HDR

MITIGATION PLAN FOR BROWNSVILLE NAVIGATION DSITRICT SPOOL BASE FACILITY PROJECT
SWG-2017-00250
Cameron County, Texas

I) Mitigation Goals and Objectives

Brownsville Navigation District (BND) is proposing to construct a spool base facility and dredge an associated basin along the southern shoreline of the Brownsville Ship Channel at the end of R.L. Ostos Road in Cameron County, Texas (**Enclosure A, Sheet 1 – 16 of 25**).

Dredging of the proposed 13-acre basin will result in the removal of approximately 654,000 cubic yards (cy) of dredge material and the basin will be constructed with a 3:1 slope. Waterfront features of the proposed spool base facility will include a 3-sided slip with bulkhead and articulated block mat revetment for slope protection on the vessel slip approach and along the vessel slip bulkhead, one mooring structure, and one breasting structure with catwalks. Proposed features not on the waterfront would include the office building / warehouse, pipe joint welding building and welded pipe storage area (pipe rack), an emergency only egress access road, two drainage corridors, and required security fencing.

Approximately 0.02 acres of estuarine wetland, 0.10 acres of mangrove, 2.03 acres of tidal flats, 3.43 acres of shallow open water (< 6 feet), and 2.05 acres of deep open water (> 6 feet) will be permanently impacted as a result of basin dredging (excavation), totaling approximately 7.6 acres of permanent impacts. Approximately 0.02 acres of ephemeral stream, 1.44 acres of freshwater wetlands, 1.32 acre of mudflats, 0.10 acres of tidal flat, 0.14 acre of shallow open water (< 6 feet), and 0.01 acre of deep open water (> 6 feet) will be permanently impacted (filled) as a result of construction of the spool base facility (dock, buildings, pipe rack, and access road) and placement of articulated block mat shoreline revetment. **Table 1** provides a summary of proposed impacts.

As compensatory mitigation for impacts from the proposed project, BND proposes three mitigation efforts: 1) flats and estuarine wetland creation and enhancement, 2) mangrove creation, and 3) freshwater wetland creation and enhancement (**Enclosure A, Sheet 17 of 25**). The estuarine wetland mitigation effort will be located at a separate off-site location and the freshwater wetland mitigation effort will be located onsite. Both mitigation efforts are described in further detail below.

II) Site Selection Information

1) Flats and Estuarine Wetland Creation and Enhancement

The flats and estuarine wetland mitigation site was selected based on the following criteria: location within the South Laguna Madre watershed, adequate size to compensate for impacts, accessibility to the site, and suitable habitat to compensate for tidal flat, mudflat, and estuarine wetland. The selected site is located within Port of Brownsville property and is part of the South Laguna Madre watershed close to San Martin Lake (**Enclosure A, Sheet 1 of 25**).

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Table 1. Summary of Jurisdictional Impacts

Resource Type	Existing (Acres)	Permanent Impact (Acres)		Total Impacted (Ac)
		Impacted Excavation (Ac.)	Impacted Fill (Ac.)	
Ephemeral Stream	0.02	0.00	0.02	0.02
Estuarine Wetland	0.02	0.02	0.00	0.02
Freshwater Wetland	1.44	0.00	1.44	1.44
Mangroves	0.10	0.10	0.00	0.10
Mudflat	1.32	0.00	1.32	1.32
Tidal Flat	2.13	2.03	0.10	2.13
Shallow Water (0.0 ft. to -6.0 ft.)	3.57	3.43	0.14	3.57
Open Water (-6.0 ft. to -47 ft.)	2.06	2.05	0.01	2.06
TOTAL (Jurisdictional Habitats)	10.66	7.63	3.03	10.66

2) Mangrove Creation

The mangrove mitigation site was selected based on the following criteria: location within the South Laguna Madre watershed, adequate size to compensate for impacts, accessibility to the site and suitable habitat to compensate for mangrove. In order to provide mangrove mitigation with greater likelihood of long-term success, an onsite location was selected. The selected site is located on the western side of an inlet channel to San Martin Lake from the Brownsville Ship Channel, adjacent to the Bay Bridge Texas, LLC mitigation site (SWG-2008-0220).

3) Freshwater Wetland Creation and Enhancement

The freshwater wetland site was selected based on the following criteria: location within the South Laguna Madre watershed, adequate size to compensate for impacts, and suitable habitat to compensate for freshwater emergent wetland. In order to provide freshwater wetland mitigation with greater likelihood of long-term success, an onsite location was selected. The selected freshwater wetland site is located along the western extent of the proposed facility and within an area identified by U.S. Fish and Wildlife Service's National Wetland Inventory (NWI) data as a freshwater emergent wetland. Moreover, the proposed freshwater wetland site will have a direct hydrologic connection to an existing freshwater wetland onsite.

III) Site Protection Instrument

4) Estuarine, Mangrove, Flats and Freshwater Wetland Creation and Enhancement

The flats and estuarine, mangrove, and freshwater wetland mitigation sites are located within Port of Brownsville property as shown in Enclosure A, Sheet 1 of 25. This site is owned by the BND, and will

be protected from residential, commercial, or industrial development through a permanent conservation easement, deed restriction, or other comparable legal instrument. BND will provide a copy of the legal instrument to the USACE for review and approval.

IV) Baseline Information

1) Flats and Estuarine Wetland Creation and Enhancement

The flats and estuarine wetland mitigation site is an area of coastal prairie and low-intensity urban development situated between wind tidal flats of San Martin Lake and upland coastal prairie habitat. Based on historical aerial imagery the area consisted of thick coastal prairie or scrub-shrub habitat prior to urban development in the area sometime between 2005 and 2006. After 2006, additional roads and a potential well pad site appear to have further impacted the proposed mitigation site. Based on aerial imagery, the area is currently comprised of moderately disturbed coastal prairie and scrub-shrub habitat with multiple dirt roads and recreational vehicle ruts crossing the site. A wetland delineation of the proposed mitigation site has not been conducted at the time of submittal of the mitigation plan. A wetland delineation will be submitted under a separate cover.

2) Mangrove Creation

The mangrove mitigation site is an area of mud flat located along the western side of an inlet channel to San Martin Lake off the Brownsville Ship Channel. Based on historic aerial imagery, the proposed mangrove creation site was part of San Martin Lake prior to the development of State Highway 46 and dredging of the Brownsville Ship Channel sometime between 1934 and 1936. The excavated material was placed along the northern side of the ship channel, resulting in a raised north bank and reduced inundation frequency. The site currently appears to be heavily impacted by recreational vehicle use. A wetland delineation and an oyster and seagrass survey of the proposed mitigation site have not been conducted at the time of the mitigation plan. A wetland delineation and oyster and seagrass survey will be submitted under a separate cover.

3) Freshwater Wetland Creation and Enhancement

The freshwater wetland mitigation site is located on the western side of the pipe rack and access road of the proposed spool base facility. The site is identified as a freshwater emergent wetland by USFWS NWI data. However, the site was determined to be upland coastal prairie based on the wetland delineation survey conducted on January 25 – 27 and February 21 – 23, 2017. Based on aerial imagery, the natural hydrology of the proposed freshwater mitigation site has been altered by the creation of upland ponds and drainage features located east of the proposed project site. These alterations may direct surface runoff away from areas previously identified on the NWI as freshwater wetlands.

The proposed freshwater wetland mitigation site would be created adjacent to an existing freshwater wetland in order to enhance the existing wetland feature. The vegetation community within the existing wetland feature was dominated by cattails (*Typha* sp.). The vegetation community within the

freshwater wetland mitigation site includes sea-oxeye daisy (*Borrichia frutescens*), shoregrass (*Distichlis littoralis*), annual seepweed (*Suaeda linearis*), and gulf cordgrass (*Spartina spartinae*).

V) Number of Credits to be Provided

1) Flats and Estuarine Wetland Creation and Enhancement

Removal of fill and excavation to reference elevations of surrounding estuarine wetlands and tidal flat will result in the creation of approximately 7.21 acres of tidal flat and 0.06 acres of fringing estuarine wetland. Based on the surrounding habitat types, and active hydrology of the area, it is anticipated that a portion of the created flats will re-vegetate naturally along the eastern edge, where elevations are slightly higher than the surrounding tidal flat, and form estuarine wetland. The flats and estuarine wetland mitigation project will include 7.21 acres of creation at a ratio of 2.1 to 1 (created to impacted) (**Enclosure A, Sheet 20 and 21 of 25**) (**Table 2**). Excavated material will be placed within upland areas located on Port of Brownsville property (**Enclosure A, Sheet 22 of 25**).

The estuarine wetlands proposed to be impacted are adjacent to the Brownsville Ship Channel and tidal flats. Land use within the area of the impacted flats and estuarine wetland is primarily industrial and commercial use. Based on the size and location of wetlands present within the project site, the proposed creation of flats and estuarine wetland performed as compensatory mitigation for the proposed project will sufficiently offset the proposed project impacts to flats and estuarine wetland.

2) Mangrove Creation

A mosaic of shallow channels will be excavated along an inlet to San Martin Lake to promote mangrove establishment that will result in approximately 0.30 acres of mangrove habitat. The proposed mangrove site is located in an area surrounded by established mangrove, high marsh, and mud flat communities. The excavated material will be used within the footprint of the shallow channels to construct mounds. The mounds and banks of the shallow channels are expected to naturally re-vegetate with mangrove and high marsh vegetation (**Enclosure A, Sheet 18 of 25**). The mangrove mitigation project will include 0.30 acres of creation at a ratio of 3:1 (created to impacted) (**Table 2**).

3) Freshwater Wetland Creation and Enhancement

Excavation to reference elevations of the most adjacent (avoided) freshwater wetland will result in the creation of approximately 2.75 acres of freshwater wetland. Based on the surrounding habitat types, and use of preserved topsoil from impacted wetlands, it is anticipated that the 2.75 acre mitigation site will successfully re-vegetate and form emergent wetland. Excavation to reference elevations within the mitigation site will result in enhancement of approximately 0.14 acre of freshwater wetland. Based on aerial imagery and USFWS NWI, the freshwater wetland mitigation site was historically emergent wetland prior to land use modifications that impacted the hydrology of the project site. By creating a freshwater wetland connected to an existing emergent wetland, the constructed wetland will reflect similar landscape complexity to onsite conditions prior to land use modifications. Moreover, the large constructed wetland should provide higher quality habitat than the

impacted freshwater wetland based on the location further south, where the project site appears to be less impacted by industrial use.

The proposed spool base facility project will result in permanent impacts to approximately 1.44 acres of freshwater wetland. The wetland mitigation project will include 2.75 acres of creation at a ratio of 1.9 to 1 (created to impacted) and 0.14 acres of enhancement at a ratio of 0.08 to 1. The combination of creation and enhancement will include 2.89 acres at a ratio of 2.0 to 1 (**Table 2**) (**Enclosure A, Sheet 19 of 25**).

The freshwater wetlands proposed to be impacted appear to be connected to an altered drainage feature located east of DMPA 7. Land use within the area of the impacted freshwater wetland is primarily industrial and commercial use. Based on the size and location of wetlands present within the project site, the proposed creation of freshwater wetland performed as compensatory mitigation for the proposed project will sufficiently offset the proposed project impacts to freshwater wetland.

