PROJECT INFORMATION REPORT
REHABILITATION OF DAMAGED FLOOD CONTROL WORKS
SKAGWAY RIVER LEVEE, SKAGWAY, ALASKA
ALASKA DISTRICT

March 15, 2024

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PART 1. EXECUTIVE SUMMARY

PROJECT NAME: Skagway River Levee
(System ID: 2105000005; Segment ID: 2104000005)

PROJECT FUNDING CLASS: 310

PROJECT CWIS NUMBER: 516890

NON-FEDERAL SPONSOR: Department of Transportation and Public Facilities (DOT&PF) and the Municipality of Skagway

LOCATION AND DESCRIPTION: The levee is located along the southeast bank of the Skagway River starting at the Klondike Highway (23rd Avenue) Bridge in Skagway, Alaska. The levee was originally constructed between 1939-1940 and was 6,700 feet long. The fill material was from the river bottom with 2 feet of riprap of unknown size added as armor stone along the riverward side of the levee. All but a roughly 1,300-foot portion of the levee was modified by DOT&PF in 2001, encapsulating the original levee and adding Class III and IV armor stone along the riverward side slopes. The levee protects public infrastructure as well as residential, commercial, and historical properties.

DESCRIPTION OF DAMAGE: A significant flood event occurred between 29 September 2022 and 04 October 2022 causing flood damage to the levee including loss of riverward armor stone and toe width reduction or loss. The construction length is approximately 5,000 linear feet (LF). See Appendices B-E for site maps.

PROPOSED REPAIR: The proposed repair will consist of rebuilding the levee toe and damaged slope along the DOT&PF portion of the levee with Class IV riprap and a 1.5 horizontal (H) to 1 vertical (V) side slope. The original levee had damage to a roughly 300-foot section at the toe, so the toe will be rebuilt for this section. The total construction length is approximately 5,000 Linear Feet (LF). Costs associated with proposed repair can be seen in Table 1.

Table 1. Summarized Financial and Economic Data

Construction Cost	$22,472,800
S&A (6%)	$1,348,400
Engineering and Design (6%)	$1,348,400
Contingency (10% [Construction + S&A+E&D])	$2,516,960
Total Construction Cost	**$27,686,560**
Federal Cost (100% Construction + E&D for Federal project)	$27,686,560
Sponsor Cost (0% Construction)	$0
Benefit/Cost Ratio	**5.95:1**

POINT OF CONTACT: Olivia Jobin, CEPOA-ECG-H, (907) 753-2770

PART 2. PROJECT REPORT

1. Project Identification

   a. Project Name: Skagway River Levee (System ID: 2105000005; Segment ID: 2104000005)
   b. Project Funding Class: 310
   c. Project CWIS Number: 516890

2. Project Authority

   a. Classification: USACE Federally Constructed Levee, turned over to public sponsors for operations and maintenance.
   b. Authority: The project was originally constructed in 1940 as a training dike for the Skagway River as part of the USACE Skagway Harbor navigation project, authorized by the Rivers and Harbors Act of June 20, 1938 (House Doc. 547, 75th Congress, 3rd Session). The project authorization was subsequently modified by the Flood Control Act of July 24, 1946 (House Doc. 695, 79th Congress, 2nd Session) in order to reconstruct and extend the training dike, and the project was adopted as an official flood control structure. The Water Resources Development Act (WRDA) of 1986 Public Law 99-662- November 17, 1986, deauthorized the project for navigation, Skagway River, Alaska, authorized by the Rivers and Harbor Act of June 20, 1938, Public Law 685, Seventy-Fifth Congress, and section 10 of the Flood Control Act of 1946, except the 6-700-foot training dike and the 1,800-foot breakwater. This training dike was also rehabilitated in 1951 and 1967. The training dike was significantly modified in 2001 by the local sponsor (DOT&PF) to expand the airport, encapsulating all but roughly 1,300 feet of the training dike, with the side slopes of the runway being integrated into the structure footprint. The training dike was renamed the Skagway River Levee in 2007. Prior to the recent flood event, the Skagway River levee was determined to be eligible for PL 84-99 rehabilitation assistance.
   c. Estimated original cost of project: $62,173
   d. Construction completion date of the original project: 01 July 1940
   e. The Flood Control Act of 1944 (PL 84-99) was passed on December 22, 1944.
   f. The Skagway River Levee has been rehabilitated under PL 84-99 in 1946, 1951, and 1967.

3. Public Sponsors

a. Sponsor 1 Identification

Municipality of Skagway
P.O. Box 415
Skagway, AK 99840
Phone: (907) 612-8247
Point of Contact: Emily Deach, Deputy Borough Manager

b. Sponsor 2 Identification

Department of Transportation and Public Facilities -Southcoast Region
P.O. Box 112506
Juneau, AK 00811-2506
Phone: (907) 465-1215
Point of Contact: Kirk Miller, Regional Preconstruction Engineer

c. Application for Assistance

(1) Date of issuance of district's public notice: 01 August 2023
(2) Date of public sponsor's written request (see Appendix A)

- DOT&PF – 24 August 2023.
- Municipality of Skagway – 16 August 2023.

4. USACE PIR Inspection Team Members

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5. Project Description

The Skagway River Levee protects the Municipality of Skagway, Alaska from flooding by the Skagway River. Construction of the Skagway River Levee was authorized by the Rivers and Harbors Act of June 20, 1938. The act, as adopted, provided for a rock, brush, and earth training dike 6,700 feet long on the east bank of the Skagway River, and a rubble-mound breakwater 1,800 feet long across the tide flats as a prolongation of the training dike. The project authorization was subsequently modified by the Flood Control Act of July 24, 1946. This act, as adopted, provided for (1) restoration of the existing breakwater (1,800 ft) to the original project cross-section, construction of a 300-foot extension thereto, and the addition of two groins on the river side, (2) reconstruction and extension of the existing training dike (6,700 ft) adjacent to the city, and (3) reconstruction of the existing dike at the sanatorium. Public Law 99-662, November 17, 1986 deauthorized the modifications authorized in 1946, except for the 6,700 ft training dike and the 1,800 ft breakwater.

Airport expansion encapsulated all but a roughly 1,300-foot portion of the training dike in 2001, with side slopes of the runway being integrated into the project footprint. The airport modifications were submitted through the 408 Federal project modification process and approved by USACE. In 2007 the training dike was renamed the Skagway River Levee. The present-day Skagway River Levee extends from the river mouth upstream approximately 6,700 feet to the Klondike Highway (23rd Avenue) bridge, near the upstream end of the municipality. In the undamaged condition, the levee provides protection from overtopping up to the 1% annual exceedance probability (AEP) flood event.

6. Project Design

The project is 6,700 LF and approximately 12 feet high and is constructed of earthen and riverbed material, and armor stone. The original levee was constructed of fill material from the river bottom with a 2-foot-thick riprap layer, 2H:1V riverward side slope, a 12-foot crest width, and a 7-foot-wide toe. Rock gradations for the original levee are unknown.

The majority the modifications to the airport was specified as Class III Riprap, which requires 50% to 100% of the stones in the gradation to be more than 700 pounds. At the upstream end of the airport, Class IV riprap was specified which requires 50% to 100% of the stones in the gradation to be more than 2000 pounds. The revetments along the runway were designed to extend 20 to 40 feet into the Skagway River beyond the river side of the original levee at a slope of 1.5H:1V. The revetments were constructed with a buried toe that extended 13 to 15 feet from the bottom of the revetment slope. The resulting condition of the modified system comprises approximately 5,200 feet of Class III Riprap revetment at the airport, 740 feet of Class IV Riprap revetment at the upstream end of the airport and 1,280 feet of original levee between the airport and the Klondike Highway Bridge

This levee protects approximately 310 acres of residential area and public infrastructure. See Appendices B and D for project vicinity maps and plan and cross-sectional views of the original design and 2001 airport improvements.

7. Disaster Incident

The significant flood event occurred between 29 September 2022 and 04 October 2022 causing flood damage to the Skagway River Levee. The National Weather Service (NWS) stage gage at the Skagway River Bridge (SKGA2) exceeded flood stage on 01 October 2022. Flood stage occurs at 26.5 feet and the 2022 flood event reached a stage of 26.75 feet. The 2022 flood event was the flood of record for the NWS gage, but as no flow data or rating curve is available for the gage, and no datum conversion to NAVD88, the flood cannot be correlated to an AEP. The event was driven by a large precipitation event that lasted several days, originating from atmospheric river storm events.

8. Project Damages

During the flood, the Skagway River transported significant woody debris and sediment which dislodged slope armor along the toe and side slopes on several sections of the Skagway River Levee. Flood damages include severe loss of toe and slope armor. If the levee is not repaired and erosion continues, the airport runway would be damaged and would likely be inoperable, and property damage would occur at downstream inundated areas. The runway is critical infrastructure to the municipality of Skagway. It provides MedEvac capability for any injury or serious illness for both Skagway residents and Cruise Ship passengers as Skagway does not have Emergency Medical Care. The Dahl Memorial Medical Clinic only provides treatment for mild injuries and illnesses. Additionally, there is risk that an estimated life loss of 1 could occur if repairs are not made. See Section 12. Economic Evaluation for more information on estimated project damages. See Appendix E for site maps of damaged locations.

9. Project Performance Data

a. Inspection Results
(1) Date of Inspections: 03 May 2022 (Site Visit); 11 July 2023 (Formal Inspection); 24 October 2023 (Levee Assessment Site Visit for PIR)
(2) Levee Assessment Site Visit for PIR inspection team: Olivia Jobin (Alaska District), Justin Miller (Alaska District), Dan Allard (Alaska District), and Doug Weber (NWD)
(3) Type of Last Inspection: Formal Inspection (CEI)
(4) Project Status: Eligible

b. Sponsor's Annual O&M Costs
(1) $6,000 for the entire length of the levee segment.

c. Estimated Cost to Repair Maintenance Deficiencies
(1)None. The levee was being maintained adequately prior to the flood event. USACE inspection trip reports from 1986, 2000, 2007, 2010, 2012, 2015, 2017, and 2022 note deficiencies of unwanted vegetation growth and embankment erosion and riprap launching. Subsequent trip reports from 1993, 1998, 2005, 2009, 2011, 2014, 2016, 2018, 2023 report repairs to some or all of these deficiencies by the sponsor. The latest maintenance activity was a partial vegetation brushing of the levee overserved during the 2023 Formal Inspection.

