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November 4, 2022

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Department of Water Resources
Post Office Box 942836
Sacramento, CA 94236-0001

Subject: Revised Five-Year Plan
Reclamation District No. 2026, Webb Tract

Dear Ms. Lobato:

On behalf of Reclamation District No. 2026, attached is the final draft of Reclamation District No. 2026, Webb Tract, Five-Year Plan (Plan). The final Plan includes maps, cost estimates, cross-sections, background literature, DWR comments and the District's response to the comments.

If you have any questions, please call me at (916) 456-4400.

Sincerely,
MBK ENGINEERS

Nate Hershey, P.E.

BJ
4280-18 ANDREA LOBATO 2022-11-04

cc: Reclamation District No. 2026
Mr. David A. Forkel (w/o attachments)

November 4, 2022

RECLAMATION DISTRICT NO. 2026 WEBB TRACT

2022 FIVE–YEAR PLAN

PRESENTED BY: MBK ENGINEERS
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SACRAMENTO, CA 95825

TABLE OF CONTENTS

List of Tables

List of Abbreviations

AB – Aggregate Base
CDFW – California Department of Fish and Wildlife
CEQA – California Environmental Quality Act
DFG – California Department of Fish and Game
DRMS - Delta Risk Management Strategy
DWR – California Department of Water Resources
EIR/S – Environmental Impact Report/Statement
FEMA – Federal Emergency Management Agency
HMP – Hazard Mitigation Plan
LAFCO – Local Agency Formation Commission
LiDAR – Light Detection and Ranging
LHA – Levee Habitat Assessment
PG&E – Pacific Gas and Electric
NGVD – National Geodetic Vertical Datum
USACE – United States Army Corps of Engineers
RMA – Routine Maintenance Agreement

Appendices

Appendix A – Maps and Exhibits
Appendix B – Typical Cross Sections, Levee Profiles and Cross Sections
Appendix C – Cost Estimates
Appendix D – Habitat Assessment
Appendix E – Response to Comments

Section 1. Executive Summary

EXECUTIVE SUMMARY

Reclamation District No. 2026 (District), Webb Tract, has prepared this Five-Year Plan (Plan) to support future planning efforts by the California Department of Water Resources (DWR) and local agencies. This plan is comprised of historical knowledge of the District, as well as recent findings and analysis to describe its existing conditions and future plans. This document will serve as a guide for future project development for the District.

The District's goal has been to attain and maintain its levee system at or above a sustainable minimum levee standard. The District's levee system consists of approximately 12.93 miles of non-project levee in the Delta primary zone, including 5.83 miles along the left bank of the San Joaquin River, 1.85 miles along Fisherman's Cut, 4.19 miles along False River, and 1.06 miles along Old River. The existing levee system generally meets the minimum elevation requirements of the Federal Emergency Management Agency's (FEMA) Short Term Hazard Mitigation Plan[1] (HMP) for an agricultural levee in the Sacramento-San Joaquin Delta (Delta). The District continues to maintain this minimum geometry to remain eligible for federal assistance in the event of a disaster. The District's long-term rehabilitation plans incorporate an increase in the levee dimensions based on geotechnical recommendations to achieve DWR's Bulletin 192-82[2] levee standard, as well as improve overall levee integrity.

With 100 percent cost share from DWR, and approval from the California Department of Fish and Wildlife (CDFW) and other agencies to proceed with planning, documentation, and design, the District can complete all rehabilitation to meet a sustainable Bulletin 192-82 levee standard within five years, subject to funding. To meet the adopted standard, the District will need roughly 694,000 cubic yards of onsite fill and 52,900 tons of imported aggregate base (Appendix B, Quantity Estimate). Engineering, planning, and construction are expected to cost an estimated $18.7 million (Appendix C, Cost Estimate) if onsite borrow material is available. This plan assumes funding will be available under the Delta Levees Special Flood Control Projects Program, also referred to as Special Projects, as the District implements rehabilitation over the identified five-year period. DWR's involvement and any other agencies willing to contribute funding will help the District achieve their goal.

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[1] HMP criteria are requirements to qualify for future federal disaster assistance. Minimum criteria include (1) levees shall have a 1' of freeboard above the 100-year flood frequency elevation, as provided by the USACE; (2) the minimum crown width shall be at least 16'; (3) waterside slopes shall be at least 1.5 horizontal to 1 vertical with revetment in areas where erosion has been a problem; (4) landside slope shall be at least 2 horizontal to 1 vertical, with flatter slopes in the lower portion of the levee in areas where soil stability and seepage have been problems; and (5) the levees shall have all-weather access roads.

[2] Bulletin 192-82 standards are levee standards established by Bulletin 192 published by DWR in December 1982. Minimum standards include (1) levees shall have a 1.5' of freeboard above the 300-year flood frequency elevation, as provided by the USACE; (2) the minimum crown width shall be at least 16'; (3) waterside slopes shall be at least 2 horizontal to 1 vertical with revetment in areas where erosion has been a problem; (4) landside slope shall be at least 3 horizontal to 1 vertical, with flatter slopes in the lower portion of the levee in areas where soil stability and seepage have been problems; and (5) the levees shall have all-weather access roads.

Section 2. Background

FOREWORD

The levee protecting Webb Tract is maintained by Reclamation District No. 2026 (District). The District was formed in April of 1918 to maintain the District's levee system that protects approximately 5,500 acres of agricultural land, local infrastructure and on-island assets. According to LAFCO, Directory of Local Agencies, August 2019, Webb Tract has one landowner and no residents. There is no transient population.

Webb Tract is located in Contra Costa County in the western Delta, north of Franks Tract and Bethel Island, east of Bradford and Sherman Islands, and south of Twitchell and Brannan-Andrus Islands (Appendix A, Vicinity Map). The District can only be accessed by ferry from Jersey Island, personal watercraft or barge. Transportation infrastructure on the island consists of the perimeter levee as well as several interior farm roads. The location of the District, along the San Joaquin River Deep Water Ship Channel, flooded Franks Tract, and its proximity to the mouth of both Three-mile Slough and the Mokelumne River combine to make the District's reliability and sustainability of significant value to regional and statewide interests (Appendix A, Regional Infrastructure Map).

The 12.9-mile-long levee system protects an important variety of agricultural operations, including approximately 4,000 acres of corn and wheat (Appendix A, District Infrastructure Map). Total assets are estimated at $416,000 based on the Delta Risk Management Strategy (DRMS) Phase 1 analysis, Section IV. This does not include the land value which is estimated to be approximately $33.8 million according to 2020 data obtained from the Contra Costa County Assessor.

The perimeter levee system protects an important variety of habitat, as documented in the EIR/S for the Delta Wetlands Project, dated September 1995, and updated for changes to cropping patterns in 2008. The habitat located on-island includes riparian (105.7 acres), marsh (464.1 acres), herbaceous uplands (534.6 acres), and open water (155.4 acres). Some agricultural operations are seasonally flooded over the fall and winter (Draft Place of Use Environmental Impact Report, 2010).

In accordance with FEMA's Short-Term HMP requirements, the District rehabilitated its levee to the HMP criteria in the early 1990s. The District maintains its levee at or above the HMP standard levee elevation (Appendix B, Typical Cross Section). There is also a well-maintained all-weather road around the District. Given the existing peat foundation thickness present in this area of the Delta, the perimeter levee system is susceptible to foundation consolidation thus requiring maintenance to comply with the HMP short-term criteria.

The District's long-term goal is to attain and maintain its levee at or above the DWR Bulletin 192-82 standard for an agricultural levee. Prior to project implementation, the District's geotechnical engineer provides design recommendations for sustainably meeting the selected design standard for an extended period of time based on the existing site conditions. This plan

was prepared based on typical design parameters utilized in past projects, and the District can reasonably expect similar design criteria for future projects. Based on these assumptions, several miles of levee require rehabilitation to meet these standards and to protect the resources and key infrastructure on the island. The District is working aggressively to rehabilitate its levee and has identified high priority reaches of levee requiring rehabilitation.

The District's levee system is important to statewide planning as it is one of the eight western Delta islands determined by DWR to be critical to maintaining water quality in the Delta. A breach in the levee system could result in an unacceptable increase in salinity in the western Delta. This Plan describes the District's intent to reach a sustainable Bulletin 192-82 levee standard within a five-year period. The ability of the District to meet this standard within five years is entirely dependent on funding support from DWR.

Assessment of the Status of the Existing Levee System

The District's levee system has historically protected the island from flooding or severe overtopping. There have been multiple instances of seepage or erosion, which have been repaired and improved to maintain the integrity of the levee. The District currently maintains its levee by utilizing funds within the Delta Levees Maintenance Subventions Program (Subventions Program). The District has also performed large rehabilitation projects under the Special Projects Program as recent as 2013. The District's goal is to progress towards complete rehabilitation to sustainably meet or exceed the Bulletin 192-82 levee standard. The cost and effectiveness of recent projects indicate that full rehabilitation is attainable within five years with adequate funding from DWR.

Historical Flood Issues

Webb Tract has flooded twice since 1900; first in June 1950 and again in 1980. A levee breach created the northern lake in 1950. Flood waters rushing through a levee breach on January 18, 1980, created the blowout pond on the east end of the island. The condition of the levees at the time of the breaches is unknown. Both levee failures resulted in deep flooding of the island for an extended period of time. Water was not drawn down completely from the 1980 event until February 1981 (Final EIS, Delta Wetlands Project, 2001).

Existing Level of Protection Provided by Levee System

In 1989, the District surveyed its levee as required by FEMA. It was found that portions of the levee crown were 1 foot below the 100-year flood elevation, or 2 feet below the minimum HMP elevation. In addition, portions of the levee crown roadway were not graveled and impassable when wet. Since the passage of Senate Bill 34 (SB 34) in 1988, the District has raised, and continues to maintain, its levee above the HMP minimum elevation. The District has also constructed and maintains an all-weather gravel access crown roadway around the entire island.

As with any typical Delta island, subsidence of peat has occurred historically on Webb Tract. Generally, subsidence as a result of farming activity does not appear to be occurring close enough to the levee to be of concern from a stability standpoint. The current elevations (2017-2018 DWR Delta LiDAR) of the island are shown in Appendix A, District Elevation Exhibit. The elevations of the island floor generally range from 5 feet to -25 feet (NGVD 29 Datum).

Recent rehabilitation projects have raised and widened the levee to sustainably meet the Delta specific PL 84-99 standard for an extended period of time. However, areas that have not been recently rehabilitated have very little overbuild above the HMP minimum elevation. Consequently, as the underlying foundation material consolidates, the District must continue to add material to the levee crown to maintain minimum elevation standards. The following table identifies existing levee standard conditions.

TABLE 1. EXISTING LEVEE STANDARD CONDITIONS

Levee Standard	**Stationing** (*feet*)	**Total Length** *(miles)*	**Percent Compliant** (%)
At HMP or Above	0+00 to 682+50	12.9	100
At PL 84-99 or Above	Various	8.0	62
At Bulletin 192-82 or Above	Various	4.1	32

Maps identifying the areas meeting HMP, PL 84-99, and Bulletin 192-82 are included in the appendix. Specific stationing for the levee standard conditions is included in Appendix B. There are no miles of levee meeting FEMA NLIP accreditation requirements. All levee work completed has utilized the Subventions and Special Projects Programs since the inception of the Programs.

PREVIOUS FIVE-YEAR PLAN PROGRESS REPORT

SUMMARY OF PREVIOUSLY SUBMITTED FIVE-YEAR PLAN

In 2009, the District's Five-Year Plan consisted of 5 phases of future improvements. At the time of submittal, Phase 1 (Appendix A, Project Phasing Map), included the north levee along the San Joaquin River from Station 438+00 to 505+00. Phase 2 consisted of the south levee adjacent to Franks Tract, from Station 50+00 to Station 230+00. Phase 3 included the east and north levee sections along the San Joaquin River from Station 320+00 to 432+00. Phase 4 included the east levee from Station 230+00 to 320+00. Finally, Phase 5 encompassed the west and south levee sections along Fisherman's Cut and False River, from Station 0+00 to 50+00 and 593+00 to 682+50.

STATUS OF PROJECTS SUBMITTED IN 2009 FIVE-YEAR PLAN

Since submitting the 2009 Five-Year Plan, the District completed what was identified as Phases 1 and 2. Table 2 below provides a summary of the status of the previously proposed projects. Work that was not completed under the 2009 Five-Year Plan has been included and prioritized in the 2020 Five-Year Plan.

TABLE 2. STATUS OF 2009 FIVE-YEAR PLAN PROJECTS

2009 Phase	Standard	Stationing (*feet*)	Completion Date	Objectives Achieved
Phase 1	Sustainable PL 84-99	438+00 - 505+00	September 2013	Rehabilitated levee; splash berm in designated areas for added protection; encroachments removed
Phase 2	Sustainable PL 84-99	50+00 - 230+00	September 2013	Rehabilitated levee; splash berm in designated areas for added protection; encroachments removed
Phase 3	Sustainable PL 84-99	320+00 - 432+00	Work Not Completed	N/A
Phase 4	Sustainable PL 84-99	230+00 - 320+00	Work Not Completed	N/A
Phase 5	Sustainable PL 84-99	0+00 - 50+00 593+00 - 682+50	Work Not Completed	N/A

Objectives not achieved were primarily a result of a lack of funding. Adequate funding is necessary for the District to achieve future objectives.

HISTORY WITH THE DELTA LEVEES PROGRAM

PARTICIPATION WITH DELTA LEVEES SPECIAL PROJECTS & MAINTENANCE SUBVENTIONS PROGRAMS

The District is a long-time participant in both the Delta Levees Special Projects and Delta Levees Maintenance Subventions Programs. California Water Code Section 12311(a) directed the Department to "develop and implement a program of flood control projects on Bethel, Bradford, Holland, Hotchkiss, Jersey, Sherman, Twitchell, and Webb Islands…," collectively referred to as the eight western islands. Levee improvements on these islands have been identified as a priority, and the District has participated in the Special Projects Program since its inception and the Subventions Program since 1988. The District completed rehabilitation of

approximately 4.7 miles of levee in September 2013 under the Special Projects Program, identified above as Phases 1 and 2 in the 2009 Five-Year Plan. This rehabilitation included enhanced components, including an armored splash berm along reaches of levee having a long fetch of open water for added protection. Participation in the Special Projects Program allowed the District to meet the Five-Year Plan objectives in the project areas. Participation in the Subventions Program and the State assistance received enables the District to maintain the levee system in its current configuration. The entire levee system is eligible for participation in both the Special Projects and Subventions Programs.

Section 3. Plan for Flood Protection

Desired Level of Protection and Strategy to Meet Goal

Desired Level of Protection Planned within Five Years

The District's goal is to meet the Bulletin 192-82 levee standard within a five-year period. Each project will have specific design recommendations by the District's geotechnical engineer for sustainably meeting the Bulletin 192-82 standard for an extended period of time. DWR conducted studies of levee design criteria suitable for use in the Delta and published its results in 1983 as DWR Bulletin 192-82. The Bulletin 192-82 cross-section recommendations produce a levee that is designed for a water level with a 1 in 300 annual chance of occurrence, including freeboard of 1.5 feet for levees protecting rural areas and freeboard of 3 feet for levees protecting urban areas. The levee system in this case directly protects rural areas, although indirectly facilitates conveyance of fresh water to extensive urban areas. Meeting a sustainable levee standard will provide the necessary levee improvements to help prevent levee breaches or overtopping, and other catastrophic or emergency events. This standard would also likely enable the District to be eligible for FEMA assistance, potentially providing the ability to leverage federal funds in the event of a disaster. Typical levee cross sections are included in Appendix B.

Historically, some reaches of the levees on Webb Tract have incorporated a splash berm which effectively increases freeboard where long wind fetches and high wave action have the potential to occur. The splash berm provides added protection against wave runup and erosion in reaches subject to long wind fetch, and with the Bulletin 192-82 standard provides sufficient freeboard to meet urban criteria.

Extra levee width is provided to accommodate the berms, and additional levee height can be added to achieve or maintain the Bulletin 192-82 standard. This also adds protection against seismic failures and provides a more effective flood fighting platform. This option is typically considered during the design process, utilizing analysis of site-specific characteristics and should be implemented where appropriate.

It should be noted that as the District implements projects to meet the Bulletin 192-82 standard, the levees will also meet the U.S. Army Corps of Engineers PL 84-99 guidelines for rehabilitation of non-federal levees in the Delta, including waterside slopes of 2:1 minimum, landside slopes of 3:1 to 5:1 depending on depth of peat, a 16-foot minimum crown width, 1.5 feet of freeboard above the 100-year flood elevation and a toe drain at a prescribed distance from the landside toe.

Phasing of Work and List of Proposed Projects

The District has phased the work for the Plan according to the existing conditions of the levee structure as well as its geographic location (Appendix A, Project Phasing Exhibit and Appendix B, 500 Foot Conceptual Design Cross Sections). Reaches that currently have lower crown elevations and relatively narrow crown widths or experience stability issues are a higher priority

than other areas. The geographic location of a levee reach is also considered. An example of why this is important is a levee reach that exists adjacent to a wide expanse of open water may be subject to more harsh environmental conditions (e.g., increased wind and wave erosion) than other areas of the levee system.

The proposed rehabilitation plan consists of four phases of construction. It should be noted that the proposed phasing can be modified based on the availability of funds and is intended for use as a planning tool only. The first three phases of construction will consist of full rehabilitation of the levee. The final phase of construction includes portions of the levee system that require minimal rehabilitation and will consist primarily of aggregate base (AB) placement on the levee crown.

Phase 1 (Project Phasing Map, Exhibit A) will include the east and north levee along the San Joaquin River from Stations 320+00 to 432+00. Phase 2 will include the east levee along the San Joaquin River from 225+00 to 320+00. Phase 3 includes the west levee along Fisherman's Cut from Station 593+00 to 0+00 and the south levee along False River from Station 0+00 to 50+00. Phase 4 will include the south levee along False River from Station 50+00 to 225+00 and the north levee along the San Joaquin River from Station 432+00 to 593+00. Phase 4 involves work on the crown of the levee and will include placing AB on the remainder of the island previously rehabilitated. AB will be placed to meet Bulletin 192-82 elevation criteria.

TABLE 3. PROJECT PHASING (APPENDIX A, PROJECT PHASING EXHIBIT)

Phase	Standard	Description	Stationing (*feet*)	Current Levee Conditions/ Rationale for Prioritization	Target Completion Date	Anticipated Long Term Habitat Impacts/Mitigation
1	Bulletin 192-82	Levee Rehabilitation, Revetment, Habitat Enhancement	320+00 – 432+00	Deficient geometry, displaced revetment	December 2024	No Impacts, Pre-Mitigated
2	Bulletin 192-82	Levee Rehabilitation, Revetment, Habitat Enhancement	225+00 – 320+00	Deficient geometry, displaced revetment	December 2025	No Impacts, Pre-Mitigated
3	Bulletin 192-82	Levee Rehabilitation, Revetment, Habitat Enhancement	593+00 – 0+00 0+00 – 50+00	Deficient geometry, displaced revetment	December 2026	No Impacts, Pre-Mitigated
4	Bulletin 192-82	Crown Fill/AB Only	50+00 – 225+00 432+00 – 593+00	Low crown elevation	December 2027	No Impacts, Pre-Mitigated

Various studies and reports are anticipated for each project phase in this plan, including, but not limited to, geotechnical investigations, environmental studies and documentation, plans and specifications, a comprehensive Scope of Work, and a completion report. Once funding is secured, plans and specifications will be developed, and bidding and construction will commence as soon as possible.

To complete all project phases by the end of 2027, funding must be made available progressively starting with funds for design and construction of Phase 1. Assuming funding is available, each project phase could be completed in one construction season, with planning and engineering occurring in the winter months prior to the commencement of each construction phase. A graphical depiction of the schedule to implement this Plan to attain a sustainable Bulletin 192-82 levee system is included below.

TABLE 4. ANTICIPATED PROJECT TIMELINES

2024	2025	2026	2027
Phase 1			
	Phase 2		
		Phase 3	
			Phase 4

ESTIMATED COST TO ACHIEVE FIVE-YEAR PLAN GOAL

Webb Tract has the ability to utilize on-island borrow material for levee rehabilitation projects. Borrow investigations will be required for each phase of construction to locate areas containing suitable material that can be efficiently excavated and transported.

The estimated onsite fill required for levee rehabilitation under this plan is 694,000 cubic yards. It is anticipated that 52,900 tons of aggregate base will be required to construct an all-weather road surface on the levee crown. The estimated cost to complete all phases of the Plan and successfully build the District's levee to the Bulletin 192-82 standard using onsite fill is approximately $21.3 million. The quantity and cost estimates to attain a sustainable standard around the entire island are included in Appendices B & C. It should be noted that these quantities and costs are planning level estimates and are subject to final design criteria to be determined as engineering for each phase is completed.

The estimated quantity for the District to meet the Bulletin 192-82 standard was calculated utilizing DWR's Delta LiDAR data (2017-2018) for the Sacramento – San Joaquin Delta. Geotechnical investigations have not been completed for future construction; however reasonable design criteria have been assumed. The assumed design criteria enabled planning level estimates to be generated for purposes of this plan; however, final quantities and associated costs will vary based on the final design recommendations.

As mentioned above, the District's geotechnical engineer, Hultgren-Tillis Engineers, has prepared geotechnical investigations for previous levee rehabilitation projects. Generally,

recommended design parameters have consisted of a 21-foot-wide levee crown[3], constructed 1 foot above the design elevation to account for future settlement as the underlying foundation material consolidates. Water side slopes are a minimum of 2:1 and catch on the waterside levee hinge of the existing crown, resulting in minimal waterside impacts. A 3:1 embankment slope is typically recommended on the landside and is buttressed by a toe berm. An all-weather road surface will be constructed on the subgrade of the levee crown using Class 2 aggregate base material. The results of this Bulletin 192-82 compliant design have proven that this design is an efficient use of fill and is sustainable for an extended period of time.

The estimated cost for the District to meet a sustainable levee standard was calculated assuming multiple factors that would enable the complete rehabilitation of the levee system. The Cost Estimate summary table in Appendix C provide an itemized breakdown of the cost per phase. The assumptions are based on calculated quantities and a three percent annual increase in construction costs due to inflation. The engineering, design, permitting, coordination and inspection are limited to 20 percent of the total project cost.

POTENTIAL COST-SHARING PARTNERS

The District has a limited ability to pay for large scale rehabilitation projects. The District is allowed to levy assessments for drainage and flood control services based on California Government Code Sections 54710 *et seq*. The method used for apportioning the assessment is based upon the proportional special benefits from the services to be derived by the properties in the assessment area over and above general benefits. The assessment is not based on value, rather benefit. The assessments collected from landowners enable the District to maintain the levee in its current state, with minimal funds remaining for additional activities. Based on data provided by the District, approximately $180,000 per year is available for levee maintenance and related activities. The District can leverage these funds through the Subventions Program, receiving reimbursement of up to 75 percent of eligible expenses, less $1,000 per mile of levee, in accordance with the program guidelines.

The Special Projects program has historically funded large-scale levee rehabilitation on Webb Tract. As a result of the District having very limited financial capacity to fund projects, Special Projects has provided funding for rehabilitation projects with up to 100 percent State cost share for the District. This program is the most viable funding mechanism for financing the rehabilitation of the District's levee system and is essential for the District to implement its five-year rehabilitation plan.

REQUESTED COST-SHARING WITH THE DELTA LEVEES SPECIAL PROJECTS PROGRAM

Due to the magnitude of the projected rehabilitation costs and the District's limited ability to fund those costs, the District requests a 100% State share of project costs under the Special

[3] The Bulletin 192-82 levee standard requires a minimum 16' wide crown. Due to settlement over time, minimum levee standards cannot be maintained without additional overbuild incorporated; both vertically and spatially.

Projects Program. The requested cost sharing is consistent with previous projects implemented on Webb Tract.

Estimated Contribution from Delta Levees Special Projects & Maintenance Subventions Programs

The ability of the District to reach the complete build-out to a sustainable levee standard by the end of five years will depend on the interest of DWR to support the District throughout the process. The District has very limited resources to perform large scale levee rehabilitation projects. The District's annual assessments to fund operations total $497,032.70. The portion of the assessment revenue that is available for levee maintenance after other expenses are deducted is approximately $180,000. The District can leverage this amount by utilizing DWR's Subventions Program and receive reimbursement for up to 75 percent of qualified expenses, less $1,000 per levee mile in accordance with the program guidelines. It is anticipated that the Subventions Program will allow the District to adequately maintain the levee system, however the ability to fund rehabilitation projects is limited.

A second funding mechanism available to the District is the Special Flood Control Projects Program, also referred to as Special Projects, authorized under SB 34. This program distributes grants to local agencies to construct projects that are selected using a competitive process. Cost shares under this program are variable and are based on various metrics identified in the program guidelines. This Plan is reliant upon the Special Projects Program to fund the identified projects at the requested cost share. Funding from the Special Projects Program is necessary for achievement of the Five-Year Plan goals. The Special Projects Program would need to provide funding in the amount of approximately $21,330,200 over the projected five-year period.

Estimated Contribution from Other Agencies

At this time, the District has no other cost sharing partners to provide funding for rehabilitation and maintenance. Therefore, there is no estimated contribution from agencies other than funding provided by DWR.

Potential Constraints and Obstacles

There could potentially be a multitude of constraints and obstacles throughout the planning, design and implementation of the rehabilitation projects:

- Structures may have to be relocated, or removed from the levee crown and landside levee toe (Appendix A, District Infrastructure Map);
- Multiple siphons will need to be raised and extended along the exterior levee;
- Trees and some vegetation removal may be required;
- The cost of the rehabilitation during the various phases of the projects will vary depending on the additional planning, design, coordination, and permitting required for project construction at each site;

- All projects will require ongoing coordination between the District, landowners, and all agencies involved in the rehabilitation process;
- Coordination may be required with PG&E and other utility providers as the rehabilitation project planning commences along power lines, communication lines, or pipelines.

These considerations are typical of rehabilitation projects and the District is well-versed in navigating the various hurdles of a rehabilitation project. The District will openly communicate and work with the various stakeholders to develop solutions that are acceptable to the various Program and project interests.

Needed Improvements to Reduce Existing Hazards

Local Assets

The District is an internal Delta Island, only accessible by barge, ferry or boat. The transportation infrastructure on-island includes the levee crown road and various interior roads used primarily for farming activities. The District protects two primary areas with structures. One area is a duck club, located on the southeast corner of the island, and the other is a farming complex located within the western half of the island.

A network of approximately 15 siphons divert water for irrigation purposes. The District operates two pumping stations to dewater and manage the water levels on the island. The District's levee system protects active agricultural operations on Webb Tract, including 3,821.5 acres of corn, as of 2019, and 1,259 acres of mixed habitat types as documented in the Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for the Delta Wetlands Project, dated September 1995. This operation is supported by an on-island farming enterprise with facilities and farming equipment. Some of the agricultural fields are seasonally flooded adding to the available habitat for migratory waterfowl within the Pacific Flyway during the fall and winter seasons. The habitat located on-island includes riparian (105.7) acres, marsh (464.1 acres), herbaceous uplands (534.6 acres), and open water (155.4 acres).

There are 4 structures and up to 20 inhabitants at any given time on the island.

Non-Local Assets and Public Benefits

California Water Code Section 12311(a) directs DWR to develop and implement a program of flood control projects on Bethel Island, Bradford Island, Holland Tract, Hotchkiss Tract, Jersey Island, Sherman Island, Twitchell Island, and Webb Tract. These islands are collectively referred to as the eight western Delta islands. These islands are significant to maintaining water quality in the Delta. A breach in the levee system on one of these islands has the potential to increase salinity levels, potentially halting water exports from the Delta. Not only does the flooding of an island degrade the water quality, it also exposes adjacent islands to additional risks, including

erosion from wind and wave action and potential flooding as a result of underseepage. Historically, DWR has concluded that maintaining the integrity of the levee systems of the eight western Delta Islands is a priority.

RISKS FOR CURRENT LAND USE BASED ON EXISTING ASSETS

The rehabilitation of the District levee to the Bulletin 192-82 levee standard increases the factor of safety for the island and lowers the potential risk from overtopping or levee breach. By performing the phased projects previously mentioned, the District and the State could alleviate the possible $182,000 in repair costs due to damages to the District infrastructure, as estimated in the DRMS Impacts to Infrastructure Technical Memorandum.

A detailed risk and uncertainty analysis for the District was not performed for this Plan. The available information that was used came from the methodologies and model used by the DRMS team. The estimated repair costs were provided based on potential flood damage incurred to existing structures and infrastructure. Impacts to businesses, employment, levee repair, and crop damages are unknown at this time, and would depend greatly on when the flood event occurred and how long the island remained inundated, as well as the severity of the flood event.

The District does not maintain records of on island infrastructure to compare to the results of the DRMS technical memorandum. Therefore, it is not the intent of the District to evaluate the results, but merely to report on findings from the analysis and economic modeling that was utilized.

CONSEQUENCES OF LEVEE FAILURE OR BREACH

If flooding occurred as a result of a high-water event, the repair costs would be expected to reach $182,000 out of an estimated value of assets of $416,000 in 2007 dollars (DRMS, 2007). The DRMS report shows that the island currently has a single-family dwelling and an 83-acre gas/oil production field with related infrastructure. The DRMS report shows a value for the single-family dwelling as $171,000 and $245,000 for the natural gas infrastructure. It should be noted that the gas wells have been capped and abandoned since the DRMS report was published.

The information above was taken from the DRMS Technical Memorandum for Impact to Infrastructure and does not take into account levee repair costs due to the levee breaching or scours. The DRMS stated island value also does not include the value of the land or the ferry slip. The total land value, according to 2020 Contra Costa County assessment data, is estimated to be $33.8 million.

Depending on multiple factors, the repair to the District's levee and drainage system after a levee breach could vary by orders of magnitude. The severity of the conditions during the emergency, the repair of both the interior and exterior of the levee system, drainage facilities,

debris removal and contamination cleanup, levee access and utility repairs all need to be considered when evaluating the costs to repair the levee system.

The loss and costs that would impact the agriculture on island could vary greatly depending on multiple factors including the time of year, size and duration of the inundation, water quality conditions, crops planned or planted for that period, and overall market conditions.

Existing Deficiencies in System

An analysis of the 2017-2018 DWR LiDAR data indicates that a small group of sites are very close to the minimum HMP criteria for width and elevation. These sites include the following:

Table 5. Sites Close to HMP Minimum Geometry

Site	Beginning Station	Ending Station	Length (*feet*)
1	227+50	232+50	500
2	377+80	379+29	149
3	498+64	499+90	126
4	578+20	579+59	139
5	582+42	582+65	23
6	607+50	617+50	1,000

The accuracy of the LiDAR data is such that it cannot be conclusively determined that the sites are, in fact, below HMP. These areas should continue to be monitored and the LiDAR data should be confirmed with a higher accuracy conventional terrestrial-based survey. If the sites are determined at some point to have actually settled below the minimum HMP geometry, maintenance should be performed to maintain minimum width and elevation requirements.

Seepage has been observed historically below the pump station discharge pipes on the south levee near Station 165+00. Based on recommendations from the District's geotechnical engineer, additional fill material was placed on the toe berm to lengthen the seepage path and support the levee embankment. The exiting seepage has slowed; however, the area should continue to be monitored. Additional rehabilitation in this area may be needed in the future.

Urgency of Repair Work

Due to the nature of the island only being accessibly by boat or ferry, a timely response during an emergency can be a challenge and potentially problematic. Rehabilitating the levees to meet the Bulletin 192-82 standard would increase the level of protection for the island and potentially lower the frequency of events requiring an emergency response. Safer levees also minimize a potential disruption in the State's water conveyance system.

Opportunities for Multi-Benefit Projects

The main goal of the District during the next five years is to attain a sustainable Bulletin 192-82 levee standard around the entire island. It should be noted that each levee rehabilitation project identified under this Plan can be identified as having multiple objectives. These projects not only lower the flood risk for the lands within the District, but they also lower the risk of impacts to water quality and conveyance, as well as impacts to neighboring islands that are associated with a flood event.

Ecosystem Restoration and Habitat Enhancement

The landside slope will be seeded to propagate a CDFW-approved native grass seed mix. The District will consult with DWR and CDFW on seed selection and best management practices, such as soil preparation, timing of seeding, irrigation, and weed management for achieving the long-term establishment of native grass cover.

Reversing Land Subsidence

The anticipated design template for the levee improvements will require the construction of a stability berm along the landside toe of the levee. In compliance with California Water Code Section 12316(g), this toe berm will raise the elevation of the land immediately adjacent to the levee and provide a cap over exposed peat that could otherwise oxidize over time. The berm will also minimize any future farming practices immediately adjacent to the levee.

Ensuring Adequate and Effective Emergency Response Plans

A rehabilitated levee results in a safer, wider levee system than what existed previously. A wider levee enables better access and supports emergency response efforts. It is difficult to respond to emergencies if access is restricted. The most significant constraint to achieving this objective is the ability to secure adequate funding.

Water Quality and Supply Reliability Improvement

Webb Tract is one of the eight western Delta islands. There have been multiple reports and studies that have shown how these islands are critical to the water quality and water supply reliability for the State Water Project and Central Valley Project.

Levee Stability and Integrity Improvement

The proposed projects will improve the static stability of the levee in the project area. The geotechnical report for the projects will include a discussion on slope stability. The design for previous projects on the island resulted in landside factors of safety for the long-term rehabilitated levee that are significantly higher than the levee that previously existed. It is anticipated that a similar design will be recommended for these projects, with a comparable improvement in the static stability.

The proposed projects will also improve the seismic stability of the levee in the project area. For several of the proposed projects, a landside berm will be placed to support the levee, while also enhancing post-seismic recovery. A detailed evaluation of the seismic safety is beyond the scope of this plan; however, our experience is that the long-term seismic performance of the levee should increase after the levee is rehabilitated for static conditions. It is anticipated that the final design will result in a net improvement in the seismic stability. Metropolitan Water District has performed extensive seismic stability analyses along the Middle River freshwater pathway levee system south of the San Joaquin River and has concluded that levees with similar cross-sectional improvements have substantially improved stability under severe earthquake shaking. Levee stability analyses performed by AECOM/Schnabel on behalf of MWD finds that, given potential seismic deformation, levees perform more effectively under earthquake loading and to support effective emergency response at or near the Bulletin 192-82 design standard.

Actions in the Governor's California Water Action Plan

This Plan is consistent with the relevant actions identified in the governor's California Water Action Plan (2016 Update). The rehabilitation and habitat enhancements proposed contribute toward achieving the co-equal goals for the Delta. Levee rehabilitation and meeting the Bulletin 192-82 Standard enhances flood control while also maintaining water supply reliability. The habitat enhancements contribute toward a healthier ecosystem. This plan is compatible with and supports the actions identified in the California Water Plan.

Section 4. Plan for Permits and Habitat

Habitat Mitigation and Enhancement

In the early 1990s, the District explored the possibility of mitigating for all impacts that would result from levee maintenance and rehabilitation, both past and future. The goal was to provide a programmatic solution and address the mitigation issues that each project must consider. Reclamation District Nos. 756, 2025, 2026, 2028, 2041, DWR and CDFW (formerly DFG) all participated in a collaborative process to create a mitigation site for the participating districts. On September 20, 1993, a mitigation agreement was executed between CDFW and Reclamation District No. 2041, providing 50 acres of mitigation on Medford Island. CDFW has subsequently confirmed that all habitat impacts resulting in levee maintenance and rehabilitation that occur within 150 feet of the levee centerline have been previously mitigated for the participating districts under the agreement, with the exception of impacts to Shaded Riverine Aquatic (SRA) habitat.

In 2002, CDFW staff completed a habitat assessment of the levee system (Appendix D, Webb Tract Reclamation District No. 2026 Habitat Assessment, CA Department of Fish and Game, 2002). The habitat assessment describes the wildlife habitat and vegetation resources observed along the levee system.

No habitat mitigation requirements are anticipated for the landside work proposed in this Plan. The proposed projects will be designed to avoid impacts to SRA habitat; therefore, no mitigation is anticipated at this time.

Pre-existing Habitat Conditions

The levee system currently protects an important variety of habitat, as documented in the Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for the Delta Wetlands Project, dated September 1995. The habitat located on-island includes riparian (105.7 acres), marsh (464.1 acres), herbaceous uplands (534.6 acres), and open water (155.4 acres).

Anticipated Impact and Opportunities for Avoidance of Habitat Impact

The District will remove all vegetation on the landside slope during the rehabilitation process. The vast majority of habitat to be removed is ruderal. There is very little vegetation on the waterside slope. The District is pre-mitigated out to 150' from the levee centerline on the landside of the levee for impacts to riparian forest, scrub shrub, and freshwater marsh through the 1994 Mitigation Agreement between Reclamation District 2041 (Medford Island) and CDFW. The District is an intended beneficiary under the agreement. The District will work with CDFW and other regulatory agencies as appropriate to assess impacts from construction.

In compliance with Water Code Section 12314, the District will minimize its impact on the project areas. The following measures are proposed for implementation as part of the levee rehabilitation activities to help conserve and minimize impacts to vegetation and wildlife.

- The project will be restricted to the proposed levee footprint.
- No work will be performed below mean high water on the waterside of the levee.
- Anticipated impacts will be to grasses, ruderal weeds, and a small number of trees and shrubs. Tree and shrub removal will be on the landside only and has been pre-mitigated, resulting in no net loss of habitat.
- The land adjacent to the levee is active agricultural land, and the proposed habitat enhancements provide a net habitat improvement.

If necessary, the District will request to be included in a State-sponsored program to meet the requirement of no net long-term loss of habitat and a net habitat improvement.

Potential On-site Habitat Mitigation Opportunities

Mitigation opportunities within the levee footprint are somewhat limited, however opportunities may exist elsewhere on the island. Since little to no mitigation is anticipated to be required for the proposed projects, there has been little focus on identifying opportunities. However, the District is open to exploring opportunities that may potentially benefit Delta interests.

Potential On-site Ecosystem Enhancement Opportunities

Ecosystem enhancement opportunities may exist along the levee and within the interior of the island. The District has proposed ecosystem enhancements where feasible, including seeding the landside slopes with native grasses. The District is open to exploring opportunities that may potentially benefit both the District and Delta interests.

Compliance with CEQA and Required Permit Procurement

Required Permits and Environmental Compliance Documents

The work described in this plan will generally take place along the landside and crown of the levee within the existing levee footprint and is considered rehabilitation of an existing serviceable structure. It is anticipated that a Streambed Alteration Agreement will be required to armor the newly placed crown fill on the water side. The existing riprap will be compacted to create a bench that will support the new riprap and prevent material from entering the water. Section 401 and 404 permits should not be necessary as work will be conducted above the ordinary high-water mark (OHWM) and the levee does not exhibit wetland characteristics. No additional permits are anticipated to be necessary. The District intends to work with DWR and CDFW in a collaborative fashion regarding its CEQA documentation and permit requirements for projects that are funded by a project funding agreement.

Environmental Documentation, Permit Status, and Meeting Agency Requirements

It is anticipated that the environmental documentation required will generally consist of a CEQA Mitigated Negative Declaration for the bulk of the work associated with this plan. Environmental documentation will be reviewed by the District's attorney and environmental consultants to determine whether the proposed documentation satisfies the legal requirements that exist at the time. If any additional documentation and permits are required, the District will coordinate with the appropriate agencies and will obtain the necessary permits prior to construction. The District will act as the Lead Agency under CEQA and DWR will be a Responsible Agency for the projects it provides funding for.

Once the proposed projects have been constructed, the District has a Routine Maintenance Agreement (RMA) with DFW. The RMA covers many aspects of the District's maintenance responsibilities, and allows for various types of trimming, pruning, clearing, and is dependent upon multiple factors, including time of year. The RMA also allows for small erosion repair at sites that will not place rock or fill in the water. The RMA was developed through arbitration as described in the CDFW code and complies with CEQA's Categorical Exemption requirements and the no net loss of habitat requirements of the Delta Levees Program.

REFERENCES

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California Department of Public Works, 1930, Bulletin No. 37, Irrigation, Reclamation and other Public Districts in California, Division of Water Resources.

Camp, Dresser & McKee Inc., 1992, Ability to Pay Study, Six Western Delta Reclamation Districts.

Hultgren-Tillis Engineers, 2008, *Geotechnical Investigation: Webb Tract. Stations 450 to 650*: prepared for Reclamation District No. 2026, Webb Tract.

Hultgren-Tillis Engineers, 2008, *Geotechnical Investigation: Webb Tract. Stations 50 to 230*: prepared for Reclamation District No. 2026, Webb Tract.

ICF International, 2010, *Draft Delta Wetlands Place of Use Environmental Impact Report*: Prepared for Semitropic Water Storage District

Jones & Stokes, 2001, *Delta Wetlands Final EIR/EIS*: prepared for California State Water Resources Control Board

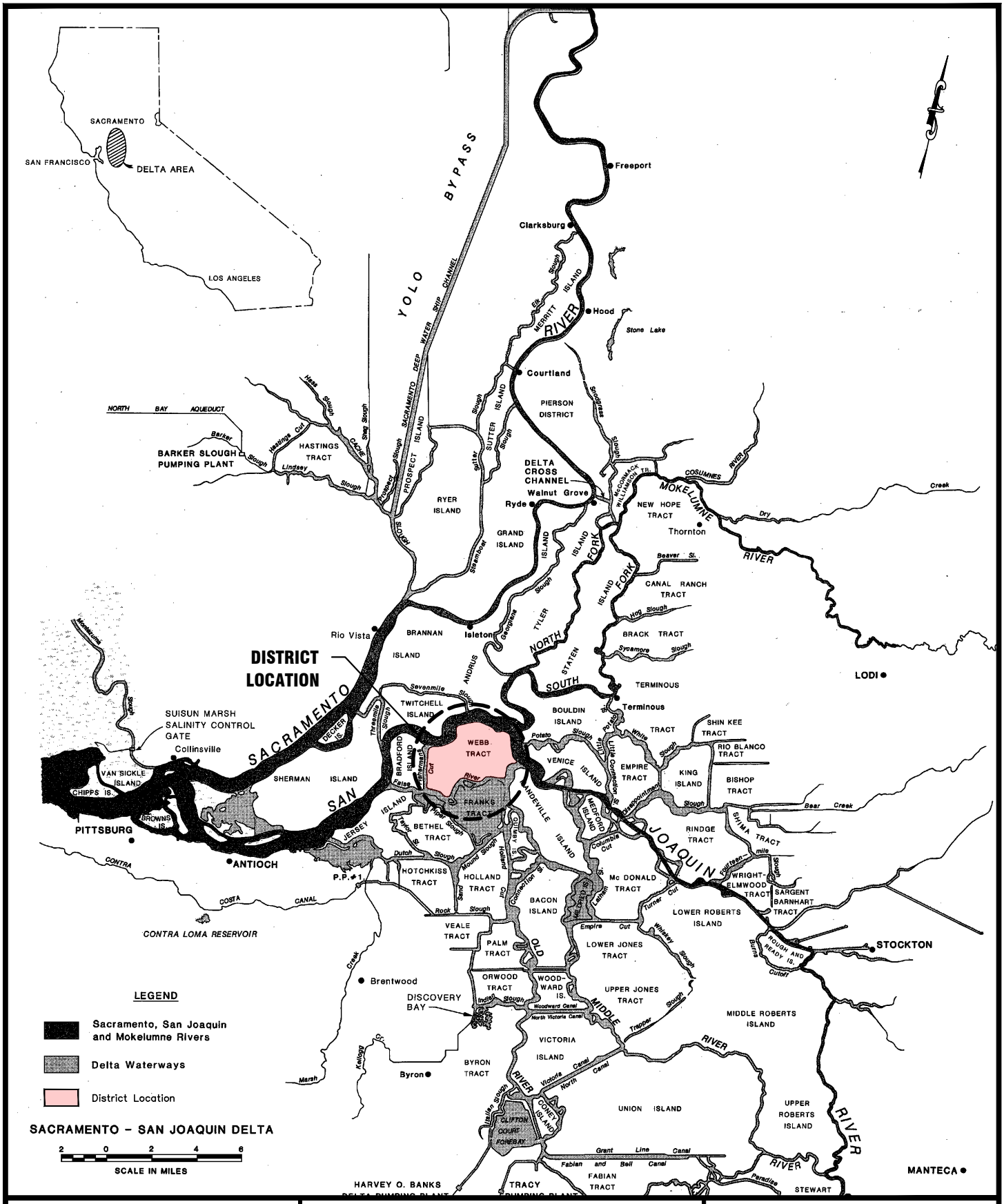
Thompson, John, 1957, The Settlement Geography of the Sacramento-San Joaquin Delta, California: Doctor of Philosophy, Geography Dissertation from Stanford University.

URS Corporation and J.R. Benjamin & Associates, Inc., 2007, Technical Memorandum: Delta Risk Management Strategy (DRWS) Phase 1 Draft Risk Analysis: prepared for the California Department of Water Resources.

TABLE 6. TABLE OF REQUIRED TABULATED INFORMATION

Required Information	Value/Units	Discussion
Total acreage protected by Local Agency levees	5,500 acres	
Total levee miles maintained by Local Agency	12.9 miles	
Levee miles in the Local Agency service area that are not maintained through the Delta Levee Program (e.g. Dry levees, cross levees)	-	
Percentage of Local Agency's levee system at or above HMP Levee Standard	100%	
Miles of Local Agency's levee system raised to meet the minimum HMP Standard through the Delta Levees Special Projects Program	12.9 miles	
Percentage of Local Agency's levee system at or above Bulletin 192-82 Levee Standard	25%	
Miles of Local Agency's levee system raised to meet the Bulletin 192-82 Levee Standard through the Delta Levees Special Projects Program	3.3 miles	
Number of levee rehabilitation projects funded through the Delta Levees Special Projects Program for the Local Agency	4	
Total State funds expended for levee rehabilitation projects on the Local Agency's Island/Tract through the Delta Levees Special Projects Program	$11,303,300	
List of local and non-local assets and critical infrastructure protected by the Local Agency's levee system		• Duck club • Farming complex • 4,000 acres of corn • 1,259 acres of mixed habitat types • Several previously plugged and abandoned gas extraction wells

Appendix A – Maps and Exhibits



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RECLAMATION DISTRICT NO. 2026
WEBB TRACT

VICINITY MAP

SCALE:	AS NOTED
JOB NUMBER:	4280-18
DRAWN BY:	JB
DATE:	04/16/2020
SHEET:	1 OF 9

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RECLAMATION DISTRICT NO. 2026
WEBB TRACT

AERIAL MAP WITH STATIONING

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JOB NUMBER:	4280-18
DRAWN BY:	NH
DATE:	04/17/2020
SHEET:	2 OF 9

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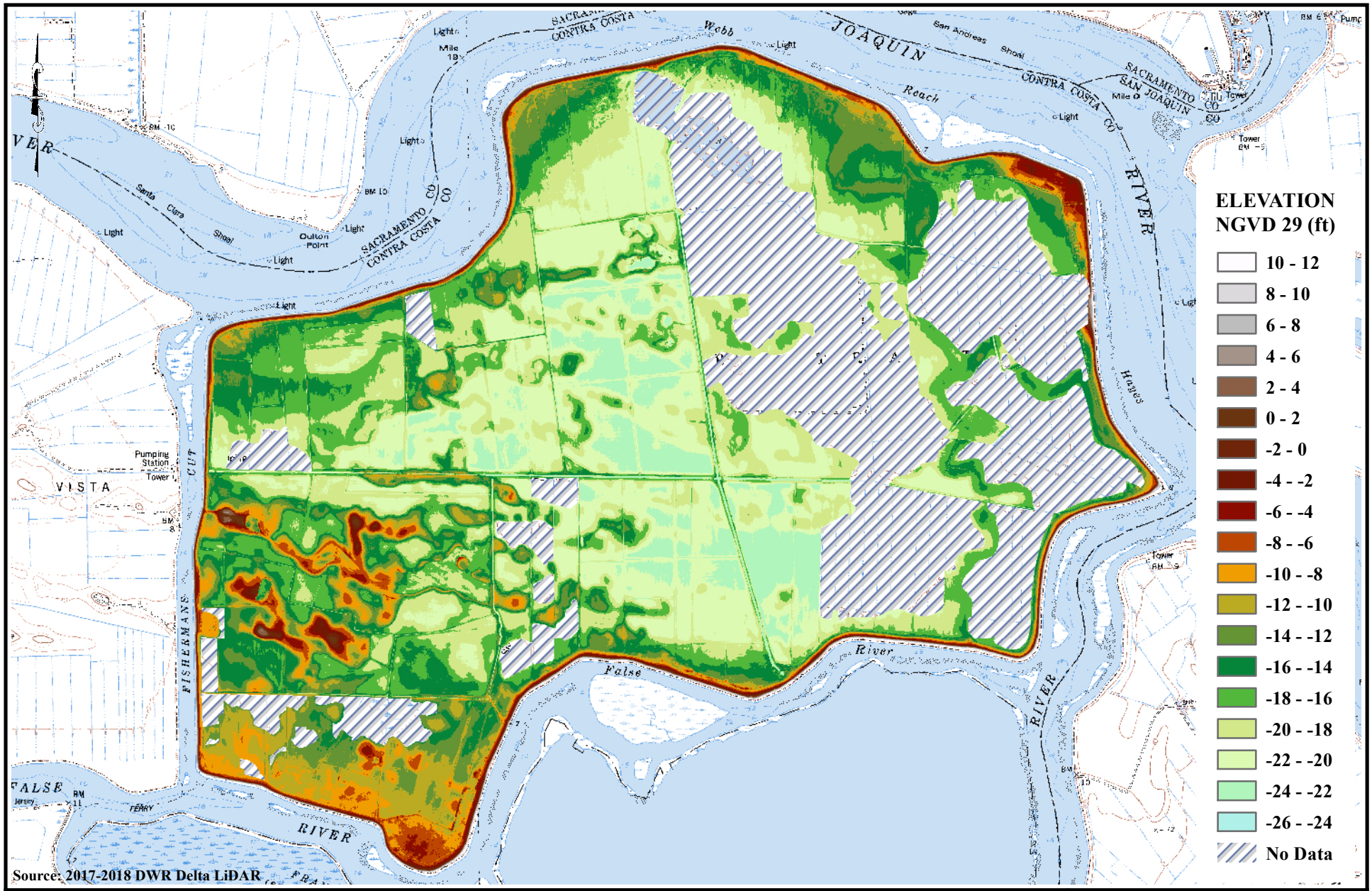

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RECLAMATION DISTRICT NO. 2026
WEBB TRACT

DISTRICT ELEVATION EXHIBIT

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DRAWN BY:	MB
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SHEET:	3 OF 9

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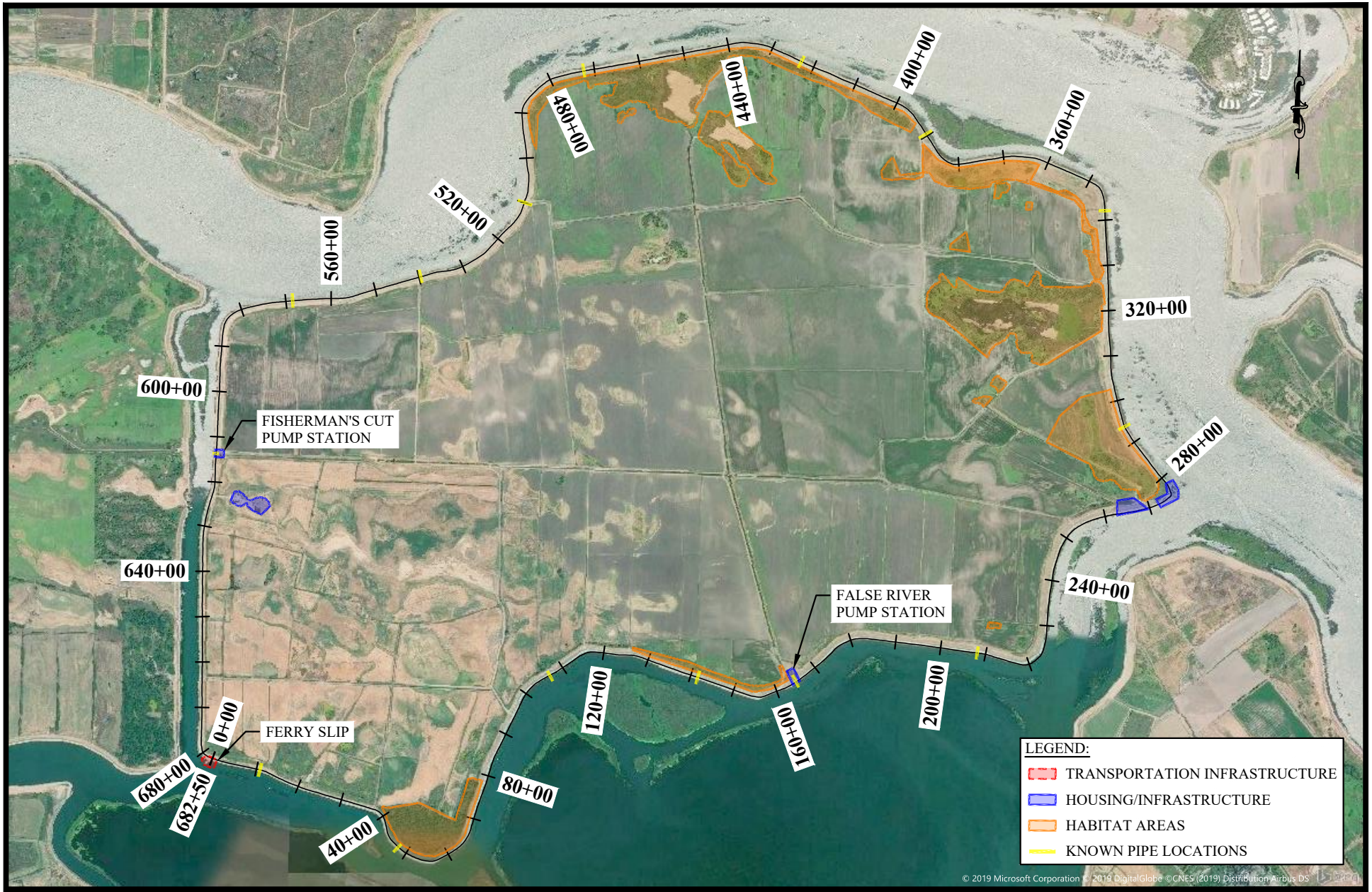

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WEBB TRACT

DISTRICT INFRASTRUCTURE MAP

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JOB NUMBER:	4280-18
DRAWN BY:	JB
DATE:	04/16/2020
SHEET:	4 OF 9

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NO.	DATE	REVISION

RECLAMATION DISTRICT NO. 2026
WEBB TRACT

REGIONAL INFRASTRUCTURE MAP

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BY:	JB
CHK:	MM/NH
DATE:	04/16/2020

SHEET 5 OF 9 SHEETS

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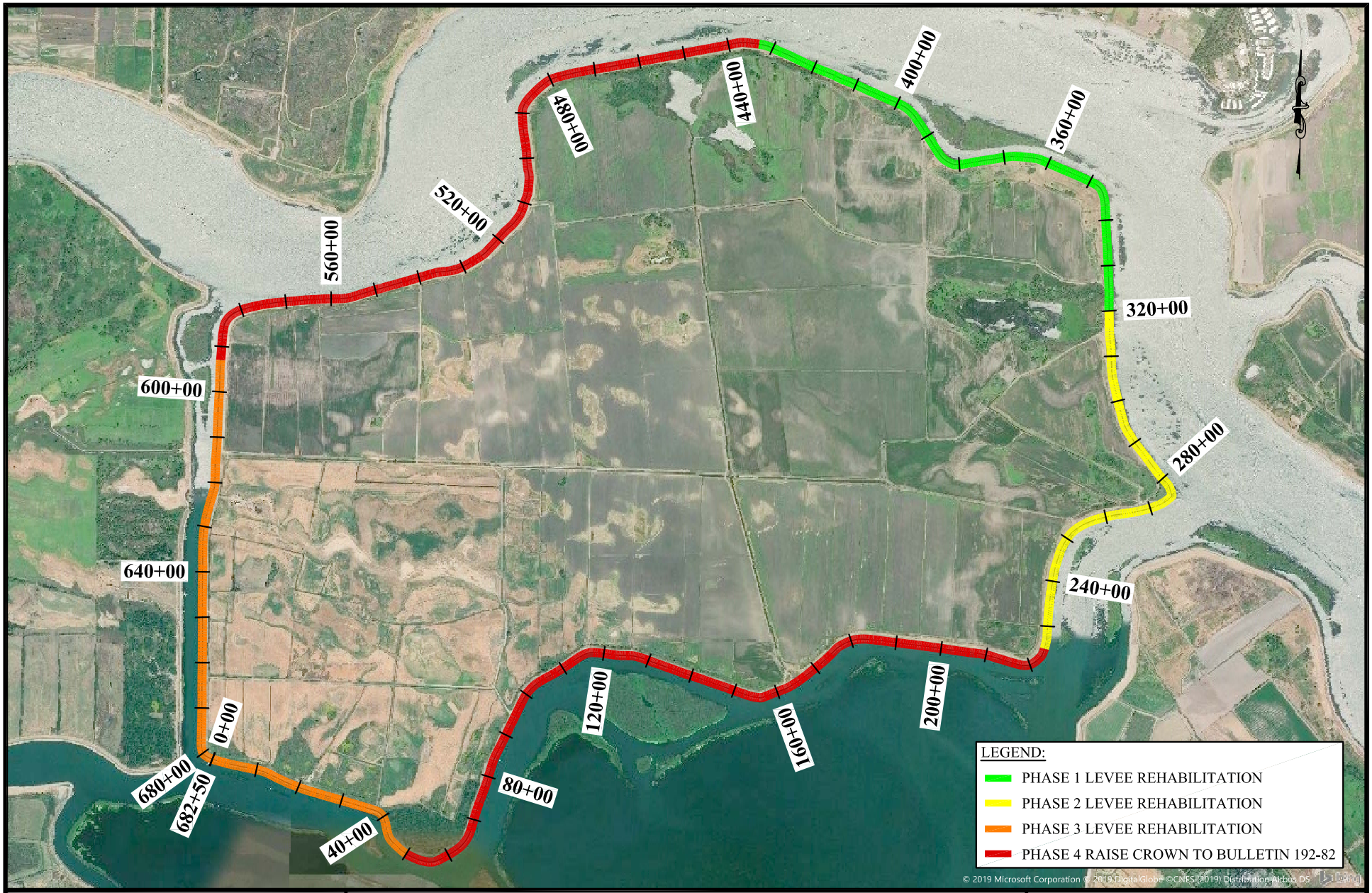

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RECLAMATION DISTRICT NO. 2026
WEBB TRACT

PROJECT PHASING EXHIBIT

SCALE:	1" = 3000'
JOB NUMBER:	4280-18
DRAWN BY:	NH
DATE:	04/17/2020
SHEET:	6 OF 9

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RECLAMATION DISTRICT NO. 2026
WEBB TRACT

DELTA LEVEE STANDARD STATUS HMP

SCALE:	1" = 4000'
JOB NUMBER:	4280-18
DRAWN BY:	AR
DATE:	04/08/2020
SHEET:	7 OF 9

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RECLAMATION DISTRICT NO. 2026
WEBB TRACT

DELTA LEVEE STANDARD STATUS PL 84-99

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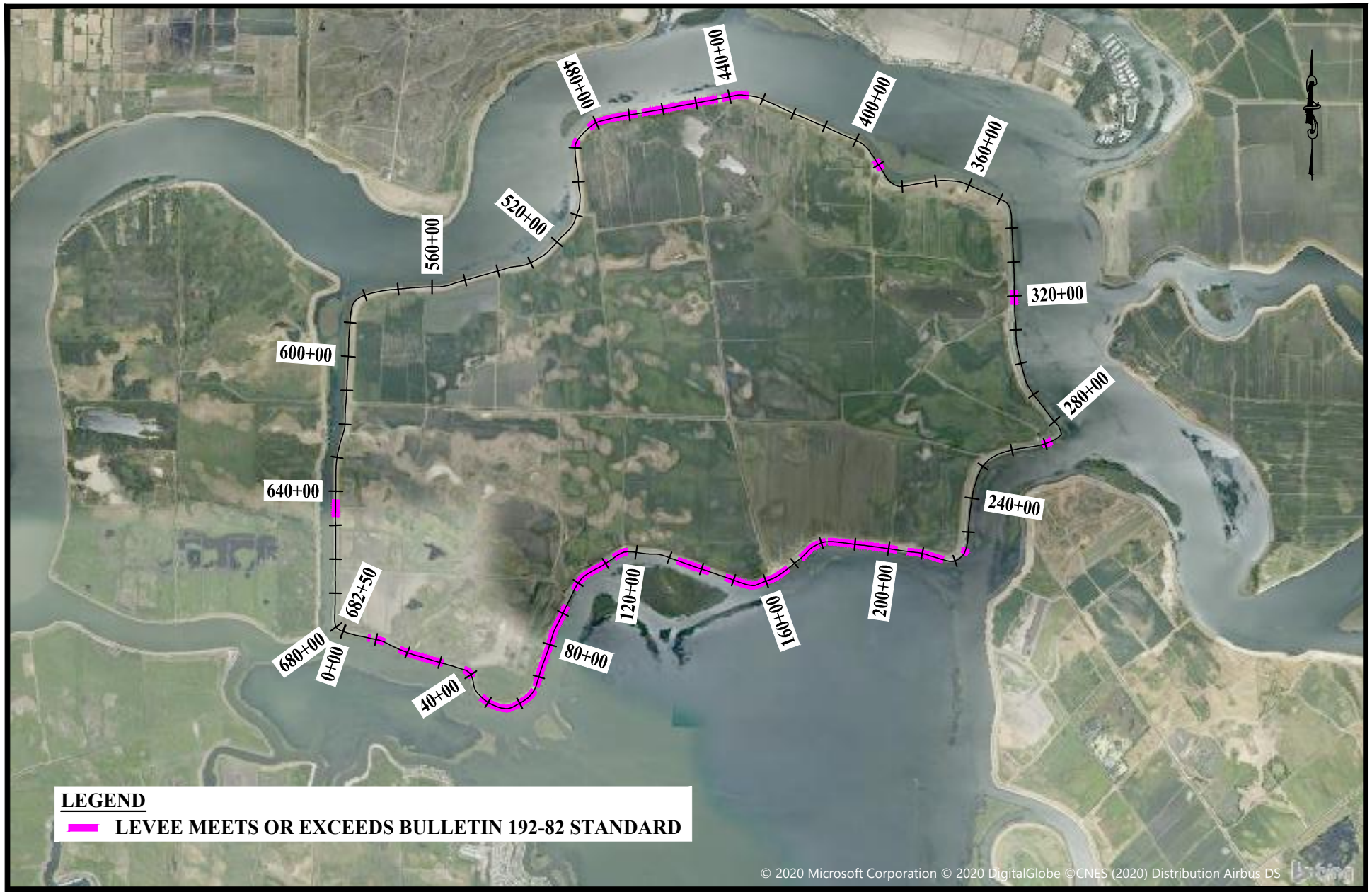

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RECLAMATION DISTRICT NO. 2026
WEBB TRACT

DELTA LEVEE STANDARD STATUS BULLETIN 192-82

SCALE:	1" = 4000'
JOB NUMBER:	4280-18
DRAWN BY:	AR
DATE:	04/08/2020
SHEET:	9 OF 9

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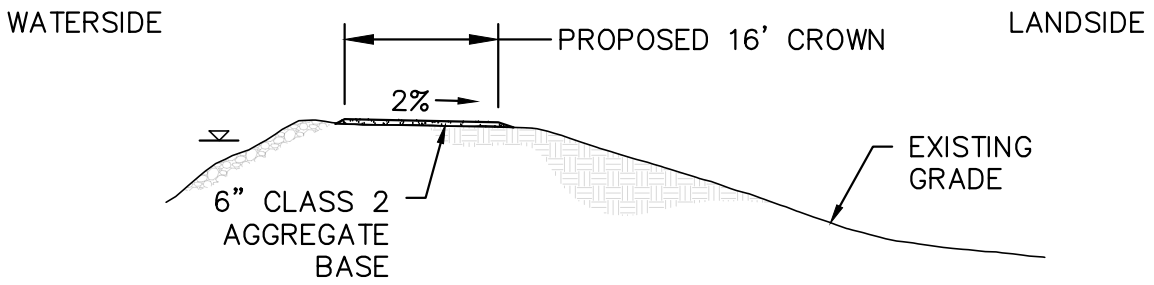
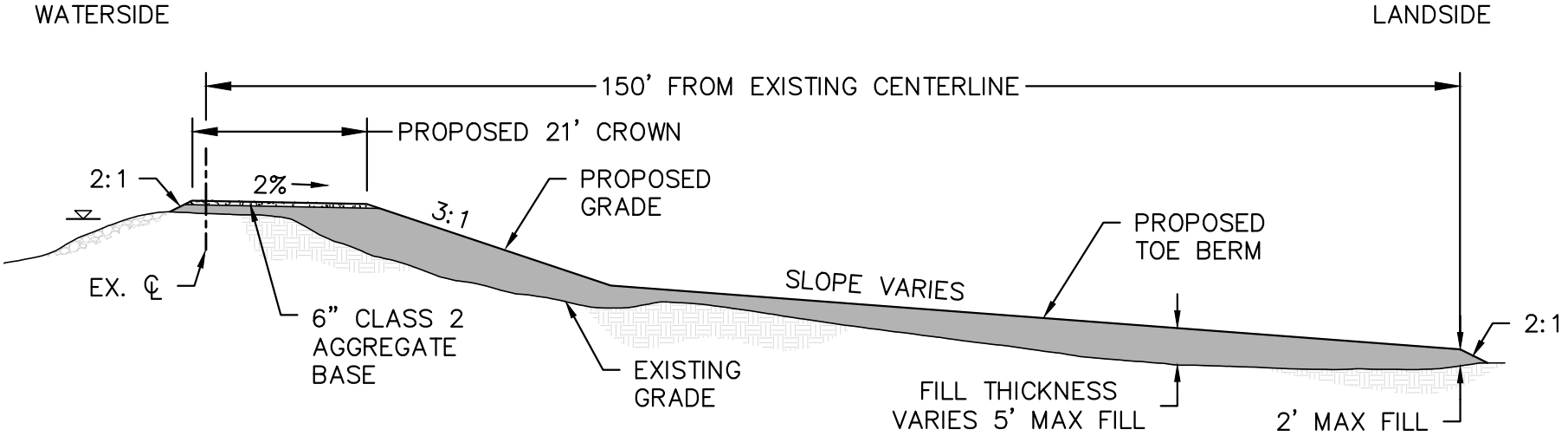
Appendix B – Typical Cross Sections, Levee Profiles, and Cross Sections



TYPICAL 16' AB CROWN ROADWAY CROSS SECTION

STATIONS 50+00 TO 225+00 & 432+00 TO 591+00



TYPICAL 21' AB CROWN ROADWAY CROSS SECTION WITH TOE BERM

STATIONS 0+00 TO 50+00, 225+00 TO 432+00+00 AND 591+00 TO 682+50

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WEBB TRACT

TYPICAL CROSS SECTIONS

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JOB NUMBER:	4280-18
DRAWN BY:	JB
DATE:	3/12/2019
SHEET:	1 OF 1

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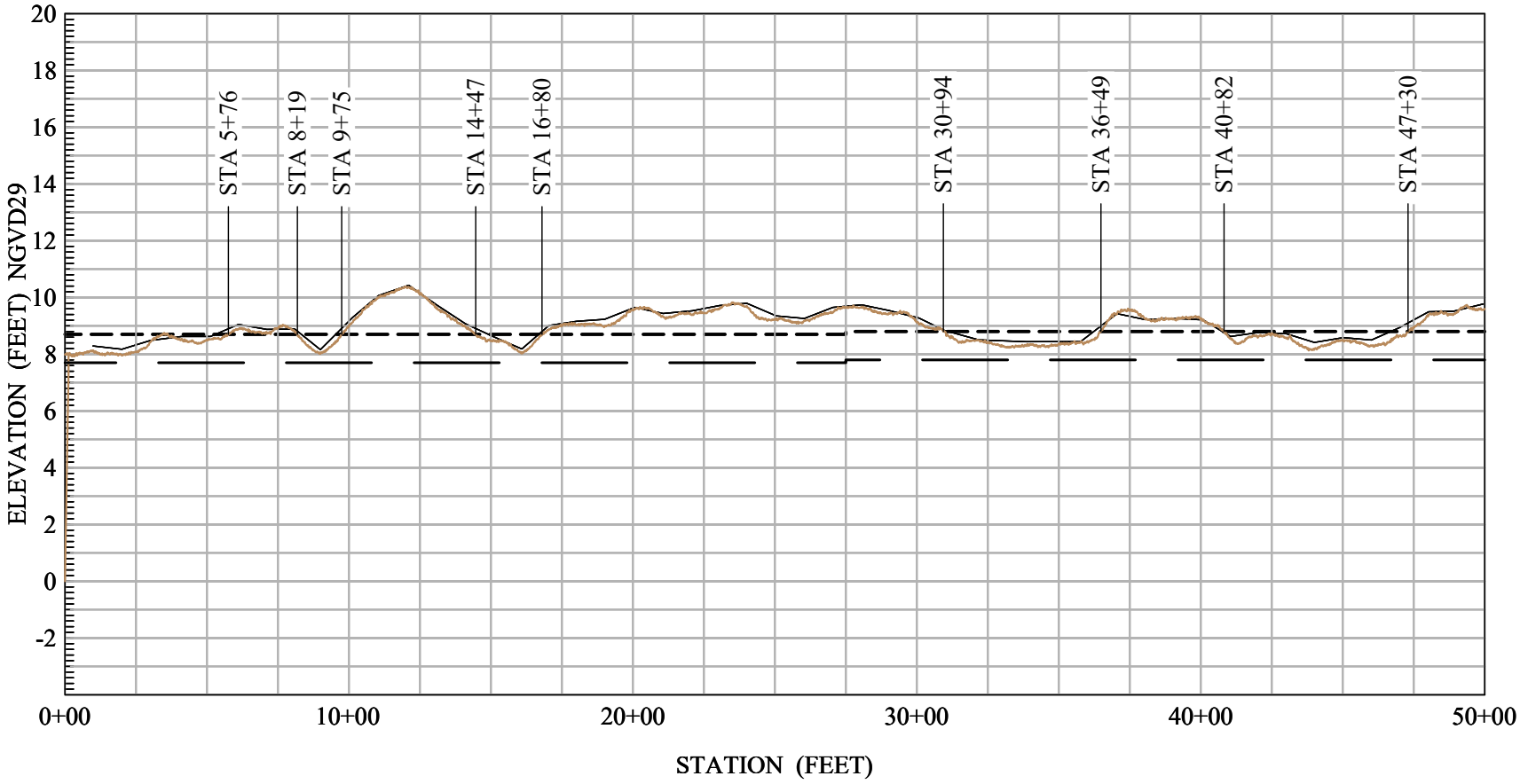
RD 2026 - WEBB TRACT
LEVEE CENTERLINE PROFILE 0+00 - 50+00



