



**PERMIT APPLICATION REVIEW FORM FOR
CABLE, CONDUIT, AND POLE LINE ACTIVITY
IN FORT BEND COUNTY**

**Fort Bend County
Engineering Department**
301 Jackson Suite 401
Richmond, Texas 77469
281.633.7500
Permits@fortbendcountytx.gov

- Right of Way Permit**
- Commercial Driveway Permit**

Permit No: 2018-18648

The following "Notice of Proposed Cable, Conduit, and/or Pole Line activity in Fort Bend County" and accompanying attachments have been reviewed and the notice conforms to appropriate regulations set by Commissioner's Court of Fort Bend County, Texas.

(1) COMPLETE APPLICATION FORM:

- a. Name of road, street, and/or drainage ditch affected.
- b. Vicinity map showing course of directions
- c. Plans and specifications

(2) BOND:

- County Attorney, approval when applicable.
- Perpetual bond currently posted. Bond No: _____ Amount: _____
- Performance bond submitted. Bond No: _____ Amount: _____
- Cashier's Check Check No: XXXXXXXXXX Amount: \$20,000.00

(3) DRAINAGE DISTRICT APPROVAL (WHEN APPLICABLE):

Drainage District Approval

Date

We have reviewed this project and agree it meets minimum requirements.

Charles O. Ay

Permit Administrator

2/19/2018

Date



**REVIEW BY FORT BEND COUNTY
COMMISSIONERS COURT**

**Fort Bend County
Engineering Department**
301 Jackson Suite 401
Richmond, Texas 77469
281.633.7500
Permits@fortbendcountytx.gov

- Right of Way Permit**
- Commercial Driveway Permit**

Permit No: 2018-18648

Applicant: Sparrow Capital Partners LLC

Job Location Site: 25500 Westheimer Pkwy, Katy, TX 77494

Bond No. [REDACTED] **Date of Bond:** 2/13/2018 **Amount:** \$20,000.00

The above applicant came to make use of certain Fort Bend County property subject to, "The Order Regulating the Laying, Construction, Maintenance, and Repair of Buried Cables, Conduits, and Pole Lines, In, Under, Across or Along Roads, Streets, Highways, and Drainage Ditches in Fort Bend County, Texas, Under the Jurisdiction of the Commissioners Court of Fort Bend County, Texas," as passed by the Commissioners Court of Fort Bend County, Texas, of the Minutes of the Commissioners Court of Fort Bend County, Texas, to the extent that such order is not inconsistent with Chapter 181, Vernon's Texas Statutes and Codes Annotated.

Notes:

1. Evidence of review by the Commissioners Court must be kept on the job site and failure to do so constitutes grounds for job shutdown.
2. Written notices are required:
 - a. 48 hours in advance of construction start up, and
 - b. When construction is completed and ready for final inspection, submit notification to Permit Administrator thru MyGovernmentOnline.org portal.
3. This permit expires one (1) year from date of permit if construction has not commenced.

On this 27th day of February, 2018, Upon Motion of Commissioner _____, seconded by Commissioner _____, duly put and carried, it is ORDERED, ADJUDGED AND DECREED that said notice of said above purpose is hereby acknowledged by the Commissioners Court of Fort Bend County, Texas, and that said notice be placed on record according to the regulation order thereof.

Signature

Presented to Commissioners Court and approved.

By: 
County Engineer

Date Recorded _____ Comm. Court No. _____

By: N/A
Drainage District Engineer/Manager

Clerk of Commissioners Court

By: _____
Deputy

SOLEA CINCO RANCH

WITHIN
FORT BEND COUNTY, TEXAS
25500 WESTHEIMER PARKWAY KATY, TEXAS 77494

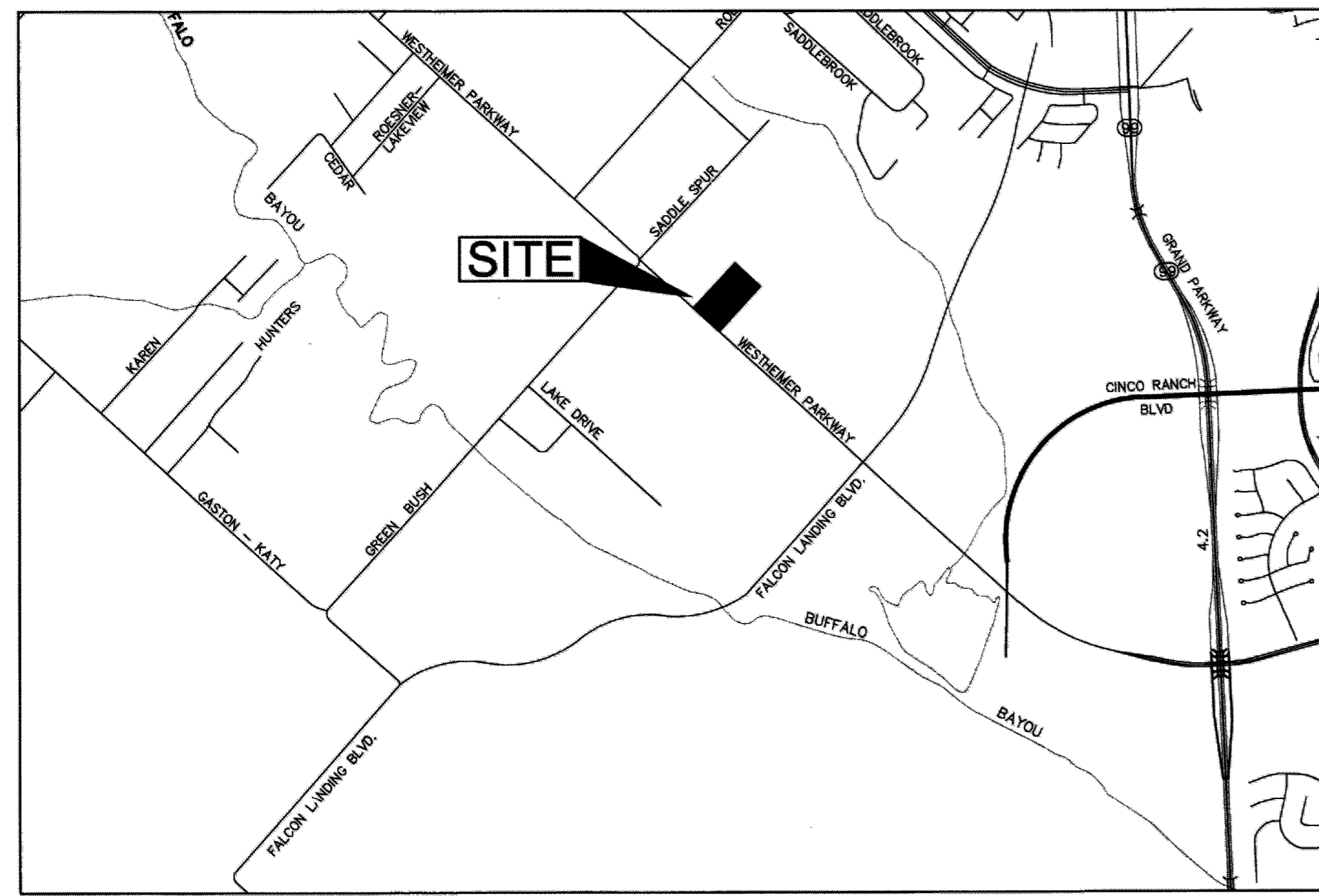
CONSTRUCTION PLANS FOR PROPOSED WATER DISTRIBUTION, SANITARY SEWER, PAVING & DRAINAGE

WATER DISTRIBUTION, SANITARY SEWER,
PAVING & DRAINAGE PLANS FOR
SOLEA CINCO RANCH

DRAWING INDEX

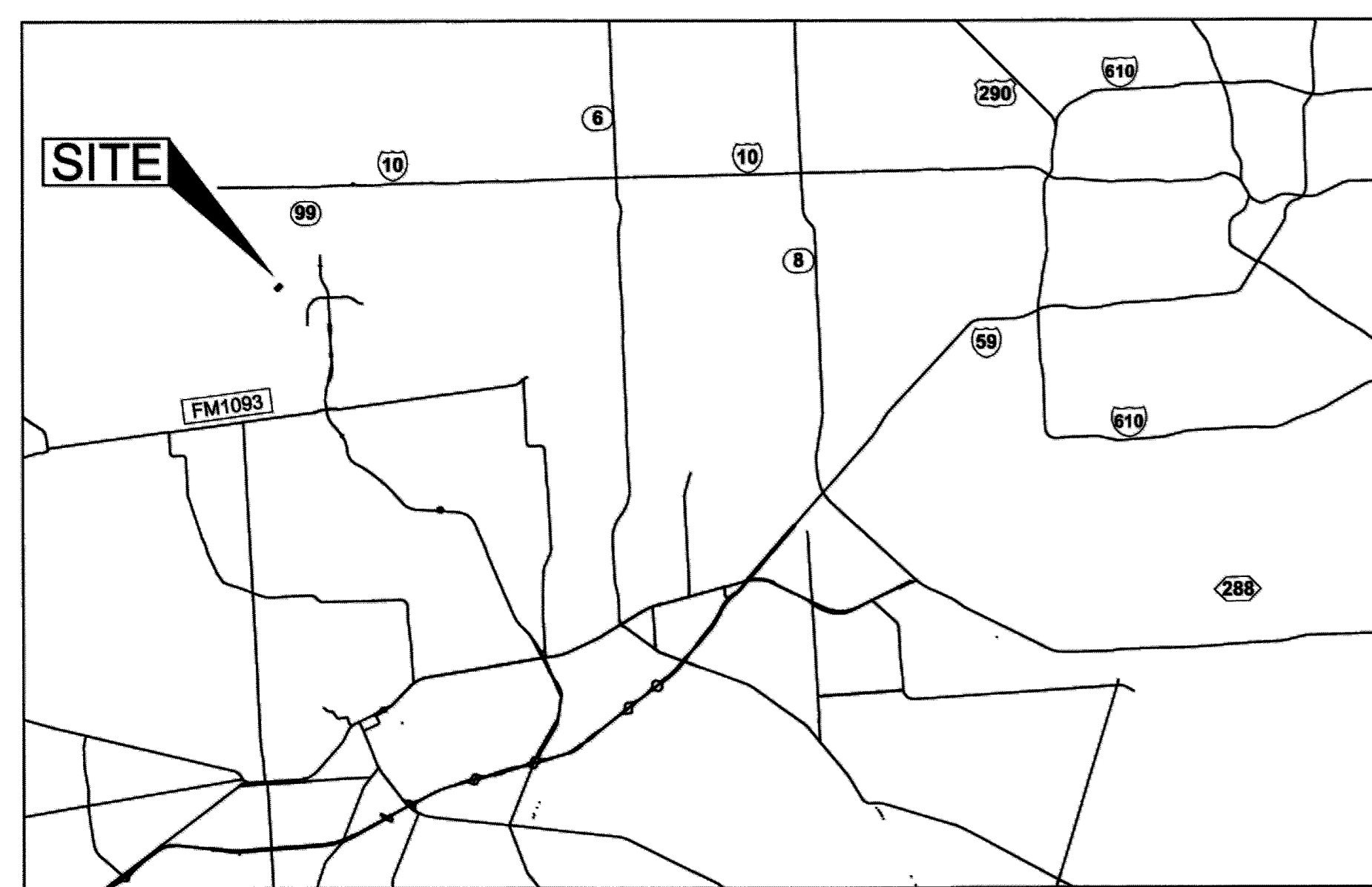
CIVIL SHEET NO.	TITLE
C0.0	COVER
C1.0	GENERAL NOTES
C2.0	OVERALL SIT EPLAN
C3.1	STORM WATER POLLUTION PREVENTION PLAN
C3.2	STORM WATER POLLUTION PREVENTION PLAN DETAILS
C4.1	DIMENSION CONTROL PLAN (1 OF 2)
C4.2	DIMENSION CONTROL PLAN (2 OF 2)
C5.1	GRADING PLAN (1 OF 2)
C5.2	GRADING PLAN (2 OF 2)
C6.1	UTILITY PLAN (1 OF 2)
C6.2	UTILITY PLAN (2 OF 2)
C6.3	PLAN & PROFILE "A, B, & C" - PUBLIC UTILITIES
C6.4	PLAN & PROFILE "D" - 4" SANITARY FORCE MAIN
C6.5	PLAN & PROFILE "E & F" - 4" SANITARY FORCEMAIN & 8" SANITARY SEWER
C7.1	DRAINAGE AREA MAP
C7.2	DRAINAGE AREA MAP CALCULATIONS
C8.0	DETENTION POND AND CALCULATIONS
C9.0	PLAN & PROFILE - LEFT TURN LANE
C10.0	TRAFFIC CONTROL PLAN
C11.1	PAVEMENT DETAILS (1 OF 3)
C11.2	PAVEMENT DETAILS (2 OF 3)
C11.3	PAVEMENT DETAILS (3 OF 3)
C12.0	UTILITY DETAILS

LIFT STATION SHEET NO.	TITLE
1	LIFT STATION PLAN & SECTION
2	GENERAL NOTES & DETAILS (1 OF 2)
3	GENERAL NOTES & DETAILS (2 OF 2)



LOCATION MAP

SCALE: 1" = 2,000'



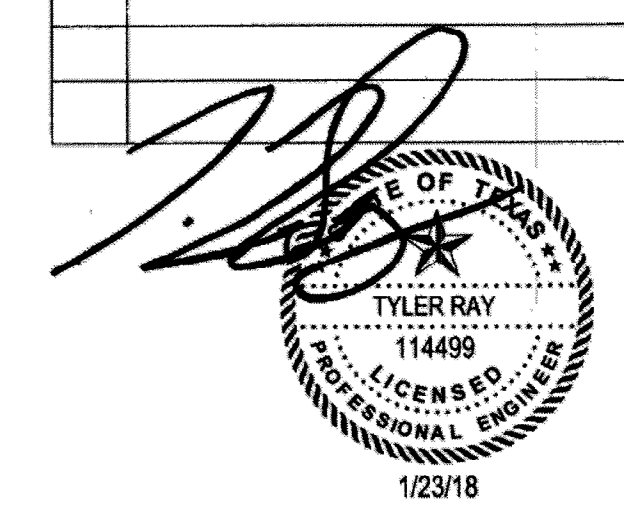
VICINITY MAP

KEY MAP NO. 534E ZIP: 77004

SCALE: 1" = 20,000'

CONTRACTOR SHALL CONTACT THE DISTRICT'S OPERATOR MDS, BUILDER SERVICES DEPARTMENT (281-290-6503) OPTION 2, OR VIA EMAIL AT BLDRSERVICES@MUNICIPALDISTRICTSERVICES.COM 48-HOURS PRIOR TO CONSTRUCTION AND TO REQUEST REQUIRED INSPECTIONS. ALL SITE SANITARY SEWER AND GREASE LINES SHALL BE INSPECTED BY MDS PRIOR TO BACKFILL

REV	DESCRIPTION	DATE
	ISSUE FOR PERMIT	01/23/2018



WGA

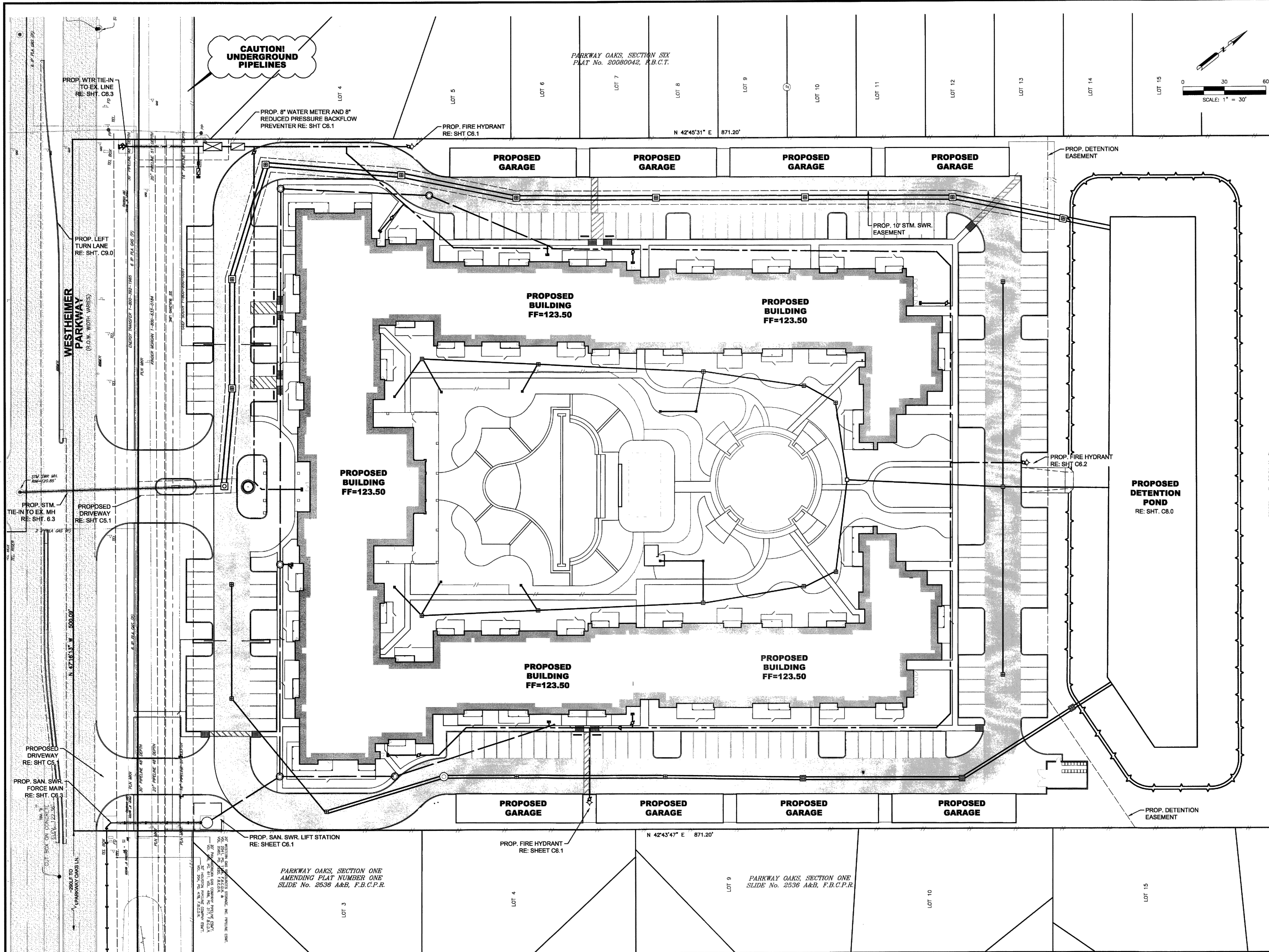
WARD, GETZ & ASSOCIATES, LLP
CONSULTING ENGINEERS
TEXAS REGISTERED ENGINEERING FIRM F-9756
2500 Tanglewilde, Suite 120
Houston, Texas 77065
713.789.1900

JANUARY 2018
WGA PROJECT No. 00024-024

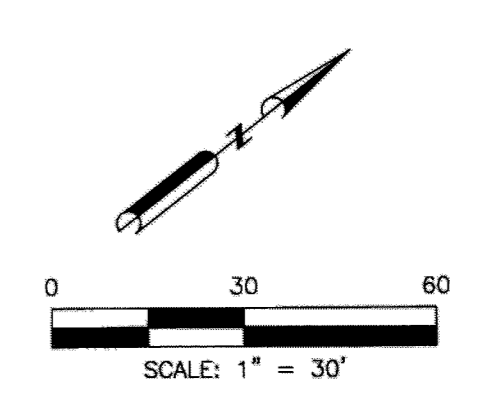
FORT BEND COUNTY ENGINEER
ENGINEER: *Richard W. Stolte*, PE, PTOE
FOR: RICHARD W. STOLTE, P.E.
DATE: 2/1/18

THESE SIGNATURES ARE VOID IF CONSTRUCTION HAS NOT COMMENCED IN (1) YEARS FROM DATE OF APPROVAL.

APPROVED: *Max*
DEVELOPMENT COORDINATOR
DATE: 2/1/18



CAUTION!
UNDERGROUND
PIPELINES



BENCHMARKS:
PROJECT BENCHMARK IS FLOODPLAIN REFERENCE MARK NO. 1900225, BEING A BRASS DISK STAMPED 1900225 ON BRIDGE AT MASON RD AND UPPER BUFFALO BAYOU LOCATED ON DOWNSIDE CONCRETE WALK, ON NORTHEAST CORNER OF BRIDGE IN KEYMAP 486Z IN THE BARKER WATERSHED NEAR STREAM T100-09-00.
ELEV=103.51 NAVD83, 2001ADJ.
TEMPORARY BENCHMARK "A" BEING A CUT BOX ON INLET LOCATED ON THE NORTH RIGHT-OF-WAY LINE OF WESTHEIMER PARKWAY.
ELEV=120.21 NAVD83, 2001ADJ.
TEMPORARY BENCHMARK "B" BEING A CUT BOX LOCATED ON THE MEDIAN OF WESTHEIMER PARKWAY.
ELEV=122.36 NAVD83, 2001ADJ.

FLOOD PLAIN NOTE:
THIS SUBJECT TRACT LIES IN UNSHADED ZONE "X". (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN)
AS DELINEATED ON THE FLOOD INSURANCE RATE MAP FOR FORT BEND COUNTY, TEXAS AND INCORPORATED AREAS, MAP NOS. 48157C0045 L & 48157C0110 L, REVISED APRIL, 2, 2014.

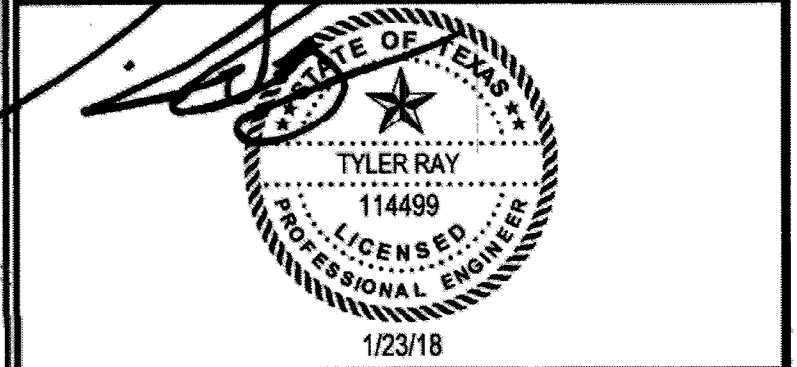
OVERALL LAYOUT LEGEND:

	PROPOSED LARGE DIAMETER STORM SEWER AND GRATE INLET
	PROPOSED STORM SEWER AND GRATE INLET
	PROPOSED SANITARY SEWER AND MANHOLE
	PROPOSED WATER LINE
	PROPOSED DETENTION POND HIGHBANK
	FIRE LANE REF. DETAIL SHT. C10.0

THESE SIGNATURES ARE VOID IF CONSTRUCTION HAS NOT COMMENCED IN (1) YEARS FROM DATE OF APPROVAL.

APPROVED:
DEVELOPMENT COORDINATOR
DATE: 2/1/18

REV	DESCRIPTION	DATE
1	ISSUE FOR PERMIT	01/23/2018



WGA
WARD, GETZ & ASSOCIATES, LLP
CONSULTING ENGINEERS
TEXAS REGISTERED ENGINEERING FIRM P-9756
2500 Tanglewilde, Suite 130
Houston, Texas 77063
713.789.1900

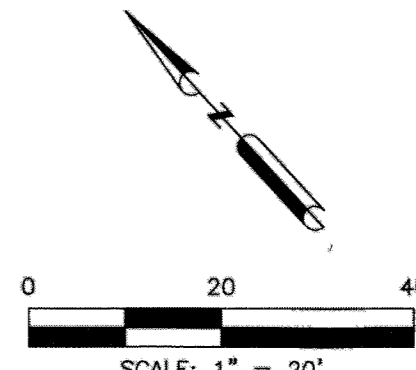
SOLEA CINCO RANCH

OVERALL SITE PLAN

SCALE 1"=30'	DESIGN TD/TR	DRAWN TD
-----------------	-----------------	-------------

C2.0

S 47°16'58" E 499.65'



BENCHMARKS:
 PROJECT BENCHMARK IS FLOODPLAIN REFERENCE MARK NO. 190025, BEING A BRASS DISK STAMPED 190025 ON BRIDGE AT MASON RD AND UPPER BUFFALO BAYOU LOCATED ON DOWNS TREAM CONCRETE WALK, ON NORTHEAST CORNER OF BRIDGE IN KEYMAP 485Z IN THE BARKER WATERSHED NEAR STREAM T100-00-00. ELEV=103.51 NAVD88, 2001ADJ.
 TEMPORARY BENCHMARK "A" BEING A CUT BOX ON INLET LOCATED ON THE NORTH RIGHT-OF-WAY LINE OF WESTHEIMER PARKWAY. ELEV=120.21 NAVD88, 2001ADJ.
 TEMPORARY BENCHMARK "B" BEING A CUT BOX LOCATED ON THE MEDIAN OF WESTHEIMER PARKWAY. ELEV=122.36 NAVD88, 2001ADJ.

FLOOD PLAIN NOTE:
 THIS SUBJECT TRACT LIES IN UNSHADED ZONE "X". (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN)
 AS DELINEATED ON THE FLOOD INSURANCE RATE MAP FOR FORT BEND COUNTY, TEXAS AND INCORPORATED AREAS, MAP NOS. 481570045 L & 4815700110 L, REVISED APRIL, 2, 2014.

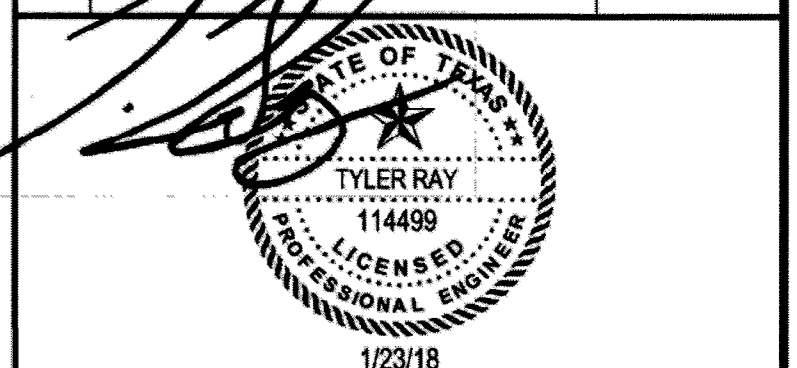
SHEET NOTES:

1. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
2. REFERENCE ARCHITECTURAL PLANS FOR EXACT BUILDING DIMENSIONS.
3. PROPOSED HANDICAP SIGN. SEE PAVEMENT DETAILS.
4. PROPOSED SIGN. REFERENCE LANDSCAPE ARCHITECT PLANS FOR DETAILS.
5. CONTRACTOR SHALL REFERENCE THE LANDSCAPE ARCHITECTURAL PLANS FOR ALL COURTYARD DETAILS.
6. CROSS SLOPE THROUGH DRIVEWAYS SHALL NOT EXCEED 2% IN ACCORDANCE WITH A.D.A.
7. EXISTING SURVEY WAS DONE BY WINDROSE LAND SERVICES, INC. WITH THEIR CONTACT INFORMATION AS FOLLOWS:
 Windrose Land Services, Inc.
 3200 Wilcrest, Suite 325 Houston, Texas 77042
 Phone (713) 458-2281 Fax (713) 461-1151

THESE SIGNATURES ARE VOID IF CONSTRUCTION HAS NOT COMMENCED IN (1) YEARS FROM DATE OF APPROVAL.

APPROVED: *Maryland*
 DEVELOPER COORDINATOR
 DATE: 2/1/18

REV	DESCRIPTION	DATE
	ISSUE FOR PERMIT	01/23/2018



WGA
 WARD, GETZ & ASSOCIATES, LLP
 CONSULTING ENGINEERS
 TEXAS REGISTERED ENGINEERING FIRM F-9756
 2900 Tanglewilde, Suite 120
 Houston, Texas 77063
 713.789.1900

SOLEA CINCO RANCH
DIMENSION CONTROL PLAN (1 OF 2)

SCALE 1"=20'	DESIGN TD/TR	DRAWN TD
-----------------	-----------------	-------------

C4.1

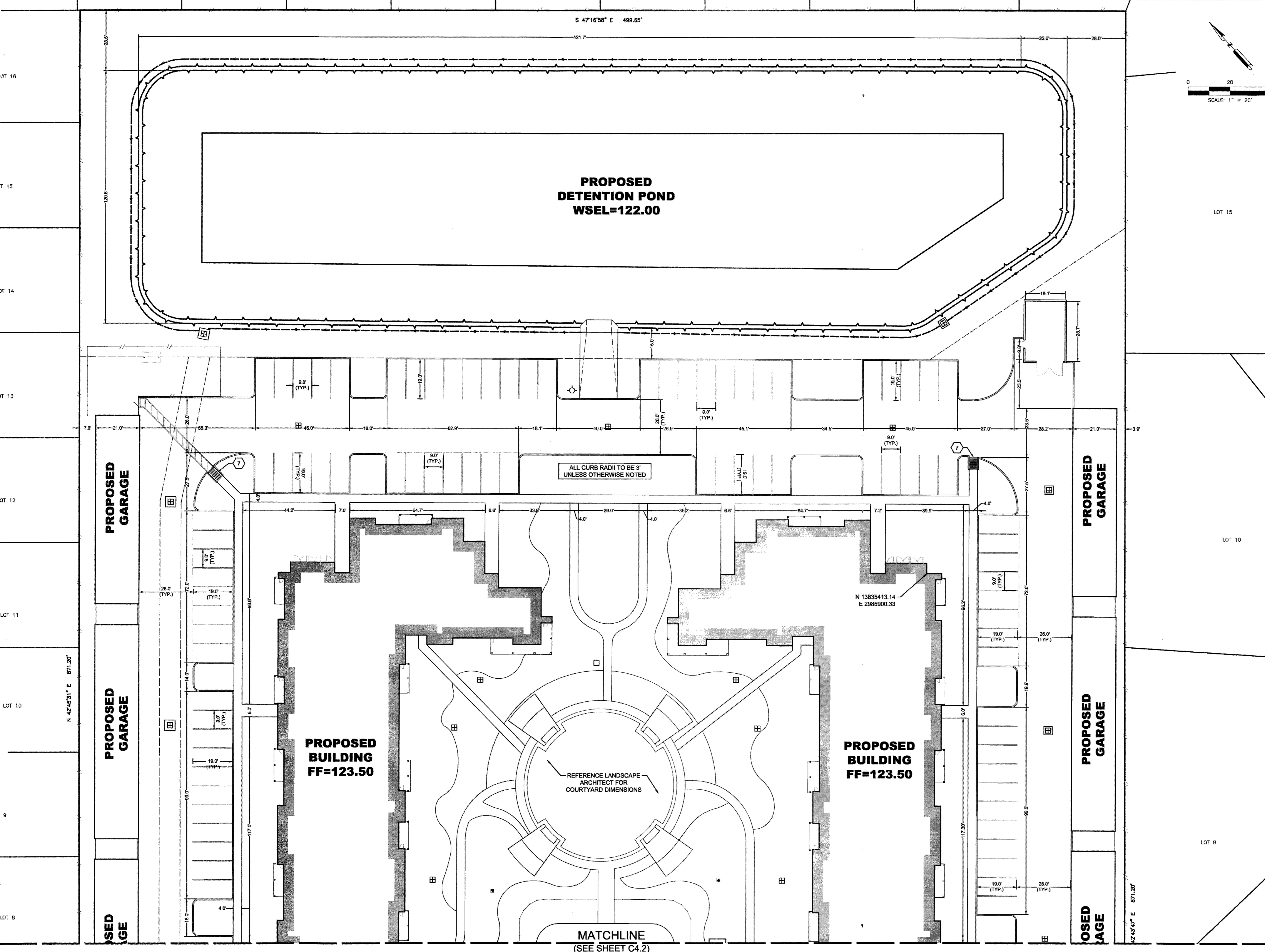
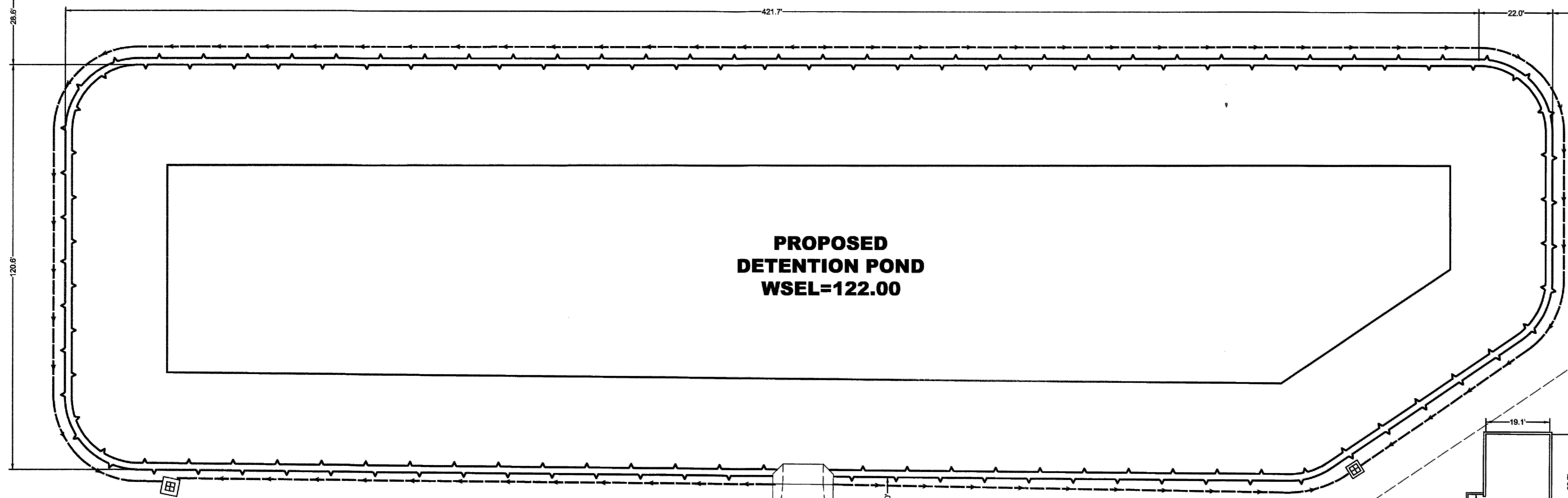
**PROPOSED
 DETENTION POND
 WSEL=122.00**

ALL CURB RADII TO BE 3'
 UNLESS OTHERWISE NOTED

**PROPOSED
 BUILDING
 FF=123.50**

**PROPOSED
 BUILDING
 FF=123.50**

MATCHLINE
 (SEE SHEET C4.2)



MATCHLINE
(SEE SHEET C4.1)

BENCHMARKS:
PROJECT BENCHMARK IS FLOODPLAIN REFERENCE MARK NO. 1900025, BEING A BRASS DISK STAMPED 190025 ON BRIDGE AT MASON RD AND UPPER BUFFALO BAYOU LOCATED ON DOWNSTREAM CONCRETE WALL 4, ON NORTHEAST CORNER OF BRIDGE IN KEYMAP 4852 IN THE BARKER WATERSHED NEAR STREAM T100-00-00.
ELEV=103.51 NAVD88, 2001ADJ.
TEMPORARY BENCHMARK "A" BEING A CUT BOX ON INLET LOCATED ON THE NORTH RIGHT-OF-WAY LINE OF WESTHEIMER PARKWAY.
ELEV=120.21 NAVD88, 2001ADJ.
TEMPORARY BENCHMARK "B" BEING A CUT BOX LOCATED ON THE MEDIUM OF WESTHEIMER PARKWAY.
ELEV=122.38 NAVD88, 2001ADJ.

FLOOD PLAN NOTE:
THIS SUBJECT TRACT LIES IN UNSHADED ZONE "X". (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN)
AS DELINEATED ON THE FLOOD INSURANCE RATE MAP FOR FORT BEND COUNTY, TEXAS AND INCORPORATED AREAS, MAP NOS. 481570045 L & 4815702110 L, REVISED APRIL, 2, 2014.

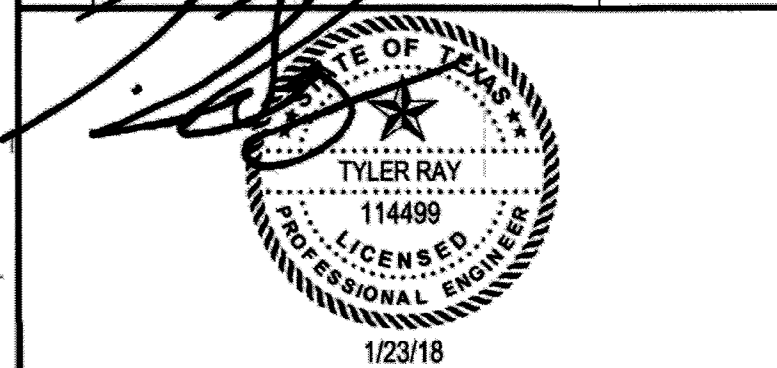
SHEET NOTES:

1. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
2. REFERENCE ARCHITECTURAL PLANS FOR EXACT BUILDING DIMENSIONS.
3. PROPOSED HANDICAP SIGN. SEE PAVEMENT DETAILS.
4. PROPOSED SIGN. REFERENCE LANDSCAPE ARCHITECT PLANS FOR DETAILS.
5. CONTRACTOR SHALL REFERENCE THE LANDSCAPE ARCHITECTURAL PLANS FOR ALL COURTYARD DETAILS.
6. CROSS SLOPE THROUGH DRIVEWAYS SHALL NOT EXCEED 2% IN ACCORDANCE WITH A.D.A.
7. ALL RAMPS TO BE 6' LONG, UNLESS OTHERWISE NOTED.
8. EXISTING SURVEY WAS DONE BY WINDROSE LAND SERVICES, INC. WITH THEIR CONTACT INFORMATION AS FOLLOWS:
Windrose Land Services, Inc.
3200 Wilcrest, Suite 325 Houston, Texas 77042
Phone (713) 458-2261 Fax (713) 461-1151

THESE SIGNATURES ARE VOID IF CONSTRUCTION HAS NOT COMMENCED IN (1) YEARS FROM DATE OF APPROVAL.