10. Project Repair Alternatives Considered

For any alternative to be accepted for consideration it must meet certain objectives. The alternative must restore flood protection to the pre-flood level of protection, it must be economically justified, it should be environmentally acceptable, be able to be constructed in a timely manner given Alaska's short construction window and should minimize cost to the Federal government. Due to the complete loss of the toe in sections and subsequent loss of armor stone along the side slopes of the levee, the likelihood of slope failure during another storm event is high, which would lead to a loss of flood level protection.

Multiple alternatives were considered. The repair in place alternative is the preferred alternative. At this stage in the project, a preliminary analysis has been performed on the following alternatives:

a. *No Action Alternative*
The No Action Alternative was evaluated and rejected due to the reduced level of protection and the increased likelihood of increased damages to the airport that is critical infrastructure to the municipality. This is not an acceptable alternative to the sponsor.

b. *Repair in Place Alternative*
The Repair in Place Alternative includes a construction length of approximately 5,000 LF which will reconstruct the riverward levee side slopes and toe with Class IV riprap for the entire length of the repairs. Based on the amount of Class III armor stone that was displaced during the flood of record, it was deemed critical to increase the armor stone size for stability and longevity of the structure. PL 84-99 authorizes using updated Engineering techniques for levee rehabilitation projects. Increases in armor stone size is authorized from updated scour analysis. This will entail reshaping the riverward slope to a 1.5H:1V side slope, restoring the riverward toe to its original design width, and adding a one stone thickness Class IV riprap armor layer over the existing levee. Due to scour and erosion of the existing slopes, Class II riprap will be used to reshape the existing structure with a 1.5H:1V side slope before the addition of Class IV riprap.

c. *Levee Setback Alternative*
The Levee Setback Alternative would realign approximately 5,000 LF of levee behind the existing levee footprint. This alternative was deemed not feasible due to the airport. There is no other location to move the airport in the area due to the terrain and it would be more costly than the repair alternative and would require additional real estate. This is not the sponsors preferred alternative.

d. *Non-Structural Alternative*
The Non-Structural Alternative would buy-out the existing infrastructure and would also provide for any necessary re-locations. This alternative was discarded because due to the mountainous terrain around Skagway, this alternative would not be feasible. This is not the sponsor preferred alternative.

11. Recommended Alternative

The recommended alternative is Repair in Place which will restore the levee at the damage locations. The repair will restore the levee to pre-disaster protection levels utilizing new engineering techniques of increasing the size of armor riprap. One stone thickness layer of Class IV riprap will be added to the side slopes with a riverward side slope of 1.5H:1V, as well as restoring the levee toe to its original design width. Due to scour and erosion of the existing slopes, Class II riprap will be used to reshape the existing structure with a 1.5H:1V side slope before the addition of Class IV riprap. The construction length is approximately 5,000 LF. The repair uses Class IV riprap along the entire repair length due to the severity of erosion along the toe and side slopes. It was deemed critical to increase the rock size from Class III to Class IV along the airport where Class III rock was originally used for stability of the structure. Mitigation for riverward encroachment and other impacts will be fully designed during Engineering & Design (E&D). Design quantities were determined without a survey, so exact quantities will be adjusted during E&D when a survey can be completed. The toe width varies along the repair length from 0-10 feet wide. To be conservative, quantities were based on an assumed toe with of 0 feet along the entire length of the repair site. Toe quantities may decrease after the survey is complete during E&D. Drawings, maps, and other pertinent design information are in Appendices B through E.

Due to the winter construction work window, repairs will need to be conducted in 2025. However, the PDT will work with the levee sponsors to develop a contingency plan to address flood risk prior to completion of the repairs.

12. Real Estate Lands, Easements, Rights-of-Ways, Relocation, and Disposal (LERRD's)

The project is located within the Municipality of Skagway, Haines Borough, Alaska. The proposed Rehabilitation effort will return the levee to the pre-flood condition and level of protection within the existing project footprint. The Skagway River Levee Rehabilitation Project would repair approximately 5,000 LF.

To proceed with the rehabilitation effort, the Non-Federal Sponsor (NFS) must make the required local project lands available prior to solicitation for the construction contract. See the proposed project schedule under Section 15 of this report.

To meet the real estate requirements, the NFS will need to demonstrate that it has the below minimum real property interests for Skagway River Levee Rehabilitation Project footprint:

> PERPETUAL FLOOD PROTECTION LEVEE EASEMENT ESTATE
> A perpetual and assignable right and easement in the land delineated on the attached location map, Exhibit__, by this reference made a part hereof, to construct, maintain, repair, operate, patrol and replace a flood protection levee, including all appurtenances thereto; reserving, however, to the owners, their heirs and assigns, all such rights and privileges in the land as may be used without interfering with or abridging the rights and easement hereby acquired.

The NFS will need to demonstrate that it has the below real property interests for the proposed temporary work areas.

> TEMPORARY WORK AREA EASEMENT
> A temporary easement and right-of-way in, on, over, and across the land delineated on the attached location map, Exhibit __, for a period not to exceed _____, beginning with date possession of the land is granted to the Grantee for use by the United States, its representatives, agents, and contractors as a work area, including the right to deposit fill thereon, move, store, and remove equipment and supplies, and erect and remove temporary structures on the land, and to perform any other work necessary and incident to the construction of Skagway River Levee Rehabilitation Project, Job No. _____, together with the right to trim, cut, fell, and remove there from all trees, underbrush, obstructions, and any other vegetation, structures, or obstacles within the limits of the right-of-way; reserving, however, to the landowners, their heirs and assigns, all such rights and privileges as may be used without interfering with or abridging the rights and easement hereby acquired; subject, however, to existing easements for public roads.

Excavated materials will be utilized within the existing project footprint as much as possible. If the material cannot be re-utilized on site, the NFS will need to identify and provide a temporary disposal site during the period of construction, or the material will need to be taken to a commercial disposal facility. With the information available at this time, it is anticipated that excavated materials will be reused and material disposal will not be required.

The final location of temporary work area easements and disposal sites to support the construction of the Rehabilitation Effort, including access routes for ease of construction, will be determined in the next phase – Engineering & Design (E&D). As part of the land certification process for the levee rehabilitation effort, the Public Sponsor will need to provide title reports, not more than 90 days old at the time of land certification demonstrating its interest in the Levee Project repair site.

Any questions regarding types of property interests needed for the proposed project should be coordinated with the U.S. Army Corps of Engineers, Alaska District, Real Estate Division.

13. Economic Evaluation

There is relatively little data available for the Skagway River; the town has not been flooded since the construction of the levee, and the flood event of 2022 was recorded by the NWS stage gage and a conversion to flow is not available. The USGS river gage (no longer operational) provides 23 years of stage and flow data available from 1963 to 1986. The USGS Stream Stats website reports estimated flow rates for various AEP flood events, shown in Table 2.

Table 2. Flow Rates for each AEP based on Stream Stats

Annual Exceedance Probability	Flow (cubic feet per second)
50%	4,870
20%	7,380
10%	9,340
4%	12,200
2%	14,600
1%	17,200
0.5%	20,100
0.2%	24,400

In 2021, the USACE Modeling, Mapping and Consequences (MMC) Production Center published the Skagway River Levee Modeling Report. The MMC develops consistent hydrologic and hydraulic levee breach models, flood inundation maps, and consequence estimations to support risk communication and risk informed decision making. The 2021 report provided an analysis of possible flood scenarios and the damages to structures, structure contents, and vehicles. This report estimated damages as a percentage of structure value using USACE's general use depth-damage curves.

This PIR has relied heavily on this broader analysis due to the limited availability of data. The 2021 report determined the most probable place a breach of the levee would occur to be at Station 8+60, otherwise designated breach location 1 or BL1. This assessed 4 scenarios for which it found property damage: the stage level of the river reaching the top of the levee at BL1 (BL1 ToL), the stage level overtopping the levee by 1 foot (BL1 1-ft OT), the maximum flood expected possible in the area (BL1 Max OT), and the stage level reaching the top of the levee at the airport (ToL Airport). For 3 of these scenarios, the report assessed damages both in the case of a levee breach and without it, however a levee breach at the airport location is highly unlikely as the runway is built into the levee and effectively widens and reinforces it.

The stationing for the scenarios discussed above can be seen in Figure 1. The total number of structures inundated, and the damages associated with each scenario can be seen in Table 3. The breach (LB) and no-breach (NLB) scenarios do not differ greatly. As such, in this analysis, we have averaged them into "Low", "Medium", and "High" damage levels, and kept the "Airport" scenario separate. We have also updated damage estimates to 2023 dollars using the owner's equivalent rent of residences in urban Alaska from the Bureau of Labor Statistics (Table 4).

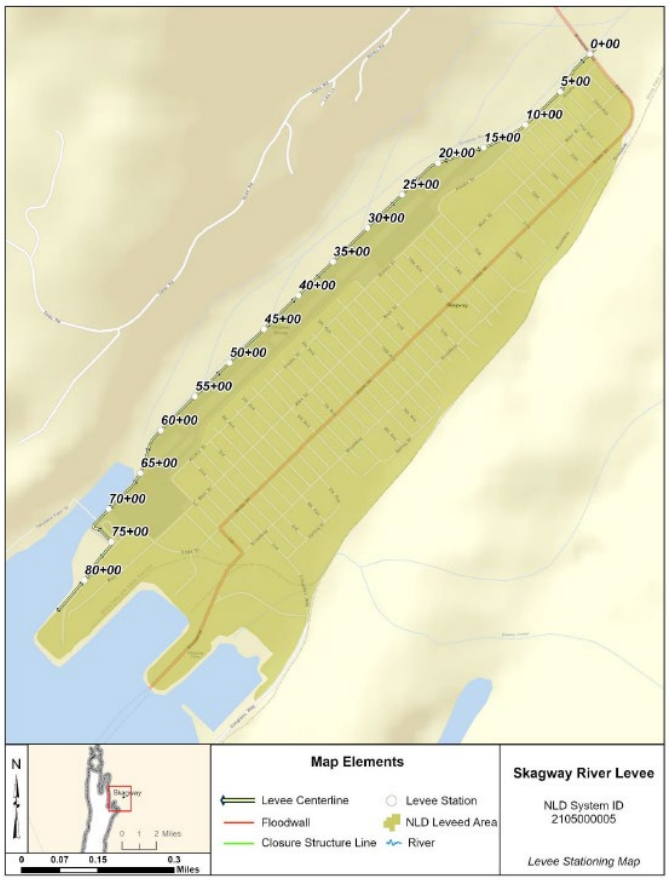

Figure 1. Skagway River Levee Stationing Map from MMC Report

Table 3. Economic Evaluation of Scenarios from MMC Report

Name	Structures Inundated	Damages (2020$)
BL1 Max OT LB	640	$ 173,011,175
BL1 Max OT NLB	640	$ 173,004,847
BL1 1 foot OT LB	311	$ 24,822,788
BL1 1 foot OT NLB	307	$ 24,599,067
BL1 TOL NP LB	22	$ 622,620
BL1 TOL NP NLB	12	$ 570,394
TOL Airport NLB	206	$ 13,620,558

Table 4. Damage Value Estimates in 2023 Dollars

Damage Level	Structures	Damage Value (2020 $)	Damage Value (adjusted)
High	640	$ 173,008,011	$ 198,110,773
Medium	309	$ 24,710,928	$ 28,296,383
Low	17	$ 596,507	$ 683,058
Airport	206	$ 13,620,558	$ 15,596,846

Figure 2 was taken from the 2021 report and shows the relationship between stage height and flow volume for the Skagway River based on the data from the United States Geological Survey (USGS) 15056100 Skagway River at Skagway, Alaska gage for years 1963-1986 and from the current NWS gage SKGA2 located on the pedestrian bridge beside the highway bridge. It should be noted, this data was considered suspect and was identified as such in the MMC report but was used here because it was the only data available.