PROFILE SHEET: 1 OF 14

SCALE:

Vertical: 1" = 6'

Horizontal: 1" = 600'

LEGEND:

- 2015 As-Built HMP Profile
- 2017 LiDAR Profile
- HMP Elevation
- Bulletin 192-82 Elevation

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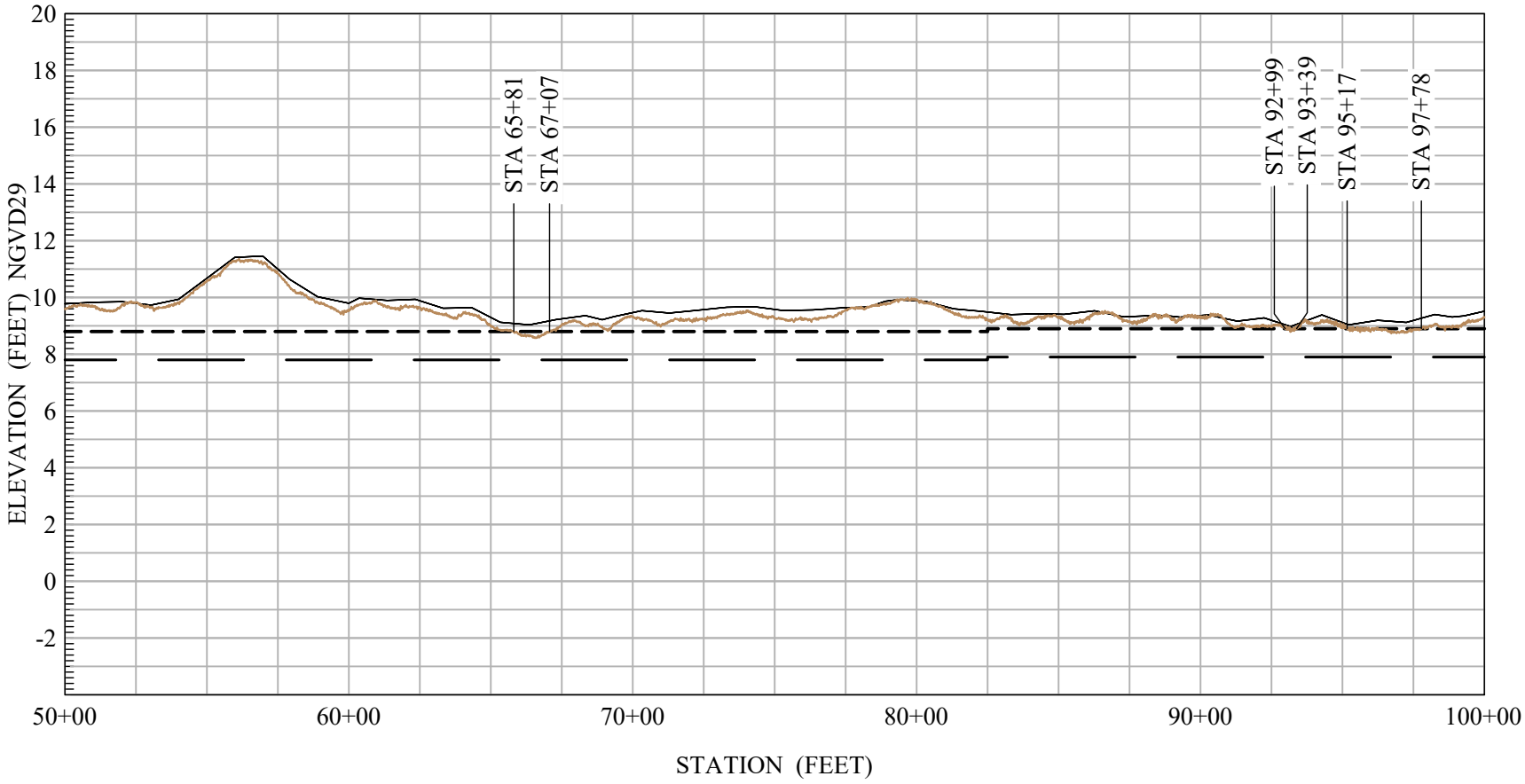
RD 2026 - WEBB TRACT
LEVEE CENTERLINE PROFILE 50+00 - 100+00



PROFILE SHEET: 2 OF 14

SCALE:

Vertical: 1" = 6'

Horizontal: 1" = 600'

LEGEND:

- 2015 As-Built HMP Profile
- 2017 LiDAR Profile
- HMP Elevation
- Bulletin 192-82 Elevation

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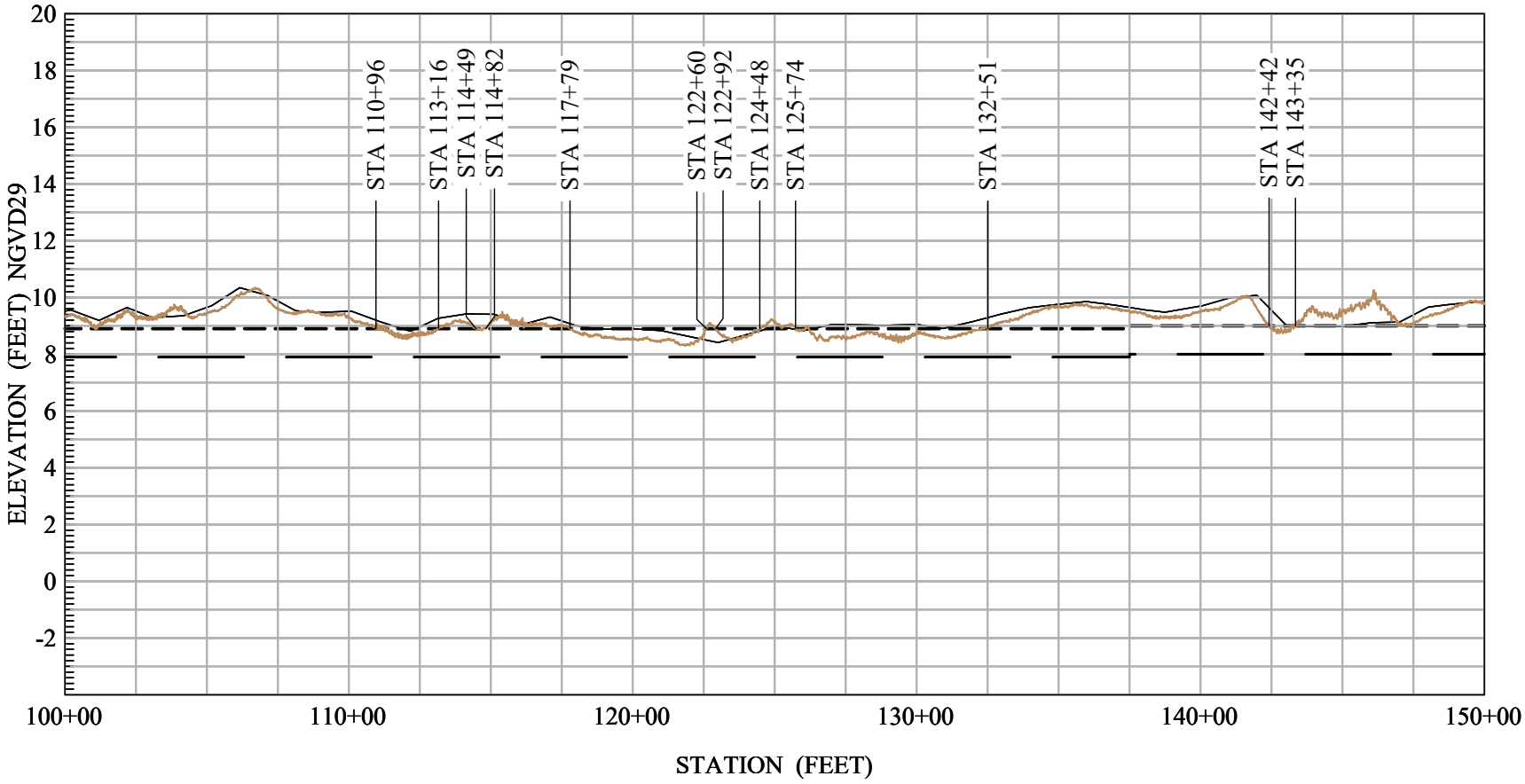
RD 2026 - WEBB TRACT
LEVEE CENTERLINE PROFILE 100+00 - 150+00



PROFILE SHEET: 3 OF 14

SCALE:

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Horizontal: 1" = 600'

LEGEND:

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- 2017 LiDAR Profile
- HMP Elevation
- Bulletin 192-82 Elevation

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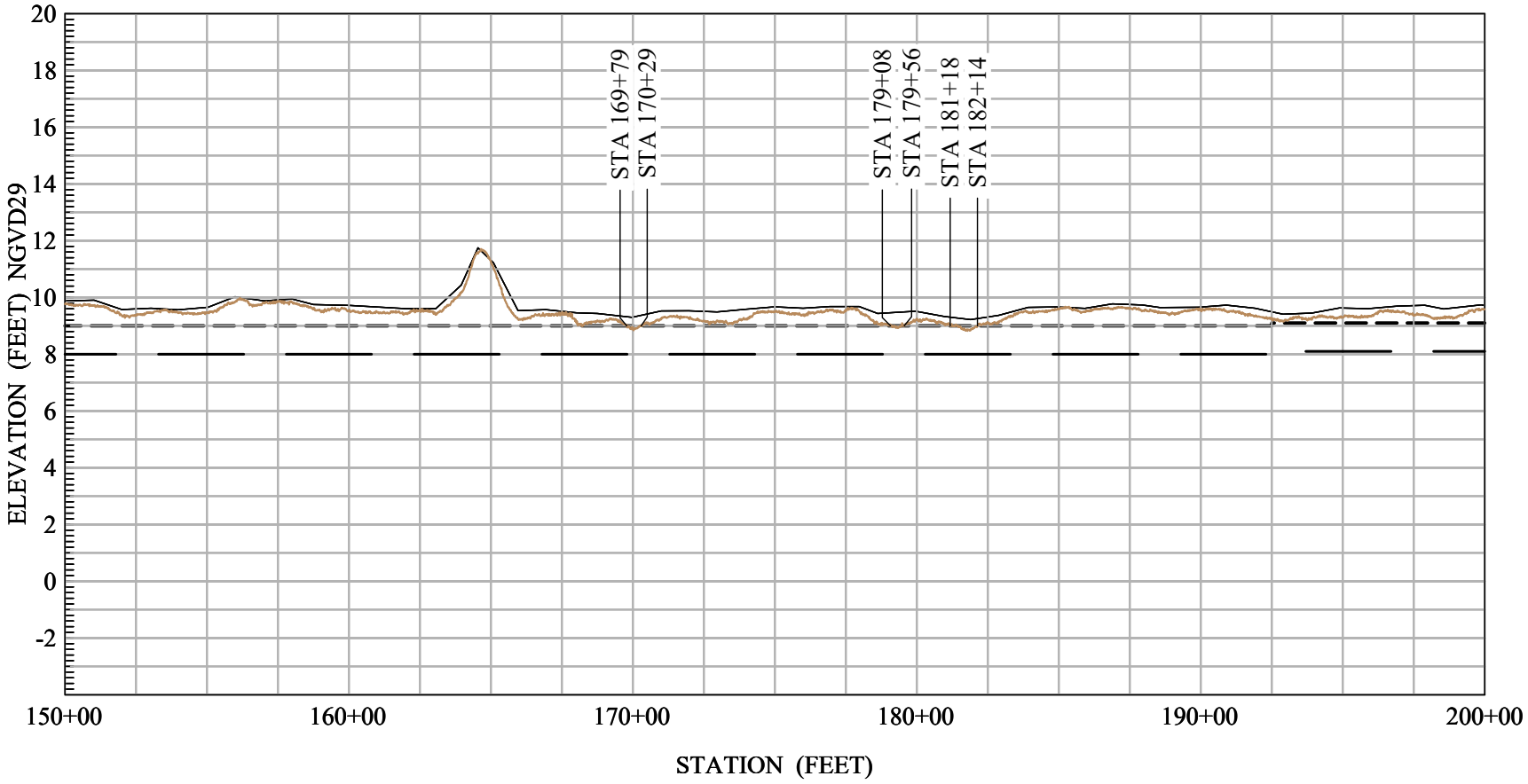
RD 2026 - WEBB TRACT
LEVEE CENTERLINE PROFILE 150+00 - 200+00



PROFILE SHEET: 4 OF 14

SCALE:

Vertical: 1" = 6'

Horizontal: 1" = 600'

LEGEND:

- 2015 As-Built HMP Profile
- 2017 LiDAR Profile
- HMP Elevation
- Bulletin 192-82 Elevation

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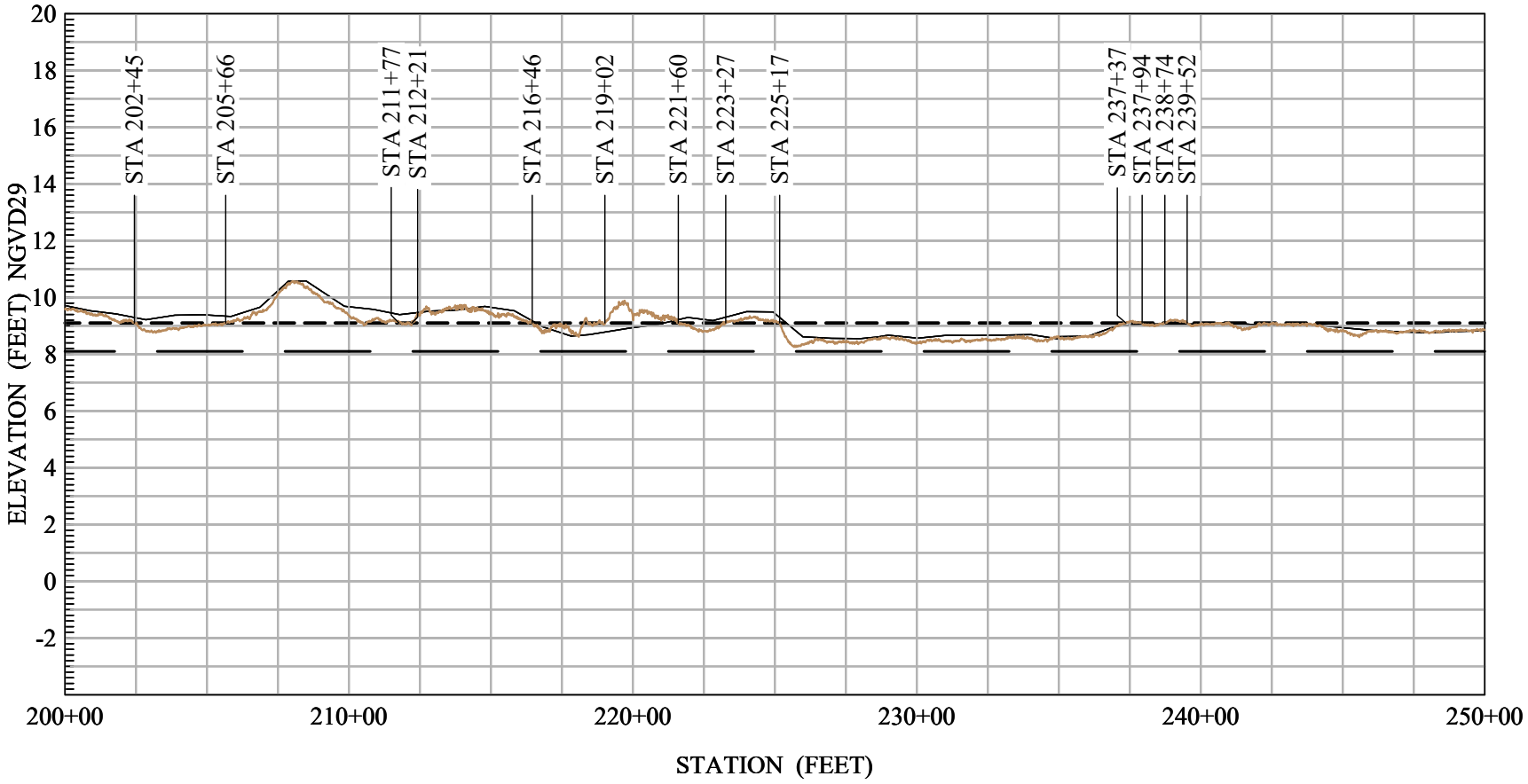
RD 2026 - WEBB TRACT
LEVEE CENTERLINE PROFILE 200+00 - 250+00



PROFILE SHEET: 5 OF 14

SCALE:

Vertical: 1" = 6'

Horizontal: 1" = 600'

LEGEND:

- 2015 As-Built HMP Profile
- 2017 LiDAR Profile
- HMP Elevation
- Bulletin 192-82 Elevation

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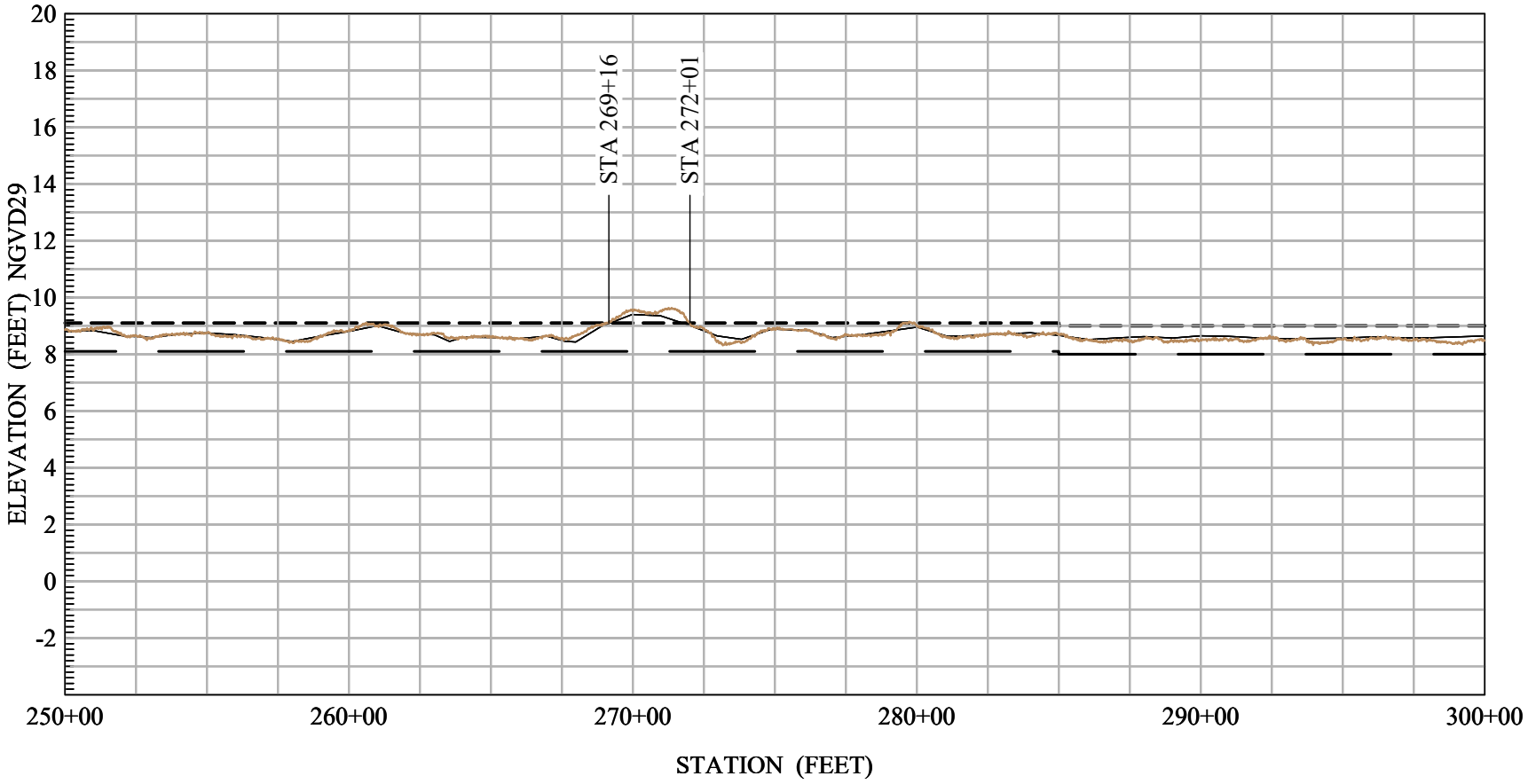
Last Updated: 2020-07

R:\2526.00 Delta General\2018_5 Year Plan\2026\Maps\Centerline Profile.dwg 7-09-20 01:59:30 PM reece

RD 2026 - WEBB TRACT
LEVEE CENTERLINE PROFILE 250+00 - 300+00



PROFILE SHEET: 6 OF 14

SCALE:

Vertical: 1" = 6'

Horizontal: 1" = 600'

LEGEND:

- 2015 As-Built HMP Profile
- 2017 LiDAR Profile
- HMP Elevation
- Bulletin 192-82 Elevation

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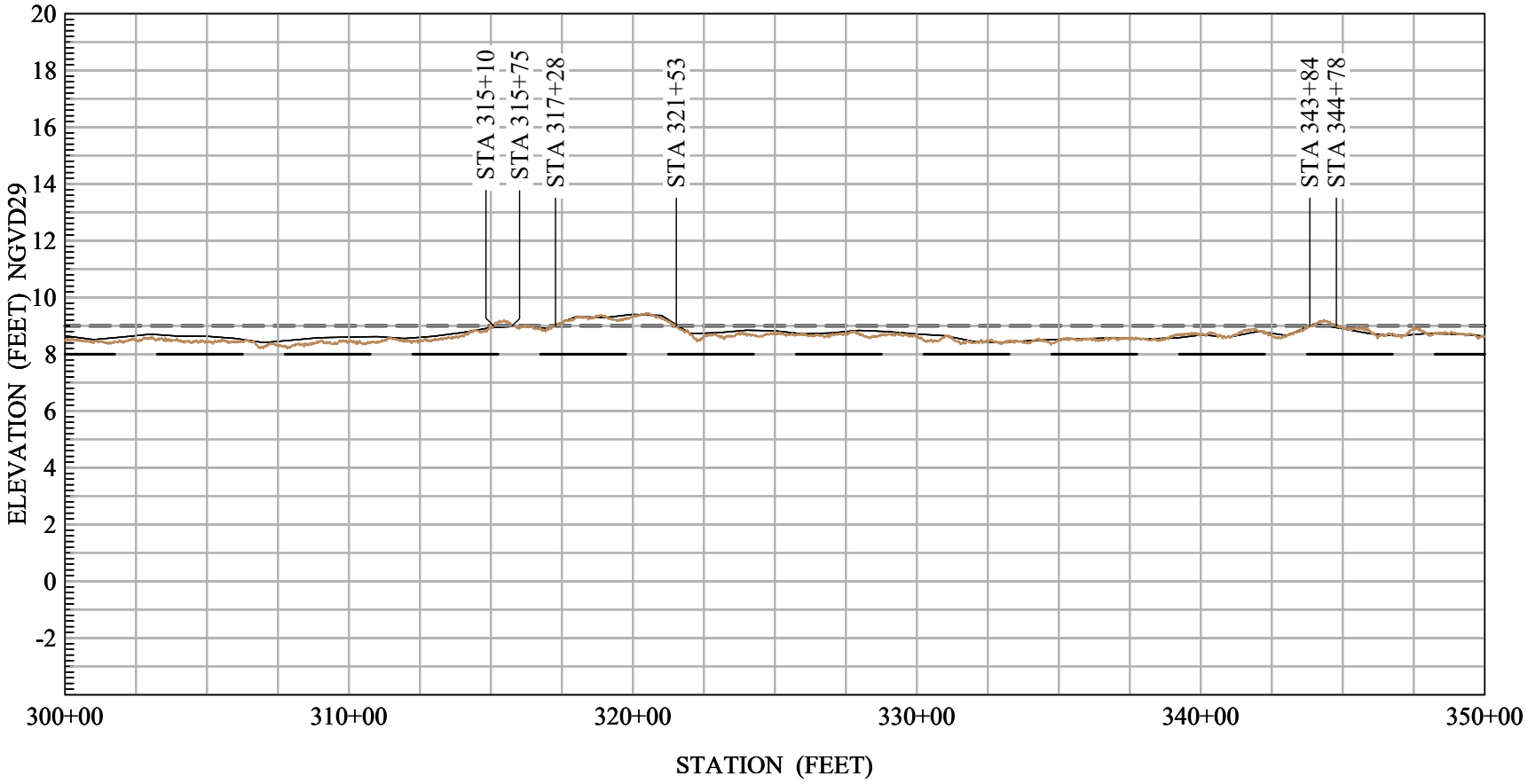
RD 2026 - WEBB TRACT
LEVEE CENTERLINE PROFILE 300+00 - 350+00



PROFILE SHEET: 7 OF 14

SCALE:

Vertical: 1" = 6'

Horizontal: 1" = 600'

LEGEND:

- 2015 As-Built HMP Profile
- 2017 LiDAR Profile
- HMP Elevation
- Bulletin 192-82 Elevation

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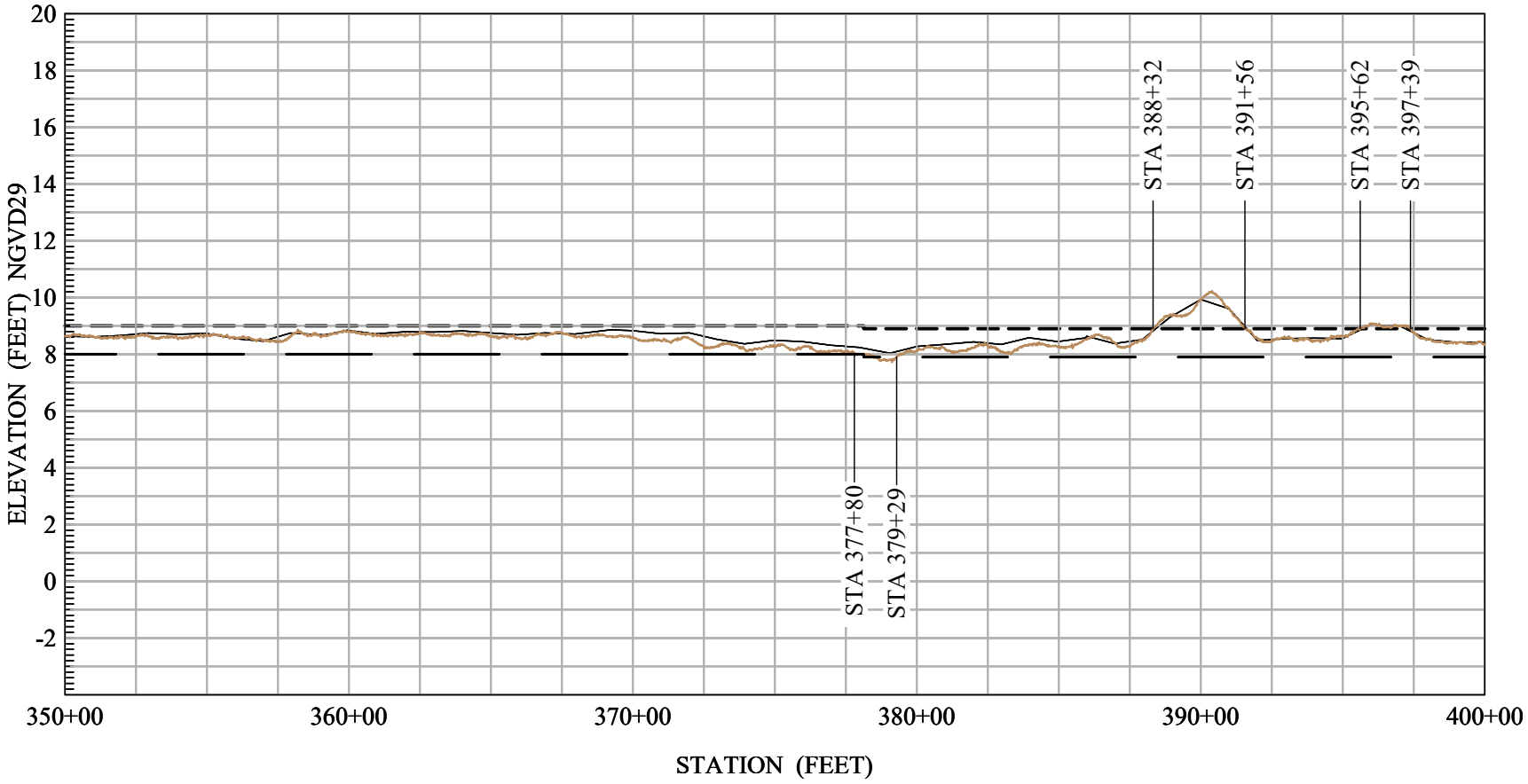
RD 2026 - WEBB TRACT
LEVEE CENTERLINE PROFILE 350+00 - 400+00



PROFILE SHEET: 8 OF 14

SCALE:

Vertical: 1" = 6'

Horizontal: 1" = 600'

LEGEND:

- 2015 As-Built HMP Profile
- 2017 LiDAR Profile
- HMP Elevation
- Bulletin 192-82 Elevation

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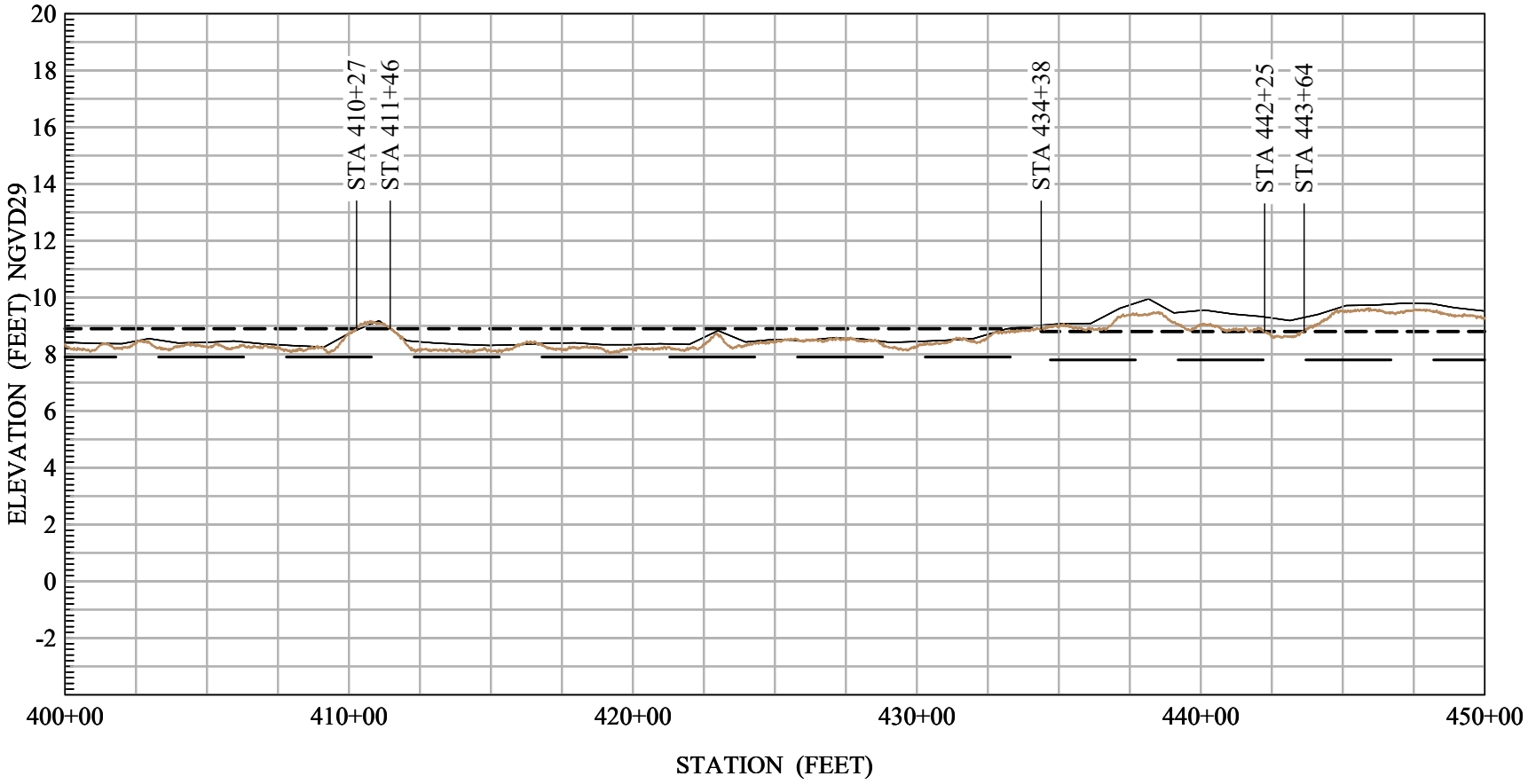
RD 2026 - WEBB TRACT
LEVEE CENTERLINE PROFILE 400+00 - 450+00



PROFILE SHEET: 9 OF 14

SCALE:

Vertical: 1" = 6'

Horizontal: 1" = 600'

LEGEND:

- 2015 As-Built HMP Profile
- 2017 LiDAR Profile
- HMP Elevation
- Bulletin 192-82 Elevation

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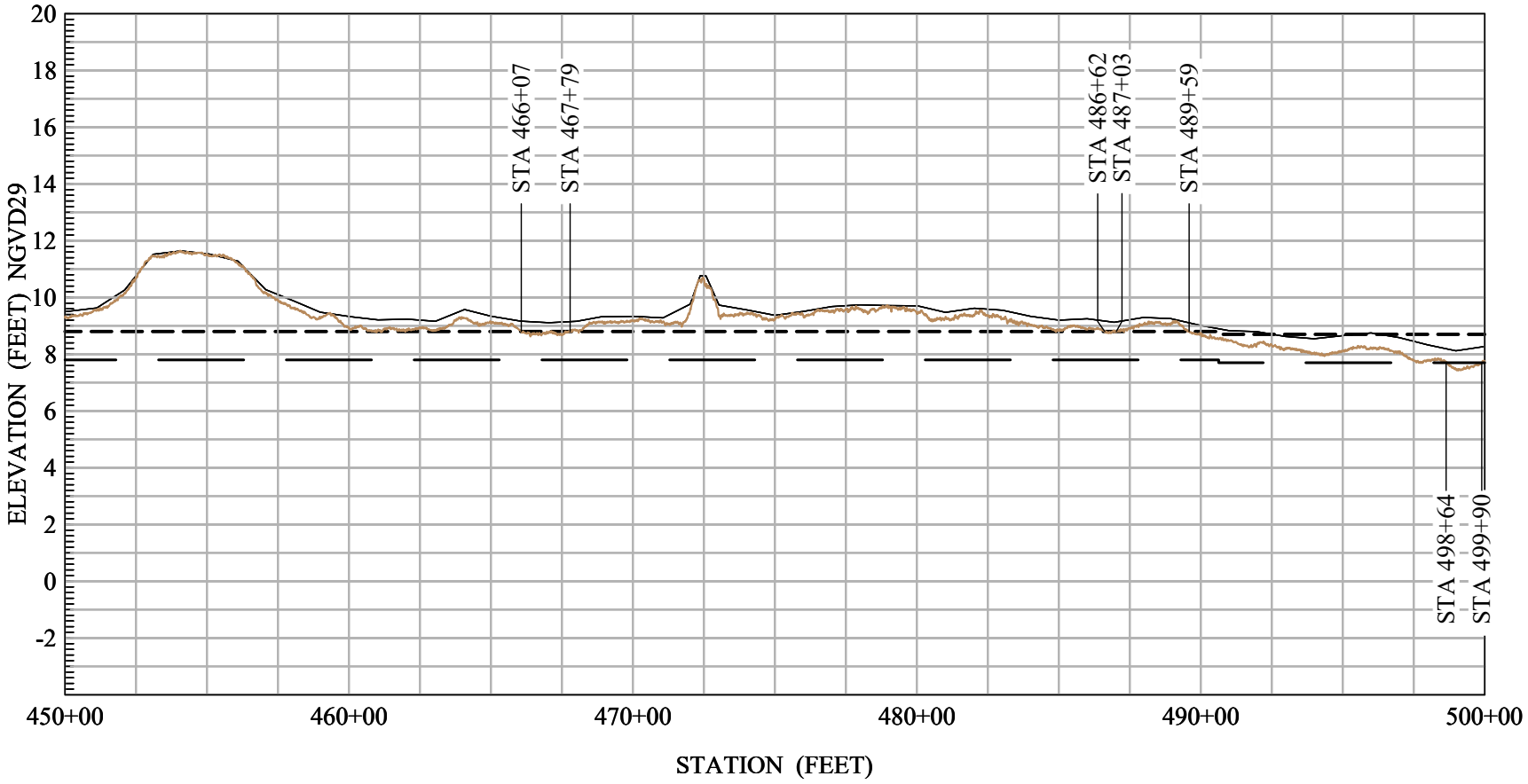
RD 2026 - WEBB TRACT
LEVEE CENTERLINE PROFILE 450+00 - 500+00



PROFILE SHEET: 10 OF 14

SCALE:

Vertical: 1" = 6'

Horizontal: 1" = 600'

LEGEND:

- 2015 As-Built HMP Profile
- 2017 LiDAR Profile
- HMP Elevation
- Bulletin 192-82 Elevation

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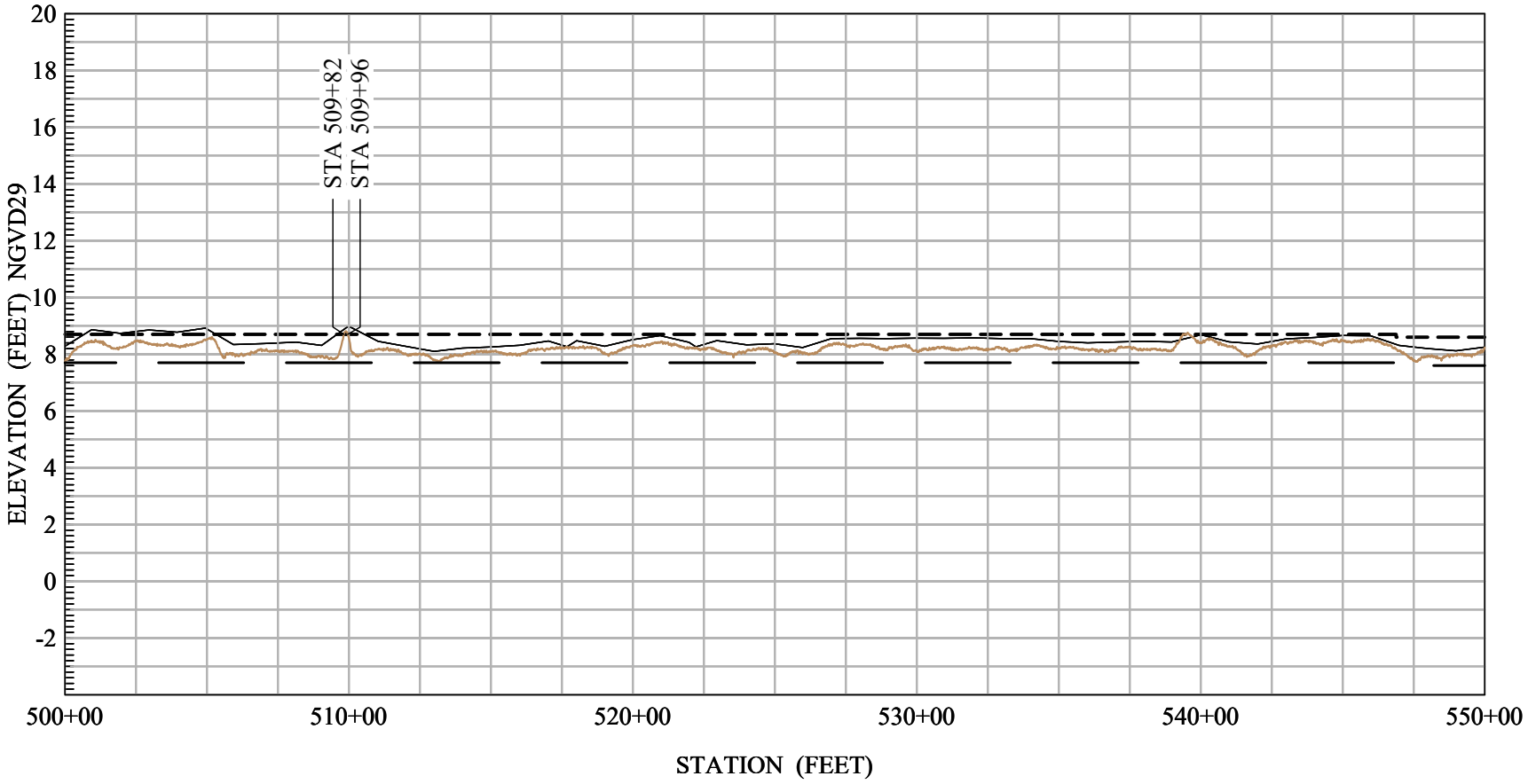
RD 2026 - WEBB TRACT
LEVEE CENTERLINE PROFILE 500+00 - 550+00



PROFILE SHEET: 11 OF 14

SCALE:

Vertical: 1" = 6'

Horizontal: 1" = 600'

LEGEND:

- 2015 As-Built HMP Profile
- 2017 LiDAR Profile
- HMP Elevation
- Bulletin 192-82 Elevation

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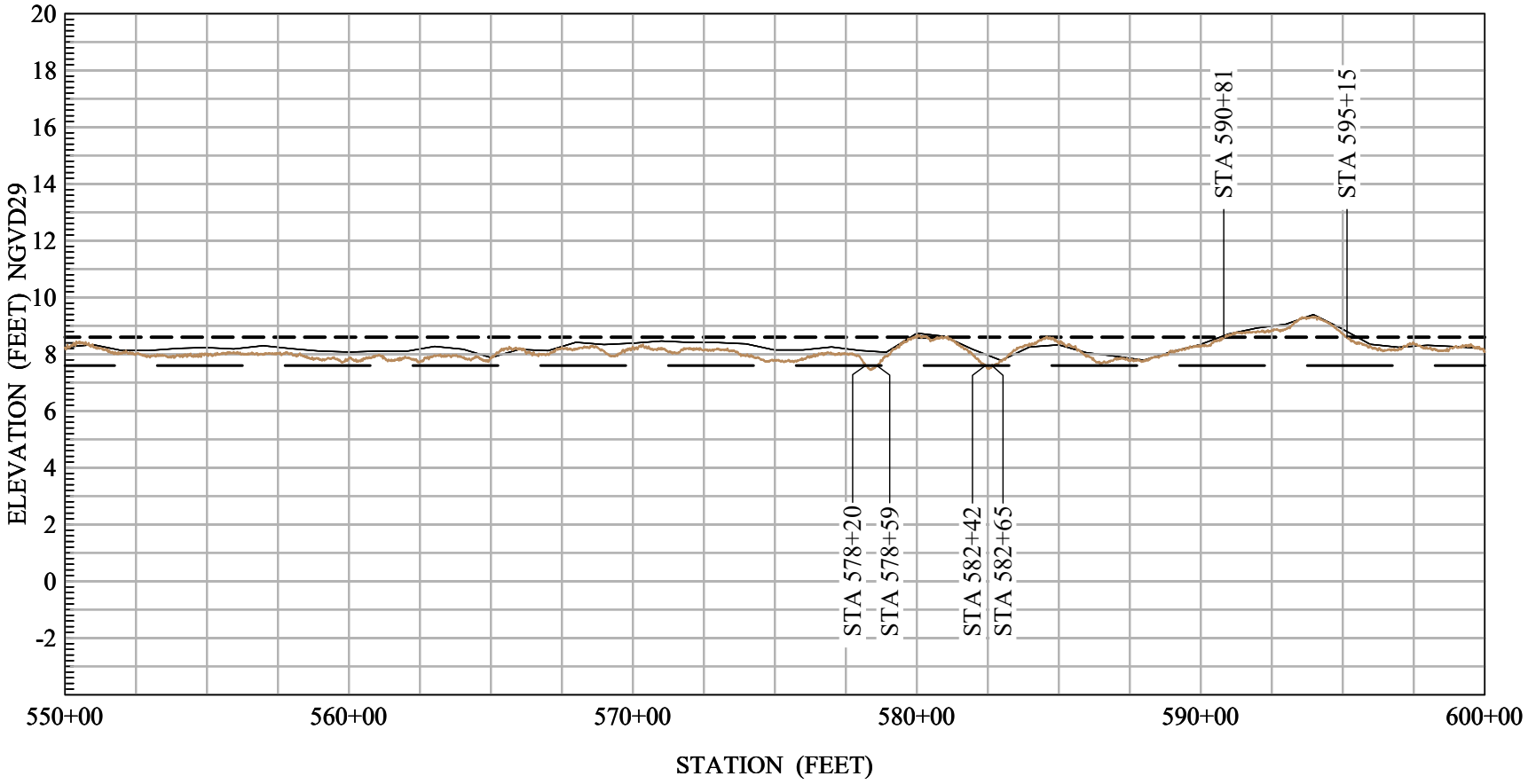
RD 2026 - WEBB TRACT
LEVEE CENTERLINE PROFILE 550+00 - 600+00



PROFILE SHEET: 12 OF 14

SCALE:

Vertical: 1" = 6'

Horizontal: 1" = 600'

LEGEND:

- 2015 As-Built HMP Profile
- 2017 LiDAR Profile
- HMP Elevation
- Bulletin 192-82 Elevation

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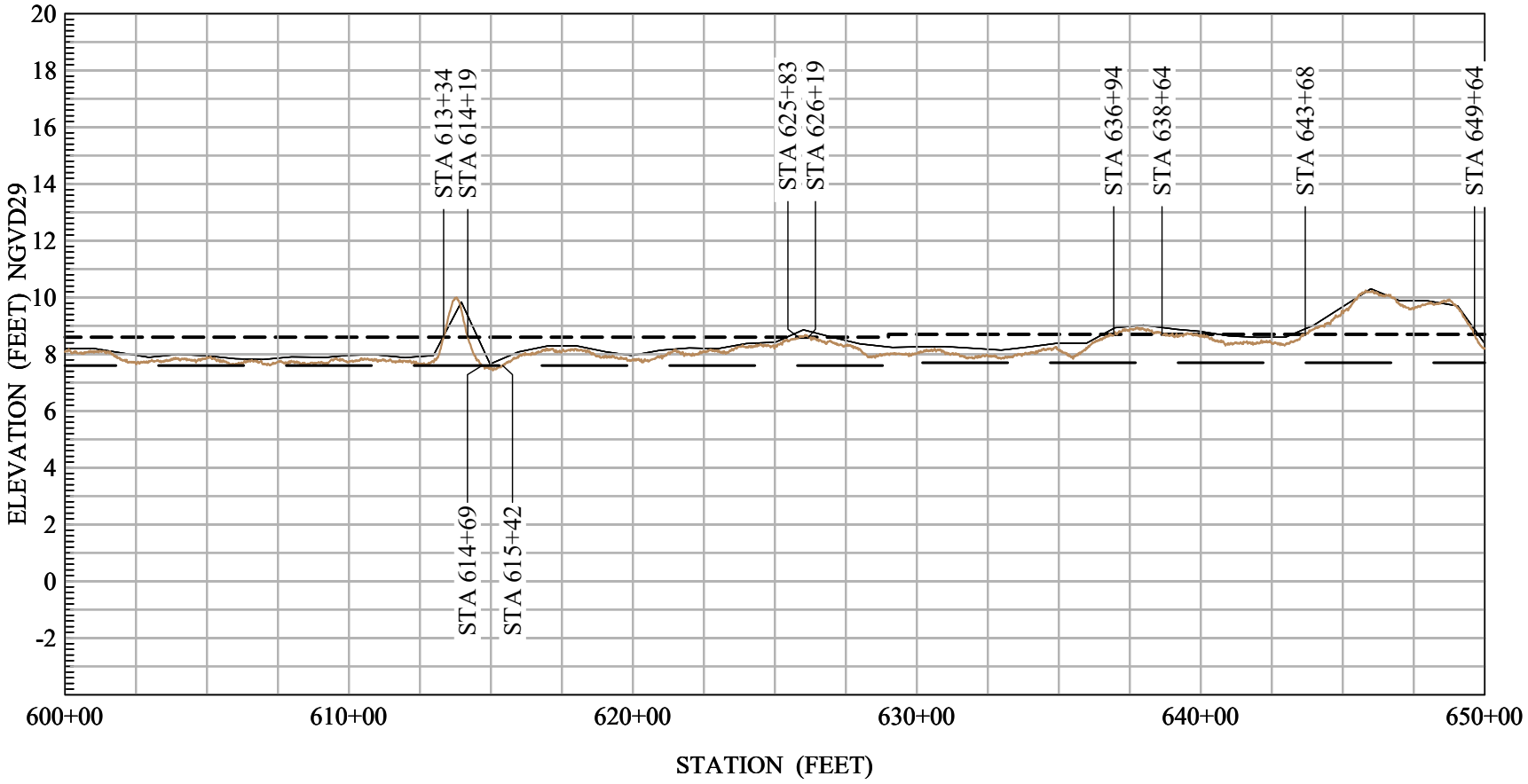
RD 2026 - WEBB TRACT
LEVEE CENTERLINE PROFILE 600+00 - 650+00



PROFILE SHEET: 13 OF 14

SCALE:

Vertical: 1" = 6'

Horizontal: 1" = 600'

LEGEND:

- 2015 As-Built HMP Profile
- 2017 LiDAR Profile
- HMP Elevation
- Bulletin 192-82 Elevation

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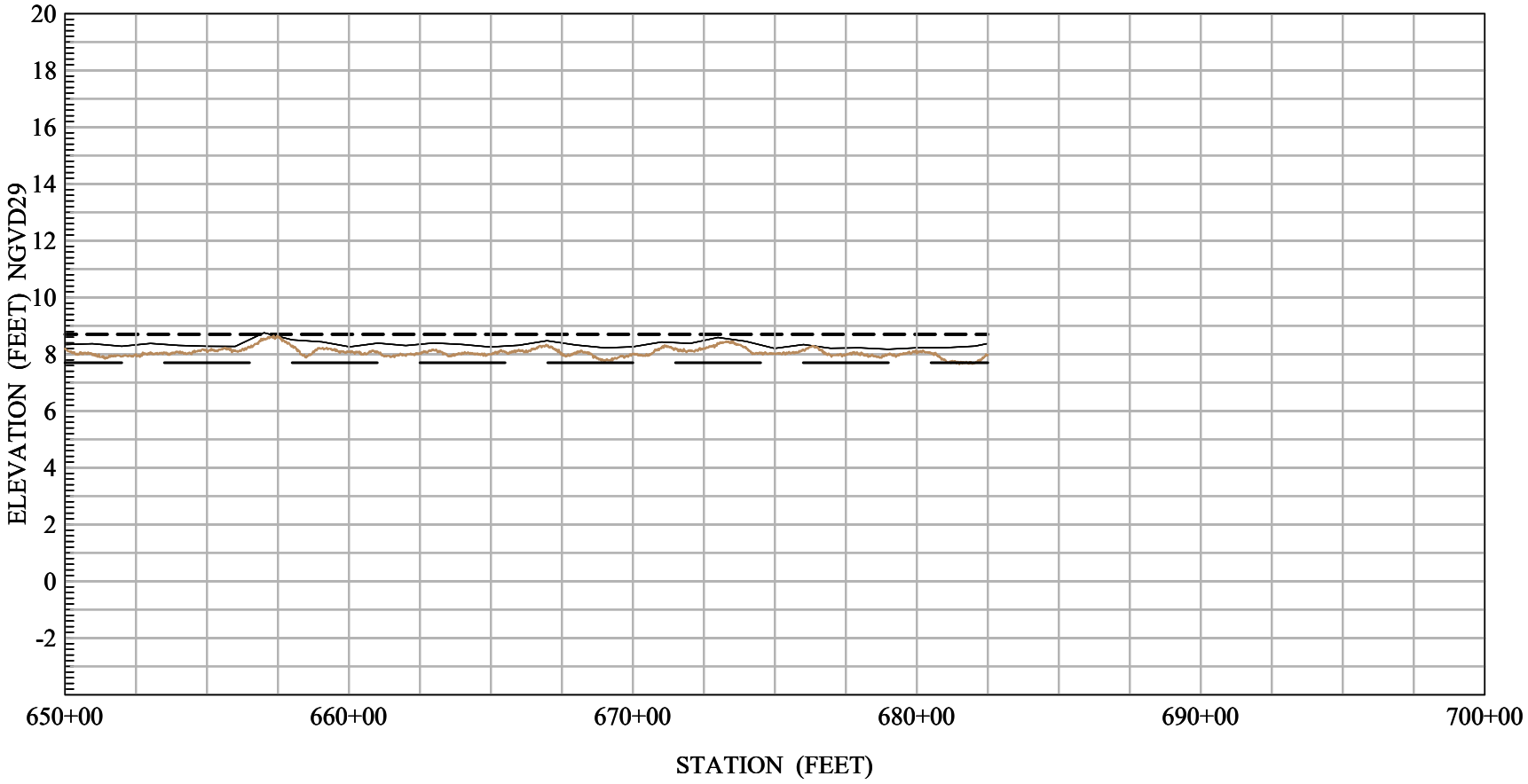
RD 2026 - WEBB TRACT
LEVEE CENTERLINE PROFILE 650+00 - 700+00



PROFILE SHEET: 14 OF 14

SCALE:

Vertical: 1" = 6'

Horizontal: 1" = 600'

LEGEND:

- 2015 As-Built HMP Profile
- 2017 LiDAR Profile
- HMP Elevation
- Bulletin 192-82 Elevation

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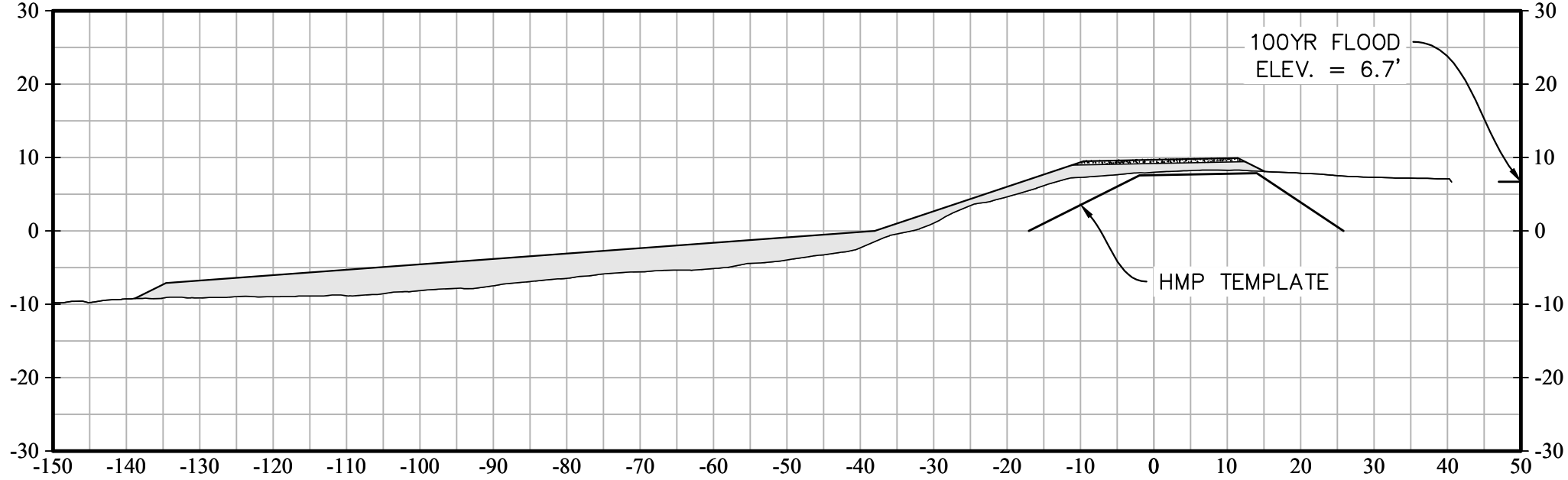
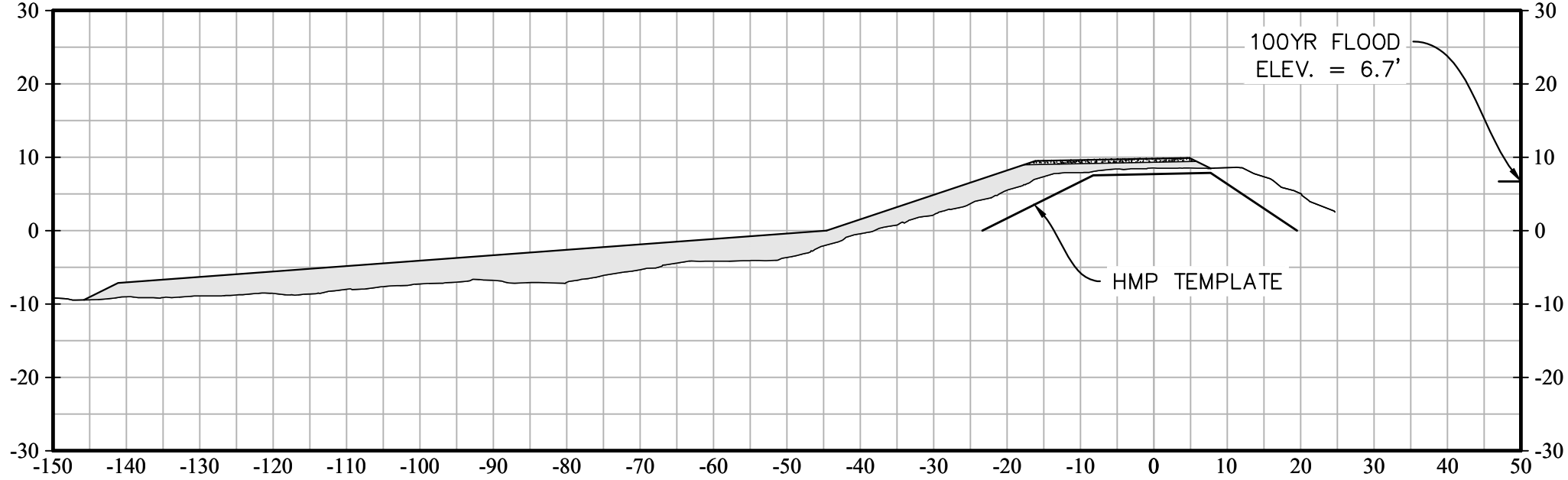
* VERTICAL DATUM = NGVD 29

0+00



5+00



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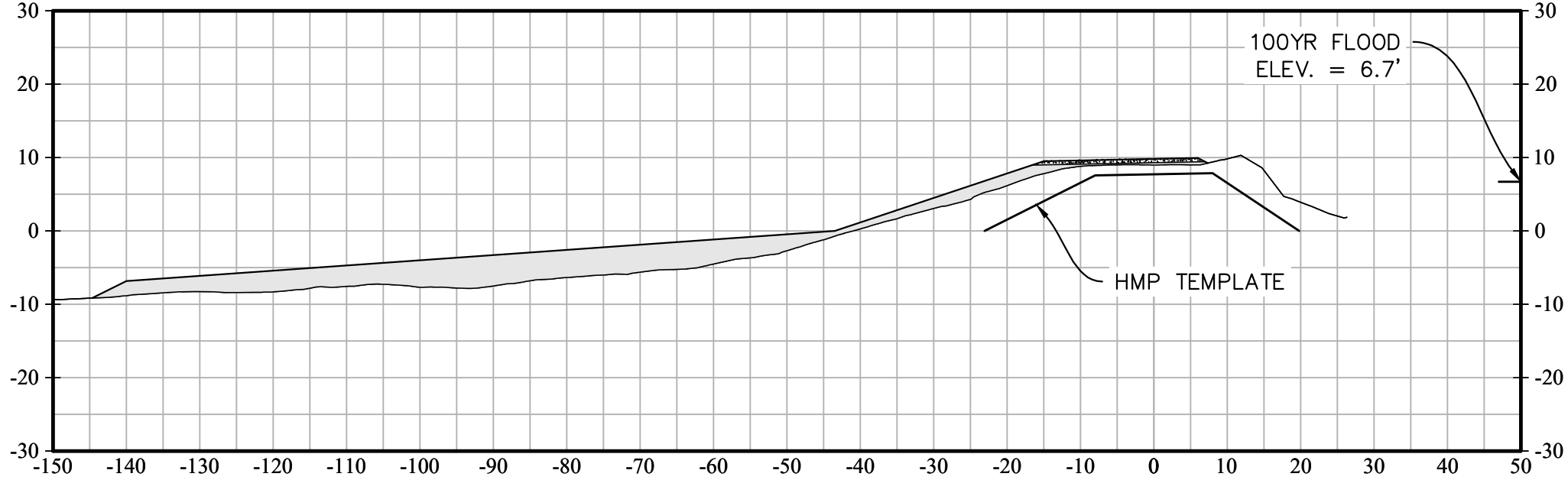
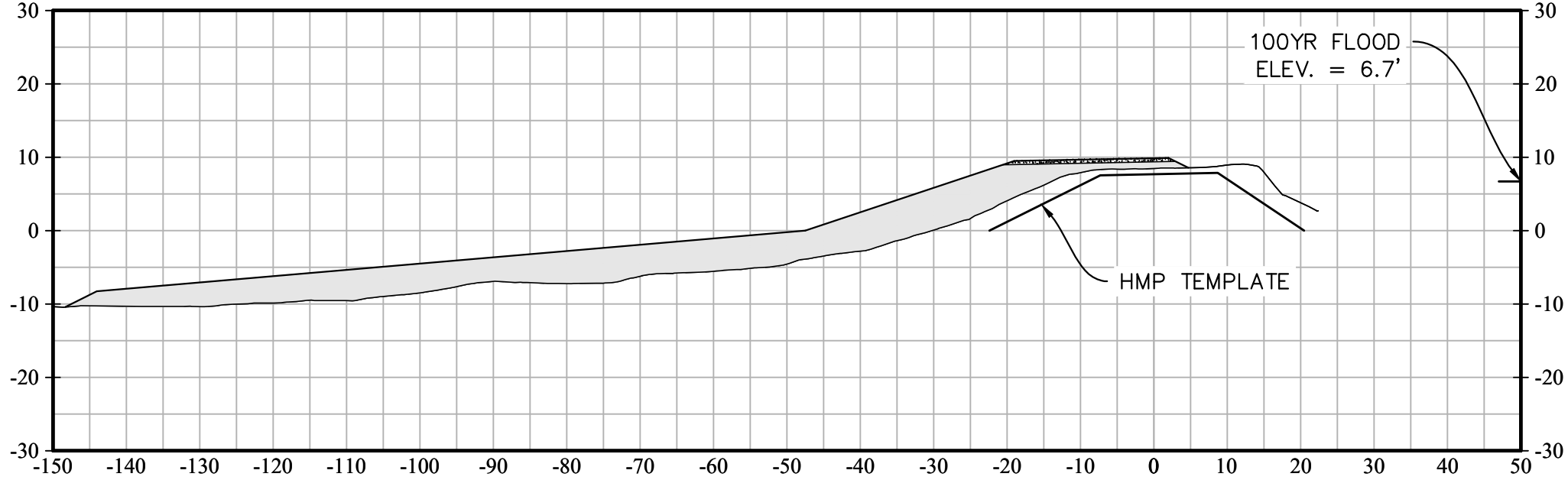
* VERTICAL DATUM = NGVD 29

10+00



15+00



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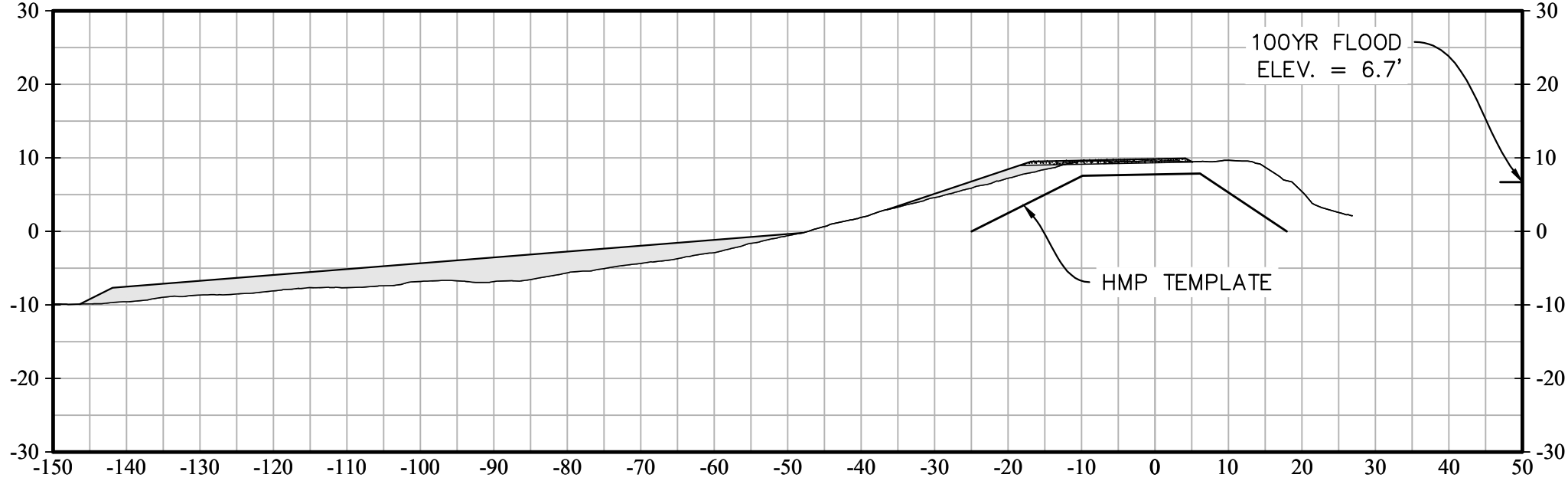
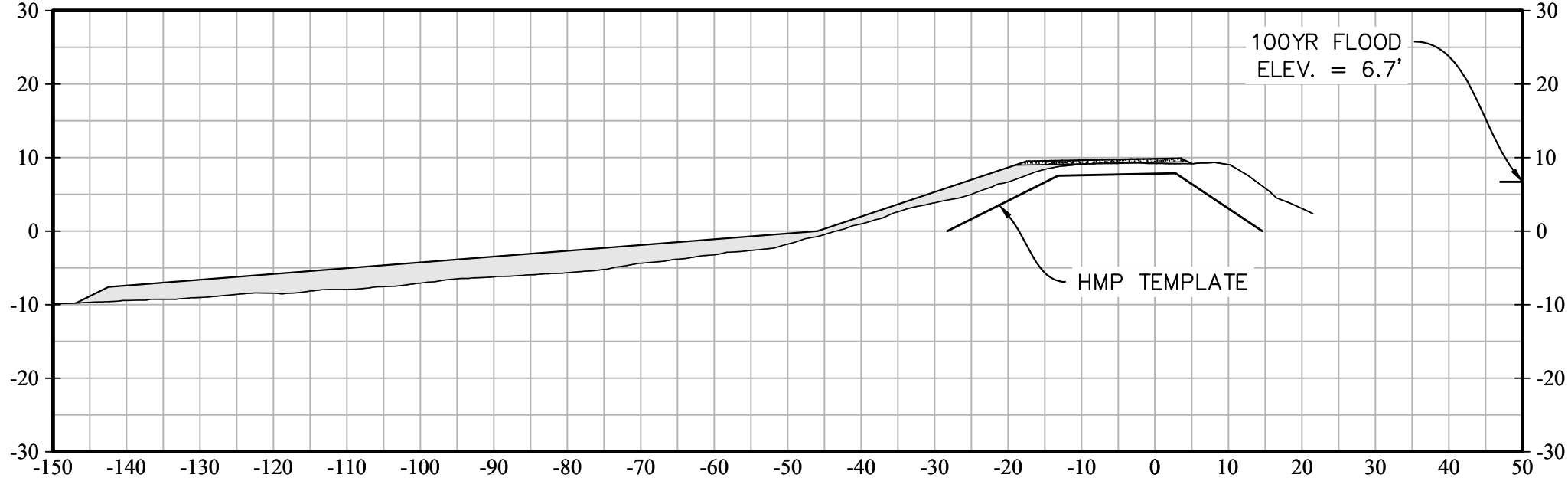
20+00