APPROVED: *Maxis*
DEVELOPMENT COORDINATOR
DATE: 2/1/18

REV	DESCRIPTION	DATE
1	ISSUE FOR PERMIT	01/23/2018

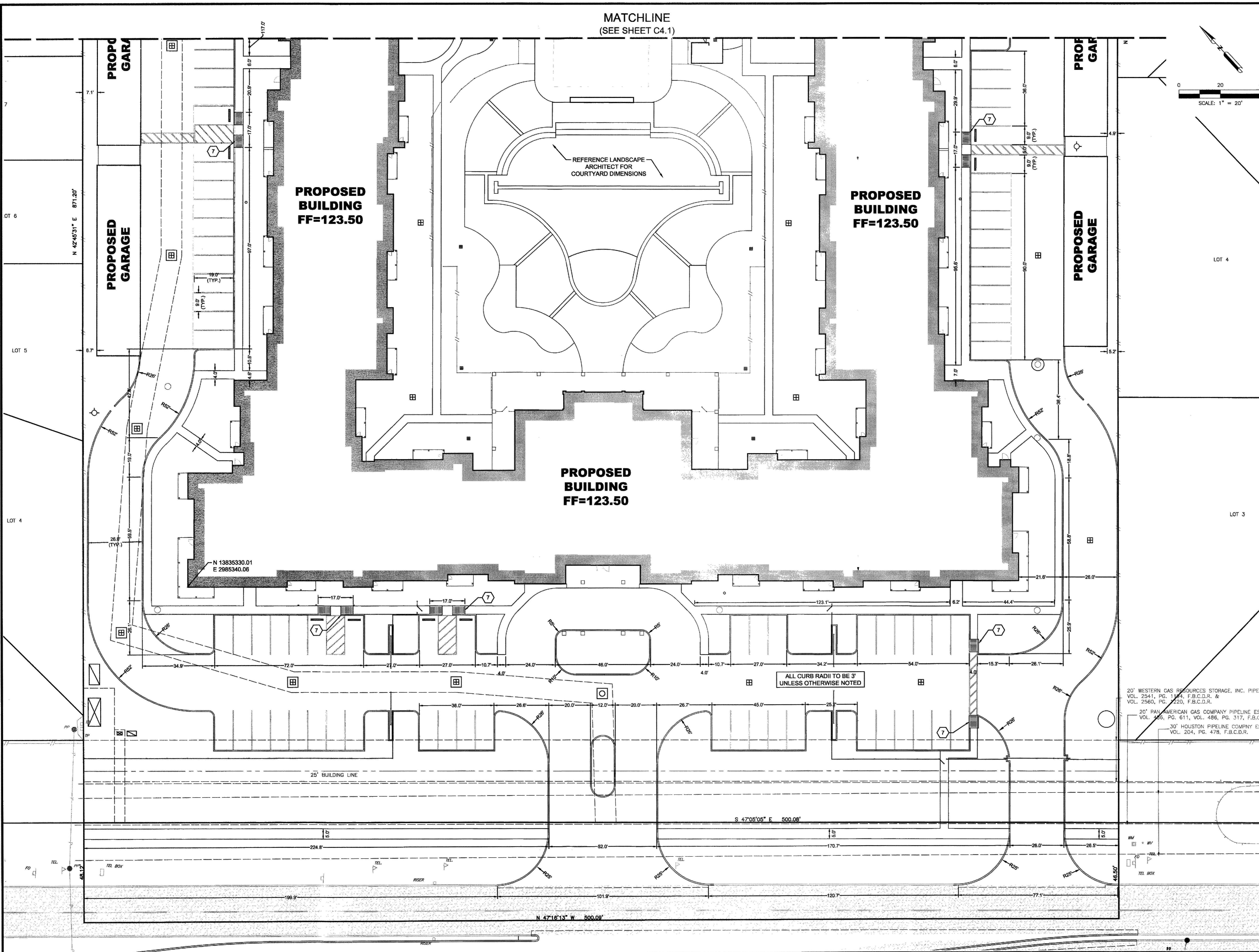


WGA
WARD, GETZ & ASSOCIATES, LLP
CONSULTING ENGINEERS
TEXAS REGISTERED ENGINEERING FIRM F-9756
2900 Tanglewilde, Suite 120
Houston, Texas 77063
713.789.1900

SOLEA CINCO RANCH
DIMENSION CONTROL PLAN (2 OF 2)

SCALE	DESIGN	DRAWN
1"=20'	TD/TR	TD

C4.2



**PROPOSED
DETENTION POND
WSEL=122.00**

**PROPOSED
BUILDING
FF=123.50**

**PROPOSED
BUILDING
FF=123.50**

MATCHLINE
(SEE SHEET C5.2)

BENCHMARKS:
PROJECT BENCHMARK IS FLOODPLAIN REFERENCE MARK NO. 1900025, BEING A BRASS DISK STAMPED 190025 ON BRIDGE AT MASON RD AND UPPER BUFFALO BAYOU LOCATED ON DOWNSTREAM CONCRETE WALK, ON NORTHEAST CORNER OF BRIDGE IN KEYMAP 4852 IN THE BARKER WATERSHED NEAR STREAM T100-00-00. ELEV=103.51 NAVD88, 2001ADJ.
TEMPORARY BENCHMARK "A" BEING A CUT BOX ON INLET LOCATED ON THE NORTH RIGHT-OF-WAY LINE OF WESTHEIMER PARKWAY. ELEV=123.21 NAVD88, 2001ADJ.
TEMPORARY BENCHMARK "B" BEING A CUT BOX LOCATED ON THE MEDIAN OF WESTHEIMER PARKWAY. ELEV=122.36 NAVD88, 2001ADJ.

FLOOD PLAIN NOTE:
THIS SUBJECT TRACT LIES IN UNSHADED ZONE "X". (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN)
AS DELINEATED ON THE FLOOD INSURANCE RATE MAP FOR FORT BEND COUNTY, TEXAS AND INCORPORATED AREAS, MAP NOS. 48157C0045 L & 48157D010 L, REVISED APRIL, 2, 2014.

- GRADING NOTES:**
1. ALL SPOT ELEVATIONS ARE TO TOP OF PAVEMENT UNLESS OTHERWISE NOTED.
 2. ALL SIDEWALKS AND ACCESSIBLE ROUTES, INCLUDING DRIVEWAY CROSSWALKS, SHALL CONFORM TO ALL APPLICABLE AMERICANS WITH DISABILITIES ACT STANDARDS AND THE TEXAS ACCESSIBILITY STANDARDS. IF ANY DISCREPANCY IS DISCOVERED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO POURING ANY PAVEMENT.
 3. ALL SIDEWALKS AND ACCESSIBLE ROUTES, INCLUDING DRIVEWAY CROSSWALKS, SHALL NOT EXCEED A RUNNING SLOPE OF 5% (1:20) WITHOUT A RAMP, AND SHALL NOT EXCEED A 2% CROSS SLOPE (1:50).
 4. THE ACCESSIBLE PARKING AND PASSENGER LOADING AREAS SHALL NOT EXCEED A SLOPE OF 2% (1:50) IN ANY DIRECTION.
 5. ALL EXISTING APPURTENANCES ON SITE SHALL BE ADJUSTED TO PROPOSED GRADE AS APPLICABLE.
 6. CONTRACTOR SHALL REFERENCE GEOTECHNICAL REPORT AND ALL ADDENDA FOR BUILDING PAD LIMITS AND PREPARATION REQUIREMENTS.
 7. CONTRACTOR SHALL ENSURE THERE IS POSITIVE DRAINAGE FROM THE PROPOSED BUILDINGS AND NO PONDING IN PAVED AREAS, AND SHALL NOTIFY ENGINEER IF ANY GRADING DISCREPANCIES ARE FOUND IN THE EXISTING AND PROPOSED GRADES PRIOR TO PLACEMENT OF PAVEMENT OR UTILITIES.

LEGEND:

	EXISTING PAVEMENT (CONCRETE/ASPHALT AS NOTED)
	PROPOSED 4" CONCRETE PAVEMENT (SIDEWALK)
	PROPOSED 6" CONCRETE PAVEMENT
	PROPOSED 8" CONCRETE PAVEMENT
	PROPOSED BUILDING

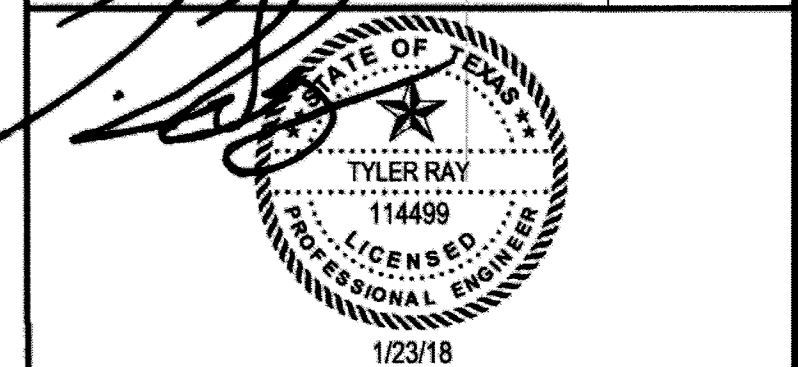
GRADING LEGEND:

78.50	EXISTING GRADE
TC79.50	TOP OF CURB
G79.50	GUTTER
TP79.50	TOP OF PAVEMENT
TG79.50	TOP OF GRADE
FG79.50	FINISHED GRADE
ME79.50	MATCH EXISTING
	TRANSITION CURB 0' - 6" WITHIN 5 FEET
	SWALE
	HIGH POINT

THESE SIGNATURES ARE VOID IF CONSTRUCTION HAS NOT COMMENCED IN (1) YEARS FROM DATE OF APPROVAL.

APPROVED:
DEVELOPMENT COORDINATOR
DATE: 2/1/18

REV	DESCRIPTION	DATE
1	ISSUE FOR PERMIT	01/23/2018



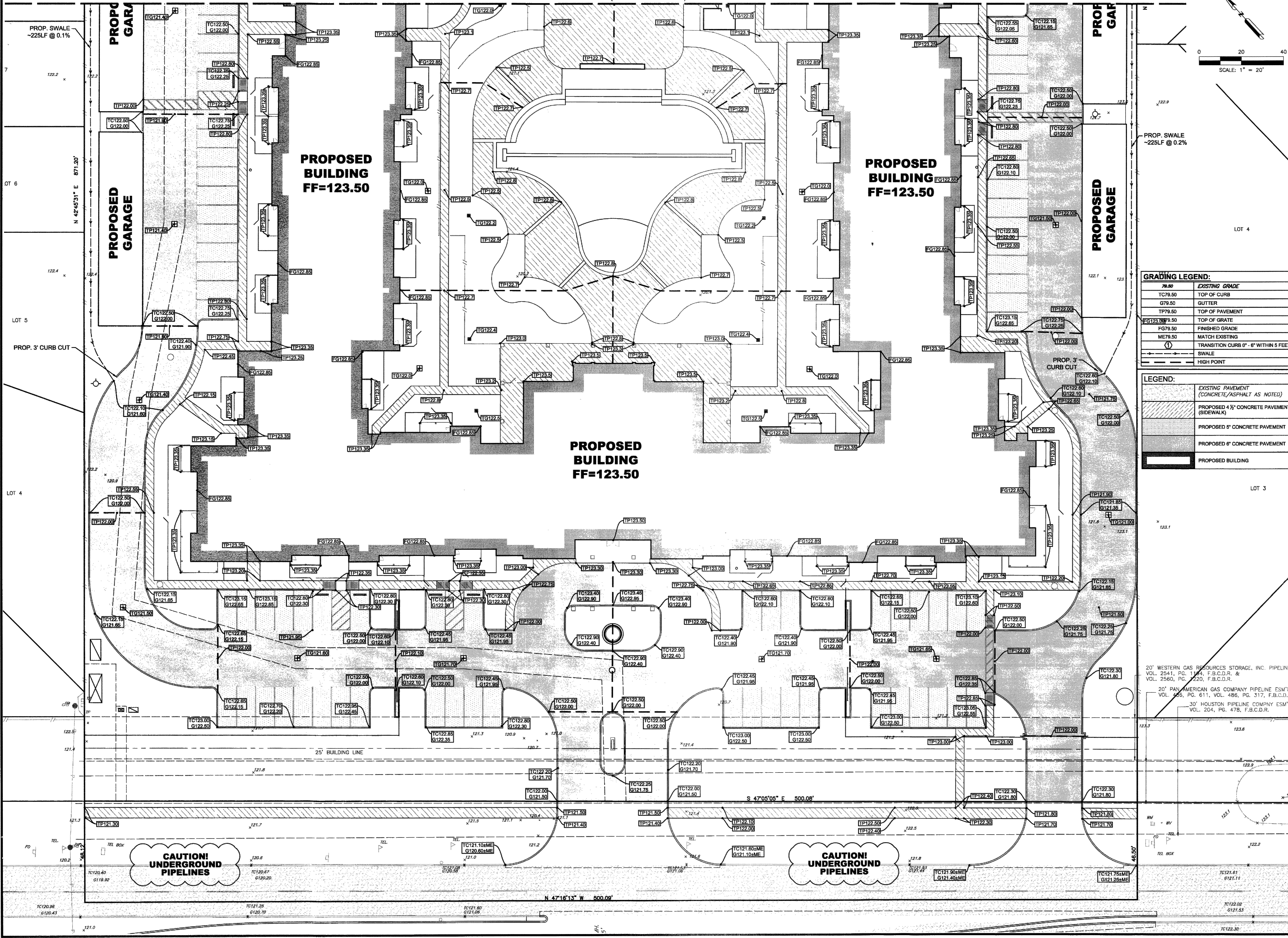
WGA
WARD, GETZ & ASSOCIATES, LLP
CONSULTING ENGINEERS
TEXAS REGISTERED ENGINEERING FIRM F-9756
2500 Tanglewilde, Suite 120
Houston, Texas 77063
713.789.1900

SOLEA CINCO RANCH
GRADING PLAN
(1 OF 2)

SCALE 1"=20'	DESIGN TD/TR	DRAWN TD
-----------------	-----------------	-------------

C5.1

MATCHLINE
(SEE SHEET C5.1)



BENCHMARKS:
PROJECT BENCHMARK IS FLOODPLAIN REFERENCE MARK NO. 1900025, BEING A BRASS DISK STAMPED 190025 ON BRIDGE AT MASON RD AND UPPER BUFFALO BAYOU LOCATED ON DOWNSTREAM CONCRETE WALK, ON NORTHEAST CORNER OF BRIDGE IN KEY MAP 4852 IN THE BARKER WATERSHED NEAR STREAM T100-00-00. ELEV=103.51 NAVD88, 2001ADJ.
TEMPORARY BENCHMARK 'A' BEING A CUT BOX ON INLET LOCATED ON THE NORTH RIGHT-OF-WAY LINE OF WESTHEIMER PARKWAY. ELEV=120.21 NAVD88, 2001ADJ.
TEMPORARY BENCHMARK 'B' BEING A CUT BOX LOCATED ON THE MEDIAN OF WESTHEIMER PARKWAY. ELEV=122.38 NAVD88, 2001ADJ.

FLOOD PLAIN NOTE:
THIS SUBJECT TRACT LIES IN UNSHADED ZONE 'X'. (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN)
AS DELINEATED ON THE FLOOD INSURANCE RATE MAP FOR FORT BEND COUNTY, TEXAS AND INCORPORATED AREAS, MAP NOS. 48157C0045 L & 48157C0110 L, REVISED APRIL, 2, 2014.

- GRADING NOTES:**
1. ALL SPOT ELEVATIONS ARE TO TOP OF PAVEMENT UNLESS OTHERWISE NOTED.
 2. ALL SIDEWALKS AND ACCESSIBLE ROUTES, INCLUDING DRIVEWAY CROSSWALKS, SHALL CONFORM TO ALL APPLICABLE AMERICANS WITH DISABILITIES ACT STANDARDS AND THE TEXAS ACCESSIBILITY STANDARDS. IF ANY DISCREPANCY IS DISCOVERED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO POURING ANY PAVEMENT.
 3. ALL SIDEWALKS AND ACCESSIBLE ROUTES, INCLUDING DRIVEWAY CROSSWALKS, SHALL NOT EXCEED A RUNNING SLOPE OF 5% (1:20) WITHOUT A RAMP, AND SHALL NOT EXCEED A 2% CROSS SLOPE (1:50).
 4. THE ACCESSIBLE PARKING AND PASSENGER LOADING AREAS SHALL NOT EXCEED A SLOPE OF 2% (1:50) IN ANY DIRECTION.
 5. ALL EXISTING APPURTENANCES ON SITE SHALL BE ADJUSTED TO PROPOSED GRADE AS APPLICABLE.
 6. CONTRACTOR SHALL REFERENCE GEOTECHNICAL REPORT AND ALL ADDENDA FOR BUILDING PAD LIMITS AND PREPARATION REQUIREMENTS.
 7. CONTRACTOR SHALL ENSURE THERE IS POSITIVE DRAINAGE FROM THE PROPOSED BUILDINGS AND NO PONDING IN PAVED AREAS, AND SHALL NOTIFY ENGINEER IF ANY GRADING DISCREPANCIES ARE FOUND IN THE EXISTING AND PROPOSED GRADES PRIOR TO PLACEMENT OF PAVEMENT OR UTILITIES.

GRADING LEGEND:

78.50	EXISTING GRADE
TC78.50	TOP OF CURB
G79.50	GUTTER
TP79.50	TOP OF PAVEMENT
FG79.50	TOP OF GRATE
ME79.50	MATCH EXISTING
(1)	TRANSITION CURB 0' - 6" WITHIN 5 FEET
SWALE	SWALE
HIGH POINT	HIGH POINT

LEGEND:

(Hatched pattern)	EXISTING PAVEMENT (CONCRETE/ASPHALT AS NOTED)
(Dotted pattern)	PROPOSED 4 1/2" CONCRETE PAVEMENT (SIDEWALK)
(Horizontal lines)	PROPOSED 5" CONCRETE PAVEMENT
(Vertical lines)	PROPOSED 6" CONCRETE PAVEMENT
(Solid black)	PROPOSED BUILDING

THESE SIGNATURES ARE VOID IF CONSTRUCTION HAS NOT COMMENCED IN (1) YEARS FROM DATE OF APPROVAL.

APPROVED: *[Signature]*
DEVELOPMENT COORDINATOR
DATE: 2/11/18

REV	DESCRIPTION	DATE
1	ISSUE FOR PERMIT	01/23/2018

20" WESTERN GAS RESOURCES STORAGE, INC. PIPELINE VOL. 2541, PG. 1184, F.B.C.D.R. & VOL. 2560, PG. 220, F.B.C.D.R.
20" PAN AMERICAN GAS COMPANY PIPELINE ESMT. VOL. 145, PG. 611, VOL. 486, PG. 317, F.B.C.D.R.
30" HOUSTON PIPELINE COMPANY ESMT. VOL. 204, PG. 478, F.B.C.D.R.

[Professional Engineer Seal]
TYLER RAY
114499
REGISTERED PROFESSIONAL ENGINEER
1/23/18

WGA
WARD, GETZ & ASSOCIATES, LLP
CONSULTING ENGINEERS
TEXAS REGISTERED ENGINEERING FIRM F-9756
2500 Tangletide, Suite 120
Houston, Texas 77063
713.789.1900

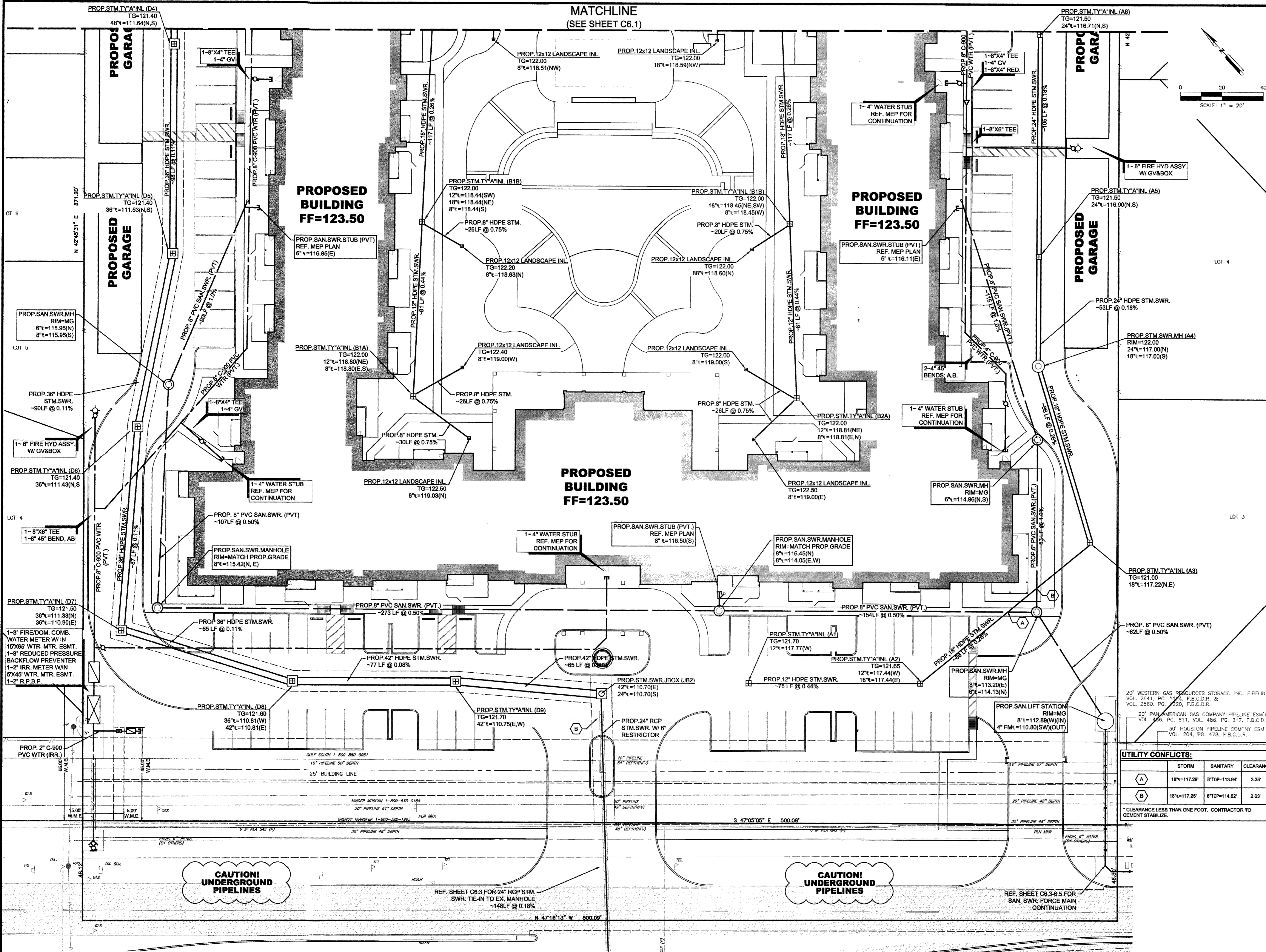
SOLEA CINCO RANCH

**GRADING PLAN
(2 OF 2)**

SCALE	DESIGN	DRAWN
1"=20'	TD/TR	TD

C5.2

MATCHLINE
(SEE SHEET C6.1)



BENCHMARKS:
PROJECT BENCHMARK IS FLOODPLAIN REFERENCE MARK NO. 190025, BEING A BRASS DISK STAMPED 190025 ON BRIDGE AT MASON RD AND UPPER BUFFALO BAYOU LOCATED ON DOWNSTREAM CONCRETE WALK, ON NORTHEAST CORNER OF BRIDGE IN KEYMAP 4852 IN THE BARKER WATERSHED NEAR STREAM 1100-0000.
TEMPORARY BENCHMARK "A" BEING A CUT BOX ON INLET LOCATED ON THE NORTH RIGHT-OF-WAY LINE OF WESTHEIMER PARKWAY. ELEV=120.21 NAVD88, 2001ADJ.
TEMPORARY BENCHMARK "B" BEING A CUT BOX LOCATED ON THE MEDIAN OF WESTHEIMER PARKWAY. ELEV=122.36 NAVD88, 2001ADJ.

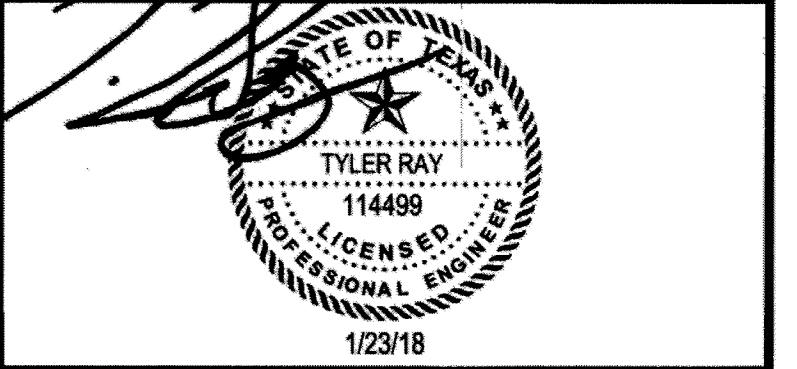
FLOOD PLAIN NOTE:
THIS SUBJECT TRACT LIES IN UNSHADED ZONE "C". (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN)
AS DELINEATED ON THE FLOOD INSURANCE RATE MAP FOR FORT BEND COUNTY, TEXAS AND INCORPORATED AREAS, MAP NOS. 48157C0045 L & 48157C0110 L, REVISED APRIL, 2, 2014.

- UTILITY NOTES:**
- UTILITIES SHOWN ARE APPROXIMATE. CONTRACTOR TO FIELD VERIFY EXISTING UTILITY LOCATIONS PRIOR TO CONSTRUCTION AND IMMEDIATELY NOTIFY ENGINEER OF ANY CONFLICT OR DISCREPANCIES.
 - CONTRACTOR TO COORDINATE WITH UTILITY COMPANIES FOR SERVICE ORIGIN AND CONNECTION.
 - CONTRACTOR SHALL TAKE CARE NOT TO DAMAGE ANY EXISTING ITEMS ON SITE.
 - CONTRACTOR SHALL KEEP THE SITE CLEAN OF DEBRIS AND ANY EROSION CONTROL MEASURES ARE ADEQUATELY PLACED.
 - CONTRACTOR TO COORDINATE LOCATIONS OF UNDERGROUND IRRIGATION SLEEVING PRIOR TO PAVING. SEE LANDSCAPE PLANS.
 - CONTRACTOR TO COORDINATE LOCATIONS OF UNDERGROUND CONDUIT FOR SITE LIGHTING PRIOR TO PAVING.
 - ALL CONSTRUCTION OPERATIONS SHALL BE ACCOMPLISHED IN ACCORDANCE WITH APPLICABLE REGULATIONS OF THE U.S. OCCUPATIONAL HEALTH AND SAFETY ADMINISTRATION. COPIES OF OSHA STANDARDS MAY BE PURCHASED FROM THE U.S. GOVERNMENT PRINTING OFFICE. INFORMATION AND RELATED REFERENCE MATERIALS MAY BE PURCHASED FROM OSHA, 903 SAN JACINTO, RM 319, AUSTIN, TX. 78701. TEL: (512) 918-5783.
 - ALL SANITARY SEWERS CROSSING WATER LINES WITH A 6 INCHES TO 9 FEET CLEARANCE SHALL HAVE A MINIMUM OF 18" JOINT OF 150 P.S.I. SDR 26 PVC PIPE MEETING ASTM SPECIFICATION 02241 CENTERED ON WATER LINE. WHEN WATER LINE IS BELOW SANITARY SEWER PROVIDE MINIMUM 2 FOOT SEPARATION.
 - REFERENCE MEP PLANS FOR UTILITY CONDUIT LOCATIONS.

THESE SIGNATURES ARE VOID IF CONSTRUCTION HAS NOT COMMENCED IN (1) YEARS FROM DATE OF APPROVAL.

APPROVED: *[Signature]*
DEVELOPMENT COORDINATOR
DATE: 2/1/18

REV	DESCRIPTION	DATE
1	ISSUE FOR PERMIT	01/23/2018



WGA
WARD, GETZ & ASSOCIATES, L.P.
CONSULTING ENGINEERS
TEXAS REGISTERED ENGINEERING FIRM P-9756
2500 Tanglewilde, Suite 120
Houston, Texas 77063
713.788.1900

SOLEA CINCO RANCH

**UTILITY PLAN
(2 OF 2)**

SCALE: 1"=20' DESIGN: TD/TR DRAWN: TD

C6.2

UTILITY CONFLICTS:

	STORM	SANITARY	CLEARANCE
A	18"=117.25'	8"TOP=113.94'	3.35'
B	18"=117.25'	8"TOP=114.62'	2.63'

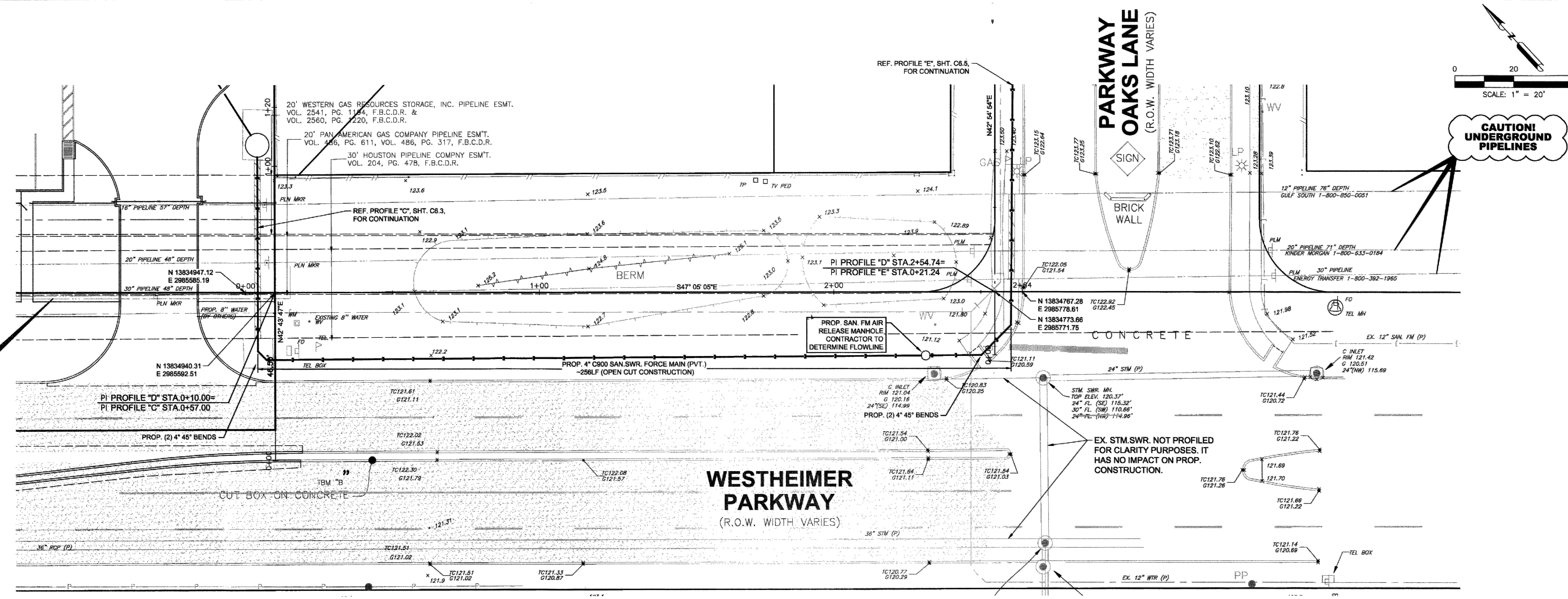
* CLEARANCE LESS THAN ONE FOOT. CONTRACTOR TO CEMENT STABILIZE.

**CAUTION!
UNDERGROUND
PIPELINES**

**CAUTION!
UNDERGROUND
PIPELINES**

REF. SHEET C6.3 FOR 24" RCP STM.SWR. TIE-IN TO EX. MANHOLE -148LF @ 0.18%

REF. SHEET C6.3-8.5 FOR SAN.SWR. FORCE MAIN CONTINUATION



BENCHMARKS:
 PROJECT BENCHMARK IS FLOODPLAIN REFERENCE MARK NO. 190025, BEING A BRASS DISK STAMPED 190025 ON BRIDGE AT MASON RD AND UPPER BUFFALO BAYOU LOCATED ON DOWNS TREAM CONCRETE WALK, ON NORTHEAST CORNER OF BRIDGE IN KEYMAP 485Z IN THE BARKER WATERSHED NEAR STREAM T100-00-00. ELEV=103.51 NAVD88, 2001ADJ.

TEMPORARY BENCHMARK "A" BEING A CUT BOX ON INLET LOCATED ON THE NORTH RIGHT-OF-WAY LINE OF WESTHEIMER PARKWAY. ELEV=120.21 NAVD88, 2001ADJ.

TEMPORARY BENCHMARK "B" BEING A CUT BOX LOCATED ON THE MEDIAN OF WESTHEIMER PARKWAY. ELEV=122.38 NAVD88, 2001ADJ.

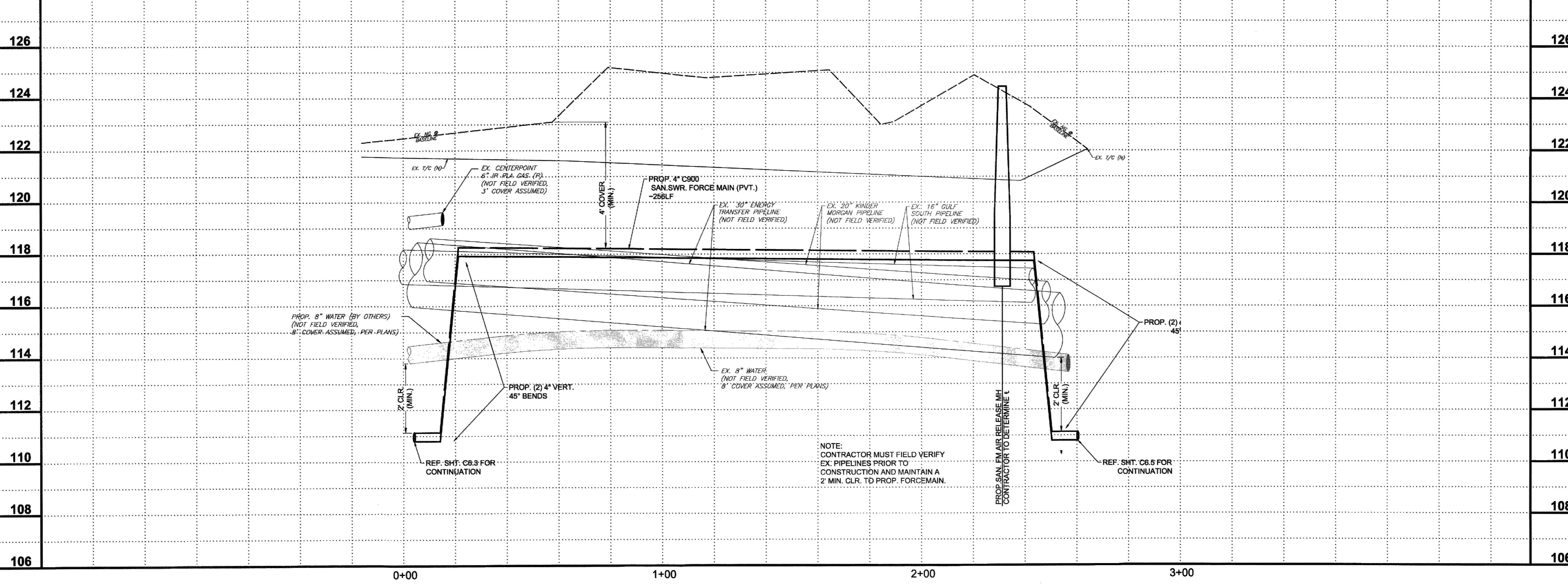
FLOOD PLAIN NOTE:
 THIS SUBJECT TRACT LIES IN UNSHADED ZONE "X". (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN)

AS DELINEATED ON THE FLOOD INSURANCE RATE MAP FOR FORT BEND COUNTY, TEXAS AND INCORPORATED AREAS, MAP NOS. 48157C0045 L & 48157C0110 L, REVISED APRIL, 2, 2014.