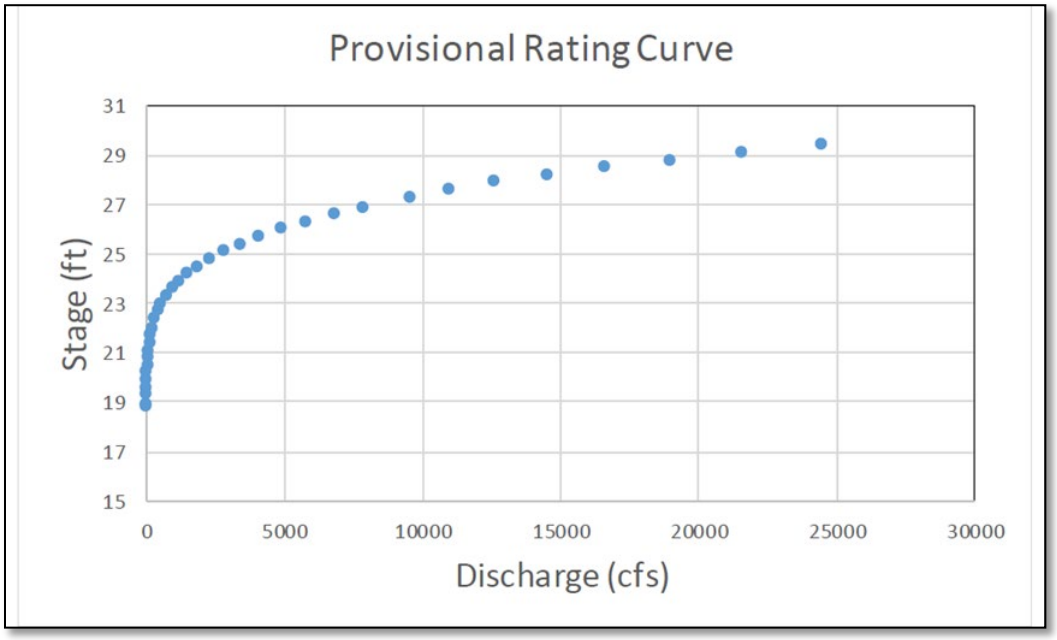

Figure 2. Provisional Rating Curve for the Skagway River

For this analysis we have cross-referenced this graph with the Annual Exceedance Probability flow rates from the USGS. This provides an approximate relationship between stage, flow rate, and the likeliness of a given flood (Table 5). It should be noted that there is no historical flood record against which to validate these relationships. The report stage values are based off the non-operational USGS gage and do not correlate to the NWS gage stage value of the 2022 flood event.

Table 5. Damage Values Related to Flood Frequency

Damage Level	Structure	Damage Value (adjusted)	Report Stage (ft)	Est. Flow	Nearest AEP	Est. AEP Flow (cfs)
High	640	$ 198,110,773	30.8	75,000*	< 0.2%	24,400
Medium	309	$ 28,296,383	26.7	5,000	20%	7,380
Low	17	$ 683,058	24.7	2,500	>50%	2,500
Airport	206	$ 15,596,846	25.7	4,000	50%	4,870

In the MMC report, the Maximum Overtopping Scenario was estimated to have a flow of 75,000 cfs, based on tripling the flow rate of the 1% AEP flood event, and adding a buffer for

uncertainty. The Max OT, or High scenario is expected to have roughly 3 times the flow rate of the 0.2% AEP flood event, which is projected at 24,400 cfs. This means that while it provides valuable information, it should be considered a "worst case scenario" rather than equivalent to a 0.2% AEP flood event. Similarly, the Low scenario, BL1 TOL, has a stage of 24.7 ft and is associated with a flow rate of 2,500 cfs, placing it significantly below the expected flow rate for the 2-year flood (4,870 cfs). As such, the High scenario is less likely that an 0.2% AEP flood event and the Low scenario is more likely than the 50% AEP flood event, meaning both scenarios fall outside the range of probabilities normally considered for USACE flood risk management projects.

The 20% AEP flood event is estimated to have a flow rate of 7,380 cfs which correlates to a stage height of roughly 27 feet, which is very close to the expected stage height of the Medium damage level estimated as a result of a 1-foot overtopping at the BL1 location. The 50% AEP flood event is estimated to have a flow rate of 4,870 cfs which corelates to a stage height of 25.7 feet, which is very close to the estimated stage of the Airport scenario. As such, we have treated the expected damages from the Airport scenario as having the probability of a 50% AEP flood event, and the expected damages from the Medium scenario (BL1 1-foot OT in the 2021 report) as having the likelihood of a 20% AEP flood event for the purposes of this analysis.

Using the estimated damages for the Medium and Airport scenarios adjusted to 2023 dollars we have $28.3 and $15.6 million respectively, and from the USGS we have a 20% likelihood and a 50% likelihood of each. This results in yearly expected damages of $6.19 million. The costs and benefits summaries are shown in Table 6 and Table 7. The benefits were annualized at the current FY24 discount rate of 2.75%.

Table 6. Cost Summary

	Total PV
Project First Cost	**$ 27,687,000**
IDC	$ 229,781
OMRR&R	$ 162,000
Total Economic Cost	**$ 28,078,000**
AAEQ Economic Cost	$ 1,040,000

Table 7. Benefits Summary

	Total PV	**Net PV**	**AAEQ**
Benefits	$ 167,052,000	$ 138,974,000	**$ 6,188,000**
Costs	$ 28,078,000	---	$ 1,040,000

Life loss was estimated by the 2021 report to be 1 for the 1-foot overtopping scenario and up to 103 for the maximum overtopping scenario. The 1-foot overtopping scenario equates to the Medium scenario for this analysis, and an estimated life loss of 1 may result from not repairing the levee.

The **BCR** for this project is **5.95:1.** This indicates that if the damaged levee is not repaired and remains ineffective, there is a high probability that the town of Skagway will experience flooding and associated property damage, and potential life loss. Over the life of the project, 50 years in this case, the average annual expected damage without a functional levee is $6.2 million dollars. If the levee is repaired and these damage costs are avoided, those avoided costs are benefits to the residents of Skagway. The costs of the levee repair are estimated to have an average annual value of $1 million dollars, significantly less than the costs in property damage that flooding would cause.

14. Environmental

a. General

The Skagway River spans from British Columbia, Canada to the State of Alaska, United States. The Skagway River has three main tributaries that flow from White Pass, Warm Pass, and East Fork; all originate from glaciers in British Columbia. The Skagway River flows southwest across the Canada-Alaska international boundary southeast of White Pass. The Skagway River flows slightly northwest after crossing the international boundary, then turns southwest and drains into the ocean at the head of Taiya Inlet. The City of Skagway is located at the head of Taiya Inlet, near the mouth of Skagway River.

A History of the Skagway River (Buzzell, 2004) provides a summary of the existing environmental conditions within the area, which are summarized here. Glaciers in the surrounding mountains and highland terrain significantly influence the discharge of water and sediment. The Skagway River valley is half a mile wide at Skagway and gets narrower upstream. The valley floor is covered with coarse fluvial gravel. The lower 5 miles of the river is a braided glacial stream which divides occasionally into a multichannel configuration, separated by gravel bars and bounded by terraces. During periods of flooding, the gravel bars and terraces are mostly covered by river water. Above the confluence with East Fork, the river is a single channel. The portion of the river near Skagway is a braided channel characterized by episodic events of erosion and deposition. The channel bottom in this area is higher at some points than the City of Skagway, which is protected by a system of dikes, including the Skagway River levee.

The Skagway River levee has been maintained by clearing excess vegetation. Vegetation on the face of the levee is dominated by hardy perennial plants, including fireweed (*Chamaenerion angustifolium*), Nootka lupine (*Lupinus nootkatensis*), and common yarrow (*Achillea millefolium*). Other plants include small saplings of cottonwood (*Populus* spp.) and various soil-binding shrubs, such as alder (*Alnus* spp.) and willow (*Salix* spp.).

a. Environmental Considerations:

(1) Water Quality

There may be short-term direct impacts on water quality within the Skagway River during construction. Specifically, there may be a temporary increase in turbidity due to fill placement. Turbidity may be monitored during construction. If turbidity exceeds State of Alaska water quality standards, construction will be slowed and recommence when turbidity returns to acceptable levels. This landward movement would require the removal of saplings and shrubs, (i.e., cottonwood and willow) along the levee.

(2) Fish and Wildlife

The Skagway area supports both resident and migratory avian species. Resident species occur in the area year-round, while migratory species seasonally occupy the area during the boreal summer. If construction occurs during the summer (between May and August), monitoring may be required under the Migratory Bird Treaty Act (MBTA). Bald eagles (*Haliaeetus leucocephalus*) are a common year-round resident in southeastern Alaska. If an active bald eagle nest is present within the project area, monitoring during construction may be required under the Bald and Golden Eagle Protection Act (BGEPA).

The Skagway River supports runs of various anadromous fish species. The Alaska Department of Fish and Game's Anadromous Waters Catalogue (ADFG AWC; Giefer & Graziano, 2023) has nominations for Pacific salmon (*Oncorhynchus* spp.), Dolly Varden (*Salvelinus malma*), and Eulachon (*Thaleichthys pacificus*) within the lower reaches of the Skagway River (AWC code: 115-34-10300). The Skagway River is considered to have minimal fishing potential since the in-stream habitat has been substantially degraded by human activity over the years (Buzzell, 2004).

