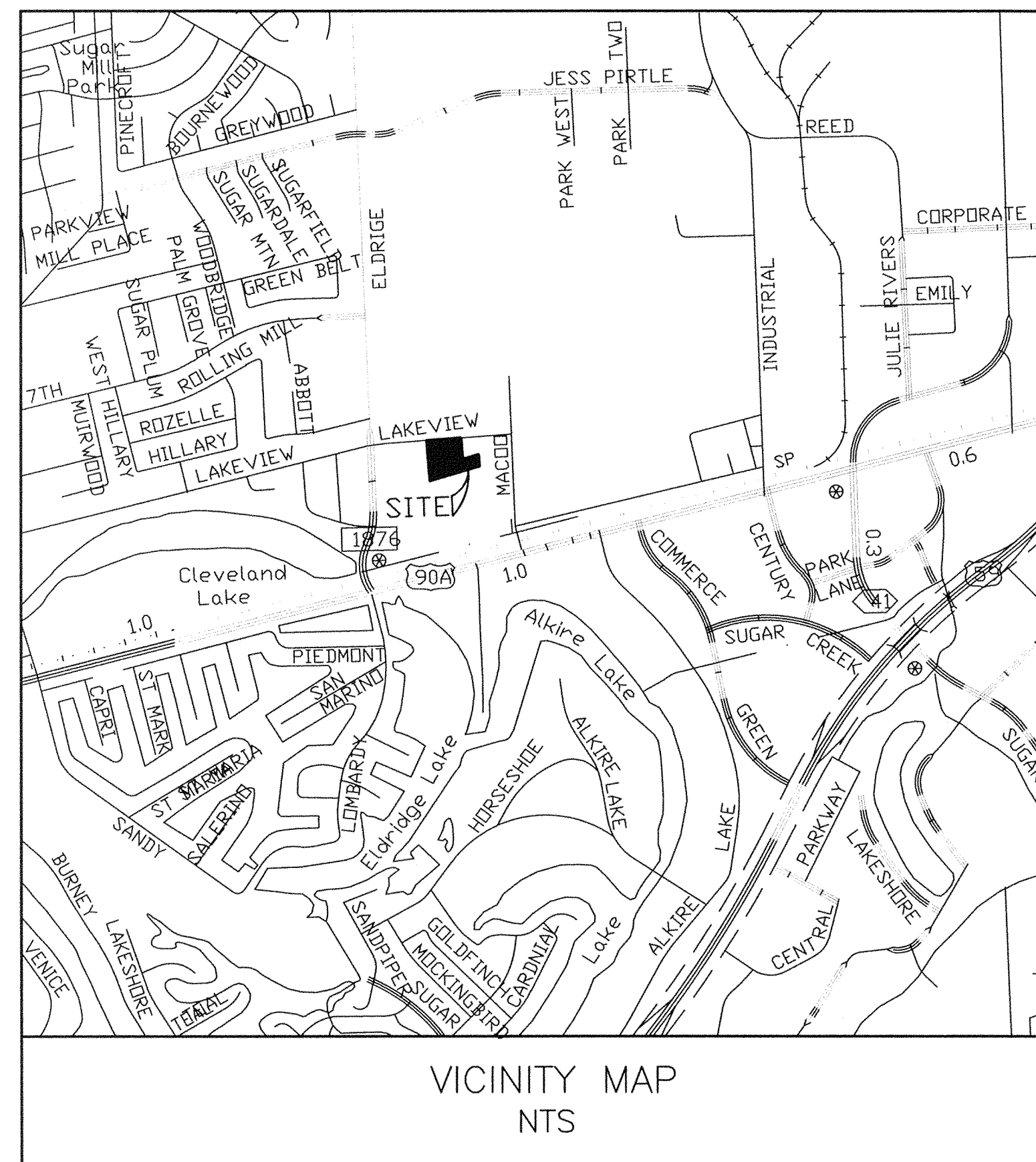


# 30" PUBLIC STORM SEWER & 8" FIRE LINE TO SERVE ASSISTED LIVING LOCATED ON LAKEVIEW DRIVE SUGAR LAND, TX



## INDEX OF DRAWINGS

SHEET	DESCRIPTION
SHT 1	COVER SHEET
SHT 2	OVERALL LAYOUT
SHT 3	PUBLIC STORM P&P
SHT 4	FIRE LINE BORE P&P
SHT SL-01	GENERAL CONSTRUCTION NOTES I
SHT SL-02	GENERAL CONSTRUCTION NOTES II
SHT SL-03	STORM SEWER MANHOLE DETAILS
SHT SL-04	STORM SEWER MANHOLE DETAILS
SHT SL-05	STORM SEWER CONSTRUCTION DETAILS
SHT SL-20	STORM SEWER PIPE BEDDING & BACKFILL DETAILS
SHT SL-15	WATER LINE CONSTRUCTION DETAILS
SHT SL-16	WATER LINE CROSSING DETAILS
SHT SL-19	WATER LINE, SANITARY SEWER FORCE MAIN BEDDING DETAILS

TEXAS ENGINEERING & MAPPING CO.  
REGISTRATION # F-2906

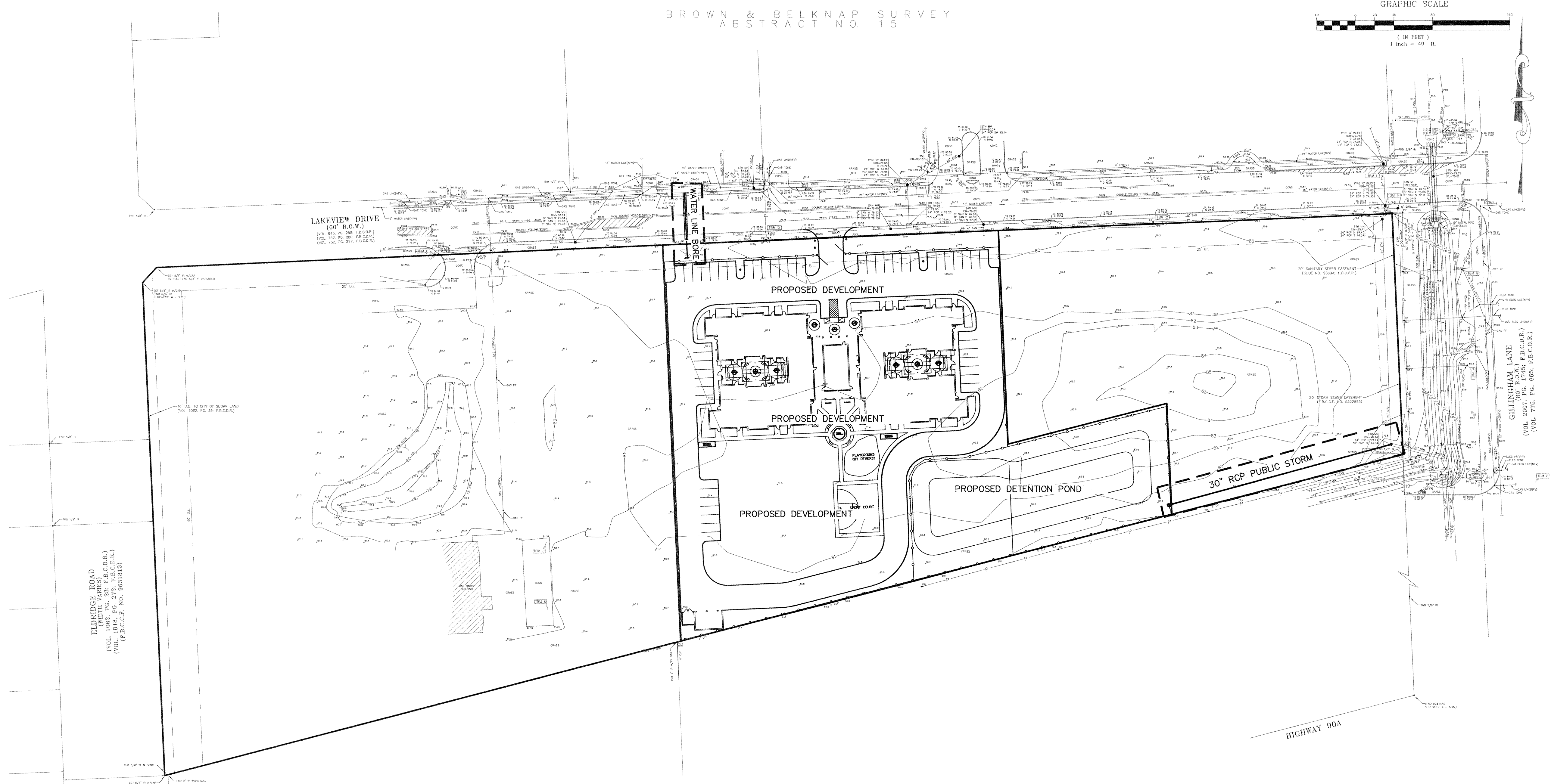
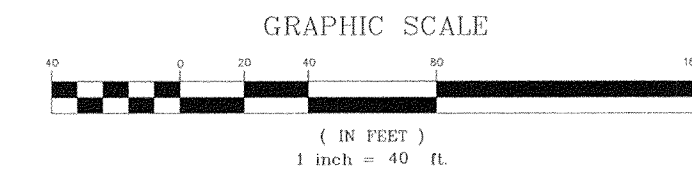


**TEXAS ENGINEERING AND MAPPING**  
12810 CENTURY DRIVE  
STAFFORD, TEXAS 77477  
PHONE: (281) 491-2525 FAX: (281) 491-2535

SHEET NUMBER

1 OF 13

BROWN & BELKNAP SURVEY  
ABSTRACT NO. 15



**BENCHMARK:**  
SUGAR LAND FLOODPLAIN RM NO. SDR-RMD16: A 3" BRASS DISK STAMPED "RM16" LOCATED AT THE INTERSECTION OF HIGHWAY 90A AT GILLINGHAM LANE, FROM S40D INTERSECTION TRAVEL NORTH ON GILLINGHAM LANE 184 FEET TO THE BENCHMARK LOCATED ON THE LEFT.  
ELEVATION = 77.97 (NAVD 88, 2001 ADJUSTMENT)

**ITEM A:**  
BOX CUT ON CONCRETE CONDUIT BASE LOCATED ON THE WEST SIDE OF GILLINGHAM ROAD.  
ELEVATION = 82.51'

**ITEM B:**  
BOX CUT ON CONCRETE CONDUIT BASE LOCATED ON THE WEST SIDE OF GILLINGHAM ROAD.  
ELEVATION = 82.61'

**ITEM C:**  
RAILROAD SPIKE IN THE NORTH SIDE OF POWER POLE.  
ELEVATION = 81.55'

**ITEM D:**  
RAILROAD SPIKE IN THE NORTH SIDE OF POWER POLE.  
ELEVATION = 81.35'

**ITEM E:**  
RAILROAD SPIKE IN THE NORTH SIDE OF POWER POLE.  
ELEVATION = 81.21'

**ITEM F:**  
TOP OF FLANGE ON FIRE HYDRANT.  
ELEVATION = 82.69'

**ITEM G:**  
TOP OF FLANGE ON FIRE HYDRANT.  
ELEVATION = 82.45'

**ITEM H:**  
BOX CUT ON THE FIRST TYPE "C" INLET ON THE SOUTH SIDE OF LAKEVIEW DRIVE, WEST OF GILLINGHAM LANE.  
ELEVATION = 79.63'

**ITEM I:**  
BOX CUT ON THE FIRST TYPE "C" INLET ON THE NORTH SIDE OF LAKEVIEW DRIVE, WEST OF GILLINGHAM LANE.  
ELEVATION = 79.79'

**ITEM J:**  
BOX CUT ON CONCRETE SLAB.  
ELEVATION = 81.40'

**ITEM K:**  
BOX CUT ON CONCRETE SLAB.  
ELEVATION = 81.36'

**LEGEND**

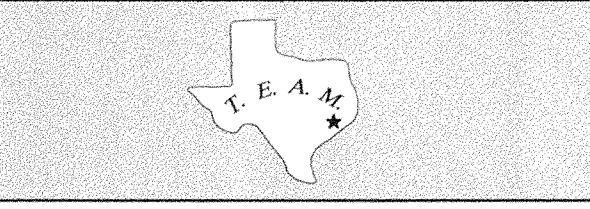
CLF	- CHAIN LINK FENCE
CMF	- CORRUGATED METAL PIPE
CO	- CLEAN OUP
CDIC	- CONCRETE
CP	- CONCRETE PEDESTAL
DP	- DOWN EXP.
EB	- ELECTRIC BOX
ELEC	- ELECTRIC
F. B. C. F.	- FORT BEND COUNTY CLERK'S FILE
F. B. C. R. R.	- FORT BEND COUNTY DEED RECORDS
F. B. C. P. R.	- FORT BEND COUNTY PLAT RECORDS
FH	- FIRE HYDRANT
FL	- FLOOD LINE
FL1	- FLOOD LIGHT
FND	- FINISH
G	- GUTTER
GI	- GROUND INLET
GV	- GAS VALVE
IP	- IRON PIPE
IR	- IRON ROD
MB	- MUD BANK
MP	- MANHOLE
MP-L	- OVERHEAD POWER LINE
MP-R	- FIRE FLAG
P. B. B.	- POINT OF BEGINNING
P. B. C.	- POINT OF COMMENCEMENT
PP	- POWER POLE
RCP	- REINFORCED CONCRETE PIPE
R. D. V.	- RIGHT OF WAY
SM	- SANITARY
SG. FT.	- SQUARE FEET
STM	- STORM
TC	- TEMPORARY BENCHMARK
TE	- TELEPHONE PEDESTAL
UD	- UNDERGROUND
W	- WITH
W/R	- WHEEL CHAIR RAMP
WM	- WATER METER
WV	- WATER VALVE
(NFD)	- NOT FIELD VERIFIED

**NOTES:**

- 1.) BEARINGS SHOWN HEREON ARE BASED ON TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE (NAD83) USING THE CONTIGUOUS OPERATING REFERENCE STATIONS.
- 2.) THE SURVEYOR HAS NOT ABSTRACTED THIS PROPERTY. DEED INFORMATION SHOWN HEREON WAS RESEARCHED AND PROVIDED BY OTHERS.
- 3.) THE CERTIFICATE SHOWN HEREON IS VALID ONLY IF THIS DOCUMENT CONTAINS AN ORIGINAL STAMPED OR IMPRESSION SEAL AND SIGNATURE OF THE SURVEYOR. SAID CERTIFICATION SHALL NOT APPLY TO ANY COPIES OR ALTERED ORIGINALS.
- 4.) THIS SURVEY WAS PERFORMED WITHOUT THE BENEFIT OF A CURRENT TITLE REPORT. ADDITIONAL ENCUMBRANCES MAY EXIST THAT ARE NOT SHOWN.
- 5.) ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY'S FLOOD INSURANCE RATE MAP FOR FORT BEND COUNTY, TEXAS AND INCORPORATED AREAS, COMMUNITY PANEL NO. 48157-C-0140K EFFECTIVELY DATED APRIL 20, 2005, THIS PROPERTY LIES IN ZONE "X", AN AREA DETERMINED TO BE OUTSIDE OF THE 100-YEAR FLOOD CHANGES FLOODPLAIN.
- 6.) A METES AND BOUNDS DESCRIPTION WAS COMPILED IN CONJUNCTION WITH THIS SURVEY.
- 7.) ALL RODS SET ARE 5/8" IRON RODS WITH CAPS STAMPED: T.E.A.M. - 281-491-2525.
- 8.) THIS TRACT OF LAND WAS SURVEYED IN THE FIELD ON JUNE 3, 2011. ANY CHANGES MADE AFTER THIS DATE ARE NOT SHOWN HEREON.

**OPTIMUM PERSONAL CARE  
ASSISTED LIVING FACILITIES**  
1110/12/14 Lakeview Drive  
Sugar Land, Texas 77478

TEXAS ENGINEERING & MAPPING CO.  
REGISTRATION # F-2906

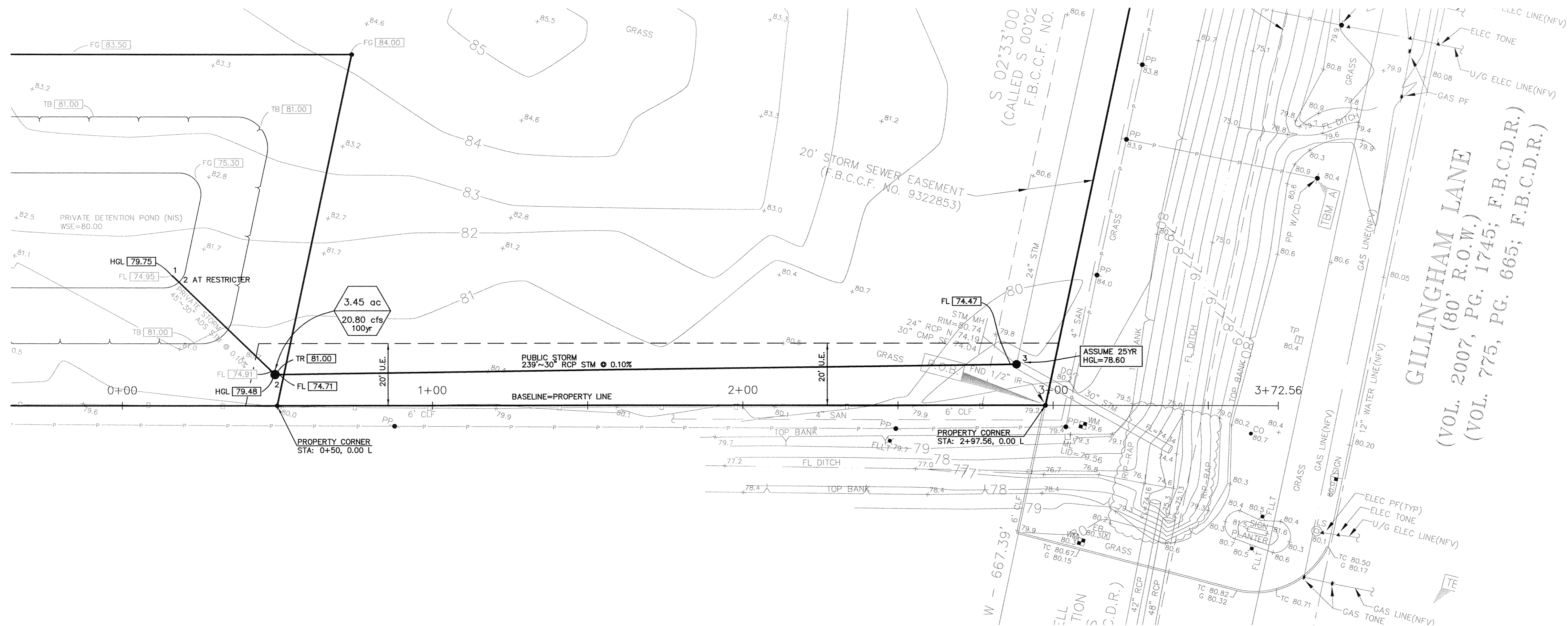


**TEXAS ENGINEERING AND MAPPING**  
12810 CENTURY DRIVE  
STAFFORD, TEXAS 77477  
PHONE: (281) 491-2525 FAX: (281) 491-2535

DRAWN BY: SS  
DATE: 04/29/13  
JOB NO: 130-2  
REVISION DATE: N/A

**SHEET 2**  
OVERALL LAYOUT

SCALE: 1"=60'

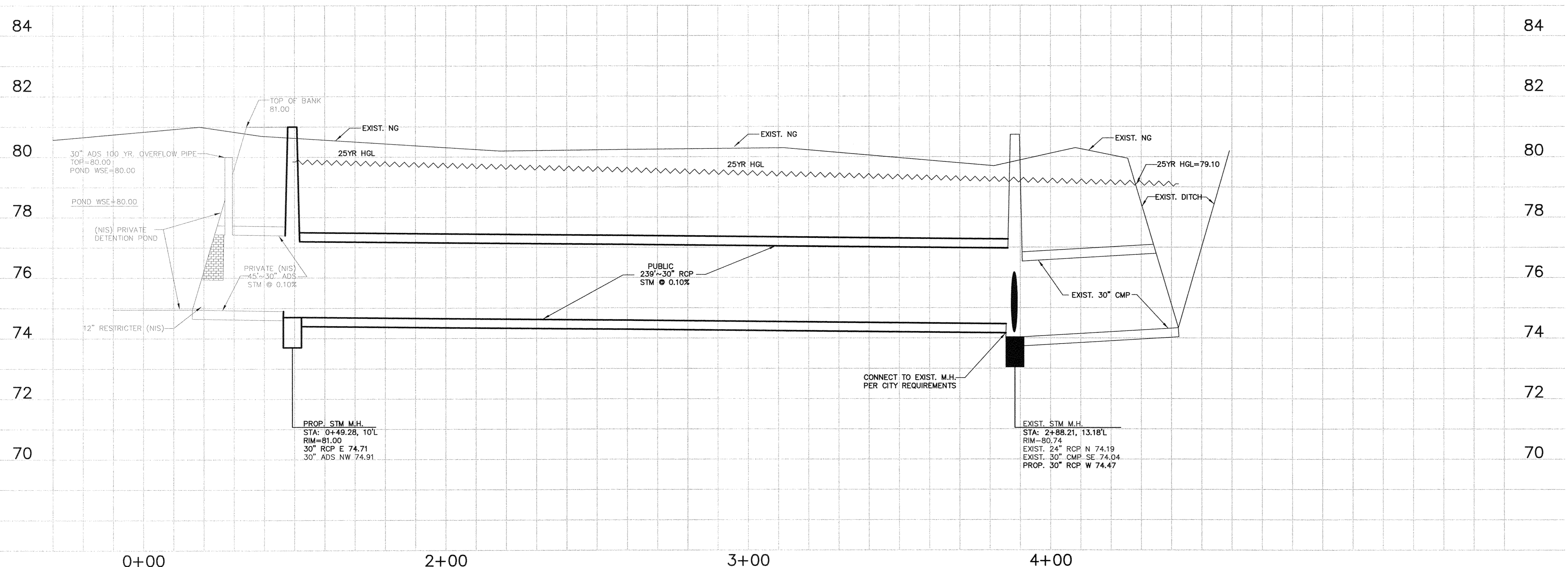


STORM CALCULATION TABLE

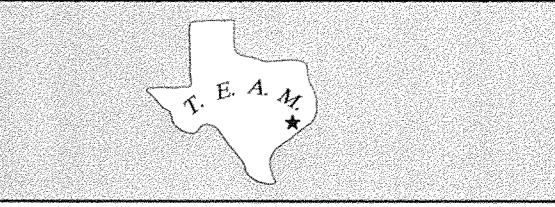
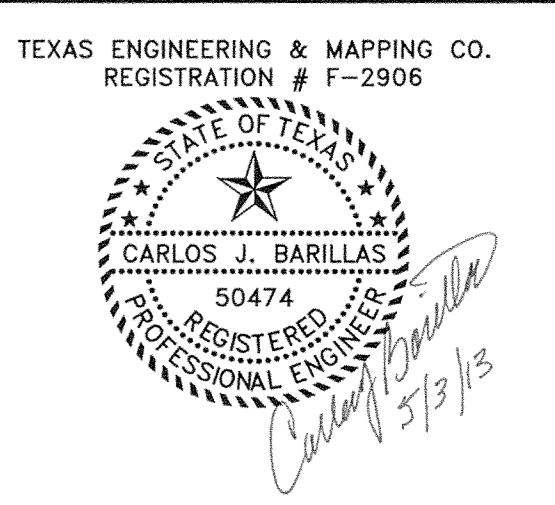
Inlet Area #	Inlet To	Area	ACC Data Area	Runoff Coefficient	Sum of (100%)/C	Intensity (in/hr)	Time of Concentration (min)	Peak Rate (cfs)	Reach Length (ft)	Diameter (inches)	Hydraulic Area (sq ft)	Slope (ft/ft)	Manning's Coefficient	Capacity (cfs)	Velocity (ft/s)	Fall Drop (ft)	Flowline Elevation Upstream	Flowline Elevation Downstream	Top of Pipe Elevation	100% Hydraulic Gradient	Change in Head Losses	Minor Losses	Elevation of Head Upstream	Elevation of Head Downstream	Total Area Required	Inlet Size	Area Provided	NG Upstream	NG Downstream	Top Rise	cover	Pending Upstream	Pending Downstream			
																																		(ft)	(ft)	(ft)
1	1	1	3.45	0.65	2330	1.50	11.0	19.97	0.0248	2	24	2.458	0.01	0.010	1.154	2.277	0.002	0.00	74.99	76.95	74.95	0.005	0.005	0.0175	0.042	0.01	79.94	NA	NA	80.00	81.00	3.05	4.05	0.01	4.05	
2	3	2	3.45	0.65	2330	1.50	11.0	19.97	0.035	4	30	4.027	0.01	0.010	1.211	2.462	0.006	0.00	74.95	77.45	74.91	4.233	2.292	1.127	0.161	76.54	79.47	NA	NA	80.00	81.00	2.95	3.80	0.36	4.59	
3	4	3	0.00	0.65	2340	1.50	11.0	19.75	0.035	20	30	4.027	0.01	0.010	1.025	3.123	0.239	0.00	74.71	77.21	74.47	76.97	4.303	0.267	0.059	0.148	79.47	79.00	NA	NA	81.00	80.74	3.60	3.77	4.59	2.14

**BENCHMARK:**  
SUGAR LAND FLOODPLAIN RM NO. SGR-RM016: A 3" BRASS DISK STAMPED "RM016" LOCATED AT THE INTERSECTION OF HIGHWAY 90A AT GILLINGHAM LANE, FROM SAID INTERSECTION TRAVEL NORTH ON GILLINGHAM LANE 184 FEET TO THE BENCHMARK LOCATED ON THE LEFT.  
ELEVATION = 77.93' (NAVD 88, 2001 ADJUSTMENT)

ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY'S FLOOD INSURANCE RATE MAP FOR FORT BEND COUNTY, TEXAS AND INCORPORATED AREAS, COMMUNITY PANEL NO. 48157-C-0140K EFFECTIVELY DATED APRIL 20, 2000, THIS PROPERTY LIES IN ZONE "X", AN AREA DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN.



**OPTIMUM PERSONAL CARE ASSISTED LIVING FACILITIES**  
1110/12/14 Lakeview Drive  
Sugar Land, Texas 77478



**TEXAS ENGINEERING AND MAPPING**  
12810 CENTURY DRIVE  
STAFFORD, TEXAS 77477  
PHONE: (281) 491-2525 FAX: (281) 491-2535

DRAWN BY: SS  
DATE: 04/29/13  
JOB NO: 130-2  
REVISION DATE: N/A

**SHEET 3**  
PUBLIC STORM P&P

SCALE: 1"=20' HOR 1"=2' VERT



BROWN & BELKNAP SURVEY  
ABSTRACT NO. 15

RESERVE "B"  
ELDRIDGE CHURCH OF CHRIST AND  
FORT BEND BAPTIST ACADEMY  
SECTION TWO  
(SLIDE NO. 2107A; F.B.C.P.R.)

FORT BEND BAPTIST ACADEMY  
12.708 ACRES  
(F.B.C.C.F. NO. 2001000006)

CITY OF SUGAR LAND  
1.8365 ACRES  
(VOL. 643, PG. 254; F.B.C.D.R.)

FIRST METHODIST CHURCH, SUGAR LAND, TEXAS  
4.501 ACRES  
(VOL. 1227, PG.878; F.B.C.D.R.)

LAKEVIEW DRIVE  
(60' R.O.W.)  
(VOL. 643, PG. 254; F.B.C.D.R.)  
(VOL. 752, PG. 277; F.B.C.D.R.)

3.4408 ACRES  
(149,880 SQ. FT.)

THE HOLY HOLY MARRIAGES OF  
SEBASTIAN THOMAS CHRISTIAN CHURCH, INC.  
(F.B.C.C.F. NO. 2002124412)

GILLINGHAM LANE  
(60' R.O.W.) F.B.C.D.R.  
(VOL. 770, PG. 665; F.B.C.D.R.)

N 89°51'42" W - 242.27'  
(CALLED S 75°31'53" W - 546.91'  
(PLAT NO. 20070053; F.B.C.P.R.)

N 89°51'42" W - 511.95'  
(CALLED NORTH - 500.00'  
(F.B.C.C.F. NO. 200224412)

ELDREDGE ROAD  
(WITH VARIATIONS)  
(VOL. 1002, PG. 28; F.B.C.D.R.)  
(VOL. 846, PG. 272; F.B.C.D.R.)  
(F.B.C.C.F. NO. 9631815)

S 75°31'53" W - 546.91'  
(CALLED S 75°31'53" W - 546.91'  
(PLAT NO. 20070053; F.B.C.P.R.)

S 75°28'39" W - 771.76'  
(CALLED S 76°02' W - 778.23'  
(VOL. 908, PG. 532; F.B.C.D.R.)

CITY OF SUGAR LAND  
12.2342 ACRES  
(VOL. 908, PG. 532; F.B.C.D.R.)

HIGHWAY 90A

WILLOW PARK OFFICE CONDOMINIUMS AT ELDRIDGE  
(PLAT NO. 20070063; F.B.C.P.R.)

BENCHMARK:  
SUGAR LAND FLOODPLAIN RM NO. SR-RM018. A 3" BRASS DISK  
STAMPED "RM018" LOCATED AT THE INTERSECTION OF HIGHWAY 90A  
AT GILLINGHAM LANE, FROM SAID INTERSECTION TRAVEL NORTH ON  
GILLINGHAM LANE 104 FEET TO THE BENCHMARK LOCATED ON THE  
LEFT.  
ELEVATION = 77.93' (NAVD 88, 2001 ADJUSTMENT)

IBM A:  
BOX CUT ON CONCRETE CONDUIT BASE LOCATED ON THE WEST SIDE  
OF GILLINGHAM ROAD.  
ELEVATION = 82.51'

IBM B:  
BOX CUT ON CONCRETE CONDUIT BASE LOCATED ON THE WEST SIDE  
OF GILLINGHAM ROAD.  
ELEVATION = 82.51'

IBM C:  
RAILROAD SPIKE IN THE NORTH SIDE OF POWER POLE.  
ELEVATION = 81.55'

IBM D:  
RAILROAD SPIKE IN THE NORTH SIDE OF POWER POLE.  
ELEVATION = 81.35'

IBM E:  
RAILROAD SPIKE IN THE NORTH SIDE OF POWER POLE.  
ELEVATION = 81.21'

IBM F:  
TOP OF FLANGE ON FIRE HYDRANT.  
ELEVATION = 82.69'

IBM G:  
TOP OF FLANGE ON FIRE HYDRANT.  
ELEVATION = 82.45'

IBM H:  
BOX CUT ON THE FIRST TYPE 'C' INLET ON THE SOUTH SIDE OF LAKE  
VIEW DRIVE, WEST OF GILLINGHAM LANE.  
ELEVATION = 79.63'

IBM I:  
BOX CUT ON THE FIRST TYPE 'C' INLET ON THE NORTH SIDE OF LAKE  
VIEW DRIVE, WEST OF GILLINGHAM LANE.  
ELEVATION = 79.79'

IBM J:  
BOX CUT ON CONCRETE SLAB.  
ELEVATION = 81.40'

IBM K:  
BOX CUT ON CONCRETE SLAB.  
ELEVATION = 81.36'

LEGEND

- CLF - CHAIN LINK FENCE
- CMP - CORRUGATED METAL PIPE
- CB - CONCRETE BASE
- CC - CLEAN GUT
- CONC - CONCRETE
- CP - CABLE PEDESTAL
- DP - DOWN GUY
- DG - DRAIN
- EB - ELECTRIC BOX
- ELEC - ELECTRIC
- F.B.C.C.F. - FORT BEND COUNTY CLERK'S FILE
- F.B.C.D.R. - FORT BEND COUNTY DEED RECORDS
- F.B.C.P.R. - FORT BEND COUNTY PLAT RECORDS
- FH - FIRE HYDRANT
- FL - FLOOD LINE
- FLLT - FLOOD LIGHT
- FND - FOUND
- G - GUTTER
- GI - GRATE INLET
- GV - GAS VALVE
- IP - IRON PIPE
- IR - IRON ROD
- MB - METER BANK
- MH - MANHOLE
- DP - DIVERHEAD POWER LINE
- PI - PIN FLAG
- P.D.B. - POINT OF BEGINNING
- P.D.C. - POINT OF COMMENCEMENT
- PP - POWER POLE
- R.C.P. - REINFORCED CONCRETE PIPE
- R.D.V. - RIGHT OF WAY
- SAN - SANITARY
- SQ.FT. - SQUARE FEET
- STM - STORM
- STMB - TEMPORARY BENCHMARK
- TC - TOP OF CURB
- TP - TELEPHONE PEDESTAL
- U/G - UNDERGROUND
- W - WITH
- MCR - WHEEL CHAIR RAMP
- WH - WATER METER
- WV - WATER VALVE
- (NFV) - NOT FIELD VERIFIED

C-1 TOPOGRAPHIC SURVEY

Scale 1" = 50' JOB NO: 130-2

- SEE SHT C-0 FOR TOPOGRAPHIC SURVEY
- SEE SHT C-1 FOR GRADING & DRAINAGE
- SEE SHT C-2 FOR STORM SEWER LAYOUT
- SEE SHT C-3 FOR DRAINAGE AREA MAP
- SEE SHT C-4 FOR SANITARY & WATER LAYOUT
- SEE SHT C-5 FOR PAVING JOINT LAYOUT
- SEE SHT C-6 FOR SWPPP & DETAILS
- SEE SHT C-7 FOR NOTES & DETAILS
- SEE SHT C-8 FOR P&P OVERALL
- SEE SHT C-9 FOR PUBLIC STORM P&P
- SEE SHT SL-01 FOR GENERAL CONSTRUCTION NOTES I
- SEE SHT SL-02 FOR GENERAL CONSTRUCTION NOTES II
- SEE SHT SL-03 FOR STORM SEWER MANHOLE DETAILS
- SEE SHT SL-04 FOR STORM SEWER MANHOLE DETAILS
- SEE SHT SL-05 FOR STORM SEWER CONSTRUCTION NOTES
- SEE SHT SL-20 FOR STORM SEWER PIPE BEDDING & BACKFILL DETAILS

- NOTES:
- BEARINGS SHOWN HEREON ARE BASED ON TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE (NAD83) USING NGS CONTINUOUSLY OPERATING REFERENCE STATIONS.
  - THE SURVEYOR HAS NOT ABSTRACTED THIS PROPERTY. DEED INFORMATION SHOWN HEREON WAS RESEARCHED AND PROVIDED BY OTHERS.
  - THE CERTIFICATE SHOWN HEREON IS VALID ONLY IF THIS DOCUMENT CONTAINS AN ORIGINAL STAMPED OR IMPRESSION SEAL AND SIGNATURE OF THE SURVEYOR. SAID CERTIFICATE SHALL NOT APPLY TO ANY COPIES OR ALTERED ORIGINALS.
  - THIS SURVEY WAS PERFORMED WITHOUT THE BENEFIT OF A CURRENT TITLE REPORT. ADDITIONAL ENCUMBRANCES MAY EXIST THAT ARE NOT SHOWN.
  - ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY'S FLOOD INSURANCE RATE MAP FOR FORT BEND COUNTY, TEXAS AND INCORPORATED AREAS, COMMUNITY PANEL NO. 48157-C-0140K EFFECTIVELY DATED APRIL 20, 2000, THIS PROPERTY LIES IN ZONE "X", AN AREA DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN.
  - A METES AND BOUNDS DESCRIPTION WAS COMPILED IN CONJUNCTION WITH THIS SURVEY.
  - ALL RODS SET ARE 5/8" IRON RODS WITH CAPS STAMPED: T.E.A.M. - 281-491-2525.
  - THIS TRACT OF LAND WAS SURVEYED IN THE FIELD ON JUNE 3, 2011. ANY CHANGES MADE AFTER THIS DATE ARE NOT SHOWN HEREON.