25+00



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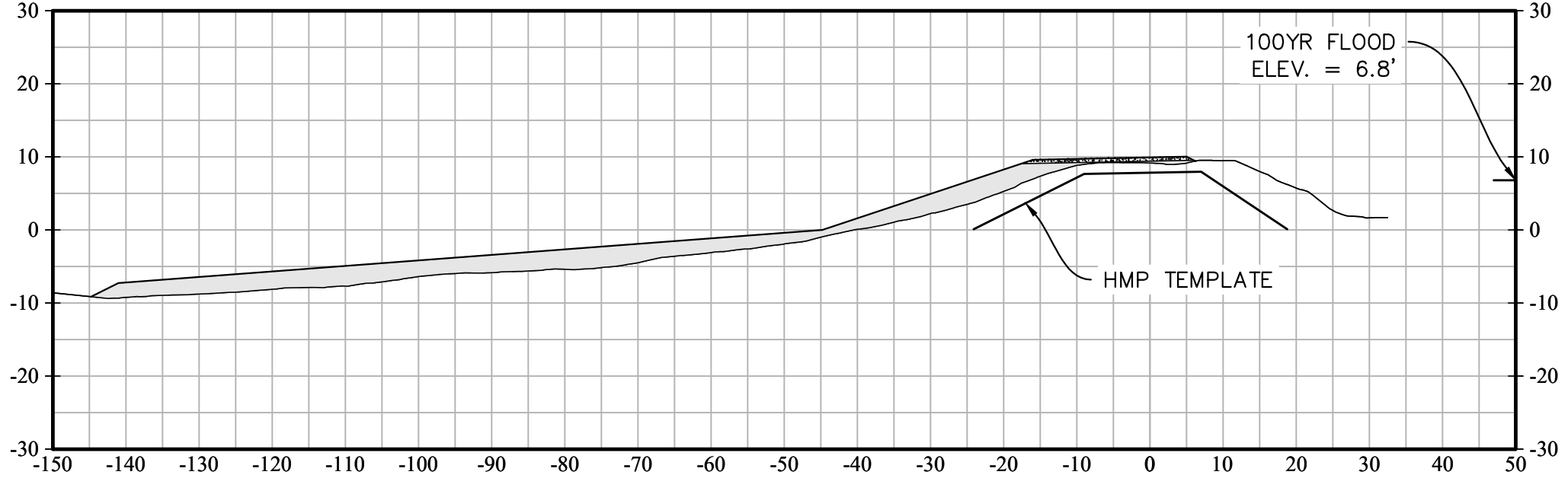
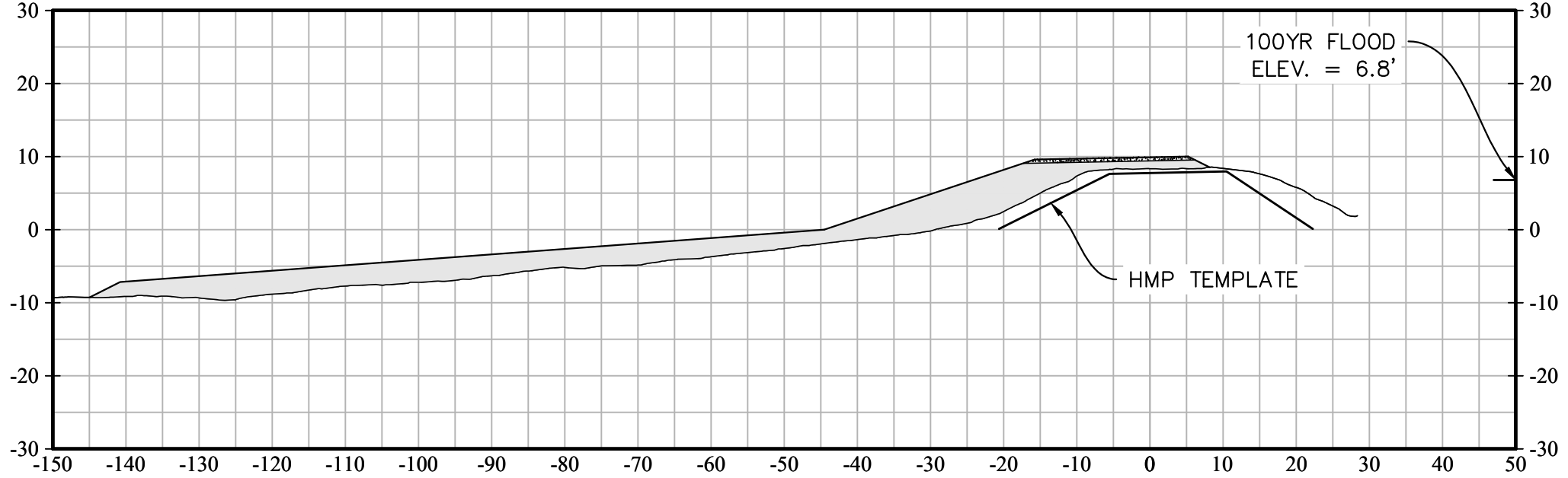
30+00



35+00



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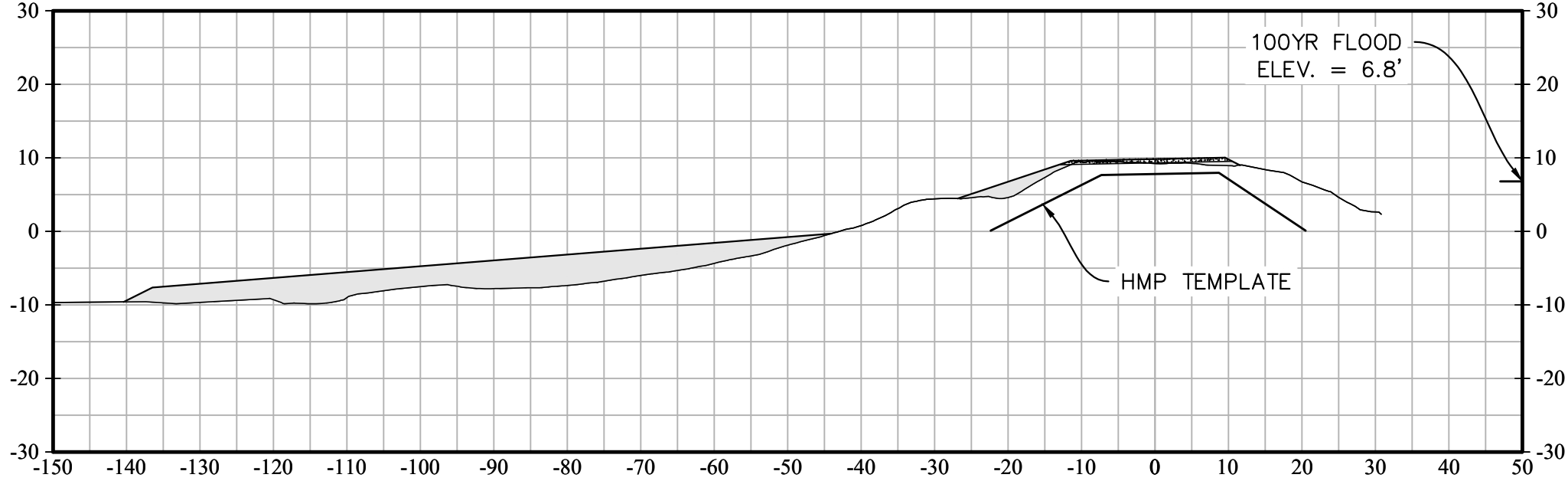
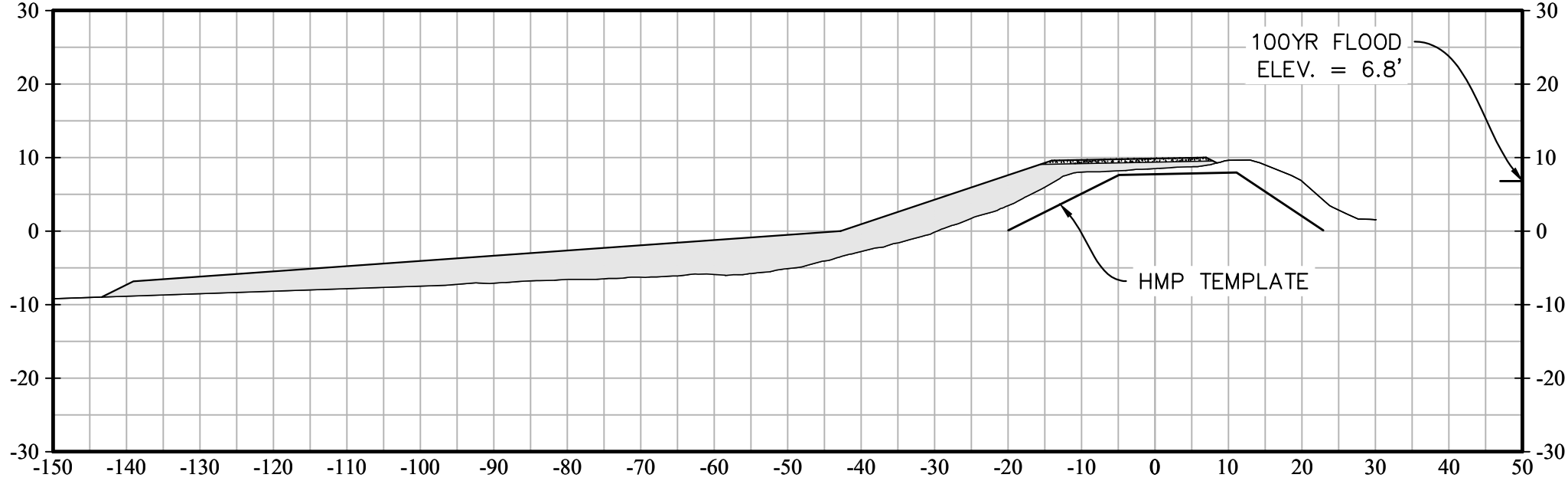
40+00



45+00



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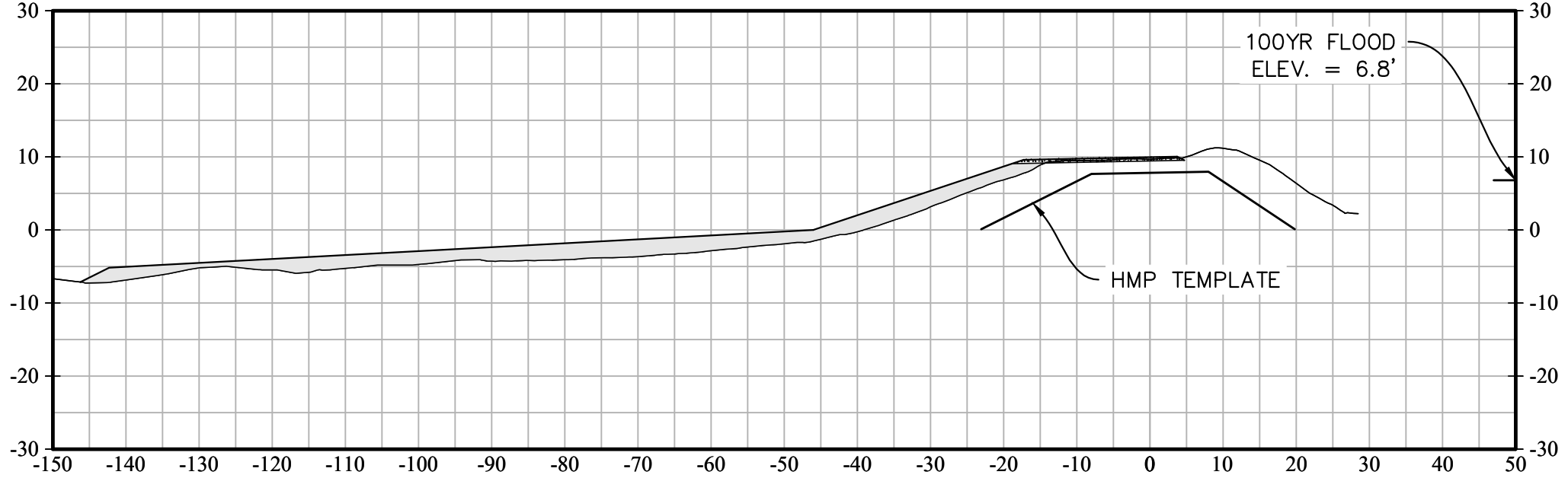
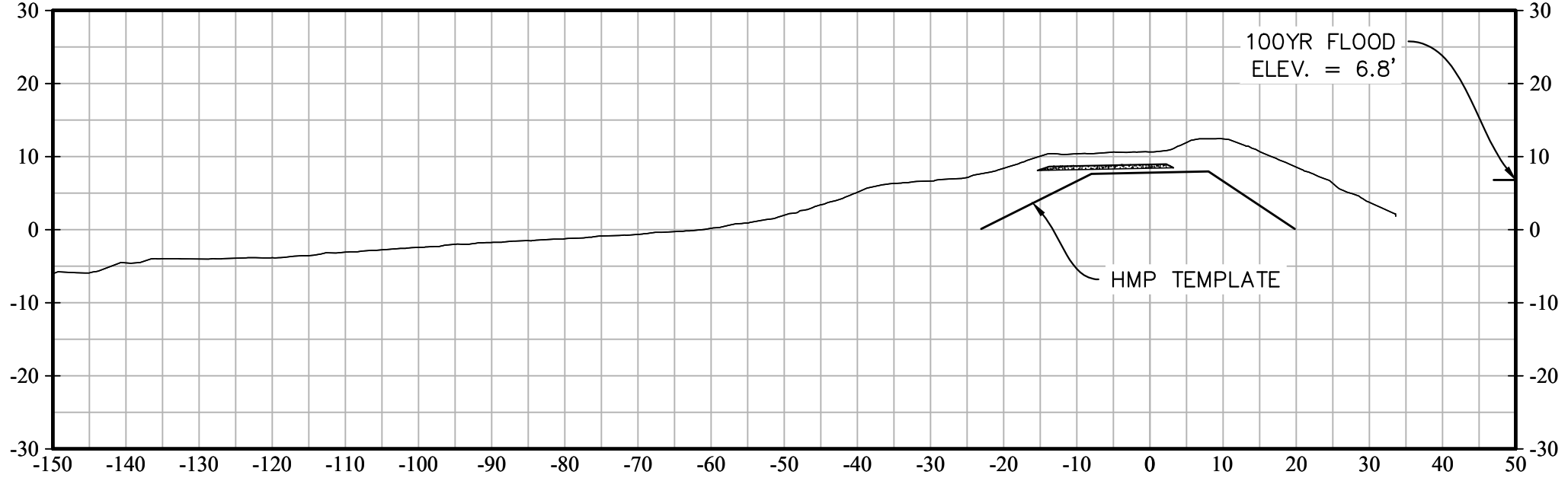
50+00



55+00



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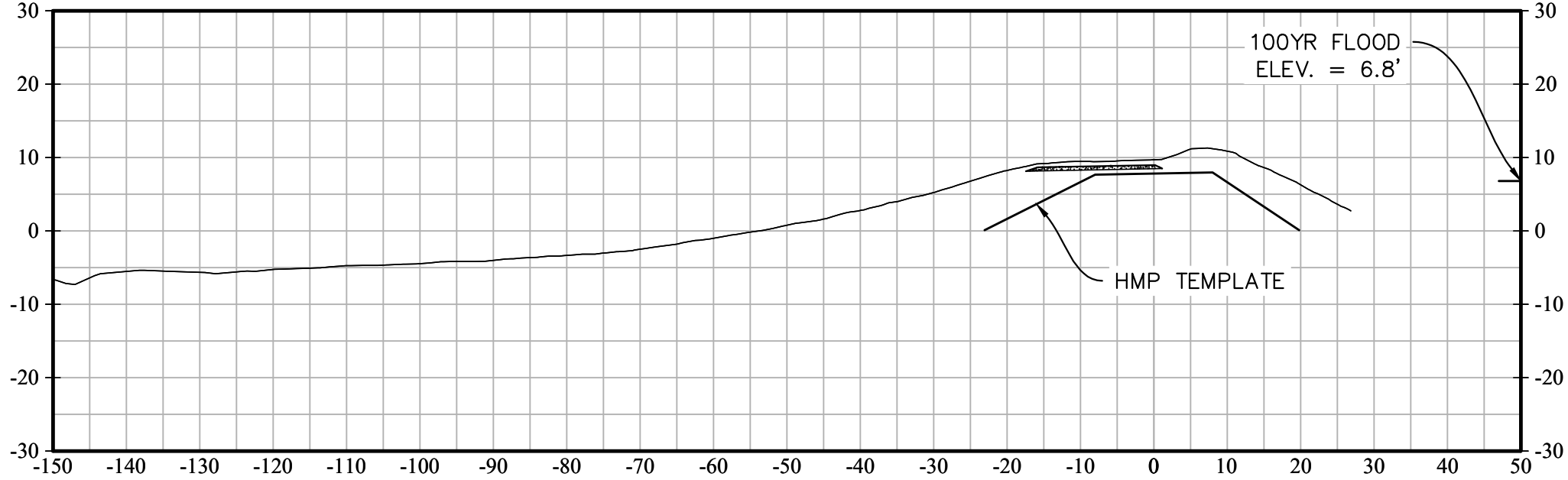
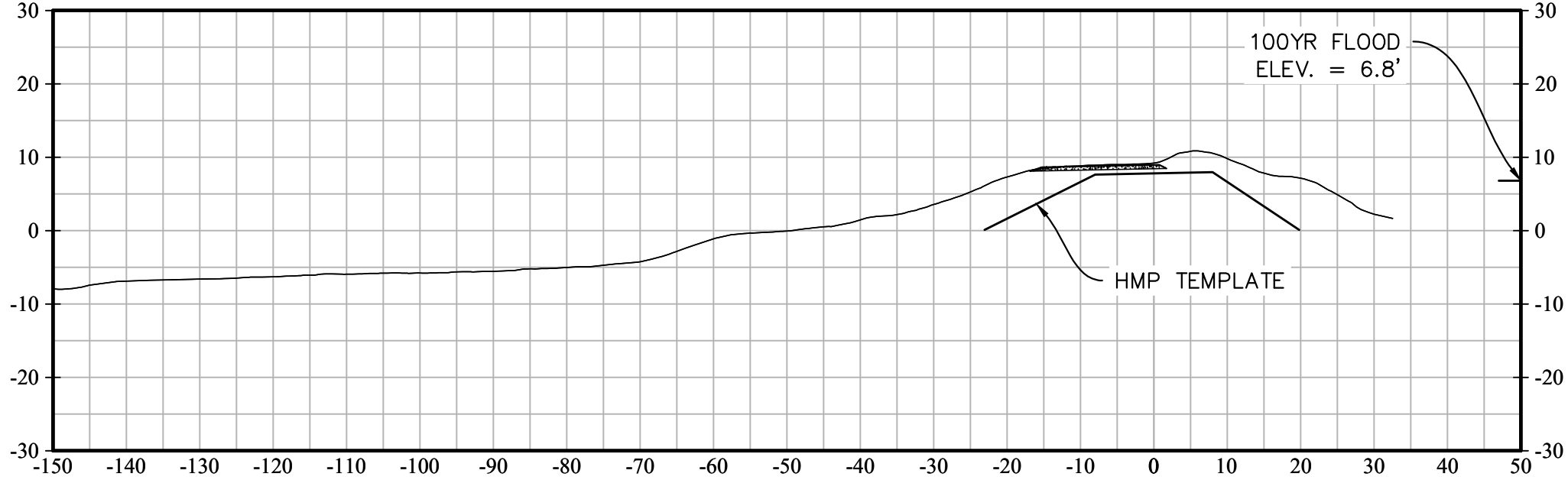
60+00



65+00



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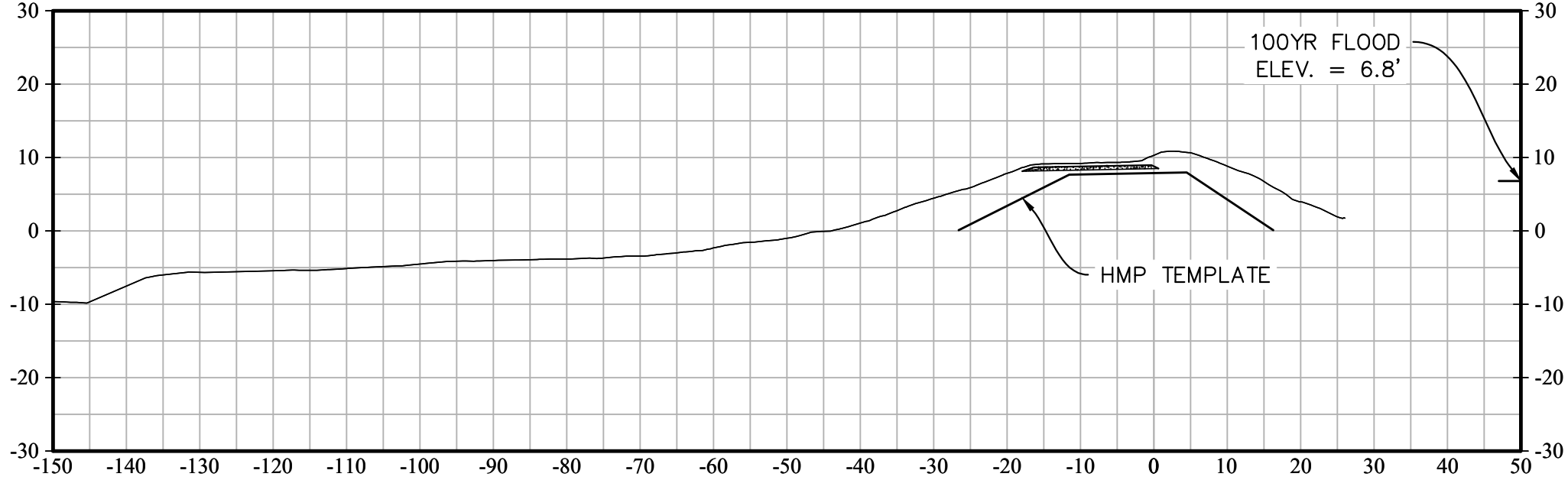
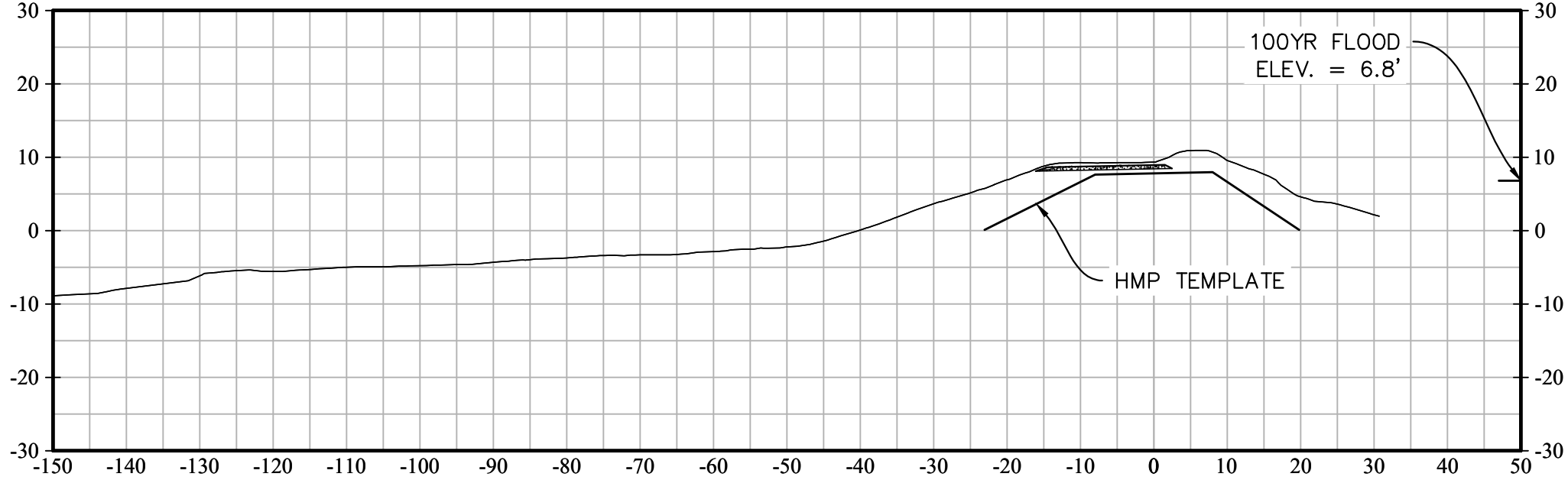
70+00



75+00



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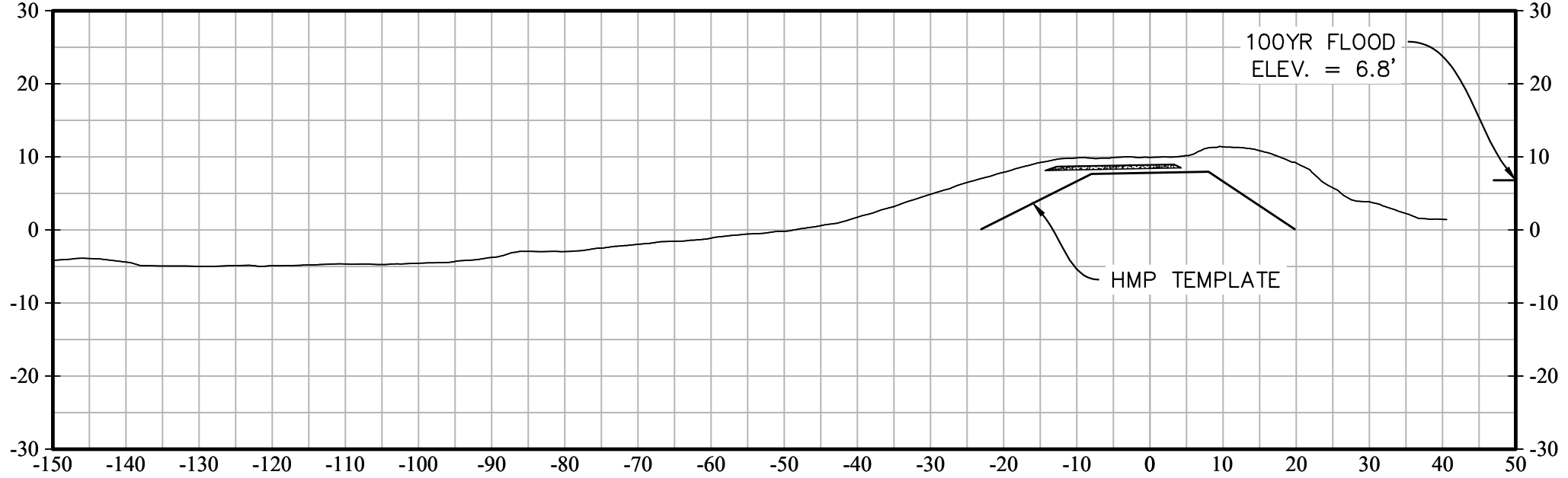
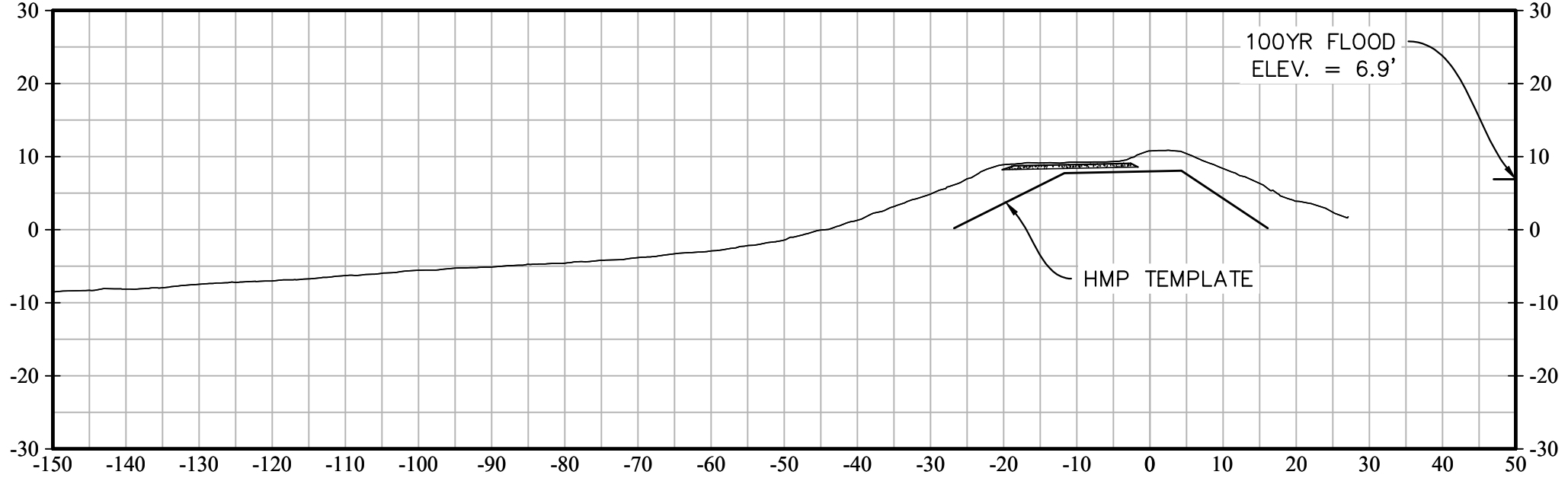
80+00



85+00



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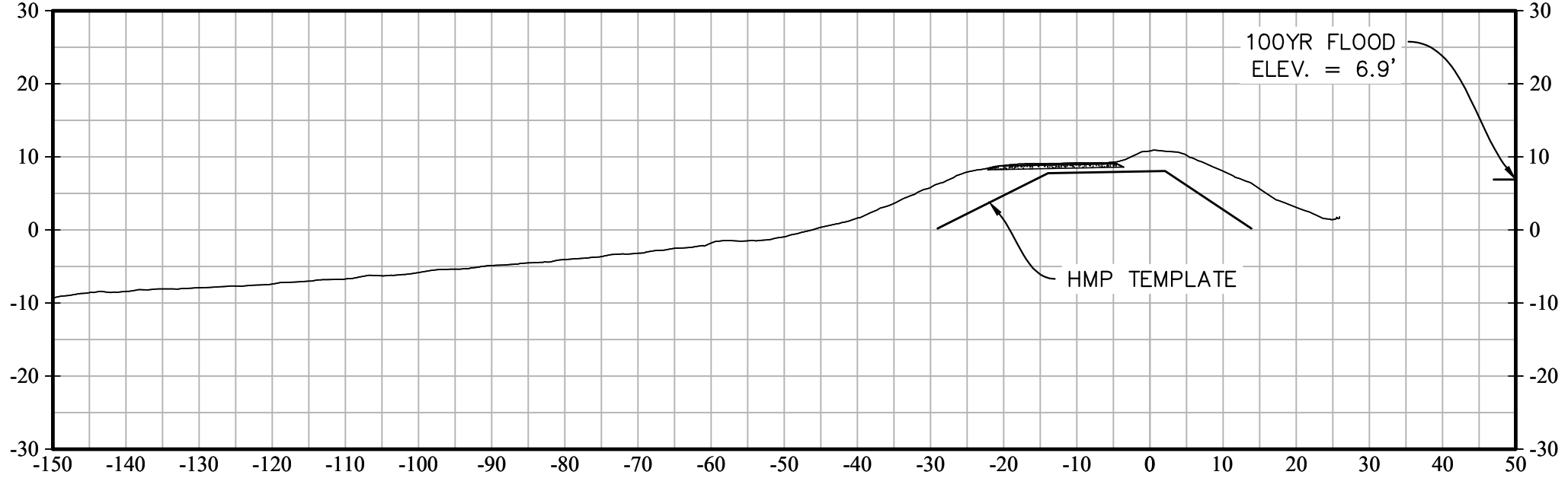
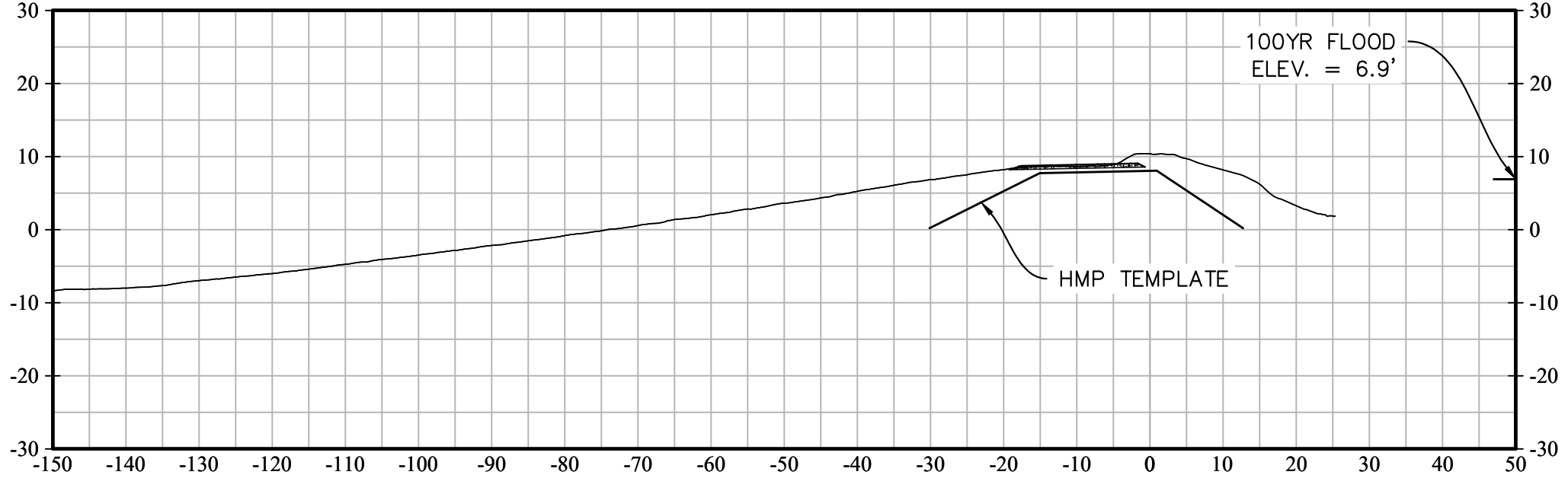
90+00



95+00



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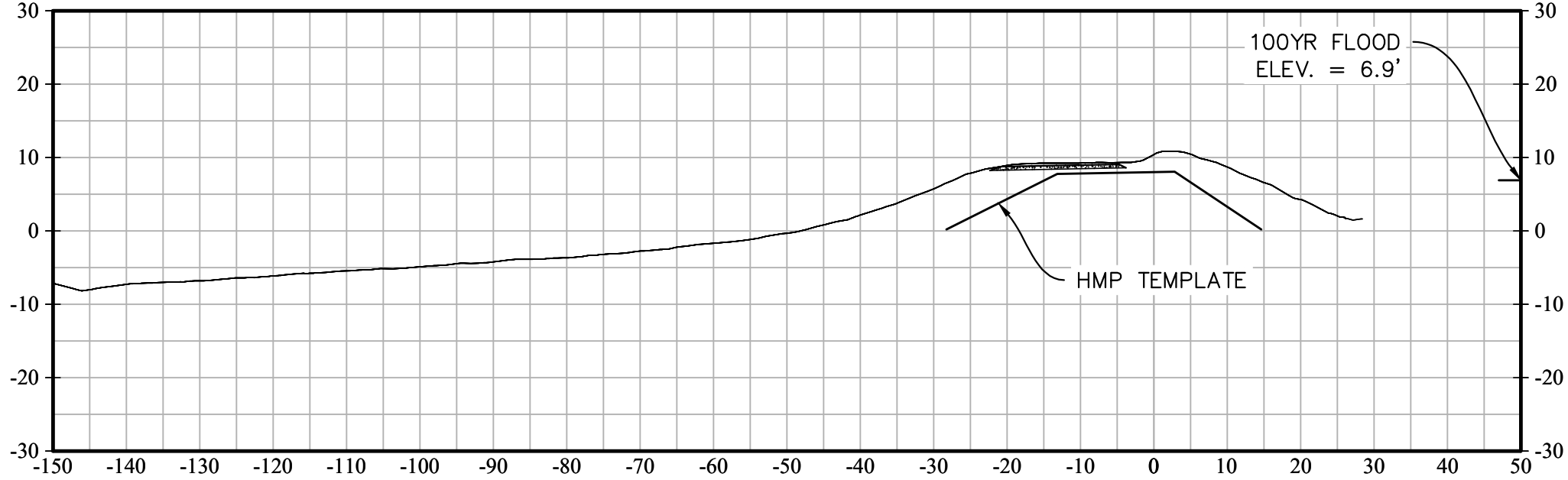
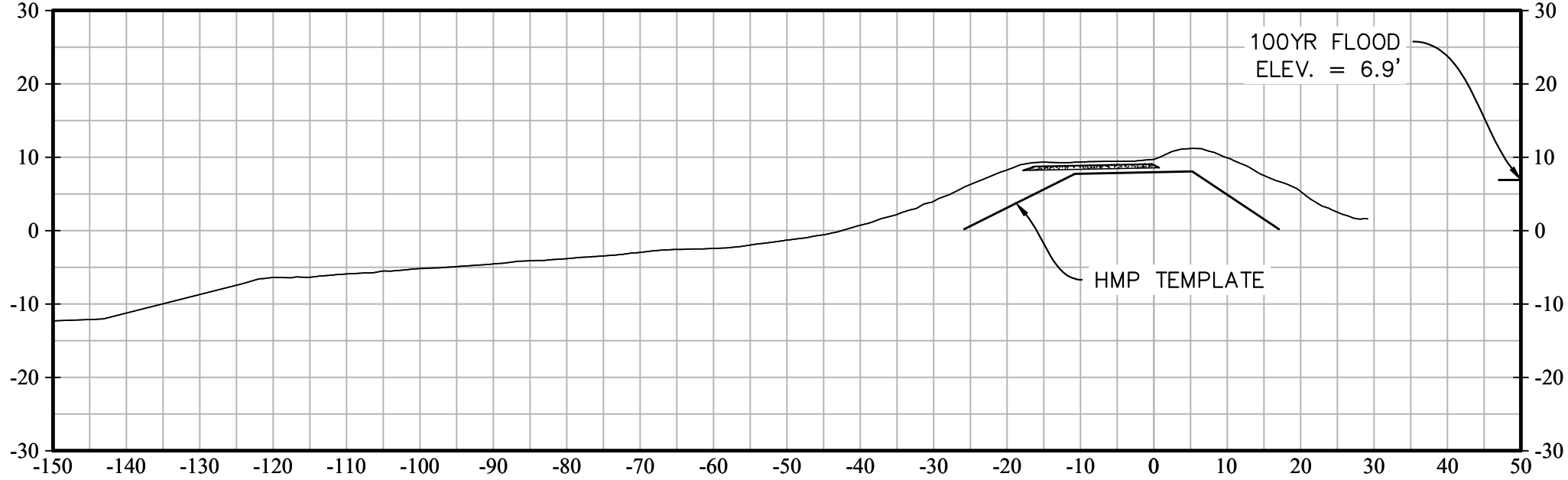
* VERTICAL DATUM = NGVD 29

100+00



105+00



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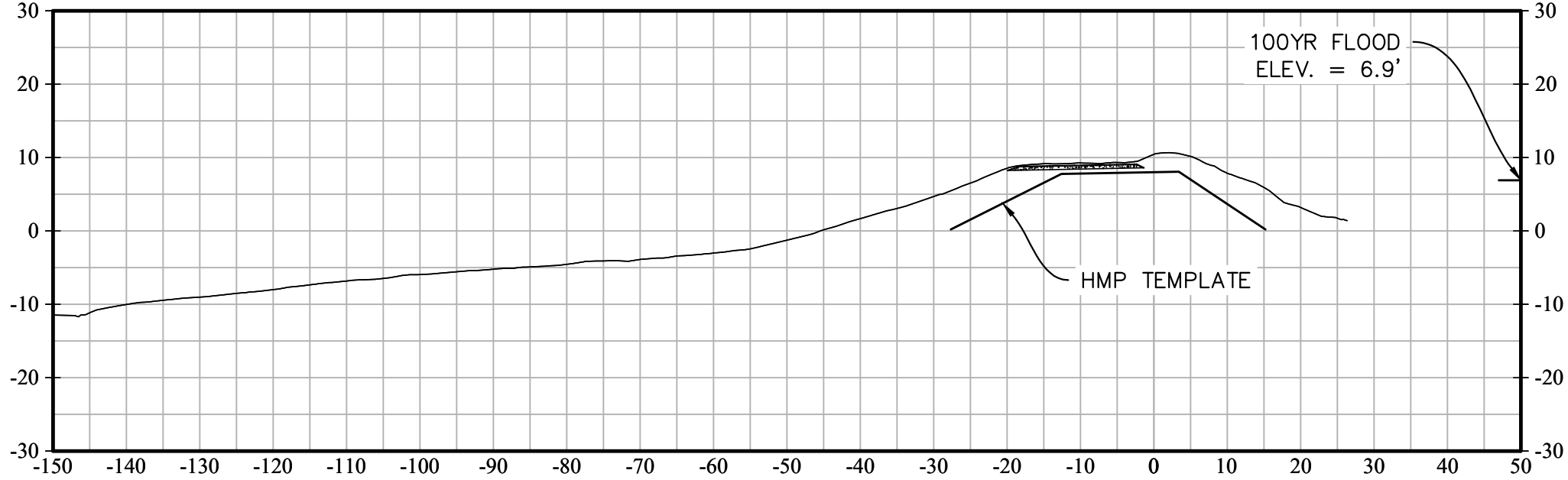
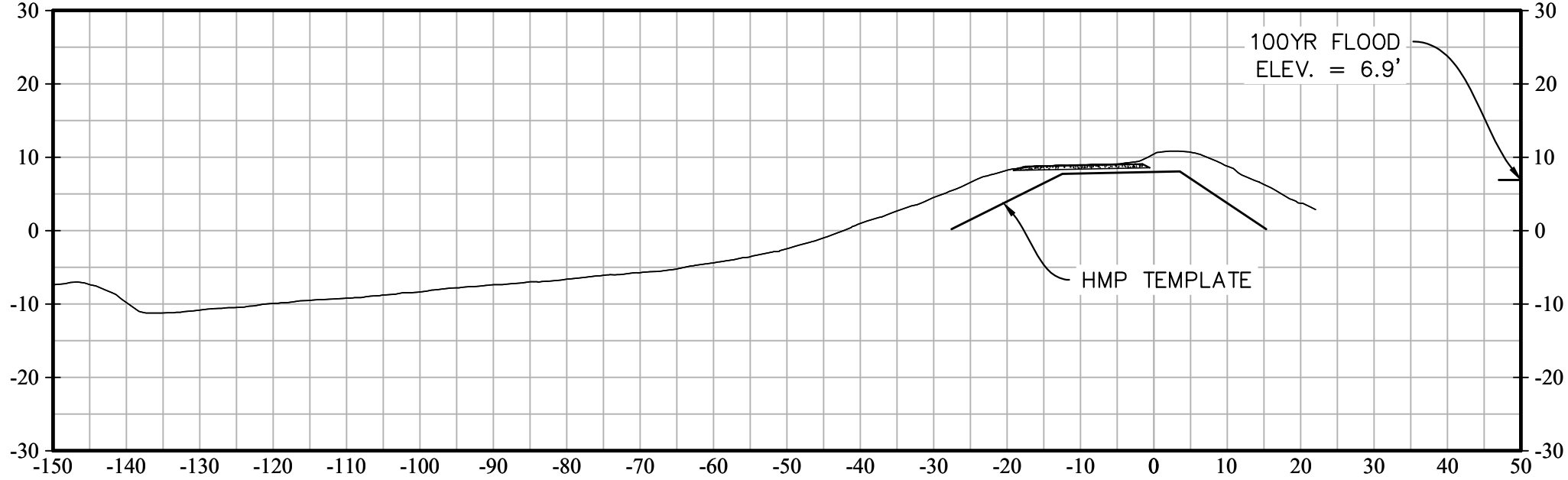
* VERTICAL DATUM = NGVD 29

110+00



115+00



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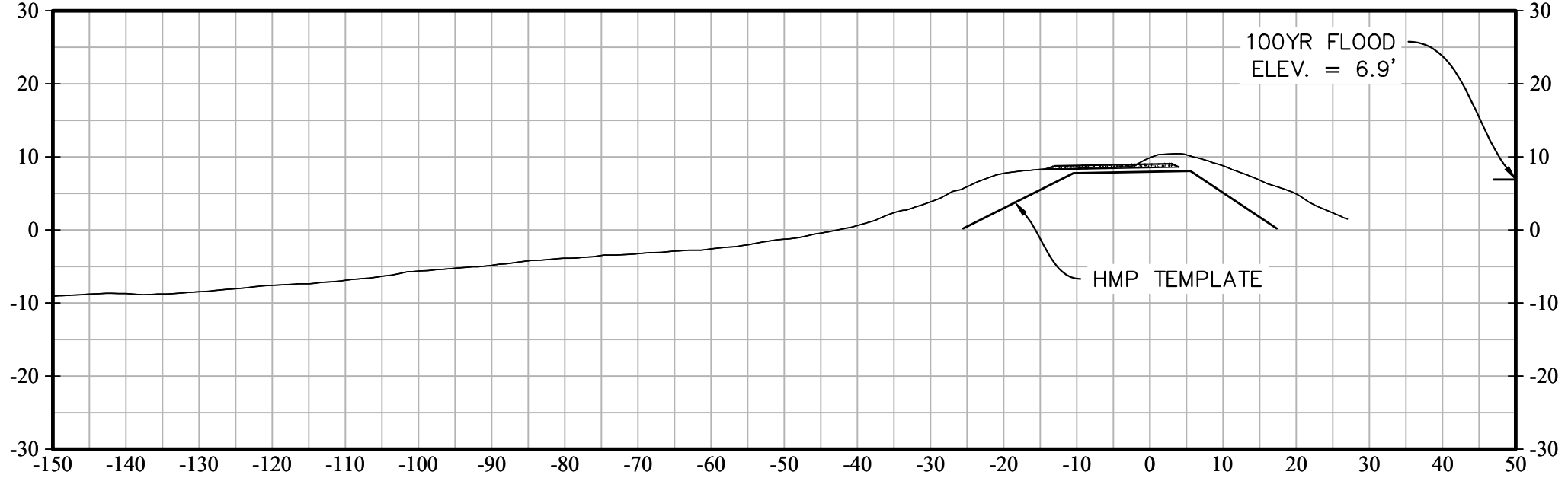
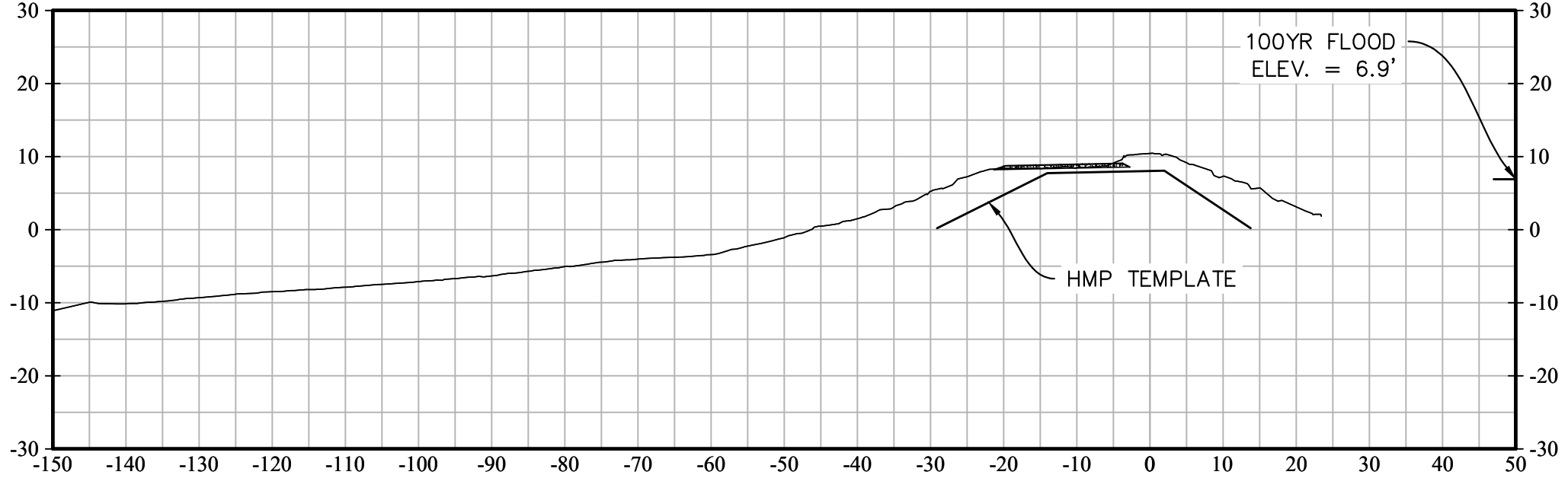
* VERTICAL DATUM = NGVD 29

120+00



125+00



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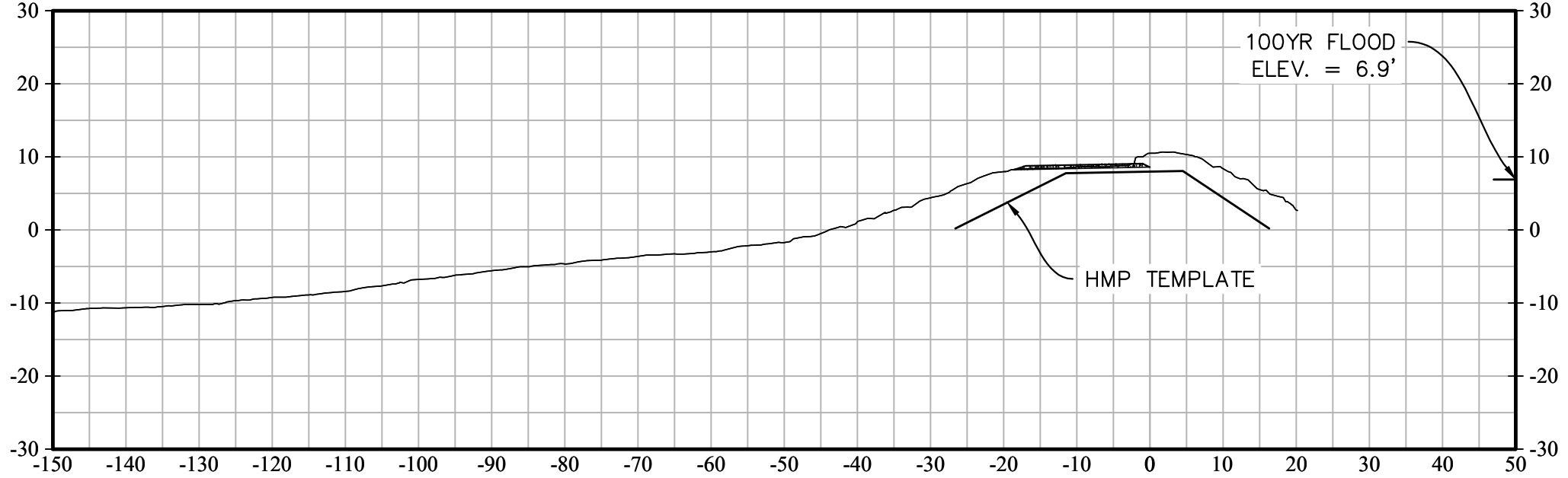
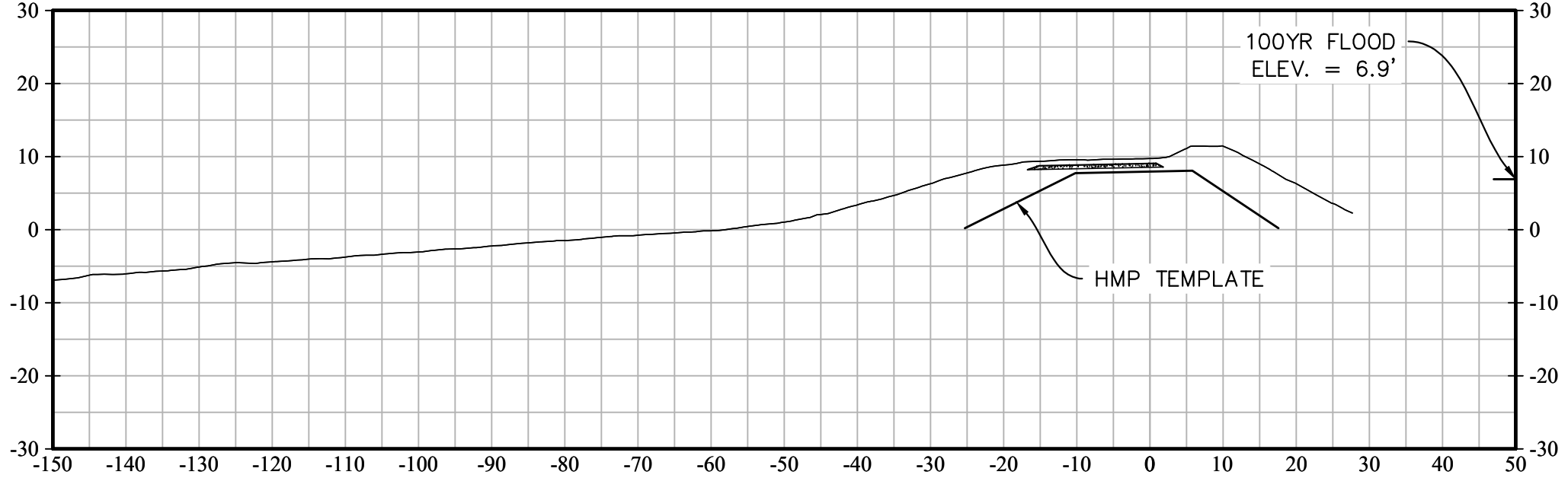
* VERTICAL DATUM = NGVD 29

130+00



135+00



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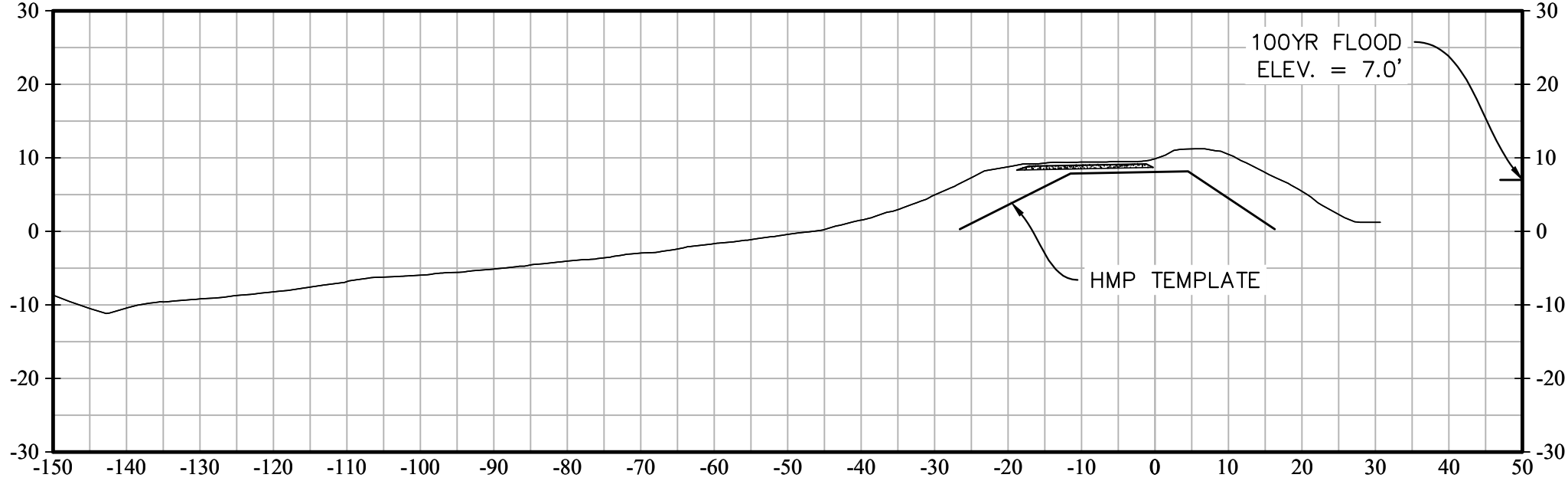
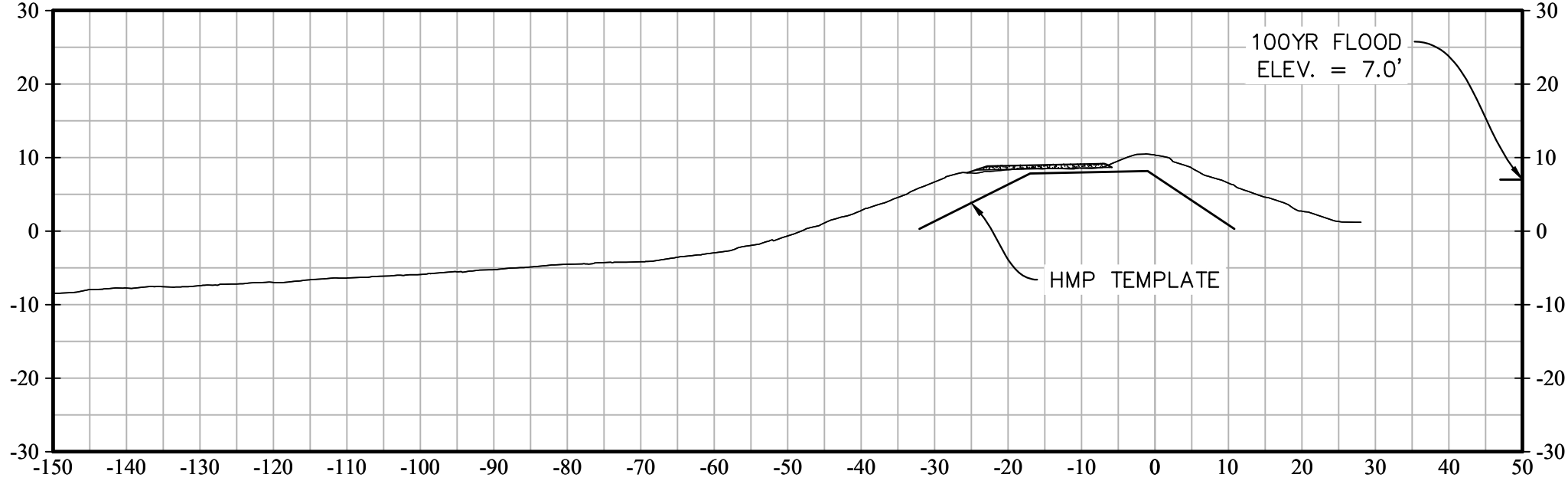
* VERTICAL DATUM = NGVD 29

140+00



145+00



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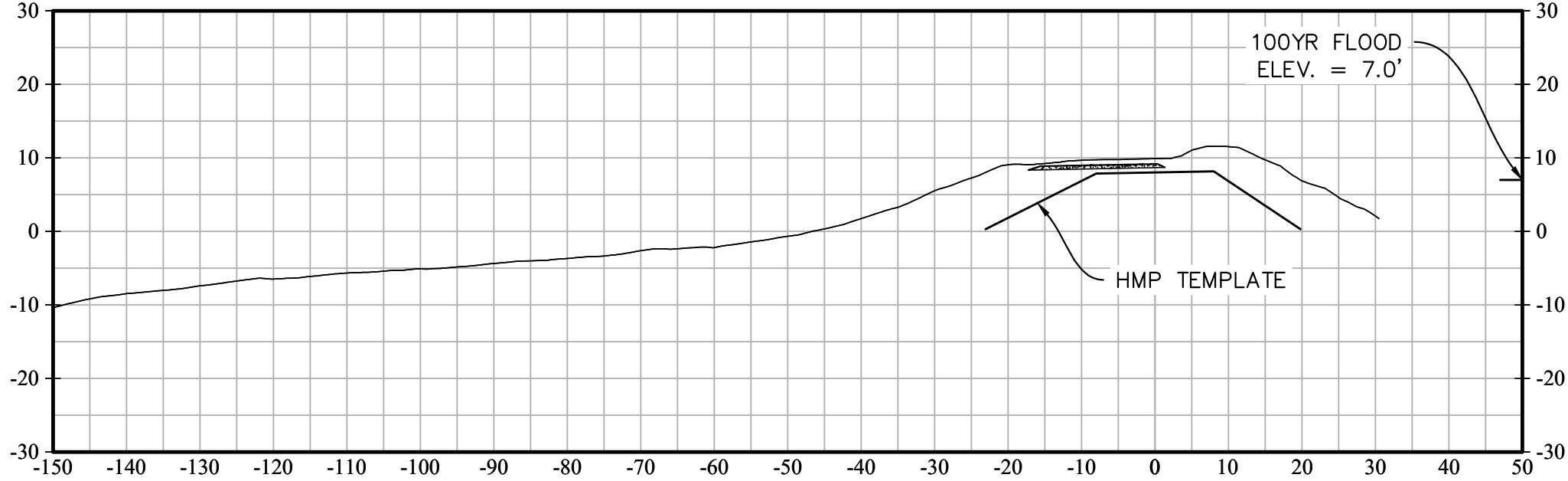
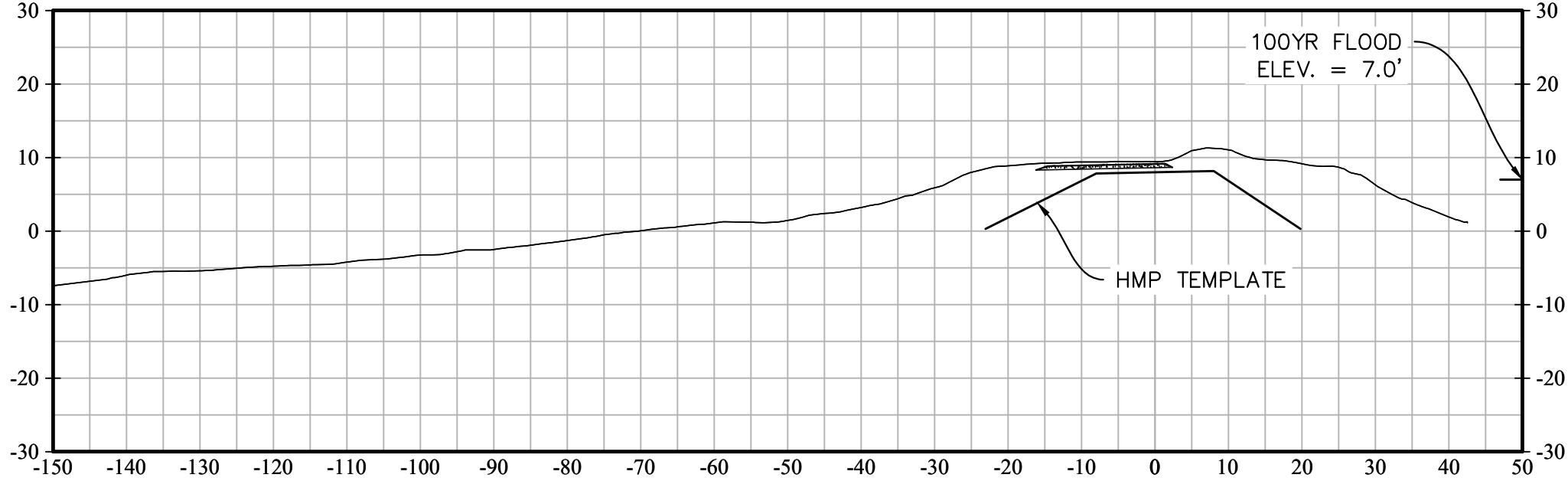
* VERTICAL DATUM = NGVD 29

150+00



155+00



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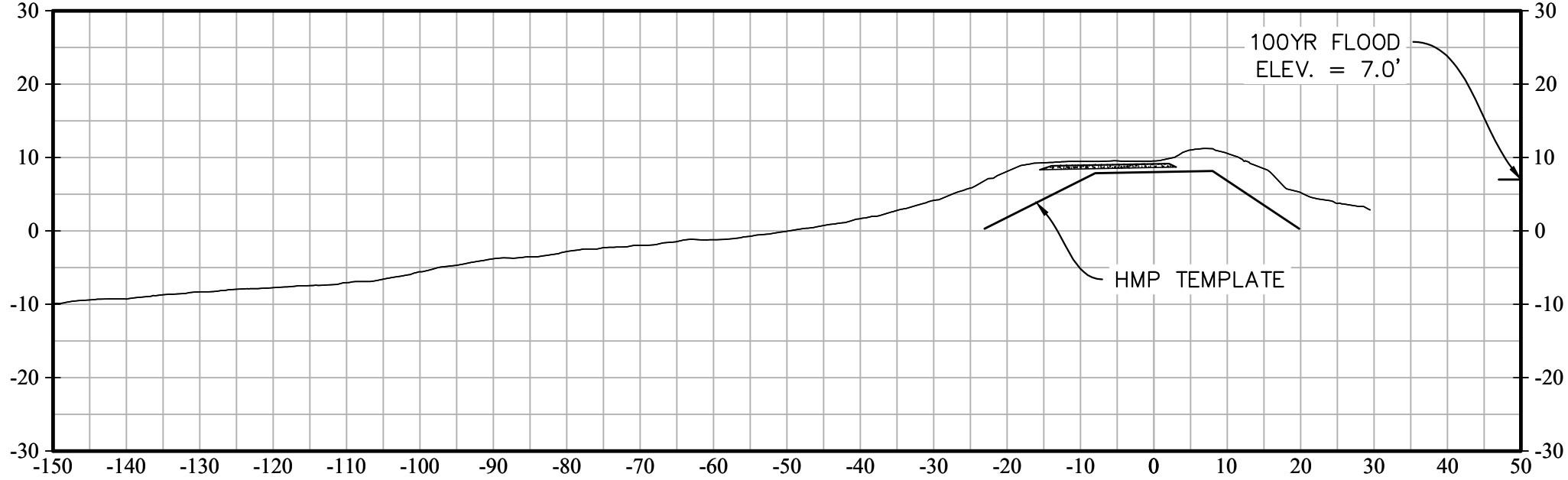
160+00



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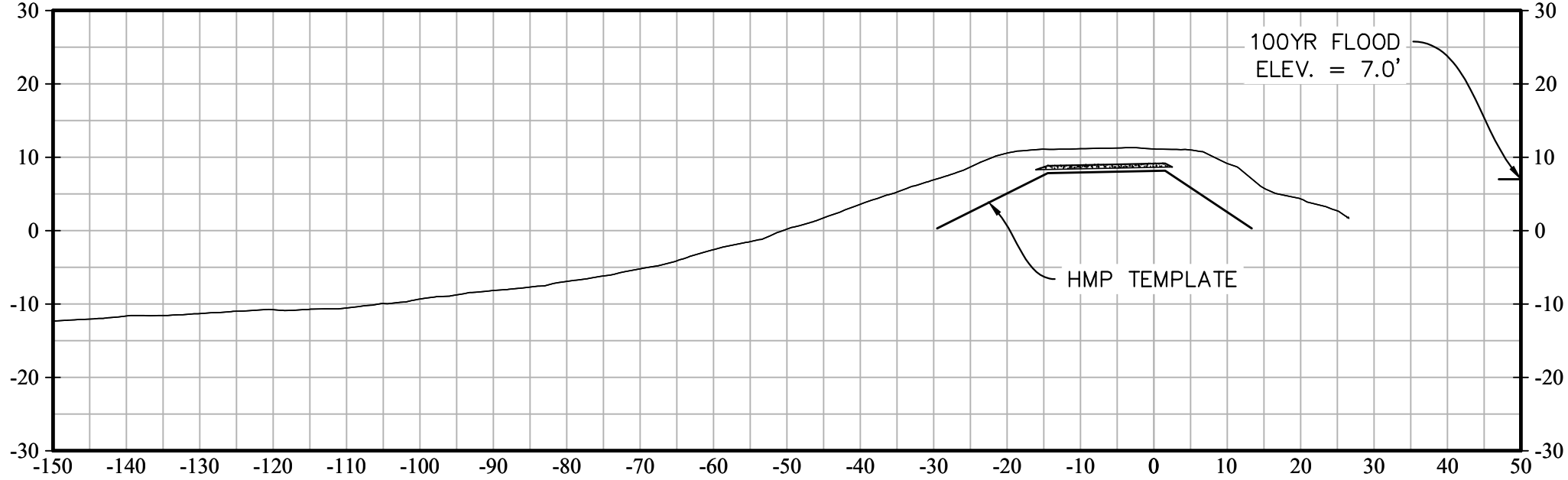

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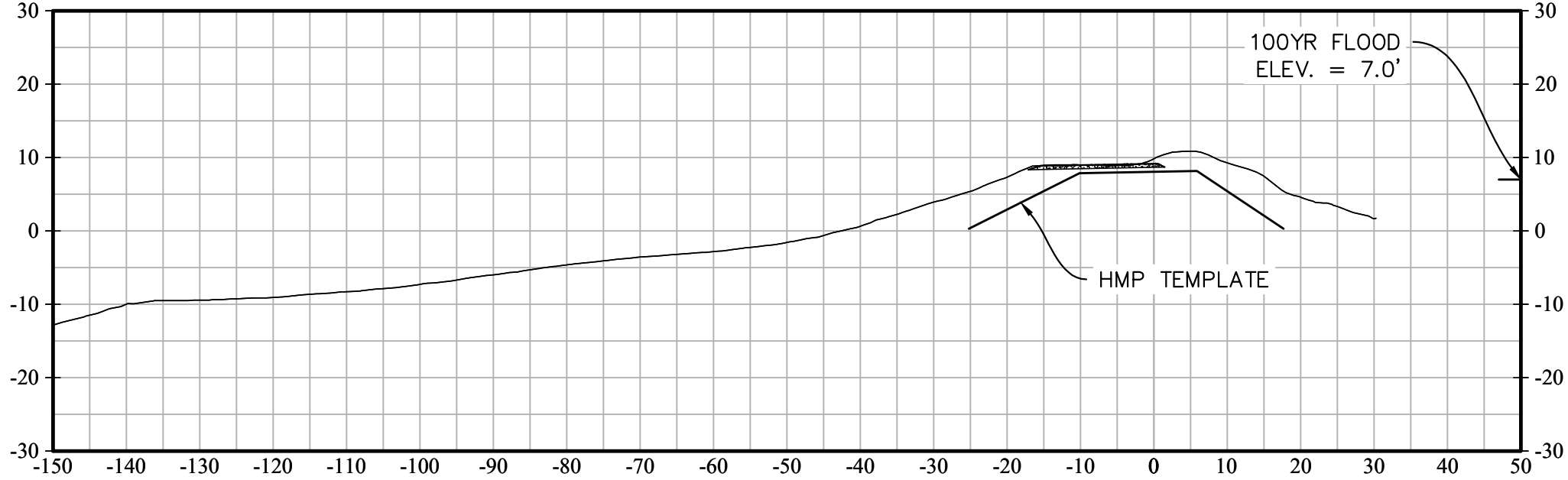
170+00