In Alaska, there are no species of anadromous fish listed under the Endangered Species Act (ESA). However, the requirements for compliance with the ESA will include analysis of impacts and consultation with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service. No other ESA listed species are anticipated to be impacted by the project given the inland location, away from the coast of Taiya Inlet. Construction noise may temporarily disturb wildlife in the area, but the effect is anticipated to be short-term and minimal.

The project area is considered essential freshwater fish habitat (EFH) in the State of Alaska. Consultation with NMFS, and an analysis of potential impacts on EFH will be required for compliance with the Magnuson-Stevens Act (MSA). Construction and repairs to the Skagway River levee may have short-term adverse effects on spawning habitat function and availability for anadromous fish species. Other unavoidable impacts to the area during construction include temporary increase in turbidity, noise, and vibration. Construction would be accomplished during an established work window to minimize any potential disruption of anadromous fish migration or spawning. Individuals present within the project area during the

construction work window would be temporarily displaced due to disturbance.

(3) Wetlands

The U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory maps indicate that the only wetlands present near the Skagway River levee are classified as riverine, within the Skagway River. An evaluation under Section 404(b)(1) of the Clean Water Act (CWA) may be required if dredged or fill material is discharged into the Skagway River.

(4) Historic Properties Considerations

The proposed undertaking lies within the Skagway and White Pass National Historic Landmark (NHL) District (SKG-00013). A search of the Alaska Heritage Resources Survey (AHRS) maintained by the Alaska Office of History and Archaeology indicates the existence of multiple additional historic properties in the vicinity of the levee. Although the levee itself has been repaired and modified over the years, it was originally constructed in 1940. Due to its age, USACE will be required to determine the levee's eligibility for listing in the National Register of Historic Places (NRHP) in accordance with Section 106 of the National Historic Preservation Act (NHPA). The levee is not associated with the Skagway and White Pass NHL, whose period of significance is 1897–1910. No known cultural resources surveys have been conducted of the levee. No assessment of effect for the proposed undertaking can be made until the eligibility of the levee itself has been determined by USACE and concurred on by the Alaska State Historic Preservation Officer (SHPO).

In accordance with 36 CFR § 800, USACE must, prior to the approval of the expenditure of Federal funds for anything other than nondestructive project planning activities, determine the eligibility of the levee for listing in the NRHP and assess the effect of the proposed undertaking on any historic properties in the Area of Potential Effect (APE) in consultation with its stakeholders. Should the proposed undertaking be found to have an adverse effect on a historic property, the adverse effect will be resolved in accordance with 36 CFR § 800.6.

(5) Tribal Interests

The proposed undertaking is within the traditional territories of two federally recognized tribes: Skagway Village and Central Council of the Tlingit & Haida Indians of Alaska. The undertaking is also within the purview of Sealaska Corporation, a regional Alaska Native Corporation (ANC) created in accordance with the Alaska Native Claims Settlement Act (ANCSA) of 1971. These Alaska Native Tribes and ANC will be coordinated and consulted with regarding the proposed undertaking.

(6) Recreation

This section of the Skagway River levee is not considered a recreational area.

(7) Cumulative Effects

Cumulative effects of these actions will be fully considered as required under NEPA.

(8) Coordination

The proposed work will be formally coordinated throughout the planning, design, and construction phases with the following agencies:

- U.S. Fish and Wildlife Service (USFWS)
- National Marine Fisheries (NMFS)
- Environmental Protection Agency (EPA)
- Alaska Department of Fish and Game (ADFG)
- Alaska State Historic Preservation Office (SHPO)
- National Park Service (NPS)

The design will be coordinated with and reviewed by the above listed agencies and their recommendations will be considered and implemented, as appropriate. In accordance with *Procedures for Implementing NEPA*, *Emergency Actions* (ER 200-2-2, paragraph 8), when responding to emergency situations to prevent or reduce imminent risk of life, health, property, or severe economic losses, district commanders may proceed without the specific documentation and procedural requirements of other sections of this regulation.

During design, USACE will determine and document the APE for both direct and indirect effects on historic properties. USACE will coordinate with the SHPO, the NPS, and Alaska Native Tribes and ANCs for review and comments, as required at 36 CFR § 800.4 of the regulations implementing Section 106 of the NHPA.

15. References

Buzzell R.G. 2004. A History of the Skagway River. Office of History and Archaeology Report No. 99, Division of Parks and Outdoor Recreation. Alaska Department of Natural Resources, Anchorage, AK.

Giefer J., Graziano S. 2023. Catalogue of waters important for spawning rearing, or migration of anadromous fishes – Southeastern Region, effective June 15, 2023. Alaska Department of Fish and Game, Special Publication No. 23-04. Alaska Department of Fish and Game, Anchorage, AK.

16. Interagency Levee Task Force (ILTF)

HQUSACE has not directed activation of an ILTF for the flood event associated with the September/October 2022 floods in Southeast Alaska.

17. Project Management

a. Funding Authority

(1) Program and Appropriation: FCCE, 96x3125
(2) Project Funding Class: 310
(3) Project CWIS Number: 516890

b. Project Repair Schedule

RESPONSIBLE PARTY	MILESTONE TASKS	MILESTONE DATE
USACE	PIR Approval	01 January 2024
USACE	E&D Funding Received	01 February 2024
USACE	ER Start Environmental Documentation	01 February 2024
USACE	Cooperation Agreement (CA) to Public Sponsor	01 April 2024
USACE	Survey Data Received	01 June 2024
USACE	Sign CA	15 July 2024
USACE	E&D Complete	01 September 2024
USACE	EC Memo signed by District Commander	01 October 2024
USACE	Environmental Documentation Complete	01 February 2025
USACE	Real Estate Certifies Lands	01 March 2025
USACE	Advertise IFB	01 April 2025
USACE	Award Construction	15 June 2025
USACE	Start Physical Construction	01 October 2025
USACE	Complete Construction	15 March 2026

c. Project Authentication

- Program Management: Lori Scalis, (907) 753-5634
- Project Management: Ronnie Barcak, (907) 753-5755
- Emergency Management approval: Herschel Deaton, (907) 753-5588

d. Technical Points of Contact

- Technical Lead/LSPM - Hydraulics and Hydrology: Olivia Jobin, (907) 753-2770
- Geotechnical Engineer: Justin Miller, (907) 753-2577
- Emergency Management: Daniel Allard, (907) 753-2871
- Environmental Resources: Fern Spaulding, (907) 753-2693
- Cultural Resources: Kelly Eldridge, (907) 753-2672
- Cost Engineer: Danielle Perkins, (907) 753-5675
- Economics: Megan Green, (907) 753-2524
- Planning: Phillip Martinez, (907) 753-5788
- Real Estate: Ronald Green, (907) 753-2848

Municipality of Skagway
GATEWAY TO THE KLONDIKE
P.O. BOX 415 SKAGWAY, ALASKA 99840
(PHONE) 907-983-2297 – Fax 907-983-2151
WWW.SKAGWAY.ORG

August 16, 2023

U.S. Army Engineer District, Alaska
ATTN: CEPOA-EM
P.O. Box 6898
Joint Base Elmendorf-Richardson, Alaska 99506-0898

Dear Sir:

This letter is to seek the assistance of the U.S. Army Corps of Engineers under PL 84-99 Rehabilitation Program, as amended, in reducing the threat of damages along the Skagway River Levee in the vicinity of Skagway, Alaska.

The Skagway River Levee Rehabilitation project will construct high-performance resilient infrastructure to mitigate future risk and vulnerability from impacts of climate change, improving the levee's ability to withstand natural disasters due to high volumes of precipitation, erosion, and ground disturbance. The US Army Corps of Engineers inspected the levee in 2022, and one of the main deficiencies noted was erosion of the revetment, which was deemed "unacceptable." Rehabilitation of the levee will prevent further damage and protect the airport runway and community from flooding due to extreme weather events.

The project mitigates the potential for future economic injury, strengthens local and regional capacity to troubleshoot and address vulnerabilities in the regional economy, and addresses current and future risks to the transportation industry. Skagway residents can only reach Juneau by small plane or boat. The airport is a critical piece of infrastructure for the local and regional economy, providing for resident travel to Juneau for medical care for vulnerable populations, job training and work opportunities, and the delivery of US Postal Service mail. The airport also facilitates the transportation of visitors to the community, which contributes significantly to the local and regional economy. Rehabilitation of the MOS levee assures the economic resiliency of the community, which relies on the airport for critical services and economic stability.

The Skagway River Levee Rehabilitation Project will improve the community's economic resiliency and effectiveness. With proper maintenance, the rehabilitated riprap revetment of the levee will remain in place for the next 25 to 30 years, preventing flooding and bank erosion. A rehabilitated levee will protect transportation routes for the delivery of critical services (including access to medical service) and economic benefits over the next decade. Skagway's main economic driver, tourism, will be supported by a functioning and safe airport runway. Skagway

residents will be able to travel to Juneau to get job training, required certifications, and supplies, which all benefit the local and regional economy.

We understand that we would be required to pay a cost share of any studies needed, if there is Federal interest in the rehabilitation project moving forward. We understand that we can obtain Work-In-Kind contribution credit for authorized contributions to the in lieu of monetary contributions. We further understand that we would be required to pay for a percentage of the construction costs. We are able and willing to proceed to construction as soon as possible if a feasible project is found. For further information please contact:

Emily Deach, Deputy Borough Manager
Municipality of Skagway
P.O. Box 415
Skagway, AK 99840
(907) 612-8247
e.deach@skagway.org

Sincerely,

Brad Ryan, Manager
manager@skagway.org

THE STATE of ALASKA
GOVERNOR MIKE DUNLEAVY

Department of Transportation and Public Facilities

SOUTHCOAST REGION
Regional Director's Office

6860 Glacier Highway
P.O. Box 112506
Juneau, Alaska 99811-2506
Main: 907.465.1763
Fax: 907.465.2016
dot.alaska.gov

August 22, 2023

U.S. Army Engineer District, Alaska
ATTN: CEPOA-EM
P.O. Box 6898
Joint Base Elmendorf-Richardson, Alaska 99506-0898

Re: Skagway River Airport Levee Repairs
PL 84-99 Study Request

The State of Alaska, Department of Transportation and Public Facilities (DOT&PF) is requesting US Army Corps of Engineers assistance under PL 84-99 Rehabilitation Program, as amended in the restoration and/or remediation of the Skagway River Levee within the DOT&PF owned and maintained Airport property located in Skagway, Alaska.

