APPENDIX G – IMPACTS TO WATERS OF THE U.S., REV 2

I-64 Hampton Roads Bridge-Tunnel Expansion Project

Hampton Roads Connector Partners
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Hampton-Norfolk, Virginia
December 19, 2019

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Design Joint Venture

ATTACHMENTS

Attachment G-1: Joint Permit Application Impact Plates
Attachment G-2: Joint Permit Application Impact Tables
Attachment G-3: Design Plans
- Attachment G-3A: Structural Design
- Attachment G-3B: Island Design
- Attachment G-3C: Roadway Sections
- Attachment G-3D: Willoughby Spit Sections

Attachment G-4: Preliminary Jusrisdictional Determination
- Attachment G-4A: PJD September 2017
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G.1 INTRODUCTION

The Impact Plates in Attachment G-1 graphically portray the Project's impacts to regulated Waters of the U.S. (WOUS) and jurisdictional state waters (including subaqueous bottom, tidal wetlands, and dunes/beaches), collectively referred to as "Jurisdictional Areas". The Impact Plates display the WOUS type or classification, the type of impact, and the specific wetland or WOUS that is affected. Information provided on the Impact Plates includes the following:

G.1.1.1 IMPACTS TO JURISDICTIONAL AREAS

Impacts to jurisdictional areas are based on the Hampton Roads Bridge Tunnel (HRBT)_AqResource file provided by the Virginia Department of Transportation (VDOT) to the U.S. Army Corps of Engineers (USACE) Office of Regulatory Management (ORM) Jurisdictional Determination and Permit Decisions Database. These wetland boundaries were confirmed in two preliminary jurisdictional determinations (PJDs) NAO-1994-01166 dated September 19, 2017 and October 18, 2018. Minor adjustments to project design caused some areas within the Project's Limits of Disturbance (LOD) to be outside of the confirmed wetland delineation boundary. Hampton Roads Connection Partners (HRCP) performed a field delineation of these areas in November 2019 and a subsequent PJD request is being submitted to USACE concurrently. Additionally, boundaries for the wetland type Estuarine Intertidal Rocky Shore (E2RS2) around the tunnel islands were georeferenced from the Versar Baseline Benthic Survey because this feature was not captured by the PJD delineation (Wong et al. 2018).

WOUS within the Project area include the following:

- E1OW = Estuarine Subtidal Open Water
- E2RF= Estuarine Intertidal Reef
- E2RS2= Estuarine Intertidal Rocky Shore
- E2US2= Estuarine Intertidal Unconsolidated Shore – Sand
- E2US3= Estuarine Intertidal Unconsolidated Shore – Mud
- E2EM= Estuarine Intertidal Emergent Wetland
- E2SS= Estuarine Intertidal Scrub/Shrub Wetland
- E2FO=Estuarine Intertidal Forested Wetland
- PUB= Palustrine Unconsolidated Bottom
- PEM= Palustrine Emergent Wetland
- PSS= Palustrine Scrub/Shrub Wetland
- PFO= Palustrine Forested Wetland
- R2=Riverine-Perennial
- R4=Riverine-Intermittent
- R6=Riverine-Ephemeral
- SAV= Submerged Aquatic Vegetation
    - SAV was separated out from E1OW into its own category.

E1OW were subdivided into habitat categories based on bathymetric data for the Project surveyed by Alpine Ocean Seismic Survey, Inc. in June 2019 to determine permanent impacts due to habitat conversion and support the Habitat Conditions Analysis (Appendix P, Attachment

P-1). E1OW were divided into the following categories based on depth from mean lower low water (MLLW):

- E1OW- Shallow (MLLW to 6.6 feet below MLLW)
    - 6.6 feet depth represents the limit of the photic zone for seagrass
- E1OW- Mid Depth (6.6 to 15 feet below MLLW)
- E1OW- Deep (15 to 30 feet below MLLW)
- E1OW- Deeper (30 to 45 feet below MLLW)
- E1OW- Deepest (>45 feet below MLLW)

Jurisdictional impacts were calculated according to type and duration of projected impact. The impact areas were coded for Impact Type and Wetland ID (based on the ORM shapefile, or designated name during photointerpretation):

Impact Types were categorized as follows:

- P= Permanent Fill
- PC= Permanent Conversion
- PS= Permanent Shading
- ET= Extended Temporary Shading (> 6 months)
- EF=Extended Fill (> 6 months)
- WT= Work Trestle (> 6 months)
- MT= Maintenance of Traffic (MOT) Trestle (> 6 months)
- JT= Jump Trestle (<6 months)
- T= Temporary (< 6 months)
- D= Dredge

Each identified Jurisdictional Area was assigned a unique identifier as follows:

- Numbers 108 thorough 279 are individual wetlands identified in the PJD
- VN and VS are Versar North and Versar South, respectively, and identify the E2RS2 around the North and South Island
- HU, WS, WL, and WP represent wetlands delineated by HRCP during November 2019 since they were outside of the previous PJDs.

Descriptions are defined in Section 8 of the Joint Permit Application (JPA), but are also included below for reference:

- F=fill
- EX=excavation
- S=Structure
- T=tidal
- NT=non-tidal
- TE=temporary
- PE=permanent
- PR=perennial
- IN=intermittent
- SB=subaqueous bottom
- DB=dune/beach

- IS=hydrologically isolated
- V=vegetated
- NV=non-vegetated
- MC=Mechanized Clearing of PFO
  (Example: F, NT, PE, V)

Permanent impacts are not counted as temporary impacts to avoid double counting. Similarly, temporary impacts which are later overlain by permanent trestle impacts are not counted. Permanent pile areas were calculated based on the 30 inch pile diameter or 6.25 square feet per pile. For the temporary jump, MOT, and work trestles, the platforms were calculated as opposed to the piles to allow for flexibility during construction.

For the North Island and South Island expansions, areas of undercut dredging that will then be backfilled with fill were included in the permanent fill impacts and not totaled with the dredge impacts.

Shading impacts were considered permanent for any shading of vegetated wetlands for a time period of greater than 6 months. Shading impacts were calculated in GIS based on DEQ's equation: $I=L_b (W_b-1.25H_b)$ Where: I= wetland impact, L_b=bridge length over wetlands, W_b=bridge width, and H_b=average bridge height over wetlands (DEQ 2018).

Temporary E1OW impacts were only included if disturbance to subaqueous bottom was anticipated (ie in shallow water where culvert repairs will take place).

Mooring, anchoring, and bridge demolition areas were not included in the impact calculations due to the intermittent and temporary nature of the activity.

G.1.2 REFERENCES

Virginia Department of Environmental Quality (DEQ). 2018. Chapter 3: Joint Permit Application Review. Accessed on August 27, 2019 from https://www.deq.virginia.gov/Portals/0/DEQ/Water/WetlandsStreams/VWP%20Permit%20Manual/Ch%203.pdf?ver=2019-01-09-133313-883

Wong, D, A.M. Bromilow and D. Zaveta. 2018. Hampton Roads Bridge-Tunnel Expansion - Baseline Benthic Survey. Prepared by Versar, Columbia, MD.

ATTACHMENT G-1: JOINT PERMIT APPLICATION IMPACT PLATES

GENERAL EROSION AND SEDIMENT CONTROL NOTES

ES-1: Unless otherwise indicated, all vegetative and structural erosion and sediment control practices will be constructed and maintained according to minimum standards and specifications of the Virginia Erosion and Sediment Control Handbook and Virginia Regulations Erosion and Sediment Control Regulations.

ES-2: The plan approving authority must be notified one week prior to the pre- construction conference, one week prior to the commencement of land disturbing activity, and one week prior to the final inspection.

ES-3: All erosion and sediment control measures are to be placed prior to or as the first step in clearing.

ES-4: A copy of the approved erosion and sediment control plan shall be maintained on the site at all times.

ES-5: Prior to· commencing land disturbing activities in areas other than indicated on these plans (including, but not limited to, off-site borrow or waste areas), the contractor shall submit a supplementary erosion control plan to the owner for review and approval by the plan approving authority.

ES-6: The contractor is responsible for installation of any additional erosion control measures necessary to prevent erosion and sedimentation as determined by the plan approving authority.

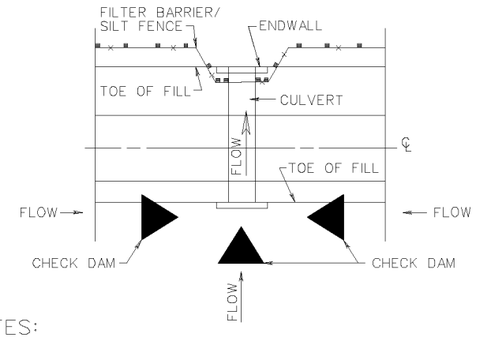
ES-7: All disturbed areas are to drain to approved sediment control measures at all times during land disturbing activities and during site development until final stabilization is achieved.

ES-8: During dewatering operations, water will be pumped into an approved filtering device.

ES-9: The contractor shall inspect all erosion control measures periodically and after each runoff-producing rainfall event. Any necessary repairs or cleanup to maintain the effectiveness of the erosion control devices shall be made immediately.

EC-5

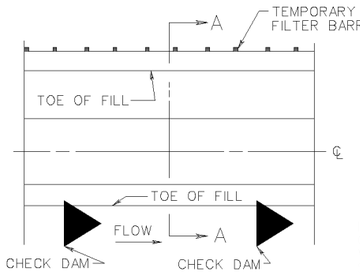
TYPICAL DETAIL FOR TEMPORARY FILTER BARRIER/SILT FENCE/CHECK DAM AT CULVERT



NOTES:

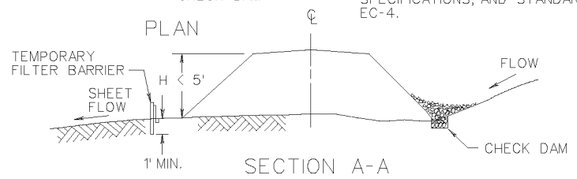
1. IF ANY PORTION OF FILL IS GREATER THAN 5', SILT FENCE IS REQUIRED. IF FILL HEIGHT IS LESS THAN 5', FILTER BARRIER IS REQUIRED.
2. ROCK CHECK DAM IS TO BE CONSTRUCTED IN ACCORDANCE WITH THE ROAD AND BRIDGE SPECIFICATIONS, AND STANDARD EC-4.

TYPICAL DETAIL FOR TEMPORARY FILTER BARRIER/CHECK DAM AT TOE OF FILL



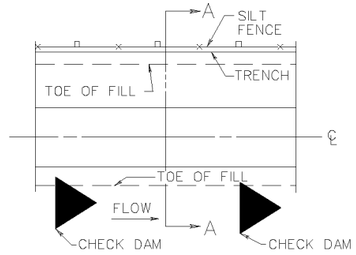
PLAN

NOTE:
ROCK CHECK DAM IS TO BE CONSTRUCTED IN ACCORDANCE WITH THE ROAD AND BRIDGE SPECIFICATIONS, AND STANDARD EC-4.

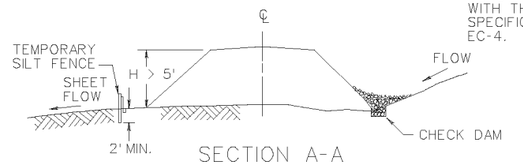


SECTION A-A

TYPICAL DETAIL FOR TEMPORARY SILT FENCE/CHECK DAM AT TOE OF FILL

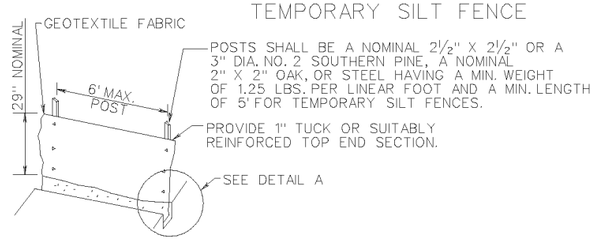


NOTE:
ROCK CHECK DAM IS TO BE CONSTRUCTED IN ACCORDANCE WITH THE ROAD AND BRIDGE SPECIFICATIONS, AND STANDARD EC-4.

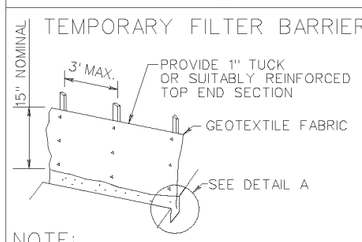


SECTION A-A

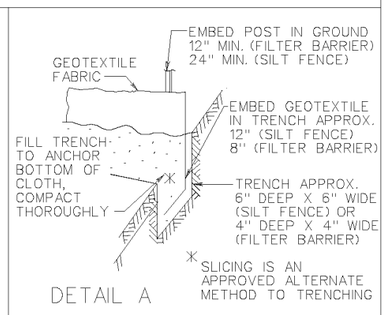
TEMPORARY SILT FENCE



TEMPORARY FILTER BARRIER



NOTE:
SUPPORTS FOR TEMPORARY FILTER BARRIERS SHALL BE A NOMINAL 1" X 2" OR A 1½" DIA. NO. 2 SOUTHERN PINE OR OAK, OR STEEL HAVING A MIN. WEIGHT OF 1.00 LBS. PER LINEAR FOOT.