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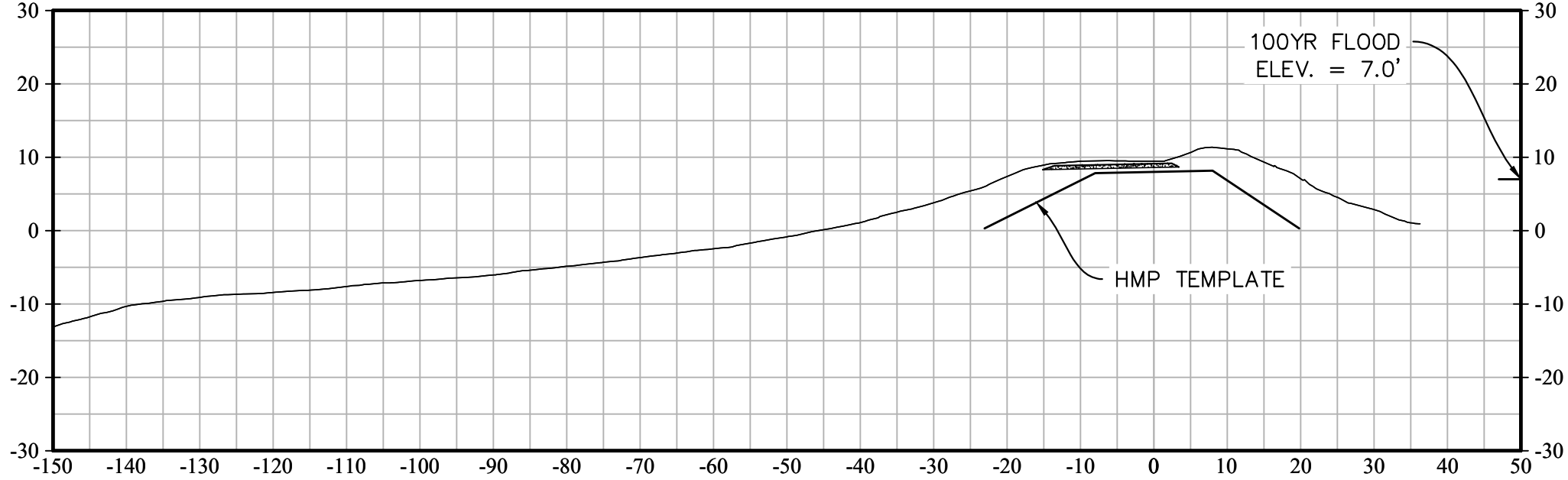

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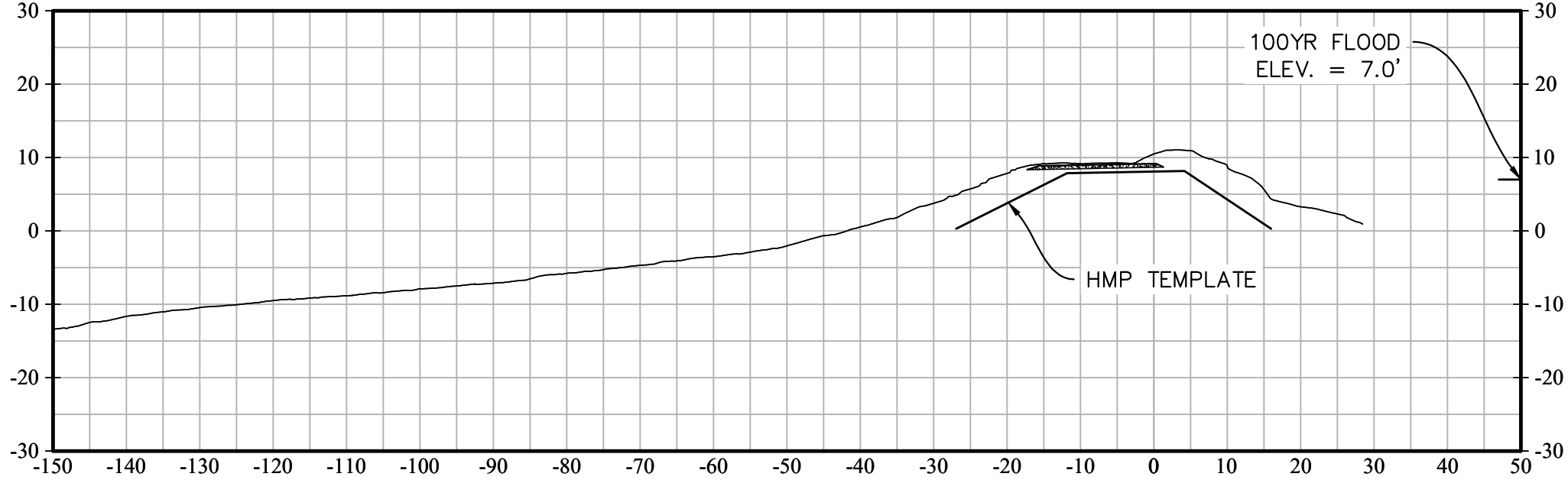
180+00



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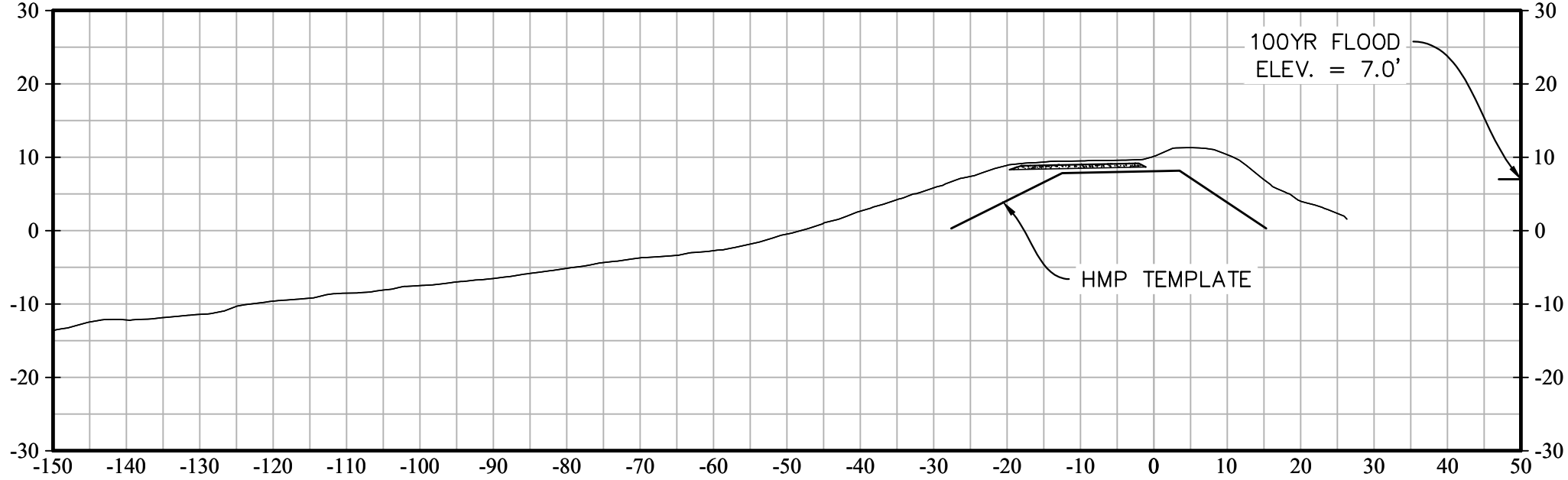

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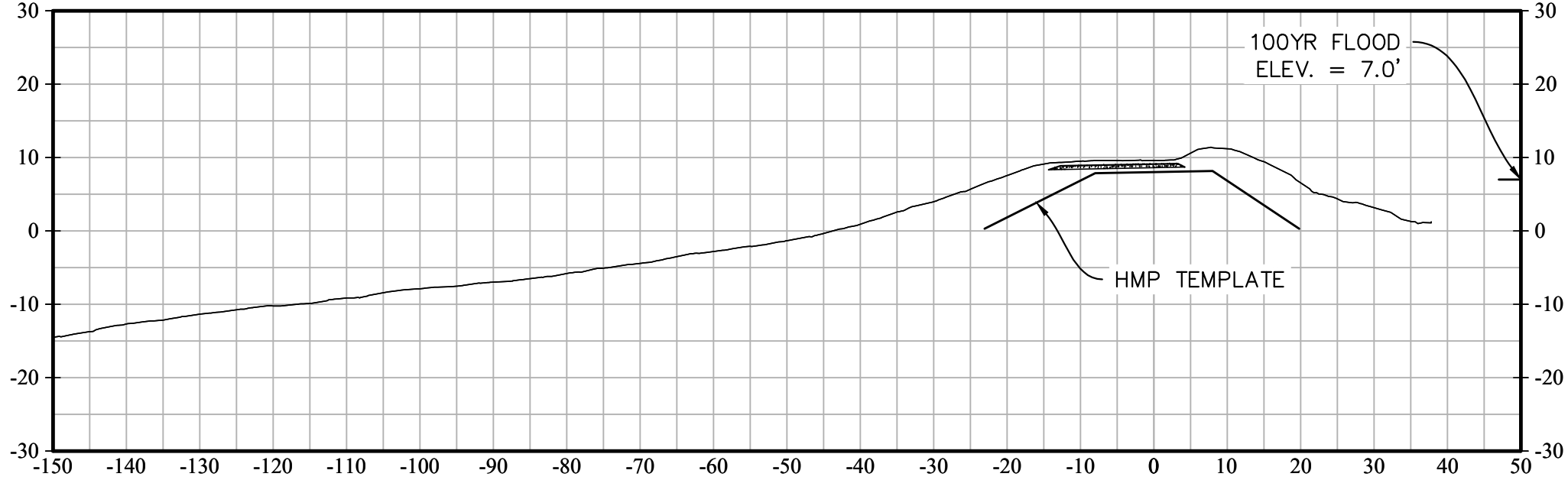
190+00



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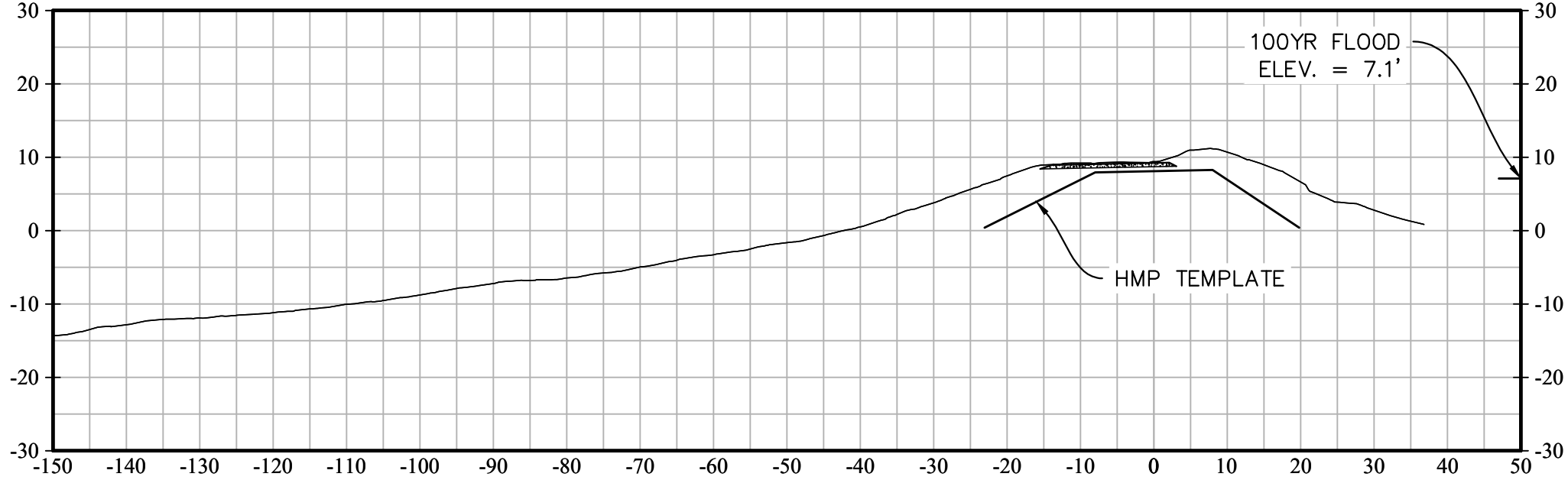

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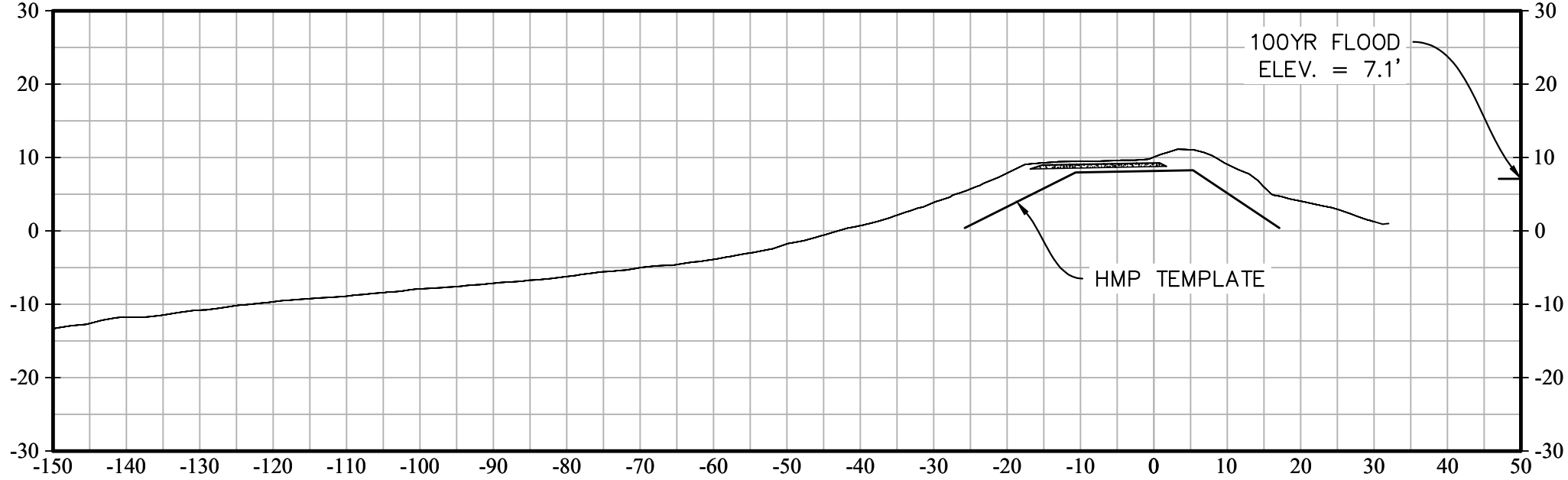
200+00



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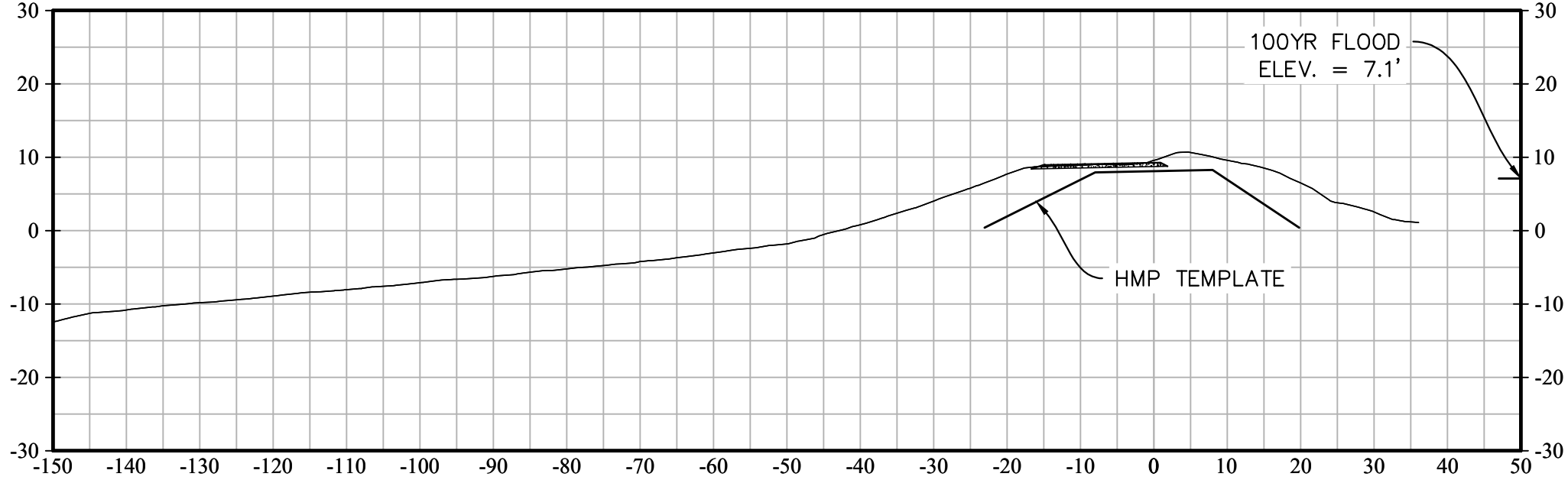

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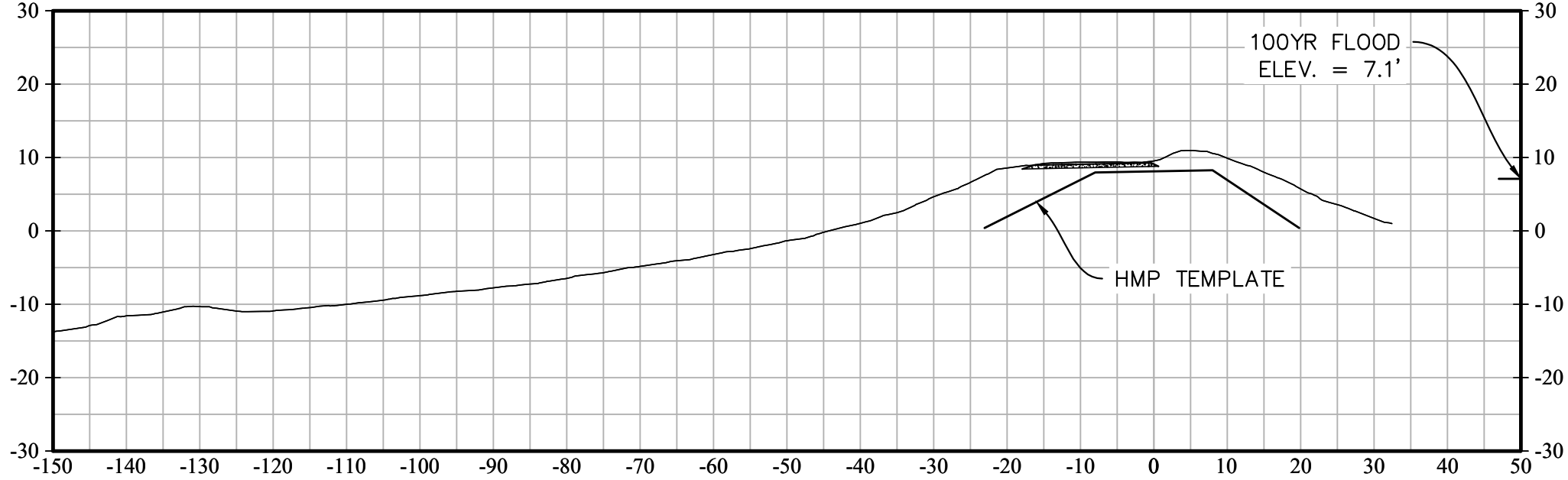
210+00



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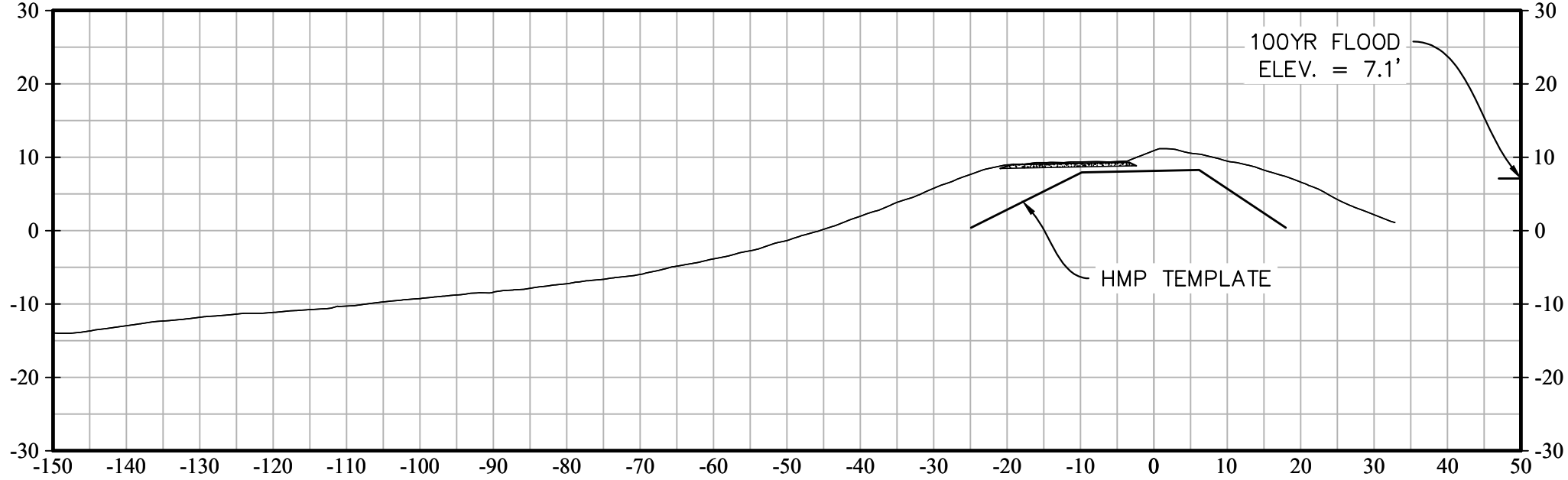

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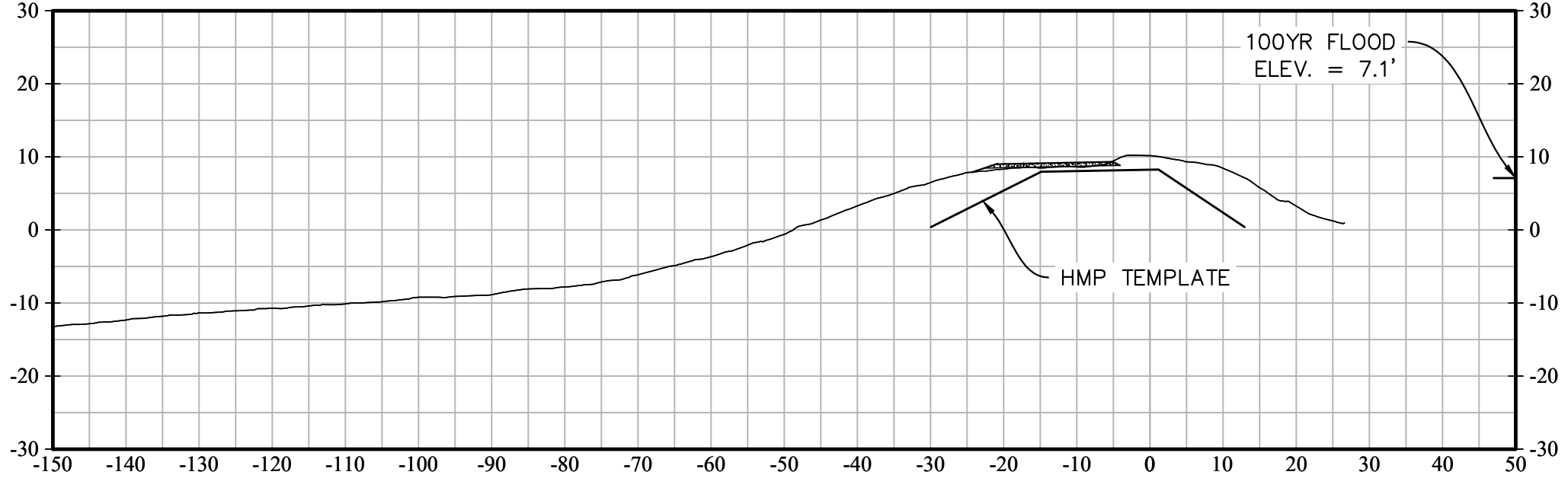
220+00



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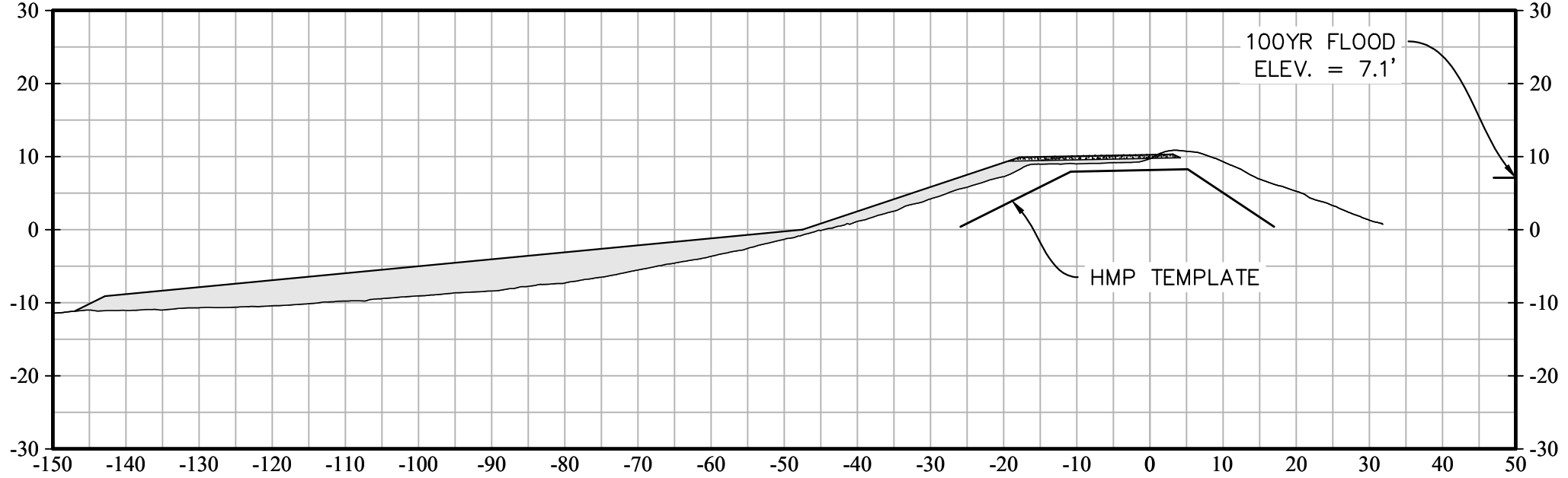

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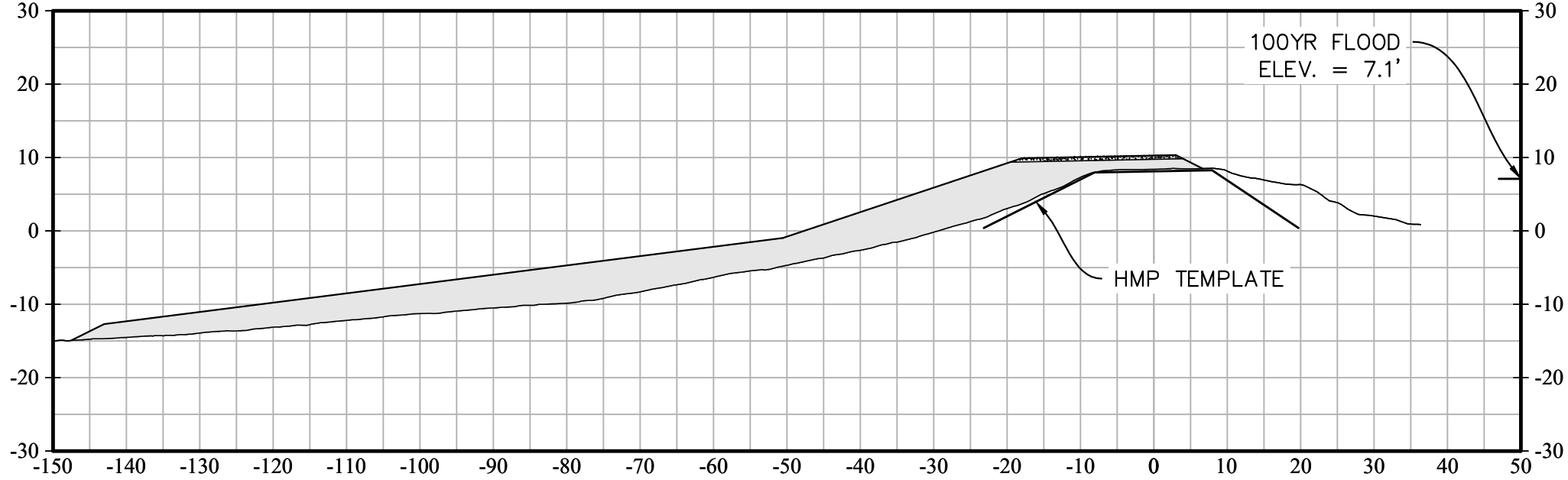
230+00



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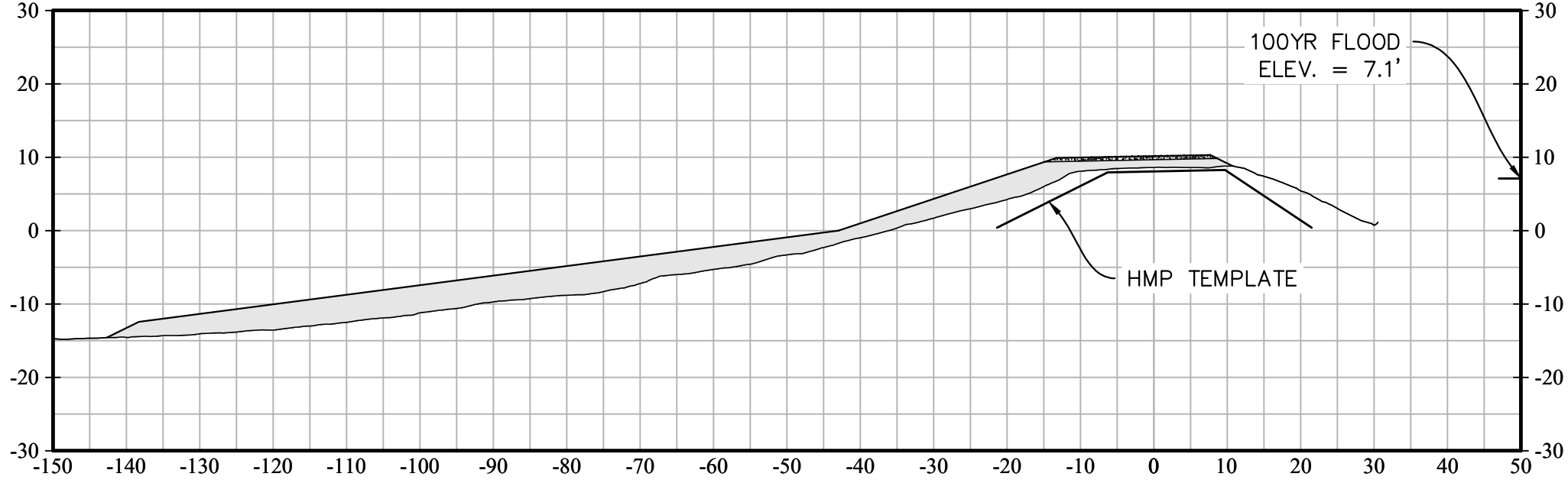

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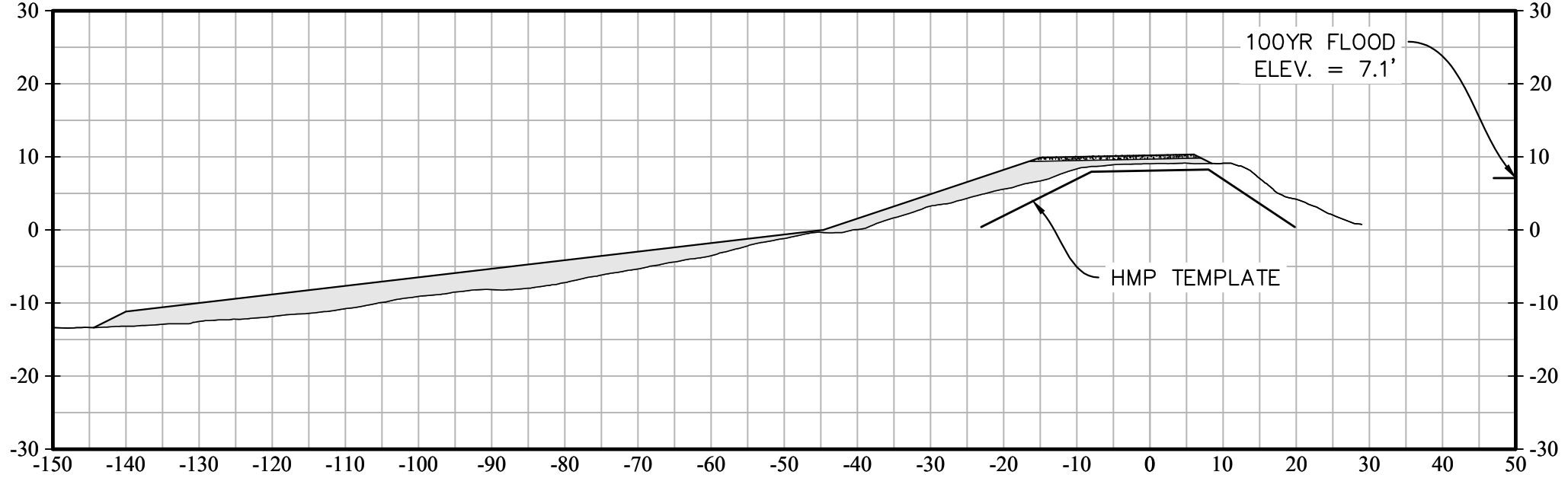
240+00



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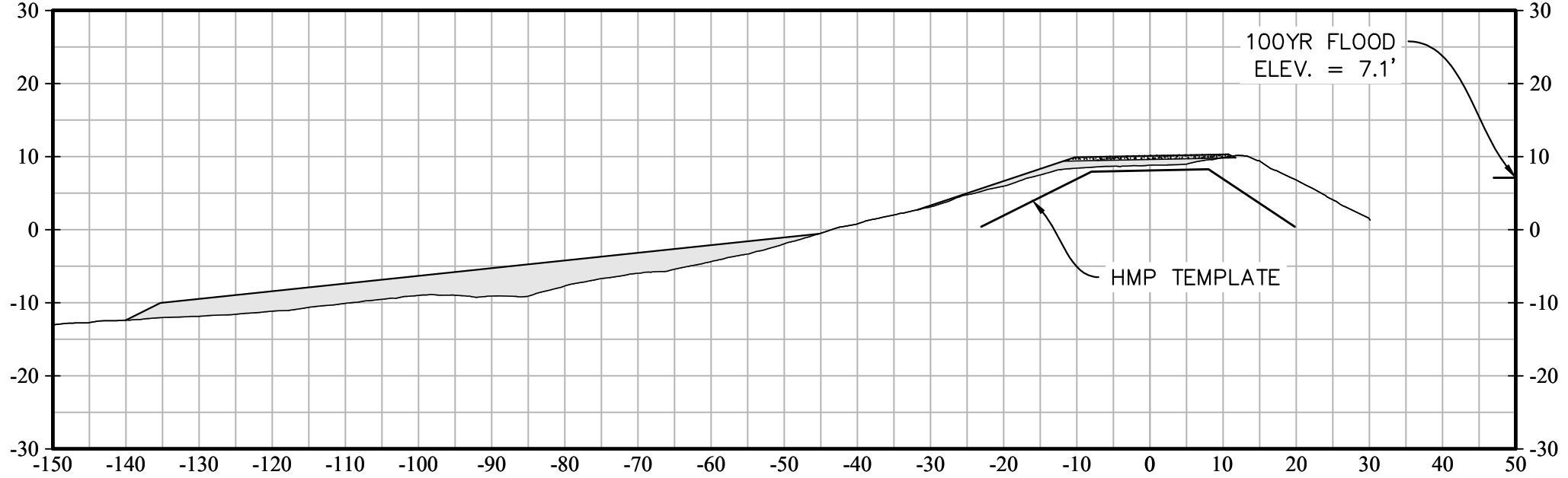

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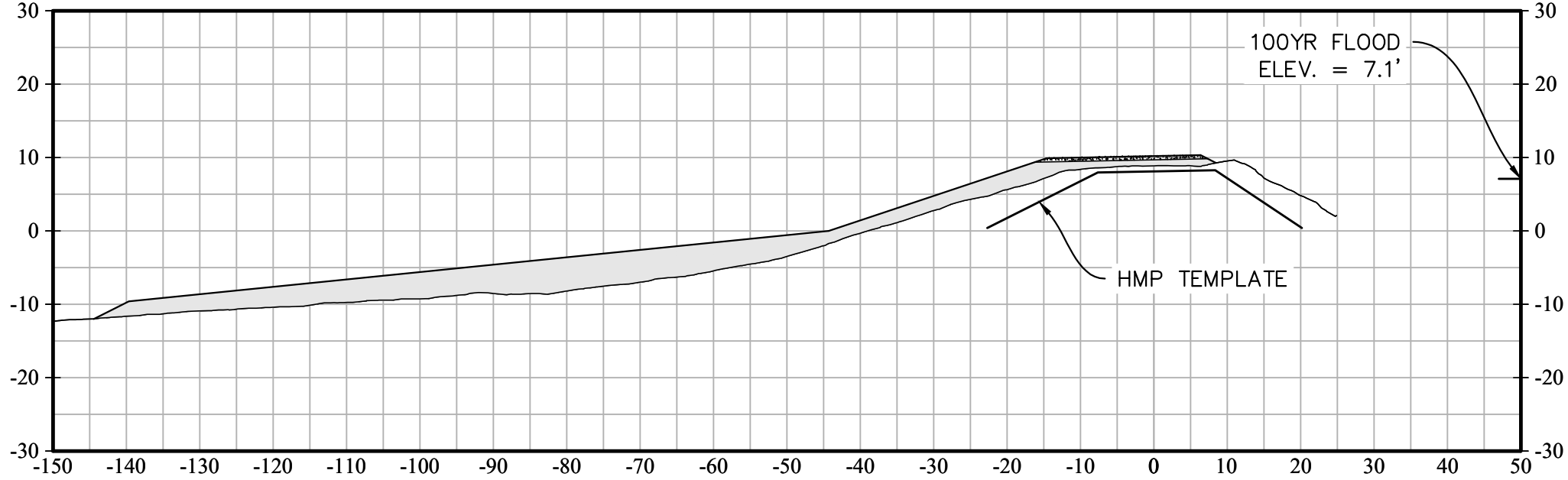
250+00



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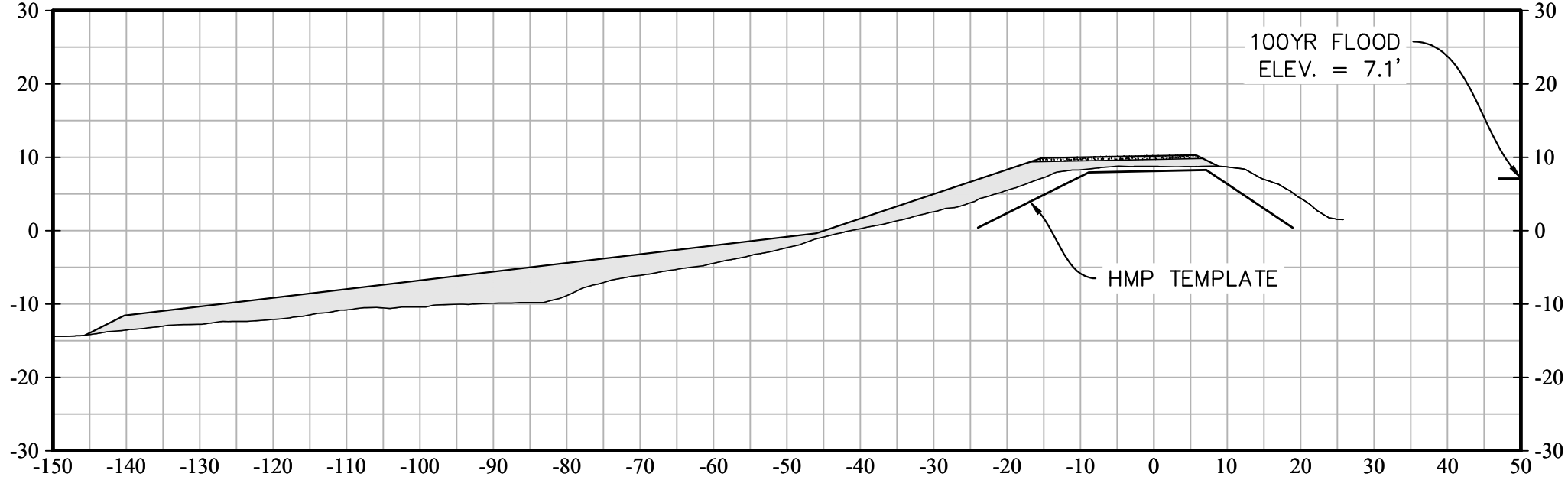

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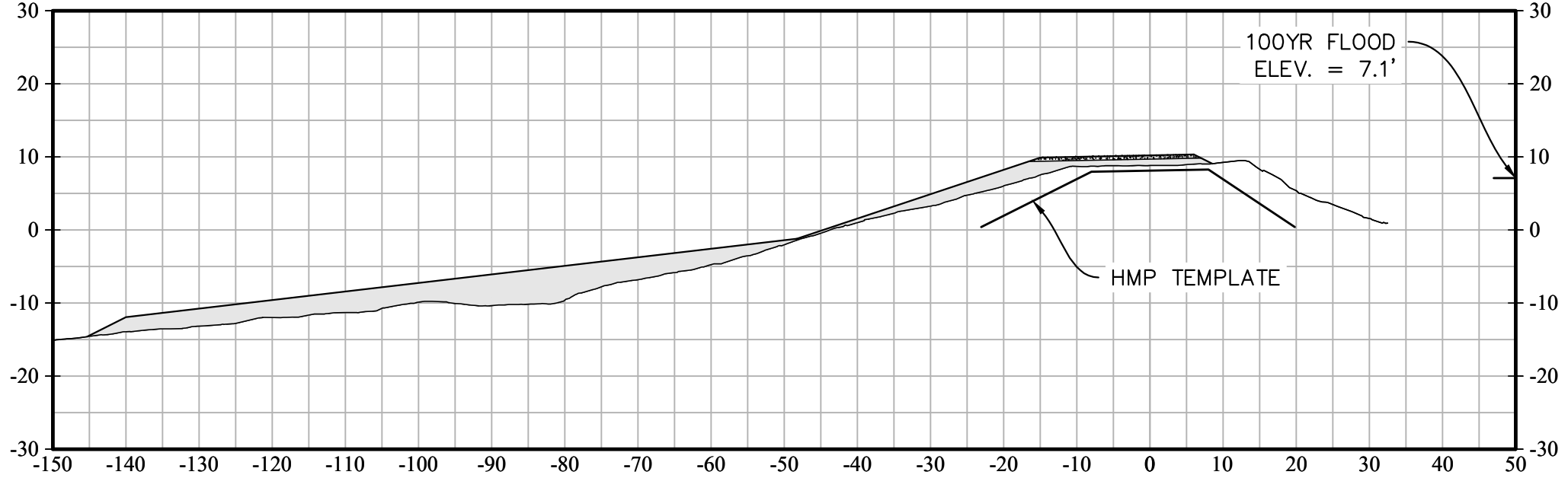
260+00



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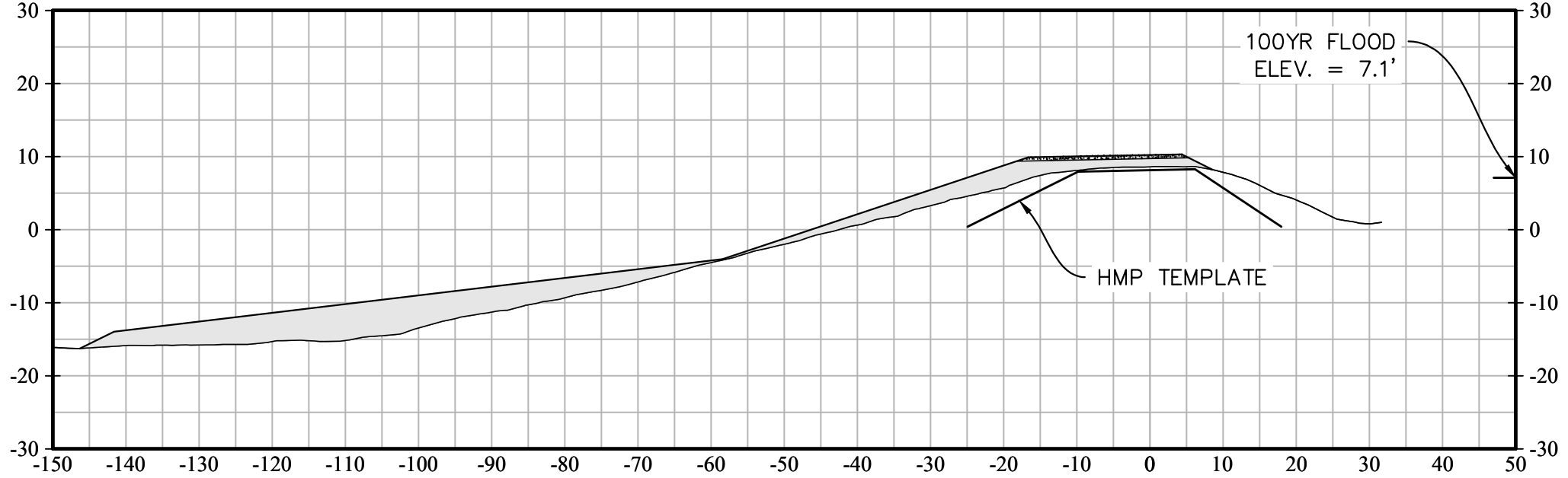

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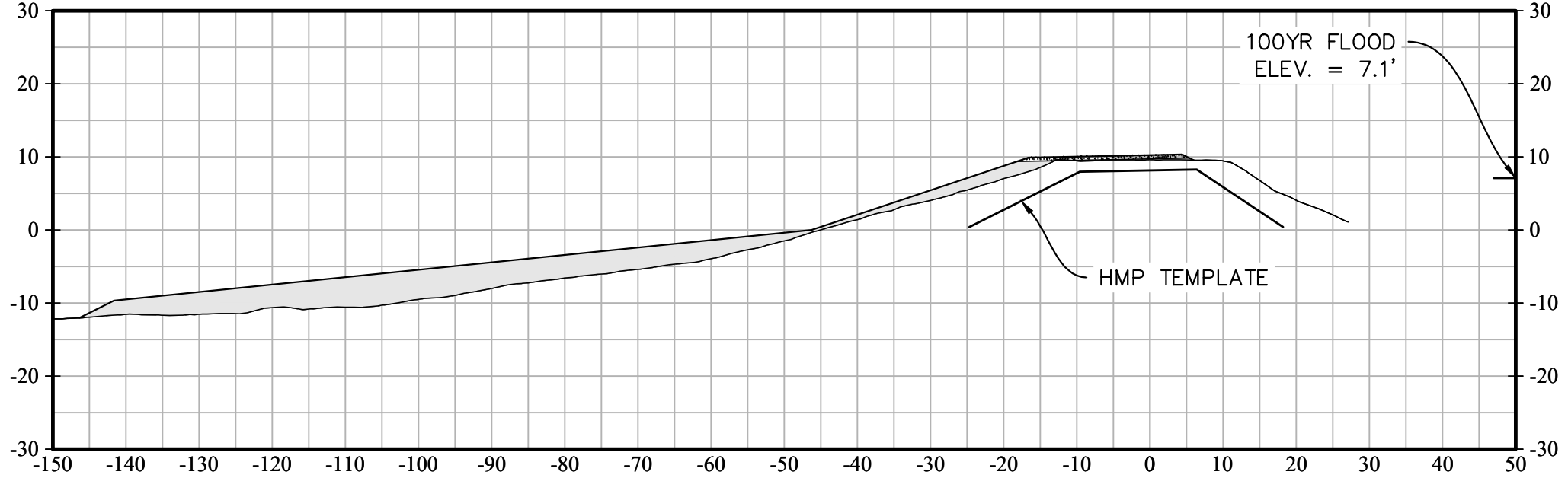
270+00



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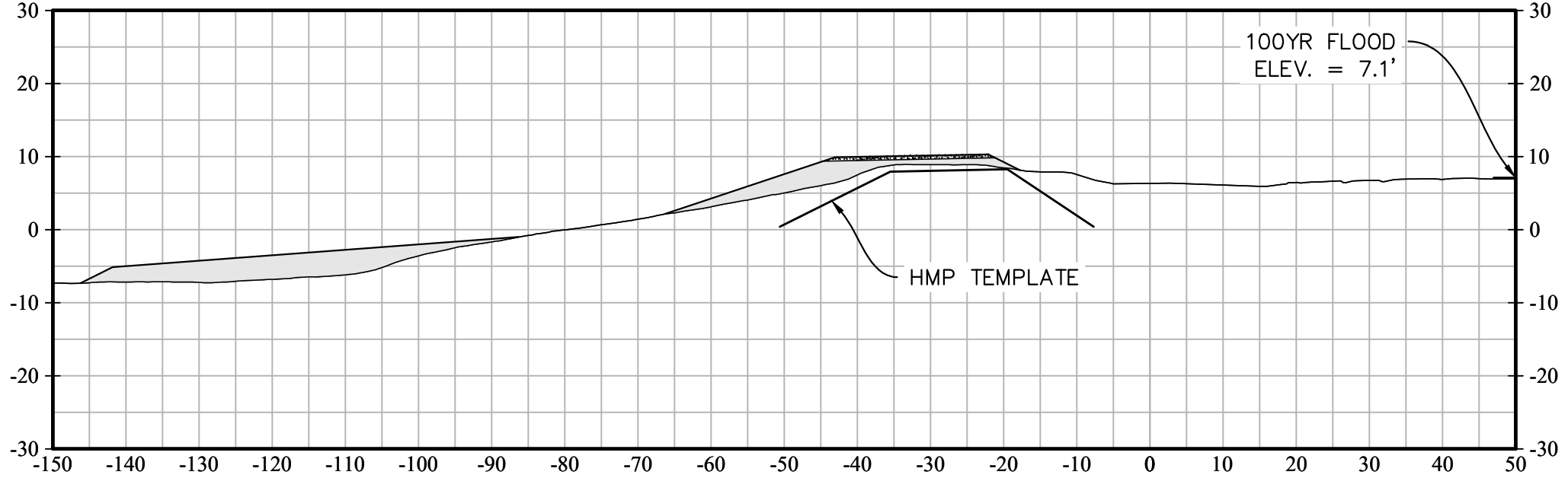

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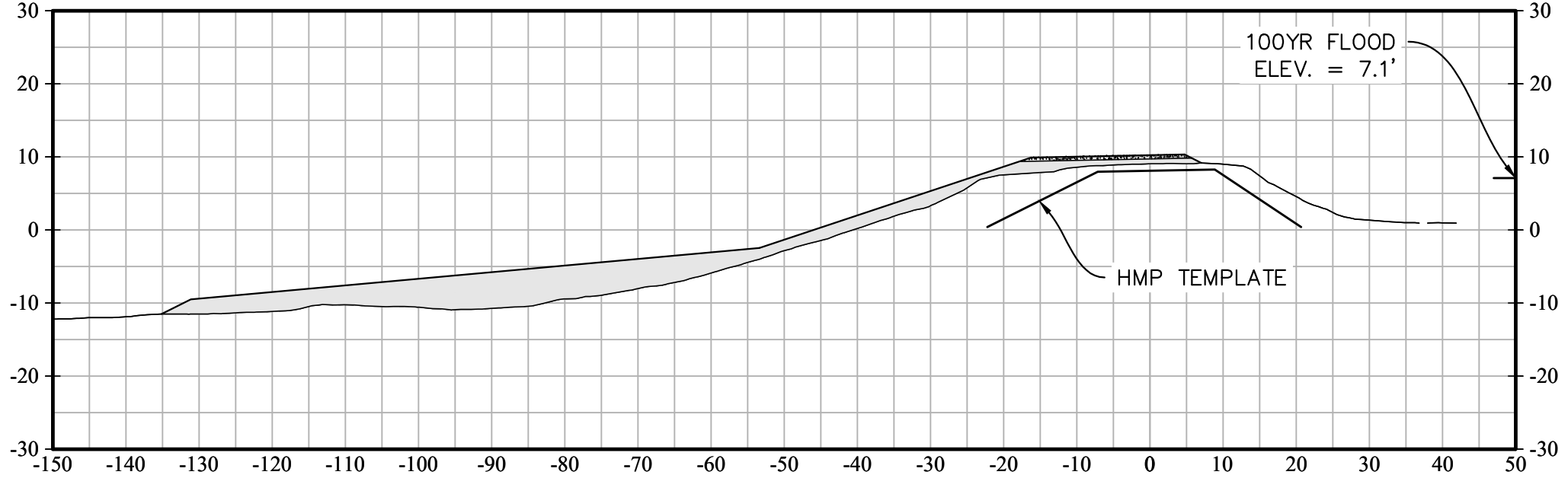
280+00



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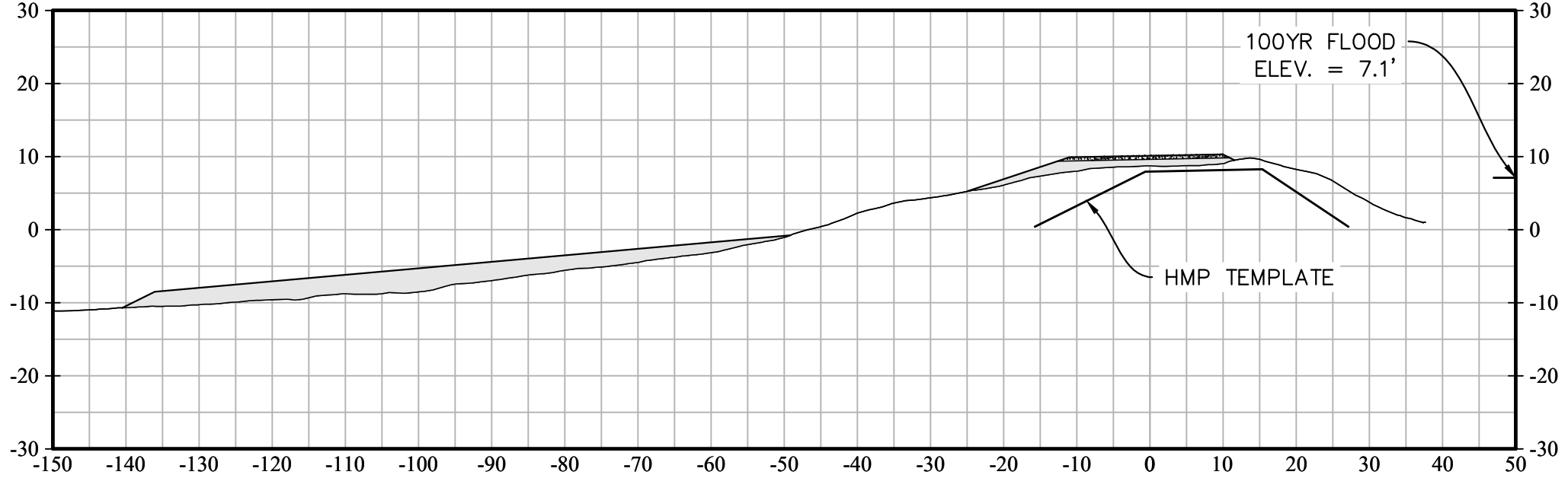

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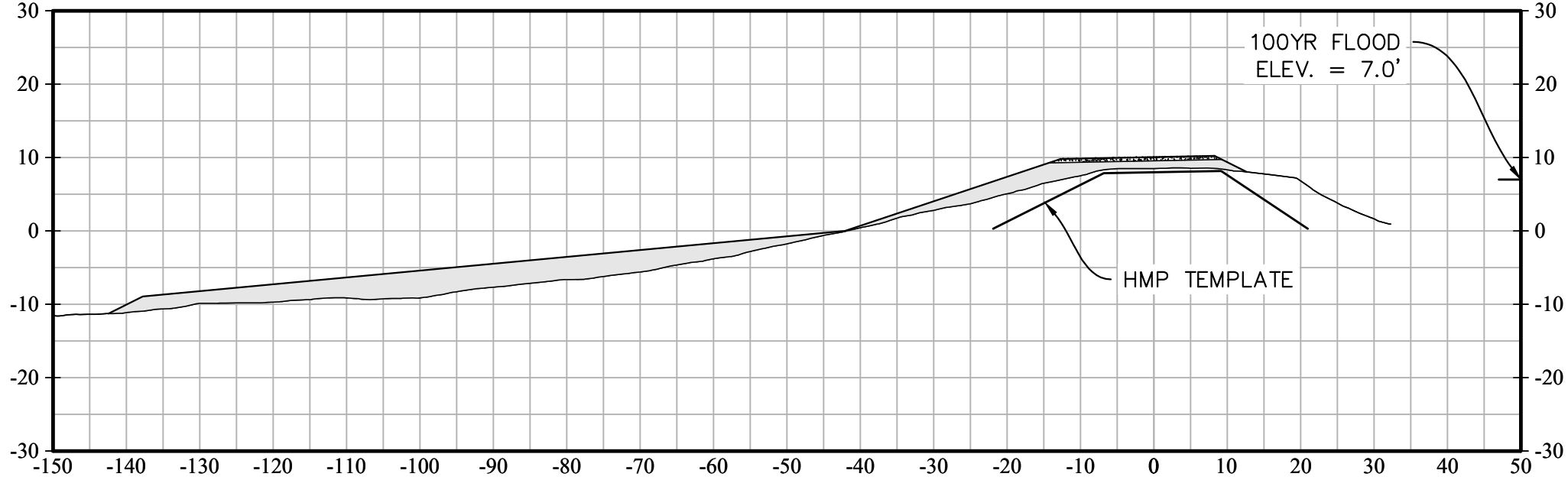
290+00



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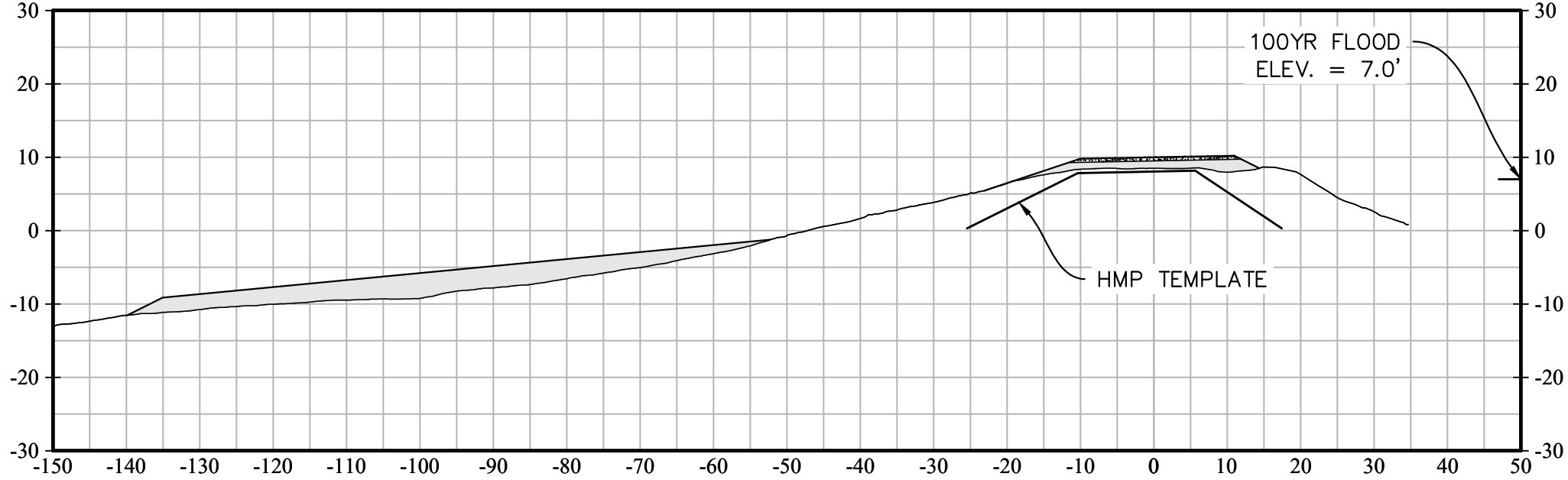

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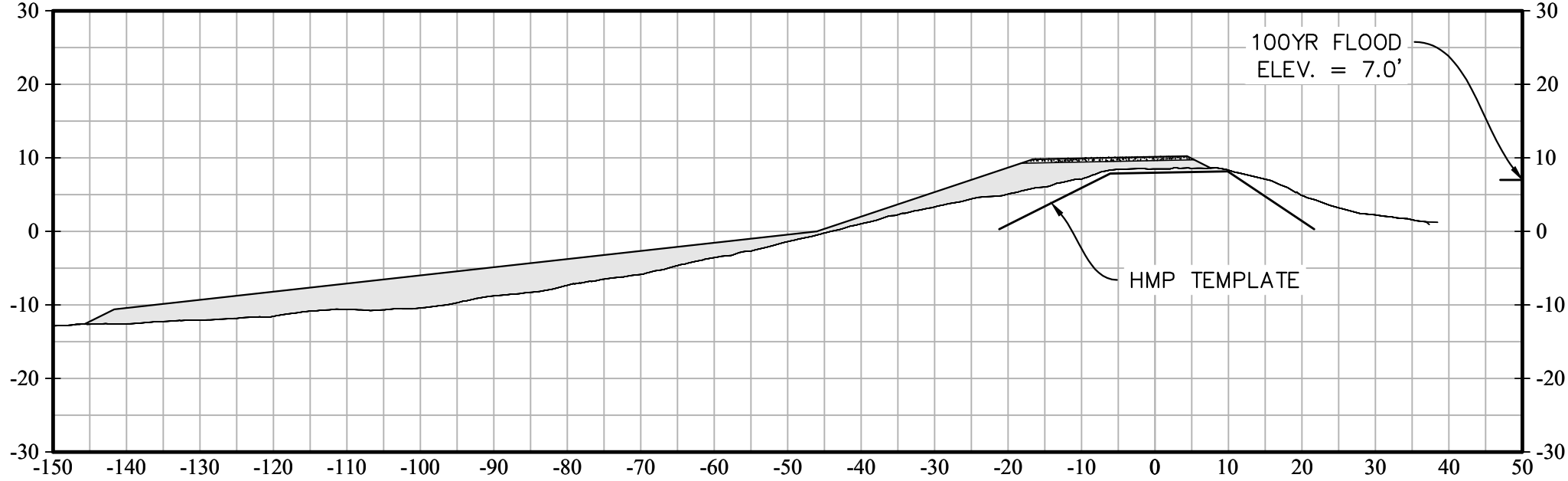
300+00



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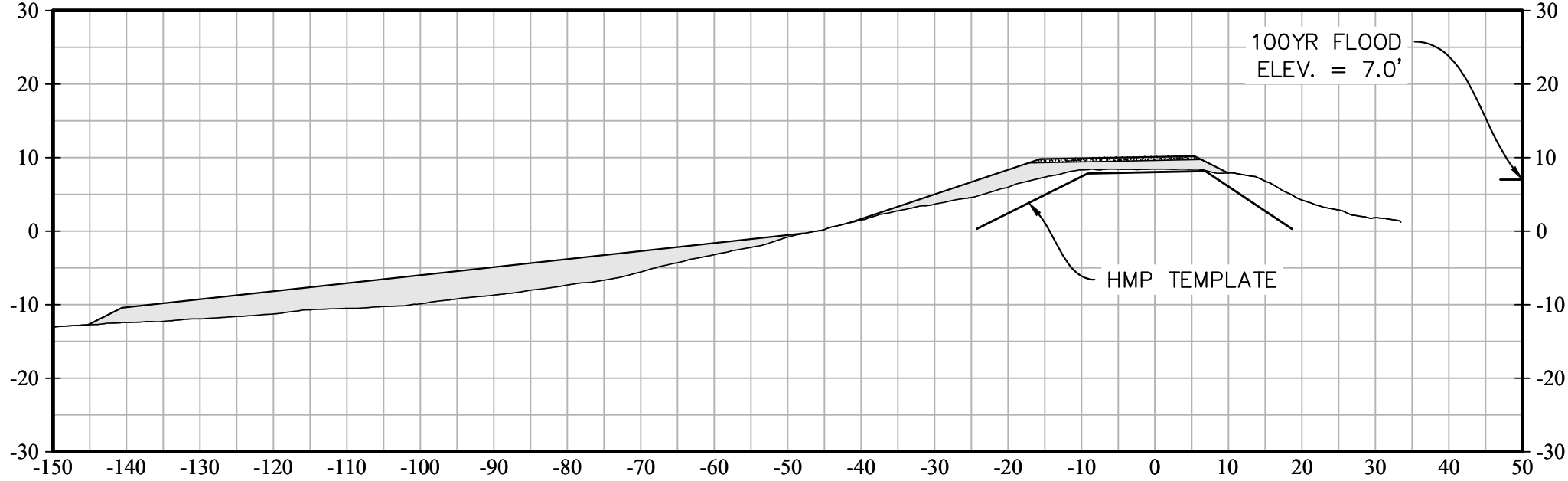

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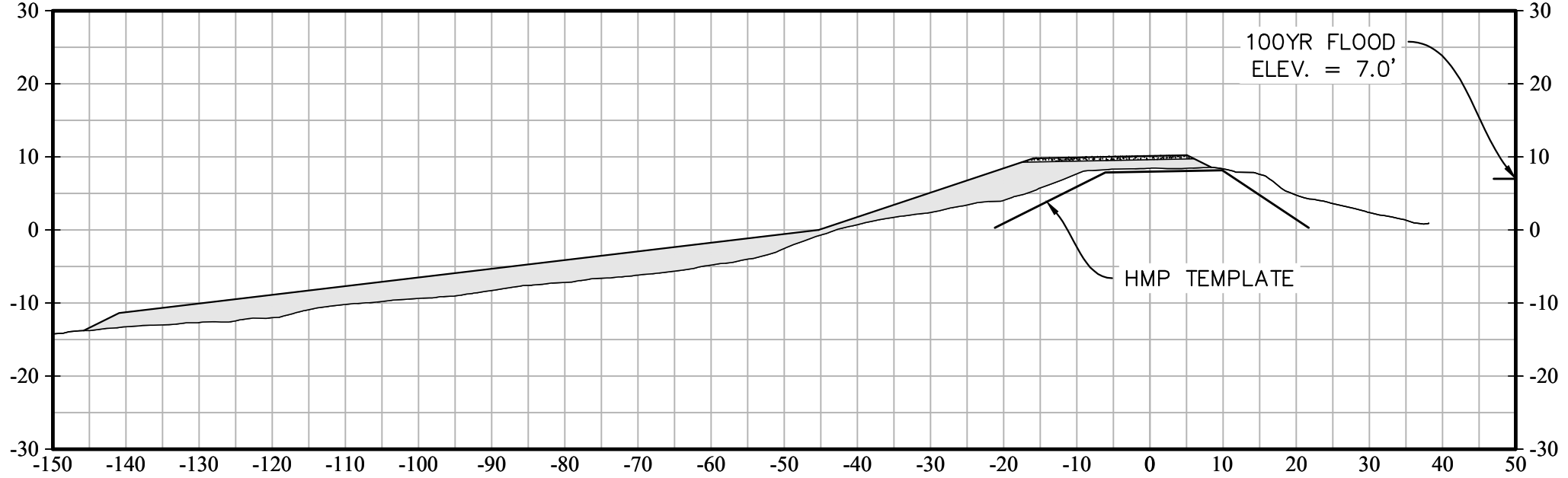
310+00