The Skagway River Levee was originally constructed by the US Army Corps of Engineers and substantial portions thereof subsequently incorporated into the DOT&PF Skagway Airport facility. The levee is directly adjacent to the airport runway. Ongoing damage is evident at several locations due to recent river flow events. The US Army Corps of Engineers inspected the levee in 2022. The primary deficiencies noted were significant erosion of the revetment in several areas. Further erosion and resulting deterioration of this flood control structure will render significant damage and potential loss of the airport runway which will then pose other aviation safety concerns. The Skagway Airport is an important and vital transportation link to the community of Skagway. Rehabilitation of the levee will protect the airport runway and the community of Skagway (neighboring properties) from flooding due to extreme weather events and associated river flows.

It is our understanding that your initial study would not require a local match or cost sharing but further project development actions by the US Army Corps would require cost sharing by the local sponsor and construction phases should this project be advanced. No funds have been allocated by DOT&PF at this time for this project and as such this letter is not a commitment to fund further project development efforts at this time. However, we will certainly endeavor to explore all local sponsor funding possibilities should the US Army Corps determine Federal eligibility under the PL 84-99 rehabilitation program.

We understand that we would be required to pay a cost share of any design or studies needed if there is Federal interest in the rehabilitation project moving forward. We understand that we can obtain Work-In-Kind contribution credit for authorized contributions to the in lieu of monetary contributions. We further understand that we would be required to pay for a percentage of the construction costs. We are able and willing to proceed to design and construction as soon as possible if a feasible project is found.

Feel free to contact us if you need any additional information or have questions. We have engineering experience and local knowledge at this location, hydraulic expertise on staff and other information on file that may of beneficial use in your study efforts.

Our designated contact person for this effort will be:

Kirk Miller, PE
Regional Preconstruction Engineer
DOT& PF / Southcoast Region
PO Box 112506
Juneau, Alaska 00811-2506

Thank you for your attention and consideration and we are look forward to partnering with the US Army Corps of Engineers on this important project.

Sincerely,

DocuSigned by:

2E12E08EE6670418

8/24/2023

Christopher Goins, PE
Regional Director

cc: Vicky Roberts, Deputy Regional Director
Marie Heidemann, Regional Planning Chief
City of Skagway

Appendix B – Project Location: Skagway, Alaska

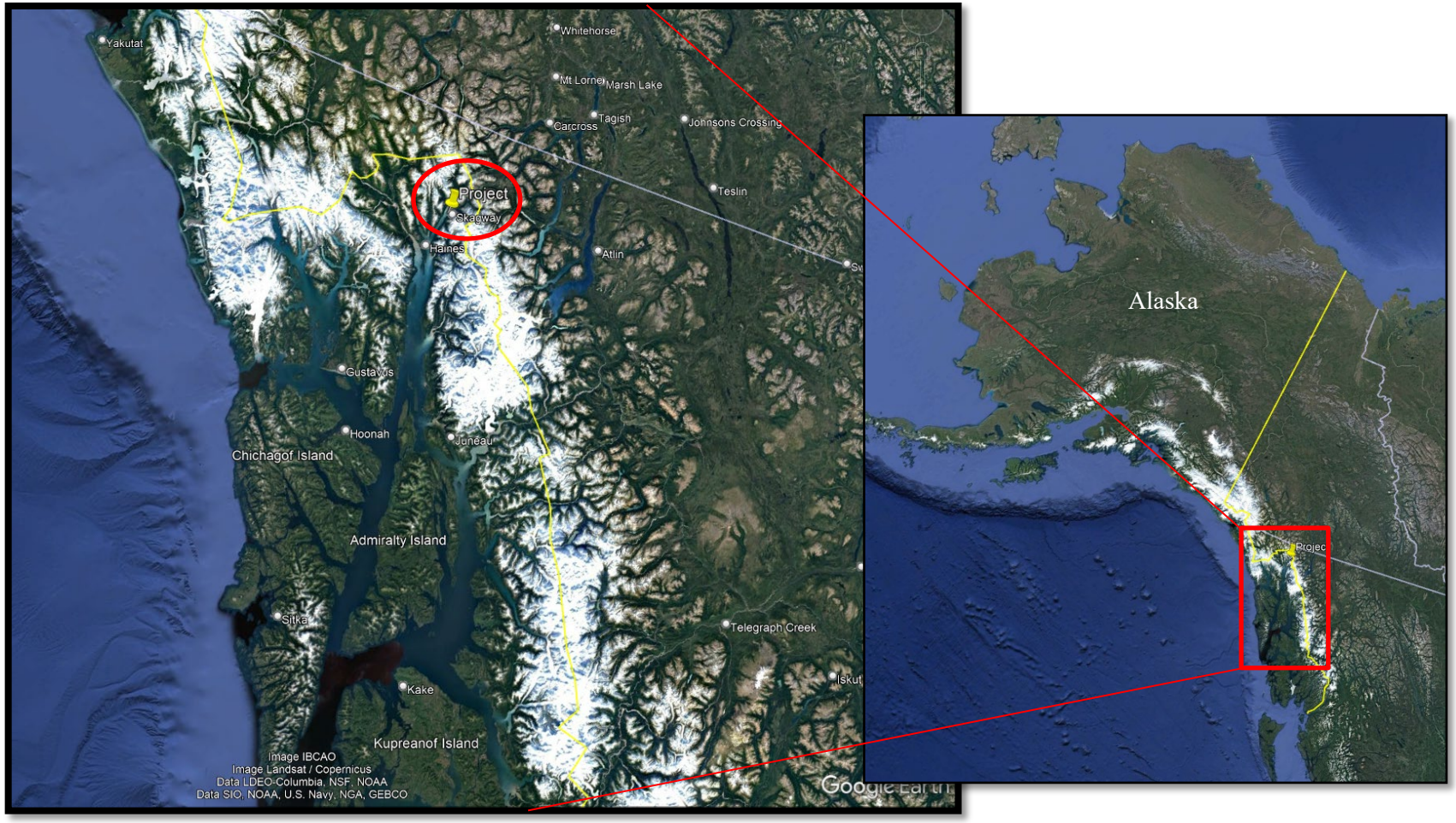

Figure 3 – Project Vicinity Map.

Figure 4 – Skagway River Levee System and Leveed Area.

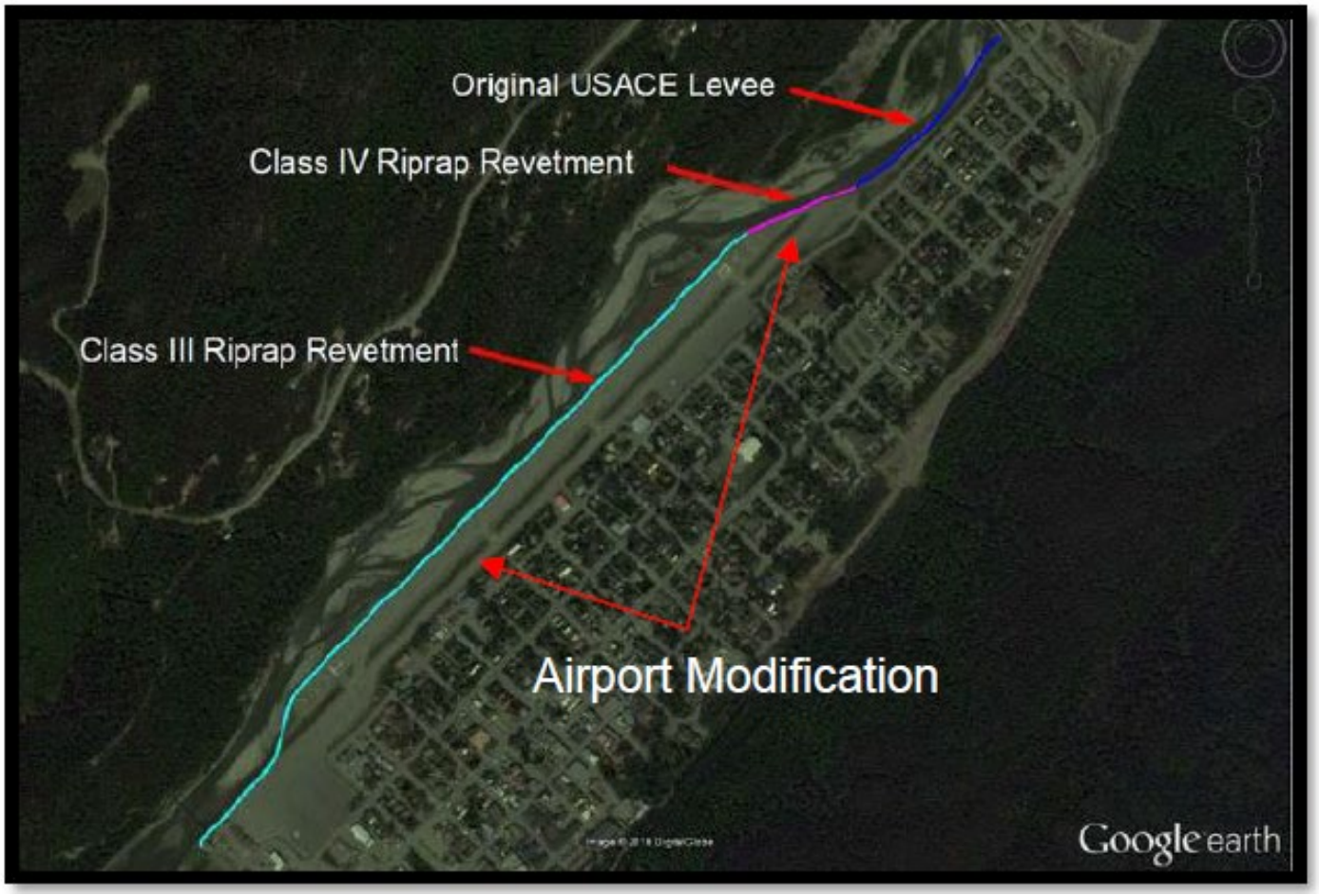

Figure 5 – Components of the Skagway River Levee.

Appendix C – Photographs of Skagway River Levee Damages

Figure 6 – Erosion along toe where airport modification was complete in 2001. Area should have a 13-foot-wide toe and the toe is only roughly 3 feet wide in this section.