Table 2. Summary of Wetland Mitigation Credits to be Provided

Natural Resource	Project Impacts	Created (Acres)	Enhanced (Acres)	Total Compensatory Mitigation	Mitigation Ratio (Created: Impacted)
Flats	3.45	7.21		7.21	2.1: 1
Mangrove	0.10	0.30		0.30	3:1
Estuarine Wetland [1]	0.02	0.06		0.06	3:1
Freshwater Wetland[1]	1.44	2.75	0.14	2.89	2.0:1
Ephemeral Stream	0.02	-	-	-	-
TOTAL	5.01	10.2	0.14	10.46	2.1 : 1

[1] it is anticipated the created wetlands will naturally re-vegetate

VI) Mitigation Work Plan

1) Estuarine Wetland Creation and Enhancement

A wetland delineation of the wetland mitigation site will be completed and submitted to the agencies under a separate cover. The delineation will be conducted in accordance with the USACE Wetland Delineation Manual (1987) and the latest guidelines set fort in the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coast Plan Region (Version 2.0) (2010). The existing flat adjacent to upland areas to be excavated will be used as reference elevations for the flats and estuarine wetland creation site.

Approximately 7.27 acres of disturbed uplands will be excavated and graded to reference elevations to create approximately 7.21 acres of flats and 0.06 acres of estuarine marsh. Construction vehicles

will access the site using a private road on Port of Brownsville property located north of State Highway 48, and other recreational vehicle tracks present onsite. A temporary work corridor will be marked with construction fencing so that construction vehicles are able to safely access the site in areas off the private road. Timber boards or other matting will be utilized to minimize impacts to wetlands within a temporary work corridor; however, no temporary impacts have been calculated at this time. Excavated material will be relocated to one of three upland placement areas located nearby on Port of Brownsville Property (**Enclosure A, Sheet 22 of 25**). Following wetland mitigation site construction, any temporary impact areas (temporary work corridor) will be returned to pre-construction elevation and grade. A post-construction survey of the wetland mitigation site will be conducted and submitted to the USACE within 60 days of mitigation project completion.

2) Mangrove Creation

Approximately 0.72 acre of disturbed mud flat will be excavated into shallow channels to promote the natural establishment of mangrove and high-marsh vegetation. The excavated material will be placed within the footprint of the shallow channels, creating five mounds. Approximately 0.30 acre of mangrove is anticipated to establish within the created mitigation site. Construction vehicles will access the site using a recreational vehicle road established south of State Highway 48. A temporary work corridor will be marked with construction fencing so that construction vehicles are able to safely access the site. Timber boards or other matting will be utilized to minimize impacts to potential mud flats and estuarine wetlands within a temporary work corridor around the mitigation site.

Following mangrove mitigation site construction, any temporary impact areas (temporary work corridor) will be returned to pre-construction elevation and grade. Additionally, a vehicle barrier will be installed around the mitigation site. A post-construction survey of the wetland mitigation site will be conducted and submitted to the USACE within 60 days of mitigation project completion.

3) Freshwater Wetland Creation and Enhancement

Approximately 2.75 acres of coastal prairie will be excavated and graded to match the elevation of the most adjacent freshwater wetland (reference elevations). Approximately 4 to 6 inches of top soil from existing wetlands to be impacted by the project will be reserved and spread over the created wetland to facilitate the successful establishment of wetland vegetation within the created wetland. Additional material to be excavated will be placed in uplands on-site, in areas permitted to be filled on-site. A post-construction survey of the wetland mitigation site will be conducted and submitted to the USACE within 60 days of mitigation project completion.

VII) Maintenance Plan

BND will be responsible for maintaining the mitigation wetland sites to remain in compliance with this mitigation plan during years project monitoring is required or other actions are required by the USACE for the site to meet target success criteria. Once the USACE has determined that success criteria have been met, maintenance of the wetland mitigation site will be the responsibility of the permittee. Maintenance of the wetland mitigation site will also include removing trash and non-natural debris.

VIII) Ecological Performance Standards

1) Wetland Creation and Enhancement

Success of the wetland creation and enhancement mitigation effort will be evaluated using the following standards:

Year 1 – Vegetative percent cover of target wetland vegetation in restored areas shall be equal to or greater than 25% after one complete growing season or one year after construction, whichever is longer.

Year 2 – Vegetative percent cover of target wetland vegetation in restored areas shall be equal to or greater than 50% after two complete growing seasons or two years after construction, whichever is longer.

Year 3 – Vegetative percent cover of target wetland vegetation in restored areas shall be equal to or greater than 70% three growing seasons after construction or 3 years after construction, whichever is longer. Total aerial coverage of invasive cattails (*Typha* sp.) may not exceed 5 percent. If the site meets target success criteria after Year 3, USACE may determine that no additional monitoring is required.

Year 4 – Vegetative percent cover of target wetland vegetation in restored areas shall remain equal to or greater than 70% four growing seasons after construction or 4 years after construction, whichever is longer. Total aerial coverage of invasive cattails (*Typha* sp.) may not exceed 5 percent. If the site meets target success criteria after Year 4, USACE may determine that no additional monitoring is required.

Year 5 – Vegetative percent cover of target wetland vegetation in restored areas shall remain equal to or greater than 70% five growing seasons after construction or 5 years after construction, whichever is longer. Total aerial coverage of invasive cattails (*Typha* sp.) may not exceed 5 percent.

Target wetland vegetation within the estuarine wetland may include, but is not limited to, saltwort (*Batis maritima*), glasswort (*Salicornia bigelovii*), key grass (*Distichlis littoralis*), salt grass (*Distichlis spicata*), and sea purslane (*Sesuvium portulacastrum*). Target wetland vegetation within the freshwater wetland may include, but is not limited to, sea-oxeye daisy, saltwort, salt grass, and bulrush (*Schoenoplectus tabernaemontani*).

A wetland delineation has not been completed for the proposed flats and estuarine wetland, and mangrove mitigation sites. Thus it is unknown if significant invasive species coverage is present at these proposed sites at this time. The proposed freshwater wetland mitigation site is adjacent to an existing freshwater wetland dominated by cattails. Monitoring of the wetland mitigation site will be performed in accordance with USACE Regulatory Guidance Letter 08-03 and if an invasive species becomes a dominant species within the mitigation site this will be indicated in the annual monitoring report.

IX) Monitoring Requirements

1) All Wetland Creation and Enhancement

Annual monitoring will be conducted to document site performance in the context of the Ecological Performance Standards described above. Monitoring and reporting will be conducted annually for a period of five years in accordance with USACE Regulatory Guidance Letter 08-03. Annual monitoring reports will include a description of monitoring methodology, results, and photographic documentation of site conditions.

X) Long-Term Management Plan

The wetland mitigation sites are within Port of Brownsville properties, which are managed by BND. The sites and the surrounding property will be managed in accordance with the conservation goals of the BND, and deed requirements.

XI) Adaptive Management Plan

If results of the monitoring indicate that mitigation is not successful, BND will coordinate with USACE to discuss an appropriate course of action. Example remedies may include, but are not limited to planting efforts, alternative sites, or other remedies.

XII) Financial Assurances

BND is an established company which has demonstrated financial capability and reliability in the construction of oil docks and other marine-dependent facilities within the region.

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ENCLOSURE A.

PERMIT AND MITIGATION DRAWING

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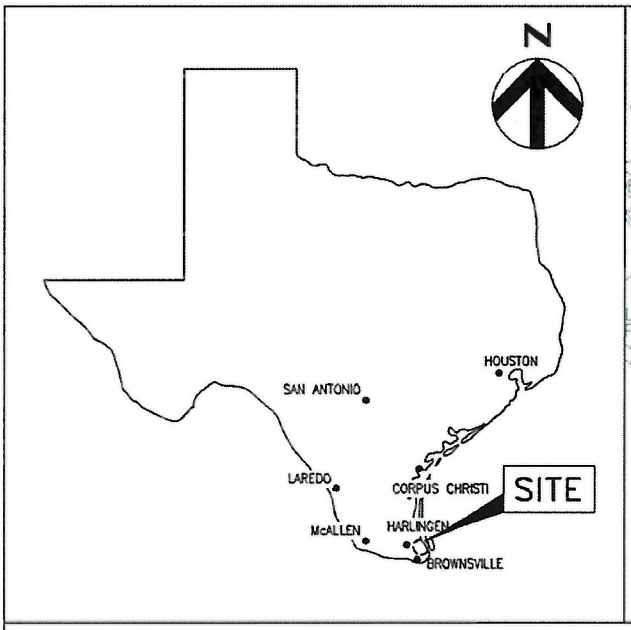
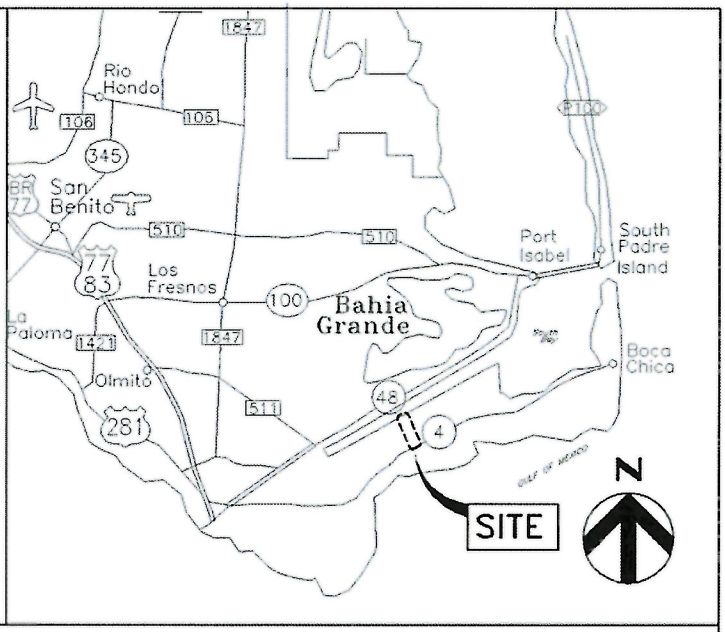