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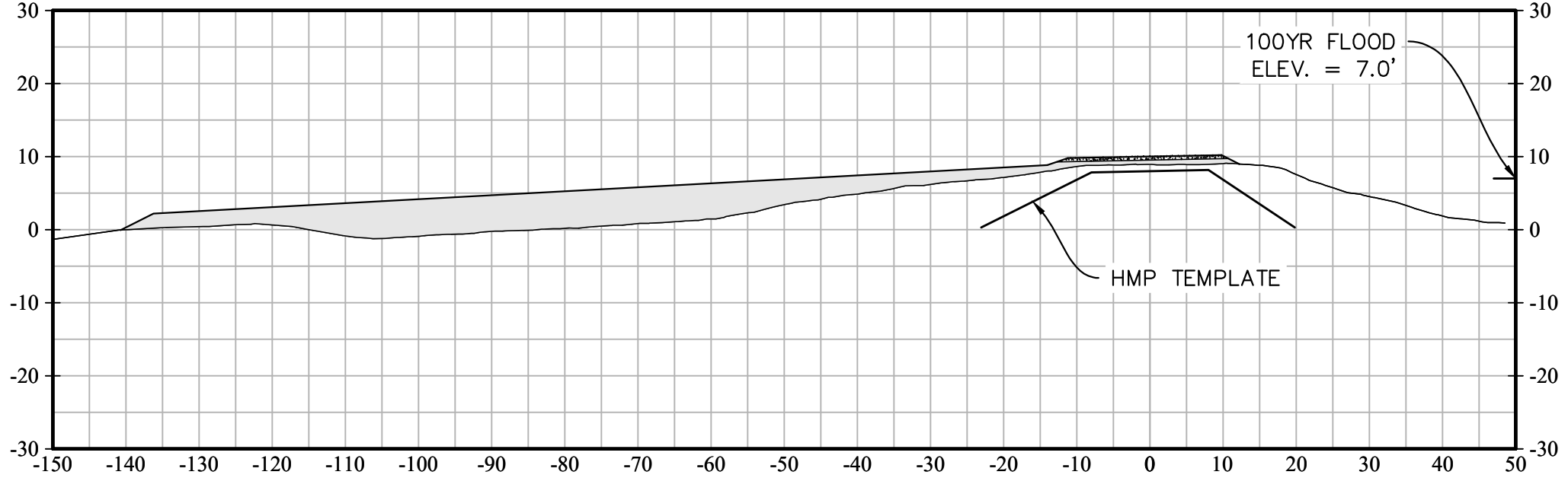

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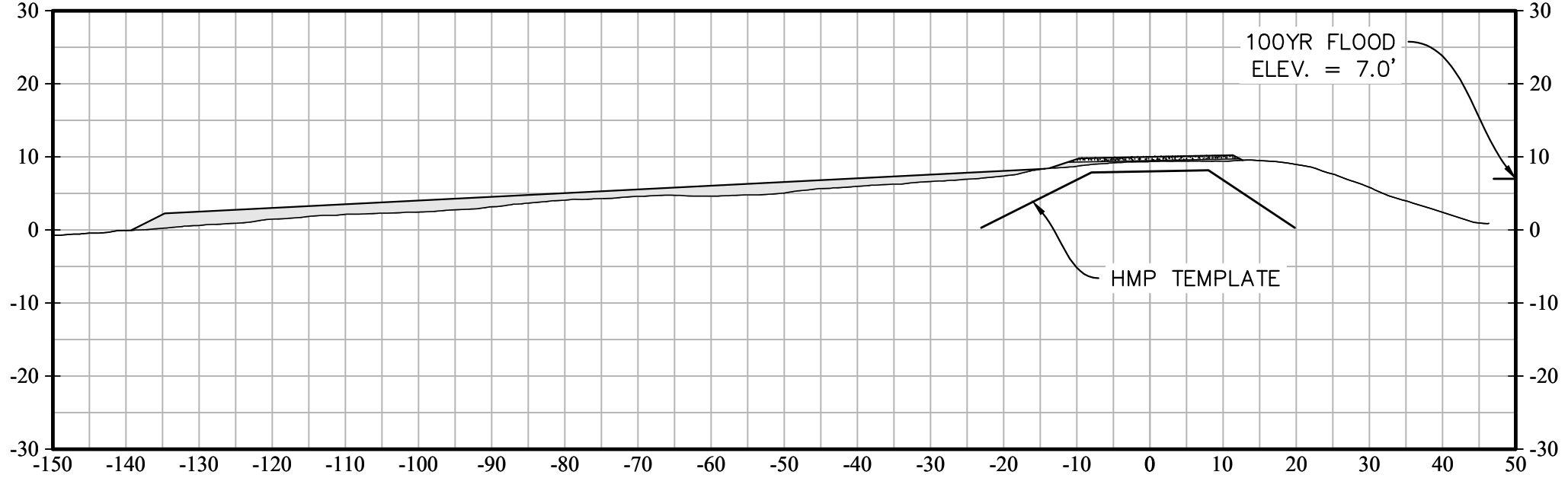
320+00



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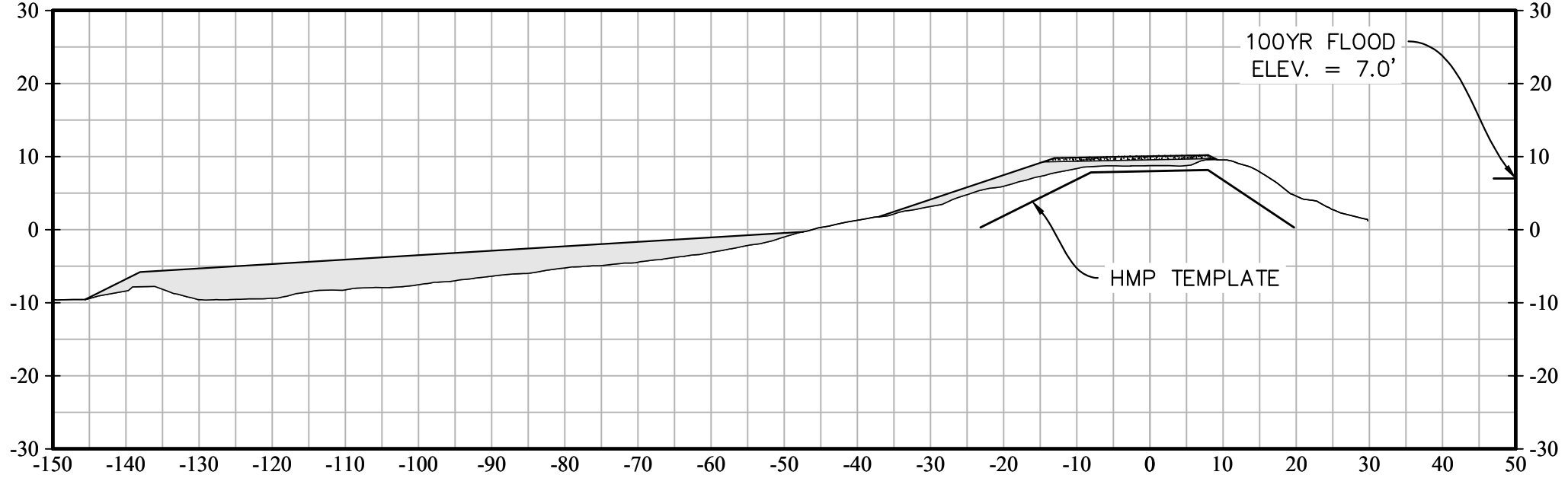

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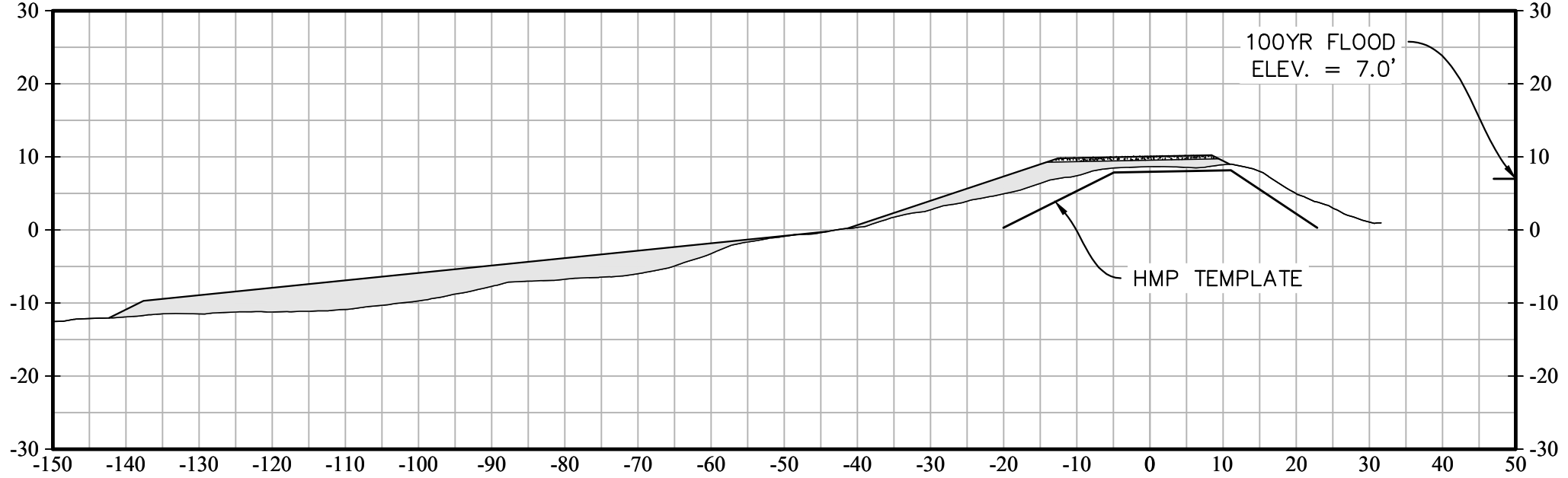
330+00



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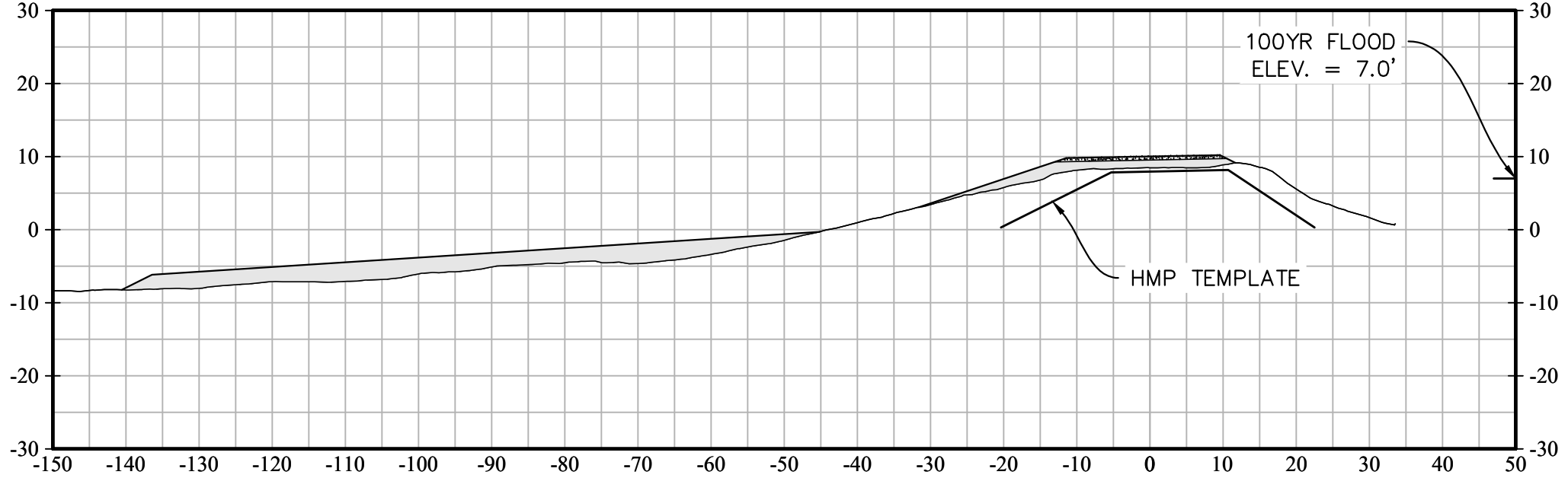

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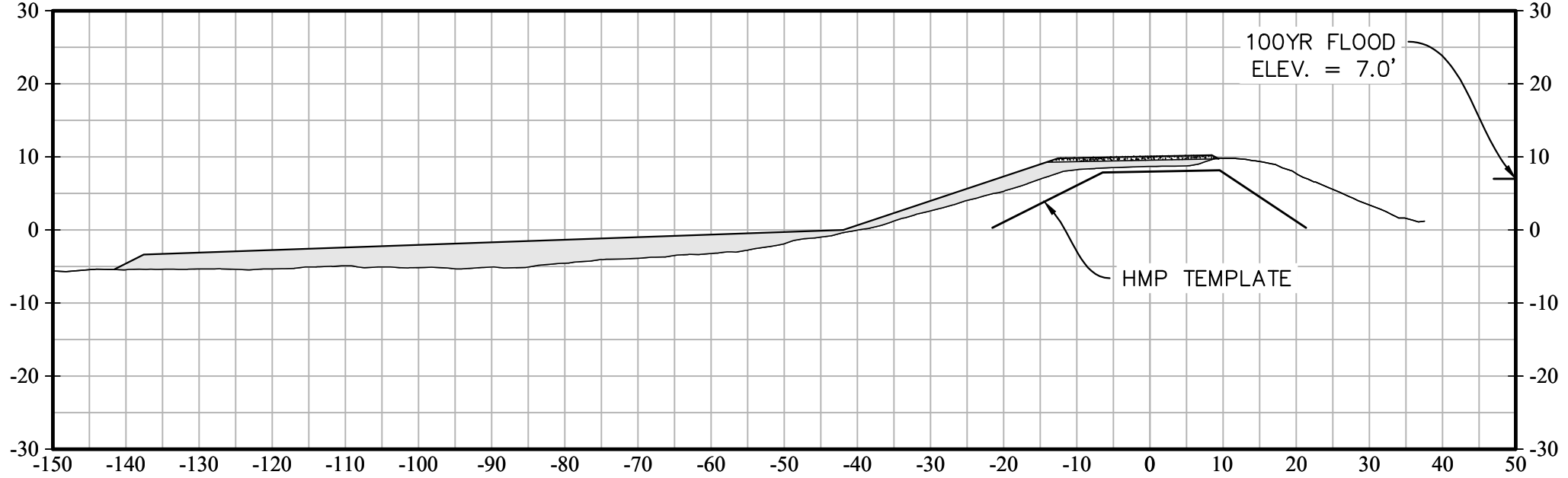
340+00



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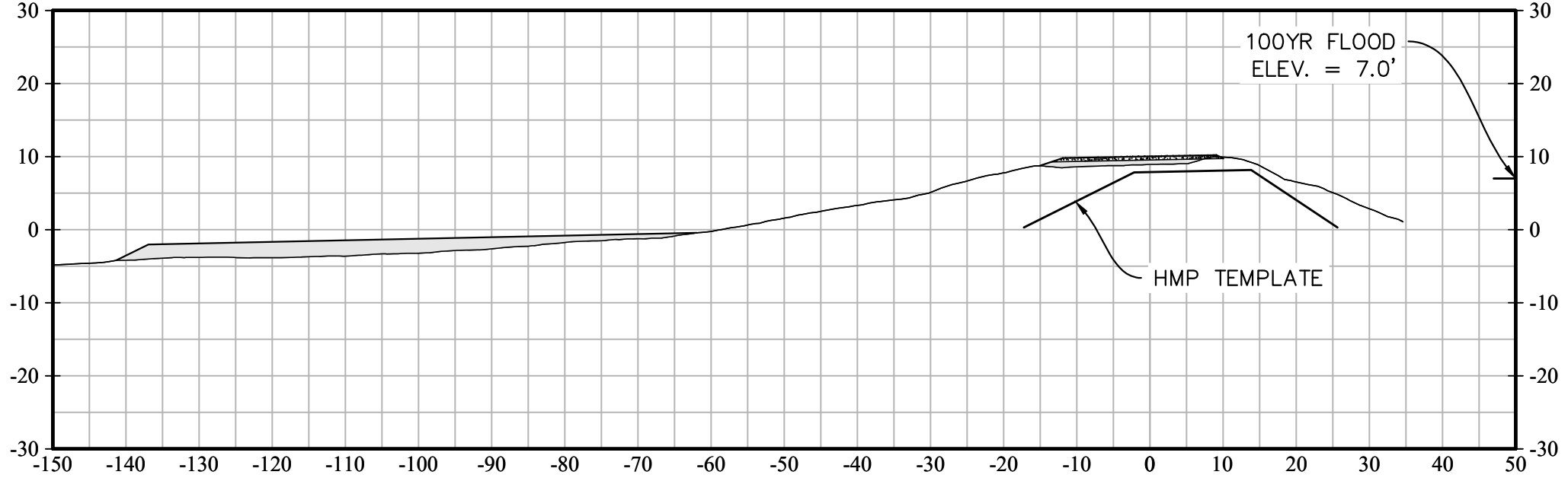

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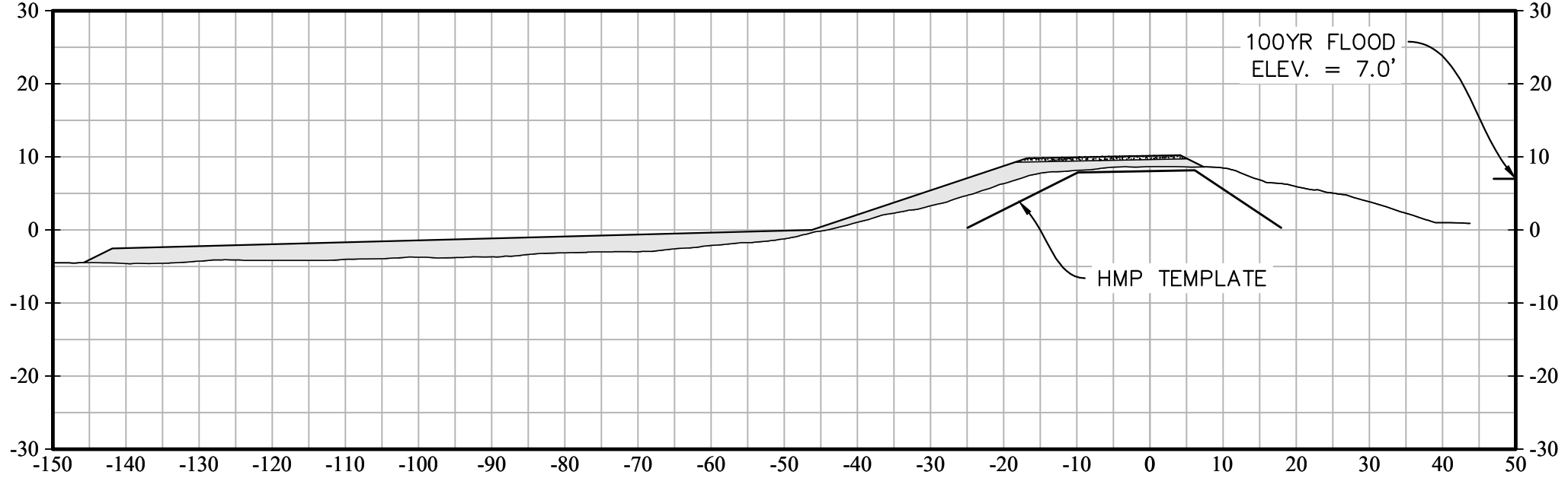
350+00



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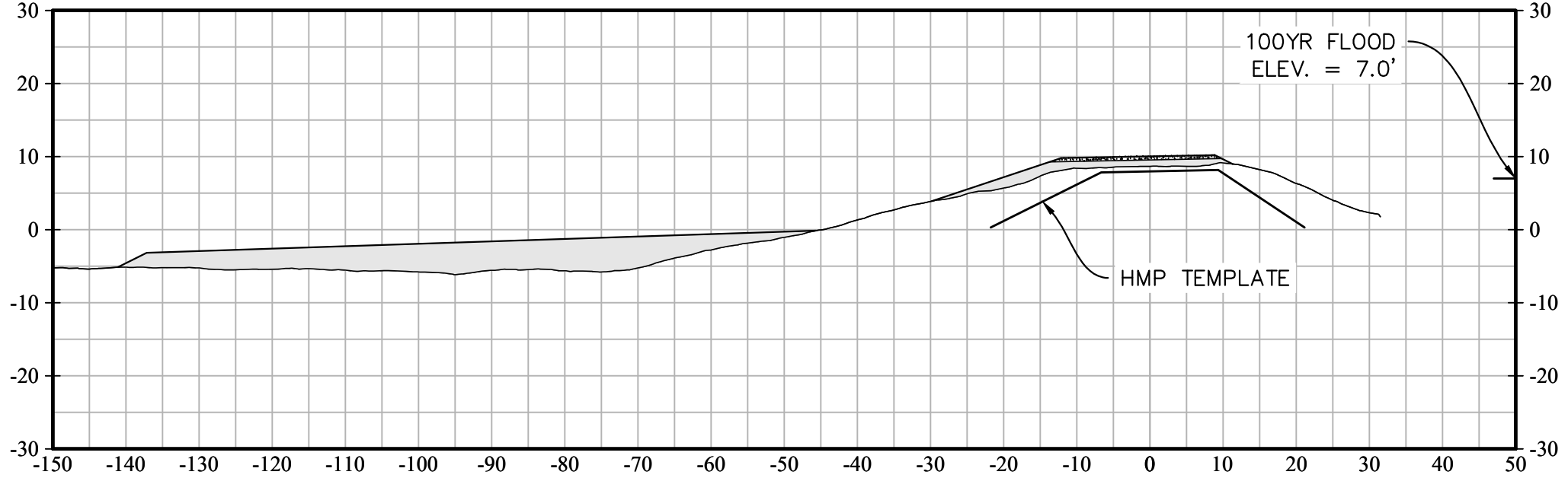

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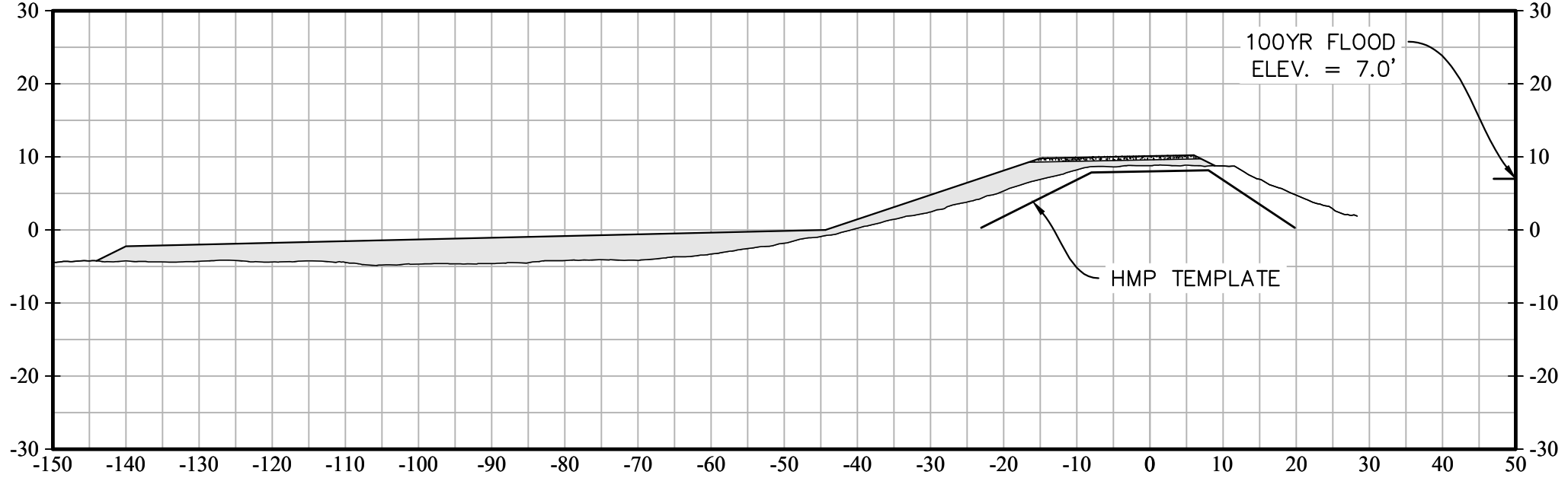
360+00



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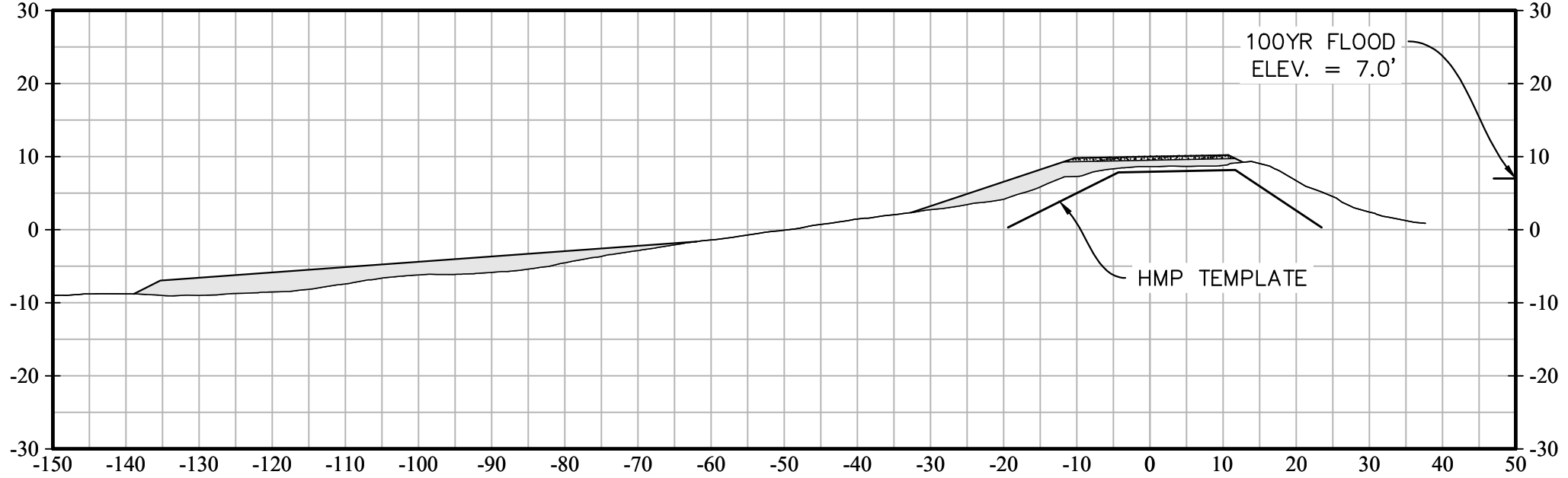

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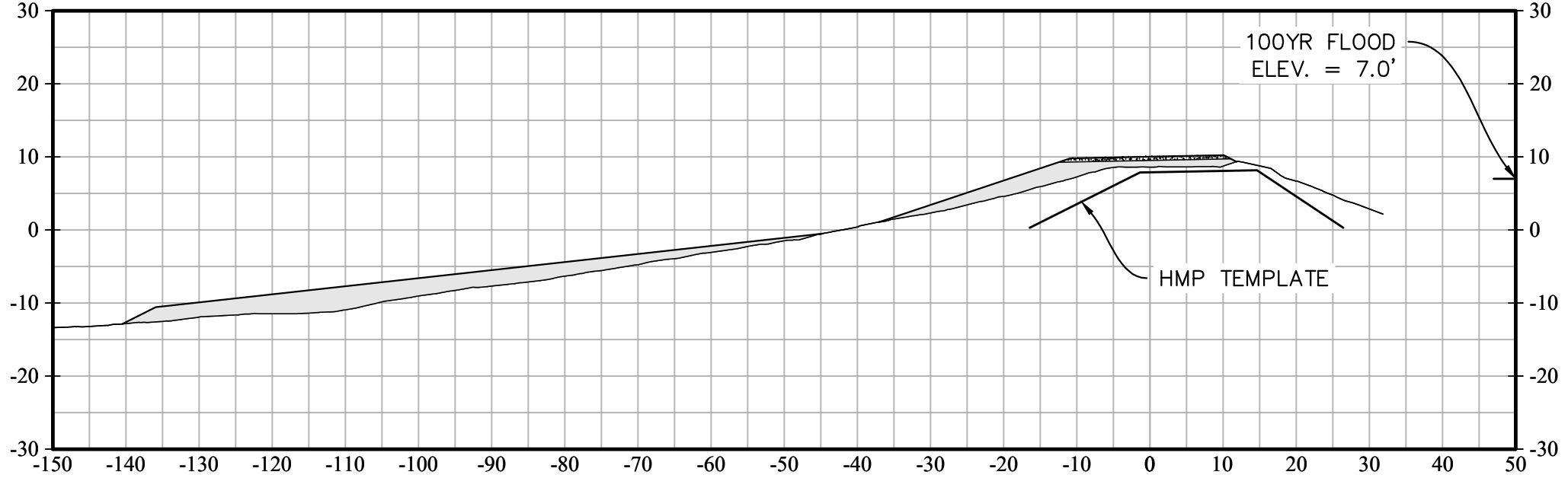
370+00



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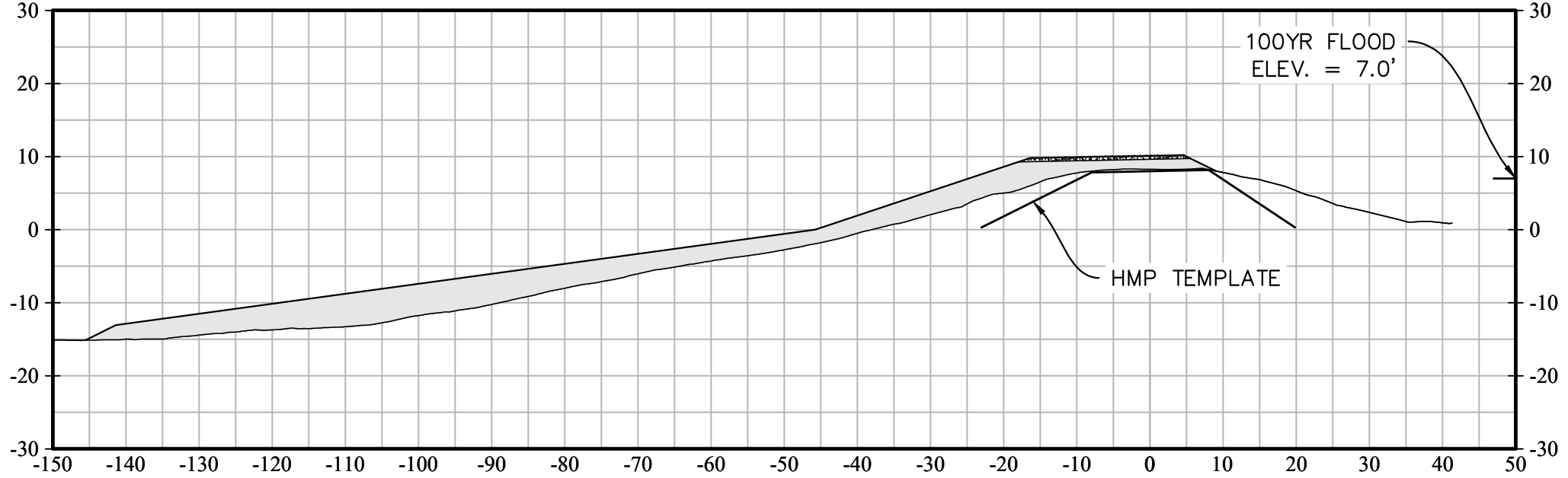

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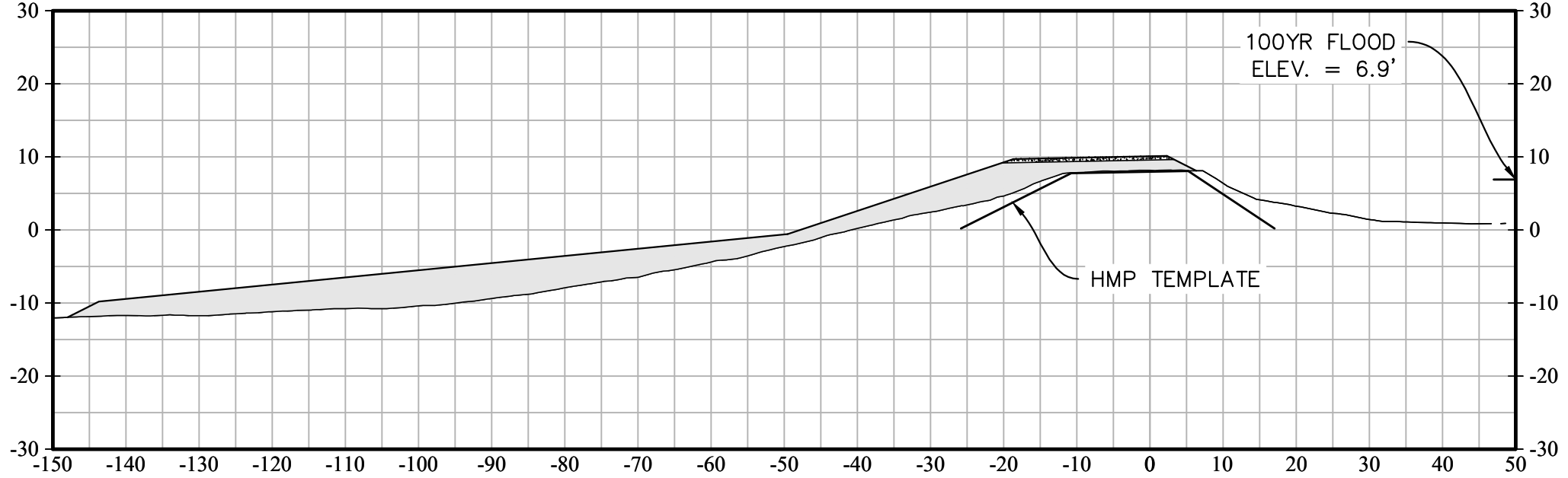
380+00



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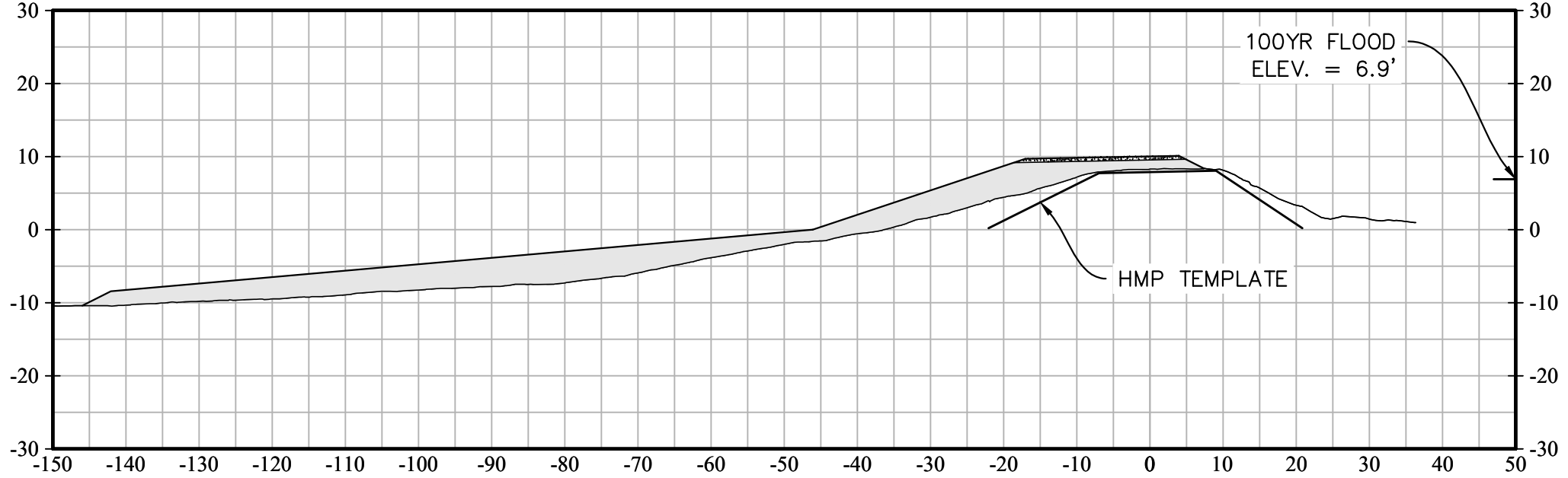

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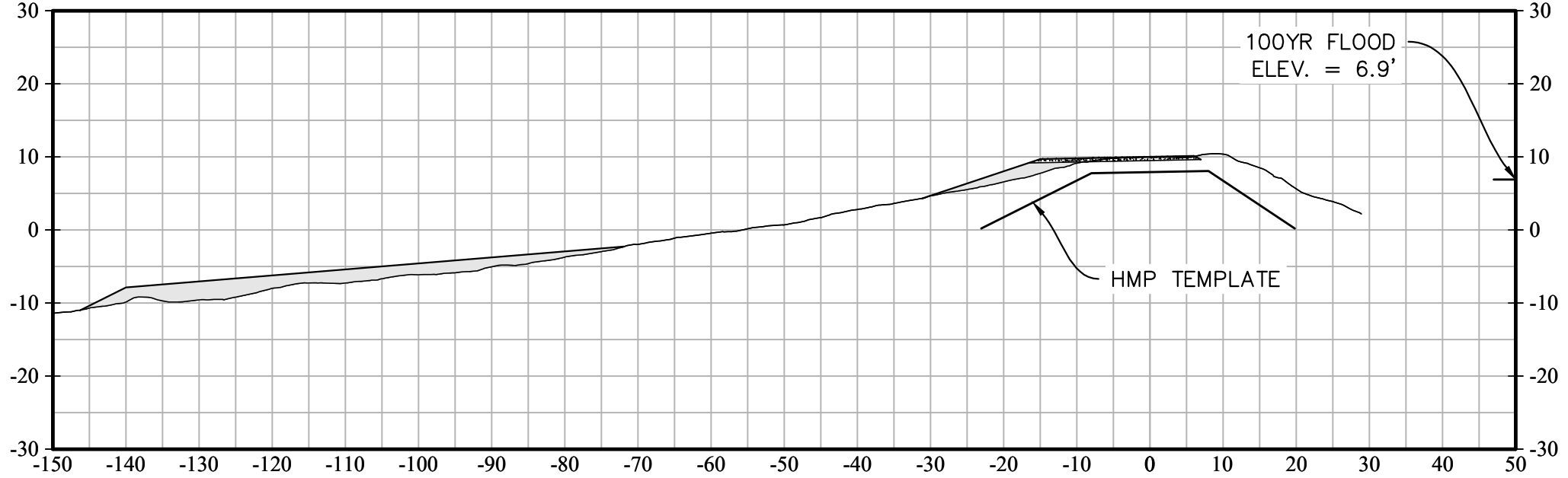
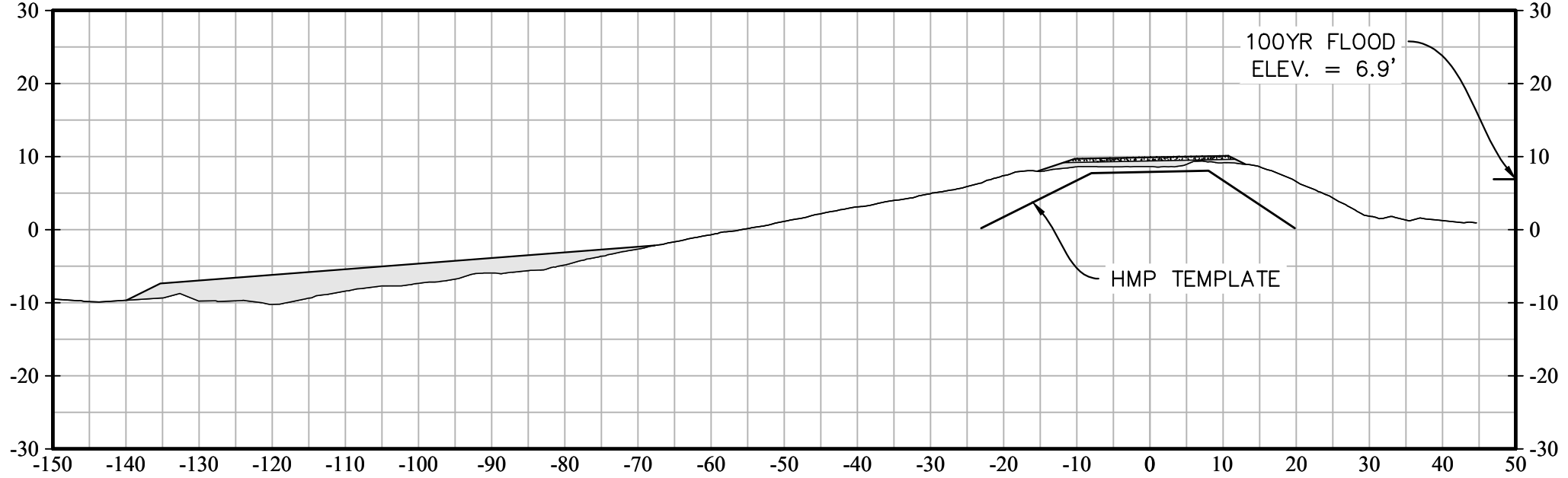
390+00



395+00



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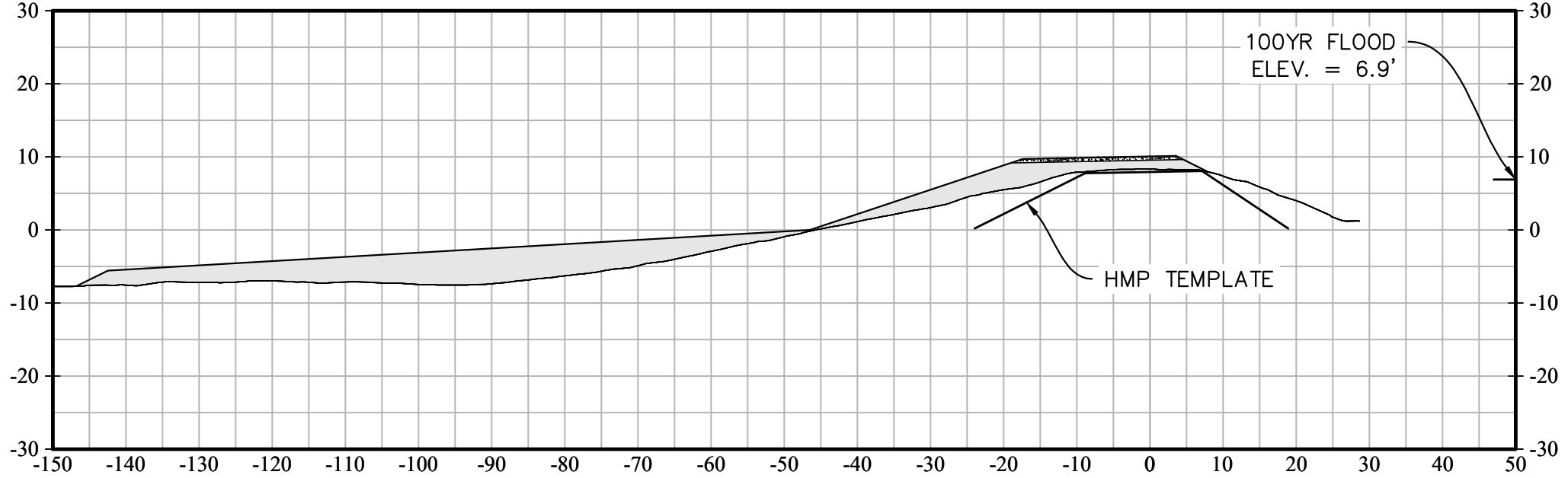
400+00



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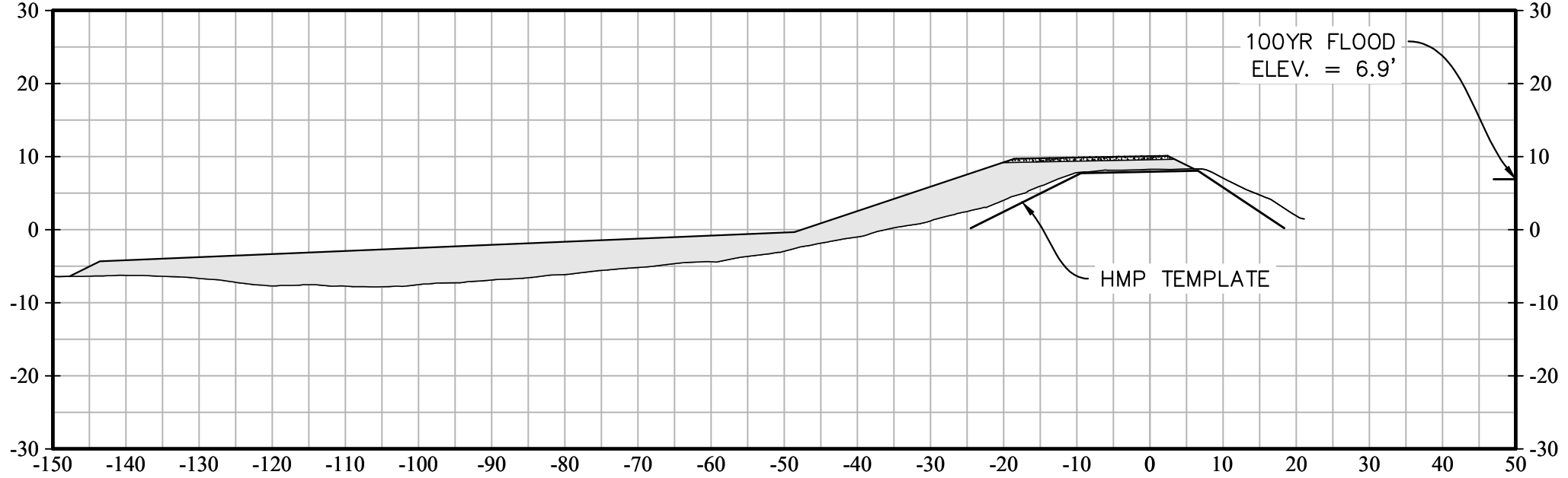

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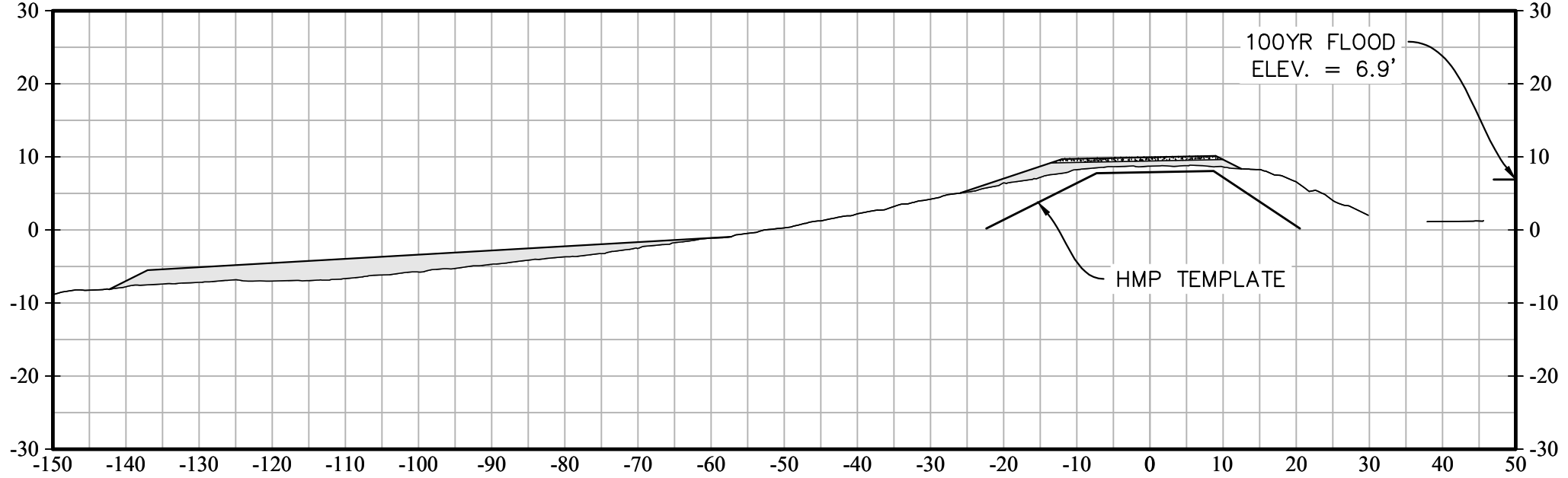
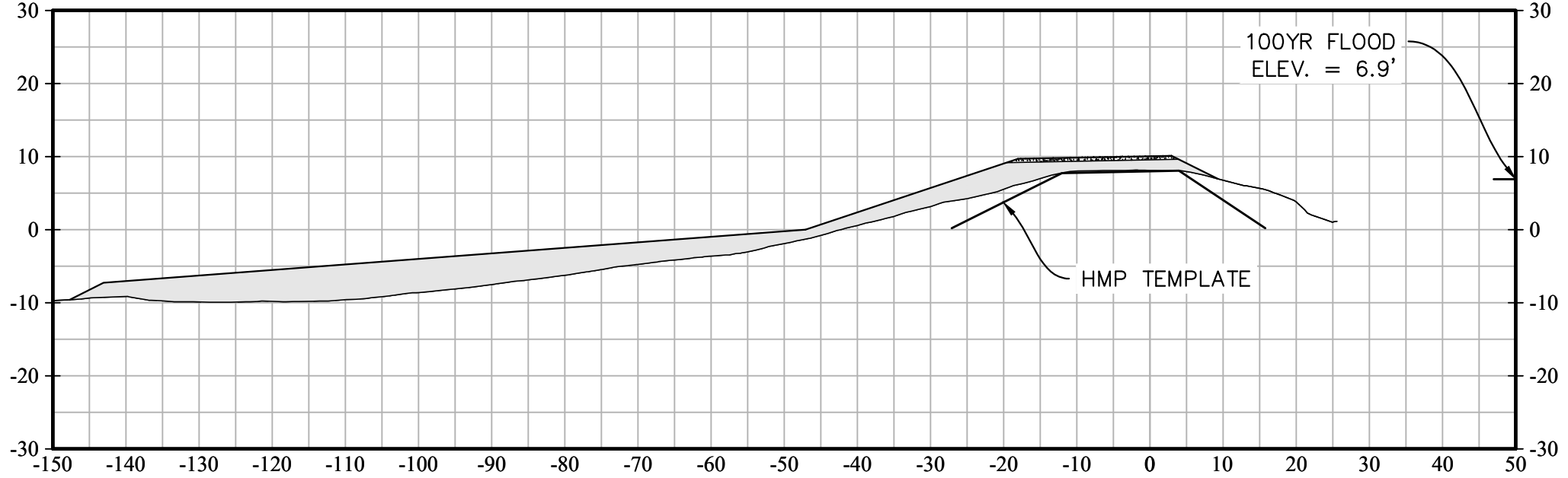
410+00



415+00



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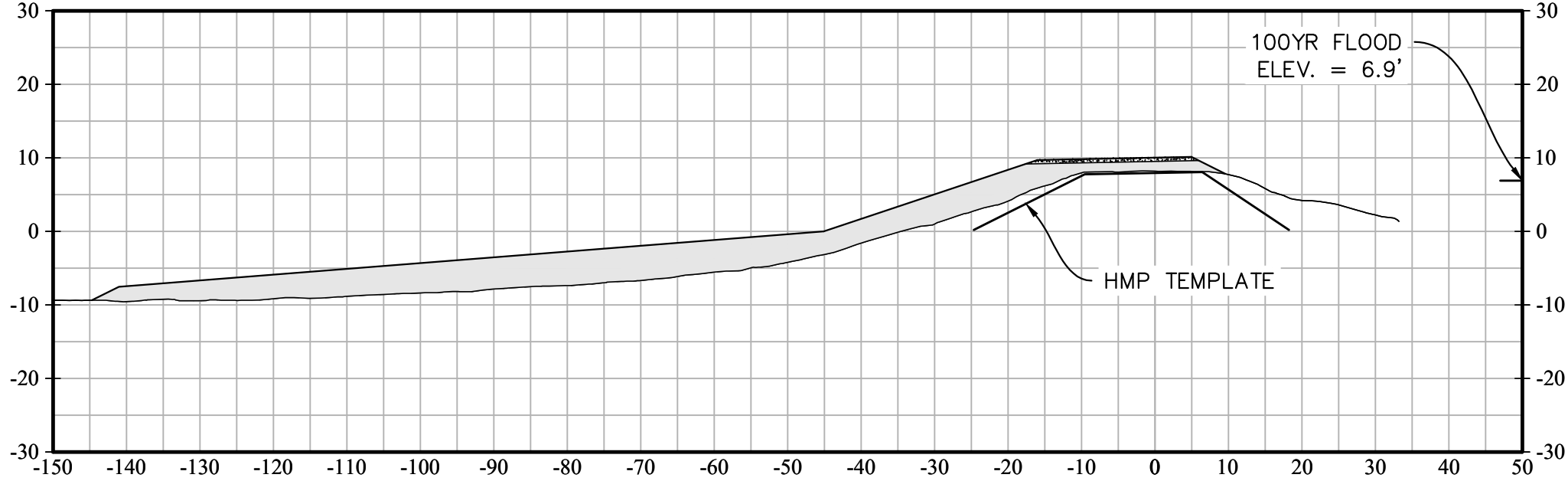
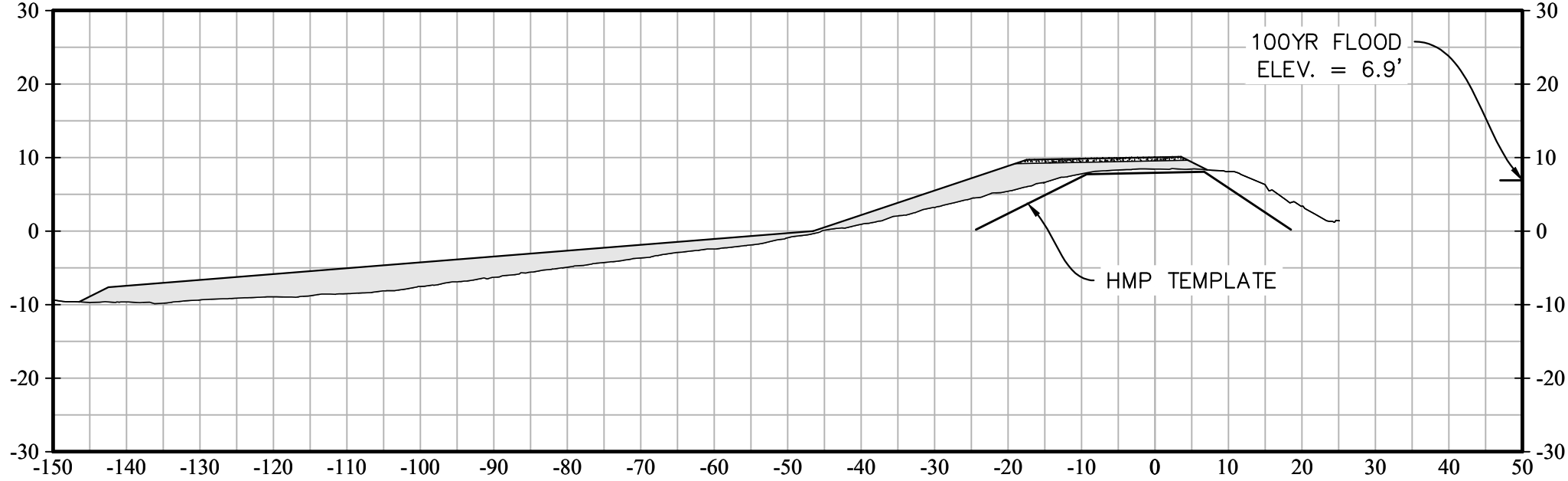
420+00



425+00



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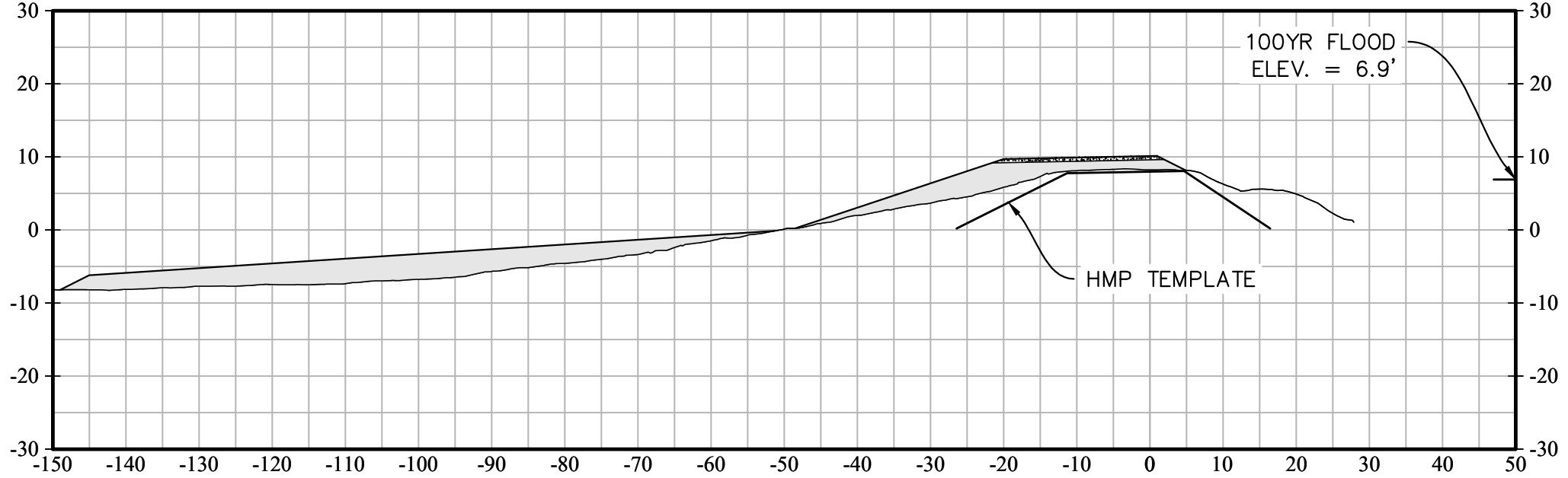
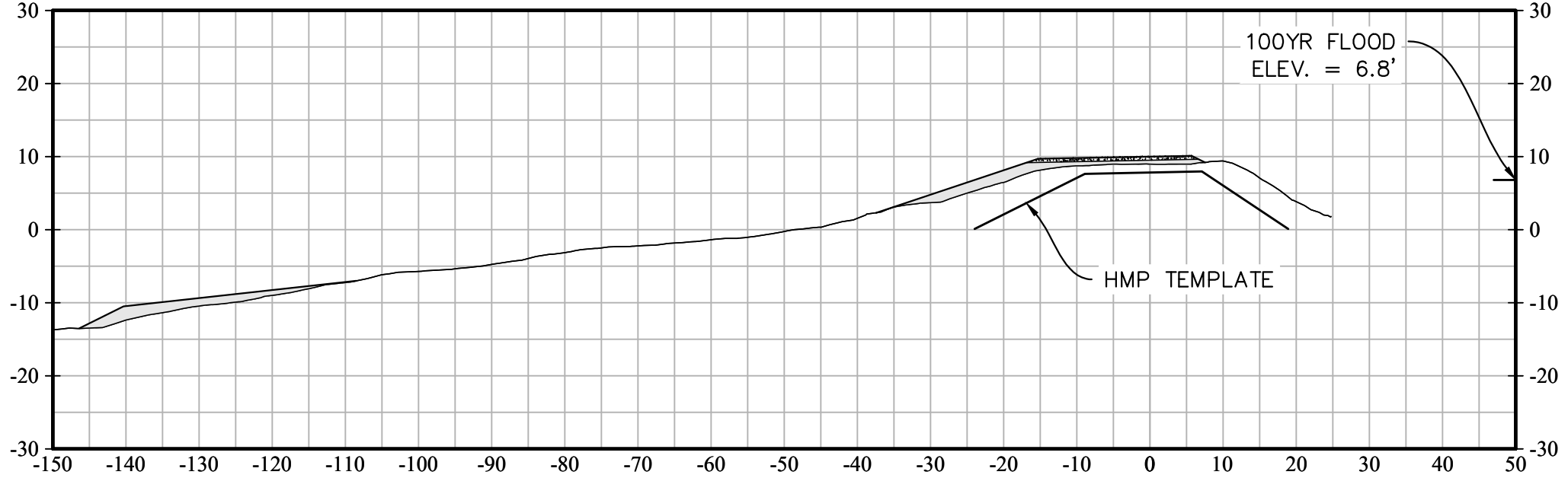
430+00



435+00



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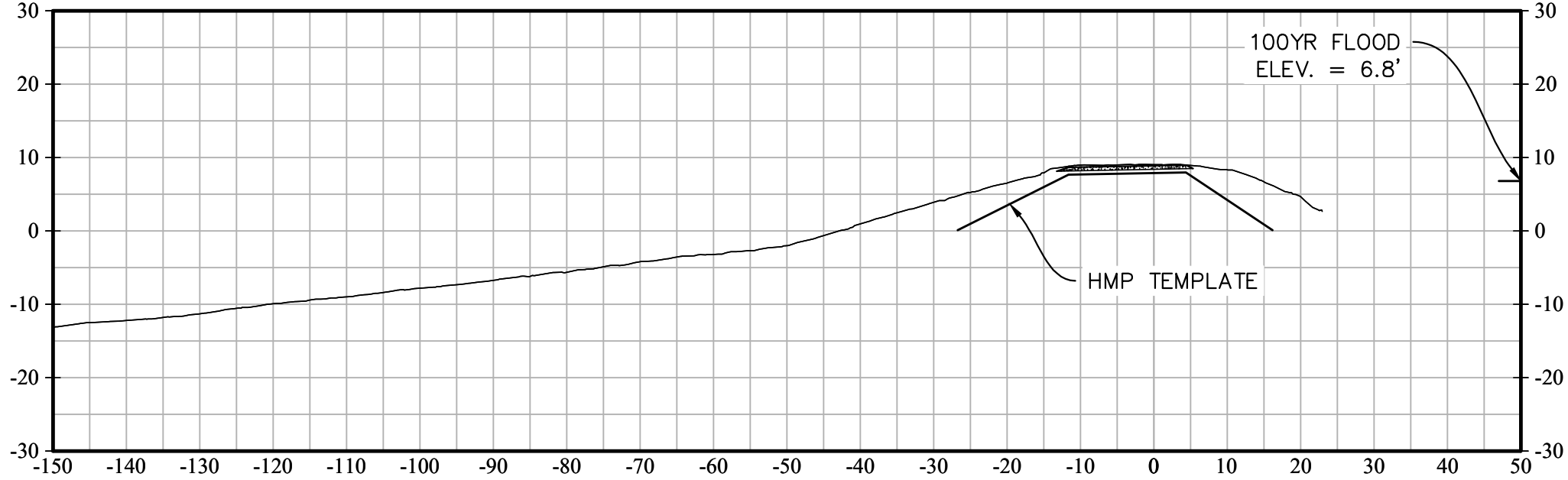
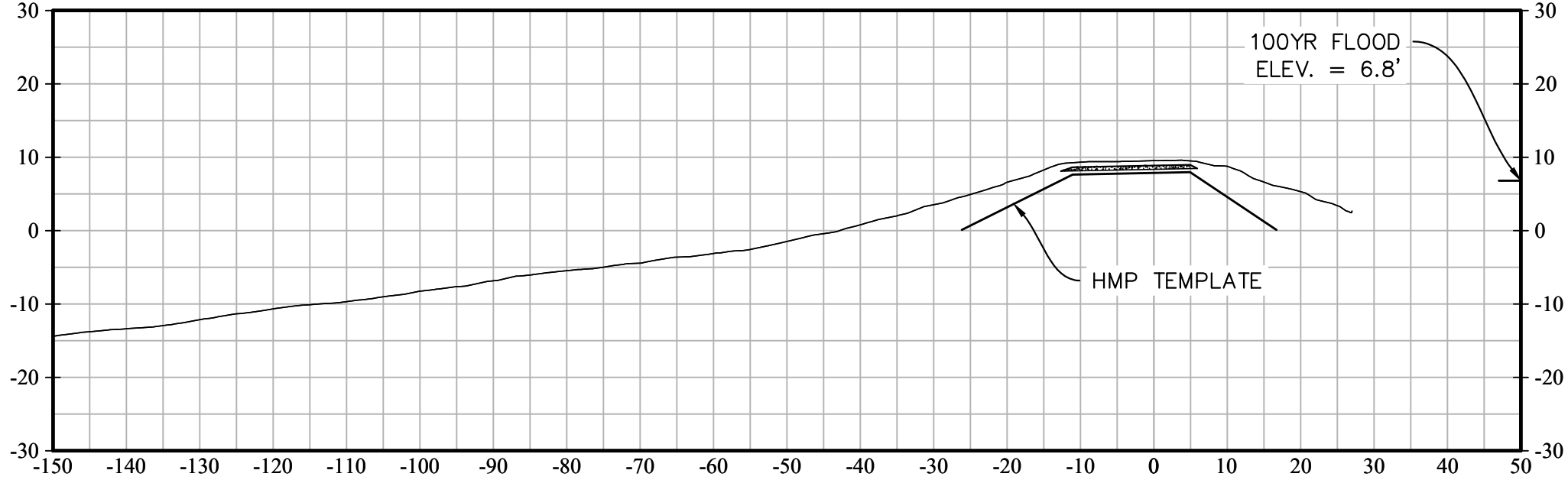
440+00



445+00



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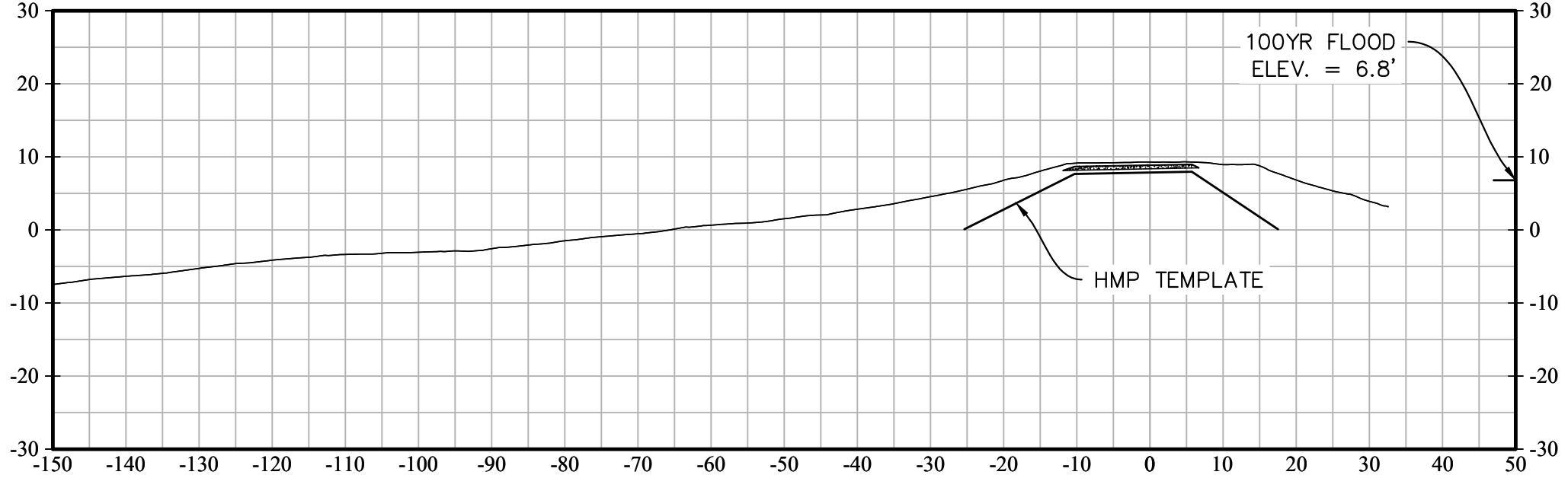
450+00



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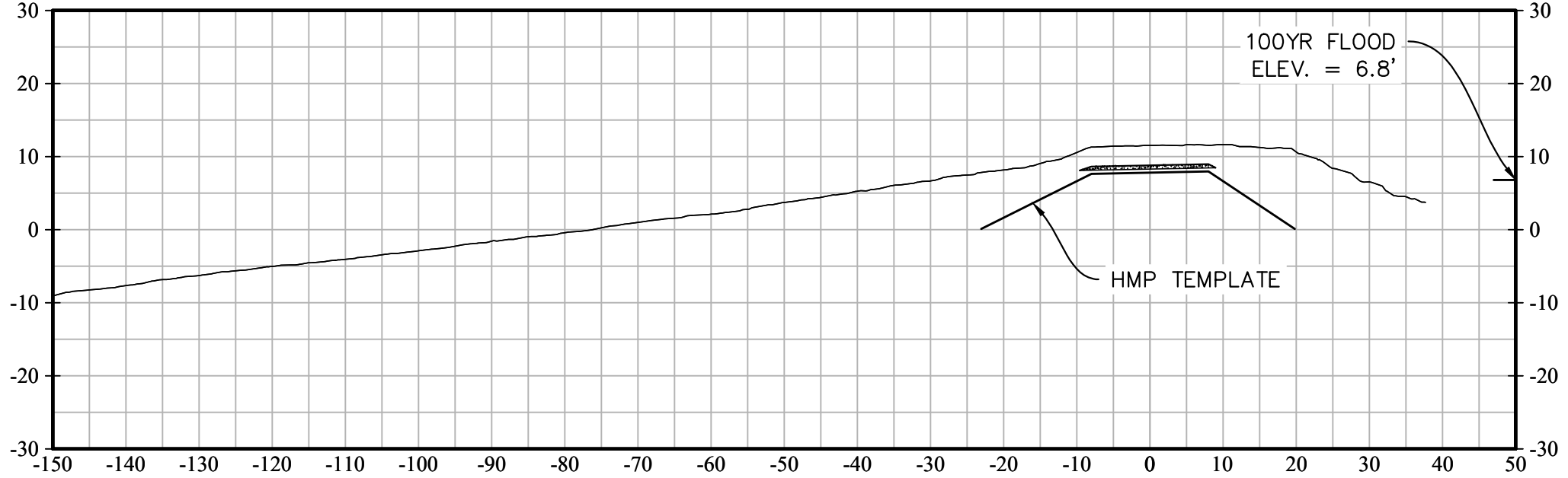

