PUBLIC NOTICE

Published: May 6, 2026
Expires: June 4, 2026

USACE District: New England District
Permit Application Number: NAE-2024-00565

Commander, U.S. Coast Guard Northeast District
USCG Public Notice: 219-26

TO WHOM IT MAY CONCERN: The New England District of the U.S. Army Corps of Engineers (Corps) has received an application for a Department of the Army permit pursuant to Section 404 of the Clean Water Act (33 U.S.C. §1344), and the U.S. Coast Guard (USCG) Northeast District has received an application for the approval of location and plans for the replacement of a bridge over a navigable waterway of the United States pursuant to the General Bridge Act of 1946, as amended (33 U.S.C. § § 525-533) and Section 9 of the Rivers and Harbors Act of 1899 (33 U.S.C. § § 401, 502). The purpose of this public notice is to solicit comments from the public regarding the work described below:

APPLICANT: Courtney Walker
Massachusetts Department of Transportation
10 Park Plaza, Room 7360
Boston, MA 02116

AGENT: Ken Deshais
Tetra Tech
100 Nickerson Road
Suite 200
Marlborough, MA 01752

Further, the Corps has received an application from the Massachusetts Department of Transportation (MassDOT) for permission pursuant to Section 14 of the Rivers and Harbors Act of 1899, 33 U.S.C. 408 (Section 408) for certain work at or near the Cape Cod Canal Federal Navigation Project, as described in this public notice and shown on attached plans. The purpose of this public notice is to elicit comments from the public, government, and marine community regarding the proposed action.

BRIDGE, WATERWAY AND LOCATION: Sagamore Bridge across the Cape Cod Canal, mile 4.55, in Bourne, Barnstable County, Massachusetts.

CHARACTER OF WORK: This project entails the replacement of the Sagamore Bridge with a fixed structure of an identical horizontal clearance and higher vertical clearance. The applicant proposes to replace the deteriorating and functionally obsolete fixed-span, steel through arch bridge with a twin, fixed-span, network-tied arch bridge built to current highway standards. Each span will provide two travel lanes, an auxiliary lane for merging and exiting traffic, and left and right shoulders. The eastbound span will provide a bidirectional shared-use bicycle and pedestrian path, fully separated from traffic by a protective barrier.

Temporary support structures will be installed for construction purposes, including the following: cofferdams constructed of sheeting around the proposed new bridge pier locations; containment cells constructed of sheeting around the demolition zone of the existing bridge piers; sheeting along the approximate high tide line to create upland work areas; sheeting below the high tide line to create a bulkhead for contractor use; docks constructed of sheeting and fill for mooring construction barges; pipe pile-supported trestles to support construction and demolition of the new and existing bridge piers, respectively; and pile-supported dolphins to assist with construction vessel mooring. These temporary structures will be positioned near the shoreline and outside of the channel to not hinder navigation.

The existing bridge's superstructure and piers will be fully removed after the eastbound span is constructed and traffic has been shifted to that span. The westbound span will be constructed after demolition of the existing bridge is complete.

MINIMUM NAVIGATIONAL CLEARANCES: The replacement bridge will have clearances as described in the table below. The horizontal clearance is identical to the existing bridge, and the vertical clearance is higher than the existing bridge. The vertical clearance is from low member elevation to mean high water.

	Vertical	Horizontal
Existing	**135 feet above Mean High Water**	**500-foot navigable channel**
Proposed	**138.3 feet above Mean High Water**	**500-foot navigable channel**

Datum: Horizontal NAD83, Vertical NAVD88

ENVIRONMENTAL CONSIDERATIONS:
The Federal Highway Administration (FHWA) is the lead Federal agency for satisfying the requirements of the National Environmental Policy Act (NEPA), and a Draft Environmental Impact Statement was issued by the FHWA on November 21, 2025. The Corps and the U.S. Coast Guard are cooperating agencies on the Environmental Impact Statement. The U.S. Coast Guard concurs that the proposed action will have a significant impact for the purposes of NEPA for the project. Documents are available for review online at Environmental Impact Statement (EIS) Database|USEPA.

The applicant applied for a water quality certification from the Massachusetts Department of Environmental Protection for this project on February 23, 2026, in accordance with Section 401 of the Clean Water Act, as amended. The Corps authority for this project falls under Section 404 of the Clean Water Act, and an application for an Individual Permit is under review. A Section 408 permit application is pending Corps review.

The applicant has made a determination that the project is consistent with Massachusetts' coastal zone management program, and Massachusetts' Office of Coastal Zone Management is anticipated to concur.

The bridge is located in the floodplain. The 100-year flood elevation is 14.0 feet. The elevation of the low steel member of the navigation span is 142.38 feet. Elevations are referenced to NAVD 88 datum. The project will involve the placement of 13,100 cubic yards of temporary and permanent fill material below mean high water during construction of the bridge and approaches.

Proposed Work: The applicant requests authorization to permanently discharge fill material within 87,500 square feet below the High Tide Line (HTL) of the Cape Cod Canal associated with the replacement of the Sagamore Bridge. Permanent discharges of fill are associated with the construction of two bridge support piers and associated rip-rap pier protection. Up to 61,500 cubic yards of material excavated from the canal during construction is proposed to be disposed of at either the Cape Cod Bay Open-Water Disposal Site, in accordance with the requirements of Ocean Dumping Regulations (40 CFR Parts 227 and 228), or the Springhill Beach Nearshore Disposal Site, if the material meets established acceptance criteria of greater than 90% sand based on grain size analysis and that all contaminants are below MCP RCS-1 concentrations and based on Similar Soils thresholds. Any excavated material determined not suitable for ocean disposal is proposed to be disposed either as upland reuse within the project area in accordance with MassDEP COMM-94-007, off-site beneficial reuse in accordance with MassDEP's Similar Soils Provision Guidance (WSC #-13-500), reuse or disposal at an in-state landfill in accordance with MassDEP's COMM-97-001: Reuse and Disposal of Contaminated Soils at Massachusetts Landfills, upland disposal offsite at an out-of-state landfill facility, or an artificial reef site established by the Massachusetts Division of Marine Fisheries. All dredged material will be sampled for chemical and physical parameters at a frequency that meets the acceptance criteria of the intended facility. The project also proposes temporary fills within 52,800 square feet below HTL associated with temporary sheet pile bulkhead work areas, four temporary solid fill piers for construction barge docking, containment cells, and temporary rip-rap scour protection at the base of temporary work trestles.

Avoidance and Minimization: The applicant has provided the following information in support of efforts to avoid and/or minimize impacts to the aquatic environment: Best Management Practices (BMPs) will be implemented to minimize turbidity, including conducting construction work behind cofferdams, and demolition of the existing bridge

within containment cells. Wetland impacts have been avoided completely. All temporary impacts to waters of the U.S. will be restored following construction.

Compensatory Mitigation: At this time, the Corps expects any compensatory mitigation for unavoidable losses to the aquatic environment will be offset by the purchase of credits from the Massachusetts In-lieu fee (ILF) Program, but we may consider a revised proposal from MassDOT to incorporate artificial reef construction as part of the mitigation.

Cultural Resources:
The Federal Highway Administration (FHWA) is the lead Federal agency responsible for Section 106 consultation for the proposed action and a Programmatic Agreement is being finalized among FHWA, the Massachusetts State Historic Preservation Office (SHPO), the Advisory Council on Historic Preservation, the Corps, and MassDOT. The Corps is a signatory to the Programmatic Agreement.

The District Engineer's effect determination will be based upon the Programmatic Agreement, which gives full consideration to the proposed undertaking's potential direct and indirect effects on historic properties within the Corps-identified permit area.

Endangered Species: The Corps has performed an initial review of the application, the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC), National Marine Fisheries Service (NMFS) Greater Atlantic Regional Fisheries Office (GARFO) Section 7 Mapper, and the NMFS Critical Habitat Mapper to determine if any threatened, endangered, proposed, or candidate species, as well as the proposed and final designated critical habitat may occur in the vicinity of the proposed project. Based on this initial review, the Corps has made a preliminary determination that the proposed project may affect species and critical habitat listed below. No other ESA-listed species or critical habitat will be affected by the proposed action.

Common Name	**Scientific Name**	**Federal Status**
Northern long-eared bat	*Myotis septentrionalis*	Endangered
Tricolored bat	*Perimyotis subflavus*	Proposed endangered
Monarch butterfly	*Danaus plexippus*	Proposed threatened
Sandplain gerardia	*Agalinis acuta*	Endangered
Plymouth redbelly turtle	*Pseudemys rubriventris bangsi*	Endangered
North Atlantic right whale (including critical habitat)	*Eubalaena glacialis*	Endangered
Fin whale	*Balaenoptera physalus*	Endangered
Green sea turtle	*Chelonia mydas*	Threatened
Kemp's ridley sea turtle	*Lepidochelys kempii*	Endangered
Leatherback sea turtle	*Dermochelys coriacea*	Endangered
Loggerhead sea turtle	*Caretta caretta*	Threatened

Atlantic sturgeon	*Acipenser oxrinchus*	Threatened
Shortnose sturgeon	*Acipenser brevirostrum*	Endangered

Pursuant to Section 7 ESA, any required consultation with the Service(s) will be conducted in accordance with 50 CFR part 402. The FHWA is the lead Federal agency for ESA consultation for the proposed action. Any required consultation will be captured in FHWA's final Environmental Impact Statement and adopted by USACE.

This notice serves as request to the U.S. Fish and Wildlife Service and National Marine Fisheries Service for any additional information on whether any listed or proposed to be listed endangered or threatened species or designated critical habitat may be present in the area which would be affected by the proposed activity.

Essential Fish Habitat: Pursuant to the Magnuson-Stevens Fishery Conservation and Management Act 1996, the Corps reviewed the project area, examined information provided by the applicant, and consulted available species information.

The FHWA is the lead Federal agency for EFH consultation for the proposed action. Any required consultation will be completed by the FHWA. A separate EFH consultation package was sent to the National Marine Fisheries Service (NMFS). The Corps will not make a permit decision until the consultation process is complete.

Note: This public notice is being issued based on information furnished by the applicant. This information has not been verified or evaluated to ensure compliance with laws and regulation governing the regulatory program. The geographic extent of aquatic resources within the proposed project area that either are, or are presumed to be, within the Corps jurisdiction has not been verified by Corps personnel.

Evaluation: The decision whether to issue a 404 permit will be based on an evaluation of the probable impact including cumulative impacts of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefits, which reasonably may be expected to accrue from the proposal, must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the proposal will be considered including cumulative impacts thereof; among these are conservation, economics, esthetics, general environmental concerns, wetlands, historical properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food, and fiber production, mineral needs, considerations of property ownership, and in general, the needs and welfare of the people. Evaluation of the impact of the activity on the public interest will also include application of the guidelines promulgated by the Administrator, EPA, under authority of Section 404(b) of the Clean Water Act or the criteria established under authority of Section 102(a) of the Marine Protection Research and Sanctuaries Act of 1972. A permit will be granted unless its issuance is found to be contrary to the public interest.

SOLICITATION OF COMMENTS:
The Corps and the USCG are soliciting comments from the public; Federal, State, and local agencies and officials; Indian Tribes; and other Interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered to determine whether to issue, modify, condition, or deny a permit for this proposal. To make this determination, comments are used to assess impacts to endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment (EA) and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act (NEPA). Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

The New England District will receive written comments on the proposed work, as outlined above, until June 4, 2026. Comments should be submitted electronically either via the Regulatory Request System (RRS) at https://rrs.usace.army.mil/rrs or to cenae-r-tu@usace.army.mil. Alternatively, you may submit comments in writing to the Commander, U.S. Army Corps of Engineers, New England District, Attention: cenae-r-tu@usace.army.mil. Please refer to the permit application number in your comments.

Any person may request, in writing, within the comment period specified in this notice, that a public hearing be held to consider the application. Requests for public hearings shall state, with particularity, the reasons for holding a public hearing. Requests for a public hearing will be granted, unless the District Engineer determines that the issues raised are insubstantial or there is otherwise no valid interest to be served by a hearing.

The USCG NE District requests comments from mariners on the proposed navigation clearances, placement of a bridge protective system and other navigational safety issues, including need for clearance gauges and the extent of nighttime navigation to determine the need for bridge lighting. Interested parties are requested to express their views, in writing, on the proposed bridge project including its possible impacts to navigation. The USCG will forward comments of an environmental nature such as those regarding wildlife refuges, public parks, historic sites, wetlands, floodplain issues, air quality, water quality, etc. to the lead federal agency. Comments will be received for the record at SMB-D1Boston-Bridges-PublicNotices@uscg.mil through June 4, 2026.

Map of location and plans attached.

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION

PLAN AND PROFILE OF

BRIDGE REPLACEMENT, B-17-005, (ARF) (SAGAMORE BRIDGE), US 6 OVER THE CAPE COD CANAL, SANDWICH ROAD (ROUTE 6A) AND MCR/MBTA RAILROAD, INCLUDES REPLACEMENT OF B-17-027 ROUTE 3 OVER US 6

IN THE TOWN OF

BOURNE

BARNSTABLE COUNTY

FEDERAL AID PROJECT NO. ######

Sagamore Bridge
Title Sheet
Application for USACE Individual
Section 404 Permit
and Section 401
Water Quality Certification
04/14/2026
Sheet 1

DISTRICT	COUNTY	SAGAMORE BRIDGE INTERCHANGES			
STATE	FED. AID PROJ. NO.		SHEET NO.	TOTAL SHEETS	
			1	20	
PROJECT FILE NO. 608020					
TITLE SHEET					

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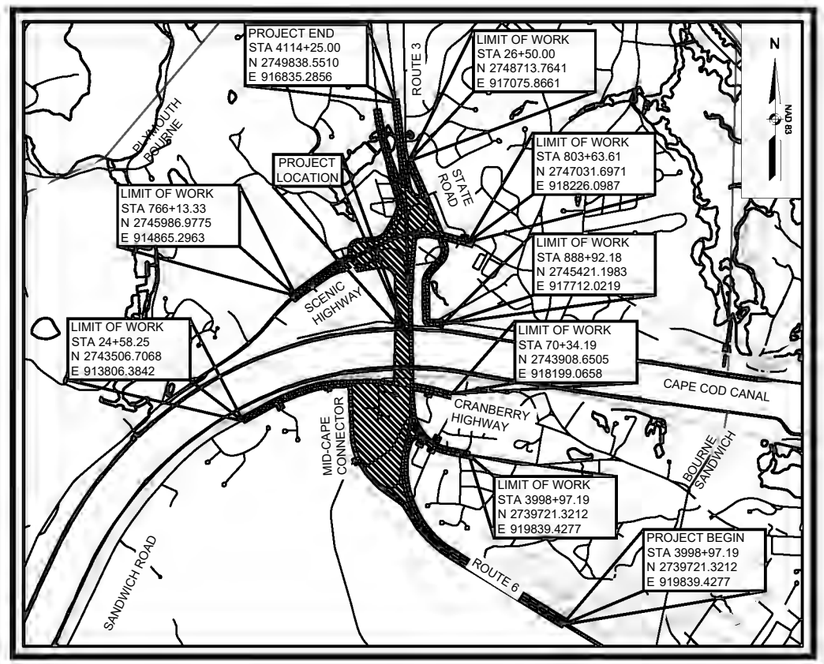

LOCUS MAP

0 1500 3000 4500 6000

SCALE: 1" = 1500'

PROJECT LIMITS

LENGTH OF PROJECT = 11,114.33 FEET = 2.105 MILES

NOTES:

1. PRELIMINARY PLANS USED TO OBTAIN U.S. ARMY CORPS OF ENGINEERS' SECTION 404 PERMIT APPROVAL AND MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION 401 WATER QUALITY CERTIFICATION

APPLICATION FOR USACE INDIVIDUAL SECTION 404 PERMIT AND SECTION 401 WATER QUALITY CERTIFICATION

04/14/2026

DATE	DESCRIPTION	REV #

MassDOT Massachusetts Department of Transportation Highway Division

APPROVED

CHIEF ENGINEER _____ DATE _____

Sagamore Bridge
Legend
Application for USACE Individual Section 404 Permit and Section 401 Water Quality Certification
04/14/2026
Sheet 2

SAGAMORE BRIDGE INTERCHANGES
STATE | FED. AID PROJ. NO. | SHEET NO. | TOTAL SHEETS
PROJECT FILE NO. 608020
LEGEND

GENERAL SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
JB	JB	JERSEY BARRIER
		BENCHMARK
CB		CATCH BASIN OR DROP INLIT
		CATCH BASIN CURB INLET
FP	FP	FLAG POLE
GP	GP	GAS PUMP
MB	MB	MAIL BOX
		POST SQUARE
		POST CIRCULAR
WELL	WELL	WELL
EHH	EHH #	ELECTRIC HANDHOLE
		FENCE GATE POST
GG	GG	GAS GATE
BHL #	BHL #	BORING HOLE
MW #	MW #	MONITORING WELL
TP #	TP #	TEST PIT
		HYDRANT
		HIGHWAY LIGHT POLE
CO.BD.		COUNTY BOUND
		GPS POINT
C	C	CABLE MANHOLE
D	D	DRAINAGE MANHOLE
E	E	ELECTRIC MANHOLE
G	G	GAS MANHOLE
M	M	MISC MANHOLE
S	S	SEWER MANHOLE
T	T	TELEPHONE MANHOLE
W	W	WATER MANHOLE
MHB	MHB	MASSACHUSETTS HIGHWAY BOUND
MON		MONUMENT
SB		STONE BOUND
TB		TOWN OR CITY BOUND
		TRAVERSE OR TRIANGULATION STATION
TPL or GUY	TPL or GUY	TROLLEY POLE OR GUY POLE
HTP		TRANSMISSION POLE
UFB	UFB	UTILITY POLE W/ FIREBOX
UPDL	UPDL	UTILITY POLE WITH DOUBLE LIGHT
ULT	ULT	UTILITY POLE W / 1 LIGHT
UPL	UPL	UTILITY POLE
		BUSH
SIZE & TYPE		TREE
		STUMP
		SWAMP / MARSH
WG	WG	WATER GATE
PM	PM	PARKING METER
		OVERHEAD CABLE/WIRE
		CURBING
100 / 90	100	CONTOURS (ON-THE-GROUND SURVEY DATA)
100 / 90	100	CONTOURS (PHOTOGRAMMETRIC DATA)
		UNDERGROUND DRAIN PIPE (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND ELECTRIC DUCT (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND GAS MAIN (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND SEWER MAIN (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND TELEPHONE DUCT (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND WATER MAIN (DOUBLE LINE 24 INCH AND OVER)
		BALANCED STONE WALL
		GUARD RAIL - STEEL POSTS
		GUARD RAIL - WOOD POSTS
		GUARD RAIL - DOUBLE FACE - STEEL POSTS
		GUARD RAIL - DOUBLE FACE - WOOD POSTS
		CHAIN LINK OR METAL FENCE
		WOOD FENCE
		SEDIMENT CONTROL BARRIER
		TREE LINE
		SAWCUT LINE
		TOP OR BOTTOM OF SLOPE
		LIMIT OF EDGE OF PAVEMENT OR COLD PLANE AND OVERLAY
		BANK OF RIVER OR STREAM
		EDGE OF FLAGGED WETLAND
		200 FT RIVERFRONT AREA
		EXTREME LOW WATER
		MEAN LOWER LOW WATER
		MEAN LOW WATER
		MEAN HIGH WATER
		HIGH TIDE LINE
		100 YEAR FLOODPLAIN

