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To: Town of Harwich Community Preservation Committee
From: Michael Lach, Executive Director, Harwich Conservation Trust (HCT)
Date: April 7, 2022
Subject: Status Report—2021 Town Mtg. Article #34 Harwich Natural Heritage Trail Project, Phase One

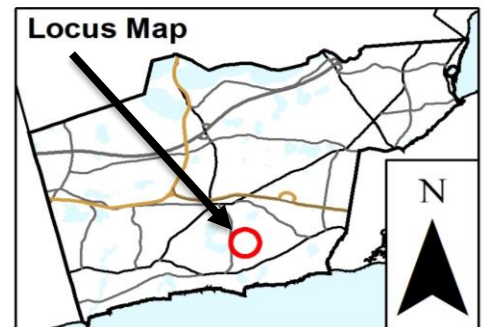
Thank you for the opportunity to provide a status report for Phase One of the Harwich Natural Heritage Trail Project.

We held design team meetings which included planning for the Phase One wheelchair accessible trail project on the following dates:

Dec. 16, 2021
Feb. 16, 2022
March 16, 2022

The following project partners and representatives participated:

- Harwich Conservation Trust (HCT), Michael Lach, Exec. Dir.
- MA Division of Ecological Restoration, Eric Ford, Ecological Restoration Specialist & Professional Wetland Scientist
- Inter-Fluve [engineering firm specializing in river & wetland ecological restoration & access projects, website link: [Inter-Fluve | River Restoration and Water Resources Engineering \(interfluve.com\)](http://interfluve.com)]
 - Nick Nelson, Regional Director & Fluvial Geomorphologist
 - Mike Burke, Principal Engineer
 - Ken Vigil, Senior Engineer
 - Marcel Young-Scaggs, Engineer
- Stimson Associates Landscape Architects, website link: [STIMSON \(stimsonstudio.com\)](http://stimsonstudio.com)
 - Joe Wahler, Ryosuke Takahashi, Cassandra Lanson



Location of Phase One, ADA trail project

During the design team meetings, we discussed the following proposed trail elements:

- Existing access trail from preferred parking option #1 is 6-8% slope, so grading and extending slope will be needed to conform with Americans with Disabilities Act (ADA) standard of 5% slope or less, but there is enough space and distance available. Access from parking option #2 can also be achieved, but parking option #1 (#203 Bank St.) provides many more parking spaces.
- Overlook/viewing platform to use existing ground elevation, rather than extending further south, therefore less expensive structure because no retaining wall needed.
- 2 existing bumpouts in cell 1/2 berm for possible benches - just need to be graded/mowed
- Stream (Cold Brook) crossings:
 - Originally, we were considering designing the two stream crossings to incorporate delivery and installation of prefabricated footbridges of approx. 25 ft. length each.

- However, it is overall more cost-effective to construct and maintain wooden/module footbridges, so this wooden/module approach was decided to be best.
- 8ft x 8ft or 8ft x 10ft module crossings can be manufactured off site and then delivered and installed; easier installation and easier disassembly.
- Options
 - Panel deck
 - Timber deck
 - Grate – steel grate – ok with ADA/wheelchairs, but more expensive
 - Costs – panel deck is most cost-effective – design team confirmed that we will go with this option.
- Foundations – the design team intends to use helical piles instead of concrete abutments
 - Keep helical piles as far from channel as possible – these should definitely not be in the middle of the channel or in the way of active water flow. If they can do a 10-ft span across the channel, that would be preferred to give more space for stream flow.

Parking:

- Parking preference continues to be at #203 Bank Street and adjoining town-owned parcels that are already providing parking access and adequate driver safety sight lines along either direction of Bank Street. HCT is partnering with the nonprofit Harwich Fire Association in anticipation of submitting a joint proposal in response to a request for proposals pending from the Select Board.
- Although the parking preference is #203 Bank Street, an alternative analysis has been completed further south at a location on Bank St. resulting in two draft parking area layouts, though each offers much less space than #203 Bank St.

Next steps:

- Continue monthly design meetings.
- Integrate ADA trail design into the overall ecological restoration design process (to date, we have completed 75% of the overall design process; final designs of the trails are expected to be completed by June 2022, while final restoration designs will be completed in the fall of 2022).
- Begin the permitting process for the Cold Brook Eco-restoration Project which includes the ADA trail aspect.
- Project construction in fall 2022/winter 2023.

Attachment:

