet the specifications in WSS 9-03.9(1) – Ballast, WSS 9-03.14(1) – Gravel Borrow, or WSS 9-03.14(2) – Select Borrow. Imported granular material should be fairly well graded between coarse and fine material, should have less than 5 percent fines by dry weight, and should have a minimum of two mechanically fractured faces.

Imported granular material should be placed in lifts with a maximum uncompacted thickness of 8 to 12 inches and compacted to not less than 95 percent of maximum dry density as determined by AASHTO T 180. During the wet season or when wet subgrade conditions exist, the initial lift should be approximately 18 inches in uncompacted thickness and should be compacted with a smooth-drum roller without using vibratory action.

5.4.1.4 Stabilization Material

Stabilization material used to create haul roads for construction traffic or at the base of unstable trench subgrade should consist of pit- or quarry-run rock or crushed rock. The material should have a maximum particle size of 6 inches and less than 5 percent by dry weight passing the U.S. Standard No. 4 sieve, should have at least two mechanically fractured faces, and should be free of organic material and other deleterious material. Material meeting the specifications in WSS 9-27.3(6) – Stone is generally acceptable for use. Stabilization material should be placed in lifts between 12 and 18 inches thick and compacted to a firm condition with a smooth-drum roller without using vibratory action.

5.4.1.5 Geotextile Separation Fabric

Geotextile fabric may be required where soft subgrade is encountered. The separation fabric should meet the specifications in WSS 9-33.2(1) – Geotextile Properties, Table 3 for soil separation. The geotextile should be installed in conformance with the specifications in WSS 2-12 – Construction Geosynthetic.

5.5 EROSION CONTROL

Soil at this site is susceptible to erosion by wind and water; therefore, erosion control measures should be carefully planned and installed before construction begins. Surface water runoff should be collected and directed away from sloped areas to prevent water from running down the slope

face. Measures that can be employed to reduce erosion include the use of silt fences, hay bales, buffer zones of natural growth, sedimentation ponds, and granular haul roads. All erosion control methods should be in accordance with local jurisdiction standards.

6.0 OBSERVATION OF CONSTRUCTION

Satisfactory pavement, earthwork, and foundation performance depends to a large degree on the quality of construction. Sufficient observation of the contractor's activities is a key part of determining that the work is completed in accordance with the construction drawings and specifications. Columbia West should be retained to observe subgrade preparation, fill placement, foundation excavations, drainage system installation, and pavement placement and to review laboratory compaction and field moisture-density information.

Subsurface conditions observed during construction should be compared with those encountered during the subsurface explorations. Recognition of changed conditions requires experience; therefore, qualified personnel should visit the site with sufficient frequency to detect whether subsurface conditions change significantly from those anticipated.

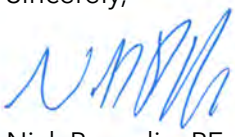
7.0 LIMITATIONS

We have prepared this report for use by the addressee and members of the design and construction team for the proposed project. This report is subject to the limitations expressed in Appendix B.

♦ ♦ ♦

We appreciate the opportunity to be of service to you. Please call if you have questions concerning this report or if we can provide additional services.

