MEMORANDUM

August 6, 2021

TO: MEMBERS, PORT COMMISSION
Hon. Kimberly Brandon, President
Hon. Willie Adams, Vice President
Hon. John Burton
Hon. Gail Gilman
Hon. Doreen Woo Ho

FROM: Elaine Forbes
Executive Director

SUBJECT: Informational presentation regarding Waterfront Resilience Program (WRP) Project Development and Delivery Process

DIRECTOR'S RECOMMENDATION: Information Only – No Action Required

Executive Summary

A multi-decade, multi-billion-dollar investment is required to reduce earthquake and flood risks along the Port of San Francisco Waterfront to improve life safety and disaster response and reduce flood risk to the City of San Francisco. To deliver this in an efficient and transparent manner the Waterfront Resilience Program (WRP) team recommends that a programmatic delivery approach be taken with a clear process for project development within the Program framework.

The project development process outlined in this report provides a consistent framework for project delivery - which is typical for an infrastructure Program of this size and complexity - designed to deliver highly successful projects that meet WRP goals, on time and within budget. The Project development process includes three major steps: Project Planning and Pre-Design, Design & Construction, and Closeout, with clear governance steps throughout the process as shown in Figure 1.

As the Program develops over the coming year, WRP staff will make a recommendation to the Port Commission on how to structure existing and future contracts to ensure the benefits of programmatic delivery – including LBE opportunities – are maximized and the Port achieves value for money.

Introduction

The WRP Program team is currently assessing the adaptation strategies for reducing flood and urgent seismic risk along the northern waterfront, targeting presentation of the strategies by the end of the year. As part of this process, a set of initial projects have been identified to address life safety risks and support disaster response. Staff plans to return to the Port Commission at the end of 2021 to seek programmatic decisions including Proposition A funding decisions.

This informational item describes the proposed project development and delivery process for the Waterfront Resilience Program that all projects will follow. Port staff anticipates that a multi-billion-dollar, multi-decade phased approach will be required to reduce the current seismic and growing flood risks along the Port's 7½ mile waterfront, including projects to be delivered using the 2018 San Francisco voter approved Proposition A Seawall Earthquake Safety Bond funds. Due to the scale and complexity of this work and the need, to deliver it in an efficient and transparent manner, staff proposes a program management approach to provide clear governance and oversight.

Program management provides an effective strategy for simultaneous delivery of multiple inter-related projects through the coordination of resources to plan and deliver multiple benefits that could not be achieved if progressed independently. A program also:

- manages interdependencies among projects;
- combines, prioritizes, and resolves escalated issues among projects;
- tracks the contribution of each individual project to the overall program benefit;
- leverages and standardizes common tools and processes; and
- effectively shares lessons between projects for continuous improvement.

There is typically a low level of scope certainty on the details of each project at the start a Program. Certainty on the projects and by extension the overall Program increases as projects are further defined.

Overview of Project Development & Delivery Process

To maintain alignment between individual projects and the Program requires a consistent process. The WRP has developed a process to advance and deliver potential Projects from initial recommendation through a series of steps to refine the definition, reduce uncertainty and risk and develop the baseline scope, budget and schedule. The process – which is typical for an infrastructure Program of this size and complexity - includes clear incremental steps to ensure transparency, manage risks, efficiently use resources, provide cost accountability, build strong project teams, engage key stakeholders, ensure quality, and provide decision makers with clear, risk-informed recommendations.

The Project development process includes the following major steps:

- Project Planning and Pre-Design
- Design & Construction
- Closeout

As each project stage is completed the project will pass through a gateway, as shown in Figure 1. These gateways provide the link back to the program overview and provide governance for the project to progress to the next stage. Throughout the process, routine Program reporting will

provide updates to the Port Commission on overall program and project schedule, budget, and risks issues.

