



### BENCHMARKS

BENCHMARK (LDB) LOCATED 5.85 M. N. FROM ROSEBURG, 0.25 M. WEST ALONG THE ATCHISON, TOPEKA AND SANTA FE RAILWAY FROM THE STATION AT ROSEBURG THENCE 4.85 M. N. ALONG FARM ROAD 305 AT THE CROSSING OF A TRANSMISSION TOWER AND POWER LINES 50 FEET S.W. OF THE CENTER LINE OF THE ROAD, 52 FEET ALNE. OF THE EAST LEG OF THE FIRST TRANSMISSION TOWER S.W. OF THE ROAD 40-1/2 FEET S.E. OF THE S.E. END OF THE METAL GATE 1-1/2 FEET ALNE. OF A TRANSMISSION TOWER 1/2 FEET S.W. OF POWER POLE 0.6 FOOT SOUTHWEST OF THE FENCE, 1.5 FOOT S.W. OF THE FENCE POST, 1.5 FOOT S.W. OF THE ROAD AND 1.5 FOOT S.W. OF A CONCRETE POST PROJECTING 4.5 FEET ABOVE GROUND, NAD 29, 1973 ADJUSTMENT.

1973 ELEV. ADJUST. 2001 ELEV. ADJUST. ELEV. DEF. 84.07 84.07 -0.04

T.B.M. # 8 SPIKE VERTICALLY IN ROOT, SOUTH SIDE 224' OAK TREE, 15' WEST OF CENTER LINE OF ROAD 4775 SOUTHWEST OF C-22.

1973 ELEV. ADJUST. 2001 ELEV. ADJUST. ELEV. DEF. 113.47 113.47 -0.04

T.B.M. # 2 1/2" IN ESPLANADE NOSE, GASTON ROAD AT ENTRANCE TO SEVEN MEADOWS SUBDIVISION.

1973 ELEV. ADJUST. 2001 ELEV. ADJUST. ELEV. DEF. 113.39 113.39 -0.04

T.B.M. # 8 RAILROAD SPIKE IN NORTH POLE OF TWO POWER POLES, SOUTH OF DRILL SITE # 67H SET OF POLES WEST OF EAST PROPERTY LINE IN H.L.49, FEE STRIP, SOUTHWEST OF THE CENTER LINE OF ROAD 4775 SOUTHWEST OF C-22.

1973 ELEV. ADJUST. 2001 ELEV. ADJUST. ELEV. DEF. 114.07 114.07 -0.04

NOTE: PROJECT ELEVATIONS ARE BASED ON 1973 ADJUSTMENT.

FLOOD NOTE: ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP NO. 4818700101, FOR FORT BEND COUNTY, TEXAS AND INCORPORATED AREAS, REVISED DATE APRIL 2, 2014, THE SUBJECT PROPERTIES LIES IN ZONE X (UNSHADED), AREAS DETERMINED TO BE OUTSIDE THE 500-YEAR FLOOD PLAIN.

100-YEAR BASE FLOOD ELEVATION ELEVATION 94.00

SEE SHEET 16 FOR PRIVATE UTILITY COMPANY NOTES TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED, CALL CENTERPOINT AT 713-207-2222.

**PRIVATE UTILITY LINES SHOWN**  
AT LEAST 48 HOURS BEFORE EXCAVATING IN STREET R.O.W. OR EASEMENTS CALL THE LONE STAR NOTIFICATION 713-223-4567.

Date: \_\_\_\_\_

CenterPoint Energy/Electric Facilities  
(Approved only for creating underground ductlines, unless otherwise noted.)  
Valid at time of review only.

Date: \_\_\_\_\_

CenterPoint Energy/Gas Facilities  
(Gas service lines are not shown)

Date: \_\_\_\_\_

Cable Company

Date: \_\_\_\_\_

SEAL:

STATE OF TEXAS  
REG. NO. 116018  
WILLIAM SHORR  
PROFESSIONAL ENGINEER  
Sept. 23, 2015

TEXAS BOARD OF PROFESSIONAL ENGINEERS  
BENCHMARK ENGINEERING CORPORATION  
T.B.P.E. REGISTRATION NUMBER F-6788

REV. NO.	DESCRIPTION	DATE

**BENCHMARK ENGINEERING CORPORATION**  
Consulting Engineers-Planners-Surveyors  
2401 Fountainview Suite 500  
Houston, Texas 77057 U.S.A.  
(713)288-9930 Fax (713)288-3804