"ATTENTION"

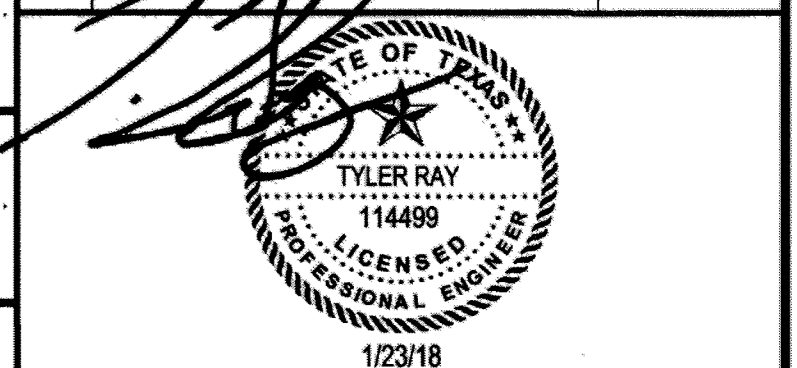
ALL EXISTING UTILITIES ARE REPRESENTED TO THE BEST OF THE ENGINEER'S KNOWLEDGE. THE CONTRACTOR MUST FIELD VERIFY ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY IF A CONFLICT ARISES.

PROFILE "D" - 4" SANITARY FORCEMAIN (PRIVATE)



FORT BEND COUNTY ENGINEER
 ENGINEER: RICHARD W. STOLLEIS, P.E.
 DATE: _____
 THESE SIGNATURES ARE VOID IF CONSTRUCTION HAS NOT COMMENCED IN (1) YEARS FROM DATE OF APPROVAL.
 APPROVED: *[Signature]*
 DEVELOPMENT COORDINATOR
 DATE: 2/1/18

REV	DESCRIPTION	DATE
1	ISSUE FOR PERMIT	01/23/2018



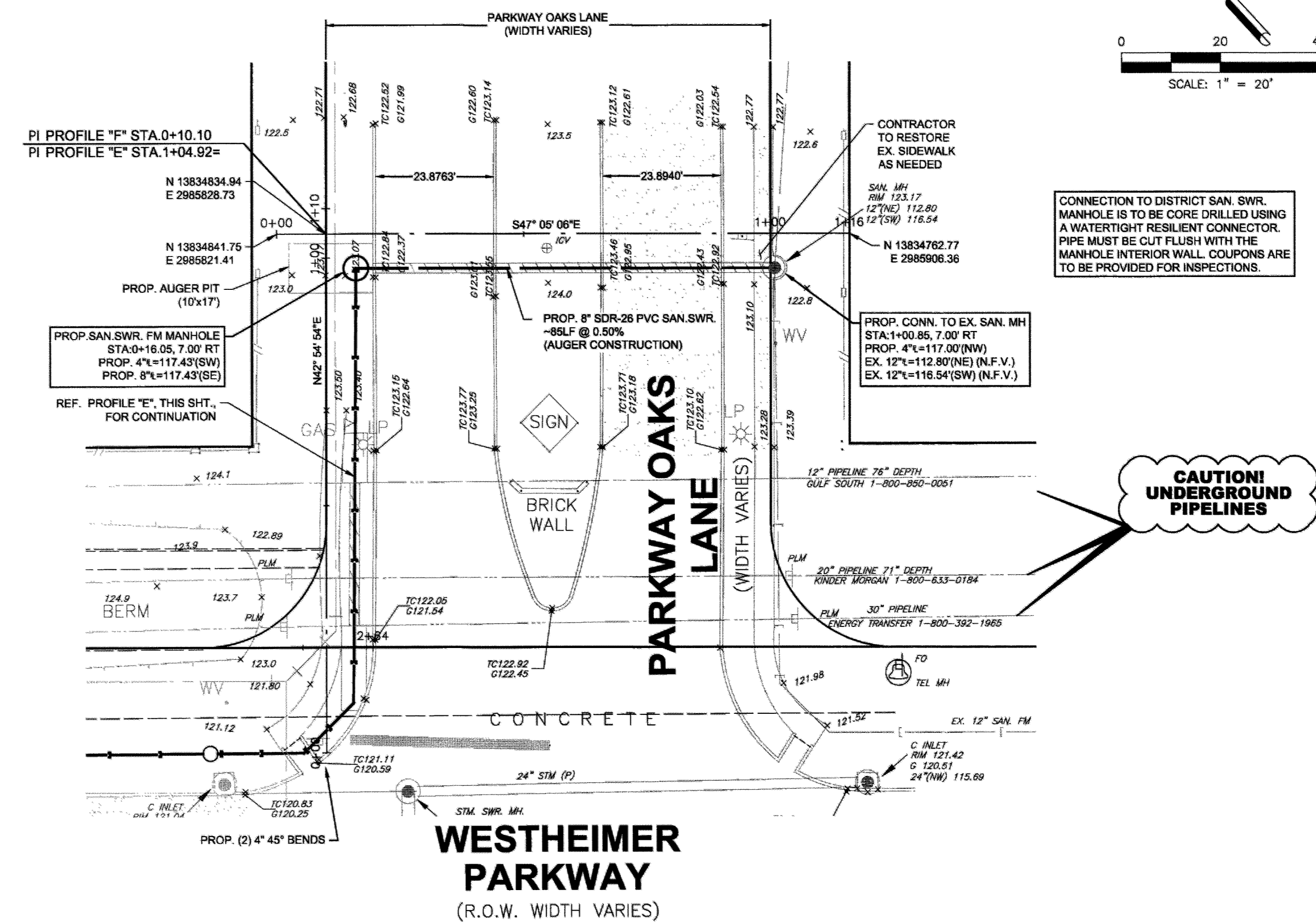
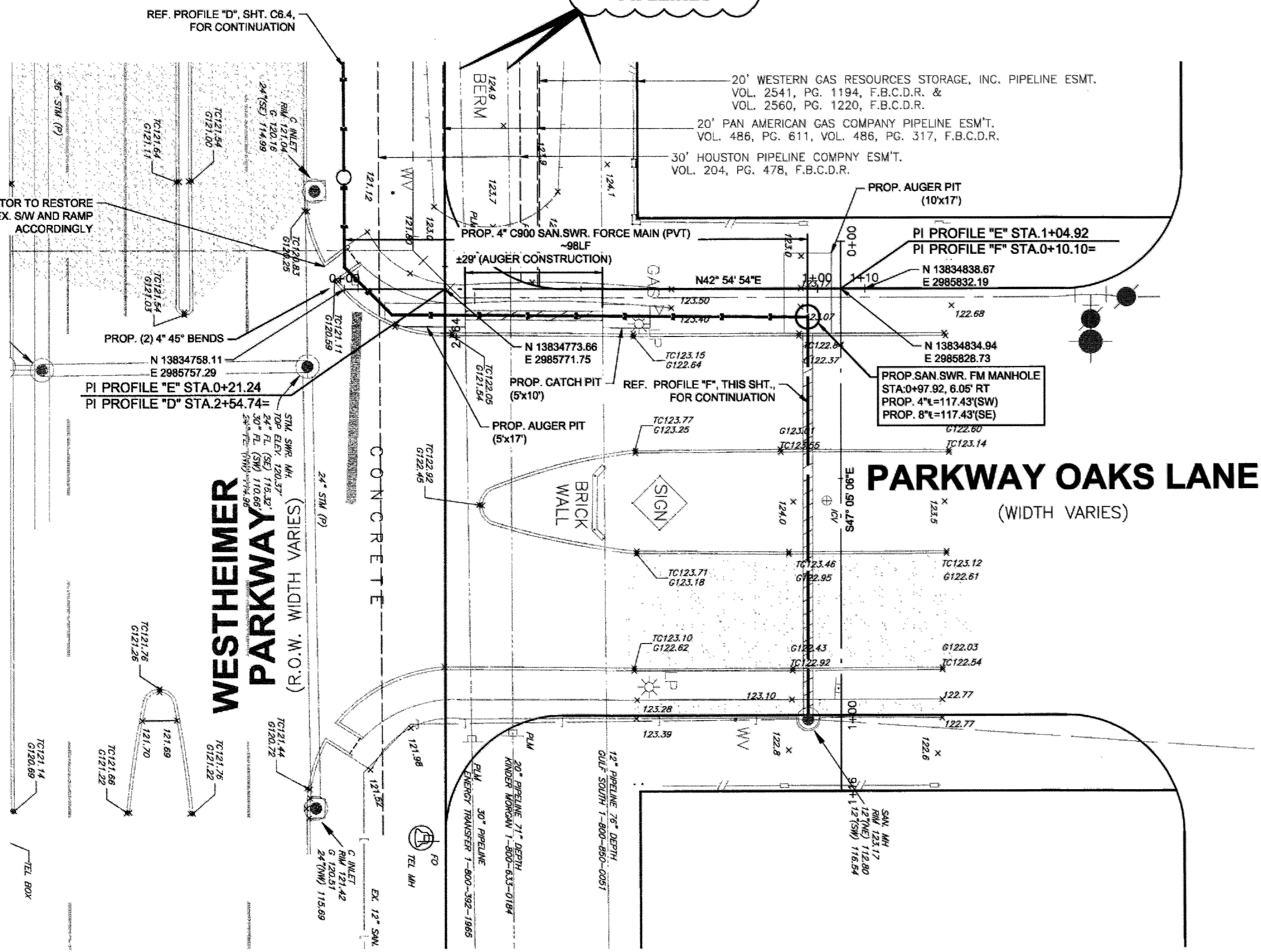
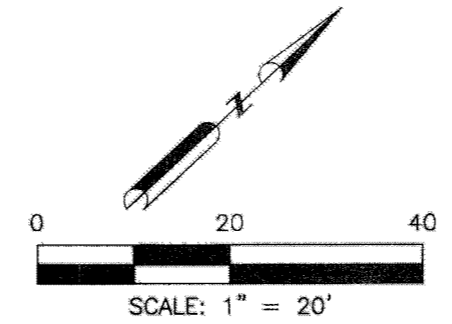
WGA
 WARD, GETZ & ASSOCIATES, LLP
 CONSULTING ENGINEERS
 TEXAS REGISTERED ENGINEERING FIRM F-9756
 2500 Tanglewilde, Suite 120
 Houston, Texas 77065
 713.789.1900

SOLEA CINCO RANCH
PLAN & PROFILE "D" - 4" SANITARY FORCEMAIN

SCALE	DESIGN	DRAWN
1"=20'	TD/TR	TD

C6.4

**CAUTION!
UNDERGROUND
PIPELINES**



CONNECTION TO DISTRICT SAN. SWR. MANHOLE IS TO BE CORE DRILLED USING A WATER TIGHT RESILIENT CONNECTOR. PIPE MUST BE CUT FLUSH WITH THE MANHOLE INTERIOR WALL. COUPONS ARE TO BE PROVIDED FOR INSPECTIONS.

**CAUTION!
UNDERGROUND
PIPELINES**

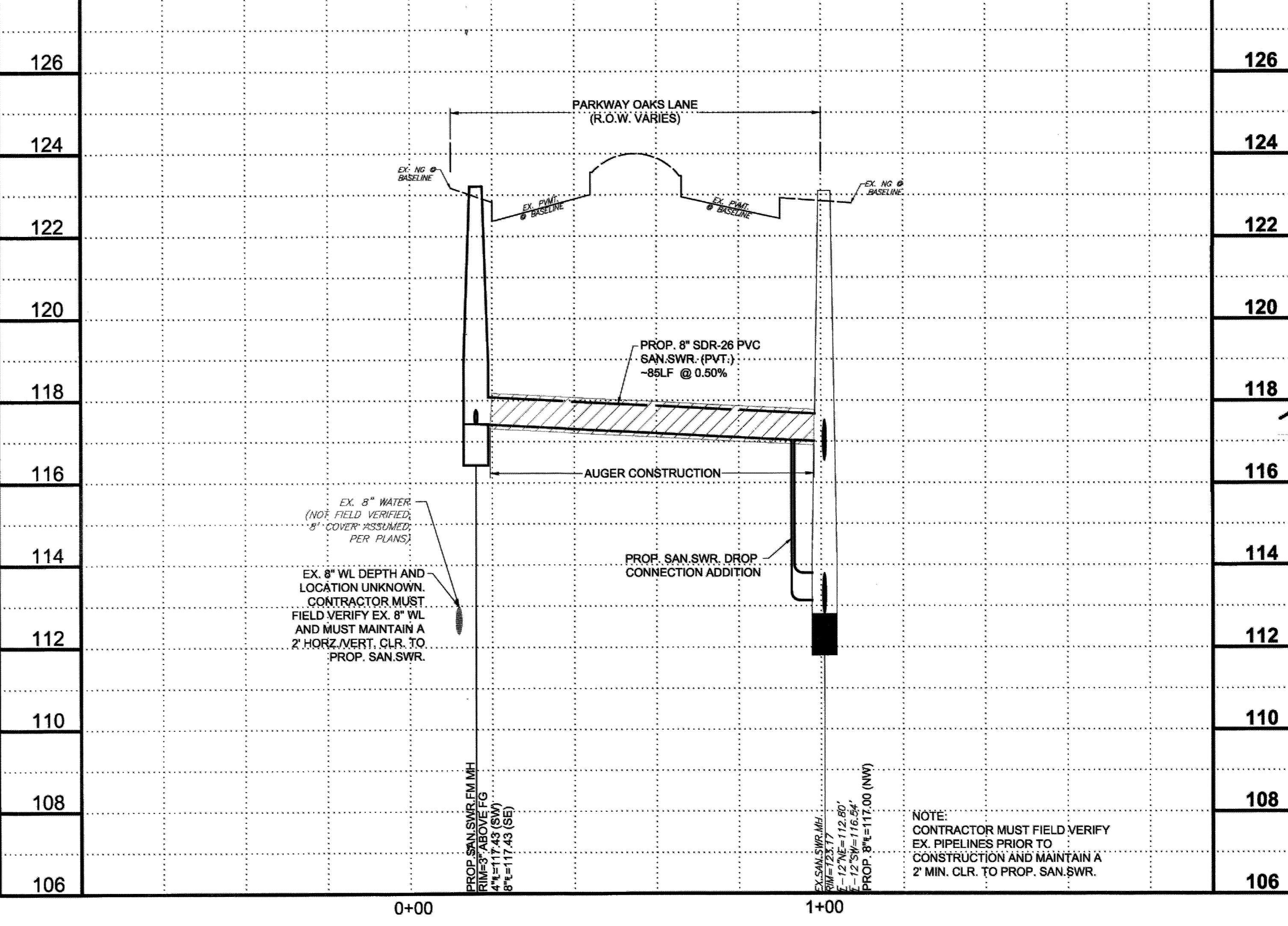
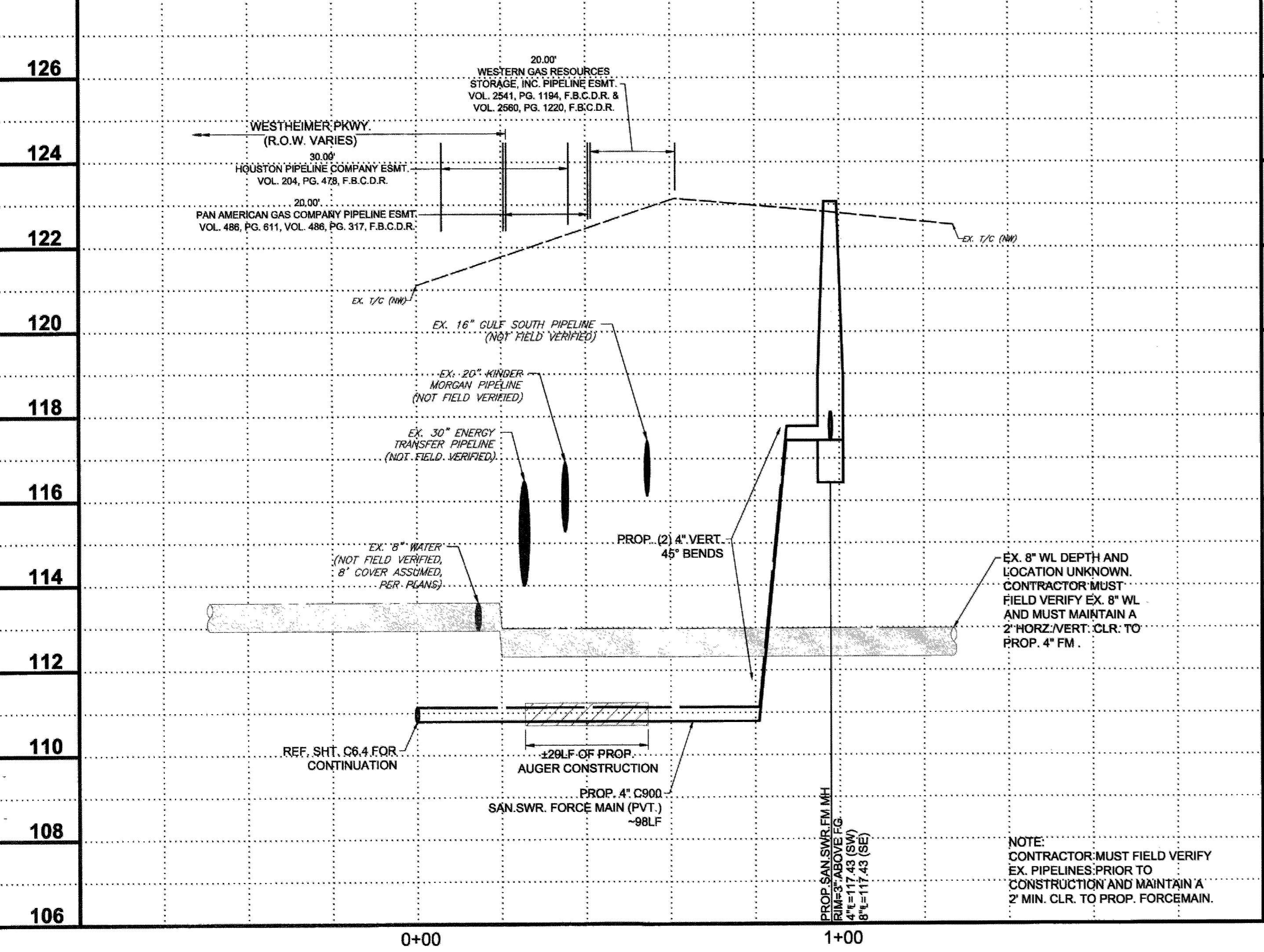
BENCHMARKS:
PROJECT BENCHMARK IS FLOODPLAIN REFERENCE MARK NO. 1900028, BEING A BRASS DISK STAMPED 19028 ON BRIDGE AT MASON RD AND UPPER BUFFALO BAYOU LOCATED ON DOWNSTREAM CONCRETE WALK, ON NORTHEAST CORNER OF BRIDGE IN KEYMAP 485Z IN THE BARKER WATERSHED NEAR STREAM T100-00-00. ELEV=103.51 NAVD83, 2001ADJ.
TEMPORARY BENCHMARK "A" BEING A CUT BOX ON INLET LOCATED ON THE NORTH RIGHT-OF-WAY LINE OF WESTHEIMER PARKWAY. ELEV=120.21 NAVD83, 2001ADJ.
TEMPORARY BENCHMARK "B" BEING A CUT BOX LOCATED ON THE MEDIAN OF WESTHEIMER PARKWAY. ELEV=122.36 NAVD83, 2001ADJ.

FLOOD PLAIN NOTE:
THIS SUBJECT TRACT LIES IN UNSHADED ZONE "X". (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN)
AS DELINEATED ON THE FLOOD INSURANCE RATE MAP FOR FORT BEND COUNTY, TEXAS AND INCORPORATED AREAS, MAP NOS. 4817C004E L & 4817C0110 L, REVISED APRIL 2, 2014.

ATTENTION
ALL EXISTING UTILITIES ARE REPRESENTED TO THE BEST OF THE ENGINEER'S KNOWLEDGE. THE CONTRACTOR MUST FIELD VERIFY ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY IF A CONFLICT ARISES.

PROFILE "E" - 4" SANITARY FORCE MAIN (PRIVATE)

PROFILE "F" - 8" SANITARY SEWER (PRIVATE)



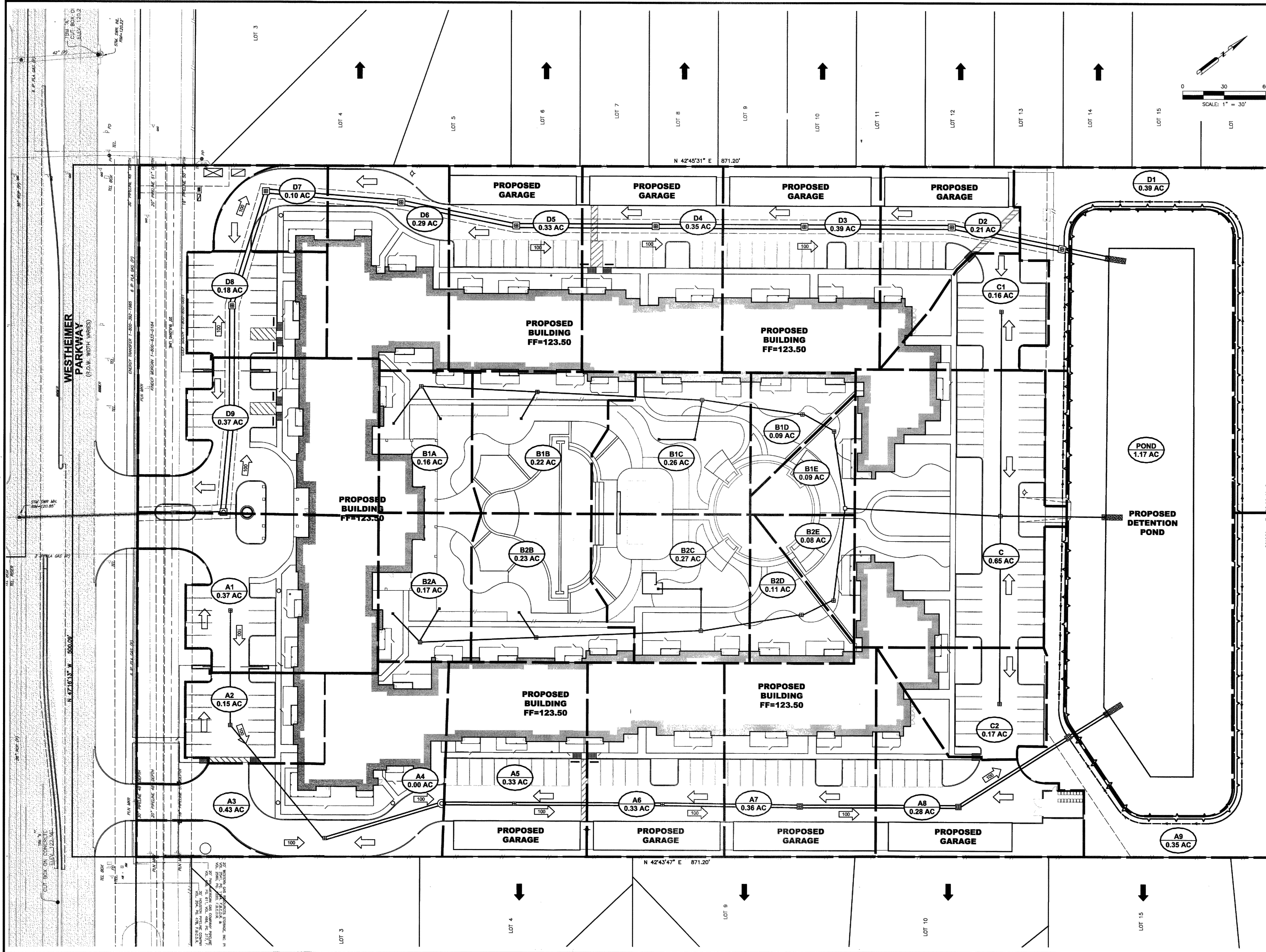
THESE SIGNATURES ARE VOID IF CONSTRUCTION HAS NOT COMMENCED IN (1) YEARS FROM DATE OF APPROVAL.
APPROVED: *[Signature]*
DEVELOPMENT COORDINATOR
DATE: 2/1/18

REV	DESCRIPTION	DATE
1	ISSUE FOR PERMIT	01/23/2018

[Signature]
TYLER RAY
114499
LICENSED PROFESSIONAL ENGINEER
1/23/18

WGA
WARD, GETZ & ASSOCIATES, LLP
CONSULTING ENGINEERS
TEXAS REGISTERED ENGINEERING FIRM F-9756
2500 Tanglewilde, Suite 120
Houston, Texas 77063
713.789.1900

SOLEA CINCO RANCH
PLAN & PROFILE "E&F" - 4" SANITARY FORCE MAIN & 8" SANITARY SEWER
SCALE: 1"=20'
DESIGN: TD/TR
DRAWN: TD



BENCHMARKS:
 PROJECT BENCHMARK IS FLOODPLAIN REFERENCE MARK NO. 190025, BEING A BRASS DISK STAMPED 190025 ON BRIDGE AT MASON RD AND UPPER BUFFALO BAYOU LOCATED ON DOWNS TREAM CONCRETE WALK ON NORTHEAST CORNER OF BRIDGE IN KEYMAP 485Z IN THE BARKER WATERSHED NEAR STREAM T100-00-00. ELEV=103.51 NAVD88, 2001ADJ.
 TEMPORARY BENCHMARK "A" BEING A CUT BOX ON INLET LOCATED ON THE NORTH RIGHT-OF-WAY LINE OF WESTHEIMER PARKWAY. ELEV=120.21 NAVD88, 2001ADJ.
 TEMPORARY BENCHMARK "B" BEING A CUT BOX LOCATED ON THE MEDIAN OF WESTHEIMER PARKWAY. ELEV=122.38 NAVD88, 2001ADJ.

FLOOD PLAIN NOTE:
 THIS SUBJECT TRACT LIES IN UNSHADED ZONE "X". (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN)
 AS DELINEATED ON THE FLOOD INSURANCE RATE MAP FOR FORT BEND COUNTY, TEXAS AND INCORPORATED AREAS, MAP NOS. 48157C0045 L & 48157C0110 L, REVISED APRIL, 2, 2014.

DRAINAGE AREA MAP LEGEND:

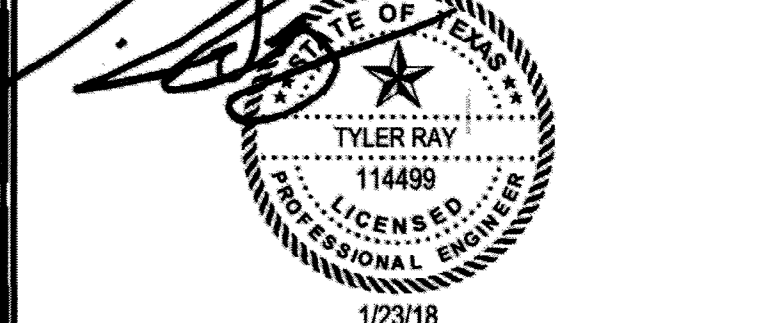
	DRAINAGE AREA AREA IN ACRES
	DRAINAGE BOUNDARY
	OFF-SITE SHEET FLOW
	100-YEAR FLOW
	EXTREME EVENT SHEET FLOW (IN EXCESS OF 100-YEAR EVENT)

MAXIMUM PONDING OVER INLETS = 6-INCHES

THESE SIGNATURES ARE VOID IF CONSTRUCTION HAS NOT COMMENCED IN (1) YEARS FROM DATE OF APPROVAL.

APPROVED:
 DEVELOPMENT COORDINATOR
 DATE: 2/1/18

REV	DESCRIPTION	DATE
1	ISSUE FOR PERMIT	01/23/2018



W|G|A
 WARD, GETZ & ASSOCIATES, LLP
 CONSULTING ENGINEERS
 TEXAS REGISTERED ENGINEERING FIRM F-9756
 2500 Tanglewilde, Suite 120
 Houston, Texas 77065
 713.789.1300

SOLEA CINCO RANCH

DRAINAGE AREA MAP

SCALE 1"=30'	DESIGN TD/TR	DRAWN TD
-----------------	-----------------	-------------

C7.1

STORM SEWER CALCULATIONS (3-YR STORM EVENT)
FORT BEND COUNTY

Z:\00024 (Stream Realty)\024 (Solea Cinco Ranch)\ENR\3-YR Storm Event.xlsx\Storm Sewer Calculations

Project: Solea Cinco Ranch
Job No: 00024-024
PM: TR

Date: January 5, 2018
Land Use Category: Residential Districts (Apartment Dwelling Areas)

3-YR
b = 69.35
d = 10.94
e = 0.806

JUNCTIONS	DRAINAGE AREA CALCULATIONS						PIPE						DESIGN						HYDRAULIC GRADE LINE						STORM FLOWLINES					
	From MH	To MH	Sub Area Acres	Total Area Acres	Sub Runoff Coeff. C	Cf	C'CF	C'CPA	Time of Conc. min.	Intensity I (In / Hr.)	Sum of Flows cfs Q	PIPE or BOX	Storm Sewer Material	Reach Length Feet	PIPE Dia (in)	PIPE AREA (sq ft)	# of Pipes/Boxes	Slope %	Manning's "n"	Capacity cfs	Velocity fps	Actual Velocity fps	Hydraulic Gradient %	Change in Head Ft	Elev. Up Stream	Elev. Down Stream	Gutter Elevation Upstream	Gutter Elevation Downstream	flowline upstream	flowline downstream
A1	A2	0.37	0.37	0.75	1.00	0.75	0.28	10.00	5.98	1.66	PIPE	HDPE	75	12 in	0.79	1	0.44	0.010	3.07	3.91	3.98	0.128	0.096	120.36	120.27	121.00	121.00	117.77	117.44	118.44
A2	A3	0.15	0.52	0.75	1.00	0.75	0.39	10.36	5.89	2.30	PIPE	HDPE	86	18 in	1.77	1	0.26	0.010	6.96	3.94	3.51	0.028	0.024	120.27	120.24	121.15	121.00	117.44	117.22	118.72
A3	A4	0.43	0.95	0.75	1.00	0.75	0.71	10.73	5.81	4.14	PIPE	HDPE	86	18 in	1.77	1	0.26	0.010	6.96	3.94	4.10	0.062	0.079	120.24	120.16	121.00	121.00	117.22	116.99	118.49
A4	A5	0.00	0.95	0.75	1.00	0.75	0.71	10.96	5.77	4.11	PIPE	HDPE	53	24 in	3.14	1	0.18	0.010	12.48	3.97	3.54	0.020	0.010	120.16	120.15	121.00	121.00	116.99	116.90	118.90
A5	A6	0.33	1.28	0.75	1.00	0.75	0.96	11.39	5.67	5.45	PIPE	HDPE	105	24 in	3.14	1	0.18	0.010	12.48	3.97	3.83	0.034	0.036	120.15	120.12	121.00	121.00	116.90	116.71	118.71
A6	A7	0.33	1.61	0.75	1.00	0.75	1.21	11.79	5.59	6.75	PIPE	HDPE	95	24 in	3.14	1	0.18	0.010	12.48	3.97	4.04	0.053	0.050	120.12	120.07	121.00	121.00	116.71	116.54	118.54
A7	A8	0.36	1.97	0.75	1.00	0.75	1.48	12.27	5.50	8.13	PIPE	HDPE	113	30 in	4.91	1	0.13	0.010	19.23	3.92	3.74	0.023	0.026	120.07	120.04	121.00	121.00	116.54	116.39	118.89
A8	A9	0.28	2.25	0.75	1.00	0.75	1.69	12.67	5.42	9.15	PIPE	HDPE	94	30 in	4.91	1	0.13	0.010	19.23	3.92	3.85	0.029	0.028	120.04	120.01	121.00	121.00	116.39	116.27	118.77
A9	POND	0.35	2.60	0.75	1.00	0.75	1.95	12.81	5.40	10.53	PIPE	HDPE	33	30 in	4.91	1	0.13	0.010	19.23	3.92	3.98	0.039	0.013	120.01	120.00	121.00	121.00	116.27	116.23	118.73
B2A	B2B	0.17	0.17	0.75	1.00	0.75	0.13	10.00	5.98	0.76	PIPE	HDPE	81	12 in	0.79	1	0.44	0.010	3.07	3.91	3.20	0.027	0.022	120.24	120.21	122.00	122.00	119.00	118.64	119.64
B2B	B2C	0.23	0.40	0.75	1.00	0.75	0.30	11.00	5.75	1.73	PIPE	HDPE	117	18 in	1.77	1	0.44	0.010	8.84	5.00	3.81	0.016	0.019	119.65	119.63	122.00	122.00	118.64	118.13	119.63
B2C	B2D	0.27	0.67	0.75	1.00	0.75	0.50	12.00	5.55	2.79	PIPE	HDPE	73	18 in	1.77	1	0.44	0.010	9.06	5.13	4.51	0.042	0.029	120.26	120.23	122.00	121.80	118.13	117.82	119.32
B2D	B2E	0.11	0.78	0.75	1.00	0.75	0.59	13.00	5.36	3.14	PIPE	HDPE	23	18 in	1.77	1	0.26	0.010	6.96	3.94	3.84	0.053	0.012	120.22	120.21	121.80	121.80	117.82	117.76	119.26
B2E	JB1	0.09	0.87	0.75	1.00	0.75	0.65	10.27	5.91	3.86	PIPE	HDPE	64	24 in	3.14	1	0.18	0.010	12.48	3.97	3.49	0.017	0.011	120.21	120.20	121.80	122.00	117.76	117.65	119.65
B1A	B1B	0.16	0.16	0.75	1.00	0.75	0.12	10.00	5.98	0.72	PIPE	HDPE	81	12 in	0.79	1	0.44	0.010	3.07	3.91	3.14	0.024	0.019	120.23	120.21	122.00	122.00	119.00	118.64	119.64
B1B	B1C	0.22	0.38	0.75	1.00	0.75	0.29	11.00	5.75	1.64	PIPE	HDPE	117	18 in	1.77	1	0.44	0.010	9.06	5.13	3.83	0.014	0.017	119.65	119.63	122.00	122.00	118.64	118.13	119.63
B1C	B1D	0.28	0.64	0.75	1.00	0.75	0.48	12.00	5.55	2.86	PIPE	HDPE	70	18 in	1.77	1	0.44	0.010	9.06	5.13	4.45	0.038	0.027	120.23	120.20	122.00	121.80	118.13	117.82	119.32
B1D	B1E	0.09	0.73	0.75	1.00	0.75	0.55	13.00	5.36	3.94	PIPE	HDPE	23	18 in	1.77	1	0.26	0.010	6.96	3.94	3.76	0.046	0.011	119.27	119.26	121.80	121.80	117.82	117.76	119.26
B1E	JB1	0.09	0.82	0.75	1.00	0.75	0.62	10.23	5.92	3.64	PIPE	HDPE	54	24 in	3.14	1	0.18	0.010	12.48	3.97	3.45	0.015	0.008	120.21	120.20	121.80	122.00	117.76	117.66	119.66
JB1	C	0.00	1.69	0.75	1.00	0.75	1.27	10.83	5.79	7.34	PIPE	HDPE	143	24 in	3.14	1	0.18	0.010	12.48	3.97	4.13	0.062	0.089	120.20	120.11	122.00	120.75	117.81	117.55	119.55
C1	C	0.16	0.16	0.75	1.00	0.75	0.12	10.00	5.98	0.72	PIPE	HDPE	148	12 in	0.79	1	0.44	0.010	3.07	3.91	3.14	0.024	0.035	120.15	120.11	121.00	120.75	118.00	117.35	118.35
C2	C	0.17	0.17	0.75	1.00	0.75	0.13	10.00	5.98	0.76	PIPE	HDPE	135	12 in	0.79	1	0.44	0.010	3.07	3.91	3.20	0.027	0.037	120.15	120.11	121.00	120.75	117.95	117.36	118.36
C	POND	0.64	2.66	0.75	1.00	0.75	2.00	11.16	5.72	11.42	PIPE	HDPE	76	24 in	3.14	1	0.18	0.010	12.48	3.97	4.50	0.151	0.115	120.11	120.00	120.75	121.50	112.14	112.00	114.00
POND	D1	1.17	6.43	0.75	1.00	0.75	4.82	10.00	5.98	28.81	PIPE	HDPE	34	36 in	7.07	1	0.13	0.010	31.26	4.42	5.01	0.110	0.038	115.60	115.56	121.50	121.70	112.00	111.96	114.96
D1	D2	0.39	6.82	0.75	1.00	0.75	5.12	10.31	5.90	30.20	PIPE	HDPE	82	36 in	7.07	1	0.13	0.010	31.26	4.42	5.04	0.121	0.099	115.56	115.46	121.70	121.00	111.96	111.85	114.85
D2	D3	0.21	7.03	0.75	1.00	0.75	5.27	10.70	5.82	30.67	PIPE	HDPE	105	36 in	7.07	1	0.13	0.010	31.26	4.42	5.04	0.125	0.131	115.46	115.33	121.00	121.00	111.85	111.71	114.71
D3	D4	0.39	7.42	0.75	1.00	0.75	5.67	11.10	5.73	31.91	PIPE	HDPE	105	36 in	7.07	1	0.13	0.010	31.26	4.42	5.04	0.135	0.142	115.33	115.19	121.00	121.00	111.71	111.58	114.58
D4	D5	0.35	7.77	0.75	1.00	0.75	5.83	11.47	5.66	32.97	PIPE	HDPE	98	36 in	7.07	1	0.13	0.010	31.26	4.42	5.00	0.145	0.142	115.19	115.05	121.00	121.00	111.58	111.45	114.45
D5	D6	0.33	8.10	0.75	1.00	0.75	6.08	11.81	5.59	33.95	PIPE	HDPE	90	36 in	7.07	1	0.13	0.010	31.26	4.42	4.80	0.153	0.138	115.05	114.91	121.00	121.00	111.45	111.33	114.33
D6	D7	0.29	8.39	0.75	1.00	0.75	6.29	12.14	5.52	34.77	PIPE	HDPE	87	36 in	7.07	1	0.13	0.010	31.26	4.42	4.92	0.161	0.140	114.91	114.77	121.00	121.00	111.33	111.22	114.22
D7	D8	0.10	8.49	0.75	1.00	0.75	6.37	12.46	5.46	34.79	PIPE	HDPE	85	36 in	7.07	1	0.13	0.010	31.26	4.42	4.92	0.161	0.137	114.77	114.63	121.00	121.15	111.22	111.11	114.11
D8	D9	0.18	8.67	0.75	1.00	0.75	6.50	12.75	5.41	35.18	PIPE	HDPE	77	36 in	7.07	1	0.13	0.010	31.26	4.42	4.98	0.165	0.127	114.63	114.51	121.15	121.00	111.11	111.01	114.01
D9	JB2	0.37	9.04	0.75	1.00	0.75	6.78	12.99	5.37	36.38	PIPE	HDPE	65	42 in	9.62	1	0.08	0.010	36.99	3.85	4.38	0.077	0.050	114.51	114.45	121.00	121.00	111.01	110.96	114.46
JB2	OUT	0.00	9.04	0.75	1.00	0.75	6.78	13.63	5.25	35.61	PIPE	HDPE	148	42 in	9.62	1	0.08	0.010	36.99	3.85	4.38	0.074	0.110	114.45	114.34	121.00	121.00	110.96	110.84	114.34