TEXAS ENGINEERING AND MAPPING  
12810 CENTURY DRIVE  
STAFFORD, TEXAS 77477  
PHONE: 281.491.2525 FAX: 281.491.2535

STANDARD LAND AND TOPOGRAPHIC SURVEY  
OF 11.5861 ACRES (504,691 SQ. FT.) OF LAND IN THE BROWN & BELKNAP SURVEY, ABSTRACT NO. 15, CITY OF SUGAR LAND, FORT BEND COUNTY, TEXAS

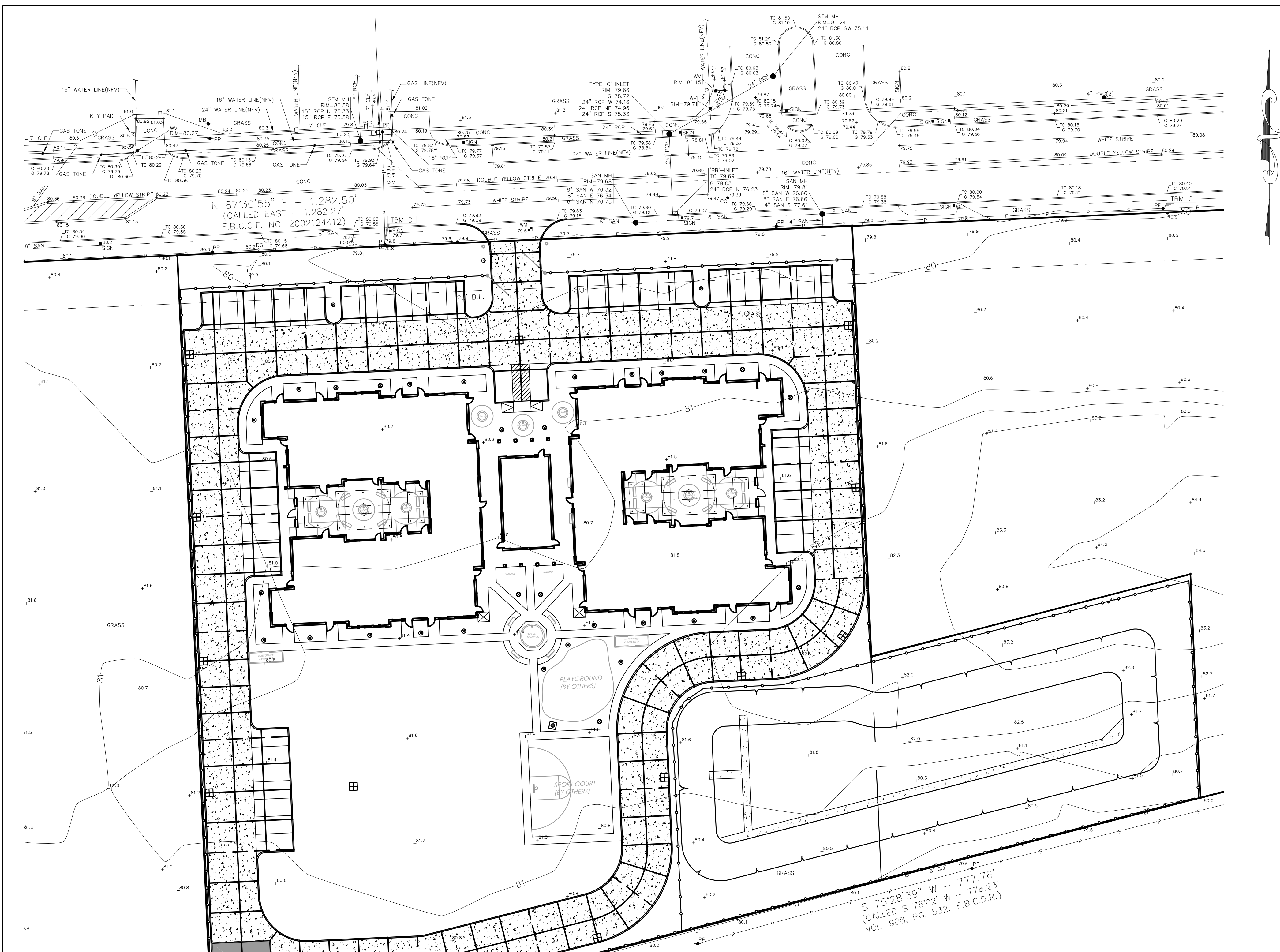
CREW: TG DRAWN BY: KPR CALC. BY: BSN CK BY: BSN  
DATE: 07/08/11 SCALE: 1"=50' KEY MAP: 368L JOB NO: 130-2











N 87°30'55" E - 1,282.50'  
(CALLED EAST - 1,282.27'  
F.B.C.C.F. NO. 2002124412)

S 75°28'39" W - 777.76'  
(CALLED S 78°02' W - 778.23'  
VOL. 908, PG. 532; F.B.C.D.R.)

**NOTE:**  
ALL PAVING, FILL COMPACTION AND SUBGRADE PREPARATION SHALL BE IN ACCORDANCE WITH SOIL REPORT SPECS.

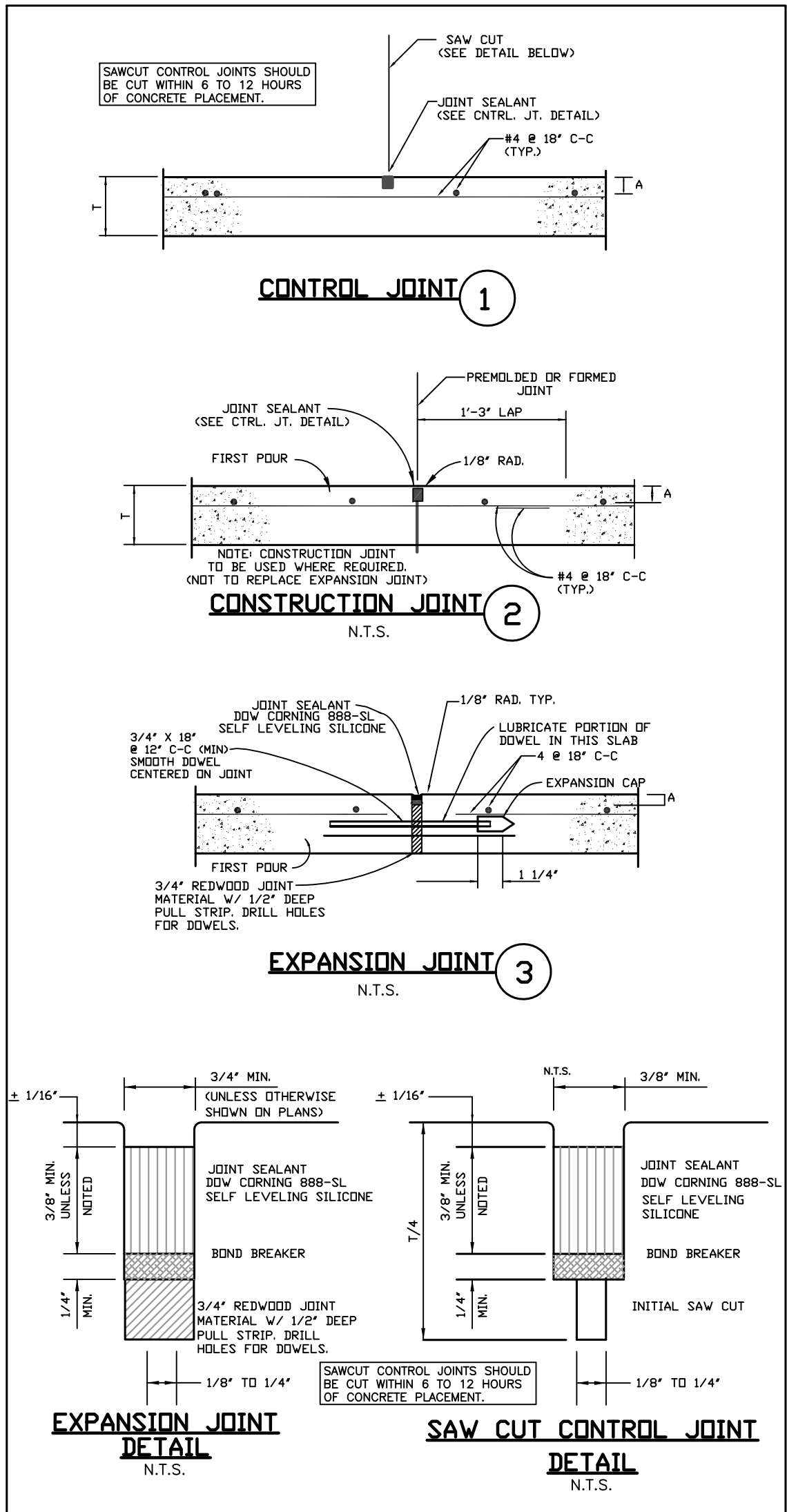
**NOTE:**  
ALL PAVEMENT JOINTS SHALL ALIGN WITH ALL CURB JOINTS. ALL CURB JOINTS SHALL BE SEALED WITH JOINT SEALANT.

**NOTE:**  
THIS PAVING JOINTS LAYOUT IS CONCEPTUAL ONLY. EXPANSION JOINTS ARE 60' C-C MAX. & CONTROL JOINTS ARE 15' C-C MAX.

SCHEDULE	
SLAB THICK (IN.)	COVER (IN.)
5	2
7	2-3/8
8	3

**GENERAL NOTES**

- ALL SIDEWALKS SHALL HAVE A MAXIMUM CROSS SLOPE OF 2.00% PER ADA REQUIREMENTS
- CONTRACTOR TO ASSURE POSITIVE DRAINAGE TO ALL INLETS
- CONTRACTOR SHALL COORDINATE WITH OWNER, GEOTECHNICAL ENGINEER AND STRUCTURAL ENGINEER FOR SELECT FILL REQUIREMENTS AND PROCEDURES UNDER BUILDING SLABS. SEE SOILS REPORT FOR ALL REQUIRED DESIGN CRITERIA. CONTRACTOR SHALL NOT PROCEED WITH CONSTRUCTION UNTIL THE REQUIRED SELECT FILL PROCEDURE UNDER BUILDING SLABS HAS BEEN APPROVED.
- CONTRACTOR SHALL ALSO COORDINATE WITH SOILS REPORT FOR ALL REQUIRED FILL, COMPACTION AND LIME STABILIZATION UNDER PROPOSED PAVING SECTIONS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH CIVIL DRAINAGE PLAN AND ASSURE POSITIVE DRAINAGE FROM THE BUILDING OVER THE SIDEWALK AND TO THE PARKING LOT. ANY PROBLEMS ENCOUNTERED DURING CONSTRUCTION SHALL BE COORDINATED WITH THE CIVIL ENGINEER BEFORE FINAL CONSTRUCTION IF LANDSCAPING BEDS ARE ADJACENT TO THE BUILDING. CONTRACTOR SHALL ASSURE THAT DRAINAGE IS NOT BLOCKED. REFER TO TRENCH DRAIN DETAIL, IF NEEDED.
- SEE SHEET C-0 FOR ADDITIONAL TOPO INFORMATION OR TOPO INFORMATION THAT MAY BE UNCLEAR ON THESE DRAWINGS & C-5 FOR NOTES AND DETAILS
- OWNER TO OBTAIN ALL PERMITS REQUIRED BY THE CITY OF SUGAR LAND, TEXAS, AND ALL GOVERNMENTAL AUTHORITIES WITH JURISDICTION, PRIOR TO STARTING CONSTRUCTION OF UTILITY AND/OR DRIVEWAYS WITHIN PUBLIC RIGHTS OF WAY.
- NOTE:**  
CONTRACTOR IS RESPONSIBLE FOR THE PLACEMENT OF EXPANSION & CONTROL JOINTS IN THE PAVING. EXPANSION JOINTS TO BE PLACED @ A MAX. OF 60' C-C & CONTROL JOINTS TO BE PLACED @ A MAX. OF 15' C-C. (SEE DETAILS FOR JOINT REQUIREMENTS)



**LEGEND**

- SQUARE GRATE INLET
- JUNCTION BOX
- N.F.V. NOT FIELD VERIFIED
- 5" THICK CONCRETE PAVEMENT
- 6" THICK CONCRETE PAVEMENT
- 7" THICK CONCRETE PAVEMENT
- EXPANSION JOINT
- CONTROL JOINT

**C-5 PAVING JOINT LAYOUT**

Scale 1" = 30' JOB NO: 130-2

SEE SHT C-0 FOR TOPOGRAPHIC SURVEY  
 SEE SHT C-1 FOR GRADING & DRAINAGE  
 SEE SHT C-2 FOR STORM SEWER LAYOUT  
 SEE SHT C-3 FOR DRAINAGE AREA MAP  
 SEE SHT C-4 FOR SANITARY & WATER LAYOUT  
 SEE SHT C-5 FOR PAVING JOINT LAYOUT  
 SEE SHT C-6 FOR SWPPP & DETAILS  
 SEE SHT C-7 FOR NOTES & DETAILS  
 SEE SHT C-8 FOR P&P OVERALL  
 SEE SHT C-9 FOR PUBLIC STORM P&P  
 SEE SHT SL-01 FOR GENERAL CONSTRUCTION NOTES I  
 SEE SHT SL-02 FOR GENERAL CONSTRUCTION NOTES II  
 SEE SHT SL-03 FOR STORM SEWER MANHOLE DETAILS  
 SEE SHT SL-04 FOR STORM SEWER MANHOLE DETAILS  
 SEE SHT SL-05 FOR STORM SEWER CONSTRUCTION NOTES  
 SEE SHT SL-20 FOR STORM SEWER PIPE BEDDING & BACKFILL DETAILS



**TEXAS ENGINEERING AND MAPPING**  
 12810 CENTURY DRIVE  
 STAFFORD, TEXAS 77477  
 PHONE: (281) 491-2525 FAX: (281) 491-2535

**Optimum Personal Care  
 Assisted Living Facilities**

XXX Lakeview Drive  
 Sugar Land, Texas 77478

**Radian**  
 ARCHITECTURE  
 134 Eldridge Road Suite A  
 Sugar Land, Texas 77478  
 TEL (713) 933-0507  
 FAX (713) 933-0515

#	Date	Description
1	12.10.12	SCHEMATIC DESIGN

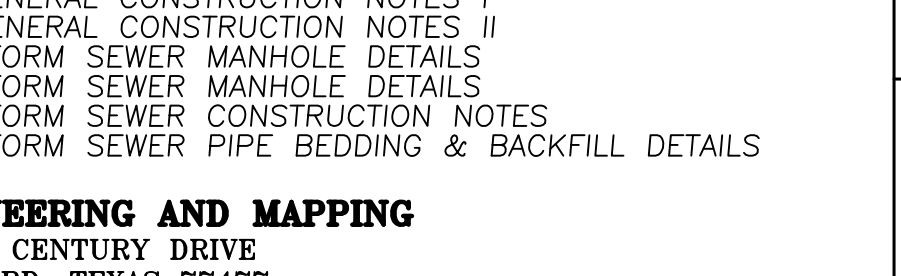
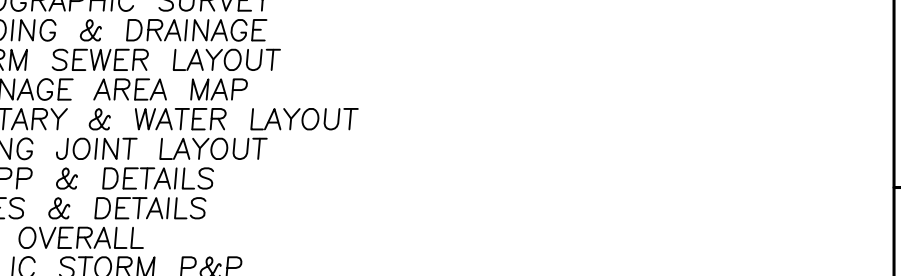
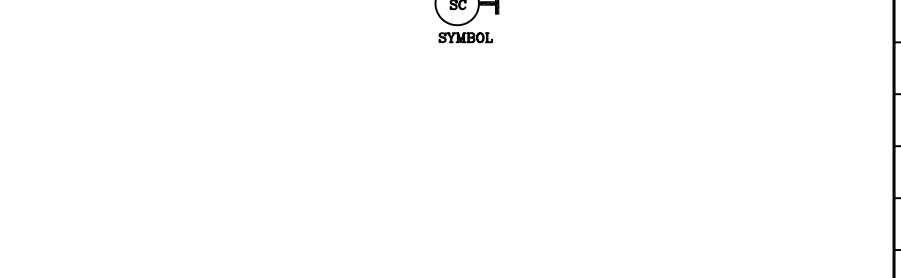
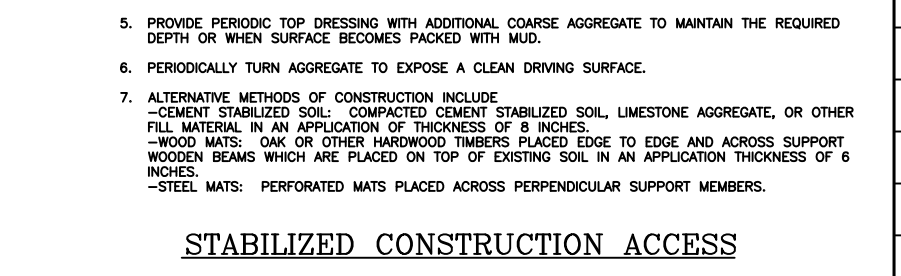
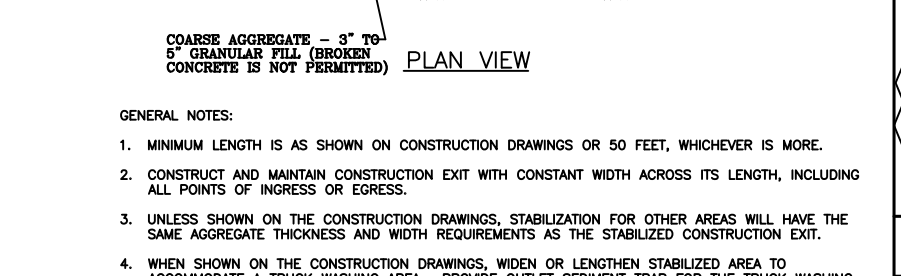
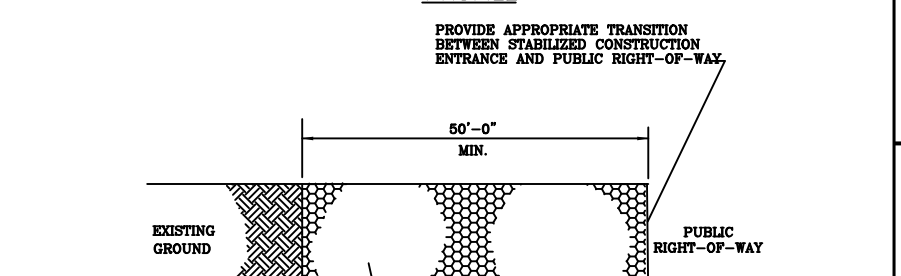
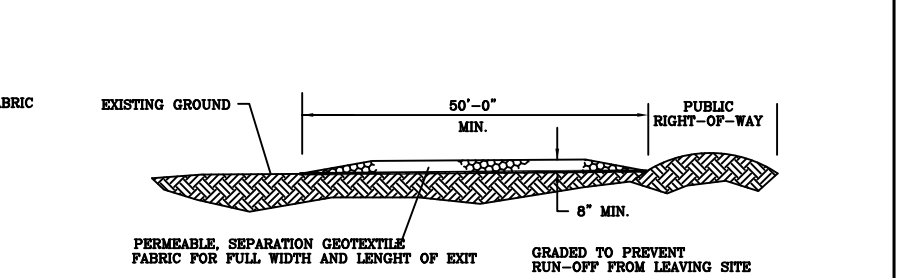
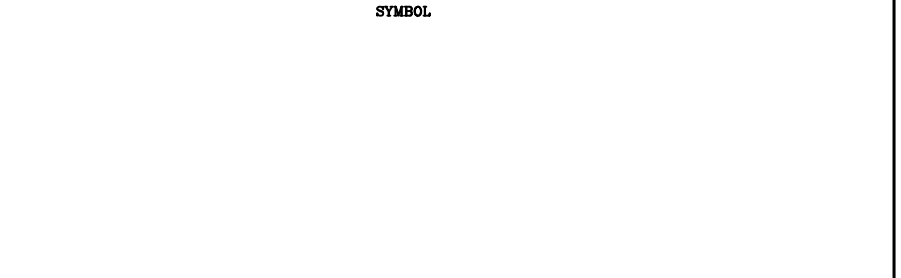
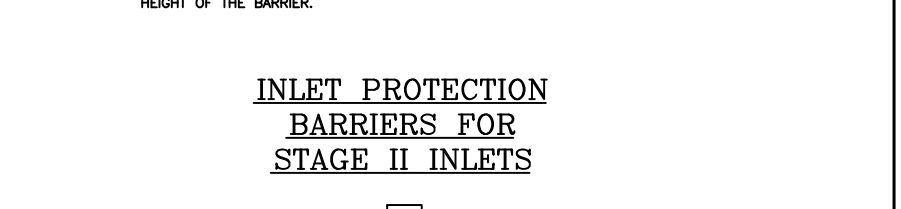
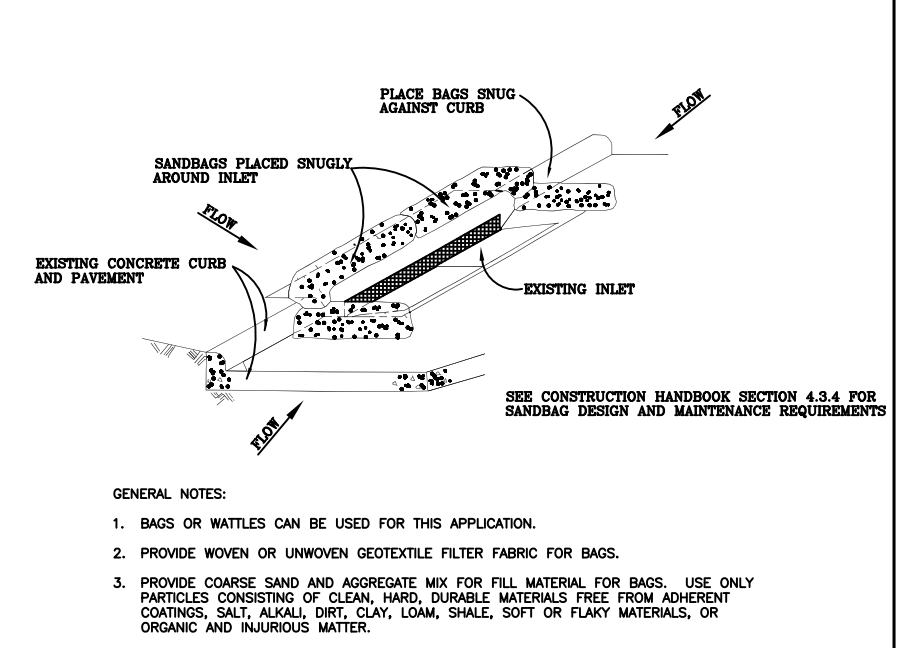
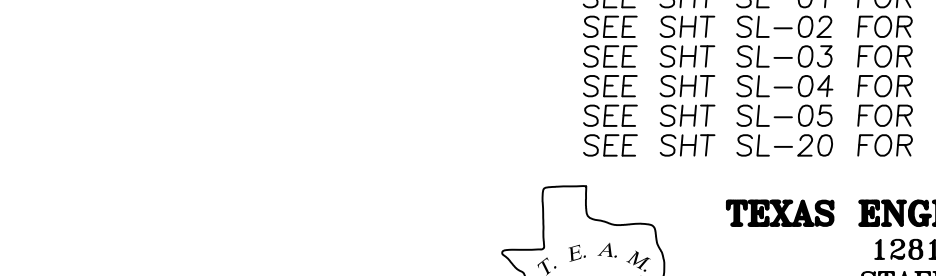
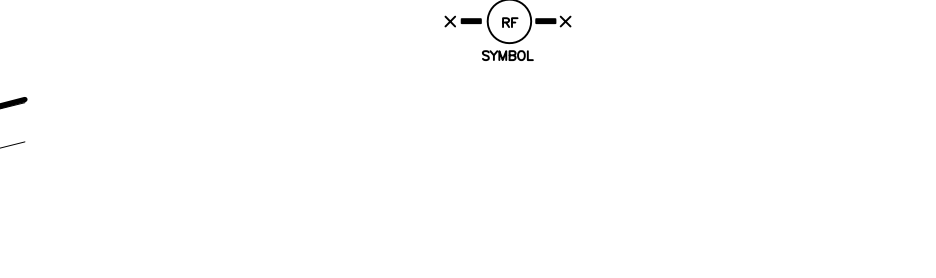
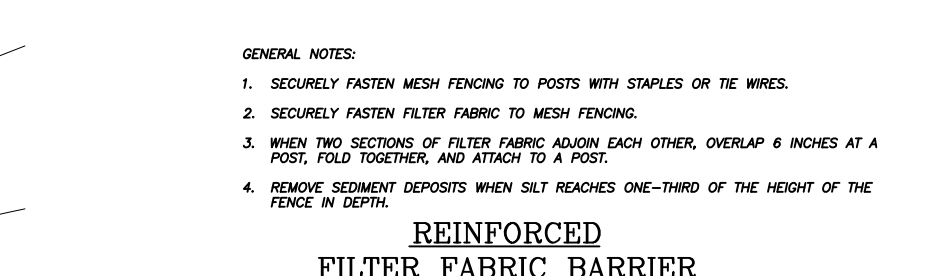
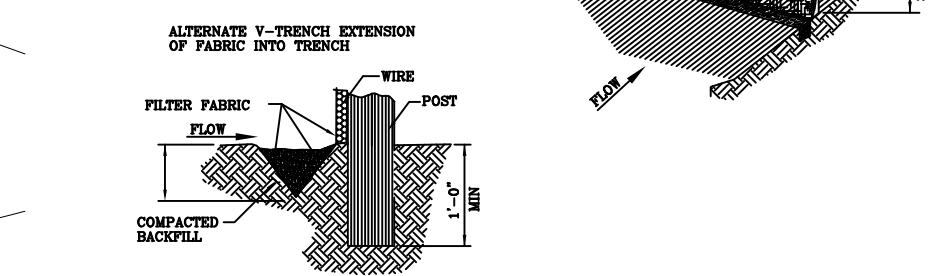
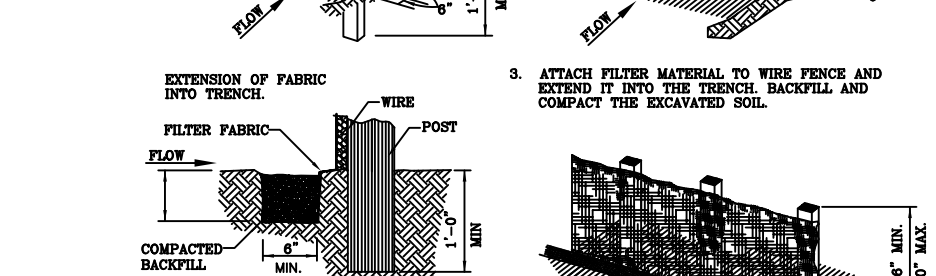
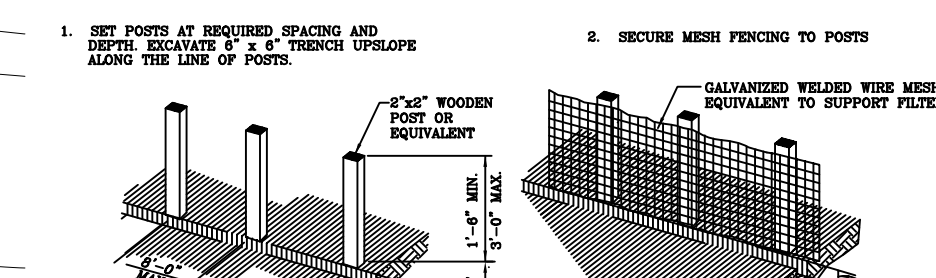
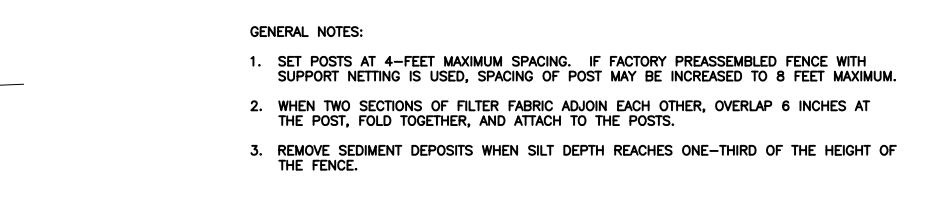
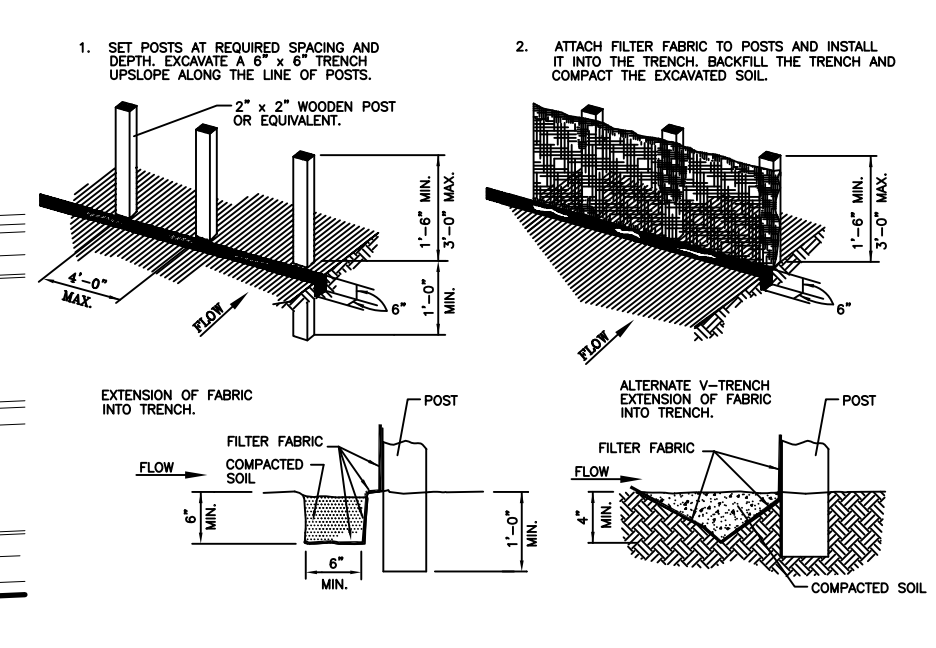
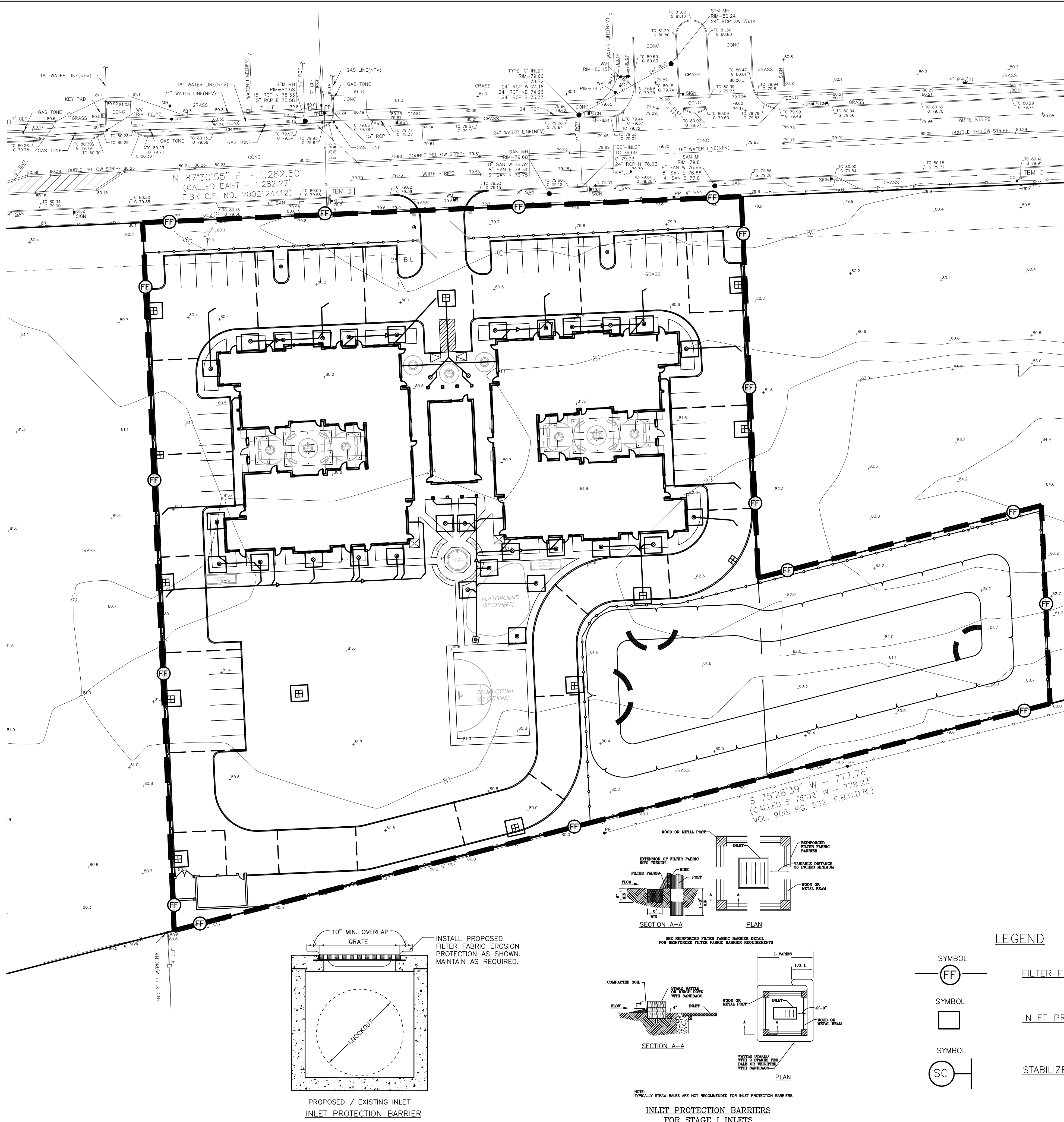
TEXAS ENGINEERING & MAPPING CO.  
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Project No.120131

**PAVING JOINT LAYOUT**

Sheet No.