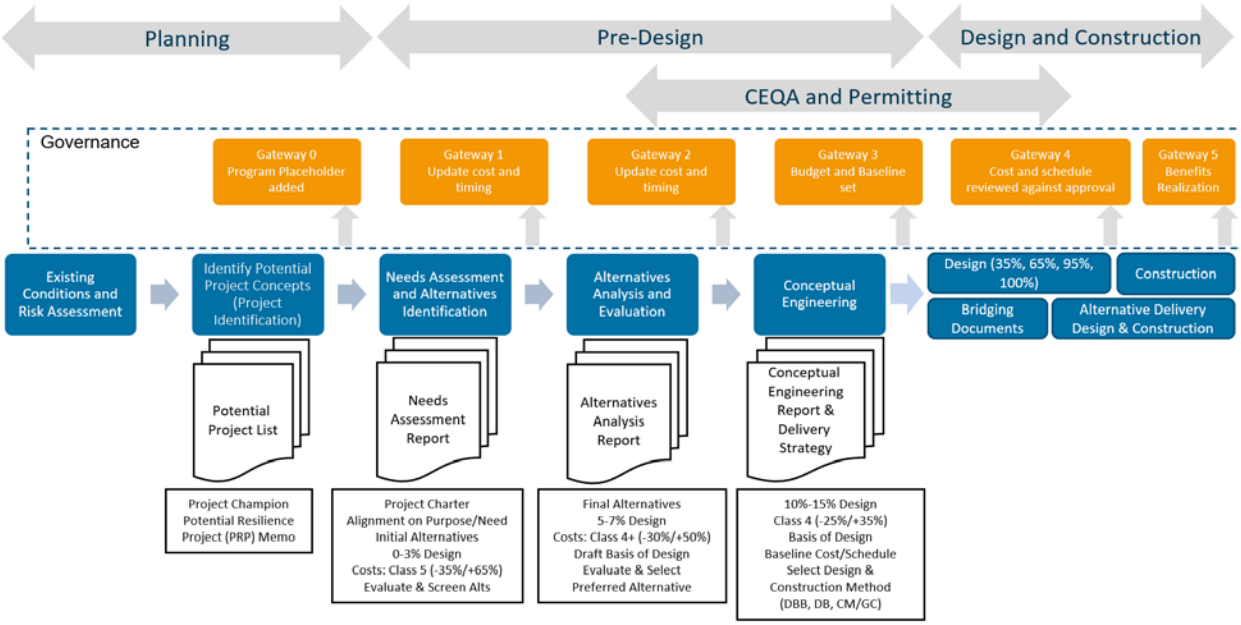

Figure 1 Standard approach for Project Delivery

The project delivery steps are outlined in the following sections, further description of each stage is included in Exhibit A.

Project Planning and Pre-Design

Project Planning and Pre-Design is the process to advance a proposed project from initial identification to a refined design concept sufficient to confirm feasibility, define the basic scope and initial design criteria, establish the initial baseline budget and schedule, assess risks, and recommend a detailed design and delivery approach. Project Planning and Pre-design work includes refining the need and objectives, completing investigations and technical studies, developing and evaluating alternatives, selecting a preferred alternative, identifying the approach to permitting and regulatory approvals including compliance with the California Environmental Quality Act (CEQA), and advancing engineering to approximately 15% design. Where more certainty is needed or a potential funding source requires it, pre-design can include advancing design to a 35% level. As projects progress through each stage of pre-design the risks and uncertainties will reduce and cost certainty will increase.

Steps in *Planning and Pre-Design* include:

Project Identification: *Identify potential project concepts to be explored in the Needs Assessment Report*
Once a project is identified through strategic planning, WRP team members develop a short memo to capture the existing understanding of the project and add a Program placeholder.

Needs Assessment Report (NAR): *Refine project purpose and develop alternatives*
The Needs Assessment stage collates and refines the existing understanding of the project with the support of project stakeholders. At this stage, the WRP team more robustly establishes the

project need and Program context, scope, preliminary list of engineering alternatives, budget and schedule to inform the decision to move to the Alternatives Analysis stage.

Alternatives Analysis Report (AAR): *Evaluate Alternatives and Select Preferred Alternative*
The purpose of the Alternatives Analysis Report stage is to advance multiple project alternatives, evaluate the alternatives against specific project and broader Program goals and objectives, and select a recommended project alternative to advance to conceptual engineering. Some projects will need more detailed study, stakeholder input, investigations, or engineering design to support evaluation, while others may be more limited. The WRP will use a risk informed approach to focus resources on developing what matters most for alternative analysis, such as existing conditions, stakeholder considerations, design feasibility, constructability and construction impacts, cost and schedule, entitlement risk, etc. At the AAR stage, there is still a high degree of budget and schedule uncertainty.

Conceptual Engineering Report (CER): *Develop Conceptual Design of Selected Alternative to Advance Toward Detailed Design and Construction*
Conceptual Engineering is the process to advance the design of the selected alternative to a level sufficient to define the draft basis of design, describe the basic scope of work and entitlements required, establish the initial baseline budget and schedule, and select the delivery method for detailed design and construction. For most projects, this will be a 10% to 15% level of design, however, some projects may require up to 35% design to support decision making or funding requirements. At the end of this stage, a decision is made to advance the project and initiate environmental review and permitting (CEQA). When a project requires compliance with the National Environmental Protection Act (NEPA), this will be initiated during the prior AAR stage.