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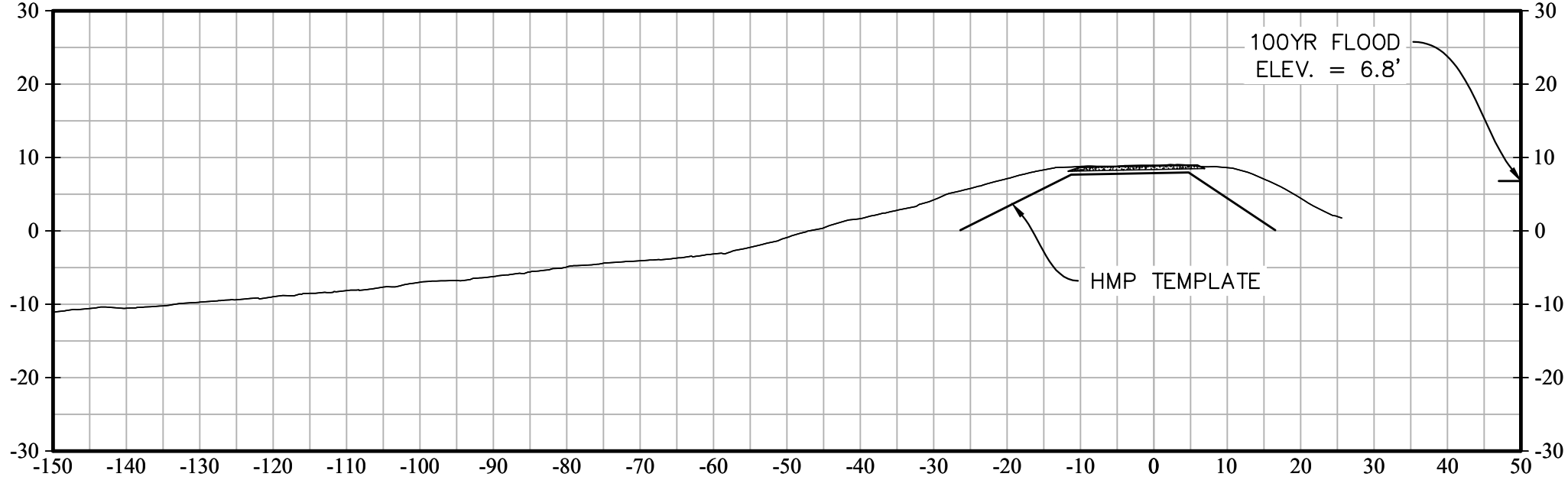
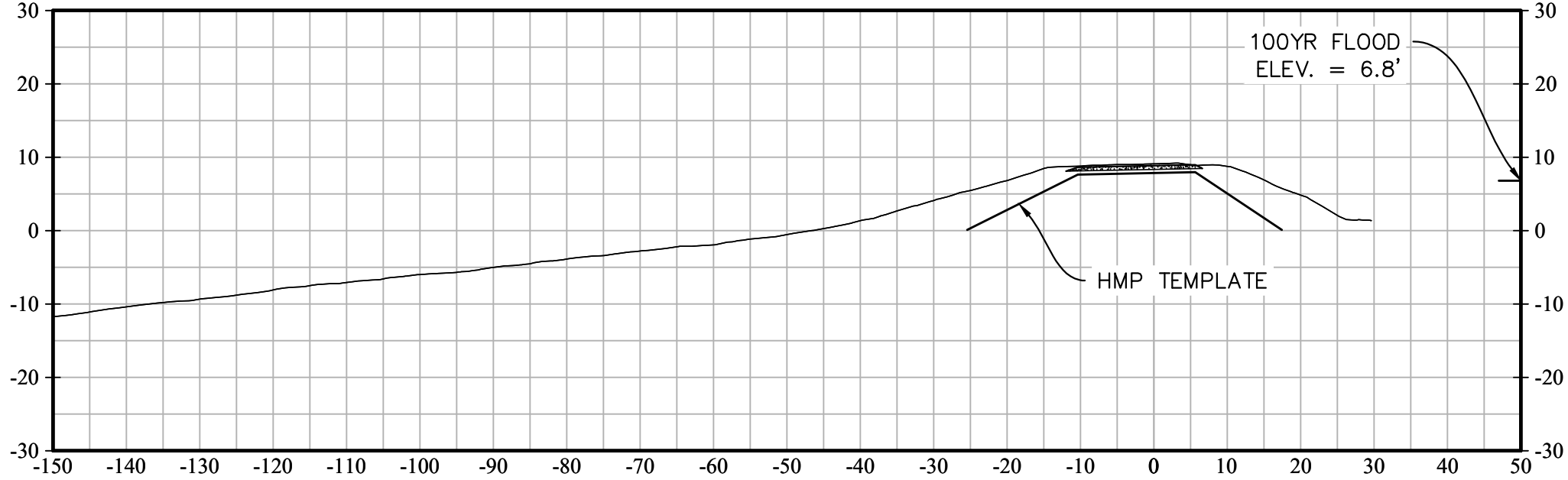
460+00



465+00



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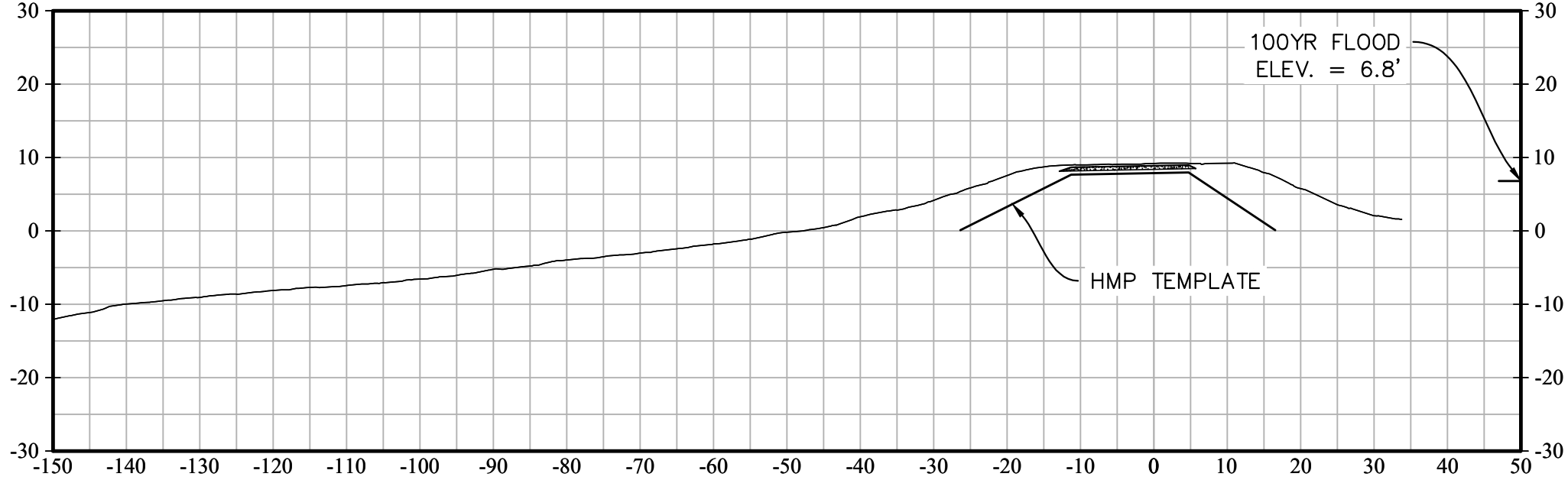
470+00



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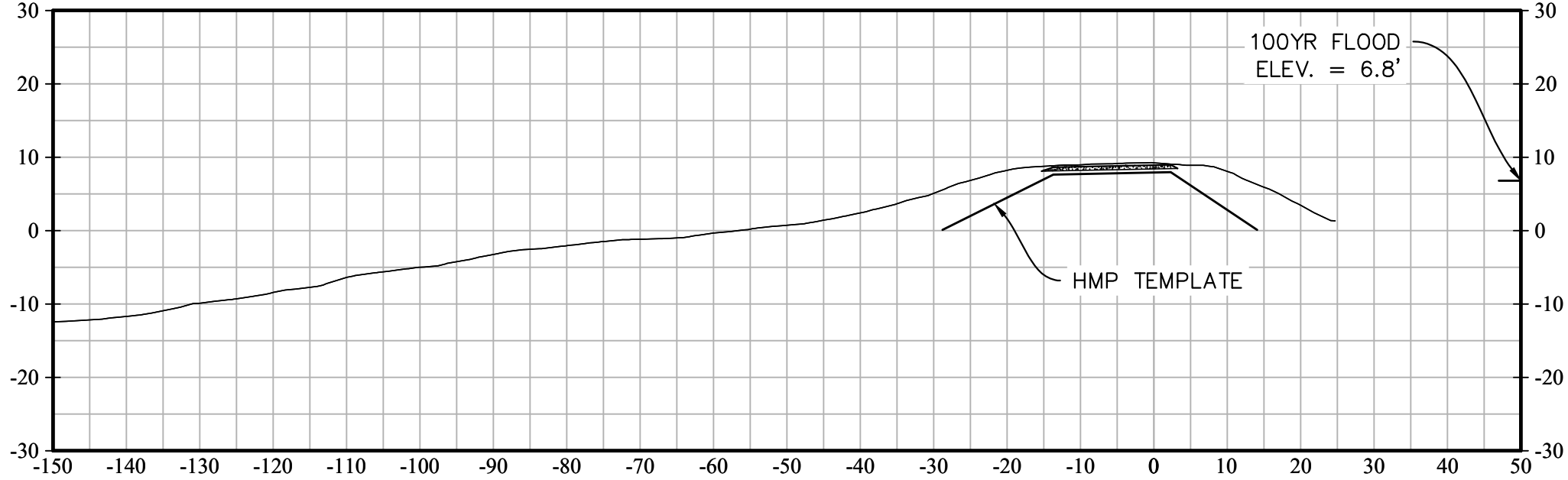

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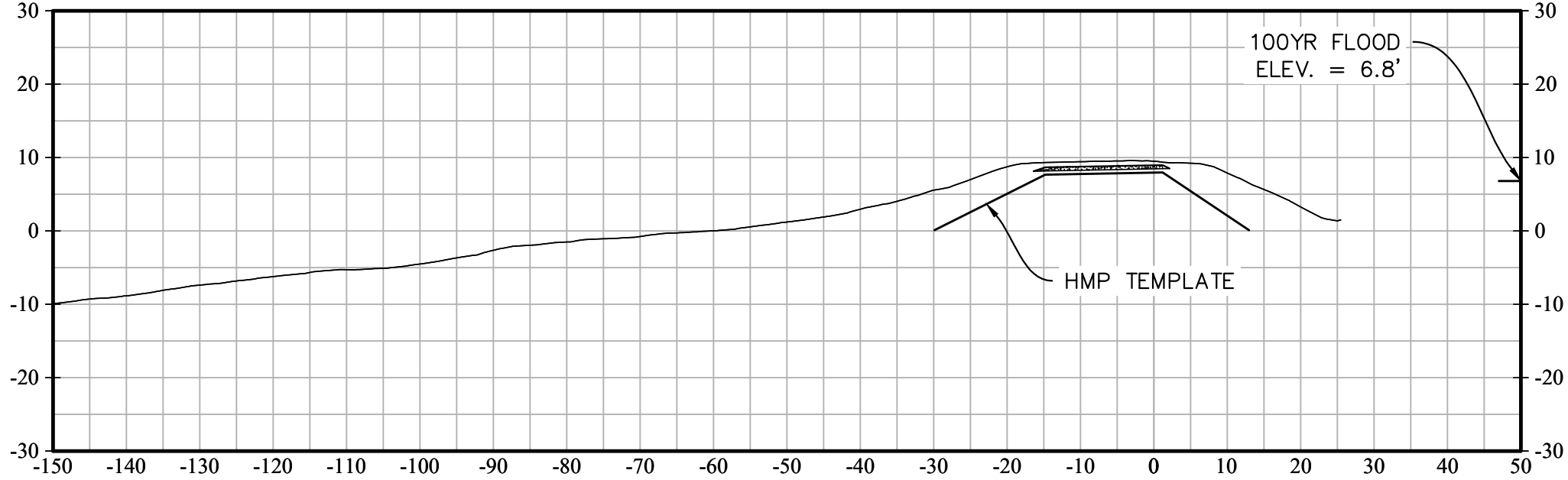
480+00



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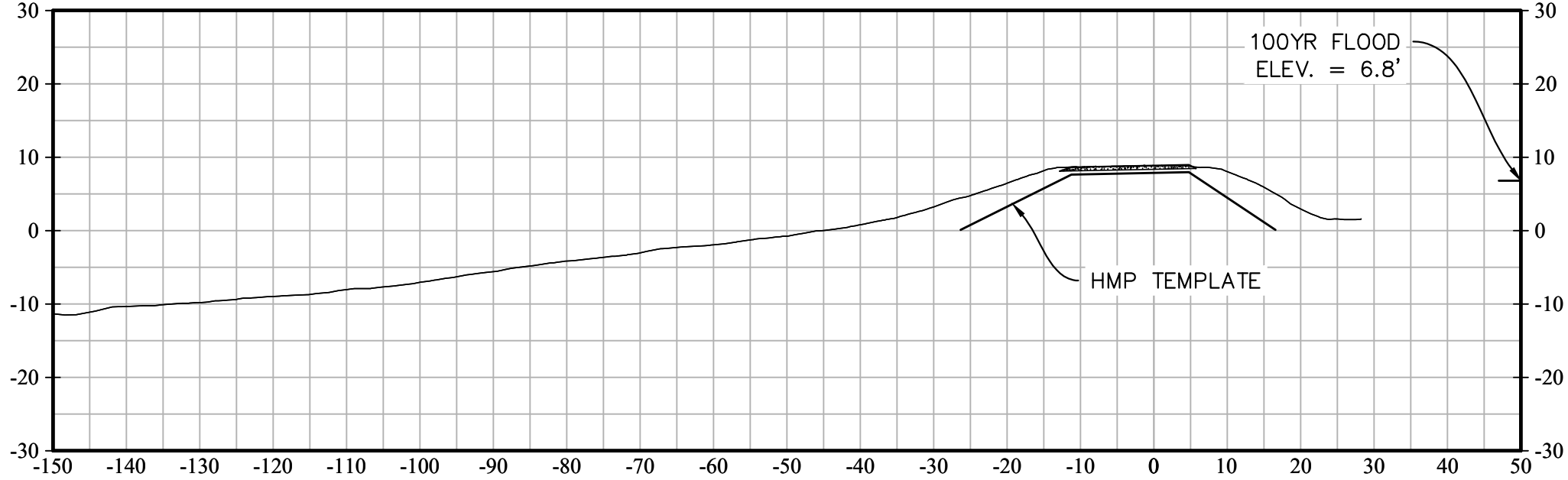

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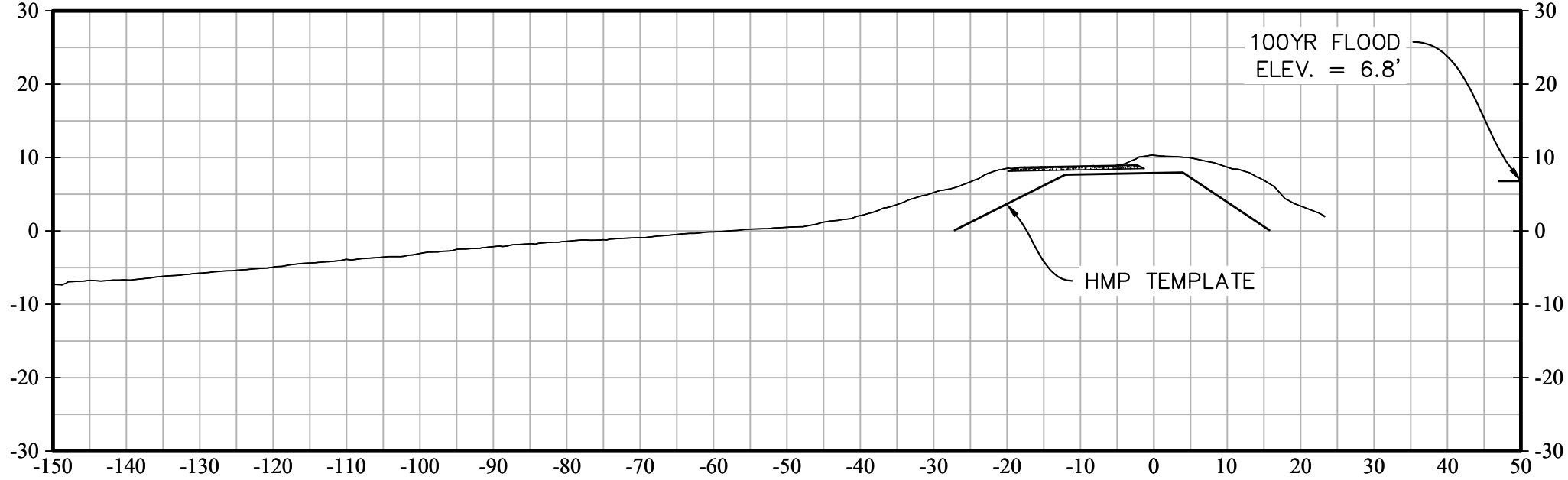
490+00



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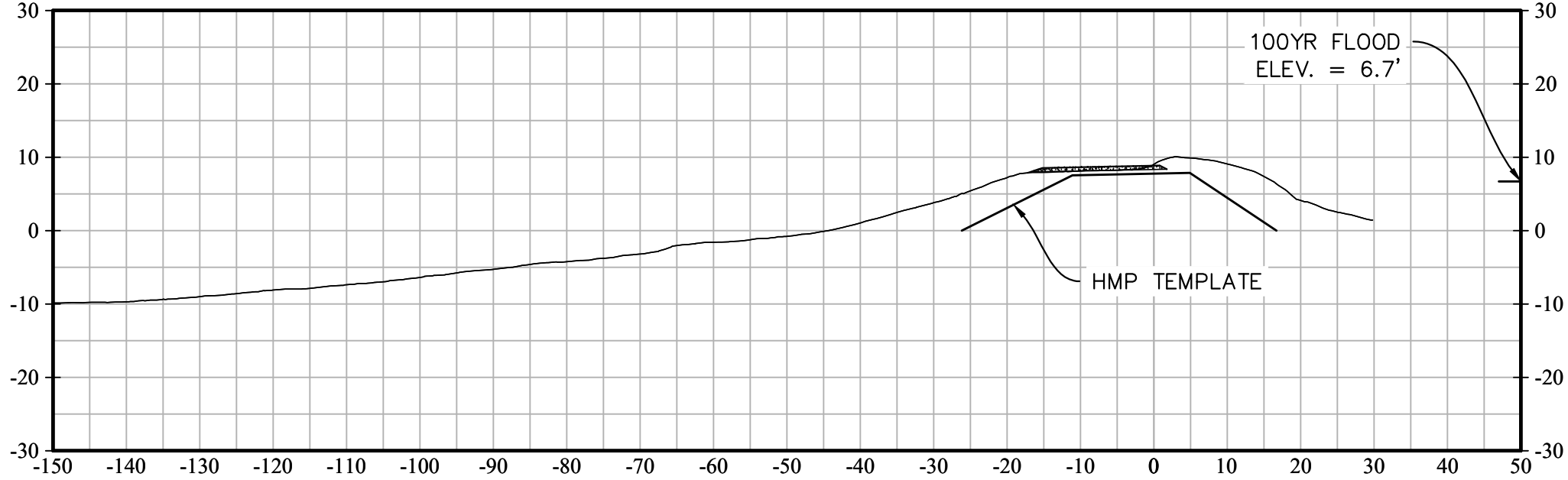

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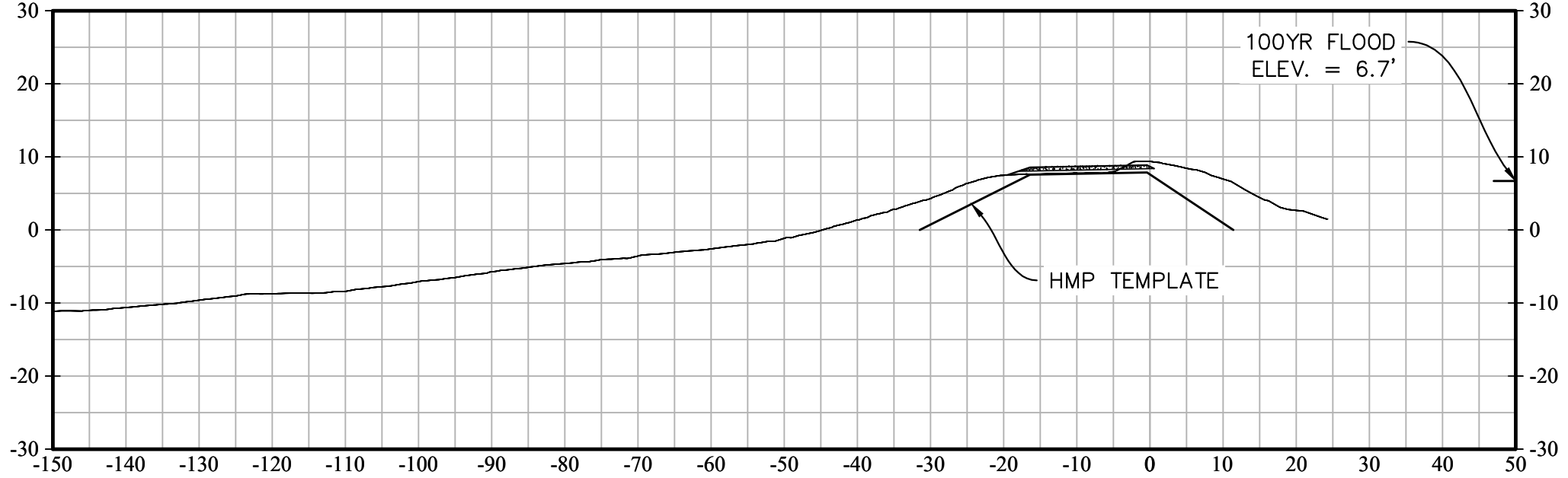
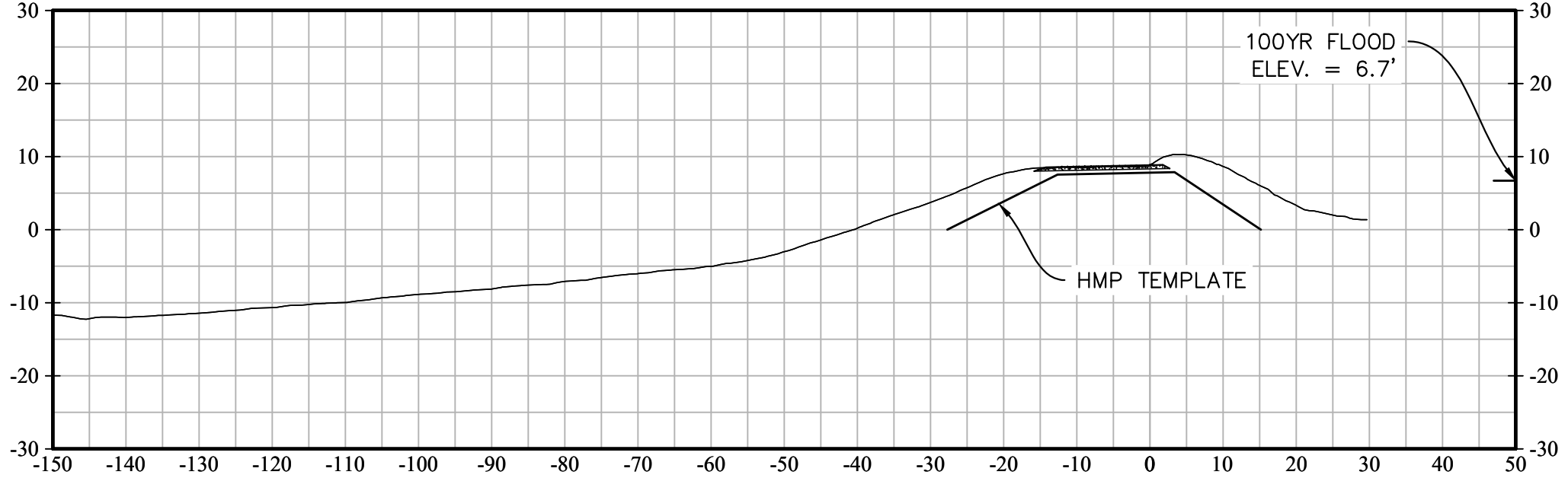
500+00



505+00



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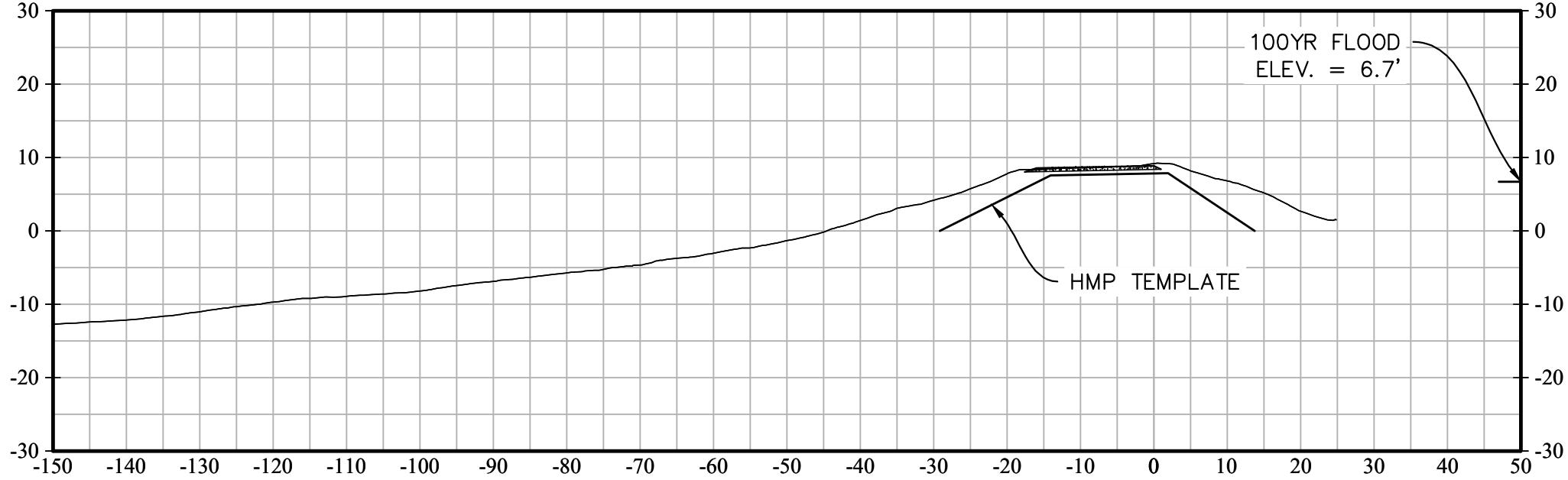
510+00



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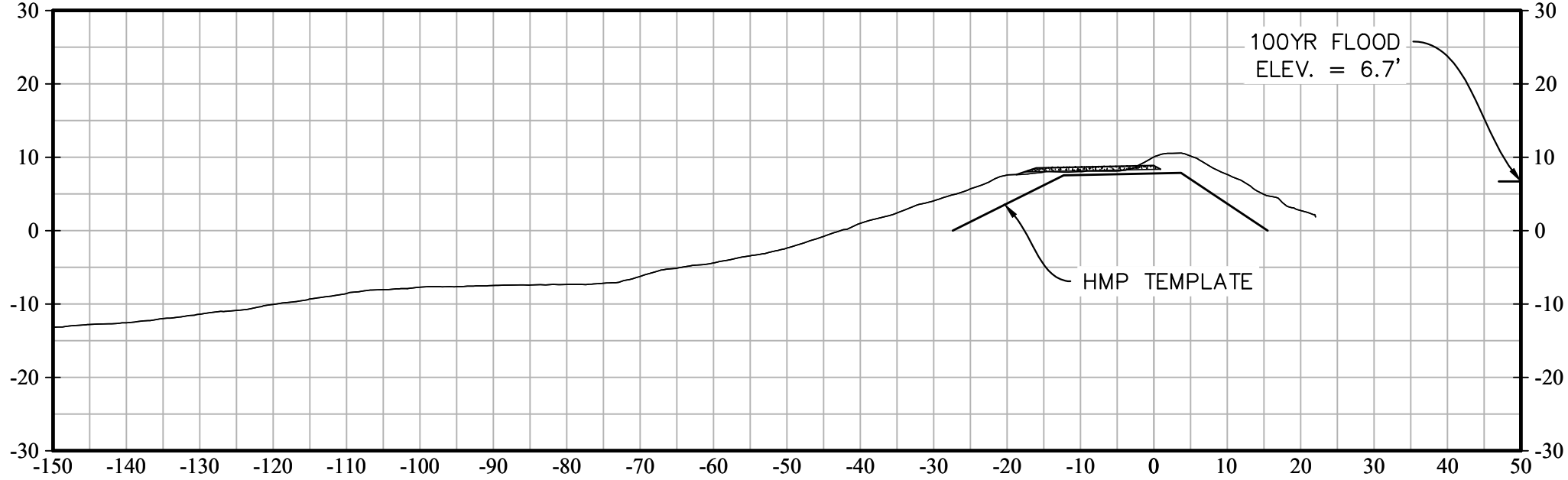

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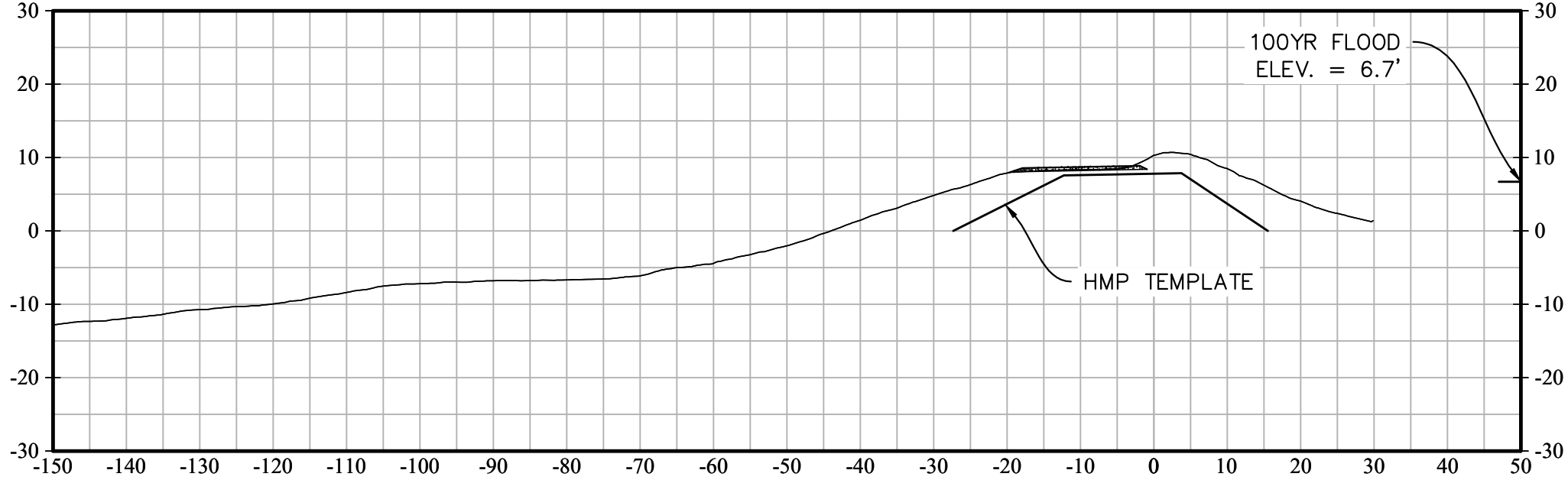
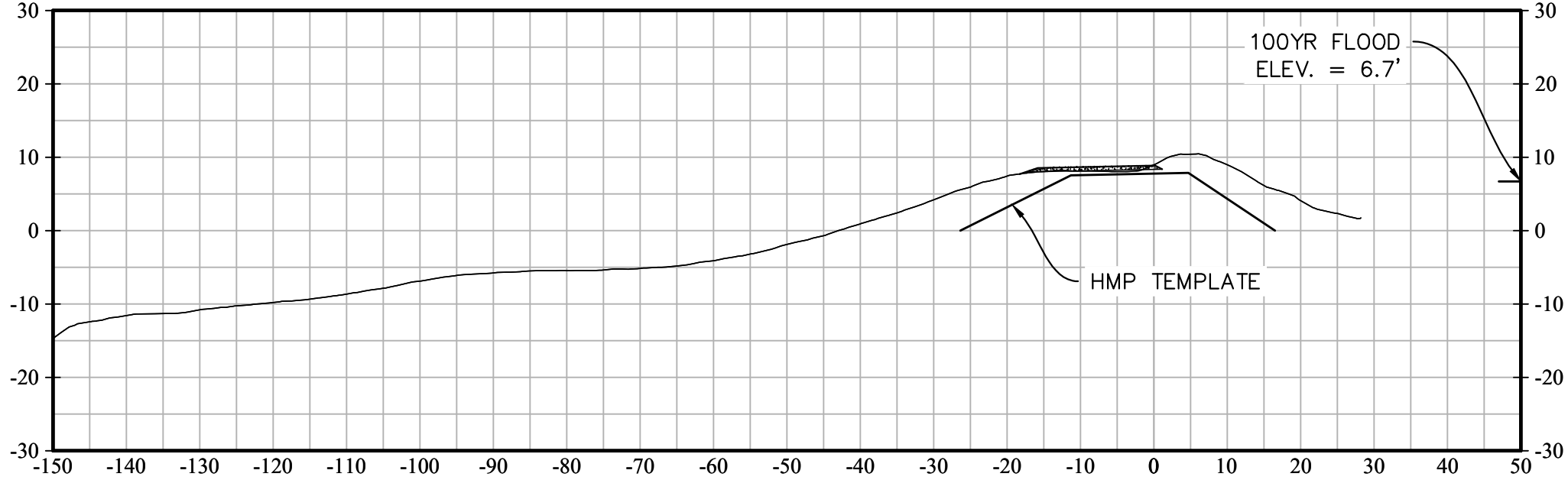
520+00



525+00



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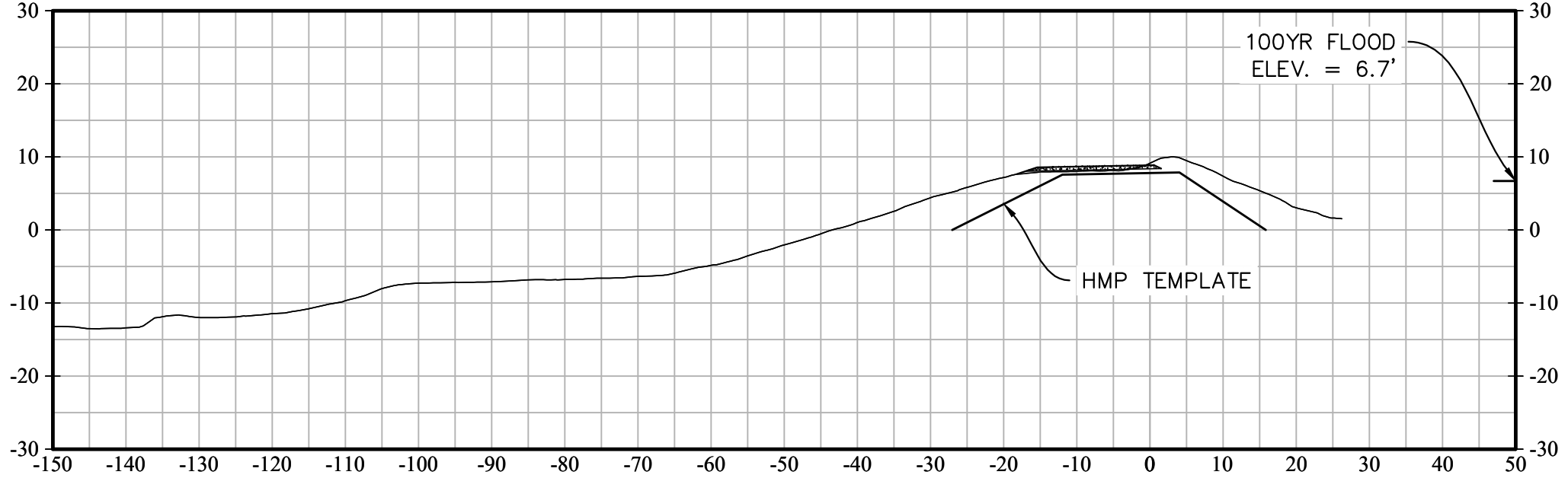
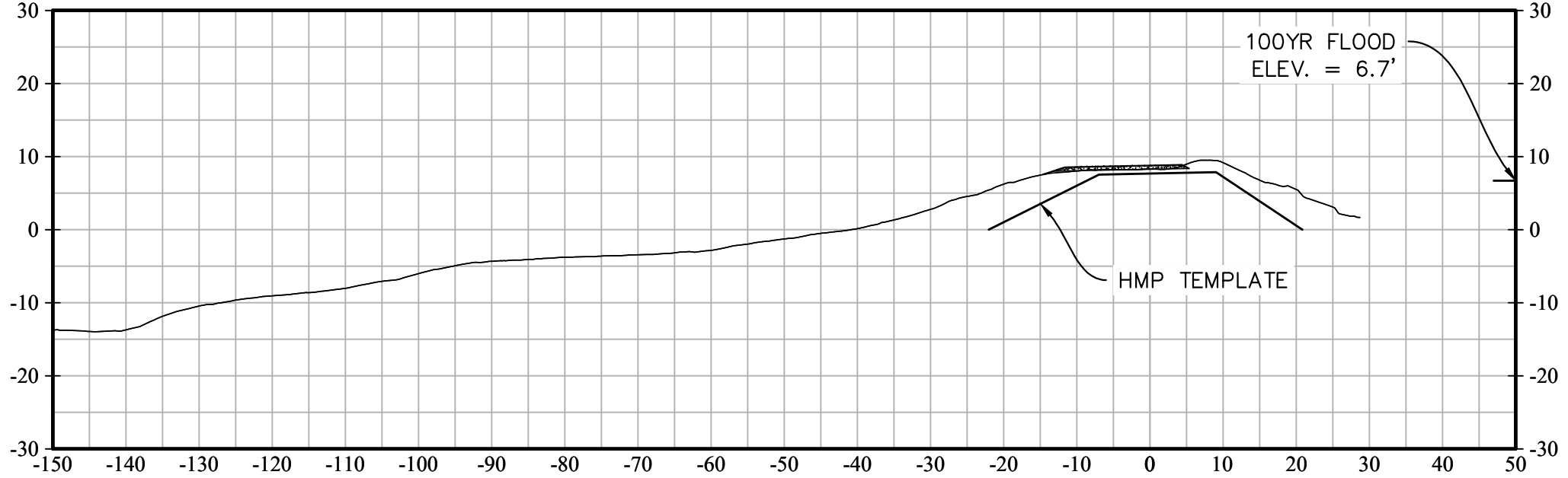
530+00



535+00



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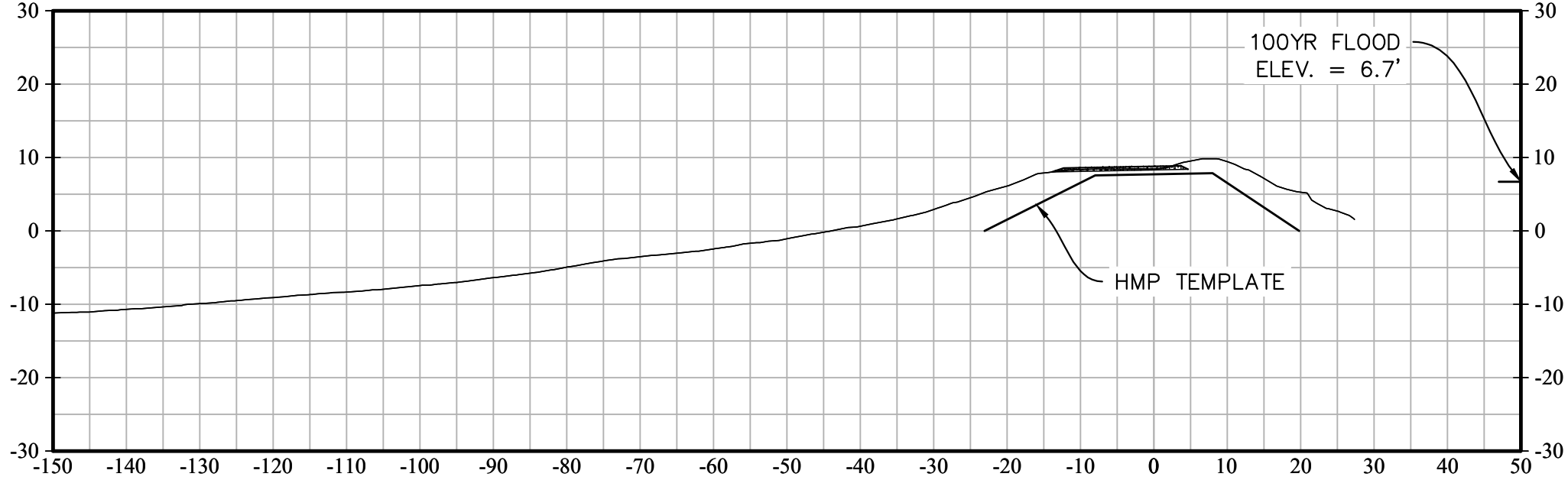
540+00



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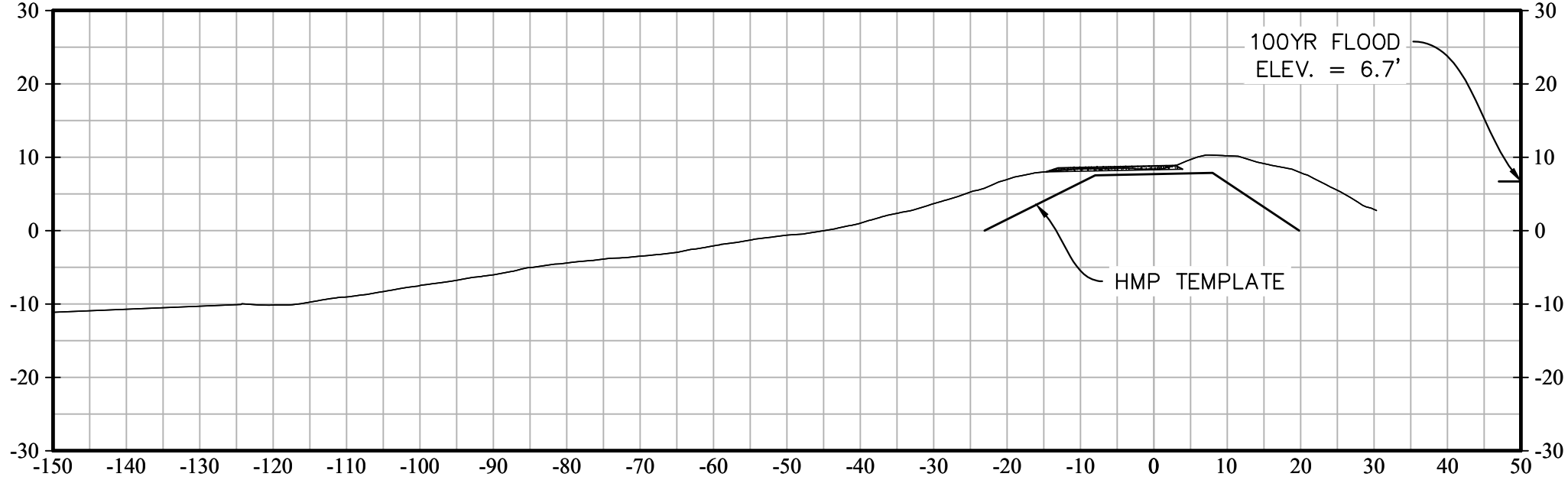

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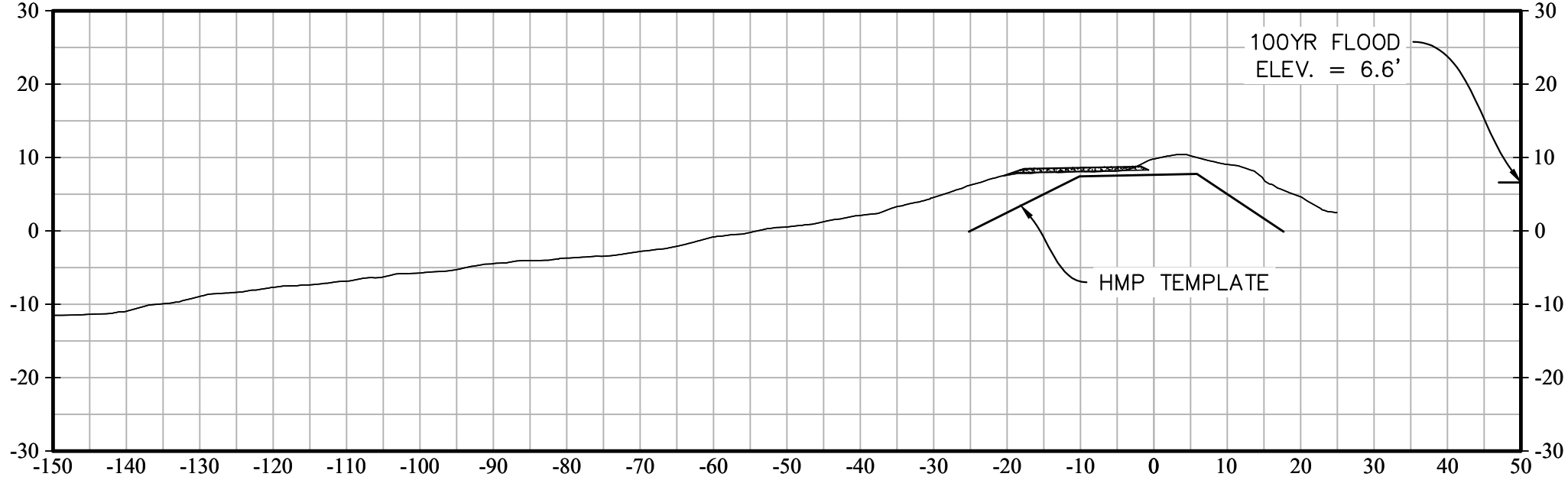
550+00



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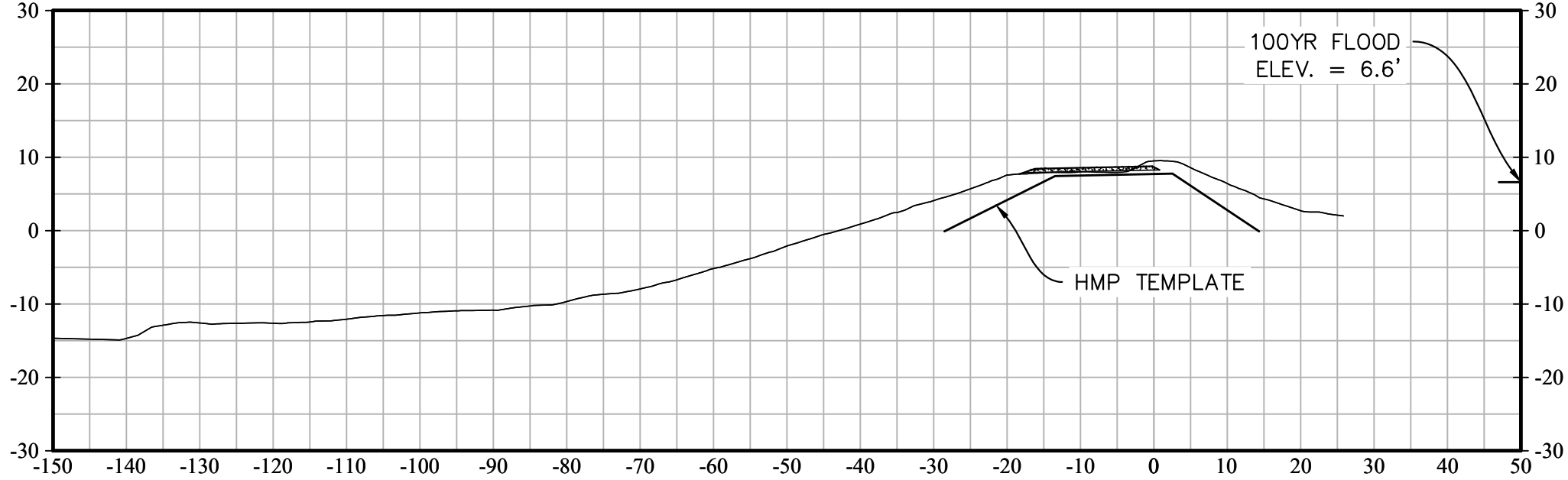

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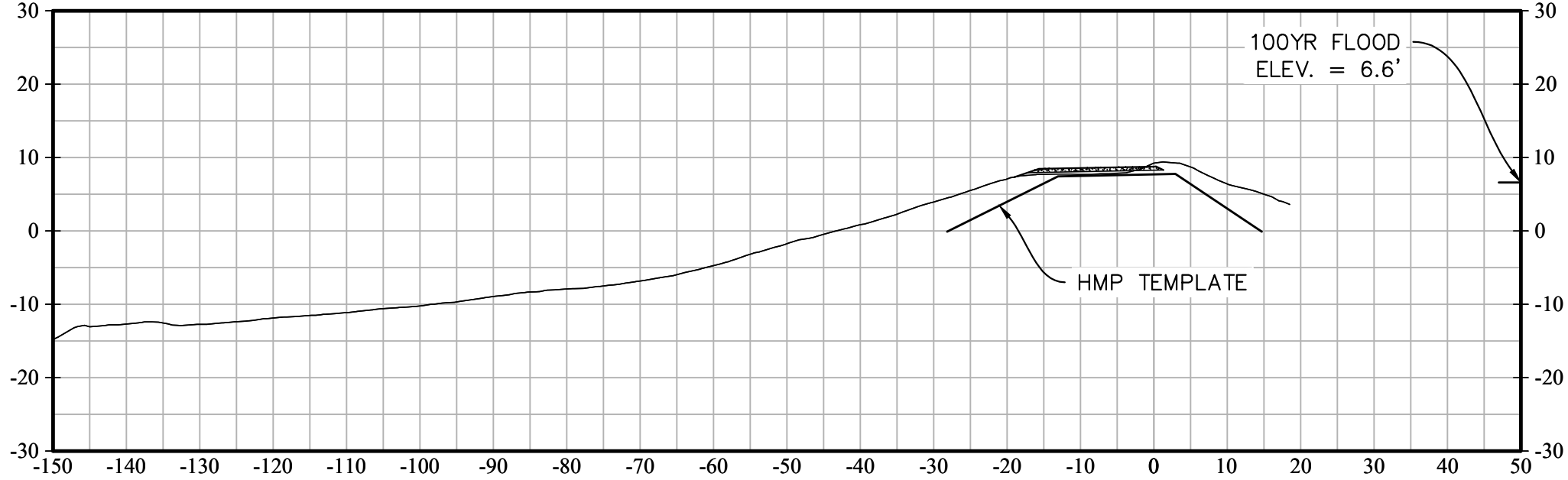
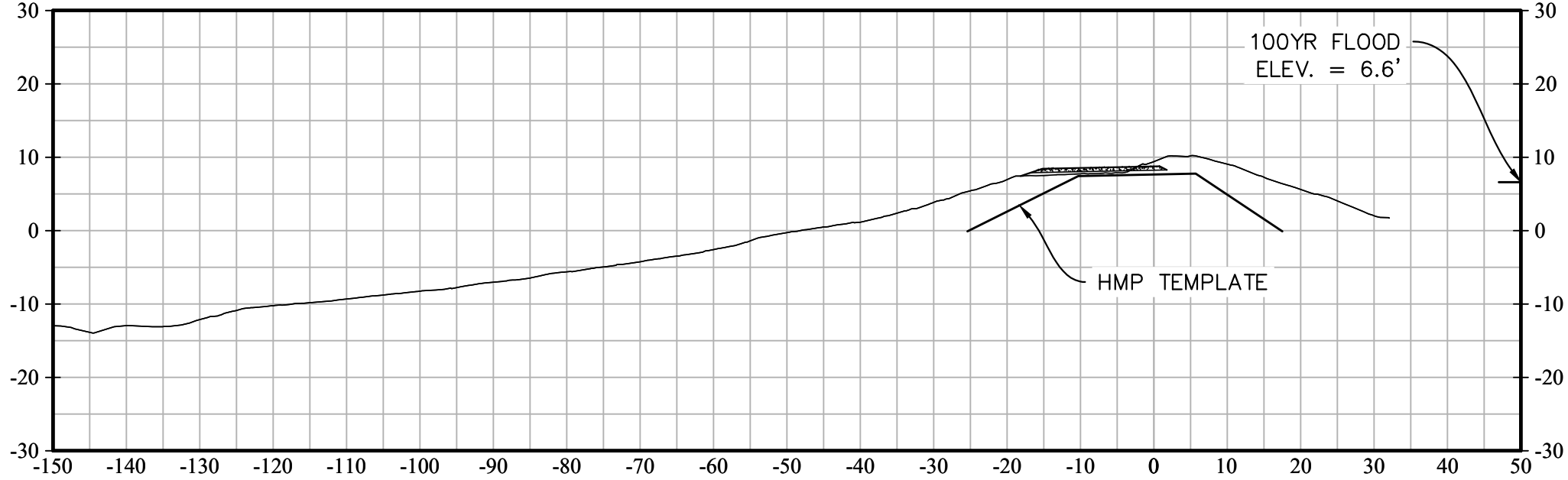
560+00



565+00



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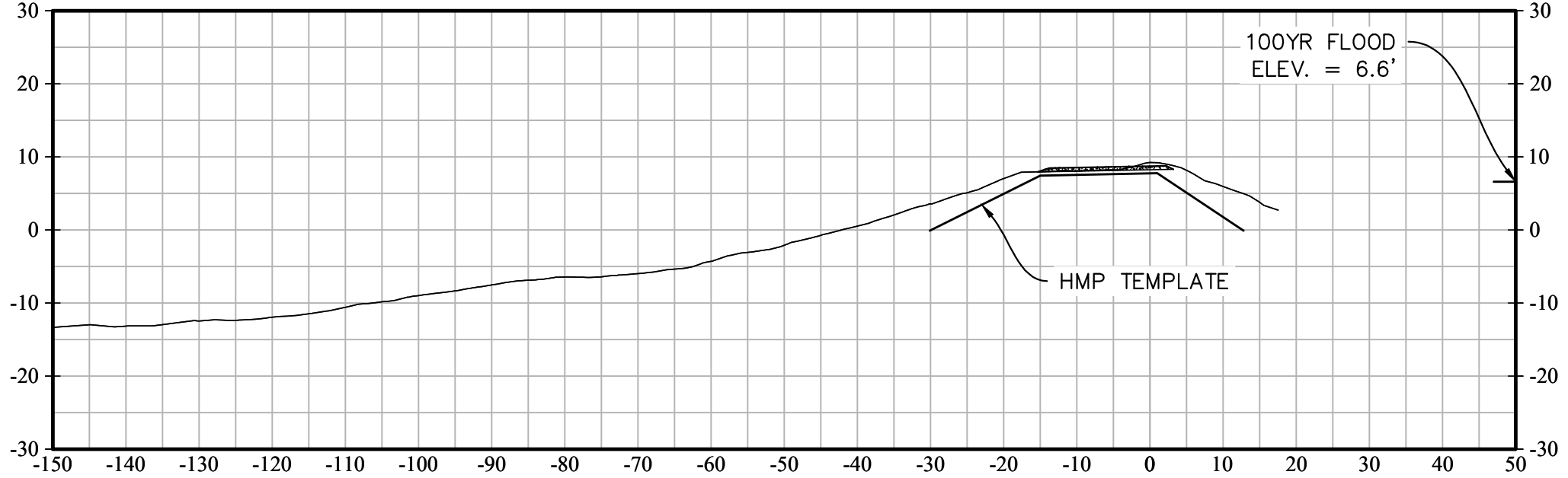
570+00



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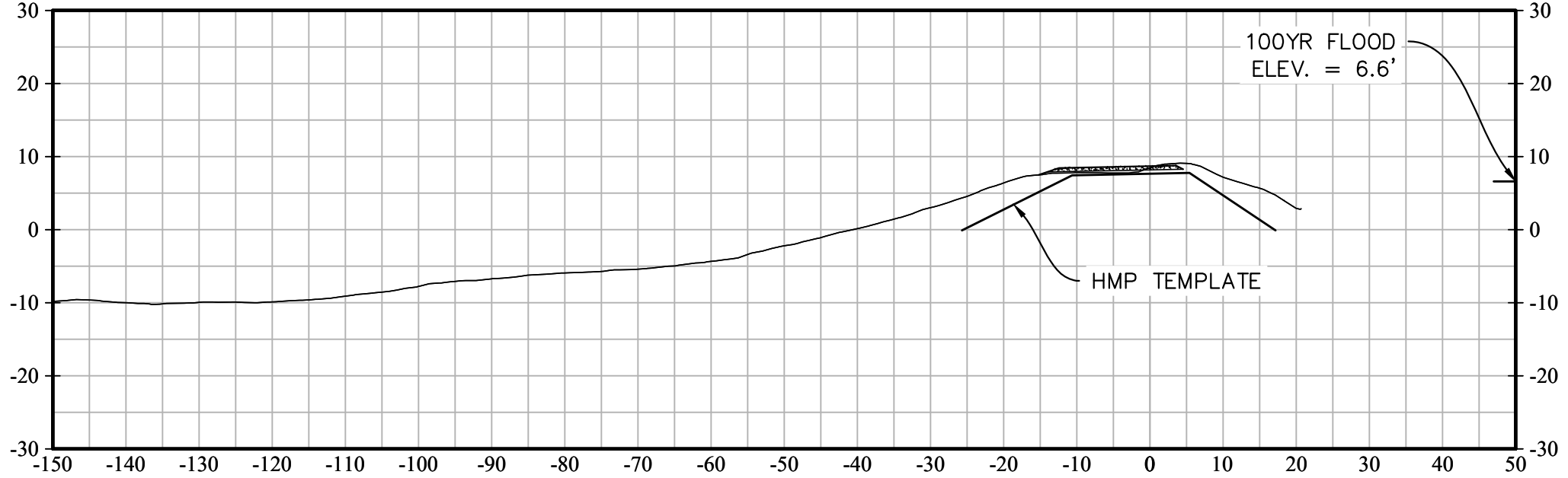

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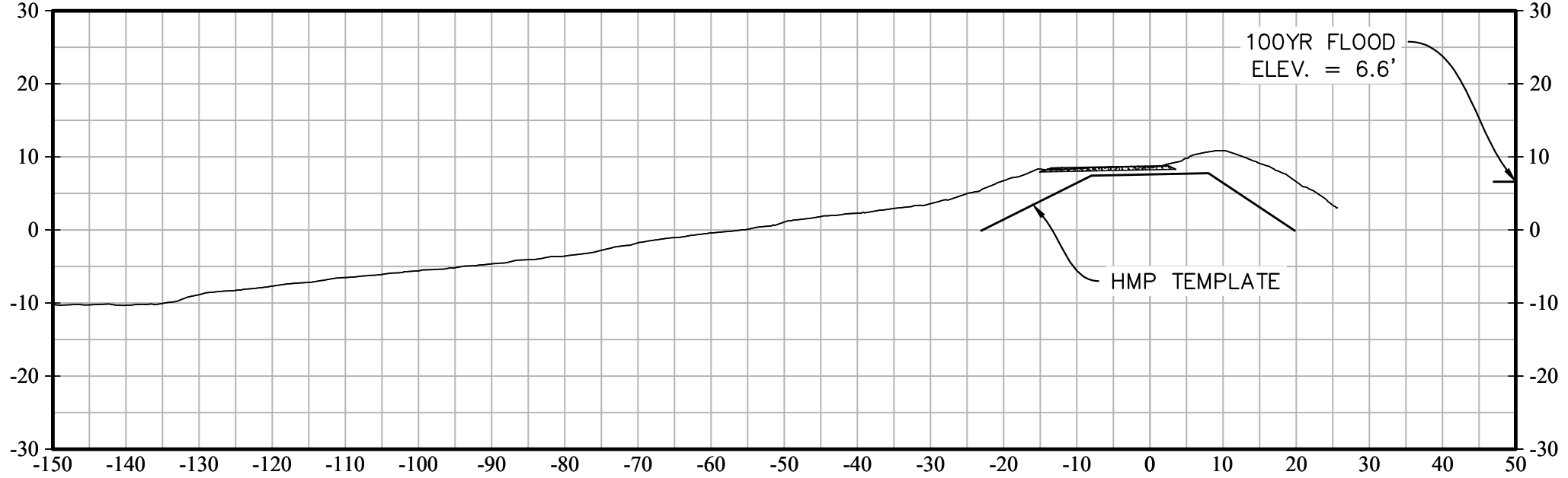
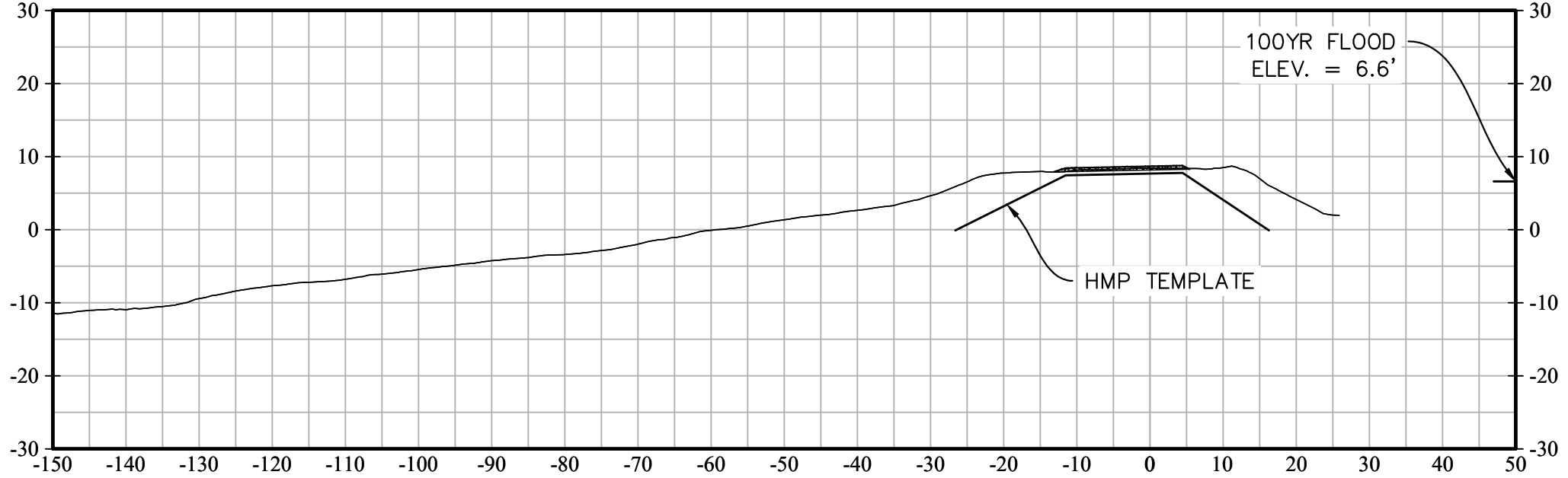
580+00



585+00



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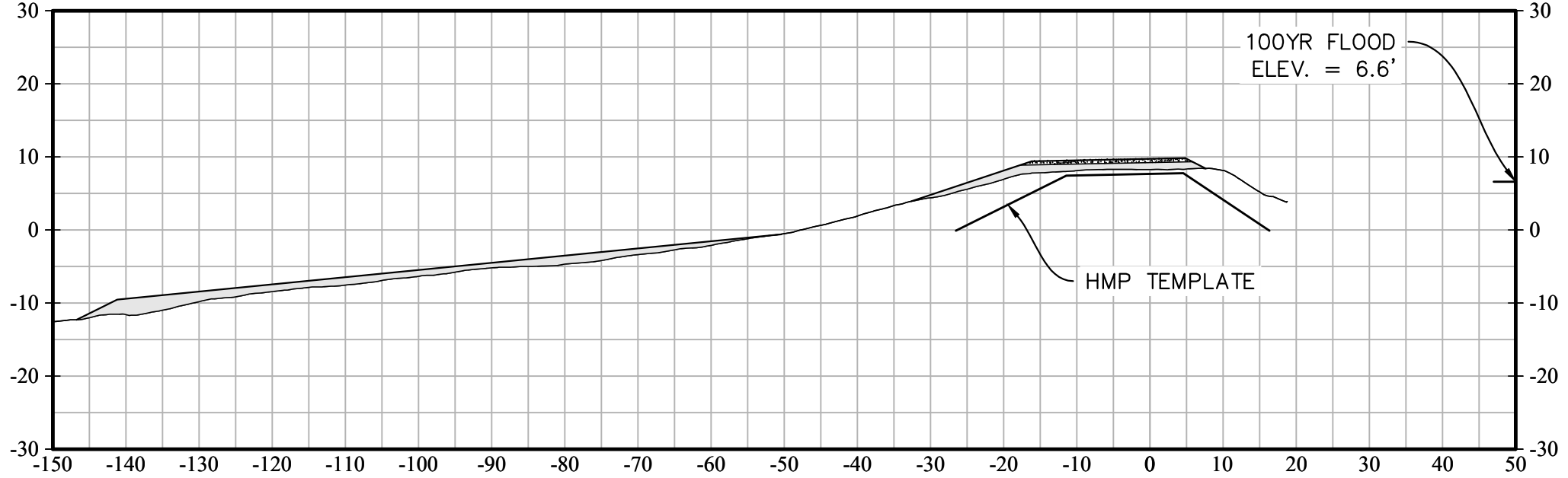
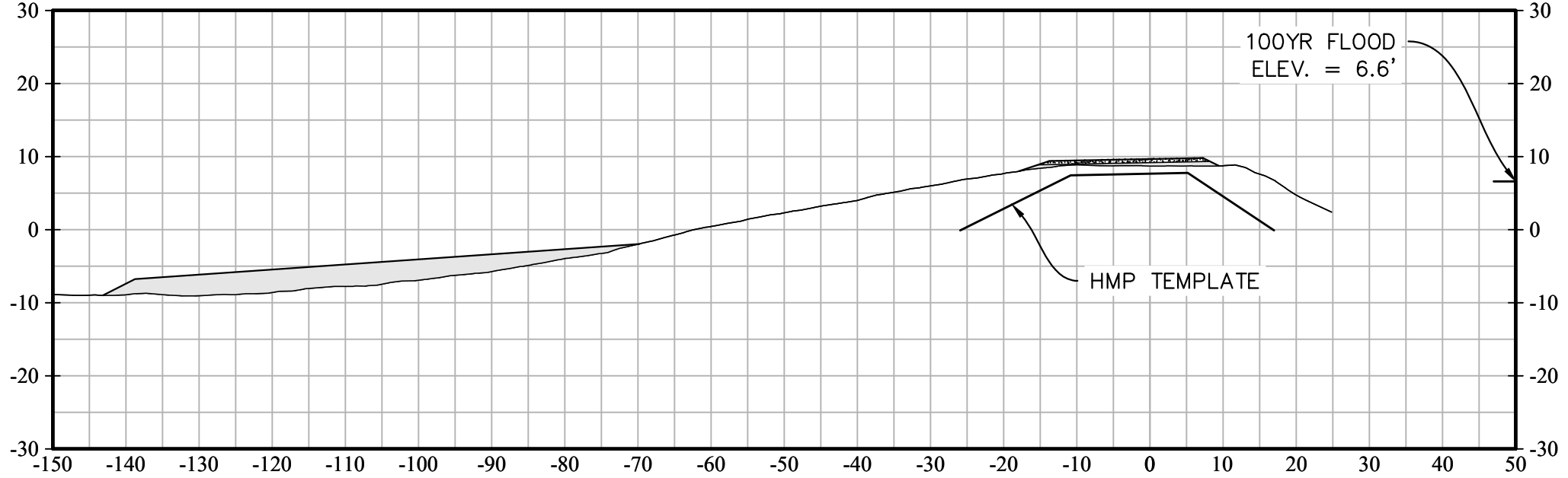
590+00



