



**VELASCO DRAINAGE DISTRICT**  
**Standard Specification:**

**Structural Demolition**

**Revision Control**

Revision Number	Date	Revision Author
1.0 – Approved for use	12/05/2014	HSS – District Engineer
2.0	03/22/2016	HSS – District Engineer
3.0	11/07/2017	DBR – District Engineer

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Douglas B. Roesler, P.E.  
President, Baker & Lawson, Inc.  
District Engineer, Velasco Drainage District

November 7, 2017

## **1.0 Scope and Discussion**

- 1.1 This specification shall govern work associated with the demolition of structures on the Freeport, and Vicinity, Hurricane Flood Protection System (the “federal levee”).
  - 1.1.1 Abandoned facilities must be removed from the federal levee by the Permittee.
  - 1.1.2 Permittee shall be fully responsible to Velasco Drainage District (VDD) whether it uses its own forces or an independent contractor to perform the demolition.
  - 1.1.3 Permittee remains fully responsible to assure that his operations conform to all applicable federal and state law which govern the testing for asbestos, for the handling and disposition of hazardous materials, for the safety of all workman on the site.
  - 1.1.4 Permit has requirements governing work during weather emergency. Refer and conform to these requirements.
- 1.2 Follow standard procedures for purging and securing pipelines prior to removal.

## **2.0 Standards and Related Information**

- 2.1 The listed standards or technical specifications provide important information which shall supplement the Permittee's own safety and hazardous materials policy.
- 2.2 Standards or related information applying to structural demolition:
  - 2.2.1 Air Conditioning, Heating and Refrigeration Institute (AHRI)
    - 2.2.1.a AHRI Guideline K: “2009 Guideline for Containers for Recovered Non-Flammable Fluorocarbon Refrigerants.
  - 2.2.2 American Association of State Highway and Transportation Officials (AASHTO)
    - 2.2.2.a (1991; R 2008) Standard Specification or Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes.
    - 2.2.2.b (2010) Standard Method of Test for Moisture-Density Relations of Soils Using a 10 - lb. Rammer and 18 in Drop.
  - 2.2.3 American Society of Safety Engineers (ASSE/SAFE)
    - 2.2.3.a (2006) Safety Requirements for Demolition Operations.

### **3.0 Site Drawing (Existing Condition)**

3.1 All improvements, all grades, cross slopes and elevations must be shown on an existing condition drawing.

3.1.1 Improvements, grades, elevations and cross sections shall be classified as:

3.1.1.a Installed by the United States Army Corps of Engineers;

3.1.1.b Installed by Velasco Drainage District

3.1.1.c Installed by Permittee

3.2 Note the items scheduled for demolition and those scheduled to remain.

### **4.0 Protection of Improvements Installed by the United States Army Corps of Engineers (USACE) and Velasco Drainage District**

4.1 Items, such as Rip Rap, shall be restored to original condition if disturbed or removed as a part of demolition operations.

4.2 Original lines, grades, cross slopes and elevations of the levee constructed by the USACE must be restored to original condition, unless the Section 408 process approval for a revision has been obtained.

4.3 Any item installed by the VDD, if disturbed or removed as a part of the demolition operations must be restored in its original condition.

### **5.0 Construction Drawings**

5.1 Show sections of all areas to be excavated to remove piles, structures, foundations, sumps and other structural components.

5.2 Excavation area to be defined as the structural (outside) dimensions plus four feet, then extended to elevation of protected ground. Remove levee embankment as necessary. Slopes to be keyed or benched in all directions per Exhibit 8. Show each excavation in section and in plan view.

5.2.1 Excavate piles and other foundations to 3 feet below levee embankment for structures that are allowed to remain. Structures that are outside of the toe of the levee but within 15 feet of levee toe shall be removed to a depth of 3 feet below natural ground.

### **6.0 Levee Material**

- 6.1 Refer to Velasco Drainage District Specification “Embankment” for soil classification and testing requirements. Structural fill for use in levee shall be tested by an acceptable geotechnical laboratory and shall be found to have the following properties.
  - 6.1.1 Lean clay, free of organic or other deleterious materials; maximum clay lump size less than three inches.
  - 6.1.2 Liquid Limit  $\leq 65$ , PI  $\geq 15$  (preferred)
  - 6.1.3 Modify high Liquid Limit soils with lime, percentage of lime to be determined by geotechnical laboratory.
- 6.2 Do not use sand or sandy clay soils as levee fill.
- 6.3 Existing material can be used as backfill, unless material is sand or silt. The VDD will provide direction on replacement material if sand or silt is discovered.  
For Liquid Limit  $>50$ , see 6.1.3.