**C-5**



**Optimum Personal Care Assisted Living Facilities**  
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#	Date	Description
1	12.10.12	SCHEMATIC DESIGN

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Project No.120131  
**SWPPP + DETAILS**  
 Sheet No.  
**C-6**

**LEGEND**

- SYMBOL (FF) FILTER FABRIC FENCE
- SYMBOL (SC) STABILIZED CONSTRUCTION EXIT
- SYMBOL (C-6) SWPPP & DETAILS

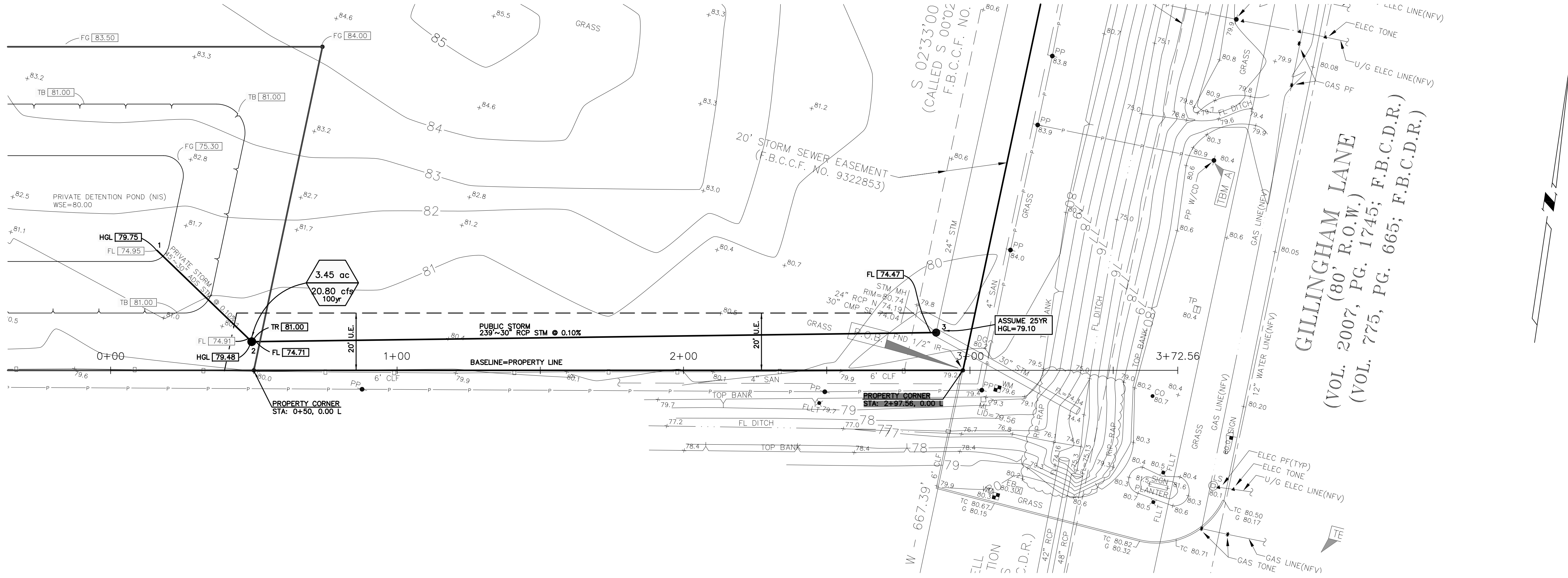
**C-6 SWPPP & DETAILS**

Scale 1" = 30'  
 JOB NO: 130-2  
 SEE SHT C-0 FOR TOPOGRAPHIC SURVEY  
 SEE SHT C-1 FOR GRADING & DRAINAGE  
 SEE SHT C-2 FOR STORM SEWER LAYOUT  
 SEE SHT C-3 FOR DRAINAGE AREA MAP  
 SEE SHT C-4 FOR SANITARY & WATER LAYOUT  
 SEE SHT C-5 FOR PAVING JOINT LAYOUT  
 SEE SHT C-6 FOR SWPPP & DETAILS  
 SEE SHT C-7 FOR NOTES & DETAILS  
 SEE SHT C-8 FOR P&P OVERALL  
 SEE SHT C-9 FOR PUBLIC STORM P&P  
 SEE SHT SL-01 FOR GENERAL CONSTRUCTION NOTES I  
 SEE SHT SL-02 FOR GENERAL CONSTRUCTION NOTES II  
 SEE SHT SL-03 FOR STORM SEWER MANHOLE DETAILS  
 SEE SHT SL-04 FOR STORM SEWER MANHOLE DETAILS  
 SEE SHT SL-05 FOR STORM SEWER CONSTRUCTION NOTES  
 SEE SHT SL-20 FOR STORM SEWER PIPE BEDDING & BACKFILL DETAILS

TEXAS ENGINEERING AND MAPPING  
 12810 CENTURY DRIVE  
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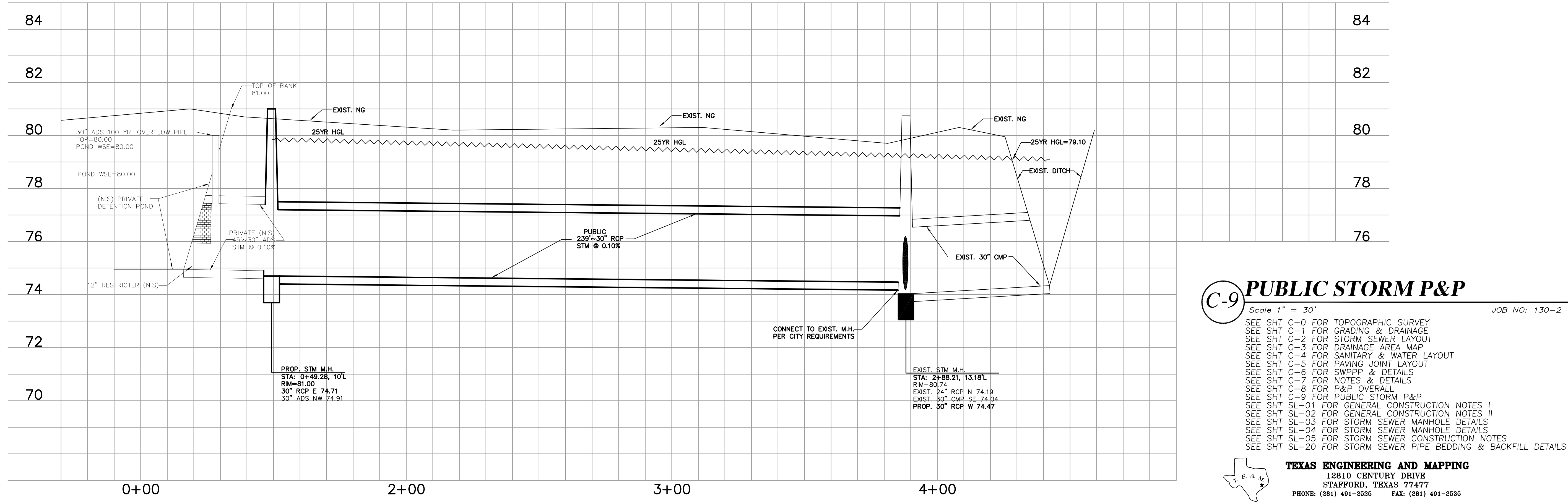


STORM CALCULATION TABLE

Inlet Area #	To	No.	Area (Acres)	C	C x A	Intensity (in/hr)	Sum of Time of Travel (min)	Pipe Length (ft)	Reach Diameter (in)	Hydraulic Radius (ft)	Slope (ft/ft)	Manning's Coefficient (n)	Capacity (cfs)	Velocity (ft/s)	Fall (ft)	Dmg	Flowline Elevation		Flowline Elevation		Elevation of These		Threat Area (Acres)	W.G. Elevation	Top Rim Elevation	Cover	Cover	Ponding	Ponding									
																	Upstream	Downstream	Upstream	Downstream	Upstream	Downstream								Upstream	Downstream							
1	2	1	3.45	0.70	2.415	7.570	18.20	18.57	0.2514	45	30	4.9367	0.65	0.19	0.013	12.971	2.642	0.045	0.00	74.95	77.45	74.91	77.41	3.724	0.1930	0.0896	0.1077	80.05	79.96	NA	NA	80.00	81.00	2.55	3.60	0.05	-1.14	
2	3	2	0.00	3.45	0.00	2.780	7.536	20.80	18.75	0.4601	259	30	4.9367	0.65	0.19	0.011	15.329	3.123	0.229	0.20	74.71	77.21	74.47	76.97	4.237	0.2576	0.0197	0.1384	79.86	79.10	NA	NA	81.00	80.74	3.80	3.77	-1.14	-1.84

**BENCHMARK:**  
SUGAR LAND FLOODPLAIN RM NO. SGR-RM016: A 3" BRASS DISK STAMPED "RM016" LOCATED AT THE INTERSECTION OF HIGHWAY 90A AT GILLINGHAM LANE, FROM SAID INTERSECTION TRAVEL NORTH ON GILLINGHAM LANE 184 FEET TO THE BENCHMARK LOCATED ON THE LEFT.  
ELEVATION = 77.93' (NAVD 88, 2001 ADJUSTMENT)

ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY'S FLOOD INSURANCE RATE MAP FOR FORT BEND COUNTY, TEXAS AND INCORPORATED AREAS, COMMUNITY PANEL NO. 48157-C-0140K EFFECTIVELY DATED APRIL 20, 2000, THIS PROPERTY LIES IN ZONE "X", AN AREA DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN.

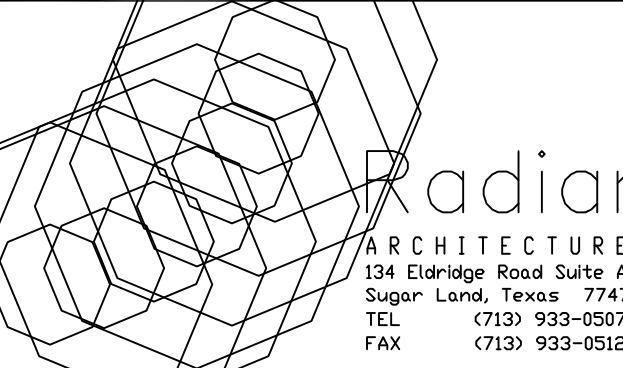


**C-9 PUBLIC STORM P&P**  
Scale 1" = 30'  
JOB NO: 130-2

- SEE SHT C-0 FOR TOPOGRAPHIC SURVEY
- SEE SHT C-1 FOR GRADING & DRAINAGE
- SEE SHT C-2 FOR STORM SEWER LAYOUT
- SEE SHT C-3 FOR DRAINAGE AREA MAP
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#	Date	Description
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TEXAS ENGINEERING & MAPPING CO.  
REGISTRATION # F-2906  
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Project No.120131  
**PUBLIC STORM P&P**  
Sheet No.  
**C-9**

GENERAL NOTES:

- 1. CONTACT THE ENGINEERING INSPECTORS WITH THE CITY'S ENGINEERING DEPARTMENT AT (281) 275-2780 PRIOR TO STARTING WORK TO SCHEDULE A PRE-CONSTRUCTION MEETING.
2. CONTRACTOR IS RESPONSIBLE FOR HAVING ALL BURIED UTILITIES IDENTIFIED, PROTECTED, REPLACED AND/OR PROPERLY REPAIRED IF DAMAGED. REPAIRS/REPLACEMENT SHALL BE AT CONTRACTOR'S EXPENSE.
3. CONTRACTOR SHALL OBTAIN AND MAINTAIN ON SITE ALL APPLICABLE PERMITS AND AN APPROVED COPY OF THE PLANS AND SPECIFICATIONS. NOTIFY THE CITY'S ENGINEERING DEPARTMENT 48 HOURS PRIOR TO COMMENCEMENT OF WORK.
4. CONTRACTOR IS RESPONSIBLE FOR NOTIFYING THE CITY'S ENGINEERING DEPARTMENT 24 HOURS PRIOR TO WEEKDAY WORK REQUIRING INSPECTION INCLUDING, BUT NOT LIMITED TO, LIMING, PAVING OPERATIONS, CONCRETE PLACEMENT, FORMING AND SET-UP, DENSITIES, PIPE INSTALLATION, AND ANY TESTING BY LABORATORIES. THE ENGINEERING DEPARTMENT MAY BE REACHED AT 281-275-2780 OR BY CONTACTING THE ASSIGNED INSPECTOR.
5. ALL SATURDAY WORK SHALL BE REQUESTED, IN WRITING, WITH THE CITY'S ENGINEERING DEPARTMENT AT LEAST 48-HOURS IN ADVANCE. SUNDAY AND HOLIDAY WORK REQUIRES 72 HR. WRITTEN REQUESTS AND MUST BE APPROVED BY THE CITY ENGINEER. FAXES MAY BE SENT TO (281) 275-2771. REQUIRED INSPECTIONS MAY BE SUBJECT TO INSPECTION FEES. NON-NOTIFICATIONS MAY RESULT IN NON-COMPLIANCE, WORK ORDERED STOPPAGE AND DOUBLE INSPECTION FEES.
6. FULL-TIME RESIDENT INSPECTION BY THE PROJECT ENGINEER'S REPRESENTATIVE SHALL BE PROVIDED AT ALL CRITICAL POINTS OF CONSTRUCTION OR AS DEEMED NECESSARY BY THE CITY OF SUGAR LAND.
7. FOLLOW-UP INSPECTIONS OF ALL PUBLIC INFRASTRUCTURE SHALL BE SCHEDULED WITHIN 60 DAYS OF THE INITIAL INSPECTION. COMPLETE RE-INSPECTION AND A NEW PUNCH LIST MAY BE REQUIRED AFTER THE 60 DAY PERIOD.
8. DESIGN AND CONSTRUCTION SHALL CONFORM TO THE TEXAS COMMISSION OF ENVIRONMENTAL QUALITY RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS, THE CITY OF SUGAR LAND DESIGN MANUAL (ISSUED 2007), AND THE CITY OF SUGAR LAND STANDARD DETAIL SHEETS. THE CITY OF SUGAR LAND DESIGN STANDARDS SHALL BE ACQUIRED (AND USED) FROM THE ENGINEERING DEPARTMENT. THE LATEST REVISIONS AND/OR AMENDMENTS SHALL BE OBSERVED. WHERE CONFLICT MAY ARISE BETWEEN INFORMATION ON APPROVED CONSTRUCTION DRAWINGS AND/OR PROJECT SPECIFICATIONS AND CITY OF SUGAR LAND STANDARDS, THEN THE CITY DESIGN STANDARDS SHALL GOVERN.
9. ALL STATIONS ARE CENTERLINE OF STREET RIGHT-OF-WAY UNLESS OTHERWISE NOTED ON THE PLANS EXCEPT IN SIDE OR BACK LOT EASEMENTS WHERE CENTERLINE IS CENTER OF PIPE. IN EASEMENTS WHERE SANITARY AND STORM SEWER ARE PRESENT PARALLEL, STATIONS SHALL BE BASED ON CENTERLINE OF STORM SEWER PIPING.
10. ADEQUATE DRAINAGE SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION. ANY DRAINAGE AREA OR STRUCTURE DISTURBED, DURING CONSTRUCTION, SHALL BE RESTORED TO THE SATISFACTION OF THE CITY OF SUGAR LAND. ALL CONSTRUCTION STORM RUNOFF SHALL COMPLY WITH THE REQUIREMENTS OF THE CITY OF SUGAR LAND DESIGN STANDARDS. IF NON-COMPLIANCE OCCURS, CONTRACTOR SHALL REMEDY IMMEDIATELY AT HIS OWN EXPENSE.
11. ANY POLLUTION CONTROL DEVICE, SOD, OR SEEDED AREA DAMAGED, DISTURBED, OR REMOVED SHALL BE REPLACED OR REPAIRED AT THE CONTRACTOR'S EXPENSE. THE CONTRACTOR IS RESPONSIBLE FOR WATERING ANY SEED OR SOD WHICH HE HAS INSTALLED UNTIL ADEQUATE GROWTH IS ACHIEVED TO PREVENT EROSION.
12. STORM WATER POLLUTION PROTECTION SHALL BE DESIGNED, CONSTRUCTED, MAINTAINED AND SHALL BE IN TOTAL COMPLIANCE WITH THE STORM WATER QUALITY MANUAL OF THE CITY OF SUGAR LAND.
13. ANY MATERIALS OR WORKMANSHIP NOT MEETING OR EXCEEDING CITY OF SUGAR LAND STANDARDS IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND WILL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE.
14. THE CONTRACTOR SHALL KEEP THE STREETS, RIGHT-OF-WAY, AND WORK AREA CLEAN OF DIRT, MUD, AND DEBRIS AS NEEDED OR AS REQUIRED BY CITY STAFF.
15. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN ALL REQUIRED TRAFFIC SAFETY CONTROL DEVICES UP TO AND INCLUDING FLAGMEN OR POLICE OFFICERS, IF DEEMED NECESSARY BY THE CITY OF SUGAR LAND.
16. THE CONTRACTOR SHALL CONTACT THE CITY OR LOCAL MUD AS APPROPRIATE TO OPERATE EXISTING UTILITIES AND PRIOR TO MAKING TIE-INS.
17. ALL BACKFILL WITHIN PUBLIC RIGHTS-OF-WAY OR EASEMENTS SHALL BE COMPACTED TO 95% STANDARD PROCTOR DENSITY (IN 8 INCH LIFTS) AND TESTED FOR ±2% OPTIMUM MOISTURE BY AN APPROVED LAB.
18. IT IS PERMISSIBLE TO USE A BACKHOE FOR TRENCH EXCAVATION IN LIEU OF A TRENCHING MACHINE.
19. THE CONTRACTOR SHALL NEVER UNLOAD ANY TRACK-TYPE VEHICLE OR EQUIPMENT ON ANY EXISTING PAVEMENT OR CROSS OVER ANY EXISTING PAVEMENT OR CURB.
20. ALL FINISH GRADES ARE TO CONFORM TO A MINIMUM SLOPE OF 6" PER 100 FT. POSITIVE DRAINAGE IS DEPICTED BY ARROWS.
21. CONTRACTOR SHALL UNCOVER EXISTING UTILITIES AT ALL "POINTS OF CROSSING" TO DETERMINE IF CONFLICTS EXIST BEFORE COMMENCING ANY CONSTRUCTION. NOTIFY THE ENGINEER AT ONCE OF ANY CONFLICT.
22. ALL FINISHED GRADES SHALL VARY UNIFORMLY BETWEEN FINISHED ELEVATIONS.
23. ALL TESTING PROCEDURES SHALL CONFORM TO THE CITY OF SUGAR LAND STANDARDS. THE INITIAL TESTING EXPENSE SHALL BE BORNE BY THE OWNER. IF ANY OF THE TESTS DO NOT MEET THE TESTING STANDARDS, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REMOVE OR REPLACE SUCH MATERIAL SO THE TESTING STANDARDS CAN BE MET. ADDITIONAL TESTING TO MEET COMPLIANCE SHALL BE AT THE CONTRACTOR'S EXPENSE.
24. CONTRACTOR SHALL PROVIDE SHEETING, SHORING, AND BRACING AS NECESSARY TO PROTECT WORKMEN AND EXISTING UTILITIES DURING ALL PHASES OF CONSTRUCTION AS PER O.S.H.A. REQUIREMENTS.
25. ALL MATERIALS AND WORKMANSHIP NOT GOVERNED BY CITY STANDARDS SHALL CONFORM TO THE LATEST VERSION OF THE TXDOT STANDARD SPECIFICATIONS AND THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, AND ANY REVISIONS THERETO.
26. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SAFEGUARDING AND PROTECTING ALL MATERIALS AND EQUIPMENT STORED ON THE JOBSITE IN A SAFE AND WORKMAN-LIKE MANNER (DURING AND AFTER WORKING HOURS), UNTIL JOB COMPLETION.
27. THE LOADING AND UNLOADING OF ALL PIPE, VALVES, HYDRANTS, MANHOLES, AND OTHER ACCESSORIES SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDED PRACTICES AND SHALL BE PERFORMED WITH CARE TO AVOID ANY DAMAGE TO THE MATERIAL. THE CONTRACTOR SHALL LOCATE AND PROVIDE THE NECESSARY STORAGE AREAS FOR MATERIAL AND EQUIPMENT.
28. THE CONTRACTOR SHALL FURNISH ALL MATERIALS, EQUIPMENT, AND LABOR FOR EXCAVATION, INSTALLATION, AND COMPLETION OF THE PROJECT AS SHOWN ON THE PLANS AND SPECIAL PROVISIONS TO COMPLY WITH CITY OF SUGAR LAND STANDARDS.
29. NO PRIVATE UTILITIES (I.E., PHONE, CABLE T.V., ELECTRICITY, ETC.) SHALL BE INSTALLED WITHIN 4 FEET BACK OF CURB.
30. PLANS DO NOT EXTEND TO OR INCLUDE DESIGNS OR SYSTEMS PERTAINING TO THE SAFETY OF THE CONTRACTOR OR ITS EMPLOYEES, AGENTS, OR REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. THE SEAL OF THE REGISTERED PROFESSIONAL ENGINEER(S) HEREON DOES NOT EXTEND TO ANY SUCH SYSTEMS THAT MAY NOW OR HEREAFTER BE INCORPORATED IN THE PLANS. THE CONTRACTOR SHALL PREPARE OR OBTAIN THE APPROPRIATE SAFETY SYSTEMS, INCLUDING CURRENT OSHA STANDARDS FOR TRENCH SAFETY SYSTEMS, SEALED BY A LICENSED PROFESSIONAL ENGINEER. APPROPRIATE TRENCH SAFETY PLANS SHALL BE SUBMITTED BY THE CONTRACTOR PRIOR TO EXECUTION OF A CONTRACT FOR HIS WORK.
31. FOR TRAFFIC SIGNAL CONSTRUCTION, CONTACT THE CITY OF SUGAR LAND INFORMATION TECHNOLOGY DEPARTMENT TO OBTAIN IP ADDRESSES FOR SIGNAL CABINET EQUIPMENT. ALLOW 5 WORKING DAYS FOR THE ADDRESS. ONCE EQUIPMENT HAS BEEN INSTALLED AND COMMUNICATIONS ESTABLISHED WITH THE TRAFFIC MANAGEMENT CENTER, IT WILL COMMISSION THE COMMUNICATION LINK. ALLOW 10 WORKING DAYS FOR COMMISSIONS.

CONCRETE/PAVING NOTES:

- 1. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS AND AUTHORIZATION REQUIRED BY CITY OF SUGAR LAND.
2. CONTRACTOR SHALL HAVE ALL UTILITIES LOCATED PRIOR TO CONSTRUCTION AND WILL REPAIR OR REPLACE ANY DAMAGE AT CONTRACTOR'S EXPENSE.
3. PAVING CONTRACTOR SHALL PROTECT WATER, SEWER, AND DRAINAGE FACILITIES AND WILL REPLACE ANY DAMAGED FACILITIES AT HIS OWN EXPENSE. ALL MANHOLES AND VALVES WITHIN THE PAVEMENT AREA SHALL BE ADJUSTED TO FINISH GRADE BY THE PAVING CONTRACTOR WITH THE USE OF APPROVED BLOCKOUTS.
4. WHEN THE TOP OF CURB OR BOTTOM OF SIDEWALK SLAB ELEVATION VARIES FROM THE NATURAL GROUND, THE PAVING CONTRACTOR SHALL BACKFILL IN LAYERS NOT EXCEEDING 8-INCHES IN DEPTH. EACH LAYER WILL BE COMPACTED TO A MINIMUM OF 95% STANDARD PROCTOR DENSITY. THE DISTURBED AREA SHALL BE SEED, SODDED, FERTILIZED, AND/OR SILT BARRIER FENCED WITHIN 10 WORKING DAYS. THE TYPE OF POLLUTION CONTROL WILL BE DETERMINED BY THE APPROVED PLANS AND/OR THE CITY OF SUGAR LAND CITY ENGINEER.
5. ALL PAVING SHALL BE IN ACCORDANCE WITH THE CITY OF SUGAR LAND DESIGN STANDARDS, APPROVED PLANS AND SPECIFICATIONS WITH THE LATEST REVISIONS OR AMENDMENTS. IN THE EVENT OF A CONFLICT, THE CITY OF SUGAR LAND DESIGN STANDARDS GOVERNS.
6. PAVING CONTRACTOR SHALL PROVIDE AND MAINTAIN SILT PROTECTION FENCES ON ALL STAGE I CURB INLETS. THE PAVING CONTRACTOR SHALL MAINTAIN ANY OTHER POLLUTION CONTROLS ESTABLISHED, I.E., ADDITIONAL SILT BARRIERS, SAND BAGS, ETC., FOR THE DURATION OF THE PROJECT. ANY DAMAGED OR MISSING DEVICES SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE.
7. EXISTING PAVEMENTS, CURBS, SIDEWALKS, DRIVEWAYS, ETC., DAMAGED OR REMOVED DURING CONSTRUCTION SHALL BE REPLACED TO THE CITY OF SUGAR LAND STANDARDS AT THE CONTRACTOR'S EXPENSE.
8. CONDITION OF THE WORK AREA (INCLUDING ROADS, RIGHT-OF-WAYS, ETC.) UPON COMPLETION OF THE JOB SHALL BE AS GOOD OR BETTER THAN THE CONDITION PRIOR TO STARTING THE WORK.
9. ALL DRIVEWAYS WILL BE LOCATED TO AVOID EXISTING CURB INLET STRUCTURES.
10. REDWOOD AND KEYPAWS SHALL NOT INTERSECT WITHIN 2 FEET OF AN INLET.
11. AT INITIAL AND FINAL INSPECTIONS THE PAVEMENT WILL BE FLOODED TO CHECK FOR BIRDBATHS AND CRACKS. FLOODING OF STREETS SHALL OCCUR 1 HOUR PRIOR TO INSPECTION.
12. ALL CONCRETE PLACED SHALL BE UNIFORMLY SPRAYED WITH A MEMBRANE CURING COMPOUND AS DESCRIBED IN ITEM 526 IN THE TXDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION. IMPROPER APPLICATION WILL RESULT IN THE REJECTION OF THE CONCRETE.
13. SIX (6) INCH, 5.5 SK, 3500 PSI @ 28 DAYS, REINFORCED WITH #4 REBAR, 24" C.C. EACH WAY IS THE MINIMUM ACCEPTABLE CONSTRUCTION FOR LOCAL STREETS.
14. SEVEN (7) INCH, 5.5 SK, 3500 PSI @ 28 DAYS, REINFORCED WITH #4 REBAR, 18" C.C. EACH WAY IS THE MINIMUM ACCEPTABLE PAVEMENT CONSTRUCTION FOR COLLECTOR STREETS.
15. EIGHT (8) INCH, 5.5 SK, 3500 PSI @ 28 DAYS, REINFORCED WITH #4 18" C.C. EACH WAY IS THE MINIMUM ACCEPTABLE FOR ARTERIAL STREETS.
16. WHEN CONCRETE PAVEMENT INTERSECTS THICKER PAVEMENT, THE THICKER PAVEMENT SHALL BE CONSTRUCTED TO THE ENDS OF ALL CURB RETURNS.
17. ALL RETURNS SHALL HAVE A MIN. 25 FT. RADIUS AT THE FACE OF CURB UNLESS OTHERWISE NOTED.
18. ALL INTERSECTIONS SHALL BE CONSTRUCTED WITH WHEELCHAIR RAMPS IN ACCORDANCE WITH THE TEXAS ACCESSIBILITY STANDARD, THE AMERICAN DISABILITIES ACT, AND THE CITY OF SUGAR LAND STANDARDS (LATEST REVISIONS). (NO BLOCOUTS)
19. CONCRETE SIDEWALKS SHALL BE CONSTRUCTED WITHIN EACH STREET RIGHT-OF-WAY IN ACCORDANCE WITH CITY OF SUGAR LAND, THE A.D.A., AND THE T.A.S. STANDARDS (LATEST REVISIONS).
20. CRACKS LARGER THAN 1/16-INCH ARE NOT ACCEPTABLE IN NEW PAVEMENT. CRACKS 1/16-INCH OR LESS SHALL BE ADDRESSED ON AN INDIVIDUAL BASIS BY DRILL AND EPOXY INJECTION, SUBJECT TO APPROVAL OR REJECTION.
21. PROPER TESTING AND LAB DOCUMENTATION IS REQUIRED. FAILURE TO MEET THE MINIMUM PAVEMENT REQUIREMENTS WILL RESULT IN THE REJECTION OF SAID PAVEMENT. IMMEDIATE REMOVAL AND REPLACEMENT OF SUBSTANDARD PAVEMENT SECTIONS WILL BE NECESSARY TO SATISFY THESE REQUIREMENTS.
22. 4-CONCRETE CYLINDERS, SLUMP, AND AIR ENTRAINMENT TESTS ARE REQUIRED FOR EACH 100 CUBIC YARDS OF CONCRETE PAVING WITH A MINIMUM OF ONE SET OF 4 PER PLACEMENT. THE CITY OF SUGAR LAND RESERVES THE RIGHT TO REQUEST ANY ADDITIONAL TESTS AT THE CONTRACTOR'S EXPENSE, IF ANY MATERIAL APPEARS BELOW STANDARDS.
23. NO. 3 REBAR, 18-INCH C.C. E.W. IS THE MINIMUM ACCEPTABLE FOR SIDEWALKS, NUMBER 4-REBAR, 24-INCH C.C. EACH WAY IS THE MINIMUM ACCEPTABLE FOR COMMERCIAL APPROACHES, HANDICAP RAMPS, RESIDENTIAL APPROACHES AND DRIVEWAYS.
24. COLD WEATHER PRECAUTIONS. CONCRETE PAVEMENT SHALL NOT BE PLACED WHEN THE AMBIENT TEMPERATURE IS 40°F AND FALLING. CONCRETE MAY BE PLACED IF THE AMBIENT TEMPERATURE IS 35° AND RISING. CONTRACTOR SHALL PROVIDE AN APPROVED COVERING MATERIAL (COTTON MATS, POLYETHYLENE SHEETING, ETC.) IN THE EVENT TEMPERATURE SHOULD FALL BELOW 32°F. NO SALT OR OTHER CHEMICALS SHALL BE ADDED TO CONCRETE TO PREVENT FREEZING.
25. HOT WEATHER. NO CONCRETE PAVEMENT MIXTURE SHALL BE PLACED IF THE MIXTURE TEMPERATURE IS ABOVE 95°F. AIR AND WATER REDUCER ARE REQUIRED IF MIXTURE TEMPERATURE REACHES 85°F OR ABOVE.
26. IF NO AIR AND WATER REDUCER HAS BEEN ADDED, NO CONCRETE SHALL BE PLACED IF MORE THAN 60 MINUTES PAST BATCH TIME. IF AIR AND WATER REDUCER HAS BEEN ADDED, NO CONCRETE SHALL BE PLACED IF MORE THAN 90 MINUTES PAST BATCH TIME.
27. STRUCTURE TEMPERATURES AND TIMING FOR CONCRETE PLACEMENT MAY VARY. REFER TO TXDOT STANDARDS ITEM 420 FOR DETAILS.
28. TRANSVERSE EXPANSION JOINTS SHALL BE PLACED AT ALL POINTS OF CURVATURE, POINTS OF TANGENCY AND ALL INTERSECTION CURB RETURN POINTS. MAXIMUM SPACING SHALL BE 200' AND BE SEALED WITH SEALANT CONFORMING TO TXDOT ITEM 360 (& ITEM 438) AND TXDOT DMS-6310, CLASS-2.
29. CONTROL JOINTS SHALL BE PLACED AT 20' C-C.
30. EXPANSION JOINT LAYOUT FOR INTERSECTIONS SHALL BE PROVIDED BY ENGINEER FOR CITY APPROVAL.
31. NO WIRE MESH IS ALLOWED IN ANY CONCRETE WITHIN THE CITY LIMITS OR ETC.
32. ALL REBAR SHALL BE 100% TIED. OVERLAPS SHALL BE DOUBLE TIED MINIMUM. REINFORCED STEEL SHALL BE A MINIMUM 6% COVERAGE.
33. ALL NEW CURB REQUIRES 3,000 P.S.I. @ 28-DAYS. 4 CONCRETE CYLINDERS, SLUMP, AND AIR ENTRAINMENT TESTS ARE REQUIRED FOR EACH 50 CUBIC YARDS OF CONCRETE CURB WITH A MINIMUM OF ONE SET OF 4 PER PLACEMENT.
34. A CITY INSPECTOR MUST BE PRESENT ON ALL PROOF ROLLS, LIME DEPTH CHECKS AND DENSITY TESTS AND MUST BE CONTACTED AT LEAST 24 HOURS PRIOR TO THE TEST.
35. CONCRETE MIX DESIGN MUST BE SENT TO THE CITY FOR APPROVAL A MINIMUM 72 HOURS BEFORE THE FIRST CONCRETE POUR.
36. FOR A REGULAR MIX, SLUMP SHALL BE A MAXIMUM OF 5". FOR A MIX WITH A WATER REDUCER, SLUMP SHALL BE A MAXIMUM OF 6".
37. VEHICLES OF ALL TYPES ARE PROHIBITED FROM DRIVING ON NEW PAVEMENTS THREE (3) DAYS AFTER THE CONCRETE POUR AND UNTIL THE CONCRETE HAS REACHED A MINIMUM OF 3,000 PSI. PAVEMENT PROTECTION SUCH AS A DIRT LAYER OF AT LEAST 12" IS REQUIRED FOR TRACK EQUIPMENT AT PAVEMENT CROSSINGS.
38. IN LIEU OF MECHANICALLY CONTROLLED VIBRATORS CONTROLLED BY A SLIP-FORM PAVING MACHINE, HAND MANIPULATED MECHANICAL VIBRATORS SHALL BE USED FOR PROPER CONSOLIDATION OF CONCRETE IN ALL PAVEMENT AREAS (ALONG FORMS, AT JOINTS, ETC.).
39. ALL CONCRETE STREETS AND BRIDGE SURFACES SHALL HAVE A "BAKER BROOM" FINISH, WHILE ALL OTHER CONCRETE PLACEMENT SHALL HAVE A MEDIUM BROOM FINISH.
40. ALL PAVEMENT MARKINGS TO BE DONE IN CONFORMANCE WITH THE LATEST VERSION OF TMUTCD AND TXDOT STANDARD SPECIFICATIONS AND ANY REVISIONS THERETO.
1. REFER TO GENERAL NOTES.