STORM SEWER CALCULATIONS (100-YR STORM EVENT)
FORT BEND COUNTY

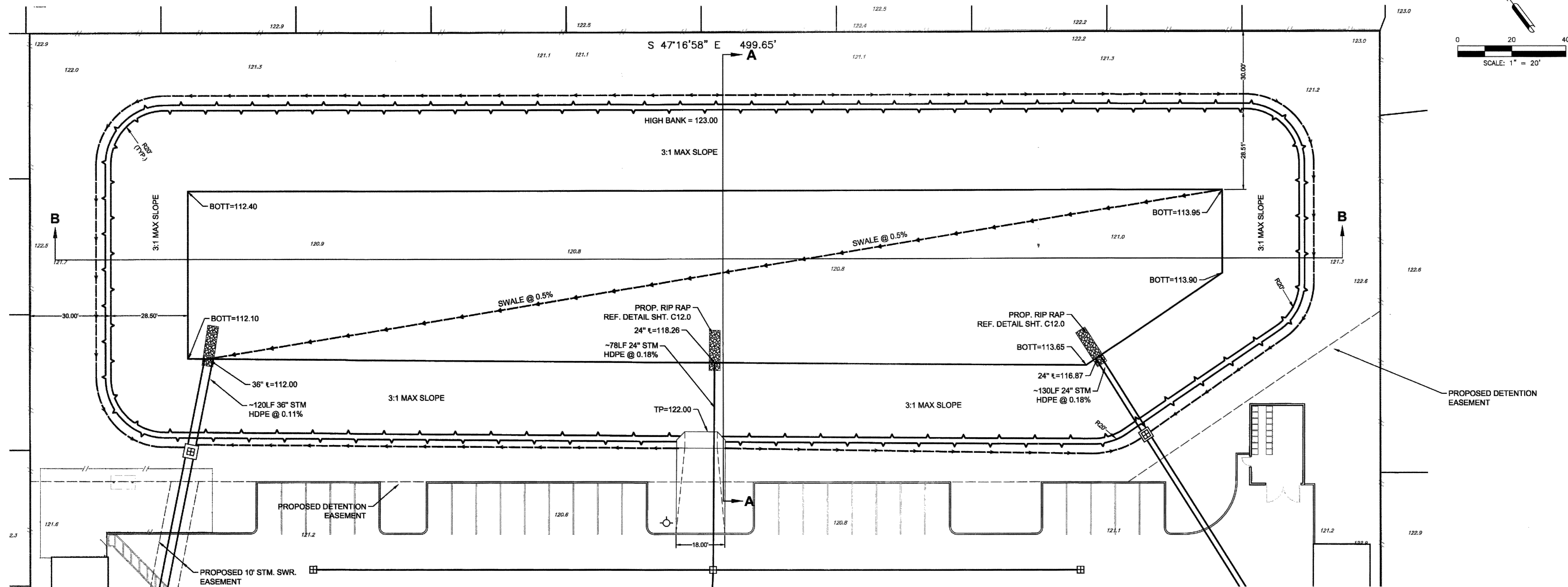
Z:\00024 (Stream Realty)\024 (Solea Cinco Ranch)\ENR\100-YR Storm Event.xlsx\Storm Sewer Calculations

Project: Solea Cinco Ranch
Job No: 00024-024
PM: TR

Date: January 5, 2018
Land Use Category: Residential Districts (Apartment Dwelling Areas)

100-YR
b = 146.18
d = 15.12
e = 0.7851

JUNCTIONS	DRAINAGE AREA CALCULATIONS						PIPE						DESIGN						HYDRAULIC GRADE LINE						STORM FLOWLINES						INLET CAPACITY			
	From MH	To MH	Sub Area Acres	Total Area Acres	Sub Runoff Coeff. C	Cf	C'CF	C'CPA	Time of Conc. min.	Intensity I (In / Hr.)	Sum of Flows cfs Q	PIPE or BOX	Storm Sewer Material	Reach Length Feet	PIPE Dia (in)	PIPE AREA (sq ft)	# of Pipes/Boxes	Slope %	Manning's "n"	Capacity cfs	Velocity fps	Actual Velocity fps	Hydraulic Gradient %	Change in Head Ft	Elev. Up Stream	Elev. Down Stream	Gutter Elevation Upstream	Gutter Elevation Downstream	flowline upstream	flowline downstream	(downstream) top of pipe	Grate Area (SF)	Max. Head (Ft)	Inlet Capacity
A1	A2	0.37	0.37	0.75	1.25	0.94	0.35	10.00	11.63	4.04	PIPE	HDPE	75	12 in	0.79	1	0.44	0.010	3.07	3.91	5.14	0.759	0.569	122.20	121.64	121.70	121.65	117.77	117.44	118.44	3.52	0.50	15.98	4.04
A2	A3	0.15	0.52	0.75	1.25	0.94	0.49	10.46	11.47	5.59	PIPE	HDPE	107	18 in	1.77	1	0.26	0.010	6.96	3.94	4.37	0.168	0.179	121.64	121.46	121.65	121.00	117.44	117.16	118.66	3.52	0.50	15.98	1.61
A3	A4	0.43	0.95	0.75	1.25	0.94	0.89	10.82	11.35	10.10	PIPE	HDPE	86	18 in	1.77	1	0.26	0.010	6.96	3.94	5.72	0.548	0.471	121.46	120.99	121.00	121.50	117.16	116.94	118.44	3.52	0.50	15.98	4.57
A4	A5	0.00	0.95	0.75																														



BENCHMARKS:
 PROJECT BENCHMARK IS FLOODPLAIN REFERENCE MARK NO. 1900025, BEING A BRASS DISK STAMPED 190025 ON BRIDGE AT MASON RD AND UPPER BUFFALO BAYOU LOCATED ON DOWNSTREAM CONCRETE WALK, ON NORTHEAST CORNER OF BRIDGE IN KEYMAP 485Z IN THE BARKER WATERSHED NEAR STREAM T100-00-00. ELEV=103.51 NAVD88, 2001ADJ.
 TEMPORARY BENCHMARK "A" BEING A CUT BOX ON INLET LOCATED ON THE NORTH RIGHT-OF-WAY LINE OF WESTHEIMER PARKWAY. ELEV=120.21 NAVD88, 2001ADJ.
 TEMPORARY BENCHMARK "B" BEING A CUT BOX LOCATED ON THE MEDIAN OF WESTHEIMER PARKWAY. ELEV=122.38 NAVD88, 2001ADJ.

FLOOD PLAIN NOTE:
 THIS SUBJECT TRACT LIES IN UNSHADED ZONE "X". (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN)
 AS DELINEATED ON THE FLOOD INSURANCE RATE MAP FOR FORT BEND COUNTY, TEXAS AND INCORPORATED AREAS, MAP NOS. 481570045 L & 481570110 L, REVISED APRIL, 2, 2014.

**PROPOSED DETENTION POND
 (TO BE PRIVATELY OWNED AND MAINTAINED)**

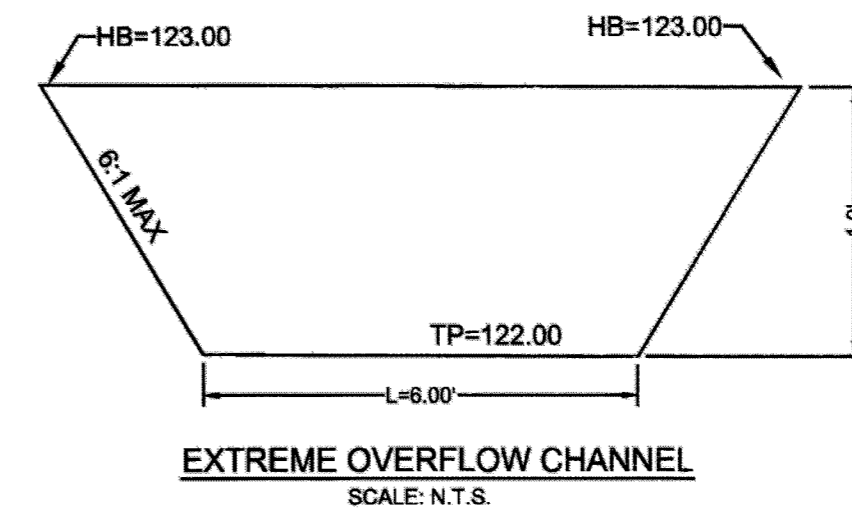
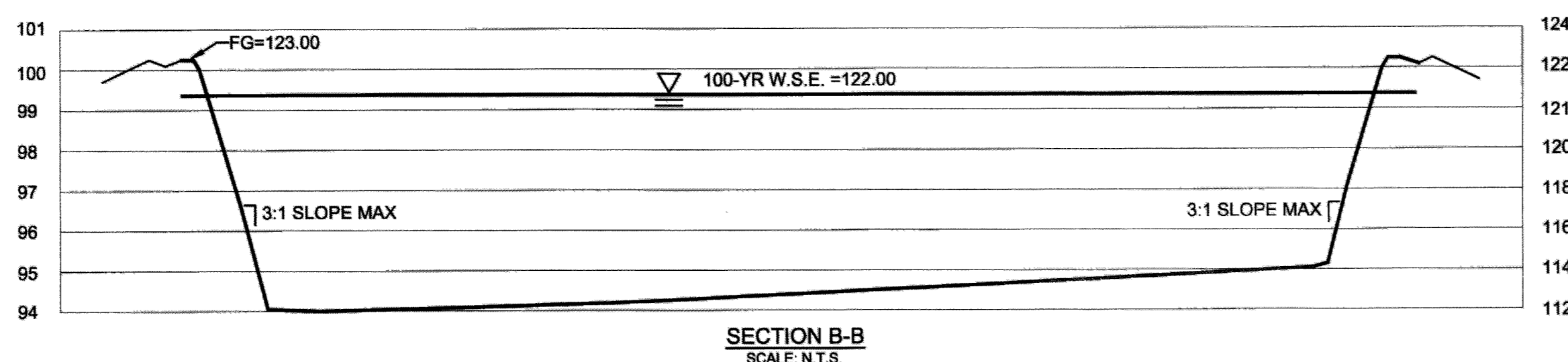
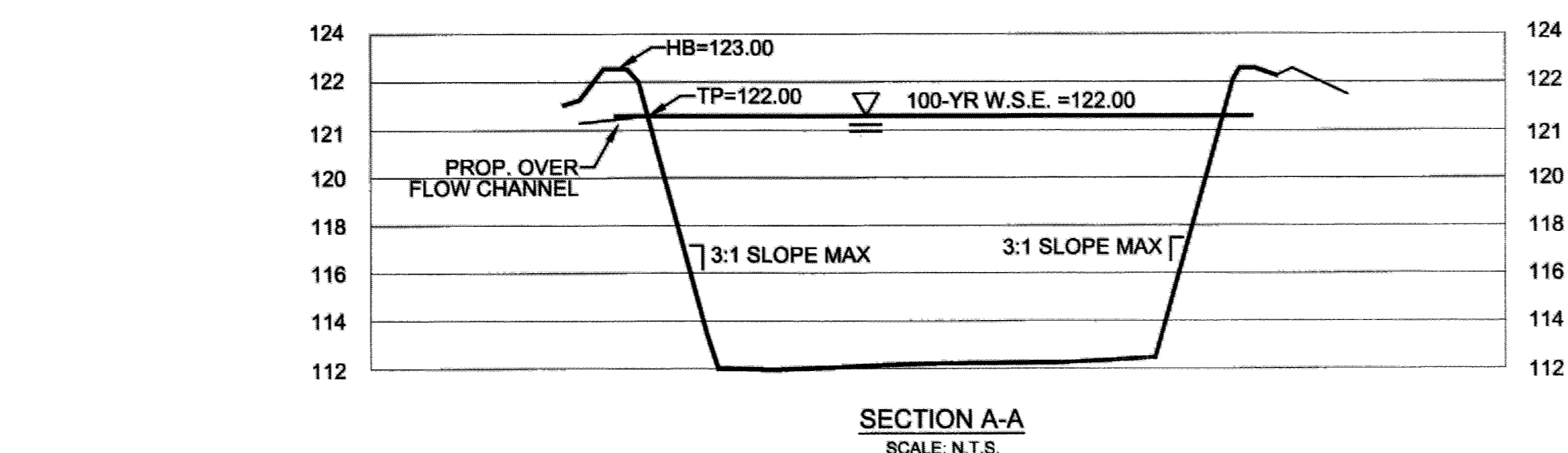
DETENTION POND CALCULATIONS

DETENTION CALCULATIONS SUMMARY:

TOTAL SERVICE AREA = 411,866 SQ.FT. = 9.4549 AC
 PROPOSED IMPERVIOUS COVER = 297,310 SQ.FT. = 6.8252 AC
 PERCENT OF IMPERVIOUS COVER = 72%
 CALCULATED DETENTION RATE = 0.888
 REQUIRED DETENTION VOLUME = TOTAL SERVICE AREA X DETENTION RATE = 357,490 CU-FT. = 8.21 AC-FT
 PROVIDED DETENTION VOLUME = 366,862 CU-FT. = 8.42 AC-FT

EXISTING CAPACITY
 PER APPROVED DRAINAGE REPORT TITLED GREENBUSH ROAD ROADWAY IMPROVEMENT PROJECT, PREPARED BY COBB FENDLEY ENGINEERS, DATED 08/15/2009 (ATTACHED):
 DRAINAGE AREA C4C SERVES 18.99 AC. HAS CAPACITY FOR 26.53 CFS (3-YR FREQUENCY)
 THEREFORE DRAINAGE AREA C4C CAPACITY: 26.53 CFS/18.99 AC = 1.43 CFS/AC

RESTRICTOR CALCULATIONS
 ALLOWABLE OUTFLOW RELEASE RATE = 1.43 CFS/AC
 ALLOWABLE = (1.43 CFS/AC) * (9.4549 AC) = 13.52 CFS
 100% DETENTION POND DEPTH = 121.50 FT
 TOP ELEVATION OF OUTFALL PIPE = 111.20 FT
 H = 121.50 - 111.20 = 10.30 FT
 RESTRICTOR SIZE D = 6" INCH
 $Q = CAV\sqrt{2GH}$
 $Q = (0.8)(\pi(6")^2/4)\sqrt{(2)(32.2)(10.30)}$
 $Q = 4.08\text{ CFS}$
 $Q = 3.40\text{ CFS} < Q_{ALLOWABLE} = 13.52\text{ CFS}$



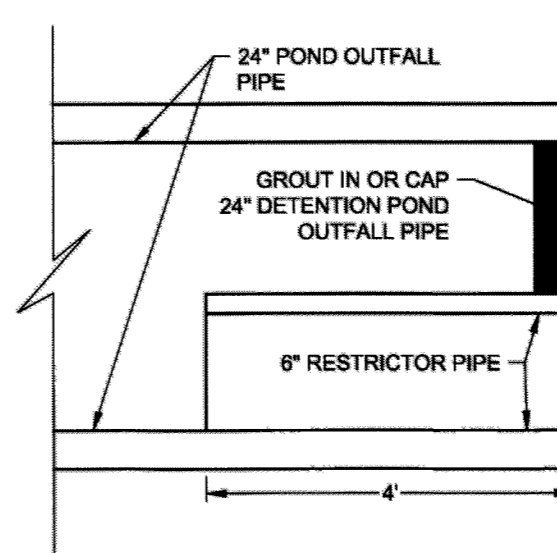
PROPOSED 100-YR SITE RUNOFF

$Q = C_i A C_f$
 $C = 0.75$
 $T_c = 10\text{ MIN.}$
 $I = 11.63\text{ IN/H}$
 $A = 9.4549\text{ AC}$
 $C_f = 1.25$
 $Q = (0.75)(11.63)(1.25)(9.4549) = 103.09\text{ CFS}$

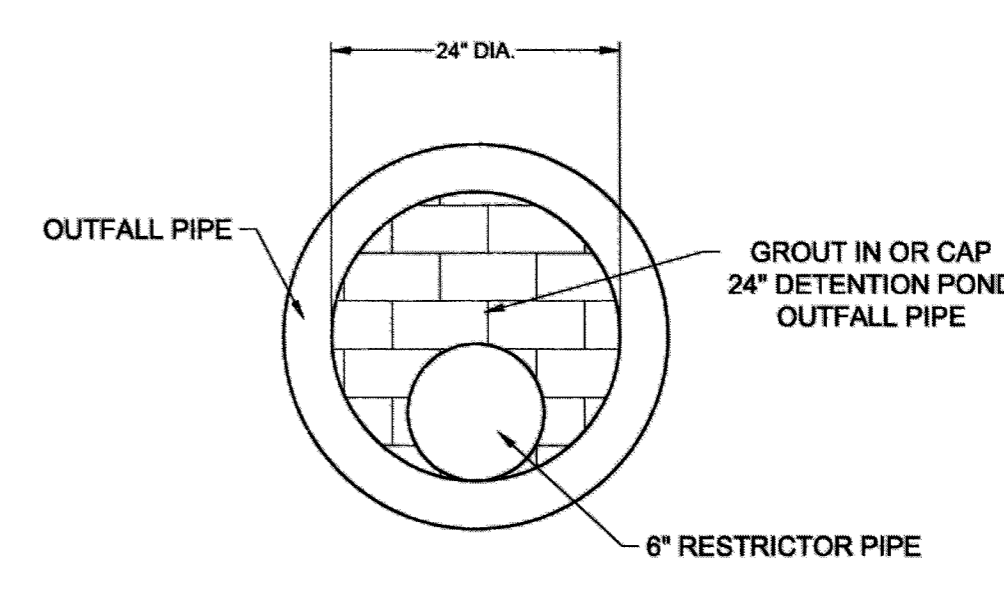
PROPOSED EXTREME OVERFLOW CHANNEL

$Q = 1.49 A^2 R^2 S^2$, WHERE: $R = \frac{A}{P_{WET}}$

$C_{CONCRETE} = 0.013$
 $A_{CHANNEL} = \frac{1}{2}(B_1 + B_2)H = \frac{1}{2}(6+18) \cdot 1.0 = 12\text{ FT}^2$
 $P_{WET\ CHANNEL} = B_1 + 2H\sqrt{1+Z^2} = 6 + 2(1.0)\sqrt{1+6^2} = 11.29\text{ FT}$
 $R_{CHANNEL} = \frac{12}{11.29} = 1.06\text{ FT}$
 $S = 0.6\% = 0.006\text{ FT/FT}$
 $Q_{CHANNEL} = 1.49 \cdot 12^2 \cdot 1.06^2 \cdot 0.006^2 = 111.30\text{ CFS}$
 $Q_{DESIGN} = 110.76\text{ CFS}$



DETENTION POND RESTRICTOR DETAIL
 N.T.S.

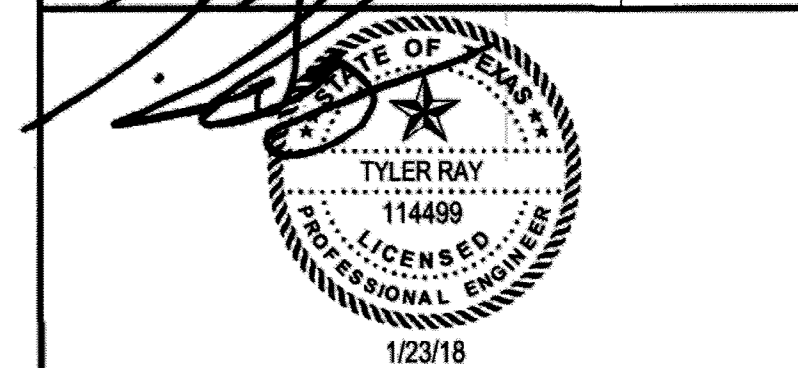


DETENTION POND RESTRICTOR DETAIL
 N.T.S.

THESE SIGNATURES ARE VOID IF CONSTRUCTION HAS NOT COMMENCED IN (1) YEARS FROM DATE OF APPROVAL.

APPROVED: *[Signature]*
 DEVELOPMENT COORDINATOR
 DATE: 2/1/18

REV	DESCRIPTION	DATE
1	ISSUE FOR PERMIT	01/23/2018



W|G|A
 WARD, GETZ & ASSOCIATES, LLP
 CONSULTING ENGINEERS
 TEXAS REGISTERED ENGINEERING FIRM P-9756
 2500 Tanglewilde, Suite 120
 Houston, Texas 77063
 713.789.1900

**SOLEA CINCO RANCH
 DETENTION POND AND
 CALCULATIONS**

SCALE	DESIGN	DRAWN
1"=30'	TD/TR	TD

C8.0

BENCHMARKS:
 PROJECT BENCHMARK IS FLOODPLAIN REFERENCE MARK NO. 190025, BEING A BRASS DISK STAMPED 190025 ON BRIDGE AT MASON RD AND UPPER BUFFALO SANYU LOCATED ON DOWNSTREAM CONCRETE WALK, ON NORTHEAST CORNER OF BRIDGE IN KEYMAP 485Z IN THE BARKER WATERSHED NEAR STREAM T100-00. ELEV=103.51 NAVD83, 2001ADJ.
 TEMPORARY BENCHMARK "A" BEING A CUT BOX ON INLET LOCATED ON THE NORTH RIGHT-OF-WAY LINE OF WESTHEIMER PARKWAY. ELEV=120.21 NAVD83, 2001ADJ.
 TEMPORARY BENCHMARK "B" BEING A CUT BOX LOCATED ON THE MEDIAN OF WESTHEIMER PARKWAY. ELEV=122.38 NAVD83, 2001ADJ.

FLOOD PLAIN NOTE:
 THIS SUBJECT TRACT LIES IN UNSHADED ZONE "C". (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN)
 AS DELINEATED ON THE FLOOD INSURANCE RATE MAP FOR FORT BEND COUNTY, TEXAS AND INCORPORATED AREAS, MAP NOS. 48157C0045 L & 48157C0110 L, REVISED APRIL, 2, 2014.

1. MEDIAN NOSE CURBS TO BE PAINTED YELLOW
2. CONTRACTOR TO HYDROMULCH PROPOSED LEFT TURN LANE & LEFT TURN LANE MODIFICATION

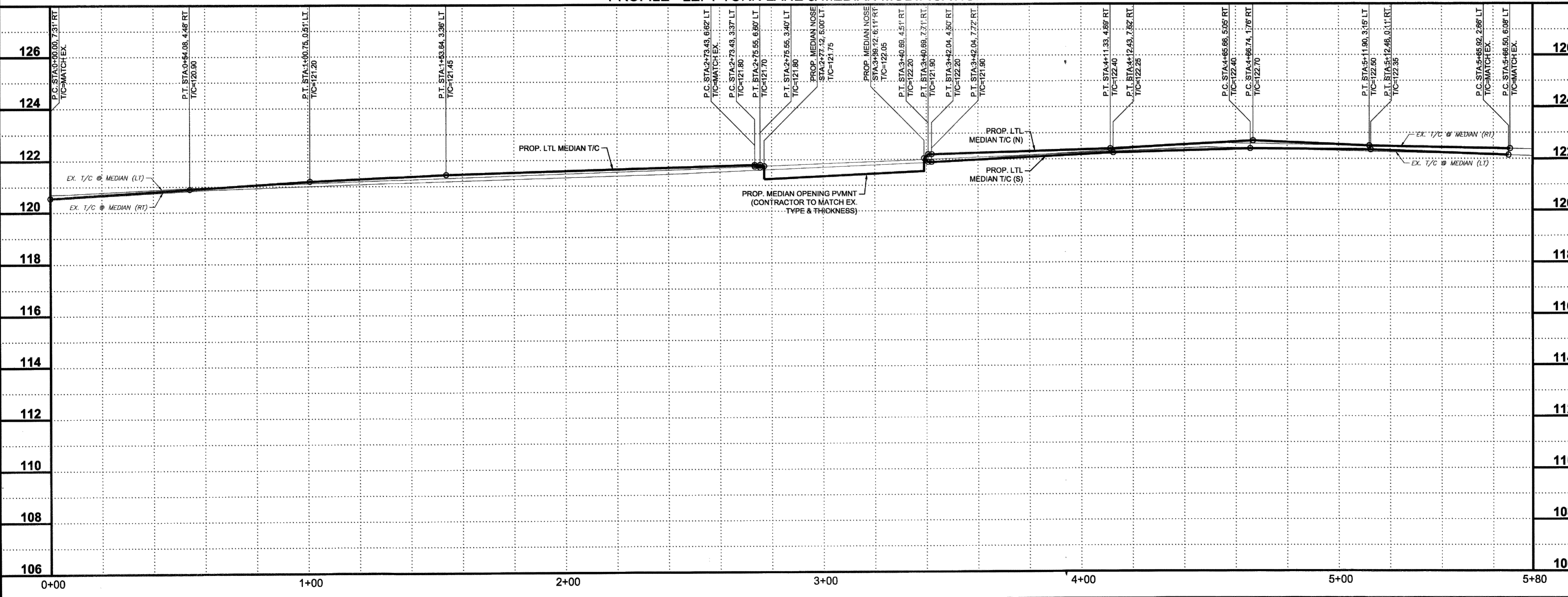
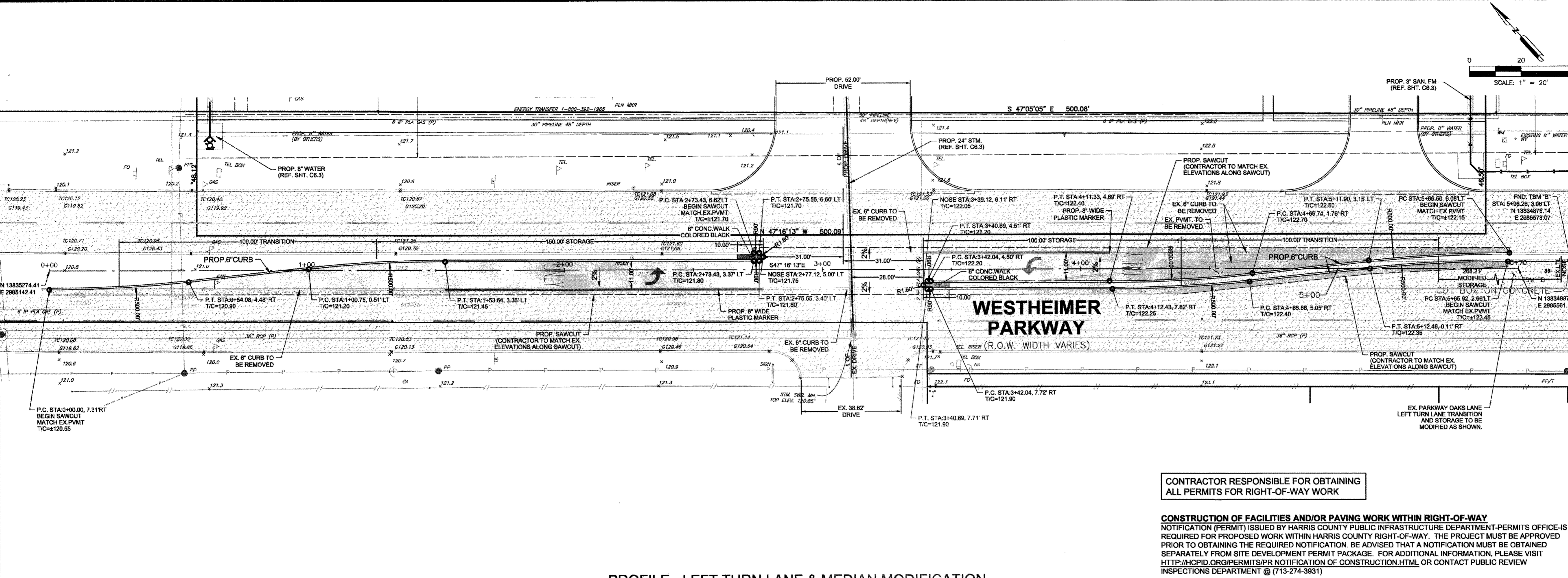
ATTENTION
 ALL EXISTING UTILITIES ARE REPRESENTED TO THE BEST OF THE ENGINEER'S KNOWLEDGE. THE CONTRACTOR MUST FIELD VERIFY ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY IF A CONFLICT ARISES.

LEGEND:

	EXISTING PAVEMENT (CONCRETE/ASPHALT AS NOTED)
	PROPOSED PAVEMENT (MATCH EXISTING THICKNESS)

CONTRACTOR RESPONSIBLE FOR OBTAINING ALL PERMITS FOR RIGHT-OF-WAY WORK

CONSTRUCTION OF FACILITIES AND/OR PAVING WORK WITHIN RIGHT-OF-WAY
 NOTIFICATION (PERMIT) ISSUED BY HARRIS COUNTY PUBLIC INFRASTRUCTURE DEPARTMENT-PERMITS OFFICE-IS REQUIRED FOR PROPOSED WORK WITHIN HARRIS COUNTY RIGHT-OF-WAY. THE PROJECT MUST BE APPROVED PRIOR TO OBTAINING THE REQUIRED NOTIFICATION. BE ADVISED THAT A NOTIFICATION MUST BE OBTAINED SEPARATELY FROM SITE DEVELOPMENT PERMIT PACKAGE. FOR ADDITIONAL INFORMATION, PLEASE VISIT [HTTP://HCPID.ORG/PERMITS/PR NOTIFICATION OF CONSTRUCTION.HTML](http://hcpid.org/permits/pr_notification_of_construction.html) OR CONTACT PUBLIC REVIEW INSPECTIONS DEPARTMENT @ (713-274-3931)



THESE SIGNATURES ARE VOID IF CONSTRUCTION HAS NOT COMMENCED IN (1) YEARS FROM DATE OF APPROVAL.

APPROVED:
 DEVELOPMENT COORDINATOR
 DATE: 2/1/18

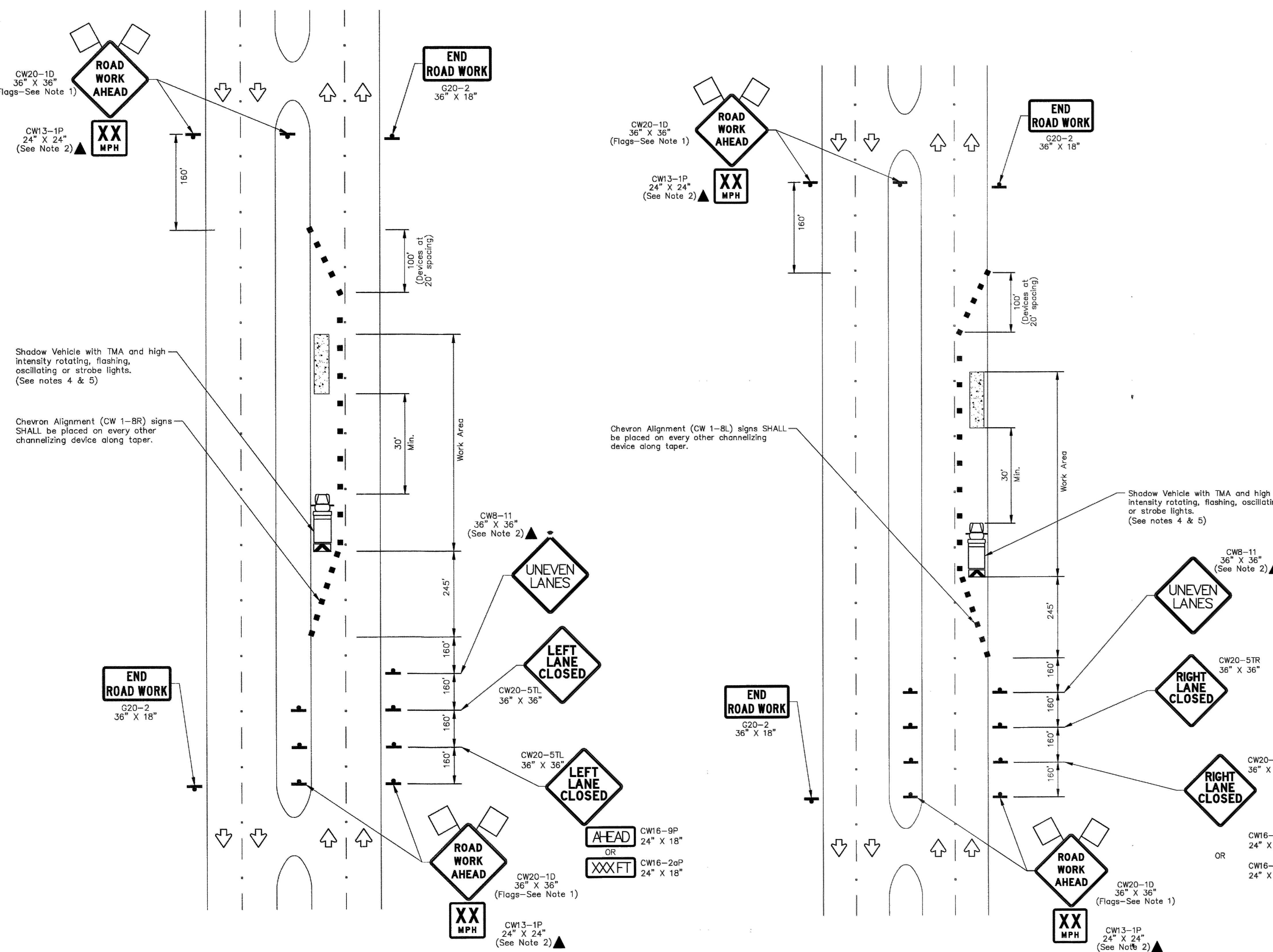
REV	DESCRIPTION	DATE
1	ISSUE FOR PERMIT	01/23/2018

WGA
 WARD, GETZ & ASSOCIATES, LLP
 CONSULTING ENGINEERS
 TEXAS REGISTERED ENGINEERING FIRM F-9756
 2500 Tanglewilde, Suite 120
 Houston, Texas 77063
 713.789.1900

SOLEA CINCO RANCH
**PLAN & PROFILE -
 LEFT TURN LANE &
 MEDIAN MODIFICATION**

SCALE: 1"=20'
 DESIGN: TD/TR
 DRAWN: TD

C9.0



LEFT LANE CLOSURE (4 LANE BOULEVARD ROAD)
PHASE I

RIGHT LANE CLOSURE (4 LANE BOULEVARD ROAD)
PHASE II

TRAFFIC CONTROL PLAN SECTION SHALL BE COMPLETED BY ENGINEER

ROADWAY	POSTED SPEED	TAPER LENGTH	SPACING CHANNELIZING DEVICES		SIGN SPACING	BUFFER SPACE
			TAPER	TANGENT		
WESTHEIMER PARKWAY	35 MPH	245' MIN.	35' MAX	70' MAX	160' MIN.	120'

	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board		Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed	Formula	Minimum Desirable Taper Lengths "L"			Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing "X"	Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent		
30	L = WS ² / 60	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40	L = WS	265'	295'	320'	40'	80'	240'	155'
45		450'	495'	540'	45'	90'	320'	195'
50	L = WS	500'	550'	600'	50'	100'	400'	240'
55		550'	605'	660'	55'	110'	500'	295'
60	L = WS	600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70	L = WS	700'	770'	840'	70'	140'	800'	475'
75		750'	825'	900'	75'	150'	900'	540'

* Conventional Roads Only
** Taper lengths have been rounded off.
L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

GENERAL NOTES

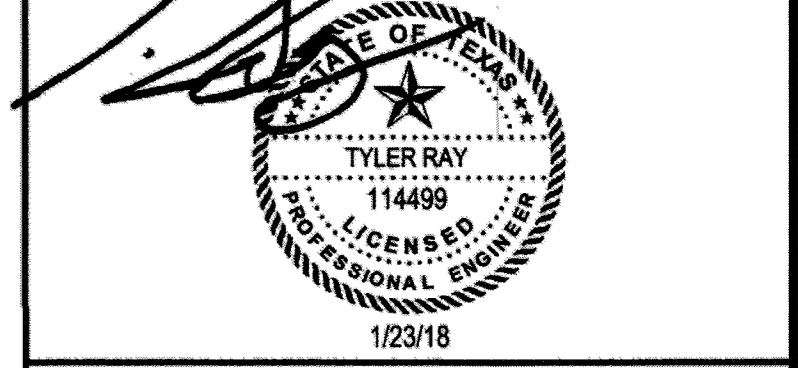
- Flags attached to signs where shown are OPTIONAL.
- All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol are OPTIONAL.
- Inactive work vehicles or other equipment should be parked near the right-of-way line and not parked on the paved shoulder.
- A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
- Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.
- Contractor shall provide and install traffic control devices in conformance with part VI of Texas Manual on Uniform Traffic Control Devices (TMUTCD - Latest edition with revisions) during construction.
- No lanes shall be blocked from 7am to 9am and 4pm to 6:30pm Monday thru Friday.
- Off duty police officers/flaggers are required to direct traffic when applicable.
- If project is within 400 feet from a signalized intersection, the Contractor shall contact Harris County Engineering Department, Traffic Signal Maintenance at (713) 881-3210 five (5) days prior to the start of construction.