DETAIL A

TEMPORARY SILT FENCE AND FILTER BARRIER

VIRGINIA DEPARTMENT OF TRANSPORTATION

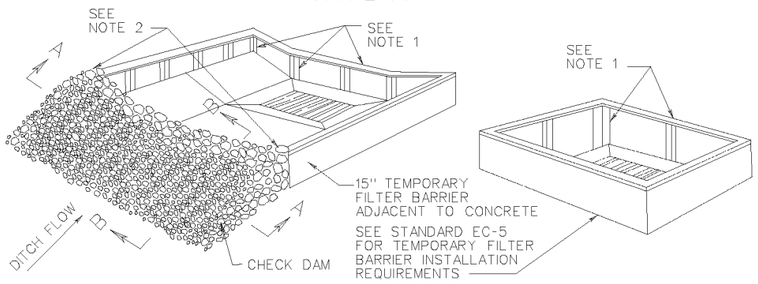
REV. 9/06

114.06

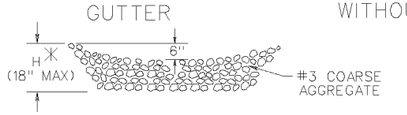
SPECIFICATION REFERENCE
107 242 303

EC-6

DROP INLET SILT TRAP (TYPE A)



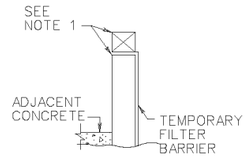
TYPICAL TREATMENT FOR DROP INLET WITH CONCRETE GUTTER

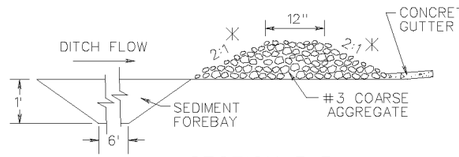


SECTION A-A

✳IF CHECK DAM IS LOCATED INSIDE CLEAR ZONE AND ADJACENT TO A TRAVELWAY, SLOPE FACING ON COMING TRAFFIC IS TO BE 6:1 AND MAXIMUM H IS TO BE 12".

TYPICAL TREATMENT FOR DROP INLET WITHOUT CONCRETE GUTTER





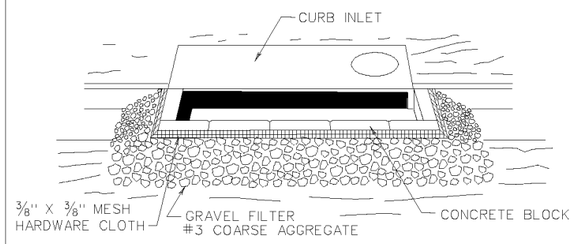
SECTION B-B

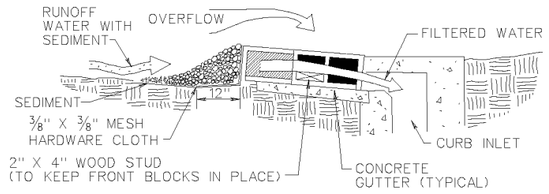
NOTES

1. POSTS AND TOP RAIL SHALL BE A NOMINAL 2½" X 2½" OR A 3" DIA. NO. 2 SOUTHERN PINE, A NOMINAL 2" X 2" OAK, OR STEEL HAVING A MIN. WEIGHT OF 1.25 LBS. PER LINEAR FOOT AND A MIN. LENGTH OF 5' FOR TEMPORARY SILT FENCES.
2. END OF FILTER BARRIER TO BE EMBEDDED INTO AGGREGATE.
3. IF A DROP INLET IS LOCATED IN A SAG IN THE DITCH GRADE, A CHECK DAM IS REQUIRED FOR EACH SIDE OF THE INLET THAT RECEIVES DITCH FLOW.
4. WHERE DRAINAGE AREAS EXCEED ONE ACRE OR DITCH GRADE EXCEEDS 3%, A TEMPORARY SEDIMENT FOREBAY SHALL BE INSTALLED WITH MINIMUM DIMENSIONS OF 12" DEPTH, 2' WIDTH AND 6' LENGTH.

GEOTEXTILE PRODUCTS DESIGNED TO BE INSERTED INTO GRATED DROP INLETS OR DESIGNED TO COVER THE SLOTS OF SLOT DROP INLETS, THAT HAVE BEEN APPROVED FOR USE ON VDOT PROJECTS AND ARE FOUND ON VDOT'S SPEL LIST, MAY BE SUBSTITUTED FOR THE DROP INLET PROTECTION DEVICES DETAILED HEREON.

DROP INLET SILT TRAP TYPE B (BLOCK AND GRAVEL)



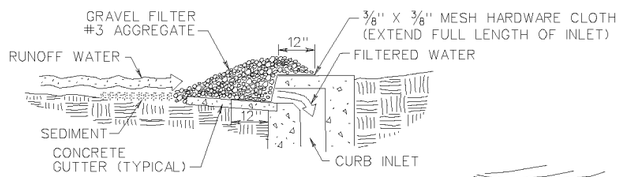


SECTION VIEW

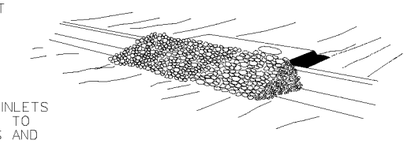
SPECIFIC APPLICATION

THIS METHOD OF INLET PROTECTION IS APPLICABLE AT CURB INLETS WHERE AN OVERFLOW CAPABILITY IS NECESSARY TO PREVENT EXCESSIVE PONDING IN FRONT OF THE STRUCTURE.

ALTERNATE DROP INLET SILT TRAP TYPE B (GRAVEL)



SECTION VIEW



SPECIFIC APPLICATION

THIS METHOD OF INLET PROTECTION IS APPLICABLE AT CURB INLETS WHERE PONDING IN FRONT OF THE STRUCTURE IS NOT LIKELY TO CAUSE INCONVENIENCE OR DAMAGE TO ADJACENT STRUCTURES AND UNPROTECTED AREAS.

SPECIFICATION REFERENCE
107 242 303

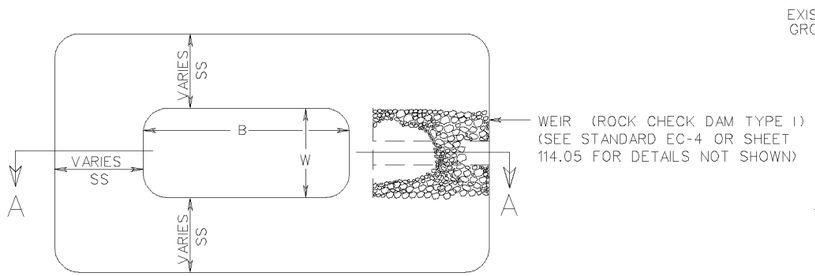
DROP INLET SILT TRAP (TYPE A AND B)

VIRGINIA DEPARTMENT OF TRANSPORTATION

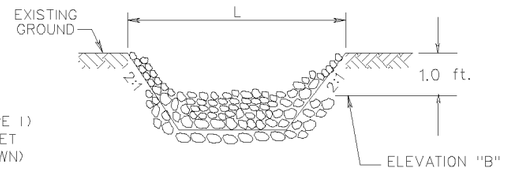
REV. 3/03

114.07

EC-7



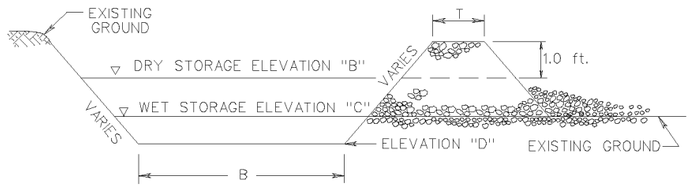
PLAN VIEW OF TEMPORARY SEDIMENT TRAP



TYPICAL SECTION THRU WEIR
(ROCK CHECK DAM TYPE 1)

NOTES:

1. CHECK DAM IS SHOWN FOR ILLUSTRATION ONLY AND IS NOT INCLUDED IN PAYMENT FOR SEDIMENT TRAP.
2. THE SEDIMENT STORAGE VOLUME SHALL BE 134 CUBIC YARDS/ACRE OF TOTAL CONTRIBUTING DRAINAGE AREA AND SHALL CONSIST OF HALF IN THE FORM OF WET STORAGE AND HALF IN THE FORM OF DRY STORAGE.
3. SEE PLANS FOR DIMENSIONS AND ELEVATIONS.



TYPICAL SECTION (A-A) THRU
TEMPORARY SEDIMENT TRAP

TYPICAL SEDIMENT TRAP

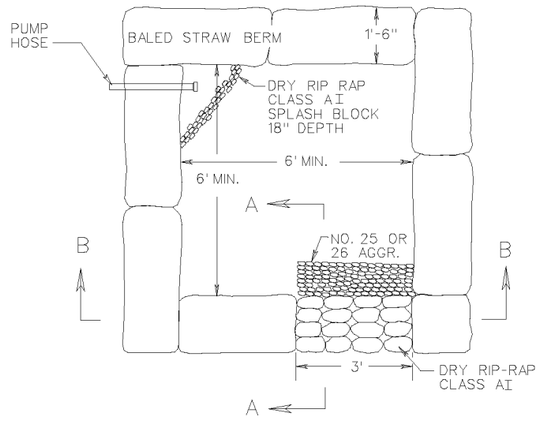
VIRGINIA DEPARTMENT OF TRANSPORTATION

114.08

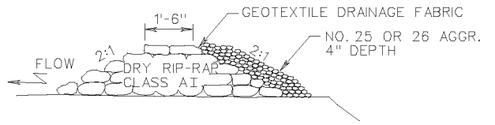
SPECIFICATION REFERENCE

107
303

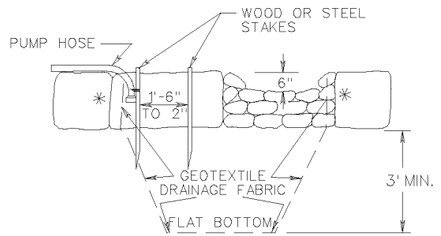
TYPICAL DEWATERING BASIN



PLAN



SECTION A-A



SECTION B-B

* GEOTEXTILE DRAINAGE FABRIC TO COVER INSIDE FACE OF BALED STRAW BERM.

NOTES:

1. DEWATERING BASIN SIZE SHALL BE DETERMINED BY THE FORMULA 16 X GAL./MIN. OF PUMP = CU. FT. OF STORAGE CAPACITY.
2. THIS WORK SHALL CONSIST OF THE CONSTRUCTION OF A DEWATERING BASIN FOR THE PURPOSE OF RECEIVING SEDIMENT-LADENED WATER PUMPED FROM A CONSTRUCTION SITE TO ALLOW FOR FILTRATION BEFORE IT REENTERS THE WATERWAY. PUMPING INTO THESE BASINS SHALL CEASE WHEN THE FLOW FROM THE BASIN BECOMES SEDIMENT-LADENED.
3. SURFACE WATER FLOW SHALL BE DIVERTED AROUND THIS DEVICE.
4. THE OUTFALL FROM THE BASIN(S) SHALL HAVE A STABILIZED CONVEYANCE TO RECEIVING WATERS.
5. ONCE THE DEWATERING BASIN BECOMES FILLED TO HALF OF THE EXCAVATED DEPTH, ACCUMULATED SEDIMENT SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED DISPOSAL AREA OUTSIDE OF THE 100-YEAR FLOODPLAIN UNLESS OTHERWISE APPROVED ON THE PLANS.
6. SEDIMENT CONTROL DEVICES ARE TO REMAIN IN PLACE UNTIL ALL DISTURBED AREAS ARE STABILIZED AND THE ENGINEER APPROVES THEIR REMOVAL. GROUND CONTOURS SHALL BE RETURNED TO THEIR ORIGINAL CONDITION UNLESS SPECIFICALLY APPROVED OTHERWISE BY THE ENGINEER.
7. SYNTHETIC PRODUCTS APPROVED BY VDOT'S NEW PRODUCTS COMMITTEE AS A SUBSTITUTE MAY BE USED IN LIEU OF THIS DESIGN. HOWEVER, VDOT WILL ONLY COMPENSATE THE CONTRACTOR UP TO THE BID PRICE PER EACH AT EACH SITE.