- March 16, 2022 design team meeting slides from Stimson Landscape Architects

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Cold Brook

Monthly Meeting
03.16.2022



Site Plan

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Site Plan - ADA Path

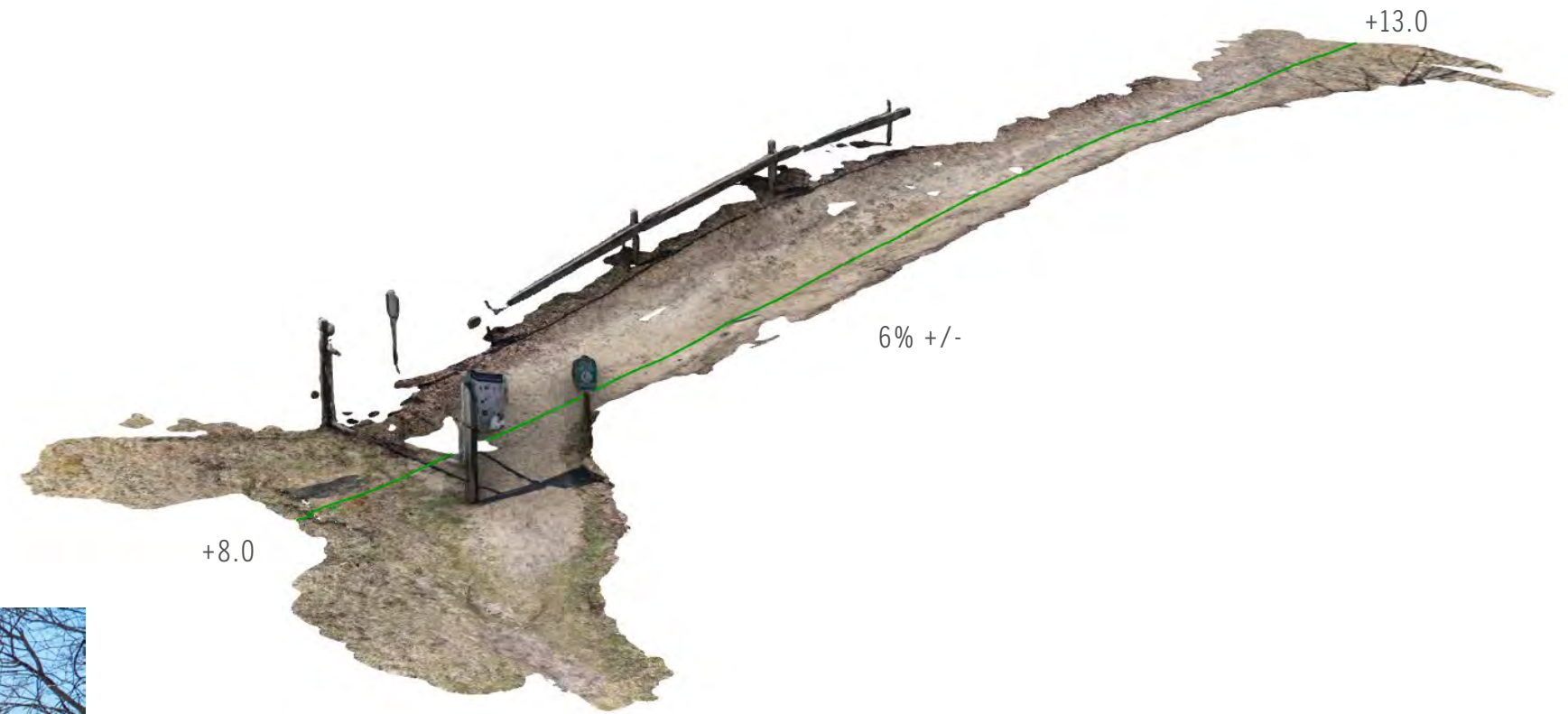
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North Parking Conditions

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North Parking Conditions

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Overlook

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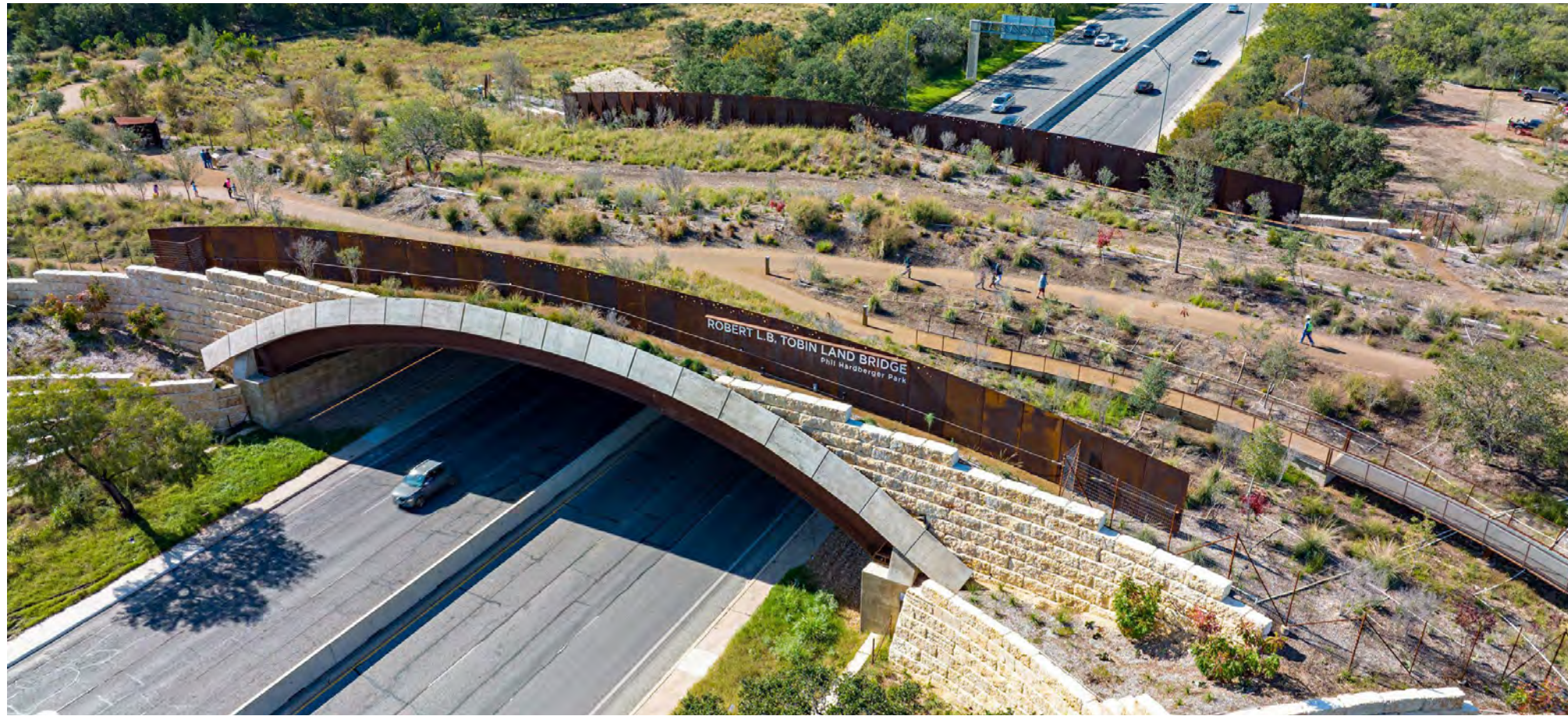
OPTION 1: CURRENT GRADING



