PORT OF BROOKINGS HARBOR
Special Commission Meeting
Friday, December 27, 2019 • 10:00am
Port Conference Room Suite 202
16350 Lower Harbor Road, OR 97415

TENTATIVE AGENDA

1. **CALL MEETING TO ORDER**
   - Roll Call
   - Modifications, Additions, and Changes to the Agenda
   - Declaration of Potential Conflicts of Interest

2. **APPROVAL OF AGENDA**

3. **PUBLIC COMMENTS** (Limited to a maximum of three minutes per person. A "Public Comment Request", located near the entrance, must be completed and turned into the Chair prior to the beginning of the meeting.)

4. **ACTION ITEMS** **Page #**
   A. 2015 Strategic Business Plan (5-year Update - 2020).....2
   B. Pre-Disaster Mitigation Grant.....21
   C. Beachfront RV Park Restroom Replacement Plan.....107
   D. Building Self-Storage Units.....109

5. **INFORMATION ITEMS**
   A. None

6. **NEXT REGULAR MEETING DATE** – January 17, 2019, 6:00pm

7. **ADJOURNMENT**

ACTION ITEM – A

DATE: December 27, 2019

RE: 2015 Strategic Business Plan Update (5-year Update 2020)

TO: Honorable Board President and Harbor District Board Members

ISSUED BY: Gary Dehlinger, Port Manager

OVERVIEW

- The Port of Brookings Harbor Strategic Business Plan was presented for review and adoption by the Port Commission, with review and acceptance by the Oregon Business Development Department.
  This was completed in June 2015.

- Once adopted, the Port may request Oregon Ports Planning and Marketing funds for the projects discussed in the Strategic Business Plan.
  Port IGA with Business Oregon completed April 2019.

- The SBP may be amended to accommodate changing conditions and new opportunities, and must be updated every 10 years, with a mid-point (5-year) review and annual updates for sub-plan components.
  Annual updates were done in 2018 and 2019 to show changed conditions from declared disasters and failing infrastructure.

- We have reached the 5-year mid-point review of the SBP. I would like to suggest using a consulting group to facilitate this review point. Port conditions, ideas and opportunities have changed since 2015.

- Advertise a "Request for Proposal" for consulting groups to complete a 5-year mid-point update/review in the next several months. Budget this review in next fiscal year and complete it before 2020-year end.

- Updated Strategic Business Plan could help the Port secure State / County funding or special loans for upcoming projects.

DOCUMENTS

- Oregon Ports September 2014 Brief, 5 pages
- Port IGA with Business Oregon, 12 pages
- 2019 Port Annual SBP Update Table – 14 Capital Improvement Plan, 1 page

COMMISSIONERS ACTION

- **Recommended Motion:**
  Motion to update the 2015 Strategic Business Plan using a consulting group to facilitate the review. Schedule the completion of the update by 2020-year end.

Background Brief on ...

Oregon Ports

September 2014

Inside this Brief

Legislative Committee Services
State Capitol Building
Salem, Oregon 97301
(503) 986-1813

Background

Oregon's system of 23 public ports plays an important role in the state's economy. Ports are the gateways through which Oregon products, as well as those of much of the western United States, begin or continue their journey through worldwide markets. The state's agricultural, timber, and manufacturing industries rely on ports, in coordination with all modes of transportation, to move their goods. Goods from throughout the world also arrive at Oregon ports to be distributed throughout Oregon and the United States.

Oregon's nine ports on the Columbia River make up one-quarter of the 36-port Columbia-Snake system, along with one in Idaho and 26 in Washington. The three ports on the lower Columbia, Astoria, St. Helens, and Portland, are deep-water ports. Over 13 million tons of goods moved through the Port of Portland's marine terminals in 2011. Oregon also has 14 coastal ports, including the deep-water ports of Newport and the Oregon International Port of Coos Bay.

Ports are a critical part of the state's multimodal freight transportation system. Multimodal refers to the fact that goods may be transferred between ships, barges, trains, trucks, pipelines, and aircraft on their way from production facilities to markets. Goods are generally transported in one of five forms:

- Dry bulk: examples include grain, potash, or wood chips;
- Liquid bulk: items such as crude oil, petroleum products, and liquefied natural gas;
- Break bulk: carried in bags, crates, boxes, or on pallets;
- Containers: large metal boxes that can be customized for a variety of goods and can be mechanically moved between modes of transportation; or
- Roll-on/roll-off: cars and other wheeled equipment.

Port districts also play an active role in economic development. According to the Statewide Ports Strategic Plan adopted in October 2010, "one out of six Oregon jobs is directly or indirectly tied to cargo, recreation, industrial, commercial, or other activities at Oregon's ports, including privately owned and operated docks which import and export goods." Ports create and maintain industrial and commercial infrastructure in surrounding areas. They own and develop industrial and commercial parks for lease to private companies and help to maintain transportation infrastructure. Their role in attracting jobs and private investment is especially beneficial to rural areas where industrial infrastructure might not otherwise be developed. Several Oregon ports also operate air terminals and railroads in addition to marine facilities.

According to a report commissioned in 2014 by the Oregon Business Development Department **(OBDD)**, the permanent annual economic impact of the Oregon Columbia River ports (excluding the Port of Portland) include 20,805 direct, indirect, and induced jobs, with a total labor income of $856 million and local and state tax revenue payments of nearly $162 million. The same report shows that the 15 Oregon Coastal ports provide 15,258 direct, indirect, and induced jobs with $579 million in labor income and local and state tax revenue payments in excess of $88 million. The estimated regional economic benefits of the Port of Portland and Portland Harbor include 75,800 direct, indirect, and induced jobs, $3.76 billion in annual labor income and $346 million in annual state and local tax payments.

Oregon's public ports are also important to state tourism and the commercial and recreational fishing industries. Ports develop and own marine and land-side infrastructure necessary to support thousands of commercial fishing and sport boats. The ports are a primary link in moving Oregon seafood products to domestic and international markets.

Oregon's ports are incorporated special local districts, regulated under Oregon Revised Statutes **(ORS)** chapter 777 and 778 (Port of Portland only). Ports are run by locally elected boards of commissioners (except for the Port of Portland and the Oregon International Port of Coos Bay, whose boards are appointed by the Governor and confirmed by the Oregon Senate), and are authorized to generate income through bonding, user fees, taxation, and other sources. Because of differences in waterway conditions, surrounding transportation infrastructure, and goods shipped, each port faces different issues. For example, forest products and wood fiber make up 95 percent of the tonnage shipped through the Oregon International Port of Coos Bay while accounting for less than 10 percent of commodities on the Columbia River, where the single largest commodity is wheat. The Lower Columbia is first in the nation in wheat exports and third in the nation as a grain export center.

Statewide Ports Strategic Plan

The Oregon Business Development Commission formally adopted "Ports 2010: A New Strategic Business Plan for Oregon's Statewide Port System" in October 2010. Statutory changes enacted by the Legislative Assembly in 2007 provided the impetus for development of the Statewide Plan. Both those statutory changes and the statewide plan require that ports incorporated under ORS 777 develop and maintain strategic business plans based on an Oregon Business Development Department approved template as a condition for maintaining access to department funding.

The Statewide Ports Plan requires that individual port strategic business plans be approved by OBDD. The plan also calls for elected port commissioners and officials to receive training on ethics and best practices. Under the Statewide Plan, once a port's business plan is approved by OBDD, the Department and the port are to develop an intergovernmental agreement **(IGA)** based on the approved plan, with the agreement incorporating the training requirements, best practices, and other recommendations of the Statewide Plan. The IGA lays out how the Department and port will work together to implement the port's adopted business plan.

Multiple ports have completed their strategic plans and the IGA process, while the remainder continue to actively work to do so. Ports were given until the end of October 2013 to begin development of their plans, which must ultimately be submitted to OBDD for approval.

Infrastructure Improvements

Port managers continually seek ways to upgrade their infrastructure. Since ports are but one part of a multimodal system, it is vital that rail and highway connections be maintained, and where possible, enhanced. Achieving seamless movement of goods across transportation modes and geographical regions minimizes transportation costs, thereby making Oregon's ports and Oregon's products more competitive. Port needs include rail improvements, road access expansion, and terminal expansion and improvement.

The navigation channel and ocean bar crossings of most coastal river mouths and bays must be dredged periodically to maintain their depths due to natural buildup of silt deposits. Coastal jetties also require periodic maintenance in order to protect navigational access to smaller ports and harbors. Federal funding for maintenance dredging of many of Oregon's shallow-draft fishing ports is threatened annually with reduction or elimination. The Legislative Assembly expanded the Marine Navigation Improvement Fund in 2003 to help provide local matching funds needed to obtain federal dollars for navigation projects.

In 1999, the Legislative Assembly authorized $45 million in lottery bonds for local commercial and industrial infrastructure projects, including port facilities (House Bill 2153). House Bill 3364 (2001) created the Oregon Freight Advisory Committee to advise the Oregon Department of Transportation (ODOT) on freight transportation policies and programs. House Bill 3446 (2003) provided $3.5 million in lottery bond capacity for small port dredging purposes.

During the 2005 legislative session, *Connect*Oregon was created as a $100 million lottery-bond-based initiative to invest in air, rail, marine, and transit infrastructure to ensure that Oregon's transportation system is strong, diverse, and efficient. Ensuing projects focused on connections between the highway system and other modes of transportation. The projects were distributed statewide and selected by the Oregon Transportation Commission (OTC) with the use of criteria specified in statute along with stakeholder and regional transportation advisory committee consultation. An additional requirement was that 15 percent of the proceeds were to be spent in each of ODOT's five regions. Following the sale of the $100 million bonds approved in 2005, 41 projects were funded. Nine ports received funding for projects ranging from barge slip redevelopment, intermodal rail project, mooring dolphins, and a post-panamax crane.

The 2007 Legislative Assembly enacted *Connect*Oregon II through House Bill 2278 that provided for an additional $100 million in lottery-backed bonds for intermodal infrastructure improvements. The Commission selected projects using the following revised criteria:

- Reduction of business transportation costs;
- Improved access to jobs and labor sources;
- Economic benefit to the state;
- Linking transportation moves for efficiency;
- Available matching funds; and
- Readiness for construction.

Two marine projects, at the Port of Portland ($4.5 million) and Port of Astoria ($973,000), received funding through *Connect*Oregon II.

House Bill 2001 (2009) included an additional $100 million in funding for multimodal projects in *Connect*Oregon III. After being reviewed by modal and regional committees, 41 projects were awarded funding by the Oregon Transportation Commission, using similar criteria from the 2007 selection process. Seven port projects were funded, including dredge equipment upgrades, de-icing system upgrades, wharf repairs, crane modernization, and rail-to-barge facilities.

In 2011, the Legislative Assembly approved $40 million in lottery-backed bonds for the *Connect*Oregon IV program as part of House Bill 5036. Building on the success of the first three authorizations, *Connect*Oregon IV had a total of 65 applications that met eligibility criteria. Of those 65 applications, nine port-related applications were chosen for funding.

In 2013, the Legislative Assembly approved $42 million in lottery-backed bonds for the *Connect*Oregon V program as part of Senate Bill 260. Recently, the Final Review Committee selected seven port applications for funding to be considered by the Oregon Transportation Commission in the summer of 2014.

In 2013, the Legislative Assembly also approved $3 million in Lottery Funds to support dredging federally-authorized channels serving South Coast Ports under a Memorandum of Understanding between the State of Oregon and the U.S. Army Corps of Engineers. In 2014, the Legislative Assembly authorized $2 million for the purchase of a portable dredge to conduct dredging in port marinas and non-federal channels.

Deepening the Columbia River Channel

After nearly 20 years of effort, the Columbia River channel improvement project is complete. The final portion of the 110-mile, lower Columbia River navigation channel was deepened from 40 to 43 feet in November 2010. The region has since seen $930 million in new investment, including nearly $125 million in improvements at the Port of Portland's Terminal 5 and 6, and new and upgraded facilities at other lower Columbia River ports. In addition to the dredging, 257 acres of habitat were restored and 11 tide gates were retrofitted to allow for fish passage as part of the project.

Dredging the 103-mile, 600-foot-wide navigation channel between the mouth and Portland to deepen it from 40 feet to 43 feet was originally estimated to require removal of 19 million cubic yards of sand at a cost of $134 million. Environmental challenges and increased costs ultimately increased the total project cost to roughly $200 million. On May 20, 2002, the National Marine Fisheries Service and the United States Fish and Wildlife Service jointly announced findings that the channel deepening project presented negligible risk to threatened and endangered species. With the deepening portion of the project completed, additional work restoring fish habitat and areas where dredged materials were deposited will continue into the future.

The navigation channel is managed by the United States Army Corps of Engineers. It was originally dredged in 1878 to a depth of 20 feet, and has been progressively deepened, usually in five-foot increments, to its current depth of 43 feet. House Bill 2275, enacted in 2001, authorized issuance of $28.7 million in lottery bonds through the Oregon Economic and Community Development Department to pay Oregon's share of the dredging project's total cost. The bonding authority was extended by House Bill 3446 (2003).

Staff and Agency Contacts

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President, Oregon Public Ports Association
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503-986-0065

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503-808-4340

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business oregon
a state agency

April 4th, 2019

RECEIVED
APR 10 2019

Richard Heap, Commission Vice-Chair
Port of Brookings Harbor
c/o Gary Dehlinger
16330 Lower Harbor Rd
PO Box 848
Brookings, OR 97415

Dear Mr. Heap:

Thank you for returning the signed original Intergovernmental Agreement,
Enclosed please find an executed original for your project file.

Should you have any questions, please do not hesitate to contact Dave Harlan, Port Manager at 503-986-0065 or email to: dave.harlan@oregon.gov.

Sincerely,

David C Sell

David Sell, Administrative Assistant
Business Oregon

Enclosure

C: File

8

Intergovernmental Agreement

Establishing a Business Relationship between the

Oregon Business Development Department

and the Port of Brookings Harbor, Oregon

Under the authority in ORS 190.110, this Intergovernmental Agreement ("IGA" or "Agreement") is made by and between the State of Oregon, acting by and through its Oregon Business Development Department ("Department"), and the Port of Brookings Harbor ("Port").

Recitals

A. At the direction of key state legislators and the Oregon Business Development Commission, the Department, in Spring 2009, commenced a statewide strategic planning effort in order to determine what the State of Oregon's interest and involvement in Oregon's 23 port districts should be. The result of this process was the "Ports 2010: A New Strategic Business Plan for Oregon's Statewide Port System" (as modified or supplemented from time to time the "Statewide Ports Strategic Plan" or "Plan").

B. On May 12, 2010, the Infrastructure Finance Authority ("IFA") board unanimously approved the Statewide Ports Strategic Plan. On September 24, 2010, the Oregon Business Development Commission endorsed the Statewide Ports Strategic Plan and adopted the Plan as the Department's policy and guideline for State/Port relations, activities and investments.

C. The Statewide Ports Strategic Plan, published in October 2010, requires that port districts enter into intergovernmental agreements with the Department if they want to receive Department staff support and funding assistance.

D. The Port desires to enter into this Agreement in order to be eligible for coordinated funding programs; state advocacy and support on business development, regulatory and legislative matters; and state supported training and certification programs from the Department.

E. The Department desires to enter into this Agreement to assure that (1) funding for Port projects is tied to state and regional priorities, including key industries; (2) there is a return on investment ("ROI") or acknowledged public benefit for state investments; (3) the Port develops and maintains the ability to operate and maintain its capital facilities; (4) the Port is committed to compliance with state and federal laws; and (5) the Port is held accountable for the proper use of state funds.

Agreement

Section 1: Purpose

This IGA is intended to (a) implement the Statewide Ports Strategic Plan by evidencing the commitment of the Department and the Port to the policies and guidelines set forth in the Plan and (b) provide a description of the roles and responsibilities of and actions to be undertaken by the Department and the Port.

Section 2: Appendix A and Appendix B to the Agreement

Appendix A that is attached to this Agreement sets forth certain representations and facts related to the Port. The Port may update these representations and facts to the Department to the Department through Port Commission resolution or written administrative action, and by posting on the Port's website.

Appendix B that is attached to this Agreement sets forth certain representations and facts related to the Department. The Department may update these representations and facts to the Port by written notice.

Section 3: Port's Acknowledgement

The Port acknowledges that it has read and understands the Statewide Ports Strategic Plan and agrees that it will implement the policies and conform to the guidelines set forth in the Plan. The Port also understands and acknowledges that the Department is relying on the Port's commitment as set out in this Agreement when making any decisions regarding the award of grants, loans, or technical assistance to the Port pursuant to ORS 285A.600-732 and that the Port's compliance with the terms of this Agreement is required for the Port to be eligible for any grant, loan or technical assistance award.

Section 4: Port's Representations

The Port represents and warrants to the Department the following:

4.1 **Organization and Existence:** The Port is duly and validly organized and in existence as a port under ORS Chapter 777 and a special district pursuant to ORS 198.010(20).

4.2 **Authority:** The Port has full legal right, power, and authority to execute and deliver this Agreement and to incur and perform its obligations hereunder.

4.3 **Authorization:** The Port's execution and delivery of this Agreement have been duly authorized by the Port's governing body in accordance with applicable law and the Port's requirements for filing public notices and holding public meetings, and it has been duly executed and delivered on behalf of the Port by an authorized officer of the Port.

4.4 **Enforceability:** This Agreement constitutes the legal, valid and binding obligation of the Port, enforceable in accordance with its terms.

4.5 **No Breach or Violation:** The authorization, execution and delivery of this Agreement by the Port and the performance by the Port of its obligations hereunder will not result in any breach or default, nor has the Port received notice of any claimed breach or default, under any of the terms of any State of Oregon loan or grant agreement. Nor will such action result in any violation of the provisions of the charter or other document pursuant to which the Port was created or established, or any laws, rules, regulations, ordinances, orders, resolutions, loan agreements or court orders to which the Port or its properties or operations is subject.

4.6 **Continuing Representations:** The representations and warranties of the Port contained herein are true on the Effective Date of this Agreement and will remain true at all times thereafter until the final performance, observance and discharge of all duties, covenants, agreements and obligations of

the Port under this Agreement, except that the representations of the Port contained in Appendix A may be updated by the Port from time to time by written notice to the Department.

Section 5: Conditions Precedent to this Agreement

This Agreement is not effective until the date ("Effective Date") that this Agreement is fully executed and has received all required approvals, and the following have been delivered to the Department, in form and substance satisfactory to the Department and its counsel:

5.1 A copy of the organizational documents of the Port certified by an authorized officer of the Port as being a true and complete copy; and

5.2 A certified copy of the meeting minutes, resolution or ordinance documenting the official action of the Port authorizing the execution, delivery and performance of this Agreement, which must also be posted on the Port website not more than 90 days after approval by the Port Commission.

Section 6: Roles, Responsibilities & Commitments of the Department

The Department, in order to fulfill the recommendations of the Statewide Ports Strategic Plan, agrees to undertake the following implementation actions:

6.1 **Revise State Ports Program Institutional Structure:** The Department shall restructure its Ports Program so as to promote the coordination of State/Port-related functions. In the short-term (defined as up to three years), the Department shall endeavor to establish memoranda of understanding with other relevant State agencies to obtain commitments for assistance with the Port Program. Over the longer-term (three to ten years), the Department shall use good faith efforts to provide additional technical assistance including coordination for environmental compliance, regulatory agency reviews, and permitting on major Port projects requiring environmental review.

6.2 **State and Federal Coordination:** The Department shall continue to provide federal coordination assistance on funding requests and regulatory and permitting issues. The Department will use good faith efforts to include, in any memoranda of understanding described in Section 6.1 above, ways to streamline permitting and regulatory processes where practical, while also supporting regional efforts aimed at accomplishing the same goal with federal agencies. The Department will cooperate with the Oregon Public Ports Association ("OPPA") to convene the cargo ports to discuss and identify priorities for marine transportation system navigation improvements, dredging, and jetty repairs and coordinate federal funding requests based on those priorities to the Oregon congressional delegation.

6.3 **Capital Facilities Plan:** To assist ports with their capital facilities funding needs, the Department will work with OPPA and the ports to create a six-year state-wide Capital Facilities Plan ("CFP") identifying the top state-wide priorities for state funding and existing funding sources as well as any shortfall of funds for projects. The projects will be based on rankings developed by a committee appointed by OPPA with Department participation and separated into small/medium and large port categories. The CFP will be updated every biennium.

6.4 Funding of Port by the Department: OPPA and the Department shall establish eligibility criteria for any Port request(s) for funding by the Department. The criteria include but are not limited to the following:

6.4.1 The Port's compliance with the terms of this Agreement.

6.4.2. Whether the Port has submitted and received approval from the Department for periodic updates to its Strategic Business Plan based on a Department template.

6.4.3 Whether the Port has a current basic Capital Facilities Plan identifying its capital project priorities as described in Appendix A, in form and substance acceptable to the Department.

6.4.4. Whether the Port has complied with the terms of any loan agreements or other funding agreements between the Port and the Department or any other agency of the State of Oregon.

The Port understands and acknowledges that it may not be awarded funding it seeks due to: lack of funds, the Port not in compliance with Department loan agreements, or as the result of an underwriting analysis done by the Department at the time of the Port's application for funding. This Agreement is not a commitment by the Department to provide the Port with any funding.

6.5 Training Program: Working with OPPA and the Special Districts Association of Oregon ("SDAO"), the Department will seek to identify appropriate training programs and opportunities for Port Commissioners, Port CEOs, and other Port employees.

Section 7: Roles, Responsibilities & Commitments of the Port

While the Port is responsible for managing its assets and liabilities, to fulfill its obligations under this Agreement, the Port agrees to implement the following required policies, plans and programs:

7.1 Port Plan: The Port shall adopt a Strategic Business Plan and a Capital Facility Plan (collectively and individually without distinction, the "Port Plans"), and periodically update them every five years or more often if required by circumstance. The Port Plan must be consistent with the templates included in the Statewide Ports Strategic Plan. The Department will provide funding assistance to support those planning efforts set forth in Appendix A, subject to the availability of funds, the Department's approval of Port's application, the requirements of program rules, and the execution of a funding contract. The Port shall identify one or more core functions that the Port provides and current and new industries and economic development that the Port expects to support and promote. Targeted industries in the Port's Strategic Business Plan must be consistent with the Department's identified key industries list or regionally important industries identified in the Port's Strategic Business Plan.

7.2 Planning Process: When preparing or updating its Port Plans, which must occur not less than every five years, the Port shall prepare, distribute and publicize a work program and schedule for the planning process. The work program must identify specific opportunities for government stakeholders, residents of the district and Port businesses and tenants to submit to the Port verbal and written comments on the draft interim and final components of the Port Plans. The Port Plans must also identify links to the Department's key industries or regionally important industries, including new or emerging industries, which the Port's activities or facilities support.

7.3 Plan Amendment: The Port may amend its Port Plans in response to unforeseen business opportunities or circumstances. Any amendments to Port Plans in response to unforeseen business opportunities or circumstances must be consistent with the requirements of this Agreement, must be copied to the Department in writing or by email, and posted on the Port's website.

7.4 New Business Opportunities: The Port will evaluate opportunities for new business in the marketplace for suitability based on the Department key industry list and the regionally important industries identified in the Port's Strategic Business Plan. To qualify for Department funds to attract a new business, the Port shall verify the existence and viability of the market for the proposed new business opportunity by conducting a market feasibility study or providing other research and analysis, subject to review and approval by the Department, that shows the business opportunity is consistent with the Port's Strategic Business Plan.

7.5 Statewide Capital Facilities Plan: As stated in Section 6.3 above, the Department has committed to supporting the creation of a Statewide CFP for ports in coordination with OPPA. The Port will participate in the preparation of the CFP and its updates as requested by OPPA or the Department or both.

7.6 Governance: The Port shall [*if policies not yet adopted:* adopt,] maintain and enforce governance policies, both for the Port Commission and for Port staff and operations, that are consistent with best management practices; both of which must comply with state ethics laws pertaining to conflict of interest and fiduciary responsibilities.

7.7 Training: The Port will work to ensure that newly elected Port Commissioners undergo the general board training provided by SDAO and any specialized training provided through OPPA by adopting policies on board and staff training. Ongoing board training and other training opportunities for sitting Port Commissioners and the Port CEO should be encouraged, to remain current on statutory and policy changes (see Appendix A).

7.8 Audited Financial Statements: The Port shall promptly notify the Department of any delay beyond one calendar week of its applicable filing date for submitting audited annual financial statements to the Oregon Secretary of State's Office.

Section 8: Reporting Requirements

8.1 New Department Programs: The Department shall, from time to time, update the Port on the implementation of any new programs.

8.2 Reports: The Port shall comply in a timely manner with all reporting requirements set forth in its funding agreements with the Department. Further, within 180 days of the end of its fiscal year ending each June 30, the Port shall provide to the Department, on a consolidated basis, in a format approved by the Department, (1) a progress report regarding the status of all projects funded by state grants or loans and (2) an itemization of all expenditures made in the fiscal year for all state grants and loans.

8.3 Notification of Meeting Dates: The Port shall post the dates of commission meetings and other public meetings on its website.

8.4 Plan Changes: The Port shall provide the Department with draft plan changes and components for all planning and marketing programs (such as its Port Plans) to allow for review and comment before adoption.

Section 9: General Terms

9.1 Term; Termination: The term of this Intergovernmental Agreement commences on the Effective Date of this Agreement and ends on the anniversary of the Effective Date; provided however that this Agreement renews automatically unless either party gives to the other notice at least thirty (30) days prior to the current applicable anniversary.

This Agreement may be terminated by written mutual consent of the parties. In addition, this Agreement may be terminated by either party with not less than ninety (90) days' written notice to the other party.

Termination of this Agreement does not terminate any other agreement between the Department and the Port unless the other agreement expressly so provides.

9.2 Notice: All notices to be given under this Agreement must be in writing and addressed as shown below, or to other addresses that either party may hereafter indicate pursuant to this section. Notices may be mailed, postage prepaid, which become effective five calendar days after mailing. Notices may be personally delivered, which become effective upon actual delivery. Notices may be emailed, which become effective upon verification of receipt of email.

Notices to Department:
Oregon Business Development Department
775 Summer Street N.E., Suite 200
Salem, OR 97301-1280
(Attention: Dave Harlan, Ports Program Manager)
Facsimile Number: (503) 581-5115

Notices to Port:
Port of Brookings Harbor
(Attention: Port Manager)
P.O. Box 848
Brookings, OR 97415
portmanager@portofbrookingsharbor.com
Facsimile Number: (541) 347-4645

9.3 No Third Party Beneficiaries: Department and the Port are the only parties to this Agreement and are the only parties entitled to enforce its terms. Nothing in this Agreement gives, is intended to give, or is to be construed to give or provide any benefit or right, whether directly, indirectly or otherwise, to third persons any greater than the rights and benefits enjoyed by the general public unless such third persons are individually identified by name herein and expressly described as intended beneficiaries of the terms of this Agreement.

9.4 Independent Contractors: The parties agree and acknowledge that their relationship is that of independent contracting parties and that the Port is not an officer, employee, or agent of the State of Oregon as those terms are used in ORS 30.265 or otherwise.

9.5 Successors and Assigns: This Intergovernmental Agreement inures to the benefit of and is binding upon the Department and the Port and their respective successors and permitted assigns. Port shall not assign or transfer any interest in this Agreement without the prior written approval of Department.

9.6 Amendments: This Intergovernmental Agreement may be amended only by an amendment signed by both parties. No waiver or consent becomes effective unless in writing and signed by the party against whom enforcement is sought.

9.7 Severability: In the event any provisions of this Intergovernmental Agreement are held invalid or unenforceable by any court of competent jurisdiction, such holding does not invalidate or render unenforceable any other provisions hereof.

9.8 Headings: All headings contained herein are for convenience of reference only and are not intended to define or limit the scope of any provision of this Agreement.

9.9 No Construction against Drafter: Both parties acknowledge that they are each represented by and have sought the advice of counsel in connection with this Agreement and the transactions contemplated hereby and have read and understand the terms of this Agreement. The terms of this Agreement are not to be construed against either Party as the drafter hereof.

9.10 Governing Law: This Agreement is to be governed by and construed in accordance with the laws of the State of Oregon without regard to principles of conflicts of law.

9.11 Counterparts: This Agreement may be executed in several counterparts, each of which constitutes an original and all of which when taken together constitutes one agreement binding on all parties.

IN WITNESS WHEREOF, the parties have caused this Agreement to be duly executed by their authorized representatives. The Port, by signature of its authorized representative, hereby acknowledges that it has read this Agreement, understands it, and agrees to be bound by its terms and conditions.

OK
4/2/19

STATE OF OREGON
acting by and through the
Oregon Business Development Department

By: _____
Chris Cummings, Assistant Director
Economic Development

Date: 4-2-19

PORT BROOKINGS HARBOR

PORT OF BROOKING HARBOR

By: _____
Richard Heap, Commission Vice-Chair

Date: 3-21-2019

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APPENDIX A - Port

Section 1. Port Contact Person. The Port's contact person for this Agreement is the Port Manager.

Section 2. Certain Representations of the Port.

2.1 The governing body of the Port is the Board of Commissioners, comprised of five members, who are elected for four (4) year terms. Two (2) commissioners appear on the general election ballot every 4th year, and three (3) commissioners appear on the ballot every 4th year. The chief [executive] [operating] officer of the Port is the Port Manager.

2.2 The Port's primary business lines include: marine facility operations and management, community and economic development and navigation channel maintenance advocacy. The Port's activities and facilities support: water transportation, commercial and recreational fishing, local farming, food processing and distribution, entrepreneurial activities, and tourism/recreational industries.

Section 3. Additional Eligibility Criteria for Streamlined Funding Process. Below are additional eligibility criteria to streamline the process for review of the Port's request(s) for funding by the Department:

3.1 Commitment to Implement Strategic Plan: The Port shall demonstrate good faith efforts to follow and implement its adopted Strategic Business Plan, including as demonstrated by activities listed in its adopted annual budget.

3.2 Governance Policies: The Port will maintain and adhere to a Commission Governance Policy clearly defining the roles and responsibilities of the commission and staff. The adopted policies are based on Special Districts Association of Oregon (SDAO) recommended policies. Policies include measures to protect the Port against breach of policies by elected officials or staff.

3.3 Capital Facilities Plan: To comply with the requirement in 6.4.3 regarding a current Capital Facilities Plan, the Port shall develop and maintain a Capital Facilities Plan (CFP) as described in its June 2015 adopted Strategic Business Plan. Site-specific capital facilities plans may be developed as components of the Port's overall CFP. The Port will routinely review and update its CFP as part of its annual budget process.

3.4 Best Management Practices: The Port shall adopt appropriate best management practice policies, as outlined in the Financial Plan section of its adopted Strategic Business Plan; review, update and adopt appropriate environmental management policies for its activities and facilities, including Port lease policies and documents.

Section 4. Department's Funding Assistance for Port Planning Efforts. Consistent with item 7.1 of this IGA, the Port may seek to submit funding applications for up to two planning efforts for the following projects listed below per biennium, contingent on the availability of funds. Consideration may be given for funding additional projects for unanticipated opportunities

Section 5. Training. The Port shall require that its Commissioners, CEO and at least one other employee undergo SDAO or other approved training in accordance with the following schedule:

All newly elected or appointed Commissioners shall participate in relevant SDAO board training within one (1) year of their election or appointment. All sitting Commissioners will participate in recurring training at least once per term. The Executive Director and (designated assistant manager) will participate in port-specific training at least once a year. Training requirements can be met through participation in SDAO programs, OPPA meetings, or other appropriate training sessions or meetings. Port Commissioners and other staff will be encouraged to participate in additional training and development activities according to the Port's Training and Development policy.

Section 6. Priority Tasks involving the Department. The Port intends to pursue the following priority tasks with Department assistance within 24 months. This list may be updated at any time upon mutual written agreement of the Port and the Department.

TASK	*TIMELINE*
Fuel Dock Ramp and Slope Reconstruction	Winter 2019
Pac Choice Receiving Dock Rebuild	Winter 2020
RV Park Facility Reconstruction	Summer/Fall 2020
Basin 2 Slopes Repairs-Reconstruction	Winter 2021
Dredge Basins 1 & 2	Oct – Dec 2021, Jan – Feb 2022
Paving Gear Storage – Stormwater Improvements	Fall 2022
Tasks subject to change due to FEMA disaster relief and/or INFRA Grant award	

APPENDIX B - Department

Section 1. Department Contact Person. The Department's Ports Program Manager (Dave Harlan, or other designated staff) will serve as the Department's contact person for this Agreement.

Section 2. Notifications of Meeting Dates and Plan Changes. The Department shall regularly update the Port on public or Oregon Business Development Commission meetings. On request, the Department shall, in a timely manner, provide examples to the Port of components for all planning and marketing programs (such as the Strategic Business Plan, marketing plans and capital facilities plans) during any changes/updates.

Section 3. Training. On request, the Department shall, in a timely manner, identify or confirm training opportunities for Port elected officials, the Port Manager and other Port staff that will assist the Port in meeting the training requirements of this Agreement.

Section 4. Best Practices Handbook. The Department shall identify and distribute Best Management Practices policies, examples and related training opportunities to the Port.

Section 5. Federal Advocacy: The Department will continue to provide good faith advocacy and assistance to the Port on federal navigation channel operations and maintenance and other port-related federal policies and funding opportunities.

Section 6. Project Coordination: The Department will provide good faith project coordination with other state and federal agencies as requested by the Port.