FORT BEND COUNTY M.U.D. NO. 133 CONSTRUCTION PLANS FOR PROPOSED WATER, SANITARY SEWER, STORM SEWER, AND IRRIGATION SYSTEMS SERVING

**LAKES OF BELLA TERRA**  
VIA MAZZINI WAY RESERVE SEC 1  
PUBLIC STREETS/PUBLIC UTILITIES IN FORT BEND COUNTY, TEXAS

PROPOSED

**OVERALL DRAINAGE AREA MAP**

PLAT NAME: LAKES OF BELLA TERRA VV. MAZZINI RES SEC 1  
CPC 101 FILE NO.: 2015-1978  
I.L.M.S. No. 15118963  
C.O.H. LOG No. 15-1504

AUTHORIZATION IS VALID FOR 1 YEAR.

APPROVED: *[Signature]*  
FBD DEVELOPMENT COORDINATOR

DATE: 12/16/15

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

**CITY OF HOUSTON**  
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

12-31-15  
TRAFFIC & TRANSPORTATION  
STORM WATER QUALITY  
FACILITIES

FOR CITY OF HOUSTON USE ONLY  
ACCEPTED FOR FILED  
55158  
CITY DRAWING NUMBER

- #### DETENTION PLAN SUMMARY
- STORM WATER DETENTION PLANS ARE PROVIDED AND PREPARED BY BENCHMARK ENGINEERING CORPORATION, SAIB Y. SAOUR, PE # 40094. REPORT TITLE: MASTER DRAINAGE PLAN REPORT FOR LAKES OF BELLA TERRA FORT BEND COUNTY M.U.D. #133  
A. SIGNED AND APPROVED BY: FORT BEND COUNTY M.U.D. #133 DEC. 27, 2012  
B. SIGNED AND APPROVED BY: FORT BEND COUNTY LEVEE IMPROVEMENT DISTRICT #12 MAY 08, 2013
  - DETENTION SUMMARY  
1. AREA SERVED = 788.78 ACRES  
2. DETENTION STORAGE VOLUME RATE =  $C_d = 0.6839$  AC-FI/AC  
3. DETENTION STORAGE VOLUME REQUIRED = 533.43 AC-FI  
4. DETENTION STORAGE VOLUME AVAILABLE = 650.34 AC-FI  
5. MAXIMUM OUTFALL RATE ALLOWED = 377.59 CFS  
6. MAXIMUM OUTFALL RATE PROVIDED = 373.53 CFS  
7. RESTRICTOR SIZE = 1-4'x5' R.C.B. WITH 0.35'-FOOT FLATE ALONG THE TOP OF 6'x5' R.C.B. OPENING UNDER CANAL ROAD

- #### LEGEND
- 0.50 AC (18.47 CFS) ACCUMULATED ACREAGE
  - 0.50 AC (18.47 CFS) ACCUMULATED C.F.S.
  - EXTREME EVENT
  - SHEET FLOW DIRECTION
  - IN-48 INLET IDENTIFICATION NUMBER
  - MH-26 MANHOLE IDENTIFICATION NUMBER
  - FMH-26 FUTURE MANHOLE IDENTIFICATION NUMBER
  - ACREAGE IN AREA
  - C.F.S. IN AREA
  - DRAINAGE BREAK POINT
  - DRAINAGE AREA LINE
  - DRAINAGE FLOW