Sincerely,



Nick Paveglio, PE
Principal Engineer

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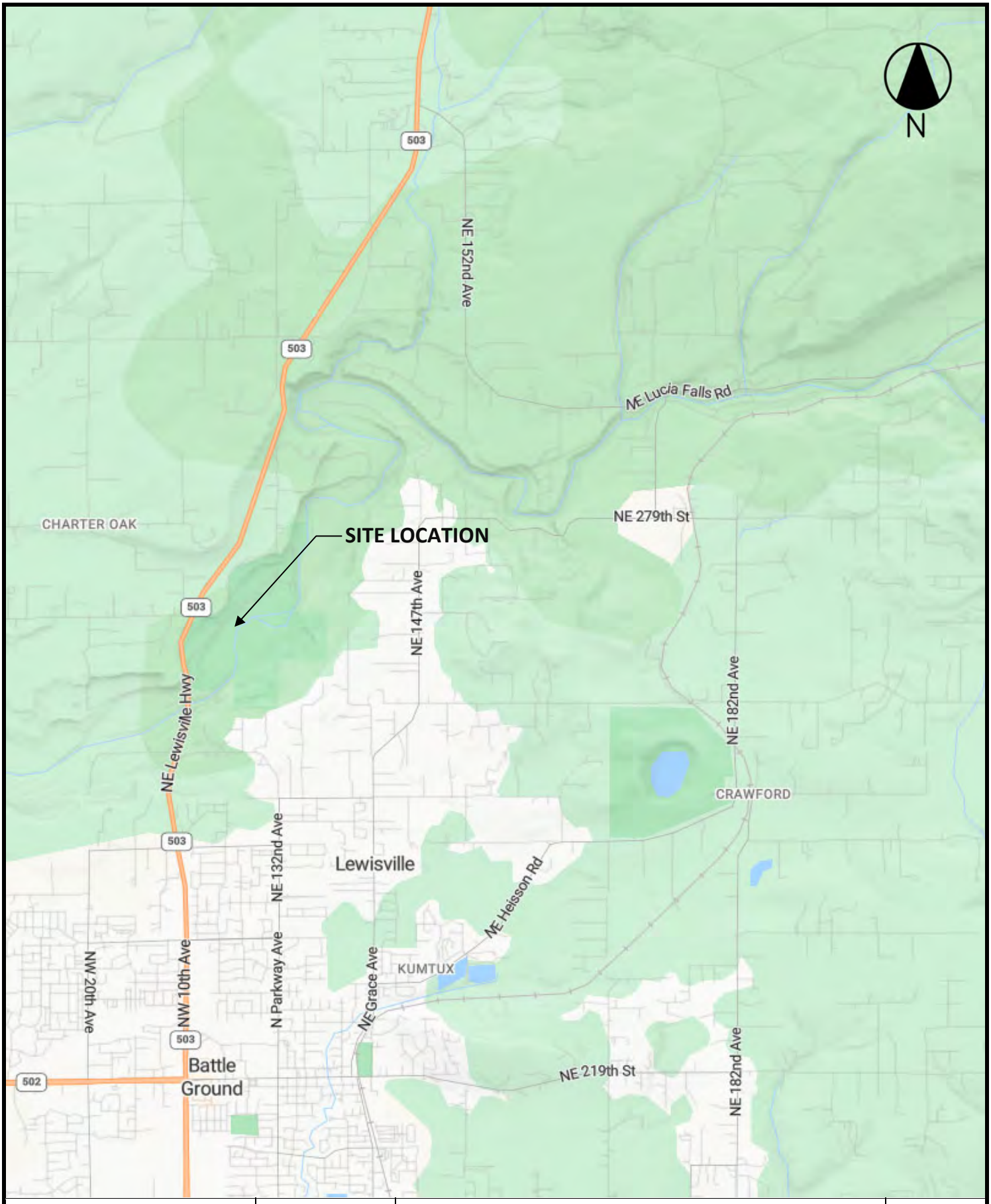
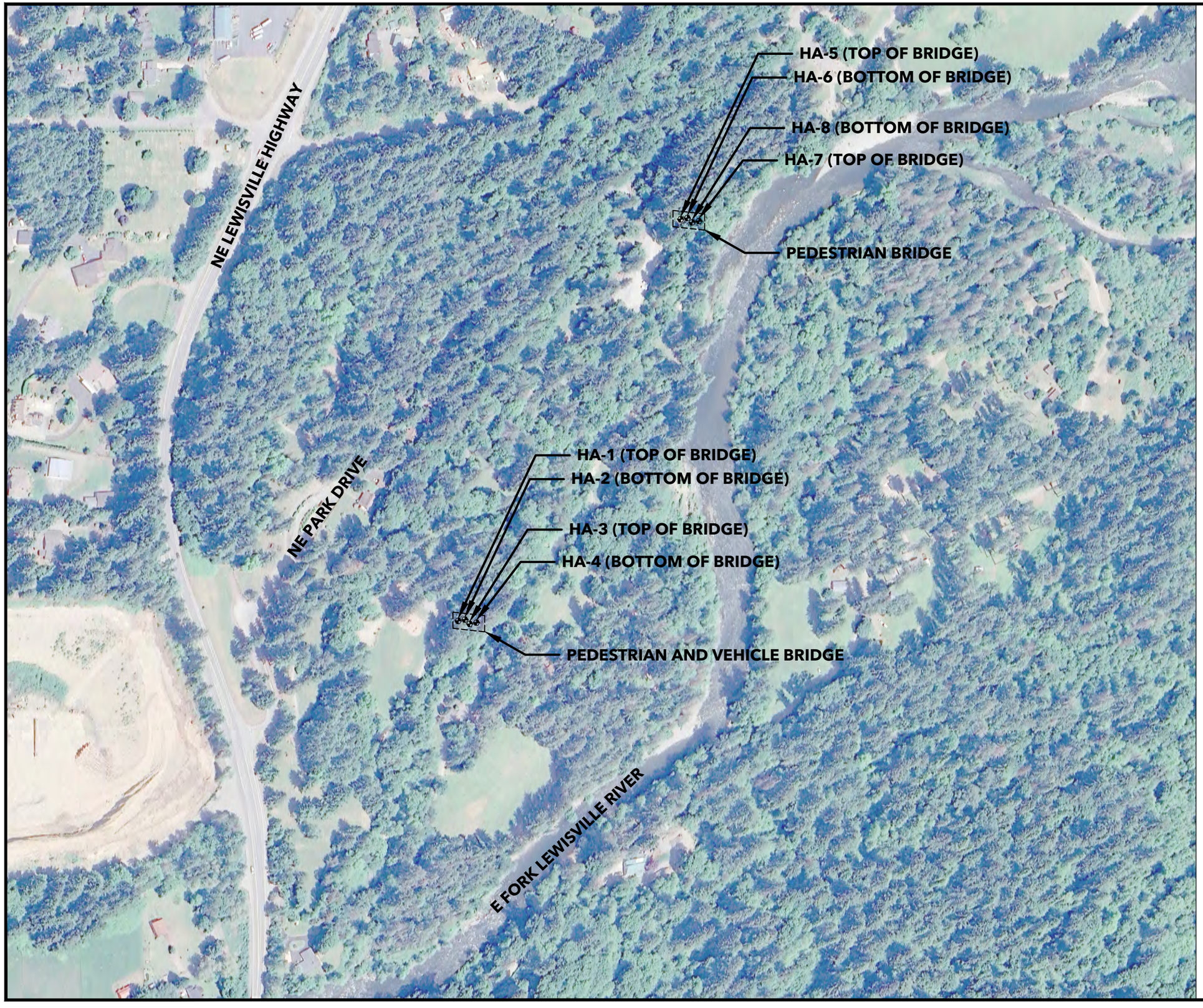
FIGURES



Geotechnical ▪ Environmental ▪ Special Inspections Columbia West Engineering, Inc	PROJECT NO: OTAK-4-01-1 OCTOBER 2024	VICINITY MAP LEWISVILLE PARK BRIDGE ASSESSMENT CLARK COUNTY, WASHINGTON	FIGURE 1



LEGEND

- SITE BOUNDARIES
- HAND AUGER

N

0 20 40 60 80 100 200

NOTES:
1. AERIAL PHOTO SOURCED FROM GOOGLE EARTH.
2. EXPLORATION LOCATIONS ARE APPROXIMATE AND NOT SURVEYED.
3. REFER TO REPORT TEXT FOR EXPLORATION DESCRIPTIONS.