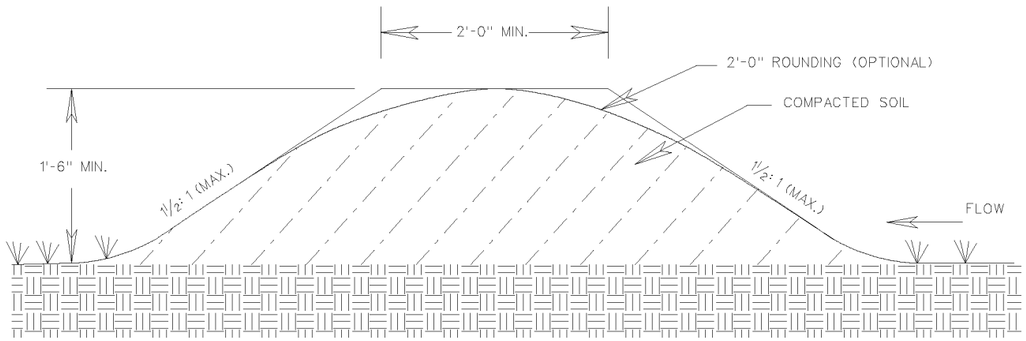
SPECIFICATION REFERENCE
107 303

DEWATERING BASIN

VIRGINIA DEPARTMENT OF TRANSPORTATION

114.09

EC-9



TEMPORARY DIVERSION DIKE

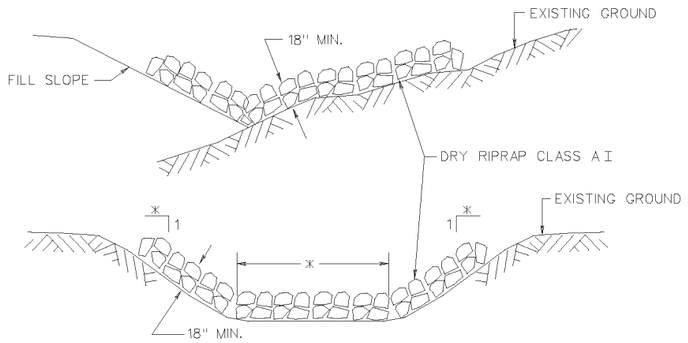
NOTE:

1. THE CHANNEL CREATED BEHIND THE DIKE SHALL HAVE A POSTIVE GRADE TO A STABILIZED OUTLET. THE CHANNEL SHALL BE STABILIZED, AS NECESSARY, TO PREVENT EROSION.
2. TEMPORARY DIVERSION DIKE WILL BE MEASURED AND PAID FOR IN ACCORDANCE WITH SECTION 303 OF THE SPECIFICATIONS.

	SPECIFICATION REFERENCE
TEMPORARY DIVERSION DIKE VIRGINIA DEPARTMENT OF TRANSPORTATION	303

114.10

SUGGESTED METHOD OF TEMPORARILY PLACING RIPRAP FOR EROSION CONTROL IN CHANNELS, DITCHES, & AT TOE OF FILL SLOPES

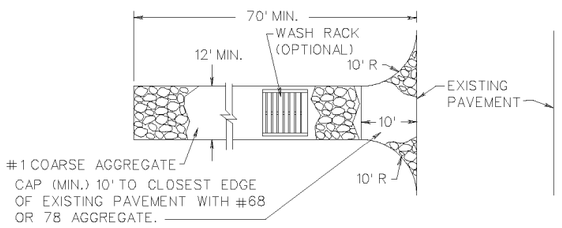


NOTES:

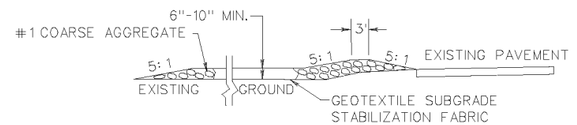
1. THE DEPTH OF PROTECTION WILL DEPEND ON WHATEVER DEPTH IS ATTAINABLE, WITH THE RIPRAP BEING EVENLY SPREAD WITH THE QUANTITY SHOWN ON THESE PLANS. RIPRAP MAY BE ADDED OR DELETED AS FOUND NECESSARY BY THE ENGINEER.

* SIDE SLOPES AND BOTTOM WIDTH (IF TRAPEZOIDAL) SHOWN IN TYPICAL SECTION OF PROPOSED DITCH OR CHANNEL.

MINIMUM REQUIREMENTS FOR STABILIZED CONSTRUCTION ENTRANCE



PLAN



PROFILE

1. SURFACE WATER SHALL BE PIPED UNDER THE CONSTRUCTION ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
2. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT OF WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHT OF WAY SHALL BE REMOVED IMMEDIATELY.
3. WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHT OF WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
4. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER HEAVY USE AND EACH RAIN.

SPECIFICATION REFERENCE
107 303

TEMPORARY EROSION & SILTATION CONTROL

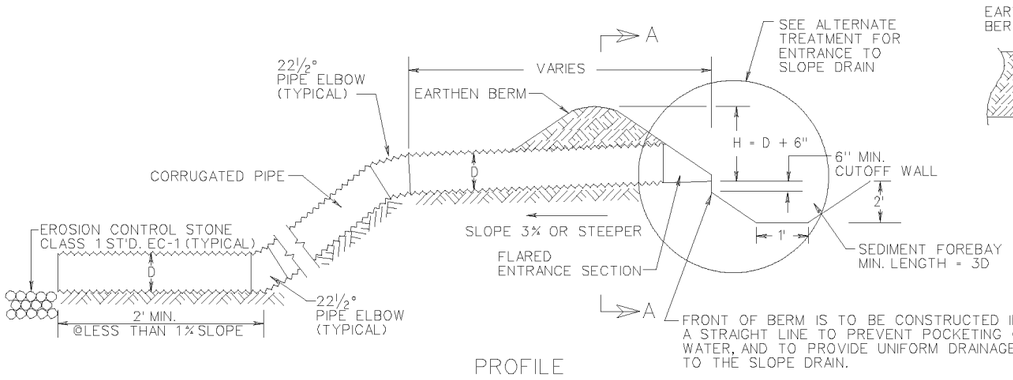
VIRGINIA DEPARTMENT OF TRANSPORTATION

REV. 7/04

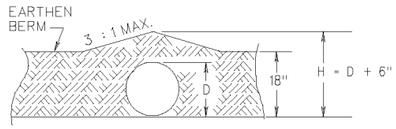
115.01

ESC-INS

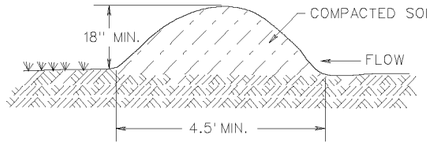
TEMPORARY BERM & SLOPE DRAIN



PROFILE



SECTION A-A



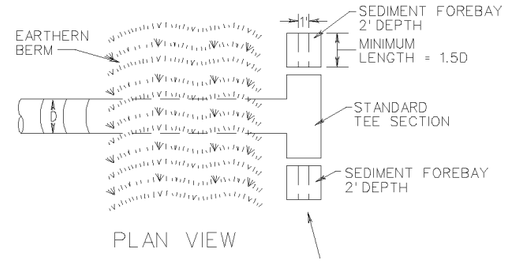
EARTHEN BERM

SIZE OF SLOPE DRAIN	
MAXIMUM DRAINAGE AREA (ACRES)	MINIMUM PIPE DIAMETER, D (IN.)
0.5	12
1.5	18
2.5	21
3.0	24

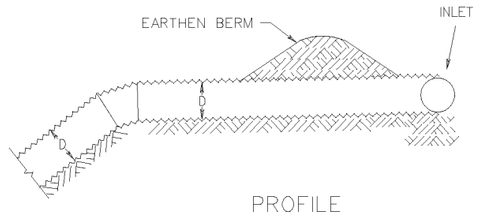
NOTES

1. SLOPE DRAIN SHALL BE SECURELY STAKED TO THE SLOPE, AT 10' (OR LESS) INTERVALS.
2. THE SLOPE DRAIN SECTIONS SHALL BE SECURELY FASTENED TOGETHER AND HAVE WATER TIGHT FITTINGS.

ALTERNATE ENTRANCE TREATMENT



PLAN VIEW



PROFILE

SHEET 2 OF 3

TEMPORARY EROSION & SILTATION CONTROL

VIRGINIA DEPARTMENT OF TRANSPORTATION

115.02

SPECIFICATION REFERENCE

107
303

RESTORATION MEASURES FOR TEMPORARY IMPACTS

Where practicable, the following measures will be implemented to minimize impacts to aquatic resources for temporary impacts:

•E2RS2:
- o Rock/ riprap will be replaced once piles are removed to return structural community for benthic wildlife use.
- o Riprap will be clean and from an approved quarry.

•E2US2:
- o Pile holes will be filled with clean fill and will return to existing habitat conditions.
- o Wetland access areas will be graded to pre-existing biological, chemical, and hydrological conditions.

•E2US3:
- o Wetland matting and low ground pressure equipment will be used for temporary access.
- o Pile holes will be filled with clean fill to match adjacent elevations.
- o Wetland matting will be removed and access areas will be returned to original elevations as well as to pre-existing biological, chemical, and hydrological conditions.

•E2EM:
- o Wetland matting and low ground pressure equipment will be used for temporary access.
- o Pile holes will be filled with clean fill to match adjacent elevations.
- o Wetland matting will be removed and access areas will be restored to original elevations as well as to pre-existing biological, chemical, and hydrological conditions.
- o Disturbed areas will be sprigged with appropriate native vegetation (for example: low marsh = Spartina alterniflora, high marsh = S. patens) to match existing reference wetland.
- o Spartina sprigging will consist of nursery stock peat pot plugs planted on one-foot centers.

• E2SS:
- o Shrubs may be cleared with stumps left in place. Planting of shrubs is not expected as stump sprout from cut shrubs is expected.
- o Wetland matting and low ground pressure equipment will be used for temporary access.
- o Pile holes will be filled with clean fill to match adjacent elevations.
- o Wetland matting will be removed and access areas will be restored to original elevations as well as to pre-existing biological, chemical, and hydrological conditions.
- o If temporary access areas are denuded of herbaceous vegetation the appropriate salt-tolerant seed mix or plugging of native vegetation will be required.
- o Seeding will follow the VDOT and DEQ recommended densities, fertilizing, and mulching requirements.

•E2FO:
- o Tree limbs may be removed for accessibility.
- o If tree clearing required, stumps will be left in place. Planting of trees is not expected as stump sprout from cut trees is expected.
- o Wetland matting and low ground pressure equipment will be used for temporary access.
- o Wetland matting will be removed and access areas will be restored to original elevations as well as to pre-existing biological, chemical, and hydrological conditions.
- o If temporary access areas are denuded of herbaceous vegetation the appropriate salt-tolerant seed mix or plugging of native vegetation will be required.
- o Seeding will follow the VDOT and DEQ recommended densities, fertilizing, and mulching requirements.

•PEM:
- o Wetland matting and low ground pressure equipment will be used for temporary access.
- o Pile holes will be filled with clean fill to match adjacent elevations.
- o Wetland matting will be removed and access areas will be restored to original elevations as well as to pre-existing biological, chemical, and hydrological conditions.
- o Disturbed areas will be seeded with an approved wetland seed mixture that compares to existing reference wetland, such as ERNMX-120 OBL-FACW Perennial Food and Cover Wetland Mix.
- o Seeding will follow the VDOT and DEQ recommended densities, fertilizing, and mulching requirements.

•PSS:
- o Shrubs may be cleared with stumps left in place. Planting of shrubs is not expected as stump sprout from cut shrubs is expected.
- o Wetland matting and low ground pressure equipment will be used for temporary access.
- o Pile holes will be filled with clean fill to match adjacent elevations.
- o Wetland matting will be removed and access areas will be restored to original elevations as well as to pre-existing biological, chemical, and hydrological conditions.
- o If temporary access areas are denuded of herbaceous vegetation the appropriate seed mix or plugging of native vegetation will be required. Seeding will follow the VDOT and DEQ recommended densities, fertilizing, and mulching requirements.

•PFO:
- o Tree limbs may be removed for access.
- o If tree clearing required, stumps will be left in place. Planting of trees is not expected as stump sprout from cut trees is expected.
- o Wetland matting and low ground pressure equipment will be used for temporary access.
- o Wetland matting will be removed and access areas will be restored to original elevations as well as to pre-existing biological, chemical, and hydrological conditions.
- o If temporary access areas are denuded of herbaceous vegetation the appropriate seed mix or plugging of native vegetation will be required. Seeding will follow the VDOT and DEQ recommended densities, fertilizing, and mulching requirements.

•R2:
- o Will restore grade and banks to existing conditions and to match the upstream and downstream banks.
- o Bare banks will be seeded with an approved riparian seed mixture that compares to existing reference waters, such as ERNMX-892 VA Outer Coastal Plain Riparian Mix.
- o Seeding will follow the recommended densities, fertilizing, and mulching requirements.