OPTION 2: EXTENDED GRADING



Overlook Options



Outlook Precedents

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Bench Locations

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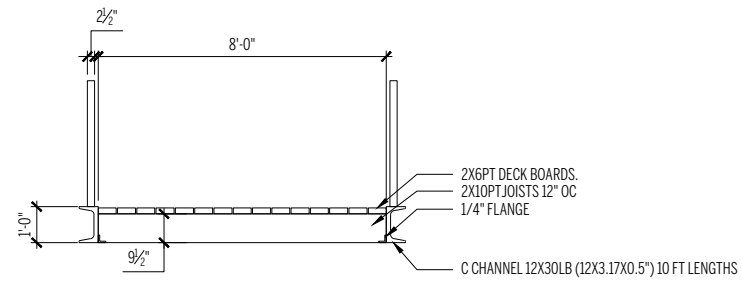
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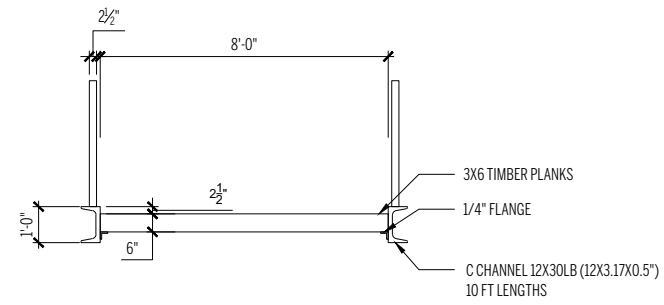
South West Proposed Parking Conditions

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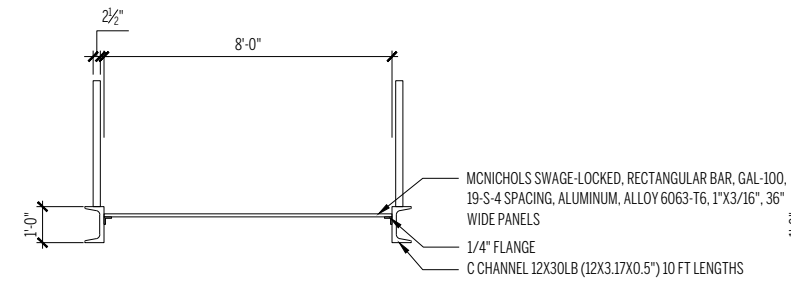
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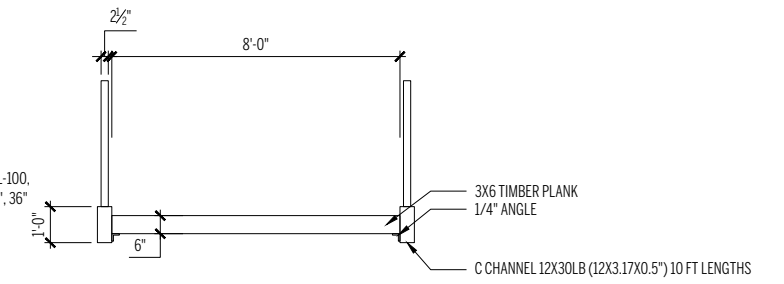
OPTION 1: PANEL DECK