CEMENT STABILIZED SAND:

- 1. ALL STABILIZED SAND SHALL BE A MINIMUM OF 1.5 SK PER CUBIC YARD.
2. CEMENT STABILIZED SAND (C.S.S.) SHALL ACHIEVE A MINIMUM OF 100 PSI WITHIN 48 HOURS.
3. A MINIMUM OF 2 RANDOM SAMPLES SHALL BE TAKEN EACH WEEK. (FOR SMALLER PROJECTS, ONE SAMPLE MAY SUFFICE WITH CITY OF SUGAR LAND APPROVAL.) THE CITY OF SUGAR LAND RESERVES THE RIGHT TO REQUIRE ADDITIONAL TESTS, AT THE CONTRACTOR'S EXPENSE IF IT IS DEEMED NECESSARY.
4. ANY C.S.S. NOT MEETING CITY OF SUGAR LAND STANDARDS SHALL BE REMOVED AND REPLACED AT THE CONTRACTOR'S EXPENSE.
5. BOTH CEMENT CONTENT AND COMPRESSIVE TESTS SHALL BE CONDUCTED ON C.S.S. SAMPLES.
6. ALL C.S.S. SHALL BE COMPACTED IN MAXIMUM OF 8-INCH LIFTS AND REQUIRED TO REACH A MINIMUM DENSITY OF 95%. 7. REFER TO GENERAL NOTES.

BANK SAND:

- 1. BANK SAND IS DEFINED AS A WELL-GRADED SAND, FREE OF SILT, CLAY, FRAGILE OR SOLUBLE MATERIALS AND ORGANIC MATER, MEETING THE UNIFORM CLASSIFICATIONS SYSTEM GROUP SYMBOL SW CRITERIA WITH A BALL-BEARING INDEX OF LESS THAN 7 AND MORE THAN 12% OF MATERIAL PASSING THE No. 200 SIEVE.

ASPHALT - OILS AND EMULSIONS:

- 1. CONTRACTOR SHALL VERIFY LINES AND GRADES AND THAT COMPACTED BASE IS READY TO SUPPORT LOADS.
2. BASE MATERIAL SHALL BE DRY AND THOROUGHLY CLEAN OF LOOSE MATERIAL PRIOR TO APPLICATION.
3. OILS & EMULSION SHALL BE DISTRIBUTED EVENLY AND SMOOTHLY UNDER PRESSURE NECESSARY FOR PROPER DISTRIBUTION.
4. MAINTAIN REQUIRED SURFACE CONDITIONS UNTIL ACCEPTED BY THE CITY OF SUGAR LAND.
5. PRIME COAT SHALL BE M.C.-30, M.C. 70 OR E.P.R.1 PRIME AND SHALL COMPLY WITH TXDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION OF HIGHWAYS, STREETS, AND BRIDGES (1993) AND ITS LATEST REVISIONS.
6. TACK COAT SHALL BE SS-1 AND SHALL COMPLY TO TXDOT, S.S.C.H.S. & B. (1993) AND ITS LATEST REVISIONS.
7. M.C.-30 AND M.C.-70 AND EPR-1 PRIME SHALL BE DISTRIBUTED AT A RATE OF .25 TO .35 GALLONS PER SQUARE YARD AND MAY NOT BE APPLIED WHEN AMBIENT TEMPERATURE IS 50°F AND FALLING. (NOTICE: CUTBACK ASPHALTS MAY NOT BE USED DURING THE PERIOD OF APRIL 16 THROUGH SEPT. 15 AS PER ASTM D-244).
8. EPR-1 MAXIMUM WATER DILUTION IS 3 PARTS WATER TO ONE PART EPR.
9. SS-1 TACK COAT SHALL BE APPLIED AT A RATE NOT TO EXCEED 0.06 GAL PER SQUARE YARD OF SURFACE AREA. CONTACT JOINTS, CURBS, ETC. SHALL BE PAINTED WITH AN EVEN THIN COAT APPLIED BY BRUSH OR BROOM. COATING MATERIAL SHALL BE HEATED TO 120°F TO 180°F WHEN APPLIED. TACK COAT MAY BE APPLIED WHEN AMBIENT TEMPERATURES ARE 40°F AND RISING. TACK COAT MAY NOT BE APPLIED IF AMBIENT AIR IS 50°F AND FALLING.

LIMING SUBGRADE:

- 1. LIME SHALL BE A "SLURRY" AS PER TXDOT 260 UNLESS SPECIFICALLY RECOMMENDED BY THE GEO TECHNICAL ENGINEER AND APPROVED BY THE CITY ENGINEER.
2. ALL LIME SLURRIES SHALL BE FURNISHED AT OR ABOVE THE MINIMUM "DRY SOLIDS" CONTENTS AS APPROVED BY THE ENGINEER.
3. SUBGRADE SHALL BE STABILIZED WITH A MINIMUM SIX PERCENT (6%) LIME BY WEIGHT, EIGHT INCHES (8") THICK THE INITIAL MIX TO REDUCE PLASTICITY INDEX (PI) TO 20 OR LESS AS DETERMINED BY THE LIME SERIES. THE FINAL MIX SHALL BE AT SIX INCHES (6") THICK.
4. LIME DRY SOLID CONTENT TESTS SHALL BE CONDUCTED ON SITE, ONCE PER ONE-HUNDRED (100) TONS OF MATERIAL DISTRIBUTED, UNLESS OTHERWISE NOTED.
5. THE SUBGRADE SHALL BE SHAPED AND GRADED TO CONFORM TO THE TYPICAL SECTIONS, AS SHOWN ON THE PLANS, PRIOR TO TREATING THE EXISTING MATERIAL.
6. UNLESS APPROVED BY THE CITY ENGINEER, LIME OPERATIONS SHALL NOT BE STARTED WHEN THE AMBIENT AIR TEMPERATURE IS BELOW 40°F, AND FALLING. LIMING MAY, WITH APPROVAL, BE STARTED WHEN THE AMBIENT AIR TEMPERATURE IS 35°F AND RISING. LIME SHALL NOT BE PLACED WHEN WEATHER CONDITIONS, IN THE ENGINEER'S OPINION, ARE UNSUITABLE.
7. THE SUBGRADE MATERIAL AND SLURRY SHALL BE THOROUGHLY MIXED, BROUGHT TO THE PROPER MOISTURE CONTENT (±2) AND LEFT TO CURE USUALLY 3 DAYS (72 HRS.) MINIMUM AS APPROVED BY THE CITY ENGINEER.
8. AFTER CURING, THE SUBGRADE SHALL BE REMIXED UNTIL PULVERIZATION REQUIREMENTS ARE MET, AS PER TXDOT.
9. PERCENT MINIMUM PASSING 1-3/4" SIEVE.....100
PERCENT MINIMUM PASSING 3/4" SIEVE.....85
PERCENT MINIMUM PASSING No.4 SIEVE.....60
10. SIEVE TESTS SHALL BE CONDUCTED EVERY 150 LF ON ALTERNATING LANES OF TRAFFIC OR EVERY 300 LF ON SINGLE LANES AS REQUIRED. AT LEAST ONE TEST SHALL BE CONDUCTED ON EACH ROADWAY OR CUL-DE-SAC.
11. THE MATERIAL SHALL BE AERATED OR MOISTENED TO + OR -2% OPTIMUM PRIOR TO COMPACTION. COMPACTION TO A MINIMUM 95% DENSITY SHALL BEGIN IMMEDIATELY AFTER ALL PULVERIZATION AND MOISTURE REQUIREMENTS ARE MET. THROUGHOUT THIS ENTIRE OPERATION, THE SURFACE SHALL BE SMOOTH AND IN CONFORMITY WITH THE LINES AND GRADES ON THE PLANS.
12. WHEN THE SUBGRADE FAILS TO MEET DENSITY REQUIREMENTS OR SHOULD IT LOSE THE REQUIRED STABILITY, DENSITY, OR FINISH, IT SHALL BE REWORKED IN ACCORDANCE WITH TXDOT SUBARTICLE 260.4(7) "WORKING A SECTION", WHICH MAY REQUIRE AN ADDITIONAL 25% OF THE SPECIFIED LIME AMOUNT.
13. THE TREATED SUBGRADE SHALL BE KEPT MOIST AND PREVENTED FROM DRYING. IN THE EVENT OF A ONE-HALF (1/2) INCH RAINFALL AND/OR IF THE MATERIAL BECOMES DRY AND IS NOT IN COMPLIANCE WITH THE ±2% OPTIMUM MOISTURE, DENSITY AND MOISTURE TESTS SHALL BE RETAKEN.
14. LIME DEPTH DETERMINATIONS WILL BE CONDUCTED AT EACH LOCATION OF DENSITY TESTING, LIME-STABILIZED SUBGRADE SHALL BE A MINIMUM OF 6% AT 8" UNLESS OTHERWISE DIRECTED BY CITY ENGINEER. DENSITY TESTING SHALL BE DONE IMMEDIATELY PRIOR TO PLACEMENT OF REINFORCING STEEL AND SHALL BE COMPACTED TO A MINIMUM OF 95%. LIME DEPTH TESTS SHALL BE CONDUCTED AT EVERY 150 LF OF ROADWAY ON ALTERNATING LANES OR EVERY 300 LF OF SINGLE LANE. AT LEAST ONE TEST SHALL BE CONDUCTED ON EACH ROADWAY AND/OR CUL-DE-SAC.
15. 22. NO SUBGRADE SHALL BE COVERED WITH ANOTHER MATERIAL UNLESS APPROVED BY THE CITY OF SUGAR LAND AND LIME DEPTH TESTS HAVE BEEN COMPLETED.

HOT MIX ASPHALTIC BASE COURSE:

- 1. NO HOT MIX ASPHALTIC BASE MAY BE INSTALLED UNTIL THE SUBGRADE HAS BEEN PROPERLY PREPARED AND TESTED AS PER THE PLANS AND SPECIFICATIONS. THE SUBGRADE SHALL BE INSPECTED AND APPROVED BY THE CITY OF SUGAR LAND BEFORE ANY BASE MATERIALS ARE INSTALLED.
2. HOT MIX ASPHALTIC BASE MATERIALS, HANDLING, AND INSTALLATION SHALL COMPLY WITH TXDOT STANDARDS FOR CONSTRUCTION OF HIGHWAYS, STREETS, AND BRIDGES 1995 (SECTION 20271) AND ITS LATEST REVISIONS.
3. HOT MIX ASPHALTIC MATERIALS SHALL BE AT TEMPERATURES BETWEEN 250°F AND 325°F WHEN PLACED.
4. MATERIALS MAY NOT BE PLACED IN WET CONDITIONS OR IF THE AMBIENT TEMPERATURE IS BELOW 50°F AND FALLING. MATERIAL MAY BE INSTALLED IF THE AMBIENT TEMPERATURE IS TAKEN IN THE SHADE AND IS 40°F AND RISING.
5. PLACE BASE COURSES 4 INCHES OR GREATER IN THICKNESS IN TWO OR MORE LAYERS, EACH HAVING A COMPACTED THICKNESS OF NOT GREATER THAN 4 INCHES.
6. BASE MATERIAL MAY ONLY BE PLACED AGAINST CLEAN, STRAIGHT EDGES. SAW CUTTING, FULL DEPTH, IS REQUIRED AT EXISTING EDGES ARE ROUGH OR UNEVEN.
7. COMPACTION SHALL BEGIN WHILE MATERIAL IS STILL HOT AND AS SOON AS IT WILL BEAR THE ROLLER OR COMPACTOR WEIGHT WITHOUT UNDUE DISPLACEMENT OR HAIR CRACKING.
8. COMPACT SURFACE UNIFORMLY WITH ROLLERS OR TAMPERS IN LOCATIONS NOT READILY ACCESSIBLE (I.E., ALONG CURBS, WALLS, ETC.).
9. UNLESS OTHERWISE SPECIFIED, COMPACT DENSITY SHALL NOT BE LESS THAN 95% OF MAXIMUM POSSIBLE DENSITY.
10. A CERTIFIED LAB SHALL BE ON SITE AT ALL TIMES TO TEST AND PROPERLY DOCUMENT THE CONSTRUCTION METHODS AND QUALITY OF MATERIALS.
11. ALL MATERIALS AND WORKMANSHIP SHALL COMPLY TO A.S.T.M. ASPHALT INSTITUTE AND CITY OF SUGAR LAND REQUIREMENTS. FAILURE TO COMPLY WILL RESULT IN REJECTION OF SAID MATERIALS AND SUCH SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
12. DO NOT OPEN BASE TO TRAFFIC UNTIL IT CAN BE MAINTAINED IN GOOD CONDITION AND IS CAPABLE OF SUPPORTING VEHICLE WEIGHT WITHOUT DAMAGE OR DEGRADATION.
13. DENSITY SHALL BE TAKEN AT A MINIMUM OF AT LEAST ONCE PER 300 LF OF DRIVEWAY OR ONCE PER 250 SQ. YD., WHICHEVER MAY APPLY AND SHALL BE STAGGERED RELATIVE TO TESTING SITES IN ADJUTING TRAFFIC LANES. FAILURE TO MEET MINIMUM REQUIREMENTS SHALL RESULT IN THE REPLACEMENT OF SAID MATERIAL AT CONTRACTOR'S EXPENSE.

PLOT TIME:

CADD FILE PATH: PLOT DATE:

Table with 3 columns: No., DATE, REVISION

Professional Engineer Seal for Carlos J. Barillas, State of Texas, Registration # 12-2908



CITY OF SUGAR LAND, TEXAS ENGINEERING DEPARTMENT

CONSTRUCTION PLANS FOR:

GENERAL CONSTRUCTION NOTES I

Table with 2 columns: Job No., Date, Designed By, Drawn By, Checked By, Sheet No. (SL-01)

PLOT TIME:

ASPHALTIC CONCRETE PAVEMENT:

- 1. ASPHALTIC MATERIAL AND WORKMANSHIP SHALL COMPLY WITH ASTM C 33, ASTM C 131, ASTM C 136, AND TxDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION OF HIGHWAYS, STREETS AND BRIDGES (1993) AND ITS LATEST REVISIONS. ASPHALT SHALL BE TYPE D-100 UNLESS SPECIFICALLY NOTED AND APPROVED BY CITY OF SUGAR LAND ENGINEER.
2. CONTRACTOR SHALL VERIFY ELEVATIONS AND GRADES AND THAT BASE COURSE IS READY TO SUPPORT IMPOSED LOADS.
3. APPLY A PRIME COAT AS PER CITY OF SUGAR LAND AND TxDOT STANDARDS. DO NOT APPLY TACK COAT UNTIL PRIMED BASE COURSE HAS CURED AND IS APPROVED BY THE CONSTRUCTION INSPECTOR.
4. TACK COAT SHALL COMPLY TO CITY OF SUGAR LAND AND TxDOT STANDARDS.
5. DO NOT USE CUTBACK ASPHALT APRIL 16 THROUGH SEPTEMBER 15.
6. DO NOT PLACE ASPHALT WHEN AMBIENT TEMPERATURE IS BELOW 50°F AND FALLING. MIXTURE MAY BE PLACED WHEN AMBIENT TEMPERATURE IS 40°F AND RISING.
7. ON PUBLIC ROADS, STREETS, AND RIGHT-OF-WAY, ASPHALT SHALL BE PLACED IN MAXIMUM 2-INCH LIFTS. IN THE EVENT MORE THAN ONE LIFT IS REQUIRED, EACH LIFT SHALL BE COMPACTED, TESTED, AND GIVEN ADEQUATE TIME FOR THE PREVIOUS LIFT TO CURE AND DRY BEFORE THE NEXT LIFT IS PLACED. IF COMPLETELY CURED AND DRIED, A TACK COAT WILL BE REQUIRED BETWEEN LIFTS.
8. A CERTIFIED LAB SHALL BE ON SITE AT ALL TIMES TO TEST AND PROPERLY DOCUMENT THE CONSTRUCTION METHODS AND QUALITY OF MATERIALS.
9. ROLLING PATTERNS SHALL BE ESTABLISHED BY THE CONTRACTOR, AS RECOMMENDED BY THE LAB, TO ACHIEVE THE MAXIMUM COMPACTION. THE SELECTED ROLL PATTERN SHALL BE FOLLOWED UNLESS CHANGES IN THE PLACEMENT OR MIXTURE OCCUR, WHICH AFFECT COMPACTION. COMPACTION OF 95% SHALL BE ACHIEVED.
10. ASPHALT SHALL NOT BE PLACED ON WET BASE.
11. NO "BIRDBATHS" ARE ALLOWED.
12. IF THE SURFACE RAVELS (SEPARATES), FLUSHES, RUTS, OR DETERIORATES IN ANY MANNER PRIOR TO FINAL ACCEPTANCE, THE CONTRACTOR WILL CORRECT THIS CONDITION AT HIS EXPENSE TO THE SATISFACTION OF THE CITY OF SUGAR LAND ENGINEER.
13. THE CONTRACTOR SHALL PROTECT THE PAVEMENT UNTIL DIRECTED BY THE CITY ENGINEER TO OPEN SAID PAVEMENT TO TRAFFIC.
14. RIDE QUALITY SHALL COMPLY WITH TxDOT ITEM 585, "RIDE QUALITY FOR PAVEMENT SURFACES".
15. SPECIAL NOTE: CONTRACTOR, WHILE MAXIMIZING COMPACTION, SHALL USE CAUTION NOT TO "OVER-ROLL" ASPHALT. PAVEMENT STRETCHED OR OVER-ROLLED, WHERE COMPACTION IS BROKEN, SHALL NOT BE ACCEPTED AND SHALL BE REPAIRED OR REPLACED TO THE CITY ENGINEER'S SATISFACTION AT THE CONTRACTOR'S EXPENSE.
16. CORE SAMPLES SHALL BE TAKEN RANDOMLY AT A MINIMUM OF EVERY 300 LF PER LANE OF ROADWAY OR ONE PER EVERY 250 SQ. YD., WHICHEVER IS APPLICABLE AND SHALL BE STAGGERED RELATIVE TO TESTING SITES IN ADJUTING TRAFFIC LANES.
17. ALL ASPHALTIC CONCRETE PAVEMENT REPAIRS SHALL BE SAW CUT TO FULL ASPHALT DEPTH. REFER TO ASPHALT, STABILIZED BASE, FLEXIBLE BASE, ASPHALT BASE, AND OIL AND EMULSION NOTES. ALL DAMAGED BASE AND SUBGRADES SHALL BE REMOVED AND REPLACED TO THE CITY ENGINEER'S SATISFACTION, AT THE CONTRACTOR'S EXPENSE. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AREA DAMAGED DURING CONSTRUCTION, INCLUDING AREAS OUTSIDE THE DESIGNATED REPAIR.

STABILIZED CRUSHED CONCRETE:

- 1. TEST AND ANALYSIS OF AGGREGATE AND BINDER MATERIALS WILL BE PERFORMED IN ACCORDANCE WITH ASTM D 1557 AND ASTM D 4318. CEMENT SHALL BE ASTM 150 TYPE I.
2. ALL MATERIALS AND WORKMANSHIP SHALL COMPLY WITH TxDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION OF HIGHWAYS, STREETS AND BRIDGES (1993) AND ITS LATEST REVISIONS AND CITY OF SUGAR LAND STANDARDS.
3. PRIME COAT SHALL BE M.C. 30 OR EPR-1 PRIME.
4. DESIGN MIX FOR MINIMUM AVERAGE COMPRESSIVE STRENGTH OF 200 PSI IN 48 HRS. PROVIDE MINIMUM CEMENT CONTENT OF 2 SK PER TON OF MIX. CEMENT CONTENT MAY BE RAISED AT THE CONTRACTOR'S EXPENSE IF TESTS ON FIELD SAMPLES FALL BELOW 200 PSI.
5. THREE SAMPLES SHALL BE MOULDED EACH DAY FOR EACH 300 TONS OF PRODUCTION. COMPRESSIVE STRENGTH SHALL BE THE AVERAGE OF THREE TESTS FOR EACH PRODUCTION LOT. CONTRACTOR SHALL REPLACE, AT HIS OWN EXPENSE, ANY MATERIAL BELOW MINIMUM REQUIREMENTS.
6. CONTRACTOR SHALL VERIFY LINES, GRADES, AND COMPACTED SUBGRADING AS READY TO RECEIVE MATERIALS PRIOR TO ITS PLACEMENT.
7. CEMENT STABILIZED BASE MAY NOT BE PLACED IF AMBIENT TEMPERATURE IS 40°F AND FALLING. BASE MATERIAL MAY BE PLACED IF AMBIENT TEMPERATURE IS 35°F AND RISING.
8. MATERIAL MAY NOT BE PLACED IN LIFTS EXCEEDING 3 INCHES IN DEPTH. EACH LIFT SHALL HAVE DENSITIES TAKEN.
9. CEMENT STABILIZED BASE MAY NOT BE STORED FOR LONG PERIODS. DELIVERY OF MATERIAL AND UTILIZATION SHOULD BE TIMED ACCORDINGLY. MAXIMUM TIME ALLOWED 3 HRS FROM BATCH TIME TO HAVING BEEN INSTALLED.
10. CEMENT STABILIZED BASE SHALL NOT BE INSTALLED IN WET OR SOFT AREAS.
11. COMPACT TO MINIMUM DENSITY OF 95% OF MAXIMUM DRY DENSITY UNLESS OTHERWISE INDICATED ON DRAWINGS, MOISTURE SHALL BE BETWEEN + OR -2% OPTIMUM AS DETERMINED BY ASTM D 698.
12. AFTER COMPACTING FINAL COURSE, BLADE SURFACE TO FINAL GRADE. ANY IRREGULARITIES, WEAK SPOTS, AREAS OF EXCESSIVE WETNESS, OR SURFACE HAIR LINE CRACKING SHALL BE REPAIRED AND/OR REPLACED AT CONTRACTOR'S EXPENSE.
13. A CERTIFIED LAB SHALL BE ON SITE AT ALL TIMES TO TEST AND PROPERLY DOCUMENT THE CONSTRUCTION METHODS AND QUALITY OF MATERIALS.
14. COMPACTION TESTING WILL BE PERFORMED IN ACCORDANCE WITH ASTM D 1556 OR ASTM D 2922 AND ASTM D 3017 AT RANDOMLY SELECTED LOCATIONS AS DIRECTED BY CITY OF SUGAR LAND CONSTRUCTION INSPECTOR.
15. A MINIMUM OF ONE CORE SHALL BE TAKEN AT RANDOM LOCATIONS PER 300 LF PER LANE OF ROADWAY OR ONE PER 250 SQ. YD., WHICHEVER MAY APPLY AND SHALL BE STAGGERED RELATIVE TO TESTING SITES IN ADJUTING TRAFFIC LANES.
16. CURE FOR A MINIMUM OF 7 DAYS BEFORE ADDING ASPHALT PAVEMENT COURSES.
17. COVER SURFACE WITH CURING MEMBRANES AT THE FOLLOWING RATES: MC-30;.01 GAL. PER SQ. YD., OR EPR-1 PRIME;.15 GAL. PER SQ. YD. DO NOT USE CUTBACK ASPHALT APRIL 16 TO SEPTEMBER 15. PROTECT THE MEMBRANE BY ALLOWING MEMBRANE TO FULLY CURE PRIOR TO PERMITTING TRAFFIC TO DRIVE ON IT.
18. UNSTABILIZED CRUSHED CONCRETE MAY NOT BE USED ON PUBLIC STREETS, ROADS, OR RIGHTS-OF-WAY.
19. STABILIZED LIMESTONE BASE MAY BE SUBSTITUTED FOR STABILIZED CRUSHED CONCRETE IF SUBMITTED AND APPROVED BY THE CITY ENGINEER.

STORM SEWER NOTES:

- 1. STORM SEWERS SHALL BE DESIGNED AND CONSTRUCTED WITH CITY OF SUGAR LAND'S STANDARD CONSTRUCTION SPECIFICATIONS AND IN ACCORDANCE WITH CITY OF SUGAR LAND STANDARD DETAILS SHEET AND LATEST REVISIONS.
2. ALL PIPE STORM SEWERS SHALL BE INSTALLED, BEDDED, AND BACKFILLED IN ACCORDANCE WITH CITY OF SUGAR LAND STANDARD DETAIL DRAWINGS.
3. ALL CEMENT STABILIZED SAND (C.S.S.) SHALL BE 1-1/2 SK PER CUBIC YD. AND MEET MINIMUM C.S.S. STANDARDS COMPACTED TO 95%.
4. ALL STORM SEWERS UNDER AND WITHIN TWO (2) FOOT OF PROPOSED OR FUTURE PAVEMENTS SHALL BE BACKFILLED AND COMPACTED WITH 1-1/2 SK C.S.S. TO BOTTOM OF SUBGRADE.
5. ALL PROPOSED PIPE STUB-OUTS FROM MANHOLES OR INLETS ARE TO BE PLUGGED WITH 8" BRICK WALLS WITH FULL MORTAR HEAD AND BED JOINTS AND GROUTED WITH A MINIMUM OF 1/2-INCH NON-SHRINK GROUT INSIDE AND OUTSIDE, UNLESS OTHERWISE NOTED.
6. AVOID TO MAXIMUM EXTENT, MANHOLES IN HANDICAP RAMPS.
7. ALL STORM SEWER MANHOLES SHALL BE OF SUGAR LAND TYPE "C" UNLESS OTHERWISE NOTED AND SHALL BE LOCATED A MINIMUM OF THREE (3) FEET BACK OF CURB. IF CONFLICT EXISTS, RACK OVER MANHOLE TO MISS PROPOSED CURB.
8. RIM ELEVATIONS SHOWN ON THE PLANS ARE APPROXIMATE ONLY. UTILITY CONTRACTOR SHALL ADJUST RIM ELEVATIONS TO 0.4 FEET ABOVE THE FINISH GRADE AT EACH LOCATION AFTER CONTRACTOR HAS COMPLETED FINAL GRADING. SLOPED FILL SHALL BE ADDED FOR STORM WATER DRAINAGE AWAY FROM RIM.
9. RIM ELEVATIONS SHALL BE PROPERLY ADJUSTED TO GRADE IN PAVEMENT AND SIDEWALKS. APPROVED BLOCKOUTS SHALL BE USED IN PAVEMENT.
10. ALL STORM SEWER MANHOLE COVERS MUST INCLUDE "STORM SEWER" AND "DUMP NO WASTE", "DRAINS TO WATERWAYS" WITH CITY OF SUGAR LAND EMBLEM AS DEPICTED IN THE DETAIL SHEETS.
11. MINIMUM STORM SEWER SIZE SHALL BE 24-INCH DIAMETER. ALL STORM SEWER PIPES 24" AND LARGER ARE TO BE REINFORCED CONCRETE PIPE ASTM C-76 CLASS III, INCLUDING INLET LEADS CROSSING UNDER EXISTING OR PROPOSED PAVEMENTS. ALL INLET LEADS SHALL BE 24" R.C.P. OR LARGER. ALL STORM SEWER PIPE SHALL BE RUBBER GASKETED. ALL CMP PIPE SHALL BE IN ACCORDANCE WITH C.O.S.L. APPROVED PRODUCT LIST AND STANDARD DETAILS.
12. CONTRACTOR SHALL VERIFY NATURAL GROUND SHOTS PRIOR TO MANHOLE CONSTRUCTION.
13. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING LOCATION OF ALL EXISTING UTILITIES PRIOR TO EXCAVATION. DURING THE COURSE OF ANY AND ALL CLEARING, GRUBBING, FILL, GRADING, EXCAVATION OR OTHER CONSTRUCTION, CONTRACTOR SHALL ENSURE THAT STORM DRAINAGE PATHWAYS ARE MAINTAINED AND REMAIN OPEN TO ENSURE POSITIVE DRAINAGE AND THAT SUCH CONVEYANCES ARE NOT IMPEDED OR BLOCKED IN ANY WAY. STORM SEWER INLETS SHALL BE PROTECTED FROM ENTRY OF SILT, TRASH, DEBRIS AND ANY SUBSTANCES DELETERIOUS TO THE STORM SEWER SYSTEM AND/OR WATERWAYS RECEIVING STORM WATER RUNOFF. CONTRACTOR SHALL AT COMPLETION OF WORK, FILL LOW SPOTS AND GRADE ALL RIGHTS-OF-WAY AND UTILITY EASEMENTS AND REGRADE/RESTORE DITCHES AS NECESSARY TO MAINTAIN AND/OR ESTABLISH POSITIVE DRAINAGE.
14. CONTRACTOR TO PROVIDE A MINIMUM OF 6-INCHES CLEARANCE AT UTILITY CROSSINGS AND A MINIMUM OF TWELVE (12) INCHES AT SANITARY SEWER CROSSING.
15. CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING, MAINTAINING, AND RESTORING ANY BACKSLOPE DRAINAGE SYSTEM DISTURBED AS A RESULT OF HIS WORK.
16. ALL DITCHES SHALL BE RESTORED TO PROPOSED ELEVATIONS TO INSURE PROPER DRAINAGE. ALL OUTFALLS SHALL BE COMPACTED AND ALL DISTURBED AREAS SHALL BE RESEDED OR RESODDED WITHIN 10 WORKING DAYS OF EACH OCCURRENCE (NO SEPARATE PAY).
17. THE UTILITY CONTRACTOR SHALL ROUGH CUT ALL ROADSIDE SWALES IN PROPER ALIGNMENT AND SLOPE TO WITHIN 0.2 FT. OF FINISH GRADE. THE PAVING CONTRACTOR, UPON COMPLETION OF PAVING, SHALL COMPLETE FINAL GRADING ALIGNMENT OF SWALES AND RESTORE ALL AREAS WITHIN RIGHT-OF-WAY FOR SEEDING OR SODDING AND FERTILIZATION.
18. ALL STORM SEWERS MUST BE CLEAN/FREE OF DIRT AND DEBRIS AT THE TIME AND INITIAL AND FINAL ACCEPTANCE.
19. REFER TO GENERAL NOTES AND C.S.S. NOTES.