VICINITY MAP



LOCATION MAP

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Sheet ____ of ____

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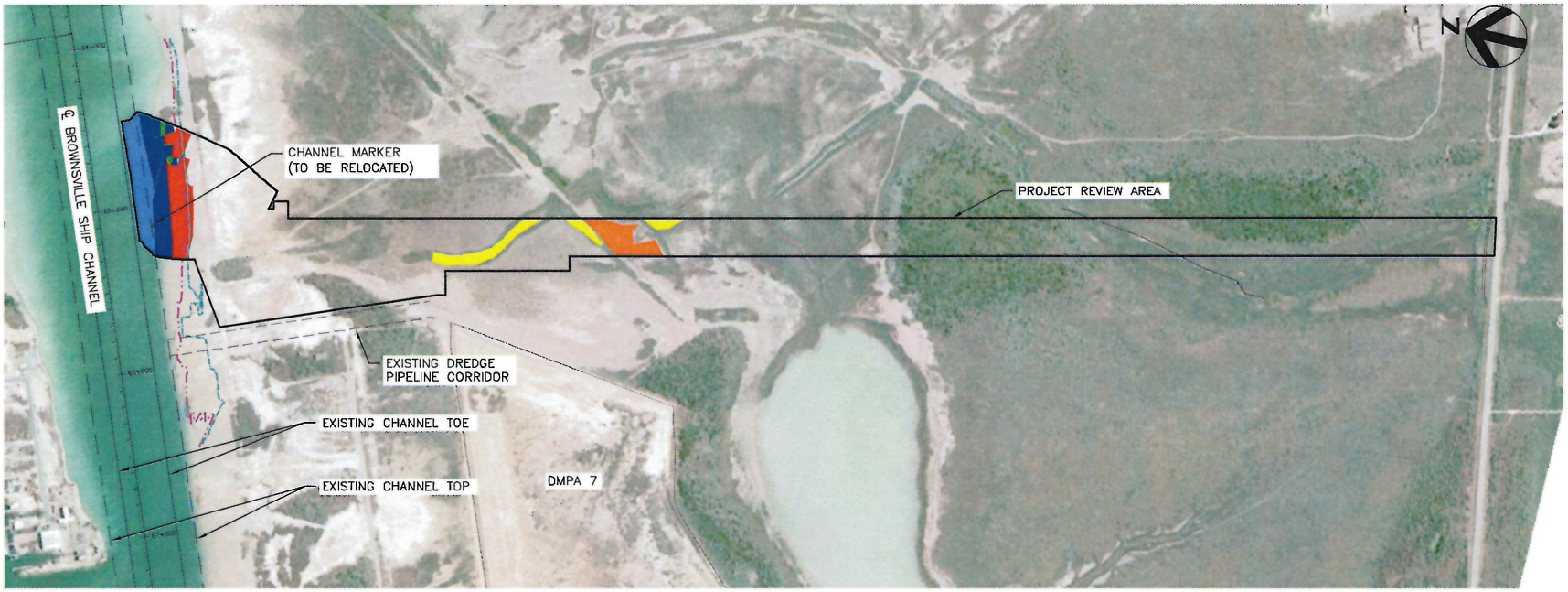
ACTIVITY: Spool Base – PERMITTING	
APPLICANT: Brownsville Navigation District	DATUM:
DATE: 04/2017	REV. DATE:
HDR JOB NO: 10053098	SHEET 1 OF 25



EXISTING CONDITIONS

SCALE: 1" = 1000'

EXISTING CONDITIONS – REVIEW AREA	
RESOURCE TYPE	EXISTING (Ac.)
EPHEMERAL STREAM	0.02
ESTUARINE WETLAND	0.02
FRESHWATER WETLAND	1.44
MANGROVES	0.10
OYSTERS	0.04
MUDFLAT	1.32
TIDAL FLAT	2.13
SHALLOW OPEN WATER (0.0' TO -6.0')	3.57
DEEP OPEN WATER (-6.0' TO -42.0')	2.06
UPLANDS	56.54

LEGEND:
- MHW (MEAN HIGH WATER)
- AHT (ANNUAL HIGH TIDE LINE)

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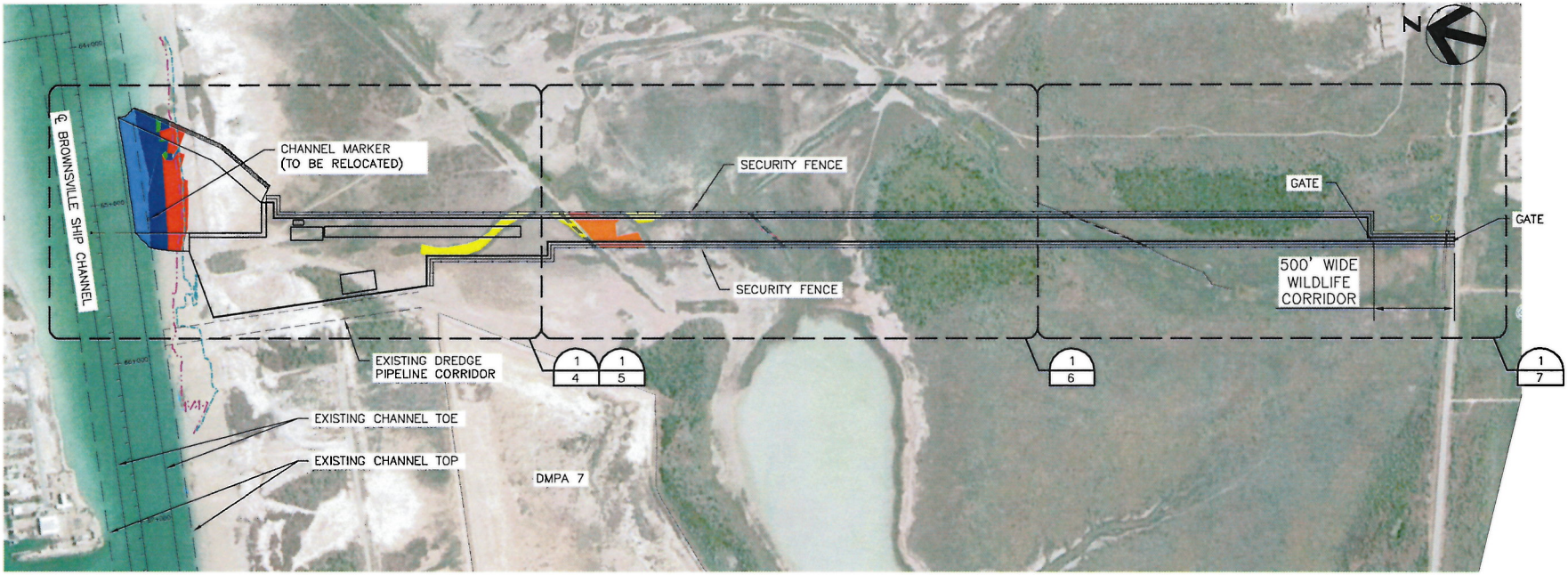
ACTIVITY: Spool Base – PERMITTING

APPLICANT: Brownsville Navigation District — DATUM:

DATE: 04/2017 — REV. DATE:

HDR JOB NO: 10053098 — SHEET 2 OF 25



LEGEND:
- MHW (MEAN HIGH WATER)
- AHT (ANNUAL HIGH TIDE LINE)

PROJECT LAYOUT 1/1

SCALE: 1" = 1000'

HABITAT IMPACT SUMMARY TABLE

RESOURCE TYPE	EXISTING (Ac.)	IMPACTED EXCAVATION (Ac.)	IMPACTED FILL (Ac.)	TOTAL IMPACTED
EPHEMERAL STREAM	0.02	0.00	0.02	0.02
ESTUARINE WETLAND	0.02	0.02	0.00	0.02
FRESHWATER WETLAND	1.44	0.00	1.44	1.44
MANGROVES	0.10	0.10	0.00	0.10
OYSTERS	0.04	0.00	0.00	0.00
MUDFLAT	1.32	0.00	1.32	1.32
TIDAL FLAT	2.13	2.03	0.10	2.13
SHALLOW OPEN WATER (0.0' TO -6.0')	3.57	3.43	0.14	3.57
DEEP OPEN WATER (-6.0' TO -42.0')	2.06	2.05	0.01	2.06
UPLANDS	56.54	5.52	51.02	56.54
	TOTAL	13.15	54.09	67.24

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ACTIVITY: Spool Base – PERMITTING

APPLICANT: Brownsville Navigation District DATUM:

DATE: 04/2017 REV. DATE:

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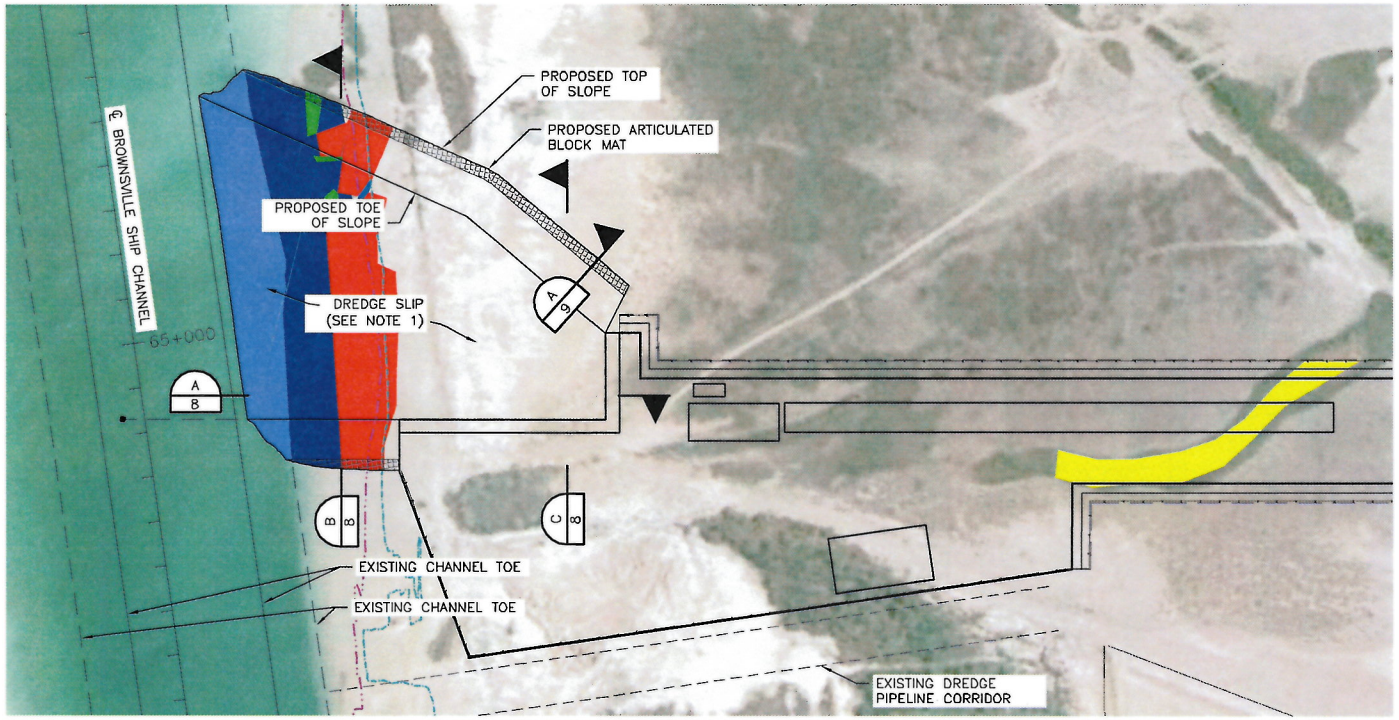

DREDGE PLAN (1/3)
SCALE: 1" = 400'

NOTES:
1. APPLICANT PROPOSES TO DREDGE TO −35.0' MLT +2.0' ALLOWABLE OVERDEPTH.
2. DREDGE AREA = 12.60 AC
3. APPROXIMATELY 654,000 CY OF MATERIAL TO BE HYDRAULICALLY DREDGED AND/OR MECHANICALLY EXCAVATED.
4. SEE SHEET 16 FOR DREDGED MATERIAL PLACEMENT LOCATIONS.
5. COORDINATES SHOWN ARE REFERENCED TO NAD83 TEXAS SOUTH ZONE US FEET.