Table-14 Capital Improvement Plan

2019 CIP Rank	2020 CIP Rank		Capital Improvements	2019 Cost Estimates	Timeline	2019 Priority	2020 Priority	Fund Source	Priority Project Category
1	1	Fuel Dock Access Pad Replacement	Reconstruct marine fuel dock station	$831,500	2019-20	High	Extreme	State Lottery-FEMA	Commercial / Marina facility upgrade
5	2	Basin 2 West, South and East Embankment Repair - Reconstruction	Embankment repair, via H-pile/concrete section stabilization; install fencing	$3,750,000	2020-21	High	High	FEMA - PDM - Port / Business Oregon	2019 Storm related damage
7	3	Basins 1 and 2 Dredging	Basins 1 and 2 dredging	$4,200,000	2020-21	High	High	FEMA - PDM - Port / Business Oregon	2019 Storm related damage
2	4	Pacific Seafood Receiving Docks	Demolish two existing timber docks and concrete bulkhead; construct concrete dock on both sides of new receiving dock; install concrete pavement; install storm drainage facilities.	$1,500,000	2022	High	High	NHMP - PDM / Port	Commercial facility upgrade
	5	Green Building Area	Develop site for covered storage units for all types of equipment, gear, vessels, vehicles, etc.	$1,000,000	2020-21		High	Port - Grants	Commercial facility upgrade
3	6	RV Park Protection Wall and Facility Improvements	Install protection seawall; demolish existing restroom shower facility, RV office and laundromat foundation; construct new facility with RV office, laundromat, showers and restroom; construct new pull-thru sites	$400,000	2020-21	High	High	NHMP - PDM / Port	Recreation improvements / public amenities
6	7	Stormwater Drainage and Paving Zones 3 Basin 2 East Parking Area	Stormwater improvements; grind / overlay parking lot; curbs; striping	$1,080,000	2021-22	Medium	Medium	NHMP - PDM / Port	Commercial facility upgrade / public amenities
8	8	Stormwater Drainage and Paving Zones 4 Basin 2 West Parking Lot and RV Park	Stormwater improvements; grind / overlay parking lot; curbs; striping	$1,180,000	2022-23	Medium	Medium	NHMP - PDM / Port	Commercial facility upgrade / public amenities
9	9	Hallmark Receiving Dock	Demolish existing timber dock; construct concrete dock; install concrete pavement; install storm drainage facilities.	$870,000	2022-23	High	Medium	NHMP - PDM / Port	Commercial facility upgrade
11	10	Basin 2 and Transient Docks	Replace old docks from C thru H and N thru P; reconfigure spaces to accommodate larger vessel; upgrade transient dock piles and docks	$1,500,000	2023-24	High	Medium	Port - Grants	Commercial / Marina facility upgrade
12	11	Commercial Center Upgrade / Renovation	Commercial building and site repairs or building third retail building	$1,500,000	2023	Medium	Medium	Port - Grants	Commercial facility upgrade / public amenities
13	12	Stormwater Drainage and Paving Zones 1 Commercial Storage Area	Stormwater improvements; grading, paving and curbs	$2,574,000	2024	High	Medium	NHMP - PDM / Port	Commercial facility upgrade
14	13	Stormwater Drainage and Paving Zones 5 Fishing Pier	Stormwater improvements; grind / overlay parking lot; curbs; striping	$165,000	2024	Medium	Medium	NHMP - PDM / Port	Marina facility upgrade / public amenities
15	14	Boardwalk Expansion / Replacement	Repair / restore piling; secure slope; replace wood planks with concrete surface	$292,500	2024	Medium	Medium	NHMP - PDM / Port	Marina facility upgrade / public amenities
16	15	Long-term Development Potential	Access condo / mixed-use development potential with drainage improvements including the addition of a canal / bioswale		Yrs 10-20	Low	Low	Port - Grants	Public-private partnership opportunity
17	16	Development Potential	Examine opportunity site for potential development - hotel / condo / business center		Yrs 10-20	Low	Low	Port - Grants	Public-private partnership opportunity
18	17	Lease Upgrades	Make commercial building upgrades	$150,000	Yrs 1-10	High	Low	Port	Facility upgrades

ACTION ITEM – B

DATE: December 27, 2019

RE: Pre-Disaster Mitigation Grant

TO: Honorable Board President and Harbor District Board Members

ISSUED BY: Gary Dehlinger, Port Manager

OVERVIEW

- October 15, 2019, Board approved working on PDM Grant applications for Basin 2 Slope Repairs, Dredging, Seawall at RV Park and Receiving Dock Repair.
- Deadline for the PDM Grant applications is Friday January 3, 2020.
- Oregon Military Department, Oregon Office of Emergency Management team had some employee turnover that prolong communication on this year Pre-Disaster Mitigation Grant process.
- With the deadline time constraint and this year declared disasters we have selected Basin 2 Slope Repairs and Dredging for 2020 PDM Grant application.
- **Important note with funding for this grant.** PDM grant matching is 25%. The estimated cost of the project is $3.3 million. Matching amount would be around $825,000. The Port could use its reserve fund plus budget another $100,000 from general fund. Amount would come up to $225,000. Another $600,000 would be needed to satisfy the matching.
- FEMA disaster funding cannot be used with this grant. State or Port funding must be used for the matching amount.
- If the Port happens to receive this award and matching amounts cannot be obtained, the grant will fail.
- If this grant fails or the Port decides not to pursue the grant, repairs to the Basin 2 slopes should be repaired using the proper rock and slope angle under the FEMA disaster funding. Dredging 38,000 cubic yards would also be under the FEMA disaster funding. The required 25% matching could be covered by Business Oregon and the Port would not use any of its funds for this repair work.

DOCUMENTS

- PDM Grant, 441 pages total (86 pages in this packet, removed reports and studies, available upon request)

COMMISSIONERS ACTION

- **Recommended Motion Option 1:**
  Motion to proceed with submitting Pre-Disaster Grant application for Basin 2 Slope Reconstruction and Dredging Basin 1 & 2.
- **Recommended Motion Option 2:**
  Motion to proceed repairing Basin 2 slopes and dredging under FEMA Disasters 4432 and 4452.

PRE-DISASTER MITIGATION

FOR THE

SPECIAL DISTRICT OF THE PORT OF BROOKINGS HARBOR (POBH)

DECEMBER, 2019

(FON DHS-19-MT-047-000-99, Restoration and Hardening of Basin 2 Docks and Embankments)

TABLE OF CONTENTS

10.6.9 Aug. 1978
10.6.10 Mar. 1983
10.6.11 Nov. 1984
10.6.12 Feb. 1994
10.6.13 Nov. 2002
10.6.14 Nov. 2009

11.0 Engineering Feasibility and Design
11.1 Preliminary
11.2 Design and Data
11.2.1 Summary
11.2.2 Survey Data
11.2.3 Hydraulic Data
11.2.4 Tides
11.2.5 Datum's (referenced to MLLW) Value (feet)
11.2.6 Ranges Value (feet)
11.2.7 Army Corp of Engineers and WEST Consultants Surge Study
11.2.8 Geotechnical Data
11.2.9 Preliminary Soil Conditions
11.2.10 Design Vessel Characteristics
11.2.11 NAVFAC Unified Facilities Criteria
11.2.12 Wind Loading on Design Vessels
11.2.13 Wave Loading on Dock and Design Vessels
11.2.14 Service Load and Extreme Loading Design and Recommended Design Criteria

12.0 Engineering Feasibility and Design Documentation – Hard Embankment Repair (Note: Engineered drawings with drawing notes are submitted as Exhibits, which provide construction details and scaled plan and profile views).

13.0 Engineering Feasibility and Design Documentation – Rock Base (Note: Engineered drawings with drawing notes are submitted as Exhibits, which provide construction details and scaled plan and profile views).

14.0 Cost Effectiveness BCA

15.0 Environmental/Historical Preservation Compliance

ATTACHMENTS

Attachment A: BCA Detail Spreadsheet
Attachment B: POBH Dock Failure Prelim. Report
Attachment C: POBH Restroom Estimate
Attachment D: Typical Pile Profile
Attachment E: Bellingham 2 Proposal
Attachment F: West Consultants Surge Study
Attachment G: Project Schedule
Attachment H: Retaining Wall Narrative
Attachment I: Rock Placement Tasks Estimates
Attachment J: Hazards Mitigation Plan
Attachment K: FEMA 4432-DR Site Inspection
Attachment L: FEMA 4452-DR Site Inspection
Attachment M: Engineering Project Drawings
Attachment N: SF 424, Signed and Dated
Attachment O: BCA Calculating Sheets

1.0 Port of Brookings Harbor

The Port of Brookings Harbor is a port authority within Curry County, Oregon, United States, and serves the neighboring communities of Brookings and Harbor. The Port is governed by a five-member commission elected at-large from the service district population of approximately 16,000. It is the busiest recreational port on the Oregon Coast, generating more than 33,000 boat trips for more than 95,000 people, and is one of the most active harbors for Chinook salmon on the coast.

The Port of Brookings Harbor is located at the mouth of the Chetco River. The Port entity was created in 1956 and it began operations in 1959. Today, the Port contains slips for 530 boats, and also has two transient boat docks.

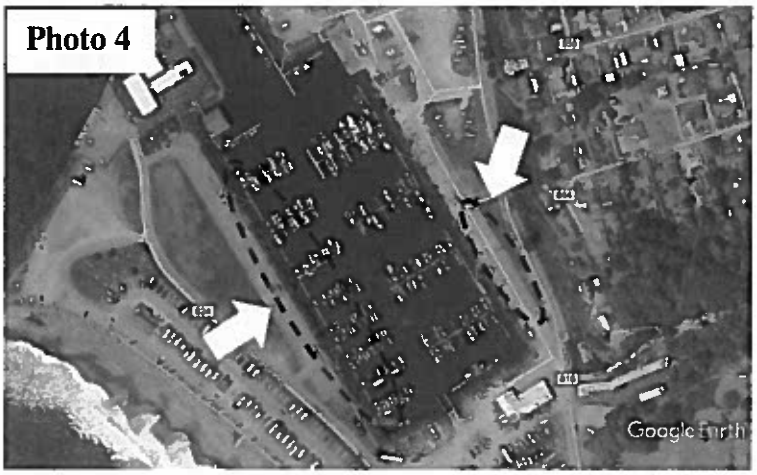
The Port of Brookings is an important commercial fishing harbor with over 5,000 annual visits by commercial fishing boats.

The Port of Brookings Harbor is listed as a "Harbor of Refuge" by the U.S. Coast Guard. The Chetco River, on which the Port is located, is the safest bar on the Oregon coast, with more than 280 passable days per year[1].

The Port has two basins: Basin 1 (North Basin) primarily accommodates recreational boaters, sailors and fisherman, while Basin 2 (South Basin) is designed to support the commercial fishing fleet.

[1] 8/23/11 BCA, by Kenneth Goettel

2.0 Landslide Threat



The Port of Brookings Harbor is seeking assistance to restore the use of Port facilities and arrest the slope failure threatening its Basin 2 facilities. At present, the encircled dock area shown in Photo 2 to the left is not safe and has been barricaded against public access and use.

This loss of lease income is about $13,000 annually, just under 10% of lease income from the west ½ moorage provided within Basin 2.

If action is not taken, staff and engineering analyses have indicated that up to 130 additional slips (shown in Photo 3 to the left) could be incapacitated within the next 3 – 5 years. Since the west side of the Basin 2 is of primarily smaller slips when compared to the east side, these 145 slips constitutes about 10% of the total commercial income and economic benefit to the POBH.

Additionally, indications of slope failure have been noted and documented along the south and east Basin 2 embankments[2].

The area[3] encircled in the aerialphoto (Photo 4) to the left below is that showing signs of embankment failure.

[2] See **Attachment B**, showing Floating Dock Access Pad failure, the most dramatic result of failure along the east Basin 2 embankment. The repair/replacement of this embankment section is not being sought in this assistance request, because slope stabilization and floating dock restoration comprises a separate project that needs individual design and funding attention. However, the photos do show the failure occurring along the east side of Basin 2

[3] See Photos on Page 3.

In total, as outlined in Section 6.2.1, of the March 2018 Natural Hazards Mitigation Plan, Floods/Storm Surge Events, "48% of Commercial Docks will not be practically available to the POBH within the next 5 – 7 years". This constitutes about $170,000 annual lease income loss to the POBH.

Much more significant to the POBH future is the subsequent loss to its commercial community. Section 6.3 of the March 2018 Natural Hazards Mitigation Plan identifies economic benefits for the operation of POBH as follows: 1)Totally Port related Oregon Employment of 860 jobs (706 direct and 150 for indirect/induced); 2) Oregon output (gross sales) of nearly $67.9 million ($40.9 million direct and $27. million in direct/induced); 3) Oregon Real Gross Domestic Product of $39.4 million ($22.65 million direct and $16.78 million in direct/induced); 4) Oregon Labor Income of $23.93 million ($12.89 million direct and $11.05 million in direct/induced); 5) Annual Local and Oregon tax revenue/payments of $4.21 million ($1.26 million in local and $2.95 million in state tax revenues) and 6) Annual Federal tax/payments by Oregon enterprises and employees of $5.12 million, the total of these exceeding $135,000,000/year.


Photo 5

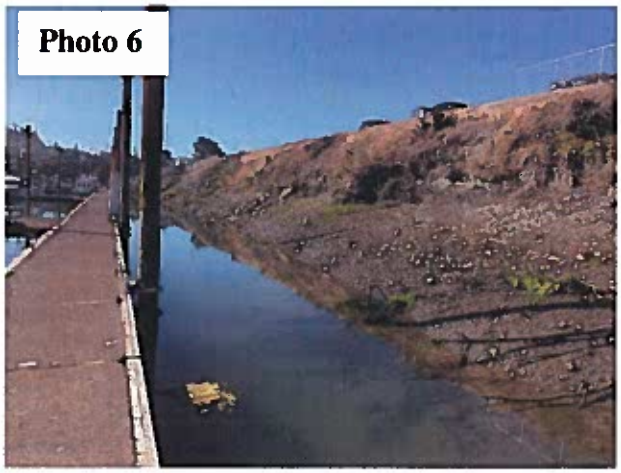


Photo 6

Attachment A is a group of tables that calculates the estimated losses to the Port, and also benefits expected to occur over the useful life of the proposed project.

As stated in the previous page of this narrative, if action is not taken, up to 130 slips in addition to those indicated in Photo 2 are predicted to be incapacitated within the next 3 – 5 years.

Photos 5 and 6 below were taken during high and low tide, respectively.

Photo 8 during highest tide (11:45 AM, +8.01' MLLW) and 7 was taken during low tide (9:04 AM, + 0.02' MLLW) 7/19/19. In all of these photos landslide conditions are evident.

The Port's restroom facilities are threatened, as foundation support soils have fallen away.

Photo 7

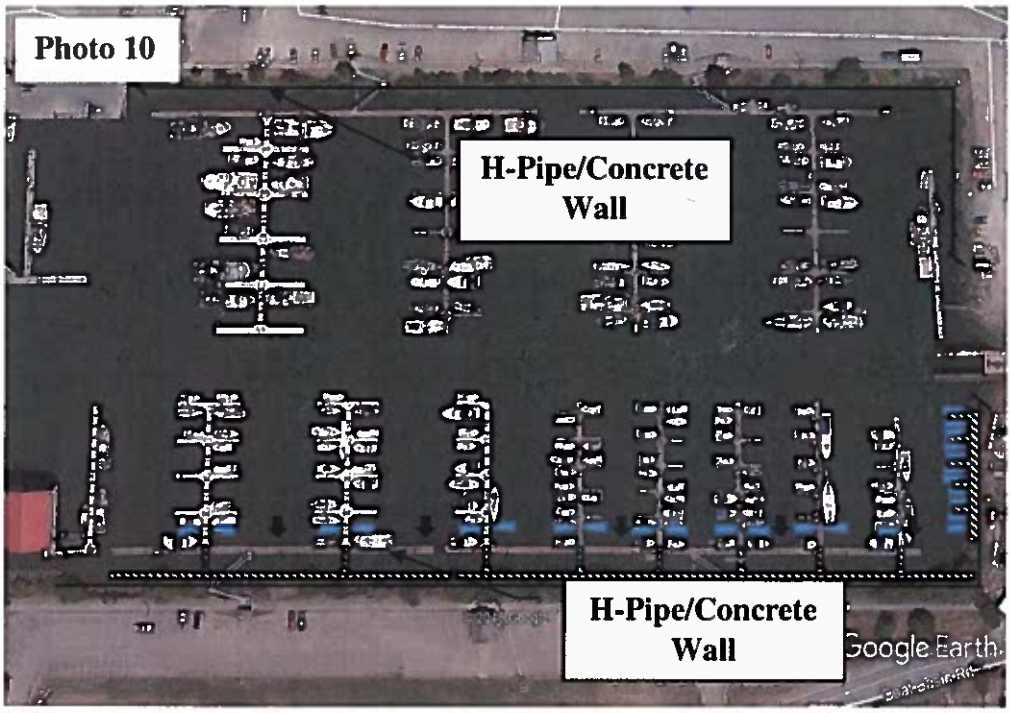
Photo 8

3.0 Scope of Work

The Port of Brookings Harbor is seeking assistance to provide a permanent (useful life of at least 40 years) solution to surge and embankment erosion and degradation in the Port's South Basin, referred to as "Basin 2". Photo 9 (using Photo 5) shows a conceptual placement of the proposed embankment wall, located above medium high tide elevation, and atop buried base rock (for scour protection).

The engineered drawing package entitled "**PORT OF BROOKINGS BASIN 2 – H - PILE / CONCRETE WALL**" is provided with this narrative, as **Attachment M**.

About 2,200 feet of Basin 2 slopes are failing due to accelerated erosion. These embankments will continue to degrade, and, now that failure has begun at the above-cited locations, deterioration of these slopes and the structures they support will accelerate. Increased erosion is pushing more sediment into the Port basin, and access to services will become more limited. As of November 3rd, 2017, over 450 linear feet of sidewalk along the west side of the Basin 2 and about 600 feet of floating dock (see Photos 13 -15 on Page 7) have been restricted from public access. Further, as shown in Photos 5 and 7 on Page 3 above, the restroom is now threatened.



It is recommended that these embankments be more permanently repaired. The repair should be such that these slopes are protected from energetic storm surges and high winter storms. Several slope stabilization methods were investigated, including 1) retaining walls constructed with sheet pile, pile and plank, H-pile/concrete sections, with tie backs and/or helical screws; 2) cantilevered retaining walls as described in 1), but without tie backs or other support or 3) rock wall placed at a 1.5/1.0 slope (maximum). Of these options, Method 2) is the best alternative, because the cost associated with parking lot repairs from tie-back excavation out-weighs that of heavier materials required for cantilevering, and rock wall construction at 1.5/1.0 slope would take valuable moorage space at the toe of the wall. EMC, the engineering firm contracted to investigate the feasibility of these options, has therefore recommended and preliminarily specified an embankment repair constructed of stand-alone (cantilevered) H-pile/concrete sections (see Section 9.0).

Photo 10 above indicates the proposed location of the wall. Also shown are proposed floating dock and slip additions made possible by the project. Additional vessels and moorage are indicated by blue-colored polygons. Hatched polygons (▨) indicate new or relocated docks and slips.

In order to support a cantilevered loading, prefabricated concrete sections that are 10 feet tall, having about a 10 ft.² cross-section (approximately 11 1/2" x 10') weighing approximately 16,000 pounds each, double curtain reinforced with #5 rebar (10 equally spaced vertically and 12 equally spaced horizontally), all cast 3 inches clear of all edges and faces would be specified. These concrete sections should be supported by 14 inch wide flange (W 14 x 90) piles. Concrete is to be minimum 4000 psi at 28 days. Rebar picking eyes (two each), when set, will bend hook 90° into precast pocket and filled flush with high strength grout. Piles will be driven to point of fixity (to be determined at each location). Fabric that will allow for drainage while retaining fine-grained sands and silts will be placed between the wall and engineered backfill.

An estimate for the construction of the wall, placement of fabric and fill is $975 per linear foot. It is estimated that about 2200 linear feet x 10' high of wall of this construction should be placed along these above-described embankment. Additionally, 4 – 6000 lb. toe rock would be placed beneath and sloping from the base of the wall. A 6" minus apron would be placed at least five feet eastward downslope from the base of the wall.

The engineered drawing package entitled "**PORT OF BROOKINGS BASIN 2 – H - PILE / CONCRETE WALL**" is provided with this narrative as **Attachment M. Sheet No. D.1.1, Task 6,** shows a profile of the dredging requirements for this project, estimated at about 6000 cubic yards.

If funding assistance was received for this project, final design, permitting[4], compensatory mitigation requirements and contracting procurement would conservatively place the construction initiation at about 18 months from funding approval. Since in-water work of this kind is required to work within the approved in-water work window (IWWW is 10/15 – 3/15), the project would begin on 10/15/21 and in-water work completed by 3/15/22[5]. As explained in Section 6.0, the project may be completed earlier.

4.0 Effectiveness of Similar Projects at the Port of Brookings Harbor

The proposed wall construction has precedent at the Port. The Port is located down-gradient (at the lowest elevation within the Brookings/Harbor communities) and receives all ground and surface water from these surrounding areas.

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[4] Permitting process begins with the Joint Permit Application to USACE, and ODSL; we then approach NOAA/NMFS for a BO (biological opinion, or equivalent). ODFW usually has some follow-up questions. There is usually a WQC-401 via DEQ. SHPO is often involved, certainly the local tribes. Then now we have an additional USACE branch to fill out a 408. We're required to do an eelgrass survey, a separate report to USACE & DSL. Also, if any upland work, say to excavate more than an acre of preparation for disposal, we have to produce a 1200-Construction Stormwater permit for another branch of the DEQ. We have to obtain a land-use compatibility statement (LUCS) sign off from the city or county, depending on which one at a given area manages it. We have an LCDC Oregon coastal zone process we have to go through, to satisfy that all of this work conforms to city/county/state/federal "enforceable policies". All of these agencies do not have to put forth any concerns they have until the public review period, which can be 30 days, sometimes, rarely, be accelerated to 15 days. In order to try to speed things up we often go directly to these agencies during the same period of time that we are submitting the JPA, resolving their issues beforehand, so that we don't get hit with any surprises from the public review.

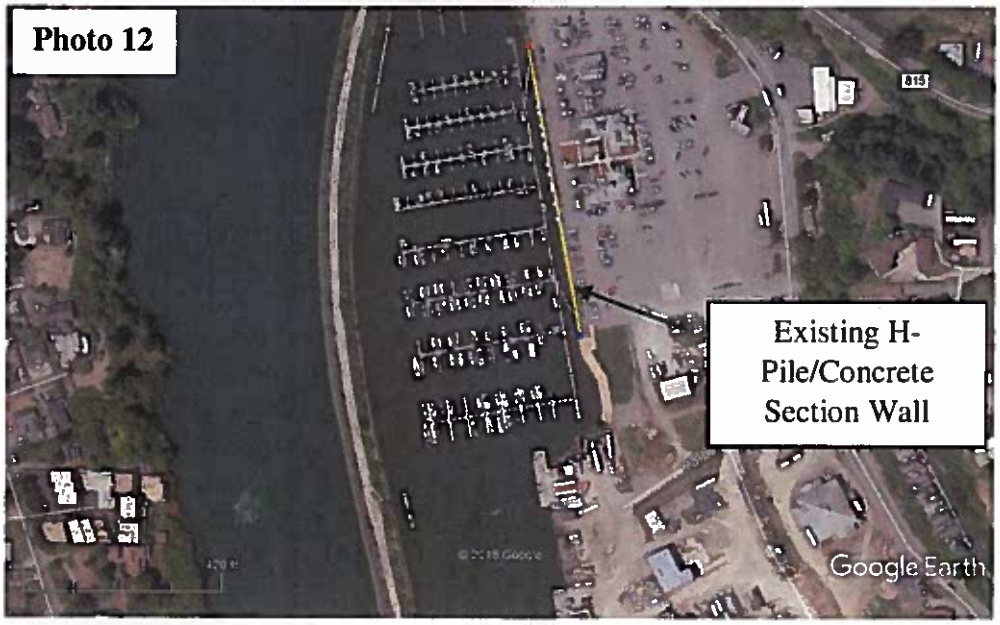
[5] See Section 6.0 and Attachment G for more scheduling details.

The Port embankments, having been originally constructed from previous mill pond and estuary, are high and steep, vulnerable to degradation and unraveling. At present, as shown in photos embedded into this narrative, and in Attachment B, Port operations are being threatened and/or compromised.

As seen in Photo 11, steep embankments along the east side of the Port's North Basin (Basin 1) have been successfully retained by a wall of construction similar to that proposed (although the larger embankments of the proposed project require design specifications as shown in attached engineering drawings).

Photo 11

Photo 12



The H-Pile w/ prefab concrete sectioned wall (about 640' long) shown in Photo 12 was constructed in the 1970's, and is well over 40 years old. The wood piles seen in front of the wall are columns supporting the overhanging boardwalk, and do not provide structural support for this wall.

5.0 Public Safety

In addition to the demonstrated public benefit, the proposed project will provide the necessary protection from the danger to the general public posed by the existing landslide threat. The top of the embankment is unstable. The adjacent sidewalk is accessed by adults, children and pets every day of the week. To temporarily protect the public, large sections of the top edge of the embankment along the west side of Basin 2 has been cordoned off.

Photo 13

Photo 14

Photo 15

Additionally, as shown in Photos 13 through 15, especially during very low tides, floating docks within the proposed project areas that are used by the public to access vessels and utilities are being racked as sediments migrating from adjacent embankment shoal and thus shallow the channel.

6.0 Schedule

Attachment G presents a work schedule that delineates project tasks. This schedule was constructed by the contracted engineer (EMC). EMC has the necessary experience with respect to permitting timelines, mitigation options and local contractor capabilities.

Enlisted in Attachment G are 15 tasks, each measured by monthly duration (time and start periods), related to the project activities outlined in the Scope of Work (Section 3.0).

These timelines are reasonable and conservative, accounting for permitting delays (e.g. mitigation negotiations, tribal disputes, etc.) and potential delays during project construction (e.g. equipment breakdowns, storms, discoveries, etc.).

The schedule assumes the completion of project design by end of February, 2020, which of course is a necessary element to permit application. Preliminary engineering work has been performed to enable the Port to complete this Application, providing information and drawings for timelines, budgets, benefit/cost analyses, etc.

Permit application begins, according to this schedule, by end of February as well. This is necessary to assure that excavation, which in part is in-water work, will be permitting by the upcoming in-water work window (IWWW) for the Chetco River estuary (October 15 – March 15).

Since most of the work scheduled for the 20 – 21 IWWW is not in-water work (H-pile and concrete section placement, considerable flexibility exists for the completion of this task. However, since excavation in part needed to place base rock beneath the concrete sections does require permitting, concrete section placement must await the receipt of the USACE/ODSL permit, along with all necessary agency concurrences.

Although the schedule in Attachment G assumes project completion by May, 2022, it is very possible that the project could be completed a year earlier. If, for example, sediment sampling and subsequent characterization were completed during months in 2020, and mitigation action proposed were accepted by the agencies (USACE, ODSL, NOAA/NMFS and ODFW) during 2020, then dredging and mitigation could also be easily accomplished, as well as pile and wall section placement, in 2020.

7.0 Project Cost Estimate

The project cost estimate (see Attachment A) outlines the costs for the development of the overall plan or project, and itemizes specific costs by task. The estimate includes all contractor and management costs. Risk assessment and hazard identification for the various project tasks, if not included within permit requirements (alternative analyses, final functions assessment, land use compatibility, etc.) are included in the engineering function for this project (Section 11.0).

7.1 Attachment A – Attachment A is a spreadsheet calculator, containing 9 tables used to accrue present and ongoing facility losses due to past and predicted degrading events leading to facility losses of function. Predicted losses were discounted at a conservative interest rate of 7% over a 40 year useful life span.

Thereby, for example, an estimated loss of $31,000.00 five years from now is discounted to $22,103. The same $31,000 loss is only valued at $2070 40 years from now. Annual discounted losses are thus calculated and accrued over the term of useful life. Attachment A also contains a cost sheet.

7.2 Sources of Data - Budget estimates for proposed project tasks were extracted from recent bids received from qualified contractors regarding similar project tasks. Floating docks and hoops utilized successful bids from Bellingham Marine, a well-known dock design, fabrication and installation firm (see Attachment E). Steel round and H-pile supply, concrete shoring, pile driving and removal, rock supply and placement utilized bids from Billeter Marine (see attachments H and I). Dredging costs vary widely, affected by method, whether via clamshell or hydraulic suction dredging/pipe line, by volumes of sediment per single event and frequency of equipment mobe/demobe, disposal options, whether by flow-lane, beach nourishment, ocean disposal or upland disposal (upland disposal is assumed for the proposed project), and dredging by mechanical, or clamshell method.

7.3 Project Costing and Performance Feasibility - EMC, the selected engineer for the proposed project, has provided full engineering design and project engineering/management for all of the tasks outlined for the proposed project. Since 2000 EMC has accomplished sediment sampling, analyses, dredging (using clamshell and hydraulic suction, design and supervision of all methods of disposing, i.e. to flow-lane, upland, beach nourishment and ocean disposal), excavation, grading and installation, rock and pile wall construction, H-pile and pipe pile removal and installation, culvert/stormwater design and analyses, debris boom design and analyses, landslide repair, etc. via licensed and qualified contractors, including Billeter Marine, Bellingham Marine, Legacy Contractors, Underwater Earthmovers (dredging), Bergersen Construction, Marzet LLC, West Coast Contractors, and many others.

Such projects were completed for and, in most cases, with government districts such as the Ports of Brookings-Harbor (permitting[6], sediment evaluation[7], bank stabilization, landslide repair, stormwater analyses and design, parking lot analyses, submerged aquatic vegetation or SAV analyses, dock facility installations, miscellaneous engineering analyses), Coosbay (permitting, dredging), Bandon (permitting, bank stabilization, rock construction, dredging, SAV analyses and mitigation), Gold Beach (SAV analyses, permitting, dredging, culverts), Siuslaw (permitting, embankment repair and construction, parking lot construction, SAV Analyses, dredging), and Alsea (permitting, SAV analyses and mitigation, dredging, pile extraction, installation, debris boom design and construction), Salmon Harbor Marina (permitting, SAV Analyses dock design and construction, sediment evaluation), private persons and businesses (streambed design and construction, sediment analyses and permitting, wall construction, culvert design and installation, landform grading and construction, landslide analyses, excavation, grading, etc.).

[6] Permitting includes federal, state and local permitting, as well as concurrences, opinions, submitted to FEMA programs, USACE, ODEQ, ODSL, EPA, USFW, ODFW, CZM, NOAA/NMFS, USDA, etc., as well to municipalities and counties.

[7] Sediment evaluation includes the development of a sampling and analyses plan, in-water sample collection, characterization of soils and water, and submission of opinions RE suitability of sediment for disposal methods.

7.4 Economic Analyses - In addition to effects presented regarding the Port of Brookings Harbor, losses of function severely impacts the local community and the State of Oregon. The FEMA-approved Natural Hazards Mitigation Plan, utilizing state and local data, documents these potential impacts[8].

Section 1.0 of the NHMP identifies the following economic benefits for the operation of this Port:

1) Total Port related Oregon Employment of 860 jobs (706 direct and 150 for indirect/induced);
2) Oregon output (gross sales) were nearly $67.9 million ($40.9 million direct and $27. million in direct/induced);
3) Oregon real Gross Domestic Product of $39.4 million ($22.65 million direct and $16.78 million in direct/induced);
4) Oregon labor income of $23.93 million ($12.89 million direct and $11.05 million in direct/induced);
5) Annual local and Oregon tax revenue/payments of $4.21 million ($1.26 million in local and $2.95 million in state tax revenues);
6) Annual federal tax/payments by Oregon enterprises and employees of $5.12 million.

Recreational and RV Park operations are removed from this analyses, focusing only on commercial and industrial facilities[9]. If a very conservative distribution of benefits of 43.8% (using relative numbers of slips, that is: 298 recreational and 232 commercial), is attributed to the commercial/industrial Port operations, a loss of 377 jobs, $29.7 million in sales, $17.4 million in domestic product, $10.5 in Oregon labor income and $4.1 million in total federal and tax income would be suffered.

Since all key benefits (Oregon output, Gross Domestic Product, labor income and total Taxes/payments) very significantly exceed a BCR of 1.0 after the first year, a discount rate to determine total accrued losses of benefits over the useful life of the project seems unnecessary.

[8] Attachment J is the final NHMP submitted to FEMA, On Pages 15 and 16 the need for the wall is presented. The economic impacts for the entire loss of function of Port of Brookings Harbor is presented on Page 7, Section 1. Since the NHMP refers to the entire Port, whereas this narrative refers only to Basin 2, loss-of-function calculations are reduced accordingly.

[9] Includes fish, crab, shrimp production, ice production facilities, transient and trailerable vessel pumpouts, fueling, safety (US Coast Guard Station), launch ramps, boatyard maintenance, repair, lift, with full nearshore business and facility services.

8.0 Cost Share Allocation

The Port of Brookings Harbor presents the following table showing allocation of $3,346,189:

Funding Source	Contribution	% of Budget	Comment
FEMA PDM	2,509,642	75	
	636547	19	
Port	200,000	6	Port has set aside these funds

9.0 Decision-making Process

The need and solution options available were reviewed by a Mitigation Planning Team, led by Gary Dehlinger, Port Manager. The Planning Team included the following members:

Gary Dehlinger, Port Manager

Travis Webster, Harbormaster

POBH Board of Commissioners

Jack Akin of EMC, Engineer of Record

At the Port's request, EMC conducted an alternatives analysis that reviewed and compared relative budgets and benefits for all feasible solutions to the failing embankment and resulting loss of Port facility functions within Basin 2. EMC compared eligibility, cost effectiveness, EHP issues and engineering feasibility, utilizing engineering data (see Section 11.0), contractor bids for past work successfully performed, and EMC experience with similar projects. Additionally, EMC utilized budget information and site facility information and knowledge provided by Gary Dehlinger and Travis Webster. All data was reviewed by the Board of Commissioners during publically held meetings.

Wall Construction	Cost ($)/foot, 10 ft. Height Basis	Comments
Sheet Pile	2600	Armored by existing rock wall (cantilevered, no tie-backs). Soils are not cohesive. It is estimated that sheet pile would be driven to a depth more than double that of exposed length. **This is a feasible solution[10]. However, costs for this solution would preclude from eligibility, as it would fail the BCA specific to Port operations.**
H-Pile/Concrete Lag	975	Armored by existing rock wall. H-piles to be driven to a depth at least double that of exposed length. **This is a feasible solution[11].**
Ultra Block	450	Armored by existing rock wall. Rock must be excavated and footing/key placed. **As a vertical shoring solution, this construction material is unable to endure loads from soil/water embankment pressure and shear forces.**

[10] Calculations preliminarily confirmed via SPW911, v2.40 engineering software.
[11] Ibid

H-Pile/Timber	425	Armored by existing rock wall. **Excessive exposure to water limits the useful life span of this solution to less than 20 years, and so it is not recommended.**
Rock	850	This is not a vertical shoring solution, and 10-foot basis is not applicable. **In order to obtain a repaired embankment with an acceptable safety factor, construction must result in at least a 1.5H:1.0V slope. Footprint must therefore be extended at least 25 feet into Basin 2. In so doing the EHP Mitigation requirement is prohibitive, and, additionally, the benefit of gaining more mooring slips is lost.**
EcoBlock	200	Armored by existing rock wall. Construction can be partial. Rock must be excavated and footing/key placed. Construction cannot be accomplished without the removal of the sidewalk. **As a vertical shoring solution, this construction material is unable to endure loads from soil/water embankment pressure and shear forces.**

10.0 Damage History and Feasible Solutions

Damage history in this area has been enlisted in the NHMP (Attachment J). Section 3.0 in the NHMP, entitled Hazard Identification, Vulnerability and Risk Assessment, identifies the following hazards as risks, in the following order of greatest risk: Floods/Storm Surge (rain, wind, floods, winter storms), Tsunamis, Earthquakes, Wildland-Urban Interface Fires and Tornados. Details about the hazards are found in above-referenced NHMP, summarized and focused on the affected area to be remedied by the proposed project.

10.1 Floods/Storm Surge

The most significant natural hazard, due to Port's vulnerability, and to the high frequency of this natural hazard in the Region (Region 1, defined within the attached Chapter 2 of the State Risk Assessment as including the coasts of Clatsop, Tillamook, Lincoln, Lane, Douglas, Coos, and Curry Counties), is Floods/Storm Surge. Embankment failure has been greatly accelerated in recent years (2015 & 2016) by the 1) excessive loss of soil cohesion from surface and groundwater flow during storm season and 2) scour and undermining of embankment toes from storm-induced high wave energy.

Specifically, accelerated erosion, scouring, embankment failure and high wave energy, all resulting from, to the greatest degree and frequency, winter storms, and at a lower frequency, tsumamis and distant earthquakes, have been and are continuing to occur at the POBH.

The Basin 2 docks accommodate more than 250 vessels. The floating dock system has 12 main walkways (identified as C through Q) that extend from four separate marginal walkways. The floating docks are of concrete construction with steel guide piles.

Docks H, I, J and O were replaced in 2012 because of damage from the tsunami of 2011. Though the supports for these docks were repaired and mitigated during the 2012 pile replacement project, about 48% of the battered docks were not, and thus the condition of these docks are undergoing accelerated deterioration. All of these docks provide electrical power. These docks are accessed via gangways from the west side of the basin.

The docks that were installed in 2012 are in good condition, while the overall observed condition of the older docks is poor. Replacement of the remaining and deteriorating docks is not part of the proposed project. All of these docks, as explained earlier, face surge, storm, landslide debris, wildfire engendered shoaling, tsunami and earthquake threat.

Significant failure has been noted at most locations around the Basin 2 due to accelerated erosion. These embankments will continue to degrade, and, now that failure has begun at these locations, deterioration of these slopes and the structures they support, will accelerate. Increased erosion will push more sediment into the Port basins, and access to many services, will become more limited.