Project Detailed Design & Construction

Detailed Design and Construction is the process to advance the project design from concept to approved plans, secure entitlements including environmental review, permits, and real estate agreements, and complete the physical construction. At this stage, the WRP team will further execute the selected delivery approach through design and engineering services (engineer of record) and construction services based on the recommendations made during CER.

In consultation with City Planning, the WRP team will conduct environmental review (CEQA and NEPA if required) during this stage and secure any permits and other necessary approvals prior to construction.

Contracting

The scale of the Program requires a programmatic approach to oversight, coordination, and contracting to ensure efficient future project and Program delivery. As the projects and Program are developed over the coming year, WRP staff will make a recommendation to the Port Commission on how to structure existing and future contracts to ensure the benefits of programmatic delivery – including LBE opportunities – are maximized and the Port achieves value for money.

WRP staff recommends the Program delivery approach noted in Table 2 and is currently considering the following design and construction delivery methods:

- Design, Bid, Build (DBB);
- Construction Manager / General Contractor (CM/GC);

- Design/Build (DB); and
- Progressive Design/Build (PDB)

Details of these contracting methodologies are included in Exhibit B.

Table 1 Anticipated Support Services During Each Major Step

Service	Pre-Design	Design & Construction	Closeout
Program & Project Management	Professional Services Program Management (PM) Contract	Professional Services PM Contract	Professional Services PM Contract (programmatic closeout)
Strategic Planning	Professional Services PM Contract	-	-
Engineering	Professional Services PM Contract or separate Professional Services Contract(s)	Professional Services Contract(s) (Engineer of Record)	Professional Services Contract(s) (Engineer of Record) (as-built closeout)
Environmental	Professional Services PM Contract or separate Professional Services Contract(s)	Professional Services PM Contract or separate Professional Services Contract(s)	-
Third Party Design Review	-	Professional Services PM Contract	-
Third Party Cost Review	-	Professional Services PM Contract	-
Pre-Construction Services	-	CM/GC and/or PDB Contract(s)	-
Construction	-	CM/GC(s) and/or PDB and/or Construction Contract(s)	CM/GC(s) and/or and/or PDB and/or Construction Contract(s)
Construction Management Services	-	Professional Services Contract(s) (Const. Mgmnt)	Professional Services Contract(s) (Const. Mgmnt) (construction and claims closeout)

WRP staff look forward to working with the Port Commission to advance future contracts to efficiently delivery the Program.

Future Iterations of the Process

The WRP aspires to continuously improve in all that we do. In line with this aim, the WRP team will periodically review this process and all other processes to maximize efficiency and ensure WRP goals continue to be met.

Next Steps

Through current adaptation planning, the WRP team has identified a series of potential early projects, focused on life safety and disaster response. The team is currently reviewing those projects with Port divisions and relevant City departments and is in the process of briefing the Port executive leadership to gain input and policy direction. We anticipate recommending some projects to move into the pre-design process later this year. During the coming months, the WRP will continue to refine the project development procedures so we can hit the ground running.

The WRP team looks forward to engaging with the Port Commission on this critical phase of Program development.

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For: Brad Benson, Waterfront Resilience Director

Exhibit A:
Project Delivery Process Detailed Overview

The Project delivery steps are outlined in further detail below.

Project Planning and Pre-Design

Project Planning and Pre-Design is the process to advance a proposed project from initial identification to a refined design concept sufficient to confirm feasibility, define the basic scope and design criteria, establish the initial baseline budget and schedule, and recommend a detailed design and delivery approach. Project Planning and Pre-design work includes refining the need and objectives, completing investigations and technical studies, developing and evaluating alternatives, selecting the preferred alternative, and advancing the design to approximately 10% or 15% level. Where more certainty is needed or a potential funding source requires it, pre-design can include advancing design to a 35% level. As projects progress through each stage of pre-design the risks and uncertainties will reduce and subsequently cost certainty will increase. Table 1 provides the program guidance on estimated project cost ranges at each step of Pre-Design and Detailed Design, with cost certainty increasing as scope uncertainty is reduced through design.

Steps in *Planning and Pre-Design* include:

Project Identification: *Identify potential project concepts to be explored in the NAR*
Once a project is identified through strategic planning, the existing information and understanding of the project is documented within a short memo, providing the high-level information necessary to add a placeholder within the overall program. The memo then serves as the initial project definition for the project to be progressed at the appropriate time.