GENERAL SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
		TOP OF RIPRAP
		TOE OF RIPRAP
		480' NAVIGATION CHANNEL
		LIMIT OF 96' NAVIGATION CHANNEL SIDE SLOPE
		STATE HIGHWAY LAYOUT
		TOWN OR CITY LAYOUT
		COUNTY LAYOUT
		RAILROAD SIDELINE
		TOWN OR CITY BOUNDARY LINE
		PROPERTY LINE OR APPROXIMATE PROPERTY LINE
		EASEMENT
		DRAINAGE BASIN
		LIMIT OF DISTURBANCE
		SCM MAINTENANCE PATH

TRAFFIC SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
1	1	CONTROLLER PHASE ACTUATED
		TRAFFIC SIGNAL HEAD (SIZE AS NOTED)
		WIRE LOOP DETECTOR (6' x 6' TYP UNLESS OTHERWISE SPECIFIED)
		VIDEO DETECTION CAMERA
		MICROWAVE DETECTOR
		PEDESTRIAN PUSH BUTTON, SIGN (DIRECTIONAL ARROW AS SHOWN) AND SADDLE
	*	EMERGENCY PREEMPTION CONFIRMATION STROBE LIGHT
		VEHICULAR SIGNAL HEAD
		VEHICULAR SIGNAL HEAD, OPTICALLY PROGRAMMED
		FLASHING BEACON
		PEDESTRIAN SIGNAL HEAD, (TYPE AS NOTED OR AS SPECIFIED)
RRSG	RRSG	RAILROAD SIGNAL
		SIGNAL POST AND BASE (ALPHA-NUMERIC DESIGNATION NOTED)
	20'	MAST ARM, SHAFT AND BASE (ARM LENGTH AS NOTED)
		HIGH MAST POLE OR TOWER
		SIGN AND POST
		SIGN AND POST (2 POSTS)
	20'	MAST ARM WITH LUMINAIRE
		OPTICAL PRE-EMPTION DETECTOR
		CONTROL CABINET, GROUND MOUNTED
		CONTROL CABINET, POLE MOUNTED
		FLASHING BEACON CONTROL AND METER PEDESTAL
		PULL BOX 12"x12" (OR AS NOTED)
		ELECTRIC HANDHOLE 12"x24" (OR AS NOTED)
		TRAFFIC SIGNAL CONDUIT

ELEVATION TABLE

SYMBOL	EXISTING	ELEVATION
	EXTREME LOW WATER	-6.79'
	MEAN LOWER LOW WATER	-4.79'
	MEAN LOW WATER	-4.50'
	MEAN HIGH WATER	3.00'
	HIGH TIDE LINE	5.40'
	100 YEAR FLOODPLAIN	14.00'

LIGHTING SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
		HIGHWAY LIGHT POLE
		SHARED USE PATH (SUP) LIGHT POLE
		UNDERPASS LUMINAIRE
		ELECTRIC HANDHOLE 12"X24"
		ELECTRIC HANDHLOLE 24"X24"
	JB	ELECTRICAL NEMA 4X JUNCTION BOX WALL MOUNTED 12"X12"X6" (OR AS NOTED)
	JBL	ELECTRICAL NEMA 4X JUNCTION BOX WALL MOUNTED 24"X24"X10" (OR AS NOTED)
		LOAD CENTER ASSEMBLY
		LIGHTING CONDUIT 2" PVC NM
		LIGHTING CONDUIT 3" PVC NM -DOUBLE

PAVEMENT MARKINGS SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
		PAVEMENT ARROW - WHITE
ONLY	ONLY	LEGEND "ONLY" - WHITE
	SL	STOP LINE - 12" WIDTH - WHITE
	CW	CROSSWALK - 12" WIDTH - WHITE
	SWL	SOLID WHITE LINE - 6" WIDTH
	SYL	SOLID YELLOW LINE - 6" WIDTH
	BWL	BROKEN WHITE LINE - 10' LINE, 30' GAP - 6" WIDTH
	BYL	BROKEN YELLOW LINE - 10' LINE, 30' GAP - 6" WIDTH
	DWL	DOTTED WHITE LINE - 3" LINE, 9' GAP - 6" WIDTH
	DYL	DOTTED YELLOW LINE - 3" LINE, 9' GAP - 6" WIDTH
	DWLEx	DOTTED WHITE LINE EXTENSION - 2' LINE, 6' GAP - 6" WIDTH
	DYLEx	DOTTED YELLOW LINE EXTENSION - 2' LINE, 6' GAP - 6" WIDTH
	DBWL	DOUBLE WHITE LINE - 2-6" WIDTH LINES - 10" O.C.
	DBYL	DOUBLE YELLOW LINE - 2-6" WIDTH LINES - 10" O.C.

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Sagamore Bridge
Abbreviations
Application for USACE Individual
Section 404 Permit
and Section 401
Water Quality Certification
04/14/2026
Sheet 3

SAGAMORE BRIDGE INTERCHANGES
STATE — ROADWAY PROJ. NO. — SHEET NO. — TOTAL SHEETS
PROJECT FILE NO. 608020
ABBREVIATIONS

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ABBREVIATIONS

GENERAL

∠PNT	ANGLE POINT
A.C.	ASPHALT CONCRETE
AADT	ANNUAL AVERAGE DAILY TRAFFIC
ABAN	ABANDON
ACCEL	ACCELERATION
ACCM PIPE	ASPHALT COATED CORRUGATED METAL PIPE
AD	AREA DRAIN
A.D.	ALGEBRAIC DIFFERENCE IN GRADES
ADJ	ADJUST
ALT	ALTERATION
APPROX.	APPROXIMATE
ATC	ADVANCED TRAFFIC CONTROLLER
BC	BOTTOM OF CURB
BD.	BOUND
BIT.	BITUMINOUS
BL	BASELINE
BLDG	BUILDING
BM	BENCHMARK
BN	BOURNE NORTH
BO	BY OTHERS
BOS	BOTTOM OF SLOPE
BR.	BRIDGE
BS	BOURNE SOUTH
BWL	BROKEN WHITE LINE
BYL	BROKEN YELLOW LINE
CAB	CABINET
CATV	CABLE
CB	CATCH BASIN
CBCI	CATCH BASIN WITH CURB INLET
CEM CONC	CEMENT CONCRETE
CC	CENTER OF CURVE
CCM	CEMENT CONCRETE MASONRY
CCVE	CLOSED CIRCUIT VIDEO EQUIPMENT
CEM	CEMENT
CI	CAST IRON
CIP	CAST IRON PIPE
CIT	CHANGE IN TYPE
CL	CENTERLINE
CLF	CHAIN LINK FENCE
CMP	CORRUGATED METAL PIPE
CO.	COUNTY
CONC	CONCRETE
CONST	CONSTRUCTION
CONT	CONTINUOUS
CR GR	CROWN GRADE
CSP	CORRUGATED STEEL PIPE
CW	CROSSWALK
DBWL	DOUBLE WHITE LINE
DBYL	DOUBLE YELLOW LINE
D	DIRECTIONAL FACTOR
DDHV	DIRECTIONAL DESIGN HOURLY VOLUME
DECEL	DECELERATION
DF	DOUBLE FACED
DGCB	DOUBLE GRATE CATCH BASIN
DHV	DESIGN HOURLY VOLUME
DI	DROP INLET
DIR	DIRECTIONAL
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DMH	DRAINAGE MANHOLE
DSMH	DEEP SUMP MANHOLE
DW	STEADY UPRAISED HAND
DWL	DOTTED WHITE LINE
DWLEX	DOUBLE WHITE LINE EXTENSION
DWP	DETECTABLE WARNING PANEL
DWY	DRIVEWAY
DYL	DOTTED YELLOW LINE
DYLEX	DOUBLE YELLOW LINE EXTENSION
EASE	EASEMENT
EB	EASTBOUND
EC	EDGE OF CONCRETE
ELEC	ELECTRIC
ELEV	ELEVATION
EMB	EMBANKMENT
EMH	ELECTRIC MANHOLE
EOP	EDGE OF PAVEMENT
ESAL	EQUIVALENT SINGLE AXEL LOAD
ETW	EDGE OF TRAVEL WAY
EXC	EXCAVATION
EXIST(or EX)	EXISTING
F&C	FRAME AND COVER
F&G	FRAME AND GRATE
FDN.	FOUNDATION
FDP	FULL DEPTH PAVEMENT
FDW	STEADY UPRAISED HAND
FES	FLARED END SECTION
FLDSTN	FIELDSTONE
FR	FLASHING CIRCULAR RED
FRL	FLASHING RED LEFT ARROW
FRR	FLASHING RED RIGHT ARROW
FY	FLASHING CIRCULAR YELLOW
FYL	FLASHING YELLOW LEFT ARROW
FYR	FLASHING YELLOW RIGHT ARROW
G	STEADY CIRCULAR GREEN
GAR	GARAGE
GD	GROUND
GG	GAS GATE
GI	GUTTER INLET
GIP	GALVANIZED IRON PIPE
GL	STEADY GREEN LEFT ARROW
GR	STEADY GREEN RIGHT ARROW
GRAN	GRANITE
GRAV	GRAVEL
GRD	GUARD
GSL	STEADY GREEN SLASH LEFT ARROW
GSR	STEADY GREEN SLASH RIGHT ARROW
GTD	GRADE TO DRAIN
GV	STEADY GREEN VERTICAL ARROW
GW	GUY WIRE
HDPE	HIGH DENSITY POLYETHYLENE PIPE
HDW	HEADWALL
HMA	HOT MIX ASPHALT
HOR	HORIZONTAL
HP	HIGH POINT
HSD	HEADLIGHT SIGHT DISTANCE
HYD	HYDRANT
I.T.	INTERSECTION OF TANGENT
INV	INVERT
JCT	JUNCTION
K	RATIO OF DESIGN HOURLY VOLUME TO AVERAGE DAILY TRAFFIC
K	RATE OF VERTICAL CURVATURE
L	LENGTH OF CURVE
LB	LEACH BASIN
LF	LINEAR FEET
LO	LAYOUT
LOW	LIMIT OF WORK
LP	LIGHT POLE
LP	LOW POINT
LSA	LANDSCAPING AREA
LT	LEFT
M&O	MILL AND OVERLAY
MAX	MAXIMUM
MB	MAILBOX
MH	MANHOLE
MHB	MASSACHUSETTS HIGHWAY BOUND
MIN	MINIMUM
MKG	MARKING
ML	MAINLINE
MOD	MODIFIED
MTD	MOUNTED
MW	MONITORING WELL
NB	NORTHBOUND
NIC	NOT IN CONTRACT
NO.	NUMBER
NTS	NOT TO SCALE
OCS	OUTLET CONTROL STRUCTURE
O.C.	ON CENTER
OHW	OVERHEAD WIRE
OL	OVERLAP
PB	PULL BOX
PC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVATURE
PCR	PEDESTRIAN CURB RAMP
PED	PEDESTRIAN
PERM	PERMANENT
PGL	PROFILE GRADE LINE
PI	POINT OF INTERSECTION
PL	PROPERTY LINE
PNT	POINT
POC	POINT ON CURVE
POT	POINT ON TANGENT
PRC	POINT OF REVERSE CURVATURE
PROJ	PROJECT
PROP	PROPOSED
PSB	PLANTABLE SOIL BORROW
PT	POINT OF TANGENCY
PTZ	PAN, TILT, ZOOM
PVC	POLYVINYLCHLORIDE PIPE
PVC	POINT OF VERTICAL CURVATURE
PVCC	POINT OF VERTICAL COMPUND CURVE
PVI	POINT OF VERTICAL INTERSECTION
PVMT	PAVEMENT
PVRC	POINT OF VERTICAL REVERSE CURVE
PVT	POINT OF VERTICAL TANGENCY
PWW	PAVED WATERWAY
QTY	QUANTITY
R	RADIUS OF CURVATURE
R	STEADY CIRCULAR RED
R&D	REMOVE AND DISPOSE
R&R	REMOVE AND RESET
R&S	REMOVE AND STACK
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
RDWY	ROADWAY
REM	REMOVE
REQ	REQUIRED
RET	RETAIN
RET WALL	RETAINING WALL
RL	STEADY RED LEFT ARROW
ROW	RIGHT OF WAY
RR	RAILROAD
RR	STEADY RED RIGHT ARROW
RRFB	RECTANGULAR RAPID FLASH BEACON
RT	RIGHT
SB	SOUTHBOUND
SC	SCUPPER
SCM	STORMWATER CONTROL MEASURE
SF	SINGLE FACED
SGE	SLOPED GRANITE EDGING
SHLD	SHOULDER
SHLO	STATE HIGHWAY LAYOUT
SL	STOP LINE
SMH	SEWER MANHOLE
SN	SAGAMORE NORTH
SS	SAGAMORE SOUTH
SSD	STOPPING SIGHT DISTANCE
ST	STREET
STA	STATION
STBD	STONE BOUND
STL	STEEL
SUP	SHARED-USE PATH
SW	SIDEWALK
SWL	SOLID WHITE LINE
SYL	SOLID YELLOW LINE
T	TANGENT DISTANCE OF CURVE
T	TRUCK PERCENTAGE
TAN	TANGENT
TC	TOP OF CURB
TEMP	TEMPORARY
TMH	TELEPHONE MANHOLE
TLO	TOWN LAYOUT
TOS	TOP OF SLOPE
TR SIG	TRAFFIC SIGNAL
TSC	TRAFFIC SIGNAL CONDUIT
TSV&B	TAPPING SLEEVE VALVE & BOX
TYP.	TYPICAL
UP	UTILITY POLE
VAR	VARIES
VC	VERTICAL CURVE
VERT	VERTICAL
VGC	VERTICAL GRANITE CURB
W	STEADY WALKING PERSON
WB	WESTBOUND
WG	WATER GATE
WIP	WROUGHT IRON PIPE
WM	WATER METER/WATER MAIN
WRF	WOOD RAIL FENCE
X-SECT	CROSS SECTION
Y	STEADY CIRCULAR YELLOW
YL	YIELD LINE
YL	STEADY YELLOW LEFT ARROW
SWPPP	STORMWATER POLLUTION PREVENTION PLAN
NPDES	NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

STATE | FED.AID PROJ. NO. | SHEET NO. | TOTAL SHEETS
PROJECT FILE NO. 608020
SAGAMORE BRIDGE INTERCHANGES
GENERAL NOTES

DRAINAGE NOTES

1. ALL EXISTING DRAINAGE STRUCTURES WITHIN PROJECT LIMITS TO BE RETAINED AT PROJECT COMPLETION WILL BE CLEANED AND/OR FLUSHED PRIOR TO ACCEPTANCE.
2. WHERE FEASIBLE, PROPOSED CATCH BASINS SHALL HAVE 4' DEEP SUMPS.
3. UNLESS SHOWN ON THE PLANS, NO EXISTING DRAINAGE SYSTEMS SHALL BE ABANDONED, MODIFIED OR REMOVED WITHOUT THE PRIOR APPROVAL OF THE ENGINEER.
4. EXISTING CORREGATED METAL PIPE WITHIN THE IMPACTED PROJECT LIMITS-SHALL BE REMOVED UNLESS OTHERWISE NOTED ON PLANS.
5. ALL SLOPES FOR DRAINAGE PIPE ARE CALCULATED FROM THE INSIDE WALLS OF DRAINAGE STRUCTURES.
6. ALL DRAINAGE STRUCTURES TO BE ABANDONED SHALL HAVE THEIR FLOOR/BASE SLAB BROKEN (FOR DRAINAGE PURPOSES), AT LEAST THE TOP 2 FEET OF THE STRUCTURE REMOVED, AND THE REMAINING STRUCTURE FILLED WITH GRAVEL. DRAIN PIPE CONNECTIONS, EXCLUDING CORRUGATED METAL PIPE CONNECTIONS, TO BE ABANDONED SHALL BE PLUGGED WITH A CEMENT CONC MASONRY PLUG.
7. ALL DRAINAGE PIPES UNDER PAVEMENT TO BE ABANDONED SHALL BE FILLED WITH CONTROLLED DENSITY FILL-EXCAVATABLE (CDF). DRAINAGE PIPES TO BE ABANDONED THAT CAN NOT BE FILLED WITH CDF SHALL BE REMOVED.
8. ALL EXISTING DROP INLET FRAMES, GRATES AND CATCH BASIN FRAMES WITHIN STATE HIGHWAY LAYOUT THAT ARE TO BE MAINTAINED DURING CONSTRUCTION SHALL BE REPLACED WITH NEW FRAMES AND GRATES THAT ARE HOOK AND LOCK BAR GRATE OR WELDED SHUT. ALL STRUCTURES TO BE ADJUSTED SHALL HAVE NEW CASTINGS THAT SHALL COMPLY WITH MASSDOT ENGINEERING AND POLICY DIRECTIVES. EXISTING MANHOLE CASTINGS WITHIN THE TRAVELED WAY SHALL BE REPLACED WITH NEW CASTING WITH BOLTED COVERS.
9. IN LOCATIONS WHERE NEW SUBDRAIN IS PROPOSED GENERALLY PARALLEL TO EXISTING SUBDRAIN THE EXISTING SUBDRAIN SHALL BE FILLED WITH CONTROLLED DENSITY FILL - EXCAVATABLE (CDF). EXISTING SUBDRAIN IS BELIEVED TO CONTAIN ASBESTOS AND DISTURBANCE TO THE SUBDRAIN OTHER THAN FILLING WITH CDF IS NOT ALLOWED EXCEPT FOR RELATED ABANDONMENT WORK AND FOR REMOVAL THAT IS REQUIRED DUE TO DIRECT CONFLICTS WITH PROPOSED WORK.
10. DB ENTITY SHALL VERIFY NO LIVE CONNECTIONS EXIST IN DRAINAGE STRUCTURES TO BE ABANDONED OR REMOVED.
11. DB ENTITY SHALL EXCAVATE TEST PITS IN AREAS OF POTENTIAL UTILITY CONFLICTS AND RELAY INFORMATION TO ENGINEER PRIOR TO COMMENCEMENT OF UTILITY WORK.
12. CASTINGS OF ALL DRAINAGE STRUCTURES TO BE REMOVED OR ABANDONED SHALL BE DISCARDED.
13. OFFSET CONES SHALL BE USED ON ALL DRAINAGE STRUCTURES ADJACENT TO BARRIER AND GUARDRAIL TO AVOID CONFLICT.