It was therefore recommended in the NHMP that these embankments be more permanently repaired. The repair should be such that these slopes are protected from energetic storm surges and high surface/groundwater flows from adjacent parking lots and hillsides that occur at the Port during winter storms. Several slope stabilization methods available were reviewed, including

1) retaining walls constructed with sheet pile, pile and plank, H-pile/concrete sections, with tie backs and/or helical screws; 2) cantilevered retaining walls as described in 1), but without tie backs or other support; 3) rock wall placed at a 1.5/1.0 slope (maximum). Of these options, the cost associated with parking lot repairs from tie-back excavation out-weighs that of heavier materials required for cantilevering. Rock wall construction at 1.5/1.0 slope would take valuable moorage space at the toe of the wall, particularly along the Basin 2 embankments.

Increased wave energy from higher than normal tides and surges from February and April, 2019 storm events have accelerated scouring and subsequent supporting embankment sloughing at these locations. The effects on the Basin 2 docks observed from the most recent events validate professionally predicted losses of dock function (note Attachment K and L – Site Inspection Reports for Damage Numbers 304670 and 318038).

Rock is to be used as a base for the wall. The rock must meet the gradation requirements for the class specified, be free from overburden, spoiled, shale and organic material. Non-durable rock, shale or rock with shale seams is not acceptable. A clamshell, orange peel bucket, skip or similar approved device will be used which will contain the riprap material to its final destination.

The longitudinal extent of this repair should be continuous for a distance greater than the length that is impacted. The vertical extent of protection required for this revetment includes design height and foundation or toe depth. The design height of the rip rap and H-pile wall installation is to be equal to the design high water elevation (King tide plus storm surge) with adequate freeboard to accommodate wave action, super elevation from the channel bend, hydraulic jump, and flow irregularities, plus erratic phenomena such as unforeseen embankment settlement, accumulation of trash and debris from the river. A median buildup added elevation is determined to be four feet above existing.

10.2 Tsunamis

A large tsunami (and associated earthquake) would likely destroy many buildings in coastal communities that are located in the tsunami inundation zone.

The damage would be from the combined effects of the forces from the tsunami surges, currents and debris, as well as the earthquake hazards.

The State of Oregon has adopted construction standards for buildings in tsunami zones (2015 ORS 455). The National Tsunami Hazard Mitigation Program recently completed the document entitled Designing for Tsunamis that outlines some of these issues.

The following events were documented in the NHMP.

Tsunami's – most recently, in March, 2011, the POBH was damaged by tsunami wave energy, as a result of a 9.0 magnitude underwater earthquake off the coast of Japan. Close to $11 million worth of repairs were necessary, which included some mitigation, as a result of this disaster. The following events are listed by Date/ Location/ Description/ Remarks

10.2.1 Jan. 1700/ offshore/ the Cascadia Subduction Zone Approximately 9.0; generated a tsunami that struck Oregon, Washington, and Japan; destroyed Native American villages along the coast.

10.2.2 Mar. 2011/ offshore/ DR-1964 was Oregon's first tsunami Major Disaster Declaration (far-field event originating from a massive subsea earthquake near Japan). Effects from the trans-ocean tsunami in Oregon were largely confined to rapid changes in sea levels at port facilities in Curry and Lincoln Counties. Previously developed tsunami evacuation planning and inundation mapping were used as a life/safety measure (no lives were lost to the tsunami wave activity) based on the Pacific-wide tsunami warning. The tsunami wave impacts, although much less than those from a near-field Cascadia event, provided further impetus for the City of Newport to consider and seek mitigation funding for a tsunami "safe haven" project that will retrofit an existing land feature as a "high ground" evacuation site.

The POBH implemented a post-disaster, multi-hazard mitigation project to protect their port facility from far-field tsunami waves and for storm surge waves that can occur during any winter season. The mitigation efforts described in the section of this report entitled "Floods/Storm Surge" also largely provide protection against the effects associated with earthquakes and tsunamis (damage to dock systems, embankments and shoreline structures).

10.3 Earthquakes

The geographical position of Region 1 (defined within the attached Chapter 2 of the State Risk Assessment as including the coasts of Clatsop, Tillamook, Lincoln, Lane, Douglas, Coos, and Curry Counties) makes it susceptible to earthquakes from three sources: 1) the off-shore Cascadia Fault Zone, 2) deep intra-plate events within the subducting Juan de Fuca plate, and 3) shallow crustal events within the North America Plate. All have some tie to the subducting or diving of the dense, oceanic Juan de Fuca Plate under the lighter, continental North America Plate. Stresses occur because of this movement.

There is no historic record of major damaging crustal earthquakes centered in this region in the past 156 years, although Region 1 has experienced small crustal earthquakes and crustal earthquakes that originated outside the region.

The geologic record shows that movement has occurred along numerous offshore faults as well as a few onshore faults in Coos and Tillamook Counties. The faulting is believed to have occurred over the last 20,000 years. Intraplate earthquakes are very rare in Oregon, although such earthquakes originating outside of the state have been felt in this region.

It is believed that the M7.3 near Brookings in 1873 was an intraplate quake. In Region 1, geologic earthquake hazards include severe ground shaking, liquefaction of finegrained soils, landslides and flooding from local and distant tsunamis.

The severity of these effects depend on several factors, including the distance from the earthquake source, the ability of soil and rock to conduct seismic energy composition of materials, and the ground and ground water conditions.

10.3.1 Historic Earthquake Events - Approximate years, cited from the Oregon State Plan, of historic earthquakes are 1400 BC, 1050 BC, 600 BC, 400 AD, 750 AD, 900 AD. These are generally offshore, Cascadia Subduction Zone, estimated at M8-9.

10.3.2 The following events are listed by Date/ Location/ Description/ Remarks

a. Jan. 1700/ offshore/ the Cascadia Subduction Zone Approximately M9.0 generated a tsunami that struck Oregon, Washington, and Japan; destroyed Native American villages along the coast

b. Nov. 1873/ Brookings area/ a M7.3 intraplate event, origin probably Gorda block of the Juan de Fuca plate; chimneys fell (Port Orford, Grants Pass, and Jacksonville), no aftershocks

c. Nov. 1962/ Portland, OR/ M5.2 to 5.5 crustal event; damage to many homes (chimneys, windows, etc.)

d. Mar. 1993/ Scotts Mills, OR/ M5.6 crustal event; FEMA-985-DR-OR, damage- $28 million (homes, schools, businesses, state buildings in Salem)

e. Sep. 1993/ Klamath Falls, OR/ M5.9 to 6.0 crustal event, FEMA-1004-DR-OR, two earthquakes; fatalities: 2; damage $7.5 million (homes, commercial, and government buildings)

10.4 Discussion Regarding Risk and Mitigation-Tsunamis and Earthquakes

Risk and mitigation for tsunamis and for earthquakes are common in terms of potential damage and prevention actions, and so are combined in the narrative below.
FEMA's (2011) review of historical tsunamis affecting the Oregon coast for FEMA-1964-DR-OR documents 7 tsunami events from 1700 through 2011. This report suggests a mean interval time of about 50 years and recommends this as the "event frequency." The historical data in this report are very useful, although the surge height and damage data are incomplete. However, the frequency analysis has significant flaws, in that the 7 tsunami events include 6 distant earthquake events along with the 1700 Cascadia Subduction Zone event, and historical data for distant tsunamis are probably incomplete before the 1940s and certainly incomplete before 1873, the earliest distant earthquake tsunami event listed.

These historical data are reinterpreted as follows. The six distant earthquake events fall into two groups:

Major events with significant damages
- 1873, surge height 10 feet
- 1964, surge height 4.6 to 12 feet at various locations
- 2011, surge height 6.6 feet at Brookings Harbor

Lessor events with minor damages
- 1946, surge height 4 feet at one location only (Seaside)
- 1952, no surge height data
- 1960, no surge height data

The three major distant earthquake tsunami events were recorded over 138 years, which corresponds to a return period of 46 years. These events are included in the benefit-cost analysis presented later in this report. The three smaller events with very limited surge height data and minor damages are probably similar to the more frequent storm surge events.

In the spirit of a conservative, lower-bound type benefit-cost analysis, these events are not considered in the benefit-cost analysis.

10.4.1 Cascadia Subduction Zone Tsunamis

The 2011 report by Goldfinger et al. documents the paleoseismic history of the Cascadia Subduction Zone over the past 10,000 years using dates for turbidite deposits offshore. Time-correlated turbidite deposits at many locations along the length of the Cascadia Subduction Zone from Northern California to British Columbia yield the following numbers of major mega-thrust earthquakes:

- 19 M9.0 earthquakes (full length ruptures) and
- 21 Additional M8+ events (rupture of the southern 50% to 70% of the Subduction zone).

These paleoseismic results indicate return periods of about 500 years for the M9.0 events and about 250 years for M8 or greater events (including the M9 events).
Tsunami surge events from these major Cascadia Subduction Zone earthquakes would likely have surge heights of 30 to 105 feet (FEMA 2011, DOGAMI Modeling, 2012) and result in complete or nearly complete destruction of harbor facilities all along the Oregon Coast, including Brookings Harbor. There are therefore no mitigation measures to protect harbor facilities from events of this extreme magnitude that are feasible from either an engineering or economic perspective. Therefore, the proposed mitigation project is designed to minimize damage in smaller distant earthquake tsunami events and in the frequent storm surge events. As afore-mentioned, the mitigation efforts described in the section of this report entitled "Floods/Storm Surge" also largely provide protection against the effects associated with earthquakes (damage to dock systems, embankments and shoreline structures).

10.5 Wildfires

Most counties within Region 1 have low to moderate risk from wildfire based primarily on cool, moist weather conditions.

However, this region has had some of the largest wildfires that posed threats to communities when they occurred. The 1936 Bandon Fire is a prime example of a fire that, when combined with heavy fuels (gorse) and powerful dry east winds, an entire city was destroyed killing 13 people. Gorse, brush and timber still make up much of the landscape in Region 1. Given the right conditions, this region's vulnerability to wildfire exists. However, due to infrequent fire activity, the level of vulnerability can be categorized as moderate. A large wildfire in this region would affect local economies that rely on tourism and recreation dollars. The economic stability of the region is dependent on a major state highway (Hwy 101) that runs along the Oregon Coast. Should a major wildfire or other natural event (such as a tsunami) threaten or impact this major thoroughfare, coastal tourism and recreational economies would come to a halt. In addition, each year a significant number of people build homes within or on the edge of the forest (urban-wildland interface), thereby increasing wildfire hazards. Risk of direct hazard from wildfires at the POBH is limited by available fuels. The POBH and its facilities are somewhat isolated from the fields and forested areas surrounding the Port. Nevertheless of direct fire damage, risk, though minimal, does exist.

The far greater risk, however, to the POBH from wildfires is from accelerated erosion and sedimentation. The Chetco Bar fire, which is located in the Kalmiopsis Wilderness and Chetco River corridor near Brookings, grew to approximately 200,000 acres.

Wildfire affects streams and rivers in a multitude of ways, and the health and wealth of a stream environment are reflections of the condition of the surrounding watershed. Stream ecosystems are constantly changing and are often altered by episodic floods and droughts. Erosion is a natural process. Its effects on a stream are highly variable. Add a high-intensity wildfire, and conditions in the stream or river at the bottom of the hill can change rapidly. All of these naturally occurring events are described as pulse disturbances – with effects that are initially severe but generally short-lived. Over time, the stream environment recovers or shifts to a new and different equilibrium.

Much of that sediment loss can occur the first few years after a wildfire, though in some cases, sediment accumulations may take decades or even longer to recover to pre-fire conditions. Wildfire can cause water repellency and consume plant canopy, surface plants and litter, and structure-enhancing organics within soil. Changes in soil moisture, structure, and infiltration can accelerate surface runoff, erosion, sediment transport, and deposition. Intense rainfall and some soil and terrain conditions can contribute to overland runoff and in-channel debris torrents.

Mineralization of organic matter, interruption of root uptake, and loss of shade can further impact water quality by increasing stream temperatures and nutrient concentrations. Where wildfires are unnaturally large and severe, watershed effects are likely to be negatively skewed.

The area of this 2017 burn covers the Quail Prairie Mountain, the Kalmiopsis , a portion of Eagle Mountain, Rosley Butte, Mineral Hill, Snow Camp Mountain, Big Craggy's, Heather Mountain, Basin Butte, and other watersheds.

A good number of creeks and tributaries, most of which directly or indirectly contribute to stormwater collection with the POBH as its destination, are fed by these watersheds. As mentioned above, due to the infrequency of fire activity in the Chetco corridor and other above-described areas, the level of vulnerability can be categorized as moderate. Also, as aforementioned, the risk of direct hazard from wildfires is limited by available fuels. The afore-described increase of sedimentation in the area of this most recent fire event is expected to directly impact shoaling rates at the POBH over the next two to five years. In anticipation of the possible 225,000 cubic yards of sediment that could be accumulated in total at the POPH during that time period, the POBH has conducted recent (2017 and 2019) bathymetric surveys of all basins. Findings from these surveys have indicated sediment accumulation in the Port basins substantially above average shoaling rates.

10.5.1 Recent Wildfires that Threatening Sedimentation to the Port of Brookings Harbor

The Chetco Bar Fire was started by a lightning strike in the Kalmiopsis Wilderness near the Chetco River. It was reported on July 12th, 2017 at 1:45 PM. By July 15th, it was primarily burning in the scar of the 2002 Biscuit Fire (see below) and had only burned 45 acres. By July 20th, it was determined that the fire had actually burned over 300 acres (1 km^2). As of August 2nd, the fire had expanded to 2,907 acres (12 km^2).

By August 19th, the fire had spread 22,042 acres (89 km^2) and the first mandatory evacuations were put in place - for the top of Gardiner Ridge Road and Cate Road past Hazel Camp area, Wilson Creek area, and along the Chetco River from Loeb State Park to the wilderness retreat area. By August 24th the fire had burned 102,333 acres (414 km^2), burning in steep and rugged terrain about five miles north of Brookings, Oregon. The smoke from the fire began impacting visibility along Highway 101 and creating dramatic hazes in Gold Beach and in Brookings. By August 30th, the National Guard had joined the fire-fighting efforts. As of September 10th, the fire was at 182,284 acres (738 km2) and was 5% contained. The fire had spread into Curry County. In Josephine County, crews began structure assessments of the communities of O'Brien, Cave Junction, and Selma. The fire was announced as being 100% contained on November 2nd.

10.6 Tornados - The following events are listed by Date/ Location/ Description/ Remarks:

10.6.1 June 1897/ Bay City, Oregon/ observed; no damage recorded
10.6.2 Oct. 1934/ Clatskanie, Oregon/ observed; no damage
10.6.3 Apr. 1960/ Coquille, Oregon/ accompanied by heavy rain; no damage
10.6.4 Nov. 1965/ Rainier, Oregon/ crossed Columbia River; two buildings damaged
10.6.5 Oct. 1966/ Seaside, Oregon windows broken, telephone lines down, outdoor signs destroyed
10.6.6 Oct, 1967/ Near Astoria, Oregon airport/ began over ocean and moved inland; several homes and commercial buildings damaged
10.6.7 Dec, 1973/ Newport, Oregon/ some roof damage
10.6.8 Dec. 1975/ Tillamook, Oregon/ 90 mph wind speed; damage to several buildings
10.6.9 Aug. 1978/ Scappoose, Oregon/ manufactured home destroyed; other damage

10.6.10 Mar. 1983/ Brookings, Oregon/ minor damage
10.6.11 Nov. 1984/ Waldport, Oregon/ damage to automobiles and roofs
10.6.12 Feb. 1994/ Near Warrenton, Oregon/ damage in local park
10.6.13 Nov. 2002/ Curry County, Oregon/ $500,000.00 in property damage
10.6.14 Nov. 2009/ Lincoln County, Oregon/ $35,000 in property damage, damage to homes and automobiles

Sources

National Weather Service, Portland-Taylor and Hatton (1999);
National Climatic Data Center (2013) Storm Events Database
http://www.ncdc.noaa.gov/stormevents;
Hazards & Vulnerability Research Institute (2007);
The Spatial Hazard Events and Losses Database for the United States, Version 5.1 [Online Database], Columbia, SC;
University of South Carolina-Available from http://www.sheldus.org;
National Climatic Data Center (2013), US Tornado Climatology,
http://www.ncdc.noaa.gov/oa/climate/severeweather/tornadoes.html
As aforementioned, the mitigation efforts described in the section of this report entitled "Floods/Storm Surge" also largely provide protection against the effects associated with tornados (damage to dock systems, embankments and shoreline structures).

11.0 Engineering Feasibility and Design Documentation – Piles, Loading, Surge, Erosion (Note: Engineered drawings with drawing notes are submitted as Exhibits, which provide construction details and scaled plan and profile views).

11.1 Preliminary

Contractor activities are described as the installation of steel piles via a crane-mounted vibratory hammer (vegetable oil fueled), welding as needed on floating dock(s), operating a 100-ton crawler crane (diesel fueled), and extracting of loose piles. The project is completed with the installation of a pile cap atop the piles.

The hammer used will have up to about 4400 in-lb eccentric moment & driving force of up to 170 tons, with a 0-1800 oscillations/minute (OPM) range. Hydro-acoustic effects are generally expected not to exceed 177 decibels at 10 meters. Jetting might be used for piling installation in areas with coarse, uncontaminated sediments. During pile removal, the Port, in order to minimize sediment disturbance and sediment resuspension, will install a floating surface boom to capture floating surface debris; keep all equipment (e.g., bucket, steel cable, vibratory hammer) out of the water, grip piles above the waterline, and complete all work during low water and low current conditions; dislodge the piling with a vibratory hammer, when possible; never intentionally breaking a pile by twisting or bending; slowly lifting the pile from the sediment and through the water column; placing the pile on the shoreline without attempting to clean or remove any adhering sediment.

Containment area will be constructed of durable plastic sheeting with sidewalls supported by hay bales or another support structure to contain all sediment and return flow which may otherwise be directed back to the waterway. Engineering specifications located within records at the Port of Brookings Harbor show the recommendation of approximately thirty foot drives. To better understand the rationale for this proposal, please see the information in the Section below entitled "Design and Data".

11.2 Design and Data

11.2.1 Summary

The information below is specific to the Port of Brookings-Harbor. Sources are cited within the narratives. A calculated data table is presented below, drawn from the Survey Data, Hydraulic Data, Tide and Data information, Geotechnical Data, vessel characteristics, loadings, etc., in support of the proposed mitigation, are:

a. The average location of the mudline in the Port basins is about -10.6' MLLW;
b. Highest tide observed is 10.7', and the mean high water is 6.3';
c. Major surges in the basins are observed to be in the range of 5 – 6';
d. Soil conditions show that adequately firm soils begin at a depth of about 13' below mudline;
e. Point if fixity is about – 19.7' (8.7' below mudline);
f. Calculated pile tip recommended to be – 37' MLLW (26' below mudline, minimum, or about two feet into firmer soils).

Design and maximum credible loading criteria for the repair/replacement of the floating dock piles are summarized herein required to satisfy current, standard design criteria.

11.2.2 Survey Data

The bottom surface elevation of both Bookings Harbor boat basins was surveyed by Oregon State Marine Board (OSMB) for Port of Bookings Harbor on March 21-23, 2011, and then again by EMC in December, 2012. For the purposes of this study of piling alternatives, the average bottom surface elevation of both Basin1 and Basin 2 are -11 feet (North American Vertical Datum (NAVD) 1988 + 0.4-feet equals MLL tide). All elevations will be reported in NAVD 1988, which is the basis of the engineered repair plans. The conversion from NAVD 1929 to NAVD 1988 is +3.53'.

11.2.3 Hydraulic Data

FEMA prepared a Flood Insurance Study (FIS) study for City of Brookings in 1985. From the study, the approximate 100-year flood elevation of the Chetco River at the mouth of the boat basins is 13.0 feet (1929 NAVD), which equals 16.5 feet NAVD 1988. The 500 year flood elevation of the Chetco River at the mouth of the boat basins is 15.5 feet (1929 NAVD), which equals 19.0 feet NAVD 1988. Also available is hydraulic data from the Chetco River Bridge plans, dated 1969 by Oregon Department of Transportation giving the extreme high water elevation at the bridge of 14.7 feet (1929 NAVD), which equals 18.2 feet NAVD 1988.

11.2.4 Tides

The tides at Brookings are based on a National Ocean Service (NOS) tide gauge located at Crescent City, California, about 25 miles to the south of Brookings. The next nearest tide station is Port Orford, 55 miles to the north.

This station has recorded data continuously since 1933. Brookings is typical referenced to the primary station at Crescent City. The following table lists the tidal datum and ranges that should be used for Brookings:

11.2.5 Datum's (referenced to MLLW) Value (feet)

a. Highest Observed Tide 10.7
b. Mean Higher High Water (MHHW) 6.9
c. Mean High Water (MHW) 6.3
d. National Geodetic Vertical Datum-1929 (NGVD 29) 3.8
e. Mean Tide Level (MTL) 1.2
f. Mean Low Water (MLW) 1.2
g. Mean Lower Low Water (MLLW) 0.0
Lowest Observed Water Level -2.7

11.2.6 Ranges Value (feet)

a. Diurnal Tidal Range (MHHW-MLLW) 6.9
b. Mean Tidal Range (MHW – MLW) 5.1

11.2.7 Army Corp of Engineers and WEST Consultants Surge Study

The U.S. Army Corps of Engineers (Corps), Portland District (NWP) conducted a study to assess and report surge problems in Brookings Harbor. WEST Consultants, Portland, Oregon conducted the study for the Corps. The consultant extensively modeled the port and described the major surge events to be in the 5 to 6 feet range, occurring when the ocean sees large short waves with periods of 5-20 seconds and an average surge event to be in the 2-4 feet range of vertical movement or height.

11.2.8 Geotechnical Data

a. Chetco River Bridge plans foundation data sheet, dated 1969 by Oregon Department of Transportation
b. Brookings Harbor Boardwalk plans foundation data sheet, dated 2010 by OBEC Consulting Engineers (utilizing West Consultants study previously cited).

11.2.9 Preliminary Soil Conditions

a. -11 feet to -24 feet: Medium dense silty sand and gravel with 0 to 4 blows/feet
b. -24 feet to -50 feet: Dense silty sand and gravel with 17 to 40 blows/feet
c. -50 feet to – 85 feet: Very dense silty sand and gravel with over 40 blows/feet

11.2.10 Design Vessel Characteristics

In 1997, the Port of Brookings surveyed the vessels using their harbor and recorded the lengths, beams, and drafts for 607 vessels. The Port also recorded whether vessels used the Basin 1 or basin 2. The results of the study for the Port Basins: Length 30 feet, Beam 8 feet, Draft 3 feet, Average Structure Height, (for wind loading): 6 feet.

11.2.11 NAVFAC Unified Facilities Criteria

The primary design criteria for the harbor will be the current Unified Facilities Criteria (UFC) of the United States Army Corps of Engineers (HQUSACE), Naval Facilities Engineering Command (NAVFAC) and the Office of Air Force Civil Engineering. The UFC documents provide planning, design, construction, sustainment, restoration, and modernization criteria. Applicable UFC include:

a. UFC 4-150-06 Military Harbors and Coastal Facilities, 2001
b. UFC 4-152-01 Design: Piers and Wharves, 2005
c. UFC 4-152-07 Design: Small Craft Berthing Facilities, 2009

11.2.12 Wind Loading on Design Vessels

A recommended 20 pounds per square foot wind loading on vessels is recommended for the conditions at Brookings Harbor. For sport vessels, the typical load to the adjacent piling is 3,060 pounds and approximately 100 pounds per foot to the dock.

11.2.13 Wave Loading on Dock and Design Vessels

The recommended design wave height is two feet for the observed below average occasional surge event at Brookings Harbor. For the docks, the wave imparts approximately 200 pounds per foot to the dock and 300 pounds per foot to the sport vessels, resulting in a typical load to the adjacent piling loading of approximately 5,100 pounds.

11.2.14 Service Load and Extreme Loading Design and Recommended Design Criteria

For non-extreme service load cases (wind at lower water surfaces, stream force, wind waves, etc.), the extreme load cases control the design by inspection. Service Load: Mean high tide + two feet wave + Wind. This yields a design water surface elevation of 10.0 feet. Design strength of piling should not exceed 0.75 yield.

12.0 Engineering Feasibility and Design Documentation – Hard Embankment Repair (Note: Engineered drawings with drawing notes are submitted as Exhibits, which provide construction details and scaled plan and profile views).

EMC has recommended and preliminarily specified an embankment repair constructed of stand-alone (cantilevered) H-pile/concrete section. In order to support a cantilevered loading, prefabricated concrete sections that are 10 feet tall, having about a 10 ft.^{2} cross-section (approximately 11 1/2" x 10'), reinforced with #5 rebar, 10 equally spaced vertically, 12 equally spaced horizontally, double curtained, all cast 3 inches clear of all edges and faces.

These concrete sections should be supported by 14 inch wide flange (W 14 x 90) piles. Concrete is to be minimum 4000 psi at 28 days. Rebar picking eyes (two each), when set, will bend hook 90° into precast pocket and filled flush with high strength grout. Piles will be driven to point of fixity (to be determined at each location). Fabric that will allow for drainage while retaining fine-grained sands and silts will be placed between the wall and engineered backfill.

An estimate for the construction of the wall, placement of fabric and fill is $975 per linear foot. It is estimated that about 2200 linear feet x 10' high of wall of this construction should be placed along these above-described embankment.

13.0 Engineering Feasibility and Design Documentation – Rock Base (Note: Engineered drawings with drawing notes are submitted as Exhibits, which provide construction details and scaled plan and profile views).

The rock used for this project will be specified to follow test requirements found within AASHTO 85 (Apparent specific gravity, percent absorption); ODOT TM 208A (degradation); and AASHTO T 104 (soundness). All rock specified in this project must be angular in shape, and the thickness of any single rock shall not be less than one third of its length. Round rock will not be accepted unless authorized by EMC.

The rock must meet the gradation requirements for the class specified, be free from overburden, spoiled, shale and organic material. Non-durable rock, shale or rock with shale seams is not acceptable. For example, Class 2000 rip rap is by definition comprised of rocks that are 20% by weight of 1400 pounds to 2000 pounds, 30% by weight of 700 to 1400 pounds, 40% by weight 40 to 700 pounds and 0 to 10% 0 to 40 pounds. Either a filter blanket of 16 inch layer of class 50, or specified filter fabric would be laid beneath the rock.

The rock specified for this proposed project ranges in size between 4000 – 6000 lbs. However, gradation would be approximately proportional to that of Class 2000.

A clamshell, orange peel bucket, skip or similar approved device would be used which would transport the riprap material to its final destination. This revetment repair is for flow assumed to generally be uniform, steady and subcritical. However, as demonstrated by this past winter's storms, rapidly varying, unsteady flow conditions occur occasionally, and excessive wave action, hydraulic jumps and extreme flow turbulence can occur in the Port basins. These conditions are among the reasons for the extent of protection proposed. The longitudinal extent of this repair should be continuous for a distance greater than the length that is impacted. The vertical extent of protection required for this revetment includes design height and foundation or toe depth. The design height of the rip rap installation is to be equal to the design high water elevation (King tide plus storm surge) with adequate freeboard to accommodate wave action, super elevation from flow irregularities and erratic phenomena such as unforeseen embankment settlement, accumulation of trash and debris from the river, or vessel collisions.

Scour depth is estimated at about 7 feet from the lowest elevation in the cross-section of the basin at this point, utilizing the conservative assumption of a median diameter of bed material to be about 0.15 m.

The filter beneath the riprap and overlying the structural fill is to prevent the migration of fine soil particles through structural voids and to distribute the weight of the armoring units (riprap) to provide more uniform settlement, and also permits relief of hydrostatic pressures within the soils.

For the areas above the waterline at any given time the fabric or geotextile also prevents surface water from causing erosion beneath the rip rap. In addition to toe considerations with respect to scour the flanks of this revetment are designed for upstream and downstream conditions

14.0 Cost Effectiveness BCA

This section Provides explanation regarding the computation of benefits and costs that are used to calculate the BCRs. Two BCA calculator reports are submitted, one is for the Port operations, and the other for the economic benefits presently being threatened by the degrading conditions in Basin 2.

The Port of Brookings Harbor receives its income from its RV Park, Basin 1 fees and moorages, Basin 2 fees and moorages, rents from commercial and retail businesses on its property, Port services such as fueling and boat yard work, taxes and other miscellaneous sources.

Annual income reduction, due to loss of function from Basin 2 fees and moorages, are threatening to very seriously impact the survival of the Port within the next several years.

As aforementioned, embankment erosion and subsequent shallowing of the basin floor beneath moorage slips are the present and forecast future causes for this loss of function. Attached are **Tables 1 - 7**, which are used to calculate the present value (PV) of those losses. PVs are calculated row by row utilizing the quantity of $PV = FV\ (1 + i)^{-n}$, where "i" is the interest rate used (0.07), "FV" is the future value in $ assigned to the loss and "n" is the time in number of years from the present to the FV.

Calculated present values are in listed in accumulated over the next 40 years for each for each functional Loss. For example, Table 1 shows the existing closure of C Dock, which causes the Port to lose about $15,000 per year. Full Loss of C Dock is expected to occur during the second year of our analysis, One year after a complete loss C Dock, that $15,000 would be experienced annually by the Port over the remaining years of the 40 year useful life of the proposed mitigation. The PV of that $15,000 is discounted each year as shown in the table. Total present value lost is seen over the useful life accrues to $185,957.

As shown in Table 2, three years, based on past losses and engineering analysis, D Dock is expected to lose its function, which will cost the Port about $31,000 per year in lost lease income. The PV of that $31,000 three years from now is $25,305.

So those Tables 1 - 7 calculate the accumulating losses expected to be suffered by the Port, over the next 40 years.

Economic impacts to the community are presented in Table 8. A costs sheet is provided via Table 9. These tables utilize figures and data from the previously submitted FEMA-approved Natural Hazards Mitigation Plan, and the 2015 Oregon Strategic Plan. Losses as presented in these tables of local incomes and federal and state taxes are assumed to be proportional to Basin 2 loss of function. The reason for this assumption is that Port industry, which includes fishing and other commercial endeavors at the Port are very much interwoven with the Port's ability to sustain its docks for moorage.

Nearly all fishing vessels that provide crab, shrimp, salmon, rockfish and all other fish keep their boats in Port Basin 2. Of course it is an acceptable and reasonable assumption that if fishing vessels are unable to moor at the Port, they will have to find a different port home in order to stay in business. In Oregon, the Port of Gold Beach, about 25 – 30 miles north of Brookings, is the closest Port where search vessels could stay. Unfortunately, at present the Port of Gold Beach does not have facilities (adequate docks, travel lift, etc.) to be able to moor and service commercial fleets.

The Port of Port Orford is the next closest port located in Oregon, 25 – 30 miles north of Gold Beach. This port has no in-water moorage, but every vessel launched from that port must be placed, and then lifted by a crane. The Port of Port Orford is adequately away from the Port of Brookings Harbor so as to make daily journeys back-and-forth during fishing season to preclude this Port, and all other Ports northward.

Without sufficient volumes of fish products, fish processing would come to a halt at the Port of Brookings Harbor. With the fishing industry absent in the Port operations cash flow, it is difficult to see how the other income streams would be able to support the recreational and RV functions. **Additionally, the majority of the reported 800+ jobs supporting Port operations, mostly for commercial activities, would be lost.**

RE the BCA Calculating Sheets, when selecting variables, we found it difficult to identify the applicable Hazard Type, Mitigation Action Type, and Property Type.

Although Severe Storms are the major cause for the loss of embankment in Basin 2, amplified waves surges, both continual as well as those due to storms, are scouring the foot of these embankments. The selection of the available Mitigation Action Types also limit an adequate response. Mitigation here is presented in the Scope of Work is much more than any of the options (except "other"). The Property Type options do not a type choice matching the areas experiencing the described losses of function.

Expected Damages Before and After Mitigation were filled in to attempt to match the Tables 1 – 7, the Port Operations sheet, and Table 8, the Economic Impact sheet.

We are hoping that these tables, as well as this narrative, will adequately explain the rationale behind the benefit and costing calculations.

15.0 Environmental/Historical Preservation Compliance

The EHP review process for FEMA-funded projects and activities ensures that they are in compliance with Federal EHP laws and Executive Orders.

Fortunately, the permitting requirements for the proposed project, though it would be overseen by FEMA and required to be in conformance with EHP concerns, also must conform to Nationwide Permit 3 Terms and Conditions, the Oregon Department of Land Conservation and Development (DLCD) Coastal Zone Management Conditions, and such conditions as described below.

15.1 All in-water work must be performed during the in-water work period(s) of October 15 to March 1, to minimize impacts to aquatic species. Exceptions to this time period requires specific approval from the Federal Emergency Management Agency, Corps and the National Marine Fisheries Service.

15.2 The Corps permit never authorizes the Port to take an endangered species, in particular the Salmon, coho Southern Oregon Northern California Coasts ESU (Oncorhynchus kisutch). In order to legally take a listed species, the Port must have separate authorization under the ESA (e.g., an ESA Section 10 permit, or a BO under ESA Section 7, with "incidental take" provisions with which the Port must comply). The applicable BiOp prepared by the National Marine Fisheries Service (NMFS) dated January 9, 2018, contains mandatory terms and conditions to implement the reasonable and prudent measures that are associated with "incidental take" that is also specified in the BO.

The Port's authorization under this Corps permit is conditional upon its compliance with all of the mandatory terms and conditions associated with incidental take of the BO, which terms and conditions are incorporated by reference in the issued permit. Failure to comply with the terms and conditions associated with incidental take of the BO, where a take of the listed species occurs, would constitute an unauthorized take, and it would also constitute noncompliance with the Port's Corps permit. The NMFS is identified as the appropriate authority to determine compliance with the terms and conditions of its BO, and with the ESA.

15.3 The Port must complete and sign the enclosed Compliance Certification and must submit the completed certification to the U.S. Army Corps of Engineers, Portland District, Regulatory Branch within 30 days of completion of the authorized activity.

15.4 The Port is required to notify the U.S. Coast Guard District Thirteen of the project by email at D13-PF-LNM@uscg.mil at least 14 days prior to commencing construction activities, so the project information can be issued in the Local Notice to Mariners. The regulatory branch of the USACE will have reviewed the Port's project pursuant to the requirements of the Endangered Species Act, the Magnuson-Stevens Fishery Conservation and Management Act and the National Historic Preservation Act, and determine whether or not the project complies with the requirements of these laws provided the Port complies with all of the permit general and special conditions.

15.5 The Port is required to observe Portland District NWP Regional General Condition 3, Cultural Resources and Human Burials Inadvertent Discovery Plan, which details procedures should an inadvertent discovery occur. The Port must ensure this condition is complied with during the construction of the proposed project.

15.6 In order to obtain treatment via Nationwide permitting, the Port must identify and implement specific Criteria. These Criteria are specific to steel pile removal and placement and dredging. They, for example, require only vibratory pile driving, turbidity monitoring, erosion control and planning, and equipment staging and fueling standards to protect against the release of hazardous materials into the waters of the US. Accordingly, POB will at least adhere the following SLOPES IV Criteria:

15.6.1 Pollution and erosion control. Any action that will require earthwork and may increase soil erosion and cause runoff with visible sediment into surface water, or that will require the use of materials that are hazardous or toxic to aquatic life (such as motor fuel, oil, or drilling fluid), must have a pollution and erosion control plan that is developed and carried out by the applicant, and commensurate with the scale of the action.

a. The plan must include practices to minimize erosion and sedimentation associated with all aspects of the project (e.g., staging areas, stockpiles, grading); to prevent construction debris from dropping or otherwise entering any stream or waterbody; and to prevent and control hazardous material spills.

b. During construction, erosion controls and streams must be monitored and maintained daily during the rainy season and weekly during the dry season as necessary to ensure controls.

c. If monitoring shows that the erosion controls are ineffective at preventing visible sediment discharge, the project must stop to evaluate erosion control measures. Repairs, replacements or the installation of additional erosion control measures must be completed before the project resumes.

d. Proper maintenance includes removal of sediment and debris from erosion controls like silt fences or hay bales once it has reached on-third of the exposed height of the control.