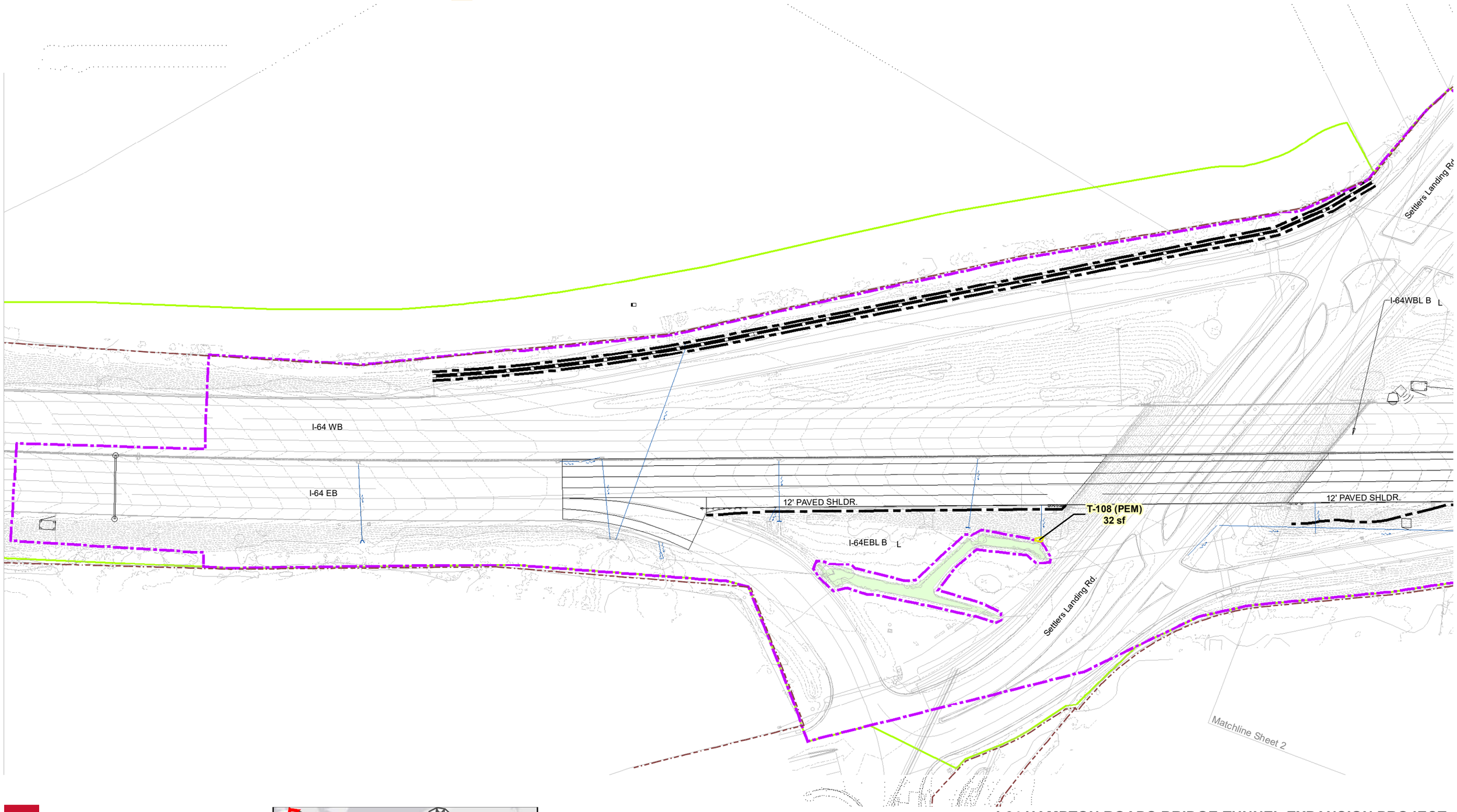
•E1OW, SAV, and PUB do not currently have any restoration measures.

If, after the aforementioned measures have been implemented, the temporary wetland impact areas fail to exhibit all three wetland parameters (i.e., hydrophytic vegetation, hydric soils, and wetland hydrology) after work has concluded in the area of impact, these would be considered to be permanent wetland losses. HRCP would provide additional compensatory mitigation for these areas at standard compensation ratios based on the pre-disturbance cover-type (e.g., 2:1 ratio for former PFO areas, etc.).

HRBT EXPANSION

- Permanent Impact
- Permanent Conversion Impact
- Permanent Shading Impact
- Extended Shading Impact
- Extended Fill Impact
- MOT Trestle Impact
- Work Trestle Impact
- Jump Trestle Impact
- Dredge Impact
- Temporary Impact
- Permanent Pile Impact
- Limit of Disturbance
- Jump Trestle Footprint
- MOT Trestle Footprint
- Work Trestle Footprint
- VDOT Right of Way
- Sound Wall
- Retaining Wall
- Limit of Grading
- Proposed Design
- Underground Utilities
- Proposed Drainage
- Temporary Drainage
- Existing Roadway and Drainage
- Existing Contour
- Mean High Water (0.95 ft)
- Mean Low Water (-1.48 ft)
- Navigation Constraint
- Wetland Delineation Boundary
- E1OW, Deepest
- E1OW, Deeper
- E1OW, Deep
- E1OW, Mid-Depth
- E1OW, Shallow
- E2RF
- E2RS2
- E2US2
- E2US3
- E2EM
- E2SS
- E2FO
- PEM
- PSS
- PFO
- PUB
- R2
- R4
- R6
- SAV

HAMPTON ROADS CONNECTOR PARTNERS



64 HDR | MOTT MACDONALD Design Joint Venture

0 50 100 Feet

DATA SOURCE: VIMS, VDOT, FHWA

I-64 HAMPTON ROADS BRIDGE-TUNNEL EXPANSION PROJECT

JOINT PERMIT APPLICATION IMPACT PLATES

DECEMBER 19, 2019

HRBT EXPANSION

Permanent Impact
Permanent Conversion Impact
Permanent Shading Impact
Extended Shading Impact
Extended Fill Impact
MOT Trestle Impact
Work Trestle Impact
Jump Trestle Impact
Dredge Impact
Temporary Impact
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E2US2
E2US3
E2EM
E2SS
E2FO
PEM
PSS
PFO
PUB
R2
R4
R6
SAV

HAMPTON ROADS CONNECTOR PARTNERS

T-109 (PUB)
3,418 sf

T-110 (PFO)
471 sf

A

Settlers Landing Rd.

I-64WBL B L

12' PAVED SHLDR.

I-64 WB

I-64 EB

I-64EBL B

12' PAVED SHLDR.

12' PAVED SHLDR.

12' PAVED SHLDR.

Matchline Sheet 3

Matchline Sheet 1

64 HDR | MOTT MACDONALD
Design Joint Venture

0 50 100
Feet

DATA SOURCE: VIMS, VDOT, FHWA

I-64 HAMPTON ROADS BRIDGE-TUNNEL EXPANSION PROJECT

JOINT PERMIT APPLICATION IMPACT PLATES

SHEET 2 OF 38

DECEMBER 19, 2019

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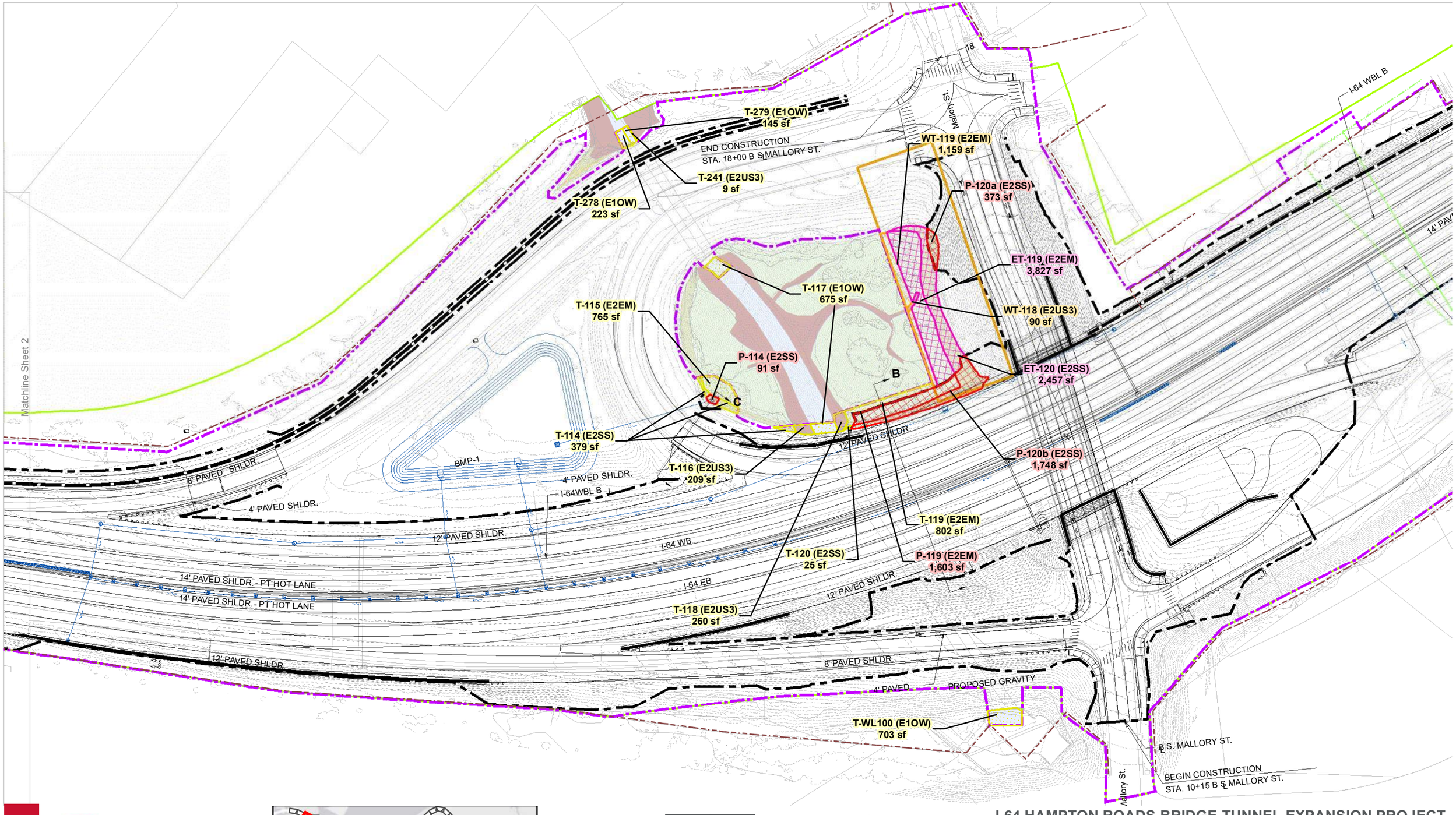
R6
SAV

HAMPTON ROADS CONNECTOR PARTNERS



64 HDR | MOTT MACDONALD
Design Joint Venture

0 50 100
Feet

DATA SOURCE: VIMS, VDOT, FHWA

I-64 HAMPTON ROADS BRIDGE-TUNNEL EXPANSION PROJECT

JOINT PERMIT APPLICATION IMPACT PLATES

SHEET 3 OF 38

DECEMBER 19, 2019

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E2US3
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E2SS
E2FO
PEM
PSS
PFO
PUB
R2
R4
R6
SAV

HAMPTON ROADS CONNECTOR PARTNERS

64 HDR | MOTT MACDONALD
Design Joint Venture

0 50 100
Feet

DATA SOURCE: VIMS, VDOT, FHWA

I-64 HAMPTON ROADS BRIDGE-TUNNEL EXPANSION PROJECT

JOINT PERMIT APPLICATION IMPACT PLATES

DECEMBER 19, 2019

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E2US2
E2US3
E2EM
E2SS
E2FO
PEM
PSS
PFO
PUB
R2
R4
R6
SAV

HAMPTON ROADS CONNECTOR PARTNERS

REMOVE EXISTING STRUCTURE
T-SAVa (SAV) 1,523 sf
T-122 (E2US2) 531 sf
ZOSTERA MARINA EXTENT (VIMS 2013-2017)
JT-122c (E2US2) 771 sf
T-SAVa (SAV) 1,523 sf
I-64WBL B
JT-124e (E1OW) 52,000 sf
12' SHLDR.
16' SHLDR. - PT HOT LANE
JT-124a (E1OW) 116,078 sf
JT-122a (E2US2) 841 sf
WT-HU1 (E2US2) 2,088 sf
JT-122b (E2US2) 422 sf
JT-124d (E1OW) 50,275 sf
ET-HU3 (E2EM) 301 sf
WT-124b (E1OW) 7,493 sf
WT-124a (E1OW) 209 sf
ET-SAV (SAV) 20,800 sf
WT-124c (E1OW) 35,818 sf
I-64EBL B
WT-122 (E2US2) 1,243 sf
P-122 (E2US2) 252 sf
WT-SAV (SAV) 6,653 sf
Ebb Flow
P-HU1 (E2RS2) 356 sf
WT-HU2 (E1OW) 1,620 sf
WT-HU3 (E2EM) 488 sf
T-SAVb (SAV) 16,558 sf
T-HU1 (E2US2) 906 sf
T-HU3 (E2EM) 1,723 sf
ZOSTERA MARINA EXTENT (VIMS 2013-2017)
HAMPTON ROADS HARBOR
Matchline Sheet 4
Matchline Sheet 6

64 HDR | MOTT MACDONALD Design Joint Venture

0 50 100 Feet

DATA SOURCE: VIMS, VDOT, FHWA

I-64 HAMPTON ROADS BRIDGE-TUNNEL EXPANSION PROJECT

JOINT PERMIT APPLICATION IMPACT PLATES

SHEET 5 OF 38

DECEMBER 19, 2019

HRBT EXPANSION

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- E2US2
- E2US3
- E2EM
- E2SS
- E2FO
- PEM
- PSS
- PFO
- PUB
- R2
- R4
- R6
- SAV

HAMPTON ROADS CONNECTOR PARTNERS

Matchline Sheet 7

℄ I-64WBL N GP

WT-124d (E1OW)
46,876 sf

12' SHLDR.