LEGEND:
- ESTUARINE WETLAND
- FRESHWATER WETLAND
- MANGROVES
- TIDAL FLAT
- SHALLOW OPEN WATER
- DEEP OPEN WATER
- MHW (MEAN HIGH WATER)
- AHT (ANNUAL HIGH TIDE LINE)

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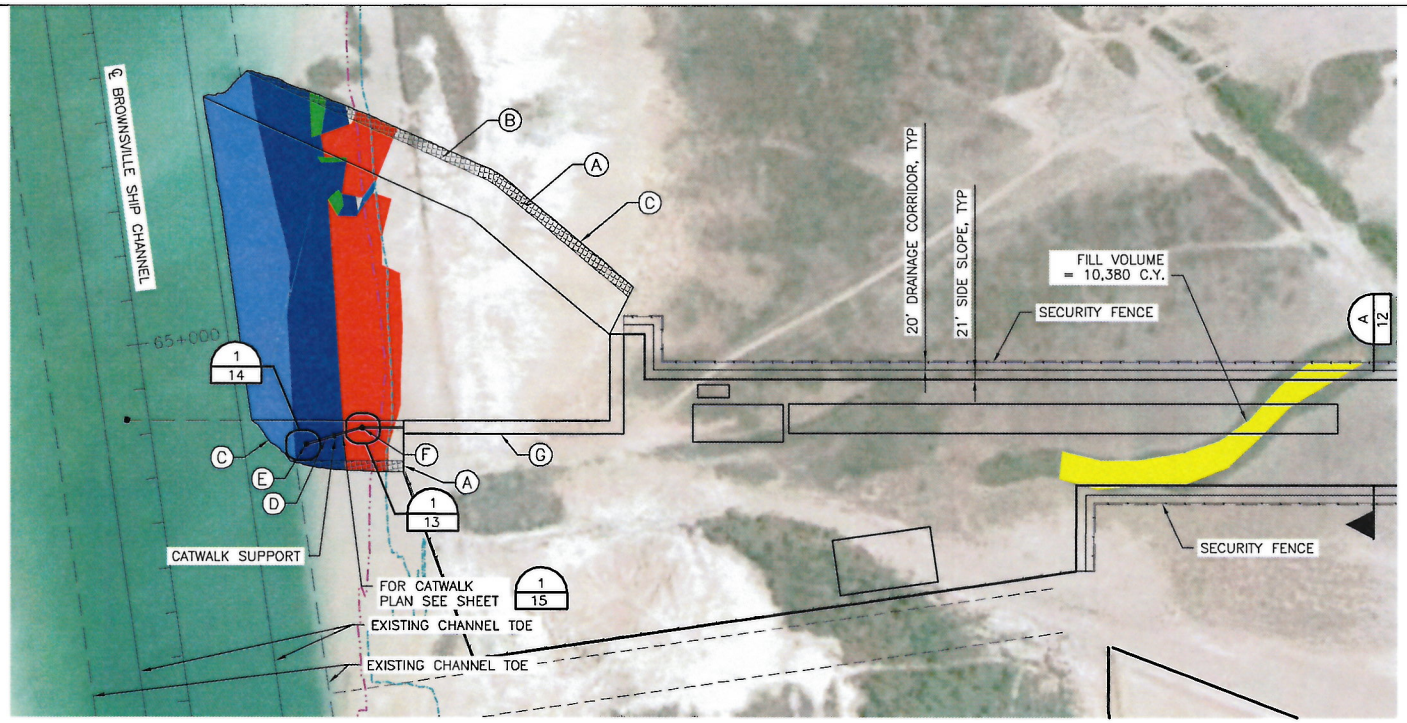

ENLARGED – PROJECT LAYOUT (1/3)
SCALE: 1" = 400'

LEGEND:

- (A) ARTICULATING BLOCK MAT
- (B) APPROXIMATE TOP OF SLOPE
- (C) AFTER DREDGING ("DAYLIGHT LINE")
- (D) ACCESS CATWALKS (FOOT BRIDGES)
- (E) PROPOSED MOORING DOLPHIN (TYP)
- (F) PROPOSED BREASTING DOLPHIN (TYP)
- (G) PROPOSED BULKHEAD

LEGEND:

- ESTUARINE WETLAND
- FRESHWATER WETLAND
- MANGROVES
- TIDAL FLAT
- SHALLOW OPEN WATER
- DEEP OPEN WATER
- MHW (MEAN HIGH WATER)
- AHT (ANNUAL HIGH TIDE LINE)
- CULVERT

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ACTIVITY: Spool Base – PERMITTING

APPLICANT: Brownsville Navigation District DATUM:

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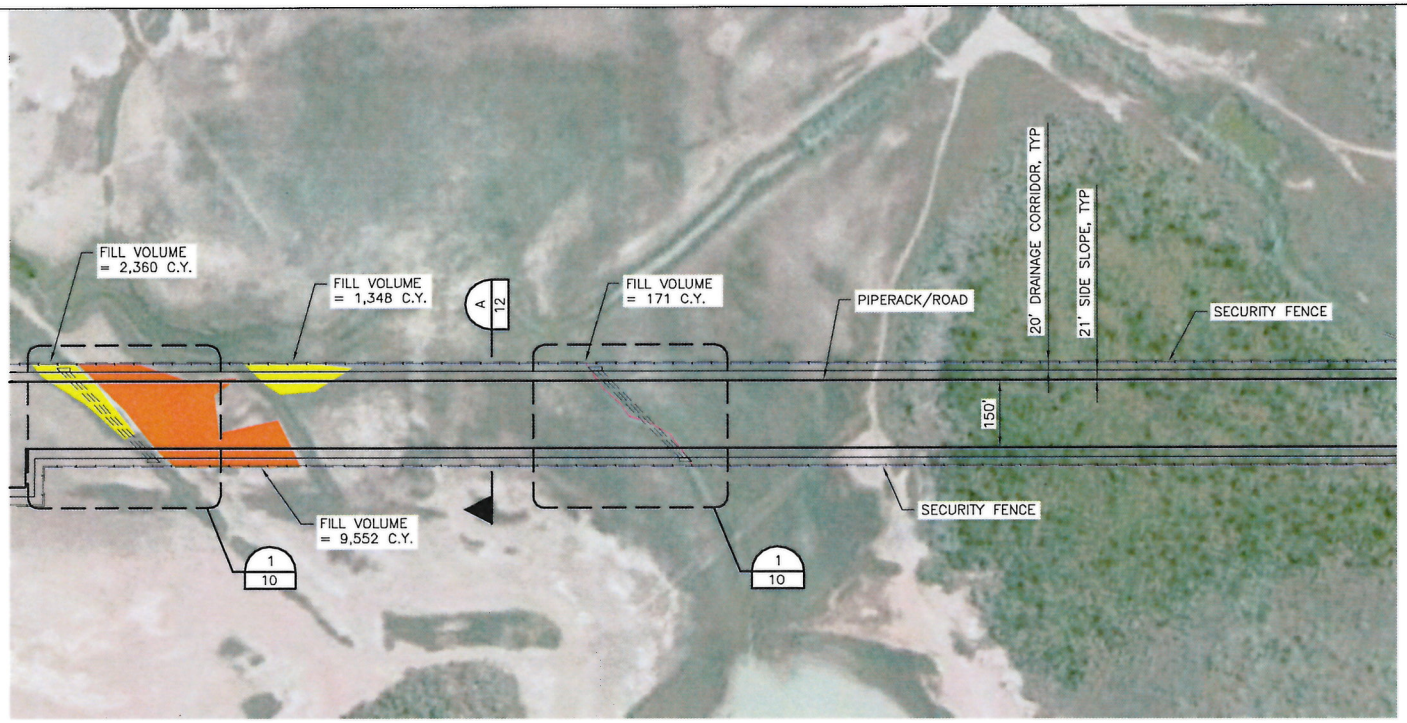

ENLARGED – PROJECT LAYOUT (1/3)

SCALE: 1"= 400'

LEGEND:
- EPHEMERAL STREAM
- MUDFLAT
- FRESHWATER WETLAND
- CULVERT

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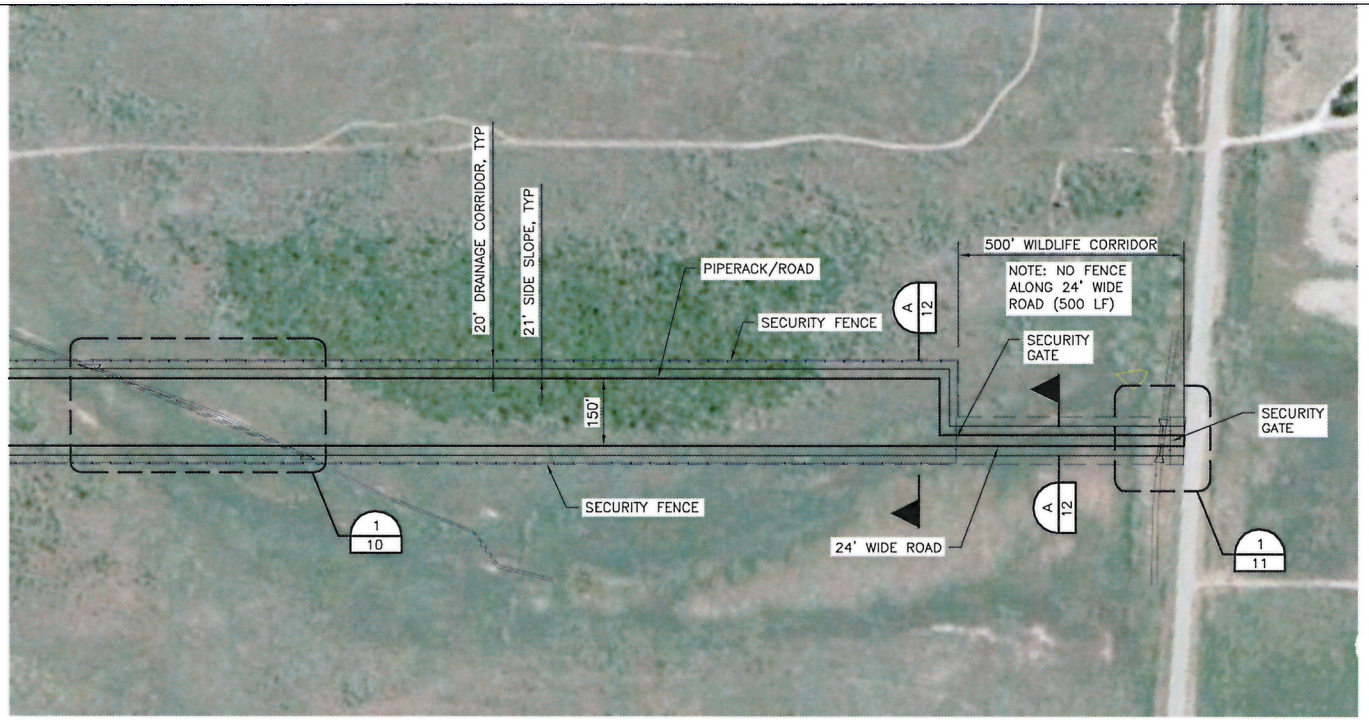
ACTIVITY: Spool Base – PERMITTING	
APPLICANT: Brownsville Navigation District	DATUM:
DATE: 04/2017	REV. DATE:
HDR JOB NO: 10053098	SHEET 6 OF 25