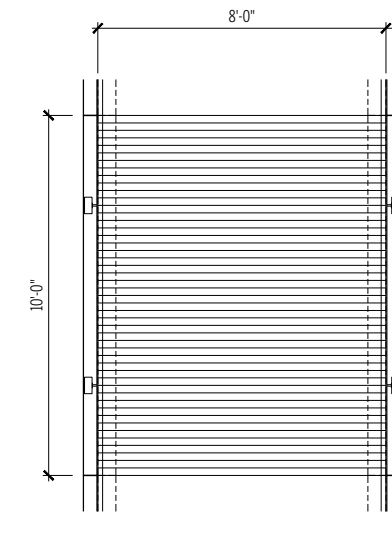
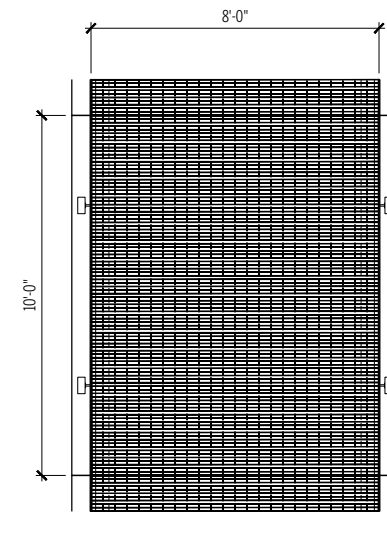
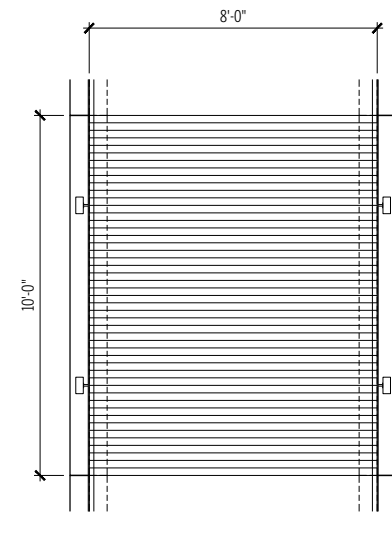
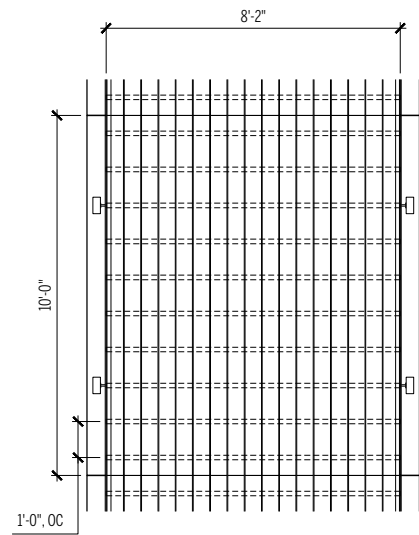
OPTION 2: TIMBER DECK



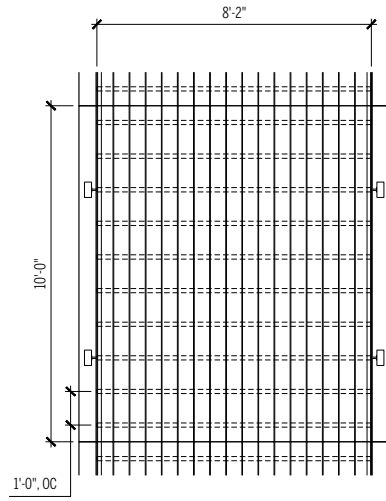
OPTION 3: GRATE PANELS



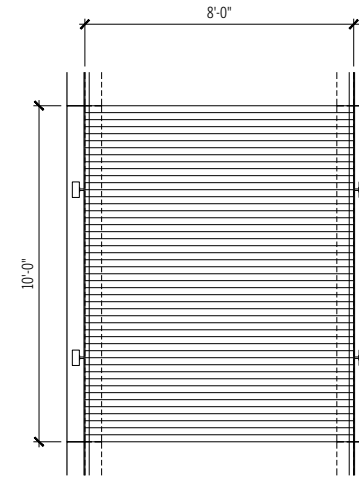
OPTION 4: PARALLAM



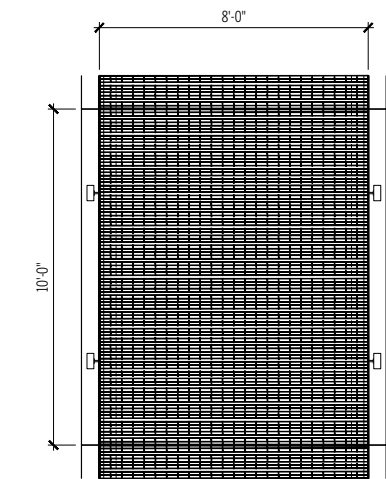
Module Crossing Section & Plan



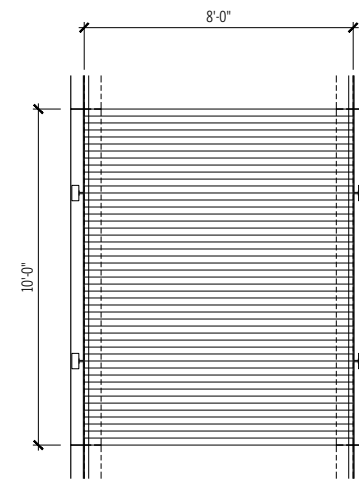
Option 1 - Panel Deck			
Item	Qty	Unit Cost	Total
Beam			
C Channel beam (10')	2	\$ 500.00	\$ 1,000.00
Floor			
Deckboard (2x6, 10' L, 1/4" spacing)	17	\$ 20.00	\$ 340.00
Joist (2x10, 8' L, 12" OC)	10	\$ 25.00	\$ 250.00
Screw (2 per Steel Angle (6x6, 1/4" THK, 3"L))	20	\$ 11.00	\$ 220.00
Guardrail			
Guardrail Post (4x6 PT, 42" H)	4	\$ 200.00	\$ 800.00
Steel Angle (6x6, 1/4" THK, 4"L)	8	\$ 14.00	\$ 112.00
Rail (1 1/2 tube, 10' L)	8	\$ 8.00	\$ 64.00
Mesh (3' H, 10' L)	2	\$ 30.00	\$ 60.00
Labor			
30% of material cost	1	\$ 850.00	\$ 850.00
TOTAL			\$ 3,696.00
Per SF			\$ 46.20