ENVIRONMENTAL NOTES

1. THE DESIGN BUILDER SHALL PROVIDE SEDIMENT CONTROLS AS SHOWN ON THE PLANS TO PREVENT SEDIMENT FROM MOVING BEYOND THE LIMITS OF DISTURBED AREAS CONSISTENT WITH PROJECT ENVIRONMENTAL PERMITS AND AS REQUIRED BY THE ENGINEER. EROSION CONTROL AND CONTAINMENT OF SEDIMENTS MAY REQUIRE, BUT ARE NOT LIMITED TO, TEMPORARY (AND PERMANENT) MEASURES TO STABILIZE SLOPES/BARE SOIL. WETLAND RESOURCES SHALL BE PROTECTED FROM SILTATION THROUGHOUT THE PROJECT. THE DESIGN BUILDER SHALL PROVIDE EROSION PROTECTION AND SILTATION BARRIERS TO PROTECT ALL WORK IN WETLANDS, WATERWAYS, AND WETLAND BUFFER ZONES AS APPLICABLE.
2. CONSTRUCTION ACTIVITIES IN WETLAND RESOURCES, INCLUDING THE 100-FOOT BUFFER ZONE TO WETLAND RESOURCE AREAS, SHALL BE LIMITED TO AUTHORIZED WORK LOCATIONS. NO NON-AUTHORIZED WORK, SUCH AS CLEARING, GRADING, EXCAVATION, MATERIAL OR EQUIPMENT STORAGE OR MAINTENANCE, IS ALLOWED IN REMAINING WETLAND AREAS WITHOUT PRIOR APPROVAL OF THE ENGINEER, U.S. ARMY CORPS OF ENGINEERS, MASSDEP, OR LOCAL CONSERVATION COMMISION, AS APPLICABLE. CONSTRUCTION ACTIVITIES IN WETLAND RESOURCE AREAS SHALL BE OVERSEEN BY THE WETLAND SCIENTIST.
3. CATCH BASIN INLET PROTECTION SHALL BE PLACED TEMPORARILY IN EXISTING AND PROPOSED CATCH BASINS WITHIN THE PROJECT LIMITS, AS REQUIRED BY THE ENGINEER AND IN ACCORDANCE WITH THE REQUIREMENTS OF THE SWPPP AND THE ENVIRONMENTAL MONITOR. SILT SACKS SHALL BE INSPECTED ON A WEEKLY BASIS (AND AFTER EACH STORM EVENT EQUAL TO OR GREATER THAN 0.25") THROUGHOUT THE DURATION OF THE PROJECT, CLEARED OF DEBRIS AND REPLACED OR RESTORED AS DEEMED NECESSARY BY THE ENGINEER AND IN ACCORDANCE WITH THE REQUIREMENTS OF THE SWPPP AND THE ENVIRONMENTAL PERMITS.
4. A VERSION(S) OF THESE PLANS MUST BE MODIFIED BY THE DB ENTITY TO DEPICT REQUIREMENTS OF PART 7.2.4 OF THE NPDES CONSTRUCTION GENERAL PERMIT (CGP) AND INCORPORATED IN THE SWPPP.
5. AT PROPOSED AND EXISTING DRAINAGE OUTFALLS, SEDIMENT CONTROL BARRIER SHALL BE INSTALLED TO ALLOW FOR UNINTERRUPTED FLOW FROM OUTFALL. DURING CONSTRUCTION OF PROPOSED OUTFALLS.
6. TEMPORARY STRUCTURES SHOWN ARE PRELIMINARY DEPICTION OF THE ANTICIPATED WORK AND SUBJECT TO CHANGE BASED ON CONTRACTOR'S MEANS AND METHODS. DIMENSIONS PROVIDED ARE APPROXIMATE AND PRELIMINARY, SUBJECT TO CHANGE IN FINAL DESIGN AND PENDING CONTRACTOR'S AND METHODS.

GREEN SURVEY NOTES

1. GREEN INTERNATIONAL AFFILIATES, INC. (GREEN) PERFORMED AN ADDITIONAL ON-THE-GROUND FIELD SURVEY BETWEEN JULY 15, 2021 AND JULY 11, 2024.
2. CAPE COD CANAL SURVEY IS A COMBINATION OF UNITED STATES ARMY CORPS OF ENGINEERS DATA OBTAINED FROM WEBSITE APRIL 29, 2024. MAP DOCUMENT: MA_36_CCC_20221206_XC_032 (VERTICAL DATUM IS MEAN LOWER LOW WATER (MLLW) COMPUTED USING RTK GPS TIDES U.S. SURVEY FEET THEN CONVERTED TO NAVD88 USING NOAA, ONLINE VERTICAL DATUM TRANSFORMATION) AND AN HYDRO SURVEY PERFORMED BY CHILDS ENGINEERING CORPORATION ON APRIL 2024.
3. HORIZONTAL AND VERTICAL CONTROL WAS ESTABLISHED BY MASSDOT SURVEY AND PROVIDED TO WSP ON JANUARY 28, 2020 (COMPUTED USING GEOID12B). HORIZONTAL DATUM IS BASED ON THE MASSACHUSETTS STATE PLANE COORDINATE SYSTEM (MAINLAND) NAD83 (2011), 2010.00 EPOCH. VERTICAL DATUM IS NAVD88 (COMPUTED USING MASSDOT BENCHMARKS). GREEN RUN DIFFERENT CLOSED TRAVERSES AND LEVELING TO BACK CHECK AND DENSIFIED CONTROL POINTS USING EXISTING CONTROL DATA BETWEEN JULY 15, 2021 AND JULY 11, 2024. TRAVERSES ADJUSTED USING LEAST SQUARES IN AUTOCAD CIVIL 3D. SAGAMORE TRAVERSE CLOSURE WITH AN ERROR OF CLOSURE OF 1 IN 40449. BOURNE TRAVERSE CLOSURE WITH AN ERROR OF CLOSURE OF 1 IN 67542.
4. THE RIGHT OF WAY LINES OF BOURNE - CAPE COD CANAL ARE THE DIRECT RESULT OF AN INSTRUMENT SURVEY PERFORMED ON-THE-GROUND BY GREEN INTERNATIONAL AFFILIATES, INC TO BACK CHECK THE EXISTING THE RIGHT OF WAY LINES IN THE WSP BASE MAPS, AND FROM PLANS AND DEEDS OF RECORD. OTHER RIGHTS OF WAY SHOWN, PRIVATE PROPERTY LINES HAVE NOT BEEN SURVEYED, THEY ARE COMPILED FROM DEED AND RECORD PLAN INFORMATION AND SHOULD BE CONSIDERED APPROXIMATE.

WSP SURVEY NOTES - AREA-1 SAGAMORE NORTH

1. THIS PLAN WAS PREPARED FROM A COMBINATION OF AN AERIAL SURVEY HAVING A PHOTOGRAPHY DATE OF JANUARY 1, 2015 AND AN ON-THE-GROUND FIELD SURVEY CONDUCTED BY WSP BETWEEN DECEMBER 20, 2019 AND MARCH 12, 2020.
2. THE HORIZONTAL DATUM SHOWN HEREON REFERENCES THE MASSACHUSETTS STATE PLANE COORDINATE SYSTEM, MAINLAND ZONE, NAD83(2011) EPOCH 2010.00 AS PROVIDED TO WSP BY MASSDOT ON JANUARY 28, 2020.
TRAVERSE POINTS PROVIDED BY MASSDOT AND HELD HORIZONTALLY IN MAIN TRAVERSE ADJUSTMENT:
STA 1 (DOT STA#2432), STA 2 (DOT STA#2433),
STA 251 (DOT STA#2461), STA 252 (DOT STA#2460),
STA 262 (DOT STA#2436), STA 263 (DOT STA#2437),
STA 271 (DOT STA#2434), STA 270 (DOT STA#2435).
3. THE VERTICAL DATUM SHOWN HEREON REFERENCES NAVD88, GEOID 12B, AS PROVIDED TO WSP BY MASSDOT,BENCHMARK HELD: NGS DISK R43 ... ELEV=58.369' ELEVATIONS OF ALL OTHER TRAVERSE POINTS DETERMINED BY DIFFERENTIAL LEVELING.
4. THE AVERAGE SCALE FACTOR USED FOR THE PROJECT = 0.99999528
5. THE ROTATION FROM MASS HIGHWAY LAYOUT BEARING SYSTEMS TO THE BEARING SYSTEM OF THIS BASEPLAN ARE AS LISTED BELOW.
LAYOUT 3063 OF 1933 IS 0°50'03" (CLOCKWISE)
LAYOUT 3084 OF 1934 IS 0°50'03" (CLOCKWISE)
LAYOUT 3138 OF 1934 IS 0°50'03" (CLOCKWISE)
LAYOUT 3174 OF 1935 IS 0°38'33" (CLOCKWISE)
LAYOUT 3180 OF 1936 IS 0°38'50" (CLOCKWISE)
LAYOUT 7696 OF 2004 IS 0°00'00"
LAYOUT 4401 OF 1956 IS 0°00'00"
6. BOUNDARIES OF ABUTTING PARCELS WERE COMPILED FROM AVAILABLE DEEDS AND PLANS AND ARE APPROXIMATE ONLY. THE OWNER NAMES, ADDRESSES AND DEED REFERENCES SHOWN ON THE SURVEY ARE PER THE MOST CURRENT DEED OR, WHEN NOT AVAILABLE, PER THE TOWN OF BOURNE ASSESSORS DATABASE.
7. THE LOCATION OF THE UTILITIES AS SHOWN HEREON HAVE BEEN COMPILED FROM VISIBLE STRUCTURES AND INFORMATION OBTAINED FROM VARIOUS SOURCES. THE ACTUAL LOCATION OF ALL UTILITIES AND UNDERGROUND STRUCTURES SHALL BE CONSIDERED APPROXIMATE AND SHALL BE VERIFIED BY THE OWNER PRIOR TO ANY CONSTRUCTION. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICES OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED.

NOTE THAT: ENBRIDGE UTILITY RECORDS SHOW UNDERGROUND GAS PIPELINES BUT NOT EVEN AN APPROXIMATE LOCATION COULD BE PLOTTED.

8. THIS DATA SET WAS TESTED TO MEET ASPRS POSITIONAL ACCURACY STANDARDS FOR DIGITAL GEOSPATIAL DATA (2014) FOR A 4.1 (CM) $RMSE_X$ / $RMSE_Y$ HORIZONTAL ACCURACY CLASS. ACTUAL POSITIONAL ACCURACY WAS FOUND TO BE $RMSE_X$ = 4.1 (CM) AND $RMSE_Y$ = 3.1 CM WHICH EQUATES TO POSITIONAL HORIZONTAL ACCURACY = +/- 8.9 AT 95% CONFIDENCE LEVEL. THIS DATA SET WAS TESTED TO MEET ASPRS POSITIONAL ACCURACY STANDARDS FOR DIGITAL GEOSPATIAL DATA (2014) FOR A 5.5 (CM) $RMSE_Z$ VERTICAL ACCURACY CLASS. ACTUAL NVA ACCURACY WAS FOUND TO BE $RMSE_Z$ = 5.4 (CM), EQUATING TO +/- 10.9 (CM) AT 95% CONFIDENCE LEVEL. ACTUAL VVA ACCURACY WAS FOUND TO BE +/- 16.3 (CM) AT THE 95% PERCENTILE.
9. DIGITAL TERRAIN MODEL (SURFACE/CONTOURS) FROM AERIAL MAPPING ON THE DECK OF SAGAMORE BRIDGE IS NOT INCLUDED IN THE SURVEY. ALL UTILITY STRUCTURES ON THE DECK AND PARTS OF CURB OBSCURED BY THE SUPERSTRUCTURE WERE LOCATED BY TOTAL STATION.

WSP SURVEY NOTES - AREA-2 SAGAMORE SOUTH

1. THIS PLAN WAS PREPARED FROM A COMBINATION OF AN AERIAL SURVEY HAVING A PHOTOGRAPHY DATE OF JANUARY 1, 2015 AND AN ON-THE-GROUND FIELD SURVEY CONDUCTED BY WSP BETWEEN FEBRUARY 12, 2020 AND SEPTEMBER 24, 2020 AND BETWEEN JANUARY 25 AND FEBRUARY 15, 2021.
2. THE HORIZONTAL DATUM SHOWN HEREON REFERENCES THE MASSACHUSETTS STATE PLANE COORDINATE SYSTEM, MAINLAND ZONE, NAD83(2011) EPOCH 2010.00 AS PROVIDED TO WSP BY MASSDOT ON JANUARY 28, 2020.
TRAVERSE POINTS PROVIDED BY MASSDOT AND HELD HORIZONTALLY IN MAIN TRAVERSE ADJUSTMENT:
STA 26 (DOT STA#2448), STA 27 (DOT STA#2449),
STA 39 (DOT STA#2452), STA 40 (DOT STA#2453),
STA 51 (DOT STA#2454), STA 52 (DOT STA#2455),
STA 65 (DOT STA#2456), STA 66 (DOT STA#2457),
STA 145 (DOT STA#2450), STA 146 (DOT STA#2451),
STA 155 (DOT STA#2445), STA 156 (DOT STA#2444).
3. THE VERTICAL DATUM SHOWN HEREON REFERENCES NAVD88, GEOID 12B, AS PROVIDED TO WSP BY MASSDOT.
BENCHMARKS HELD:
MONEL RIVET 877 ... ELEV=19.405'
MONEL RIVET 7202 ... ELEV=36.722'
MASSDPW DISK 177F ... ELEV=164.271'
MASSDPW DISK 177G ... ELEV=256.131'
ELEVATIONS OF ALL OTHER TRAVERSE POINTS DETERMINED BY DIFFERENTIAL LEVELING.
4. THE AVERAGE SCALE FACTOR USED FOR THE PROJECT = 0.99999528
5. THE ROTATIONS FROM MASS HIGHWAY LAYOUT BEARING SYSTEMS TO THE BEARING SYSTEM OF THIS BASEPLAN ARE AS LISTED BELOW.

LAYOUT 1463 OF 1913 ... 0°51'16" (CLOCKWISE) (STA 3+24.31)
LAYOUT 1816 OF 1919 ... 0°48'36" (CLOCKWISE) (STA 79+84.55)
LAYOUT 2662 ... BROKEN INTO 3 PARTS:
* LAYOUT 2662-1 OF 1930 ... 0°40'13" (COUNTER-CLOCKWISE) (STA 312+62.64 TO STA 329+50.76)
* LAYOUT 2662-2 OF 1930 ... 0°40'40" (COUNTER-CLOCKWISE) (STA 329+50.21 TO STA 350+01.11)
* LAYOUT 2662-3 OF 1930 ... 0°41'45" (COUNTER-CLOCKWISE) (STA 350+00.42 TO STA 360+94.91)
LAYOUT 2673 OF 1930 ... 0°41'35" (COUNTER-CLOCKWISE)
LAYOUTS 3063-3084-3103 OF 1933 ... 0°50'03" (COUNTER-CLOCKWISE)
LAYOUTS 3162-3184 OF 1935 ... 0°39'21" (COUNTER-CLOCKWISE)
LAYOUT 3187 OF 1935 ... 0°39'21" (COUNTER-CLOCKWISE)
LAYOUTS 3377-5681 OF 1941 .. 0°00'04" (COUNTER-CLOCKWISE)
LAYOUTS 3378-3761-5664 OF 1941 ... 0°00'08" (COUNTER-CLOCKWISE) (STA 155+00.32)
LAYOUTS 3389-3406-3654 OF 1941 ... 0°00'04" (COUNTER-CLOCKWISE)
LAYOUT 3408 OF 1942 ... 0°55'28" (CLOCKWISE)
TUPPER ROAD CO.LO. OF 1948 ... 0°41'52" (COUNTER-CLOCKWISE)
LAYOUT 5018 OF 1963 ... 0°00'18" (CLOCKWISE)

NOTE: THE DISCREPANCIES FOUND WITHIN SHLO 2662 AS SHOWN ON THIS BASEPLAN ARE UNDER REVIEW BY MASSDOT AND A FINAL DETERMINATION HAS NOT YET BEEN MADE.

6. BOUNDARIES OF ABUTTING PARCELS WERE COMPILED FROM AVAILABLE DEEDS AND PLANS AND ARE APPROXIMATE ONLY. THE OWNER NAMES, ADDRESSES AND DEED REFERENCES SHOWN ON THE SURVEY ARE PER THE MOST CURRENT DEED OR, WHEN NOT AVAILABLE, PER THE TOWN OF BOURNE ASSESSORS DATABASE.
7. THE LOCATION OF THE UTILITIES AS SHOWN HEREON HAVE BEEN COMPILED FROM VISIBLE STRUCTURES AND INFORMATION OBTAINED FROM VARIOUS SOURCES. THE ACTUAL LOCATION OF ALL UTILITIES AND UNDERGROUND STRUCTURES SHALL BE CONSIDERED APPROXIMATE AND SHALL BE VERIFIED BY THE OWNER PRIOR TO ANY CONSTRUCTION. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICES OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED.