ENLARGED – PROJECT LAYOUT 1/3
SCALE: 1" = 400'

LEGEND:
CULVERT

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ACTIVITY: Spool Base – PERMITTING

APPLICANT: Brownsville Navigation District DATUM:

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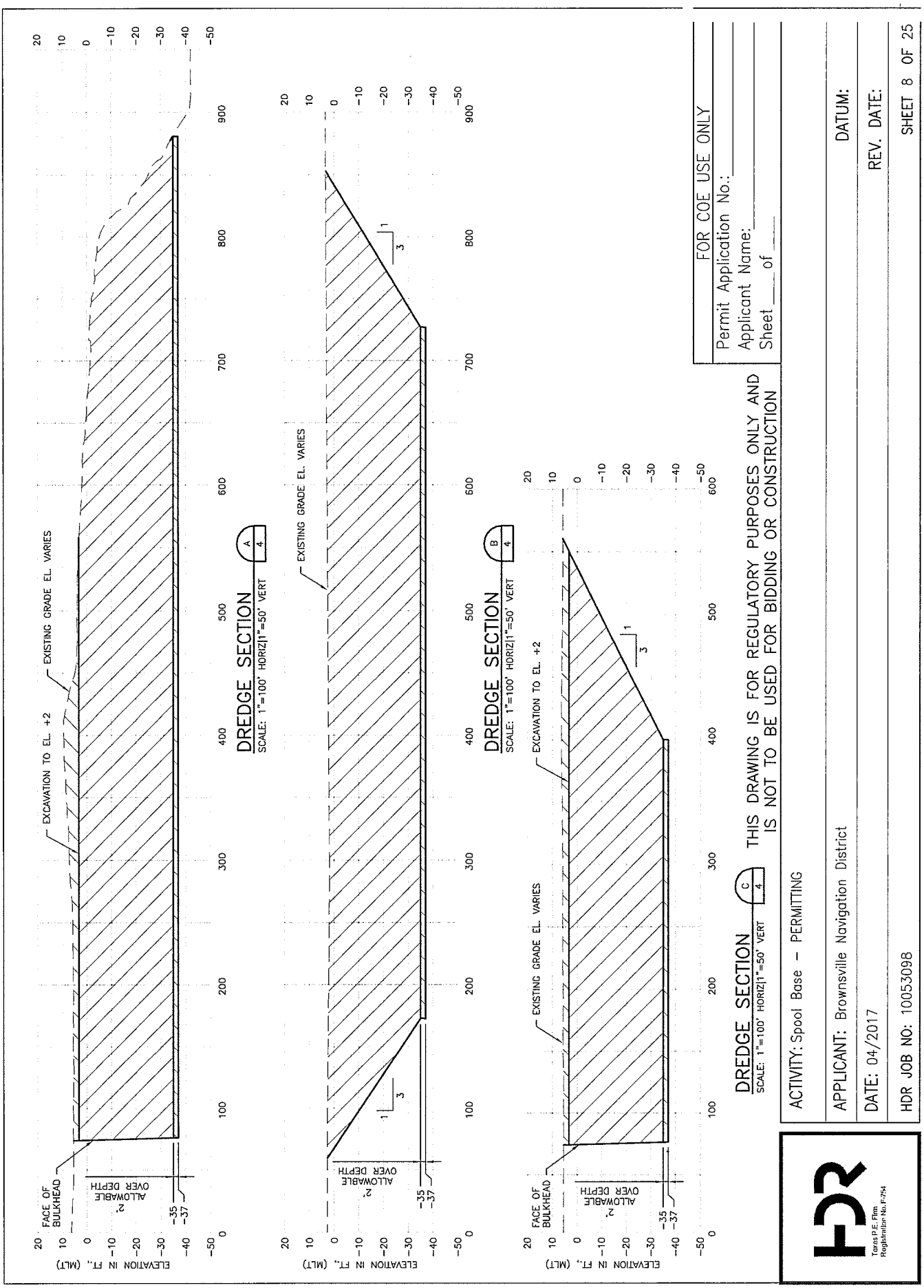
EXISTING GRADE EL. VARIES
EXCAVATION TO EL. +2
FACE OF BULKHEAD
ALLOWABLE OVER DEPTH
2'
ELEVATION IN FT., (MLT)
DREDGE SECTION
SCALE: 1"=100' HORIZ/1"=50' VERT
A
4
EXISTING GRADE EL. VARIES
ALLOWABLE OVER DEPTH
2'
1
3
DREDGE SECTION
SCALE: 1"=100' HORIZ/1"=50' VERT
B
4
EXISTING GRADE EL. VARIES
EXCAVATION TO EL. +2
FACE OF BULKHEAD
ALLOWABLE OVER DEPTH
2'
DREDGE SECTION
SCALE: 1"=100' HORIZ/1"=50' VERT
C
4
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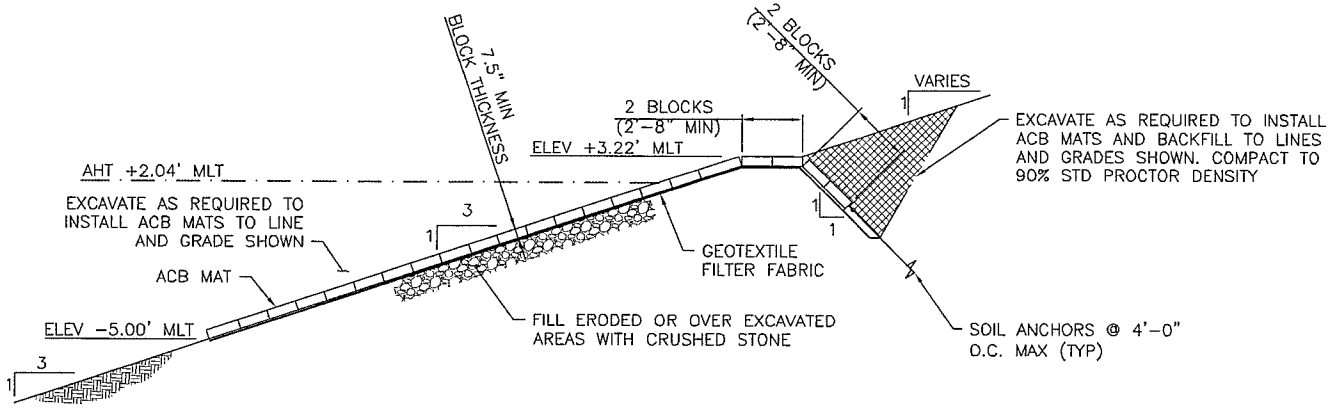
Torres P.E. Firm Registration No. F-754



TYPICAL SECTION REVETMENT

SCALE: 1/8" = 1'-0"

A/4

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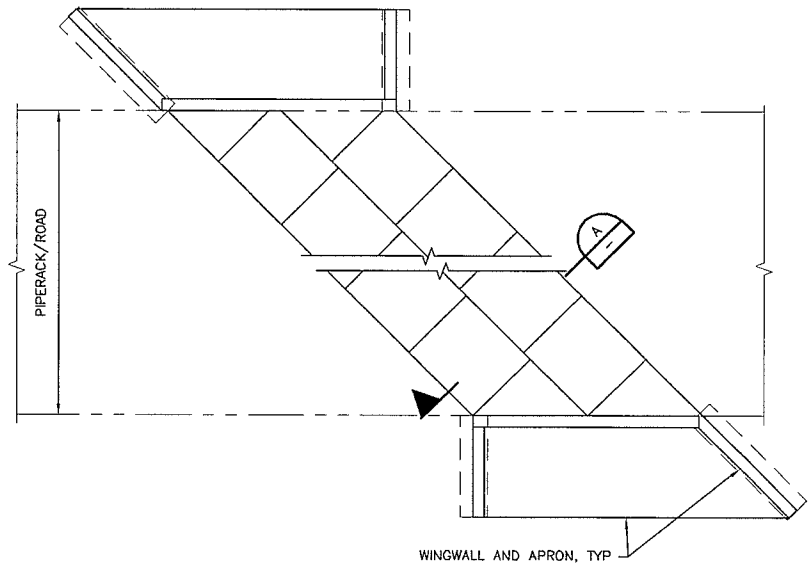
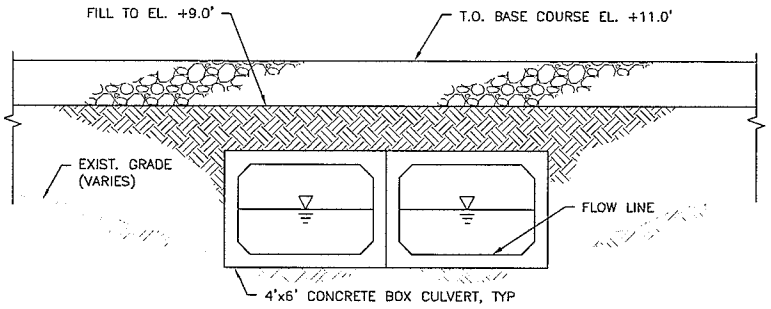


PLAN – CULVERT (1, 5,6,7)
SCALE: 1/16" = 1'-0"



SECTION – CULVERT (A)
SCALE: 1/8" = 1'-0"

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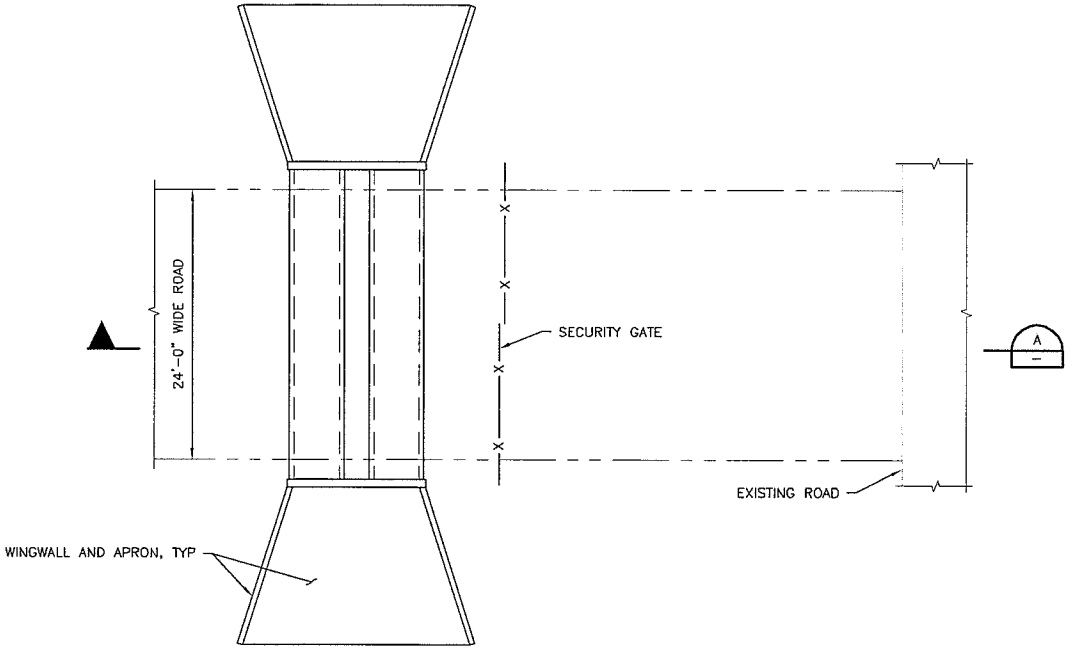
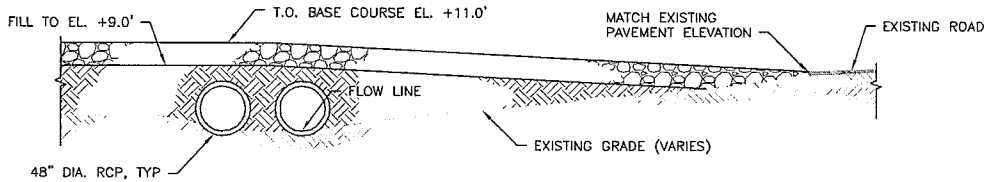