Option 2 - Timber Deck			
Item	Qty	Unit Cost	Total
Beam			
C Channel beam (10')	2	\$ 500.00	\$ 1,000.00
Floor			
Deckboard (3x6 timber plank, 8' L)	48	\$ 20.00	\$ 960.00
Steel Angle (6x6, 1/4" THK, 10' L)	2	\$ 440.00	\$ 880.00
Guardrail			
Guardrail Post (4x6 PT, 42" H)	4	\$ 200.00	\$ 800.00
Steel Angle (6x6, 1/4" THK, 4"L)	8	\$ 14.00	\$ 112.00
Rail (1 1/2 tube, 10' L)	8	\$ 8.00	\$ 64.00
Mesh (3' H, 10' L)	2	\$ 30.00	\$ 60.00
Labor			
30% of material cost	1	\$ 1,160.00	\$ 1,160.00
TOTAL			\$ 5,036.00
Per SF			\$ 62.95



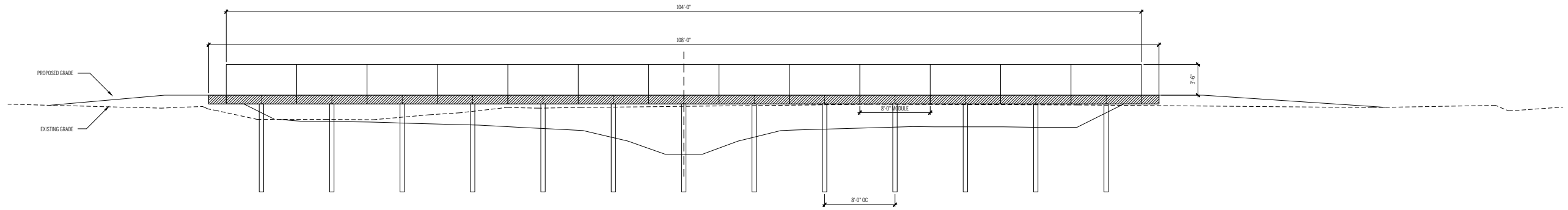
Option 3 - Grate Panels			
Item	Qty	Unit Cost	Total
Beam			
C Channel beam (10')	2	\$ 500.00	\$ 1,000.00
Floor			
Ohio Grating Wheels n' Heels 7 x 3/16 33-WH-4 Grade 50 Carbon Steel Galvanized	1	\$ 8,000.00	\$ 8,000.00
Steel Angle (6x6, 1/4" THK, 6" L)	8	\$ 22.00	\$ 176.00
Guardrail			
Guardrail Post (4x6 PT, 42" H)	4	\$ 200.00	\$ 800.00
Steel Angle (6x6, 1/4" THK, 4"L)	8	\$ 14.00	\$ 112.00
Rail (1 1/2 tube, 10' L)	8	\$ 8.00	\$ 64.00
Mesh (3' H, 10' L)	2	\$ 30.00	\$ 60.00
Labor			
20% of material cost	1	\$ 2,040.00	\$ 2,040.00
TOTAL			\$ 12,252.00
Per SF			\$ 153.15



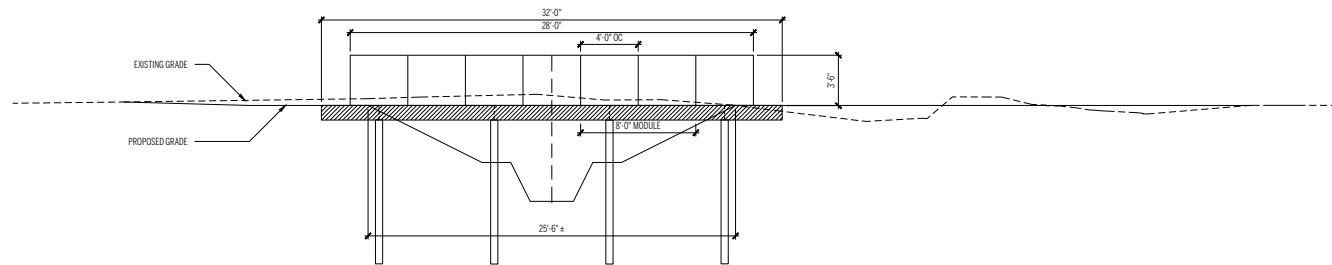
Option 4 - Parallam			
Item	Qty	Unit Cost	Total
Beam			
Parallam plus PSL (311)	2	\$ 347.50	\$ 695.00
Floor			
Deckboard (3x6 timber plank, 10' L)	48	\$ 20.00	\$ 960.00
Steel Angle (6x6, 1/4" THK, 10' L)	2	\$ 440.00	\$ 880.00
Guardrail			
Guardrail Post (4x6 PT, 42" H)	4	\$ 200.00	\$ 800.00
Steel Angle (6x6, 1/4" THK, 4"L)	8	\$ 14.00	\$ 112.00
Rail (1 1/2 tube, 10' L)	8	\$ 8.00	\$ 64.00
Mesh (3' H, 10' L)	2	\$ 30.00	\$ 60.00
Labor			
30% of material cost	1	\$ 1,070.00	\$ 1,070.00
TOTAL			\$ 4,641.00
Per SF			\$ 58.01