15.6.2 Stormwater management. Any action that will expand, recondition, reconstruct, or replace pavement, replace a stream crossing, otherwise increase the contributing impervious surface within the project area, or create a new stormwater conveyance or discharge facility, must have a stormwater management plan that is developed and carried out by the applicant, commensurate with the scale of the action, and approved by NMFS. The stormwater plan submitted for approval must include all of the information called for by the "Checklist for Submission of a Stormwater Plan" (ODEQ 2008, or most recent version), or an explanation of why any missing information is not applicable to a specific project.

15.6.3 Site restoration. Any action that results in significant disturbance of riparian vegetation, soils, streambanks, or stream channel must have a site restoration plan that is developed and carried out by the permittee (or Corps), that is commensurate with the scale of the action. The goal of the plan is to ensure that riparian vegetation, soils, streambanks, and stream channel are cleaned up and restored after the action is complete. No single criterion is sufficient to measure restoration success, but the intent is that the following features should be present in the upland parts of the project area, within reasonable limits of natural and management variation:

a. Human and livestock disturbance, if any, are confined to small areas necessary for access or other special management situations.

b. Areas with signs of significant past erosion are completely stabilized and healed, bare soil spaces are small and well-dispersed.

c. Soil movement, such as active rills and soil deposition around plants or in small basins, is absent or slight and local.

d. Native woody and herbaceous vegetation, and germination microsites, are present and well distributed across the site.

e. Plants are native species and have normal, vigorous growth form, and a high probability of remaining vigorous, healthy and dominant over undesired competing vegetation.

f. Vegetation structure is resulting in rooting throughout the available soil profile.

g. Plant litter is well distributed and effective in protecting the soil with little or no litter accumulated against vegetation as a result of active sheet erosion ("litter dams").

h. A continuous corridor of shrubs and trees appropriate to the site are present to provide shade and other habitat functions for the entire streambank.

i. Streambanks are stable, well vegetated, and protected at margins by roots that extend below baseflow elevation, or by coarse-grained alluvial debris.

15.6.4 Compensatory mitigation. Any action that will permanently displace riparian or aquatic habitats or otherwise prevent development of properly functioning condition of natural habitat processes will require compensatory mitigation to fully offset those impacts.

a. Examples of actions requiring compensatory mitigation include construction of a new or enlarged boat ramp or float, the addition of scour protection to a boat ramp, or construction of new impervious surfaces without adequate stormwater treatment.

b. For displaced riparian and aquatic habitat, the primary habitat functions of concern are related to the physical and biological features essential to the long-term conservation of listed species. Those are water quality, water quantity, channel substrate, floodplain connectivity, forage, natural cover, space, and free passage. Examples of acceptable mitigation for riparian losses includes planting trees or other woody vegetation in the riparian area, removal of existing overwater structures or restoration of shallow-water, off-channel, or beach habitat by adding features such as submerged or overhanging large wood, aquatic vegetation, large rocks and boulders, side channels and undercut banks.

c. For new impervious surfaces with inadequate stormwater treatment, the primary habitat functions of concern are water quality and water quantity. Examples of acceptable mitigation for inadequate stormwater management includes providing adequate stormwater treatment at an alternate site where it did not exist before or retrofitting an existing but substandard stormwater facility to provide capacity necessary to infiltrate and retain the proper volume of stormwater.

d. As part of NMFS's review under clause 3 above, NMFS will determine if the proposed compensatory mitigation fully offsets permanent displacement of riparian or aquatic habitats and/or impacts that prevent development of properly functioning processes.

15.6.5 Preconstruction activity. Before alteration of the action area, flag the boundaries of clearing limits associated with site access and construction to minimize soil and vegetation disturbance, and ensure that all temporary erosion controls are in place and functional.

15.6.6 Site preparation. During site preparation, conserve native materials for restoration, including large wood, vegetation, topsoil and channel materials (gravel, cobble and boulders) displaced by construction. Whenever practical, leave native materials where they are found and in areas to be cleared, clip vegetation at ground level to retain root mass and encourage reestablishment of native vegetation. Building and related structures may not be constructed inside the riparian management area.

15.6.7 Heavy equipment. Heavy equipment will be selected and operated as necessary to minimize adverse effects on the environment (e.g., minimally-sized, low pressure tires, minimal hard turn paths for tracked vehicles, temporary mats or plates within wet areas or sensitive soils); and all vehicles and other heavy equipment will be used as follows:

a. Stored, fueled and maintained in a vehicle staging area placed 150 feet or more from any waterbody, or in an isolated hard zone such as a paved parking lot.

b. Inspected daily for fluid leaks before leaving operation staging area within 50 feet of waterbody.

c. Steam-cleaned before operation below ordinary high water, and as often as necessary during operation to remain free of all external oil, grease, mud, seeds, organisms and other visible contaminants.

d. Generators, cranes and any other stationary equipment operated within 150 feet of any waterbody will be maintained and protected as necessary to prevent leaks and spills from entering the water.

Attachment A

BCA Detail $$

TABLE 1

Budget Item	Annual Dock Loss	Comment	Loss of Function, PV, $		Accruing Reduction PV
Year		C Dock Closed			
1	0		0		0
2	15,000		13102		13102
3	15,000		12244		25346
4	15,000		11443		36789
5	15,000		10695		47484
6	15,000		9995		57479
7	15,000		9341		66821
8	15,000		8730		75551
9	15,000		8159		83710
10	15,000		7625		91335
11	15,000		7126		98461
12	15,000		6660		105122
13	15,000		6224		111346
14	15,000		5817		117163
15	15,000		5437		122600
16	15,000		5081		127681
17	15,000		4749		132430
18	15,000		4438		136868
19	15,000		4148		141015
20	15,000		3876		144892
21	15,000		3623		148514
22	15,000		3386		151900
23	15,000		3164		155064
24	15,000		2957		158021
25	15,000		2764		160785
26	15,000		2583		163368
27	15,000		2414		165782
28	15,000		2256		168038
29	15,000		2108		170146
30	15,000		1971		172117
31	15,000		1842		173959
32	15,000		1721		175680
33	15,000		1609		177288
34	15,000		1503		178791
35	15,000		1405		180196
36	15,000		1313		181509
37	15,000		1227		182737
38	15,000		1147		183883
39	15,000		1072		184955
40	15,000		1002		**185957**

TABLE 2

Budget Item	Annual Dock Loss	Comment	Loss of Function, PV, $		Accruing Reduction PV
Year		D Dock Closed			
1	0		0		0
2	0		0		0
3	31,000		25305		25305
4	31,000		23650		48955
5	31,000		22103		71058
6	31,000		20657		91714
7	31,000		19305		111019
8	31,000		18042		129062
9	31,000		16862		145924
10	31,000		15759		161682
11	31,000		14728		176410
12	31,000		13764		190175
13	31,000		12864		203039
14	31,000		12022		215061
15	31,000		11236		226297
16	31,000		10501		236798
17	31,000		9814		246611
18	31,000		9172		255783
19	31,000		8572		264355
20	31,000		8011		272366
21	31,000		7487		279853
22	31,000		6997		286850
23	31,000		6539		293389
24	31,000		6112		299501
25	31,000		5712		305213
26	31,000		5338		310551
27	31,000		4989		315539
28	31,000		4662		320202
29	31,000		4357		324559
30	31,000		4072		328632
31	31,000		3806		332438
32	31,000		3557		335995
33	31,000		3324		339319
34	31,000		3107		342426
35	31,000		2904		345329
36	31,000		2714		348043
37	31,000		2536		350579
38	31,000		2370		352949
39	31,000		2215		355164
40	31,000		2070		357234

TABLE 3

Budget Item	Annual Dock Loss, $	Comment	Loss of Function, PV, $		Accruing Reduction PV, $
Year		E, F & G Closed			
1	0		0		0
2	0		0		0
3	0		0		0
4	0		0		0
5	97,000		69160		69160
6	97,000		64635		133795
7	97,000		60407		194202
8	97,000		56455		250656
9	97,000		52762		303418
10	97,000		49310		352728
11	97,000		46084		398812
12	97,000		43069		441881
13	97,000		40252		482133
14	97,000		37618		519751
15	97,000		35157		554908
16	97,000		32857		587765
17	97,000		30708		618473
18	97,000		28699		647172
19	97,000		26821		673993
20	97,000		25067		699060
21	97,000		23427		722487
22	97,000		21894		744381
23	97,000		20462		764843
24	97,000		19123		783966
25	97,000		17872		801838
26	97,000		16703		818541
27	97,000		15610		834151
28	97,000		14589		848740
29	97,000		13635		862375
30	97,000		12743		875118
31	97,000		11909		887026
32	97,000		11130		898156
33	97,000		10402		908558
34	97,000		9721		918279
35	97,000		9085		927365
36	97,000		8491		935856
37	97,000		7935		943791
38	97,000		7416		951207
39	97,000		6931		958139
40	97,000		6478		**964616**

TABLE 4

Budget Item	Annual Dock Loss, $	Comment	Loss of Function, PV, $		Accruing Reduction PV, $
Year		H, I & J Closed			
1	0		0		0
2	0		0		0
3	0		0		0
4	0		0		0
5	0		0		0
6	0		0		0
7	163,000		101508		101508
8	163,000		94867		196376
9	163,000		88661		285037
10	163,000		82861		367898
11	163,000		77440		445338
12	163,000		72374		517712
13	163,000		67639		585351
14	163,000		63214		648565
15	163,000		59079		707644
16	163,000		55214		762858
17	163,000		51602		814459
18	163,000		48226		862685
19	163,000		45071		907756
20	163,000		42122		949878
21	163,000		39367		989245
22	163,000		36791		1026036
23	163,000		34384		1060421
24	163,000		32135		1092555
25	163,000		30033		1122588
26	163,000		28068		1150656
27	163,000		26232		1176888
28	163,000		24516		1201403
29	163,000		22912		1224315
30	163,000		21413		1245728
31	163,000		20012		1265740
32	163,000		18703		1284443
33	163,000		17479		1301922
34	163,000		16336		1318258
35	163,000		15267		1333525
36	163,000		14268		1347793
37	163,000		13335		1361128
38	163,000		12462		1373590
39	163,000		11647		1385237
40	163,000		10885		**1396123**

TABLE 5

Budget Item	Annual Dock Loss, $	Comment	Loss of Function, PV, $		Accruing Reduction PV, $
Year		N Closed			
1	0		0		0
2	0		0		0
3	0		0		0
4	0		0		0
5	0		0		0
6	0		0		0
7	0		0		0
8	0		0		0
9	188,000		102260		102260
10	188,000		95570		197829
11	188,000		89317		287147
12	188,000		83474		370621
13	188,000		78013		448634
14	188,000		72910		521544
15	188,000		68140		589684
16	188,000		63682		653366
17	188,000		59516		712882
18	188,000		55622		768504
19	188,000		51984		820488
20	188,000		48583		869071
21	188,000		45404		914475
22	188,000		42434		956909
23	188,000		39658		996567
24	188,000		37064		1033631
25	188,000		34639		1068270
26	188,000		32373		1100642
27	188,000		30255		1130897
28	188,000		28276		1159173
29	188,000		26426		1185599
30	188,000		24697		1210296
31	188,000		23081		1233377
32	188,000		21571		1254948
33	188,000		20160		1275108
34	188,000		18841		1293950
35	188,000		17609		1311558
36	188,000		16457		1328015
37	188,000		15380		1343395
38	188,000		14374		1357769
39	188,000		13434		1371202
40	188,000		12555		**1383757**

TABLE 6

Budget Item	Annual Dock Loss, $	Comment	Loss of Function, PV, $		Accruing Reduction PV, $
Year		O Closed			
1	0		0		0
2	0		0		0
3	0		0		0
4	0		0		0
5	0		0		0
6	0		0		0
7	0		0		0
8	0		0		0
9	0		0		0
10	0		0		0
11	213,000		101195		101195
12	213,000		94575		195769
13	213,000		88387		284157
14	213,000		82605		366762
15	213,000		77201		443963
16	213,000		72150		516113
17	213,000		67430		583544
18	213,000		63019		646563
19	213,000		58896		705459
20	213,000		55043		760502
21	213,000		51442		811944
22	213,000		48077		860021
23	213,000		44932		904953
24	213,000		41992		946945
25	213,000		39245		986190
26	213,000		36678		1022868
27	213,000		34278		1057146
28	213,000		32036		1089182
29	213,000		29940		1119122
30	213,000		27981		1147103
31	213,000		26151		1173254
32	213,000		24440		1197693
33	213,000		22841		1220534
34	213,000		21347		1241881
35	213,000		19950		1261831
36	213,000		18645		1280476
37	213,000		17425		1297902
38	213,000		16285		1314187
39	213,000		15220		1329407
40	213,000		14224		**1343631**

TABLE 7

Budget Item	Annual Dock Loss, $	Comment	Loss of Function, PV, $		Accruing Reduction PV, $
Year		P & Q Closed			
1	0		0		0
2	0		0		0
3	0		0		0
4	0		0		0
5	0		0		0
6	0		0		0
7	0		0		0
8	0		0		0
9	0		0		0
10	0		0		0
11	0		0		0
12	0		0		0
13	0		0		0
14	263,000		101996		101996
15	263,000		95323		197319
16	263,000		89087		286406
17	263,000		83259		369666
18	263,000		77812		447478
19	263,000		72722		520199
20	263,000		67964		588164
21	263,000		63518		651682
22	263,000		59363		711044
23	263,000		55479		766523
24	263,000		51850		818373
25	263,000		48458		866830
26	263,000		45287		912118
27	263,000		42325		954442
28	263,000		39556		993998
29	263,000		36968		1030966
30	263,000		34550		1065516
31	263,000		32289		1097805
32	263,000		30177		1127982
33	263,000		28203		1156185
34	263,000		26358		1182542
35	263,000		24633		1207176
36	263,000		23022		1230197
37	263,000		21516		1251713
38	263,000		20108		1271821
39	263,000		18793		1290614
40	263,000		17563		**1308177**

Budget Item	Function Gain, $	Comment	PV of Gain, $	Span of Gain, yrs.	Accruing Lease Gains PV
Year					
1	33,000	Docks Added	30841	39	409105.27

Budget Item	Loss of Function, $	Comment		Span of Loss, yrs.	Equal Series PV[5]
Year		C Dock Closed			
1	15,000			39	185957
2		D Dock Closed			
3	31,000			37	357234
4		E, F & G Closed			
5	97,000			35	964616
6		H, I & J Closed			
7	163,000			33	1396123
8		N Dock Closed			
9	188,000			31	1383757
10		O Dock Closed			
11	213,000			29	1343631
12					
13		P & Q Closed			
14	263,000			26	1308177
TOTAL	7,348,601				

ECONOMIC ANALYSES	From Table 8 Below	
Benefit Item	Benefit, $ Millions/yr.	PV of Total Over 40 Year UsefulLife
OR Labor Income	23.9	193,922,534
Tax Revenue	9.33	SS BCR 58
TOTAL	33.23	

TABLE 8

Year	Total, Million $	Recreational Slips, No.	Commercial Slips, No.	Commercial Benefit/yr, Million $	PV of Commercial Benefit/yr, Million $
1	33.23	298	232	14.546	13.594
2	33.23	298	232	14.546	12.705
3	33.23	298	232	14.546	11.874
4	33.23	298	232	14.546	11.097
5	33.23	298	232	14.546	10.371
6	33.23	298	232	14.546	9.693
7	33.23	298	232	14.546	9.058
8	33.23	298	232	14.546	8.466
9	33.23	298	232	14.546	7.912
10	33.23	298	232	14.546	7.394
11	33.23	298	232	14.546	6.911
12	33.23	298	232	14.546	6.459
13	33.23	298	232	14.546	6.036
14	33.23	298	232	14.546	5.641
15	33.23	298	232	14.546	5.272
16	33.23	298	232	14.546	4.927
17	33.23	298	232	14.546	4.605
18	33.23	298	232	14.546	4.304
19	33.23	298	232	14.546	4.022
20	33.23	298	232	14.546	3.759
21	33.23	298	232	14.546	3.513
22	33.23	298	232	14.546	3.283
23	33.23	298	232	14.546	3.068
24	33.23	298	232	14.546	2.868
25	33.23	298	232	14.546	2.680
26	33.23	298	232	14.546	2.505
27	33.23	298	232	14.546	2.341
28	33.23	298	232	14.546	2.188
29	33.23	298	232	14.546	2.045
30	33.23	298	232	14.546	1.911
31	33.23	298	232	14.546	1.786
32	33.23	298	232	14.546	1.669
33	33.23	298	232	14.546	1.560
34	33.23	298	232	14.546	1.458
35	33.23	298	232	14.546	1.362
36	33.23	298	232	14.546	1.273
37	33.23	298	232	14.546	1.190
38	33.23	298	232	14.546	1.112
39	33.23	298	232	14.546	1.039
40	33.23	298	232	14.546	0.971

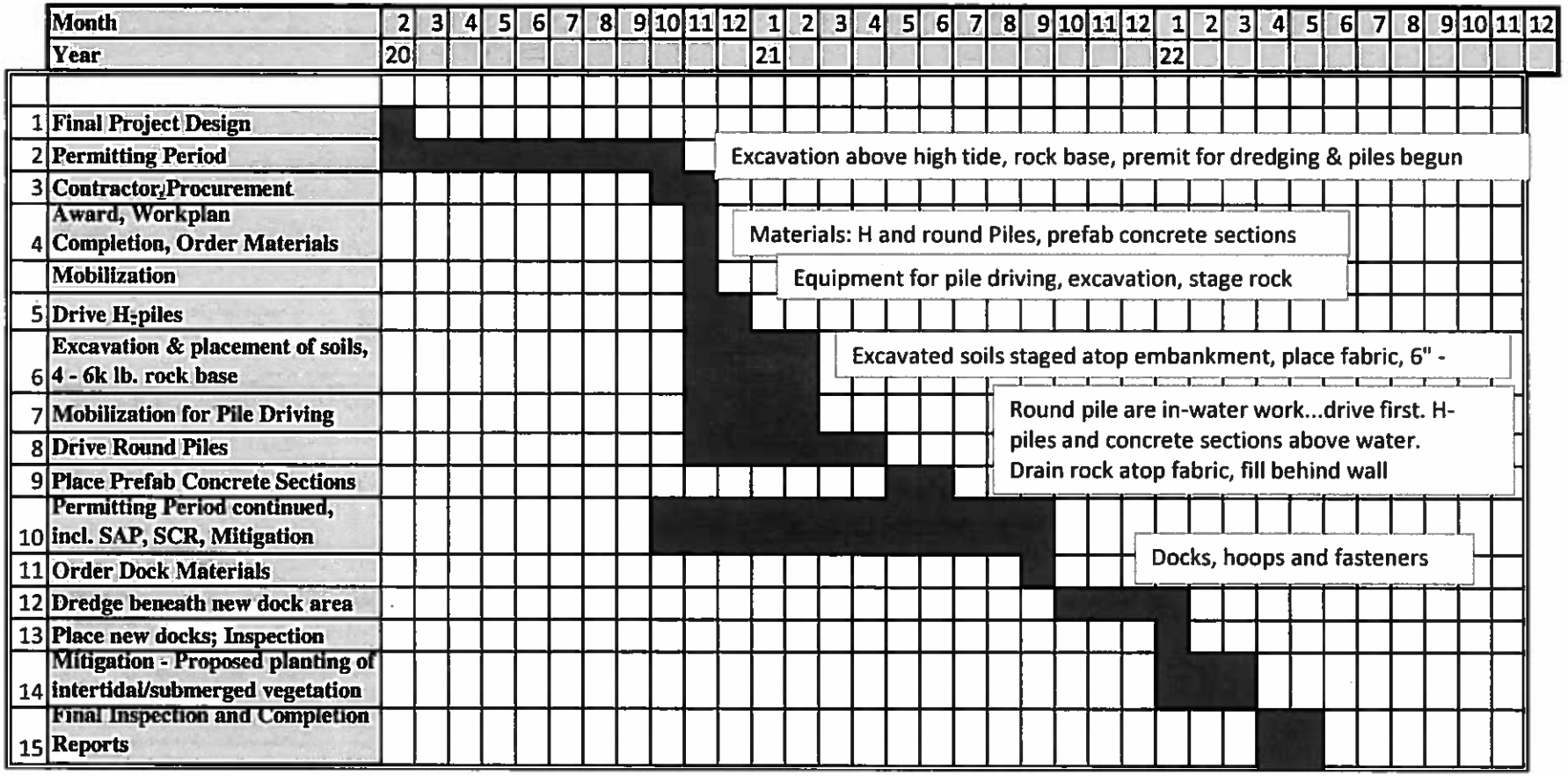
TABLE 9

	Docks, ft.^{2}	Hoops, installed	60', 1/2"t Steel Piles, installed	Mobe & Demobe	Pile/Concrete Shoring, lin. Ft
Quantity	1280	10	10	1	2200.0
Costs Ea.	50	230	4500	95000	975.0
Budget	64000	2300	45000	95000	2145000.0
	Pile Removal	Pile Redriven	Pile Coating	Electrical Utilities	Annual Dock Maintenance
Quantity	25	25	10	1	1280.0
Costs Ea.	400	900	520	60000	0.8
Budget	10000	22500	5200	60000	999.7
Dredge	Estimated Sediment, cy	Removal/cy	Disposal/cy	Dredging Budget	Sediment Evaluation
Mobe-Demobe				70000	12000.0
	6000	17	25	252000	
Base Rock	Estimated Tons	Procured & Delivered/ton	Placed/ton	Rock Base Budget	Clearing, Grade, Fabric, Backfill
	4000	38	30	272000	103888.9
Engng. & Permits	50,000				
Miti-gation	Plant Intertidal Vegetation, ft.^{2}	Cost per ft.^{2}	Mitigation		
	11,000	15	165000		
TOTAL	3346189				
SS BCA	2.20				

Attachment G

Project Schedule

Basin 2 Slope Stabilization & Moorage Addition Engineer's Estimate - 12/15/19



Attachment I

Rock Placement Tasks Estimates

EMC | Grants Pass * Jacksonville * Medford, OR
GP Office: 1867 Williams Hwy., Suite 216, Grants Pass, OR, 97527
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emc@emcengineersscientists.com; bioscapetechnologies@charter.net
http://www.emcengineersscientists.com
- Engineers/Scientists, LLC (a BioScape Technologies Affiliate)

8/26/16

Mr. Steven Leskin
Port Manager
Port of Siuslaw
Florence, OR

cc: **Mr. Hector Rivera**
Program Delivery Manager
FEMA

PROPOSED SCOPE OF WORK AND BUDGETS

Introduction

In the DAMAGE DESCRIPTION AND DIMENSIONS section of the FEMA ST0012 Site Mitigation Report the following areas were determined to have eroded and washed away during the December, 2015 storms:

Area 1- 42' in width, estimated 23.3 cy loss of slope
Area 2- 87' in width, estimated 145 cy loss of slope
Area 3- 41' in width, estimated 45.6 cy loss of slope
Area 4- 30' in width, estimated 44.5 cy loss of slope
Area 5- 35' in width, estimated 19.5 cy loss of slope

For a total estimated 277.9 cy loss of slope over a width of embankment of about 235'.

These areas are shown in the annotated, scaled drawing below (**Exhibit A**). The repair is to be constructed as shown in **Exhibits A - E**. The Port proposes to complete the revetment repair as described below.

Purpose

The purpose of this project is to restore the embankment to its original condition and prevent slope failures from reoccurring. The reconstruction of slopes using riprap and reinforced earth slopes will provide the necessary safety against slope failure. The slope reconstruction will require mitigation with an embankment extension to establish foundation support for the riprap.

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- Engineers/Scientists, LLC (a BioScape Technologies Affiliate)

Design General Description

The proposed design is a standard rip rap repair where the existing grade is covered with structural fill, compacted to 90% relative density and placed at a 1V/1H to a 1V/1.5H slope, as determined on site by the engineer of record (EMC).

Either a heavy, non-woven fabric or 16 inches of rip rap will be laid over the compacted fill. A specified angular rock, likely about 6 inches, will be placed as a base for the rip rap rock, compacted to 90% relative density and extending 4 - 5 feet beyond the riprap toe to provide an apron against scour. Specified riprap (likely Class 2000) would be placed (not dumped) atop the base rock floor and the fabric or geotextile along the structural fill embankment.

Damage Repair

Preliminary volume approximates to repair Areas 1 - 5 (and the short distances between them) as shown below in **EXHIBIT A** for 250 yd.^{3} of cut/excavation and 400 yd.^{3} of structural earth fill. The construction is tied in at either end, shown in **EXHIBIT A**.

Additionally, mitigation is described below. The conditions that exist where this section of the Siuslaw River contacts the shoreline/bulkhead (see Section below entitled **Flow Conditions**) require hard repairs, also shown in **EXHIBIT A**.

Proposed Mitigation

A 406 mitigation is recommended to protect the repair, shown in **Exhibit A,** 100 yd.^{3} of base rock and 550 yd.^{3} of class 2000 riprap. The reason for this extension is to protect the FEMA-approved repair from the ebb/flow and severe lateral and cross-current forces that will erode the repair from both the east and west ends, as well as along its full length. Bioengineering is proposed to be implemented to introduce habitat to the repair by the installation of eleven (11) trees with exposed root wads (**see EXHIBIT E**), and forty (40) live stakes (see **EXHIBIT B**).

Flow Conditions

Rapidly varying, unsteady flow conditions are common in this area of flow expansion, flow contraction, and reverse flow. These conditions are common immediately upstream, at and immediately downstream of the proposed repair area. Supercritical or near supercritical flows are to be expected near the degraded sidebanks during severe storms and tides.

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Unstable conditions exist in which the inertia and gravity forces are unbalanced. This causes excessive wave action, hydraulic jumps, localized changes in water-surface slope, and extreme flow turbulence. Non-uniform, unsteady, and near supercritical flow conditions create stresses on the channel boundary that are significantly different from those induced by uniform, steady, subcritical flow. These stresses are difficult to assess quantitatively. The stability factor method of riprap design presented in this proposed work provides a means of adjusting the final riprap design (which is based on relationships derived for steady, uniform, subcritical flow) for the uncertainties associated with these other flow conditions. The adjustment is made through the assignment of a stability factor. The magnitude of the stability factor is based on the level of uncertainty inherent in the design flow conditions.

These conditions are multiplied when the mass of water, moving during unusual storm surges such as that experienced in December, 2015, at recorded speeds in excess of 14 knots (about 24 fps). During ebb tide (flows downstream westward) the lateral forces against the embankment shown in **EXHIBIT A** are greatest. However, during severe storms, flood tides can weaken and erode this embankment from a westerly direction.

Design Specifics

This design is produced with the above section, Flow Conditions, in mind.

The rock used for this project will be specified to follow test requirements found within AASHTO 85 (Apparent specific gravity, percent absorption); ODOT TM 208A (degradation); and ASHTO T 104 (soundness). All rock specified in this project must be angular in shape, and the thickness of any single rock shall not be less than one third of its length. Round rock will not be accepted unless authorized by EMC.

The rock must meet the gradation requirements for the class specified, and be free from overburden, spoiled, shale and organic material. Non-durable rock, shale or rock with shale seams is not acceptable. Class 2000 rip rap is by definition comprised of rocks that are 20% by weight of 1400 pounds to 2000 pounds, 30% by weight of 700 to 1400 pounds, 40% by weight 40 to 700 pounds and 0 to 10% 0 to 40 pounds.

Either a filter blanket of 16 inch layer of class 50, or specified filter fabric will be laid beneath the rock. A clamshell, orange peel bucket, skip or similar approved device will be used which will contain the riprap material to its final destination.

The longitudinal extent of this repair should be continuous for a distance greater than the length that is impacted. The vertical extent of protection required for this revetment includes design height and foundation or toe depth. The design height of the rip rap installation is to be equal to the design high water elevation (King tide plus storm surge) with adequate freeboard to accommodate wave action, super elevation from the channel bend, hydraulic jump, and flow irregularities, plus erratic phenomena such as unforeseen embankment settlement, accumulation of trash and debris from the river.

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Scour depth is estimated at about 6 feet from the lowest elevation in the cross-section of the Siuslaw at this point, utilizing the conservative assumption of a median diameter of bed material to be about 0.15 m. Riprap thickness for Class 2000 is specified to be at least a 4 foot layer.

The filter beneath the riprap an overlying the structural fill is to prevent the migration of fine soil particles through structural voids and to distribute the weight of the armoring units (rip rap) to provide more uniform settlement, and also permits relief of hydrostatic pressures within the soils. For the areas above the waterline at any given time the fabric or geotextile also prevents surface water from causing erosion, beneath the rip rap. In addition to toe considerations with respect to scour the flanks of this revetment are designed for upstream and downstream conditions.

All work is proposed to be accomplished "dry", meaning that work will be scheduled to be done above tidal waters at all time.

Budgets

Proposed Repair	Unit	$/Unit	# Units	Total Cost
Clearing, excavation, fencing, erosion control	cy	90	250	22500
Moving, placing & compacting soil into embankment	cy	80	400	32000
Geofabric or textile	sf	9	4500	40500
Project engineering/management	unit	14000	1	14000
Permitting, design, FEMA and other design and communication work	unit	18000	1	18000
Overage (10%)	unit	18096	1	12700
				139700

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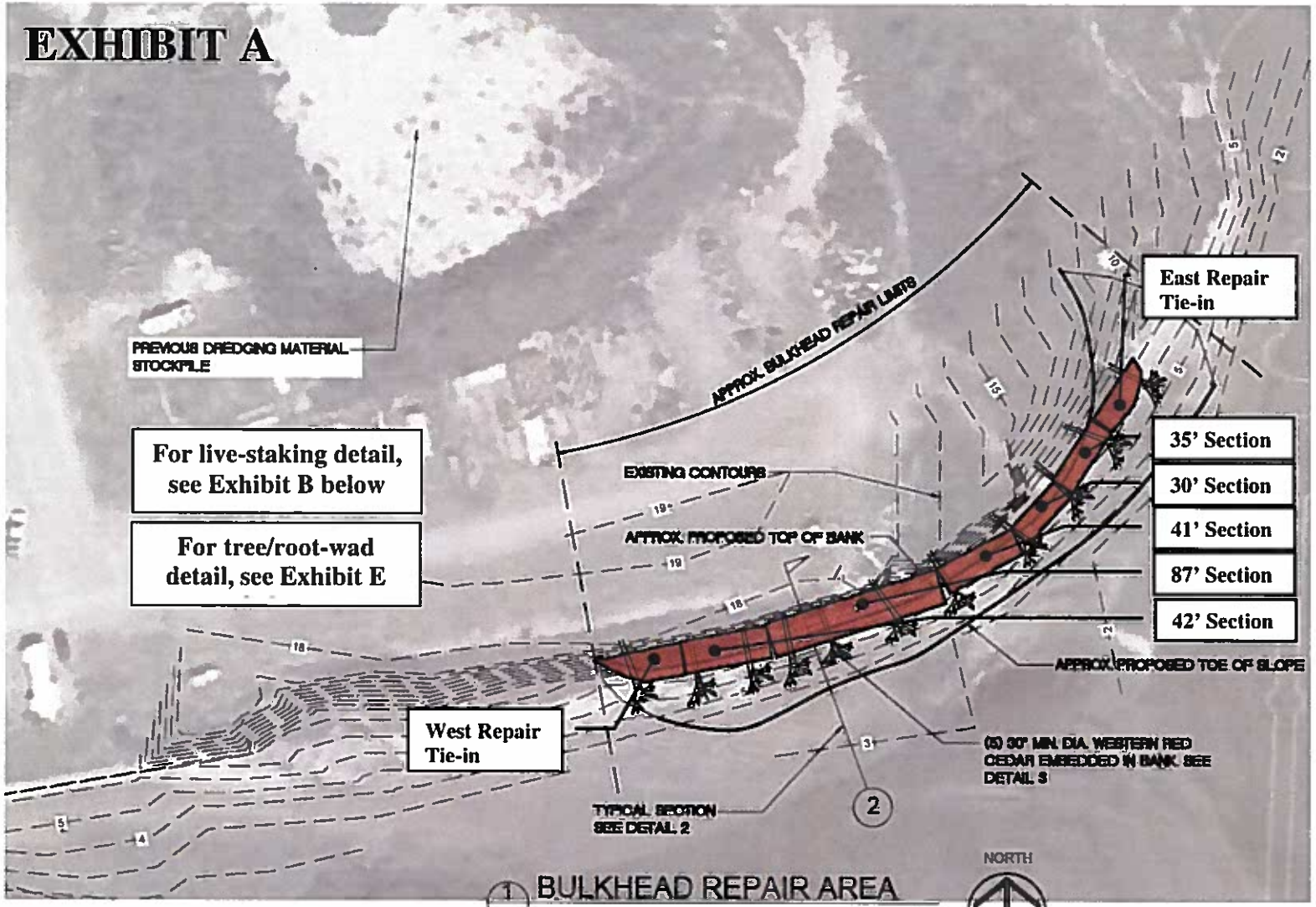
Proposed Mitigation	Unit	$/Unit	# Units	Total Cost
Purchase, deliver class 2000 rock	ton	38	880 (550 cy)	33440
Placing rock	ton	35	880 (550 cy)	30800
Base rock, delivery & placement	ton	45	160 (100 cy)	7200
Delivery and Installation of 11 trees with rod wads	unit	1600	11	17600
Concrete blocks for trees	unit	150	11	1650
Installation of trees (30" dia trees, green, pulled over for root wad, including delivery)	unit	1500	11	16500
Purchase and installation of 40 live shoots	unit	150	40	6000
Project engineering/management	unit	2500	1	2500
Permitting, design, FEMA and other design and communication work	unit	2500	1	2500
Overage (10%)		7041	1	11819
				130009

This proposed restoration and mitigation project is produced by EMC-Engineers/Scientists, LLC (EMC), and has been constructed in adherence to good and generally accepted engineering practice. Conditions in the field may change (discovery) some elements of the proposed designs. EMC is qualified to design and manage this project, and carries adequate ($2,000,000) errors & omissions insurance.