JT-124a (E1OW)
116,078 sf

PROPOSED BRIDGE

REMOVE EXISTING STRUCTURE

I-64WBL B L

Matchline Sheet 5

16' SHLDR. - PT HOT LANE

12' SHLDR.

83.5

P-124,242_NM
(E1OW-Mid Depth)
574,890 sf

I-64EBL B L

Ebb Flow

Total Undercut Dredge
Within North Island
Expansion Fill Footprint
(E1OW)
577,017 sf

HAMPTON ROADS HARBOR

D-124,242 (E1OW)
90,454 sf

Matchline Sheet 8

64 HDR | MOTT MACDONALD Design Joint Venture

0 50 100
Feet

DATA SOURCE: VIMS, VDOT, FHWA

I-64 HAMPTON ROADS BRIDGE-TUNNEL EXPANSION PROJECT

JOINT PERMIT APPLICATION IMPACT PLATES

DECEMBER 19, 2019

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E2US2
E2US3
E2EM
E2SS
E2FO
PEM
PSS
PFO
PUB
R2
R4
R6
SAV

HAMPTON ROADS CONNECTOR PARTNERS

Cable Area

HAMPTON ROADS HARBOR

Flow
Ebb

T-VN (E2RS2)
7,883 sf

T-125 (E2US2)
9,435 sf

WT-125 (E2US2)
1,895 sf

WT-VN (E2RS2)
3,711 sf

T-VN (E2RS2)
7,883 sf

T-125 (E2US2)
9,435 sf

WT-125 (E2US2)
1,895 sf

WT-VN (E2RS2)
3,711 sf

T-125 (E2US2)
9,435 sf

T-VN (E2RS2)
7,883 sf

T-124d (E1OW)
46,876 sf

P-VN (E2RS2)
26,628 sf

P-124_NS
(E1OW-Shallow)
36,567 sf

P-125 (E2US2)
18,061 sf

P-124,242_NM
(E1OW-Mid Depth)
574,890 sf

Matchline
Sheet 6

Matchline
Sheet 8

Matchline
Sheet 9

0 50 100
Feet

DATA SOURCE: VIMS, VDOT, FHWA

64 HDR | MOTT MACDONALD
Design Joint Venture

I-64 HAMPTON ROADS BRIDGE-TUNNEL EXPANSION PROJECT

JOINT PERMIT APPLICATION IMPACT PLATES

SHEET 7 OF 38

DECEMBER 19, 2019

HRBT EXPANSION

- Permanent Impact
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- E2US2
- E2US3
- E2EM
- E2SS
- E2FO
- PEM
- PSS
- PFO
- PUB
- R2
- R4
- R6
- SAV

HAMPTON ROADS CONNECTOR PARTNERS

WT-VN (E2RS2)
3,711 sf

1,895 sf

T-125 (E2US2)
9,435 sf

T-VN (E2RS2)
7,883 sf

P-VN (E2RS2)
26,628 sf

P-124_NS
(E1OW-Shallow)
36,567 sf

P-125 (E2US2)
18,061 sf

P-124,242_NM
(E1OW-Mid Depth)
574,890 sf

D-124,242 (E1OW)
90,454 sf

SEE PROPOSED TUNNEL DRAWINGS

HAMPTON ROADS HARBOR

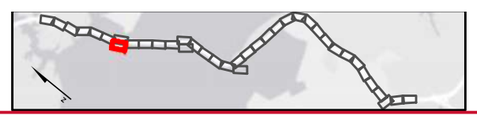
Total Undercut Dredge
Within North Island
Expansion Fill Footprint
(E1OW)
577,017 sf

Flow Ebb

Matchline Sheet 6

Hampton Creek Approach Channel

64 HDR | MOTT MACDONALD Design Joint Venture



0 50 100
Feet

DATA SOURCE: VIMS, VDOT, FHWA

I-64 HAMPTON ROADS BRIDGE-TUNNEL EXPANSION PROJECT

JOINT PERMIT APPLICATION IMPACT PLATES

DECEMBER 19, 2019

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E1OW, Deepest
E1OW, Deeper
E1OW, Deep
E1OW, Mid-Depth
E1OW, Shallow
E2RF
E2RS2
E2US2
E2US3
E2EM
E2SS
E2FO
PEM
PSS
PFO
PUB
R2
R4
R6
SAV

HAMPTON ROADS CONNECTOR PARTNERS

Matchline Sheet 7

P-124,242_NM
(E1OW-Mid Depth)
574,890 sf

T-VN (E2RS2)
7,883 sf

T-125 (E2US2)
9,435 sf

P-124_NS
(E1OW-Shallow)
36,567 sf

P-125 (E2US2)
18,061 sf

P-VN (E2RS2)
26,628 sf

P-124_ND (E1OW-Deep)
33,748 sf

D-124,242 (E1OW)
90,454 sf

Total Undercut Dredge
Within North Island
Expansion Fill Footprint
(E1OW)
577,017 sf

HAMPTON ROADS HARBOR

SEE PROPOSED TUNNEL DRAWINGS

Matchline Sheet 8

Matchline Sheet 10

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Design Joint Venture

0 50 100
Feet

DATA SOURCE: VIMS, VDOT, FHWA

I-64 HAMPTON ROADS BRIDGE-TUNNEL EXPANSION PROJECT

JOINT PERMIT APPLICATION IMPACT PLATES

DECEMBER 19, 2019

HRBT EXPANSION

- Permanent Impact
- Permanent Conversion Impact
- Permanent Shading Impact
- Extended Shading Impact
- Extended Fill Impact
- MOT Trestle Impact
- Work Trestle Impact
- Jump Trestle Impact
- Dredge Impact
- Temporary Impact
- Permanent Pile Impact
- Limit of Disturbance
- Jump Trestle Footprint
- MOT Trestle Footprint
- Work Trestle Footprint
- VDOT Right of Way
- Sound Wall
- Retaining Wall
- Limit of Grading
- Proposed Design
- Underground Utilities
- Proposed Drainage
- Temporary Drainage
- Existing Roadway and Drainage
- Existing Contour
- Mean High Water (0.95 ft)
- Mean Low Water (-1.48 ft)
- Navigation Constraint
- Wetland Delineation Boundary
- E1OW, Deepest
- E1OW, Deeper
- E1OW, Deep
- E1OW, Mid-Depth
- E1OW, Shallow
- E2RF
- E2RS2
- E2US2
- E2US3
- E2EM
- E2SS
- E2FO
- PEM
- PSS
- PFO
- PUB
- R2
- R4
- R6
- SAV

HAMPTON ROADS CONNECTOR PARTNERS

F-1 Anchorage Approach

HAMPTON ROADS HARBOR

Flood Ebb

NAVIGABLE CHANNEL

SEE PROPOSED TUNNEL DRAWINGS

Matchline Sheet 9

Matchline Sheet 11

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0 50 100 Feet

DATA SOURCE: VIMS, VDOT, FHWA

I-64 HAMPTON ROADS BRIDGE-TUNNEL EXPANSION PROJECT

JOINT PERMIT APPLICATION IMPACT PLATES

SHEET 10 OF 38

DECEMBER 19, 2019

HRBT EXPANSION

- Permanent Impact
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- Extended Fill Impact
- MOT Trestle Impact
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- Dredge Impact
- Temporary Impact
- Permanent Pile Impact
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- E1OW, Deeper
- E1OW, Deep
- E1OW, Mid-Depth
- E1OW, Shallow
- E2RF
- E2RS2
- E2US2
- E2US3
- E2EM
- E2SS
- E2FO
- PEM
- PSS
- PFO
- PUB
- R2
- R4
- R6
- SAV

HAMPTON ROADS CONNECTOR PARTNERS

Matchline Sheet 10

Matchline Sheet 12

200' Buffer

Flood Ebb

Norfolk Harbor Entrance Reach

HAMPTON ROADS HARBOR

NAVIGABLE CHANNEL

SEE PROPOSED TUNNEL DRAWINGS

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0 50 100 Feet

DATA SOURCE: VIMS, VDOT, FHWA

I-64 HAMPTON ROADS BRIDGE-TUNNEL EXPANSION PROJECT

JOINT PERMIT APPLICATION IMPACT PLATES

SHEET 11 OF 38

DECEMBER 19, 2019

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- Permanent Impact
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- Extended Fill Impact
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- Jump Trestle Impact
- Dredge Impact
- Temporary Impact
- Permanent Pile Impact
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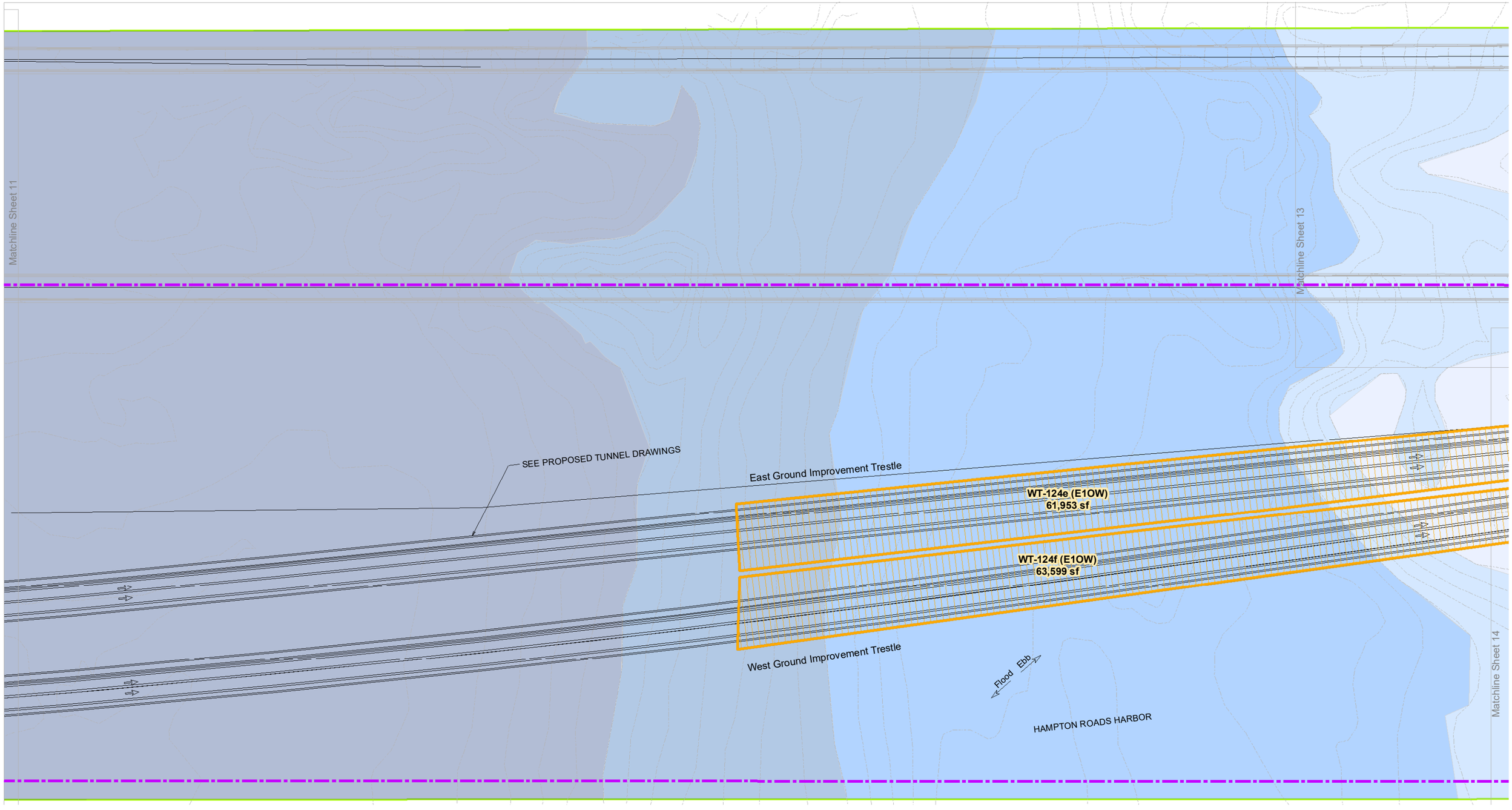
- E1OW, Deepest
- E1OW, Deeper
- E1OW, Deep
- E1OW, Mid-Depth
- E1OW, Shallow
- E2RF
- E2RS2
- E2US2
- E2US3
- E2EM
- E2SS
- E2FO
- PEM
- PSS
- PFO
- PUB
- R2
- R4
- R6
- SAV