SANITARY SEWER NOTES:

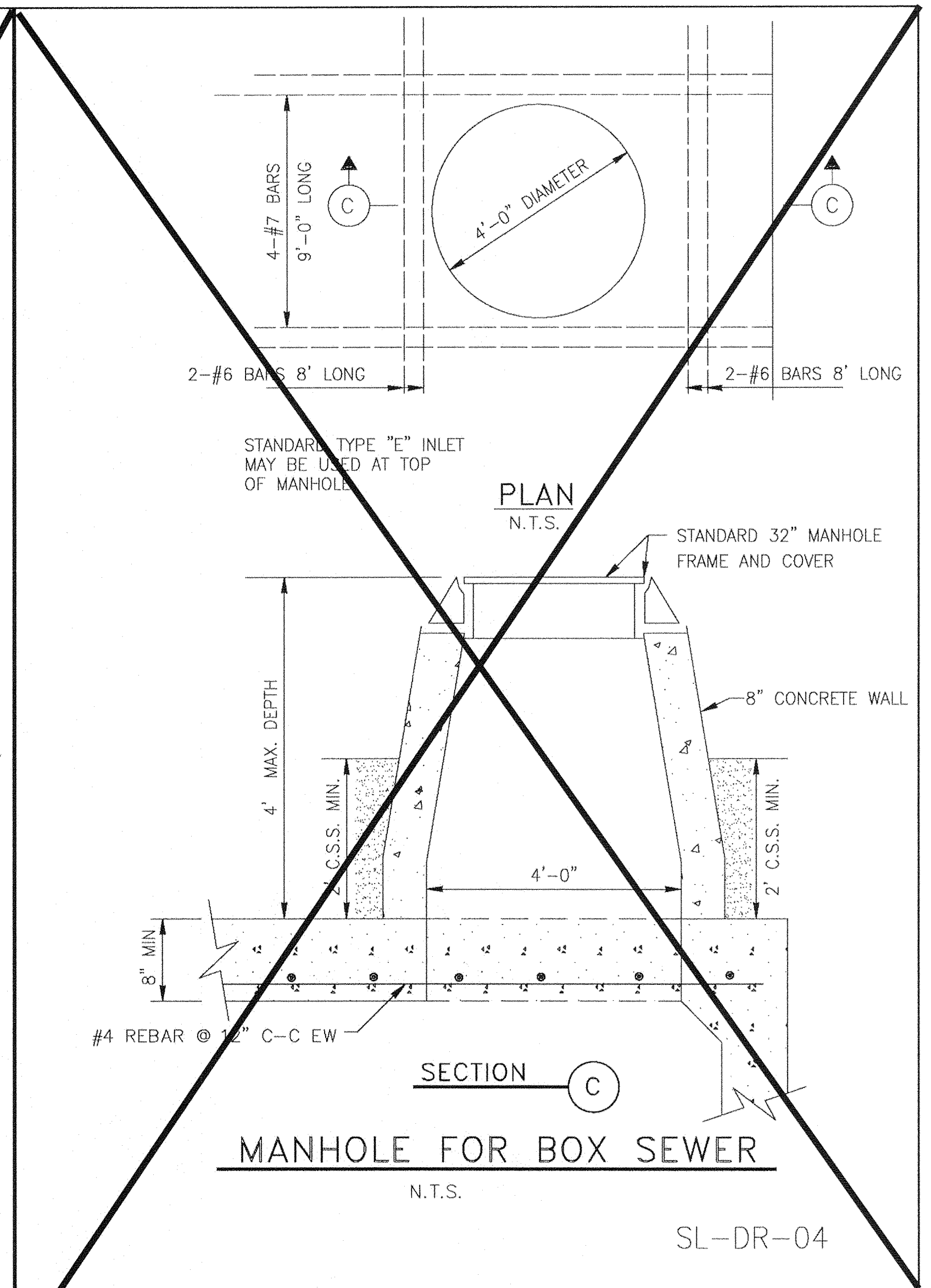
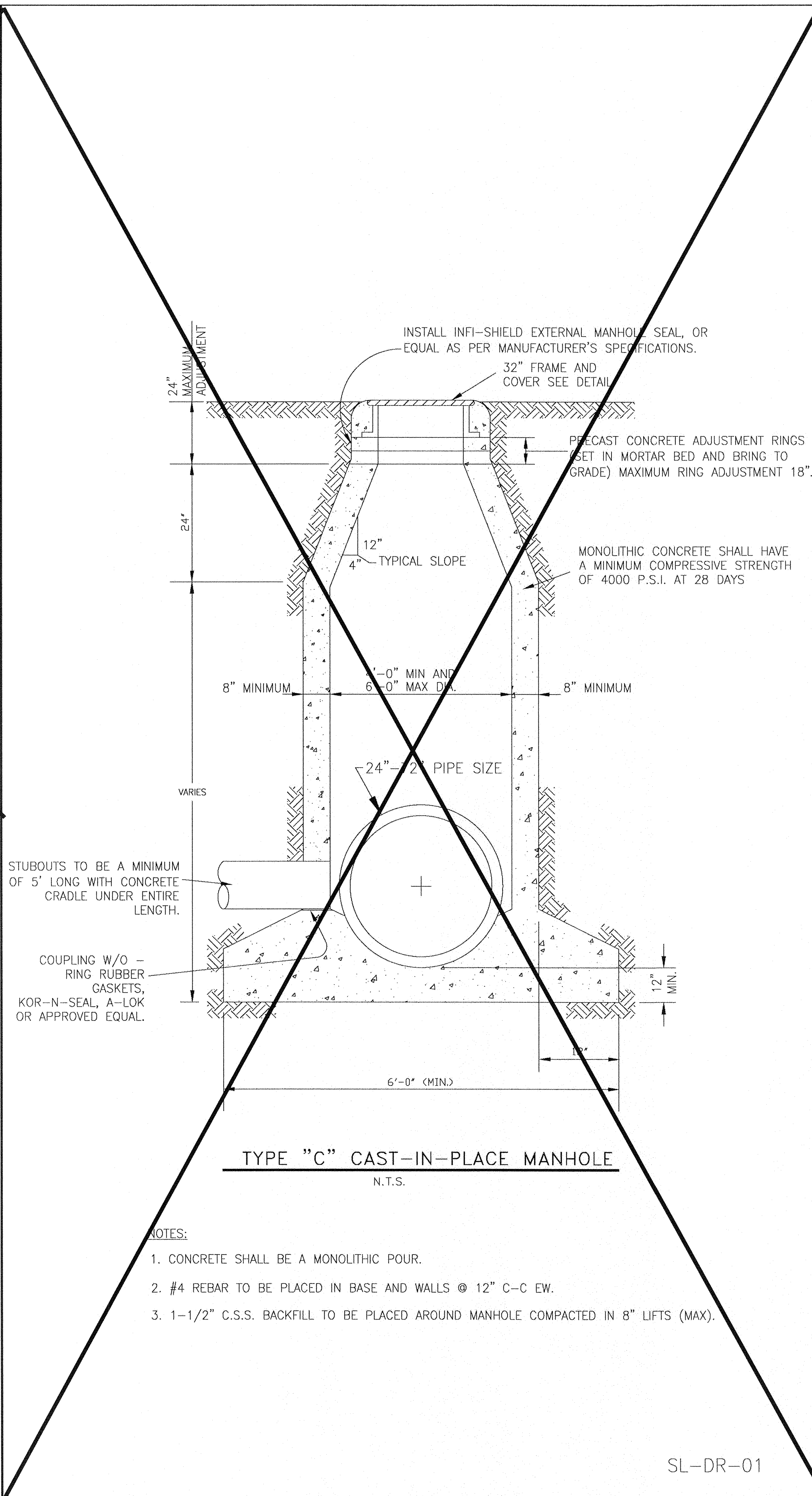
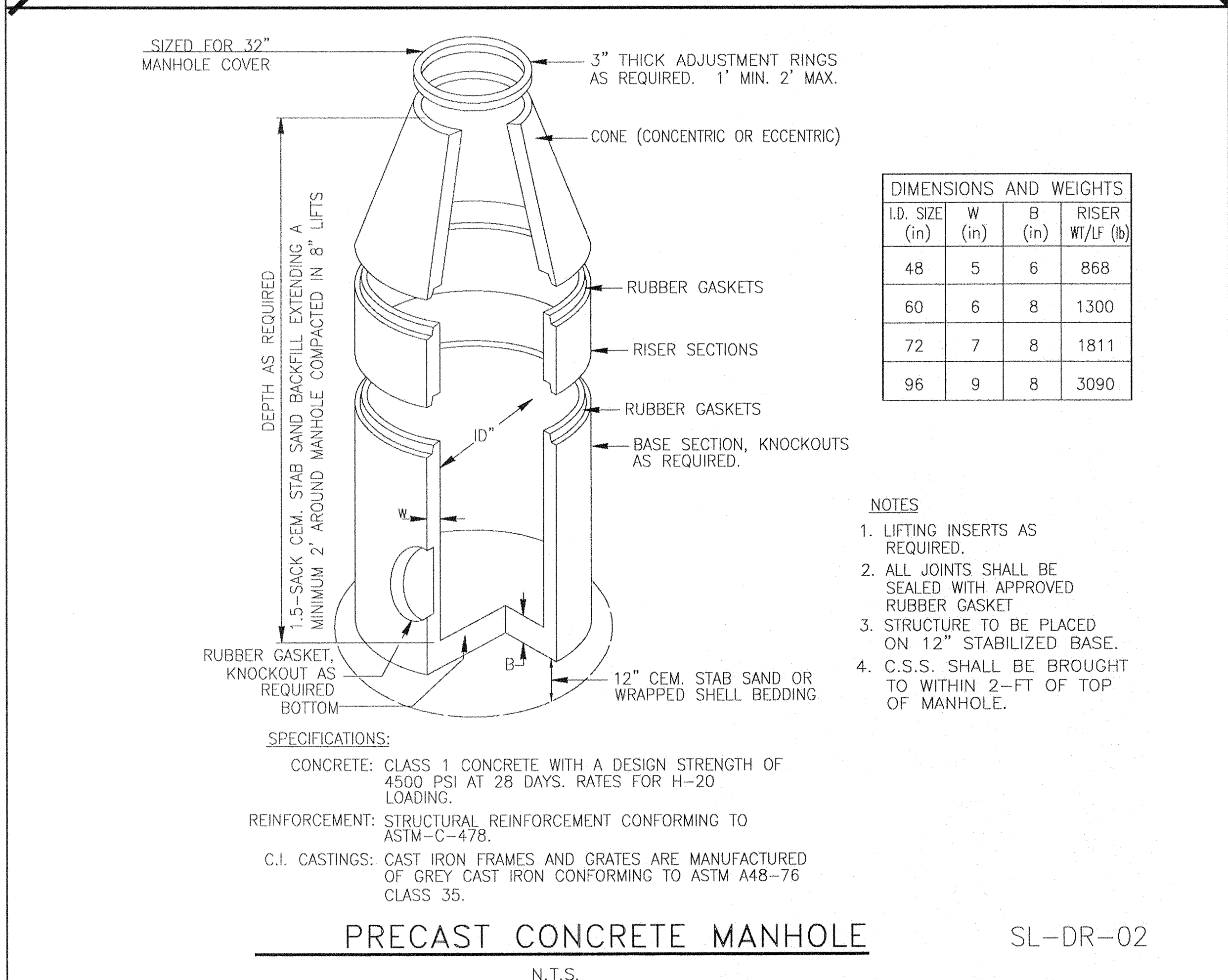
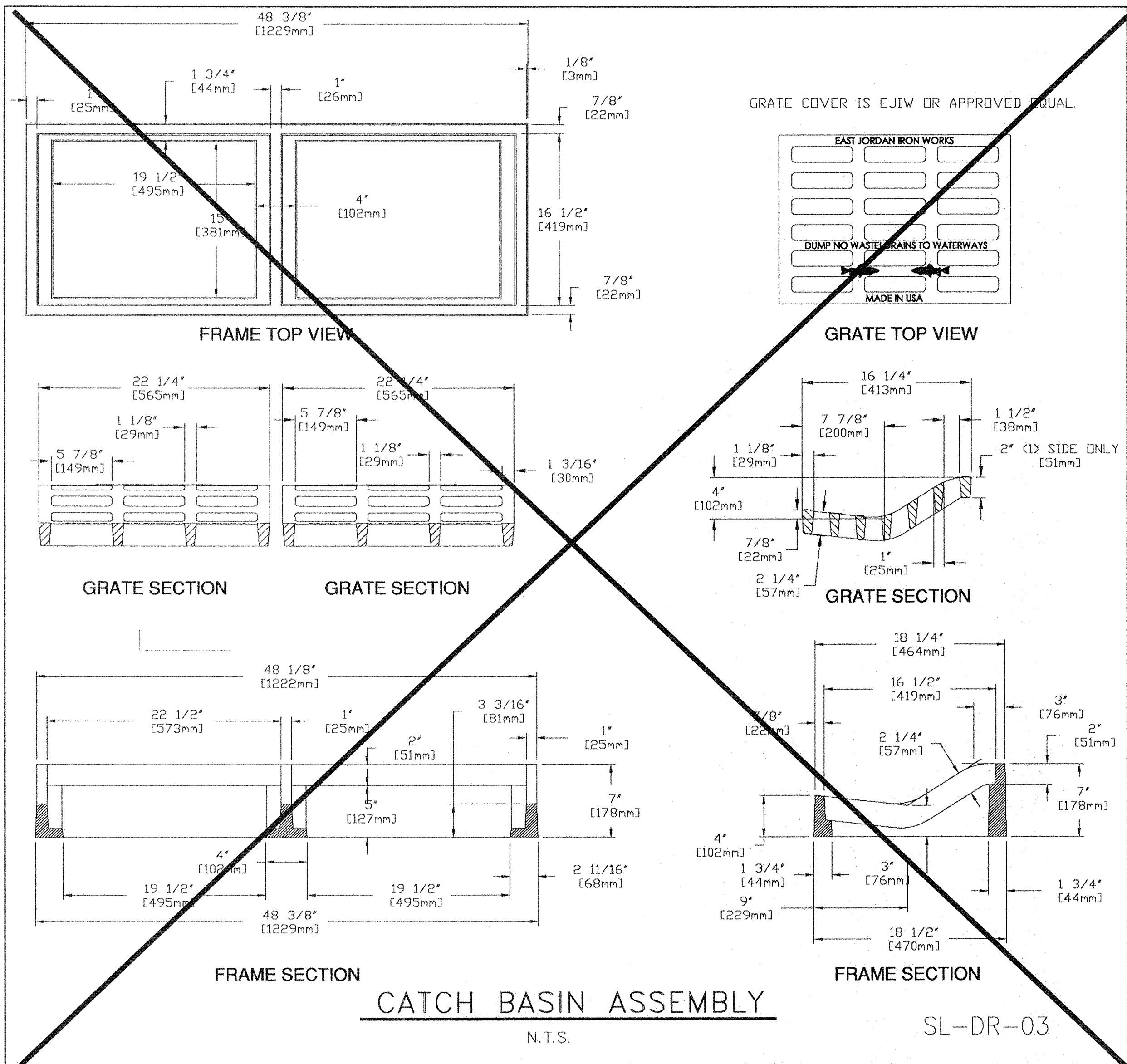
- 1. SANITARY SEWERS, FORCE MAINS, MANHOLES, LIFT STATIONS AND WASTEWATER TREATMENT PLANTS SHALL BE DESIGNED AND CONSTRUCTED AS PER THE REQUIREMENTS OF THE CITY OF SUGAR LAND DESIGN STANDARDS AND CORRESPONDING STANDARD CONSTRUCTION DETAILS SHEETS AND AS PER THE REQUIREMENTS OF THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY "DESIGN CRITERIA FOR SEWERAGE SYSTEMS". SHOULD A CONFLICT ARISE BETWEEN INFORMATION DEPICTED ON APPROVED CONSTRUCTION DRAWINGS AND/OR INFORMATION INCLUDED IN PROJECT SPECIFICATIONS, CITY OF SUGAR LAND DESIGN STANDARDS SHALL GOVERN.
2. ALL MATERIALS AND PRODUCTS USED IN THE CONSTRUCTION OF SANITARY SEWERS, FORCE MAINS, MANHOLES, LIFT STATIONS AND WASTEWATER TREATMENT PLANTS SHALL COMPLY WITH THE CITY OF SUGAR LAND DESIGN STANDARDS AND THE CURRENT APPROVED PRODUCTS LIST.
3. STACKS SHALL BE INSTALLED IN ACCORDANCE WITH THE CITY OF SUGAR LAND STANDARD DETAIL DRAWING REQUIREMENTS. EXACT LOCATION OF THE STACK SHALL BE SUPPLIED TO THE CITY ENGINEER BY SUGAR LAND BY THE PROJECT ENGINEER ON SEALED AS-BUILT DRAWINGS. AT COMPLETION OF CONSTRUCTION, ALL STACKS SHALL BE INSTALLED WITHIN 3% OF PLUMB RELATIVE TO VERTICAL PLANE AND WILL BE CAPPED AND TERMINATED AT A DEPTH OF 4 FEET BELOW FINISHED GRADE, UNLESS OTHERWISE DIRECTED BY THE CITY ENGINEER.
4. EACH SANITARY SEWER SERVICE LEAD STUB, PLUGGED WYE BRANCH OUTLET AND STACK SHALL BE MARKED IN ACCORDANCE WITH THE DETAILS AT THE TIME OF CONSTRUCTION, BEGINNING AT THE INVERT ELEVATION OF THE STUB OR WYE AND AT AN ELEVATION TWO FEET BELOW THE CAPPED TERMINATION POINT OF THE STACK AND EXTENDING TWO FEET ABOVE FINISHED GRADE.
5. SANITARY SEWER MANHOLES SHALL BE CONSTRUCTED AS PER DRAWINGS INCORPORATED IN CITY OF SUGAR LAND STANDARD CONSTRUCTION DETAILS SHEETS. SUCH MANHOLES SHALL BE CONSTRUCTED A MINIMUM OF ONE FOOT FROM BACK OF CURB ON CURB AND GUTTER ROADWAYS AND THREE FEET FROM EDGE OF TRAVELLED ROADWAY ON THOSE THOROUGHFARES HAVING NO CURBING, MEASURED FROM OUTSIDE DIAMETER OF MANHOLE. ALL SANITARY SEWER MANHOLES SHALL INCORPORATE INFLOW PROTECTORS. SANITARY SEWER MANHOLES SHALL NOT BE INSTALLED BENEATH STREET PAVING EXCEPT WHERE SPECIFICALLY AUTHORIZED BY CITY ENGINEER AND SO DESIGNATED ON APPROVED CONSTRUCTION DRAWINGS. BRICK MANHOLES AND FIBERGLASS MANHOLES ARE PROHIBITED. MANHOLES DEEPER THAN EIGHT FEET SHALL HAVE ECCENTRIC CONES. SANITARY SEWER MANHOLE COVERS SHALL BE MINIMUM 32 INCHES IN DIAMETER. ALL SUCH MANHOLE COVERS SHALL HAVE THE CITY OF SUGAR LAND EMBLEM AND THE WORDS "SUGAR LAND" AND "SANITARY SEWER" CAST IN RAISED RELIEF AS DEPICTED IN CITY OF SUGAR LAND STANDARD CONSTRUCTION DETAILS SHEETS.
6. MANHOLE RIM ELEVATIONS SHOWN ON PLANS ARE APPROXIMATE ONLY. UTILITY CONTRACTORS SHALL ADJUST RIM ELEVATIONS TO 0.4 FEET ABOVE FINISHED GRADE, AND 0.5 FEET ABOVE NATURAL GROUND WITHIN RIGHTS-OF-WAY AND EASEMENTS AT EACH MANHOLE LOCATION AFTER PAVEMENT CONTRACTOR HAS COMPLETED FINAL GRADING. THE AREA ADJACENT TO SANITARY SEWER MANHOLE LOCATIONS SHALL BE GRADED AWAY FROM SUCH MANHOLES SO AS PREVENT ENTRY OF STORM WATER RUNOFF TO THE SANITARY SEWER SYSTEM.
7. MINIMUM SEPARATION DISTANCES AS REQUIRED BY TCEQ SECTION 317.13, APPENDIX E MUST BE MAINTAINED BETWEEN POTABLE WATER LINES AND SANITARY SEWERS, FORCE MAINS, MANHOLES, LIFT STATIONS AND WASTEWATER TREATMENT PLANTS. INSTALLATION OF FIRE HYDRANTS WITHIN NINE FEET OF A SANITARY SEWER SYSTEM IS PROHIBITED. REFER TO THE CITY OF SUGAR LAND INFRASTRUCTURE STANDARDS AND CORRESPONDING STANDARD CONSTRUCTION DETAILS SHEETS FOR CONSTRUCTION REQUIREMENTS OF OTHER INSTALLATIONS WHERE SEPARATION DISTANCES GREATER THAN NINE FEET CANNOT BE MAINTAINED.
8. TESTING OF SANITARY SEWERS, FORCE MAINS, MANHOLES, LIFT STATIONS AND WASTEWATER TREATMENT PLANTS SHALL BE CONDUCTED AS NOTED IN SANITARY SEWER CHAPTER OF THE CITY OF SUGAR LAND DESIGN STANDARDS AND AS PER THE REQUIREMENTS OF THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY "DESIGN CRITERIA FOR SEWERAGE SYSTEMS".
9. ALL SANITARY SEWER PIPING AND BEDDING SHALL BE INSPECTED BY CITY CONSTRUCTION INSPECTOR FOR CONFORMANCE WITH CITY DESIGN STANDARDS PRIOR TO BACKFILLING OF PIPING IN TRENCH. CONTRACTOR SHALL NOT COVER PIPING UNTIL SUCH TIME AS INSPECTOR HAS NOTIFIED CONTRACTOR THAT RESULTS OF PIPING INSPECTION ARE SATISFACTORY AND THAT BACKFILLING MAY BE ACCOMPLISHED. ANY PIPING INSTALLED AND/OR BACKFILLED WITHOUT INSPECTOR'S SPECIFIC APPROVAL SHALL BE UNCOVERED AT INSPECTOR'S DIRECTION AND INSPECTED ACCORDINGLY. CONTRACTOR SHALL NOTIFY INSPECTOR 24-HOURS PRIOR TO INSPECTION.
10. ALL COMMERCIAL DEVELOPMENTS WITH A FAR SIDE SANITARY SERVICE LEAD ACROSS THE STREET SHALL PROVIDE A SIX (6) INCH RISER AND CLEAROUT ON THE PROPERTY SIDE. PUBLIC MAINTENANCE OF THE FAR SIDE LEAD SHALL END AT THIS RISER.

WATER DISTRIBUTION NOTES:

- 1. WATER MAINS, WATER SERVICE LINES AND ASSOCIATED APPURTENANCES SHALL BE DESIGNED AND CONSTRUCTED AS PER REQUIREMENTS OF THE CITY OF SUGAR LAND DESIGN STANDARDS AND CORRESPONDING STANDARD CONSTRUCTION DETAILS SHEETS AND AS PER THE REQUIREMENTS OF THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY. SHOULD A CONFLICT ARISE BETWEEN INFORMATION DEPICTED ON APPROVED CONSTRUCTION DRAWINGS AND/OR INFORMATION INCLUDED IN PROJECT SPECIFICATIONS, CITY OF SUGAR LAND DESIGN STANDARDS SHALL GOVERN.
2. ALL MATERIALS AND PRODUCTS USED IN THE CONSTRUCTION OF WATER MAINS, WATER SERVICE LINES AND ASSOCIATED APPURTENANCES SHALL COMPLY WITH THE CITY OF SUGAR LAND DESIGN STANDARDS AND THE CURRENT APPROVED PRODUCTS LIST AS MAINTAINED BY THE CITY'S ENGINEERING DEPARTMENT.
3. ALL GATE VALVES INSTALLED BELOW GRADE SHALL BE OF NON-RISING STEM DESIGN.
4. ALL FIRE HYDRANTS SHALL BE PAINTED AND/OR REPAINTED WITH GEO-GLEN 301 BRIGHT SILVER POLYURETHANE ENAMEL MANUFACTURED BY GEO-GLEN ENTERPRISES, INC. SURFACE PREPARATION SHALL INCLUDE REMOVAL OF OIL, GREASE AND MOISTURE, FOLLOWED BY MEDIA BLASTING TO SSPC-SP15-10-63 SPECIFICATIONS (NEAR WHITE METAL) AS PER MANUFACTURER'S RECOMMENDATIONS. PRIME BARE METAL WITH TP-251 EPOXY PRIMER EPOXY PRIMER OR WITH TP-221, TP-231 OR TP-241 UNIVERSAL PRIMER. 80°F AND 50% RELATIVE HUMIDITY ARE OPTIMAL CONDITIONS FOR APPLICATION OF PRIMER AND OF PAINT. DO NOT APPLY PRIMER AND/OR PAINT WHEN SURFACE TO BE PAINTED IS LESS THAN 5' ABOVE THE DEW POINT IN ORDER TO PREVENT MOISTURE FROM CONDENSING ON THE SURFACE TO BE PRIMED AND/OR PAINTED. A BLUE TRAFFIC BUTTON SHALL BE INSTALLED ON THE STREET 12" OFF THE CENTER LINE FOR EACH HYDRANT. MINIMUM SEPARATION DISTANCES AS REQUIRED BY TCEQ SECTION 317.13, 290. APPENDIX E MUST BE MAINTAINED BETWEEN POTABLE WATER LINES AND SANITARY SEWERS, FORCE MAINS, LIFT STATIONS AND WASTEWATER TREATMENT PLANTS. INSTALLATION OF FIRE HYDRANTS WITHIN 9' (FT) OF A SANITARY SEWER SYSTEM IS PROHIBITED. REFER TO C.O.S.L. STANDARDS FOR CONSTRUCTION REQUIREMENTS OF OTHER INSTALLATIONS WHERE DISTANCES ARE GREATER THAN 9' (NINE) FT. CANNOT BE MAINTAINED.
5. EACH WATER SERVICE LEAD STUB SHALL BE MARKED WITH A PRESSURE TREATED 4 X 4 TIMBER OR PVC PIPE AT THE TIME OF CONSTRUCTION, BEGINNING AT THE INVERT ELEVATION OF THE STUB AND EXTENDING TWO FEET ABOVE FINISHED GRADE. EACH TIMBER MARKER SHALL BE PAINTED BLUE AND LABELED "POTABLE WATER" WITH PIPE SIZE NOTED.
6. TESTING OF WATER MAINS, WATER SERVICE LINES AND ASSOCIATED APPURTENANCES SHALL BE CONDUCTED AS PER REQUIREMENTS OF AWWA C605-94.
7. DISINFECTION OF WATER MAINS, WATER SERVICE LINES AND ASSOCIATED APPURTENANCES SHALL BE CONDUCTED AS PER REQUIREMENTS OF AWWA C651 AND TCEQ. NO CONNECTIONS SHALL BE MADE TO EXISTING WATER LINES UNTIL NEWLY CONSTRUCTED WATER LINES HAVE BEEN THOROUGHLY DISINFECTED, TESTED, FLUSHED, AND SAMPLED AND CONNECTION HAS BEEN AUTHORIZED BY THE CITY ENGINEER.
8. ALL WATER PIPING AND BEDDING SHALL BE INSPECTED BY THE CITY INSPECTOR FOR CONFORMANCE TO DESIGN STANDARDS PRIOR TO BACKFILLING OF PIPING IN TRENCH. CONTRACTOR SHALL NOT COVER PIPING UNTIL SUCH TIME AS INSPECTOR HAS NOTIFIED CONTRACTOR THAT RESULTS OF PIPING INSPECTION ARE SATISFACTORY AND THAT BACKFILLING MAY BE ACCOMPLISHED. ANY PIPING INSTALLED AND/OR BACKFILLED WITHOUT INSPECTOR'S SPECIFIC APPROVAL SHALL BE UNCOVERED AT INSPECTOR'S DIRECTION AND INSPECTED ACCORDINGLY. 24-HOUR NOTICE REQUIRED.
9. ALL MECHANICALLY RESTRAINED FITTINGS MUST BE MEGALUG RESTRAINED JOINTS OR APPROVED EQUAL.
10. THE CITY OF SUGAR LAND MUST HAVE A COPY OF THE BACTERIOLOGICAL TEST RESULTS AT LEAST 24 HOURS PRIOR TO THE INITIAL INSPECTION. IF NOT, THEN THE INSPECTION WILL BE RESCHEDULED.

CAD FILE PATH:  
PLOT DATE:

Professional Engineer Seal for Carlos J. Barillas, State of Texas, Registration # F-2906. Includes City of Sugar Land, Texas logo and project information: CONSTRUCTION PLANS FOR: GENERAL CONSTRUCTION NOTES II, JOB No.: SL-02, SHEET OF.



- GENERAL CONSTRUCTION NOTES:
1. ALL CAST CONCRETE BASES AND WALLS SHALL HAVE # 4 REBAR @ 12" C-C EW
  2. CONCRETE SHALL BE 3000 PSI MIN.
  3. USE C.S.S. BEDDING AS PER DETAILS 1 1/2 SK, COMPACTED 8" LIFTS (MAX.) TO 95% STANDARD.