Sincerely

Jack (John) Akin, MS, PE, IC, HMS, CAI
EMC-Engineers/Scientists, LLC

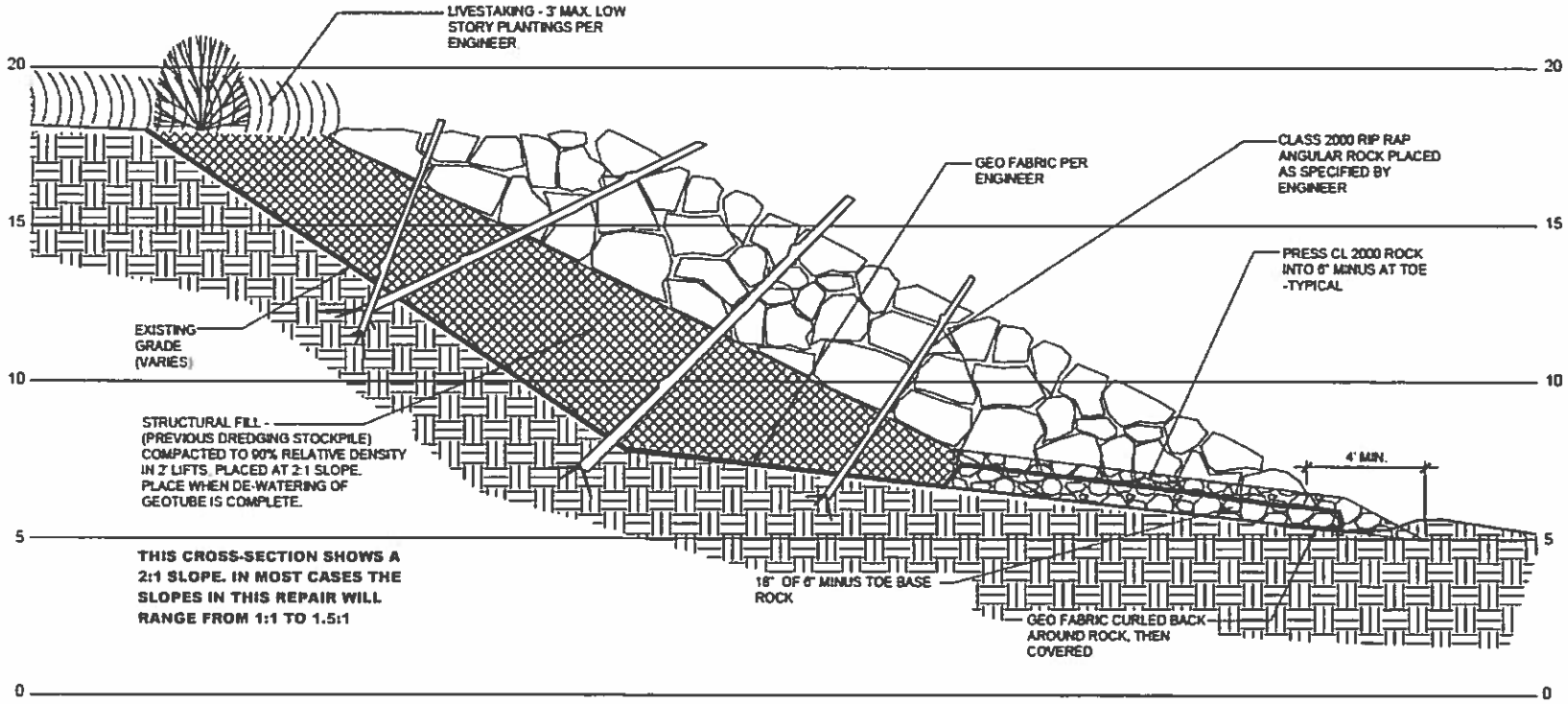
EXHIBIT A



DATA NOTES:

1 EXISTING EAST BANK AREA SURVEY ELEVATION DATA SUPPLIED BY HOSTETTER LAND SURVEYING - DATED 4/2016.

EXHIBIT B



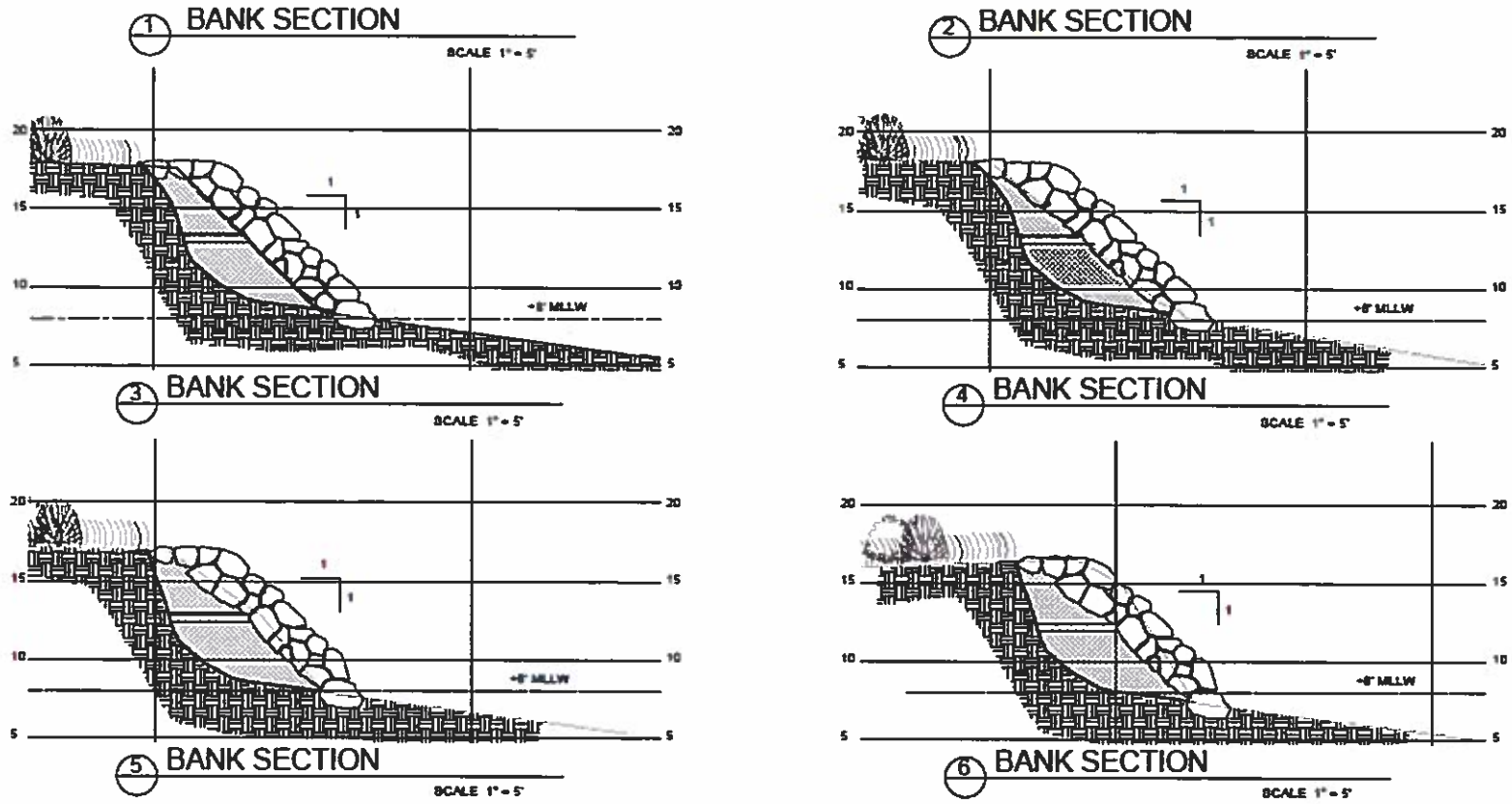
2 TYPICAL BANK SECTION

SCALE 1" = 3' ±

Notes:

- *Stakes harvested & planted in dormant season*
- *Wood at least one year old*
- *Cuts to be clean, a pilot bar to be used in firm soils*
- *Cuttings to be soaked prior to planting*
- *Plant through geofabric, prior to structural fill or riprap*
- *Wrap stakes before placing fill and riprap*
- *Correctly sized Species should be selected to avoid future compromise of riprap structure*
- *40 live stakes will be integrated into the riprap wall*

EXHIBIT C

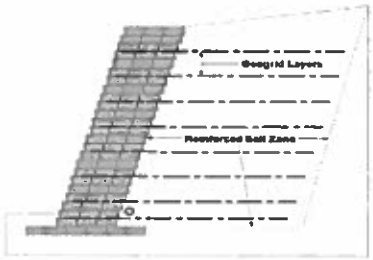


1:1 Embankment slopes are preferred on this project, and Geogrid will used for increased stability where deemed to be necessary by the Engineer of Record (EMC). See EXHIBIT D for details regarding Geogrid.

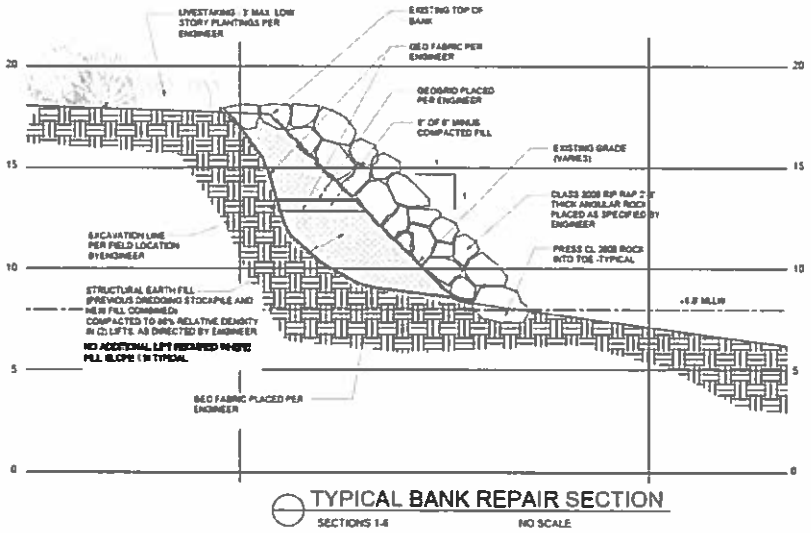
SL

EXHIBIT D

Soil Reinforcement Geogrids

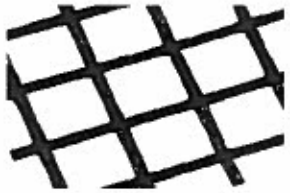


When used in applications such as retaining walls and earth embankments, geogrids must have a resistance to "creep". Unlike traffic loading, the forces that act upon a geogrid in an earth retention structure are constant. Polypropylene geogrids subjected to similar conditions will continue to stretch or "creep", making the structure unsafe. **Soil Reinforcement Geogrids** are made with materials and processes that minimize creep making them well suited to such applications. Most **Soil Reinforcement Geogrids** are Uniaxial, meaning that they are considerably stronger in one direction versus the other. It is important, when using a Uniaxial Geogrid to properly position the material so the higher strength direction is in line with the direction of the highest anticipated load. GSI offers a wide variety of **Soil Reinforcement Geogrids** for a variety of applications.



TYPICAL BANK REPAIR SECTION
SECTIONS 1-4 NO SCALE

Synteen SF® Geogrids are woven under tension, of high tenacity polyester yarns. The yarns are coated with a PVC material to resist biological degradation. This combined process gives **Synteen SF® Geogrids** a high resistance to "creep" making them well suited for use where high loads are constant such as mechanically stabilized earth (MSE) walls and embankments.



Step 1: Excavate Reinforced Soil Area
Remove existing soils in the reinforced soil area to the maximum embedment length of the geogrid. Provide a generally level soil condition behind the wall units for the placement of each geogrid layer.

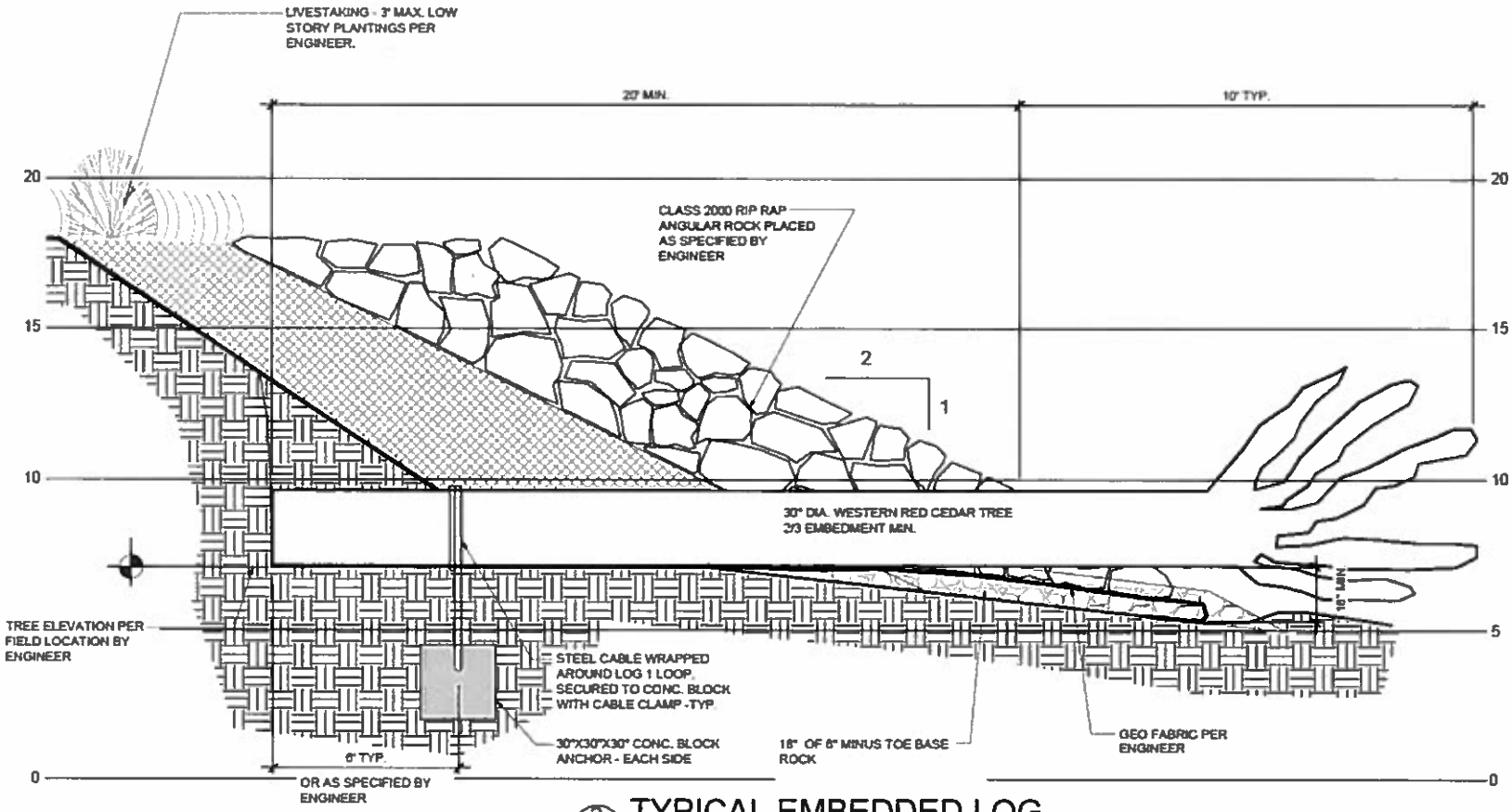
Step 2: Cut Geogrid
Cut sections from geogrid roll to the specified length (embedment depth). Geogrid roll direction is from the wall toward the embankment. Check manufacturer's criteria for biaxial or uniaxial geogrids. In most cases correct orientation is to roll the geogrid perpendicular to the wall face.

Step 3: Install Geogrid
Hook geogrid over the Keystone pins to ensure a positive mechanical connection between the unit and geogrid. Make sure geogrid is placed within 1 inch of wall face.

Step 4: Secure Geogrid
Pull the pinned geogrid taut to eliminate loose folds. Stake or secure back edge of geogrid before and during backfill and compaction. Remove stakes, if desired, once backfill is placed. Place additional sections of geogrid, abutting each other, for continuous coverage at each layer.

Step 5: Place Backfill Over Geogrid In 8" Lifts
Provide a minimum of 6" reinforced fill coverage prior to driving equipment over the geogrid with tired equipment. Avoid driving or turning vehicles directly on geogrid to avoid excessive damage.

EXHIBIT E



3 TYPICAL EMBEDDED LOG

SEE DETAIL 2 FOR INFO. NOT SHOWN

NO SCALE

Attachment K

4432-DR

Work Order 45060 Damage Number 304670 **Site Inspection Report** 4432-DR-OR **Category A**

Applicant:	FIPS#:	Applicant Representative	Site Inspector:	Site Inspection Date:
Port of Brooking Harbor	015-UIZ50-00	Gary Dehlinger	Thomas Weber & Jonathan Verdugo	9/20/2019

Applicant Address:	City:	State:	Zip Code:
16330 Lower Harbor Road	Brookings	Oregon	97415

Location Type: 1-Public Road 2-FHWA Road 3- Public ROW **4-Waterway** Private Property 6-Temporary Staging 7-Final 8-Other (Specify)

Debris Type: 1- Vegetative 2-C&D 3-White Goods 4- E-Waste **5- Wet Debris** **6-Sand/Soil/Mud** Stump 8-Leaning Tree 9-Hanging Limbs 10-Vehicle 11-Vessels 12-Putrescent Debris 13-Hazardous

Cause of Damage: Other (See Notes)
1-Surface Water Flooding 2-Wind Driven Rain 3-Sewer Back Up 4-Foundation Seepage 5-Lightning 6-High Winds 7-Tree Damage 8-Wind Blown Debris 9-Earthquake 10-Fire 11-Explosion **12-Other (specify)**

Removal

Site No.	Name of Location (city-wide, Street name, address, etc.)	Debris Type	GPS Coordinates				Dimensions (if measurable)			Quantity (cy or each)	Size (ac)	% Completed	FA or Contract or both
			Start (or single location)		End		Length (feet)	Width (feet)	Depth (feet)				
			Lat	Long	Lat	Long							
1	Basin 2 (Area 4)	6	42.051155	-124.268378	42.050387	-124.268139	See	Notes	See	Notes		0	C
2	Basin 1 (Area 1)	6	42.047097	-124.266318	42.044543	-124.264013	See	Notes	See	Notes		0	C
	N/A												
	N/A												
	N/A												

Disposal

Site No. (List all)	Temporary Staging/Reduction Site Location (GPS)	Indicate stockpile, chipping, burning, other(specify)	Permit Number	Managed By? (FA/Contract)	Final Disposal Location (Address and / or GPS)	Permit Number	Debris recycled? (Y/N)	Salvage value? (Y/N)
	Applicant will provide FEMA at a later date.				Applicant will provide FEMA at a later date.			
	Temporary Staging-Reduction Quantity (L x W x D) Applicant will provide FEMA at a later date.				Final Disposal Quantity (L x W x D) Applicant will provide FEMA at a later date.			

Applicant Representative Initials:_____

See Applicant's Email Exchange (10/15/2019) with FEMA Site Inspector Task Force Lead which included the following questions and answers:

1. Can you please breakdown the cubic yards of debris per basin (please differentiate what debris is connected to 4432 & 4452 in each section) and any other areas you are claiming for the harbor?

Applicant's Answer: Please reference attached maps (Attachments 1 & 2) from EMC Engineer/Scientists Bathymetric Survey report dated 07/11/2019. Below is approximate breakdown in each area:

Basin 1 (Area 1) 500 cubic yards
Basin 2 (Area 4) 7,500 cubic yards

2. Can you describe what type of debris is located in the harbor which needs to be removed (dredge) and has it been removed?

Applicant's Answer: Material is sand / silt / clay and marine mix. No material can be removed until permits are approved. Tree limbs, branches and stumps were removed as part of normal cleanup measures from Port staff (not part of claim).

3. Where did the debris come from e.g. local river and/or county flood control system, etc. If the debris is entering the harbor, as a result of the events, from the river and/or food control system herein who has legal responsibilities over these facilities?

Applicant's Answer: EMC Engineer/Scientists and Port has estimated 90% of the sand / silt / clay came from Chetco River.

4. What part of the harbor/channel inlet does the U.S. Army Corps of Engineers (USACE) and/or the Natural Resources Conservation Service (NRCS) have legal responsibility over?

Applicant's Answer: Please see attached drawing (Attachment 3) that shows the Federal Channel responsibility.

5. What capacity, in percentage, is the harbor lane(s) open wherein ships/boats/water vessels are freely accessing (entering/exiting) the harbor which is not impacting by the debris?

Applicant's Answer: Estimated 7% of the slips are impacted at low tide. 3% of the slips are closed from the debris.

6. Where is the final resting place (location) for the debris being removed and do you have a permit connected to this activity? What is the permit number?

Applicant's Answer: Pending permit approval Area 3 will be the main location for debris removal. If the Port does not receive approval, there are two other options. 1) Upland location away from Port property (unknown location). 2) Ocean disposal which also requires permit approva Permits may take 6-9 months or longer to achieve. Our goal will be dredging in Oct - Feb 2020-21.

NOTE FOR SITE INSPECTOR: During the site inspection, please ask the Applicant the following questions. The PDMG may have already asked these questions; however, the Applicant representative at the site inspection may have additional information. Use Notes section on next page if additional space is needed for comments.

1. Does the damaged facility have insurance coverage and/or is it an insurable risk (e.g., buildings, equipment, vehicles)? Unsure [Yes] No

Comments:
Yes, but damages does not covered.

2. Is the damaged facility(ies) located within a floodplain or a coastal high hazard area and/or does it have an impact on a floodplain or wetland? Can the project site be impacted by flooding? Will work occur within 200 feet of a waterway/waterbody?

Is the final disposal located in a floodplain or wetland? Unsure [Yes] No

Will the final disposal impact a floodplain or wetland?

Can the disposal site be impacted by flooding?

Comments:
Yes, the Harbor is next to the Chetco river & Ocean.

3. Is the damaged facility located within or adjacent to a Coastal Barrier Resource System Unit or an Otherwise Protected Area? Unsure Yes [No]

Comments:

4. Is the damaged facility on the National Register of Historic Places or state historic listing? Is it older than 45 years?

Did any ground disturbance occur during removal or disposal? Including when establishing, operating, or decommissioning a staging/reduction site? Unsure [Yes] No

Was there coordination with or a permit obtained from the State Historic Preservation Office or a Tribe or the appropriate state agency?

Comments:
Harbor next to Chetco River and Ocean.

5. Does the Applicant have a hazard mitigation proposal or would the applicant like technical assistance for hazard mitigation proposal? Unsure [Yes] No

Comments:
Yes, Harbor has a hazard mitigation plan.

6. Is the damaged facility(ies) listed on a local/state/national historic register or is it a locally recognized landmark? Is it older than 45 years? (Provide the age of the facility) Are there more, similar buildings near the site? Unsure [Yes] No

Comments: Archeologically sensitive. In SHPO databased for cultural site prehistorical tribe memorial site on port property, granted land to harbor > 45 years.

7. Are there any large, undeveloped or undisturbed areas on, or near, the project site? (Select "yes" if there are large tracts of forestland, grassland, or naturally preserved areas, etc.) Unsure Yes [No]

Comments:

8. Are there any hazardous materials at or adjacent to the damaged facility? Unsure [Yes] No

Comments: Yes, harbor has diesel (10,000 Gal) and fuel (10,000 Gal) gas station.

9. Are there any other environmental or controversial issues associated with the damaged facility and/or work item? (select yes if facility is a road maintained by a Tribal Government or if the project necessitates the establishment of a new borrow area or the horizontal expansion of an existing borrow area.) Unsure Yes [No]

Comments:

List any known endangered species in the work area:

Coho Salmon

81

Applicant Representative Initials_____

Attachment L

4452-DR

Work Order 47755 Damage Number 318038 Site Inspection Report 4452-DR-OR Category A

Applicant:	FIPS#:	Applicant Representative	Site Inspector:	Site Inspection Date:
Port of Brooking Harbor	015-UIZ50-00	Gary Dehlinger	Thomas Weber & Jonathan Verdugo	9/20/2019

Applicant Address:	City:	State:	Zip Code:
16330 Lower Harbor Road	Brookings	Oregon	97415

Location Type: 1-Public Road 2-FHWA Road 3- Public ROW 4-Waterway 5- Private Property 6-Temporary Staging 7-Final 8-Other (Specify)

Debris Type: 1- Vegitative 2-C&D 3-White Goods 4- E-Waste 5-Wet Debris 6-Sand/Soil/Mud Stump 8-Leaning Tree 9-Hanging Limbs 10-Vehicle 11-Vessels 12-Putrescent Debris 13-Hazardous

Cause of Damage: Other (See Notes)
1-Surface Water Flooding 2-Wind Driven Rain 3-Sewer Back Up 4-Foundation Seepage 5-Lightning 6-High Winds 7-Tree Damage 8-Wind Blown Debris 9-Earthquake 10-Fire 11-Explosion 12-Other (specify)

Removal

Site No.	Name of Location (city-wide, Street name, address, etc.)	Debris Type	GPS Coordinates				Dimensions (if measurable)			Quantity (Yr or each)	Site (%)	% Completed	FA or Contract or both
			Start (or single location)		End		Length (feet)	Width (feet)	Depth (feet)				
			Lat	Long	Lat	Long							
1	Basin 2 (Area 4)	6	42.051155	-124.268378	42.050387	-124.268139	See	Notes	See	Notes	N/A	0	C
2	Basin 1 (Area 1)	6	42.047097	-124.266318	42.044543	-124.264013	See	Notes	See	Notes	N/A	0	C
3	Basin 1 (Area 2)	6	42.047097	-124.266318	N/A	N/A	See	Notes	See	Notes	N/A	0	C
	N/A												
	N/A												

Disposal

Site No. (List all)	Temporary Staging/Reduction Site Location (GPS)	Indicate stockpile, chipping, burning, other(specify)	Permit Number	Managed By? (FA/Contract)	Final Disposal Location (Address and / or GPS)	Permit Number	Debris recycled? (Y/N)	Salvage value? (Y/N)
	Applicant will provide FEMA at a later date.				Applicant will provide FEMA at a later date.			
	Temporary Staging-Reduction Quantity (L x W x D)				Final Disposal Quantity (L x W x D)			
	Applicant will provide FEMA at a later date				Applicant will provide FEMA at a later date.			

Applicant Representative Initials:_____

See Applicant's Email Exchange (10/15/2019) with FEMA Site Inspector Task Force Lead which included the following questions and answers:

1. Can you please breakdown the cubic yards of debris per basin (please differentiate what debris is connected to 4432 & 4452 in each section) and any other areas you are claiming for the harbor?

Applicant's Answer: Please reference attached maps (Attachments 1 & 2) from EMC Engineer/Scientists Bathymetric Survey report dated 07/11/2019. Below is approximate breakdown in each area:

Basin 1 (Area 1) 15,500 cubic yards
Basin 1 (Area 2) 3,000 cubic yeards
Basin 2 (Area 4) 12,500 cubic yards

2. Can you describe what type of debris is located in the harbor which needs to be removed (dredge) and has it been removed?

Applicant's Answer: Material is sand / silt / clay and marine mix. No material can be removed until permits are approved. Tree limbs, branches and stumps were removed as part of normal cleanup measures from Port staff (not part of claim).

3. Where did the debris come from e.g. local river and/or county flood control system, etc. If the debris is entering the harbor, as a result of the events, from the river and/or food control system herein who has legal responsibilities over these facilities?

Applicant's Answer: EMC Engineer/Scientists and Port has estimated 90% of the sand / silt / clay came from Chetco River.

4. What part of the harbor/channel inlet does the U.S. Army Corps of Engineers (USACE) and/or the Natural Resources Conservation Service (NRCS) have legal responsibility over?

Applicant's Answer: Please see attached drawing (Attachment 3) that shows the Federal Channel responsibility

5. What capacity, in percentage, is the harbor lane(s) open wherein ships/boats/water vessels are freely accessing (entering/exiting) the harbor which is not impacting by the debris?

Applicant's Answer: Estimated 7% of the slips are impacted at low tide. 3% of the slips are closed from the debris.

6. Where is the final resting place (location) for the debris being removed and do you have a permit connected to this activity? What is the permit number?

Applicant's Answer: Pending permit approval Area 3 will be the main location for debris removal. If the Port does not receive approval, there are two other options. 1) Upland location away from Port property (unknown location). 2) Ocean disposal which also requires permit approval Permits may take 6-9 months or longer to achieve. Our goal will be dredging in Oct - Feb 2020-21.

NOTE FOR SITE INSPECTOR: During the site inspection, please ask the Applicant the following questions. The PDMG may have already asked these questions; however, the Applicant representative at the site inspection may have additional information. Use Notes section on next page if additional space is needed for comments.

1. Does the damaged facility have insurance coverage and/or is it an insurable risk (e.g., buildings, equipment, vehicles)? Unsure (Yes) No

Comments:
Yes, the Harbor is next to the Chetco river & Ocean.

2. Is the damaged facility(ies) located within a floodplain or a coastal high hazard area and/or does it have an impact on a floodplain or wetland? Can the project site be impacted by flooding? Will work occur within 200 feet of a waterway/waterbody?

Is the final disposal located in a floodplain or wetland? Unsure (Yes) No

Will the final disposal impact a floodplain or wetland?

Can the disposal site be impacted by flooding?

Comments:
Harbor next to Chetco River and Ocean.

3. Is the damaged facility located within or adjacent to a Coastal Barrier Resource System Unit or an Otherwise Protected Area? Unsure Yes (No)

Comments:

4. Is the damaged facility on the National Register of Historic Places or state historic listing? Is it older than 45 years?

Did any ground disturbance occur during removal or disposal? Including when establishing, operating, or decommissioning a staging/reduction site? Unsure (Yes) No

Was there coordination with or a permit obtained from the State Historic Preservation Office or a Tribe or the appropriate state agency?

Comments:

5. Does the Applicant have a hazard mitigation proposal or would the applicant like technical assistance for hazard mitigation proposal? Unsure (Yes) No

Comments:
Harbor has a hazard mitigation plan.

6. Is the damaged facility(ies) listed on a local/state/national historic register or is it a locally recognized landmark? Is it older than 45 years? (Provide the age of the facility) Are there more, similar buildings near the site? Unsure (Yes) No

Comments: Archeologically sensitive. In SHPO databased for cultural site prehistorical tribe memorial site on port property, granted land to harbor > 45 years.

7. Are there any large, undeveloped or undisturbed areas on, or near, the project site? (Select "yes" if there are large tracts of forestland, grassland, or naturally preserved areas, etc.) Unsure Yes (No)

Comments:

8. Are there any hazardous materials at or adjacent to the damaged facility? Unsure (Yes) No

Comments:
Yes, harbor has diesel (10,000 Gal) and fuel (10,000 Gal) gas station.

9. Are there any other environmental or controversial issues associated with the damaged facility and/or work item? (select yes if facility is a road maintained by a Tribal Government or if the project necessitates the establishment of a new borrow area or the horizontal expansion of an existing borrow area) Unsure Yes (No)

Comments:

List any known endangered species in the work area:
Coho Salmon

Applicant Representative Initials_____

Attachment M

BASIN 2 H-PILE WALL

PORT OF BROOKINGS

BASIN 2 - "H" PILE / CONCRETE WALL

VICINITY MAP
NOT TO SCALE

PROJECT OVERVIEW

SCALE: 1" = 100' - 0" (24x36) 1" = 200' - 0" (11x17)

0 100 200
1" = 100'

GENERAL NOTES

1. EVERY REASONABLE EFFORT HAS BEEN MADE TO LOCATE THE EXISTING UTILITIES ON THE PLANS, BUT NO GUARANTEE IS MADE AS TO THE COMPLETENESS OR ACCURACY OF THESES LOCATIONS IT SHALL BE THE CONTRACTORS' RESPONSIBILITY TO LOCATE AND PROTECT THESE AND OTHER EXISTING UTILITIES AND STRUCTURES IN THE FIELD
2. CALL ONE NUMBER 1-800-332-2344 FOR UTILITY LOCATIONS, FORTY EIGHT (48) HOURS BEFORE DIGGING
3. FOR COMPLETE EROSION CONTROL DESCRIPTION, SEE EROSION CONTROL NOTES THIS SHEET.
4. ALL MATERIALS AND WORK SHALL CONFORM TO THE LATEST CITY OF BROOKINGS "GENERAL ENGINEERING REQUIREMENTS AND STANDARD SPECIFICATIONS" PLUS THE FOLLOWING SUPPLEMENTAL DOCUMENTS LISTED BY ORDER OF CONTROL
   A. CITY OF BROOKINGS GENERAL REQUIREMENTS AND STANDARD SPECIFICATIONS FOR STREET, STORM DRAIN, SEWER AND WATERLINE CONSTRUCTION, DATED JANUARY 1991 (UPDATED)
   B. CONSTRUCTION DRAWINGS
   C. PERMITS
   D. OREGON STATE HEALTH DIVISION STANDARDS
   E. OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY STANDARDS
   F. OREGON APWA STANDARD SPECIFICATIONS, 1990
   G. OREGON STATE STANDARD SPECIFICATION FOR HIGHWAY CONSTRUCTION
5. ALL REFERENCE TO ENGINEER MEANS, EMS ENGINEERS / SCIENTISTS , LLC
6. REQUIRED IMPROVEMENTS SHALL BE INSPECTED UNDER THE DIRECTION OF THE ENGINEER, AND CONSTRUCTED TO THE SATISFACTION OF THE CITY OF BROOKINGS
7. ANY MATERIAL REMAINING AFTER BACKFILLING OPERATIONS HAVE BEEN COMPLETED SHALL BE DISPOSED OF BY CONTRACTOR OFF SITE OR IN A MANNER APPROVED BY THE ENGINEER
8. UTILITY PERMIT (IF REQUIRED) SHALL BE OBTAINED FROM CITY OF BROOKINGS PUBLIC WORKS DEPARTMENT PRIOR TO BEGINNING OF CONSTRUCTION
9. ALL CONTRACTORS MUST BE CURRENTLY PRE-QUALIFIED WITH BROOKINGS PWD PRIOR TO BEGINNING OF CONSTRUCTION.
10. ENGINEER AND BROOKINGS PWD SHALL BE NOTIFIED TWENTY FOUR (24) HOURS PRIOR TO COMMENCING WORK AND IN ADVANCE OF EACH CONSTRUCTION STAGE.
11. EXCAVATION, GRADING AND INSTALLATION OF UTILITIES AND FOUNDATIONS TO BE UNDER THE SUPERVISION OF PROJECT GEOLOGIST / ENGINEER.
12. ANY EXISTING UTILITIES IN NEED OF DISCONNECTION AT TIME OF CONSTRUCTION TO BE RE-CONNECTED IN ACCORDANCE WITH CITY OF BROOKINGS STANDARD SPECIFICATIONS AND DETAILS