Figure 7 - Erosion along toe where airport modification was complete in 2001. Measured 5 feet of scour in this location.

Figure 8 – One of the areas along the levee where the toe is completely gone from erosion. Scour and undermining of the structure is beginning to occur.

Figure 9 – Toe has been completely eroded along this stretch of the levee with slopes near vertical. Embankment is starting to slide.

Appendix D –Cross-Sectional Views from Original Designs

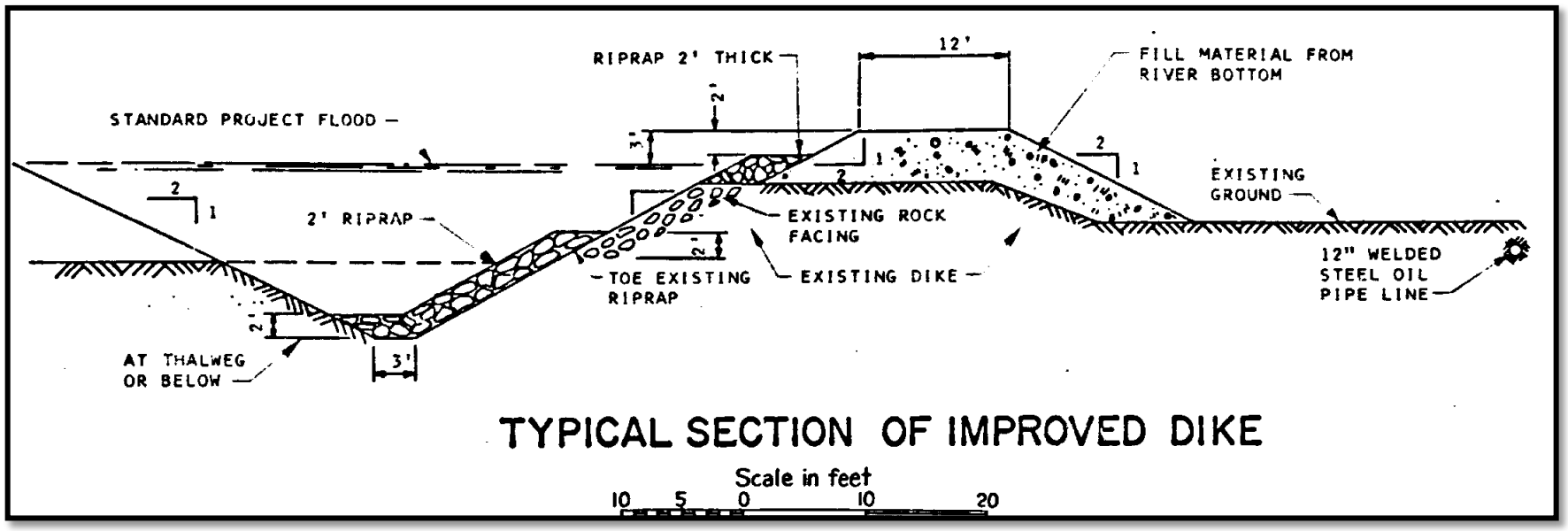

Figure 10 – Typical Cross Section from Original Levee Design completed by the USACE in 1940.

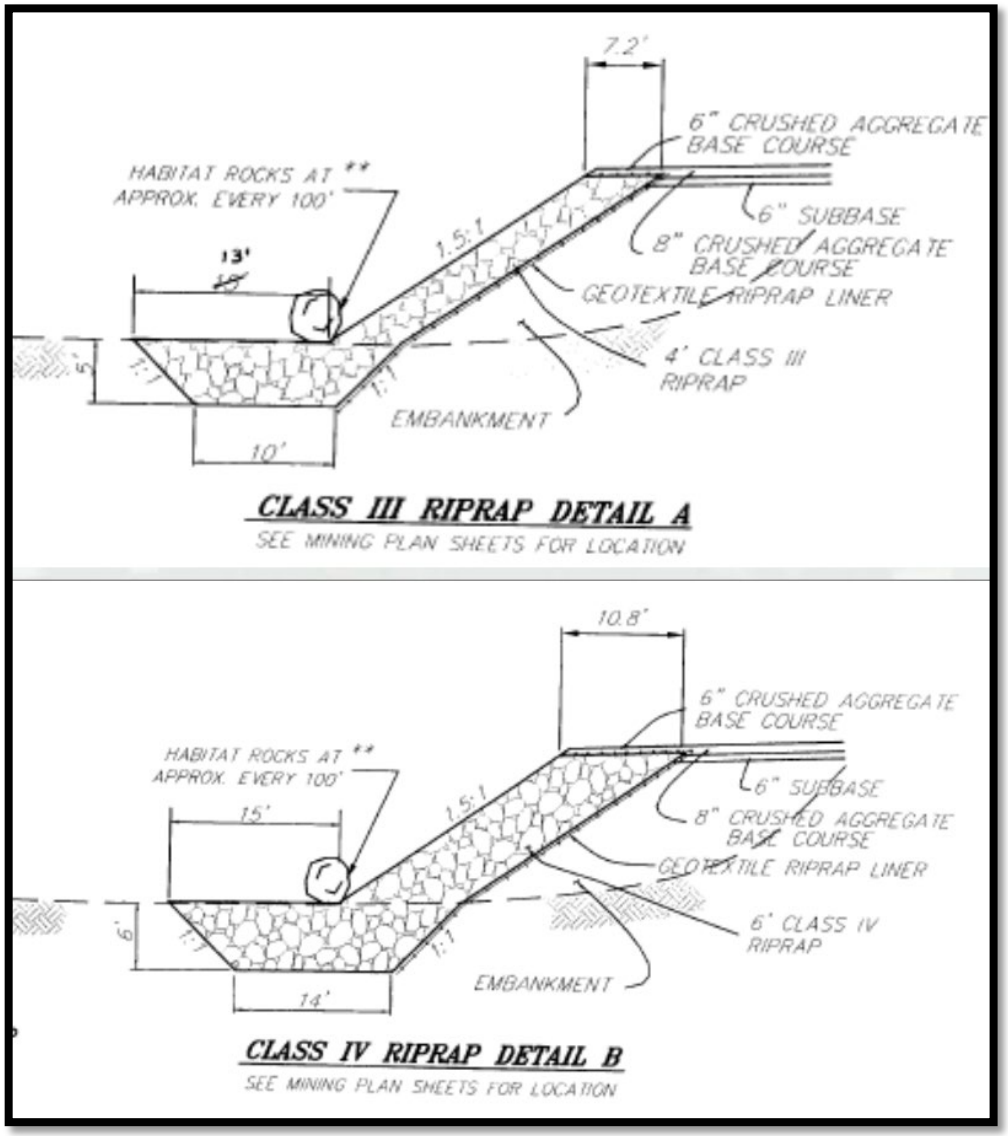

Figure 11 – Typical Cross Section for Class III and IV Rip Rap Design from 2001 Airport Modification.

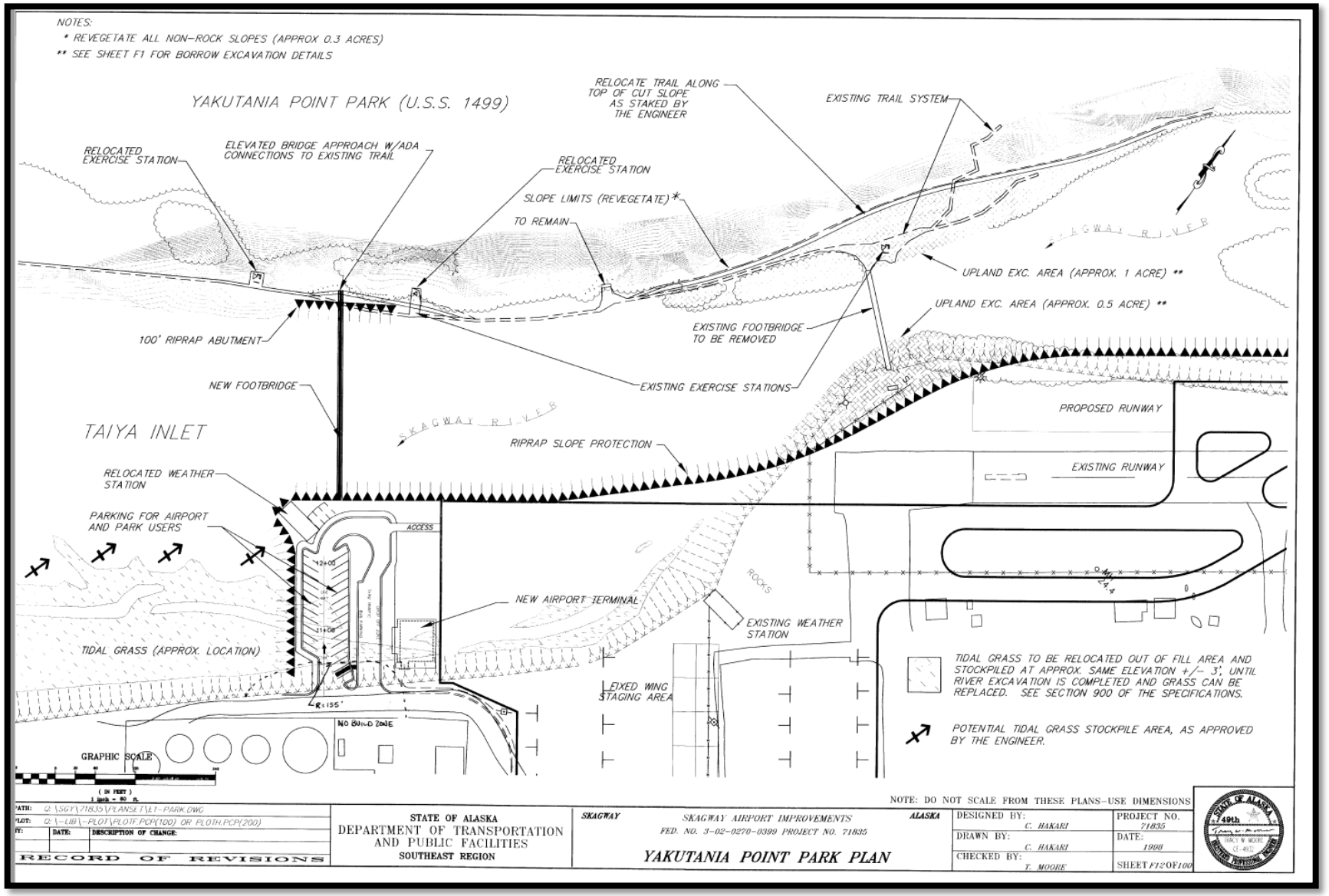

Figure 12 - 2001 Skagway Airport Improvements Plan View (1 of 3).