## **7.0 Construction Methods**

- 7.1 Reconstruct in strict accordance with the Velasco Drainage District Specification “Embankment” and “Levee Repair”.
- 7.2 Levee fill shall be compacted to at least 95% of Standard Procter maximum dry density as determined by ASTM D 698.
- 7.3 Place levee fill in maximum lifts of 8" of loose material and compact within the range of -1% to +5% above optimum moisture content value. If water must be added, uniformly apply and thoroughly mix into the soil by disking or scarifying.
- 7.4 Each structural lift is to be tested by a representative of the geotechnical engineer prior to constructing the subsequent lift.
- 7.5 To prevent a plane of failure between the existing levee and new levee fill, key or bench the repair section into the existing completed levee. “Step’ excavation slope at minimum 1H:1V or greater to comply with OSHA safety criteria based on soil classification. See Exhibit 8.

## **8.0 Sections**

- 8.1 Maintain a maximum side slope, Protected Side of 3H:1V (3.5H:1V is preferred).
- 8.2 Maintain maximum side slope, Flood Side of 6H:1V (for levees exposed seaward) or 3H:1V

(3.5H:1V preferred) for levees not subject to wave action.

8.3 Maintain the existing levee top width, reconstructed out similar materials if not earth.

**9.0 Site Drawing (Proposed Condition)**

9.1 Show all remaining improvements, grades, elevations and cross sections on the Proposed (or After Demolition) Site Drawing.

9.2 All designs shall have horizontal location based on NAD 83 and vertical based on NAVD 88.

**10.0 Construction Methods**

**10.1 Prior to Construction**

10.1.1 Provide cross sections and plan views adequate to identify the repaired section on the ground and to show the side slopes. Note limits of repair, rip rap and other elements of the project.

10.1.2 Provide analysis and soil classification (Atterberg Limits) of proposed levee fill from geotechnical laboratory in conformance with ASTM D2487, ASTM 1140 and ASTM 4318.

10.1.3 All data and designs must bear seal of a Licensed Professional Engineer - Texas (LPE-T).

**10.2 During Construction:**

10.2.1 Provide adequate supervision to accurately document that locations, elevations, etc. are incorporated in required testing and as built documentation and assure that all provisions are complied with during construction.

10.2.2 Assure that the selected geotechnical laboratory provides compaction and moisture testing as required by this Specification.

**10.3 After Construction**

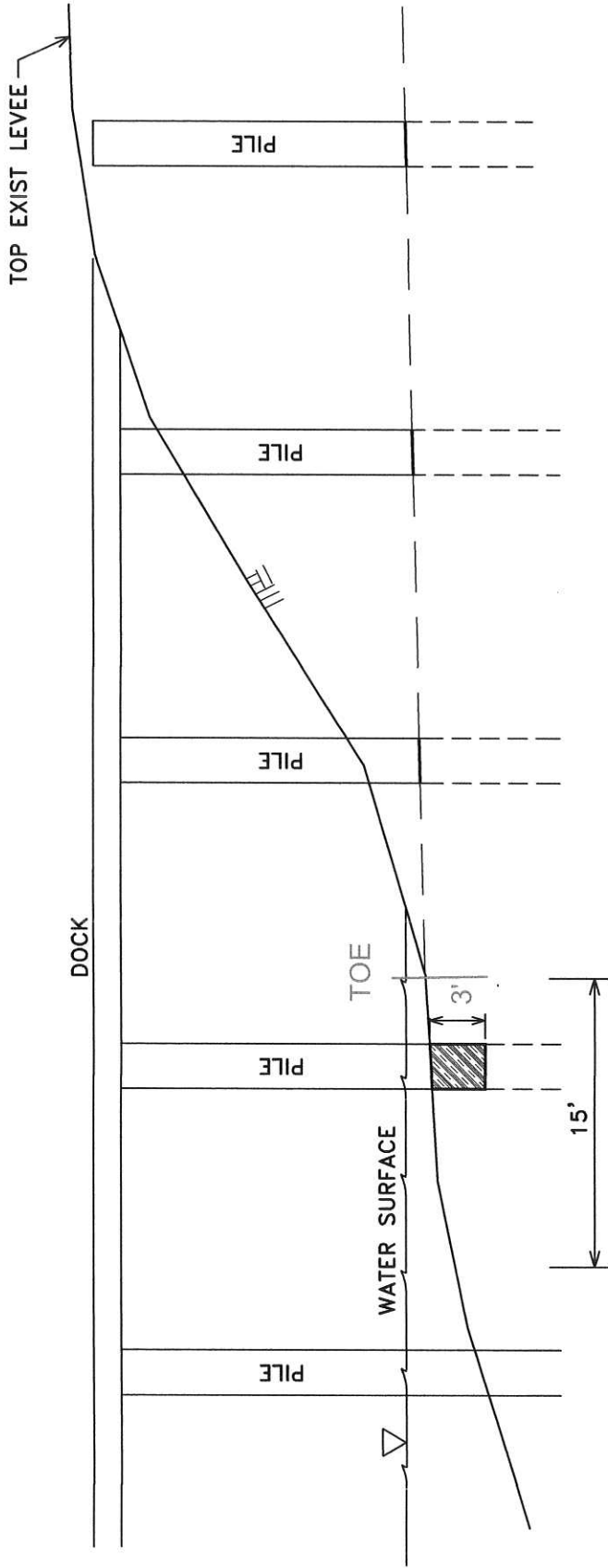
10.3.1 Provide as built drawings, note any deviation from planned drawings as needed.