Project Charter: *Stand up the project team*
Once a Project is authorized, a Project Manager will be assigned with the authority to assemble the team and develop the Project Charter for approval by Program Management.

- Program Management will assign the Project Manager, provide the planning level project definition, and any relevant information conveyed during project authorization decision.
- The Project Manager will develop the Project Charter for approval by Program Management
- Project Charter sets the course and controls for the Project. The Charter formalizes the project purpose and objectives, project team roles & responsibilities, stakeholders, project controls including budget/schedule/funding/risk, an overall workplan outline, and a detailed workplan for the next phase of work. The Project Charter is a living document that is updated at a minimum of quarterly and at each major step (NAR, AAR, CER, Detailed Design, Construction, Closeout)

Needs Assessment Report (NAR): *Refine project purpose and develop alternatives*
A Needs Assessment Report is an important first step in the Project Definition process where the Project Team and Key Stakeholders collaborate to develop a shared understanding of the existing information and conditions, gain alignment on the purpose and need for the project, and rapidly develop and evaluate a broad range of potential project alternatives. The NAR process leverages existing information, institutional knowledge, and expert guidance from subject matter experts, and often includes a charrette or series of workshops with stakeholders and the project

team. The result is a more focused definition of the project, a description of the most promising project alternatives, and recommendations on what is needed to further develop, evaluate and select a preferred project alternative. The NAR documents the results and updates the project estimates for budget, schedule, funding sources, and project risks. This is an essential first step to confirm the project need and viability before investing in the more detailed Alternatives Assessment Report step.

Alternatives Analysis Report (AAR): *Evaluate Alternatives and Select Preferred Alternative*
The purpose of the Alternatives Analysis Report is to develop, evaluate, and select the preferred project alternative that meets the project objectives. This step may include studies, investigations and engineering/design work as needed to inform alternative development, evaluation and selection. Often, design of the most promising alternatives is taken to a 5% to 7% level, and several screening iterations may be used to reduce effort. Continued collaboration with key stakeholders is extremely important as is a shared understanding of program and project specific evaluation criteria. Residual risk must be clearly explained, and additional work completed if necessary, to lower risk. Where selection of a preferred alternative requires more certainty on scope, cost, schedule, construction impacts, or environmental impacts, this will drive up effort in AAR. If additional design detail or investigations are required, consideration should be given to carrying multiple alternatives into Conceptual Engineering.

Conceptual Engineering Report (CER): *Develop Conceptual Design of Selected Alternative to Advance Toward Detailed Design and Construction*
Conceptual Engineering is the process to advance the design and engineering of the preferred alternative far enough to determine feasibility, define the basic scope and further definition of design criteria, and establish a preliminary baseline budget and schedule. This is typically a 10% to 15% level of design and includes the draft basis of design, completion of important investigations such as geotechnical and existing conditions, the strategies for project approvals including environmental and permits, and the strategy for completing detailed design and delivery of the project.

Table 2 Cost Estimate Ranges During Development Stages

SF PORT WATERFRONT RESILIENCE PROGRAM
PROJECT CONSTRUCTION COST ESTIMATING RANGES

	Project Stage	Design Level	Purpose	Cost Estimate Range		
				Class	Low	High
Pre-Design	Planning	0% to 2%	Initiation - Program Budget	Class 5+	-50%	100%
	NAR	2% to 3%	Screening & Feasibility	Class 5	-35%	65%
	AAR	5% to 7%	Selection	Class 4+	-30%	50%
	CER	10% to 15%	Preliminary Budget	Class 4	-25%	35%
Dtl Design	35% Design	35%	Baseline Budget	Class 3	-15%	20%
	65% Design	65%	Value Engineering	Class 2	-10%	15%
	95% Design	95%	Draft Bid	Class 1	-7%	10%
	100% Design	100%	Bid	Class 1	-7%	10%

Project Detailed Design & Construction

Detailed Design and Construction is the process to advance the project design from concept to approved plans, secure entitlements including environmental review, permits, and real estate agreements, and complete the physical construction. This process includes procurement of design and engineering services (engineer of record) and construction services based on the recommendations from Pre-Design.

Steps in Detailed Design will differ depending on the design and construction delivery method that is chosen, however, the program will generally advance detailed design to the standard milestones of 35%, 65%, 95% and 100% development of plans, specifications, estimate and schedule. The basics of the project are generally fixed at 35% design, and 65% design is the point at which third party reviews and value engineering review may take place.

Environmental review (CEQA and NEPA if required) will be initiated during pre-design and completed between 35% and 65% design levels when enough information is available to complete impact analysis. Permits and other necessary approvals will be secured prior to construction.

