

Reestablishment of the South Boundary of the Galveston Island Harbor Line for the Port of Galveston along the Juan N. Seguin Land Grant titled and Patented on July 22nd, 1835 to Michael B. Menard, Galveston County, Galveston, Texas in accordance with Cause No. 113,630 122nd Judicial District Court of Galveston County, Texas

REFERENCE DOCUMENTS:

- 1) Schedule A of Final Judgment in Cause No. 113,630 Styled "City of Galveston, Texas et al vs. the State of Texas, et al" in the 122nd Judicial District Court of Galveston County, Texas. The Final Judgment states under item 1 on page 2 "The Court finds, based upon the stipulation and agreement of the parties, that physical location of such legal boundary, on the face of the earth, is coincident with the line described by calls for course and distance in schedule A of this Final Judgment" NOTE: Schedule B(1) City of Galveston Tract B is the tract in question for the purpose of this survey and report.
- 2) "USACE 1939 MAP" Sheet One "Galveston Harbor, Texas U. S. Harbor Lines Galveston Harbor, Galveston Channel, Channel from Galveston Harbor to Texas City and Channel to Port Bolivar" dated May 1939 by the U.S. Engineer Office, Galveston, Texas and has a map designation of D-1-18 and File No GALV 306-16 with revisions dated May 1939. This map states "The Harbor Lines were approved by J. M. Wainwright, assistant Secretary of War on September 24, 1921". There are no statements as to North reference. This map does not state Grid or Surface distances. A hand written note states "Grid System of U.S.E.D. and distance has changed. Correction factor for distance=0.999862. Multiply these distances by correction factor and change bearing"
- 3) "USACE 1939 MAP" Sheet Two "Galveston Harbor, Texas U. S. Harbor Lines Galveston Harbor, Galveston Channel, Channel from Galveston Harbor to Texas City and Channel to Port Bolivar" dated May 1939 by the U.S. Engineer Office, Galveston, Texas and has a map designation of 12-B-2 and File No GALV 306-16 with revisions dated May 1939. This map states "The Harbor Lines were approved by J. M. Wainwright, assistant Secretary of War on September 24, 1921". There are no statements as to North reference. This map does not state Grid or Surface distances.
- 4) "USACE 1970 Galveston Island Harbor Line Map" "GALVESTON ISLAND HARBOR LINE" dated November 1970 by U.S. Army Engineer District, Galveston G M Mayfield Chief, Survey Branch. "The Harbor Lines shown on this drawing were approved by J. M. Wainwright, assistant Secretary of War, under date of September 24, 1921". "This survey is based upon Texas State Plane Coordinate System, South Central Zone and on the U.S. Coast and Geodetic Survey, Texas Coast Triangulation Net Adjusted to Sea Level Datum, and all bearings and distances shown are Grid." Neither scale factor nor rotation listed on this map. Coordinates for the Harbor Line, Base Line and Reference Lines are given in Y and X values with no reference.
- 5) "USACE 1970 Pelican Island Harbor Line Map" "PELICAN ISLAND HARBOR LINE" dated May 1970 by U.S. Army Engineer District, Galveston Aaron Graham, Jr. Chief, Survey Branch and Registered Professional Engineer certified "The foregoing survey (reestablishment of approved Harbor Line, 24 Sept. 1921)". "This survey is based upon Texas State Plane Coordinate System, South Central Zone and on the U.S. Coast and Geodetic Survey, Texas Coast Triangulation Net Adjusted to Sea Level Datum, and all bearings and distances shown are Grid." Neither scale factor nor rotation listed on this map. Coordinates for the Harbor Line, Base Line and Reference Lines are given in Y and X values with no reference.

File No. Sketch File 75

*See Rolled
Sketch 50*

*Galveston County
Reestablishment - S. boundary line
of the Galveston Island Harbor line*

Date Filed: Sept. 12, 2018

*George P. Bush, Commissioner
By: Douglas Howard*

MONUMENTATION

Monuments searched for from Schedule A and Schedule B(1) Tract B

- 1) **H 168** Found-See Below
- 2) Centerline Avenue B and 11th not found-destroyed

Monuments searched for from "USACE 1939 MAP" Sheet One

- 1) Reference Points F-L Destroyed in Galveston Trolley Extension
- 2) Reference Point M&N Paved over- no reaction from locator- Not excavated.
- 3) Reference Points O-R Under Harborside
- 4) Reference Point S In Rail yard- not recovered
- 5) **Mark "A"** Found Brass Rod in Granite surveyed in-See below
- 6) Mark "B" Point destroyed by boat ramp construction
- 7) Mark No. 3 Searched for not found- lke damaged concrete in area
- 8) Mark No. 4 Searched for not found
- 9) Mark No. 14 Searched for not found-in pond Southeast of Pelican Island Bridge
- 10) **Bolivar Lighthouse** Found and surveyed in- See Below