HAMPTON ROADS CONNECTOR PARTNERS



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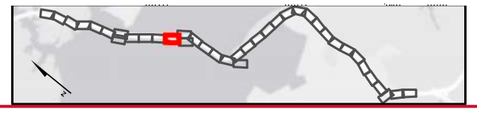

0 50 100 Feet

DATA SOURCE: VIMS, VDOT, FHWA

I-64 HAMPTON ROADS BRIDGE-TUNNEL EXPANSION PROJECT

JOINT PERMIT APPLICATION IMPACT PLATES

DECEMBER 19, 2019

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Temporary Impact
Permanent Pile Impact
Limit of Disturbance
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MOT Trestle Footprint
Work Trestle Footprint
VDOT Right of Way
Sound Wall
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Proposed Drainage
Temporary Drainage
Existing Roadway and Drainage
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Navigation Constraint
Wetland Delineation Boundary
E1OW, Deepest
E1OW, Deeper
E1OW, Deep
E1OW, Mid-Depth
E1OW, Shallow
E2RF
E2RS2
E2US2
E2US3
E2EM
E2SS
E2FO
PEM
PFO
PUB
R2
R4
R6
SAV

HAMPTON ROADS CONNECTOR PARTNERS

T-VS (E2RS2)
42,510 sf

T-126 (E2US2)
50,979 sf

Flood
Ebb

P-VSa (E2RS2)
1,948 sf

P-126a (E2US2)
4,198 sf

Matchline Sheet 12

Matchline Sheet 15

Matchline Sheet 14

T-VS (E2RS2)
42,510 sf

0 50 100
Feet

DATA SOURCE: VIMS, VDOT, FHWA

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I-64 HAMPTON ROADS BRIDGE-TUNNEL EXPANSION PROJECT

JOINT PERMIT APPLICATION IMPACT PLATES

SHEET 13 OF 38

DECEMBER 19, 2019

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Permanent Impact
Permanent Conversion Impact
Permanent Shading Impact
Extended Shading Impact
Extended Fill Impact
MOT Trestle Impact
Work Trestle Impact
Jump Trestle Impact
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Temporary Impact
Permanent Pile Impact
Limit of Disturbance
Jump Trestle Footprint
MOT Trestle Footprint
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Retaining Wall
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E1OW, Deepest
E1OW, Deeper
E1OW, Deep
E1OW, Mid-Depth
E1OW, Shallow
E2RF
E2RS2
E2US2
E2US3
E2EM
E2SS
E2FO
PEM
PSS
PFO
PUB
R2
R4
R6
SAV

HAMPTON ROADS CONNECTOR PARTNERS

WT-VSa (E2RS2) 1,401 sf
WT-126a (E2US2) 938 sf
T-126 (E2US2) 50,979 sf
WT-124e (E1OW) 61,953 sf
T-VS (E2RS2) 42,510 sf
WT-124f (E1OW) 63,599 sf
EF-126 (E2US2) 17,260 sf
WT-126c (E2US2) 1,124 sf
WT-VSb (E2RS2) 1,292 sf
WT-126d (E2US2) 810 sf
WT-VSc (E2RS2) 689 sf
Conveyor Belt Quay
T-VS (E2RS2) 42,510 sf
WT-124g (E1OW) 10,849 sf
TBM Quay
Flood
Ebb
WT-126b (E2US2) 2,680 sf
WT-VSd (E2RS2) 2,365 sf
WT-124i (E1OW) 22,206 sf
T-126 (E2US2) 50,979 sf
SEE PROPOSED TUNNEL DRAWINGS
T-VS (E2RS2) 42,510 sf
JT-126a (E2US2) 1,182 sf
JT-VSa (E2RS2) 72 sf
P-126 (E2US2) 6,022 sf
P-VS (E2RS2) 8,621 sf
P-124 SS (E1OW-Shallow) 8,695 sf
T-VS (E2RS2) 42,510 sf
P-124 SM (E1OW-Mid Depth) 9,179 sf
P-124 SDR (E1OW-Deeper) 3,511 sf
HAMPTON ROADS HARBOR
Matchline Sheet 12
Matchline Sheet 13
Matchline Sheet 15
PT 4+50.94

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0 50 100 Feet

DATA SOURCE: VIMS, VDOT, FHWA

I-64 HAMPTON ROADS BRIDGE-TUNNEL EXPANSION PROJECT

JOINT PERMIT APPLICATION IMPACT PLATES

DECEMBER 19, 2019

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Permanent Impact
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Sound Wall
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E1OW, Deepest
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E1OW, Deep
E1OW, Mid-Depth
E1OW, Shallow
E2RF
E2RS2
E2US2
E2US3
E2EM
E2SS
E2FO
PEM
PSS
PFO
PUB
R2
R4
R6
SAV

HAMPTON ROADS CONNECTOR PARTNERS

Cable Area

T-VS (E2RS2) 42,510 sf
WT-126e (E2US2) 1,009 sf
WT-VSe (E2RS2) 1,129 sf
WT-124h (E1OW) 18,634 sf
WB T TRST B
REMOVE EXISTING
MT-124c (E1OW) 41,511 sf
T-VS (E2RS2) 42,510 sf
JT-124c (E1OW) 91,677 sf
MT-VSa (E2RS2) 200 sf
EB T TRST B
I-64 WB GP B
WT-VSf (E2RS2) 3,640 sf
WT-124j (E1OW) 24,265 sf
T-VS (E2RS2) 42,510 sf
MT-124b (E1OW) 47,018 sf
JT-VSb (E2RS2) 726 sf
MT-126b (E2US2) 1,171 sf
MT-VSb (E2RS2) 1,751 sf
T-VS (E2RS2) 42,510 sf
WT-126f (E2US2) 3,949 sf
JT-124b (E1OW) 59,355 sf
P-VSa (E2RS2) 1,948 sf
T-126 (E2US2) 50,979 sf
P-126a (E2US2) 4,198 sf
P-124_SD (E1OW-Deep) 139,941 sf
JT-126a (E2US2) 1,182 sf
JT-VSa (E2RS2) 72 sf
P-126 (E2US2) 6,022 sf
Total Undercut Dredge Within South Island Expansion Fill Footprint (E1OW) 136,851 sf
Flood
Ebb
P-VS (E2RS2) 8,621 sf
P-124_SS (E1OW-Shallow) 8,695 sf
Matchline Sheet 14
Matchline Sheet 16
P-124_SDR (E1OW-Deeper) 3,511 sf
T-126 (E2US2) 50,979 sf
T-VS (E2RS2) 42,510 sf
P-124_SM (E1OW-Mid Depth) 9,179 sf

0 50 100
Feet

DATA SOURCE: VIMS, VDOT, FHWA

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I-64 HAMPTON ROADS BRIDGE-TUNNEL EXPANSION PROJECT

JOINT PERMIT APPLICATION IMPACT PLATES

HRBT EXPANSION

Permanent Impact
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Extended Fill Impact
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Work Trestle Impact
Jump Trestle Impact
Dredge Impact
Temporary Impact
Permanent Pile Impact
Limit of Disturbance
Jump Trestle Footprint
MOT Trestle Footprint
Work Trestle Footprint
VDOT Right of Way
Sound Wall
Retaining Wall
Limit of Grading
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Underground Utilities
Proposed Drainage
Temporary Drainage
Existing Roadway and Drainage
Existing Contour
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Navigation Constraint
Wetland Delineation Boundary
E1OW, Deepest
E1OW, Deeper
E1OW, Deep
E1OW, Mid-Depth
E1OW, Shallow
E2RF
E2RS2
E2US2
E2US3
E2EM
E2SS
E2FO
PEM
PSS
PFO
PUB
R2
R4
R6
SAV

HAMPTON ROADS CONNECTOR PARTNERS

Cable Area

EBb

Flobd

D-124a (E1OW)
382,021 sf

REMOVE EXISTING STRUCTURE

JT-124c (E1OW)
91,677 sf

EB T TRST B

MT-124b (E1OW)
47,018 sf

I-64 WB GP B

JT-124b (E1OW)
59,355 sf

I-64 CONSTR. B

Matchline Sheet 15

D-124b (E1OW)
439,808 sf

HAMPTON ROADS HARBOR

Matchline Sheet 17

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Design Joint Venture

0 50 100
Feet

DATA SOURCE: VIMS, VDOT, FHWA

I-64 HAMPTON ROADS BRIDGE-TUNNEL EXPANSION PROJECT

JOINT PERMIT APPLICATION IMPACT PLATES

DECEMBER 19, 2019

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- E1OW, Shallow
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- E2RS2
- E2US2
- E2US3
- E2EM
- E2SS
- E2FO
- PEM
- PSS
- PFO
- PUB
- R2
- R4
- R6
- SAV

HAMPTON ROADS CONNECTOR PARTNERS

Cable Area

D-124a (E1OW)
382,021 sf

Ebb

Flood

REMOVE EXISTING STRUCTURES

Matchline Sheet 17

D-124b (E1OW)
439,808 sf

I-64 CONSTR. B

HAMPTON ROADS HARBOR

Matchline Sheet 16

64 HDR | MOTT MACDONALD
Design Joint Venture

0 50 100
Feet

DATA SOURCE: VIMS, VDOT, FHWA

I-64 HAMPTON ROADS BRIDGE-TUNNEL EXPANSION PROJECT

JOINT PERMIT APPLICATION IMPACT PLATES

HRBT EXPANSION

HAMPTON ROADS CONNECTOR PARTNERS

- Permanent Impact
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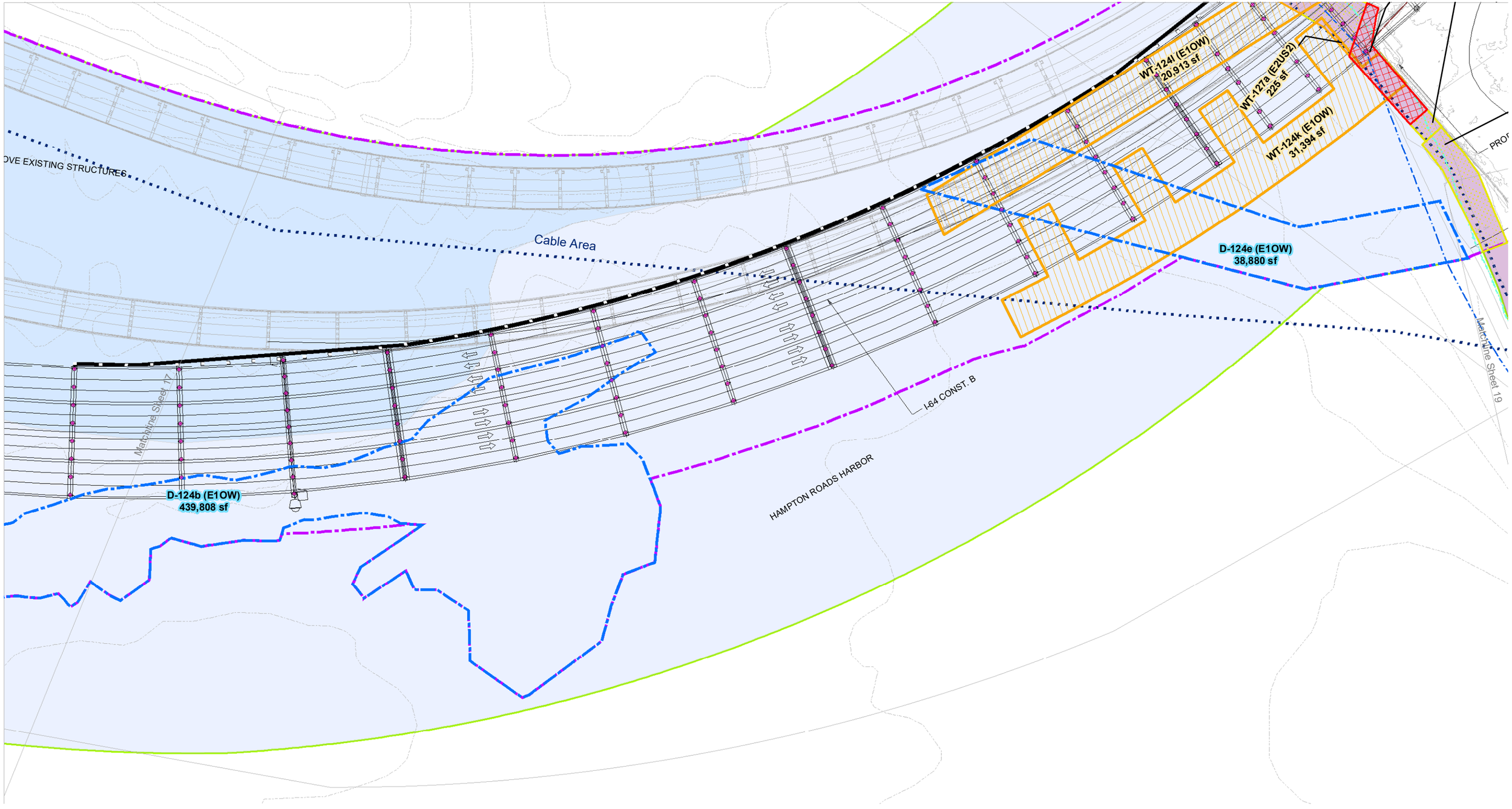
- E2RS2
- E2US2
- E2US3
- E2EM
- E2SS
- E2FO
- PEM
- PSS
- PFO
- PUB
- R2
- R4
- R6
- SAV