- #### FORT BEND COUNTY CONSTRUCTION - GENERAL NOTES
- FORT BEND COUNTY MUST BE INVITED TO THE PRE-CONSTRUCTION MEETING.
  - CONTRACTOR SHALL NOTIFY FORT BEND COUNTY ENGINEERING DEPARTMENT 48 HOURS PRIOR TO COMMENCING CONSTRUCTION AND 48 HOUR NOTICE TO ANY CONSTRUCTION ACTIVITY WITHIN THE LIMITS OF THE PAVING AT [Construction@fortbendcountytx.gov](mailto:Construction@fortbendcountytx.gov).
  - CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS REQUIRED FROM FORT BEND COUNTY PRIOR TO COMMENCING CONSTRUCTION OF ANY IMPROVEMENTS WITHIN COUNTY ROAD RIGHT OF WAYS.
  - ALL PAVING IMPROVEMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH FORT BEND COUNTY RULES, REGULATIONS AND REQUIREMENTS RELATING TO THE APPROVAL AND ACCEPTANCE OF IMPROVEMENTS IN SUBDIVISIONS AS CURRENTLY AMENDED.
  - ALL ROAD WIDTHS, CURB RADI AND CURB ALIGNMENT SHOWN INDICATES BACK OF CURB.
  - A CONTINUOUS LONGITUDINAL REINFORCING BAR SHALL BE USED IN THE CURBS.
  - ALL CONCRETE PAVEMENT SHALL BE 5" SACK CEMENT WITH A MINIMUM COMPRESSIVE STRENGTH OF 3500 PSI AT 28 DAYS. TRANSVERSE EXPANSION JOINTS SHALL BE INSTALLED AT EACH CURB RETURN AND AT A MAXIMUM SPACING OF 60 FEET.
  - ALL WEATHER ACCESS TO ALL EXISTING STREETS AND DRIVEWAYS SHALL BE MAINTAINED AT ALL TIMES.
  - 4"x12" REINFORCED CONCRETE CURBS SHALL BE PLACED IN FRONT OF SINGLE FAMILY LOTS ONLY, ALL OTHER AREAS SHALL BE 6" REINFORCED CONCRETE CURB.
  - AT ALL INTERSECTION LOCATIONS, TYPE 7 RAMPS SHALL BE PLACE IN ACCORDANCE WITH TDOT FED-12A STANDARD DETAIL SHEET A.D.A.-HANDICAP RAMPS SHALL BE INSTALLED WITH STREET PAVING AT ALL INTERSECTIONS AND COMPLY WITH CURRENT A.D.A. REGULATIONS.
  - CURB HEADERS ARE REQUIRED AT CURB CONNECTIONS TO HANDICAP RAMPS, WITH NO CONSTRUCTION JOINT WITHIN 5' OF RAMPS.
  - ALL INTERSECTIONS UTILIZING TRAFFIC CONTROL MEASURES SHALL HAVE A.D.A. WHEEL CHAIR RAMPS INSTALLED.
  - GUIDELINES ARE SET FORTH IN THE TEXAS \* MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES\*, AS CURRENTLY AMENDED, SHALL BE OBSERVED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADEQUATE FLAGMEN, SIGNING, STRIPING AND WARNING DEVICES, ETC. DURING CONSTRUCTION-SIXTH DAY AND NIGHT.
  - ALL 81-1 STOP SIGNS SHALL BE 30"x30" WITH DIAMOND GRADE SHEETING PER TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
  - STREET NAME SIGNAGE SHALL BE ON A 6" HIGH SIGN FLAT BLADE W/REFLECTIVE GREEN BACKGROUND. STREET NAMES SHALL BE UPPER AND LOWERCASE LETTERING WITH UPPERCASE LETTERS OF 6" MINIMUM AND LOWERCASE LETTERS OF 4.5" MINIMUM. THE LETTERS SHALL BE REFLECTIVE WHITE. STREET NAME SIGNS SHALL BE MOUNTED ON STOP SIGN POST.
- NOTE: FORT BEND COUNTY NOTES SUPERSEDE ANY CONFLICTING NOTES.
- INSPECTION: THE PROJECT AND ALL PARTS THEREOF SHALL BE SUBJECT TO INSPECTION FROM TIME TO TIME BY INSPECTORS DESIGNATED BY FORT BEND COUNTY. NO SUCH INSPECTIONS SHALL RELIEVE THE CONTRACTOR OF ANY OF ITS OBLIGATIONS HEREUNDER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING THE CITY OF HOUSTON OF ANY NOT IN ACCORDANCE WITH THE DRAWINGS AND SPECIFICATIONS, REQUIREMENTS AND SPECIFICATIONS OF FORT BEND COUNTY OR ANY PROVISION OF THIS PROJECT SHALL BE CONSIDERED TO IMPLY AN ACCEPTANCE OF SUCH WORK OR TO RELIEVE THE CONTRACTOR OF ANY OF ITS OBLIGATIONS HEREUNDER.