Monuments searched for from "USACE 1939 MAP" Sheet Two

- 1) Mark V Searched for not found

Monuments searched for from "USACE 1970 Galveston Island Harbor Line Map"

- 1) Mark V Searched for not found
- 2) P-7 Under Harborside Drive
- 3) P-6 Searched for not found
- 4) P-5 Found X- not certain if actual monument
- 5) G-4A Searched for not found
- 6) G-4B Paved over-not excavated
- 7) S10-S20 Destroyed
- 8) **S-21** Found Brass stem of destroyed Disk-see below
- 9) S-22-S25 Paved over-not excavated
- 10) G10-G44 Searched for not found
- 11) Coordinates listed converted from Texas State Plane Coordinates, NAD27 4204-Texas South Central Zone in U.S. Feet converted to Texas State Plane Coordinates, NAD83 4204-Texas South Central Zone in U.S. Feet using Army Corps of Engineers Corpscon v6.0.1 see attached

Monuments searched for from "USACE 1970 Pelican Island Harbor Line Map"

- 1) **Mark A** Found Brass Rod in Granite surveyed in-See below
- 2) Mark 4 Searched for not found
- 3) Mark 14 Searched for not found -in pond Southeast of Pelican Island Bridge
- 4) Mark 3 Searched for not found- lke damaged concrete in area
- 5) Coordinates listed converted from Texas State Plane Coordinates, NAD27 4204-Texas South Central Zone in U.S. Feet converted to Texas State Plane Coordinates, NAD83 4204-Texas South Central Zone in U.S. Feet using Army Corps of Engineers Corpscon v6.0.1 see attached

NOTES:

- 1) Dale Hardy Geosurv. Surveyor for the Galveston trolley extension along the centerline of Avenue B (Strand) between 22nd Street and 11th Street. Point data was researched to recover any reference points to reestablish Reference Points F-L on the said USACE 1939 map (S10-S20 on "USACE 1970 Galveston Island Harbor Line Map") . None were able to be referenced.
- 2) Calls were made to the USACE Galveston Office for additional survey data, maps or information. Calls were not returned.

RESULTS

NOTE: "CST" refers to survey data collected by Coastal Surveying of Texas, Inc. Field personnel: Sidney Bouse LSLs, Stephen Blaskey LSLs, Brian House SIT, Tommy Metcalf Party Chief, Trey Hall Instrument Man, Alex Garza, Instrument Man, Richard Long Instrument Man utilizing Coastal Surveying of Texas, Inc Topcon GPS Network adjusted to Harris Galveston Subsidence District Monument HGCS D 62 PID AW5708 Horizontal O Vertical h. Nad 83 (2007 adj).

NGS Monument H-168 PID AW0602

CST	N 13,668,200.25	E 3,298,985.76	Delta (N)	Delta (E)
NGS Data Sheet	N 13,668,199.92	E 3,298,985.53	0.33 South	0.23 West
CorpsCon (Tract A)	N 13,668,201.78	E 3,298,986.64	1.53 North	0.88 East

21st/B

CST	N 13,683,560.22	E 3,309,209.27		
Nov 1970 (Corpscon)	N 13,683,563.65	E 3,309,207.19	3.43 North	2.08 West

Mark "A"

CST	N 13,694,119.18	E 3,315,879.67		
May 1970 (Corpscon)	N 13,694,122.454	E 3,315,877.97	3.27 North	1.70 West

CONCLUSION:

Calls for course and distance from Schedule A and Tract B together with the calls for course and distance found on the USACE 1939 Maps scaled and rotated to match the found H 168 and Mark A result in a total discrepancy of 0°00'19" in rotation and a difference in scale factor of 0.000003456 when compared to the USACE 1970 maps. The reference sight line to the Bolivar Lighthouse as shown on the USACE 1939 Map will miss the actual centerline of the Lighthouse to the West by 1.69 feet at a distance of 11,193.65 feet or an angular error of 0°00'31"

Brass stem of the missing monument at 21st street is S60°51'37"E, a distance of 2.76 feet from the centerline of a line drawn between Reference Point L "Intersection of center lines of 20th Street and Avenue B" and Reference Points M & N "Intersection of center lines of 22nd Street and Avenue B" as shown on said USACE 1939 map. The said map calls for centerlines of Avenue B and 20th and 22nd streets, but does not call for monuments at the centerline, nor does it call for a reference point or monument at the intersection of Avenue B and 21st Street so this monument was not held.