0 50 100 Feet

DATA SOURCE: VIMS, VDOT, FHWA

I-64 HAMPTON ROADS BRIDGE-TUNNEL EXPANSION PROJECT

JOINT PERMIT APPLICATION IMPACT PLATES

64 HDR | MOTT MACDONALD Design Joint Venture

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E1OW, Deeper
E1OW, Deep
E1OW, Mid-Depth
E1OW, Shallow
E2RF
E2RS2
E2US2
E2US3
E2EM
E2SS
E2FO
PEM
PSS
PFO
PUB
R2
R4
R6
SAV

HAMPTON ROADS CONNECTOR PARTNERS

P-268 (E2EM) 1,600 sf
P-273 (E2US2) 1,293 sf
P-267 (E2SS) 1,387 sf
P-272 (E2US2) 373 sf
P-276 (E2EM) 728 sf
P-275 (E2US2) 2,533 sf
P-277 (E2EM) 1,138 sf
P-274 (E2SS) 1,254 sf
P-269 (E2EM) 331 sf
P-271 (E2US2) 3,451 sf
P-270 (E2EM) 1,117 sf
P-250 (E1OW-Shallow) 2,212 sf
P-249 (E2US2) 290 sf
Proposed Outfall
WT-WS3c (E1OW) 1,953 sf
WT-WS3b (E1OW) 1,949 sf
WT-WS3a (E1OW) 1,952 sf
Proposed Outfall
Proposed Outfall
Matchline Sheet 18
Matchline Sheet 20
T-247 (E2US2) 13,645 sf
T-247 (E2US2) 13,645 sf
T-247 (E2US2) 13,645 sf
WT-WS2a (E1OW) 8,154 sf
WT-247 (E2US2) 520 sf
WT-248 (E1OW) 17,449 sf

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0 50 100 Feet

DATA SOURCE: VIMS, VDOT, FHWA

I-64 HAMPTON ROADS BRIDGE-TUNNEL EXPANSION PROJECT

JOINT PERMIT APPLICATION IMPACT PLATES

HRBT EXPANSION

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E2SS
E2FO
PEM
PSS
PFO
PUB
R2
R4
R6
SAV

HAMPTON ROADS CONNECTOR PARTNERS

Matchline Sheet 18
Ebb
Flood
WT-127b (E2US2) 2,252 sf
WT-124l (E1OW) 20,913 sf
WT-127a (E2US2) 225 sf
WT-124k (E1OW) 31,394 sf
P-127 (E2US2) 3,259 sf
T-127 (E2US2) 11,372 sf
Existing Wall to be Removed
PROP. R/W &
T-247 (E2US2) 13,645 sf
Matchline Sheet 19
P-WS3 (E1OW-Shallow) 674 sf
P-268 (E2EM) 1,600 sf
P-273 (E2US2) 1,293 sf
P-261 (E2SS) 1,387 sf
P-272 (E2
END CONSTRUCTION
PROPOSED SUBSTATION
15TH View St.
W. Ocean View Ave.
END CONSTRUCTION
I64WBL B
12' PAVED SHLDR.
12' PAVED SHLDR.
PAVED SHLDR.
14' PAVED SHLDR. - PT HOT LANE
12' PAVED SHLDR.
12' PAVED SHLDR.
12' PAV
Bayville St.
PROPOSED BARRIER
I64EBL B
Matchline Sheet 21

0 50 100
Feet

DATA SOURCE: VIMS, VDOT, FHWA

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I-64 HAMPTON ROADS BRIDGE-TUNNEL EXPANSION PROJECT

JOINT PERMIT APPLICATION IMPACT PLATES

DECEMBER 19, 2019

HRBT EXPANSION

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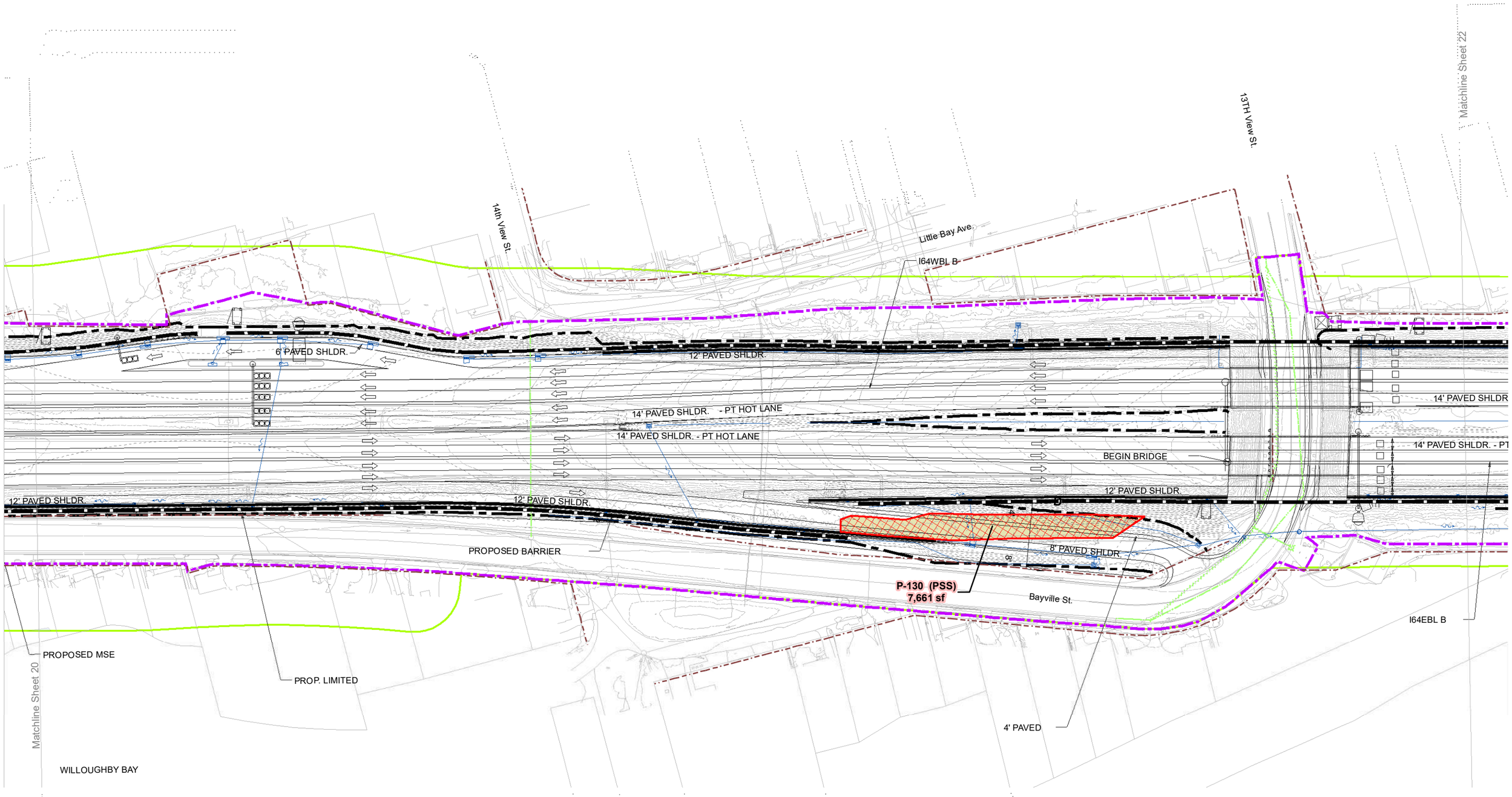
- E1OW, Shallow
- E2RF
- E2RS2
- E2US2
- E2US3
- E2EM
- E2SS
- E2FO
- PEM
- PSS
- PFO
- PUB
- R2
- R4
- R6
- SAV



64 HDR | MOTT MACDONALD Design Joint Venture

0 50 100 Feet

DATA SOURCE: VIMS, VDOT, FHWA

I-64 HAMPTON ROADS BRIDGE-TUNNEL EXPANSION PROJECT

JOINT PERMIT APPLICATION IMPACT PLATES

SHEET 21 OF 38

DECEMBER 19, 2019

HRBT EXPANSION

HAMPTON ROADS CONNECTOR PARTNERS

- Permanent Impact
- Permanent Conversion Impact
- Permanent Shading Impact
- Extended Shading Impact
- Extended Fill Impact
- MOT Trestle Impact
- Work Trestle Impact
- Jump Trestle Impact
- Dredge Impact
- Temporary Impact
- Permanent Pile Impact
- Limit of Disturbance
- Jump Trestle Footprint
- MOT Trestle Footprint
- Work Trestle Footprint
- VDOT Right of Way
- Sound Wall
- Retaining Wall
- Limit of Grading
- Proposed Design
- Underground Utilities
- Proposed Drainage
- Temporary Drainage
- Existing Roadway and Drainage
- Existing Contour
- Mean High Water (0.95 ft)
- Mean Low Water (-1.48 ft)
- Navigation Constraint
- Wetland Delineation Boundary
- E1OW, Deepest
- E1OW, Deeper
- E1OW, Deep
- E1OW, Mid-Depth
- E1OW, Shallow
- E2RF
- E2RS2
- E2US2
- E2US3
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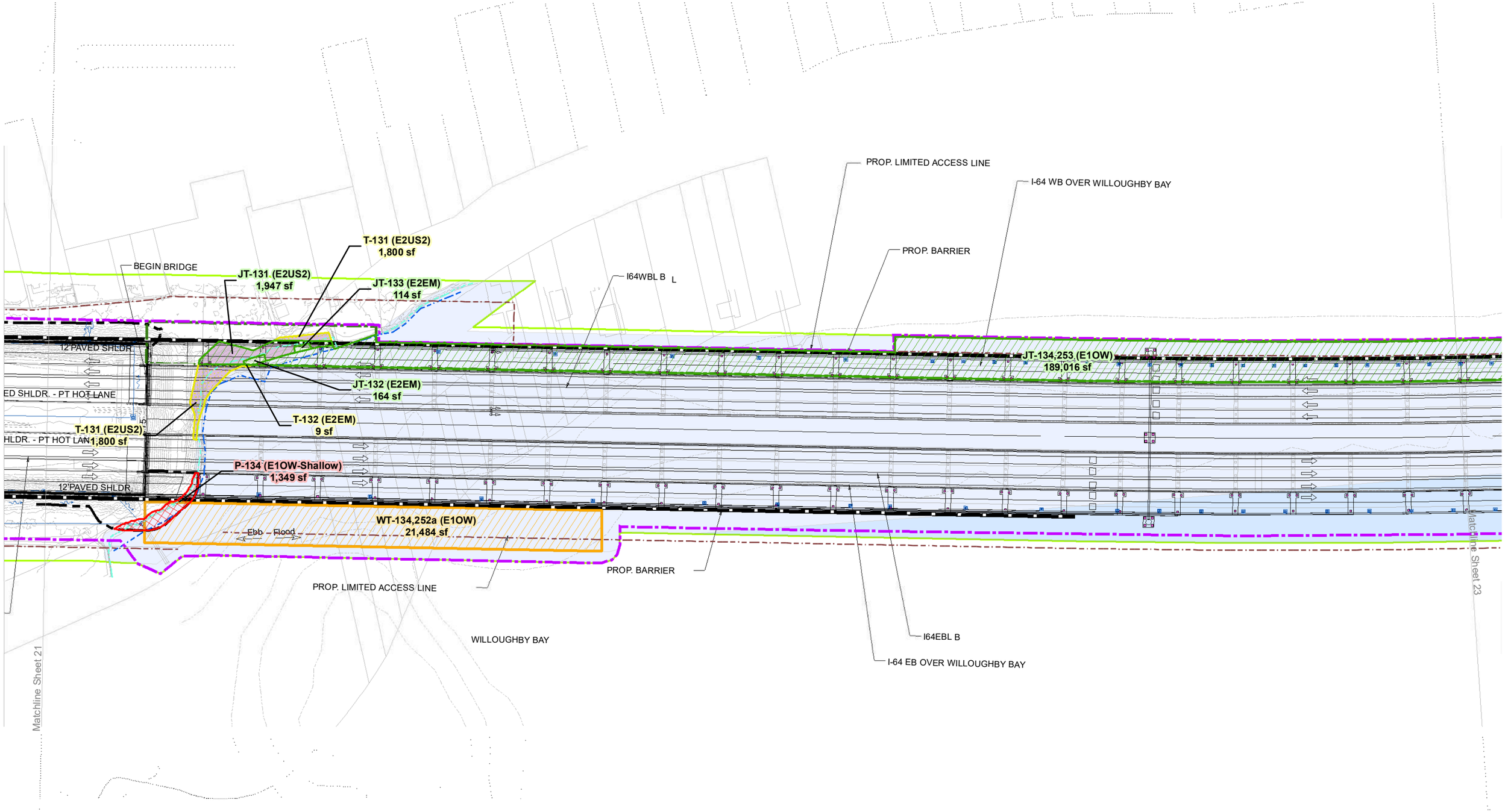
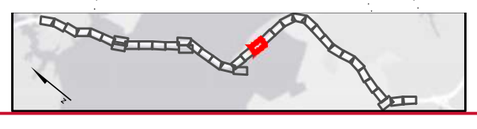