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LEWISVILLE PARK
BRIDGE ASSESSMENTS
CLARK COUNTY, WASHINGTON

SITE PLAN

PROJECT NO:
OTAK-4-01-1

OCTOBER 2024

FIGURE
2

APPENDIX A

APPENDIX A
FIELD EXPLORATIONS

GENERAL

Subsurface conditions at the bridges were explored by completing eight hand auger borings (HA-1 through HA-8) to refusal at depths between 0.25 and 1.5 feet BGS. The exploration logs are presented in this appendix. The approximate exploration locations are shown on Figure 2.

SOIL SAMPLING

Representative disturbed samples of soil observed in the hand augers were collected from the auger tip.

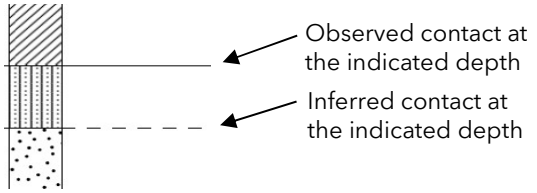
SOIL CLASSIFICATION

The soil samples were classified in the field in accordance with the "Exploration Legend" and "Soil Classification System," which are presented in this appendix. The exploration logs indicate the depths at which the soil characteristics change, although the change could be gradual. If the change occurred between sample locations, the depth was interpreted. Classifications are shown on the exploration logs.

EXPLORATION LEGEND

SYMBOL	DESCRIPTION
SPT	Sample obtained from the indicated depth in general accordance with ASTM D1586, *Standard Penetration Test and Split-Barrel Sampling of Soils*
SHELBY	Sample obtained from the indicated depth using thin-wall Shelby tube in general accordance with ASTM D1587, *Thin-Walled Tube Sampling of Fine-Grained Soils*
D&M 300	Sample obtained from the indicated depth using Dames & Moore sampler and 300-pound hammer or pushed
D&M 140	Sample obtained from the indicated depth using Dames & Moore sampler and 140-pound hammer or pushed
CSS	Sample obtained from the indicated depth using 3-inch-outer diameter California split-spoon sampler and 140-pound hammer
GRAB	Grab sample obtained from the indicated depth
CORE	Rock core interval at the indicated depth
▼	Water level observed during exploration

Graphical Log of Subsurface Lithology



GEOTECHNICAL ABBREVIATIONS AND ACRONYMS			
AASHTO	American Association of State Highway and Transportation Officials	P	Push Sample
ASTM	American Society for Testing and Materials	PP	Pocket Penetrometer
ATT	Atterberg Limits	PSF	Pounds per Square Foot
BGS	Below Ground Surface	P200	Percent Passing No. 200 Sieve
CBR	California Bearing Ratio	RES	Resilient Modulus
CON	Consolidation Test	SIEV	Sieve Analysis
DCPT	Dynamic Cone Penetration Test	SPT	Standard Penetration Test
DD	Dry Density	TS	Torvane Shear
DS	Direct Shear	UC	Unconfined Compressive Strength
HYD	Hydrometer	UU	Unconsolidated Undrained Triaxial Test
IR	Infiltration Rate	USCS	United Soil Classification System
MC	Moisture Content	VS	Vane Shear
MD	Moisture-Density Relationship	WD	Wet Density
OC	Organic Content		

SOIL CLASSIFICATION SYSTEM

PARTICLE-SIZE CLASSIFICATION

COMPONENT	ASTM / USCS		AASHTO	
	size range	sieve size range	size range	sieve size range
Boulders	Greater than 300 mm	Greater than 12 inches	--	--
Cobbles	75 mm to 300 mm	3 inches to 12 inches	Greater than 75 mm	Greater than 3 inches
Gravel	75 mm to 4.75 mm	3 inches to No. 4 sieve	75 mm to 2.00 mm	3 inches to No. 10 sieve
Coarse	75 mm to 19.0 mm	3 inches to 3/4-inch sieve	--	--
Fine	19.0 mm to 4.75 mm	3/4-inch to No. 4 sieve	--	--
Sand	4.75 mm to 0.075 mm	No. 4 to No. 200 sieve	2.00 mm to 0.075 mm	No. 10 to No. 200 sieve
Coarse	4.75 mm to 2.00 mm	No. 4 to No. 10 sieve	2.00 mm to 0.425 mm	No. 10 to No. 40 sieve
Medium	2.00 mm to 0.425 mm	No. 10 to No. 40 sieve	--	--
Fine	0.425 mm to 0.075 mm	No. 40 to No. 200 sieve	0.425 mm to 0.075 mm	No. 40 to No. 200 sieve
Fines (Silt and Clay)	Less than 0.075 mm	Passing No. 200 sieve	Less than 0.075 mm	Passing No. 200 sieve

CONSISTENCY FOR COHESIVE SOIL

CONSISTENCY	SPT N-VALUE (blows per foot)	D&M N-VALUE (blows per foot)	POCKET PENETROMETER (unconfined compressive strength [tsf])
Very soft	0 to 2	0 to 3	Less than 0.25
Soft	2 to 4	3 to 6	0.25 to 0.5
Medium stiff	4 to 8	6 to 12	0.5 to 1.0
Stiff	8 to 15	12 to 25	1.0 to 2.0
Very stiff	15 to 30	25 to 65	2.0 to 4.0
Hard	Greater than 30	Greater than 30	Greater than 4.0