THESE SIGNATURES ARE VOID IF CONSTRUCTION HAS NOT COMMENCED IN (1) YEARS FROM DATE OF APPROVAL

APPROVED: *[Signature]*
DEVELOPMENT COORDINATOR

DATE: 2/1/18

REV	DESCRIPTION	DATE
	ISSUE FOR PERMIT	01/23/2018



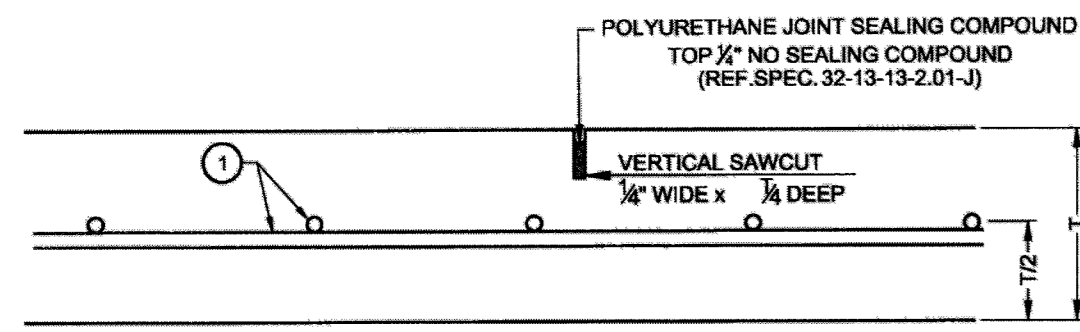
WGA
WARD, GETZ & ASSOCIATES, LLP
CONSULTING ENGINEERS
TEXAS REGISTERED ENGINEERING FIRM E-9756
2500 Tanglewilde, Suite 120
Houston, Texas 77063
713.789.1900

SOLEA CINCO RANCH

TRAFFIC CONTROL PLAN

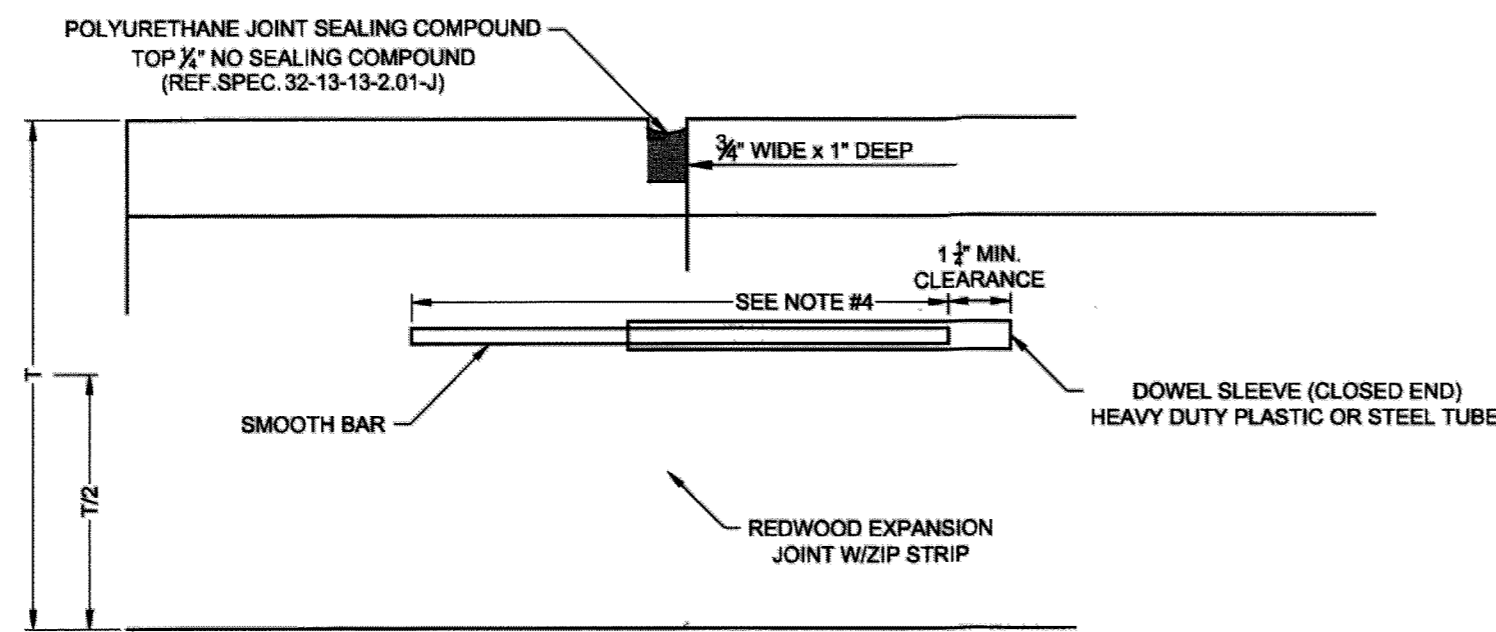
SCALE	DESIGN	DRAWN
1"=30'	TD/TR	TD

C10.0



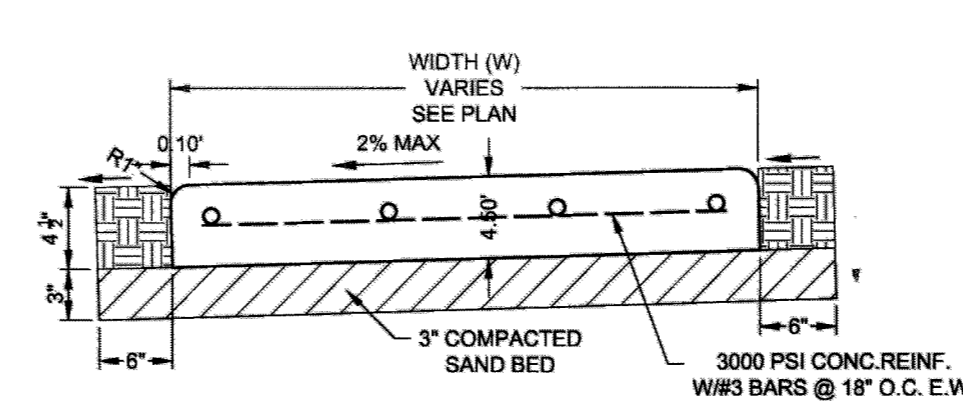
NOTES:
 T = PAVEMENT THICKNESS
 #1, SAWCUT SPACING & THICKNESS REFERENCE: "TYPICAL CONCRETE PAVEMENT SECTION" FOR DETAILS

(A) SAWED DUMMY (CONTROL) JOINT
 N.T.S.



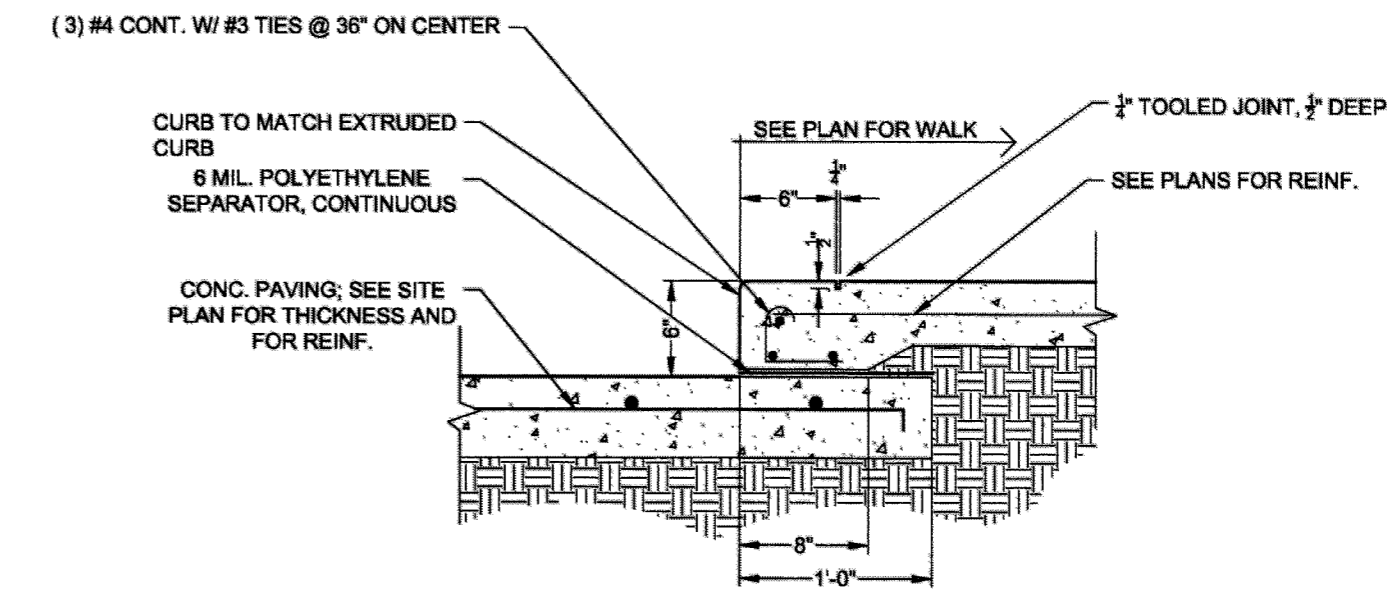
NOTES:
 T = PAVEMENT THICKNESS
 #1, #4, EXPANSION JOINT SPACING & THICKNESS REFERENCE: "TYPICAL CONCRETE PAVEMENT SECTION" FOR DETAILS

(C) EXPANSION JOINT
 N.T.S.



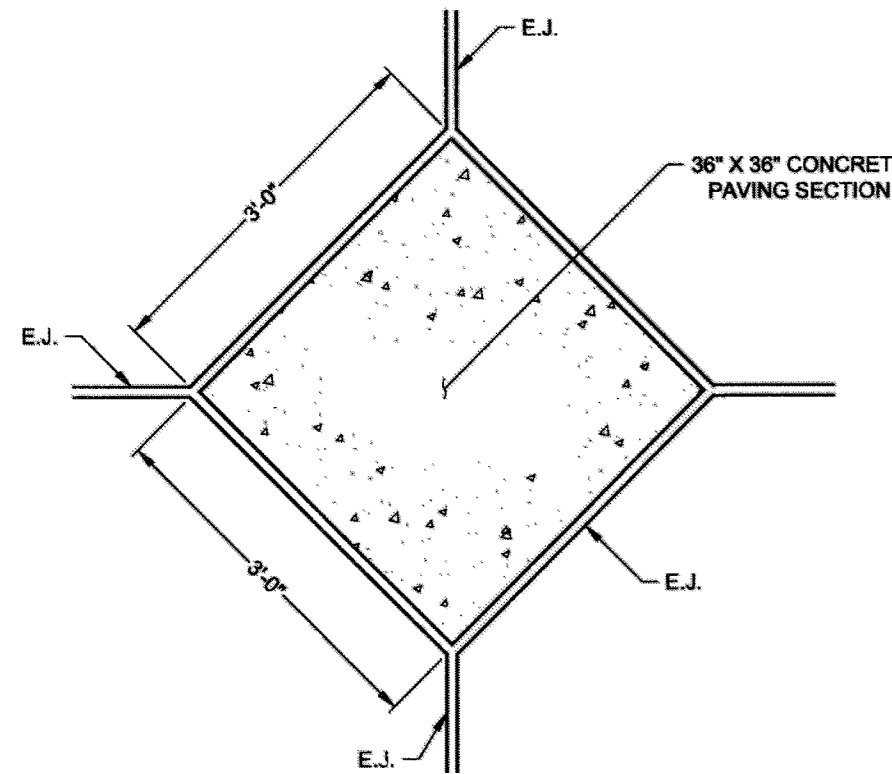
CONTRACTOR SHALL PROVIDE A SAWED JOINT SPACED EQUAL TO WIDTH (W) AND EXPANSION JOINTS TO BE PLACED @ 4 X W

(A) CONCRETE SIDEWALK DETAIL
 N.T.S.

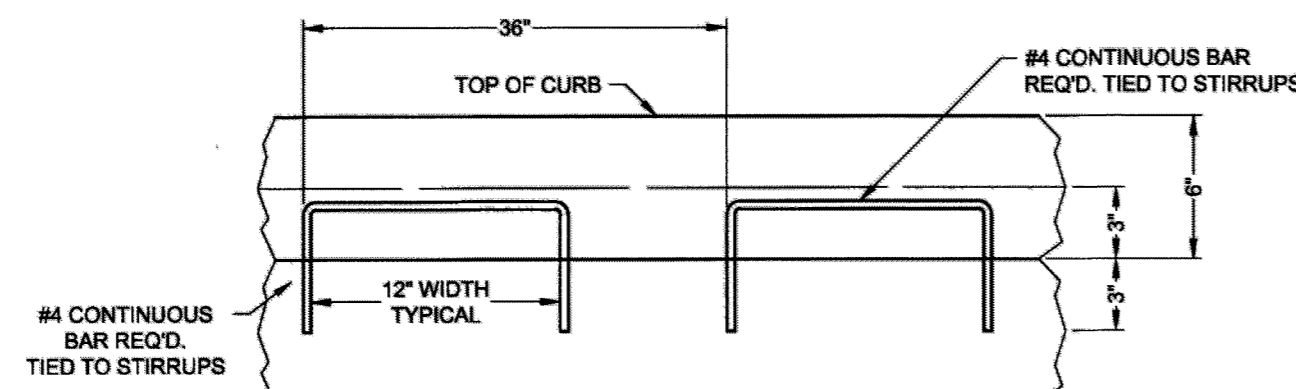


6" CONC. PAVEMENT SHALL BE 5 SACK CEMENT PRODUCING 3000 PSI COMPRESSIVE STRENGTH @ 7 DAYS AND 3500 PSI MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS. ALL WORKMANSHIP AND TESTING PER CITY OF HOUSTON SPECIFICATIONS

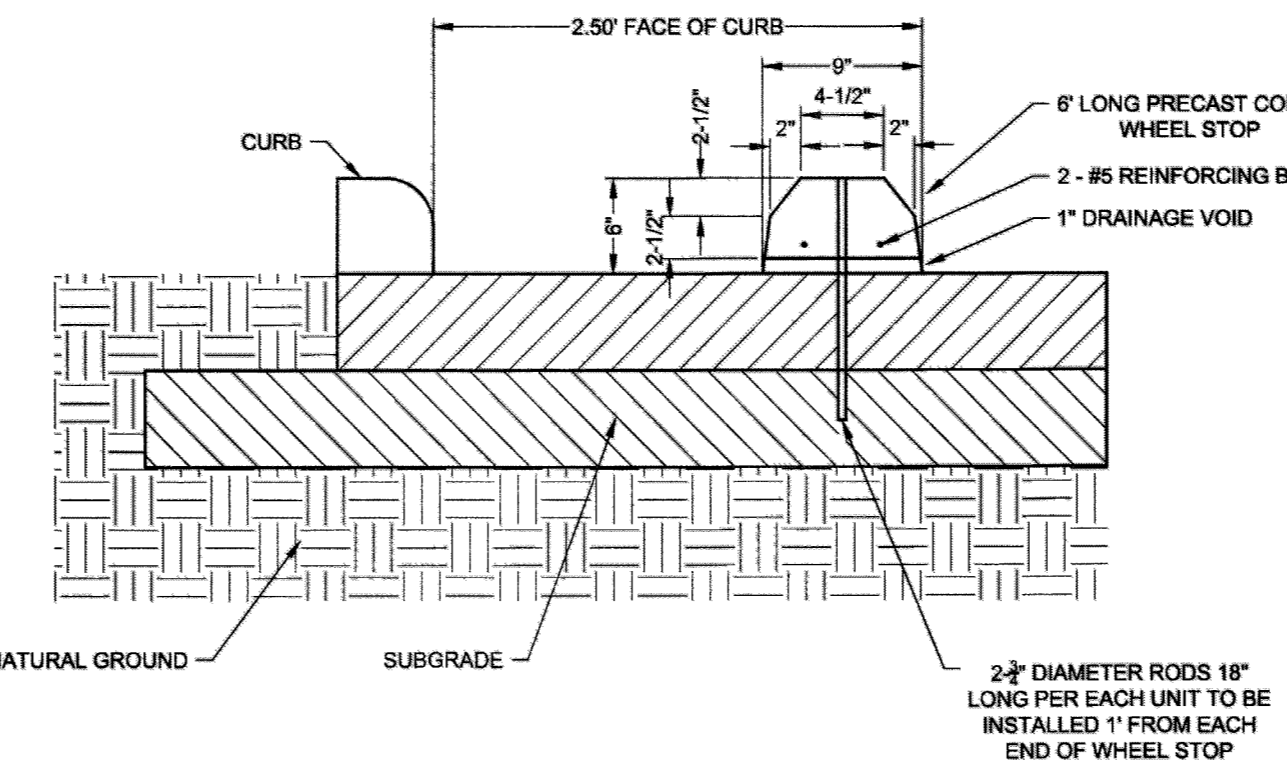
(A) SIDEWALK CURB AT CONC. PAVEMENT DET.



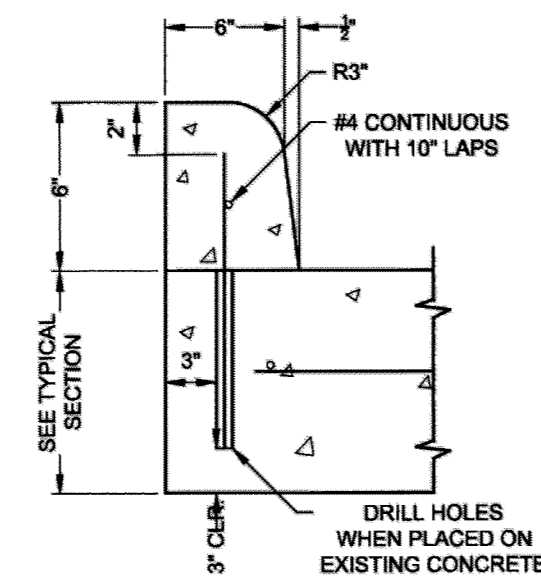
(A) PAVING EXPANSION JOINT INTERSECTION
 N.T.S.



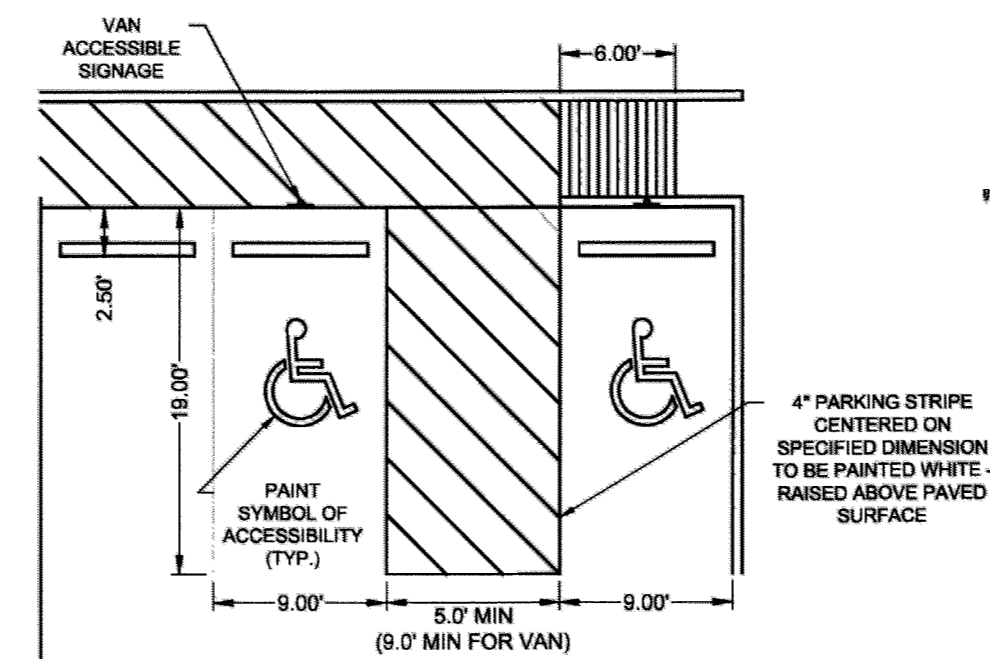
(A) TYPICAL 6" CONCRETE CURB REINFORCING
 N.T.S.



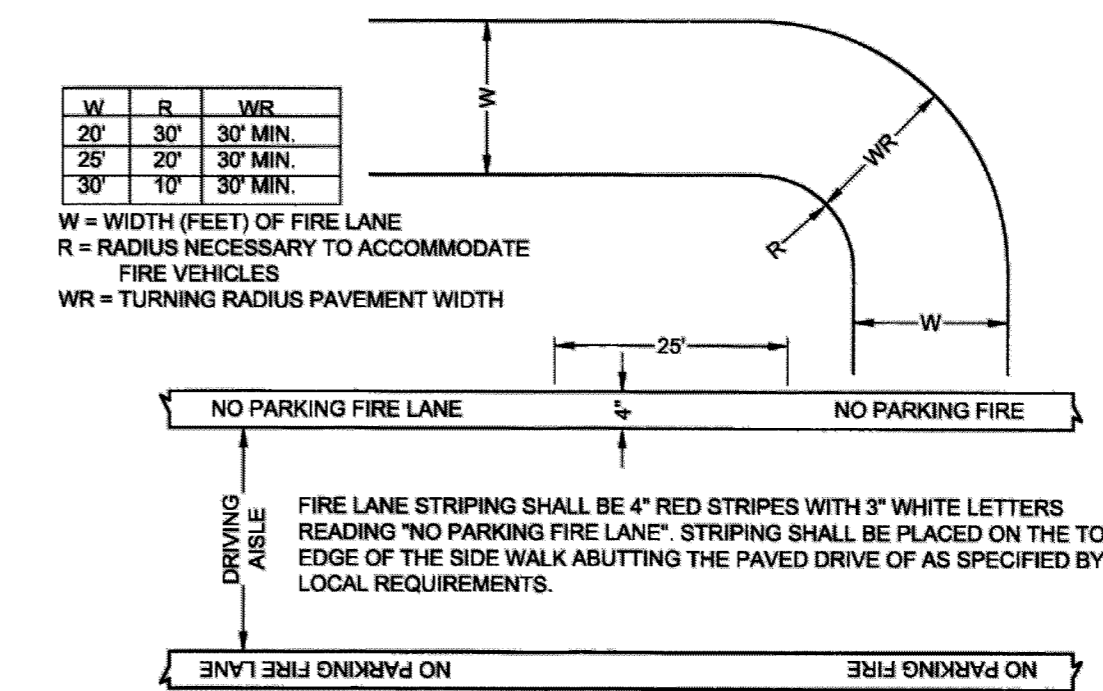
(B) WHEEL STOP DETAIL
 N.T.S.



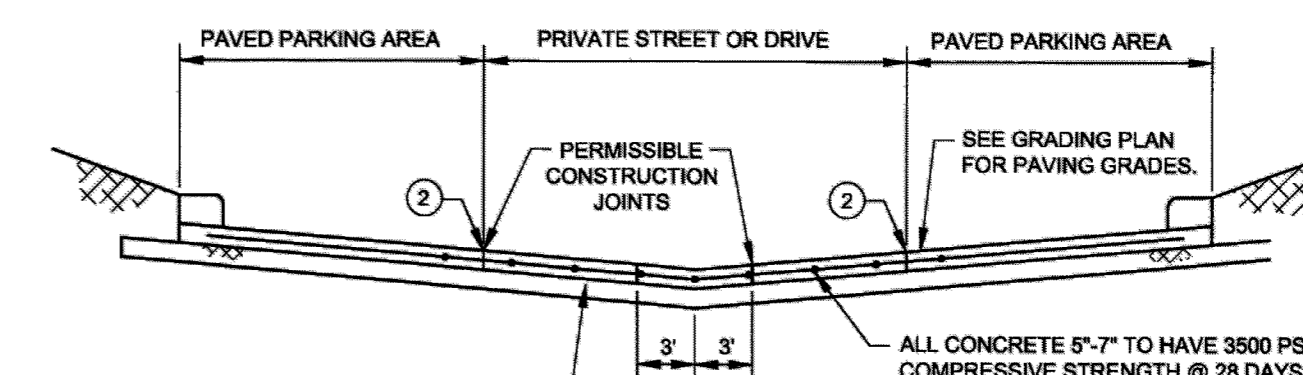
(B) TYPICAL 6" CONCRETE CURB REINFORCING
 N.T.S.



TYP - ACCESSIBLE PARKING SPACE
 N.T.S.



(E) FIRE STRIPING DETAIL

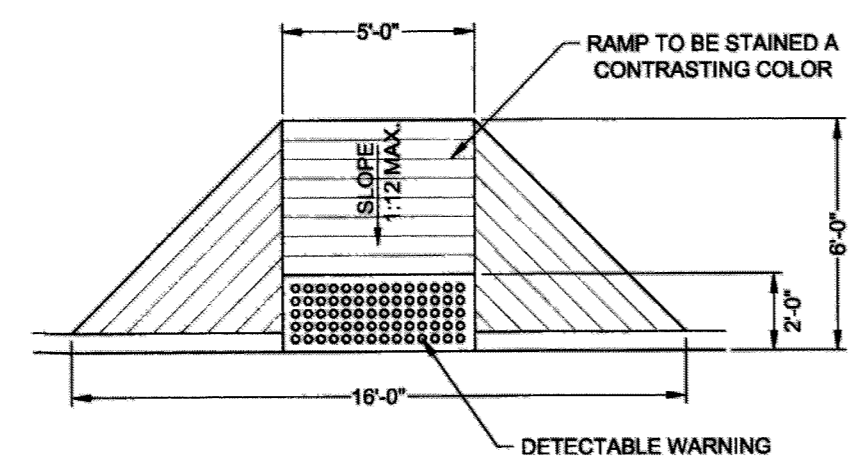
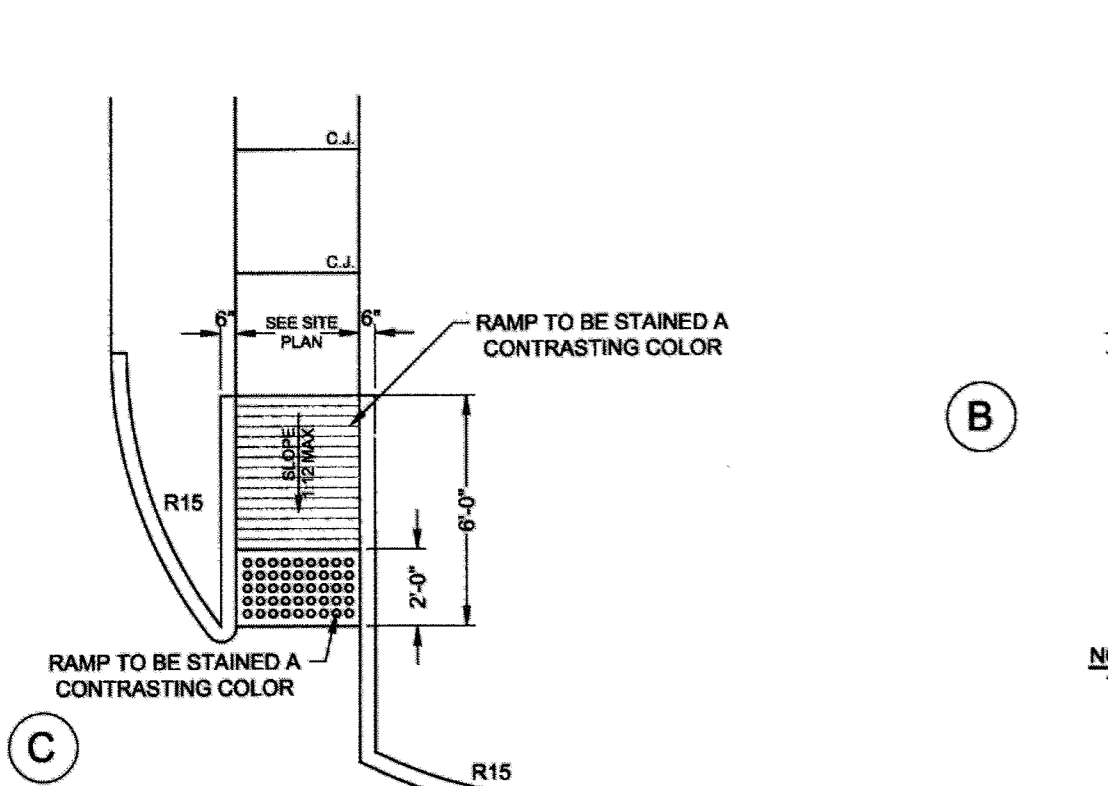
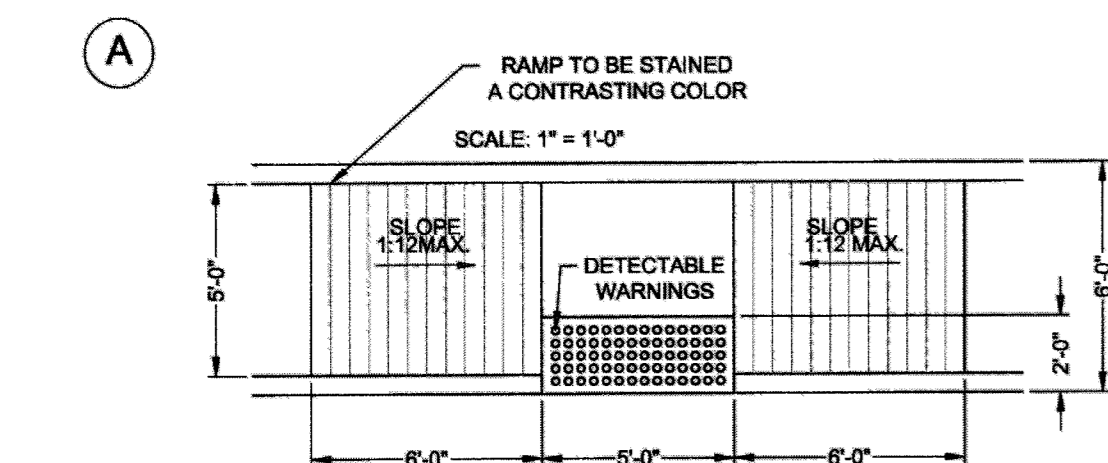


SUBGRADE PREPARATION IN ALL AREAS AFTER REACHING ROUGH GRADE SHOULD CONSIST OF SCARIFYING TO A DEPTH OF EIGHT INCHES, STABILIZATION IF NECESSARY, THEN RECOMPACTION TO A MINIMUM 95% OF STANDARD PROCTOR DENSITY AS DETERMINED BY THE ASTM D-698 PROCEDURE, AT OPTIMUM MOISTURE CONTENT (0 TO ±2%)
 IF WET CONDITIONS EXISTS AT TIME OF CONSTRUCTION, AND STABILIZATION IS REQUIRED, IT SHOULD BE PERFORMED USING LIME-FLY ASH STABILIZATION.

- 1. REINFORCING STEEL: 5" THICK CONCRETE PAVEMENT TO HAVE #3 BARS SPACED AT 24" C-C EACH WAY OR 12x12-W6/W6 WELDED WIRE FABRIC. 6" THICK CONCRETE PAVEMENT TO HAVE #3 BARS SPACED AT 18" C-C EACH WAY OR 12x12-W6/W6 WELDED WIRE FABRIC. 7" THICK CONCRETE PAVEMENT TO HAVE #3 BARS SPACED AT 18" C-C EACH WAY OR 12x12-W6.5/W6.5 WELDED WIRE FABRIC.
- 2. CONTROL JOINT SPACING: 30 TIMES PAVING THICKNESS UP TO MAXIMUM OF 15'
- 3. EXPANSION JOINT: MAXIMUM OF 60 FEET
- 4. DOWELS AT EXPANSION JOINTS: 1/2 THE SLAB THICKNESS, 18" IN LENGTH, SPACED AT 12" CENTERS AT EACH JOINT, AND BE EMBEDDED AT LEAST 9"

TYPICAL CONCRETE PAVEMENT SECTION
 N.T.S.

SEE GEOTECHNICAL ENGINEERING REPORT BY GORRONDONA & ASSOCIATES, INC. (PROJECT No. 13-00457, DATED MARCH, 2014)



NOTE:
 1. DETECTABLE WARNINGS SHALL CONSIST OF RAISED TRUNCATED DOMES WITH A DIAMETER OF NOMINAL 0.9", A HEIGHT OF NOMINAL 0.2" AND A CENTER TO CENTER SPACING OF NOMINAL 2.35" AND SHALL CONTRAST VISUALLY WITH ADJOINING SURFACES, EITHER LIGHT-ON-DARK OR DARK-ON-LIGHT. THE MATERIAL USED TO PROVIDE CONTRAST SHALL BE AN INTEGRAL PART OF THE WALKING SURFACE. DETECTABLE WARNINGS USED ON INTERIOR SURFACES SHALL DIFFER FROM ADJOINING WALKING SURFACES IN RESILIENCY OR SOUND-ON-CANE CONTACT.
 2. THE SURFACE OF A WHEEL CHAIR RAMP IS BE GROVED LATERALLY WITH 1/2" WIDE BY 1/4" DEEP GROOVES, SPACED 2-1/4" C-C, AND ROUGHENED NO LESS THAN A BROOM FINISH TO PREVENT SLIPPING, AND TO DIFFERENTIATE TEXTURE FROM THAT OF STANDARD SIDEWALK.

CONCRETE PEDESTRIAN RAMP
 N.T.S.

(D) TYP - ACCESSIBLE PARKING SIGNAGE
 N.T.S.