64 HDR | MOTT MACDONALD Design Joint Venture



0 50 100 Feet

DATA SOURCE: VIMS, VDOT, FHWA

I-64 HAMPTON ROADS BRIDGE-TUNNEL EXPANSION PROJECT

JOINT PERMIT APPLICATION IMPACT PLATES

DECEMBER 19, 2019

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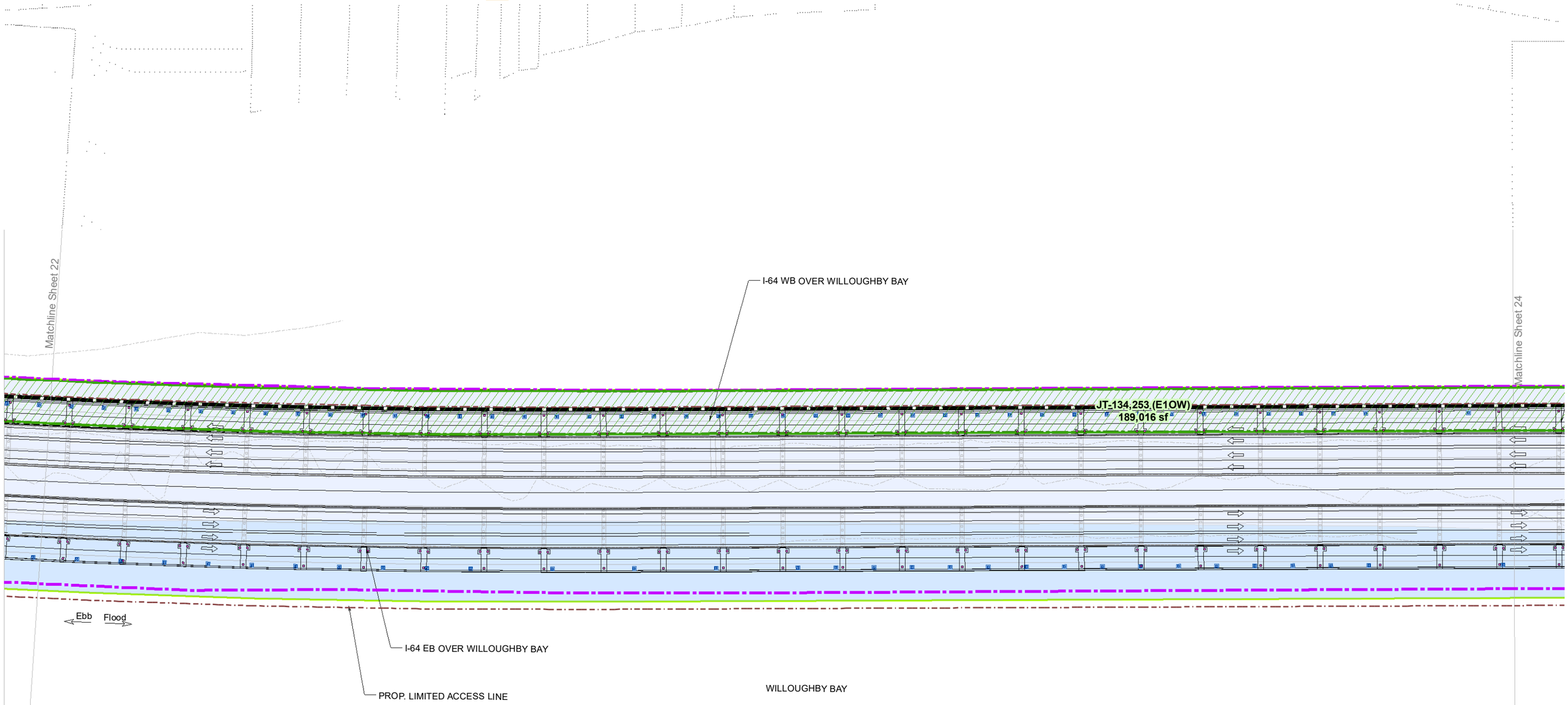

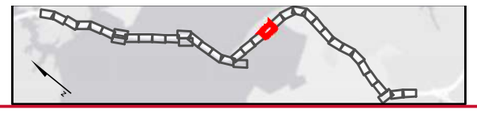

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Feet

DATA SOURCE: VIMS, VDOT, FHWA

I-64 HAMPTON ROADS BRIDGE-TUNNEL EXPANSION PROJECT

JOINT PERMIT APPLICATION IMPACT PLATES

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E2US3
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E2SS
E2FO
PEM
PFO
PUB
R2
R4
R6
PSS
SAV

I-64 WB OVER WILLOUGHBY BAY

JT-134,253 (E1OW)
189,016 sf

Ex Limited Access Line

WT-134,252b (E1OW)
20,391 sf

Ebb Flood

Ebb Flood

Matchline Sheet 23

PROP. LIMITED ACCESS LINE

I-64 EB OVER WILLOUGHBY BAY

WILLOUGHBY BAY

PROP. LIMITED ACCESS LINE

Matchline Sheet 25

0 50 100
Feet

DATA SOURCE: VIMS, VDOT, FHWA

I-64 HAMPTON ROADS BRIDGE-TUNNEL EXPANSION PROJECT

JOINT PERMIT APPLICATION IMPACT PLATES

HRBT EXPANSION

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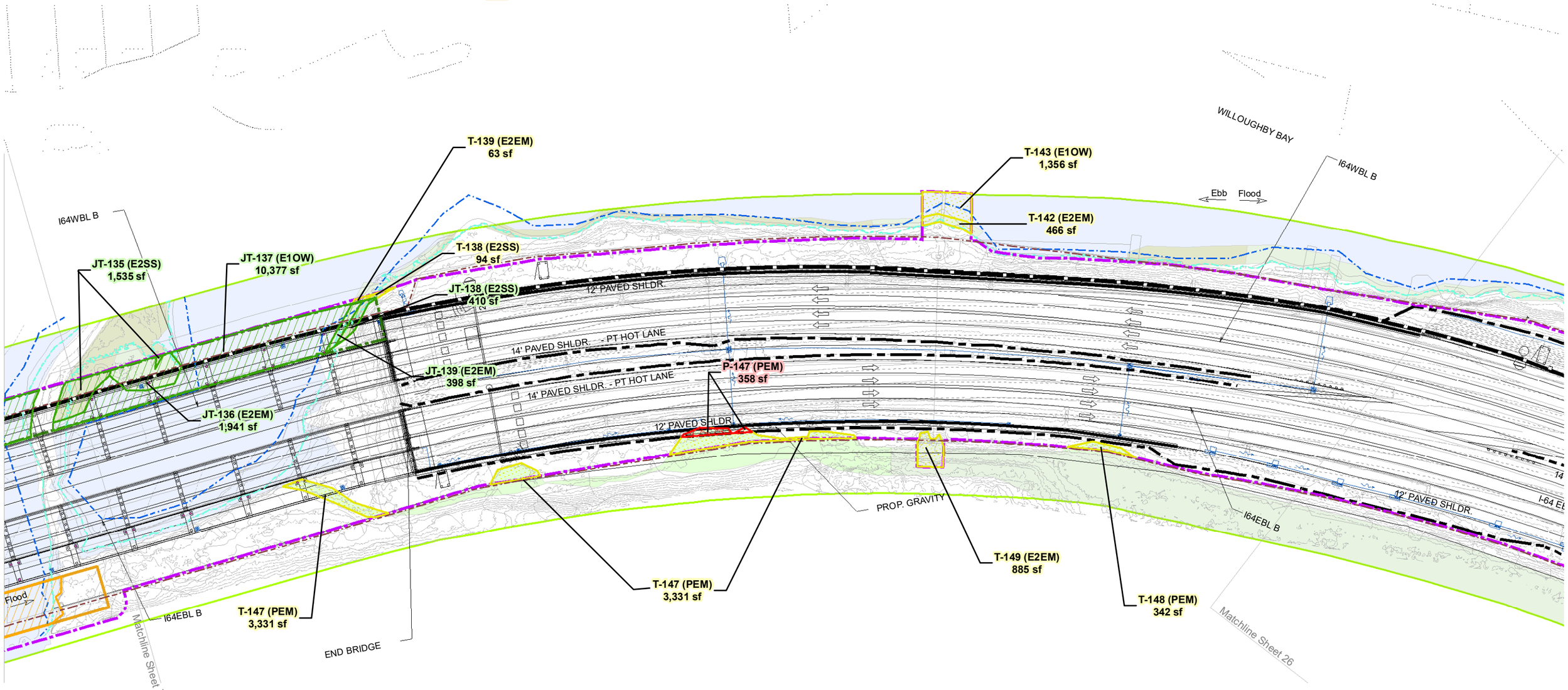

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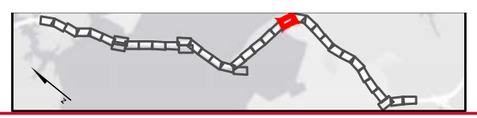

0 50 100
Feet

DATA SOURCE: VIMS, VDOT, FHWA

I-64 HAMPTON ROADS BRIDGE-TUNNEL EXPANSION PROJECT

JOINT PERMIT APPLICATION IMPACT PLATES

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E2FO
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PSS
PFO
PUB
R2
R4
R6
SAV

HAMPTON ROADS CONNECTOR PARTNERS

T-155 (PEM)
3,880 sf

P-155 (PEM)
3,935 sf

T-150 (E1OW)
290 sf

P-150
(E1OW-Shallow)
166 sf

E

8' PAVED SHLDR.
8' PAVED SHLDR.
4' PAVED SHLDR.
12' PAVED SHLDR.
I-64 WB
14' PAVED SHLDR. - PT HOT LANE
14' PAVED SHLDR. - PT HOT LANE
I-64 EB
12' PAVED SHLDR.
4' PAVED SHLDR.
8' PAVED SHLDR.
12' PAVED SHLDR.
I-64 WB
14' PAVED SHLDR. - PT HOT LANE
14' PAVED SHLDR. - PT HOT LANE
I-64 EB
12' PAVED SHLDR.
4' PAVED
BEGIN BRIDGE
I64EBL B L
I64WBL B L
BMP-2
4TH View Ave.
4th View St.
END CONSTRUCTION
END CONSTRUCTION
Matchline Sheet 25
Matchline Sheet 27

64 HDR | MOTT MACDONALD
Design Joint Venture

0 50 100
Feet

DATA SOURCE: VIMS, VDOT, FHWA

I-64 HAMPTON ROADS BRIDGE-TUNNEL EXPANSION PROJECT

JOINT PERMIT APPLICATION IMPACT PLATES