GRADING NOTES

1. PRIOR TO THE CONSTRUCTION OF EMBANKMENTS, THE CONTRACTOR SHALL EXCAVATE UNSUITABLE FOUNDATION MATERIAL, BASEMENTS, TRENCHES AND HOLES ENCOUNTERED WITHIN EMBANKMENT LIMITS SHALL BE FILLED WITH APPROVED MATERIAL. PRIOR TO BACKFILLING THE CONTRACTOR SHALL BREAK CONCRETE FLOORS OF BASEMENTS AS DIRECTED. THE CONTRACTOR SHALL BREAK UP AND ROUGHEN THE GROUND SURFACE BEFORE EMBANKMENTS MATERIAL IS PLACED THE NATURAL GROUND UNDERLYING EMBANKMENTS SHELL BE COMPACTED TO THE DENSITY SPECIFIED FOR THE EMBANKMENT MATERIALS TO BE PLACED, AND TO THE DEPTH OF THE GRUBBING OR A MINIMUM OF 6 INCHES.
2. EMBANKMENT CONSTRUCTION SHALL INCLUDE PREPARATION OF THE AREAS UPON WITCH EMBANKMENTS ARE PLACED, THE PLACEMENT AND COMPACTION OF APPROVED EMBANKMENT MATERIALS AND FILLING OF HOLES, PITS AND OTHER DEPRESSIONS WITHIN THE SUBDIVISION.
3. THE CONTRACTOR SHALL PLACE EMBANKMENTS AND FILLS IN THE HORIZONTAL LAYERS OF 8 INCHES MAXIMUM DEPTH AND COMPACT EACH LAYER TO THE DENSITY SPECIFIED
4. EMBANKMENT SHALL NOT BE CONSTRUCTED WHEN THE EMBANKMENT MATERIAL OR THE FOUNDATION ON WITCH THE EMBANKMENT WOULD BE PLACED IS FROZEN
5. IMMEDIATELY PRIOR TO COMPLETION OF THE EARTHWORK, THE CONTRACTOR SHALL CLEAN THE ENTIRE WORK AREA OF DEBRIS AND FOREIGN MATTER.
6. THE MAXIMUM DENSITY OF COMPACTED MATERIAL WILL BE DETERMINED BY AASHTO T-99
7. THE CONTRACTOR SHALL COMPACT ALL EMBANKMENTS, FILLS AND BACKFILLS TO A MINIMUM IN PLACE DENSITY OF 95 PRESENT
8. THE CONTRACTOR SHALL WATER THE MATERIALS TO PROVIDE OPTIMUM MOISTURE FOR COMPACTION OF EMBANKMENT AND BACKFILLS. EMBANKMENTS OD BACKFILL MATERIALS SHALL NOT BE PLACED IN FINAL POSITION UNTIL MOISTURE IN EXCESS OF OPTIMUM MOISTURE HAS BEEN REMOVED.
9. IF THE SPECIFIED COMPACTION IS NOT OBTAINED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER. THE CONTRACTOR MAY BE REQUIRED TO USE A MODIFIED COMPACTION PROCEDURE OR APPLY ADDITIONAL COMPACTIVE EFFORT. IF APPROVED MATERIALS MEETING THE SPECIFICATIONS CANNOT BE COMPACTED TO THE REQUIRED DENSITY REGARDLESS OF COMPACTIVE EFFORT OR METHOD, THE ENGINEER MAY REDUCE THE REQUIRED DENSITY OR DIRECT THE ALTERNATE MATERIALS BE USED. IN NO CASE SHALL EARTHWORK OPERATIONS PROCEED UNTIL THE CONTRACTOR IS ABLE TO COMPACT THE MATERIAL TO THE SATISFACTION OF THE ENGINEER
10. DEQ 1200-C PERMIT IS NOT REQUIRED
11. UNLESS DIRECTED OTHERWISE, REMOVE CLEARED AND GRUBBED MATERIAL FROM THE SITE AND DISPOSE AT AN APPROVED LOCATION.
12. PRIOR TO THE START OF CONSTRUCTION, VERIFY GRADES AT SAWCUT LOCATIONS AND MATCHING OF EXISTING GRADE LOCATIONS
13. MINIMIZE TRAFFIC ON SOIL AREAS DURING WET WEATHER. IF THE SITE SOILS ARE EXPOSED DURING WET WEATHER, THE USE OF CRUSHED ROCK PLACED AS ENGINEERED FILL IN THE BOTTOM OF THE EXCAVATIONS MAY BE NECESSARY TO PROTECT THE SUBGRADE. TAKE ALL PRECAUTIONS TO LIMIT SURFACE DISTURBANCE AND PROTECT THE SITE GRADING AREA FROM EROSION AND RUNOFF
14. UNLESS OTHERWISE NOTED, THE SAMPLING AND TESTING OF MATERIALS FOR USE ON THE JOBSITE SHALL BE AT THE EXPENSE OF THE CONTRACTOR. ALL TESTING OF MATERIALS AND WORKMANSHIP SHALL BE PERFORMED BY A CERTIFIED TESTER. RESULTS OF THE TESTS SHALL BE SENT DIRECTLY TO THE PROJECT ENGINEER AS WELL AS THE CONTRACTOR, BY THE LABORATORY. LOCATION AND FREQUENCY OF TESTS SHALL BE DESIGNATED BY THE GENERAL CONTRACTOR.
15. ALL CUT AND FILL SLOPES SHALL BE MAXIMUM OF 2:1

EROSION CONTROL NOTES

1. METHODS OF SEDIMENT AND EROSION CONTROL.

A. TEMPORARY MEASURES

1. THE CONTRACTOR SHALL INSURE THAT CONSTRUCTION EQUIPMENT AND MATERIALS ARE AS MUCH AS POSSIBLE CONFINED TO THE AREA OF THE EXCAVATION
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSURING THAT ALL MUD AND DEBRIS FROM CONSTRUCTION AND EXCAVATION, SPECIFICALLY FROM TRACKS OR WHEELS OF CONSTRUCTION EQUIPMENT BE CONTAINED ON SITE. ANY SUCH DELETERIOUS MATERIALS DEPOSITED ON PUBLIC STREETS OR SIDEWALKS SHALL BE CLEANED UP AS TO NOT CAUSE SEDIMENTATION INTO CITY STORM DRAIN FACILITIES. CONTRACTOR IS RESPONSIBLE FOR SUCH CLEANUP AS REQUIRED AT THE DISCRETION OF THE ENGINEER AND IN ACCORDANCE WITH CITY SPECIFICATIONS.
3. ALL DISTURBED AREAS SHALL BE GRADED, SWALED, AND BERMED TO PREVENT RUNOFF FROM ENTERING UNPROTECTED CUT AND FILL SLOPES.
4. EXCAVATED MATERIAL SHALL NOT BE DISPOSED OF OR STOCKPILED OUTSIDE OF THE DESIGNATED CONSTRUCTION AREA WITHOUT PRIOR APPROVAL. MATERIALS TO BE DISPOSED OF OFF SITE SHALL BE HAULED IN TRUCKS WITH ADEQUATE SIDE WALLS TO PREVENT WIND TRANSPORT OF MATERIALS AND, DISPOSED OF AT APPROVED SITES.
5. ALL FILL SHALL BE PROPERLY PLACED AND THOROUGHLY COMPACTED IN ACCORDANCE WITH ASTM D-698) OR AS DIRECTED BY ENGINEER
6. THE CONTRACTOR AND OWNER SHALL BE RESPONSIBLE TO PERIODICALLY INSPECT AND MAINTAIN ALL EROSION PROTECTION THROUGHOUT THE RAINY SEASON AND MAKE REPAIRS AND ADJUSTMENTS AS NECESSARY. PERIODIC INSPECTIONS AND RECOMMENDATIONS WILL ALSO BE MADE BY THE ENGINEER AND IMPLEMENTED BY THE OWNER TO INSURE ADEQUATE EROSION CONTROL.

B. PERMANENT MEASURES

DEPENDING UPON WEATHER CONDITIONS, IT IS COMMONLY IMPRACTICAL DURING INITIAL EXCAVATION TO IMPLEMENT ALL LONG TERM CONTROL MEASURES, AND THEREFORE SOME IMPROVEMENTS SHALL BE INSTALLED FOLLOWING THE FIRST RAINY SEASON

1. SOME AREAS MAY NEED ARMORING TO PROTECT SIDEWALLS FROM EROSION 3" MINUS SHALL OR EQUIVALENT SHALL BE USED IN THESES AREAS IN ACCORDANCE WITH ENGINEERS DIRECTION
2. IF NECESSARY, THE OWNER SHALL BE RESPONSIBLE FOR ADDITIONAL SLOPE STABILIZATION AND EROSION CONTROL TECHNIQUES DIRECTED BY ENGINEER

2. MAINTENANCE PROCEDURES

THE CONTROL MEASURES DESCRIBED HEREIN ARE DESIGNED SUCH THAT MONITORING AND MAINTENANCE WILL BE REQUIRED TO INSURE ADEQUATE PERFORMANCE. IF MAINTENANCE IS REQUIRED, EITHER ROUTINE, OR FOR NECESSARY REPAIRS, THE WORK SHALL BE PERFORMED BY LICENSED AND QUALIFIED CONTRACTORS. THE ENGINEER SHALL APPROVE MAJOR REPAIR WORK.

GEOTECHNICAL NOTE

THE CONTRACTOR SHALL COORDINATE CONSTRUCTION ACTIVITIES WITH THE PROJECT GEOTECHNICIAL ENGINEER FOR REQUIRED REMEDIATION. THE CONTRACTOR SHALL COORDINATE WITH THE GEOTECHNICIAL ENGINEER FOR REQUIRED SITE OBSERVATIONS AND TESTING OF ALL FILLS

CIVIL DRAWING INDEX:

87

811 Know what's below. Call before you dig.

OREGON LAW REQUIRES YOU TO FOLLOW RULES ADOPTED BY THE OREGON UTILITY NOTIFICATION CENTER. THOSE RULES ARE SET FORTH IN OAR 952-001-0010 THROUGH OAR 952-001-0090. YOU MAY OBTAIN COPIES OF THESE RULES FROM THE CENTER BY CALLING 1-800-522-2404. IF YOU HAVE ANY QUESTIONS ABOUT THE RULES, YOU MAY CONTACT THE CENTER. YOU MUST NOTIFY THE CENTER AT LEAST TWO BUSINESS DAYS, BEFORE COMMENCING AN EXCAVATION

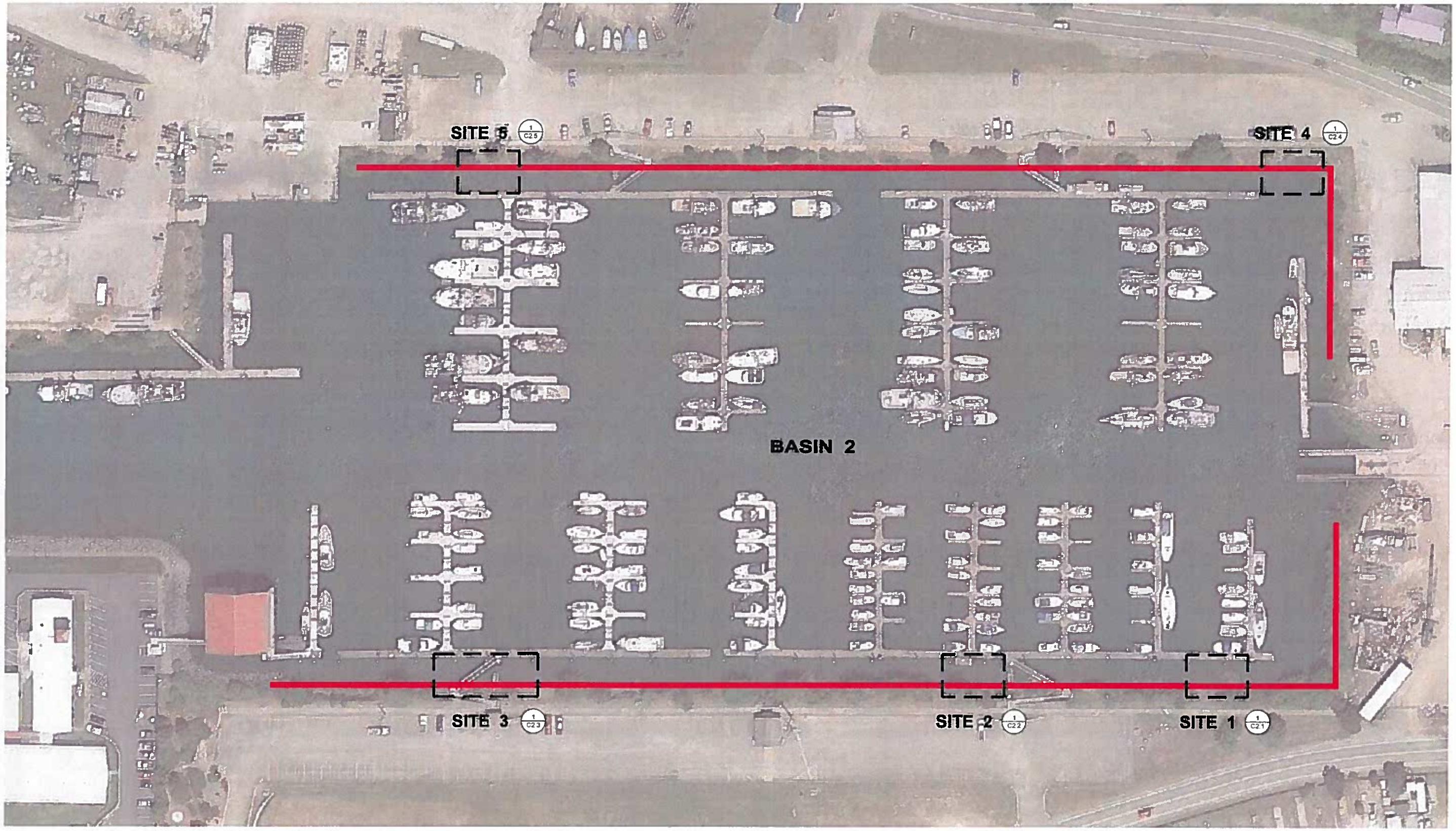
REVISIONS | BY:

EMC
Grants Pass • Jacksonville • Medford, OR
- Engineers/Scientists, LLC (a BluScape Technologies Affiliate)

PRELIMINARY — NOT APPROVED FOR CONSTRUCTION — RENEWAL DATE: 12/31/2020

PORT OF BROOKINGS HARBOR
16330 LOWER HARBOR ROAD, BROOKINGS, OR 97415
BASIN 2 - H-PILE / CONCRETE WALL

DRAWN BY: TAM
DATE: 12/20/19
JOB NO: XXXX
SHEET NO. C1.0
COVER SHEET



PLAN VIEW - PROJECT SLIDE LOCATIONS

SCALE 1" = 50' - 0" (24x36) 1" = 100' - 0" (11x17)

0 100 200
1" = 100'

88

REVISIONS | BY:

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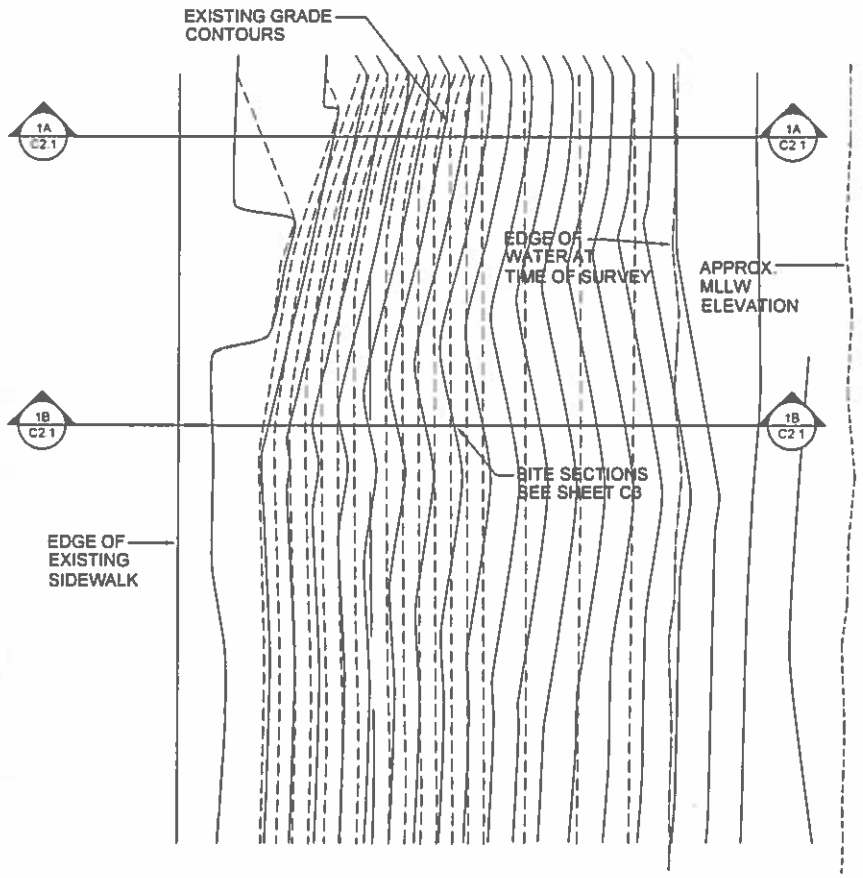
- Engineers/Scientists, LLC (a BluScape Technologies Affiliate)

OREGON REGISTERED PROFESSIONAL ENGINEER
EXPIRES: 12/31/20
PRELIMINARY
NOT FOR CONSTRUCTION
RENEWAL DATE: 12/31/2020

PORT OF BROOKINGS HARBOR
16330 LOWER HARBOR ROAD, BROOKINGS, OR 97415

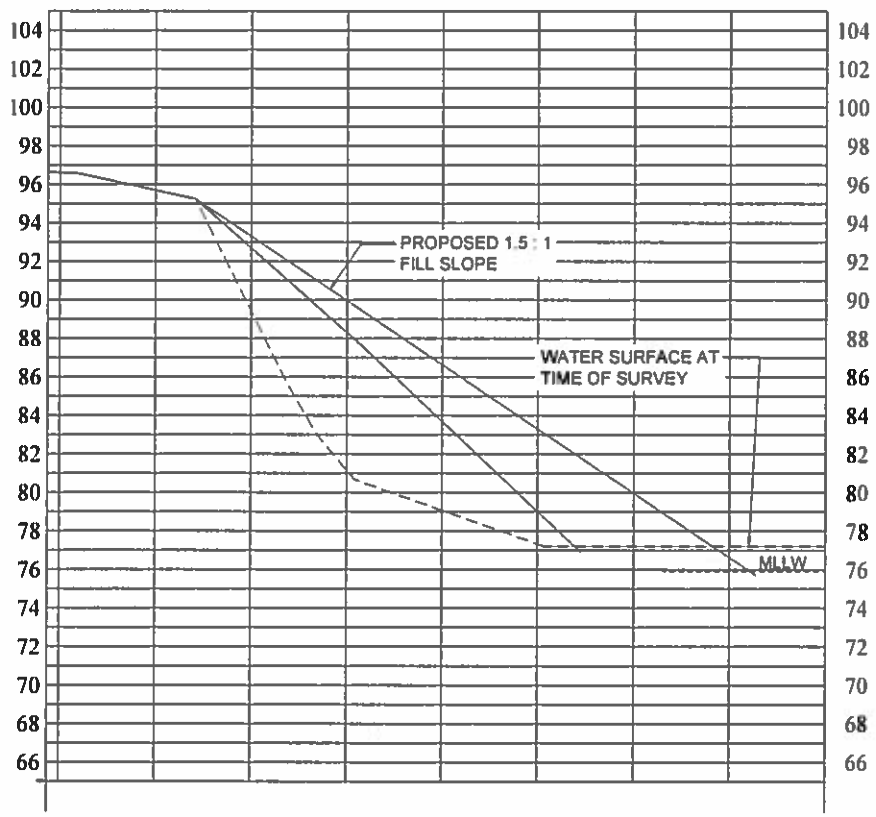
BASIN 2 - H-PILE / CONCRETE WALL

DRAWN BY: TAM
DATE: 12/20/19
JOB NO: XXXX
SHEET NO.
C1.0
COVER SHEET



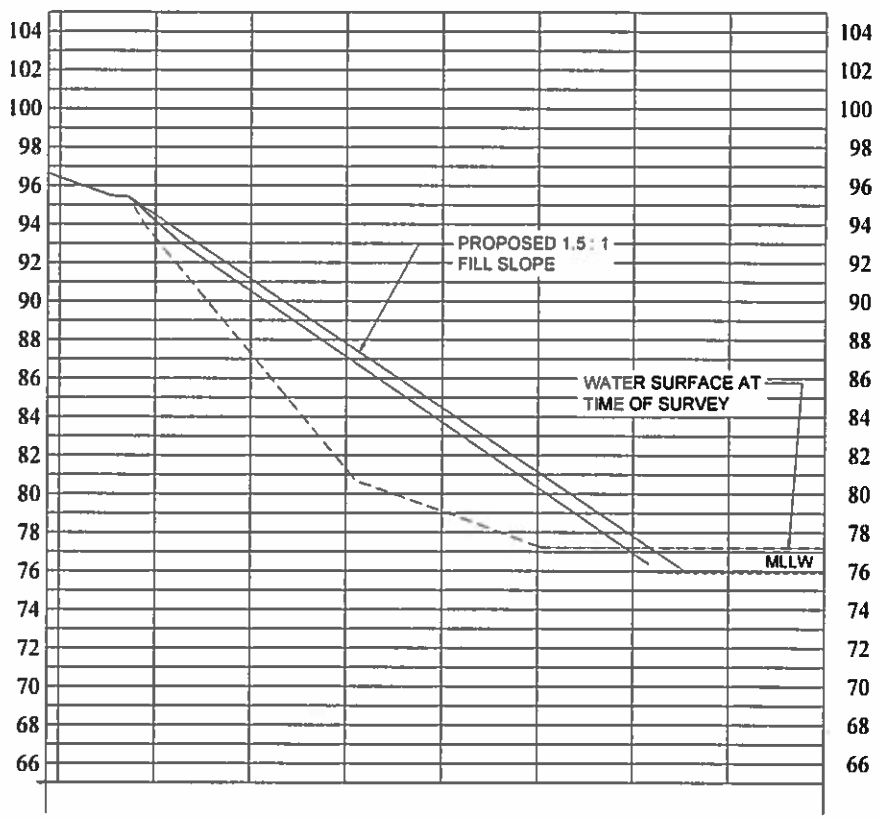
1 C2.1 **PLAN VIEW - SITE 1**

SCALE: 1" = 5' - 0" (24x36) 1" = 10' - 0" (11x17)



1A C2.1 **SITE 1 - SECTION A**

HORZ SCALE 1" = 5' - 0" (24x36) 1" = 10' - 0" (11x17)
VERT SCALE 1" = 5' - 0" (24x36) 1" = 10' - 0" (11x17)



1B C2.1 **SITE 1 - SECTION B**

HORZ SCALE 1" = 5' - 0" (24x36) 1" = 10' - 0" (11x17)
VERT SCALE 1" = 5' - 0" (24x36) 1" = 10' - 0" (11x17)

89

REVISIONS	BY:

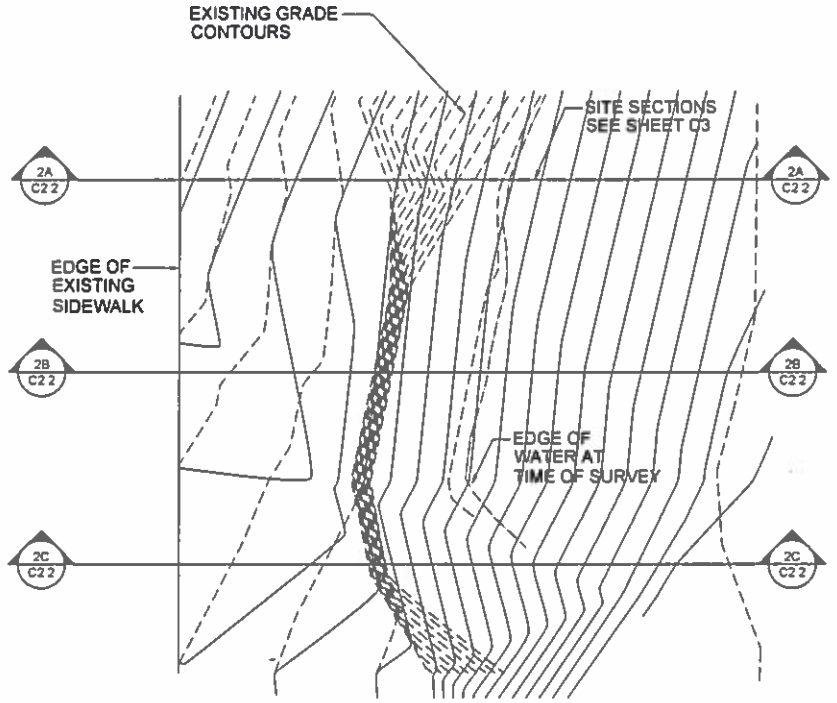
EMC
Grants Pass • Jacksonville • Medford, OR
• Engineers/Scientists, LLC (a BluScape Technologies Affiliate)

PRELIMINARY

PORT OF BROOKINGS HARBOR
16330 LOWER HARBOR ROAD, BROOKINGS, OR 97415

BASIN 2 - H-PILE / CONCRETE WALL

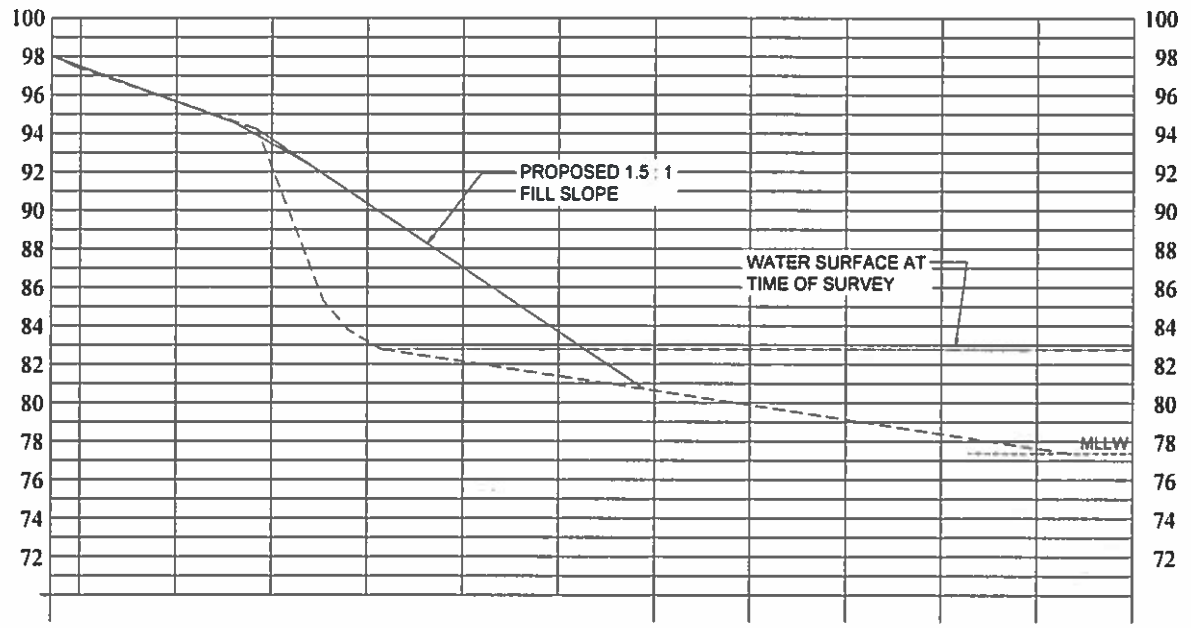
DRAWN BY:	TAM
DATE:	12/20/19
JOB NO:	XXXX
SHEET NO.	C2.0
	PLAN & PROFILES



1 / C2.2 **PLAN VIEW - SITE 2**

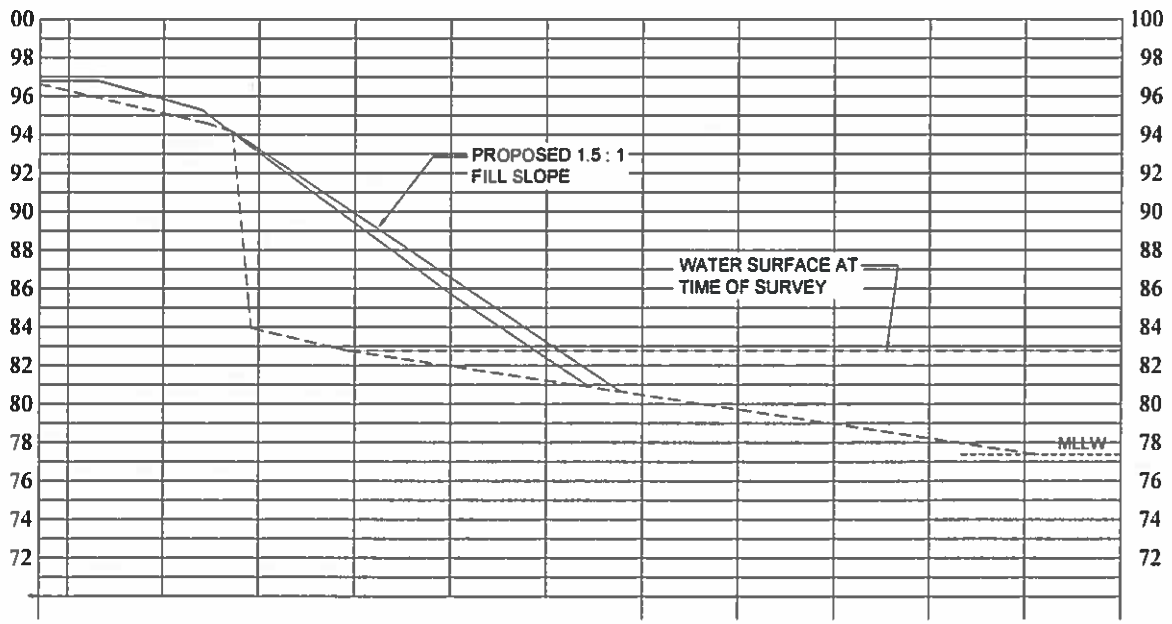
SCALE: 1" = 5' - 0" (24x36) 1" = 10' - 0" (11x17)

0 5 10
1" = 5'



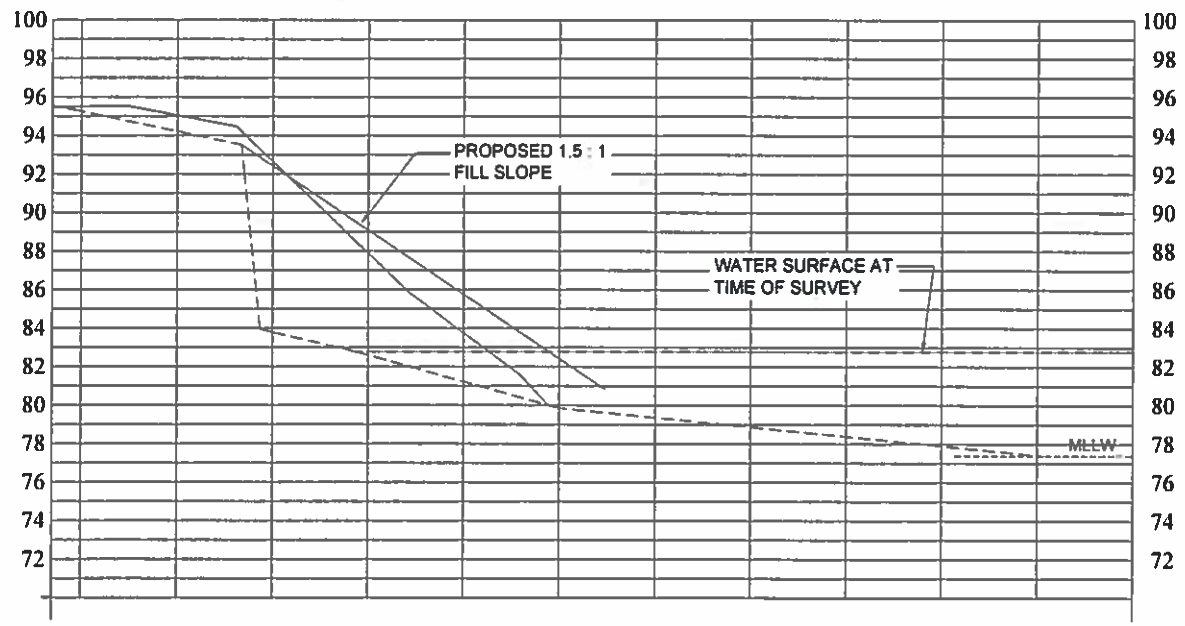
2A / C2.2 **SITE 2 - SECTION A**

HORZ. SCALE: 1" = 5' - 0" (24x36) 1" = 10' - 0" (11x17)
VERT. SCALE: 1" = 5' - 0" (24x36) 1" = 10' - 0" (11x17)



2B / C2.2 **SITE 2 - SECTION B**

HORZ. SCALE: 1" = 5' - 0" (24x36) 1" = 10' - 0" (11x17)
VERT. SCALE: 1" = 5' - 0" (24x36) 1" = 10' - 0" (11x17)



2C / C2.2 **SITE 2 - SECTION C**

HORZ. SCALE: 1" = 5' - 0" (24x36) 1" = 10' - 0" (11x17)
VERT. SCALE: 1" = 5' - 0" (24x36) 1" = 10' - 0" (11x17)

90

REVISIONS | BY:

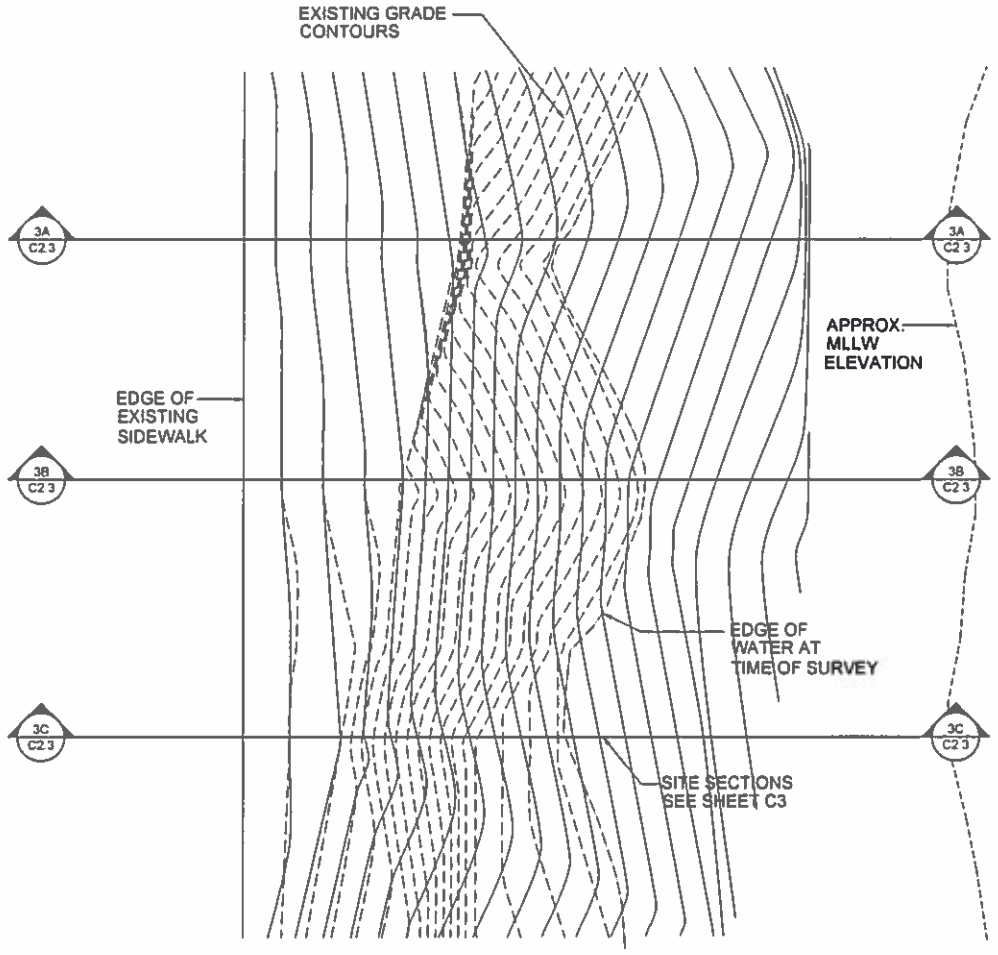
EMC | Engineers/Scientists, LLC (a BluScope Technologies Affiliate)
Grants Pass • Jacksonville • Medford, OR
CP Office: 1907 N Williams Hwy., Suite 264, Grants Pass, OR, 97527
Jacksonville Office: 340 E. California St., Jacksonville, OR, 97530
Ph: 541-474-4444, Ext. 1 • Fax: 541-737-4388
www.EngineeringManagementConsultants.com