THESE SIGNATURES ARE VOID IF CONSTRUCTION HAS NOT COMMENCED IN (1) YEARS FROM DATE OF APPROVAL.
 APPROVED: *[Signature]*
 DEVELOPMENT COORDINATOR
 DATE: 2/1/18

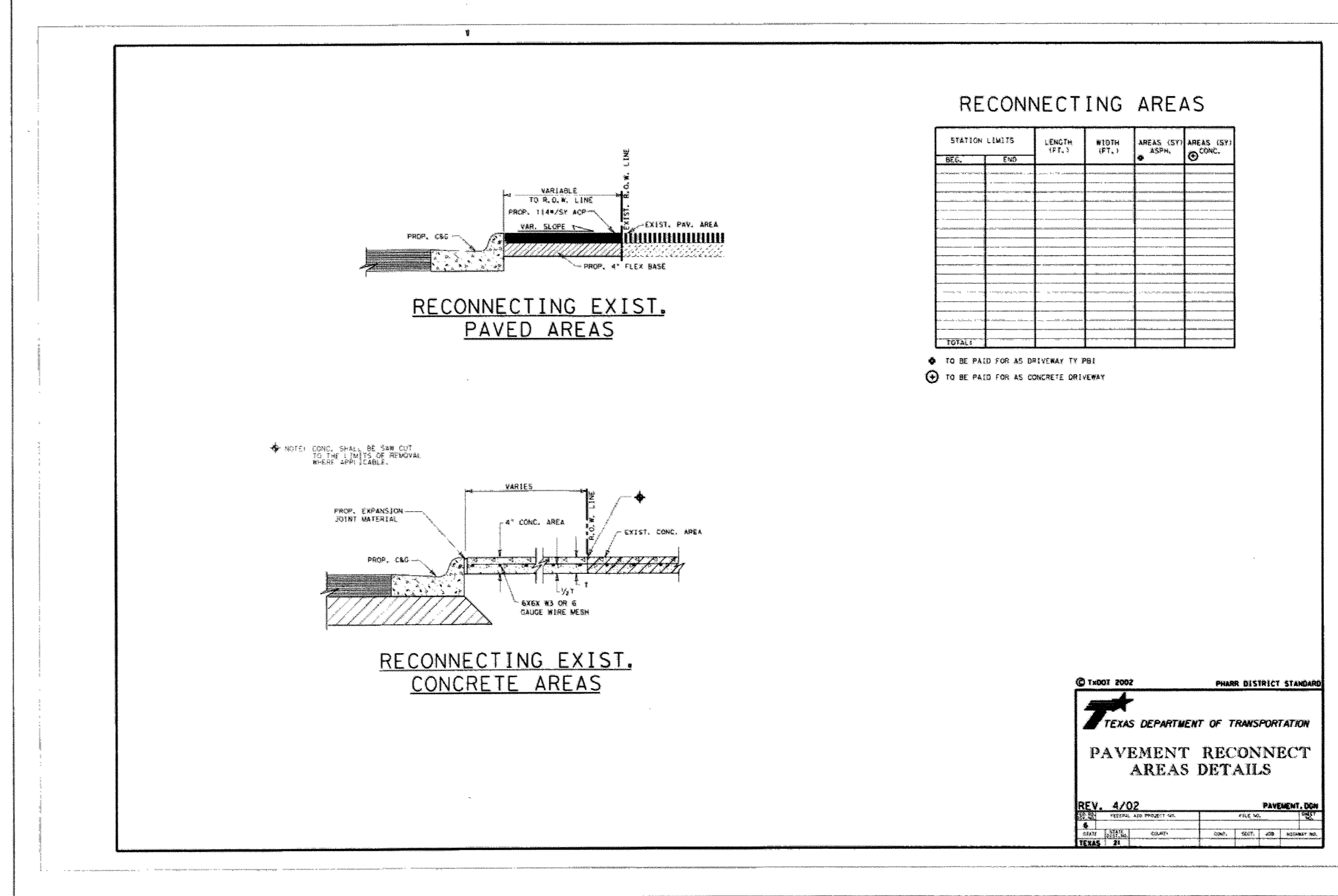
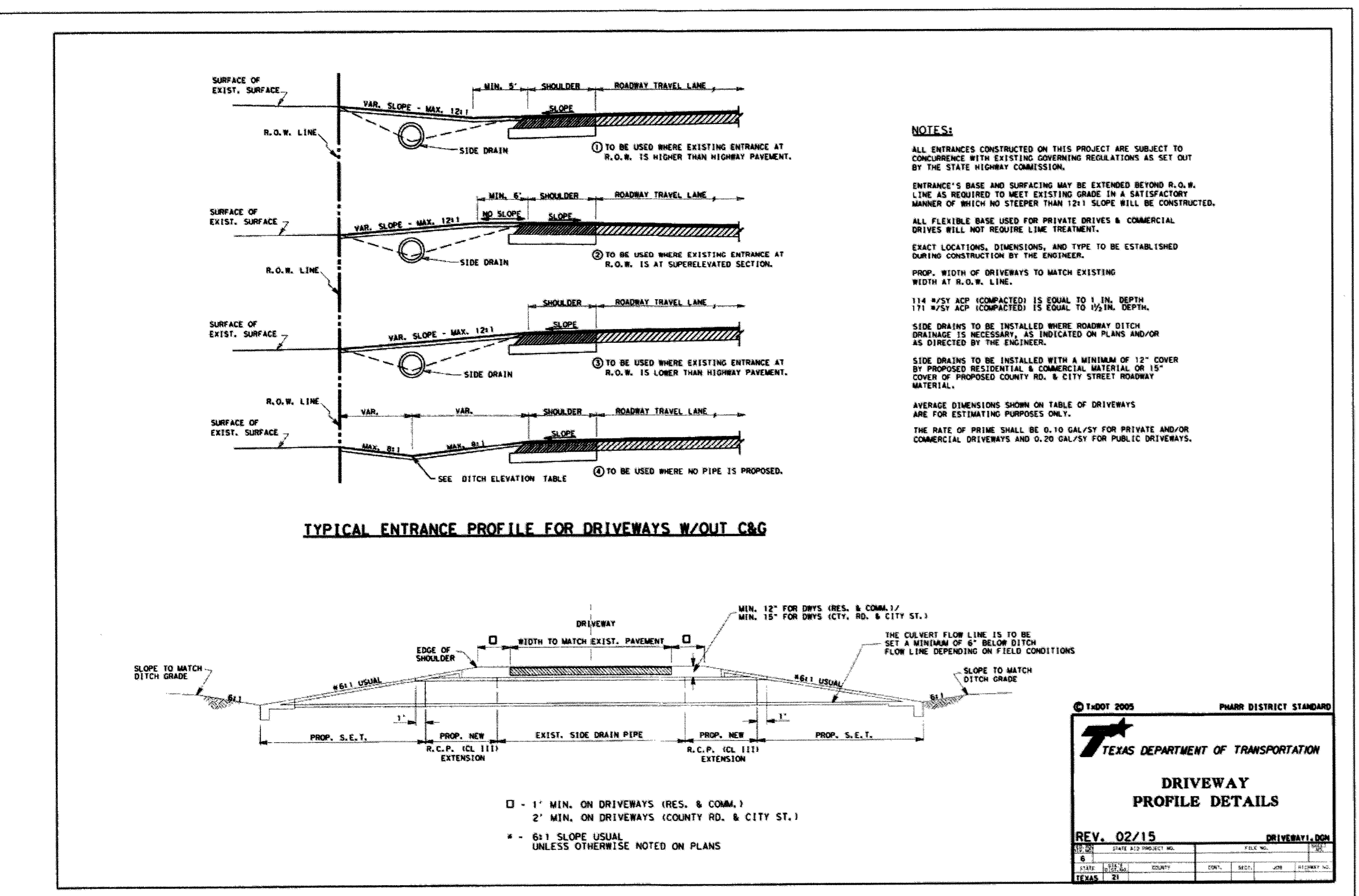
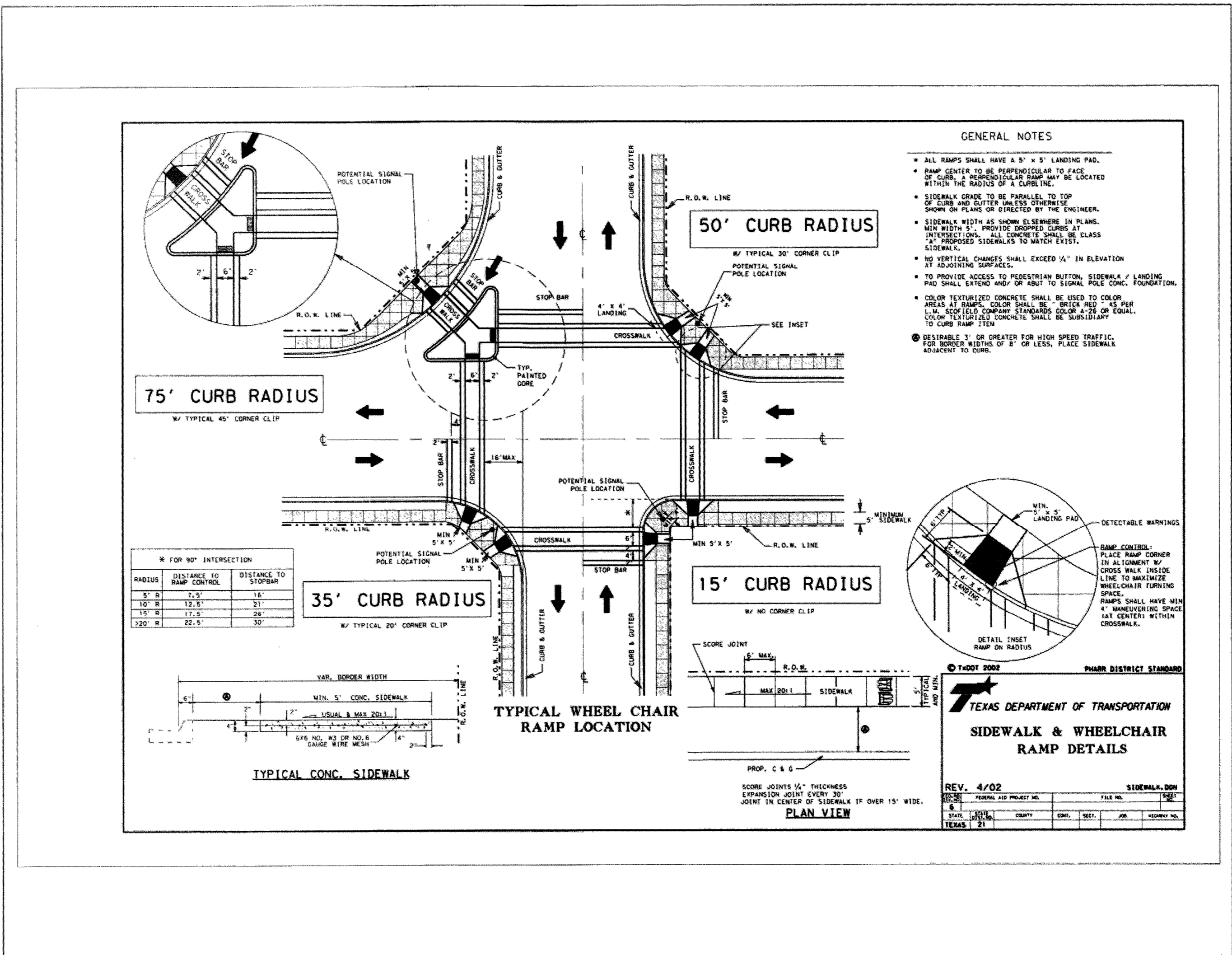
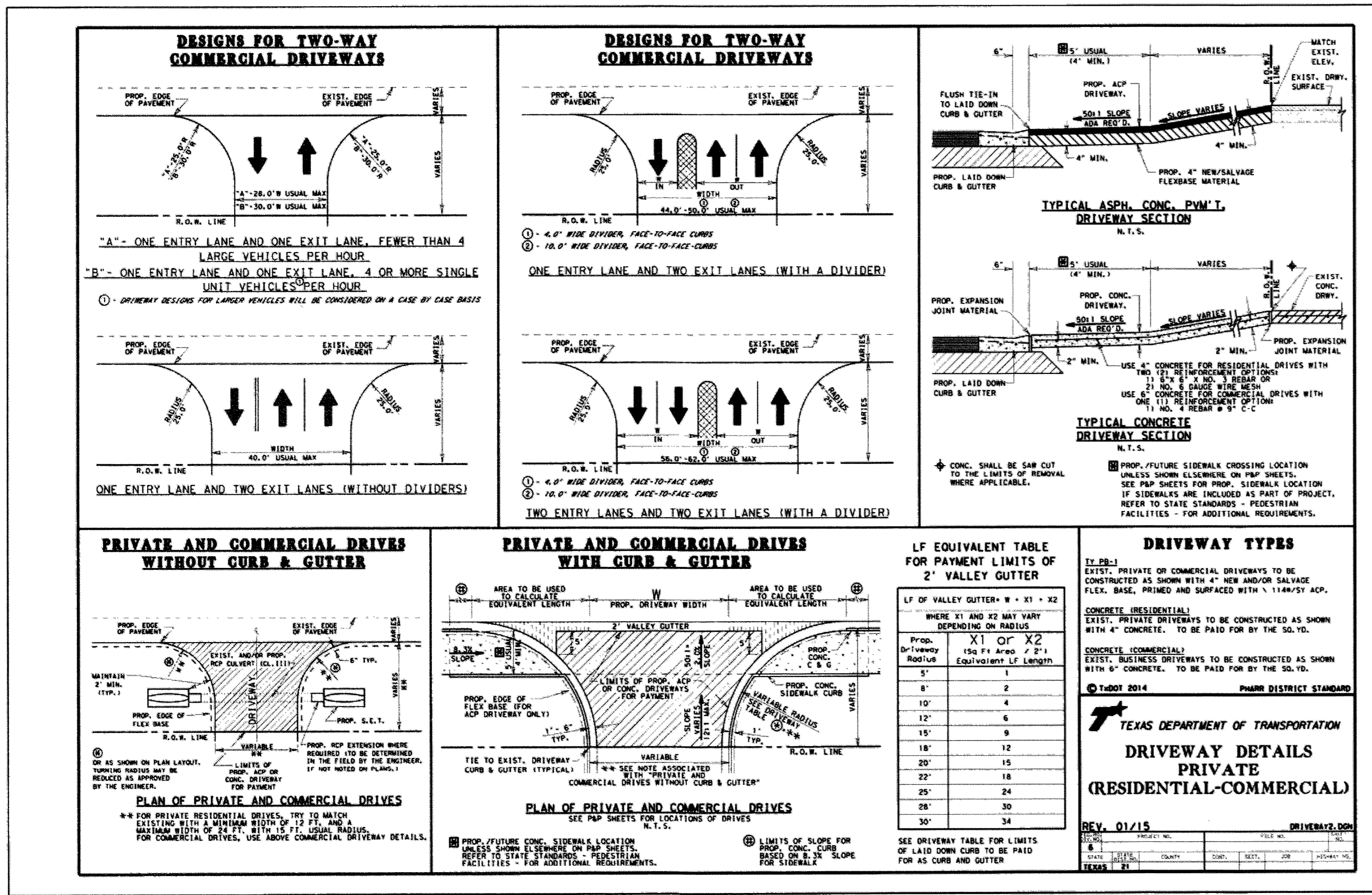
REV	DESCRIPTION	DATE
	ISSUE FOR PERMIT	01/23/2018

[Signature]
 TYLER RAY
 114488
 LICENSED PROFESSIONAL ENGINEER
 1/23/18

W|G|A
 WARD, GETZ & ASSOCIATES, LLP
 CONSULTING ENGINEERS
 TEXAS REGISTERED ENGINEERING FIRM P-9756
 2500 Tanglewilde, Suite 120
 Houston, Texas 77065
 713.789.1900

SOLEA CINCO RANCH
PAVING DETAILS

SCALE	DESIGN	DRAWN
N.T.S.	TD/TR	TD



THESE SIGNATURES ARE VOID IF CONSTRUCTION HAS NOT COMMENCED IN (1) YEARS FROM DATE OF APPROVAL.

APPROVED: *[Signature]*
 DEVELOPMENT COORDINATOR

DATE: 2/1/18

REV	DESCRIPTION	DATE
1	ISSUE FOR PERMIT	01/23/2018

TYLER RAY
 114499
 LICENSED PROFESSIONAL ENGINEER
 1/23/18

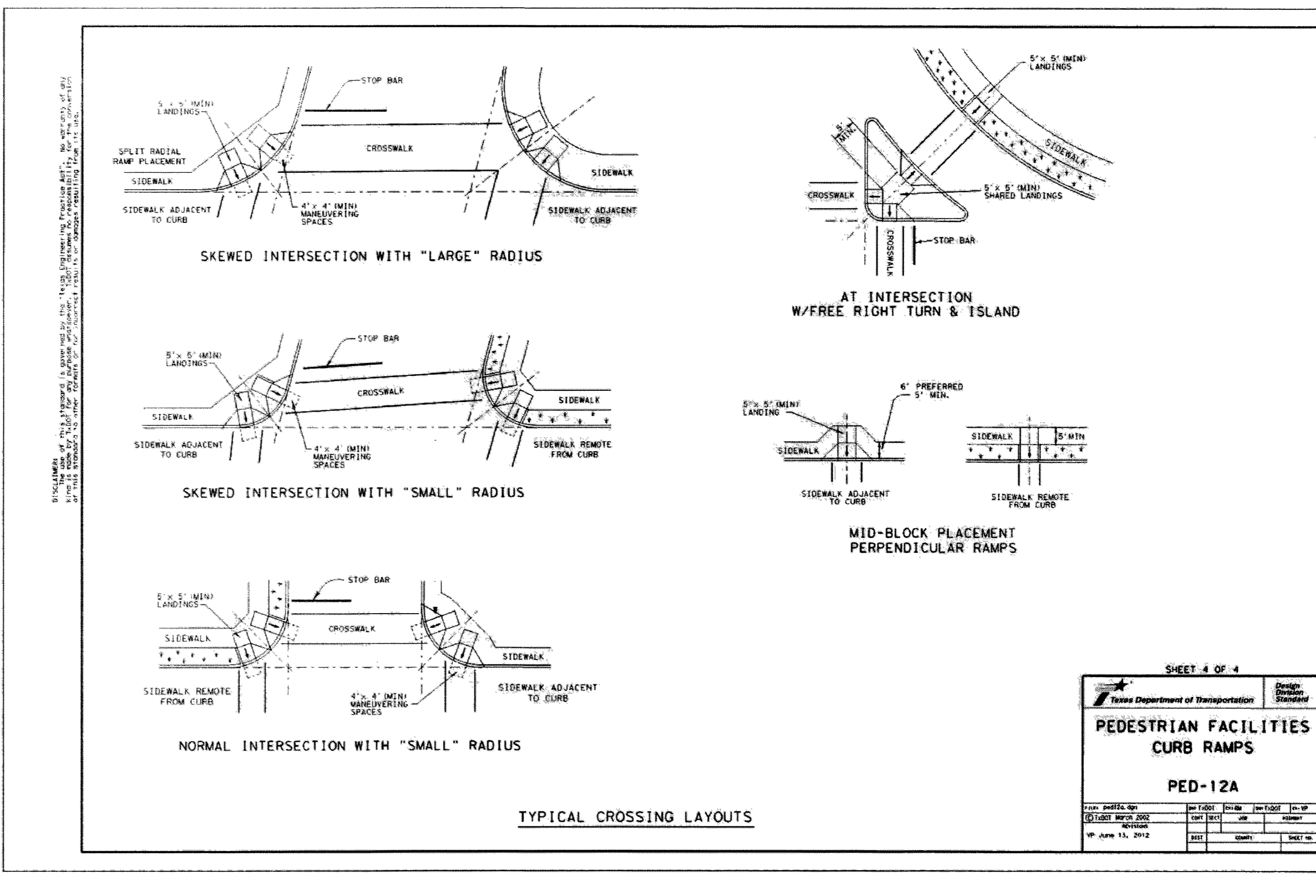
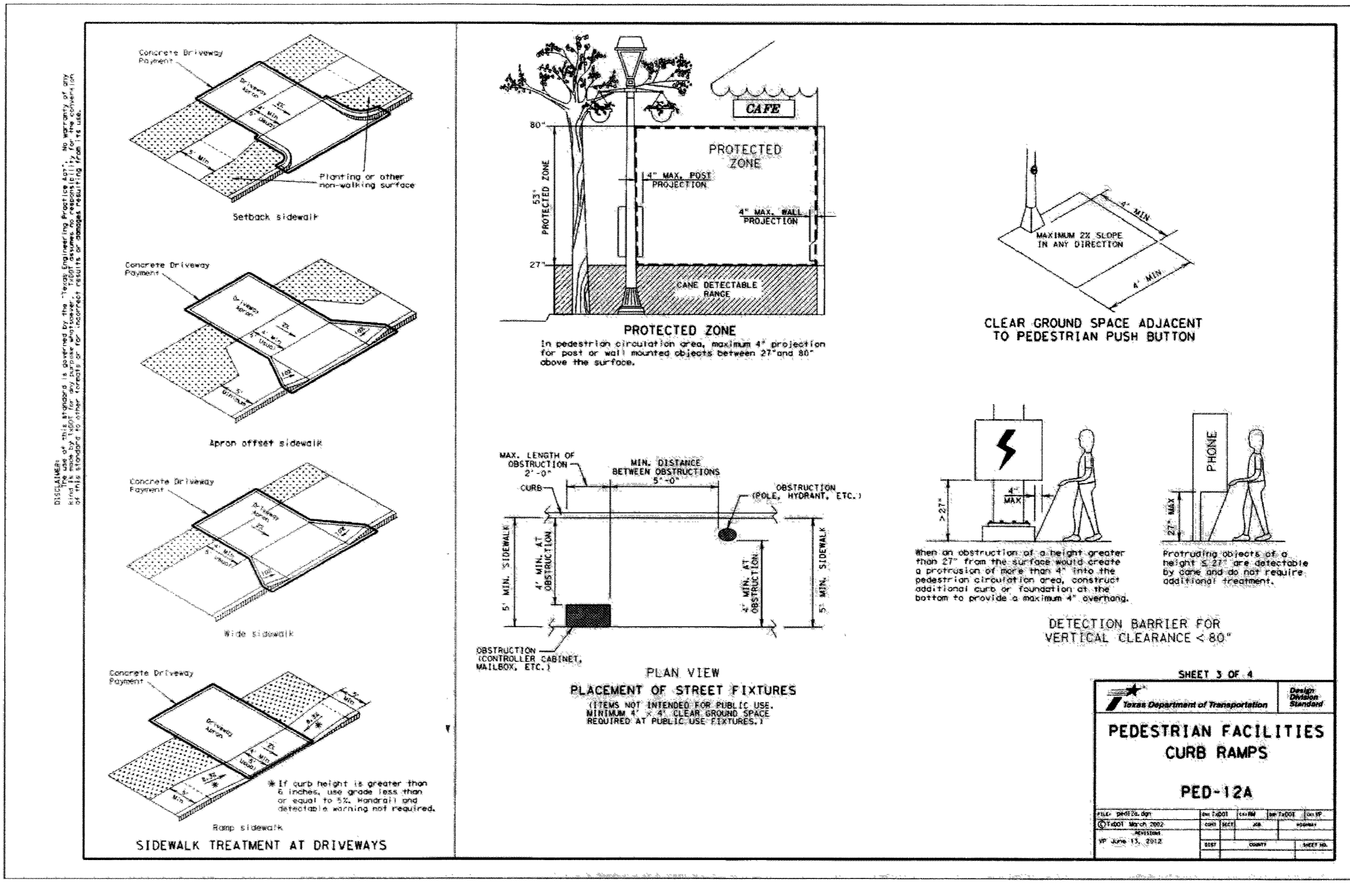
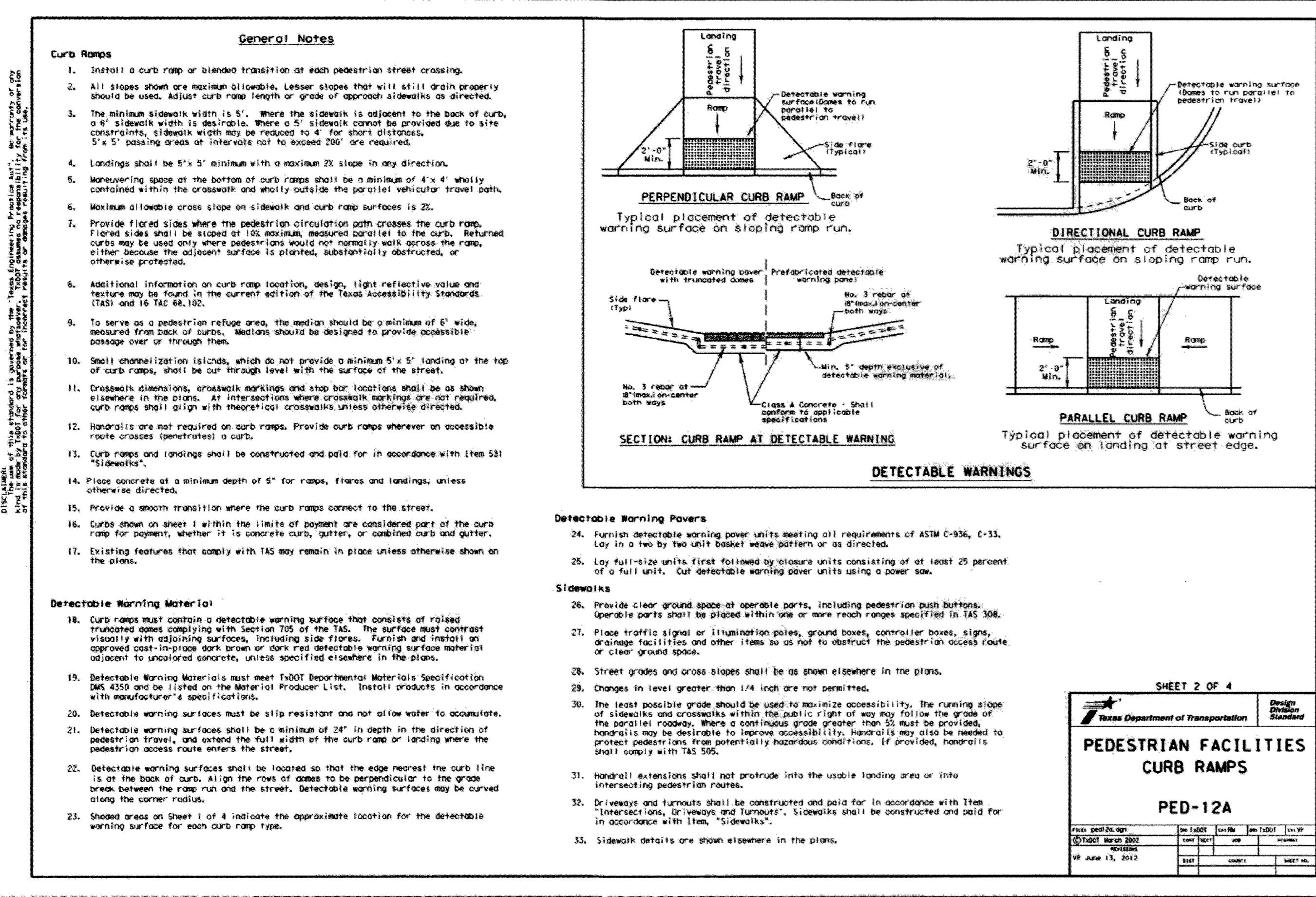
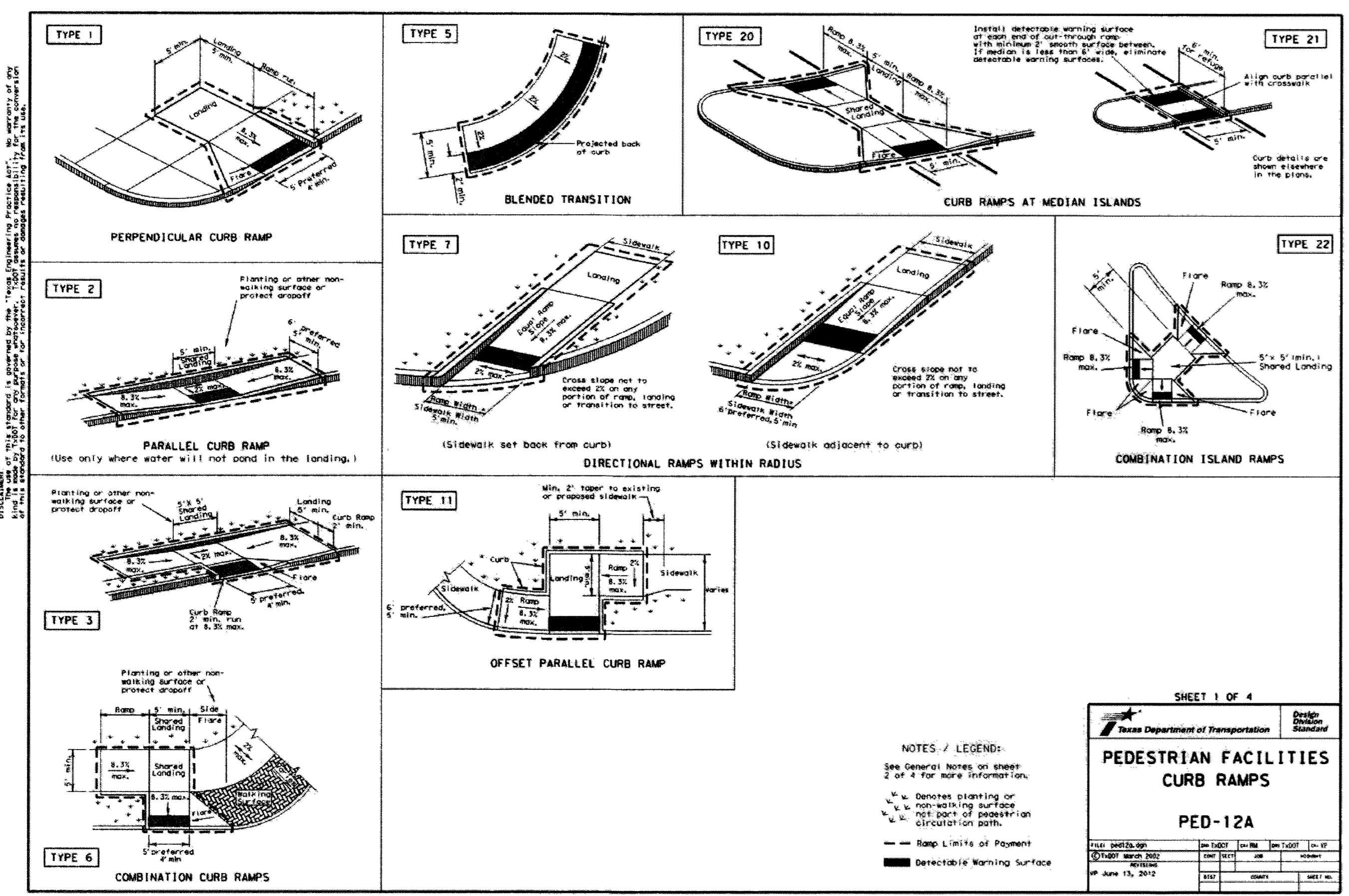
WGA
 WARD, GETZ & ASSOCIATES, LLP
 CONSULTING ENGINEERS
 TEXAS REGISTERED ENGINEERING FIRM F-9756
 2500 Tonguehole, Suite 120
 Houston, Texas 77063
 713.789.1900

SOLEA CINCO RANCH

PAVING DETAILS

SCALE	DESIGN	DRAWN
N.T.S.	TD/TR	TD

C11.2



THESE SIGNATURES ARE VOID IF CONSTRUCTION HAS NOT COMMENCED IN (1) YEARS FROM DATE OF APPROVAL.

APPROVED: *[Signature]*
 DEVELOPMENT COORDINATOR
 DATE: 2/1/18

REV	DESCRIPTION	DATE
1	ISSUE FOR PERMIT	01/23/2018

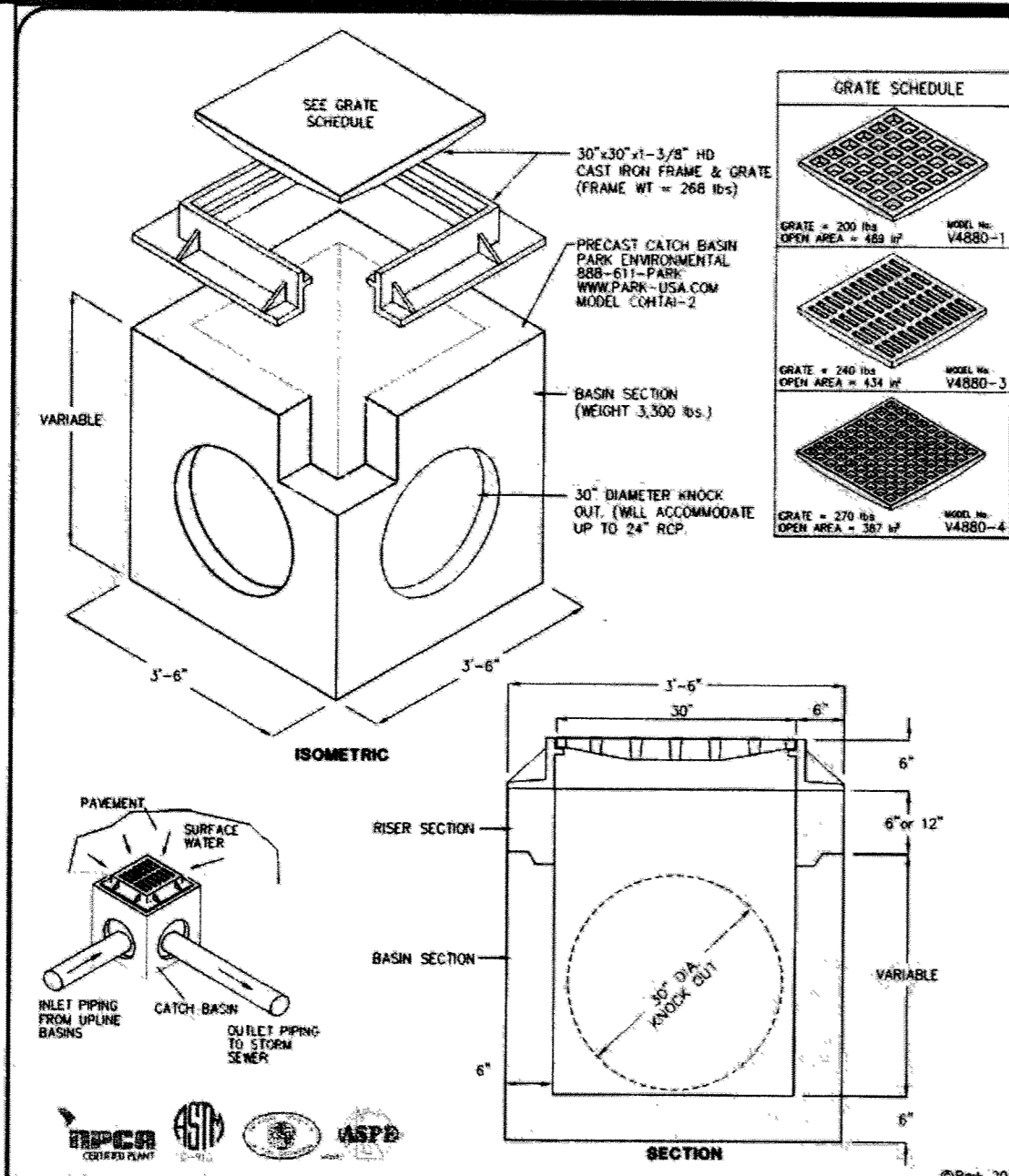
W|G|A
 WARD, GETZ & ASSOCIATES, LLP
 CONSULTING ENGINEERS
 TEXAS REGISTERED ENGINEERING FIRM P-9756
 2300 Tanglewilde, Suite 120
 Houston, Texas 77063
 713.790.1000

SOLEA CINCO RANCH
PAVING DETAILS

SCALE	DESIGN	DRAWN
N.T.S.	TD/TR	TD

C11.3

- NOTES:**
1. THE DETAIL MAY BE USED ONLY FOR THE TYPE OF MANHOLE AND REINFORCING CONSTRUCTION AND MATERIAL SPECIFICATIONS SHOWN.
 2. MIN. TRENCH WIDTH SHALL BE PER COH STANDARD SPECIFICATION FOR THE MANHOLE PIPE SIZE.
 3. MIN. TRENCH WIDTH SHALL BE PER COH STANDARD SPECIFICATION FOR THE MANHOLE PIPE SIZE.
 4. REINFORCING CONCRETE SHALL BE PER COH STANDARD SPECIFICATION FOR THE MANHOLE PIPE SIZE.
 5. ALL DIMENSIONS ARE IN FEET AND INCHES UNLESS OTHERWISE NOTED.



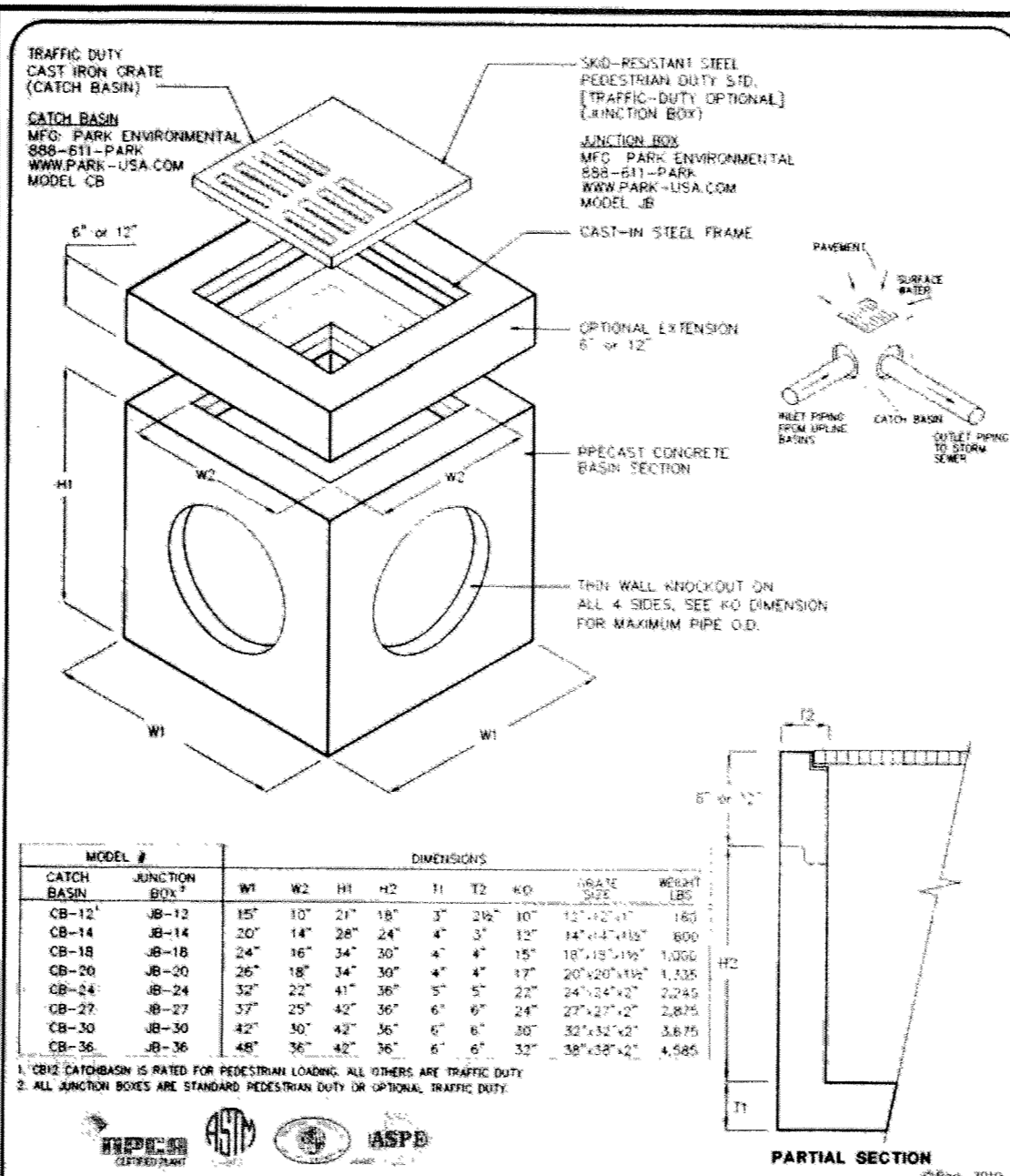
SPECIFICATIONS

CONCRETE: Class II concrete with design strength of 4500 PSI at 28 days. Unit is of modular construction of floor and first edge of wall with sectioned riser to required depth. Note for 14" dia. Lifting.