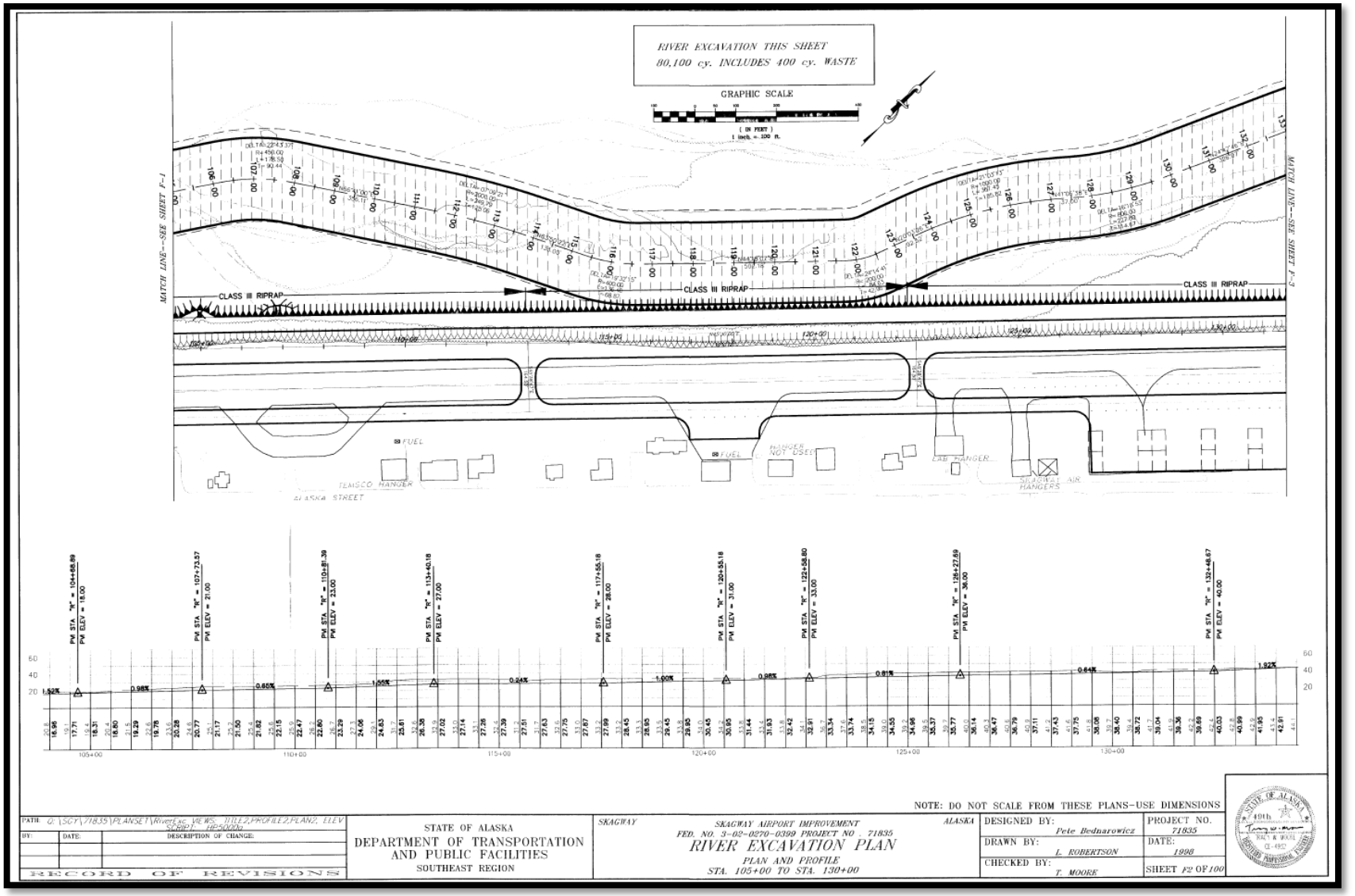

Figure 13 - 2001 Skagway Airport Improvements Plan View (2 of 3).

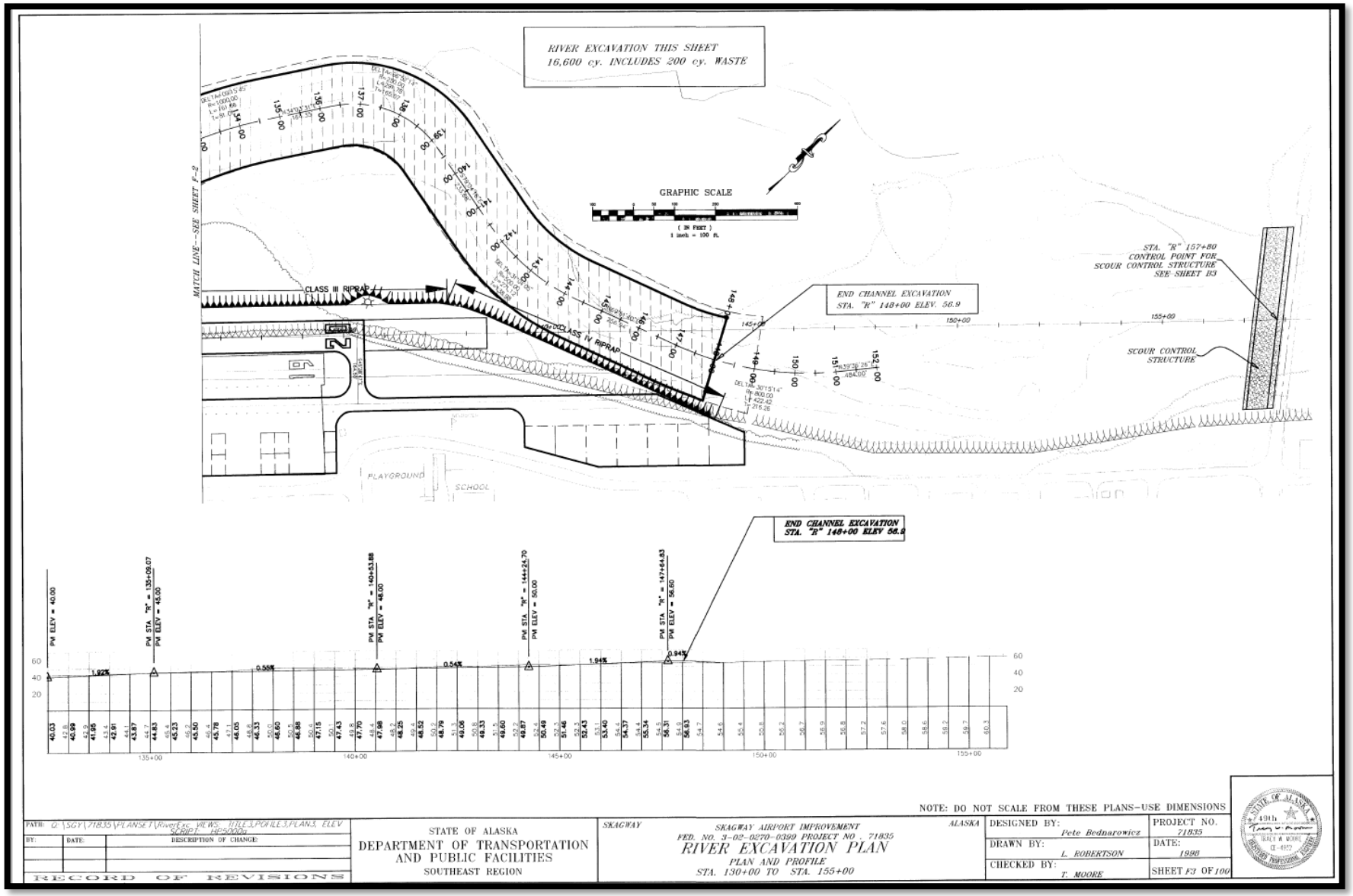

Figure 14 - 2001 Skagway Airport Improvements Plan View (3 of 3).

Appendix E – Repair Site Location and Plan Views

Figure 15 – Repair Site Locations.