No.	DATE	REVISION

SEAL:

DESIGN ENGINEER: *Carlos J. Barillas* DATE: 5/13/13

CITY OF SUGAR LAND, TEXAS  
ENGINEERING DEPARTMENT

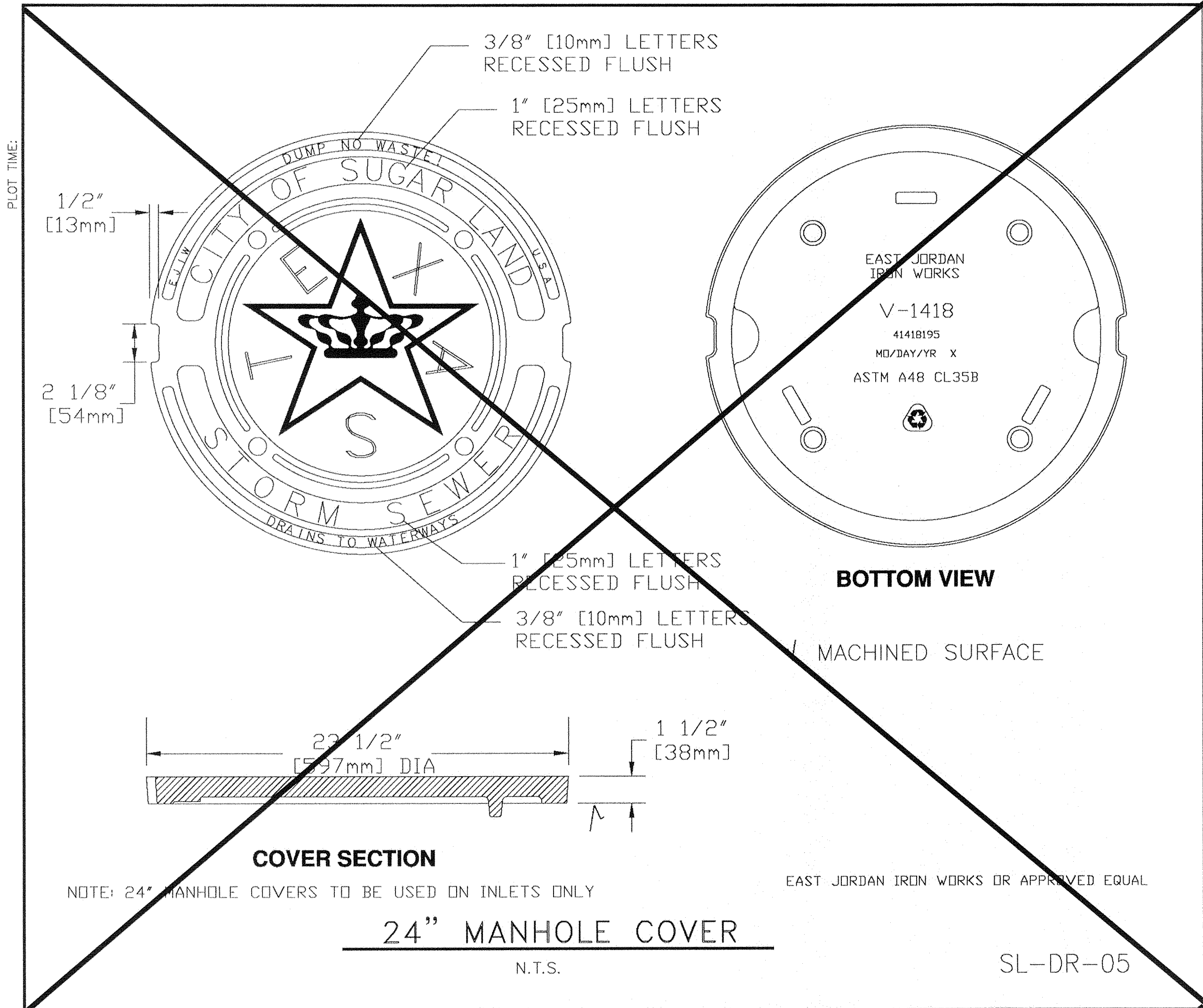
CONSTRUCTION PLANS FOR:

STORM SEWER MANHOLE  
CONSTRUCTION DETAILS

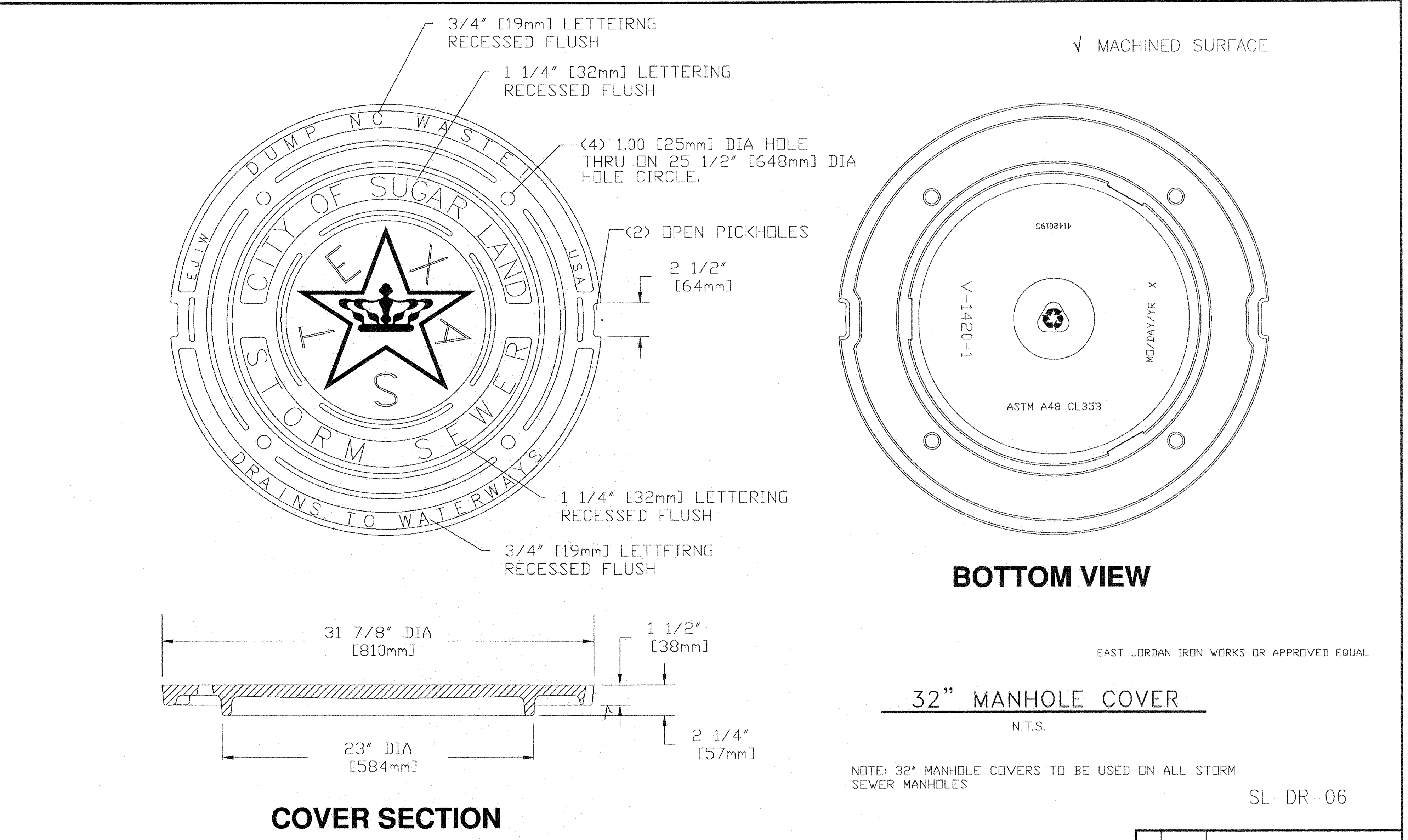
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DATE:  
DESIGNED BY:  
DRAWN BY:  
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SL-03  
SHEET OF

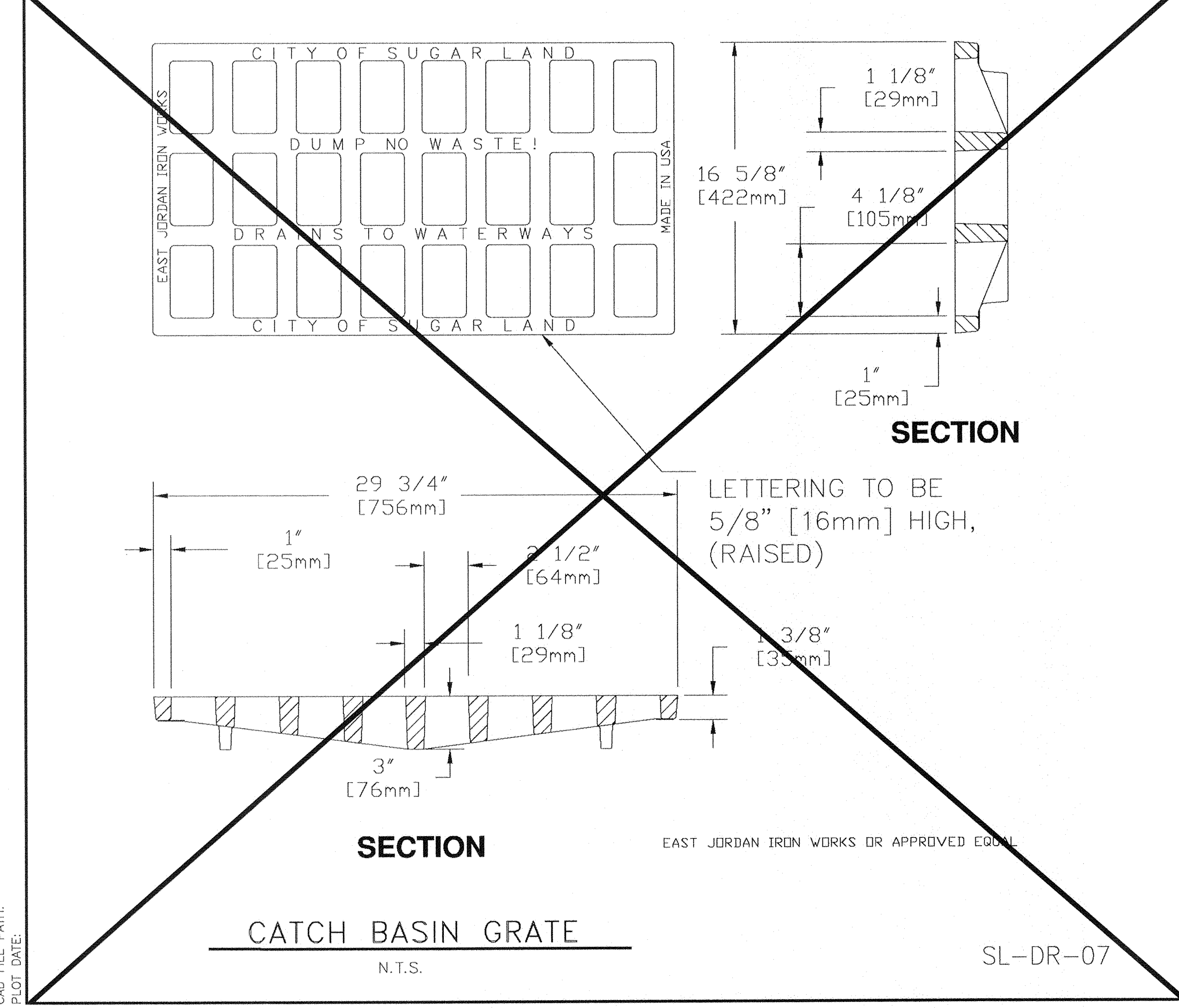
- REFER TO:
1. GENERAL NOTES, C.S.S. & CONCRETE NOTES.
  2. STORM SEWER NOTES



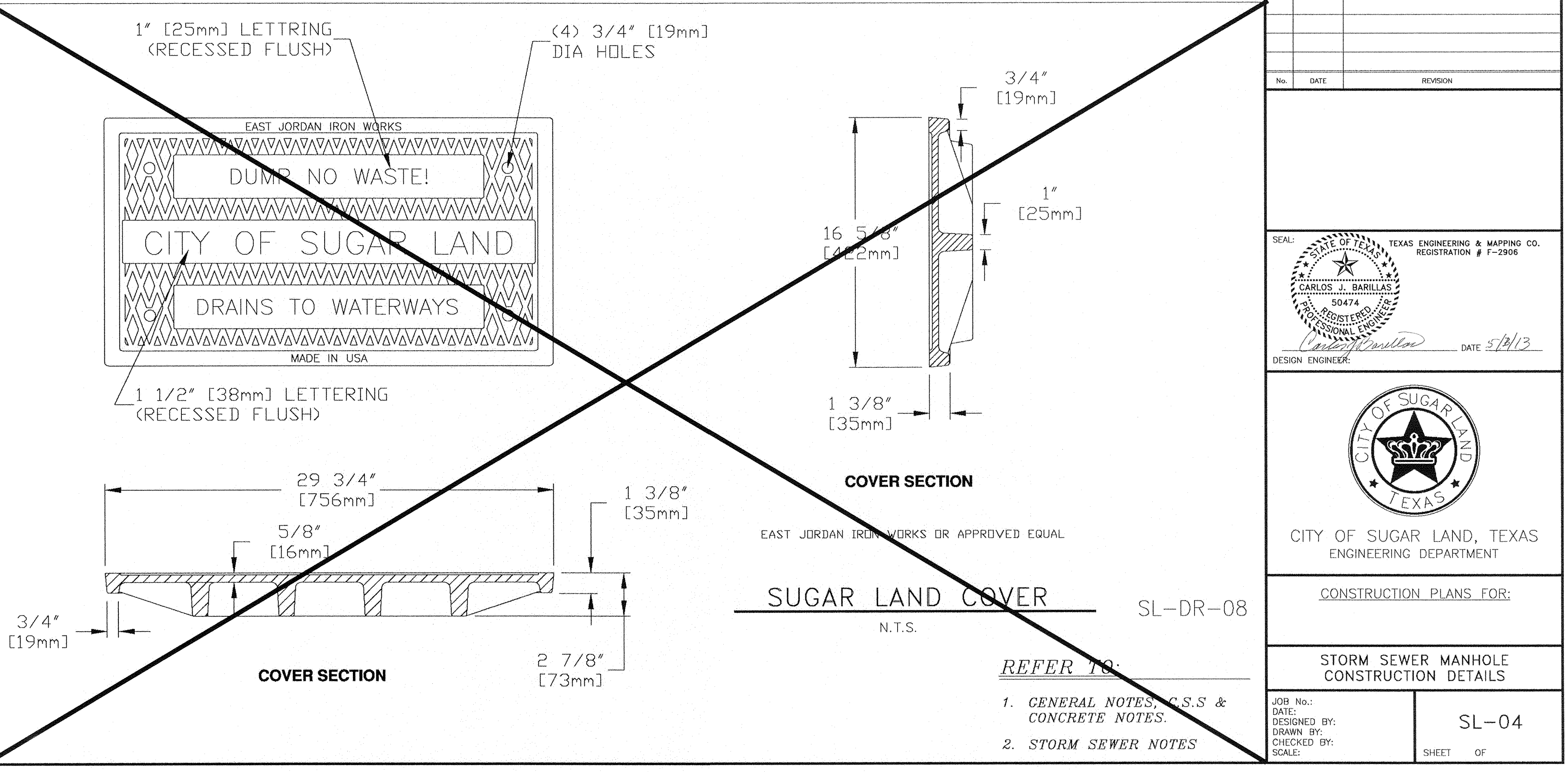
**24" MANHOLE COVER**  
N.T.S. SL-DR-05



**32" MANHOLE COVER**  
N.T.S. SL-DR-06



**CATCH BASIN GRATE**  
N.T.S. SL-DR-07



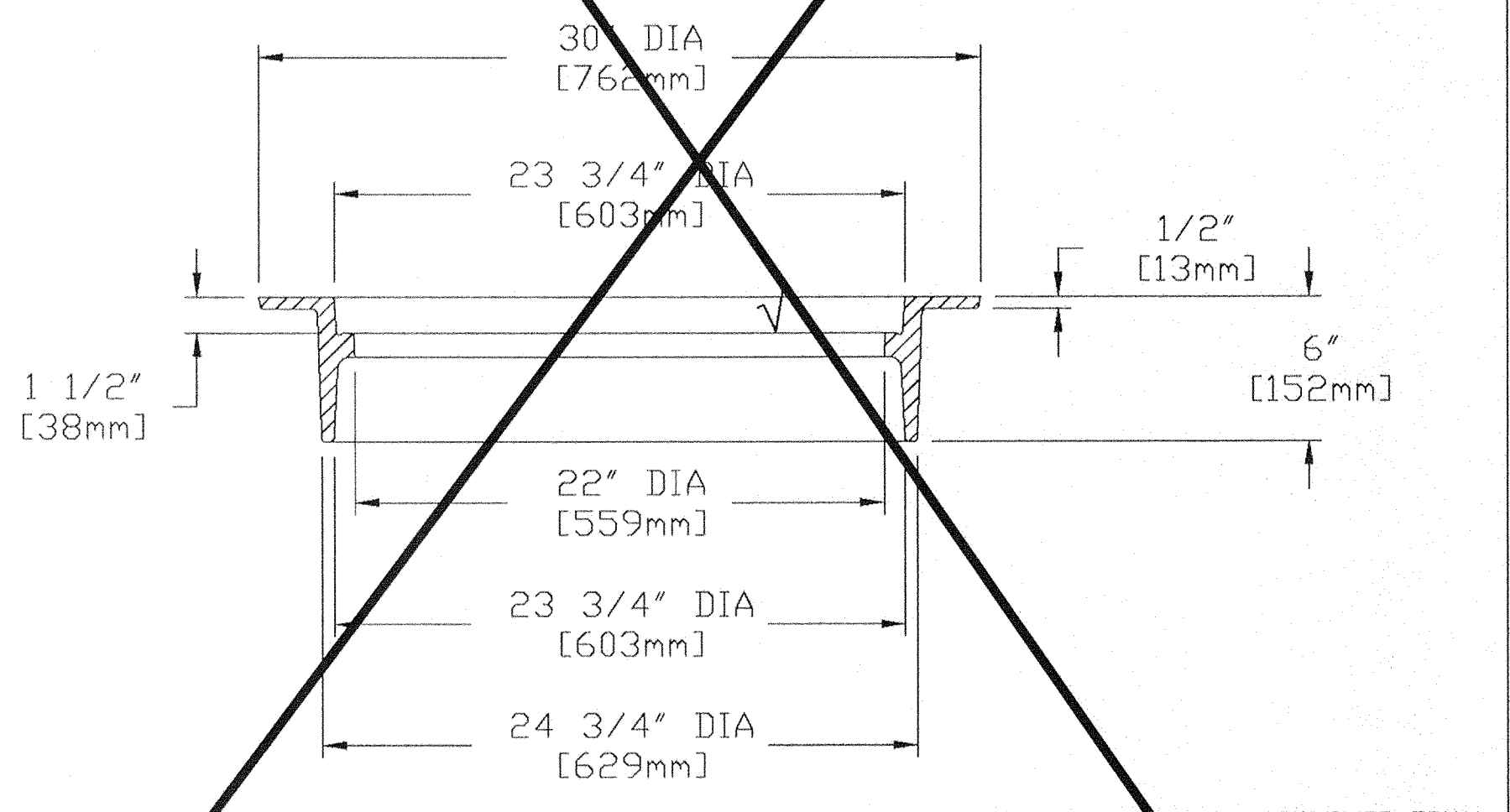
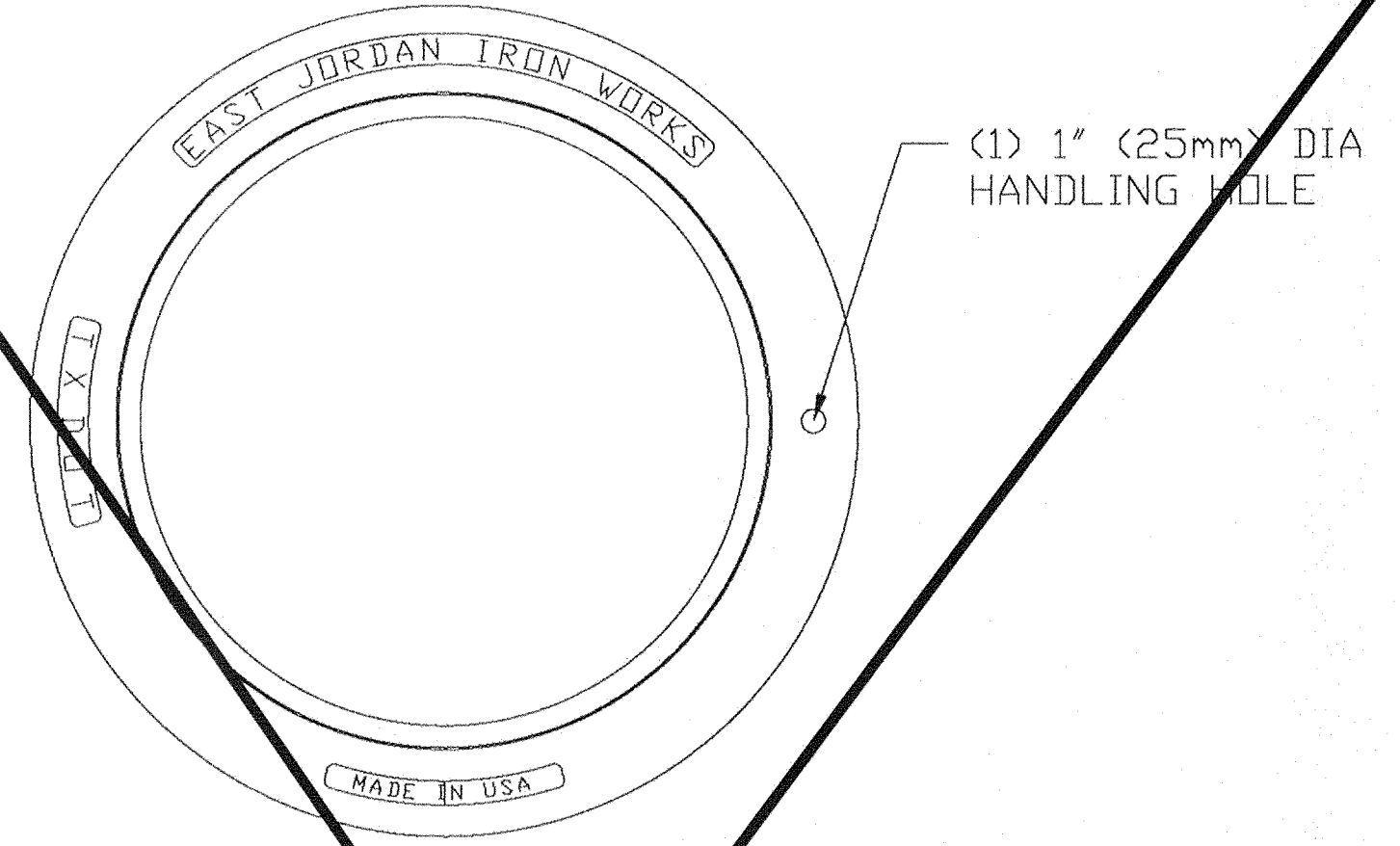
**SUGAR LAND COVER**  
N.T.S. SL-DR-08

REFER TO:  
1. GENERAL NOTES, C.S.S & CONCRETE NOTES.  
2. STORM SEWER NOTES

No.	DATE	REVISION
CITY OF SUGAR LAND, TEXAS ENGINEERING DEPARTMENT		
CONSTRUCTION PLANS FOR:		
STORM SEWER MANHOLE CONSTRUCTION DETAILS		
JOB No.:	DATE:	SL-04
DESIGNED BY:	DRAWN BY:	
CHECKED BY:	SCALE:	

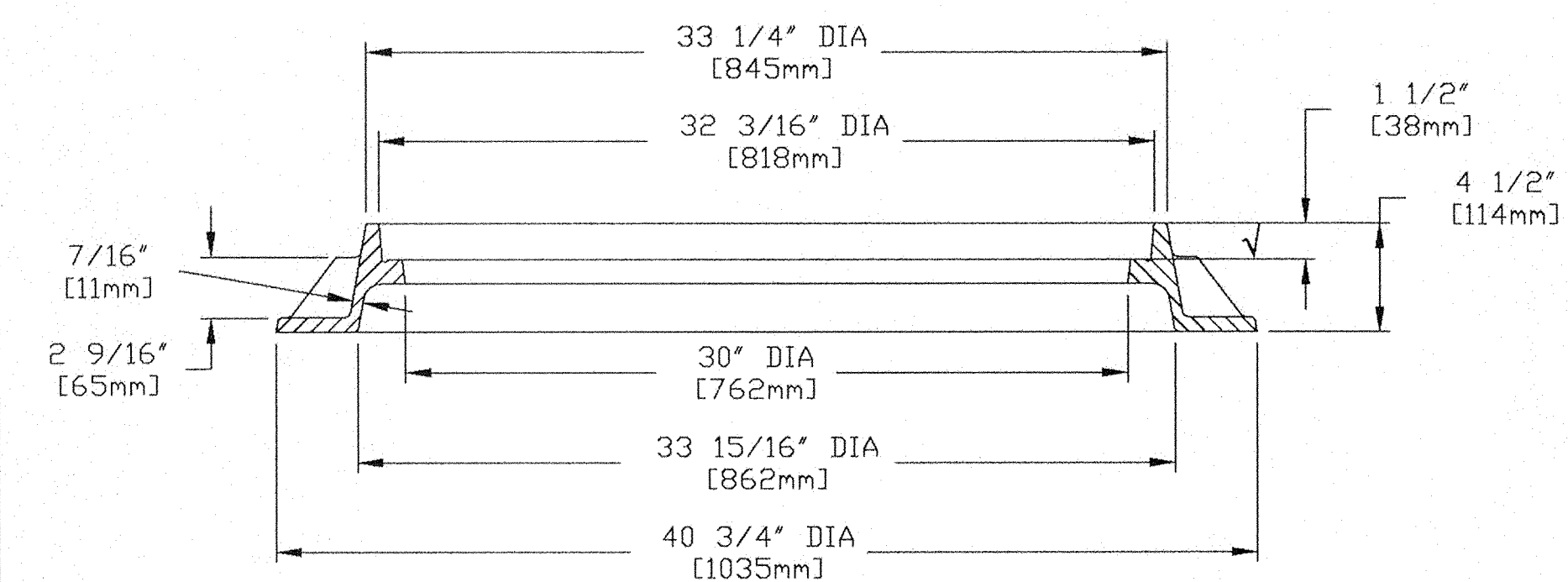
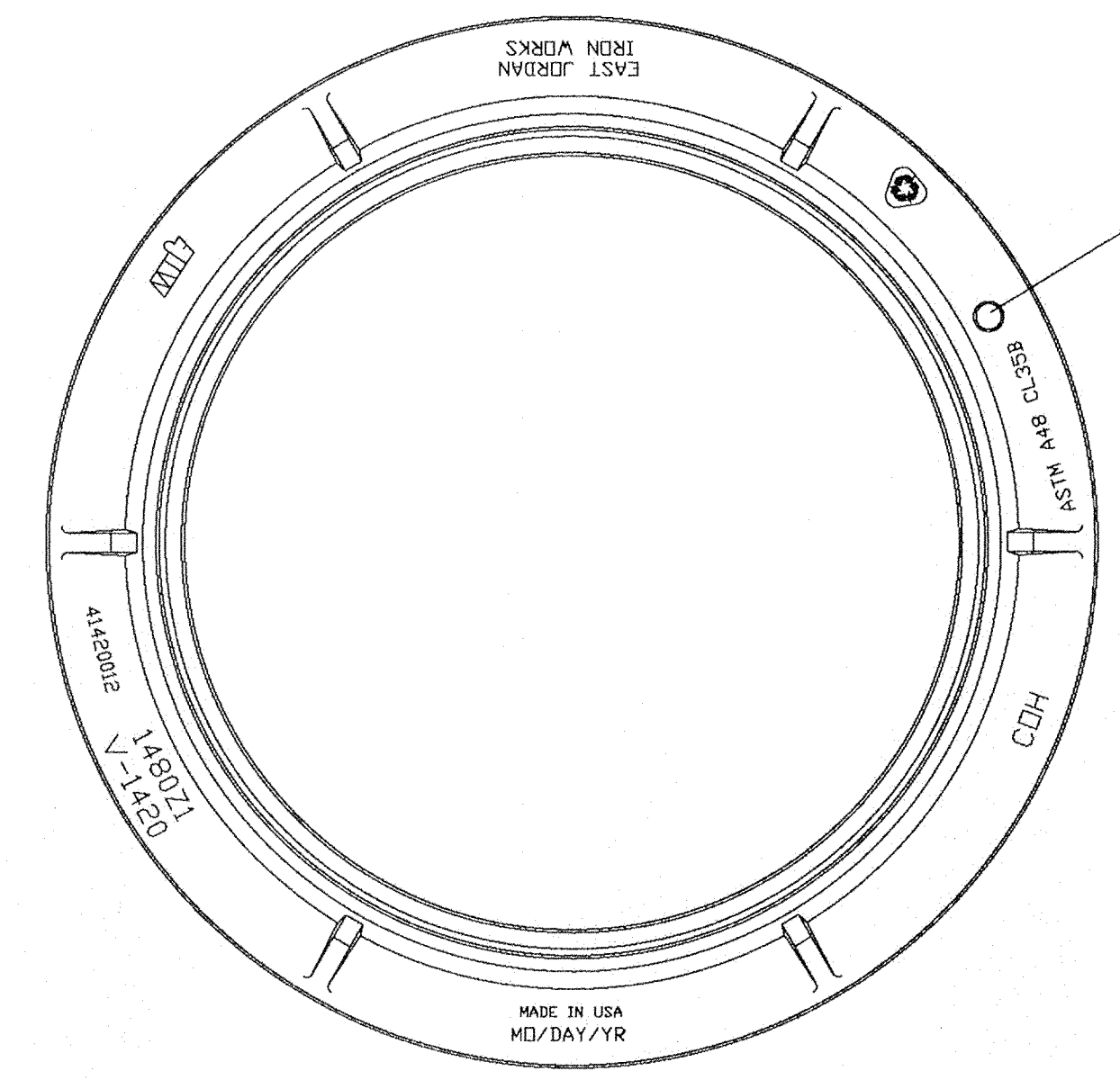
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PLOT DATE:

PLOT TIME:



**24" MANHOLE FRAME**  
N.T.S.

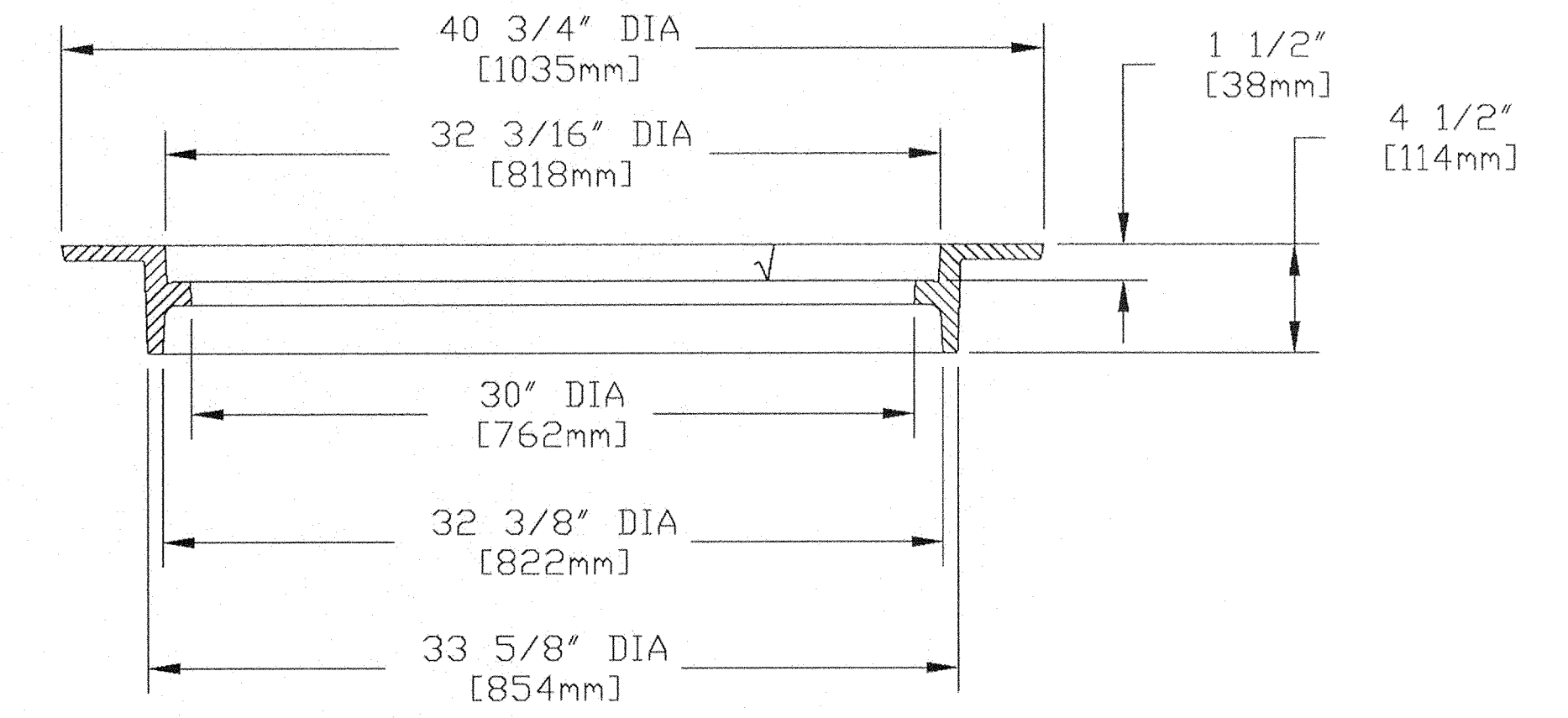
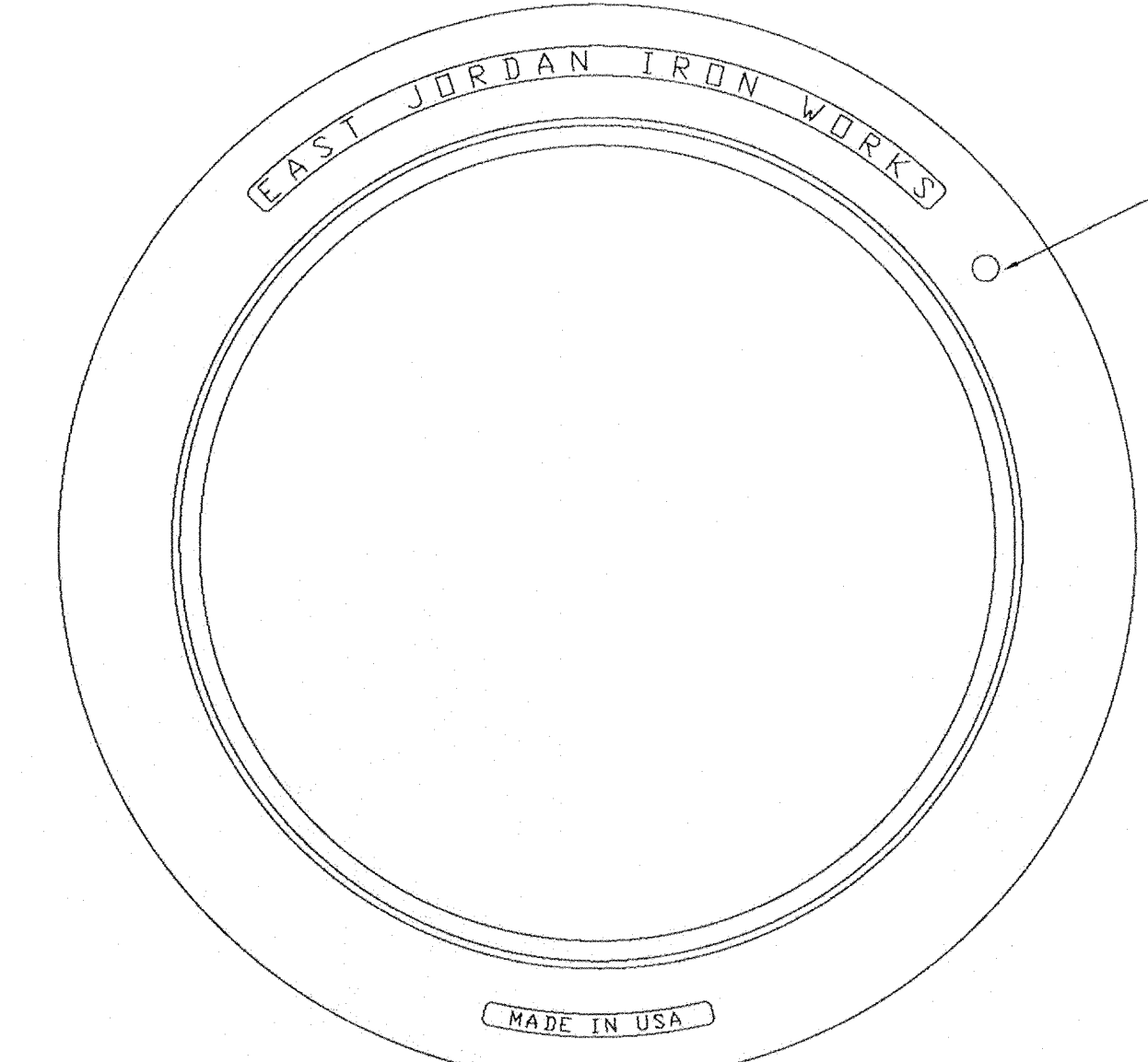
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**FRAME SECTION**