REINFORCEMENT: Grade 60 reinforced steel rebar to conform to ASTM A615 or required centers or equal.

C.I. CASTINGS: Cast iron frames and grates are manufactured of gray cast iron conforming to ASTM A818-76 Class 30.

PARK 888-611-PARK
"Expect the Best!"
TYPE-A GRATE INLET
MODEL CONTAL - SIZE 30"
SCALE: NONE
DATE: 2012
REV: COHTAI-2



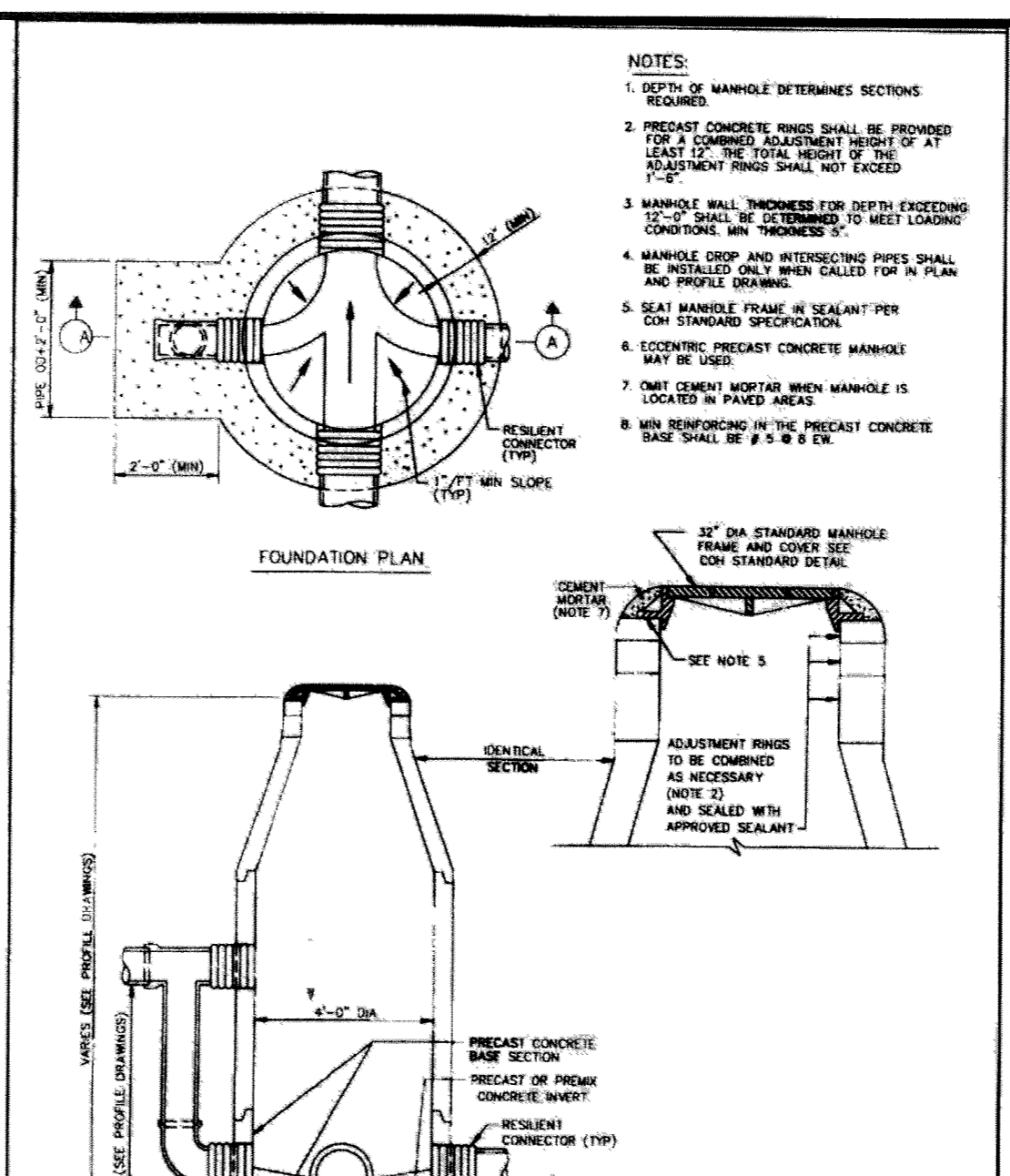
SPECIFICATIONS

CONCRETE: Class II concrete with design strength of 4500 PSI at 28 days. Unit is of modular construction of floor and first edge of wall with sectioned riser to required depth.

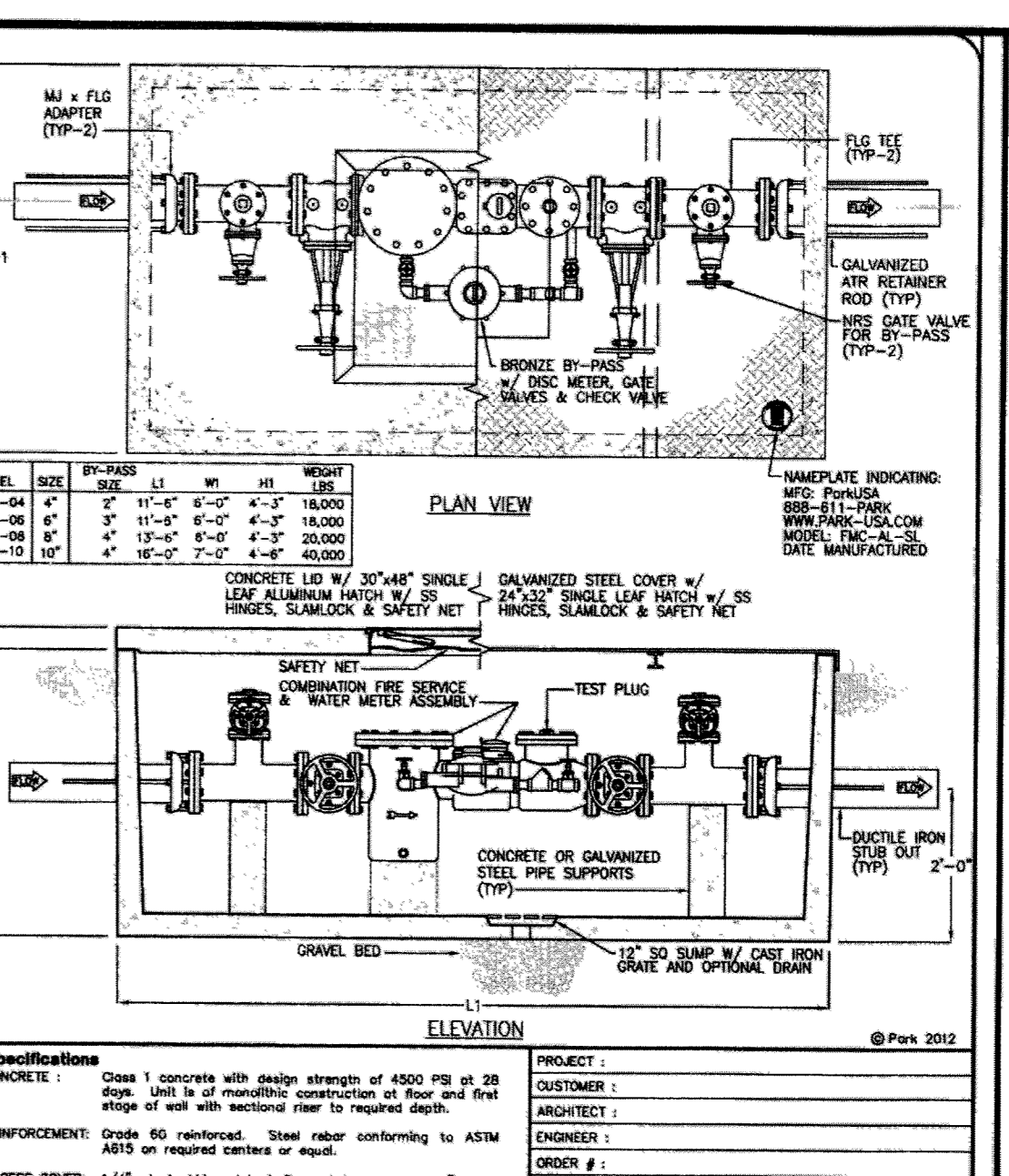
REINFORCEMENT: Grade 60 reinforced steel rebar conforming to ASTM A615 on required centers or equal.

C.I. CASTINGS: Cast iron frames and grates are manufactured of gray cast iron conforming to ASTM A818-76 Class 30.

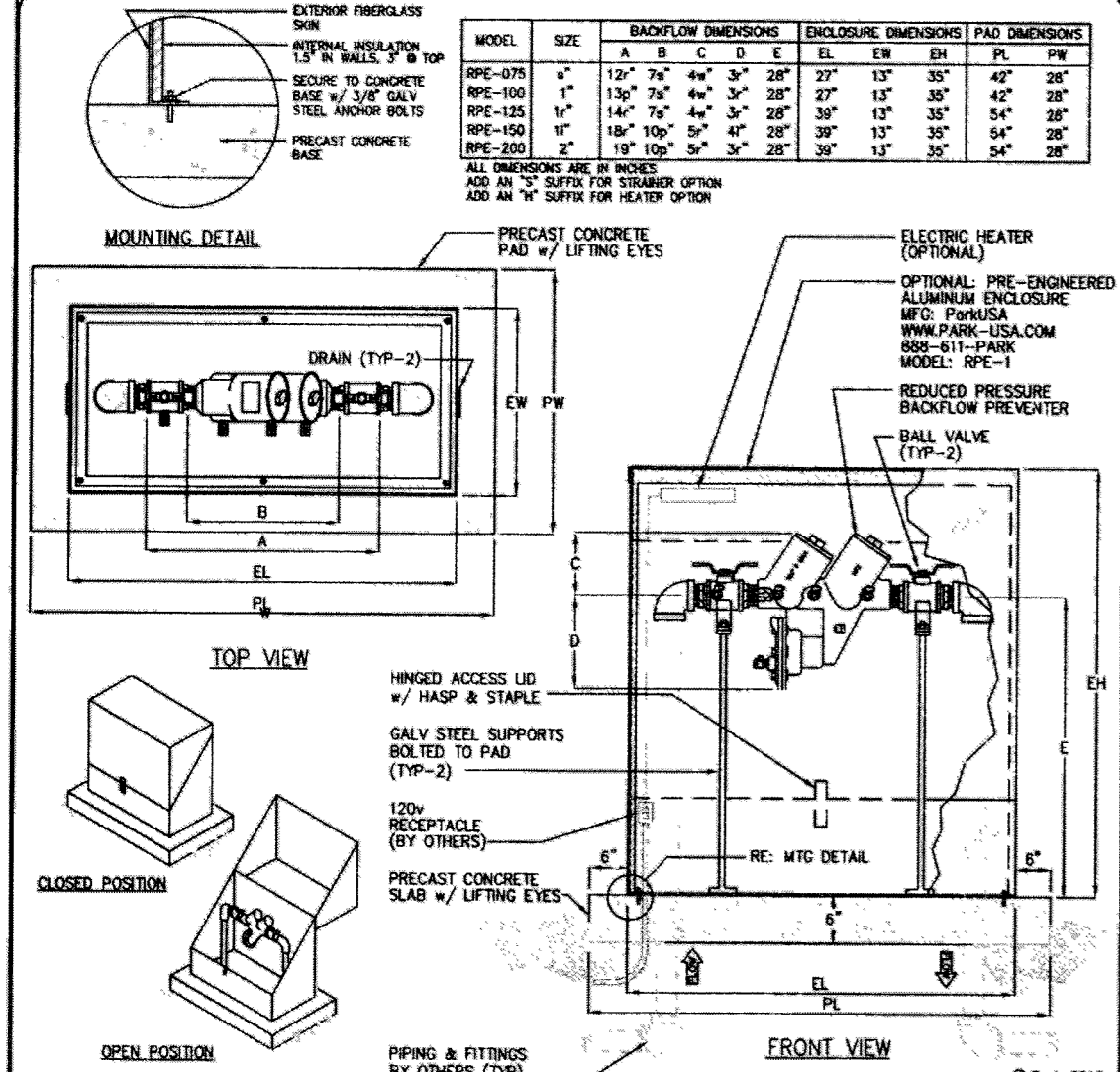
PARK 888-611-PARK
"Expect the Best!"
CATCH BASIN MODEL CB - 12" THRU 36"
JUNCTION BOX MODEL JB - 12" THRU 36"
SCALE: NONE
DATE: 2012
REV: CBUSJ6



CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
SANITARY SEWER
CORROSION RESISTANT MANHOLE
FOR FORCE MAIN DISCHARGE
MODEL RPPA-1
SCALE: NONE
DATE: 2012
REV: Q2082-02



CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
SANITARY SEWER
CORROSION RESISTANT MANHOLE
FOR FORCE MAIN DISCHARGE
MODEL RPPA-1
SCALE: NONE
DATE: 2012
REV: Q2082-02

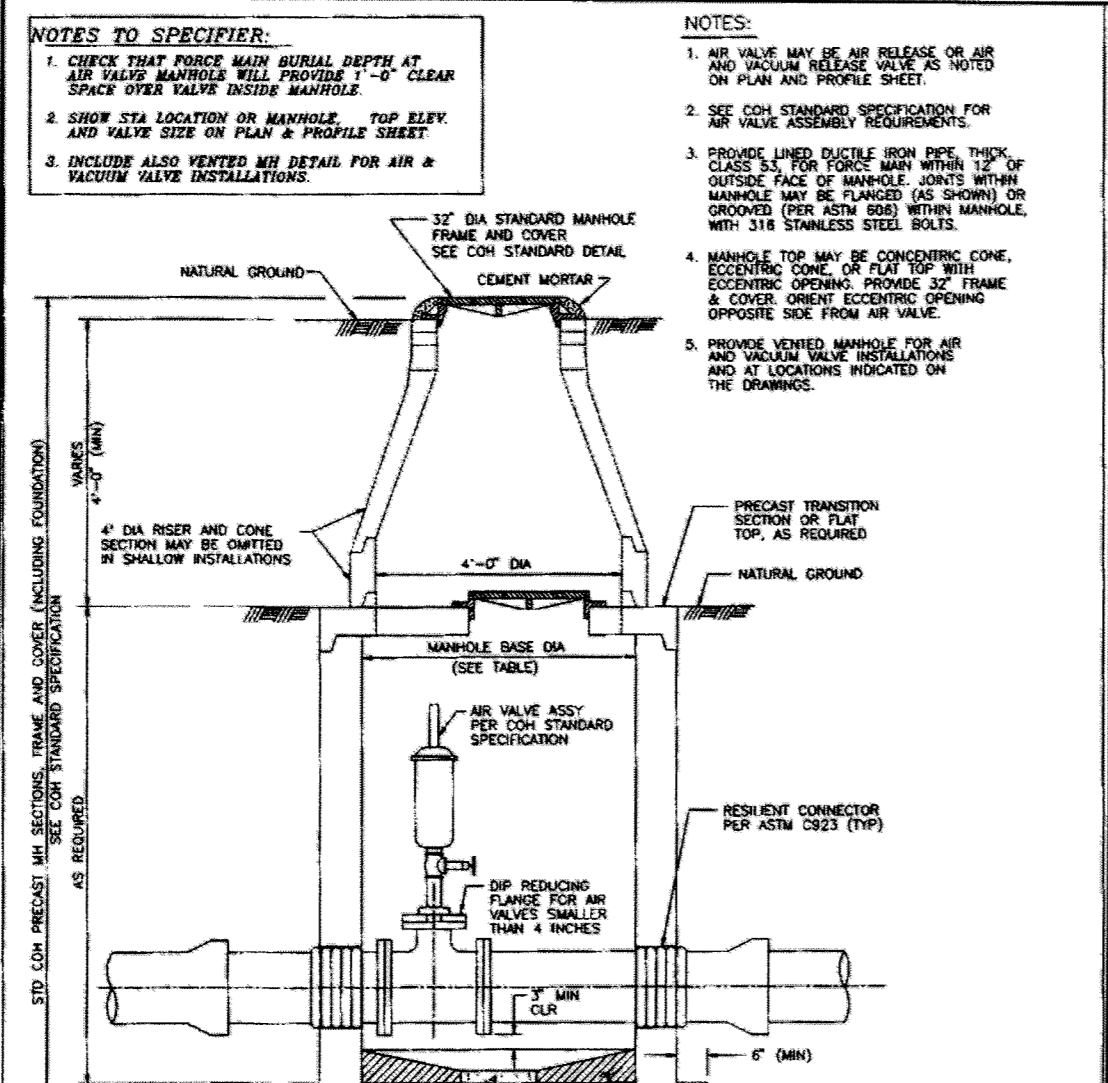


SPECIFICATIONS

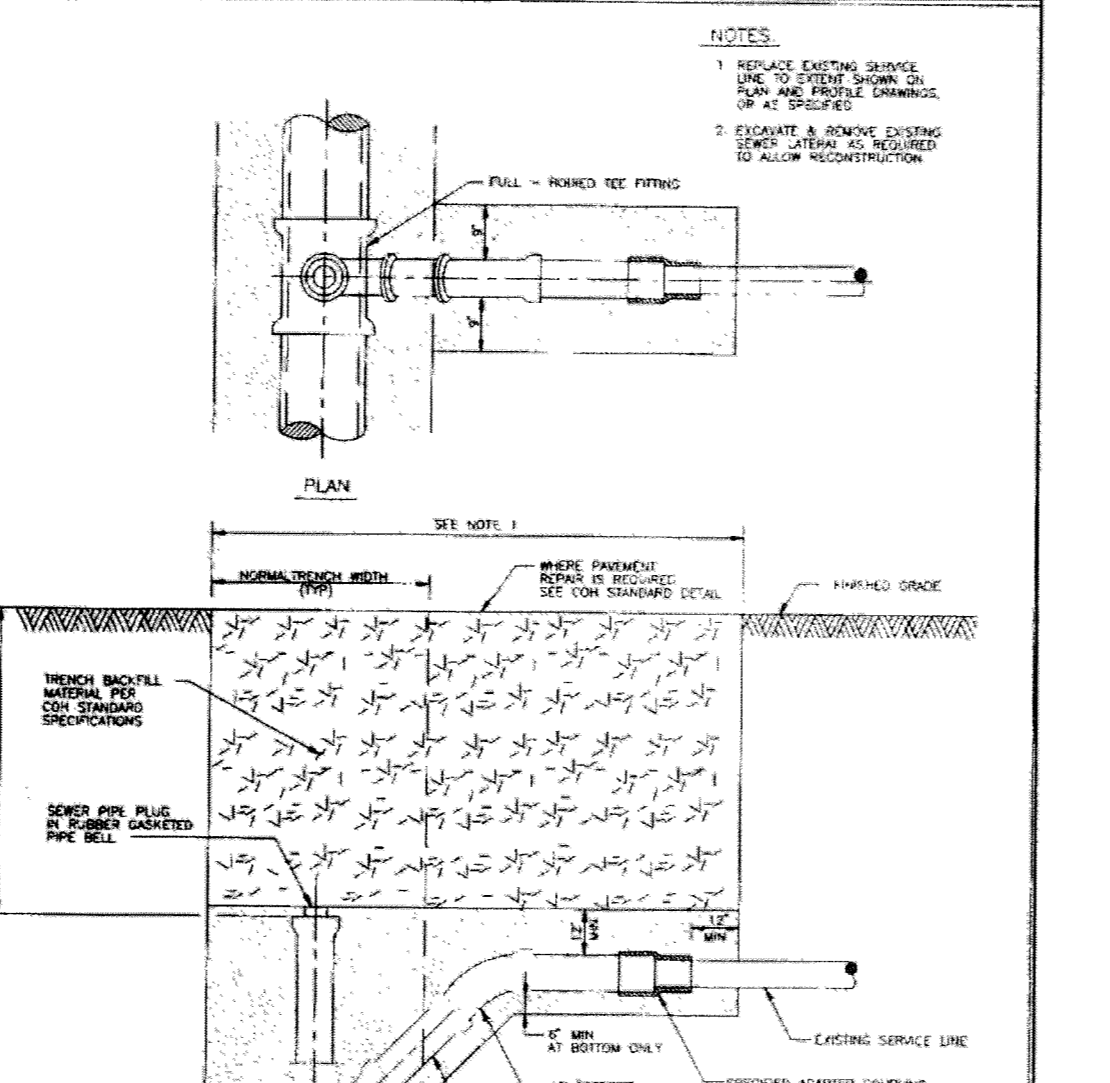
CONCRETE: Class II concrete with design strength of 4500 PSI at 28 days.

REINFORCEMENT: Grade 60 reinforced steel rebar conforming to ASTM A615 on required centers or equal.

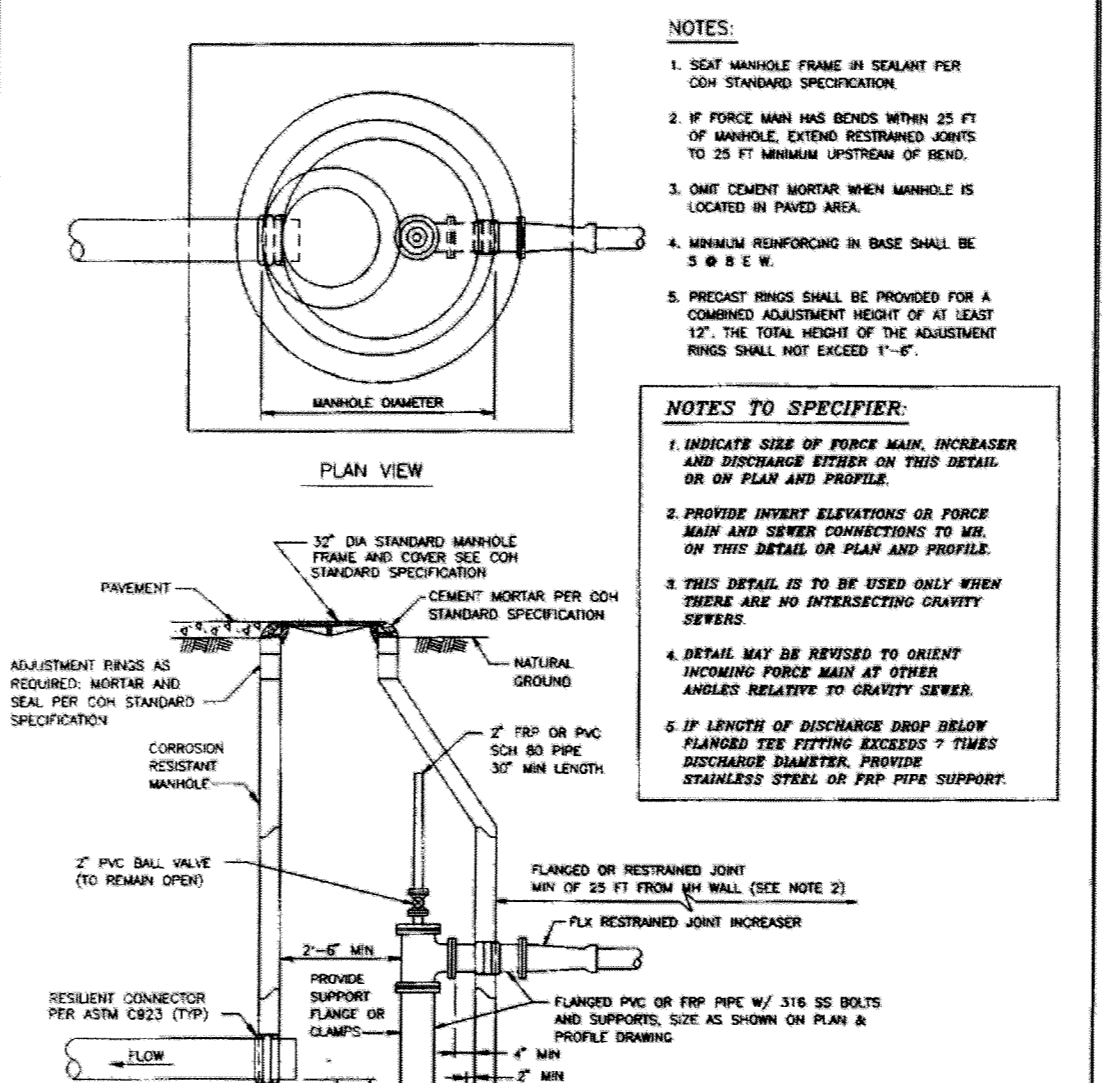
PARK 888-611-PARK
"Expect the Best!"
REDUCED PRESSURE BACKFLOW PREVENTER W/ INSULATED ENCLOSURE
MODEL RPE - 4" THRU 10"
SCALE: NONE
DATE: 2012
REV: RPE-1



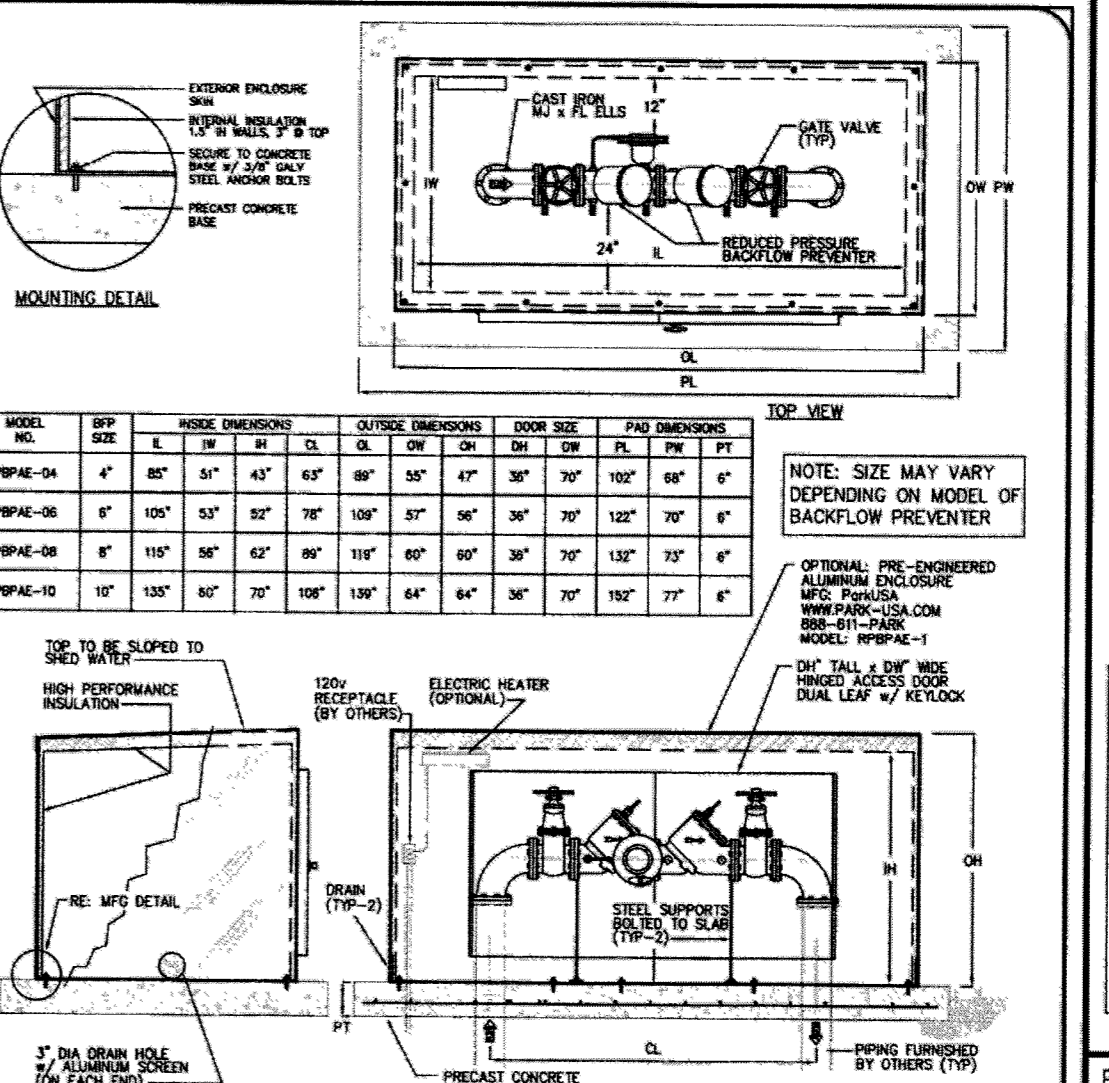
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
SANITARY SEWER
CORROSION RESISTANT MANHOLE
FOR FORCE MAIN DISCHARGE
MODEL RPPA-1
SCALE: NONE
DATE: 2012
REV: Q2082-09



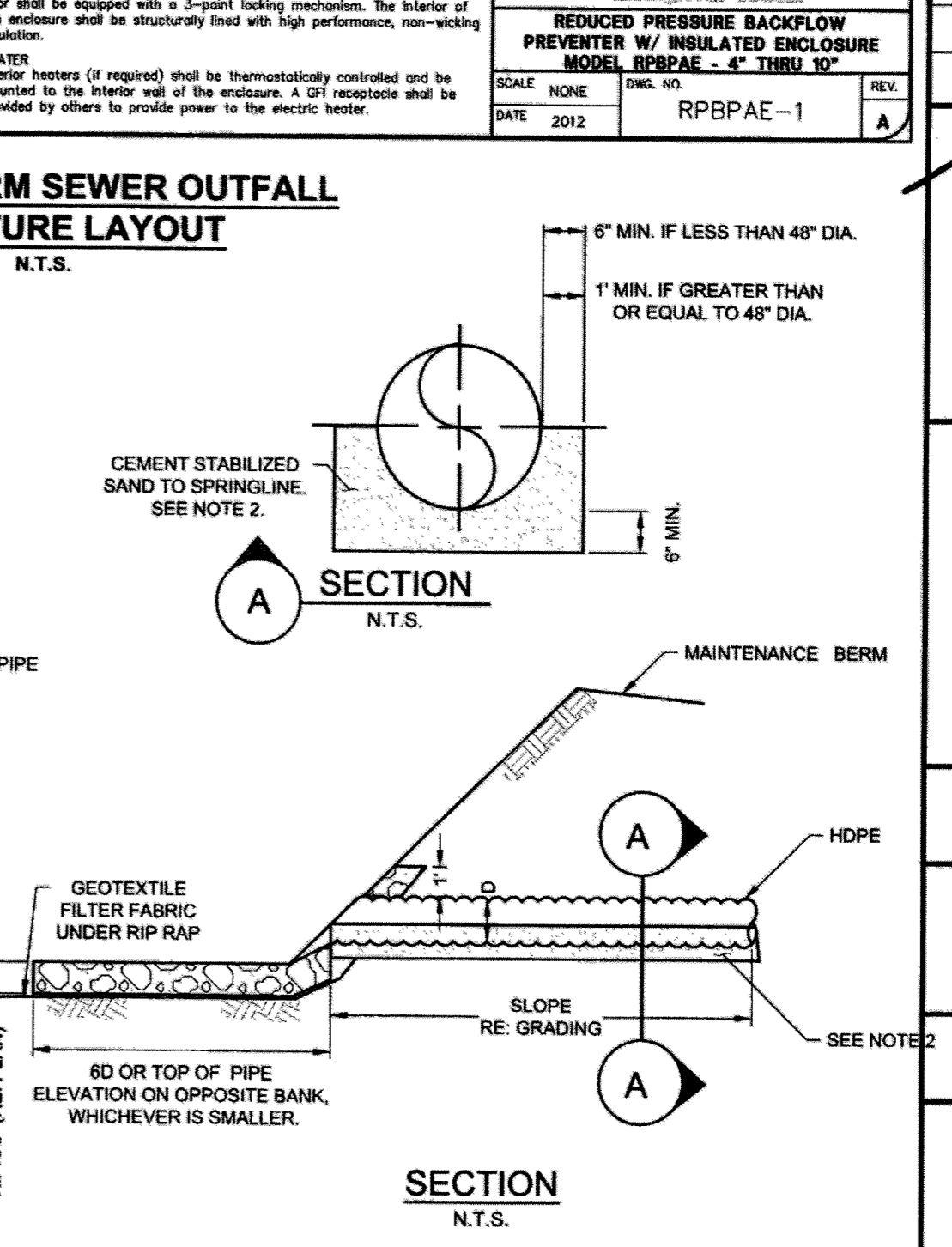
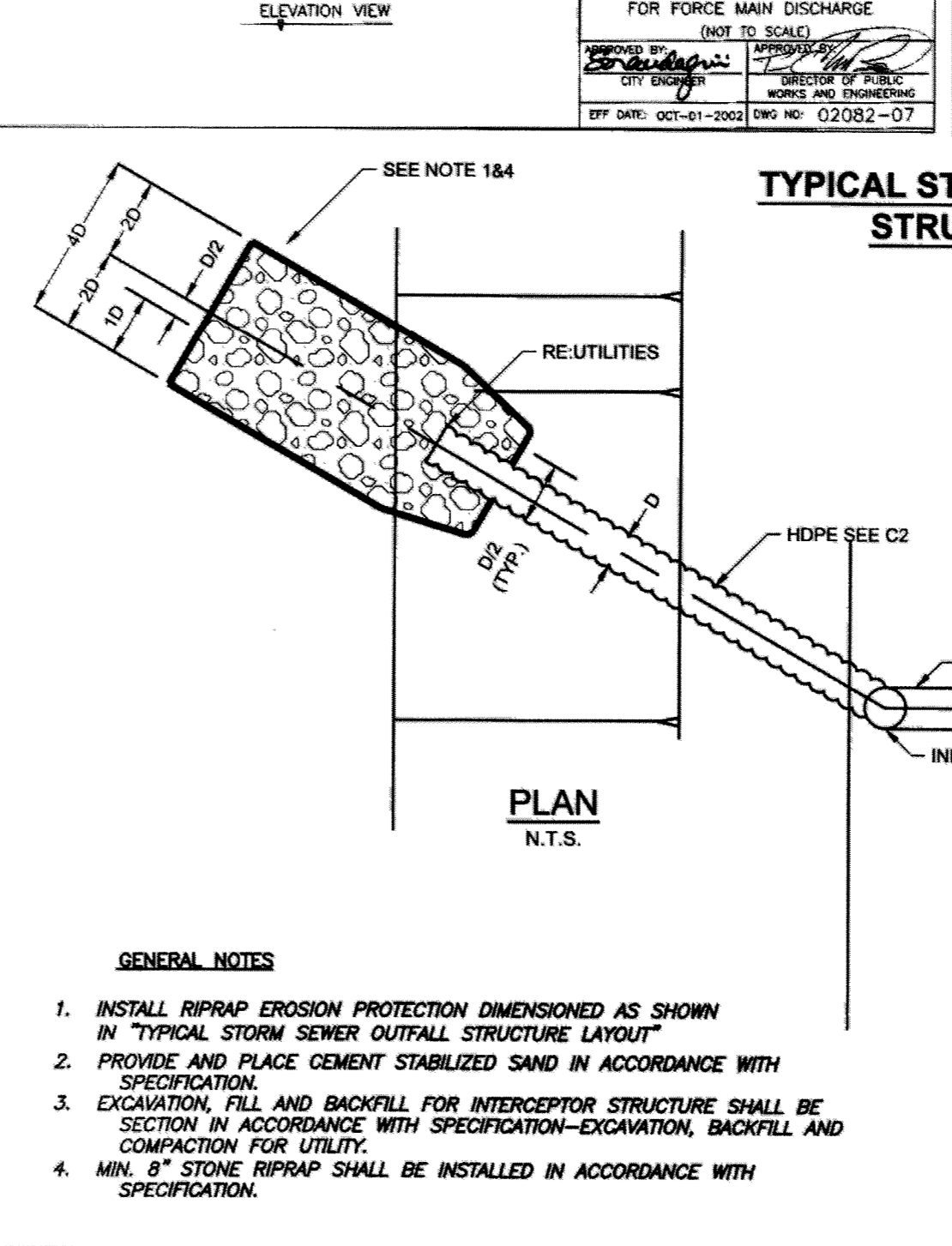
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
SANITARY SEWER
CORROSION RESISTANT MANHOLE
FOR FORCE MAIN DISCHARGE
MODEL RPPA-1
SCALE: NONE
DATE: 2012
REV: Q2082-07



CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
SANITARY SEWER
CORROSION RESISTANT MANHOLE
FOR FORCE MAIN DISCHARGE
MODEL RPPA-1
SCALE: NONE
DATE: 2012
REV: Q2082-07



CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
SANITARY SEWER
CORROSION RESISTANT MANHOLE
FOR FORCE MAIN DISCHARGE
MODEL RPPA-1
SCALE: NONE
DATE: 2012
REV: RPPA-1



THESE SIGNATURES ARE VOID IF CONSTRUCTION HAS NOT COMMENCED IN (1) YEARS FROM DATE OF APPROVAL.