PRELIMINARY — NOT FOR CONSTRUCTION — 12/9/2019

PORT OF BROOKINGS HARBOR
16330 LOWER HARBOR ROAD, BROOKINGS, OR 97415

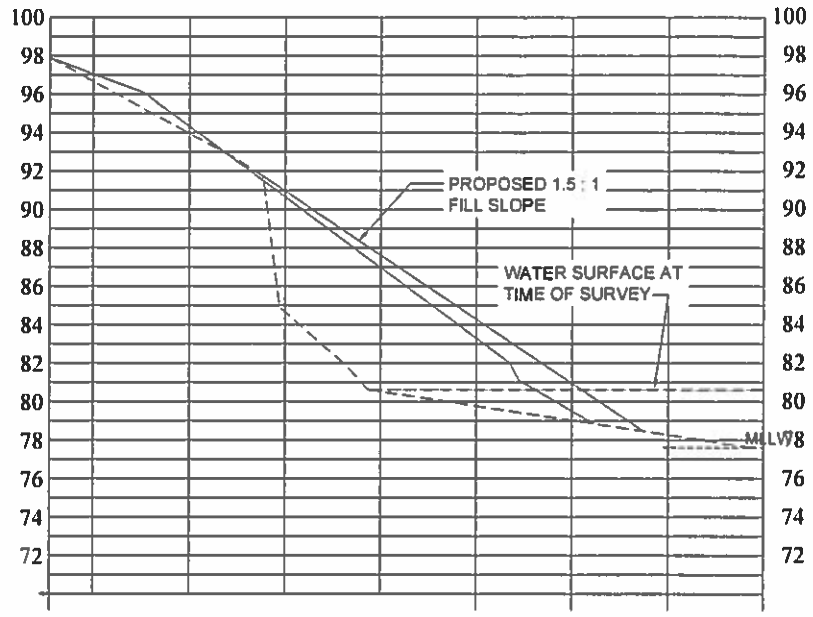
BASIN 2 - H-PILE / CONCRETE WALL

DRAWN BY: TAM
DATE: 12/20/19
JOB NO: XXXX
SHEET NO.
C2.1
PLAN & PROFILES



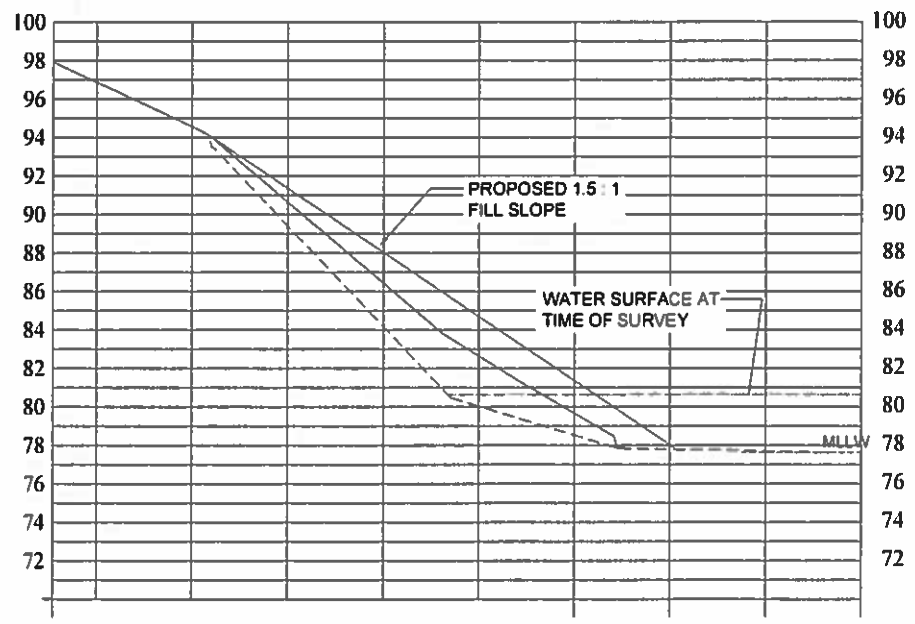
1 / C2.3 PLAN VIEW - SITE 3

SCALE: 1" = 5' - 0" (24x36) 1" = 10' - 0" (11x17)



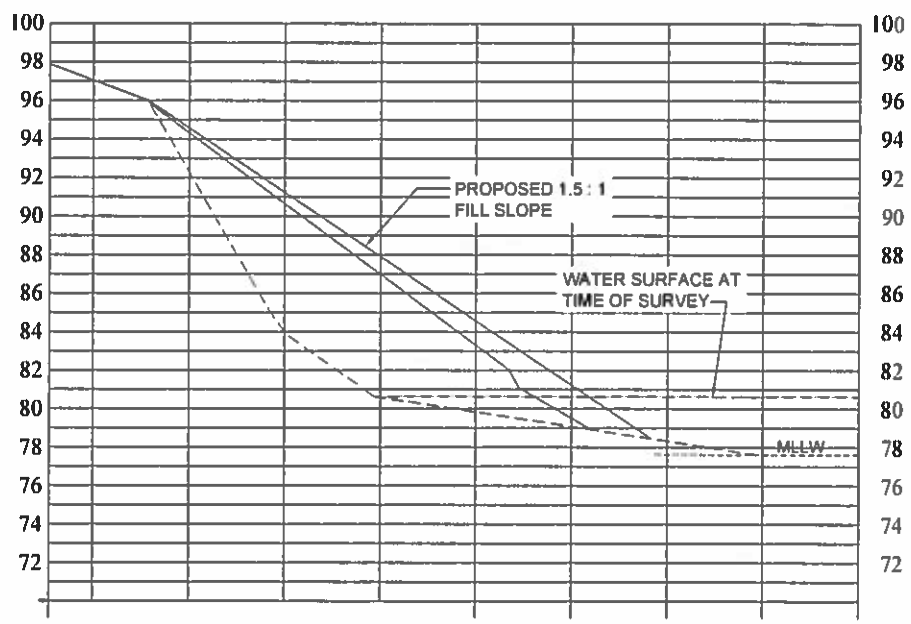
3A / C2.3 SITE 3 - SECTION A

HORZ SCALE: 1" = 5' - 0" (24x36) 1" = 10' - 0" (11x17)
VERT SCALE: 1" = 5' - 0" (24x36) 1" = 10' - 0" (11x17)



3B / C2.3 SITE 3 - SECTION B

HORZ SCALE: 1" = 5' - 0" (24x36) 1" = 10' - 0" (11x17)
VERT SCALE: 1" = 5' - 0" (24x36) 1" = 10' - 0" (11x17)



3C / C2.3 SITE 3 - SECTION C

HORZ SCALE: 1" = 5' - 0" (24x36) 1" = 10' - 0" (11x17)
VERT SCALE: 1" = 5' - 0" (24x36) 1" = 10' - 0" (11x17)

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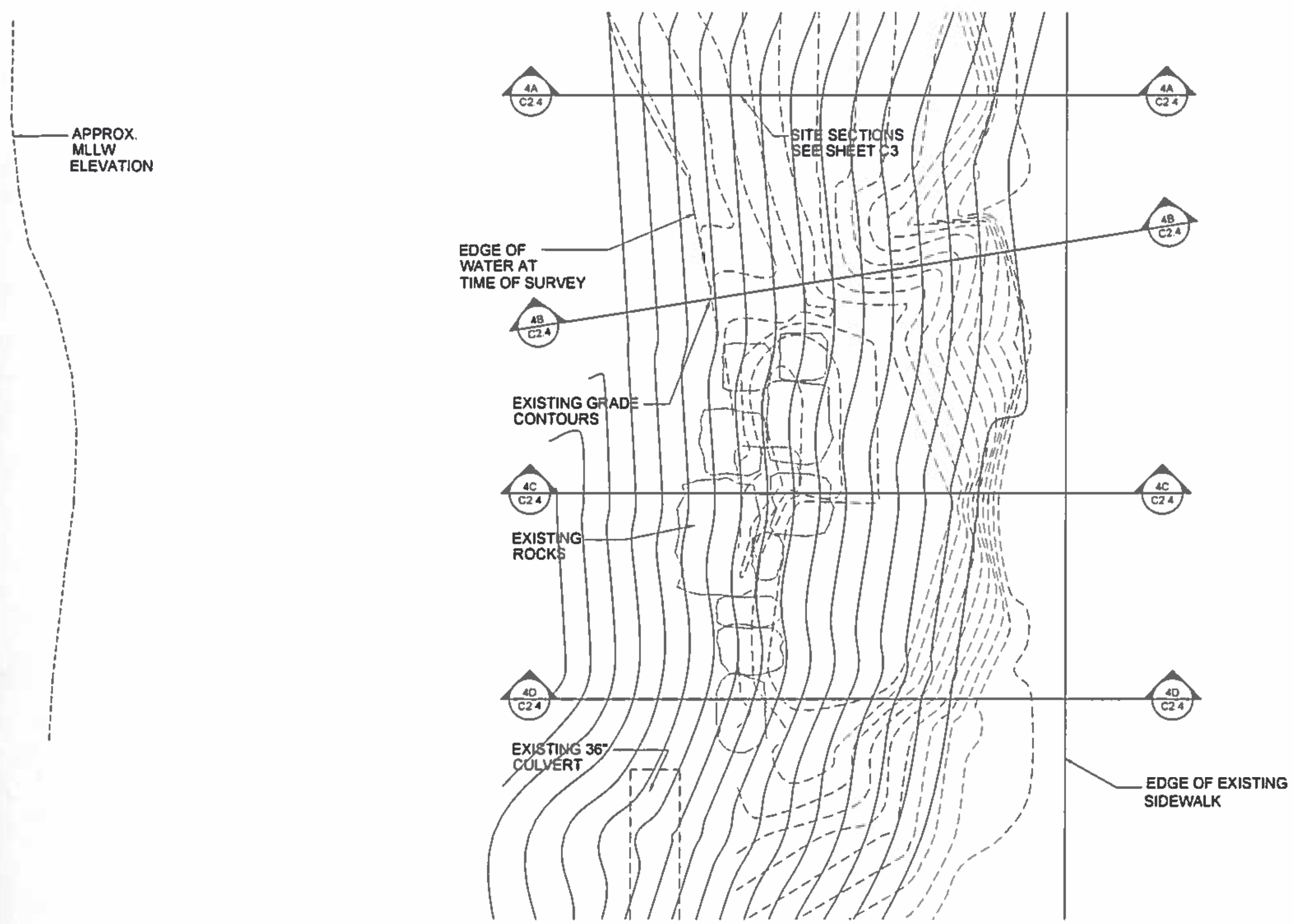
(541-474-4434)

PRELIMINARY

PORT OF BROOKINGS HARBOR
16330 LOWER HARBOR ROAD, BROOKINGS, OR 97415

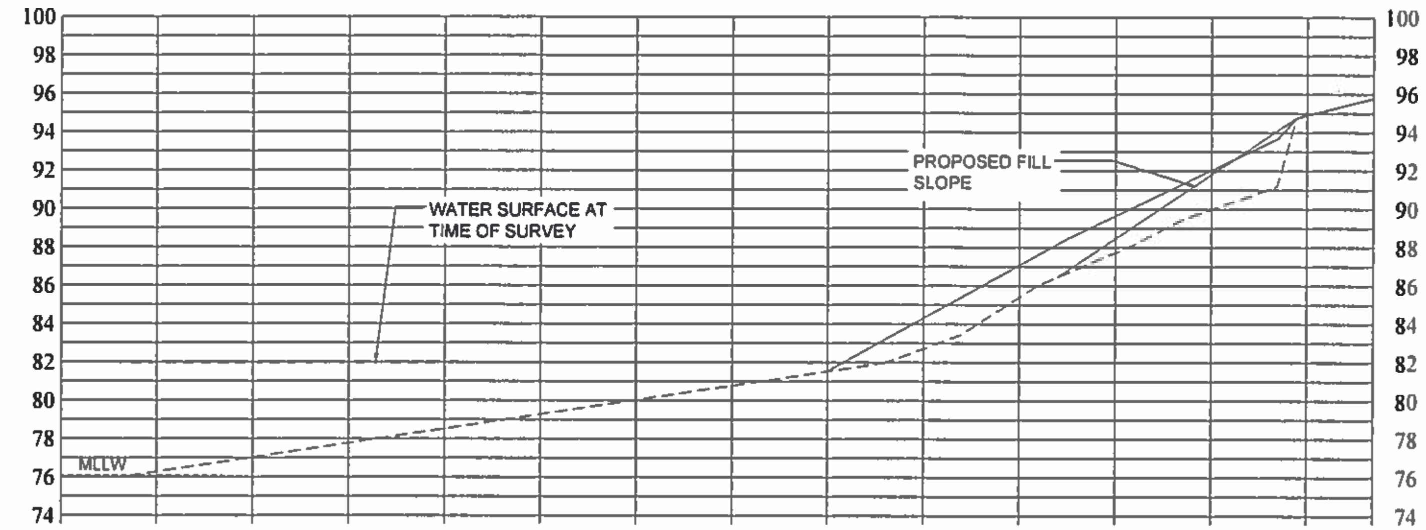
BASIN 2 - H-PILE / CONCRETE WALL

DRAWN BY: TAM
DATE: 12/20/19
JOB NO: XXXX
SHEET NO. **C2.2**
PLAN & PROFILES



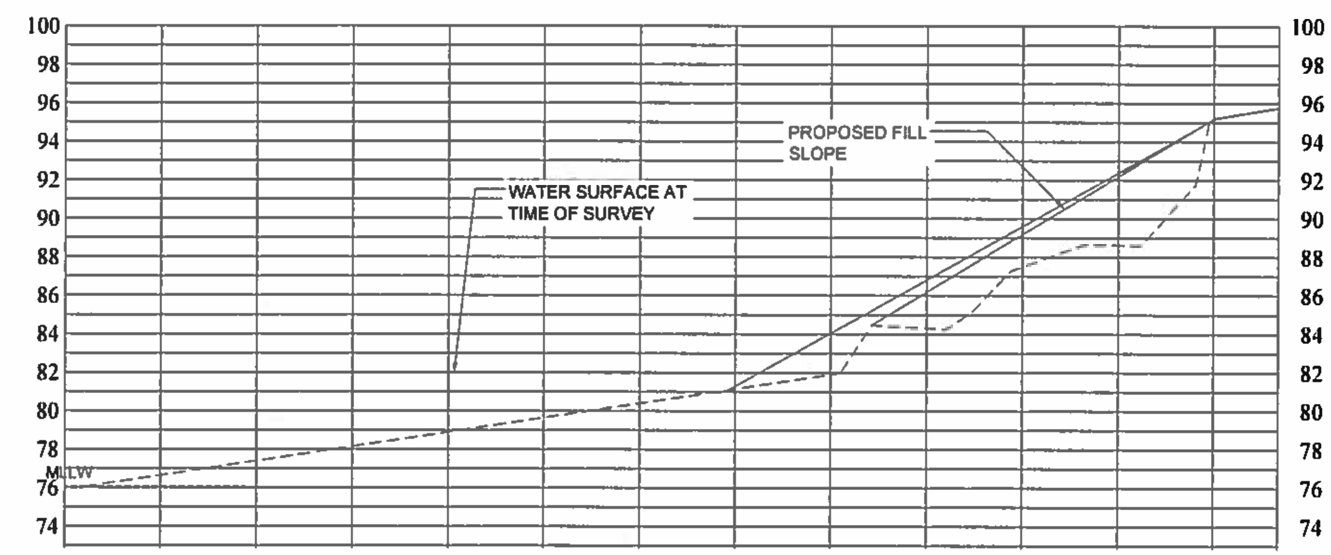
PLAN VIEW - SITE 4 (1 / C2.4)

SCALE 1" = 5' - 0" (24x36) 1" = 10' - 0" (11x17)



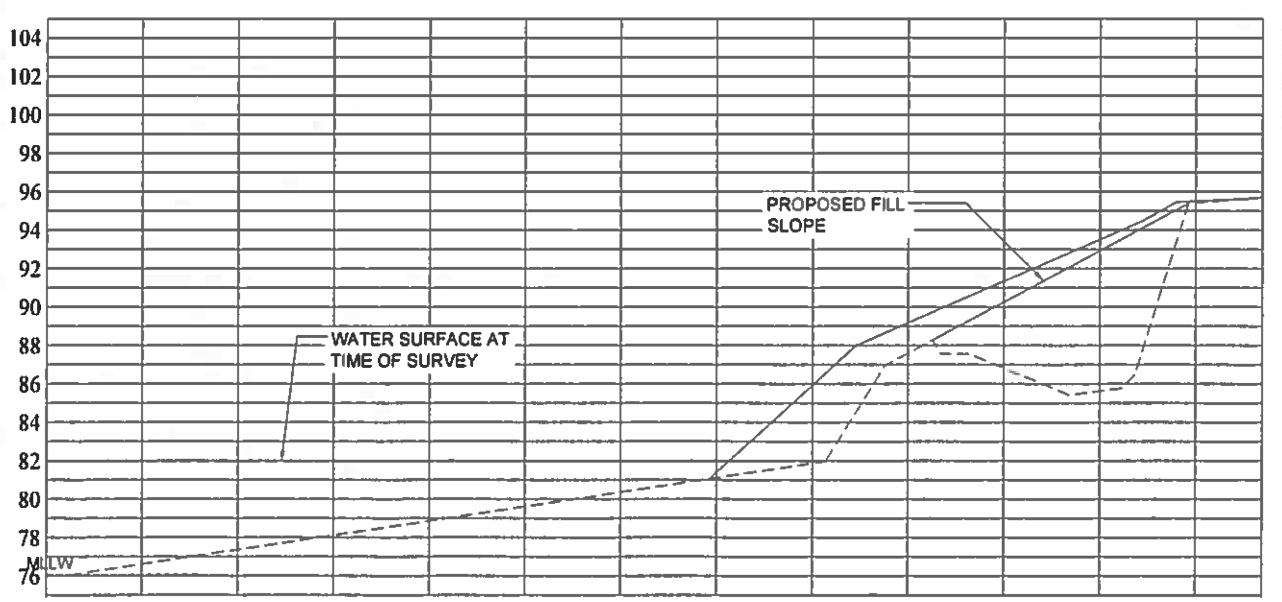
SITE 4 - SECTION A (4A / C2.4)

HORZ. SCALE 1" = 5' - 0" (24x36) 1" = 10' - 0" (11x17)
VERT. SCALE 1" = 5' - 0" (24x36) 1" = 10' - 0" (11x17)



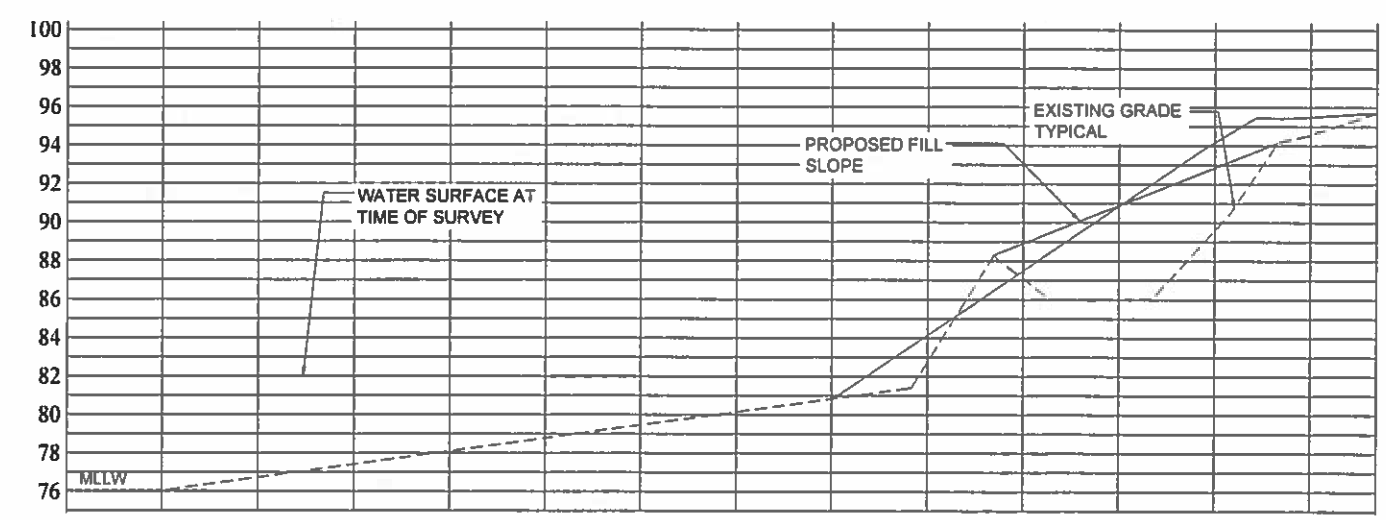
SITE 4 - SECTION B (4B / C2.4)

HORZ. SCALE 1" = 5' - 0" (24x36) 1" = 10' - 0" (11x17)
VERT. SCALE 1" = 5' - 0" (24x36) 1" = 10' - 0" (11x17)



SITE 4 - SECTION C (4C / C2.4)

HORZ. SCALE 1" = 5' - 0" (24x36) 1" = 10' - 0" (11x17)
VERT. SCALE 1" = 5' - 0" (24x36) 1" = 10' - 0" (11x17)



SITE 4 - SECTION D (4D / C2.4)

HORZ. SCALE 1" = 5' - 0" (24x36) 1" = 10' - 0" (11x17)
VERT. SCALE 1" = 5' - 0" (24x36) 1" = 10' - 0" (11x17)

92

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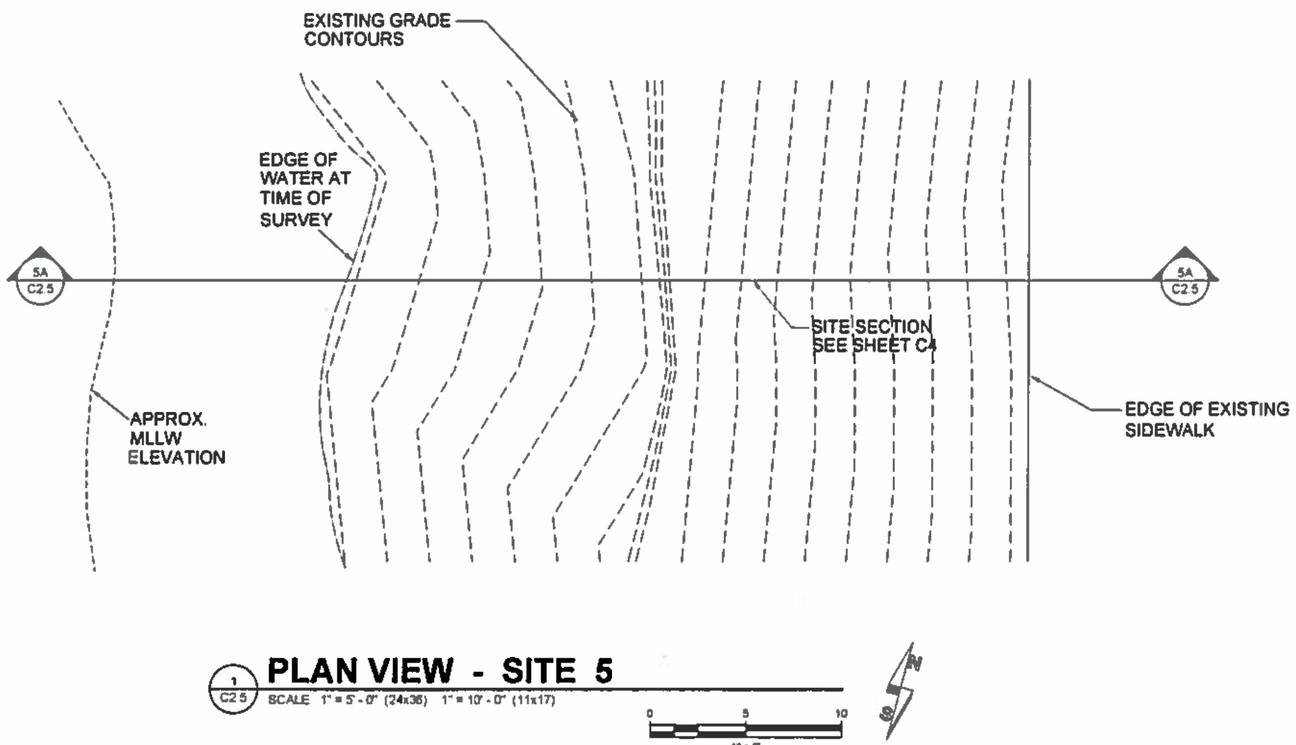
PRELIMINARY

PORT OF BROOKINGS HARBOR
16330 LOWER HARBOR ROAD, BROOKINGS, OR 97415

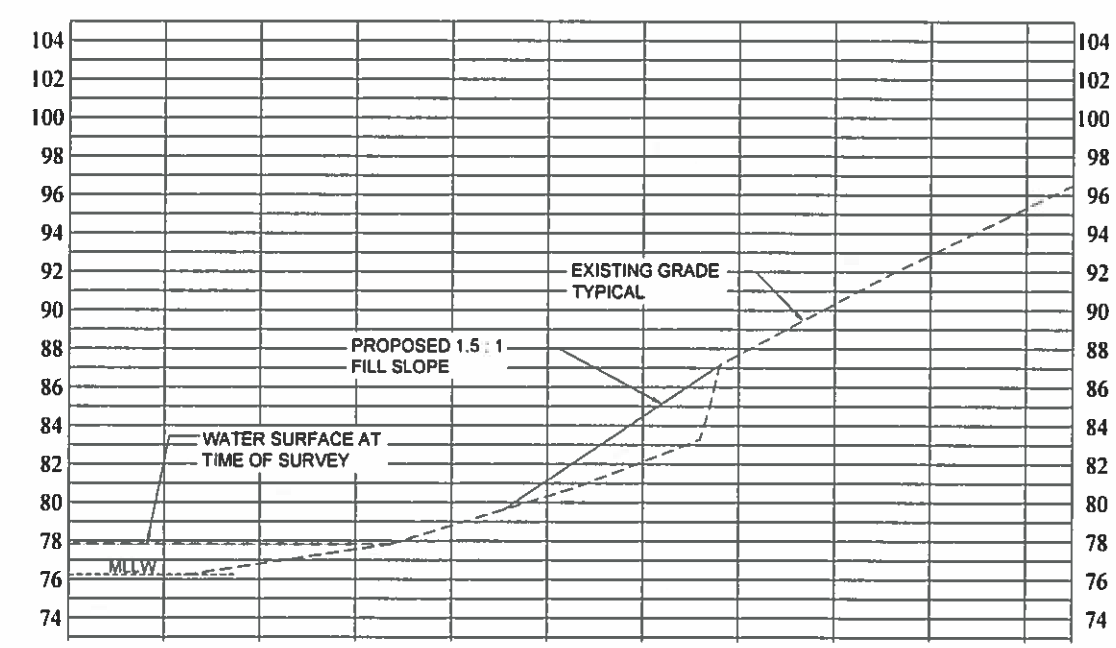
BASIN 2 - H-PILE / CONCRETE WALL

DRAWN BY: TAM
DATE: 12/20/19
JOB NO: XXXX

SHEET NO.
C2.3
PLAN & PROFILES



1 C2.5 **PLAN VIEW - SITE 5**
SCALE 1" = 5'-0" (24x36) 1" = 10'-0" (11x17)



5A C2.5 **SITE 5 - SECTION A**
HORZ. SCALE 1" = 5'-0" (24x36) 1" = 10'-0" (11x17)
VERT. SCALE 1" = 5'-0" (24x36) 1" = 10'-0" (11x17)

93

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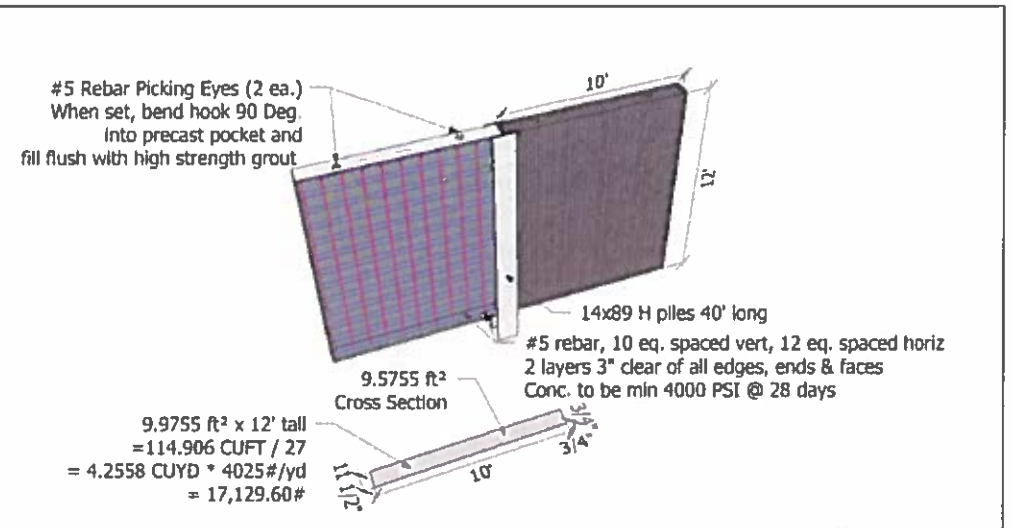
PRELIMINARY

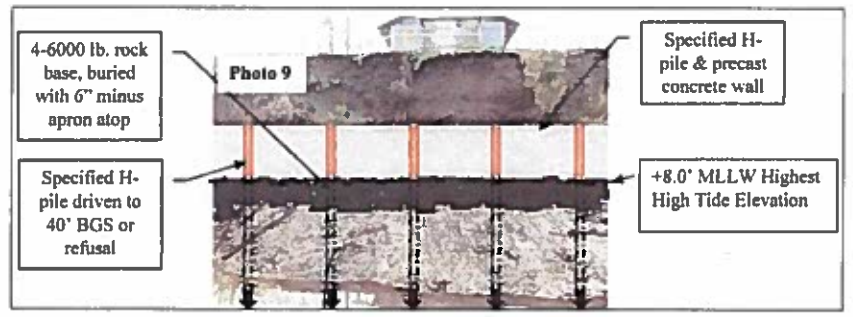
PORT OF BROOKINGS HARBOR
16330 LOWER HARBOR ROAD, BROOKINGS, OR 97415

BASIN 2 - H-PILE / CONCRETE WALL

DRAWN BY: TAM
DATE: 12/20/19
JOB NO: XXXX
SHEET NO.
C2.4
PLAN & PROFILES



1 D1.0 **DETAIL A-1 - H-PILE AND CONCRETE WALL**
SCALE NTS



2 D1.0 **DETAIL A-2 - H-PILE AND CONCRETE WALL**
SCALE NTS

94

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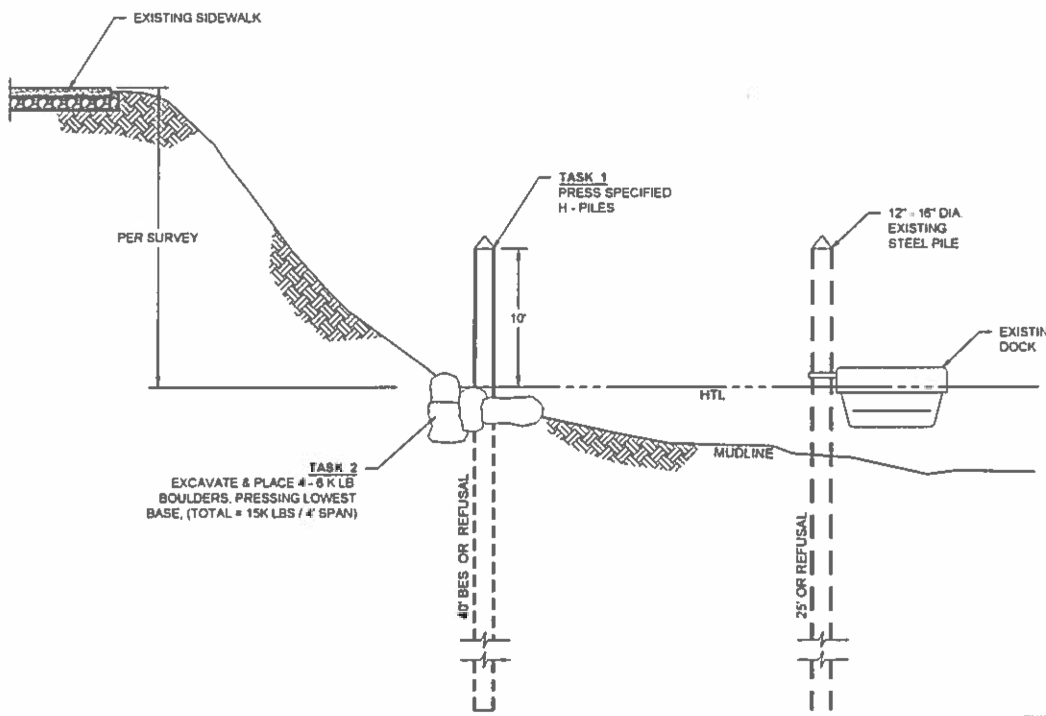
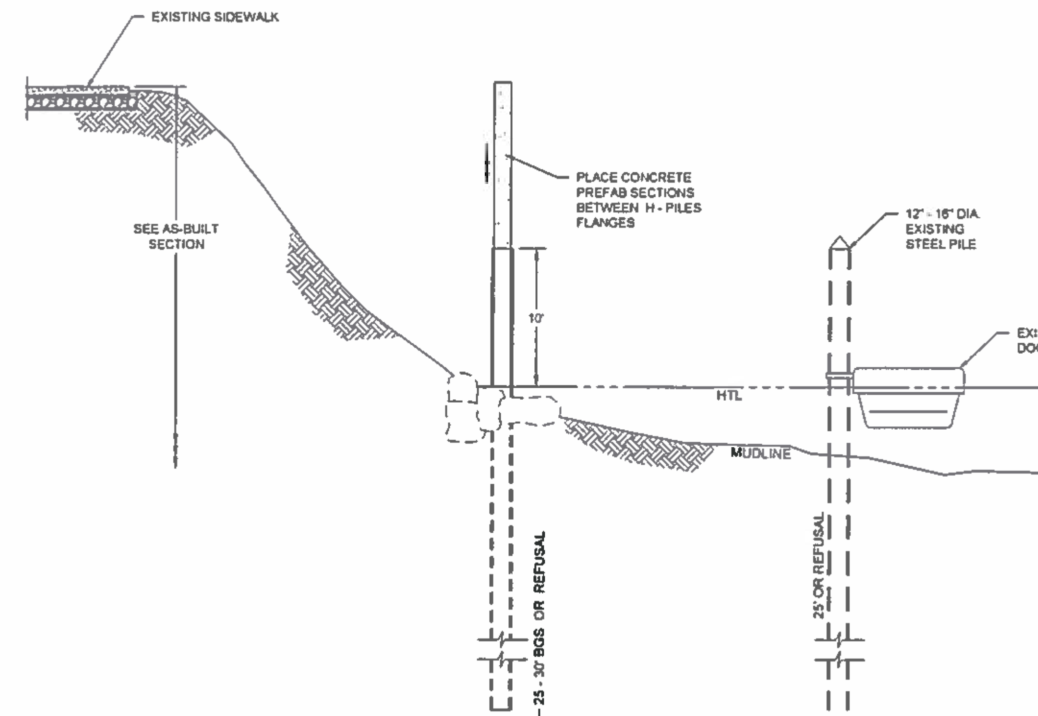
PRELIMINARY