NOTE THAT:
- THERE IS NO MUNICIPALLY OWNED SEWER SYSTEM IN BOURNE AND SANDWICH
- NO DRAINAGE INFORMATION WAS RECEIVED FROM TOWNS, ALL DRAINAGE OUTSIDE OF HIGHWAYS IS SHOWN FROM FIELD INVESTIGATION
- WATER LINES SHOWN ON THE SURVEY ARE FROM BOURNE WATER DISTRICT TIE SKETCHES AND ARE APPROXIMATE
- ALL TELEPHONE RECORDS RECEIVED ARE DEPICTED ON THE SURVEY, NOT ALL TELEPHONE MANHOLES ARE CONNECTED

8. THIS DATA SET WAS TESTED TO MEET ASPRS POSITIONAL ACCURACY STANDARDS FOR DIGITAL GEOSPATIAL DATA (2014) FOR A 0.10 (FT) $RMSE_X$ / $RMSE_Y$ HORIZONTAL ACCURACY CLASS. ACTUAL POSITIONAL ACCURACY WAS FOUND TO BE $RMSE_X$ = 0.09 (FT) AND $RMSE_Y$ = 0.10 (FT) WHICH EQUATES TO POSITIONAL HORIZONTAL ACCURACY = +/- 0.24 (FT) AT 95% CONFIDENCE LEVEL. THIS DATA SET WAS TESTED TO MEET ASPRS POSITIONAL ACCURACY STANDARDS FOR DIGITAL GEOSPATIAL DATA (2014) FOR A 0.10 (FT) $RMSE_Z$ VERTICAL ACCURACY CLASS. ACTUAL NVA ACCURACY WAS FOUND TO BE $RMSE_Z$ = 0.10 (FT), EQUATING TO +/- 0.21 (FT) AT 95% CONFIDENCE LEVEL. ACTUAL VVA ACCURACY WAS FOUND TO BE +/- 0.31 (FT) AT THE 95% PERCENTILE.
9. DIGITAL TERRAIN MODEL (SURFACE/CONTOURS) FROM AERIAL MAPPING ON THE DECK OF SAGAMORE BRIDGE IS NOT INCLUDED IN THE SURVEY. ALL UTILITY STRUCTURES ON THE DECK AND PARTS OF CURB OBSCURED BY THE SUPERSTRUCTURE WERE LOCATED BY TOTAL STATION.

GENERAL NOTES

1. CONCEPTUAL PLANS USED TO OBTAIN U.S ARMY CORPS OF ENGINEERS SECTION 404/10 PERMIT APPROVAL AND MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION 401 WATER QUALITY CERTIFICATION.
2. HORIZONTAL DATUM IS NAD83.
3. VERTICAL DATUM IS NAVD88.

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Sagamore Bridge
Key Plan
Application for USACE Individual
Section 404 Permit and
Section 401 Water Quality Certification
04/14/2026
Sheet 5

NAD 83

N

SANDWICH ROAD
SCENIC HIGHWAY
CAPE COD CANAL
MID-CAPE CONNECTOR
SOUTH
NORTH
ROUTE 3
STATE ROAD
ROUTE 6
CRANBERRY HIGHWAY
SANDWICH ROAD
MEETINGHOUSE LANE
B-17-005
B-17-027
EXISTING SAGAMORE BRIDGE
PROPOSED SAGAMORE BRIDGE

PROJECT BEGIN
STA 3998+97.19
N 2739721.3212
E 919839.4277

PROJECT END
STA 4114+25
N 2749838.5510
E 916835.2856

DESCRIPTION	SOUTH	NORTH
ENVIRONMENTAL IMPACT PLANS - TEMPORARY	6	7
ENVIRONMENTAL IMPACT PLANS - PERMANENT	12	13
ENVIRONMENTAL MITIGATION PLANS	16	17

NOTES:
1. PRELIMINARY PLANS USED TO OBTAIN U.S. ARMY CORPS OF ENGINEERS' SECTION 404 PERMIT APPROVAL AND MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION 401 WATER QUALITY CERTIFICATION

HOR. SCALE IN FEET
800 0 800 1600

SCALE: 1" = 400'

Sagamore Bridge
Environmental Impact Plan
Sagamore South
Temporary Impacts
Application for USACE Individual Section 404 Permit and Section 401 Water Quality Certification
4/14/2026
Sheet 6

SAGAMORE SOUTH TEMPORARY IMPACTS TO WOTUS

- DREDGE FOR ACCESS TO TEMPORARY DOCKS (NOT SUBJECT TO 404): 14,400 SF/ 5,000 CY
- EXCAVATION FOR RIPRAP PIER PROTECTION (NOT SUBJECT TO 404): 28,300 SF / 10,500 CY
- EXCAVATION AND FILL FOR PIER DEMOLITION: 5,200 SF / 3,800 CY
- FILL FOR TRESTLE RIPRAP: 4,800 SF / 900 CY
- EARTHEN FILL FOR BULKHEADS AND DOCKS: 18,800 SF/ 17,800 CY

N

NAD 83

CAPE COD CANAL
EBB/FLOOD

SAGAMORE SOUTH AND SAGAMORE NORTH MATCHLINE

PROP BRIDGE EB 88'

PROP BRIDGE WB 73'

3065

4065

ROUTE 3 SB / ROUTE 6 EB

ROUTE 3 NB / ROUTE 6 WB

EX SAGAMORE BRIDGE

PIER/RIPRAP PROTECTION EXCAVATION NOT SUBJECT TO 404

SAGAMORE SOUTH WORK ZONE LIMIT/ CONSTRUCTION ENVELOPE

PILE SUPPORTED DOLPHINS NOT SUBJECT TO 404 (TYP)

TRESTLE RIPRAP (TYP)

SEE SHEET 8 FOR WEST SECTION

EXISTING APPROXIMATE TOE OF RIPRAP

EXTREME LOW WATER (EL. -6.7')

MEAN LOWER LOW WATER (EL. -4.79')

MEAN LOW WATER (EL. -4.5')

DOCK FILL

BULKHEAD SHEETING

LIMIT OF 100 YR FLOOD

HIGH TIDE LINE (EL. 5.4')

MEAN HIGH WATER (EL. 3')

SHORELINE SHEETING

BULKHEAD FILL

SAGAMORE SOUTH TEMPORARY TRESTLE

TRESTLE PILES (TYP)

PROPOSED BRIDGE PIERS (TYP)

TEMPORARY CONTAINMENT CELL SHEETING (PIER DEMOLITION)

PIER DEMOLITION EXCAVATION

DREDGING FOR VESSEL ACCESS NOT SUBJECT TO 404 (TYP)

SEE SHEET 9 FOR EAST SECTION

480' NAVIGATION CHANNEL

BULKHEAD FILL

BULKHEAD SHEETING

NATURAL ROCKY HABITAT

LIMIT OF 96' NAVIGATION CHANNEL SIDE SLOPE

PROP SEDIMENT CONTROL BARRIER (TYP)

EXISTING TOP OF RIPRAP

TEMPORARY COFFERDAM SHEETING (PROPOSED PIER)

TEMP BOLLARDS (TYP)

3060

4060

CAPE COD CENTRAL RAILROAD

NOTES:

1. PRELIMINARY PLANS USED TO OBTAIN U.S. ARMY CORPS OF ENGINEERS' SECTION 404 PERMIT APPROVAL AND MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION 401 WATER QUALITY CERTIFICATION

0 80 200 300

SCALE: 1" = 80'

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Sagamore Bridge
Environmental Impact Plan
Sagamore North
Temporary Impacts
Application for USACE Individual Section 404 Permit and Section 401 Water Quality Certification
4/14/2026
Sheet 7

N
NAD 83

INFILTRATION BASIN SCM-SN11
INFILTRATION BASIN SCM-SN09
ACCESS ROAD
SOUTH OVERLOOK
22
23
24
24+30.18
222
223
224
225
226
227
228
229
230
SUP
TEMPORARY COFFER DAM SHEETING (PROPOSED PIER)
SAGAMORE NORTH TEMPORARY TRESTLE
TRESTLE PILES (TYP)
EXISTING TOP OF RIPRAP
HIGH TIDE LINE (EL.5.4')
PROP SEDIMENT CONTROL BARRIER (TYP)
LIMIT OF 100 YR FLOOD
SHORELINE SHEETING
PROPOSED BRIDGE PIERS (TYP)
NATURAL ROCKY HABITAT
TEMP BOLLARDS (TYP)
CANAL SERVICE ROAD
DOCK FILL
LIMIT OF 96' NAVIGATION CHANNEL SIDE SLOPE
MEAN HIGH WATER (EL.3')
MEAN LOW WATER (EL.-4.5')
MEAN LOWER LOW WATER (EL.-4.79')
EXTREME LOW WATER (EL. -6.7')
BULKHEAD FILL
BULKHEAD SHEETING
SAGAMORE NORTH WORK ZONE LIMIT/ CONSTRUCTION ENVELOPE
TRESTLE RIPRAP (TYP)
SEE SHEET 10 FOR WEST SECTION
PILE SUPPORTED DOLPHINS NOT SUBJECT TO 404 (TYP)
EXISTING APPROXIMATE TOE OF RIPRAP
480' NAVIGATION CHANNEL
PIER/RIPRAP PROTECTION EXCAVATION NOT SUBJECT TO 404
DREDGING FOR VESSEL ACCESS NOT SUBJECT TO 404 (TYP)
SEE SHEET 11 EAST FOR SECTION
PIER DEMOLITION EXCAVATION
TEMPORARY CONTAINMENT CELL SHEETING (PIER DEMOLITION)
CB-SCUPPER RIM=151.81 VERT.PIPE
CB-SCUPPER RIM=151.77 VERT.PIPE
CB-SCUPPER RIM=151.72 VERT.PIPE

CAPE COD CANAL
EBB/FLOOD

PROP BRIDGE EB 88'
PROP BRIDGE WB 73'
SAGAMORE SOUTH AND SAGAMORE NORTH MATCHLINE
3065
4065
ROUTE 3 SB / ROUTE 6 EB
ROUTE 3 NB / ROUTE 6 WB
EX SAGAMORE BRIDGE

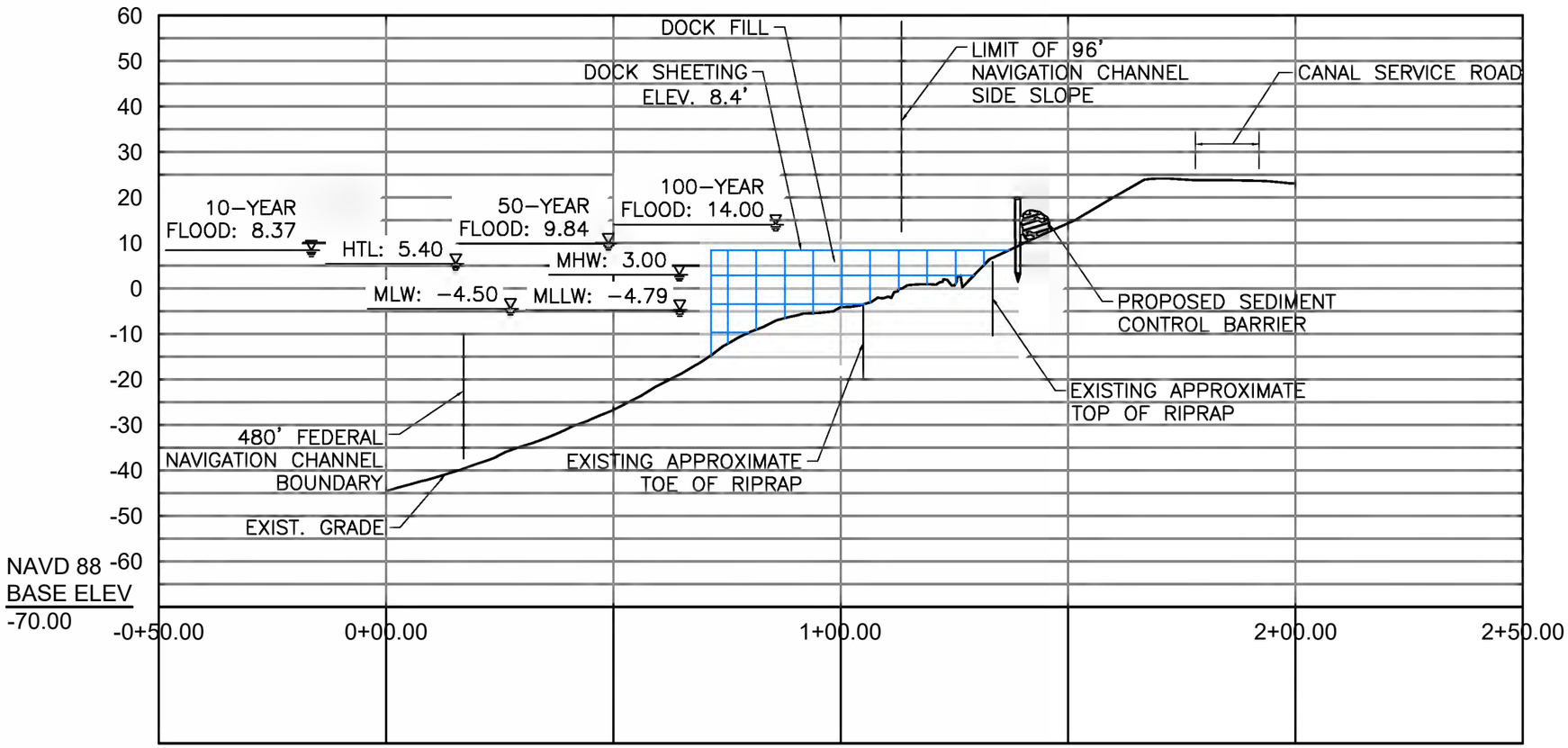
SAGAMORE NORTH TEMPORARY IMPACTS TO WOTUS
DREDGE FOR ACCESS TO TEMPORARY DOCKS (NOT SUBJECT TO 404): 13,700 SF/ 5,000 CY
EXCAVATION FOR RIPRAP PIER PROTECTION (NOT SUBJECT TO 404): 26,400 SF / 11,200 CY
EXCAVATION AND FILL FOR PIER DEMOLITION: 4,300 SF/ 3,800 CY
FILL FOR TRESTLE RIPRAP: 3,400 SF / 700 CY
EARTHEN FILL FOR BULKHEADS AND DOCKS: 16,300 SF/ 17,800 CY

NOTES:
1. PRELIMINARY PLANS USED TO OBTAIN U.S. ARMY CORPS OF ENGINEERS' SECTION 404 PERMIT APPROVAL AND MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION 401 WATER QUALITY CERTIFICATION

0 80 200 300
SCALE: 1" = 80'

608020_EV_WQC(SAG_EIP_TF).DWG 4/14/2026 10:57 AM

Sagamore Bridge
Environmental Impact Plan
Sagamore South
Temporary Impacts Section - West
Application for USACE Individual
Section 404 Permit and
Section 401 Water Quality Certification
04/14/2026



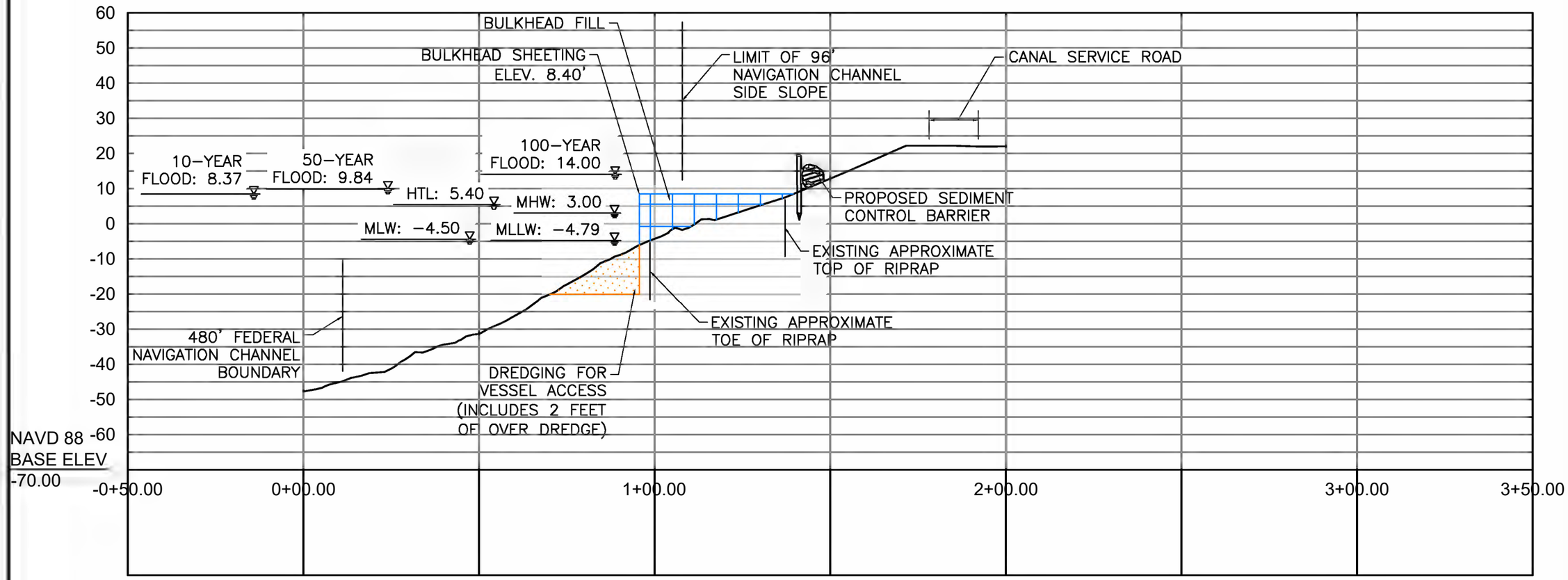
NOTES:

1. PRELIMINARY PLANS USED TO OBTAIN U.S. ARMY CORPS OF ENGINEERS' SECTION 404 PERMIT APPROVAL AND MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION 401 WATER QUALITY CERTIFICATION

0 30 60 100

SCALE: 1" = 30'

Sagamore Bridge
Environmental Impact Plan
Sagamore South
Temporary Impact Section - East
Application for USACE Individual
Section 404 Permit and
Section 401 Water Quality Certification
04/14/2026
Sheet 9



NOTES:

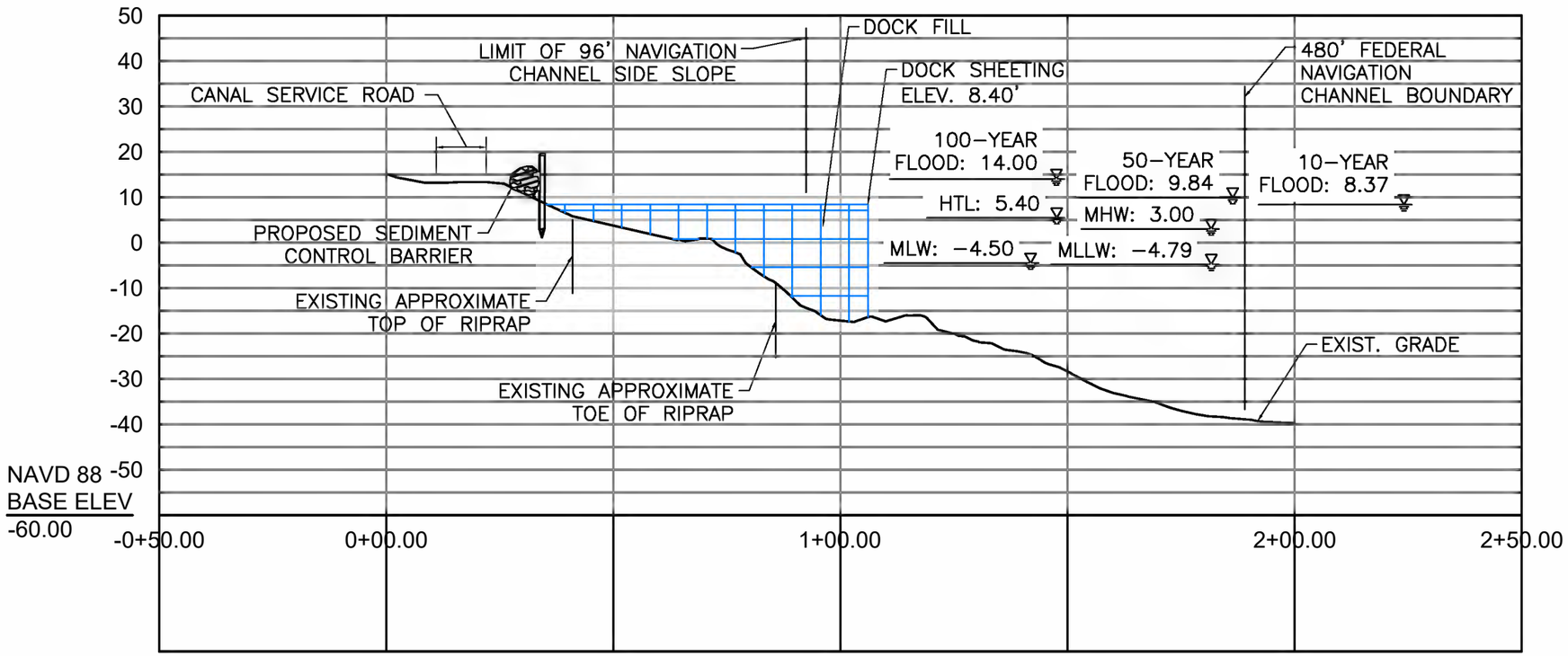
1. PRELIMINARY PLANS USED TO OBTAIN U.S. ARMY CORPS OF ENGINEERS' SECTION 404 PERMIT APPROVAL AND MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION 401 WATER QUALITY CERTIFICATION

0 30 60 100

SCALE: 1" = 30'

608020_EV_WQC(SAG_EIP_TF-SECTIONS).DWG 4/14/2026 10:44 AM

Sagamore Bridge
Environmental Impact Plan
Sagamore North
Temporary Impact Section - West
Application for USACE Individual
Section 404 Permit and
Section 401 Water Quality Certification
04/14/2026
Sheet 10

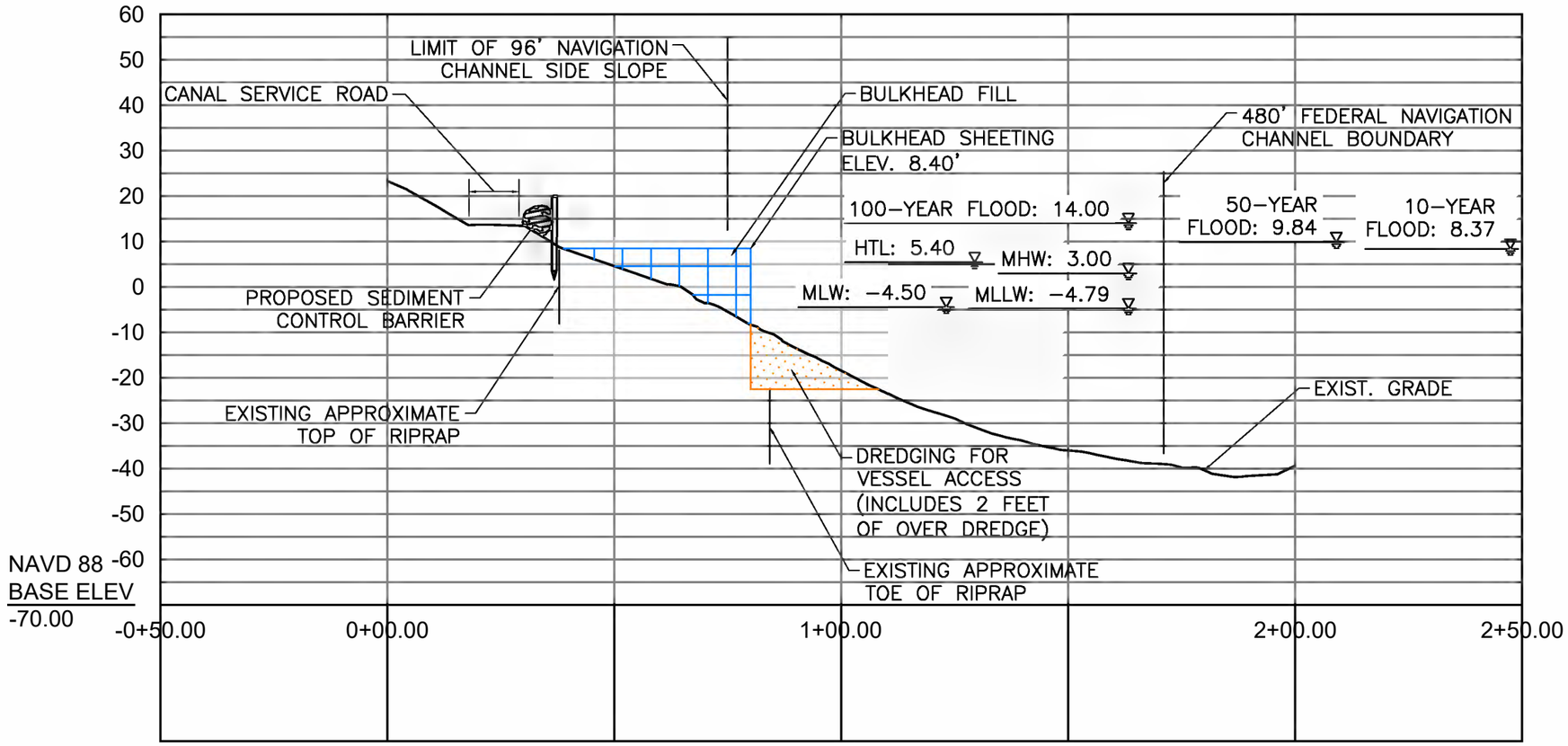


NOTES:
1. PRELIMINARY PLANS USED TO OBTAIN U.S. ARMY CORPS OF ENGINEERS' SECTION 404 PERMIT APPROVAL AND MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION 401 WATER QUALITY CERTIFICATION

0 30 60 100
SCALE: 1" = 30'

608020_EV_WQC(SAG_EIP_TF-SECTIONS).DWG 4/14/2026 10:46 AM

Sagamore Bridge
Environmental Impact Plan
Sagamore North
Temporary Impact Section - East
Application for USACE Individual
Section 404 Permit and
Section 401 Water Quality Certification
04/14/2026
Sheet 11



NOTES:

1. PRELIMINARY PLANS USED TO OBTAIN U.S. ARMY CORPS OF ENGINEERS' SECTION 404 PERMIT APPROVAL AND MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION 401 WATER QUALITY CERTIFICATION

0 30 60 100

SCALE: 1" = 30'

608020_EV_WQC(SAG_EIP_TF-SECTIONS).DWG 4/14/2026 10:48 AM

Sagamore Bridge
Environmental Impact Plan
Sagamore South
Permanent Impacts
Application for USACE Individual Section 404 Permit and Section 401 Water Quality Certification
4/14/2026
Sheet 12

N

NAD 83

CAPE COD CANAL

EBB/FLOOD

SAGAMORE SOUTH PERMANENT FILL IMPACTS TO WOTUS
3,900 SF / 3,000 CY PIERS
19,800 SF / 10,500 CY RIPRAP BELOW EXISTING GRADE
18,700 SF / 5,100 CY RIPRAP ABOVE EXISTING GRADE
TOTAL: 42,400 SF / 18,600 CY

PROP BRIDGE EB 88'

PROP BRIDGE WB 73'

ROUTE 3 SB / ROUTE 6 EB

ROUTE 3 NB / ROUTE 6 WB

EX SAGAMORE BRIDGE

3065

4065

SAGAMORE SOUTH AND SAGAMORE NORTH MATCHLINE

CB-SCUPPER RIM=151.81 VERT.PIPE

CB-SCUPPER RIM=151.72 VERT.PIPE

CB-SCUPPER RIM=151.77 VERT.PIPE

CB-SCUPPER RIM=148.17 VERT.PIPE

SEE SHEET 14 FOR SECTION

FILL ABOVE EXISTING GRADE

FILL TO EXISTING GRADE

PROPOSED RIPRAP PIER PROTECTION

SAGAMORE SOUTH WORK ZONE LIMIT/ CONSTRUCTION ENVELOPE

EXISTING APPROXIMATE TOE OF RIPRAP

480' NAVIGATION CHANNEL

NATURAL ROCKY HABITAT

MEAN LOWER LOW WATER (EL. -4.79')

EXTREME LOW WATER (EL. -6.7')

MEAN LOW WATER (EL. -4.5')

PROP SEDIMENT CONTROL BARRIER (TYP)

EXISTING TOP OF RIPRAP

LIMIT OF 96' NAVIGATION CHANNEL SIDE SLOPE

CANAL SERVICE ROAD

PROPOSED BRIDGE PIERS (TYP)

LIMIT OF 100 YR FLOOD

HIGH TIDE LINE (EL. 5.4')

MEAN HIGH WATER (EL. 3')

3060

4060

CAPE COD CENTRAL RAILROAD

INFILTRATION BASIN SCM-SS01

NOTES:

1. PRELIMINARY PLANS USED TO OBTAIN U.S. ARMY CORPS OF ENGINEERS' SECTION 404 PERMIT APPROVAL AND MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION 401 WATER QUALITY CERTIFICATION

0 80 200 300

SCALE: 1" = 80'

608020_EV_WQC(SAG_EIP_PF).DWG 4/14/2026 11:10 AM

Sagamore Bridge
Environmental Impact Plan
Sagamore North
Permanent Impacts
Application for USACE Individual
Section 404 Permit and
Section 401 Water Quality Certification
4/14/2026
Sheet 13

N

NAD 83

INFILTRATION BASIN SCM-SN11

INFILTRATION BASIN SCM-SN09

ACCESS ROAD

SOUTH OVERLOOK

22 23 24 24+30.18

222 223 224 225 226 227 228 229 230

SUP

CANAL SERVICE ROAD

EXISTING TOP OF RIPRAP

HIGH TIDE LINE (EL.5.4')

PROP SEDIMENT CONTROL BARRIER (TYP)

LIMIT OF 100 YR FLOOD

PROPOSED BRIDGE PIERS (TYP)

NATURAL ROCKY HABITAT

LIMIT OF 96' NAVIGATION CHANNEL SIDE SLOPE

MEAN HIGH WATER (EL.3')

MEAN LOW WATER (EL.-4.5')

MEAN LOWER LOW WATER (EL.-4.79')

EXTREME LOW WATER (EL. -6.7')

SAGAMORE NORTH WORK ZONE LIMIT/ CONSTRUCTION ENVELOPE

EXISTING APPROXIMATE TOE OF RIPRAP

480' NAVIGATION CHANNEL

PROPOSED RIPRAP PIER PROTECTION

FILL TO EXISTING GRADE

FILL ABOVE EXISTING GRADE

SEE SHEET 15 FOR SECTION

CAPE COD CANAL

EBB/FLOOD

PROP BRIDGE EB 88'

PROP BRIDGE WB 73'

ROUTE 3 SB / ROUTE 6 EB

ROUTE 3 NB / ROUTE 6 WB

EX SAGAMORE BRIDGE

SAGAMORE SOUTH AND SAGAMORE NORTH MATCHLINE

3065

4065

CB-SCUPPER RIM=148.42' VERT.PIPE

CB-SCUPPER RIM=151.81 VERT.PIPE

CB-SCUPPER RIM=151.77 VERT.PIPE

CB-SCUPPER RIM=151.72 VERT.PIPE

SAGAMORE NORTH PERMANENT FILL IMPACTS TO WOTUS

- 3,800 SF / 2,600 CY PIERS
- 21,700 SF / 11,200 CY RIPRAP BELOW EXISTING GRADE
- 19,600 SF / 8,000 CY RIPRAP ABOVE EXISTING GRADE

TOTAL: 45,100 SF / 21,800 CY

0 80 200 300

SCALE: 1" = 80'

NOTES:

1. PRELIMINARY PLANS USED TO OBTAIN U.S. ARMY CORPS OF ENGINEERS' SECTION 404 PERMIT APPROVAL AND MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION 401 WATER QUALITY CERTIFICATION.

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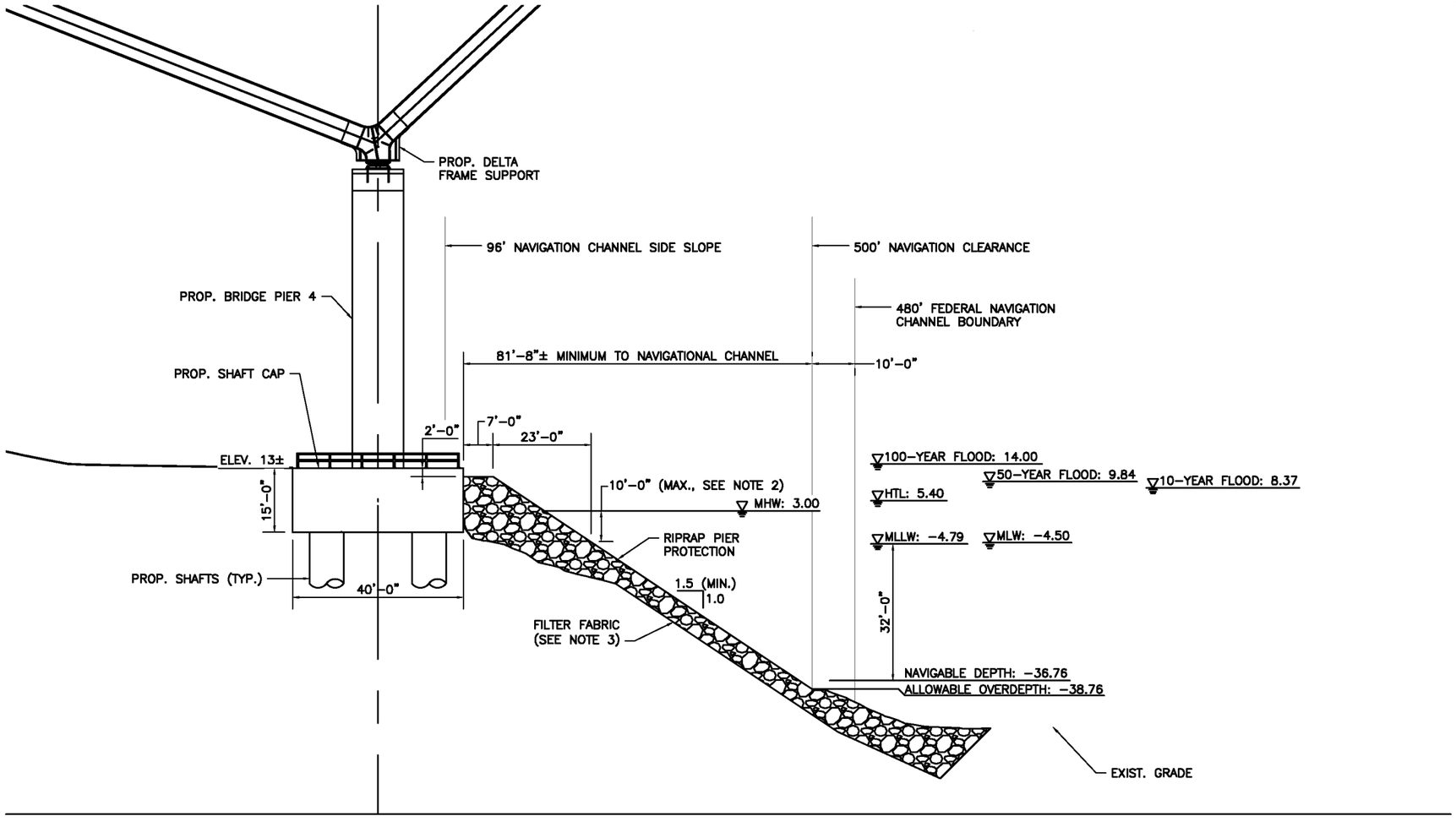