595+00



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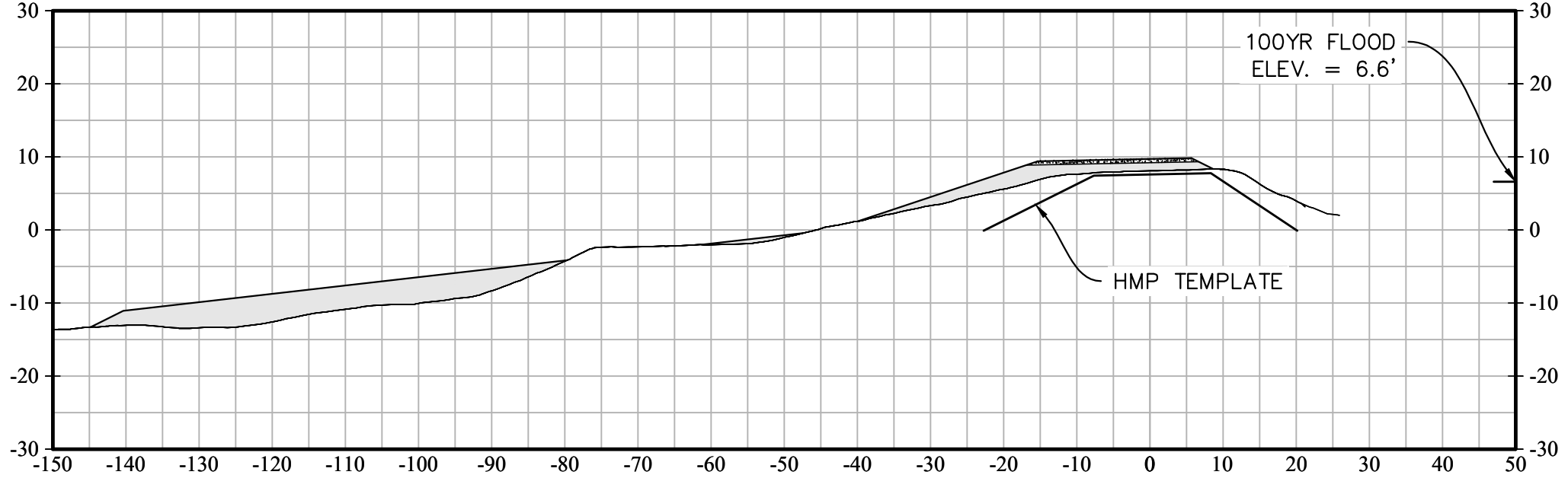
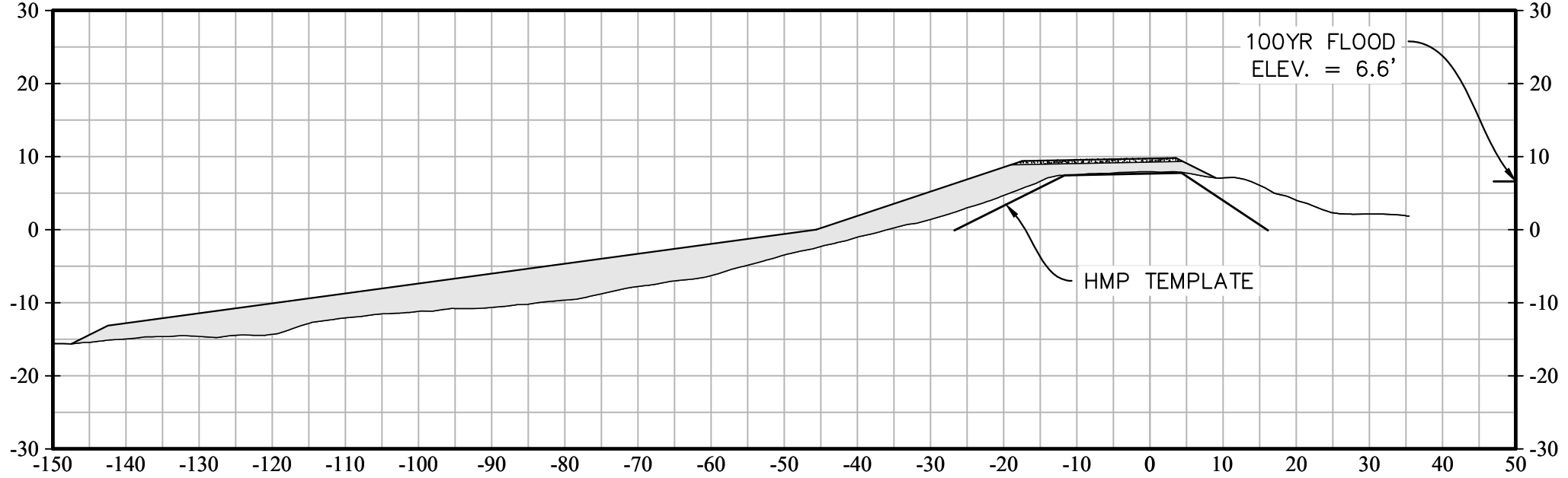
600+00



605+00



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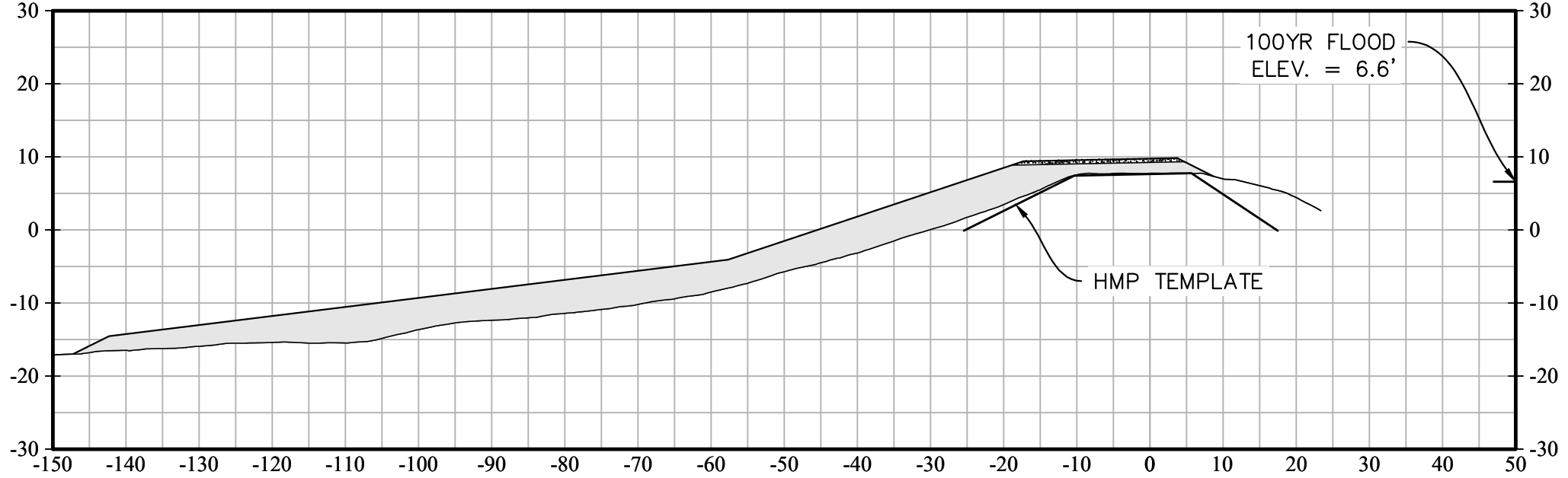
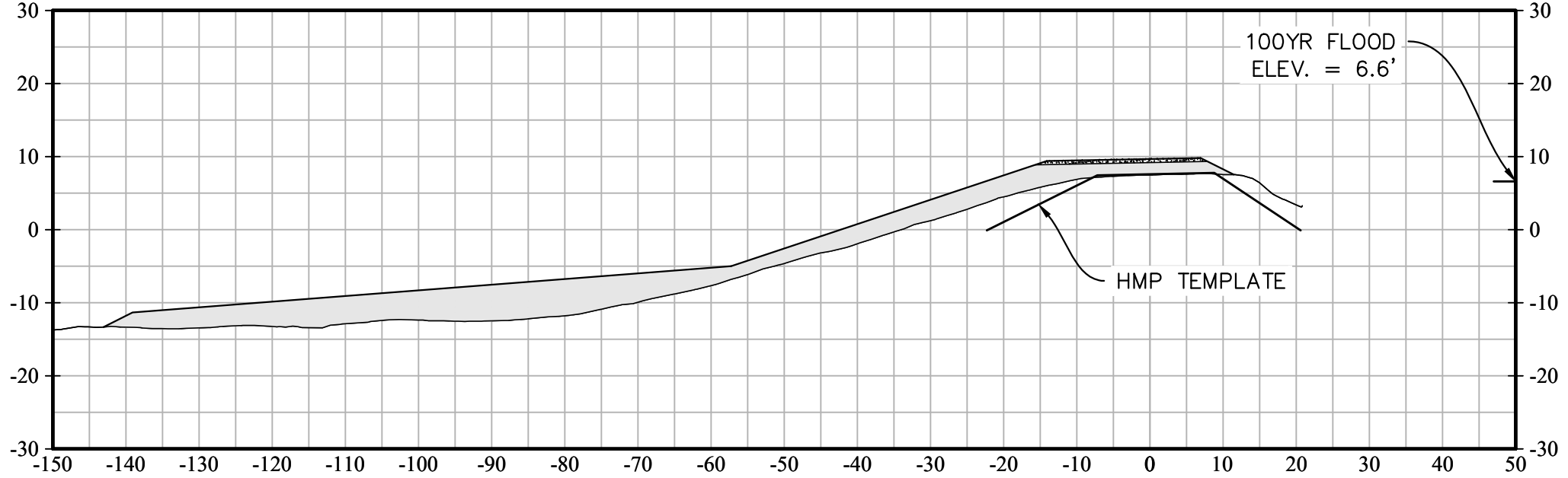
610+00



615+00



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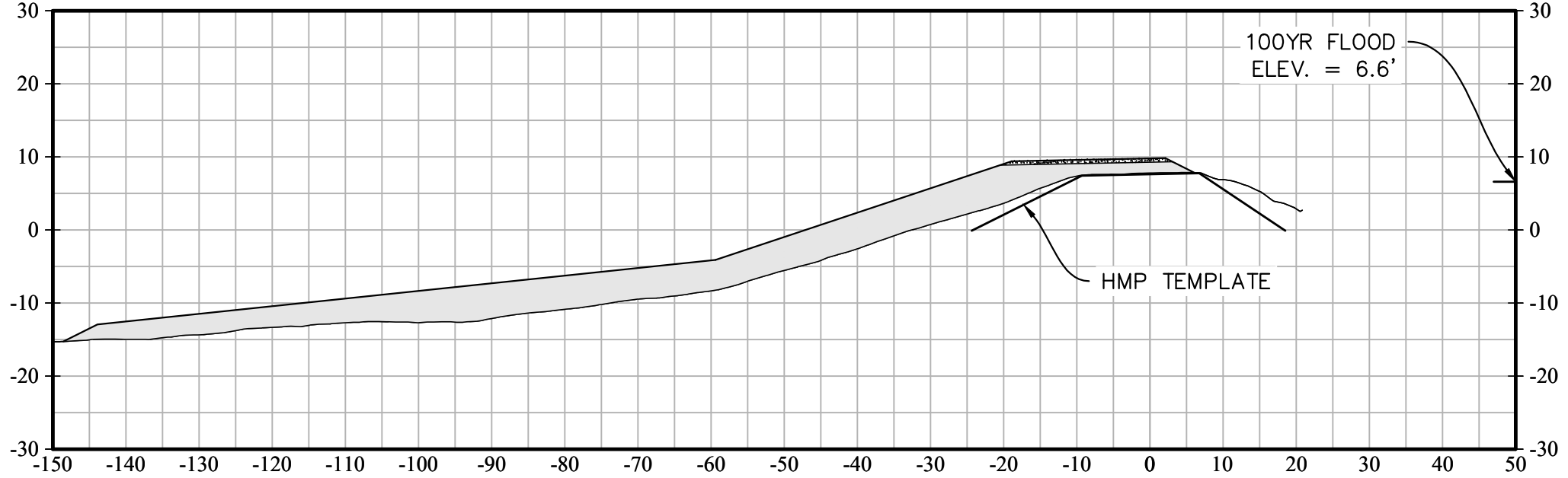
620+00



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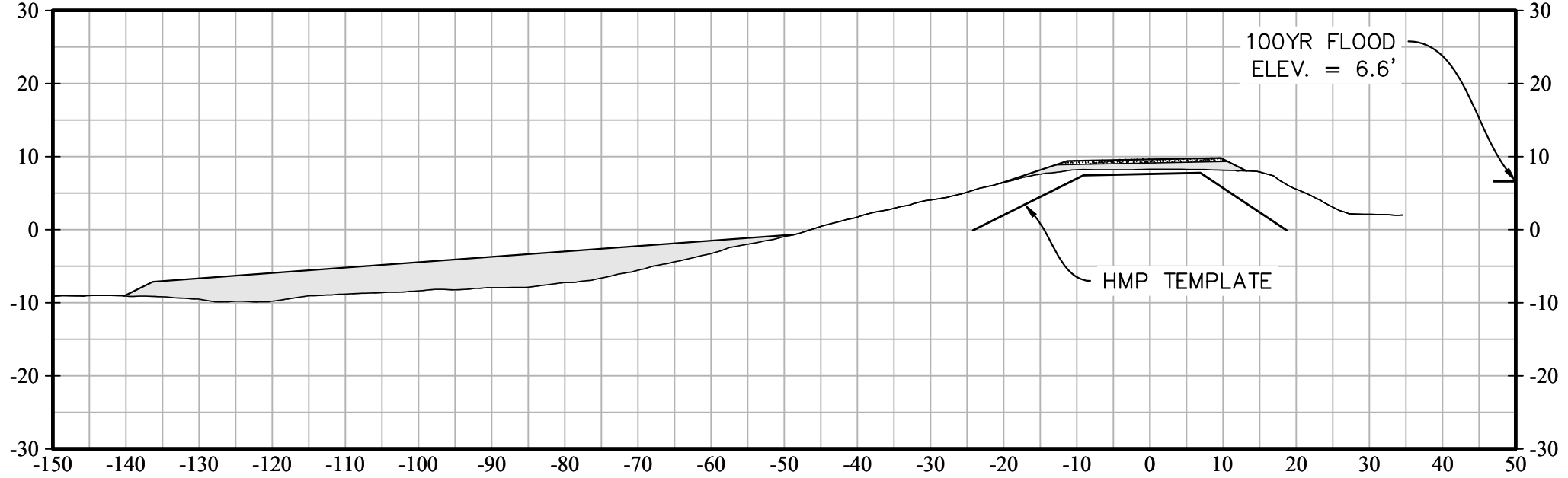

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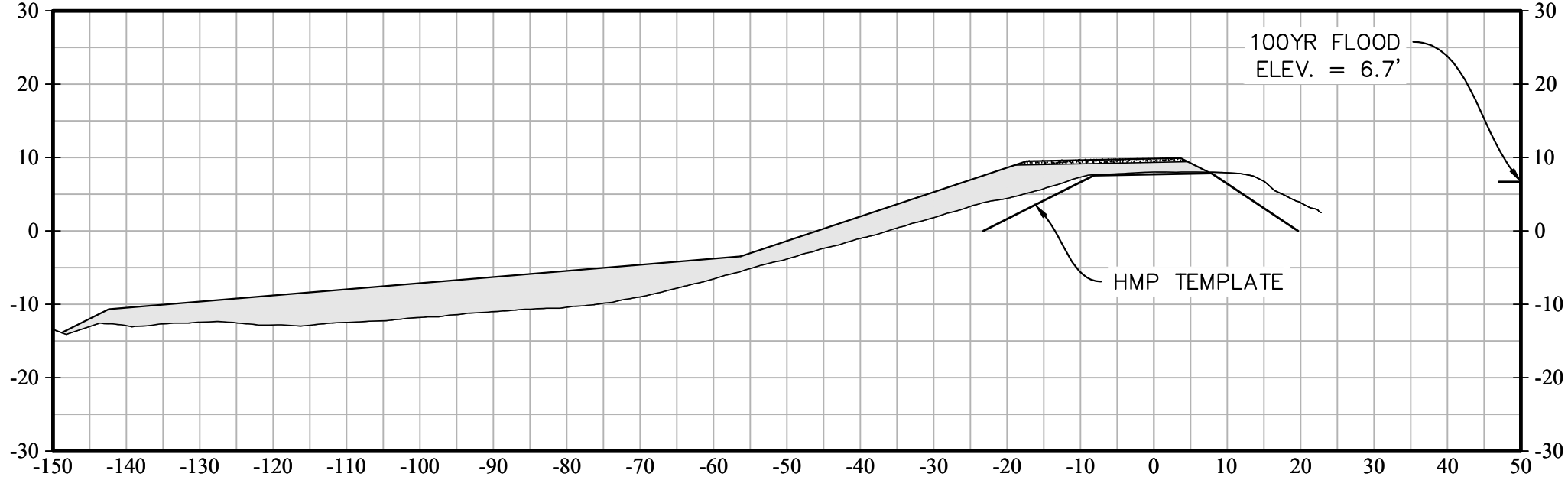
* VERTICAL DATUM = NGVD 29

630+00



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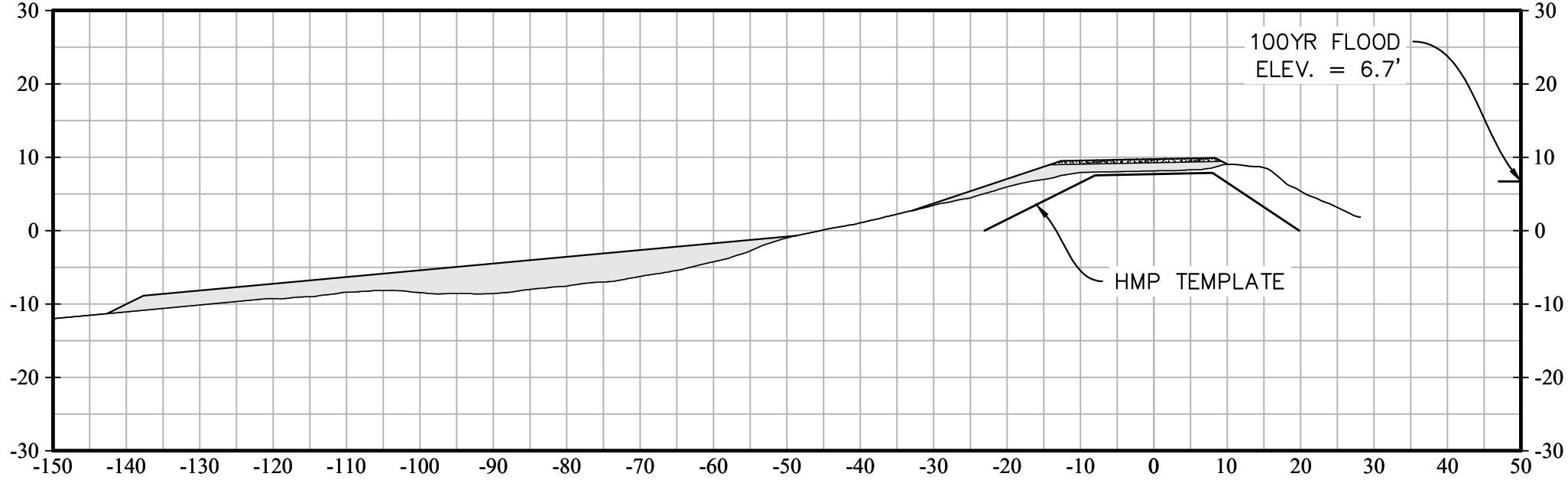

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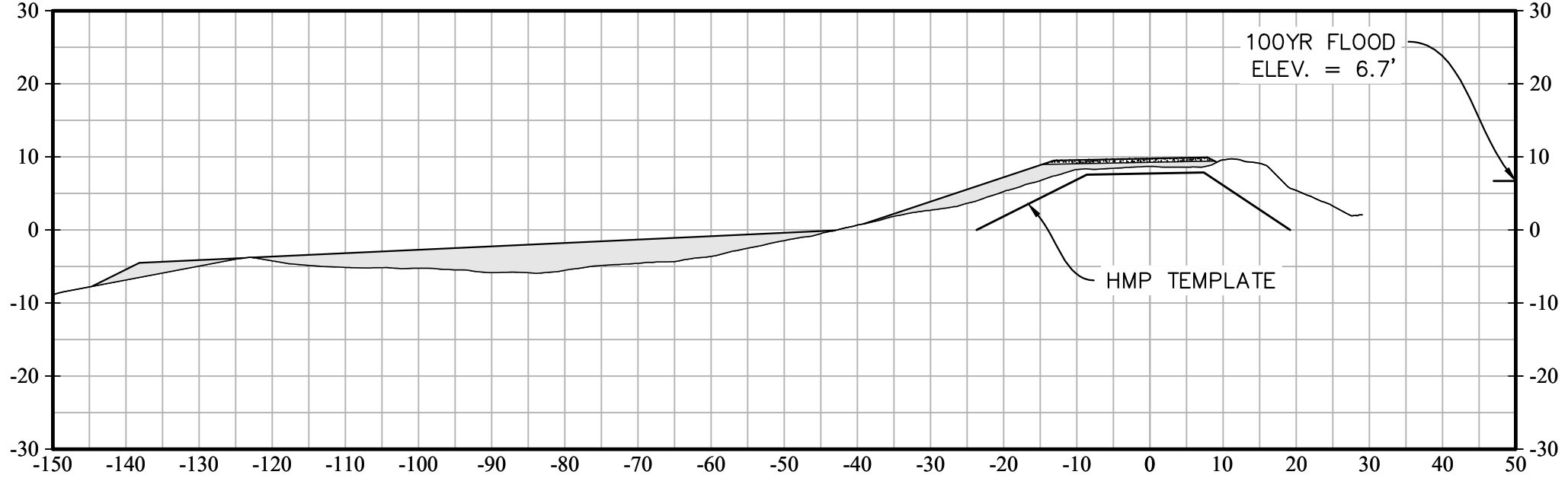
* VERTICAL DATUM = NGVD 29

640+00



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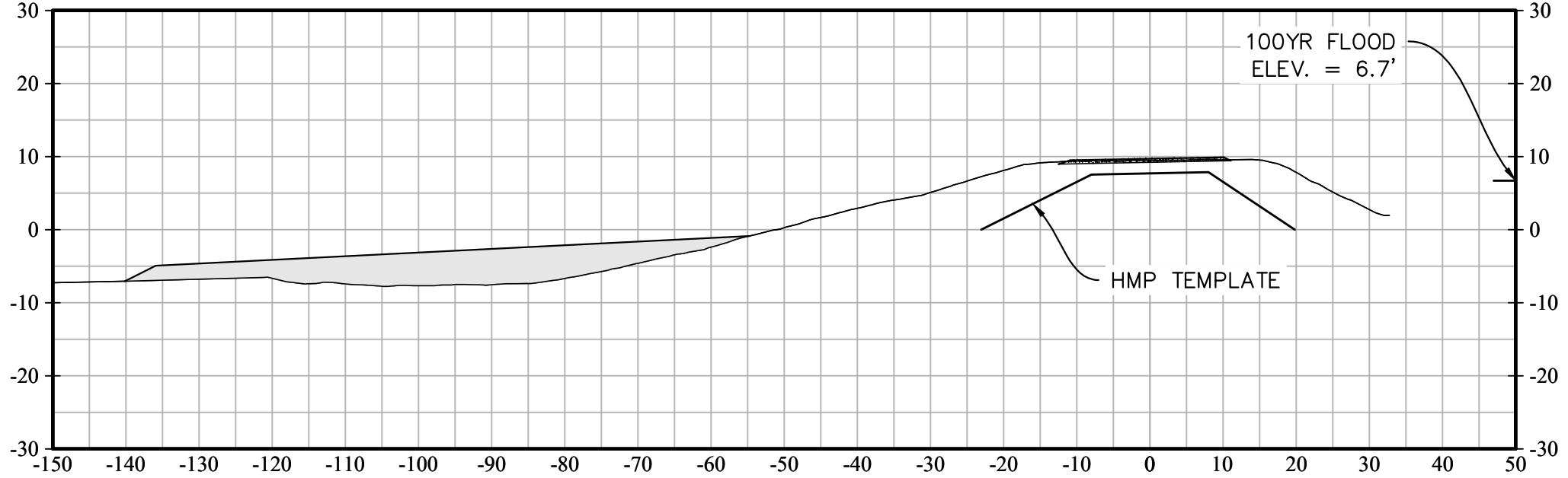

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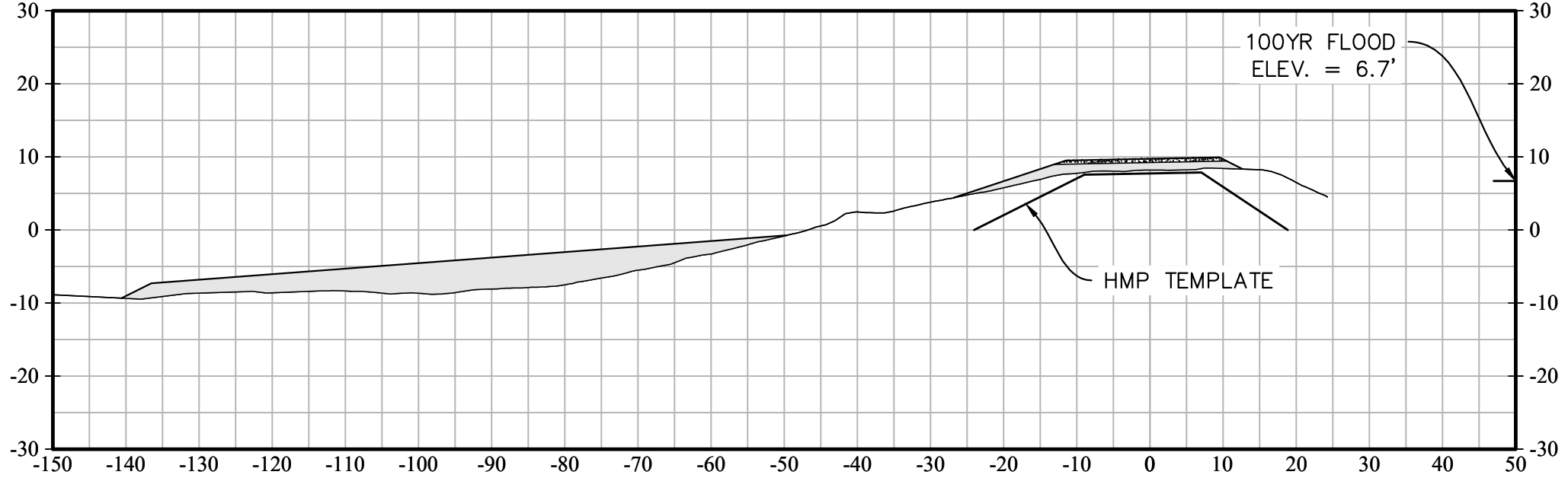
650+00



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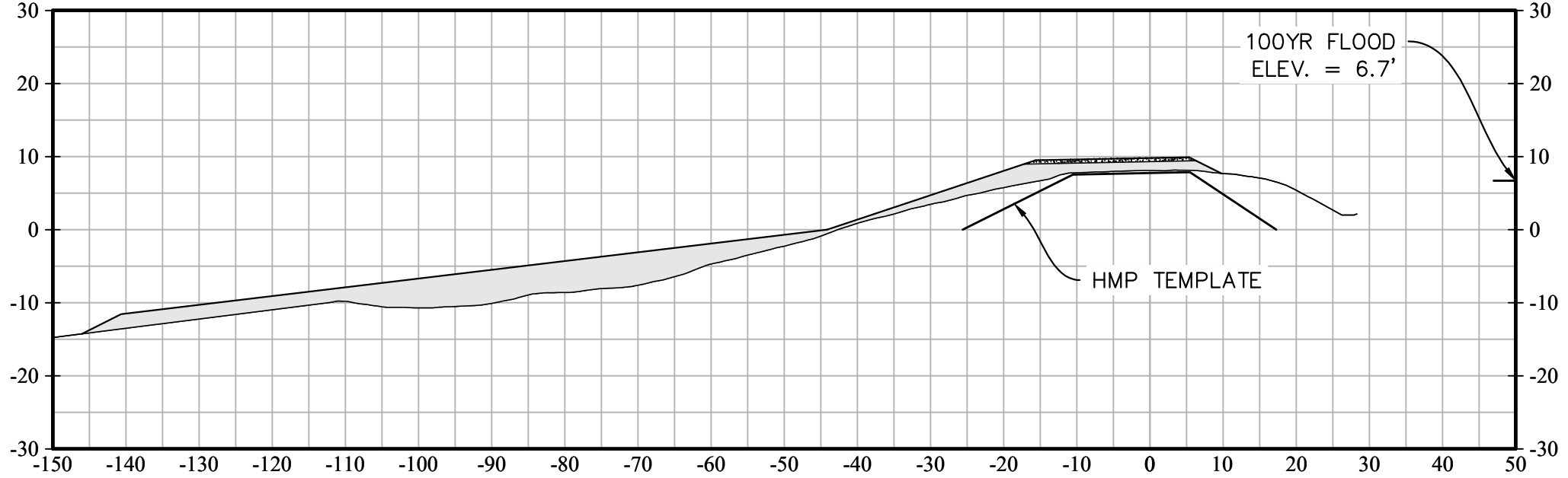

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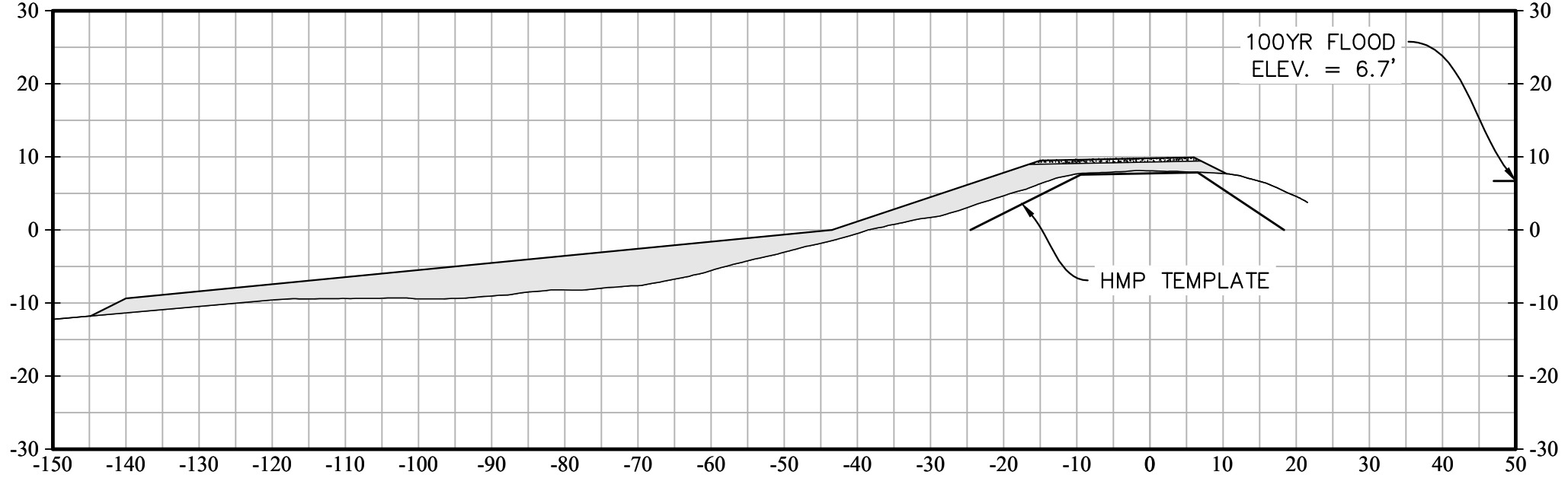
660+00



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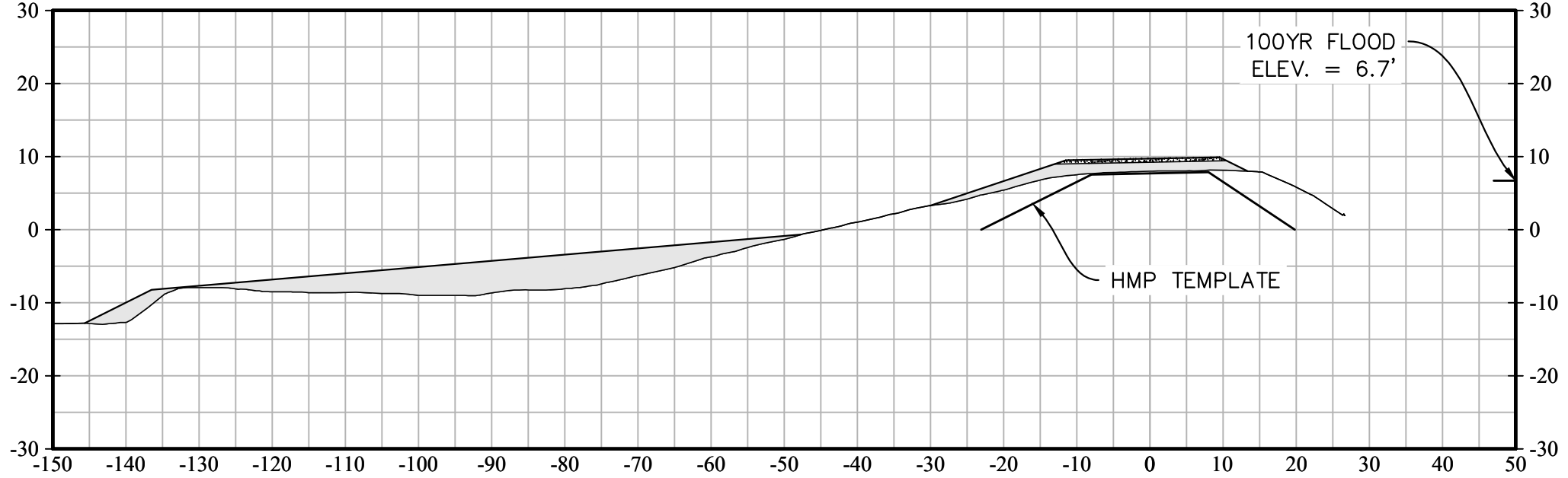

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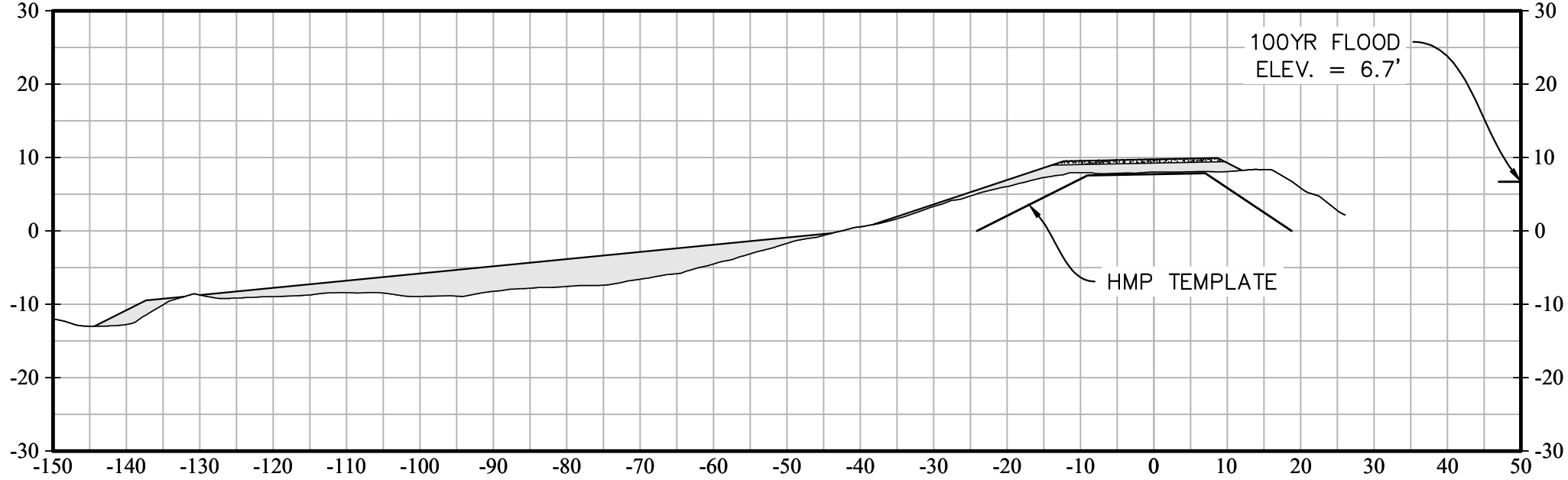
670+00



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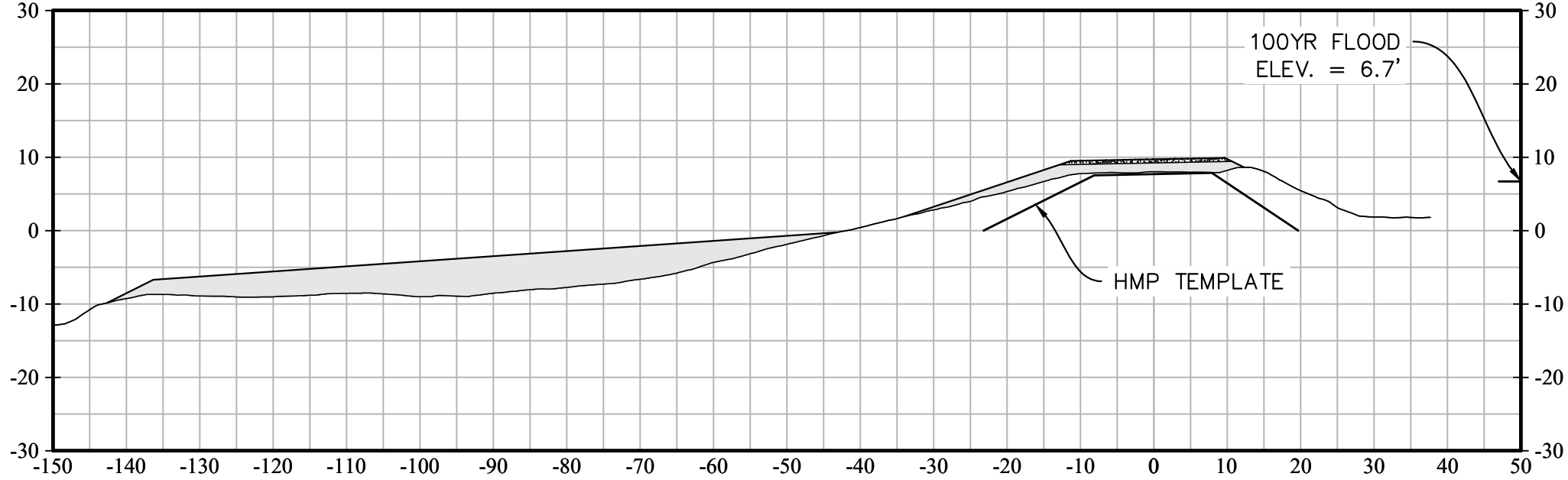

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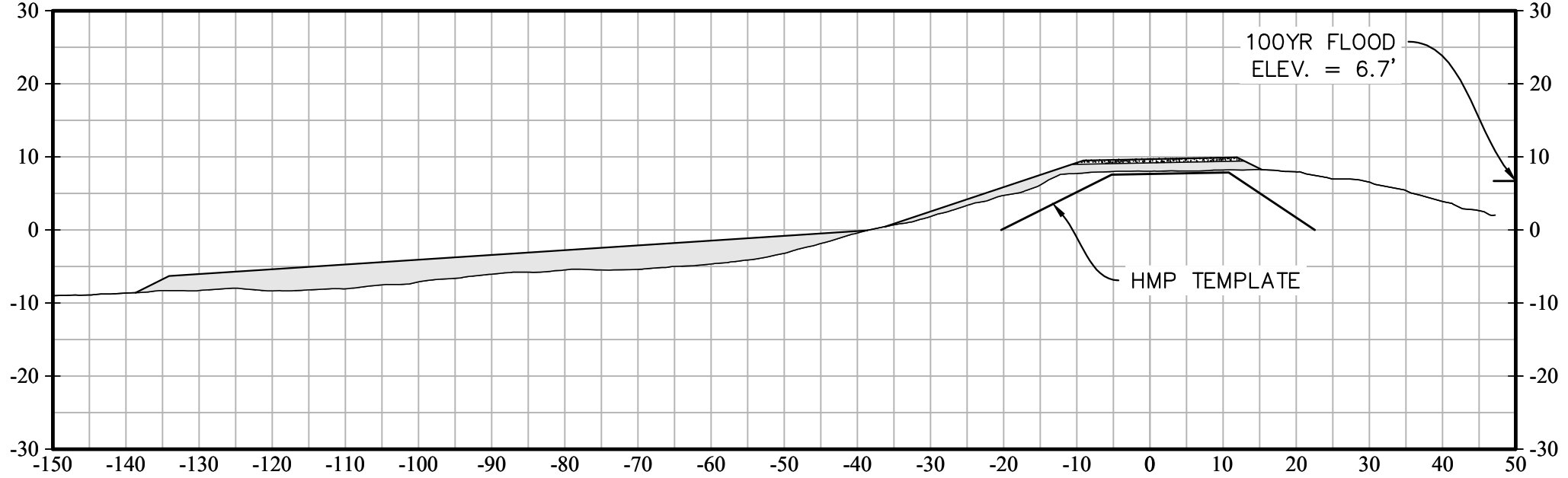
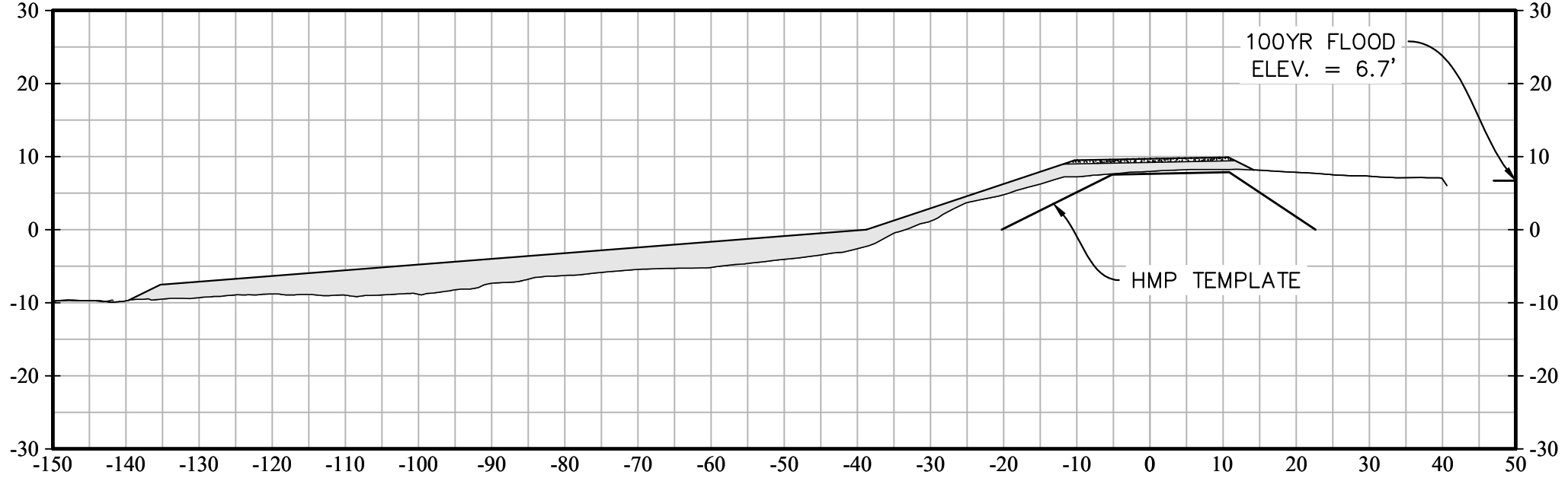
* VERTICAL DATUM = NGVD 29

680+00



682+50



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Quantity Estimate

Reclamation District No. 2026 - Webb Tract

Stations from 0+00 to End

Quantity Summary

Phase	*Volumes (CY)*		*Design Critera*	*Station Range*
	Raw Fill	*AB*		
1	*138,017*	*4,952*	*21' Crown @ 192-82 +1', 150' Toeberm*	*320-432*
2	*124,071*	*3,920*	*21' Crown @ 192-82 +1', 150' Toeberm*	*225-320*
3	*195,057*	*6,087*	*21' Crown @ 192-82 +1', 150' Toeberm*	*0-50, 593-0*
4	*554*	*10,241*	*16' Crown @ 192-82, AB Only*	*50-225, 432-593*
Totals (CY)	***457,699***	***25,200***		

Phase	Station	Length (FT)	Area (FT^2)	Raw Volume (CY)	Onsite Fill Adjusted (CY)
Phase 3	0+00	250	378.50	3504.59	5081.66
	5+00	500	408.09	7557.21	10957.96
	10+00	500	348.48	6453.31	9357.31
	15+00	500	560.15	10373.21	15041.16
	20+00	500	232.99	4314.59	6256.16
	25+00	500	286.89	5312.86	7703.65
	30+00	500	304.93	5646.87	8187.96
	35+00	500	435.93	8072.84	11705.62
	40+00	500	304.10	5631.56	8165.76
	45+00	500	486.51	9009.42	13063.65
	50+00	500	236.54	4380.31	6351.45
Phase 4	55+00	500	0.00	0.00	0.00
	60+00	500	0.00	0.00	0.00
	65+00	500	0.00	0.00	0.00
	70+00	500	0.00	0.00	0.00
	75+00	500	0.00	0.00	0.00
	80+00	500	0.00	0.00	0.00
	85+00	500	0.00	0.00	0.00
	90+00	500	0.00	0.00	0.00
	95+00	500	0.00	0.00	0.00
	100+00	500	0.00	0.00	0.00
	105+00	500	0.00	0.00	0.00
	110+00	500	0.00	0.00	0.00
	115+00	500	0.00	0.00	0.00
	120+00	500	0.00	0.00	0.00
	125+00	500	0.00	0.00	0.00
	130+00	500	0.00	0.00	0.00
	135+00	500	0.00	0.00	0.00
	140+00	500	0.00	0.00	0.00
	145+00	500	1.57	28.99	42.04
	150+00	500	0.00	0.00	0.00
	155+00	500	0.00	0.00	0.00
	160+00	500	0.00	0.00	0.00
	165+00	500	0.00	0.00	0.00
	170+00	500	0.00	0.00	0.00
	175+00	500	0.00	0.00	0.00
	180+00	500	0.00	0.00	0.00
	185+00	500	0.00	0.00	0.00
	190+00	500	0.00	0.00	0.00

Quantity Estimate

Reclamation District No. 2026 - Webb Tract

Stations from 0+00 to End

Quantity Summary

Phase	*Volumes (CY)*		*Design Critera*	*Station Range*
	Raw Fill	*AB*		
1	*138,017*	*4,952*	*21' Crown @ 192-82 +1', 150' Toeberm*	*320-432*
2	*124,071*	*3,920*	*21' Crown @ 192-82 +1', 150' Toeberm*	*225-320*
3	*195,057*	*6,087*	*21' Crown @ 192-82 +1', 150' Toeberm*	*0-50, 593-0*
4	*554*	*10,241*	*16' Crown @ 192-82, AB Only*	*50-225, 432-593*
Totals (CY)	***457,699***	***25,200***		

Phase	Station	Length (FT)	Area (FT^2)	Raw Volume (CY)	Onsite Fill Adjusted (CY)
	195+00	500	0.00	0.00	0.00
	200+00	500	0.00	0.00	0.00
	205+00	500	0.00	0.00	0.00
	210+00	500	0.00	0.00	0.00
	215+00	500	0.00	0.00	0.00
	220+00	500	0.00	0.00	0.00
	225+00	500	367.15	6799.10	9858.69
	230+00	500	599.73	11106.11	16103.87
	235+00	500	429.16	7947.41	11523.74
	240+00	500	311.56	5769.61	8365.94
	245+00	500	270.43	5007.92	7261.49
	250+00	500	413.61	7659.44	11106.18
	255+00	500	374.76	6939.95	10062.93
	260+00	500	330.60	6122.16	8877.14
	265+00	500	364.69	6753.50	9792.57
Phase 2	270+00	500	339.15	6280.63	9106.92
	275+00	500	204.33	3783.80	5486.50
	280+00	500	356.45	6600.94	9571.36
	285+00	500	228.61	4233.56	6138.66
	290+00	500	315.82	5848.59	8480.45
	295+00	500	229.71	4253.80	6168.00
	300+00	500	392.95	7276.78	10551.33
	305+00	500	332.48	6156.97	8927.60
	310+00	500	383.19	7096.20	10289.48
	315+00	500	455.44	8434.12	12229.47
	320+00	500	163.56	3028.84	4391.82
	325+00	500	340.93	6313.50	9154.58
	330+00	500	318.05	5889.80	8540.21
	335+00	500	237.96	4406.70	6389.72
	340+00	500	315.40	5840.83	8469.20
	345+00	500	134.59	2492.35	3613.91
	350+00	500	284.69	5272.06	7644.49
	355+00	500	324.35	6006.55	8709.50
	360+00	500	361.14	6687.71	9697.18
	365+00	500	199.72	3698.56	5362.92
	370+00	500	245.09	4538.65	6581.04
	375+00	500	444.63	8233.85	11939.09
Phase 1	380+00	500	492.18	9114.43	13215.93
	385+00	500	443.59	8214.67	11911.27

Quantity Estimate

Reclamation District No. 2026 - Webb Tract

Stations from 0+00 to End

Quantity Summary

Phase	*Volumes (CY)*		*Design Critera*	*Station Range*
	Raw Fill	*AB*		
1	*138,017*	*4,952*	*21' Crown @ 192-82 +1', 150' Toeberm*	*320-432*
2	*124,071*	*3,920*	*21' Crown @ 192-82 +1', 150' Toeberm*	*225-320*
3	*195,057*	*6,087*	*21' Crown @ 192-82 +1', 150' Toeberm*	*0-50, 593-0*
4	*554*	*10,241*	*16' Crown @ 192-82, AB Only*	*50-225, 432-593*
Totals (CY)	***457,699***	***25,200***		

Phase	Station	Length (FT)	Area (FT^2)	Raw Volume (CY)	Onsite Fill Adjusted (CY)
	390+00	500	135.73	2513.57	3644.67
	395+00	500	181.04	3352.59	4861.26
	400+00	500	400.05	7408.30	10742.04
	405+00	500	544.39	10081.29	14617.86
	410+00	500	178.23	3300.53	4785.76
	415+00	500	457.02	8463.38	12271.91
	420+00	500	518.29	9597.90	13916.95
	425+00	500	331.02	6129.96	8888.44
	430+00	500	327.96	6073.29	8806.28
	435+00	500	73.31	1357.62	1968.55
Phase 4	440+00	500	0.00	0.00	0.00
	445+00	500	0.00	0.00	0.00
	450+00	500	0.00	0.00	0.00
	455+00	500	0.00	0.00	0.00
	460+00	500	0.00	0.00	0.00
	465+00	500	0.00	0.00	0.00
	470+00	500	0.00	0.00	0.00
	475+00	500	0.00	0.00	0.00
	480+00	500	0.00	0.00	0.00
	485+00	500	0.00	0.00	0.00
	490+00	500	0.00	0.00	0.00
	495+00	500	0.59	10.95	15.88
	500+00	500	5.76	106.72	154.75
	505+00	500	0.00	0.00	0.00
	510+00	500	0.00	0.00	0.00
	515+00	500	1.90	35.21	51.06
	520+00	500	0.02	0.39	0.56
	525+00	500	1.63	30.24	43.85
	530+00	500	2.17	40.13	58.19
	535+00	500	0.76	14.03	20.35
	540+00	500	0.00	0.00	0.00
	545+00	500	0.00	0.00	0.00
	550+00	500	1.08	20.05	29.07
	555+00	500	1.81	33.56	48.66
	560+00	500	4.57	84.61	122.69
	565+00	500	4.63	85.76	124.35
	570+00	500	0.00	0.00	0.00
	575+00	500	3.40	62.89	91.18
	580+00	500	0.00	0.00	0.00

Quantity Estimate

Reclamation District No. 2026 - Webb Tract

Stations from 0+00 to End

Quantity Summary

Phase	*Volumes (CY)*		*Design Critera*	*Station Range*
	Raw Fill	*AB*		
1	*138,017*	*4,952*	*21' Crown @ 192-82 +1', 150' Toeberm*	*320-432*
2	*124,071*	*3,920*	*21' Crown @ 192-82 +1', 150' Toeberm*	*225-320*
3	*195,057*	*6,087*	*21' Crown @ 192-82 +1', 150' Toeberm*	*0-50, 593-0*
4	*554*	*10,241*	*16' Crown @ 192-82, AB Only*	*50-225, 432-593*
Totals (CY)	***457,699***	***25,200***		

Phase	Station	Length (FT)	Area (FT^2)	Raw Volume (CY)	Onsite Fill Adjusted (CY)
	585+00	500	0.03	0.49	0.71
Phase 3	590+00	500	132.09	2446.11	3546.87
	595+00	500	178.12	3298.61	4782.98
	600+00	500	258.36	4784.40	6937.37
	605+00	500	509.82	9441.20	13689.74
	610+00	500	581.24	10763.66	15607.31
	615+00	500	465.55	8621.30	12500.89
	620+00	500	565.78	10477.42	15192.26
	625+00	500	312.06	5778.93	8379.45
	630+00	500	514.34	9524.86	13811.04
	635+00	500	288.57	5343.81	7748.52
	640+00	500	266.07	4927.18	7144.41
	645+00	500	272.81	5051.95	7325.33
	650+00	500	301.31	5579.88	8090.83
	655+00	500	363.07	6723.51	9749.09
	660+00	500	440.71	8161.35	11833.95
	665+00	500	304.80	5644.39	8184.36
	670+00	500	265.63	4919.15	7132.77
	675+00	500	389.70	7216.70	10464.22
	680+00	375	312.72	4343.30	6297.78
	682+50	125	378.63	1752.93	2541.74
TOTALS		**68,250**	**25,267**	**457,699**	**663,663**

Centerline Profile Site Data

Reclamation District No. 2026 - Webb Tract
Sites Meeting HMP (NGVD 29)

Site No.	Beginning Station	End Station	Length (Ft)
1	0+00	377+80	37780
2	379+29	498+64	11935
3	499+90	578+20	7830
4	578+59	582+42	383
5	582+65	614+69	3204
6	615+42	682+50	6708
		TOTAL LENGTH:	**67,840**

Cross Section Site Data

Reclamation District No. 2026 - Webb Tract
Sites Meeting HMP (NGVD 29)

Site No.	Beginning Station	End Station	Length (Ft)
1	0+00	227+50	22750
2	232+50	607+50	37500
3	617+50	682+50	6500
		TOTAL LENGTH:	**66,750**

HMP Site Data

Reclamation District No. 2026 - Webb Tract
Sites Meeting HMP (NGVD 29)

Site No.	Beginning Station	End Station	Length (Ft)
1	0+00	227+50	22750
2	232+50	377+80	14530
3	379+29	498+64	11935
4	499+90	578+20	7830
5	579+59	582+42	283
6	582+65	607+50	2485
7	617+50	682+50	6500
		TOTAL LENGTH:	**66,313**

Centerline Profile Site Data

Reclamation District No. 2026 - Webb Tract

Sites Meeting PL 84-99 (NGVD 29)

Site No.	Beginning Station	End Station	Length (Ft)
1	2+76	8+67	591
2	9+28	15+83	655
3	16+35	32+93	1,658
4	33+79	34+13	34
5	34+73	43+57	884
6	44+34	121+55	7,721
7	122+18	225+40	10,322
8	235+76	252+79	1,703
9	253+15	256+52	337
10	258+95	263+43	448
11	264+38	265+13	75
12	266+82	267+24	42
13	267+84	272+86	502
14	274+18	276+88	270
15	277+32	281+05	373
16	281+52	285+72	420
17	287+87	288+62	75
18	290+21	291+35	114
19	291+96	292+75	79
20	293+30	293+72	42
21	294+78	297+94	316
22	302+72	303+69	97
23	311+31	311+77	46
24	313+13	330+21	1,708
25	330+81	331+31	50
26	335+10	356+66	2,156
27	357+80	370+19	1,239
28	371+46	372+12	66
29	385+72	386+99	127
30	387+67	398+61	1,094
31	409+71	411+98	227
32	416+21	416+60	39
33	422+59	423+24	65
34	424+81	428+68	387
35	431+09	492+84	6,175
36	495+35	495+83	48
37	500+42	505+43	501
38	509+70	510+06	36
39	517+27	518+74	147
40	519+74	522+28	254
41	526+69	528+67	198

42	529+01	529+79	78
43	530+66	531+17	51
44	531+79	532+19	40
45	532+75	533+11	36
46	533+63	534+64	101
47	535+04	535+71	67
48	537+08	537+71	63
49	539+05	541+24	219
50	542+16	547+05	489
51	549+94	551+52	158
52	565+31	566+21	90
53	567+27	568+98	171
54	569+62	571+22	160
55	571+67	573+59	192
56	579+10	581+81	271
57	583+40	585+77	237
58	589+10	599+98	1,088
59	613+20	614+36	116
60	616+78	618+42	164
61	622+64	623+04	40
62	623+39	628+06	467
63	635+96	650+00	1,404
64	656+41	658+14	173
65	666+63	667+21	58
66	670+98	671+43	45
67	672+57	674+01	144
68	676+12	676+54	42
		TOTAL LENGTH:	**47,485**

Cross Section Site Data

Reclamation District No. 2026 - Webb Tract

Sites Meeting PL 84-99 (NGVD 29)

Site No.	Beginning Station	End Station	Length (Ft)
1	2+50	32+50	3,000
2	37+50	227+50	19,000
3	237+50	262+50	2,500
4	267+50	272+50	500
5	277+50	287+50	1,000
6	312+50	332+50	2,000
7	337+50	347+50	1,000
8	352+50	372+50	2,000
9	387+50	397+50	1,000
10	407+50	412+50	500
11	432+50	497+50	6,500
12	502+50	552+50	5,000

13	567+50	572+50	500
14	577+50	597+50	2,000
15	622+50	627+50	500
16	637+50	647+50	1,000
		TOTAL LENGTH:	**48,000**

PL 84-99 Site Data

Reclamation District No. 2026 - Webb Tract

Sites Meeting PL 84-99 (NGVD 29)

Site No.	Beginning Station	End Station	Length (Ft)
1	2+76	8+67	591
2	9+28	15+83	655
3	16+35	32+50	1,615
4	37+50	43+57	607
5	44+34	121+55	7,721
6	122+18	225+40	10,322
7	237+50	252+79	1,529
8	253+15	256+52	337
9	258+95	262+50	355
10	267+84	272+50	466
11	277+50	281+05	355
12	281+52	285+72	420
13	313+13	330+21	1,708
14	330+81	331+31	50
15	337+50	347+50	1,000
16	352+50	356+66	416
17	357+80	370+19	1,239
18	371+46	372+12	66
19	387+67	397+50	983
20	409+71	411+98	227
21	432+50	492+84	6,034
22	495+35	495+83	48
23	502+50	505+43	293
24	509+70	510+06	36
25	517+27	518+74	147
26	519+74	522+28	254
27	526+69	528+67	198
28	529+01	529+79	78
29	530+66	531+17	51
30	531+79	532+19	40
31	532+75	533+11	36
32	533+63	534+64	101
33	535+04	535+71	67
34	537+08	537+71	63

35	539+05	541+24	219
36	542+16	547+05	489
37	549+94	551+52	158
38	567+50	568+98	148
39	569+62	571+22	160
40	571+67	572+50	83
41	579+10	581+81	271
42	583+40	585+77	237
43	589+10	597+50	840
44	622+64	623+04	40
45	623+39	627+50	411
46	637+50	647+50	1,000
		TOTAL LENGTH:	**42,164**

Centerline Profile Site Data

Reclamation District No. 2026 - Webb Tract

Sites Meeting Bulletin 192-82 (NGVD 29)

Site No.	Beginning Station	End Station	Length (Ft)
1	5+76	8+19	243
2	9+75	14+47	472
3	16+80	30+94	1,414
4	36+49	40+82	433
5	47+30	65+81	1,851
6	67+07	92+99	2,592
7	93+39	95+17	178
8	97+78	110+96	1,318
9	113+16	114+49	133
10	114+82	117+79	297
11	122+60	122+92	32
12	124+48	125+74	126
13	132+51	142+42	991
14	143+35	169+79	2,644
15	170+29	179+08	879
16	179+56	181+18	162
17	182+14	202+45	2,031
18	205+66	211+77	611
19	212+21	216+46	425
20	219+02	221+60	258
21	223+27	225+17	190
22	237+37	237+94	57
23	238+74	239+52	78
24	269+16	272+01	285
25	315+10	315+75	65
26	317+28	321+53	425
27	343+84	344+78	94
28	388+32	391+56	324
29	395+62	397+39	177
30	410+27	411+46	119
31	434+38	442+25	787
32	443+64	466+07	2,243
33	467+79	486+62	1,883
34	487+03	489+59	256
35	509+82	509+96	14
36	590+81	595+15	434
37	613+34	614+19	85
38	625+83	626+19	36
39	636+94	638+64	170
40	643+68	649+64	596
		TOTAL LENGTH:	**25,408**

Cross Section Site Data

Reclamation District No. 2026 - Webb Tract
Sites Meeting Bulletin 192-82 (NGVD 29)

Site No.	Beginning Station	End Station	Length (Ft)
1	7+50	12+50	500
2	17+50	32+50	1,500
3	37+50	42+50	500
4	47+50	92+50	4,500
5	97+50	117+50	2,000
6	132+50	142+50	1,000
7	147+50	167+50	2,000
8	172+50	217+50	4,500
9	222+50	227+50	500
10	267+50	272+50	500
11	317+50	322+50	500
12	342+50	347+50	500
13	387+50	392+50	500
14	432+50	482+50	5,000
15	487+50	492+50	500
16	577+50	582+50	500
17	642+50	647+50	500
		TOTAL LENGTH:	**25,500**

192-82 Site Data

Reclamation District No. 2026 - Webb Tract
Sites Meeting Bulletin 192-82 (NGVD 29)

Site No.	Beginning Station	End Station	Length (Ft)
1	7+50	8+19	69
2	9+75	12+50	275
3	17+50	30+94	1,344
4	37+50	40+82	332
5	47+50	65+81	1,831
6	67+07	92+50	2,543
7	97+78	110+96	1,318
8	113+16	114+49	133
9	114+82	117+50	268
10	132+51	142+42	991
11	147+50	167+50	2,000
12	172+50	179+08	658
13	179+56	181+18	162
14	182+14	202+45	2,031

15	205+66	211+77	611
16	212+21	216+46	425
17	223+27	225+17	190
18	269+16	272+01	285
19	317+50	321+53	403
20	388+32	391+56	324
21	434+38	442+25	787
22	443+64	466+07	2,243
23	467+79	482+50	1,471
24	487+50	489+59	209
25	642+50	647+50	500
		TOTAL LENGTH:	**21,403**

Appendix C – Cost Estimates

Reclamation District No. 2026 - Webb Tract

Five Year Plan Cost Estimate Summary

Phase	Standard	Stationing (*feet*)	Project Length (*feet*)	Estimate[1] *Onsite Fill (cy)*	Estimate[1] *AB (tons)*	Construction Cost Estimate[2] *($)*	Engineering & Environmental[3] *($)*	Total *($)*
1	Bulletin 192-82	320+00 - 432+00	11,400	210,200	9,900	$4,866,000	$973,200	$5,839,200
2	Bulletin 192-82	225+00 - 320+00	9,300	190,000	8,300	$4,500,300	$900,060	$5,400,360
3	Bulletin 192-82	593+00 - 0+00 0+00 - 50+00	14,150	292,900	12,100	$6,947,955	$1,389,591	$8,337,546
4	Bulletin 192-82	50+00 - 225+00 432+00 - 593+00	33,400	900	22,600	$1,460,923	$292,185	$1,753,107
						Grand Total (rounded):		**$21,330,200**

[1]Quantities are subject to final plans and specifications.

[2]Construction costs include any mitigation and enhancement proposed, and 5% annual inflation included.

[3]Allocation for engineering and environmental is 20% of construction cost.

Appendix D – Habitat Assessment

Webb Tract
Reclamation District No. 2026
Levee Habitat Assessment
September 1st, 2002 - *FINAL DRAFT*

STATE OF CALIFORNIA
Gray Davis, Governor

THE RESOURCES AGENCY
Mary Nichols, Secretary for Resources

DEPARTMENT OF FISH AND GAME
Robert C. Hight, Director

This report was prepared at the
Department of Fish and Game
Sacramento Valley and Central Sierra Region
Delta Levee Habitat Improvement Program
under the direction of

Robert E. Orcutt.....Program Manager

by

Jason Holley.....Environmental Scientist
Mark Philipp.....Wildlife Biologist

with assistance from

Paul Forsberg.....Environmental Specialist
Frank Gray.....Environmental Scientist
Kip Young.....Scientific Aide

The GIS Map was Created at
DEPARTMENT OF WATER RESOURCES - Central District
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under the direction of

Dave Mraz.....Branch Chief

by

Marc Commandatore.....Research Analyst, GIS
Jason Schwenkler.....GIC Branch, CSUS
Barry Hallman.....GIC Branch, CSUS
Erik Fitnel.....GIC Branch, CSUS

Abstract: On November 16th and 17th, 1998, Delta Levee Habitat Improvement Program (DLHIP) staff of the California Department of Fish and Game (DFG), recorded levee-related fish and wildlife habitat data on Webb Tract. These observations were designed to meet, and are in accordance with the requirements of Assembly Bill 360. While driving the levee road, a distance measuring device was used to determine location and areal extent of various habitat assemblages. Data were digitized for analysis, mapping, legibility, and future access. We observed 13.4 acres of levee-related habitat on Webb Tract, consisting of: 7.0 acres of Riparian Forest, 4.1 acres of Freshwater Marsh, 2.3 acres of Shrub Scrub, and 58 linear feet of Shaded Riverine Aquatic habitat. Two Western Pond Turtles *(Clemmys marmorata)* are the only Special Status Species identified on Webb. This habitat assessment consists of three parts: 1) a text overview with associated, figures, photos, and tables; 2); A GIS-generated map; and 3) a levee log which identifies habitat type and individual species by levee station, on the land and water side of the levee.

Introduction

The Delta Flood Protection Act (SB 34) was enacted in March, 1988. This legislation called for "no net loss" of riparian, fisheries, or wildlife habitat associated with program-funded levee maintenance and improvement activities. During the early years of the DLHIP, habitat assessments were conducted and maps were created for each participating Reclamation District (district) to inventory and monitor levee vegetation to ensure no net loss of habitat. Under the SB 34 program, the only documented references for district habitat changes were hand illustrated maps. These maps became difficult to interpret after several years of updates with accumulated hand annotations.

Assembly Bill 360 (chaptered in September 1996) supercedes SB 34, and requires in addition to "no net loss" that program expenditures result in "net long-term habitat improvement." To comply with this new requirement, DLHIP staff, with the assistance of Daniel Kjeldsen and engineers from Kjeldsen Sinnock & Neudeck (KSN) redesigned and improved methods to document: 1) existing habitat quantity and quality, 2) impacts of project construction, and 3) mitigation needs and compliance, and 4) habitat improvement and biological success. The use of Distance Measuring Instruments, GIS, and GPS technology described below, produce assessments that are more clear, efficient, repeatable, and are easily updated each year during field inspections.

Location

Webb Tract is located approximately 45 miles northeast of San Francisco and 18 miles

northwest of Stockton in the western center of the Sacramento-San Joaquin Delta ("Study area" on the GIS map). Webb is bordered to the east and north by the San Joaquin River. To the west, across Fisherman's Cut, lies Bradford Island. Beyond False River, submerged Franks Tract comprises most of Webb's southern border. The 5490-acre interior of Webb is protected by 12.8 miles of nonproject levee.

Methods

This area was assessed by Jason Holley (Environmental Specialist III) and Kip Young (Scientific Aide) of the California Department of Fish and Game on November 16th. Mark Fortner (District Engineer) of MBK Engineering was also in attendance. This assessment was completed on November 17th, 1998, by Jason Holley.

DLHIP staff drove counter-clockwise along the levee road and recorded the location and areal extent of four program-significant habitat types. As required by AB 360, the habitat types measured were: Shaded Riverine Aquatic (SRA), Shrub Scrub (SS), Freshwater Marsh (FM), and Riparian Forest (RF) (Table 1). These habitat types were recorded on the Field Data Collection Form following the guidelines in the Habitat Assessment Levee Vegetation Survey Form (Appendix A and B) developed by DLHIP staff. All areas subject to reimbursement through the AB360 program were assessed. This typically includes both the water and landside of the levee, 30 feet landward of the landside levee toe, or 30 feet landward of the existing toe drain, whichever is greater. We also determined location and area of individual tree species. An estimate of the circular canopy area of individual trees was derived by squaring half of the height of the tree and multiplying by Pi (π) (Figure 1).

Department staff used a *Nu-Metrics Nitestar NS-60* Distance Measuring Instrument (DMI) to determine the location and linear length of habitat types. The levee road is marked with sequentially-numbered engineering station panels (station panels). We "preset" the DMI to match with the "zero" (0+00) station panel and noted where existing levee station panels varied from our DMI reading. This was done to ensure that other users of this document can easily find specific levee locations.

The DMI was calibrated using a tape-measured distance before going into the field. With the DMI we could accurately measure lengths of vegetation to within a few feet. Widths of habitat tracts were estimated from actual measurements taken from both levee slopes. These measurements and subsequent estimates of habitat width are a diagonal distance (following the

Although SRA habitat areas were recorded, visual obstructions made them difficult to measure accurately from land (Figure 3). Therefore, to refine and confirm the initial estimates, we conducted a follow-up boat survey on 3/22/99. Approximately 26,400 linear feet of SRA was recorded during the follow-up survey.

DLHIP staff noted and photographed incidental wildlife observations and habitat relationships (Levee Log, Appendix C) during the assessment. Past incidental wildlife observations on McCormack-Williamson are also included in this report (Table 2). While the location and occurrence of special status flora and fauna were recorded, this assessment did not constitute a formal survey. A record of special status species occurrences for the area is referenced below (Figure 4).

Data were digitized into a spreadsheet and Geographical Information System (GIS). Barry Hallman and Jason Schwenkler from the Geographical Information Center (GIC) branch at California State University, Chico incorporated the data into a GIS format. Original GIS design was performed by Marc Commadatore (Research analyst, GIS) at the Central District of the California Department of Water Resources, Flood Protection and Geographic Information Branch. This digitized format allows efficient quantification and illustration of the data (see *GIS Map* following tables section). The map produced from the GIS is easier to read than previous hand-annotated maps. Natural and construction-related habitat changes can be readily evaluated with this system.

Habitat Results

A total of 43.0 acres of levee-associated habitat and 26,400 linear feet of SRA habitat were recorded (Table 3). Most (24.0 acres) of the levee-associated vegetation on Mc-W is Shrub-Scrub. Willow (*Salix spp.*) and Wild Rose (*Rosa californica*) intermingle to form solitary stands and vast riparian understories.