- A BLUE DOUBLE REFLECTORIZED BUTTON SHALL BE PLACED AT ALL FIRE HYDRANT LOCATIONS. THE BUTTON SHALL BE PLACED 12 INCHES OFF OF THE CENTERLINE OF THE STREET ON THE SAME SIDE AS THE HYDRANT.
- REINFORCED CONCRETE PIPE (C76 CLASS II) STORM SEWERS SHALL BE INSTALLED, BEDDED AND BACKFILLED IN ACCORDANCE WITH CITY OF HOUSTON DRAWINGS 0217-02, 0237-02, 0237-03, 0237-04, 0237-05 AND 0237-07.
- PAVING SHALL BE IN ACCORDANCE WITH FORT BEND COUNTY RULES, REGULATIONS AND REQUIREMENTS RELATING TO THE APPROVAL AND ACCEPTANCE OF INFRASTRUCTURE OF SAME. ALL PAVEMENT CONSTRUCTED IN HOUSTON ETJ SHALL 3500 PSI.
- ALL STORM SEWER MANHOLE RIMS LOCATED OUTSIDE THE PROPOSED PAVING SHALL BE SET TO PROPOSED FINISH GRADE ELEVATION.
- WATER LINES, WASTEWATER COLLECTION SYSTEMS, AND STORM DRAINAGE SYSTEMS SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE CITY OF HOUSTON, DEPT. OF PUBLIC WORKS AND ENGINEERING "DESIGN MANUAL, STANDARD CONSTRUCTION SPECIFICATIONS, AND DETAILS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE AND STREET PAVING", DATED OCTOBER 2002.
- THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGE TO THE EXISTING PUBLIC OR PRIVATE UTILITY LINES, INCLUDING BUT NOT LIMITED TO WATER LINES, WASTEWATER COLLECTION SYSTEMS AND STORM SEWERS, DURING CONSTRUCTION. ALL DAMAGES SHALL BE REPAIRED IN ACCORDANCE WITH CITY OF HOUSTON, DEPARTMENT OF PUBLIC WORKS AND ENGINEERING "STANDARD CONSTRUCTION SPECIFICATIONS" WITH LATEST ADDENDA AND AMENDMENTS THERETO, WITH NO COST TO THE PUBLIC.
- ALL STORM SEWERS CONSTRUCTED IN SIDE LOT EASEMENT: SHALL BE R.C.P. MINIMUM TWENTY (20) FOOT WIDE EASEMENTS SHALL BE PROVIDED.
- ALL SEWERS UNDER OR WITHIN ONE (1) FOOT OF PROPOSED OR FUTURE PAVING SHALL BE BACKFILL WITH 1-1/2 SACK CEMENT STABILIZED SAND TO WITHIN ONE FOOT (1') OF SUBGRADE.
- ALTERNATIVE TO CEMENT STABILIZED SAND BACKFILL FOR PIPES FIFTY-FOUR INCHES (54") AND LARGER, FROM ONE FOOT (1') ABOVE THE TOP OF THE PIPE TO THE BOTTOM OF THE SUBGRADE, CONTRACTOR MAY BACKFILL WITH SATURABLE MATERIAL, PROVIDED THE BACKFILL MATERIAL IS PLACED IN 8-INCH LIFTS AND MECHANICALLY COMPACTED TO 98% STANDARDS PROCTOR DENSITY. TEST SHALL BE TAKEN AT 100-FOOT INTERVALS ON EACH LIFT, BEDDING AND BACKFILL TO 1-FOOT ABOVE THE TOP OF THE PIPE SHALL BE CEMENT STABILIZED SAND.
- CONTRACTOR TO OBTAIN ALL PERMITS REQUIRED BY REGULATION OF FORT BEND COUNTY, TEXAS FOR FLOODPLAIN MANAGEMENT PRIOR TO STARTING CONSTRUCTION.
- OWNER TO OBTAIN ALL PERMITS CONSTRUCTION OF FORT BEND COUNTY, TEXAS REQUIRED BY FORT BEND COUNTY, TEXAS PRIOR TO STARTING CONSTRUCTION OF UTILITY AND/OR CULVERTS WITHIN FORT BEND COUNTY ROAD RIGHT-OF-WAY.

RECORD DRAWINGS  
MAY 16, 2016