10.3.2 Provide all geotechnical test reports.

10.3.3 Assure that all submittals under Section 10.3 bear the seal of a Licensed

Professional Engineer - Texas (LPE-T).

**END OF SPECIFICATION**



FOR PILES IN AND WITHIN 15' OF TOE,  
 CUT OFF PILE AT 3' BELOW  
 NATURAL GROUND.  
 BACKFILL WITH 3' OF SELECT CLAY. (LL =< 65, PI => 15)

## DETAIL PILE REMOVAL N.T.S.

DATE: 11-07-17 revised  
 DATE: 11-07-11  
 DRAWING: CutPileDetail.dwg



**BAKER & LAWSON, INC.**

ENGINEERS • PLANNERS • SURVEYORS

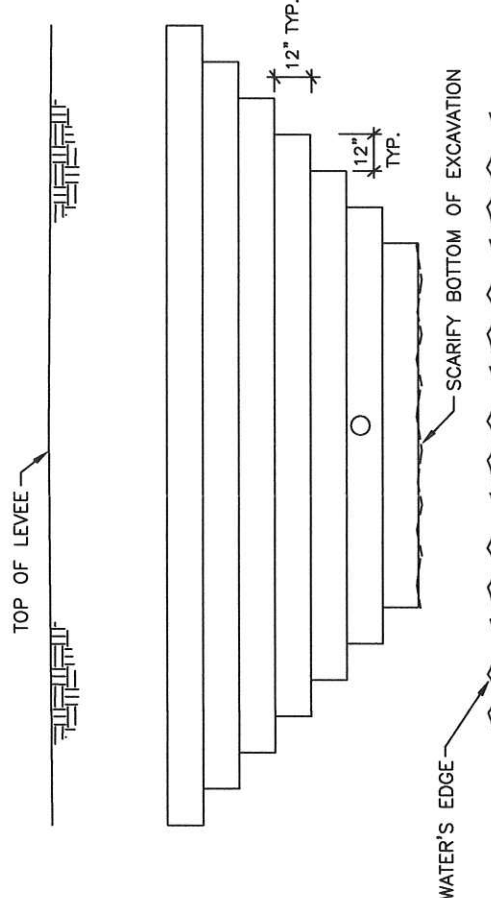
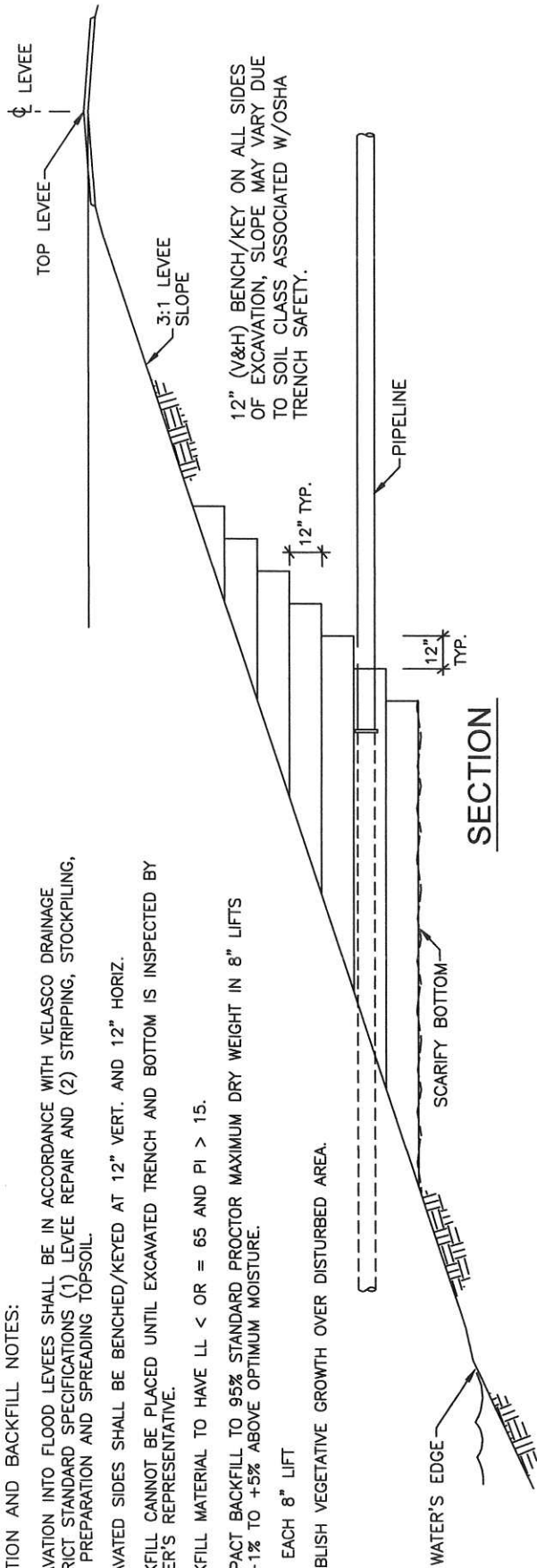
300 E. CEDAR ST., ANGLETON, TEXAS 77515

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REG. NO. F-825

**EXCAVATION AND BACKFILL NOTES:**

1. EXCAVATION INTO FLOOD LEEVES SHALL BE IN ACCORDANCE WITH VELASCO DRAINAGE DISTRICT STANDARD SPECIFICATIONS (1) LEVEE REPAIR AND (2) STRIPPING, STOCKPILING, SITE PREPARATION AND SPREADING TOPSOIL.