RELATIVE DENSITY FOR GRANULAR SOIL

RELATIVE DENSITY	SPT N-VALUE (blows per foot)	D&M N-VALUE (blows per foot)
Very loose	0 to 4	0 to 11
Loose	4 to 10	11 to 26
Medium dense	10 to 30	26 to 74
Dense	30 to 50	74 to 120
Very dense	Greater than 50	Greater than 120

MOISTURE DESIGNATIONS

TERM	FIELD IDENTIFICATION
Dry	Very low moisture, dry to touch
Moist	Damp, color appears darkened, without visible moisture, cohesive soil will clump, sand will bulk
Wet	Visible free water, usually saturated

ADDITIONAL CONSTITUENTS

Percent	SILT AND CLAY IN		Percent	SAND AND GRAVEL IN		Percent	SECONDARY MATERIAL
	Fine-Grained Soil	Coarse-Grained Soil		Fine-Grained Soil	Coarse-Grained Soil		Organics Man-Made Debris
< 5	trace	trace	< 5	trace	trace	< 4	trace
5 – 12	minor	with	5 – 15	minor	minor	4 – 12	some
> 12	some	silty/clayey	15 – 30	with	with		
			> 30	sandy/gravelly	with		

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HAND AUGER BORING LOG

PROJECT NAME	CLIENT		PROJECT NO.	HAND AUGER NO.
Lewisville Park Bridge Assessments	Otak, Inc.		Otak-4-01-1	HA-1
PROJECT LOCATION	**CONTRACTOR**	**EQUIPMENT**	**TECHNICIAN**	**DATE**
Clark County, Washington	Columbia West	3 1/4" Hand Auger/Pickaxe	SSC	10-14-2024
HAND AUGER BORING LOCATION	**GROUNDWATER DEPTH**		**START TIME**	**FINISH TIME**
See Figure 2	Not encountered		0820	0832

Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRIPTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Infiltration Testing
0						FILL. Dense, gray-brown silty GRAVEL with sand and cobbles, moist, sand is fine to coarse, cobbles are subrounded and up to 5 inches in diameter.					
0.5	HA1.1										
1											
1.5						Hand auger boring terminated at 1.5 feet due to practical refusal on boulders.					
2											

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HAND AUGER BORING LOG

PROJECT NAME	CLIENT		PROJECT NO.	HAND AUGER NO.
Lewisville Park Bridge Assessments	Otak, Inc.		Otak-4-01-1	HA-2
PROJECT LOCATION	**CONTRACTOR**	**EQUIPMENT**	**TECHNICIAN**	**DATE**
Clark County, Washington	Columbia West	3 1/4" Hand Auger/Pickaxe	SSC	10-14-2024
HAND AUGER BORING LOCATION	**GROUNDWATER DEPTH**		**START TIME**	**FINISH TIME**
See Figure 2	Not encountered		0834	0844

Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRIPTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Infiltration Testing
0	HA2.1			GM		Dense, gray-brown silty GRAVEL with sand and cobbles, moist, sand is fine to coarse, cobbles are subrounded and up to 5 inches in diameter.					
						Hand auger boring terminated at 0.25 foot due to practical refusal on boulders.					
0.5											
1											
1.5											
2											

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HAND AUGER BORING LOG

PROJECT NAME	CLIENT		PROJECT NO.	HAND AUGER NO.
Lewisville Park Bridge Assessments	Otak, Inc.		Otak-4-01-1	HA-3
PROJECT LOCATION	**CONTRACTOR**	**EQUIPMENT**	**TECHNICIAN**	**DATE**
Clark County, Washington	Columbia West	3 1/4" Hand Auger/Pickaxe	SSC	10-14-2024
HAND AUGER BORING LOCATION	**GROUNDWATER DEPTH**		**START TIME**	**FINISH TIME**
See Figure 2	Not encountered		0845	0855

Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRIPTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Infiltration Testing
0						FILL. Dense, gray-brown silty GRAVEL with sand and cobbles, moist, sand is fine to coarse, cobbles are subrounded and up to 5 inches in diameter.					
0.5											
1											
1.5						Hand auger boring terminated at 1.5 feet due to practical refusal on boulders.					
2											

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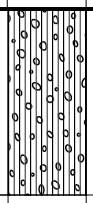
PROJECT NAME	CLIENT		PROJECT NO.	HAND AUGER NO.
Lewisville Park Bridge Assessments	Otak, Inc.		Otak-4-01-1	HA-4
PROJECT LOCATION	**CONTRACTOR**	**EQUIPMENT**	**TECHNICIAN**	**DATE**
Clark County, Washington	Columbia West	3 1/4" Hand Auger/Pickaxe	SSC	10-14-2024
HAND AUGER BORING LOCATION	**GROUNDWATER DEPTH**		**START TIME**	**FINISH TIME**
See Figure 2	Not encountered		0856	0905

Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRIPTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Infiltration Testing
0				GM		Dense, gray-brown silty GRAVEL with sand and cobbles, moist, sand is fine to coarse, cobbles are subrounded and up to 5 inches in diameter.					
						Hand auger boring terminated at 0.25 foot due to practical refusal on boulders.					
0.5											
1											
1.5											
2											

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HAND AUGER BORING LOG

PROJECT NAME	CLIENT		PROJECT NO.	HAND AUGER NO.
Lewisville Park Bridge Assessments	Otak, Inc.		Otak-4-01-1	HA-5
PROJECT LOCATION	**CONTRACTOR**	**EQUIPMENT**	**TECHNICIAN**	**DATE**
Clark County, Washington	Columbia West	3 1/4" Hand Auger/Pickaxe	SSC	10-14-2024
HAND AUGER BORING LOCATION	**GROUNDWATER DEPTH**		**START TIME**	**FINISH TIME**
See Figure 2	Not encountered		1015	1022

Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRIPTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Infiltration Testing
0						FILL. Dense, gray-brown silty GRAVEL with sand and cobbles, moist, sand is fine to coarse, cobbles are subrounded and up to 5 inches in diameter.					
						Hand auger boring terminated at 0.25 foot due to practical refusal on boulders.					
0.5											
1											
1.5											
2											

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HAND AUGER BORING LOG

PROJECT NAME	CLIENT		PROJECT NO.	HAND AUGER NO.
Lewisville Park Bridge Assessments	Otak, Inc.		Otak-4-01-1	HA-6
PROJECT LOCATION	**CONTRACTOR**	**EQUIPMENT**	**TECHNICIAN**	**DATE**
Clark County, Washington	Columbia West	3 1/4" Hand Auger/Pickaxe	SSC	10-14-2024
HAND AUGER BORING LOCATION	**GROUNDWATER DEPTH**		**START TIME**	**FINISH TIME**
See Figure 2	Not encountered		1023	1033

Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRIPTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Infiltration Testing
0				SM		Dense, gray-brown silty SAND with gravel and cobbles, moist, sand is fine to coarse, cobbles are subrounded and up to 5 inches in diameter.					
0.5	HA6.1					Hand auger boring terminated at 0.5 foot due to practical refusal on boulders.					
1											
1.5											
2											

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HAND AUGER BORING LOG

PROJECT NAME	CLIENT		PROJECT NO.	HAND AUGER NO.
Lewisville Park Bridge Assessments	Otak, Inc.		Otak-4-01-1	HA-7
PROJECT LOCATION	**CONTRACTOR**	**EQUIPMENT**	**TECHNICIAN**	**DATE**
Clark County, Washington	Columbia West	3 1/4" Hand Auger/Pickaxe	SSC	10-14-2024
HAND AUGER BORING LOCATION	**GROUNDWATER DEPTH**		**START TIME**	**FINISH TIME**
See Figure 2	Not encountered		1044	1054

Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRIPTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Infiltration Testing
0						FILL. Dense, gray-brown silty GRAVEL with sand and cobbles, moist, sand is fine to coarse, cobbles are subrounded and up to 5 inches in diameter.					
						Hand auger boring terminated at 0.25 foot due to practical refusal on boulders.					
0.5											
1											
1.5											
2											

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HAND AUGER BORING LOG

PROJECT NAME	CLIENT		PROJECT NO.	HAND AUGER NO.
Lewisville Park Bridge Assessments	Otak, Inc.		Otak-4-01-1	HA-8
PROJECT LOCATION	**CONTRACTOR**	**EQUIPMENT**	**TECHNICIAN**	**DATE**
Clark County, Washington	Columbia West	3 1/4" Hand Auger/Pickaxe	SSC	10-14-2024
HAND AUGER BORING LOCATION	**GROUNDWATER DEPTH**		**START TIME**	**FINISH TIME**
See Figure 2	Not encountered		1056	1106

Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRIPTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Infiltration Testing
0				GM		Dense, gray-brown silty GRAVEL with sand and cobbles, moist, sand is fine to coarse, cobbles are subrounded and up to 5 inches in diameter.					
0.5											
1											
1.5	HA8.1					Hand auger boring terminated at 1.5 feet due to practical refusal on boulders.					
2											

APPENDIX B

APPENDIX B
REPORT LIMITATIONS AND IMPORTANT INFORMATION

Report Purpose, Use, and Standard of Care

This report has been prepared in accordance with standard fundamental principles and practices of geotechnical engineering and/or environmental consulting, and in a manner consistent with the level of care and skill typical of currently practicing local engineers and consultants. This report has been prepared to meet the specific needs of specific individuals for the indicated site. It may not be adequate for use by other consultants, contractors, or engineers, or if change in project ownership has occurred. It should not be used for any other reason than its stated purpose without prior consultation with Columbia West Engineering, Inc. (Columbia West). It is a unique report and not applicable for any other site or project. If site conditions are altered, or if modifications to the project description or proposed plans are made after the date of this report, it may not be valid. Columbia West cannot accept responsibility for use of this report by other individuals for unauthorized purposes, or if problems occur resulting from changes in site conditions for which Columbia West was not aware or informed.

Report Conclusions and Preliminary Nature

This geotechnical or environmental report should be considered preliminary and summary in nature. The recommendations contained herein have been established by engineering interpretations of subsurface soils based upon conditions observed during site exploration. The exploration and associated laboratory analysis of collected representative samples identifies soil conditions at specific discreet locations. It is assumed that these conditions are indicative of actual conditions throughout the subject property. However, soil conditions may differ between tested locations at different seasonal times of the year, either by natural causes or human activity. Distinction between soil types may be more abrupt or gradual than indicated on the soil logs. This report is not intended to stand alone without understanding of concomitant instructions, correspondence, communication, or potential supplemental reports that may have been provided to the client.

Because this report is based upon observations obtained at the time of exploration, its adequacy may be compromised with time. This is particularly relevant in the case of natural disasters, earthquakes, floods, or other significant events. Report conclusions or interpretations may also be subject to revision if significant development or other manmade impacts occur within or in proximity to the subject property. Groundwater conditions, if presented in this report, reflect observed conditions at the time of investigation. These conditions may change annually, seasonally or as a result of adjacent development.