PLAN – RCP CULVERT (1/7)
SCALE: 1/16" = 1'-0"



SECTION – RCP CULVERT (A/—)
SCALE: 1/16" = 1'-0"

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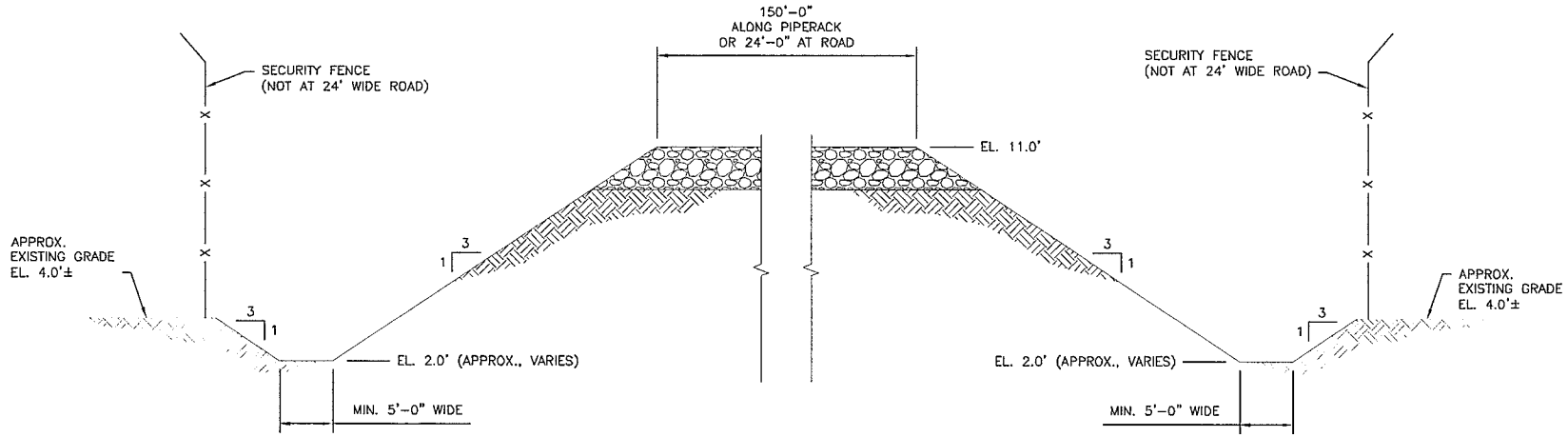

SECTION – DRAINAGE CORRIDOR (A, 5,6,7)

SCALE: 1/16" = 1'-0" HORIZ : 1/8" = 1'-0" VERT.

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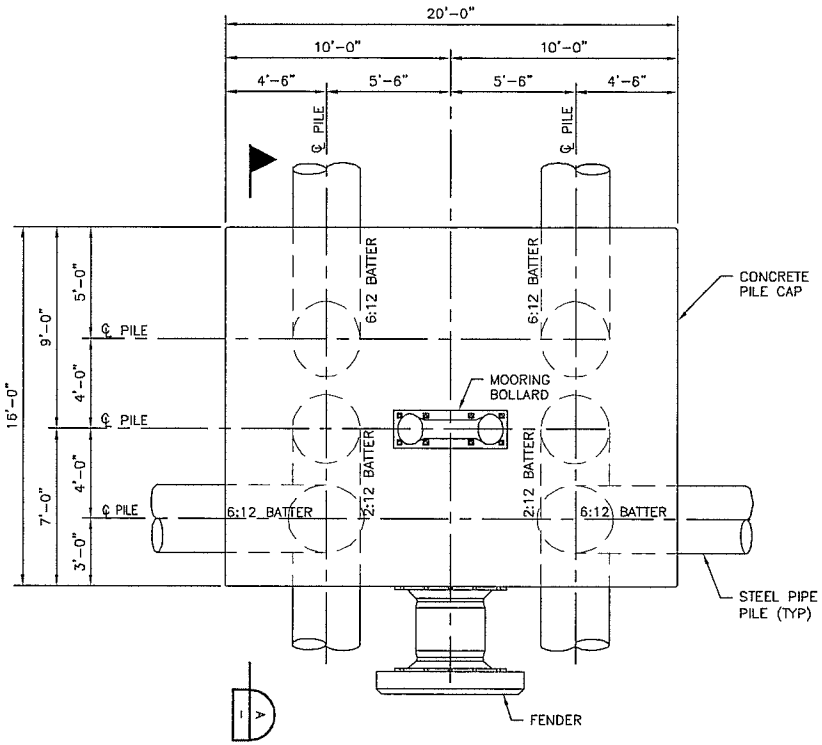
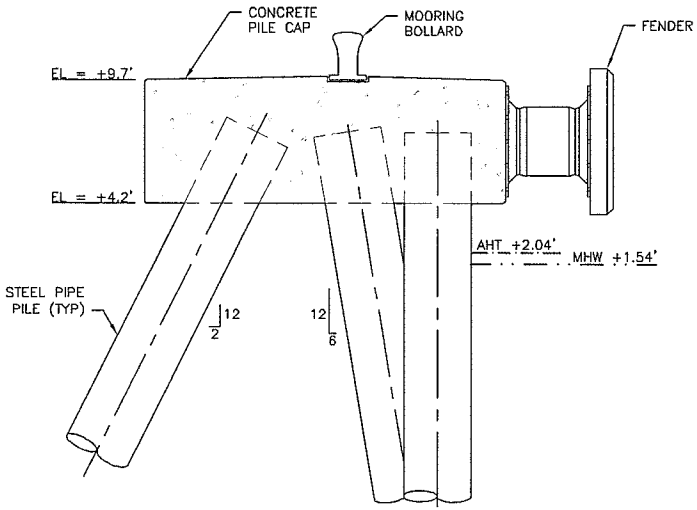


TYPICAL BREASTING DOLPHIN PLAN (1/5)
SCALE: 1/8" = 1'-0"



TYPICAL BREASTING DOLPHIN SECTION (A/–)
SCALE: 1/8" = 1'-0"

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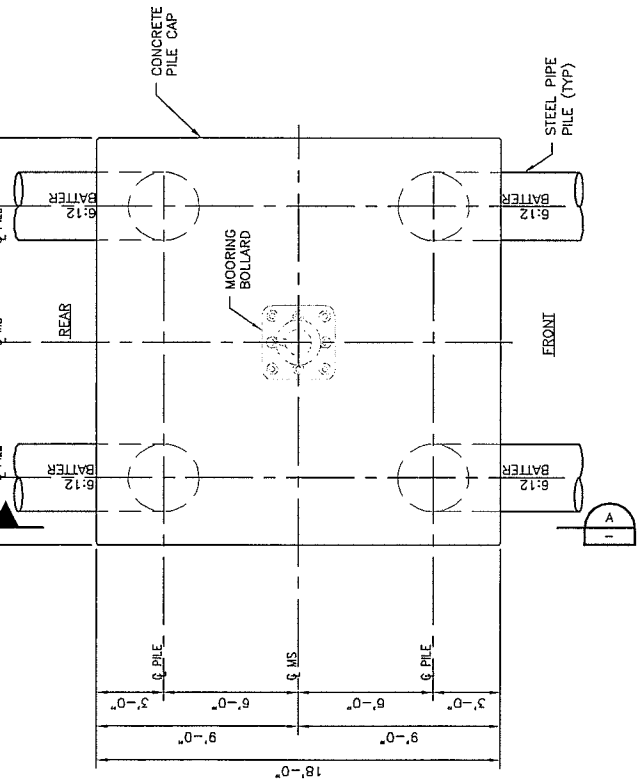
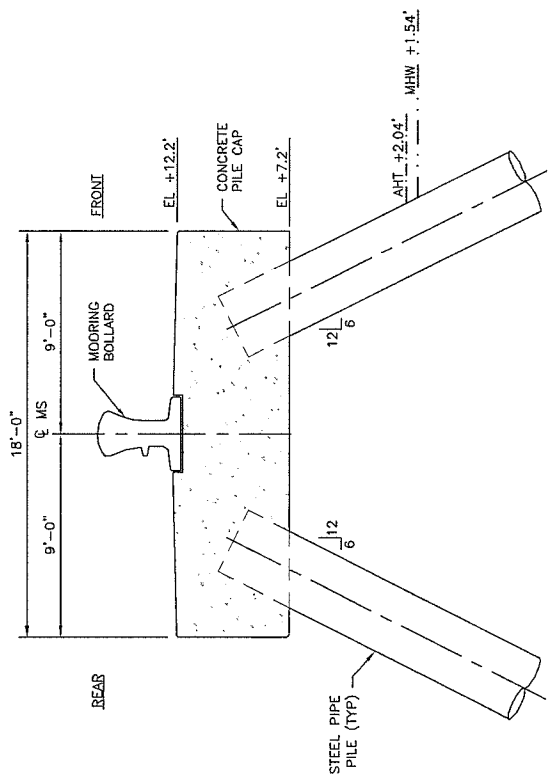


TYPICAL MOORING DOLPHIN PLAN
SCALE: 1/8" = 1'-0"



TYPICAL MOORING DOLPHIN SECTION
SCALE: 1/8" = 1'-0"