2. EXCAVATED SIDES SHALL BE BENCHED/KEYED AT 12" VERT. AND 12" HORIZ.
3. BACKFILL CANNOT BE PLACED UNTIL EXCAVATED TRENCH AND BOTTOM IS INSPECTED BY OWNER'S REPRESENTATIVE.
4. BACKFILL MATERIAL TO HAVE LL < OR = 65 AND PI > 15.
5. COMPACT BACKFILL TO 95% STANDARD PROCTOR MAXIMUM DRY WEIGHT IN 8" LIFTS AT -1% TO +5% ABOVE OPTIMUM MOISTURE.
6. TEST EACH 8" LIFT
7. ESTABLISH VEGETATIVE GROWTH OVER DISTURBED AREA.

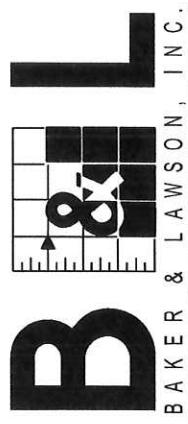


**EXHIBIT - 8**  
( LOOKING INTO LEVEE )  
**EXCAVATION AND BACKFILL**

N.T.S.

12" (V&H) BENCH/KEY ON ALL SIDES OF EXCAVATION, SLOPE MAY VARY DUE TO SOIL CLASS ASSOCIATED W/OSHA TRENCH SAFETY.

PREPARED BY:



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DRAWING FILE: 11100\_EXHIBIT-8.dwg  
DATE: NOVEMBER, 2017