PORT OF BROOKINGS HARBOR
16330 LOWER HARBOR ROAD, BROOKINGS, OR 97415
BASIN 2 - H-PILE / CONCRETE WALL

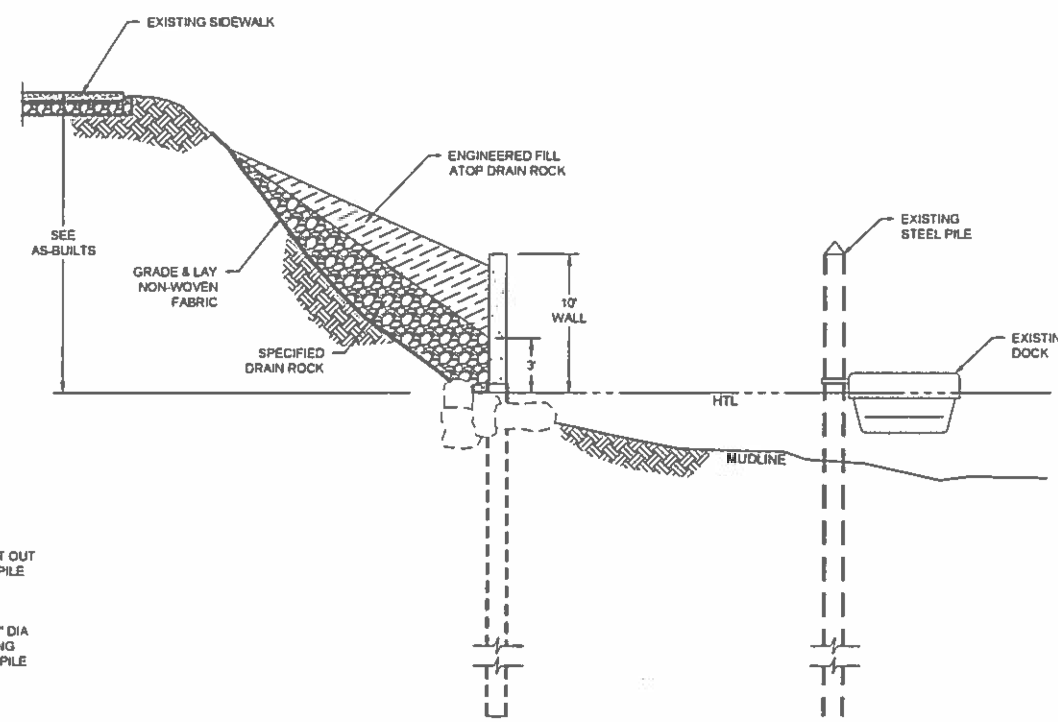
DRAWN BY:	TAM
DATE:	12/20/19
JOB NO:	XXXX
SHEET NO.	D1.0
	DETAILS



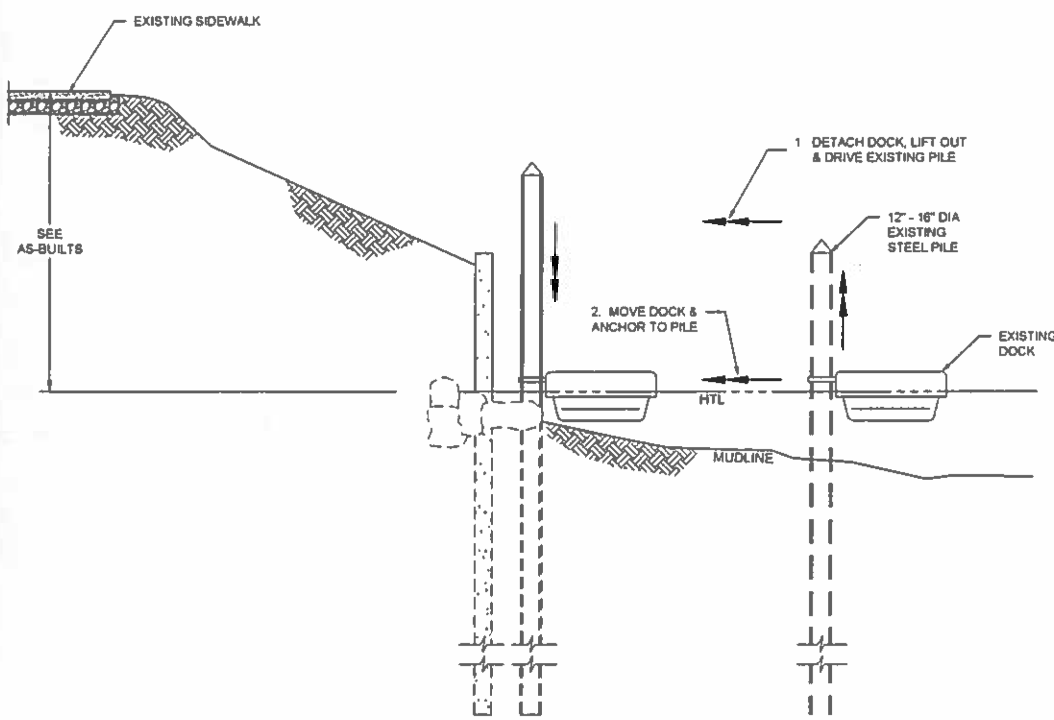
TASK 1 & 2
SCALE: NTS



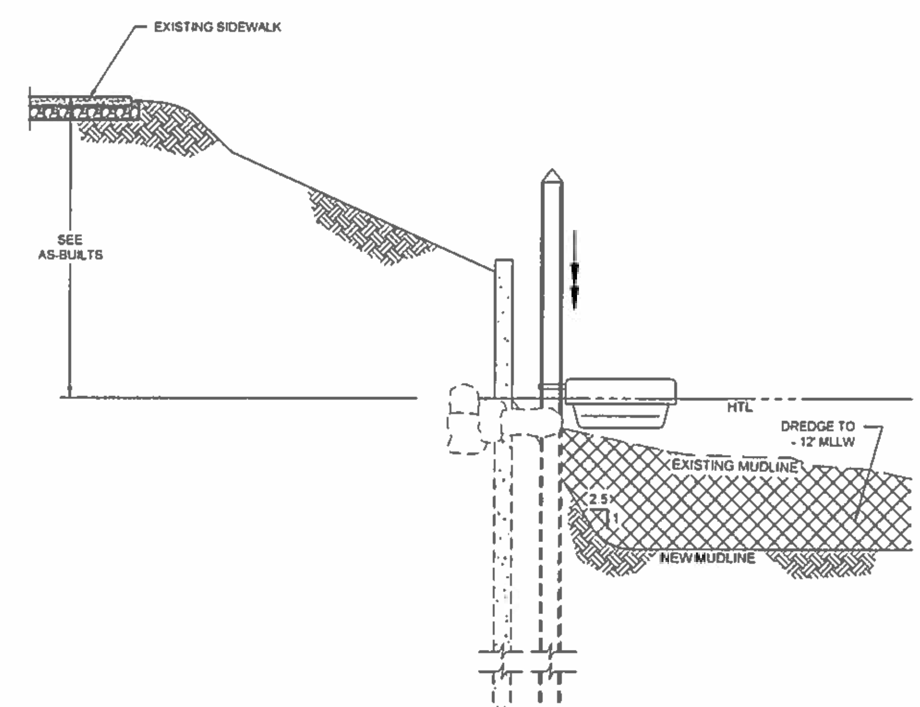
TASK 3
SCALE: NTS



TASK 4
SCALE: NTS



TASK 5
SCALE: NTS



TASK 6
SCALE: NTS

95

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PRELIMINARY

PORT OF BROOKINGS HARBOR
16330 LOWER HARBOR ROAD, BROOKINGS, OR 97415

BASIN 2 - H-PILE / CONCRETE WALL

DRAWN BY: TAM
DATE: 12/20/19
JOB NO: XXXX
SHEET NO.
D1.1
PROJECT TASK DETAILS

Attachment N

SF424_2_1-V2.1

OMB Number: 4040-0004
Expiration Date: 12/31/2019

Application for Federal Assistance SF-424

* 1. Type of Submission:
- [x] Preapplication
- [ ] Application
- [ ] Changed/Corrected Application

* 2. Type of Application:
- [x] New
- [ ] Continuation
- [ ] Revision

* If Revision, select appropriate letter(s):

* Other (Specify):

* 3. Date Received: 12/30/2019

4. Applicant Identifier: Port of Brookings Harbor

5a. Federal Entity Identifier:

5b. Federal Award Identifier:

State Use Only:

6. Date Received by State:

7. State Application Identifier:

8. APPLICANT INFORMATION:

* a. Legal Name: Port of Brookings Harbor

* b. Employer/Taxpayer Identification Number (EIN/TIN): 93-601-3807

* c. Organizational DUNS: 0520425530000

d. Address:

* Street1: 16330 Lower Harbor Road
Street2:
* City: Brookings
County/Parish: Curry
* State: OR: Oregon
Province:
* Country: USA: UNITED STATES
* Zip / Postal Code: 97415-8306

e. Organizational Unit:

Department Name: Port Office

Division Name:

f. Name and contact information of person to be contacted on matters involving this application:

Prefix: Mr.
* First Name: Jack (John)
Middle Name: Anthony
* Last Name: Akin
Suffix:

Title: Project Engineer

Organizational Affiliation: Consultant

* Telephone Number: 541.474.9434
Fax Number: 541.727.5488

* Email: emc@emcengineersscientists.com

Application for Federal Assistance SF-424

*** 9. Type of Applicant 1: Select Applicant Type:**

D: Special District Government

Type of Applicant 2: Select Applicant Type:

Type of Applicant 3: Select Applicant Type:

*** Other (specify):**

*** 10. Name of Federal Agency:**

DHS,FEMA, Fed. Ins.& Mitigation Admin.,Mit. Dir., HMAD

11. Catalog of Federal Domestic Assistance Number:

97.047

CFDA Title:

Pre-Disaster Mitigation

*** 12. Funding Opportunity Number:**

DHS-19-MT-047-000-99

*** Title:**

FY 2019 Pre-Disaster Mitigation

13. Competition Identification Number:

Title:

14. Areas Affected by Project (Cities, Counties, States, etc.):

Add Attachment | Delete Attachment | View Attachment

*** 15. Descriptive Title of Applicant's Project:**

Restoration and Hardening of Basin 2 Docks and Embankments

Attach supporting documents as specified in agency instructions.

Add Attachments | Delete Attachments | View Attachments

Application for Federal Assistance SF-424

16. Congressional Districts Of:

* a. Applicant: OR-004 * b. Program/Project: OR-004

Attach an additional list of Program/Project Congressional Districts if needed.

Add Attachment | Delete Attachment | View Attachment

17. Proposed Project:

* a. Start Date: 04/15/2020 * b. End Date: 03/31/2023

18. Estimated Funding ($):

* a. Federal	2,509,642.00
* b. Applicant	200,000.00
* c. State	636,547.00
* d. Local	
* e. Other	
* f. Program Income	
* g. TOTAL	3,346,189.00

*** 19. Is Application Subject to Review By State Under Executive Order 12372 Process?**

- ☐ a. This application was made available to the State under the Executive Order 12372 Process for review on .
- ☐ b. Program is subject to E.O. 12372 but has not been selected by the State for review.
- ☐ c. Program is not covered by E.O. 12372.

*** 20. Is the Applicant Delinquent On Any Federal Debt? (If "Yes," provide explanation in attachment.)**

☐ Yes ☒ No

If "Yes", provide explanation and attach

Add Attachment | Delete Attachment | View Attachment

21. *By signing this application, I certify (1) to the statements contained in the list of certifications and (2) that the statements herein are true, complete and accurate to the best of my knowledge. I also provide the required assurances** and agree to comply with any resulting terms if I accept an award. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties. (U.S. Code, Title 218, Section 1001)**

☒ ** I AGREE

** The list of certifications and assurances, or an internet site where you may obtain this list, is contained in the announcement or agency specific instructions.

Authorized Representative:

Prefix: Mr. * First Name: Gary

Middle Name:

* Last Name: Dehlinger

Suffix:

* Title: Port Manager

* Telephone Number: 541.254.4162 Fax Number:

* Email: portmanager@portofbrookingharbor.com

* Signature of Authorized Representative: * Date Signed:

Attachment O

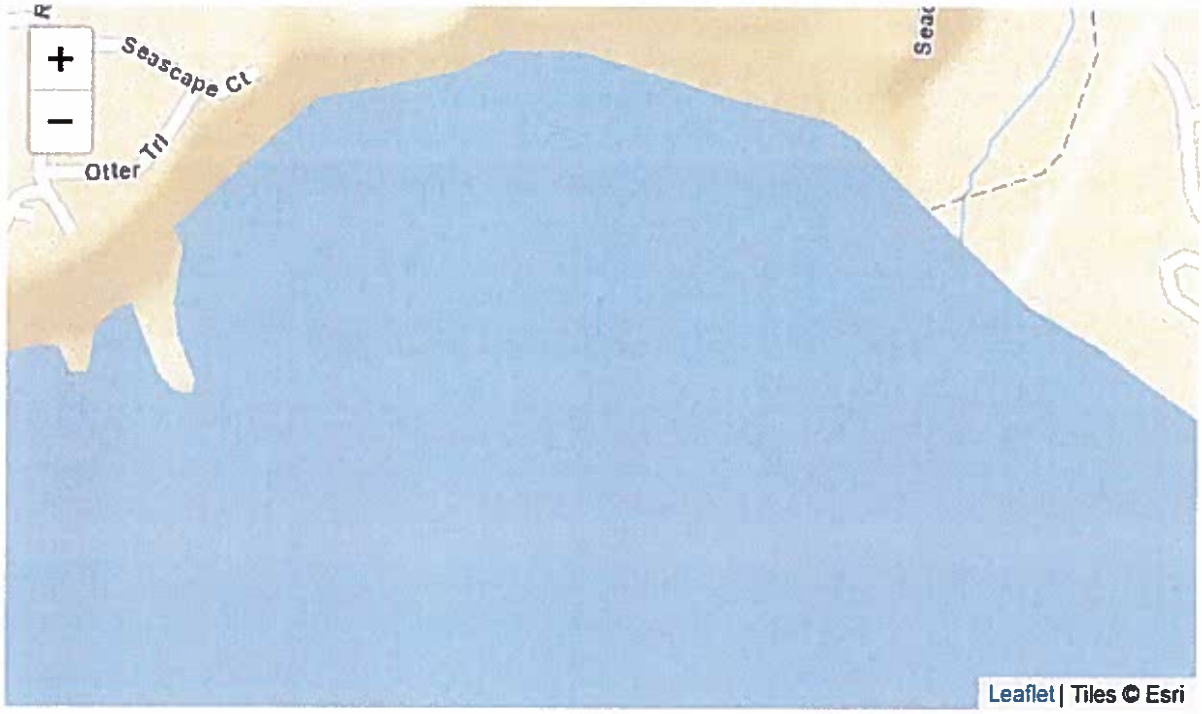
BCA Calculating Sheets

FEMA | Benefit-Cost Calculator

v6.0.0 (Build 20191212.1843)

Benefit-Cost Analysis

Project Name: Basin 2 Embankment Protection [Imported on 12/18/2019 @ 19:55:8] [Copied on 12/18/2019 @ 20:23:56] [Copied on 12/18/2019 @ 20:41:41] [Imported on 12/18/2019 @ 20:48:53] [Copied on 12/18/2019 @ 20:49:33] [Imported on 12/18/2019 @ 21:18:29] [Copied on 12/21/2019 @ 17:2:10] [Copied on 12/22/2019 @ 11:15:30] [Copied on 12/22/2019 @ 16:8:39] [Imported on 12/22/2019 @ 19:43:59] [Copied on 12/22/2019 @ 19:50:20]



MAP MARKER	MITIGATION TITLE	PROPERTY TYPE	HAZARD	BENEFITS (B)	COSTS (C)	BCR (B/C)
1	Other @ 42.0447580; -124.2664280		DFA : Severe Storm	$ 134,237,710	$ 3,369,479	39.84
Totals				**$ 134,237,710**	**$ 3,369,479**	**39.84**

Property Configuration

Property Title:	Other @ 42.0447580; -124.2664280
Property Location:	97415, Curry, Oregon
Property Coordinates:	42.0447580, -124.266428
Hazard Type:	Severe Storm
Mitigation Action Type:	Other
Property Type:	Non-Residential Building
Analysis Method Type:	Professional Expected Damages

Cost Estimation

Other @ 42.0447580; -124.2664280

Project Useful Life:	40
Project Cost:	$3,346,189
Number of Maintenance Years:	40 Use Default:Yes
Annual Maintenance Cost:	$1,747

Damage Analysis Parameters - Damage Frequency Assessment

Other @ 42.0447580; -124.2664280

Year of Analysis Conducted:	2019
Year Property was Built:	1972
Analysis Duration:	48 Use Default:Yes

Professional Expected Damages Before Mitigation

Other @ 42.0447580; -124.2664280

	OTHER	OPTIONAL DAMAGES			VOLUNTEER COSTS		TOTAL		
RECURRENCE INTERVAL (YEARS)	DAMAGES ($)	Lab...		Cat...	NUMBER OF VOLUNTEERS	NUMBER OF DAYS	ANNUALIZED RECURRENCE INTERVAL (YEARS)	DAMAGES ($)	ANNUALIZED DAMAGES AND LOSSES ($)
13	0	193,922,534	0	0	0	0	13	193,922,534	14,917,099

Professional Expected Damages After Mitigation

Other @ 42.0447580; -124.2664280

	OTHER	OPTIONAL DAMAGES			VOLUNTEER COSTS		TOTAL		
RECURRENCE INTERVAL (YEARS)	DAMAGES ($)	Lab...		Cat...	NUMBER OF VOLUNTEERS	NUMBER OF DAYS	ANNUALIZED RECURRENCE INTERVAL (YEARS)	DAMAGES ($)	ANNUALIZED DAMAGES AND LOSSES ($)
40	0	193,922,534	0	0	0	0	40	193,922,534	4,848,044

Benefits-Costs Summary

Other @ 42.0447580; -124.2664280

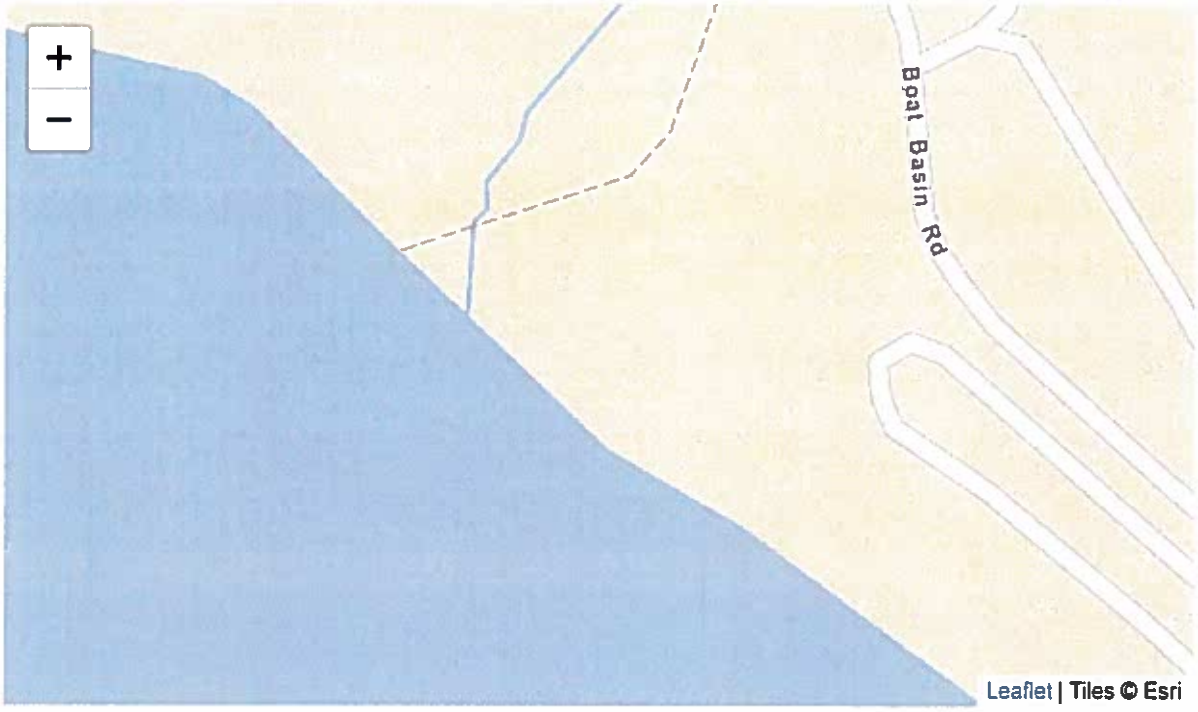
Total Standard Mitigation Benefits:	$134,237,710
Total Additional Benefits - Social:	$0
Total Additional Benefits - Environmental:	$0
Total Mitigation Project Benefits:	$134,237,710
Total Mitigation Project Cost:	$3,369,479
Benefit Cost Ratio - Standard:	39.84
Benefit Cost Ratio - Standard + Additional:	39.84

FEMA Benefit-Cost Calculator

v6.0.0 (Build 20191212.1843)

Benefit-Cost Analysis

Project Name: Basin 2 Embankment Protection [Imported on 12/18/2019 @ 19:55:8] [Copied on 12/18/2019 @ 20:23:56] [Copied on 12/18/2019 @ 20:41:41] [Imported on 12/18/2019 @ 20:48:53] [Copied on 12/18/2019 @ 20:49:33] [Imported on 12/18/2019 @ 21:18:29] [Copied on 12/21/2019 @ 17:2:10] [Copied on 12/22/2019 @ 11:15:30] [Imported on 12/22/2019 @ 19:44:14] [Copied on 12/22/2019 @ 19:46:53]



MAP MARKER	MITIGATION TITLE	PROPERTY TYPE	HAZARD	BENEFITS (B)	COSTS (C)	BCR (B/C)
1	Other @ 42.0447580; -124.2664280		DFA : Severe Storm	$ 7,362,556	$ 3,369,479	2.19
Totals				**$ 7,362,556**	**$ 3,369,479**	**2.19**

Property Configuration

Property Title:	Other @ 42.0447580; -124.2664280
Property Location:	97415, Curry, Oregon
Property Coordinates:	42.0447580, -124.266428
Hazard Type:	Severe Storm
Mitigation Action Type:	Other
Property Type:	Non-Residential Building
Analysis Method Type:	Professional Expected Damages

Cost Estimation

Other @ 42.0447580; -124.2664280

Project Useful Life:	40
Project Cost:	$3,346,189
Number of Maintenance Years:	40 Use Default:Yes
Annual Maintenance Cost:	$1,747

Damage Analysis Parameters - Damage Frequency Assessment

Other @ 42.0447580; -124.2664280

Year of Analysis Conducted:	2019
Year Property was Built:	1972
Analysis Duration:	48 Use Default:Yes

Professional Expected Damages Before Mitigation

Other @ 42.0447580, -124.2664280

	OTHER	OPTIONAL DAMAGES			VOLUNTEER COSTS		TOTAL		
RECURRENCE INTERVAL (YEARS)	DAMAGES ($)	DO...	Cat...	Cat...	NUMBER OF VOLUNTEERS	NUMBER OF DAYS	ANNUALIZED RECURRENCE INTERVAL (YEARS)	DAMAGES ($)	ANNUALIZED DAMAGES AND LOSSES ($)
13	0	7,363,458	0	0	0	0	13	7,363,458	566,419

Professional Expected Damages After Mitigation

Other @ 42.0447580, -124.2664280

	OTHER	OPTIONAL DAMAGES			VOLUNTEER COSTS		TOTAL		
RECURRENCE INTERVAL (YEARS)	DAMAGES ($)	DO...	Cat...	Cat...	NUMBER OF VOLUNTEERS	NUMBER OF DAYS	ANNUALIZED RECURRENCE INTERVAL (YEARS)	DAMAGES ($)	ANNUALIZED DAMAGES AND LOSSES ($)
13	0	184,086	0	0	0	0	13	184,086	14,160

Benefits-Costs Summary

Other @ 42.0447580, -124.2664280

Total Standard Mitigation Benefits:	$7,362,556
Total Additional Benefits - Social:	$0
Total Additional Benefits - Environmental:	$0
Total Mitigation Project Benefits:	$7,362,556
Total Mitigation Project Cost:	$3,369,479
Benefit Cost Ratio - Standard:	2.19
Benefit Cost Ratio - Standard + Additional:	2.19

ACTION ITEM – C

DATE:	December 27, 2019
RE:	Beachfront RV Park Restroom Replacement Plan
TO:	Honorable Board President and Harbor District Board Members
ISSUED BY:	Gary Dehlinger, Port Manager

OVERVIEW

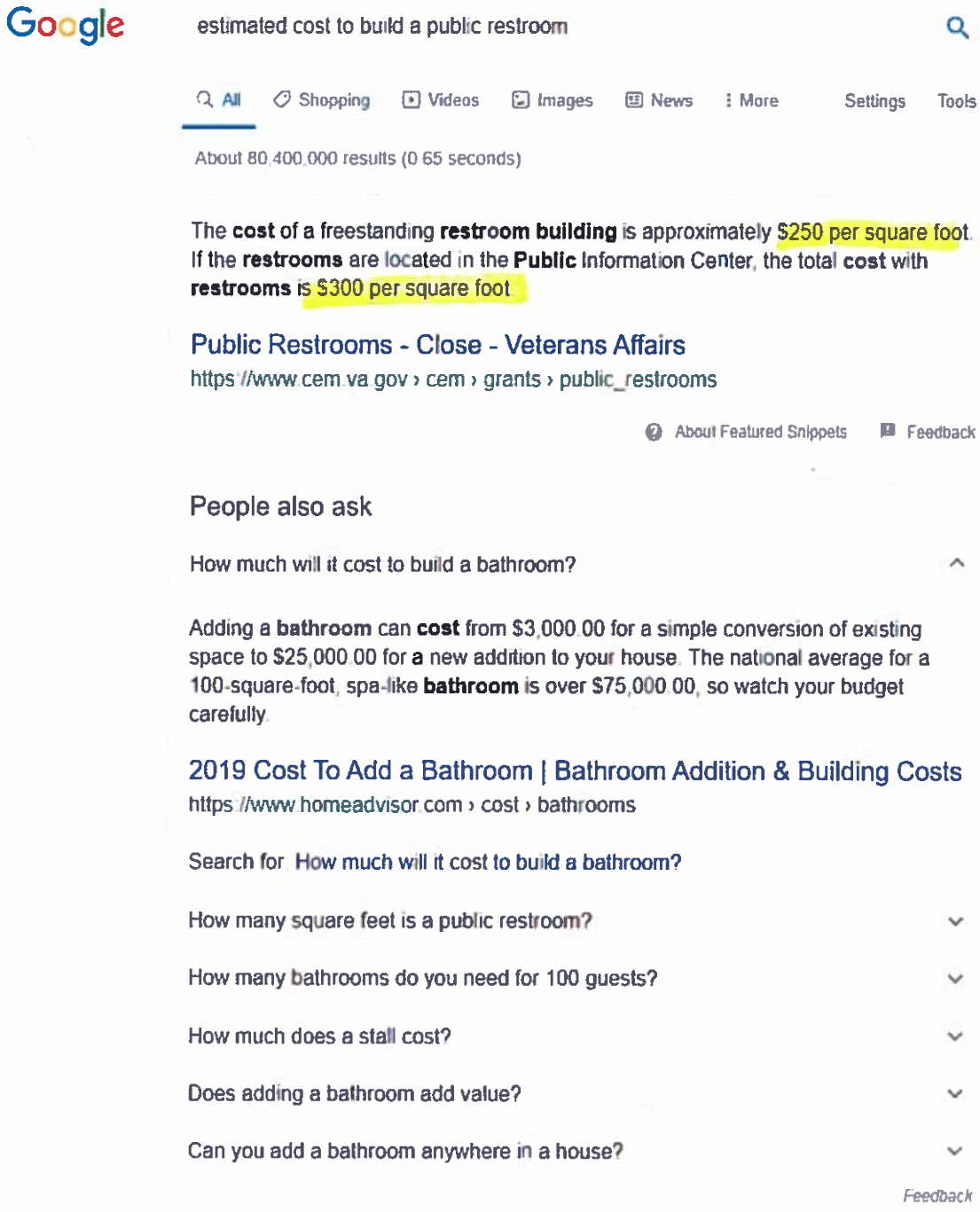
- December 18, 2018, Board approved conceptual plan to remodel the RV Park.
- March 26, 2019, Board approved Crow/Clay Associates to develop conceptual drawing with park layout, buildings, electrical, sewer and water. This included laundromat, mini-mart, park office and motel type rooms.
- June 18, 2019, Board approved Crow/Clay Associates contract to develop a conceptual drawing for the RV Park.
- August 20, 2019, Board approved Phase 1 for demolition of existing restroom, installing five new pull-thru sites and installing drop-in restroom and shower building in the backrow of the RV Park, and search for private loans for Phase 1.
- September 24, 2019, Board approved Crow/Clay Associates contract for construction drawings and specifications for Phase 1, five new pull-thru sites and drop-in restroom/shower building.
- October 15, 2019, Board approved the color of the restroom/shower building and to pursue a loan with Umpqua Bank for the construction costs. Estimated cost for the demolition, five new pull-thru sites and new restroom/shower building is $400,000. The new drop-in restroom/shower is estimated at $239,975.
- Estimated cost per square foot for a "build from the ground" restroom is between $250 and $300 per square foot. The delivered restroom is 810 SF. The estimated cost for the building would be between $202,500 and $243,000.

DOCUMENTS

- Google Cost Estimate Search for New Restroom Building, 1 page

COMMISSIONERS ACTION

- **Frist Recommended Motion:**
  Motion to resume loan documentation for a new restroom and pull-thru sites for Board approval.
- **Second Recommended Motion:**
  Motion to resume developing construction drawings and specifications for Phase 1, new restroom and pull-thru sites, with Crow/Clay Associates. Provide draft construction drawings and specifications for the restroom and pull-thru sites for Board approval.


Google
estimated cost to build a public restroom
All
Shopping
Videos
Images
News
More
Settings
Tools
About 80,400,000 results (0.65 seconds)
The cost of a freestanding restroom building is approximately $250 per square foot. If the restrooms are located in the Public Information Center, the total cost with restrooms is $300 per square foot
Public Restrooms - Close - Veterans Affairs
https://www.cem.va.gov › cem › grants › public_restrooms
About Featured Snippets
Feedback
People also ask
How much will it cost to build a bathroom?
Adding a bathroom can cost from $3,000.00 for a simple conversion of existing space to $25,000.00 for a new addition to your house. The national average for a 100-square-foot, spa-like bathroom is over $75,000.00, so watch your budget carefully.
2019 Cost To Add a Bathroom | Bathroom Addition & Building Costs
https://www.homeadvisor.com › cost › bathrooms
Search for: How much will it cost to build a bathroom?
How many square feet is a public restroom?
How many bathrooms do you need for 100 guests?
How much does a stall cost?
Does adding a bathroom add value?
Can you add a bathroom anywhere in a house?
Feedback

ACTION ITEM – D

DATE:	December 27, 2019
RE:	Building Self-Storage Units
TO:	Honorable Board President and Harbor District Board Members
ISSUED BY:	Gary Dehlinger, Port Manager

OVERVIEW

- November 20, 2018, Board approved two options for the Green Building. Option 1, advertising for viable plans to complete the Green Building. Option 2, if no viable plans, the Green Building will be demolished.
- April 16, 2019, Board approved going with Option 2 to demolish the Green Building.
- August 20, 2019, Board approved mechanical demolition of the Green Building. Port received "Green Building Release of Lien(s)" from Business Oregon.
- Green Building demolition started in November 2019. Site ready for new use.
- Least expensive site preparation for generating revenue could be secured boat / trailer storage and/or commercial fishing gear storage.
- Building cover storage units would require subgrade preparation, storm drain system, roads/pavement and utility infrastructure.
- Board will need to approve the planning, engineering, development, cost, funding and construction of the area.
- Attached are some examples of possible areas for self-storage units and estimated costs.

DOCUMENTS

- Example #1 for 1.5 Acres, 1 page
- Example #2 for 3.5 Acres, 1 page
- Example #3 for 12.1 Acres, 1 page
- Google cost estimates, 2 pages
- Estimated Monthly Payments for $1,000,000, 1 page

COMMISSIONERS ACTION

- **Recommended Motion:**
  When funds are available, prepare the ground within the fenced area to store boats / boat trailers as secured storage. Relocate all unsecured trailer storage into secured storage areas. Plan for future development of all commercial bare ground space though the Strategic Business Plan.

Example # 1 for 1.5 Acres

Cost Estimate - $731,000 to $1,091,000

65,615 square feet = 1.5 Acres
16,000 SF Building per acre = 24,000 SF Building
$25 per SF for building = $600,000
$40 per SF for building = $960,000
$2 per SF for site prep = $131,000

Example # 2 for 3.5 Acres

Cost Estimate - $1,713,000 to $2,553,000

156,504 square feet = 3.5 Acres
16,000 SF Building per acre = 56,000 SF Building
$25 per SF for building = $1,400,000
$40 per SF for building = $2,240,000
$2 per SF for site prep = $313,000

Example # 3 for 12.1 Acres

Cost Estimate - $5,901,000 to $8,805,000

530,622 square feet = 12.1 Acres
16,000 SF Building per acre = 193,600 SF Building
$25 per SF for building = $4,840,000
$40 per SF for building = $7,744,000
$2 per SF for site prep = $1,061,244

Google estimated cost of mini storage buildings

2019 Average Costs of Building Steel Mini Storage Buildings ...

https //www kompareit com › business › steel-buildings-mini-storage-cost

About Featured Snippets Feedback

People also ask

How much does it cost to build a mini storage?

Costs to **Build** Self **Storage**

Costs for Single Story Self **Storage** Construction typically ranges between $25-$40 per square foot – not including land or site improvement costs. Multi-Story Self **Storage Building** Costs have more variables and can range from $42 per square foot to as **much** as $70 per square foot. May 16, 2013

Cost To Build Self Storage - Mako Steel

https //www makosteel com › blog › bid › cost-to-build-self-storage

Search for: How much does it cost to build a mini storage?

How much does it cost to buy a storage facility?

What is the average cost of a 10x10 storage unit?

Is owning storage units profitable?

How many acres do you need for a storage facility?

For Single Story Self **Storage** Buildings, anticipate 30-38% building coverage. This rule of thumb provides approximately 13,000 to 16,000 square feet of **storage** per **acre**. The ideal site **would** consist of narrow buildings with driveways so that all of the units face the outside with drive-up access. Jan 1, 2018

How Much Space is Enough For Your Self Storage Building Project?

https //www makosteel com › blog › bid › how-much-space-is-enough-for-y...

Search for: How many acres do you need for a storage facility?

Google commercial land development cost

All Images News Shopping Maps More Settings Tools

About 409,000,000 results (0.49 seconds)

[PDF] Land Development Checklist - NAHB

https://www.nahb.org › research › land-development › land-use-101 › lan...

understand the many steps in the **land development** process, the timeline, likely **costs**, and required due diligence associated with residential ..... manufacturing and other aspects of residential and light **commercial** construction. NAHB is ...

People also ask

How much does it cost to develop land per acre?

The **average cost per** square foot ranges between $1.28 and $2, so **a** half-**acre** lot of **land** (about 20,000 square feet) **could cost** as **much** as $40,000 to prepare. The best way for you to understand where you fall on that range **is** to understand the intricacies of site preparation, as well as the variables involved.

2019 Land Clearing Costs | Avg. Cost Per Acre, Wooded Lot, Tree ...

https://www.homeadvisor.com › clear-land-or-prepare-a-construction-site

Search for: How much does it cost to develop land per acre?

How much does it cost to add electricity to land?

How much does site development cost?

How much should you pay for land?

Does clearing land increase property value?

Is buying land and building a house cheaper?

Feedback

Loan amount

$ 1,000,000

Loan term in years

15

Or

Loan term in months

180

Interest rate per year

2.95 %

CALCULATE

Monthly Payments

$ 6,881.79

Total Principal Paid	$1,000,000
Total Interest Paid	$238,723.02

COMPARE LOAN RATES

Show amortization schedule

Save results

Loan amount

$ 1,000,000

Loan term in years

20

Or

Loan term in months

240

Interest rate per year

2.95 %

CALCULATE

Monthly Payments

$ 5,520.98

Total Principal Paid	$1,000,000
Total Interest Paid	$325,035.10

COMPARE LOAN RATES

Show amortization schedule

Save results

Clean map for drawing

Clean map for drawing