Module Unit Cost Analysis

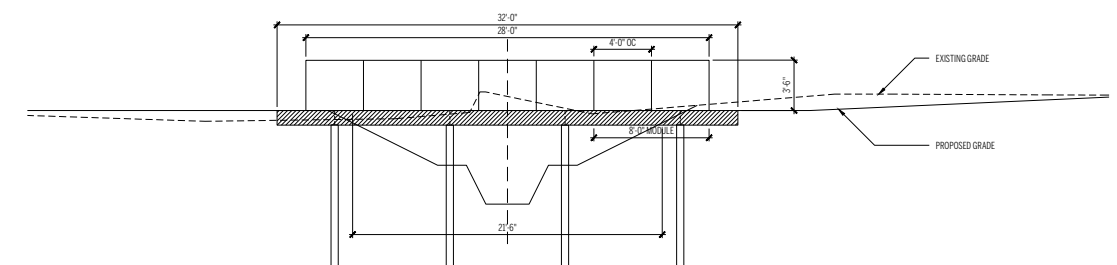
LONG BOARDWALK



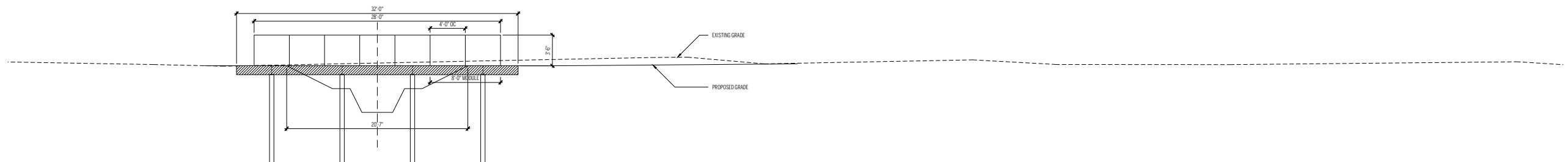
ADA CROSSING 1



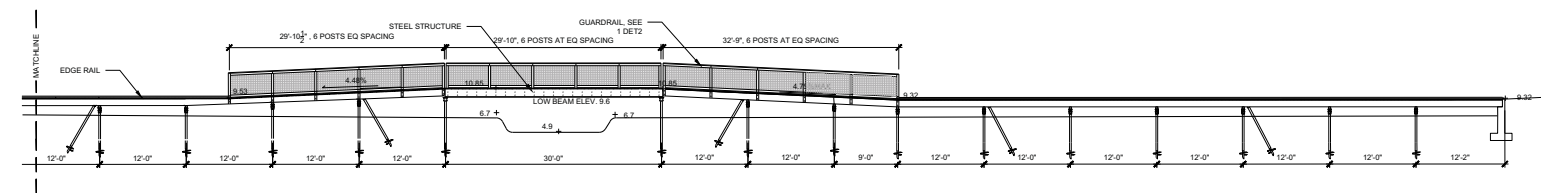
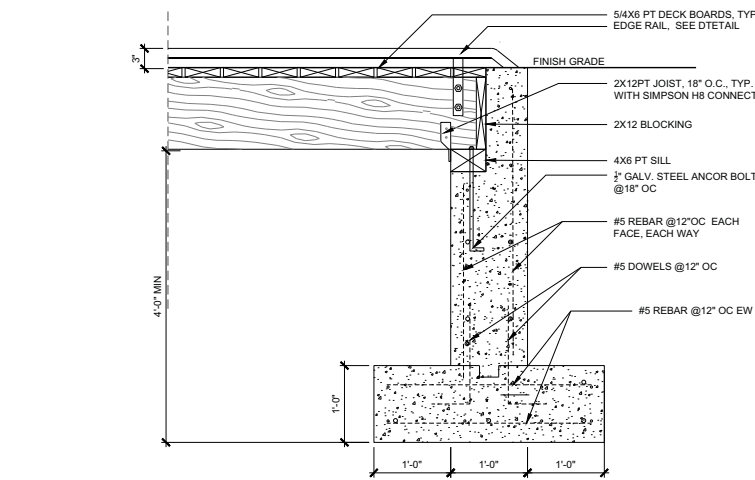
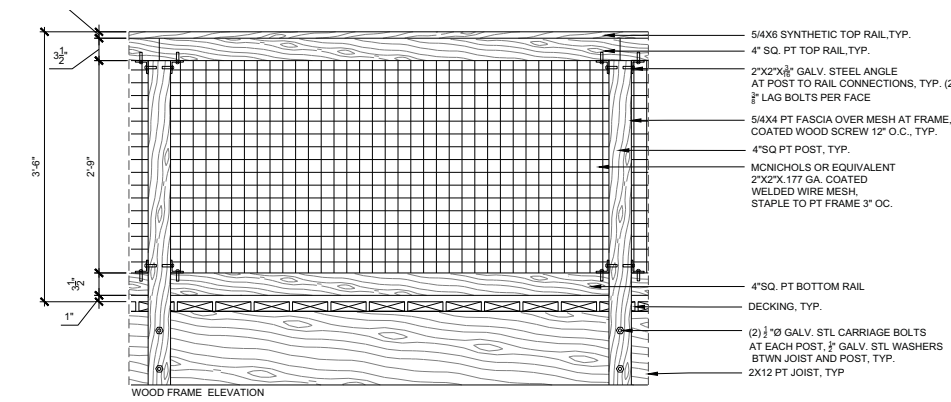
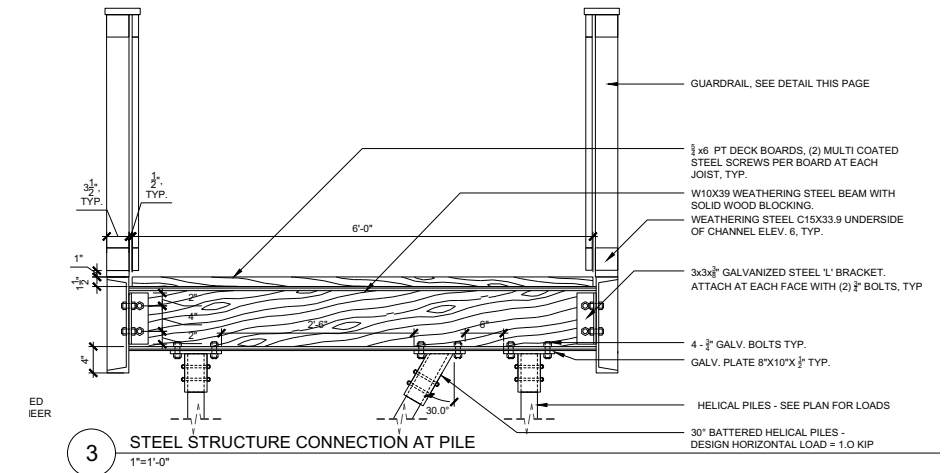
ADA CROSSING 2