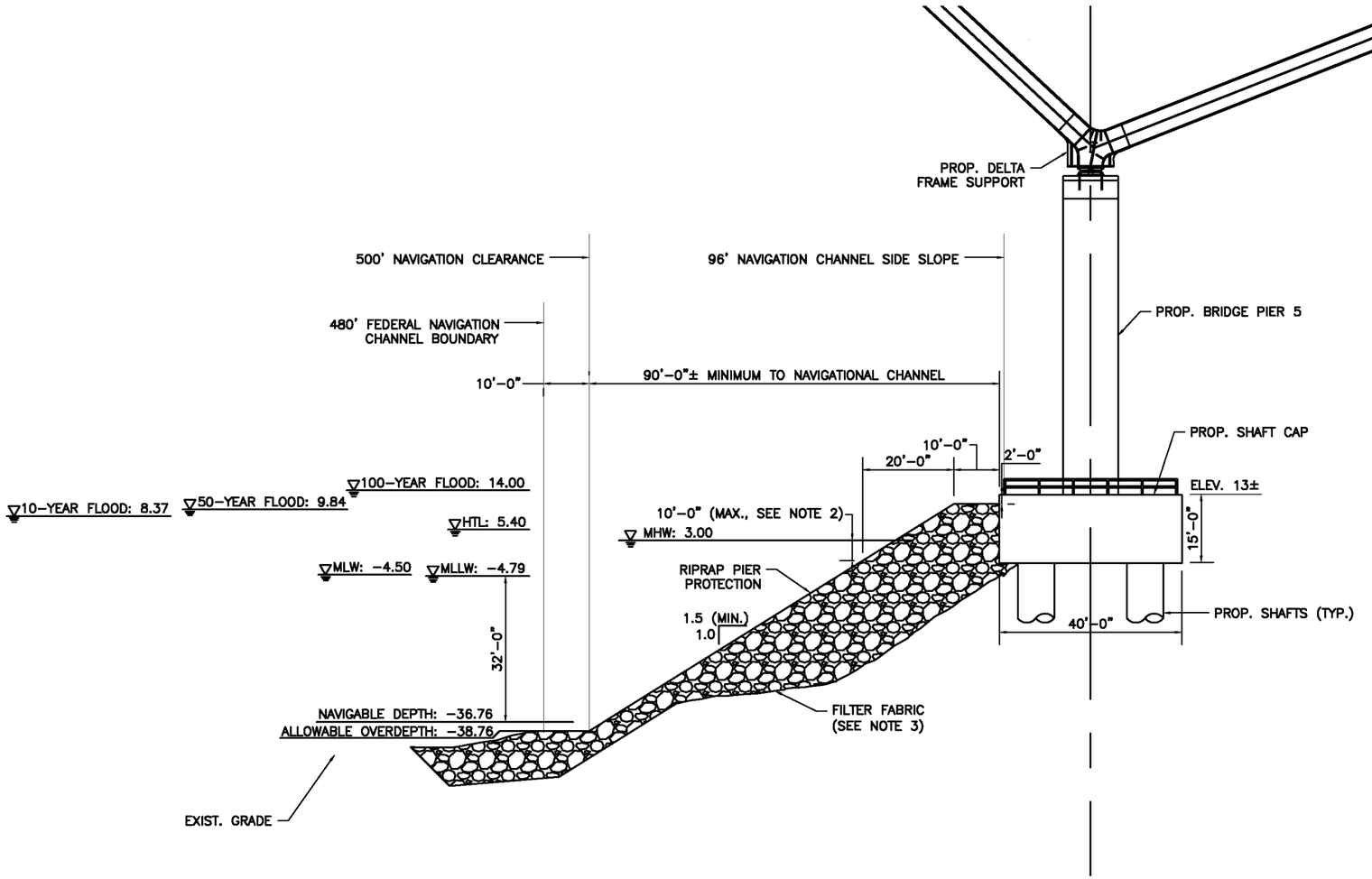
NOTES:

1. RIPRAP D50 GRADATION = 30"
2. A MAXIMUM OF 10 FEET WATER DEPTH 30 FEET FROM THE PIER CAP RESULTS IN VESSEL GROUNDING WHICH PREVENTS IMPACT TO THE PIER AND DELTA LEGS.
3. FILTER FABRIC SHALL BE PLACED BENEATH LIMITS OF RIPRAP.

0 30 60 100

SCALE: 1" = 30'

PRELIMINARY PLANS USED TO OBTAIN U.S. ARMY CORPS OF ENGINEERS' SECTION 404 PERMIT APPROVAL AND MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION 401 WATER QUALITY CERTIFICATION



NOTES:

1. RIPRAP D50 GRADATION = 30"
2. A MAXIMUM OF 10 FEET WATER DEPTH 30 FEET FROM THE PIER CAP RESULTS IN VESSEL GROUNDING WHICH PREVENTS IMPACT TO THE PIER AND DELTA LEGS.
3. FILTER FABRIC SHALL BE PLACED BENEATH LIMITS OF RIPRAP.

0 30 60 100

SCALE: 1" = 30'

PRELIMINARY PLANS USED TO OBTAIN U.S. ARMY CORPS OF ENGINEERS' SECTION 404 PERMIT APPROVAL AND MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION 401 WATER QUALITY CERTIFICATION

Sagamore Bridge
Environmental Mitigation Plan
Sagamore South
Application for USACE Individual Section 404 Permit and Section 401 Water Quality Certification
04/14/2026
Sheet 16

LEGEND:
- WOTUS RESTORATION 18,000 SF
- WOTUS RESTORATION - DOCK FILL REMOVAL 2,100 SF
- WOTUS CREATION - REMOVAL OF PIERS 1,800 SF
- WOTUS RESTORATION - RESTORATION OF PRECONSTRUCTION RIPRAP 18,300 SF

N

NAD 83

CAPE COD CANAL

EBB/FLOOD

PROP BRIDGE EB 88'

PROP BRIDGE WB 73'

SAGAMORE SOUTH AND SAGAMORE NORTH MATCHLINE

3065

ROUTE 3 SB/ ROUTE 6 EB

4065

ROUTE 3 NB/ ROUTE 6 WB

EX SAGAMORE BRIDGE

CB-SCUPPER RIM=151.81 VERT.PIPE

CB-SCUPPER RIM=151.72 VERT.PIPE

CB-SCUPPER RIM=151.77 VERT.PIPE

PIERS TO BE REMOVED TO 2' BELOW MUDLINE/RIPRAP

SAGAMORE SOUTH WORK ZONE LIMIT/ CONSTRUCTION ENVELOPE

EXISTING APPROXIMATE TOE OF RIPRAP

EXTREME LOW WATER (EL. -6.7')

MEAN LOWER LOW WATER (EL. -4.79')

MEAN LOW WATER (EL. -4.5')

480' NAVIGATION CHANNEL

NATURAL ROCKY HABITAT

CANAL SERVICE ROAD

LIMIT OF 100 YR FLOOD

HIGH TIDE LINE (EL. 5.4')

MEAN HIGH WATER (EL. 3')

PROPOSED BRIDGE PIERS (TYP)

3060

4060

LIMIT OF 96' NAVIGATION CHANNEL SIDE SLOPE

PROP SEDIMENT CONTROL BARRIER (TYP)

EXISTING TOP OF RIPRAP

CAPE COD CENTRAL RAILROAD

INFILTRATION BASIN SCM-SS01

NOTES:
1. PRELIMINARY PLANS USED TO OBTAIN U.S. ARMY CORPS OF ENGINEERS' SECTION 404 PERMIT APPROVAL AND MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION 401 WATER QUALITY CERTIFICATION

0 80 200 300

SCALE: 1" = 80'

608020_EV_WQC(SAG_EMP).DWG 4/14/2026 11:26 AM

Sagamore Bridge
Environmental Mitigation Plan
Sagamore North
Application for USACE Individual
Section 404 Permit and
Section 401 Water Quality Certification
04/14/2026
Sheet 17

N

NAD 83

INFILTRATION BASIN SCM-SN11

INFILTRATION BASIN SCM-SN09

ACCESS ROAD

SOUTH OVERLOOK

SUP

CANAL SERVICE ROAD

EXISTING TOP OF RIPRAP

HIGH TIDE LINE (EL.5.4')

PROP SEDIMENT CONTROL BARRIER (TYP)

LIMIT OF 100 YR FLOOD

PROPOSED BRIDGE PIERS (TYP)

LIMIT OF 96' NAVIGATION CHANNEL SIDE SLOPE

MEAN HIGH WATER (EL.3')

MEAN LOW WATER (EL.-4.5')

MEAN LOWER LOW WATER (EL.-4.79')

EXTREME LOW WATER (EL. -6.7')

EXISTING APPROXIMATE TOE OF RIPRAP

480' NAVIGATION CHANNEL

SAGAMORE NORTH WORK ZONE LIMIT/ CONSTRUCTION ENVELOPE

NATURAL ROCKY HABITAT

PIERS TO BE REMOVED TO 2' BELOW MUDLINE/RIPRAP

LEGEND:

- WOTUS RESTORATION 11,600 SF
- WOTUS RESTORATION - DOCK FILL REMOVAL 900 SF
- WOTUS CREATION - REMOVAL OF PIERS 1,000 SF
- WOTUS RESTORATION - RESTORATION OF PRECONSTRUCTION RIPRAP 20,700 SF

CAPE COD CANAL
EBB/FLOOD

PROP BRIDGE EB 88'

PROP BRIDGE WB 73'

SAGAMORE SOUTH AND SAGAMORE NORTH MATCHLINE

ROUTE 3 SB/ ROUTE 6 EB

ROUTE 3 NB/ ROUTE 6 WB

EX SAGAMORE BRIDGE

NOTES:

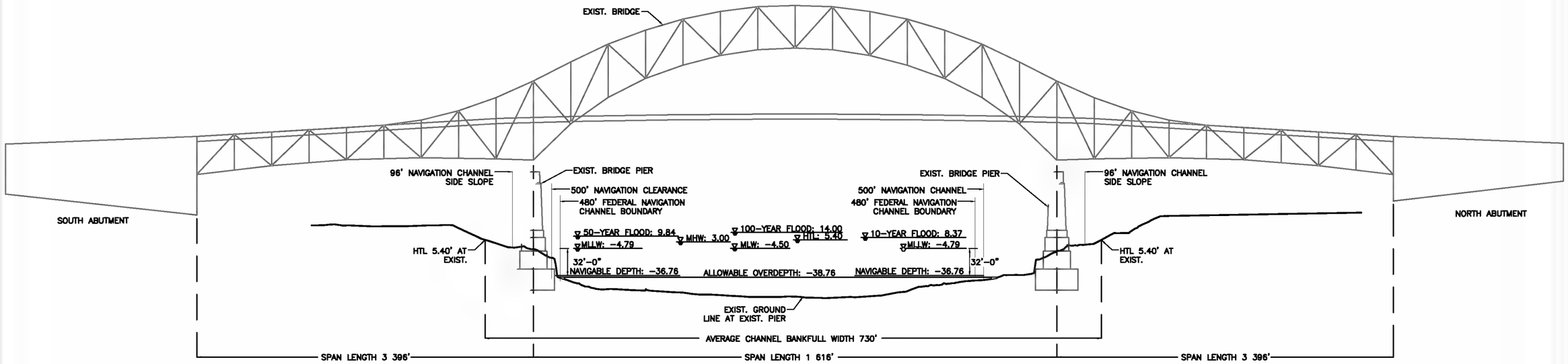
1. PRELIMINARY PLANS USED TO OBTAIN U.S. ARMY CORPS OF ENGINEERS' SECTION 404 PERMIT APPROVAL AND MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION 401 WATER QUALITY CERTIFICATION

0 80 200 300

SCALE: 1" = 80'

608020_EV_WQC(SAG_EMP).DWG 4/14/2026 11:49 AM

Sagamore Bridge
Existing Bridge Profile
Application for USACE Individual
Section 404 Permit and
Section 401 Water Quality Certification
04/14/2026
Sheet 18

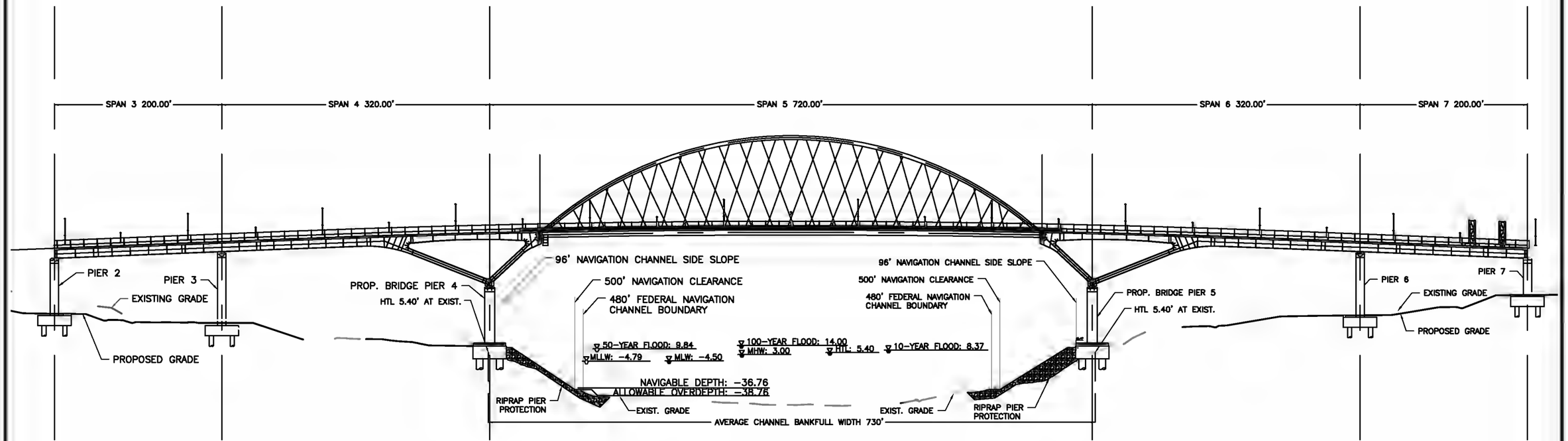


0 120 240 400

SCALE: 1" = 120'

PRELIMINARY PLANS USED TO OBTAIN U.S. ARMY CORPS OF ENGINEERS' SECTION 404 PERMIT APPROVAL AND MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION 401 WATER QUALITY CERTIFICATION

Sagamore Bridge
Proposed Bridge Profile
Application for USACE Individual
Section 404 Permit and
Section 401 Water Quality Certification
04/14/2026
Sheet 19



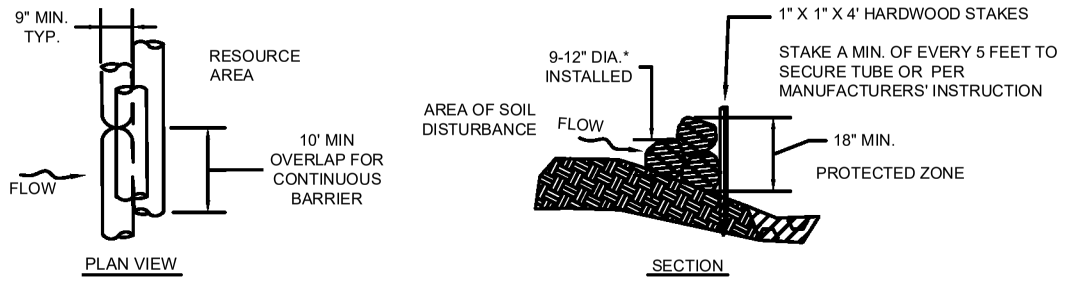
0 120 240 400

SCALE: 1" = 120'

PRELIMINARY PLANS USED TO OBTAIN U.S. ARMY CORPS OF ENGINEERS' SECTION 404 PERMIT APPROVAL AND MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION 401 WATER QUALITY CERTIFICATION

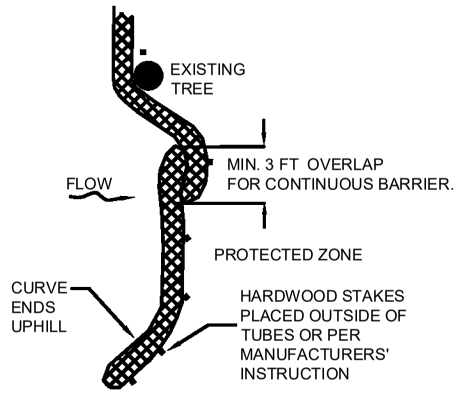
608020_EV_WQC(SAG_EIP_PF-SECTIONS).DWG 4/14/2026 11:51 AM

Sagamore Bridge
Erosion Prevention and Sediment Control Details
Application for USACE Individual Section 404 Permit and Section 401 Water Quality Certification
04/14/2026
Sheet 20



COMPOST FILTER TUBE (SLOPES 2:1 OR STEEPER)
NTS

NOTES:
1. PROVIDE A MINIMUM TUBE DIAMETER OF 12 INCHES FOR SLOPES UP TO 50 FEET IN LENGTH WITH A SLOPE RATIO OF 3H:1V OR STEEPER. LONGER SLOPES OF 3H:1V MAY REQUIRE LARGER TUBE DIAMETER OR ADDITIONAL COURSING OF FILTER TUBES TO CREATE A FILTER BERM. REFER TO MANUFACTURER'S RECOMMENDATIONS FOR SITUATIONS WITH LONGER OR STEEPER SLOPES.
2. INSTALL TUBES ALONG CONTOURS AND PERPENDICULAR TO SHEET OR CONCENTRATED FLOW.
3. DO NOT INSTALL IN PERENNIAL, EPHEMERAL OR INTERMITTENT STREAMS.
4. CONFIGURE TUBES AROUND EXISTING SITE FEATURES TO MINIMIZE SITE DISTURBANCE AND MAXIMIZE CAPTURE AREA OF STORMWATER RUN-OFF.



PLACE TUBE ALONG CONTOURS AND PERPENDICULAR TO FLOW.

PLACE AS CLOSE TO LIMIT OF SOIL DISTURBANCE AS POSSIBLE

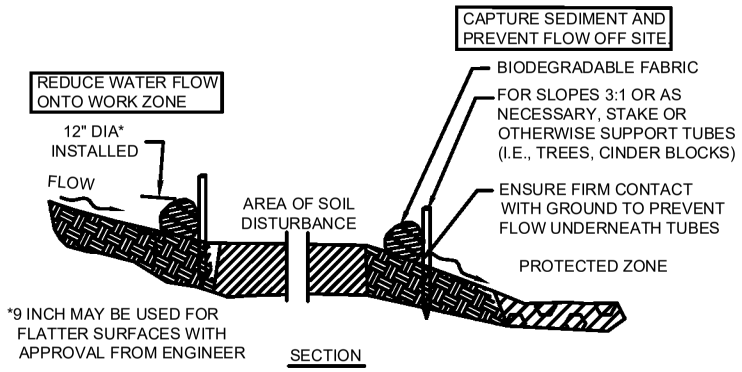
ADJUST LOCATION AS REQUIRED FOR OPTIMUM EFFECTIVENESS. DO NOT INSTALL IN WATERWAYS.

PROVIDE A 3 FT. MINIMUM OVERLAP AT ENDS OF TUBES TO JOIN IN A CONTINUOUS BARRIER AND MINIMIZE UNIMPEDDED FLOW. STAKE JOINING TUBES SNUGLY AGAINST EACH OTHER TO PREVENT UNFILTERED FLOW BETWEEN THEM.