Exhibit B:
Potential Design and Construction Delivery Methods

Traditional Delivery Method

Design-Bid-Build (DBB)
DBB is the conventional project delivery method applied by U.S. infrastructure owners including the Port. DBB generally requires a well-defined design concept and a reasonable anticipation of the construction means and methods of potential competitive bidders. DBB is useful for projects that can be designed to or near 100 percent complete with completed permits and entitlements. DBB is a sequential process beginning with the owner retaining a designer based on qualifications to complete design services. The owner then advertises and awards a separate competitively bid construction contract based on the designer's completed construction documents. Projects that benefit from the use of DBB are common projects that do not involve many unknowns or complex construction requirements.

Alternative Delivery Methods

Design-Build (DB)
DB combines two, usually separate, services into a single owner contract. With DB procurements, owners execute a single, fixed-fee contract for both architectural/engineering services and construction. The DB entity, also known as the constructor, may be a single firm, a consortium, joint venture, or other organization assembled for a project. The selection method is based on a best value approach where both qualifications and cost are considered in the proposed evaluation to select the DB entity. This delivery method is valuable for projects that have a high degree of scope definition and delivery certainty upon bid, would benefit from a high degree of collaboration between the designer and the contractor, require limited owner involvement during design, and when it is important to know the project cost upfront and when the project is well defined with limited scope for owner-induced change.

The Port used this method for the Illinois Street Bridge. DB is likely not a candidate for WRP Projects because of the need for Port involvement and high degree of design complexity which may lead to large owner-induced changes in scope and cost.

Construction Manager / General Contractor (CM/GC)
Under the CM/GC method, the owner conducts a qualifications-based selection process to separately hire a designer and a contractor to deliver the project. Chapter 6.68 of the San Francisco Administrative Code allows three procurement methods for CM/GC; Cost Only, Best Value, and Team Best Value. The owner encourages participation between the designer and contractor to deliver the best value project; however, there is no contractual relationship between the designer and contractor. The contractor provides input during the design phase before the start of construction to incorporate its preferred means and methods and available equipment, craft labor, and management staff into the final design solution and packaging of construction bids.

The CM/GC method is delivered in two contract phases. The first contract phase, the design or pre-construction phase, allows the contractor to work in partnership with the designer and the owner to identify risks, provide cost projections, provide input relative to construction means and methods, and refine the project construction sequencing and schedule. This early contractor involvement essentially provides continuous value engineering and constructability input during design and allows for early identification and mitigation of construction risks. Once the design

phase is complete, the contractor and owner negotiate the price for the next phase construction contract. If both parties agree with the construction cost, the second contract phase, the construction phase, is initiated and construction begins. If both parties cannot agree on the construction price, the owner has the option to complete the construction plans and specifications, and competitively bid the project following the conventional DBB method. Depending on the owner's preference, the CM/GC contractor may or may not submit a competitive bid for the construction phase.

This delivery method is valuable for non-standard types of designs where it is difficult for an owner to develop the technical requirements and cost estimates necessary for DB procurement without contractor input, and where the owner desires to retain design control through a separate design contractor.

The Port used CM/GC to deliver the Pier 27 Cruise Terminal. SFPUC is using this process on two of its largest Sewer System Improvement Program projects at the Southeast Treatment Plant. For the WRP, this method may be desirable for large complex projects.

Progressive Design-Build (PDB)
PDB is a refinement of the DB delivery method where the project owner selects a DB entity based on technical and personnel qualifications, with no price involved in the selection evaluation. Depending on the owner's preferences, some unit cost items may be incorporated into the selection evaluation; however, qualifications are the primary selection criteria. As with the DB delivery method, the designer and contractor work together under a single contract to optimize the project design to meet the contractor's preferred construction means and methods, and available equipment, craft labor, and construction supervision staff. As design development proceeds, the contractor and the owner progressively evaluate the project price against an agreed-upon budget, which is set up-front, and adjust the design accordingly to meet the budget. The PDB process differs from CM/GC in that the designer and contractor are one entity.

As with the CM/GC project delivery method, the PDB method is delivered in two contract phases. In the first contract phase, the DB entity completes the project design to the point desired by the owner (often 60 to 90 percent) and then typically submits a guaranteed maximum price (GMP) or lump-sum price for final design and construction, along with a detailed breakdown of estimated construction costs and a proposed schedule. If the contractor and owner cannot reach agreement on the final construction price for the second contract phase, the designer can complete the design plans and specifications and the project can be competitively bid using the conventional DBB process or proceed with another DB entity.