Additional Investigation and Construction Observation

Columbia West should be consulted prior to construction to assess whether additional investigation above and beyond that presented in this report is necessary. Even slight variations in soil or site conditions may produce impacts to the performance of structural facilities if not adequately addressed. This underscores the importance of diligent construction observation and testing to verify soil conditions do not differ materially or significantly from the interpreted conditions utilized for preparation of this report.

Therefore, this report contains several recommendations for field observation and testing by Columbia West personnel during construction activities. Actual subsurface conditions are more readily observed and discerned during the earthwork phase of construction when soils are exposed. Columbia West cannot accept responsibility for deviations from recommendations described in this report or future performance of structural facilities if another consultant is retained during the construction phase or Columbia West is not engaged to provide construction observation to the full extent recommended.

Collected Samples

Uncontaminated samples of soil or rock collected in connection with this report will be retained for thirty days. Retention of such samples beyond thirty days will occur only at client's request and in return for payment of storage charges incurred. All contaminated or environmentally impacted materials or samples are the sole property of the client. Client maintains responsibility for proper disposal.

Report Contents

This geotechnical or environmental report should not be copied or duplicated unless in full, and even then only under prior written consent by Columbia West, as indicated in further detail in the following text section entitled Report Ownership. The recommendations, interpretations, and suggestions presented in this report are only understandable in context of reference to the whole report. Under no circumstances should the soil boring or test pit excavation logs, monitor well logs, or laboratory analytical reports be separated from the remainder of the report. The logs or reports should not be redrawn or summarized by other entities for inclusion in architectural or civil drawings, or other relevant applications.

Report Limitations for Contractors

Geotechnical or environmental reports, unless otherwise specifically noted, are not prepared for the purpose of developing cost estimates or bids by contractors. The extent of exploration or investigation conducted as part of this report is usually less than that necessary for contractor's needs. Contractors should be advised of these report limitations, particularly as they relate to development of cost estimates. Contractors may gain valuable information from this report, but should rely upon their own interpretations as to how subsurface conditions may affect cost, feasibility, accessibility and other components of the project work. If believed necessary or relevant, contractors should conduct additional exploratory investigation to obtain satisfactory data for the purposes of developing adequate cost estimates. Clients or developers cannot insulate themselves from attendant liability by disclaiming accuracy for subsurface ground conditions without advising contractors appropriately and providing the best information possible to limit potential for cost overruns, construction problems, or misunderstandings.

Report Ownership

Columbia West retains the ownership and copyright property rights to this entire report and its contents, which may include, but may not be limited to, figures, text, logs, electronic media, drawings, laboratory reports, and appendices. This report was prepared solely for the client, and other relevant approved users or parties, and its distribution must be contingent upon prior express written consent by Columbia West. Furthermore, client or approved users may not use, lend, sell, copy, or distribute this document without express written consent by Columbia West.

Client does not own nor have rights to electronic media files that constitute this report, and under no circumstances should said electronic files be distributed or copied. Electronic media is susceptible to unauthorized manipulation or modification, and may not be reliable.

Consultant Responsibility

Geotechnical and environmental engineering and consulting is much less exact than other scientific or engineering disciplines, and relies heavily upon experience, judgment, interpretation, and opinion often based upon media (soils) that are variable, anisotropic, and non-homogenous. This often results in unrealistic expectations, unwarranted claims, and uninformed disputes against a geotechnical or environmental consultant. To reduce potential for these problems and assist relevant parties in better understanding of risk, liability, and responsibility, geotechnical and environmental reports often provide definitive statements or clauses defining and outlining consultant responsibility. The client is encouraged to read these statements carefully and request additional information from Columbia West if necessary.

EXHIBIT F

Clark County, Washington

Professional Services
Contract Name

Solicitation ____

This contract ("Contract"), is made as of this _____ day of _____ YEAR, by and between CLARK COUNTY, a governmental subdivision of the State of Washington, ("County"), and (Insert Vendor Name, state and legal business entity), ("Contractor").

WHEREAS, the Contractor has been chosen through a competitive process by the County (RFP # XXX) and has the expertise to provide services for Clark County and to perform those services more particularly set out in the proposal attached hereto and incorporated herein by this reference as Exhibit A; and,

WHEREAS, Clark County does not have available staff to provide such services for the benefit of Clark County.

NOW, THEREFORE, THE COUNTY AND THE CONTRACTOR MUTUALLY AGREE AS FOLLOWS:

1. Services. The Contractor shall perform services as set forth in Exhibit A, which is incorporated herein by reference as though set forth in full at this point (the "Services").

2. Term. The Contract shall be effective beginning (insert beginning date), and ending (insert ending date). If both parties agree, through a written Contract

EXAMPLE

amendment that is adopted before the Contract's term expires, the Contract term may be extended.

3. Compensation. County shall pay the Contractor for performing said services upon receipt of a written invoice according to the monthly price and/or time and materials price set forth in Exhibit B, which is attached hereto and incorporated herein by this reference. All invoices shall describe in detail each task performed and shall state the amount billed for each task. The parties mutually agree that in no event may the amount billing exceed (the dollar amount in Exhibit "B") without prior written approval by the County.

4. Withholding Payment. In the event the Contractor has failed to perform any material obligation under this Contract, then the County may, upon written notice, withhold all monies due and payable to Contractor, without penalty, until such failure to perform is cured or otherwise adjudicated.