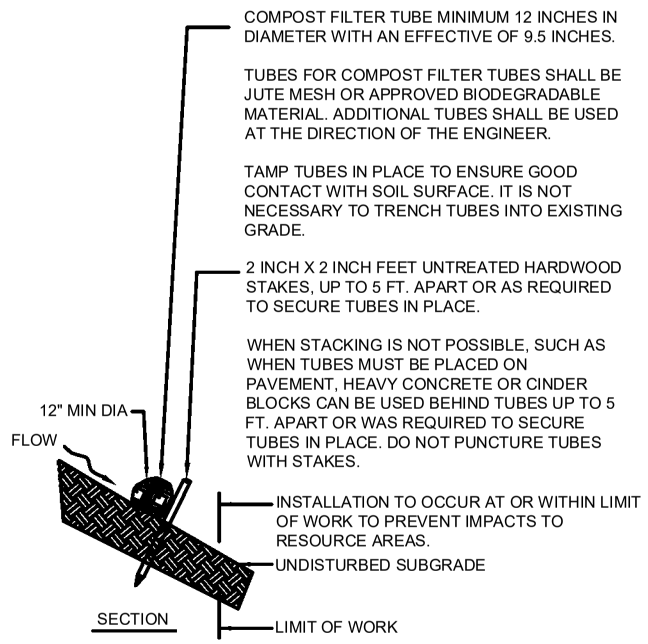
SECURE ENDS OF TUBES WITH STAKES SPACED 18 IN. APART. DO NOT PUNCTURE TUBES WITH STAKES.

PLAN VIEW

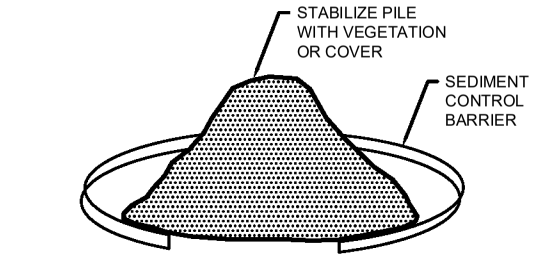
SEDIMENT BARRIERS



SEDIMENT BARRIERS - COMPOST FILTER TUBES
NTS

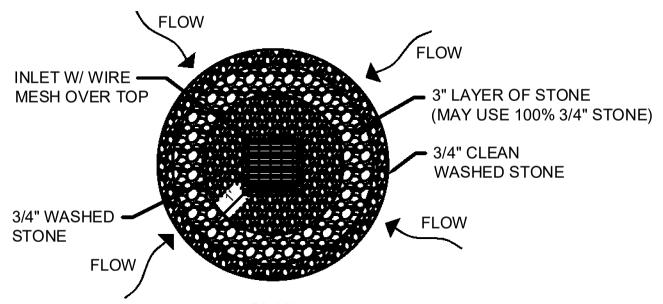


SINGLE COMPOST FILTER TUBE DETAIL
NTS

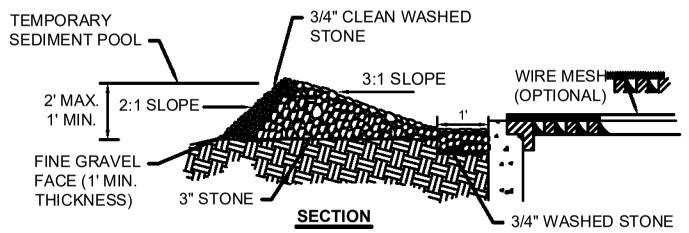


NOTES:
1. STOCKPILES MUST BE PHYSICALLY SEPARATED FROM OTHER STORMWATER CONTROLS.
2. LOCATE THE PILES OUTSIDE OF ANY NATURAL BUFFERS ESTABLISHED IN THE STORMWATER POLLUTION PREVENTION PLAN.
3. PROTECT FROM CONTACT WITH STORMWATER (INCLUDING RUN-ON) USING A TEMPORARY PERIMETER SEDIMENT BARRIER.
4. PROVIDE COVER OR APPROPRIATE TEMPORARY STABILIZATION TO AVOID DIRECT CONTACT WITH PRECIPITATION OR TO MINIMIZE SEDIMENT DISCHARGE.
5. DO NOT HOSE DOWN OR SWEEP SOIL OR SEDIMENT ACCUMULATED ON PAVEMENT OR OTHER IMPERVIOUS SURFACES INTO ANY STORMWATER CONVEYANCE (UNLESS CONNECTED TO A SEDIMENT BASIN, SEDIMENT TRAP, OR SIMILARLY EFFECTIVE CONTROL), STORM DRAIN INLET, OR SURFACE WATER.
6. UNLESS INFEASIBLE, CONTAIN AND SECURELY PROTECT FROM WIND.

SEDIMENT CONTROL BARRIER
NTS



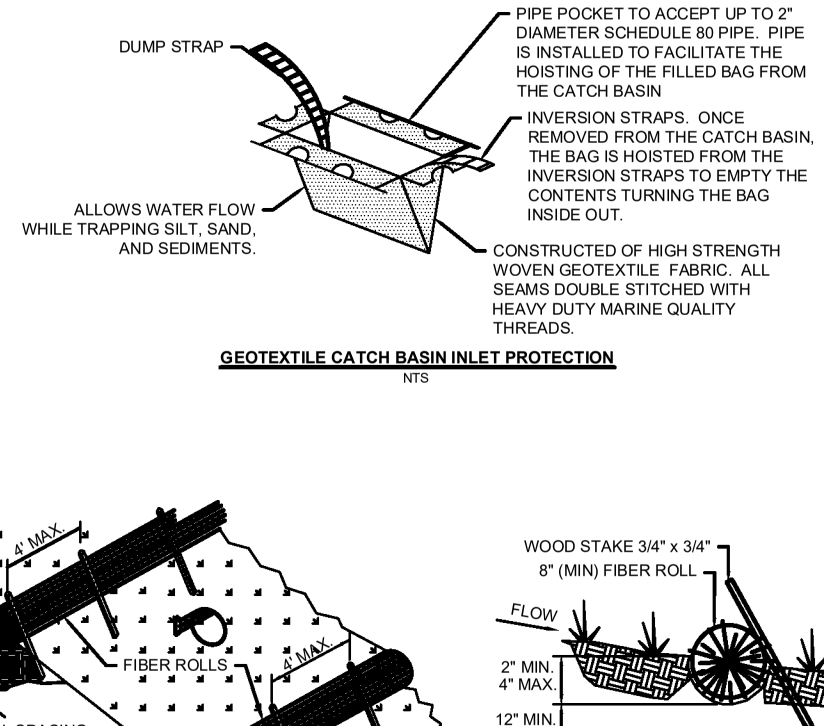
PLAN



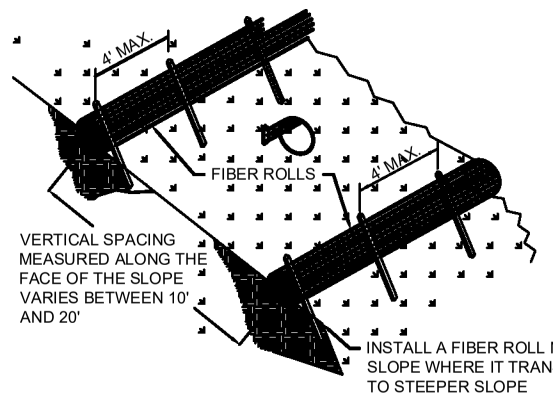
SECTION

NOTES:
1. FOR USE WHERE CONTRIBUTING AREAS ARE UNSTABILIZED AND OR UNPAVED.
2. SHAPE BASIN SO THAT LONGEST INFLOW AREA FACES LONGEST LENGTH OF TRAP.
3. FOR CONCENTRATED FLOWS, SHAPE BASIN IN 2:1 RATIO WITH LENGTH ORIENTED TOWARDS DIRECTION OF FLOW.

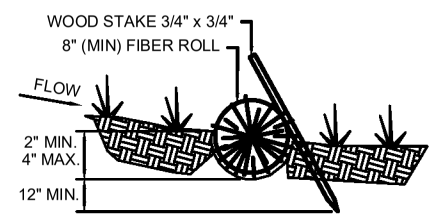
GRAVEL DROP INLET PROTECTION
NTS



GEOTEXTILE CATCH BASIN INLET PROTECTION
NTS



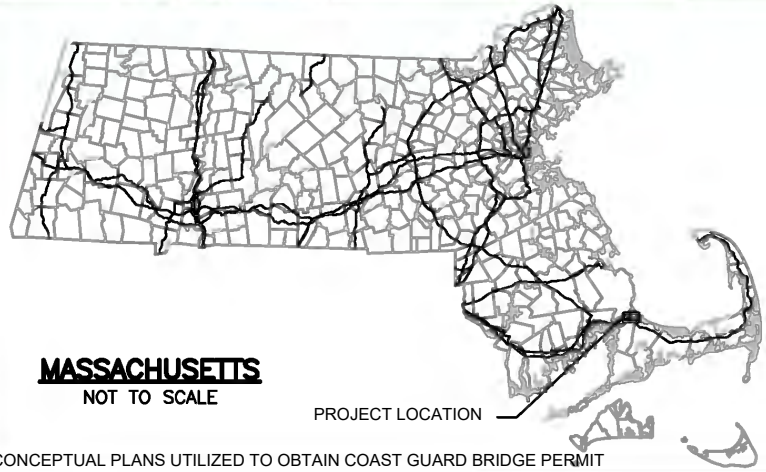
TYPICAL FIBER ROLL SLOPE INSTALLATION



ENTRENCHMENT DETAIL

NOTES:
1. PREFABRICATED ROLL TO CONSIST OF WOOD EXCELSIOR, RICE, WHEAT STRAW OR COCONUT FIBERS.
2. FIBER ROLL INSTALLATION REQUIRES THE PLACEMENT AND SECURE STAKING OF THE ROLL IN A TRENCH, 2"-4" DEEP, DUG ON CONTOUR. RUNOFF MUST NOT BE ALLOWED TO RUN UNDER OR AROUND ROLL.
3. WOOD STAKES (24" MIN. IN LENGTH) SHALL BE SPACED 4' MAXIMUM ON CENTER.
4. ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT REACHES 1/2 OF ROLL HEIGHT
5. ROLLS MAY BE PLACED ON A SLOPE IN SUCCESSION TO SHORTEN THE SLOPE LENGTH AND SPREAD RUNOFF AS SHEET FLOW. ROLLS MAY ALSO BE PLACED AT THE TOE OF EXPOSED SLOPES.
6. IF THERE IS EXCESSIVE PONDING BEHIND REPLACE FIBER ROLL OR PLACE AN ADDITIONAL ROLL ON TOP OR IN FRONT OF THE EXISTING ROLL IN THESE AREAS.
7. ROLLS MUST BE REPAIRED OR REPLACED IF SPLIT, TORN UNRAVELLING OR SLUMPING.
8. AN ADEQUATE RESERVE OF ROLLS MUST BE KEPT ON SITE AT ALL TIMES FOR EMERGENCY AND/OR ROUTINE REPLACEMENT.
9. ROLLS SHALL BE REMOVED ONLY AFTER EXPOSED SOILS IN THE CONTRIBUTING DRAINAGE AREA ACHIEVE FINAL STABILIZATION.

TYPICAL FIBER ROLL INSTALLATION
NTS



CONCEPTUAL PLANS UTILIZED TO OBTAIN COAST GUARD BRIDGE PERMIT

PLAN

0 2000 4000 8000

SCALE IN FEET

OWNER/APPLICANT:	USACE/MASSDOT
CONSULTANT/AGENT:	HNTB
BRIDGE:	SAGAMORE BRIDGE
WATERWAY:	CAPE COD CANAL
MILEPOINT:	4.55
LOCATION:	BOURNE, BARNSTABLE COUNTY, MA
DATUM:	NAVD88 AND NAD83

SEPTEMBER 10, 2025 SHEET 1 OF 6

LOCATION MAP

HNTB

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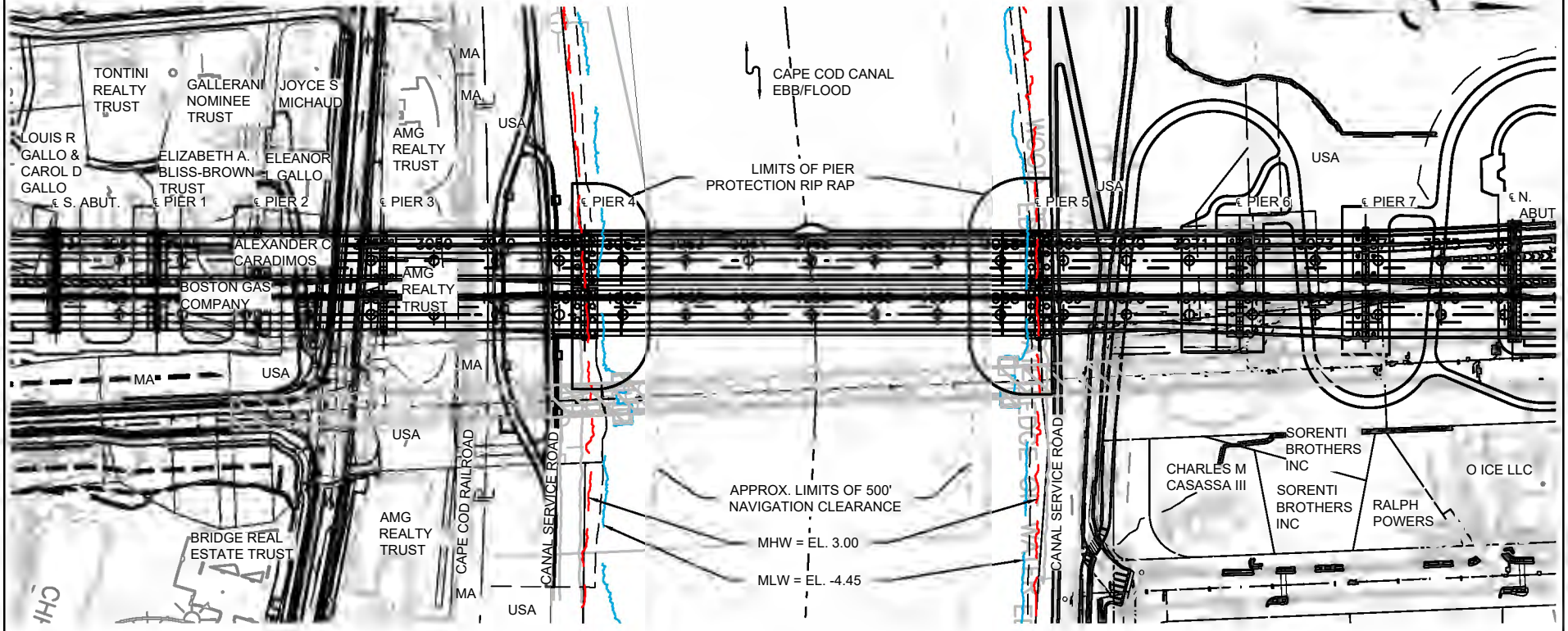
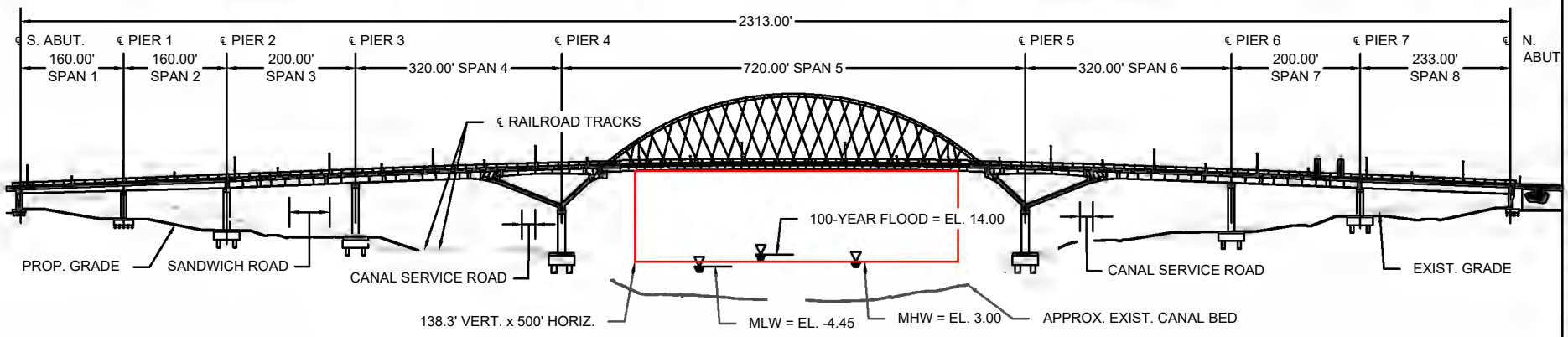
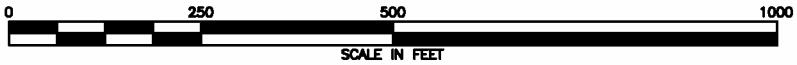




NOTES:

1. EXISTING BRIDGE PIER TO BE REMOVED TWO FEET BELOW PROPOSED RIP RAP ISLAND PROTECTION.
2. REFER TO SHEETS 3 AND 4 FOR DETAIL DIMENSIONS OF ARCH SPAN PLAN AND ELEVATION OVER CAPE COD CANAL.