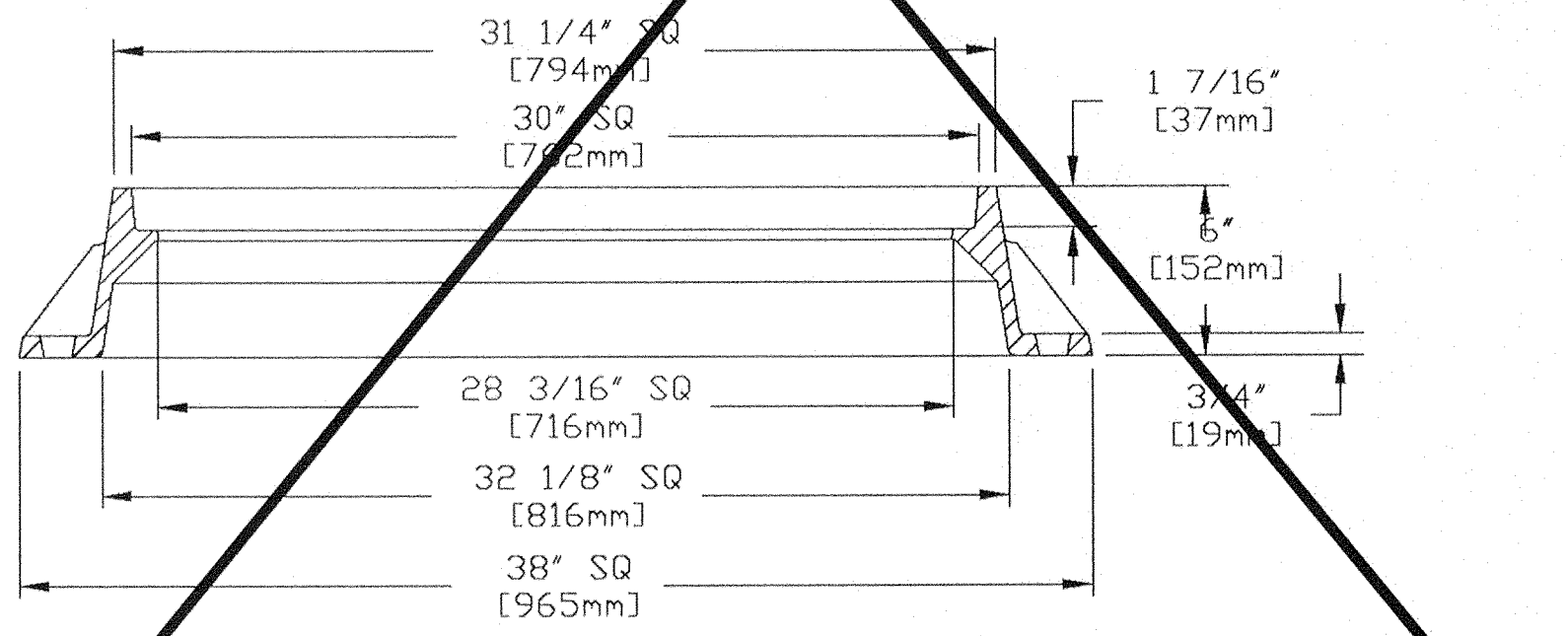
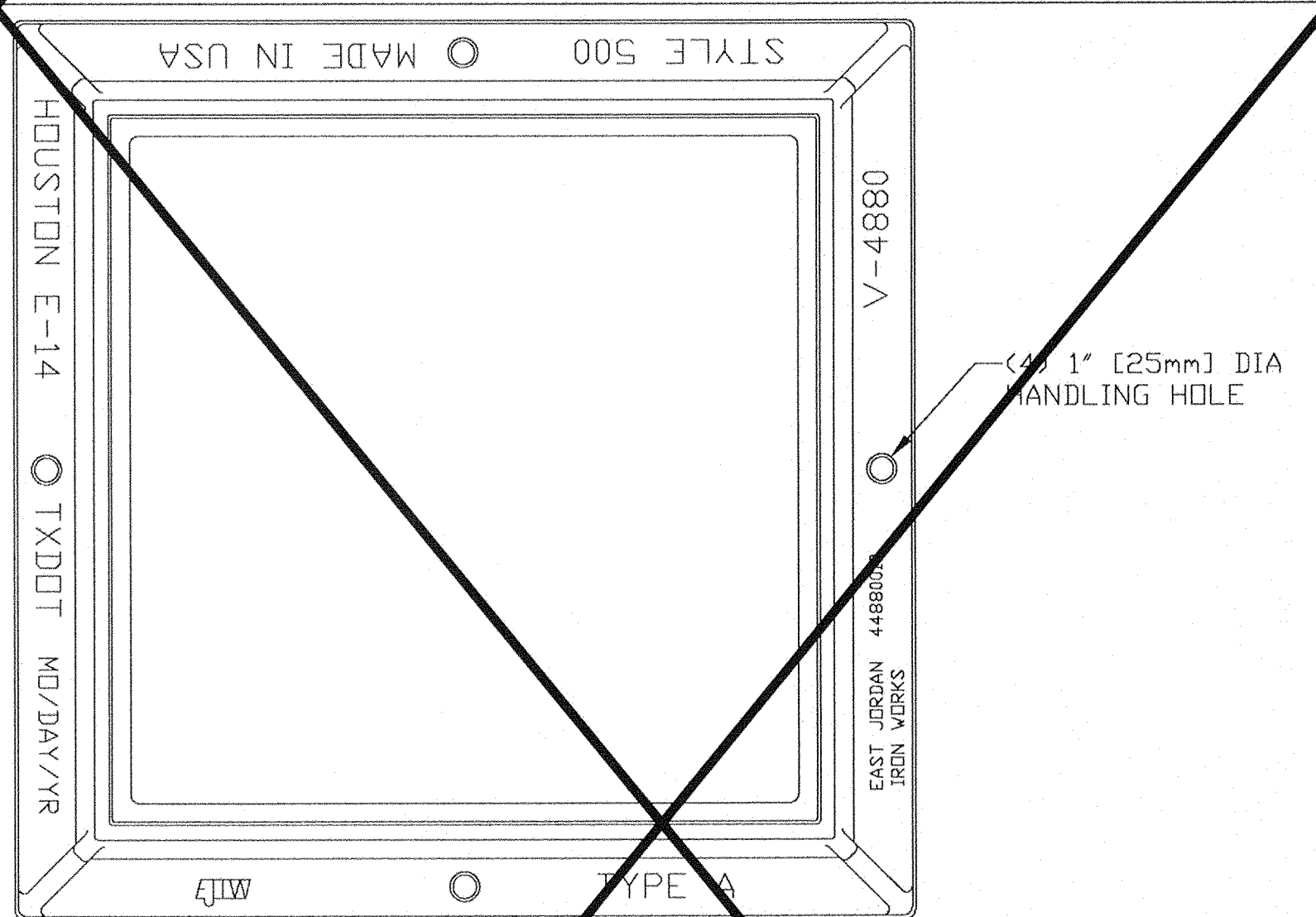
**32" MANHOLE FRAME W/O MUD RING**  
N.T.S.

SL-DR-10



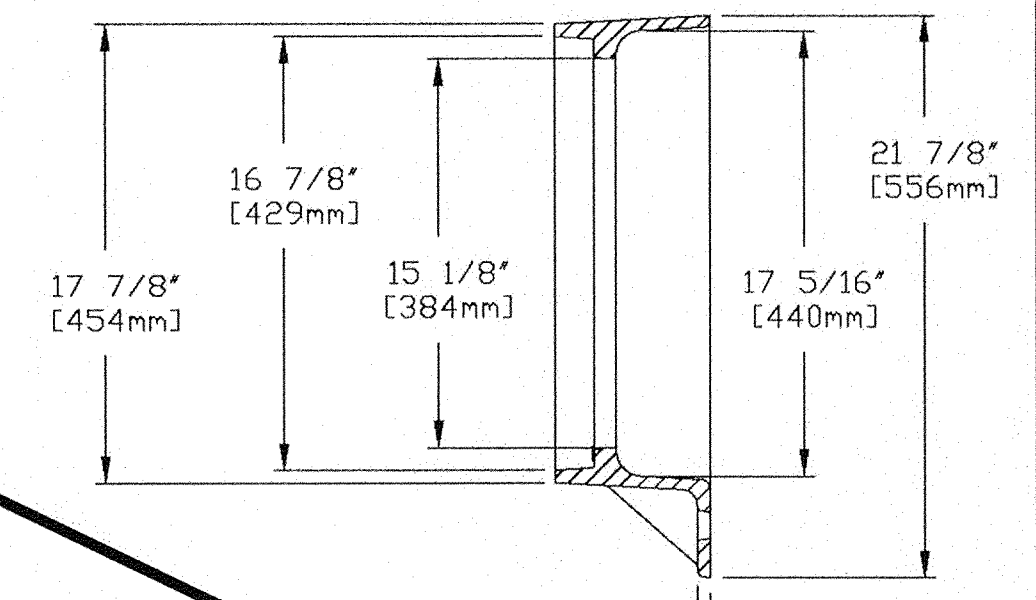
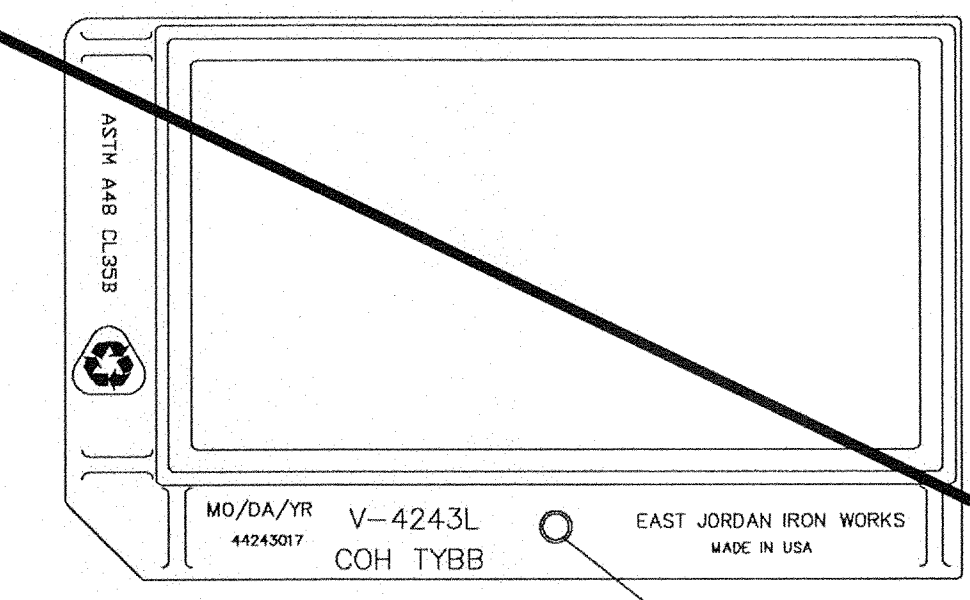
**32" MANHOLE FRAME**  
N.T.S.

SL-DR-11



**TYPE A INLET FRAME**  
N.T.S.

SL-DR-12



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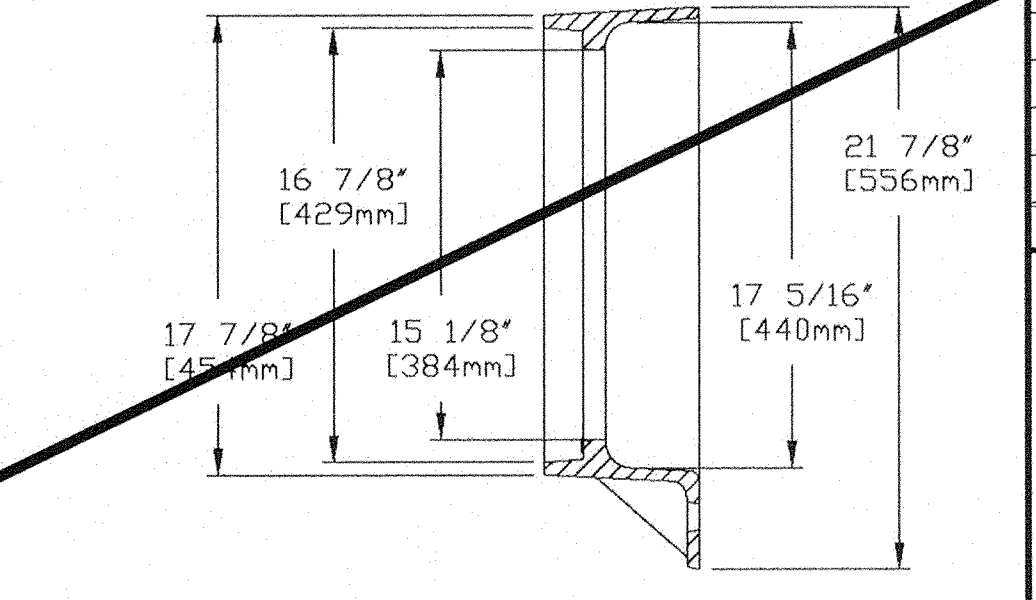
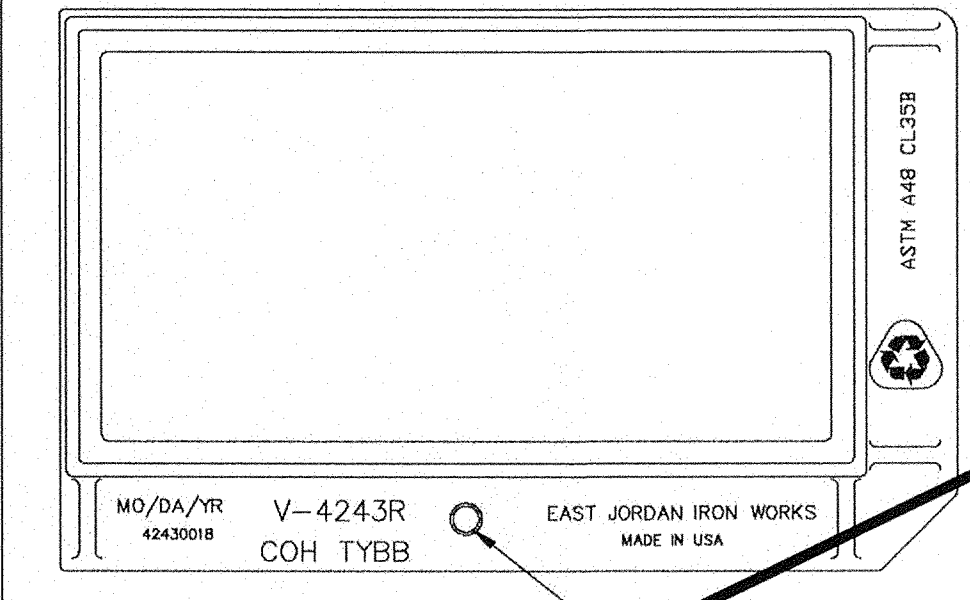
**SECTION VIEW**



**SECTION VIEW**

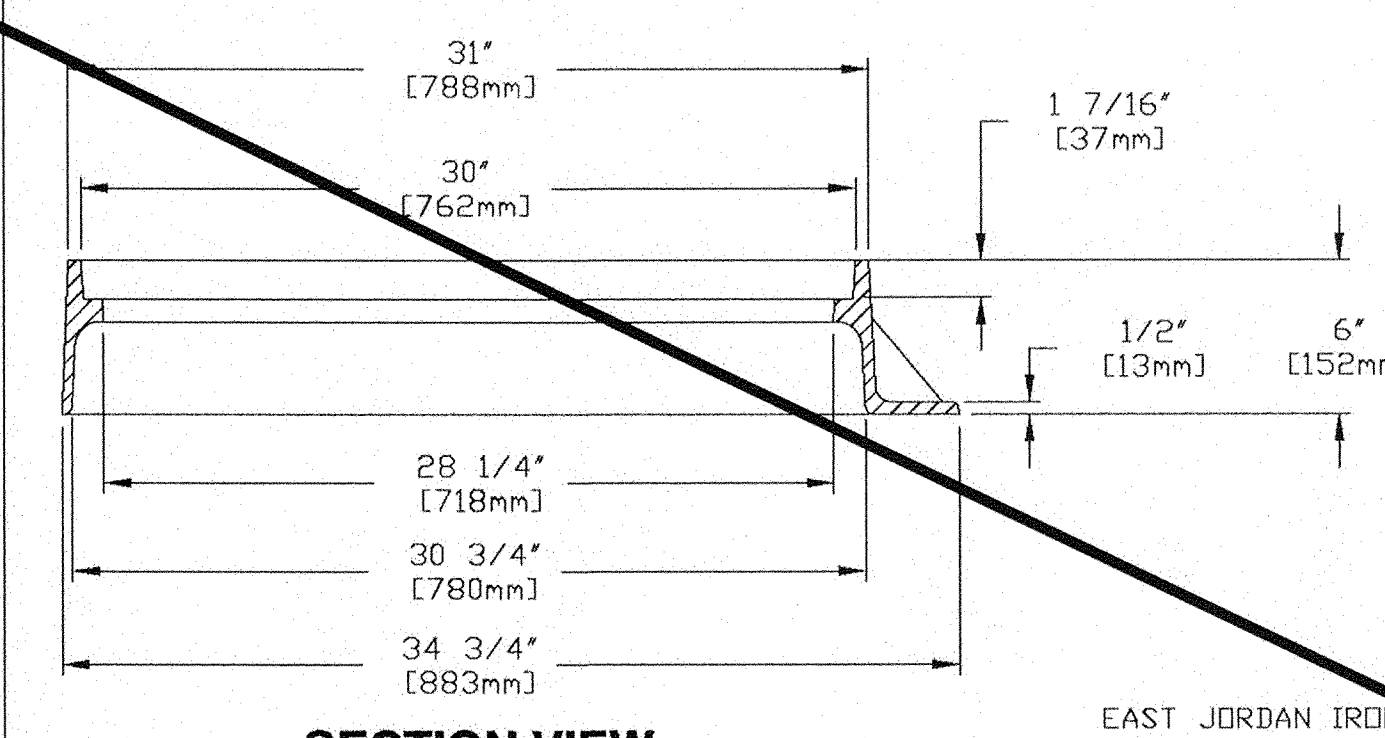
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SL-DR-13



**PLAN VIEW**

**SECTION VIEW**



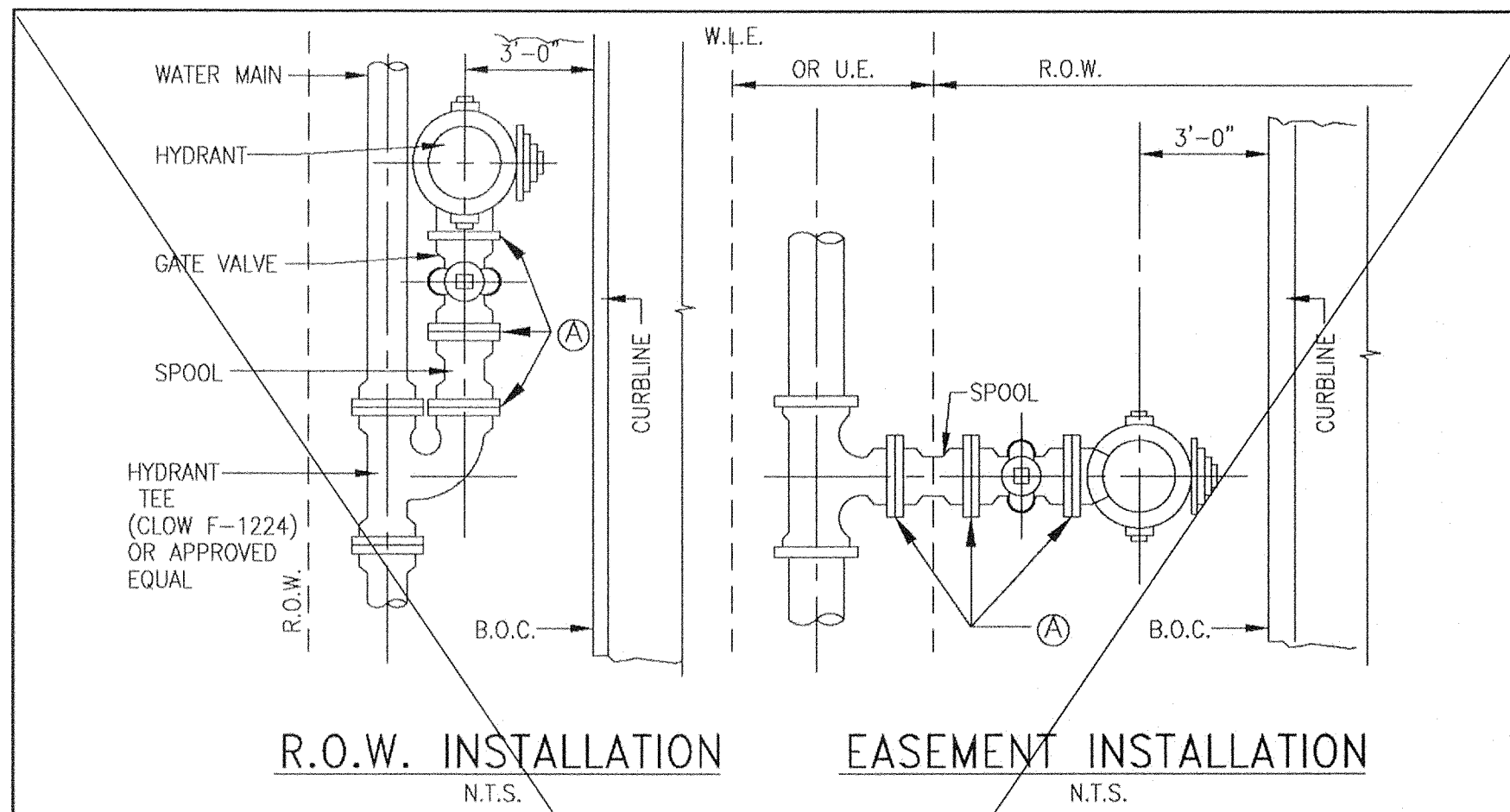
**SECTION VIEW**

**RIGHT FRAME**  
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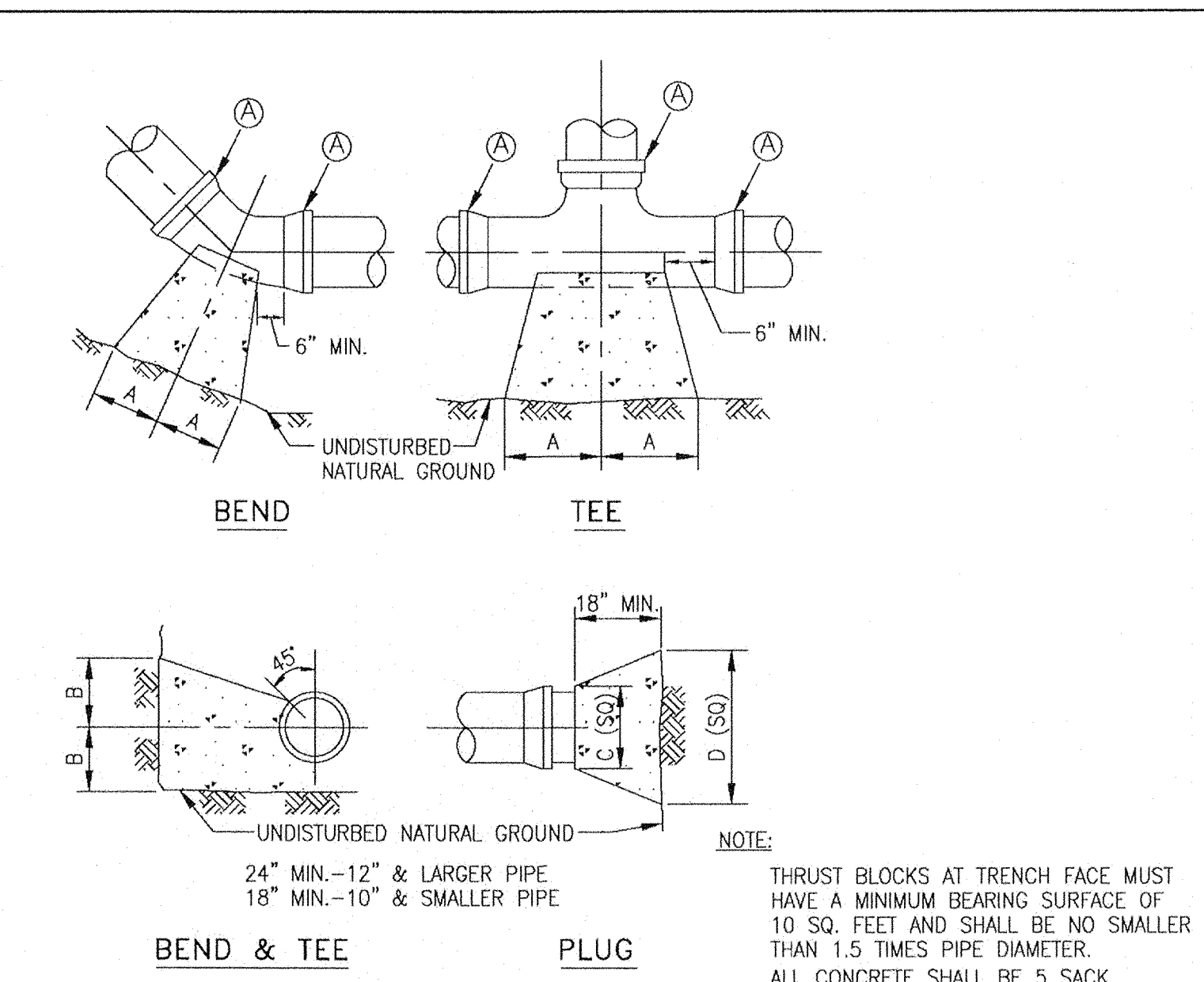
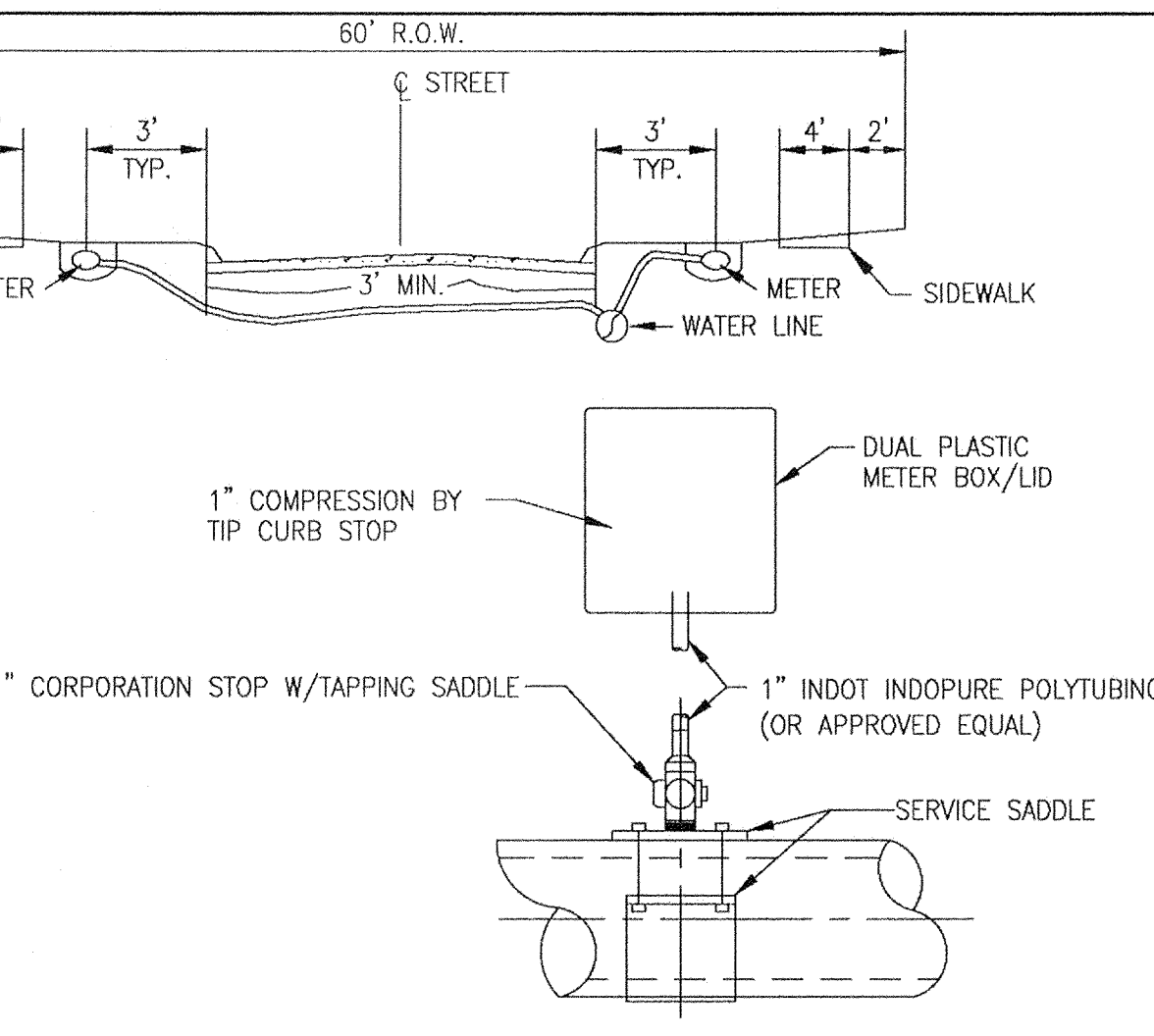
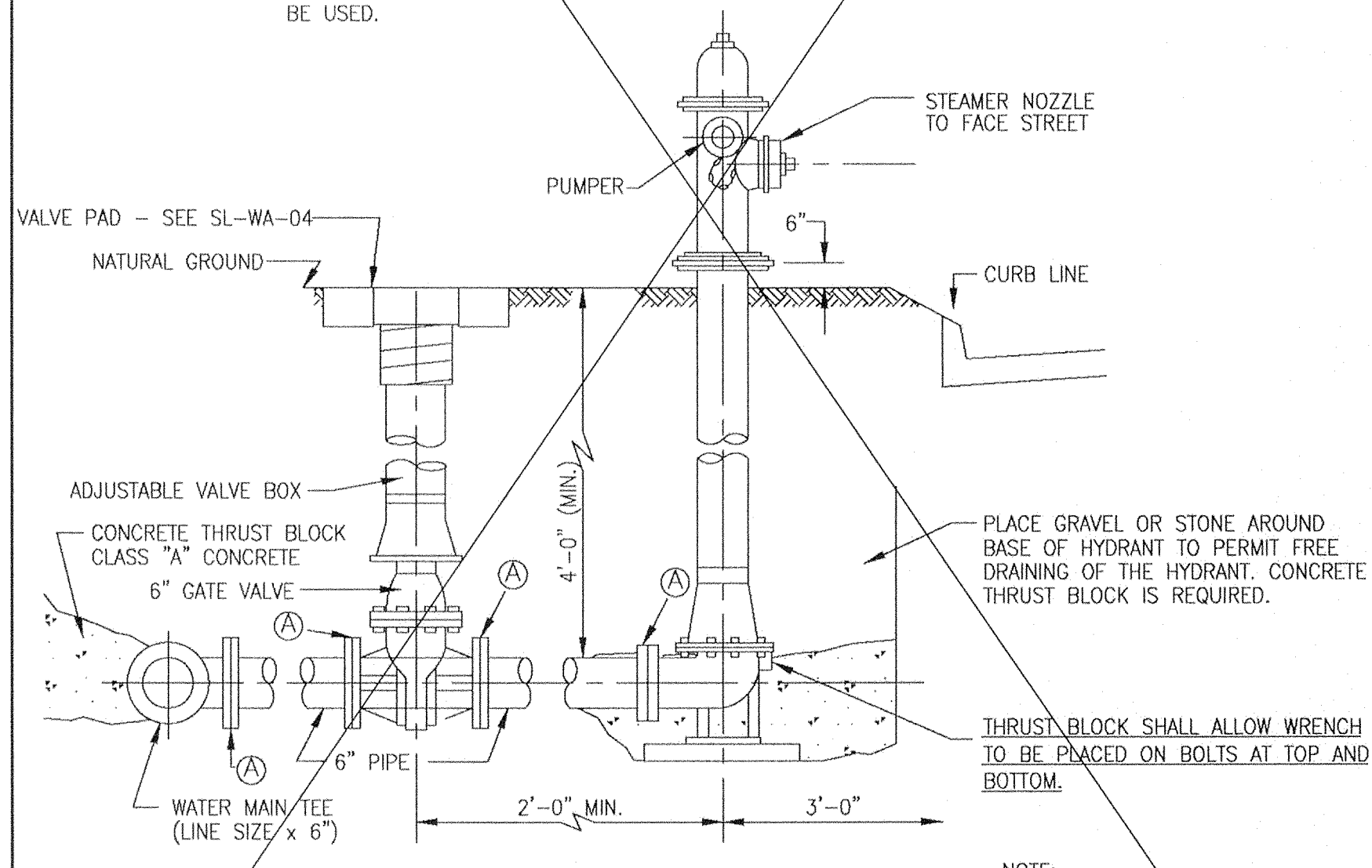
SL-DR-14

No.	DATE	REVISION
<b>CONSTRUCTION PLANS FOR:</b>  <b>STORM SEWER CONSTRUCTION DETAILS</b>		
JOB No.:	DATE:	DESIGNED BY:
SL-05		
DRAWN BY:	CHECKED BY:	SCALE:
SHEET		OF

CAD FILE PATH:  
PLOT DATE:



NOTE:  
WHEN WATER LINE IS LOCATED IN EASEMENT, STANDARD TEE MAY BE USED.