5. Termination for Default. If the Contractor defaults by failing to perform any of the obligations of this Contract or the Contractor cannot perform because of loss of license or other required credential, becomes insolvent or is declared bankrupt, commits any act of bankruptcy or insolvency, or makes an assignment for the benefit of creditors, the County may upon notice terminate this Contract, and at the County's option, obtain performance of the work elsewhere. If this Contract is terminated for default, the Contractor shall not be entitled to receive any further payments under this Contract. Any extra cost or damage to the County resulting from such default(s) shall be deducted from any money due or coming due to the Contractor. The Contractor shall bear any extra expenses incurred by the County in completing the Services, including all increased costs

EXAMPLE

for completing the Services, and all damage sustained, or which may be sustained, by the County by reason of such default. Termination of this Contract by the County based upon default of the Contractor shall not constitute a breach of contract by the County. Within fourteen (14) days after terminations the Contractor shall provide the County with all work products and working documents developed within the effective term of the Contract.

6. Termination for Public Convenience. The County may terminate this Contract upon thirty (30) days written notice to Contractor whenever the County determines, in its sole discretion that such termination is in the interests of the County. Whenever this Contract is terminated in accordance with this paragraph, the Contractor shall be entitled to payment for actual work performed at per unit rates for completed items of work. An equitable adjustment in the contract price for partially completed items of work will be made, but such adjustment shall not include provision for loss of anticipated profit on deleted or uncompleted work. Termination of this Contract by the County based upon public convenience shall not constitute a breach of contract by the County. Within fourteen (14) days after termination, the Contractor shall provide the County with all work products and working documents developed within the effective term of the Contract.

7. Independent Contractor. Pursuant to this Contract, the Contractor is an independent contractor, and neither Contractor nor its owners, employees, subcontractors, contractors, or agents are employees of the County, and they shall not be entitled to compensation or benefits of any kind from the County, except as explicitly provided herein.

EXAMPLE

8. Indemnification / Hold Harmless. The Contractor shall defend, indemnify and hold harmless the County, its officers, officials, employees, agents, and volunteers harmless from any and all claims, injuries, damages, losses or suits including attorney fees, arising out of, or resulting from, any act or omission undertaken in the performance of this Contract, of the Contractor, except for injuries and damages caused by the sole negligence of the County. Should a court of competent jurisdiction determine that this Contract is subject to RCW 4.24.115, then, in the event of liability for damages arising out of bodily injury to persons or damages to property caused by or resulting from the concurrent negligence of the Contractor and the County, its officers, officials, employees, and volunteers, the Contractor's liability, including the duty and cost to defend, hereunder shall be only to the extent of the Contractor's negligence. It is further specifically and expressly understood that the indemnification provided herein constitutes the Contractor's waiver of immunity under Industrial Insurance, Title 51 RCW, solely for the purposes of this indemnification. The foregoing indemnification obligations of the Contractor are a material inducement to the County to enter into this Contract, are reflected in the Contractor's compensation, and have been mutually negotiated by the parties. The County reserves the right, but not the obligation, to participate in the defense of any claim, damages, losses or expenses and such participation shall not constitute a waiver of Contractor's indemnity obligations under this Contract. The provisions of this section shall survive the expiration or termination of this Contract.

9. Compliance with Laws. The Contractor shall comply with all applicable federal, state, and local laws, including those laws and regulations relating to its employees, and shall defend, indemnify, and save the County harmless from all actions,

EXAMPLE

claims, demands and expenses arising out of any alleged violation of said laws or regulations.

10. Responsibility to Pay Taxes. The Contractor assumes full responsibility for the payment of all payroll taxes, use, sales, income or other form of taxes, fees, administrative charges, permitting costs, licenses, excises, or payments required by any city, federal or state legislation that is now or may during the term of this Contract be enacted and shall assume exclusive liability therefore, and meet all requirement's thereunder pursuant to any rules and regulations that are now and may be promulgated in connection therewith.

11. Order of Precedence. The Contract Documents consist of these terms and conditions that are set forth in the body of this document (the "Terms and Conditions"), and the attached proposal based on the County's (bid, quote, RFP & #, (i.e. RFP #675), and Exhibit B: Contract pricing. (Add in additional Exhibits if needed). To the extent that these Terms and Conditions are inconsistent with any other Contract Documents, or are inconsistent with any other exhibit, attachment, document, or agreement, whether executed prior to or concurrently herewith, then these Terms and Conditions shall govern.

12. Equal Employment Opportunity. The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, gender, gender identity, sexual orientation, age, disability, marital status or national origin.

13. Amendments. Any changes to any of the Contract Documents shall be made as mutually agreed amendments, which must be in writing and signed by both parties to be effective.

EXAMPLE

14. Public Records Act. Notwithstanding any provisions of this Contract to the contrary, to the extent any record, including any electronic, audio, paper or other media, is required to be kept or indexed as a public record in accordance with the Washington Public Records Act, RCW Chapter 42.56, as may hereafter be amended, Contractor agrees to maintain all records constituting public records and to produce or assist Clark County in producing such records, within the time frames and parameters set forth in state law. Contractor further agrees that upon receipt of any written public record request, Contractor shall, within two business days, notify Clark County by providing a copy of the request to the Clark County Public Records Officer/Department of Public Works:

Clark County – Public Works Department
C/O Public Records
PO Box 5000
Vancouver WA 98666-5000

15. Governing Law. This Contact shall be governed by the laws of the State of Washington. Venue for any litigation shall be in accordance with RCW 36.01.050.

16. Confidentiality. With respect to all information relating to County that is confidential and clearly so designated, the Contractor agrees to keep such information confidential.

17. Conflict of Interest. The Contractor covenants that it has had no interest and shall not acquire any interest, direct or indirect, which would conflict in any manner or degree with the performance of services hereunder. The Contractor further covenants that no person having such interest shall be employed by it or shall perform services as an independent contractor with it, in the performance of this Contract.