The Galveston Island Harbor line as referenced in said Schedule A and Tract B and on said USACE Maps of 1939 and 1970 and referenced to the HGCS D NAD 83 (2007adj) coordinates of H 168 and Mark A result in the following Texas State Plane Coordinates, NAD83(2007 adj)-Texas South Central Zone GRID coordinates, courses and distances in U.S. Feet:

Beginning NGS Monument H168;	N 13668200.25 E 3298985.76
Thence N 39°21'37" W, a distance of 16881.30 Feet to U;	N 13681252.42 E 3288279.73
Thence N 71°14'57" E, a distance of 9747.51 Feet to T;	N 13684385.80 E 3297509.90
Thence S 78°20'01" E, a distance of 3699.52 Feet to S;	N 13683637.71 E 3301132.99
Thence S 88°19'38" E, a distance of 2740.56 Feet to R;	N 13683557.71 E 3303872.39
Thence S 89°58'53" E, a distance of 884.87 Feet to Q;	N 13683557.42 E 3304757.25
Thence N 86°43'22" E, a distance of 1149.99 Feet to P;	N 13683623.16 E 3305905.37
Thence N 85°04'30" E, a distance of 845.78 Feet to O;	N 13683695.77 E 3306748.02
Thence N 79°27'08" E, a distance of 979.64 Feet to N;	N 13683875.10 E 3307711.11
Thence N 68°12'18" E, a distance of 979.64 Feet to M;	N 13684238.83 E 3308620.72
Thence N 62°34'53" E, a distance of 517.96 Feet to L;	N 13684477.34 E 3309080.50
Thence N 60°15'04" E, a distance of 536.22 Feet to K;	N 13684743.41 E 3309546.05
Thence N 55°35'38" E, a distance of 536.22 Feet to J;	N 13685046.41 E 3309988.45
Thence N 53°15'52" E, a distance of 1632.87 Feet to I;	N 13686023.06 E 3311297.04
Thence N 49°03'09" E, a distance of 704.17 Feet to H;	N 13686484.55 E 3311828.91
Thence N 40°38'33" E, a distance of 704.19 Feet to G;	N 13687018.89 E 3312287.58
Thence N 36°25'36" E, a distance of 240.94 Feet to F;	N 13687212.75 E 3312430.64
Thence N 36°19'18" E, a distance of 2053.46 Feet to E;	N 13688867.23 E 3313646.94
Thence N 15°34'26" E, a distance of 3021.30 Feet to D;	N 13691777.60 E 3314458.10
Thence N 17°34'58" E, a distance of 677.72 Feet to C;	N 13692423.66 E 3314662.83
Thence N 26°54'09" E, a distance of 1425.12 Feet to B;	N 13693694.55 E 3315307.66
Thence N 49°36'47" E, a distance of 725.51 Feet to A;	N 13694164.64 E 3315860.27
Thence S 23°06'32" E, a distance of 49.43 Feet to Mark A	N 13694119.18 E 3315879.67

CONSTRUCTION

NGS Monument H 168 PID AW0602 was held as a found original monument as called for in both the Schedule A and Tract B descriptions. The only other found monument is shown on the said USACE 1939 Map is Mark "A".

The 1939 Map has no statement as to North reference. This map does not state Grid or Surface distances. A hand written note states "Grid System of U.S.E.D. and distance has changed. Correction factor for distance=0.999862. Multiply these distances by correction factor and change bearing"

The 1970 maps are based upon Texas State Plane Coordinate System, South Central Zone and on the U.S. Coast and Geodetic Survey, Texas Coast Triangulation Net Adjusted to Sea Level Datum, and all bearings and distances shown are Grid.

EXHIBIT A compares the courses and distances of both. The USACE 1970 maps resulted in a 2°00'46" rotation and a scale factor of 0.999738226 when compared to the USACE 1939 maps.

These are also compared to the courses and distances found in Schedule A and Tract B legal descriptions as found in the said Final Judgment.

Schedule A and Tract B descriptions call to traverse to the "S. boundary of the Galveston Harbor Line by U.S. Corps of Engineers (at Texas South Central Zone Grid Coordinates)".

Schedule A and Tract B descriptions do not speak to Mark A, yet the USACE 1939 map does give us a tie from the "Galveston Harbor line "to said Mark "A".

The calls for course and distance from Schedule A and Tract B descriptions together with the calls for course and distance of the said Galveston Harbor line from the said USACE 1939 map were rotated and scaled as a single entity to the found original called for monuments of H 168 and Mark "A". The results are a rotation of 2°00'27" and a scale factor of 0.99973477 was required to be applied to the original called courses and distances to hold both found monuments.

I hereby certify that the above report is the result of an on the ground survey, based on found monumentation as stated, is true and correct as of October 10, 2011 and is part of Coastal Surveying of Texas, Inc. survey 11-0938 of even date and the basis for revisions to 10-1510A dated January 28, 2011 with revision date of July 18, 2011 and October 10, 2011. ALL BEARINGS ARE GRID BEARINGS AND REFER TO THE TEXAS COORDINATE SYSTEM OF 1983 - SOUTH CENTRAL ZONE, AS DEFINED BY ARTICLE 21.070 OF THE NATURAL RESOURCE CODE OF THE STATE OF TEXAS. ALL DISTANCES ARE GRID DISTANCES EXPRESSED IN U. S. SURVEY FEET.



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