APPROVED: *[Signature]*
DEVELOPMENT COORDINATOR
DATE: 2/1/18

REV	DESCRIPTION	DATE
1	ISSUE FOR PERMIT	01/23/2018

TYLER RAY
114489
LICENSED PROFESSIONAL ENGINEER
1/23/18

WGA
WARD, GETZ & ASSOCIATES, LLP
CONSULTING ENGINEERS
TEXAS REGISTERED ENGINEERING FIRM F-9756
2500 Tanglewilde, Suite 120
Houston, Texas 77063
713.789.1900

SOLEA RANCH

UTILITY DETAILS

SCALE	DESIGN	DRAWN
N.T.S.	TD/TR	TD

C12.0

GENERAL NOTES:

- CONCRETE:
 - CONCRETE SHALL BE PROPORTIONED IN ACCORDANCE WITH ACI 301, SPECIFICATION FOR STRUCTURAL CONCRETE FOR BUILDINGS, AND ACI 318, BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE.
 - CONCRETE MINIMUM COMPRESSIVE STRENGTH.

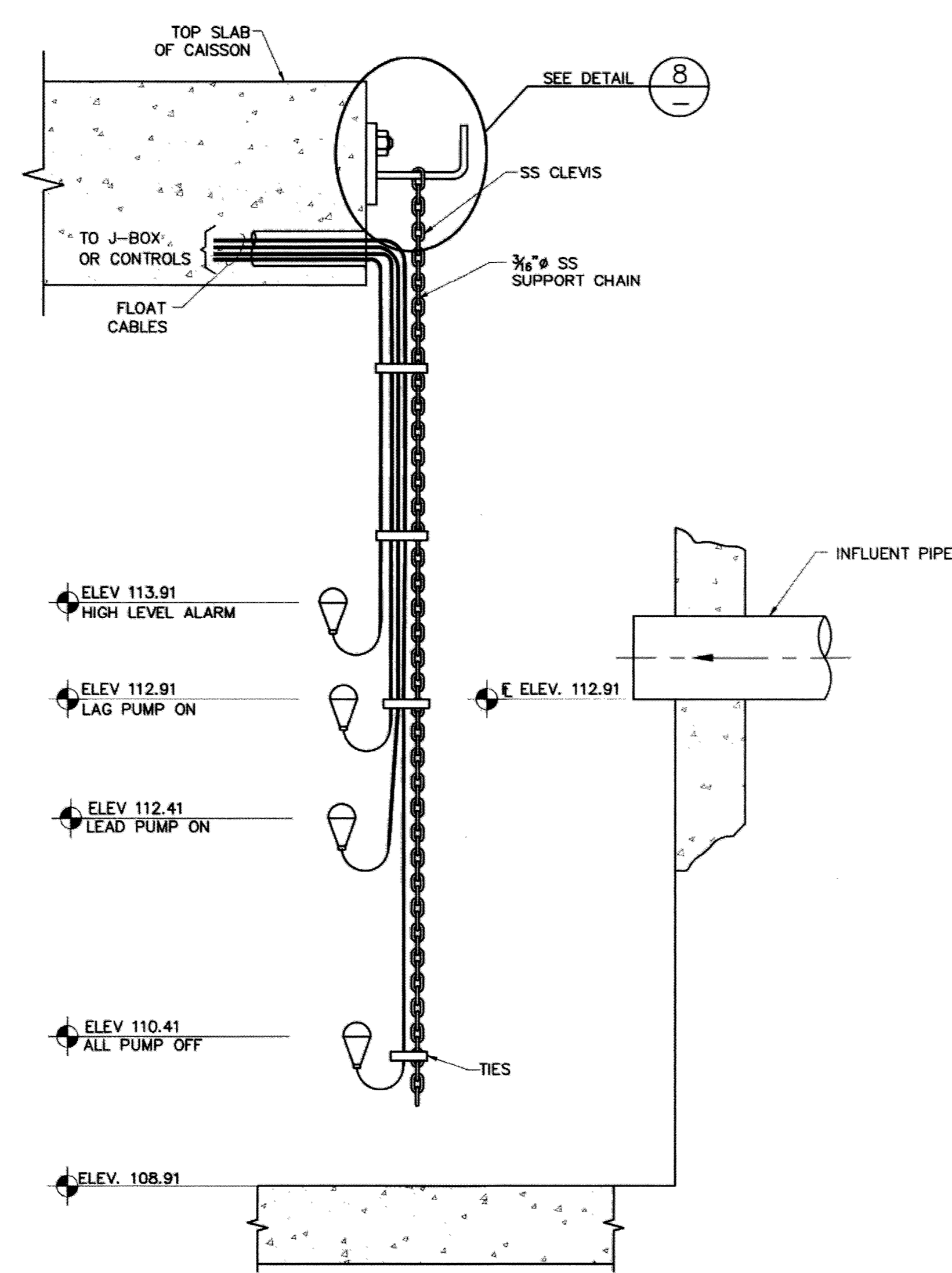
CLASS	CEMENT TYPE	MIN STRENGTH @ 28 DAYS	MAXIMUM W/C	DESCRIPTION
"A"	I OR II	4,000PSI	0.45	STRUCTURAL
"B"	I OR II	1,500PSI		SEAL SLAB

- CONCRETE MIX DESIGN SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL. THE MINIMUM CEMENT CONTENT SHALL BE DETERMINED BY TRIAL MIXES BASED ON THE PROPOSED AGGREGATE, CEMENT, AND ADMIXTURES.
 - ADMIXTURES SHALL BE SELECTED BASED ON THEIR ABILITY TO REDUCE CONCRETE SHRINKAGE.
 - ENTRAINED AIR IS NOT REQUIRED.
- REINFORCING STEEL: ASTM A615, GRADE 60

3. SPLICE LENGTHS:

BAR SIZE	VERTICAL DEFORMED BARS		HORIZONTAL DEFORMED BARS	
	4 KSI	4 KSI	4 KSI	4 KSI
3	14	18	18	24
4	19	25	25	32
5	24	31	31	40
6	28	37	37	48
7	42	54	54	70
8	47	62	62	80
9	54	70	70	90
10	60	78	78	102
11	67	87	87	113

- LAP SPLICES OF DEFORMED BARS IN TENSION SHALL BE CLASS B SPLICES EXCEPT THAT CLASS A SPLICES ARE ALLOWED WHEN:
 - THE AREA OF REINFORCEMENT PROVIDED IS AT LEAST TWICE THAT REQUIRED BY ANALYSIS OVER THE ENTIRE LENGTH OF THE SPLICE, AND
 - ONE-HALF OR LESS OF THE TOTAL REINFORCEMENT IS SPLICED WITHIN THE REQUIRED LAP LENGTH.
- POUR SCHEDULE AND SEQUENCE:
 - POUR EACH LIFT CONTINUOUSLY AND COMPLETE WITHOUT VERTICAL JOINTS. POUR DIRECTLY INTO FORMS WITHOUT USING HOPPER OR TREMIE HOSE.
 - HORIZONTAL JOINTS SHALL BE LOCATED AS SHOWN ON THE DRAWINGS OR AS REQUIRED.
 - VIBRATE EACH LIFT THOROUGHLY AND ALLOW THE VIBRATOR TO EXTEND WELL INTO THE PREVIOUS LIFT. DO NOT UNDER-VIBRATE.
- PROVIDE WATERSTOP WHERE INDICATED ON THE DRAWINGS. WATERSTOP SHALL BE HYDROPHILIC WATERSTOP (WS) AS MANUFACTURED BY ADEKA (P-201). INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. USE ADEKA (P-201) ONLY WHERE 2" OR MORE COVER IS PROVIDED. WHERE LESS THAN 2" OF COVER USE ADEKA (P-101).
- CAREFULLY CLEAN JOINT BETWEEN WALL AND BASE SLAB TO REMOVE ANY SOIL AND LOOSE MATERIAL.
- PROVIDE 2" MINIMUM CLEAR DISTANCE FOR REINFORCING STEEL IN WALLS. PROVIDE 3" MINIMUM CLEAR DISTANCE TO TOP OF BOTTOM SLAB AND BOTTOM OF TOP SLAB.
- IF REQUIRED, DEWATER SOILS BELOW THE STRUCTURE TO PREVENT UNSTABLE CONDITIONS IN THE BOTTOM OF THE EXCAVATION DURING CONSTRUCTION AND TO PROVIDE SUITABLE BEARING TO ALLOW THE STRUCTURE TO COME TO A REST AT THE REQUIRED ELEVATION.
- INSTALL PUMP BASE DIRECTLY ON STRUCTURAL GROUT OR BASE SLAB. USE CAST-IN-PLACE ANCHOR BOLTS OR EPOXY ANCHORING SYSTEM WITH A MINIMUM EMBEDMENT DEPTH OF 12" INTO THE BASE SLAB (DO NOT INCLUDE THE DEPTH OF ANY LEVELING GROUT). SEE DETAIL.
- THESE DRAWINGS ARE INTENDED TO SUPPLEMENT OR MODIFY THE DESIGN FOR THE LIFT STATION AS DESIGNED BY WARD, GETZ & ASSOCIATES, LLP, INC. FOR THE CITY OF HUMBLE, TEXAS TO SHOW THE DETAILS REQUIRED TO CONSTRUCT THE STRUCTURE AS A CAISSON. SEE THE ENGINEER'S DRAWINGS FOR DIMENSIONS, MECHANICAL, PIPING, GROUTING, ELECTRICAL, INSTRUMENTATION, SITE WORK AND OTHER DETAILS THAT ARE NOT SHOWN HERE. COORDINATE EQUIPMENT INSTALLATION REQUIREMENTS PRIOR TO CONSTRUCTION OF STRUCTURE.

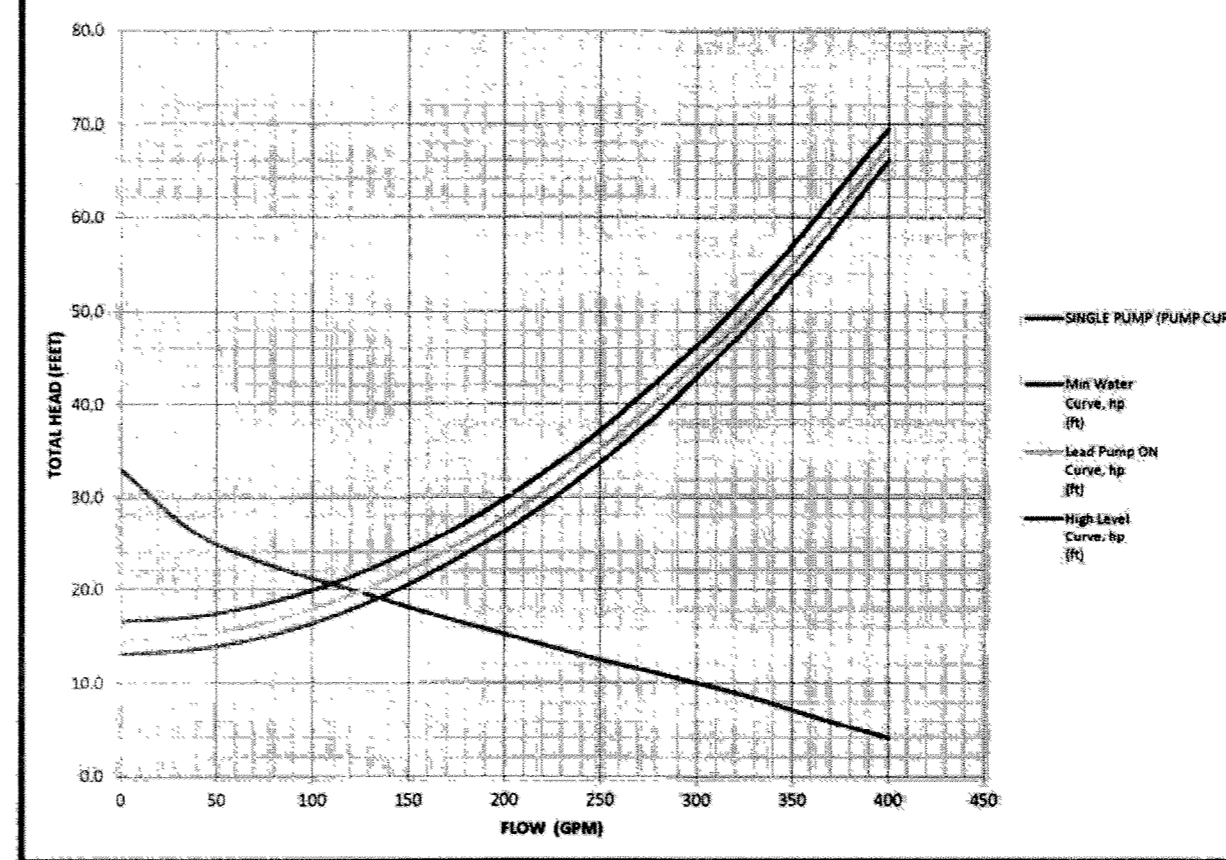


LIQUID LEVEL FLOATS DETAILS (1)

NOTE: ALL STAINLESS STEEL SHALL BE TYPE 316.

FLYGT CP 3085 MT3-438 OR EQUIVALENT

PUMP OPERATION CURVES FOR SOLEA CINCO RANCH LIFT STATION



STATION OPERATION TABLE

RISING LEVEL CYCLE		
WATER LEVEL ELEVATION	ACTION	PUMP(S) IN OPERATION
112.41	LEAD PUMP TURNS ON	LEAD PUMP ON
112.91	LAG PUMP TURNS ON	ALL PUMPS ON
113.91	HIGH LEVEL ALARM TURNS ON ALARM	ALL PUMPS ON
FALLING LEVEL CYCLE		
WATER LEVEL ELEVATION	ACTION	PUMP(S) IN OPERATION
113.91	HIGH LEVEL TURNS OFF ALARM	ALL PUMPS ON
110.41	LEAD PUMP TURNS OFF	ALL PUMPS OFF--STANDBY PUMP SWITCHES TO LEAD PUMP

PUMPS TO BE SUPPLIED WITH LIFTING CHAIN AND POWER CABLES.

NOTES:

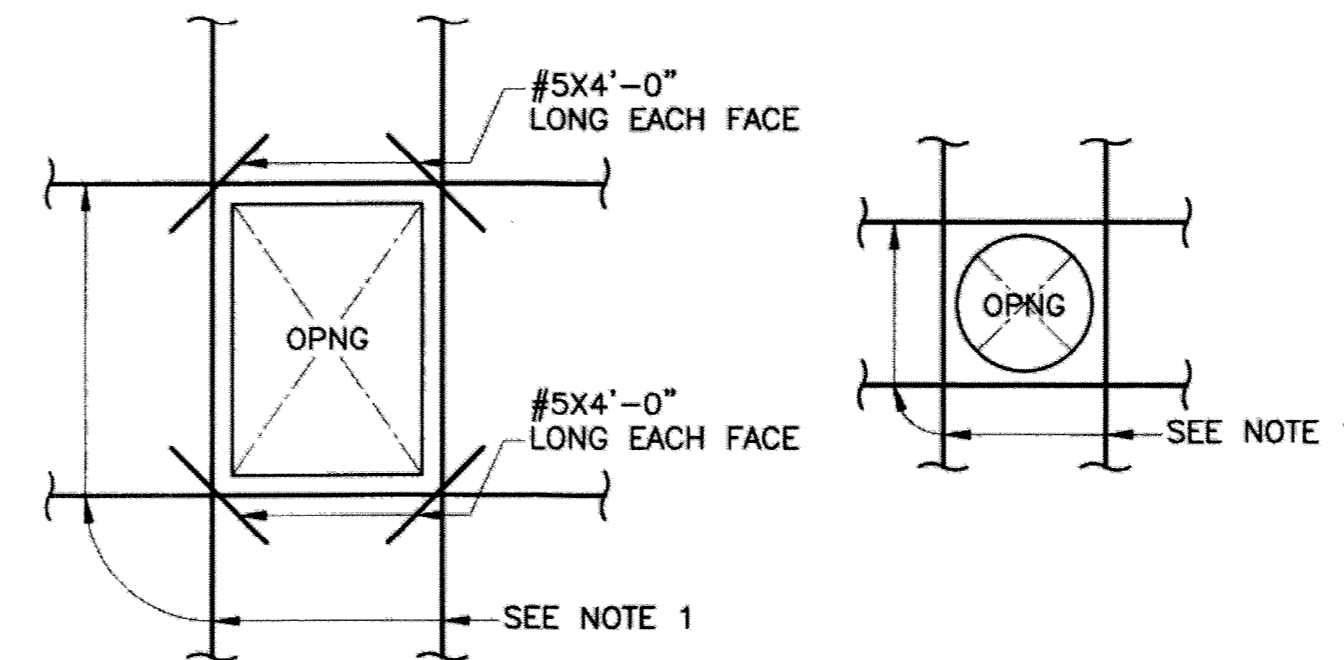
- DIMENSIONS NOTED ARE RELATIVE TO THE PUMP SIZE AND MANUFACTURER SELECTED. CONTRACTOR SHALL VERIFY.
- SEE DETAIL AND STRUCTURAL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN.
- PUMP ANCHOR BOLTS ARE TO BE ADHESIVE TYPE, AND EMBEDDED IN CONCRETE SLAB. CONTRACTOR TO SUBMIT DESIGN OF PUMP ANCHOR BOLTS AND PATTERN, INCLUDING CALCULATIONS, DURING SHOP DRAWING SUBMISSION.
- CONTRACTOR TO PROVIDE ADHESIVE ANCHORS IN LIEU OF WEDGE ANCHORS FOR ALL SUBMERGED CONDITIONS. AND SUBMIT DESIGN OF ANCHOR BOLTS DURING SHOP DRAWING SUBMISSION.
- ALL PIPING IN THE WET WELL SHALL BE FLANGED, NO FLANGED COUPLING ADAPTORS, OR VICTAULIC STYLE COUPLINGS SHALL BE PERMITTED INSIDE THE WET WELL.

PUMP DATA TABLE

PUMP CHARACTERISTICS	PUMP NO. 1	PUMP NO. 2
MOTOR DATA		
NOMINAL SIZE (HP)	3 HP	3 HP
MAX SPEED (RPM)	1700 RPM	1700 RPM
SOLIDS PASSAGE		
MIN SPHERE (IN)	3 IN	3 IN
CAPACITY (GPM)	430 GPM	430 GPM
DISCHARGE HEAD (FT)	3 FT	3 FT
EFFICIENCY (%)	33.7%	33.7%
NPSHR (FT)	23.4 FT	23.4 FT

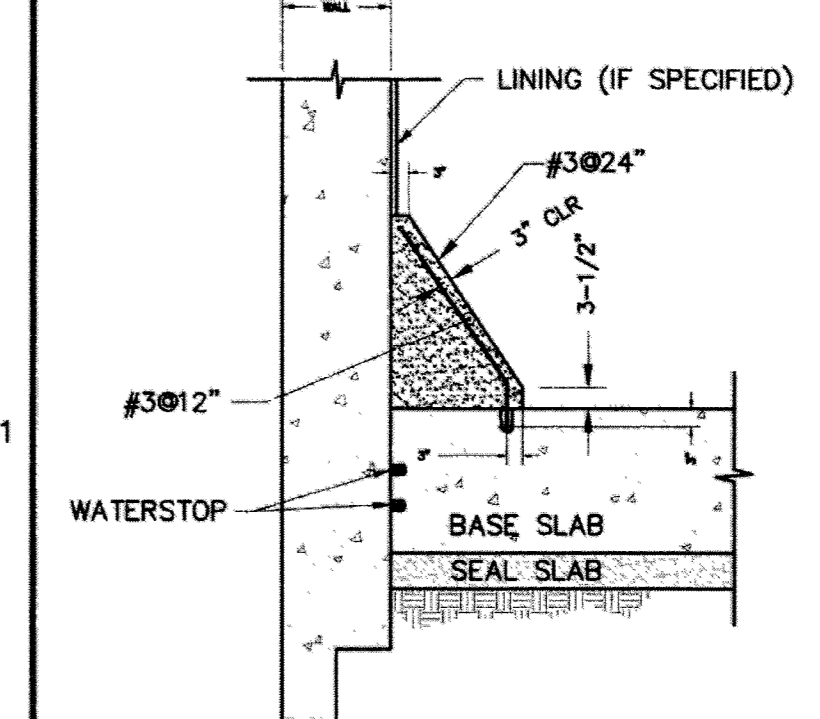
SINGLE PUMP HEAD & FLOW RATE

MIN HEAD CONDITION (FT)	19 FT
PUMP RATE (GPM)	135 GPM
MAX HEAD CONDITION (FT)	21 FT
PUMP RATE (GPM)	100 GPM



- ADDITIONAL REINFORCING AS SHOWN ON DRAWINGS.
- WHEN CIRCUMFERENTIAL BARS ARE INTERRUPTED, PLACE ADDITIONAL BARS EQUAL TO ONE-HALF OF THE NUMBER OF BARS INTERRUPTED AT EACH SIDE OF THE OPENING AT 3" C-C SPACING. THESE BARS SHOULD BE THE ORIGINAL SIZES AND LENGTH OF THOSE OF THE INTERRUPTED BARS OR THE BARS WHOSE TOTAL AREA IS EQUAL TO OR GREATER THAN THE AREA OF THE INTERRUPTED BARS.

TYPICAL OPENING REINFORCING IN WALLS AND SLAB (4)



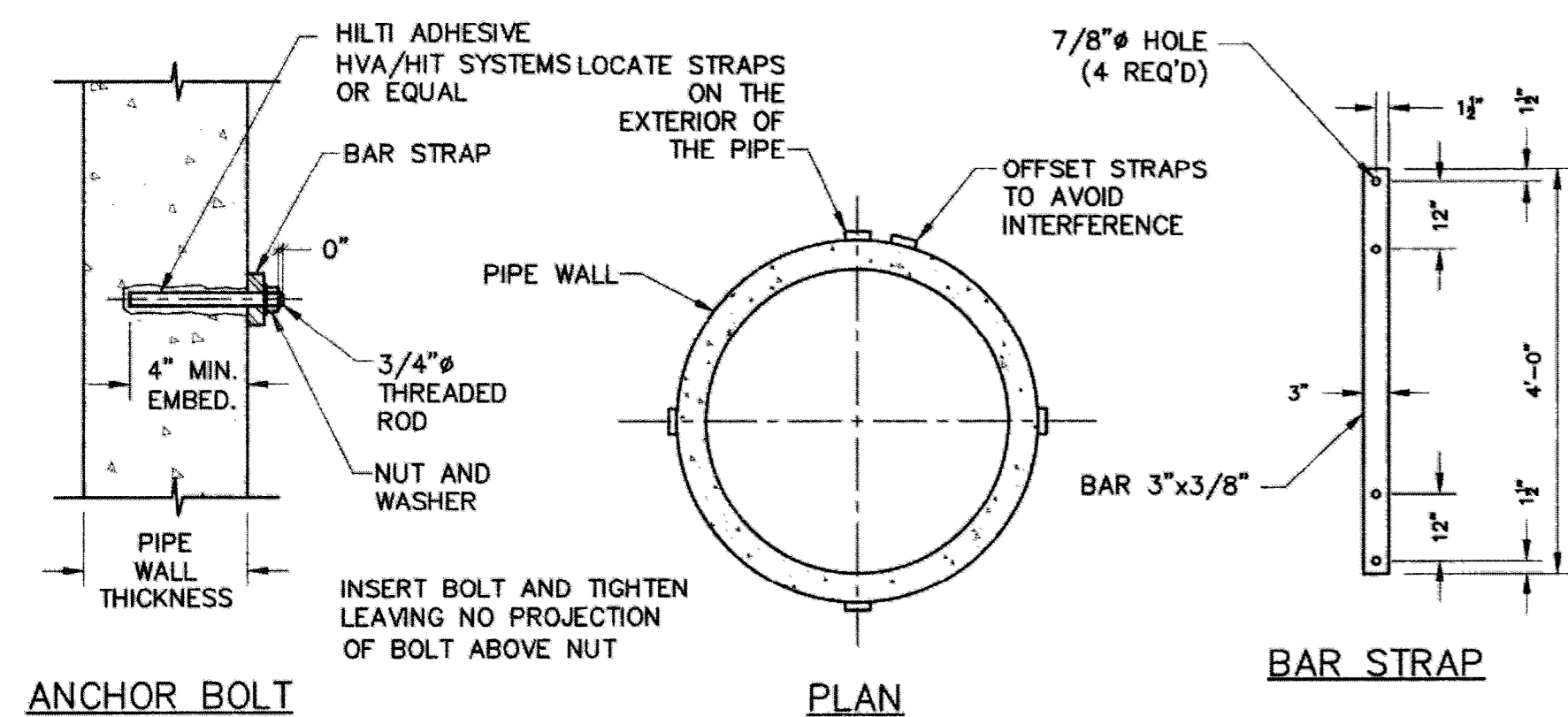
NOTES:

- CONCRETE FILL SHALL BE 3000 PSI MINIMUM.
- REINFORCEMENT: ASTM A 615, GRADE 60, 3" MINIMUM CLEAR DISTANCE DRILL #3@24" INTO BASE SLAB AND GROUT IN-PLACE. BEND REBAR TO MATCH SLOPE OF FILLET. PLACE HORIZONTAL REBAR (#3@12" AS REQUIRED).
- FINISH SURFACE TO A METAL TROWEL FINISH.
- FORM BOTTOM EDGE OF FILLET AND HAND TROWEL TOP FILLET.
- EXTEND LINING A MINIMUM OF 12" BELOW TOP OF FILLET.

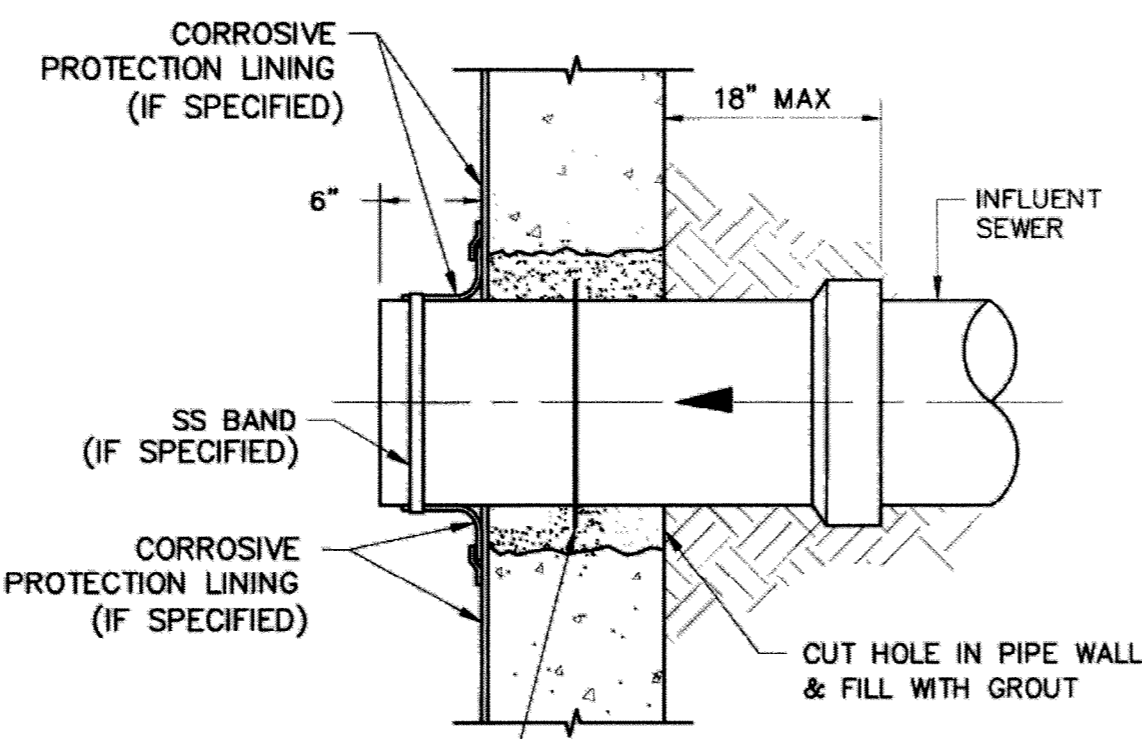
TYPICAL FILLET DETAIL (5)

DESIGN NOTES:

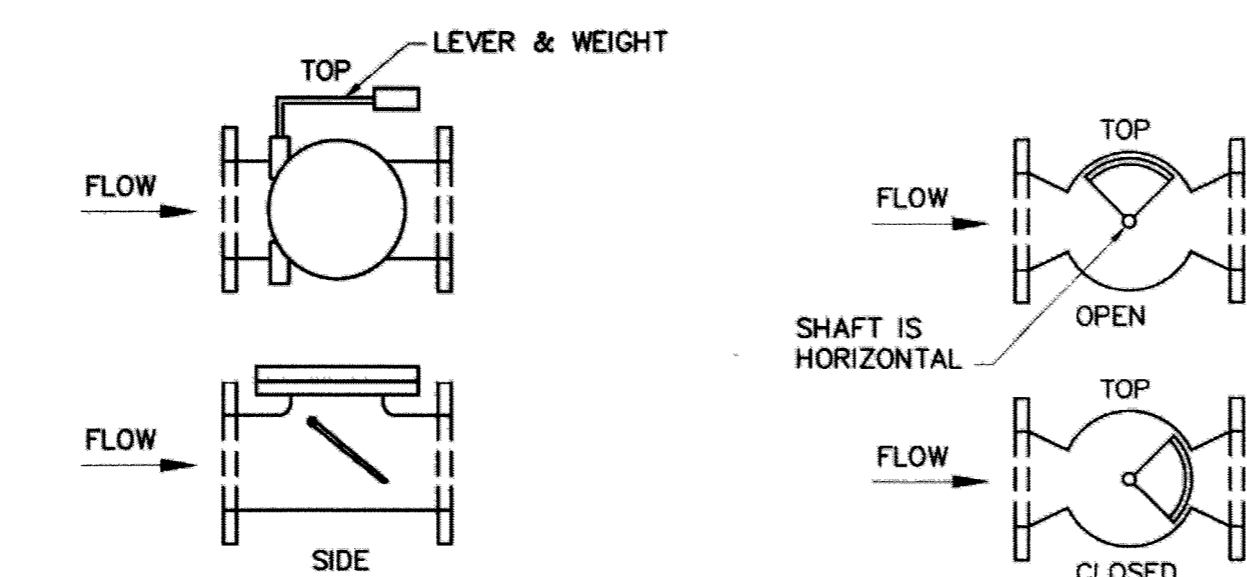
- DESIGN IS BASED ON THE BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE (ACI 318-02) AND ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES (ACI 350R-89)
- DESIGN LOADS:
 - MINIMUM ALLOWABLE TOTAL GRAVITY BEARING PRESSURE FOR THE BASE OF THE LIFT STATION: 3.0 KSF
 - DESIGN GROUND WATER ELEVATION, MSL: 123.50
 - AVERAGE UNIFORM LATERAL EARTH PRESSURE (EQUIVALENT FLUID DENSITY): 125 PCF
 - TOP SLAB LIVELOAD (NON TRAFFIC RATED): 300 PSF
 - FACTOR OF SAFETY FOR BUOYANCY DL ONLY DEAD + SOIL: 1.13



PIPE STRAP DETAIL (2)

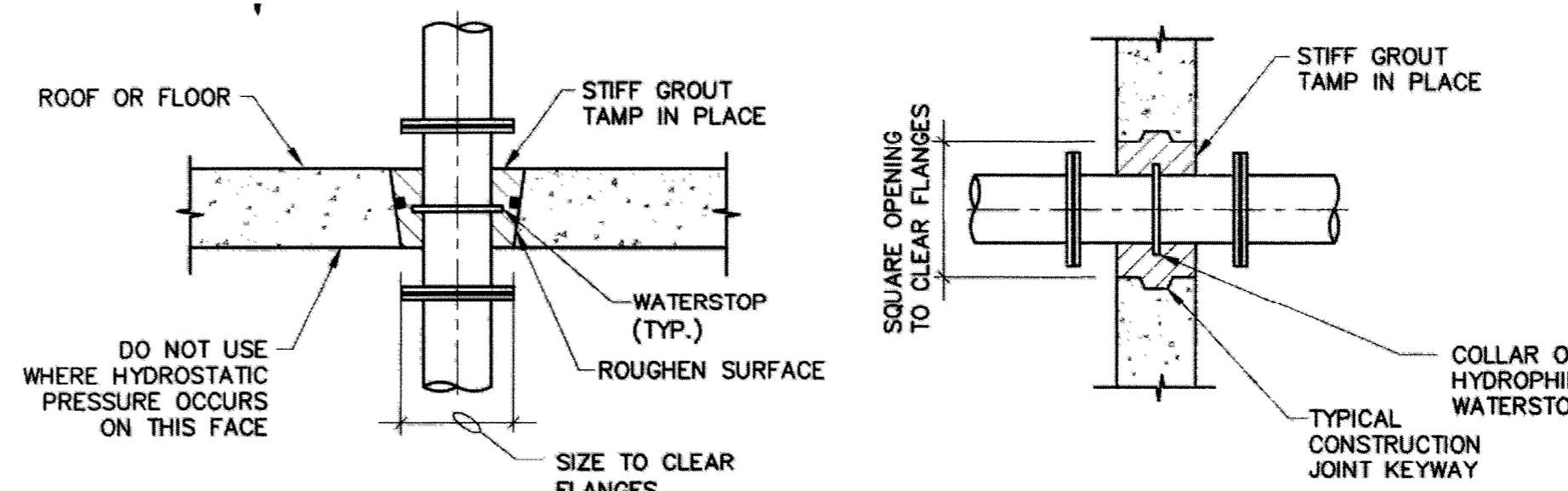


INFLUENT PIPE (3)



LEVER & WEIGHT CHECK VALVE INSTALLATION

ECCENTRIC PLUG VALVE INSTALLATION



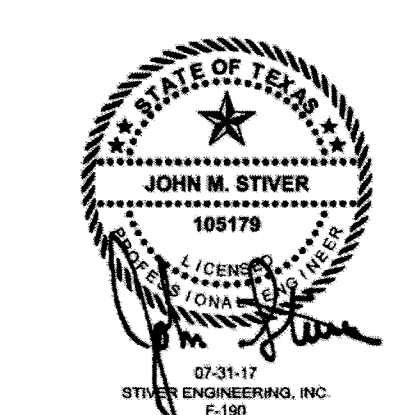
BLOCKOUTS FOR PIPE (6)

BENCHMARKS:
PROJECT BENCHMARK IS FLOODPLAIN REFERENCE MARK NO. 1900025, BEING A BRASS DISK STAMPED 190025 ON BRIDGE AT MASON RD AND UPPER BUFFALO BAYOU LOCATED ON DOWNSTREAM CONCRETE WALK, ON NORTHEAST CORNER OF BRIDGE IN KEYMAP 485Z IN THE BARKER WATERSHED NEAR STREAM T100-00-00. ELEV=103.51 NAVD88, 2001ADJ.
TEMPORARY BENCHMARK "A" BEING A CUT BOX ON INLET LOCATED ON THE NORTH RIGHT-OF-WAY LINE OF WESTHEIMER PARKWAY. ELEV=120.21 NAVD88, 2001ADJ.
TEMPORARY BENCHMARK "B" BEING A CUT BOX LOCATED ON THE MEDIAN OF WESTHEIMER PARKWAY. ELEV=122.38 NAVD88, 2001ADJ.

FLOOD PLAIN NOTE:
THIS SUBJECT TRACT LIES IN UNSHADED ZONE "X". (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN)
AS DELINEATED ON THE FLOOD INSURANCE RATE MAP FOR FORT BEND COUNTY, TEXAS AND INCORPORATED AREAS, MAP NOS. 48157C0045 L & 48157C0110 L, REVISED APRIL, 2, 2014.

SHEET NOTES:

THESE SIGNATURES ARE VOID IF CONSTRUCTION HAS NOT COMMENCED IN (1) YEARS FROM DATE OF APPROVAL.
APPROVED: *Max*
DEVELOPMENT COORDINATOR
DATE: 2/1/18



STIVER ENGINEERING
1305 Peden Street
Houston, Texas 77006
P (713) 526-3478
F (713) 526-9052
stivereng.com
TX Registration No. F-190

WIGIA
WARD, GETZ & ASSOCIATES, LLP
CONSULTING ENGINEERS
TEXAS REGISTERED ENGINEERING FIRM F-9756
2800 Tanglewilde, Suite 120
Houston, Texas 77063
713.789.1900

SOLEA CINCO RANCH
GENERAL NOTES & DETAILS
(SHEET 1 OF 2)

SCALE	DESIGN	DRAWN
AS SHOWN	JMS/JMK	MR

SHEET 2 OF 3