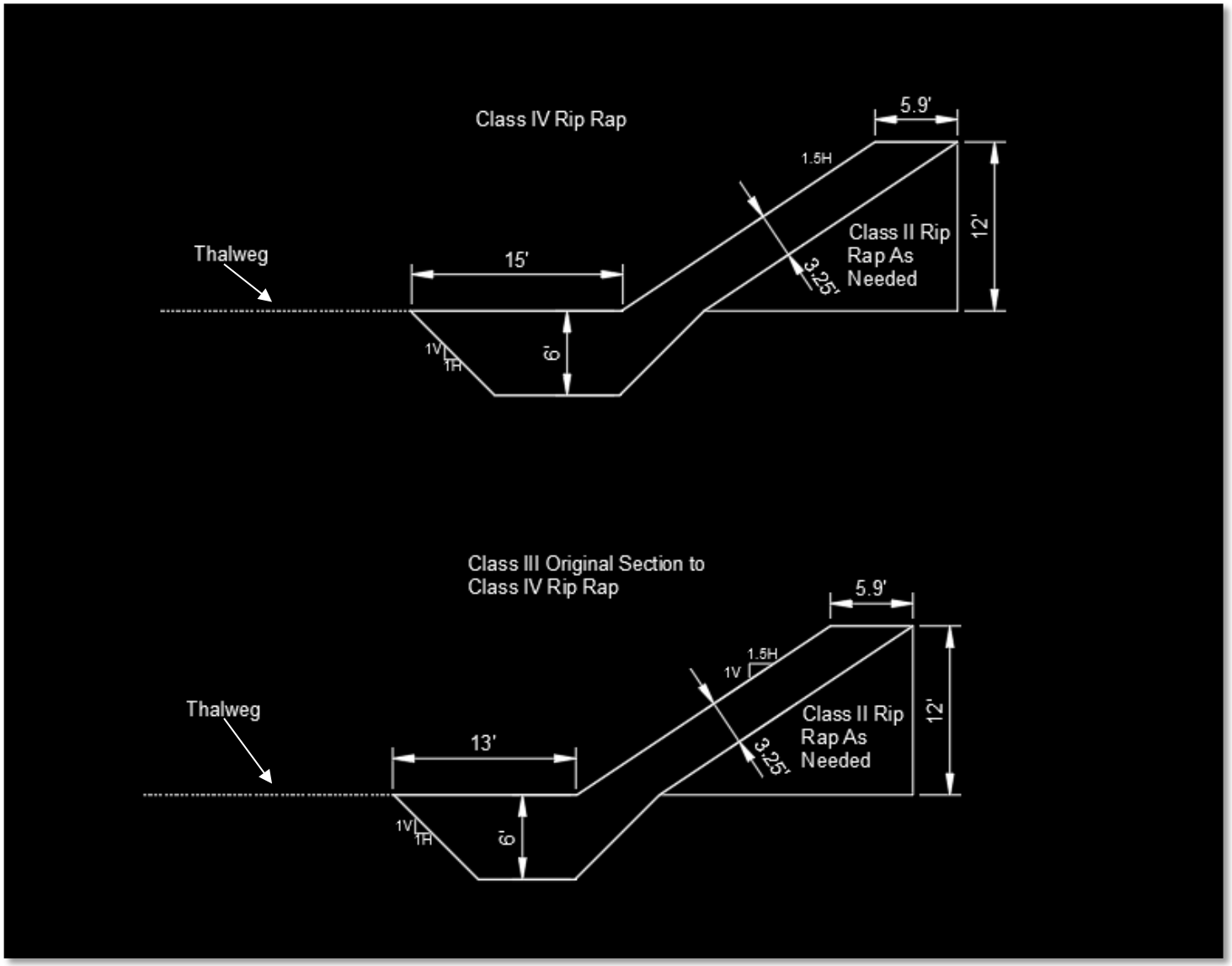

Figure 16 – Cross Sectional View for Levee Repairs along Skagway Runway.

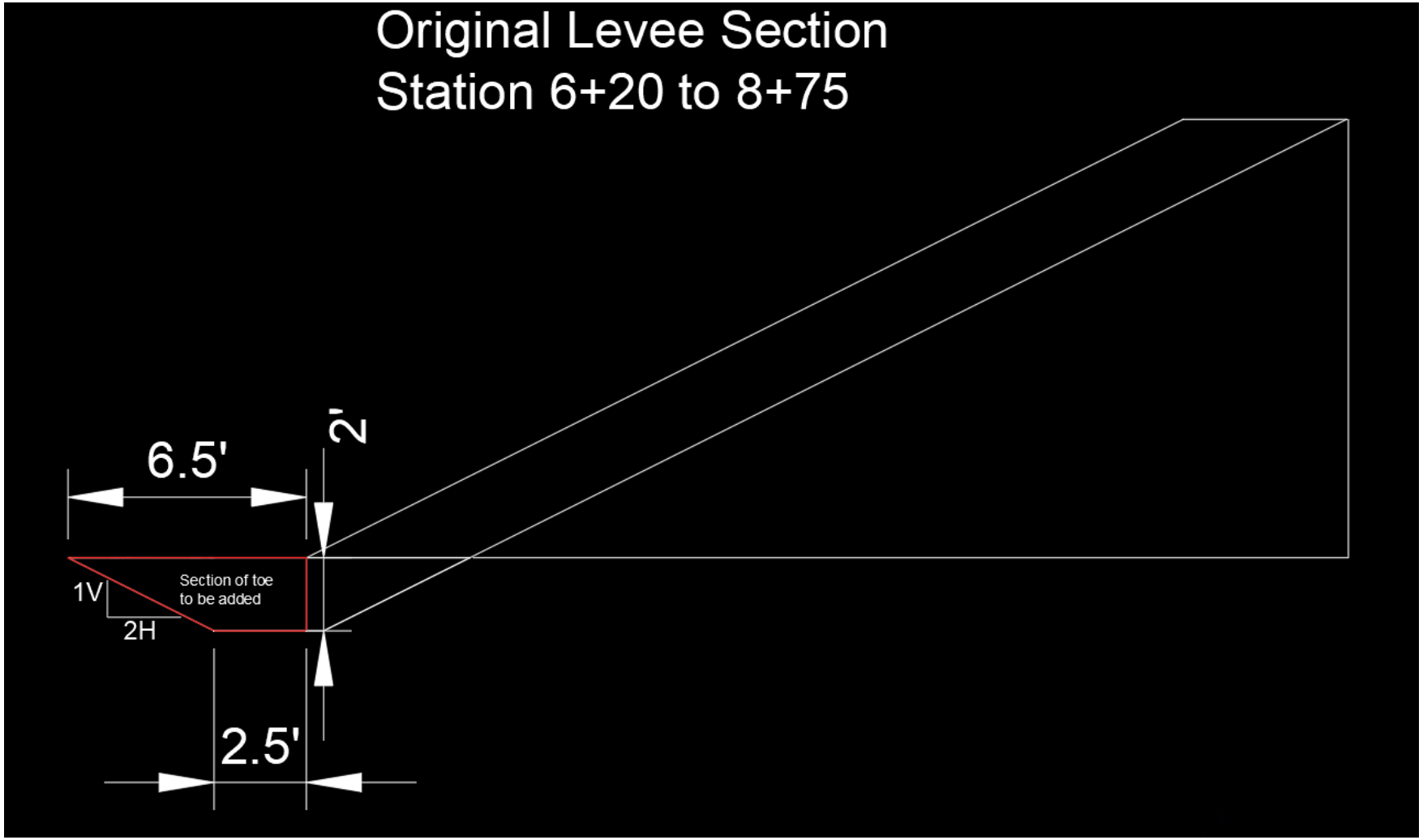

Figure 17 – Cross Sectional View of Original Levee Section Repairs.

PROJECT INFORMATION REPORT
REHABILITATION OF FLOOD CONTROL WORKS
SKAGWAY RIVER LEVEE

Appendix F – PIR Review Checklist for Repair of FCW Rehabilitation Projects

PIR Review Checklist for FRM Rehabilitation Projects

	YES	NO	N/A	
1.	☑	☐	☐	The project is active in the Rehabilitation Program. [ER, 5-2.a.]
2.	☑	☐	☐	The project was damaged by flood(s) or coastal storm(s). [ER, 5-2.]
3.	☑	☐	☐	The Public Sponsor has requested Rehabilitation Assistance in writing. [EP, 5-10.b.]
4.	☑	☐	☐	The Public Sponsor has agreed to sign the Cooperation Agreement, which will occur before USACE begins rehabilitation work. [ER, 5-10.]
5.	☑	☐	☐	The estimated construction cost of the rehabilitation is greater than $15,000, and is not considered sponsor maintenance. [ER, 5-2.q.]
6.	☑	☐	☐	The repair option selected is the option that is the least cost to the Federal government, or, the sponsor's preferred alternative is selected with all increases in cost paid by the public sponsor. PIR includes justification for non-select of the least cost alternative. [ER, 5-2.h. and 5-11.e.(3)]
7.	☑	☐	☐	The public sponsor is aware of the opportunity to seek a nonstructural alternative project, and has decided to proceed with a structural rehabilitation. [ER, 5-16]
8.	☑	☐	☐	The cost estimate in the PIR itemized the work to identify the Public Sponsor's cost share. [ER, 5-11]
9.	☑	☐	☐	The rehabilitation project has a favorable benefit cost ratio of greater than 1.0:1. [ER, 5-2.r.]
10.	☑	☐	☐	The proposed work will not modify the FRM project to increase the degree of protection or capacity, or to provide protection to a larger area. [ER, 5-2.n.]
11.	☐	☐	☑	Betterments are paid 100 percent by the Public Sponsor. [5-2.o.]
12.	☑	☐	☐	The CA contains a provision for 80% Federal and 20% local cost share for non-Federal projects. [ER, 5-11.a.]
13.	☐	☐	☑	Cost for any betterments are identified separately in the cost estimate. [ER, 5-2.o.]
14.	☐	☐	☑	Repair of deliberate levee cuts is the responsibility of the public sponsor, except as provided for in ER 500-1-1, paragraphs 5-2.j. and 4-3.h. [ER, 5-2.j. and 4-3.h.]
15.	☑	☐	☐	All deficient and deferred maintenance will be paid for or accomplished by the Public Sponsor, without receiving credit toward any sponsor's cost share. [ER, 5-2.g.]
16.	☐	☐	☑	Any relocation of levees is adequately justified. [ER, 5-2.h.]
17.	☑	☐	☐	USACE assistance does not correct design or construction deficiencies. [ER, 5-12.a.]

Z-1

PIR Review Checklist for FRM Rehabilitation Projects

	YES	NO	N/A	
18.	☑	☐	☐	An assessment of environmental requirements was completed. [ER, 5 13., and EP, Figure 5-3, paragraph 12.]
19.	☑	☐	☐	NEPA requirements have been satisfied and required documentation has been completed and placed in Appendix XX of the PIR or NEPA requirements will be satisfied prior to the funds transmittal of construction phase activities (and supplemented to this PIR) including invocation of emergency procedures for NEPA (in which case documentation in Appendix XX will include approval of emergency procedures and any coordination with other Federal Agencies). [ER, 5-13., and EP, Figure 5-3, paragraph 12.]
20.	☑	☐	☐	The Endangered Species Act was appropriately considered and applicable requirements have been satisfied or will be satisfied prior to the funds transmittal of construction phase activities (and supplemented to the PIR). When emergency circumstances mandate, ESA Section 7 consultation may be conducted informally through alternative procedures with formal consultation completed after construction consistent with 50 CFR 402.05. Dredging will not be adversely affected. [ER, 5-13.g., and EP, Figure 5-3., paragraph 12.]
21.	☑	☐	☐	EO 11988 requirements were considered in the process of evaluating the proposed project for rehabilitation or will be considered prior to the funds transmittal of construction phase activities (and supplemented to the PIR). [ER, 5-13.f., and EP, Figure 5-3, paragraph 12.]
22.	☑	☐	☐	The completed PIR has been reviewed and the PIR Checklist has been reviewed and signed by the Emergency Management Office. [EP, 5-11.a.(3)(a)]
23.	☑	☐	☐	The completed PIR meets all policy, procedural, content, and formatting requirements of ER 500-1-1 and EP 500-1-1. [ER, 2-3.b]

EM Reviewing Official's Signature

DEATON.HERSCHEL.JAY.1103531566

Digitally signed by DEATON.HERSCHEL.JAY.1103531566
Date: 2023.11.27 07:00:06 -09'00'

Name Herschel Deaton

Title Chief of Emergency Management

Phone Number 907-753-5588