CROSSING 3



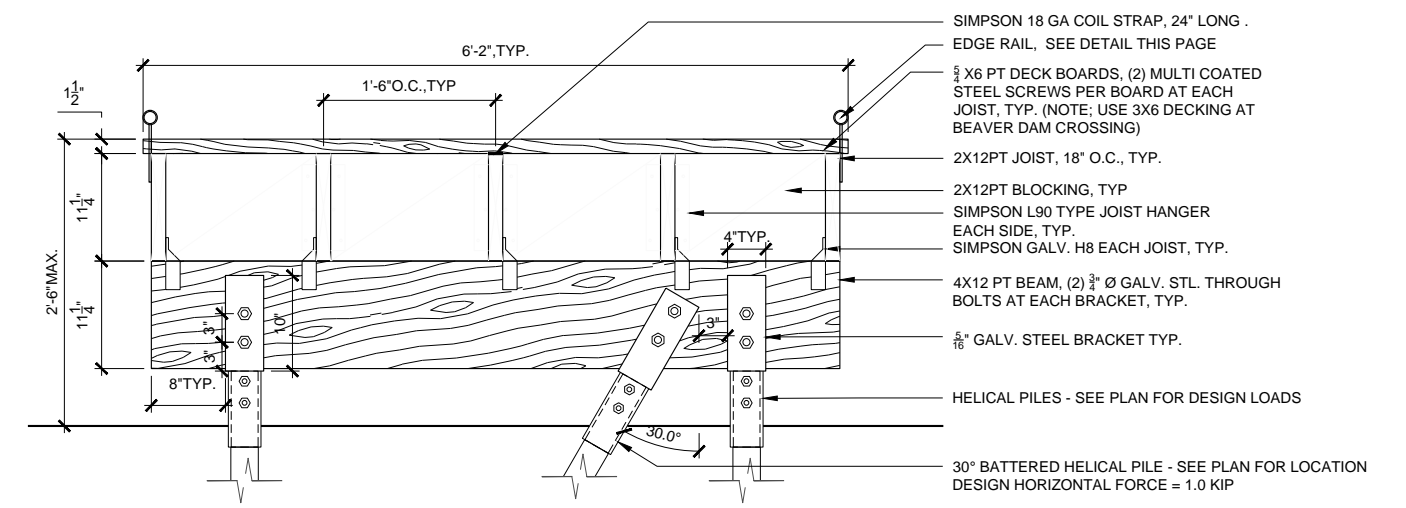
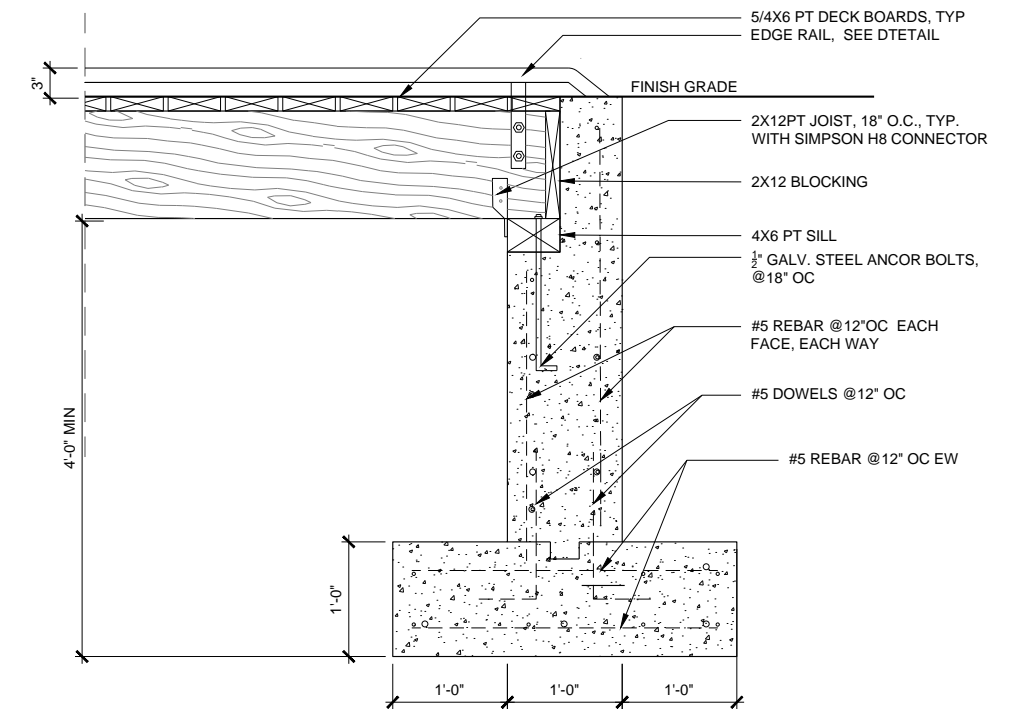
Crossing Elevations