CONCEPTUAL PLANS UTILIZED TO OBTAIN COAST GUARD BRIDGE PERMIT

OWNER/APPLICANT:	USACE/MASSDOT
CONSULTANT/AGENT:	HNTB
BRIDGE:	SAGAMORE BRIDGE
WATERWAY:	CAPE COD CANAL
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LOCATION:	BOURNE, BARNSTABLE COUNTY, MA
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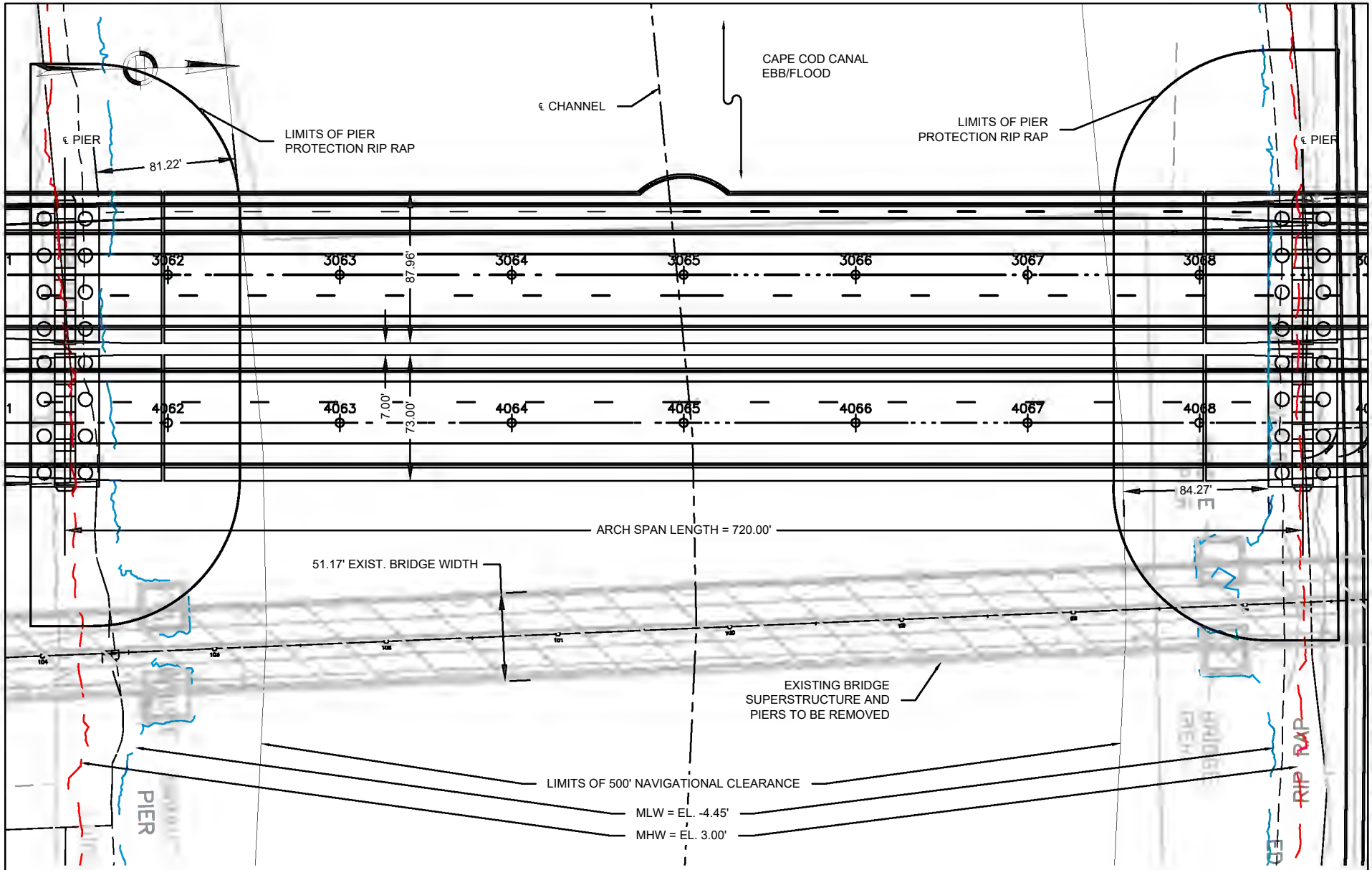
SEPTEMBER 10, 2025 SHEET 2 OF 6

GENERAL PLAN & ELEVATION

HNTB



NOTE:
LIMIT OF USACE-AUTHORIZED NAVIGATION CHANNEL = 480'

0 80 180 320
SCALE IN FEET

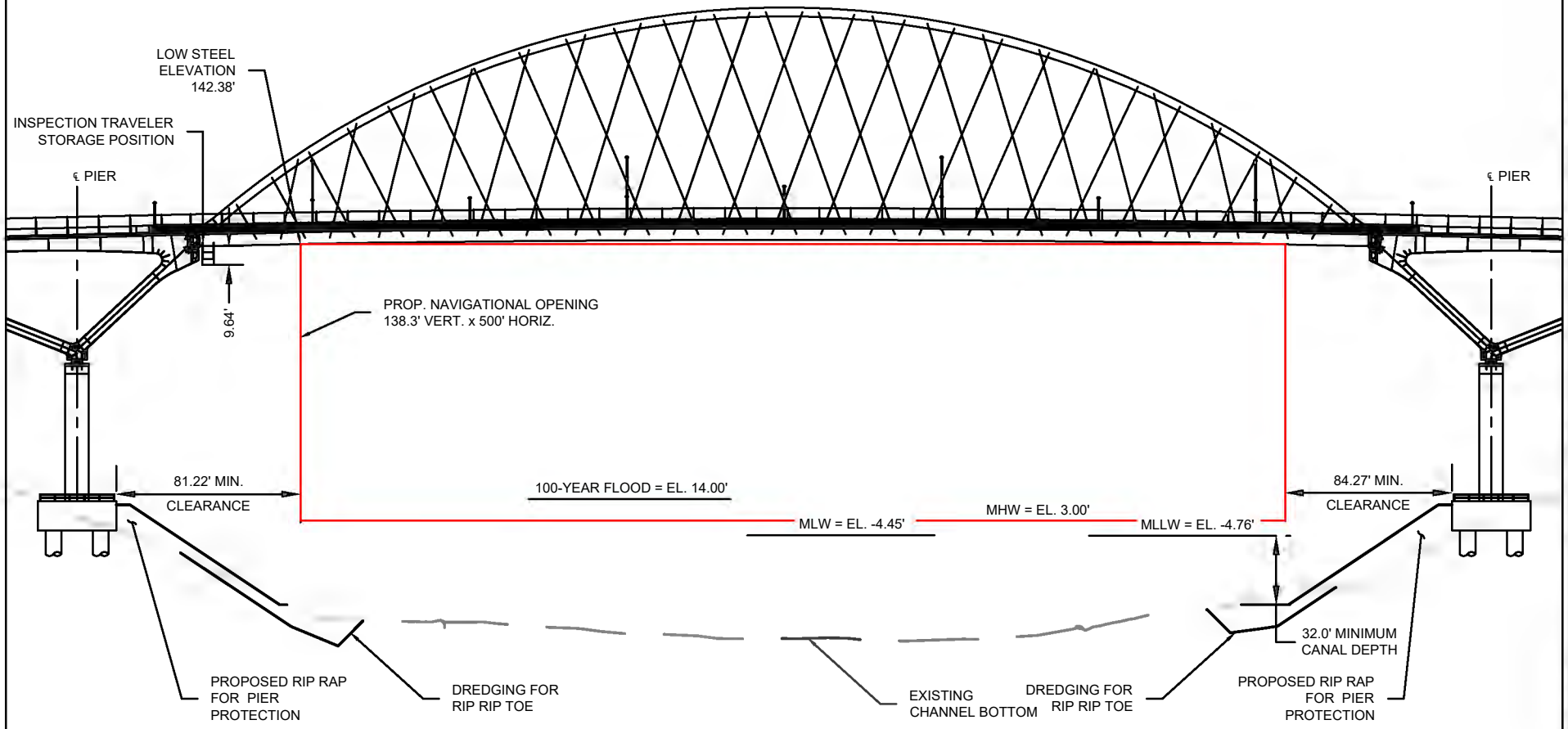
CONCEPTUAL PLANS UTILIZED TO OBTAIN COAST GUARD BRIDGE PERMIT

OWNER/APPLICANT:	USACE/MASSDOT
CONSULTANT/AGENT:	HNTB
BRIDGE:	SAGAMORE BRIDGE
WATERWAY:	CAPE COD CANAL
MILEPOINT:	4.55
LOCATION:	BOURNE, BARNSTABLE COUNTY, MA
DATUM:	NAVD88 AND NAD83

SEPTEMBER 10, 2025 SHEET 3 OF 6

ARCH SPAN PLAN VIEW

HNTB



RIP-RAP PIER PROTECTION APPROXIMATE QUANTITIES BELOW MHW			
	SOUTH	NORTH	TOTAL
DREDGE CY	8,100	9,000	17,100
FILL CY	13,200	17,000	30,200
NET CY	5,100	8,000	13,100

NOTE:
TOE OF RIPRAP PIER PROTECTION WHICH EXTENDS INTO THE NAVIGATION CHANNEL SHALL BE PLACED AT AN ELEVATION LOWER THAN THE ALLOWABLE DREDGE OVERDEPTH (EL. -36.76).

0 80 180 320
SCALE IN FEET

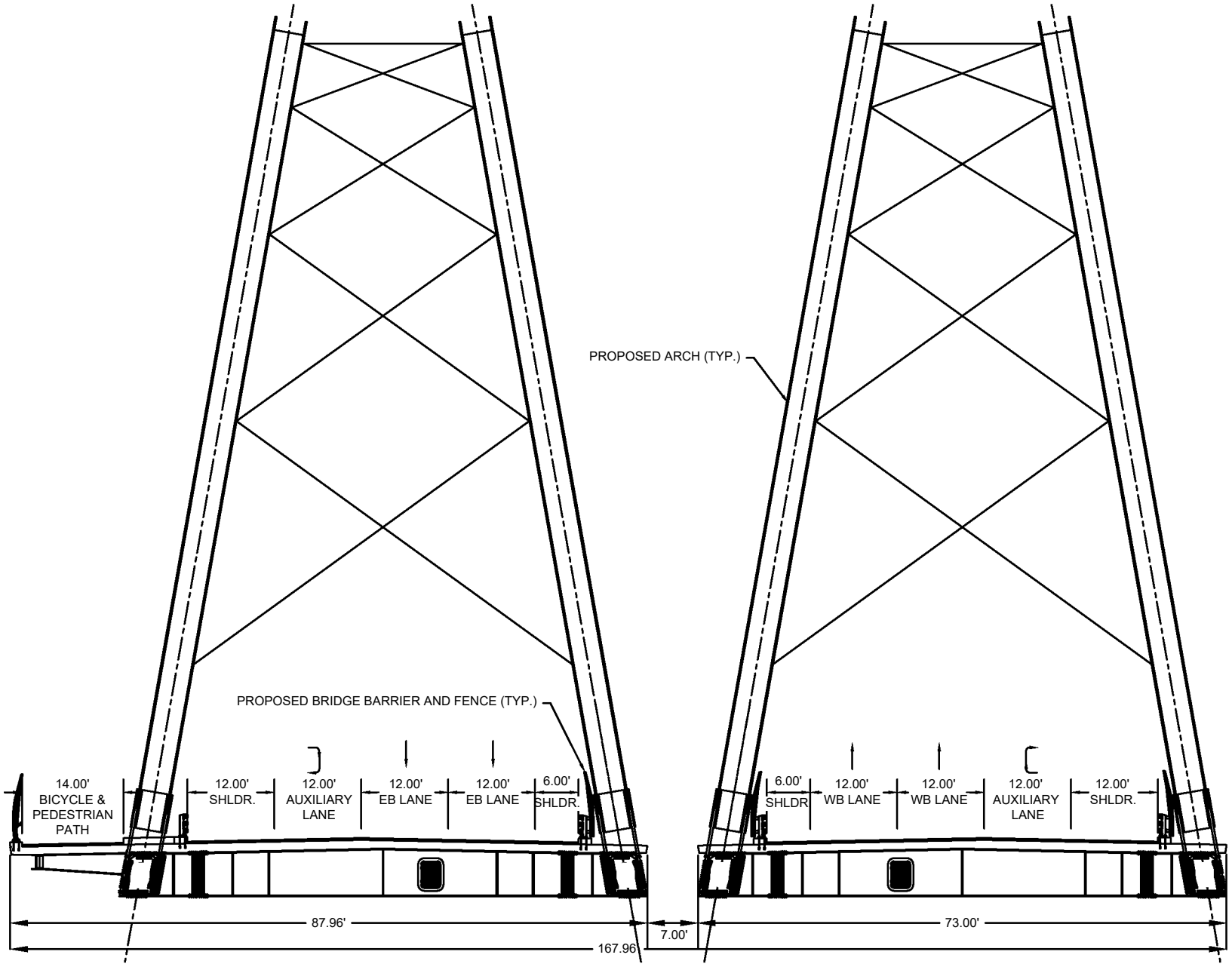
CONCEPTUAL PLANS UTILIZED TO OBTAIN COAST GUARD BRIDGE PERMIT

OWNER/APPLICANT: USACE/MASSDOT
CONSULTANT/AGENT: HNTB
BRIDGE: SAGAMORE BRIDGE
WATERWAY: CAPE COD CANAL
MILEPOINT: 4.55
LOCATION: BOURNE, BARNSTABLE COUNTY, MA
DATUM: NAVD88 AND NAD83

SEPTEMBER 10, 2025 SHEET 4 OF 6

ARCH SPAN ELEVATION

HNTB



NOTE:

1. THE SEPARATED FACILITY WILL BE 14 FEET WIDE ON THE MAIN ARCH SPAN OVER CAPE COD CANAL AND 20 FEET WIDE ON THE APPROACH SECTIONS.

0 20 40 80

SCALE IN FEET

CONCEPTUAL PLANS UTILIZED TO OBTAIN COAST GUARD BRIDGE PERMIT

OWNER/APPLICANT:	USACE/MASSDOT
CONSULTANT/AGENT:	HNTB
BRIDGE:	SAGAMORE BRIDGE
WATERWAY:	CAPE COD CANAL
MILEPOINT:	4.55
LOCATION:	BOURNE, BARNSTABLE COUNTY, MA
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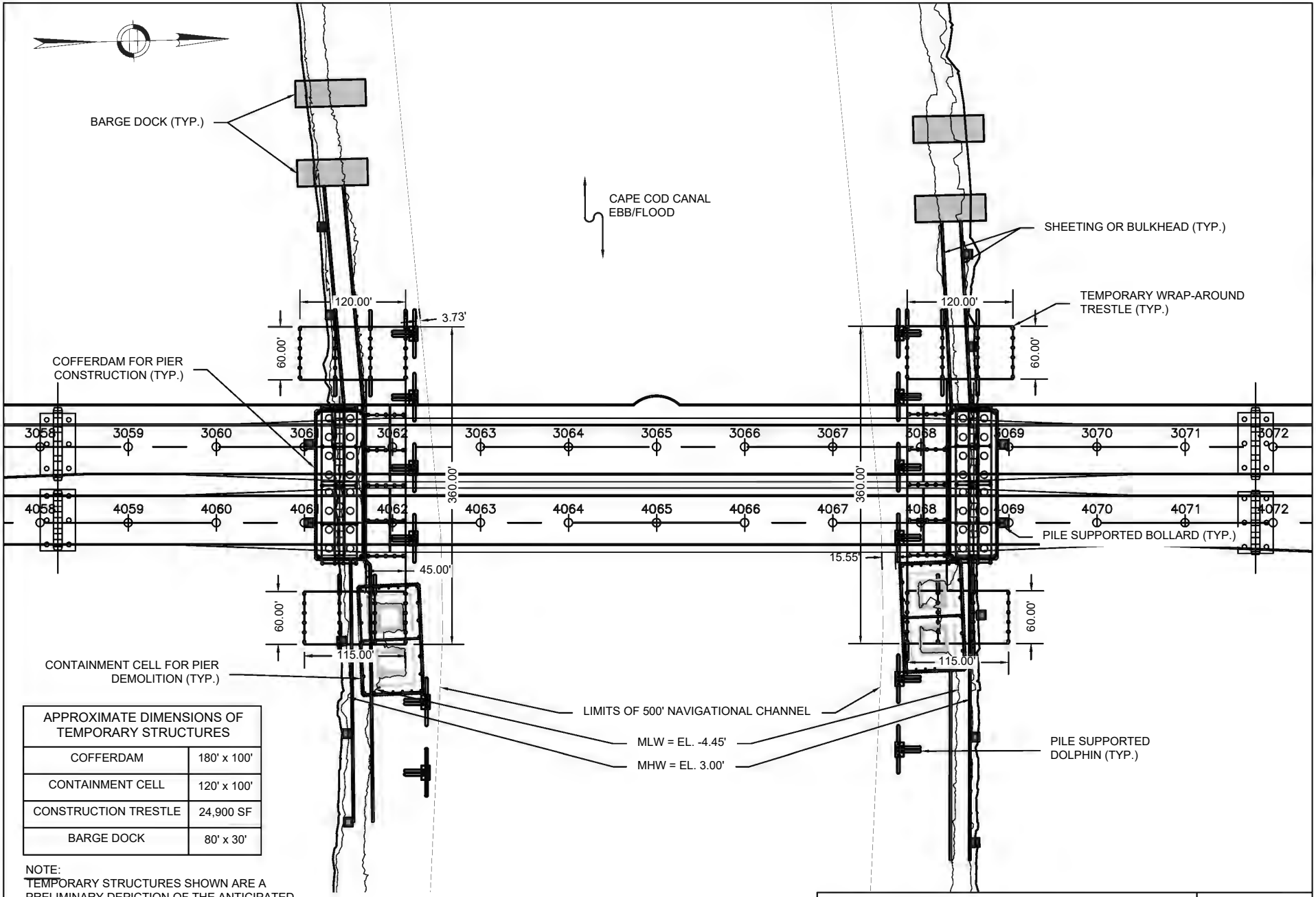
SEPTEMBER 10, 2025 SHEET 5 OF 6

TYPICAL SECTION

HNTB



APPROXIMATE DIMENSIONS OF TEMPORARY STRUCTURES	
COFFERDAM	180' x 100'
CONTAINMENT CELL	120' x 100'
CONSTRUCTION TRESTLE	24,900 SF
BARGE DOCK	80' x 30'

NOTE:
TEMPORARY STRUCTURES SHOWN ARE A PRELIMINARY DEPICTION OF THE ANTICIPATED WORK. THESE ARE EXPECTED TO BE REVISED BY THE CONTRACTOR.

0 150 300 600
SCALE IN FEET

CONCEPTUAL PLANS UTILIZED TO OBTAIN COAST GUARD BRIDGE PERMIT

OWNER/APPLICANT: USACE/MASSDOT
CONSULTANT/AGENT: HNTB
BRIDGE: SAGAMORE BRIDGE
WATERWAY: CAPE COD CANAL
MILEPOINT: 4.55
LOCATION: BOURNE, BARNSTABLE COUNTY, MA
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SEPTEMBER 10, 2025 SHEET 6 OF 6

TEMPORARY STRUCTURES

HNTB