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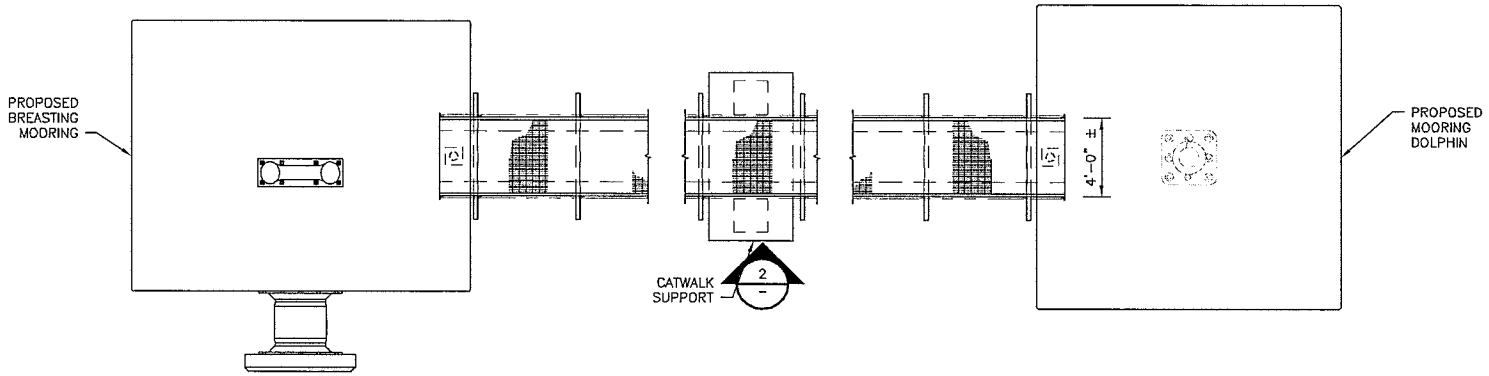
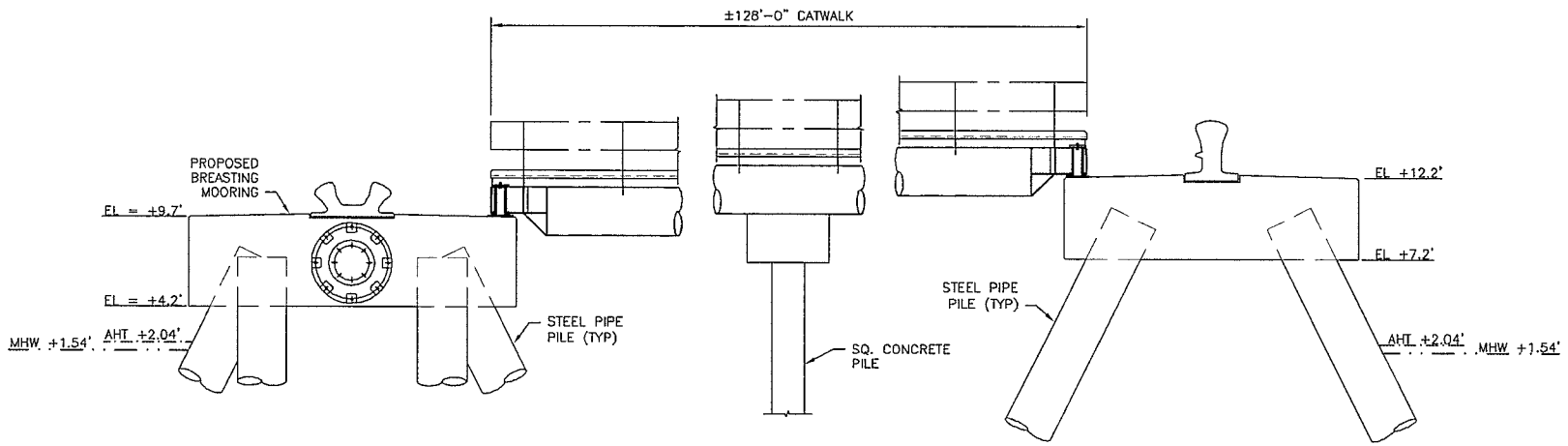


PROPOSED CATWALK PLAN (1/5)
SCALE: NOT TO SCALE



PROPOSED CATWALK ELEVATION (2/-)
SCALE: NOT TO SCALE

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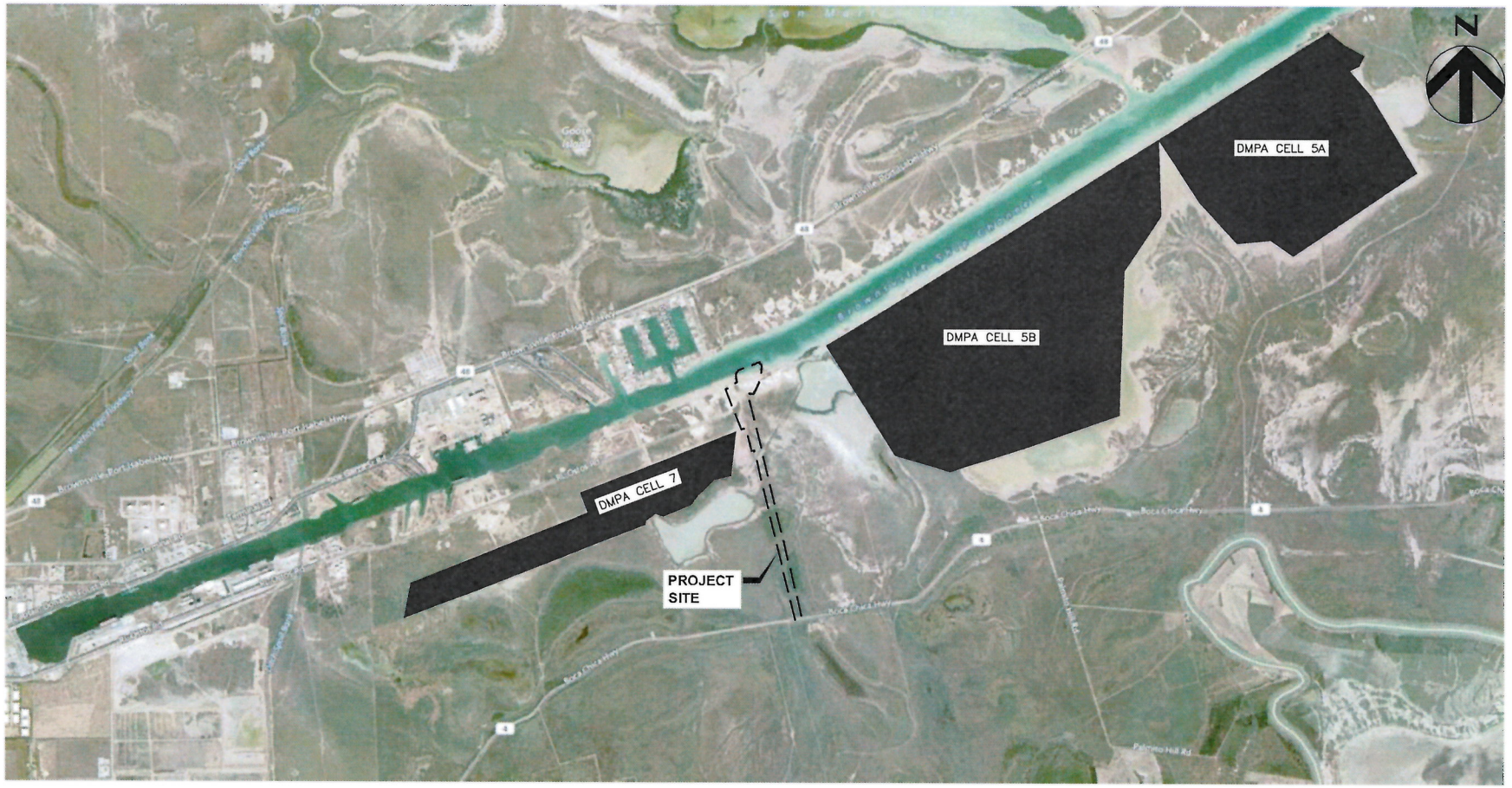

DREDEGE PLACEMENT MATERIAL AREAS

SCALE: 1"=5000'

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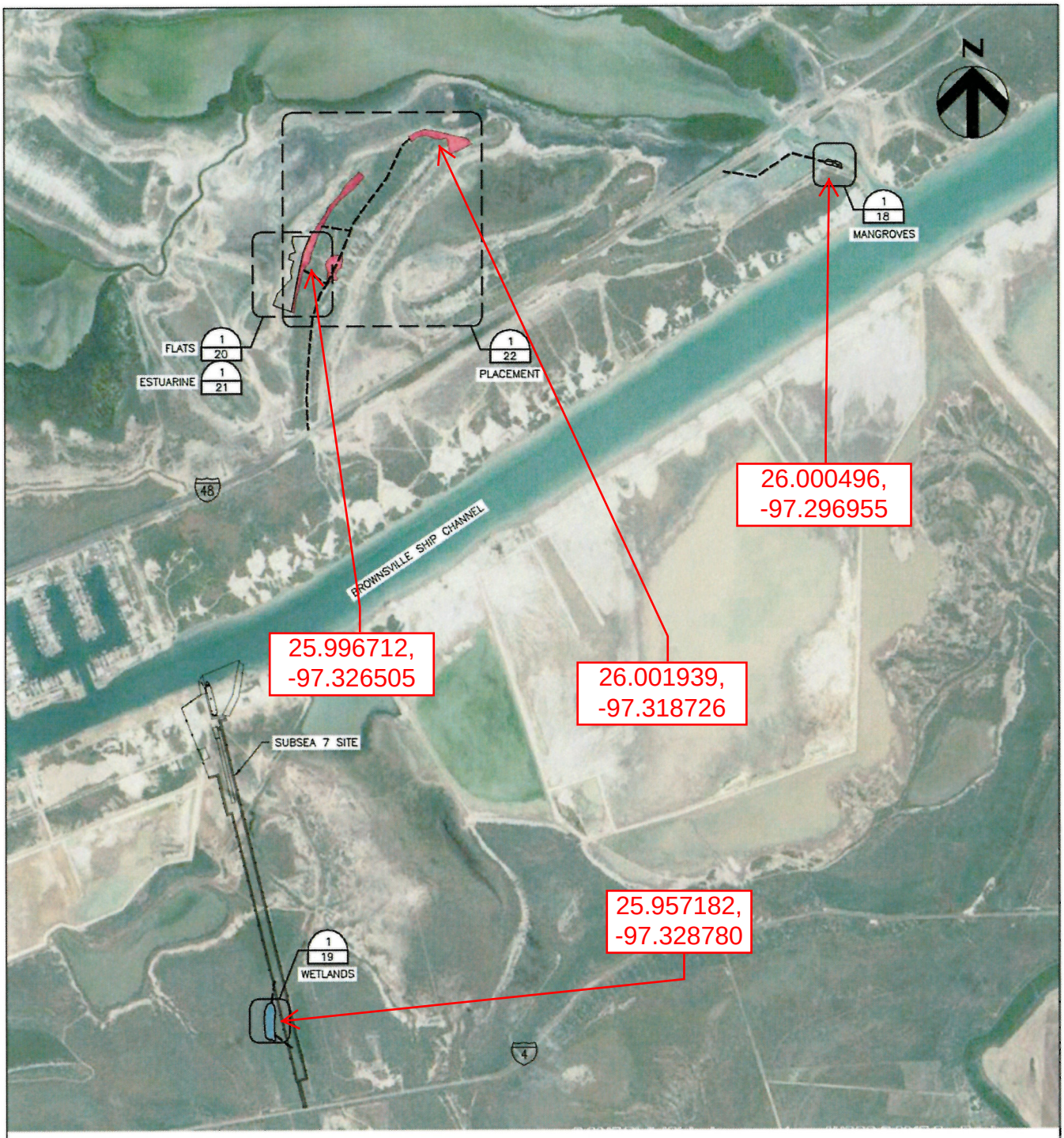