Coonamessett - Boardwalk/Crossing

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Foothills - Iron Rail Crossings

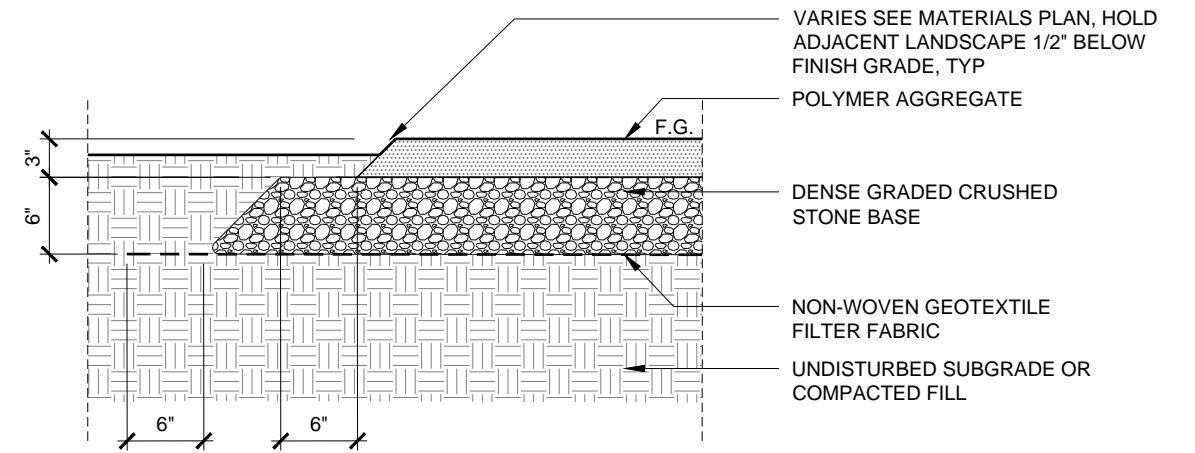
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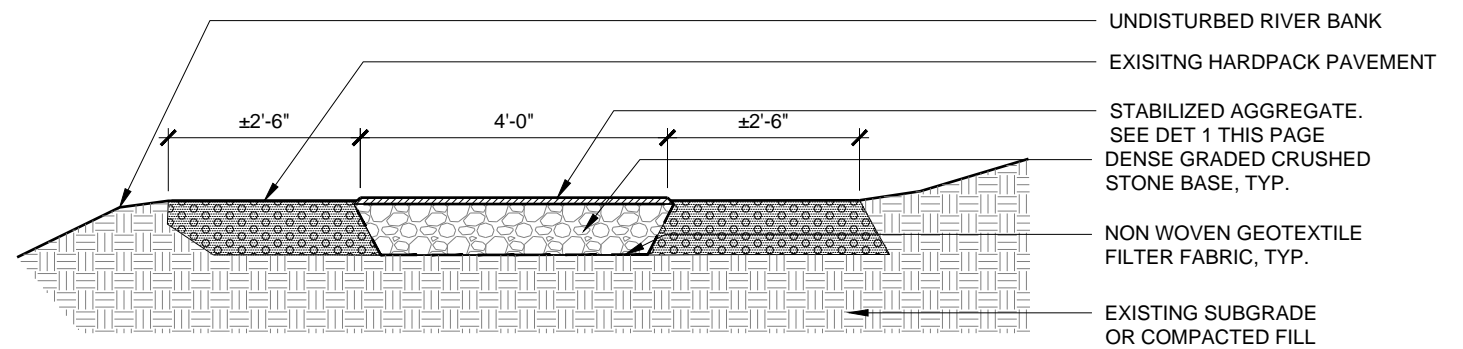
Foothills - Wood Rail Crossings

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1 STABILIZED AGGREGATE PAVEMENT
1" = 1'-0"



6 GATEWAY RING ROAD
1/2" = 1'-0"

Coonamessett - ADA Path