18. Insurance.

EXAMPLE

General Requirements:

Waiver of Subrogation: All insurance coverage maintained or procured pursuant to this agreement shall be endorsed to waive subrogation against County, its elected and appointed officers, agents, officials, employees and volunteers or shall specifically allow Contractor or others providing insurance evidence in compliance with these specifications to waive their right of recovery prior to a loss. Contractor hereby waives its own right of recovery against County and shall require similar written express waivers and insurance clauses from each of its subcontractors. This coverage shall be primary coverage and noncontributory to any coverage maintained by Clark County.

Proof of Insurance: The contractor shall provide Clark County with verification of insurance and endorsements required by this Contract. Clark County reserves the right to require complete, certified copies of all required insurance policies at any time. Failure to provide proof of insurance within five (5) business days prior to the start of this Contract is agreed by both parties to be a material breach of this Contract and may, at the County's option, result in termination of this Contract pursuant to Paragraph five (5) above.

Additional Insured: Contractor and its subcontractors shall obtain the insurance required by this Contract under policies that name Clark County, its elected and appointed officers, agents, officials, employees and volunteers as additional insureds with no restrictions or limitations concerning products and completed operations.

Insurance Company: All insurance shall be obtained from an insurance company authorized to do business in the State of Washington. All insurance companies must have a Best's rating of A-VII or better.

Contractor's Insurance: Contractor shall obtain and keep in force policies

EXAMPLE

providing the coverages listed below:

Worker's Compensation: As required by the industrial insurance laws of the State of Washington.

Automobile Insurance: If the Contractor or its employees use motor vehicles in conducting activities under this Contract, liability insurance covering bodily injury and property damage shall be provided by the Contractor through a Commercial Automobile Insurance Policy. The policy shall cover all owned and non-owned vehicles. Such insurance shall have minimum limits of $1,000,000 per accident, combined single limit for bodily injury and property damage. If the Contractor does not use motor vehicles in conducting activities under this Contract, then within 30 days of the start of the term, Contractor shall provide County with written confirmation to that effect on Contractor letterhead.

Commercial General Liability Insurance: Commercial General Liability (CGL) Insurance written under ISO Form CG0001 or its latest equivalent with minimum limits of $1,000,000 per occurrence, with coverage of $2,000,000 in the general aggregate, and a deductible of not more than $10,000 per accident or occurrence. This policy must be occurrence based; a "claims made" policy is not acceptable. The policy shall provide coverage for personal and advertising injury with a limit of not less than $1,000,000. This policy must renew annually. This coverage may be any combination of primary, umbrella or excess liability coverage affording total liability limits of not less than $1,000,000 per occurrence. However, if other policies are added they must be a follow-form policy in language, renewal date, and have no more exclusions than the underlying coverage. Products and Completed Operations coverage shall be provided for a period of three

EXAMPLE

years following Substantial Completion of the Work. The deductible will not be more than $10,000 unless the County has given prior written consent to a higher amount, which consent must be based upon the County's reasonable assessment of the Contractor's liquidity and ability to pay from its own resources regardless of the coverage status due to cancellation, reservation of rights, or other reason. If Contractor seeks County's agreement for an increased deductible, Contractor shall provide County with documentation to support County's assessment of whether the increase is warranted. Coverage shall not contain any endorsement(s) excluding or limiting Product/Completed Operations, Contractual Liability or Cross Liability.

19. Waiver. Waiver of any default or breach shall not be deemed to be a waiver of any subsequent default or breach. Any waiver shall not be construed to be a modification of the terms of this Contract unless stated to be such in writing and signed by the parties hereto or by their authorized representatives.

20. Assignment and Subcontracting. No portion of this Contract may be assigned or subcontracted to any other individual, firm or entity without the express and prior written approval of the County or as set forth in Exhibit A.

21. Ownership of Items Produced. All writings, documents, programs, records or other materials prepared by the Contractor and/or its subcontractors, in connection with the performance of this Contract shall be the sole and absolute property of the County.

22. Notice: All notices, request, demands, consent, approval or other communication required or relating to this Contract shall be in writing and will be deemed

EXAMPLE

to have been given when personally delivered, by email with a receipt request confirmed, sent by facsimile with receipt acknowledged, or deposited in any depository regularly maintained by the United States Postal Service, postage prepaid, certified mail, return receipt requested, addressed to the party for whom it is intended at the address listed below. Any Party to this Contract may add additional addresses or change its address for purpose of receipt of any such communication by giving written notice of such change to the other party in the manner prescribed in this section. Unless otherwise directed in writing, notices shall be made to the following address:

Clark County
Department Public Works
c/o Parks Division Manager
PO Box 5000
Vancouver, WA 98666-5000
Email: Ross.Hoover@clark.wa.gov

<Contractor Name>
<Contractor Address>
<City, State, Zip Code>
Email: xx

23. Entire Agreement: This Contact contains a complete and integrated understanding of the agreement between the parties as to the subject matter hereof, and supersedes any prior understanding, contracts, or negotiations, whether oral or written, unless set forth herein or in written amendments hereto duly executed by both parties.

24. Severability: If any provision of this Contract is found to be contrary to law or public policy or is declared null and void by a court of competent jurisdiction, the remaining provisions shall remain in full force and effect, and shall be construed so as to conform to the terms and requirements of applicable law.

IN WITNESS THEREOF, County and the Contractor have executed this Contract

EXAMPLE

on the date first above written.

County Manager signature block

CLARK COUNTY

By:_____

Name: Kathleen Otto

Title: County Manager

Date Signed:_____

(COMPANY – INC, LLC, CORP, ETC)

By:_____

Name: _____

Title: _____

Date Signed:_____

Approved as to form only:
ANTHONY F. GOLIK
Clark County Prosecuting Attorney

_____
Kevin A. McDowell
Deputy Prosecuting Attorney

EXAMPLE