The second most common habitat type (19.0 acres) was Riparian Forest. This diverse habitat type included 20-90 ft. Cottonwood (*Poplus fremontii*), Willow (*Salix spp.*), and Valley Oak (*Quercus lobata*) species. Nearly the entire southern and northern sections of waterside levee is covered with complex and stratified Riparian Forest. Festoons of Wild Grape (*Vitis californica*) engulf much of the flora along the Mokelumne river. No Freshwater Marsh was recorded during the assessment.

Blue Elderberry (*Sambucus mexicana*) is the only Special Status Species identified on Mc-W.

Two Western Pond Turtles (Clemmys marmorata) are the only Special Status Species identified on Webb Tract. These were two separate observations, both occuring along Fisherman's Cut, within the Freshwater Marsh. Other, past Special Status Species observations have been recorded in the area. For more information on Special Status Species visit the California Natural Diversity Database website at: www.dfg.ca.gov/whdab/html/cnddb.html.

References:

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TABLES

Table 1. Defining habitat significant to the AB 360 program assessment procedures

Definitions of AB 360 - Significant Habitat Types	
Shaded Riverine Aquatic (SRA):	This habitat is the unique, near-shore aquatic area occurring at the interface between Delta channels and levees. The primary characteristic (and the one most commonly measured) is the presence of woody shoreline vegetation overhanging the water and creating shade. Other characteristics which may or may not be present, but which nearly always increase habitat values include: (a) live or dead woody vegetation protruding into or out of the water; (b) leaves, twigs, or other detritus accumulation; and (c) naturally eroding banks. *No direct Cowardin counterpart.*
Scrub Shrub (SS):	This includes woody trees, shrubs, and vines (alder, willow, wild rose, buttonbush, box elder, etc.) predominantly less than 20 feet tall. *The counterpart in the Cowardin system is PSS1 (Palustrine Scrub Shrub).*
Freshwater Marsh (FM):	This occurs along tidal or non-tidal freshwater marshes. Freshwater marsh may be on the waterside toe of the levee. It typically occurs in the slowest moving waters where tules have become established. The presence of tules or other vegetation in Delta channels should be noted if they may be adversely impacted by levee maintenance activities. *The counterpart in the Cowardin system is L2EM1 (Lacustrine Emergent Wetland), L2EM2 (Lacustrine Emergent) and R2EMI (Riverine Emergent Wetland).* Freshwater marshes may also be behind levees where there are seeps or toe ditches. This plant community typically includes cattails, common reed, etc. *This is represented as PEM1 and PEM2 (Palustrine Emergent Wetland) under the Cowardin system.*
Riparian Forest (RF):	This includes woody plants (including isolated trees or shrubs) greater than 20 feet tall. Often there is a dense, shrubby understory. *The counterpart in the Cowardin system is PFO1 (Palustrine Forest).*

Table 2: DFG Wildlife observations at Webb Tract

Bird Species	**Scientific Name**	**Date**	**Notes**
Yellow-breasted Chat*	*Icteria virens*	7/30/97	Identified by song
Barn Swallow	*Hirundo rustica*	5/7/98	
Black Phoebe	*Sayornis nigricans*	5/7/98	
Caspian Tern	*Sterna caspia*	5/7/98	
Mourning Dove	*Zenaida macroura*	5/7/98	
Red-tailed Hawk	*Buteo jamaicensis*	5/7/98	
Killdeer	*Charadrius vociferus*	5/7/98	
Tree Swallows	*Tachycineta bicolor*	5/7/98	
American Kestrel	*Falco sparverius*	5/7/98	
Red-winged Blackbird	*Agelaius phoeniceus*	5/7/98	
Northern Harrier*	*Circus cyaneus*	5/7/98	
Blue Grosbeak	*Guiraca caerulea*	5/7/98	
Cliff Swallow	*Hirundo pyrrhonota*	5/7/98	Getting mud from muddy holes on levee road for nest building
Green-baced Heron	*Butorides striatus*	5/7/98	
Western Meadowlark	*Sturnella neglecta*	5/7/98	
Great Blue Heron	*Ardea herodias*	5/7/98	

*Species of Special Concern

Yellow-breasted Chat is listed as Ca-CSC (CA Dept. of Fish and Game "Species of Special Concern")

Northern Harrier is listed as Ca-CSC

Table 2 Continued. DFG Fish Observations for Webb Tract

Fish Species	Scientific Name	Date	Method Used
Splittail	*Pogonichthys macrolepidotus*	7/7-8/97	Electrofishing
Sacramento pikeminnow	*Ptychocheilus grandis*	7/7-8/97	Electrofishing
Carp	*Cyprinus carpio*	7/7-8/97	Electrofishing
Western Sucker	*Catostomus occidentalis*	7/7-8/97	Electrofishing
White Catfish	*Ictalurus catus*	7/7-8/97	Electrofishing
Striped Bass	*Marone saxitilis*	7/7-8/97	Electrofishing
Bluegill	*Lepomis macrochirus*	7/7-8/97	Electrofishing
Redear Sunfish	*Lepomis microlophus*	7/7-8/97	Electrofishing
Black Crappie	*Pomoxis nigromaculatus*	7/7-8/97	Electrofishing
Largemouth Bass	*Micropterus salmoides*	7/7-8/97	Electrofishing

Table 3. Habitat Assessment Results for Webb Tract. Contra Costa County. November 1998.

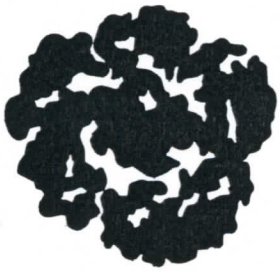
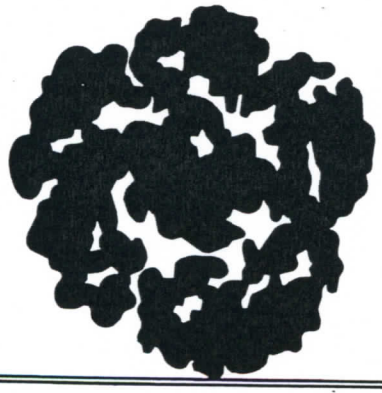
Webb Tract Habitat Summary

Habitat Type	Length	Square Feet	Acres
FM	8386.0	178596.0	4.1
SS	7018.0	100188.0	2.3
RF	15245.0	304920.0	7.0
SRA	58.0	-	-
Total	30707.0	583704.0	13.4

FIGURES

Figure 1: Height-width dependant equations for finding individual tree areas.

EXAMPLE OF A 30' HIGH TREE WITH VARIOUS HEIGHT-WIDTH RATIOS

SIDE PROFILE	AERIAL VIEW	DESCRIPTION
		1:1 *Area of Example = 70 6.85 ft² Correction factor of **(1X)** for the current formula#
		**3:2** *Area of Example=314.]6ft² Correction factor **of (0.44 X)** for the current formula#
		**2:1** *Area of Example=176.7]ft² Correction factor of **(0.25X)** for the current formula#
		***3:1*** *Area of Example= 77.75ft² Correction factor of **(O.11X)** for the current formula#
		**2:3** *Area of Example=1590.43ft² Correction factor of **(2.25X)** for the current formula#
		**1:2** *Area of Example=2827.43 ft² Correction factor of **(4X)** for the current formula#

*Assume: Area of individual tree canopy is a circular = $[\pi r^2]$

#Current formula = $[\pi(1/2\text{Height})^2]$

Figure 2. Habitat width measured using a diagonal projection.

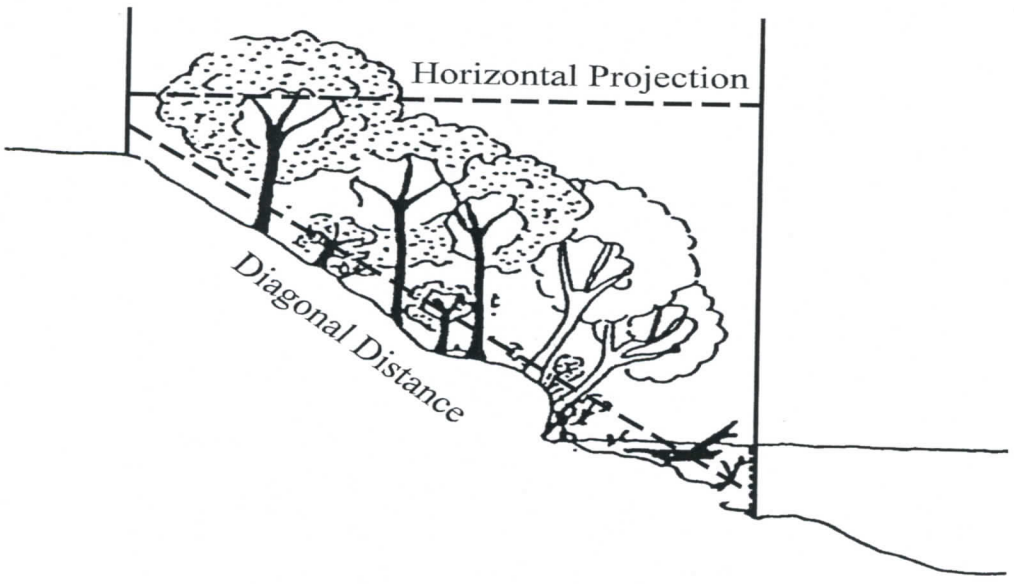
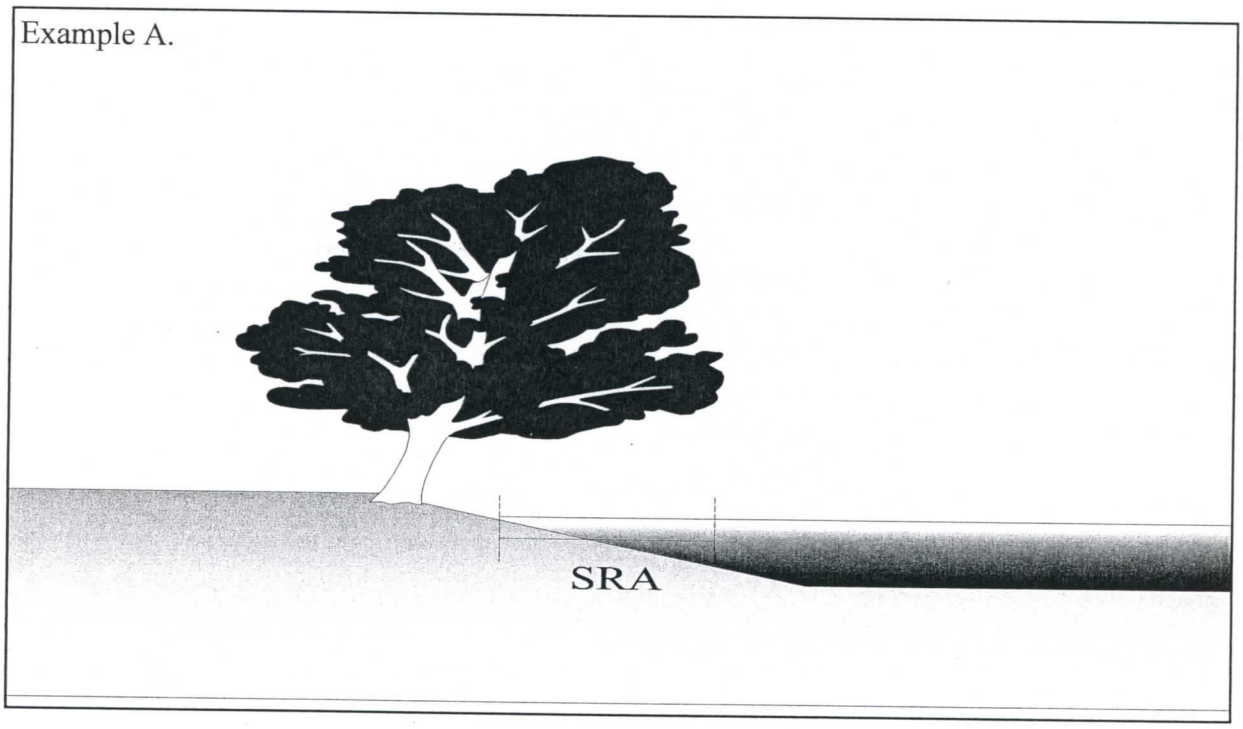


Figure 3. Typical examples of Shaded Riverine Aquatic (SRA) habitat. Example A has only the overhead shade component. Example B has both overhead shade and in-water cover components. The various components must be evaluated to determine overall SRA value at any given site.



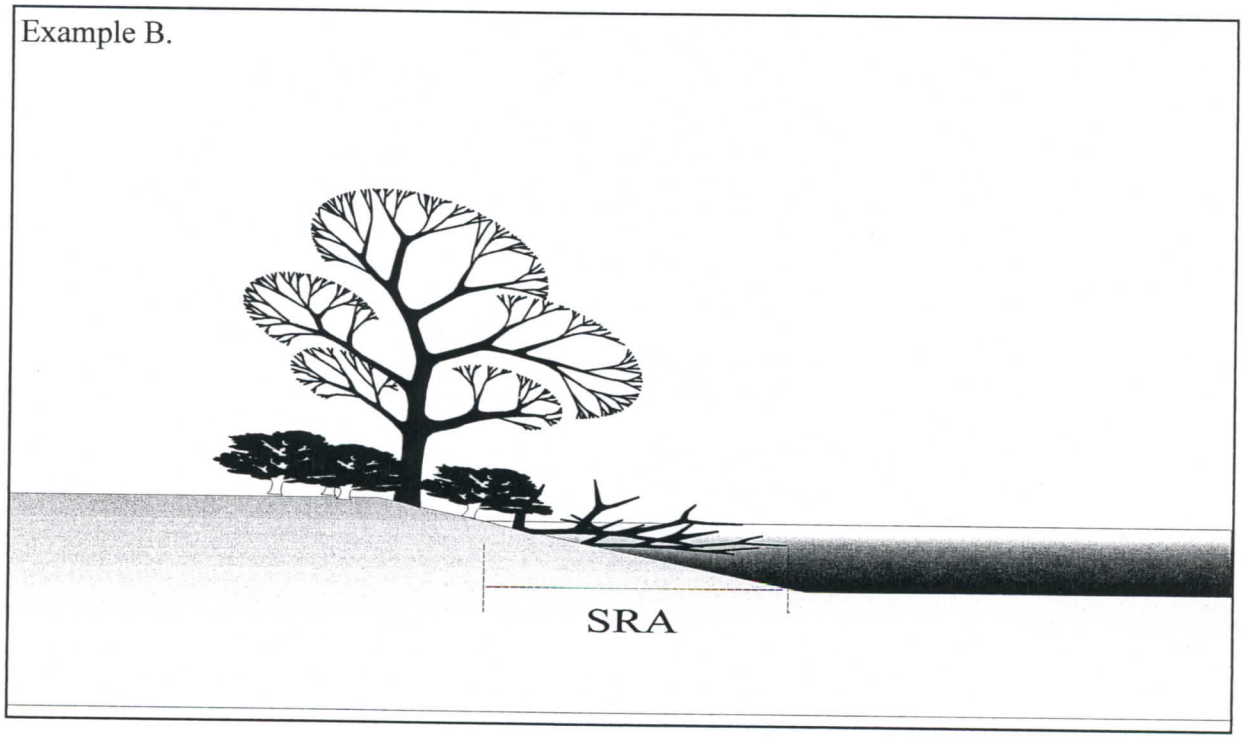


Figure 4. A Record of Special Status Species Observations Related to Webb Tract

0.8 0 0.8 1.6 2.4 Miles

Special Status Species

- BRISTLY SEDGE
- COASTAL AND VALLEY FRESHWATER MARSH
- DELTA MUDWORT
- DELTA TULE PEA
- MASON'S LILAEOPSIS
- ROSE-MALLOW
- SUISUN MARSH ASTER

N
W E
S

AB-360 Program 10/00. Data from California Natural Diversity Database (CNDDB). Points represent approximate center of occurrence area.

GIS MAP

Levee Log for Webb Tract (11/17/98)

Key to Levee Log: Side: Water (W) or Land (L) side of levee. Station Begin/End: DMI readings (feet from panel station zero). Height: Height of individual tree or average height of a linear strip of habitat. Width: Average width of a linear strip of habitat. Habitat Type: See *Table 1* for definitions. Species: Dominant species present for a said habitat type. Length: Length of habitat type (canopy edge to canopy edge). Notes: Other observations, habitat cover percentage, photo log, DMI/stationing panel discrepancies.

SIDE	Station Begin	Station End	Length	Height	Width	Habitat Type	Species	Notes
W	74	164	90		10	FM	SCR	SOME FM ALONG SEEP DITCH-PHOTO #1
L	500	1085	585	10	10	SS	RUDI	
W	1181	1324	143		10	FM	SCR	80% COVERAGE
L	1482	1646	164		20	FM	TYLA/SCR	PHOTO#2
W	2914	3029	115		10	FM	SCR	60% COVERAGE; CA SEA LION IN WATER
W	3218	3268	50		5	FM	SCR	
W	3435	3483	48		10	FM	SCR	
W	3777	3999	222		15	FM	SCR	
L	3933	4995	1062	10	30	SS	RUDI	PHOTO#3; ALONG SEEP DITCH
L	4651	4787	136	15	20	SS	SAL	PHOTO#4;PHOTO#5 IN RUDI
L	5271	5537	266	30	30	RF	SAL	LOTS OF RF/SS **BEYOND** SURVEY AREA
L	5618	5782	164	30	30	RF	SAL	
L	5782	6132	350	10	25	SS	RUDI	
L	5844		0	40		RF	SAGO	RTHA PERCHED PHOTO #6,#7
L	5871		0	30		RF	SALA	LOTS OF RF/SS BEYOND SURVEY AREA
L	6290		0	20		RF	SAL	DMI=60+24@60+00 PANEL
L	6462		0	25		RF	SAL	
L	6489	6570	81		20	FM	TYLA	70% COVERAGE
L	6643	6756	113	20	20	RF	SAL	
L	6809	6850	41	20	25	RF	SAL	
L	6999	7090	91	25	20	RF	SAL	RUDI UNDERSTORY
L	7137	7233	96	20	20	RF	SAL	SCATTERED FM
L	7280	7415	135	30	20	RF	SAL	
L	7488	7836	348	35	30	RF	SAL	DMI=8041@8000PANEL
W	8823	8894	71		5	FM	SCR	
L	10502		0	50		RF	SAGO	2 TREES
L	10614	10729	115	30	20	RF	SALA	
W	11535	11709	174		10	FM	SCR	
W	11811	11842	31		5	FM	SCR	
W	11984	12006	22		5	FM	SCR	DMI= 12063@12000 PANEL
L	12735		0	20		RF	SAL	FALLEN: 2 MALE RNPH PERCHED HERE
L	13127	13288	161	15	10	SS	SAEX	RUDI ALONG SEEP
L	13511	13565	54	20	15	RF	SAL	
L	13680	13955	275	40	30	RF	SAL	
L	13803	14005	202		5	FM	TYLA	
L	14007		0	25		RF	SALA	
L	14859	15081	222	35	25	RF	SAL	SOME TYLA
L	15139		0	20		RF	SALA	
L	15239		0	20		RF	SAL	
L	15329	15360	31	15	15	SS	SAL	
L	15370		0	40		RF	SAGO	
L	15437		0	30		RF	SALA	
L	15483		0	45		RF	SAGO	

LEVEE LOG

SIDE	Station Begin	Station End	Length	Height	Width	Habitat Type	Species	Notes
L	15535	15545	10	15	15	SS	SALA	
L	15650		0	10		SS	SAL	SCATTERED TYLA
L	15901	15948	47	35	20	RF	SAL	
L	15901	16050	149		20	FM	TYLA	SOME SCR
L	15989	16030	41	15	15	SS	SALA	
L	16072		0	25		RF	SAGO	
L	16129	16232	103	15	15	SS	SALA	80% COVERAGE
L	16419	16462	43	20	20	RF	SALA	RAB PRESENT
L	19001	19059	58	50	30	RF	SAGO	SOME TYLA/SCR ALONG SEEP
L	19596	19658	62	40	30	RF	SAL	
W	21533	21573	40		10	FM	SCR	
W	21815	21884	69		10	FM	SCR	PHOTO #8 (RTHA)
W	22949	23120	171		15	FM	SCR	DMI= 221+76@ 220+00PANEL
W	23348	23548	200		10	FM	SCR	
W	24102	24284	182		10	FM	SCR	
W	24871	24941	70		10	FM	SCR	
W	25246	25326	80		5	FM	SCR	
W	25769	26498	729		10	FM	SCR	70% COVERAGE
W	26628	26729	101		10	FM	SCR	
L	27194	28165	971			URBAN	ORNA	30+ TREES
W	27500	28043	543			URBAN	ORNA	10 TREES
W	28043	28254	211		15	FM	SCR	DMI=282+06@280+00PANEL
W	30863	31088	225		10	FM	SCR	
L	31296	31563	267		30	FM	TYLA	ALONG LAKE, PHOTO#9
W	31296	31501	205		10	FM	SCR	
L	31725	32733	1008	20	30	RF	SAL	4-40FT SAGO, 5-40FT. POFR
W	33050	33095	45		10	FM	SCR	DMI=322+08@320+00 PANEL
L	33090	33487	397	60	30	RF	SAGO	ACROSS SEEP; PHOTO #10
L	33930		0	75		RF	SAGO	
W	33990	34056	66		10	FM	SCR	
L	34126		0	60		RF	SAGO	~400FT. FROM LEVEE (NEAR SEEP)
W	34167	34329	162		10	FM	SCR	DMI=34214@340+00 PANEL
L	34180		0	40		RF	POPLAR/SAL	~ 250FT. FROM LEVEE
W	34843	35238	395		10	FM	SCR	FM also in irrigation ditch @ 34386; photo 11
L	35334	35667	333	75	30	RF	SAGO	~400FT. FROM LEVEE; PHOTO 12,13
W	35675	35716	41		10	FM	SCR	DMI=362+22@360+00 PANEL
L	36497	36665	168	20	30	RF	SAL	
W	36744	36918	174		10	FM	SCR	
W	37036	37962	926		5	FM	SCR	80% COVERAGE
L	37950	38112	162	10	10	SS	SAL	
W	38047	38754	707		10	FM	SCR	
W	39314	40760	1446		15	FM	SCR	
L	39600	40073	473	45	30	RF	SAL	
L	40477	40753	276	10	10	SS	SAL	80% COVERAGE
W	41044	41248	204	10	10	FM	SCR	60% COVERAGE
L	41287		0	50		RF	SAGO	
L	41368	41516	148	10	30	SS	SAL	
W	41420	41583	163		10	FM	SCR	

SIDE	Station Begin	Station End	Length	Height	Width	Habitat Type	Species	Notes
L	41616	41707	91	50	30	RF	SAGO	
L	41783	43299	1516	60	35	RF	SAGO	USED BY RTHA; PHOTO 14
L	43338	43530	192	15	15	SS	SAL	DMI=422+59@420+00PANEL
L	43530	44831	1301	60	50	RF	SAGO	DMI=442+68@440+00 PANEL
W	44608	44693	85		10	FM	SCR	
L	44889	45213	324	15	20	SS	SAL	
W	45216	45310	94	10	10	SS	SAEX	
L	45339	46115	776	10	15	SS	SAL	RF NEAR LAKE~350FT FROM LEVEE
W	45416	45838	422		20	FM	SCR	
L	45610		0	30		RF	SAGO	
L	45726		0	30		RF	SAGO	
L	45796	46115	319	40	20	RF	SAL/POFR	SOME FM
L	46211	46381	170	30	20	RF	SAL	
L	46381	47438	1057		20	FM	SCR/TYLA	
L	46483		0	20		RF	SAGO	
L	46781		0	30		RF	SAL	
W	46802	47537	735		10	FM	SCR	
L	46920	47144	224	15	25	SS	SAL	
L	47247		0	60		RF	SAGO	
L	47745		0	20		RF	SAL	landside FM @ 74641
L	47930	47950	20	15	20	SS	SAL	
L	48347	48861	514		30	FM	TYLA/SCR	
W	48347	48923	576		10	FM	SCR	65% COVERAGE
L	48464	48861	397	15	15	SS	SAL	
L	48577	48861	284	50	30	RF	SAGO	
L	49061		0	55		RF	SAGO	
L	49133		0	45		RF	SAGO	DMI=50278@50000 PANEL
W	50205	50235	30	10	10	SS	SAL	RESET DMI @500+00 TO START 2ND DAY
L	51740	51868	128	35	30	RF	SAL	DMI=520+09 @ 520+00 PANEL
W	52184	52210	26	10	10	SS	SAL	DMI=540+13@540+00 PANEL
W	55860	55998	138		5	FM	SCR	10 FT FROM SHORE
L	57000	57208	208		10	FM	SCR	
L	57169		0	50		RF	SAGO	
L	57225	57536	311		20	FM	TYLA	
L	57536		0	20		RF	SAL	
L	57598		0	25		RF	SAL	
W	58204	58329	125		10	FM	SCR	75% COVERAGE
W	60385	60453	68		10	FM	SCR	40% COVERAGE
W	60907	60966	59		5	FM	SCR	
W	61059	61111	52		10	FM	SCR	
W	61768	61863	95		10	FM	SCR	RUDI LANDSIDE NEAR SEEP DITCH
W	61972	62048	76		5	FM	SCR	DMI=620+48@620+00 PANEL
W	62301		0	10		SS	JUCA	
W	62367	62504	137		5	FM	SCR	40% COVERAGE; RUDI LANDSIDE NEAR SEEP
L	62825	62875	50		10	FM	PHAU	RUDI LANDSIDE NEAR SEEP
W	63496	63895	399		5	FM	SCR/PHAU	PHAU ALONG SEEP-LANDSIDE
W	64045	64169	124		5	FM	PHAU	FROM 64542-64707 TYLA IN SEEP
W	64707	65129	422		10	FM	SCR	IN SEEP

SIDE	Station Begin	Station End	Length	Height	Width	Habitat Type	Species	Notes
W	64743	64813	70	10	5	SS	SAEX	RUDI IN SEEP
L	65137	65313	176	10	10	SS	RUDI	SOME PHAU ; 70% COVERAGE
W	65359	66393	1034		10	FM	SCR	RUDI IN SEEP
L	65410	65520	110	10	10	SS	RUDI	
W	67714	67771	57		10	FM	SCR	
W	67883	67943	60		5	FM	SCR	
W	68026		0	20		RF	ALRH	
W	68085	68153	68	40	30	RF	JUCA/PINE	DMI= 680+74@680+00 PANEL ; 3 TREES
								END @ 683+28

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APPENDICES

DEPARTMENT OF FISH AND GAME
HABITAT ASSESSMENT LEVEE VEGETATION SURVEY FORM

Reclamation District: _____

Date of Inventory: _____

Conducted by: _____

Levee System Distance (Project, Nonproject, or Both): _____

Location of Engineering Station 0+00 and end of District: _____

Location of Survey (Beginning and Ending Engineering Stations): _____

The following guidelines are for use with the attached Field Data Collection Sheet. Please refer to the Habitat Assessment Requirements in the Outline of AB 360 Required Habitat Information for further information.

1) Use this form to record plant species on and adjacent to levees. Include any woody, freshwater marsh, or riverine aquatic bed vegetation which has the *potential* to:
   i) be affected by levee maintenance activities.
   ii) provide fish and/or wildlife habitat.
   Include levee-related vegetation which could be affected by AB 360 funded activities. This typically includes vegetation 30 feet landward of the landside levee toe, or 30 feet landward of existing toe drain. Also record locations of giant reed in the "notes" section of the Field Data Collection Sheet.
2) Note habitat type as defined in the SB 34 MEA - Section VI.
   Shaded Riverine Aquatic (SRA), Riparian Forest (RF), Scrub Shrub (SS), and Freshwater Marsh (FM). Riverine Aquatic Bed (RAB) shall be qualatatively noted when readily observed during assessment.
3) Note location and species of *individual trees* by engineering station. Note start and end of *canopy* cover if a *continuous* linear strip of trees/shrubs exist. A linear strip of habitat shall not be considered *continuous* if a break of greater than 25 feet occurs, or if there is a significant change in stand Height, width, or species composition. Identify representative species within habitat type. Note any recently cut trees or shrubs. FM may be noted as *discontinuous* when numerous small (under 25 feet) habitat breaks occur. Estimate percent coverage for *discontinuous* linear strips of FM.
4) Include both measured length and estimated width (by 5-foot increments) of habitat strips. "Calibrate" your estimation of levee width with an initial measurement from crown to toe.
5) Estimate tree height by 5-foot increments. Minimum height to record is 10 feet, unless stands less than 10 feet exist greater than 30 feet long.
6) Record domestic property as *urban*. Delineate as linear strip including structures and altered areas. Note general habitat conditions if applicable.
7) Include photo locations and general /incidental observations (including birds and mammals) under "Notes."
8) Although not a T & E species survey, record any observed T & E species. See SB 34 MEA Appendix F for special status species distribution by Reclamation District.

Commonly used Species Codes*

California box elder	*Acer negundo*	**ACNE**	Coast live oak	*Quercus agrifolia*	**QUAG**
White alder	*Alnus rhombifolia*	**ALRH**	Valley oak	*Quercus lobata*	**QULO**
Giant reed	*Arundo donax*	**ARDO**	Interior live oak	*Quercus wislizenii*	**QUWI**
Sedge species	*Carex* sp.	**CAR**	Black locust	*Robinia pseudoacacia*	**ROPS**
Calif. button bush	*Cephalanthus occidentalis*	**CEOC**	Himalaya blackberry	*Rubus discolor*	**RUDI**
American dogwood	*Cornus sericea*	**COSE**	Willow species	*Salix* sp.	**SAL**
Pampas grass	*Cortaderia selloana*	**COSE**	Sandbar willow	*Salix exigua*	**SAEX**
Nutsedge sp.	*Cyperus* sp.	**CYP**	Godding's black willow	*Salix goddingii*	**SAGO**
Eucalyptus species	*Eucalyptus* sp.	**EUC**	Arroyo willow	*Salix lasiolepis*	**SALA**
Edible fig	*Ficus carica*	**FICA**	Yellow willow	*Salix lucida*	**SALU**
Oregon Ash	*Fraxinus latifolia*	**FRLA**	Bulrush sp.	*Scripus* sp.	**SCR**
Black walnut	*Juglans californica*	**JUCA**	Tule	*Scirpus acutus*	**SCAC**
English walnut	*Juglans regia*	**JURE**	California tule	*Scirpus californicus*	**SCCA**
Rush	*Juncus* sp.	**JUN**	Blue elderberry	*Sambucus mexicana*	**SAME**
Western sycamore	*Platanus racemosa*	**PLRA**	Cattail	*Typha latifolia*	**TYLA**
Fremont cottonwood	*Poplus fremontii*	**POFR**	Unidentified sp.	*Unidentified sp.*	**UNID**
Common reed	*Phragmites australis*	**PHAU**	Elm species	*Ulmus* sp.	**ULM**

* Species codes utilize: the first two letters of the genus and the first two letters of the species. Additional variety and subspecies codes letters are not used on this form since there is very little overlap of plant varieties and subspecies in the Delta. If the specific species is not known, then first three letters of the genus are used. The **UNID** code is used if no positive identification of the plant can be made (i.e. ornamentals).

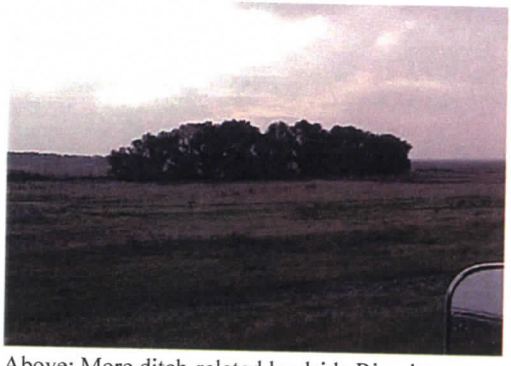
Levee Side	Engineering Station		Estimated		Habitat Type	Species Code	Notes
	Beginning	Ending	Height (H)	Width (W)			

Appendix C. Habitat Assessment Photos for Webb Tract

Above: Typical landside habitat on Webb.

Above: Agricultural ditch with Pampass Grass present.

Above: Landside Riparian Forest along ditch.



Above: More ditch-related landside Riparian Forest.

Above: Red-Tailed Hawk perching on landside RF.

Above: Same hawk using man-made perch.

Above: Landside RF on the SE side of Webb.

Above: SS and RF along the north-side pond.

STATE OF CALIFORNIA—THE RESOURCES AGENCY PETE WILSON, Governor

DEPARTMENT OF FISH AND GAME
REGION 2
1701 NIMBUS ROAD, SUITE A
RANCHO CORDOVA, CALIFORNIA 95670
(916) 355-7020

August 6, 1991

Mr. John L. Winther
P.O. Box 1267
Lafayette, California 94549

Dear Mr. Winther:

This letter is regarding your recent written proposal (letter of July 16, 1991) and subsequent telephone conversations with Mr. Jerry Mensch concerning mitigation for levee work on Bouldin Island, Holland Tract, and Webb Tract. Mitigation proposals involve 1) expanding the planned Harbor Cove Project mitigation area on Empire Tract, or 2) developing new habitat on the interior of Rindge Tract, Medford Island, or some other area. You have proposed that this habitat be created to replace the long-term losses of wetland habitat on the three islands caused by past and future levee work funded by the Delta Flood Protection Act of 1988, and to satisfy the mitigation requirements of the two pending Corps 404 permits for work planned on Holland Tract (Public Notice No. 10195) and Webb Tract (Public Notice No. 9001104).

We agree with the concept of creating wetland habitat on Empire Tract or an alternative location as mitigation for long-term losses of freshwater marsh and 404 jurisdictional wetland habitat caused by levee work on Bouldin Island, Webb Tract, and Holland Tract. We believe these mitigation alternatives will also satisfy the wetlands mitigation requirements for the pending Corps 404 permits on Webb Tract and Holland Tract. However, upon review of our field inspection records, comprised of notes, photographs and videotapes (including the videotape you prepared in August of 1989), and the Habitat Assessments prepared to date by RES Associates for Bouldin Island and Webb Tract, we have determined that the proposed off-site wetlands mitigation will not be adequate to replace all of the habitat types affected by levee improvement and maintenance on the islands. For example, Shaded Riverine Aquatic habitat occurred on Webb Tract along Fisherman's Cut in August of 1989. Based upon the available information, we have estimated the net long-term loss, in acres, for each habitat type found on the three islands. Those estimated losses are summarized below:

	Scrub-shrub	Freshwater marsh	Riparian forest	Shaded Riverine Aquatic	Ruderal
Boul	H(? ac.)	0 ac.	0 ac.	0	H(90ac)
Webb	11.0 ac. H(? ac.)	1.4 ac.	0 ac.	9000 lin. ft.	H(275ac)
Holl	4.5 ac. H(? ac.)	1.4 ac.	4.1 ac.	0	H(100ac)
TOTAL	15.5 ac. +H(? ac.)	2.8 ac.	4.1 ac.	9000 lin. ft.	H(465ac)

NOTE:The symbol "H" represents impacts from historic (i.e. post-July 1987) maintenance activities that have reduced habitat acreages or have kept habitat values lower than they would be without the maintenance activities. These historic impacts will be the subject of a separate analysis we will be pursuing through a contract in the future; a separate mitigation plan must be developed to address historic impacts.

Scrub-shrub, Freshwater Marsh, and Riparian Forest habitat impacts can be effectively mitigated on Empire Tract or some alternate location near the three islands. Because the Shaded Riverine Aquatic habitat on Webb Tract provided a significant aquatic value at the land-water interface, we recommend those impacts be mitigated on-site adjacent to the levee on Webb Tract by construction of a low-water berm that will be planted with riparian species. In the absence of a full Habitat Evaluation Procedure (HEP), we are recommending the following replacement actions:

1. Scrub-shrub: In-kind and acre-for-acre replacement (15.5 acres), off-site

2. Freshwater Marsh: In-kind and acre-for-acre replacement (2.8 acres), off-site

3. Riparian Forest: In-kind and 2 acres replacement for every 1 acre of impact (Riparian Forest habitat will require several years to reach the habitat value of the lost habitat on Holland Tract.)
(4.1 acres x 2 = 8.2 acres), off-site

4. Shaded Riverine Aquatic: In-kind and equal linear replacement (9000 lineal feet), on-site

The DFG estimates that it will require a total of 26.5 acres of land on an alternative site to replace the Scrub-shrub, Riparian Forest, and Freshwater Marsh habitats. Replacement of the Shaded Riverine Aquatic habitat will require the development of 9000 lineal feet of near-shore low-water berm with vegetation at appropriate locations on the waterside shoreline of Webb Tract. The historic impacts of maintenance practises on Ruderal habitat (465 acres) and Scrub-shrub habitat (unknown acreage) will require the development of a separate impact assessment and mitigation plan based upon the impact assessment.

We look forward to working with you to develop the long-term mitigation plan for Bouldin Island, Holland Tract, and Webb Tract. In addition to the mitigation measures we have described above, the mitigation plan should include provisions for protection of State- and Federally- listed and Candidate fish, wildlife, and plant species that may be associated with or depend upon habitat provided by the levees. The mitigation plan should also include provisions for permanent protection of the mitigation area, monitoring of the mitigation area to assure the success of the mitigation measures, and permanent management of the mitigation area. We are preparing a model "Mitigation Agreement" which may be of use in developing the mitigation plan. We will send a copy of that document to you as soon as it is completed.

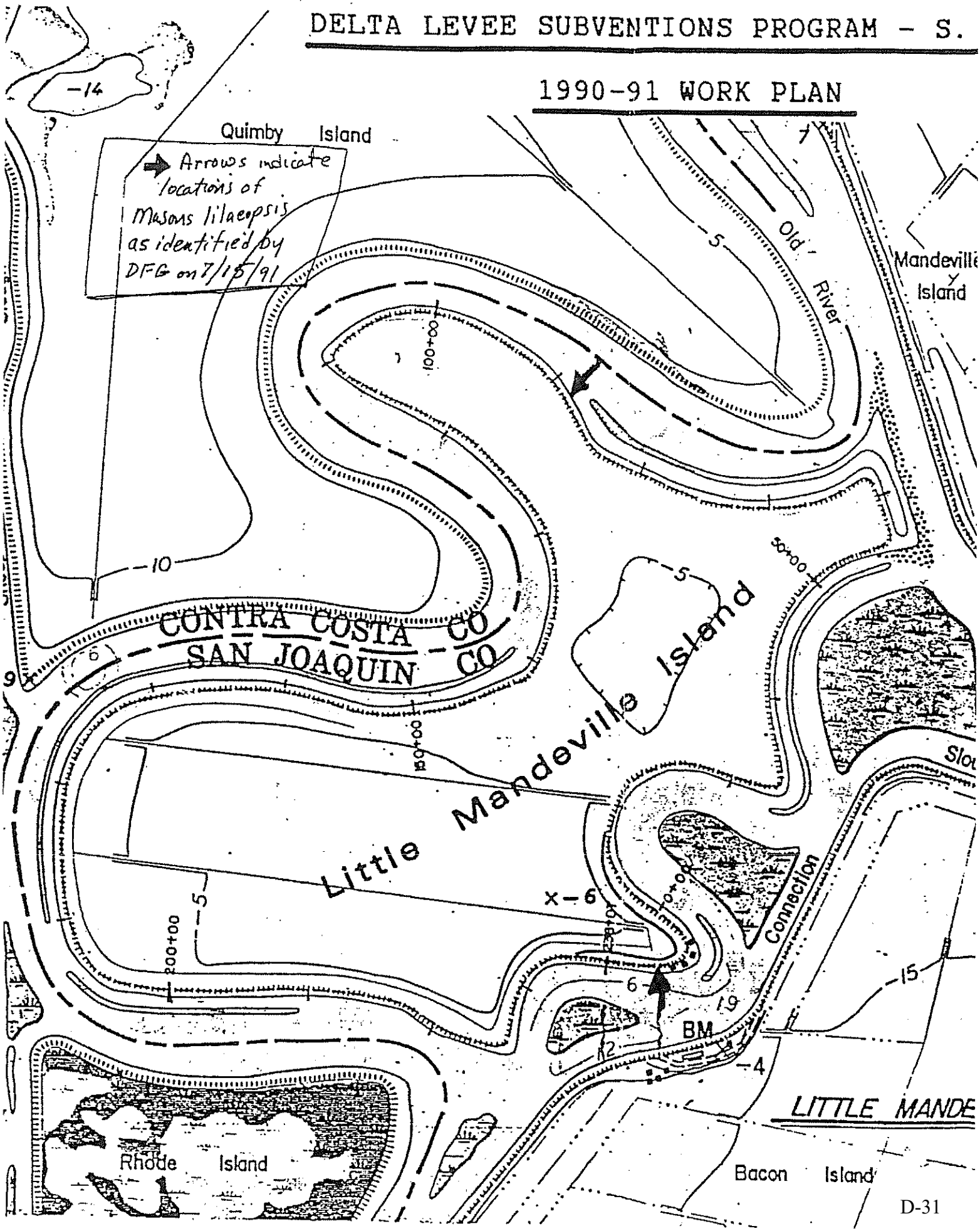
If you have any questions regarding this letter, please contact Mr. Jerry Mensch, Environmental Services Supervisor, Mr. Scott Clemons, Associate Wildlife Biologist, or Mr. Frank Gray, Associate Fishery Biologist, at (916) 355-7030.

James D. Messersmith
Regional Manager

cc: Ms. Mary Johannis
DWR Central District
3251 S Street
Sacramento, California 95816

Mr. Scott Morris
Murray, Burns, & Kienlen
1616 29th Street, Suite 300
Sacramento, California 95816

Mr. Tom Coe
Regulatory Section
U.S. Army Corps of Engineers
Sacramento District
650 Capitol Mall
Sacramento, California 95814 -4794


DELTA LEVEE SUBVENTIONS PROGRAM - S.
1990-91 WORK PLAN
Quimby Island
Arrows indicate locations of Masons lilaeopsis as identified by DFG on 7/15/91
Old River
Mandeville Island
CONTRA COSTA CO
SAN JOAQUIN CO
Little Mandeville Island
Connection
BM
LITTLE MANDE
Rhode Island
Bacon Island
-14
-10
-5
-6
-4
-15
80+00
100+00
200+00

STATE OF CALIFORNIA—THE RESOURCES AGENC.

PETE WILSON, Governor

DEPARTMENT OF FISH AND GAME
REGION 2
1701 NIMBUS ROAD, SUITE A
RANCHO CORDOVA, CALIFORNIA 95670

(916) 355-7020

February 11, 1992

Mr. John Winther
Delta Wetlands, Inc.
3697 Mt. Diablo Blvd., Suite 120
Lafayette, California 94549

Dear Mr. Winther:

The Department of Fish and Game has reviewed the proposal regarding mitigation for net long-term losses to wildlife habitat associated with levee repair and maintenance activities on the four islands you manage. These islands include Reclamation Districts No. 756 (Bouldin Island, San Joaquin County), No. 2025 (Holland Tract- Contra Costa County), No. 2026 (Webb Tract, Contra Costa County), and No. 2028 (Bacon Island, San Joaquin County). Your proposal involves paying the owner of Medford Island to dedicate approximately 49 acres of fallow agricultural land on the interior of Medford Island as wetland habitat.

Since July 1, 1987, SB 34 funded levee maintenance and improvement activities have resulted in losses of habitat at all four Districts. We assume that these levee maintenance and improvement activities will continue for the foreseeable future. We have reviewed the existing habitat information and estimated the total habitat losses from past and future levee maintenance and improvement activities on the four subject Districts will involve 45.7 acres of riparian and wildlife habitat: (scrub-shrub = 26.6 acres; riparian forest = 6.1 acres; freshwater marsh = 13.0 acres). This loss provides the basis for the creation of the 49 acre mitigation area. In addition to the above losses, 10,780 lineal feet (6.1 acres) of shaded riverine aquatic habitat will be replaced elsewhere under a separate mitigation plan and agreement.

The DFG endorses the concept of developing the subject 49-acre area on Medford Island into a mitigation area, and the timely implementation of a DFG-approved mitigation plan and mitigation agreement for this property. This would satisfy all of the mitigation requirements for the aforementioned reclamation districts with the exception of shaded riverine aquatic habitat losses. The mitigation area should produce riparian and scrub shrub habitat in addition to the existing potential for

freshwater marsh. Native trees should be planted, and there should be a permanent water supply to ensure long-term growth and survival of all plants.

We have been in contact with Mr. Earl Cooley, who provided us with a letter regarding a proposed mitigation bank area to be developed on Medford Island January 16, 1991 (attached). DFG personnel will make a site visit soon with Mr. Cooley to consider possible area designs. We agree that the timely implementation of mitigation is essential.

If you have any questions, please call Mr. Frank Gray or Mr. Scott Clemons, Environmental Specialists, of our Rancho Cordova office at (916) 355-7030.

Sincerely,

James Messersmith
Regional Manager

Attachment

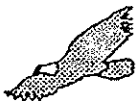
cc: Earl Cooley
L & L Farms
No. 1 Medford Island
Stockton, CA 95219

Ms. Mary Johannis
Department of Water Resources
3251 S Street
Sacramento, CA 95816

Mr. Scott Morris
Murray, Burns, & Keinlen
1619 29th Street, Suite 300
Sacramento, CA 95816

Mr. Scott Clemons
Department of Fish and Game
Rancho Cordova, CA

Mr. Frank Gray
Department of Fish and Game
Rancho Cordova, CA



L & L FARMS

MEDFORD ISLAND
STOCKTON, CALIFORNIA

VIA FAX 916-355-7102

January 16, 1991

State of California
Department Fish & Game
Attn: Scott Clemons

Dear Mr. Clemons:

It is the intent of L & L Farms ownership to engage in the restoration, enhancement and protection of wetlands, riparian and aquatic habitat values on Medford Island for the benefit of all wildlife including sensitive plant and animal species.

To facilitate funding for these major habitat improvements, it is hoped the department will approve Medford Island as an acceptable location for mitigation projects.

The attached mitigation plan outlines the development of approximately 100 acres in the S.E corner of the island as a pilot project, for the Medford Island natural community conservation planning area mitigation site. We would also be willing to utilize this pilot project as a subventious program habitat restoration demonstration area so other districts could learn to incorporate wildlife habitat improvement into their construction activities. It would also provide other districts with a mitigation alternative which would not require acquisition, development, or maintenance on their part.

Development

It is already late winter and the window of opportunity for cost effective riparian restorations only extends for a couple of months longer. Expensive container plantings with irrigation systems could extend the planting season but in our experience the planting or cuttings from willows and cottonwoods supplemented by container plantings of elderberry and wild grape, all irrigated by fluctuating adjacent wetland water levels have provided the most benefit for the least cost. With that window of opportunity time is of the essence.

Most earthmoving and water control structures are already in place. Development of the precise character of the wetlands portions of the project will be controlled by utilizing water management techniques providing sufficient inundation to produce a palustrine emergent wetland dominated by stands of perennial rooted herbaceous plants, primarily roundstem bullrushes and cattails. Other typical moist soil plants will include smartweed and watergrass.

Specific details regarding the sale of a conservation easement, establishment of a maintenance annuity and development of a monitoring and maintenance plan will require additional negotiations between the island's ownership and R.D. 2041 to incorporate department recommendations as to the precise structure of the joint venture and subsequent operations agreement requirements identified during our continued consultations.

Field planting would begin immediately. If the department is willing to document the applicability of those improvements as mitigation for the offsite impacts of other reclamation districts or organizations who as a result of SB-34 participation or other permit process requirements were required to mitigate the impact of their activities.

Such negotiation will begin upon conceptual approval of the general plan by the department. We request an opportunity to consult with you after your review of the draft so we may incorporate your recommendations and address any concerns before a final plan is submitted.

Yours truly,

EARL COOLEY
Facility Manager

EC/jkr
Enclosures

CC: J.F. Riedel
C.A. Luckey
Dave Brown, Dept. of Water Resources
Medford File
E.C. M/B

MITIGATION PROJECT AREA DESCRIPTION

Medford Island is a 1,200 acre island centered in the Delta (see attached map). Small grain production and grazing have historically been the major land uses. Winter flooding of cereal grain production fields provides a significant waterfowl wintering area. The island is home to a number of sensitive plant and annual species.

The proposed mitigation sites consist of Unit A composed of 42.8 acres in field 24 and 20 acres in field 23.

Units A & B were proposed as potential mitigation project sites as early as 1988. In 1989 in cooperation with C.W.A. and the island's ownership entered into a one year agreement to actively manage those fields in Unit A for the benefit of waterfowl. This experimental plot was flooded that winter and left fallow the next year. In 1990 it was proposed as subventions program mitigation site. In 1991 corn was planted and left standing as a conservation feed plot for the benefit of wintering waterfowl. Some experimental planting of moist soil plants were done to evaluate different restoration techniques. This experimental plot will be put back into commercial row crop production this year if a conservation easement sale cannot be negotiated.

Unit B

45.7 acres contained in Field 25. This field was last farmed in 1989 and has been used as a reclamation district borrowing area for the subvention program levee rehabilitation activities.

The result has been a reconfiguration of the area through excavation that could, if property developed, produce characteristics of a palustrine emergent wetland with scrub shrub plantings maturing into palustrine forests values. This location would optimize moist soil plant diversity by creating non-uniform water depth that would discourage monotypic stands of emergent vegetation and increase the edge effect associated with riparian restorations. This area would most likely be leveled for ag production unless a mitigation project is approved for this location.

FISH AND WILDLIFE HABITAT

MITIGATION AGREEMENT BY AND BETWEEN

RECLAMATION DISTRICT NO. 2041

AND

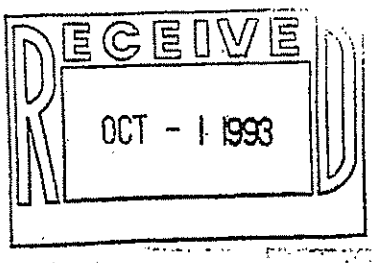
CALIFORNIA DEPARTMENT OF FISH AND GAME

This Mitigation Agreement ("Agreement") is made and entered into by and between Reclamation District No. 2041 (Medford Island), hereafter referred to as the "District", and the California Department of Fish and Game, hereafter referred to as the "Department".

The purpose of this Agreement is to guarantee adequate mitigation for the loss of 13 acres of freshwater marsh, 28 acres of scrub-shrub habitat, and 6 acres of riparian forest habitat that were growing on or adjacent to local non-project levees in the Sacramento-San Joaquin Delta. These habitat losses are long-term in nature, and occurred in conjunction with the rehabilitation and maintenance or the non-project levees that surround Medford Island, San Joaquin County (work performed by the District), Holland Tract, Contra Costa County (work performed by Reclamation District No. 2025), Webb Tract, Contra Costa County (work performed by Reclamation District No. 2026), and Bacon Island, San Joaquin County (work performed by Reclamation District No. 2028). Reclamation districts 2025, 2026 and 2028 asked the District to develop and manage the mitigation efforts on Medford Island on their behalf. The District accepted this responsibility. Reclamation districts 2025, 2026, and 2028 are thus beneficiaries of this Agreement because the habitat to be restored by the District shall satisfy part of their mitigation requirement under the provisions of the Delta Flood Protection Act of 1988. Said three reclamation districts shall have rights to enforce the provisions of this Agreement.

The levee rehabilitation and maintenance activities noted above shall hereafter be referred to as the Project. The Project was performed pursuant to the provisions of the Delta Flood Protection Act of 1988. The authority for this Agreement comes from Sections 1600, 1755 and 1801, et. al. of the Fish and Game Code, Sections 21001 and 21002 of the Public Resources Code, Sections 15040 (c) and 15041 of the California Environmental Quality Act (CEQA) Guidelines, and Section 12987 of the Water Code.

The specified mitigation measures and actions to be undertaken by the District and the Department pursuant to this



Agreement are attached hereto as Exhibit 1 (hereinafter the "Mitigation Plan").

WITNESSETH

WHEREAS, the four named reclamation districts requested the Department to approve their plans for levee rehabilitation and maintenance under the provisions of the Delta Flood Protection Act of 1988, and

WHEREAS, the Department, after reviewing the plans and conducting several site inspections determined that the nature of the Project made it impossible to avoid impacts on-site, and

WHEREAS, the Department believes that in-kind replacement of 13 acres of freshwater emergent marsh habitat, 28 acres of scrub-shrub habitat, and 6 acres of riparian forest habitat is feasible on lands currently owned by L & L Farms on Medford Island in San Joaquin County, and

WHEREAS, pursuant to Fish and Game Code Section 1802, the Department has jurisdiction over the conservation and protection of fish, wildlife and native plants and holds these resources in trust for the people of California, and

WHEREAS, pursuant to Water Code Section 12987, the Department must disapprove plans prepared under the provisions of the Delta Flood Protection Act of 1988 if those plans result in the unmitigated use of channel islands for levee repair materials, or if the plans result in a net long-term loss of fisheries, wildlife, or riparian habitat, and

WHEREAS, the Department desires permanent replacement of the specified scrub-shrub, freshwater marsh, and riparian forest habitat to assure that any net long-term losses of those habitats are adequately mitigated, and

WHEREAS, L&L Farms agrees to grant an easement as more particularly set forth in Exhibit 2, attached hereto (hereinafter the "Conservation Easement"), and

WHEREAS, the District, acting for itself and on behalf of the other three named reclamation districts, agrees to mitigate as specified in the Mitigation Plan for Project-induced losses of 13 acres of freshwater marsh habitat, 28 acres of scrub-shrub habitat, and 6 acres of riparian forest habitat.

NOW THEREFORE, the parties agree as follows:

A. DUTIES

1. The Department shall acquire a Conservation Easement over 73.59 acres of land (hereinafter referred to as "Habitat Areas") on Medford Island. This acquisition shall occur within 6 months of the execution of this Agreement.

2. The District acting in its own capacity, or through a designated agent approved by the Department, shall preserve, enhance, and maintain the Habitat Areas in good condition in perpetuity.

3. As mitigation for the habitat losses resulting from the Project, the District agrees to complete the initial habitat plantings and water structure development actions described in the Mitigation Plan within a reasonable time but no later than twelve (12) months from the execution of this Agreement. These actions shall take place within the Habitat Areas, within a 50 acre area hereinafter referred to as the "Mitigation Area". A portion of the remaining 23.59 acres of the Habitat Areas shall serve as a buffer zone to protect the Mitigation Area. L&L Farms may utilize the 23.59 acre buffer zone for purposes as described in the Mitigation Plan or Conservation Easement. The Department reserves the right to designate all or part of the 23.59 acres as mitigation for habitat losses which may result from the District's future levee maintenance and improvement activities which are eligible for funding under the Delta Flood Protection Act of 1988.

4. If the Mitigation Area is damaged or destroyed by catastrophic events beyond the control of the District (including but not limited to flood, fire, wildlife disease, and vandalism), the District shall notify the Department and the Department shall determine the appropriate course of action. If the Department determines the Mitigation Area must be restored, the District shall perform the restoration to the extent that funds are available from monies provided to the Department by the California Legislature in 1991 (Chapter 1140). If the levees surrounding Medford Island fail, and Medford Island is not reclaimed, the District shall have no further obligation for restoration or management of the Mitigation Area.

5. The Department and the District have entered into this Mitigation Agreement contemplating normal operating and maintenance expenses based on historical practices in the San Joaquin Delta region. In the event subsequent laws, rules, or regulations or other events occur which modify the historical procedures and significantly impact the cost or expense of operating and/or maintaining the Habitat Area, the Department and the District shall meet and mutually confer in an effort to

reasonably allocate the sharing of the additional cost or expense. In the event the parties are unable to agree with respect to such allocation the matter shall be referred to arbitration pursuant to the provisions of the California Code of Civil Procedure $1280, et seq.

B. COSTS

The parties to this Agreement have determined that the direct cost of acquiring the Conservation Easement and the direct cost of enhancing and managing the Mitigation Area will be as set forth below.

1. Acquiring a permanent Conservation Easement over the Habitat Area.
   Cost: $ 91987.50

2. Enhancement, operation and maintenance of the Mitigation Area during the development phase (three years) as described in the Mitigation Plan.
   Cost: $178,121

3. Perpetual operation and maintenance of the Mitigation Area and payment of levee assessments for the Habitat Areas following the development phase, as described in the Mitigation Plan.
   Cost: $179,699

C. FUND MANAGEMENT

Funding for the mitigation actions required by this Agreement shall be provided from the Department's account established for habitat mitigation under Chapter 1140, Statutes of 1991. The following describes how the funding will be managed for the development and operations and maintenance activities described in the Mitigation Plan and in this Agreement:

1. Development Phase Payment Terms

The Department shall pay the District to enhance, operate and maintain the Mitigation Area during the development phase, using funds identified in Section B.2.. Funds for development shall be disbursed to the District under the following terms:

a) Seventy-five percent (75%) of the total development cost ($133,590.75) will be paid to the District within 90 days from the execution of this Agreement.

described in this Agreement and in the Mitigation Plan. This report shall be sent to the Department's Region 2 Office, attention Regional Administrative Officer.

D. DEFAULT

Upon information and belief that the District has not complied with the conditions or obligations required of it in this Agreement or in the Mitigation Plan, the Department shall notify the District in writing that a default has occurred and give the reasons therefor. The District shall have 30 days following receipt of such notice within which to commence (and thereafter diligently pursue) corrective action to cure such a default. In the event the District fails to cure the default within 120 days following receipt of such notice, the Department shall have all rights and remedies available at law or equity including but not limited to specific performance and injunctive relief.

E. DEPARTMENT COVENANTS, REPRESENTATIONS AND WARRANTIES

The Department hereby covenants, warrants and represents as follows:

1. The Department, its designee, or successor shall hold a permanent easement deed to and protect all lands conveyed under this Agreement solely for the purposes of conservation, restoration and enhancement of those riparian and wildlife habitats and species adversely impacted by the Project. This covenant shall run with the land and no use of such land shall be permitted by the Department or any subsequent easement holder or assignee which is in conflict with the stated conservation purposes of this Agreement. If at any time in the future the Department, the District, the titleholder, or any subsequent transferee uses or threatens to use such lands for purposes not in conformance with the stated conservation purposes contained herein, the California Attorney General, or California residents shall have standing as interested beneficiaries to challenge such nonconforming uses of lands transferred herein; AND

2. The Department, its designee, or successor shall record on each deed a statement that the lands (or an easement over said lands) described in the deed of record have been conveyed to the Department or its agent for purposes of conservation, preservation, restoration and maintenance of those species and habitats adversely impacted by the Project. Such statement shall be substantially as provided in Exhibit 2.

b) Fifteen percent (15%) of the total development cost ($26,718.15) will be paid to the District upon the Department's determination that the District has satisfactorily completed the berm construction, water system development (including renovation of the existing irrigation and drainage system, and replacement of one siphon), and initial habitat plantings, as described in the Mitigation Plan.

c) Ten percent (10%) of the total development cost ($17,812.10) will be paid to the District upon determination by the Department that the District has met the performance standard specified in the Mitigation Plan (successful establishment of 13 acres of freshwater marsh, and survival of 1,600 trees and shrubs at the end of three years from the date of the initial plantings).

2) Long-term Operation and Maintenance

Within 90 days from the execution of this Agreement, the Department shall provide the District with $179,699. The District shall use this fund to create an operation and maintenance trust account which shall be dedicated to the perpetual operation and maintenance of the Mitigation Area and to the payment of specified annual levee assessment fees to the District for the Habitat Areas. The District shall begin to draw funds from this trust account after completion of the development phase. The District shall withdraw funds from the trust account on an as-needed basis; the total annual draw shall not exceed $7,188, except during years when replacement of the siphon(s) is necessary. A portion of the total annual draw shall be used by the District as the annual levee assessment fees for the Habitat Areas. Said annual levee assessment fees shall be paid at $25 per acre (total annual fee: $1,570), and such fees may be increased to a maximum of $34.84 per acre (total annual fee: $2,188) in the event of increased levee repair costs due to flood damage or levee failure.

3) Annual Accounting Report

By February 1 of each year the District shall prepare and present a report detailing expenditures from the funds provided for the mitigation actions

F. MISCELLANEOUS PROVISIONS

1. NOTICES

All notices and other communications required or permitted to be given or delivered pursuant to this Agreement shall be in writing and shall be delivered in person or by courier, by telecopy, or sent by first-class or certified mail, return receipt requested. All such notices or transmittals shall be deemed delivered upon the earlier of actual receipt or three days after posting by certified mail addressed to the recipient as follows:

DISTRICT
Mr. Tom Luckey
2495 West March Lane
Stockton, California 95207

DEPARTMENT (1) Regional Office Address:
California Department of Fish and Game
Region 2
1701 Nimbus Road, Suite A
Rancho Cordova, CA 95670

(2) STATE HEADQUARTERS ADDRESS:
California Department of Fish and Game
Legal Affairs Division
1416 Ninth Street, 12th Floor
Sacramento, California 95814

2. ENTIRE AGREEMENT

This Agreement, along with the exhibits attached hereto, constitutes the entire Agreement and understanding between the Department and the District for the Project. This Agreement supersedes all prior and contemporaneous agreements, representations or understandings of the parties, if any, whether oral or written.

3. GOVERNING LAW

This Agreement shall be governed by the laws of the State of California. Actual or threatened breach of this Agreement may be prohibited or restrained by a court of competent jurisdiction.

4. BENEFIT OF AGREEMENT

This Agreement is for the benefit of the People of the State of California by and through the Department and its successors and assigns. This Agreement provides the mitigation for habitat loss as identified, and acceptable performance by the District shall satisfy the mitigation requirements specified for all four identified reclamation districts.

5. AMENDMENTS

This Agreement cannot be amended or modified in any way except by a written instrument duly executed by the District and the Department.

6. TERMINATION

This Agreement may be terminated under the following circumstances:

a. The Department notifies the District in writing that the Agreement is terminated. Termination shall become effective within 30 days following receipt of such notice.

b. The Department determines that a default has occurred, and the District does not correct the default within a reasonable time.

c. A catastrophic event beyond the control of the District occurs, damaging the Mitigation Area, and the Department determines that the Mitigation Area cannot be restored.

d. The levees surrounding Medford Island fail, the Mitigation Area is flooded, and Medford Island is not reclaimed.

e. By law or judicial action.

IN WITNESS WHEREOF, THE PARTIES HERETO have executed this Mitigation Agreement to be in effect as of the date last signed below.

RECLAMATION DISTRICT NO. 2041

By: _____

Dated: 9-20, 1993

Tom Luckey, President
Reclamation District No. 2041

CALIFORNIA DEPARTMENT OF FISH & GAME

By: _____

Dated: 9/10/93, 1993

Boyd Gibbons, Director
California Department
of Fish and Game

Approved as to form:

By: _____

Dated: September 30, 1993

Craig Manson
General Counsel
California Department
of Fish and Game

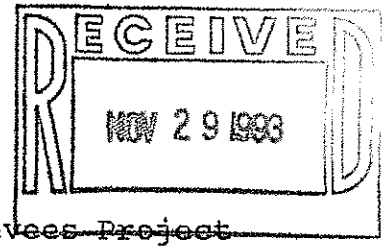
State of California

The Resources Agency

Memorandum

To : Mr. Dave Lawson
Department of Water Resources
3251 S Street
Sacramento, California 95816

Date : November 23, 1993



From : Department of Fish and Game - Ed Littrell, Delta Levees Project

Subject: "Future" Impacts' Mitigation and Funding at Medford Island

It has come to our attention that the recently signed mitigation agreement for Medford Island will require revision. The goal will be to allow the designated 73.59-acre site to serve as a mitigation area for all for past and future impacts from SB 34 related work at Holland, Bacon, Webb, and Medford Island. Mitigation for losses of shaded riverine aquatic habitat would be addressed separately. The expectation of the representatives for the subject districts is for the agreement to address future impacts, whereas the payment for the area is currently being made from the $3 million past impacts account. The "past impacts" account should not fund that portion of the site which will address future impacts.

I would like to meet with you to resolve this issue, possibly by reimbursing the past impacts account with funds from another account. This will then enable us to make the necessary revisions in the Medford agreement and facilitate approval of future workplans.

To arrange a meeting, or if you have any questions, please call me at (916) 355-0271.

Ed Littrell
Delta Levees Project Manager

cc: Mr. Gilbert Cosio
Murray, Burns, and Kienlen
1616 29 th St., Suite 300
Sacramento, CA 95816

Appendix E – Response to Comments

RECLAMATION DISTRICT NO. 2026
(WEBB TRACT)

343 East Main Street, Suite 815
Stockton, CA 95202
Office (209) 943-5551
Fax (209) 943-0251

Board of Trustees
RANDALL D. NEUDECK
DAVID A. FORKEL
RUSSELL E. RYAN

District Engineer
NATHAN HERSHEY, MBK Engineers
Secretary
PAMELA A. FORBUS

October 26, 2022

Andrea Lobato, P.E., Manager
Delta Levees Program – Special Projects
Department of Water Resources
Post Office Box 942836
Sacramento, CA 94236-0001

Subject: Response to Comments on Five-Year Plan
Reclamation District No. 2026, PFA Plan WB-18-1.0-SP

Dear Ms. Lobato:

This is in response to your letter dated March 2, 2022, providing comments on the Five-Year Plan. A response to each comment is included below, and the modified Five-Year Plan providing additional information is attached to this letter.

DWR Comment: Page 1, Executive Summary: The Plan briefly states the District's goal "... is to attain and maintain its levee system at or above a sustainable minimum levee standard". The Plan should include details of approximate miles of levee with general location along what waterway. The Plan should also include how involvement with DWR and other agencies will help the Local Agency achieve their goal.

Response: This comment has been addressed in the plan.

DWR Comment: Page 4, Section 2 Background with Historical Flood Issues. The Plan should provide the necessary information for the following items:

i. The condition of the levees and the performance of the levees during the events, and the consequences of the events.
ii. Information on permanent and transient population on Webb Tract.
iii. Resources of state interest and estimated values of the resources on Webb Tract.
iv. Transportation infrastructure on Webb Tract.

Response: This comment has been addressed in the plan.

DWR Comment: Page 5, Assessment of the Status of the Existing System: The Plan briefly mentions the District performed large rehabilitation projects under the Special Projects Program in 2013. This information should be discussed in more detail under the History with the Delta Levees Program (Page 7), with a statement as to whether and how that participation allowed the

Local Agency to meet the 2009 Five-Year Plan Objectives. The Plan should also include past work completed with the assistance of both the Subventions and Special Projects programs and include the total levee miles that are not maintained under either program

Response: This comment has been addressed in the plan.

DWR Comment: Page 6, Table 1 Existing Levee Standard Conditions:

i. The Table should be revised in accordance with the Requirements to include specific stationing and total miles for levees that are at or above HMP, PL 84-99, and Bulletin 192-82, and the percentage of each levee system to be consistent with the map provided in the Plan. The table should also indicate the work completed through the Subvention and Special Projects programs.

ii. Please also indicate if there are any miles of FEMA levee in the Plan.

Response: This comment has been addressed in the plan. Specific stationing for the levee standard conditions is included in Appendix B.

DWR Comment: Page 7, Previous Five-Year Plan Progress Report: The Plan provides a brief status of the 2009 Five-Year Plan projects in the table. However, it does not provide any information regarding objectives that were or were not achieved from the previously proposed projects, or the level of achievement.

Response: The table and plan have been updated to include information regarding objectives achieved.

DWR Comment: Page 9, Desired Level of Protection Planned within Five Years: Please address why the current levee system at the Delta specific PL 84-99 standard (62% of the total system) is not a sustainable levee standard for the District and needs to be rehabilitated to Bulletin 192-82 given the island's Historical Flood issues.

Response: It should not be implied that the PL 84-99 standard is not sustainable. The District opted to adopt the State's Bulletin 192-82 standard as it is a higher standard and it is allowed under the Program.

DWR Comment: Page 10, Table 3 Project Phasing: Please add a column indicating the current levee condition per the listed stations.

Response: The current levee condition has been added to the table.

DWR Comment: Page 10, The Plan states there are limited opportunities for potential on-site ecosystem enhancement beyond landside slope seeding. Future Project Solicitation Packages (PSPs) will likely focus on multi-benefit projects. Projects that include program habitat types of freshwater marsh, riparian forest, scrub- shrub forest, and especially SRA or waterside habitat, are likely to score higher when evaluated.

Response: Comment noted.

DWR Comment: Page 10, The plan provides a description of proposed projects for each phasing of the work. Please provide an approximation of the materials (volume) to be used for each project.

Response: A quantity estimate for each phase is included in Appendix B.

DWR Comment: Page 22, Compliance with CEQA and Required Permit Procurement: For CEQA, please consider that projects filling as Categorical Exemptions will need to provide justification, as part of the draft SOW, that there are no exceptions to the exemption the District intends to work under Article 19 Categorical Exemptions; Section 15300.2 Exceptions. Projects filling as an IS/MND will need to provide the Initial Study for review as part of the draft SOW before an MND can be filed. Please also indicate that the District will act as the Lead Agency under CEQA and DWR will be a Responsible Agency for projects it provides funding for.

Response: Comment noted. The plan has been updated to indicate that the District will act as the Lead Agency under CEQA and DWR will be a Responsible Agency for projects it provides funding for.

DWR Comment: Page 22, Compliance with CEQA and Required Permit Procurement: For Permits, please identify any possible permits that could be required for activities involved in the Plan's projects. The Plan states that "work will be conducted above the ordinary high-water mark (OHWM) and the levee does not exhibit wetland characteristics." Please also indicate how the District plans to keep fill material from entering the water for "newly placed crown fills on the waterside."

Response: This comment has been addressed in the plan.

DWR Comment: Page 25, Table of Required Tabulated Information is incomplete. Please review the Requirements and incorporate statements to fill in appropriate sections and provide clear evidence to support statement when information is needed

Response: The table has been completed.

We look forward to the approval of the Five-Year Plan. If you have any questions or require additional information, please contact Nate Hershey with MBK Engineers at (916) 456-4400.

Respectfully submitted,
RECLAMATION DISTRICT No. 2026

Dave Forkel, Chairman

NL/BJ
4280-18 ANDREA LOBATO RESPONSE TO COMMENTS

cc: Mr. Todd Gardner, Department of Fish and Wildlife
MBK Engineers