MITIGATION OVERALL SITE PLAN 1/1

SCALE: 1" = 1/2 MILES

LEGEND:

CONSTRUCTION ACCESS ROUTE

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MITIGATION MANGROVE SITE PLAN (1/17)
SCALE: 1" = 100'

* TARGETING 0.3 ACRES MANGROVE GROWTH

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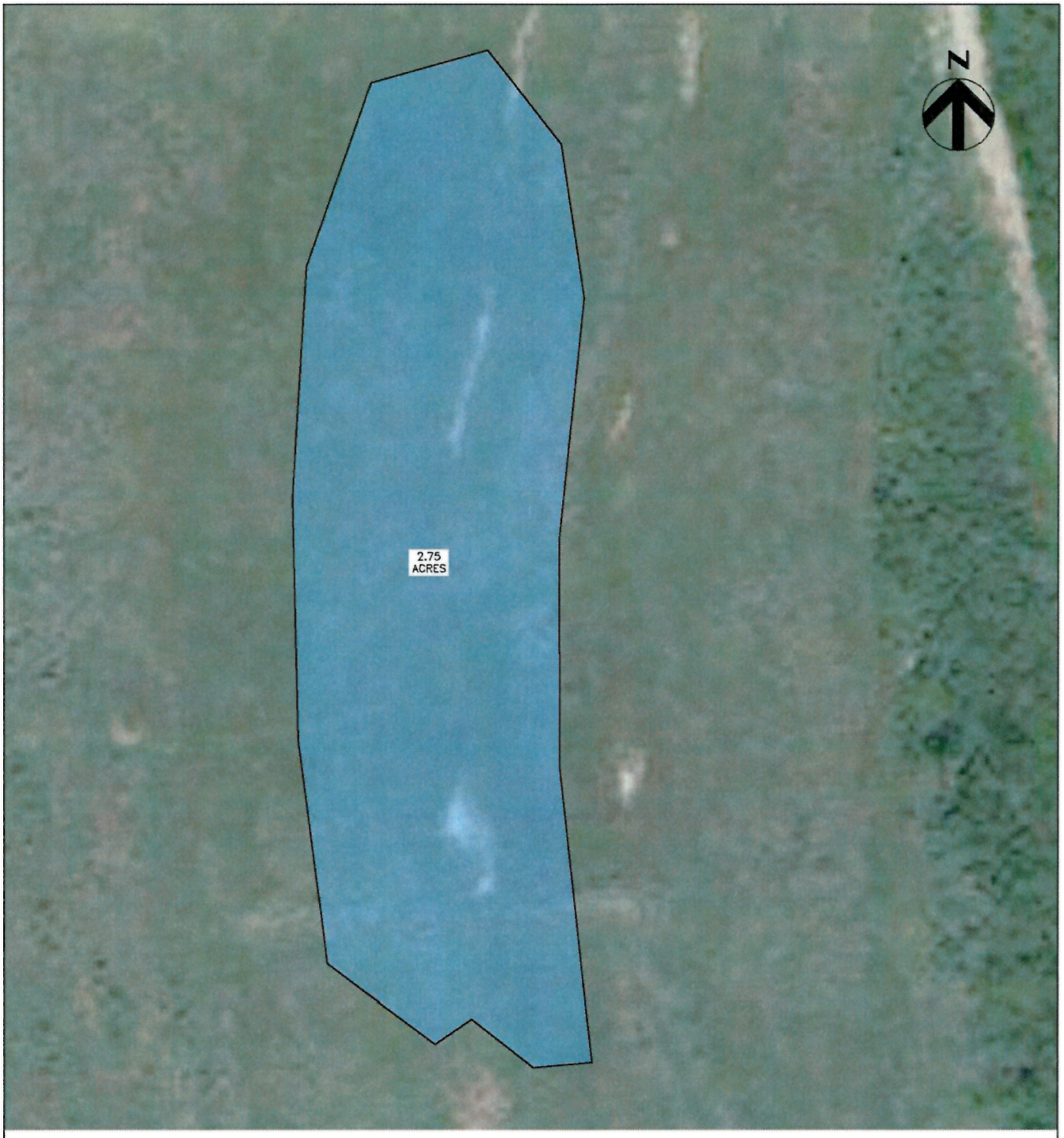

MITIGATION WETLANDS SITE PLAN (1/17)
SCALE: 1" = 100'

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MITIGATION FLATS SITE PLAN 1/17

SCALE: 1" = 200'

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MITIGATION ESTUARINE SITE PLAN (1/17)
SCALE: 1" = 200'

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PLACEMENT AREAS SITE PLAN (1/17)
SCALE: 1" = 500'

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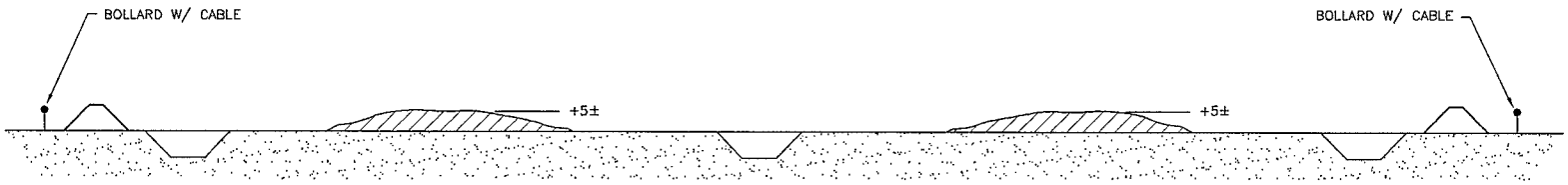
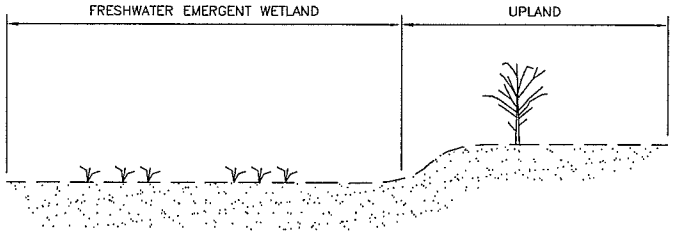
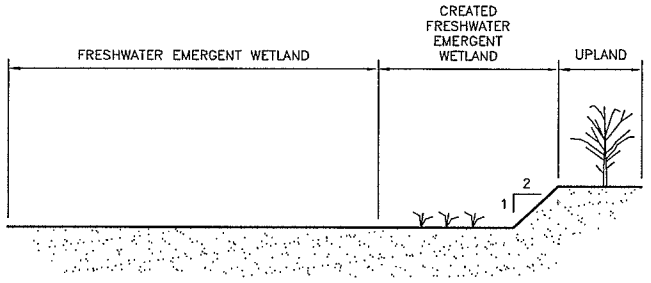


TYPICAL CROSS-SECTION VIEW (A)
SCALE: NOT TO SCALE



HABITAT ENHANCEMENT AREA (EXISTING) (B)
SCALE: NOT TO SCALE



HABITAT ENHANCEMENT AREA (PROPOSED) (C)
SCALE: NOT TO SCALE

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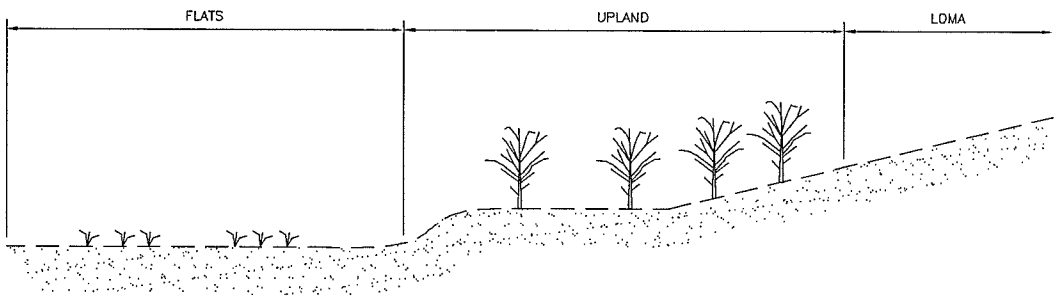

HABITAT ENHANCEMENT AREA (EXISTING) A
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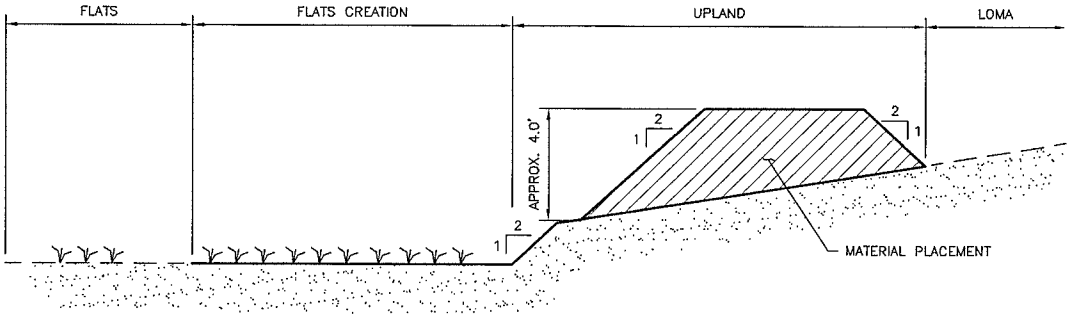

HABITAT ENHANCEMENT AREA (PROPOSED) B
SCALE: NOT TO SCALE

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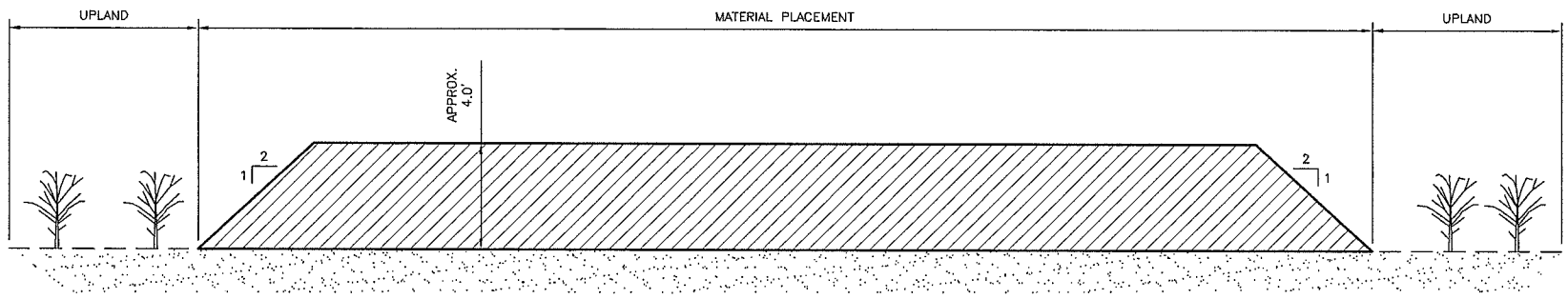

MATERIAL PLACEMENT AREA (PROPOSED) A

SCALE: NOT TO SCALE

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