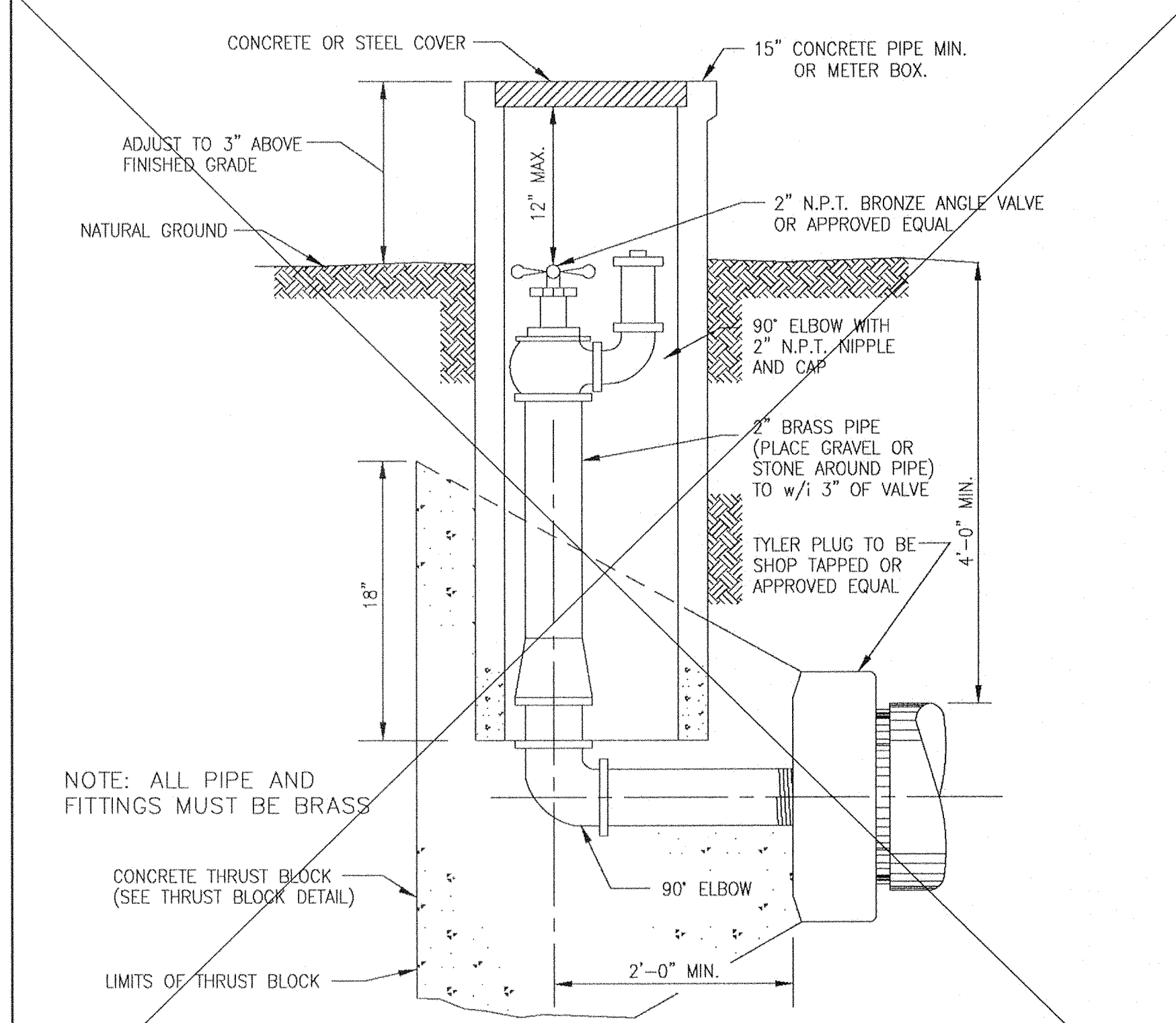
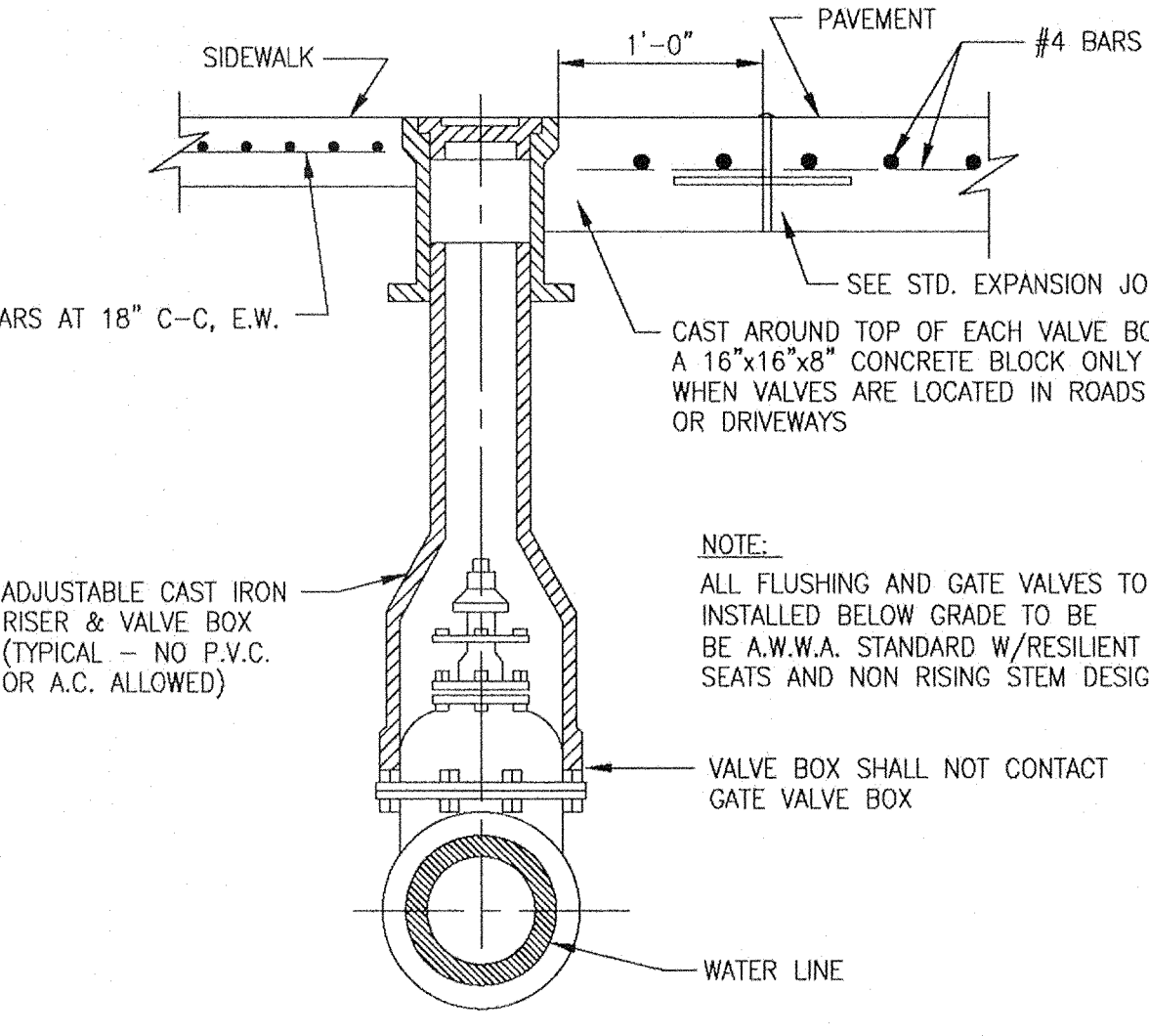
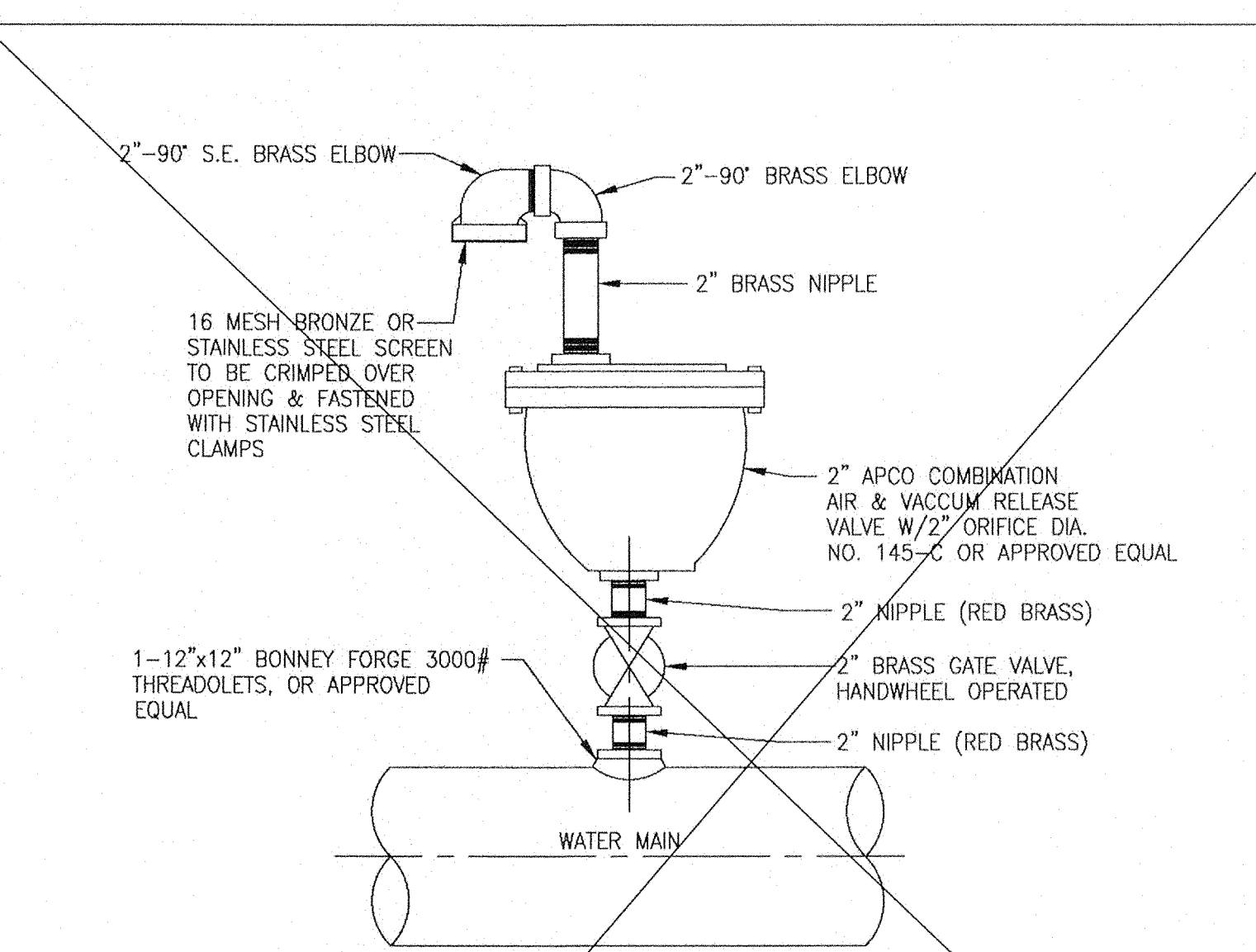
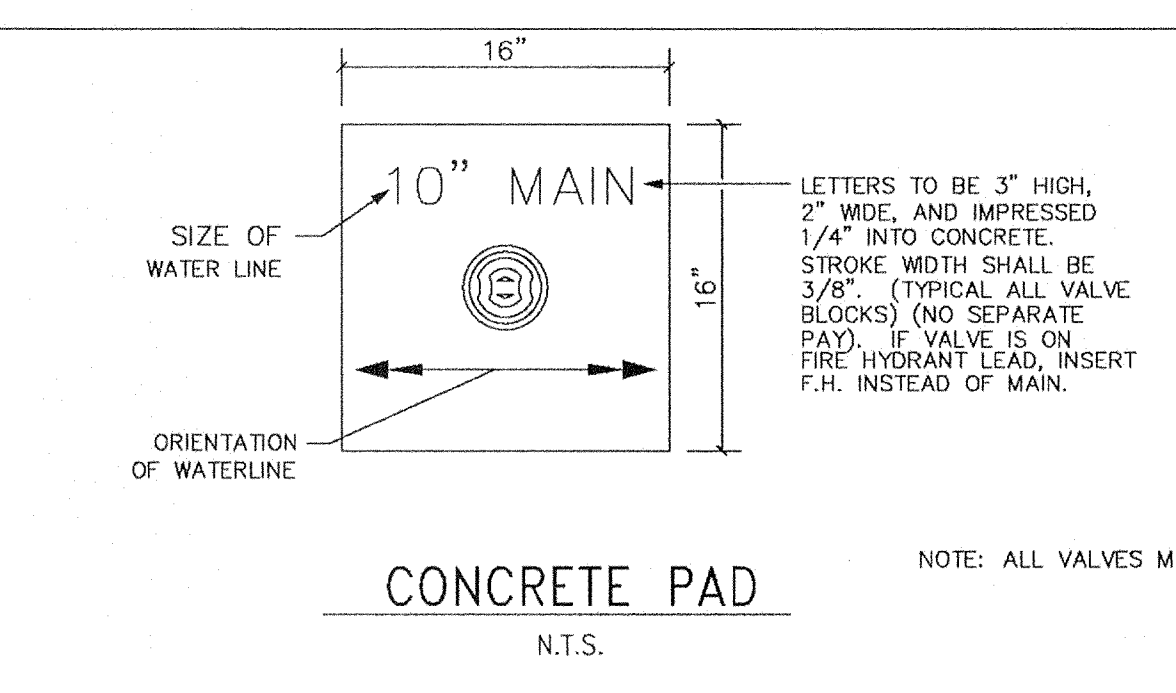
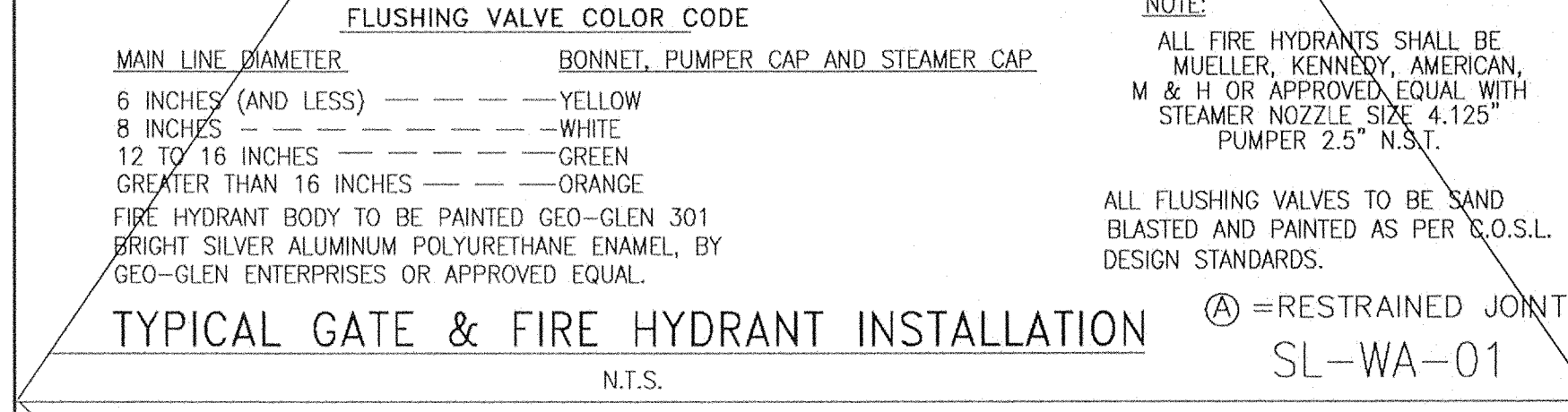
**NOTES:**  
**POLYETHYLENE WRAP FOR IRON PIPE**

- NOTE:
- POLYETHYLENE FILM SHALL BE USED AS A WRAP TO PROTECT CAST IRON AND OTHER METALS IN A CORROSIVE SOIL ENVIRONMENT.
  - AN 8 MIL POLYETHYLENE FILM WRAP SHALL BE REQUIRED AROUND ALL METAL PIPE AND APPURTENANCES (EXCEPT FIRE HYDRANTS).
  - POLYETHYLENE FILM SHALL BE FURNISHED AND INSTALLED EITHER IN TUBULAR FORM PRIOR TO LOWERING THE PIPE IN TRENCH OR IN SHEET FORM.
  - POLYETHYLENE TUBE ENCASMENT SHALL CONFORM WITH THE MINIMUM REQUIREMENTS OF "POLYETHYLENE ENCASMENT FOR GRAY AND DUCTILE CAST-IRON PIPING FOR WATER AND OTHER LIQUIDS", ANSI/AWWA C105, CURRENT REVISION. SOILS WITHIN A PROJECT SHALL BE TESTED IN ACCORDANCE WITH APPENDIX A OF ANSI/AWWA C105 TO ADEQUATELY DETERMINE THE REQUIREMENTS FOR ENCASMENT.
  - ALL FITTINGS AND PIPE JOINTS WITHIN 10' OF A FITTING SHALL HAVE RESTRAINT JOINTS

SIZE	90° BEND		45° BEND		22 1/2° BEND		TEES		PLUGS	
	A	B	A	B	A	B	A	B	A	B
2 1/2"	12"	7"	6"	7"	6"	6"	7"	8"	8"	14"
6"	16"	10"	9"	10"	6"	12"	10"	12"	10"	21"
8"	22"	13"	12"	13"	8"	10"	13"	16"	12"	29"
10"	26"	17"	14"	17"	10"	13"	16"	20"	14"	36"
12"	29"	21"	16"	21"	11"	16"	18"	24"	16"	41"
14"	35"	24"	19"	24"	12"	20"	22"	27"	18"	48"
16"	38"	27"	21"	27"	12"	24"	24"	30"	20"	54"
20"	50"	40"	30"	40"	18"	30"	30"	40"	30"	*78"
24"	50"	40"	30"	40"	18"	30"	30"	40"	30"	*78"
30"	60"	48"	36"	48"	20"	36"	36"	48"	36"	*96"

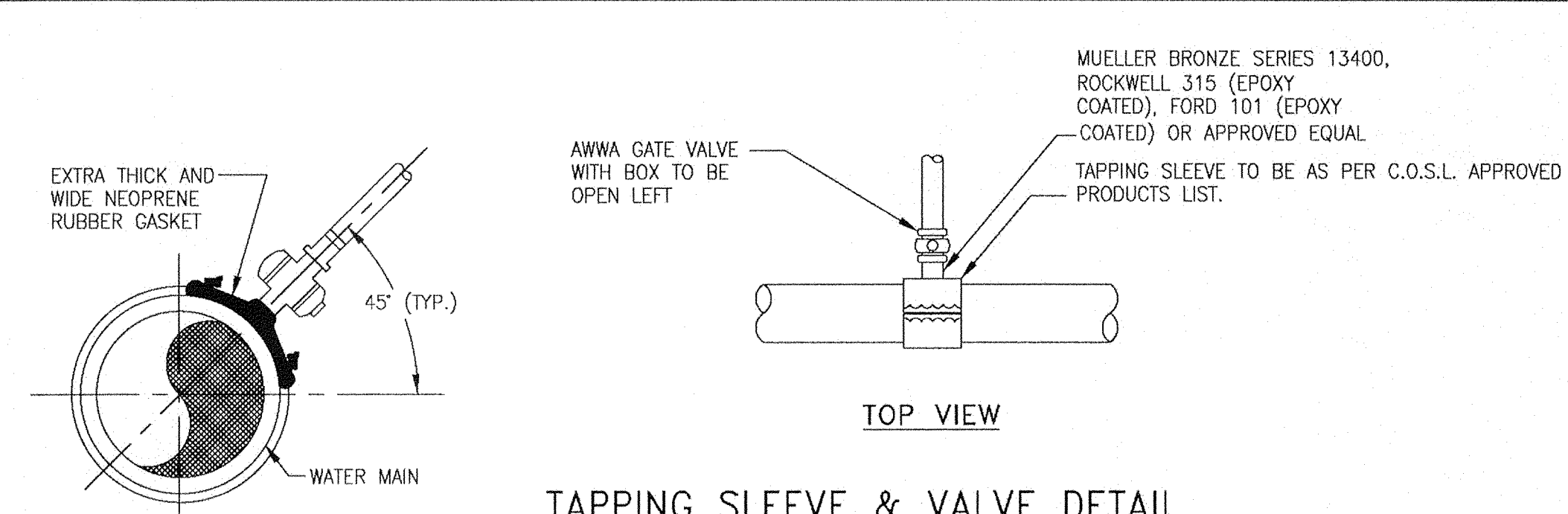
**BENDS, TEES & PLUGS FOR PIPE OF VARIOUS SIZES**

SL-WA-08



**2" BLOW OFF VALVE ASSEMBLY**  
N.T.S.

SL-WA-02



**CONSTRUCTION NOTES:**

- WATER LINES 12" (IN.) AND LESS SHALL BE AWWA C-900 DR18 WATER LINE GREATER THAN 12" (IN.) IN Ø SHALL BE AWWA C-905 DR 18
- ALL FLUSHING VALVES AND GATE VALVES TO BE AMERICAN WATER WORKS ASSOC. (AWWA) STANDARD COUNTERCLOCKWISE OPENING WITH NON-RISING STEM DESIGN.
- ALL DUCTILE IRON PIPE SHALL BE CLASS 50 MORTAR LINED. NO A.C. PIPE WILL BE ALLOWED AND ALL DUCTILE IRON FITTINGS SHALL BE MORTAR LINED PUSHON OR MECHANICAL JOINTS.
- ALL BACKFILL WITHIN THE R.O.W. SHALL BE COMPACTED TO 95% STANDARD PROCTOR DENSITY.
- MINIMUM SPACING BETWEEN TAPS SHALL BE 2' AT ALTERNATING TAP ANGLES.

No.	DATE	REVISION

SEAL

STATE OF TEXAS

TEXAS ENGINEERING & MAPPING CO.  
REGISTRATION # F-2906

CARLOS J. BARRILLAS  
REGISTERED PROFESSIONAL ENGINEER  
50474

DESIGN ENGINEER: *Carlos J. Barrillas* DATE: 5/13/13



CITY OF SUGAR LAND, TEXAS  
ENGINEERING DEPARTMENT

CONSTRUCTION PLANS FOR:

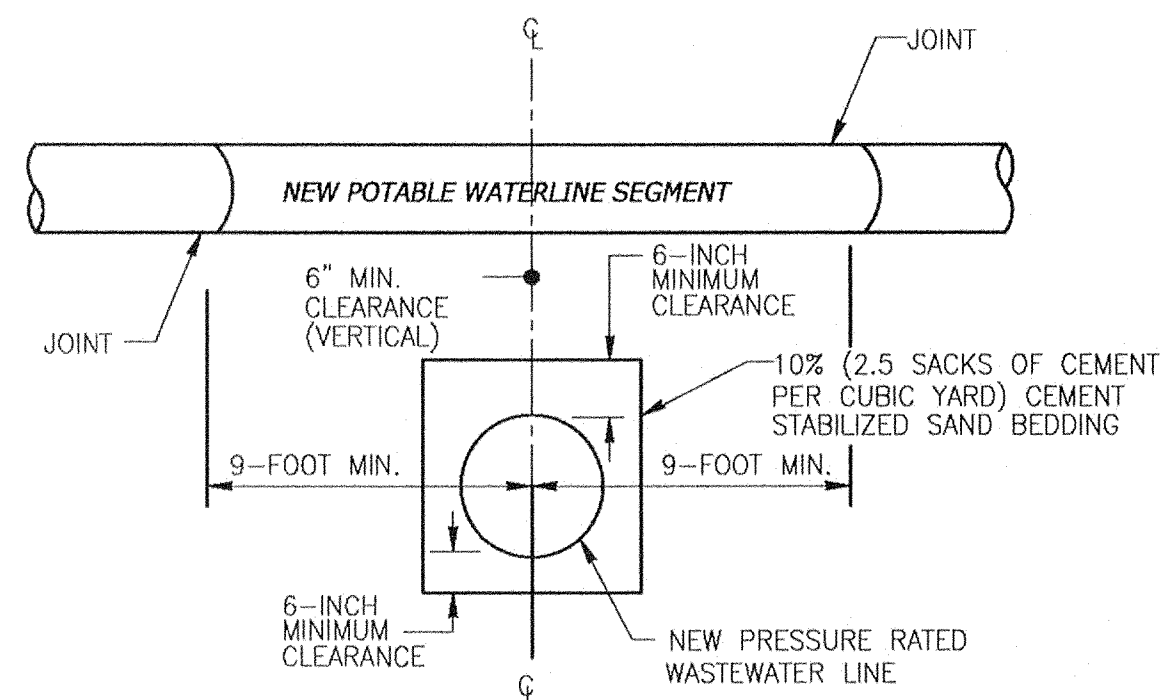
WATER LINE  
CONSTRUCTION DETAILS

JOB No.:	SL-WA-08
DATE:	
DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	
SCALE:	

SL-15  
SHEET OF

PLOT TIME:

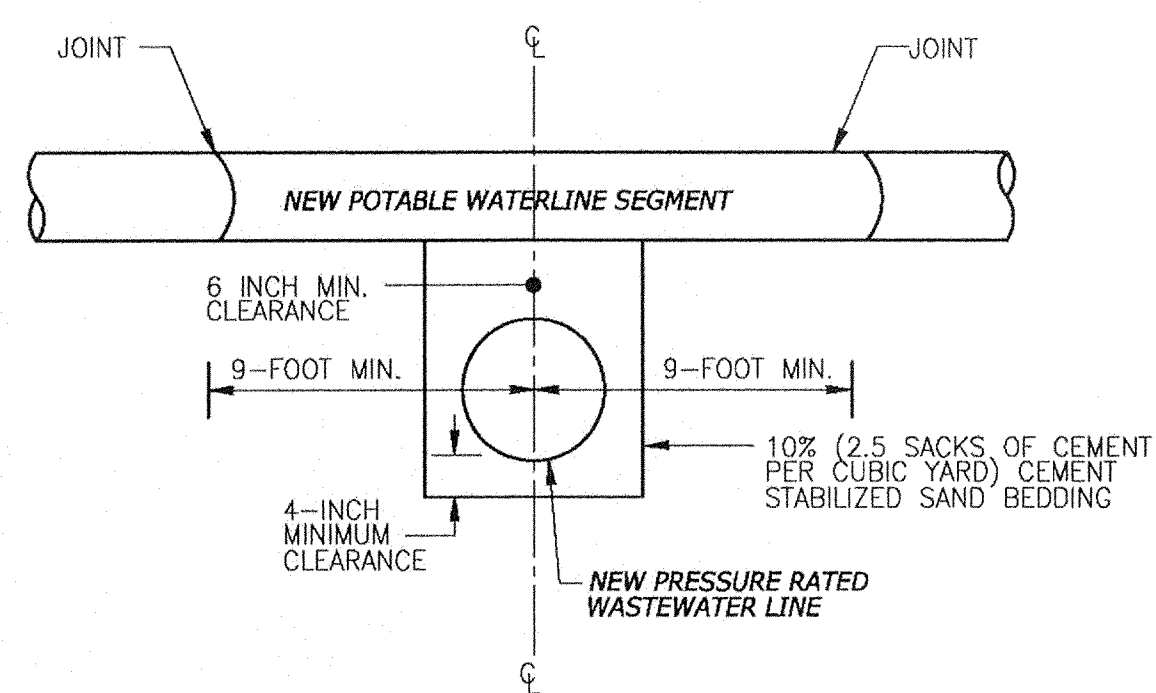
NEW POTABLE WATERLINE CROSSING NEW PRESSURE RATED WASTEWATER LINE WITH SEGMENT LENGTHS OF EIGHTEEN (18) FEET OR GREATER, HAVING 6 INCHES OF VERTICAL CLEARANCE AND 4 FEET OF HORIZONTAL CLEARANCE



- WHENEVER POSSIBLE, THE CROSSING SHALL BE CENTERED BETWEEN JOINTS OF THE WASTEWATER LINE.
- MINIMUM WASTEWATER PIPE STIFFNESS OF 115 PSI AT 5% DEFLECTION.
- EMBED WASTEWATER LINE IN CEMENT STABILIZED SAND TO AT LEAST 12" INCHES BEYOND EACH JOINT OF CROSSED SECTION OF PIPE.

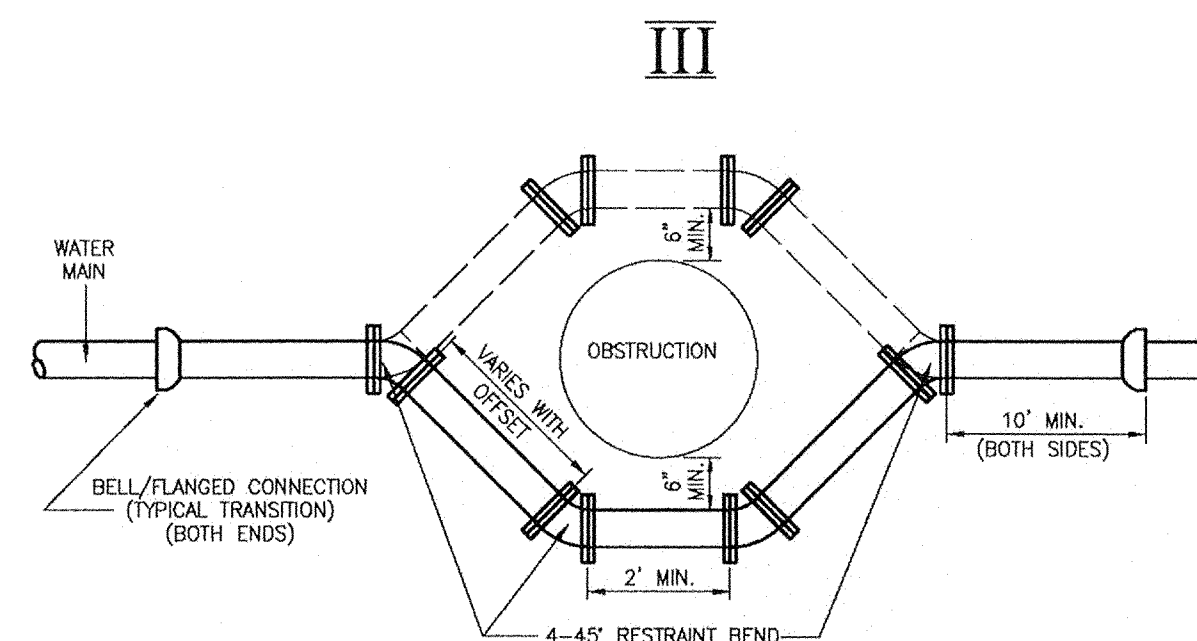
SL-WA-09

NEW POTABLE WATERLINE CROSSING NEW PRESSURE RATED WASTEWATER LINE



- WHENEVER POSSIBLE, THE CROSSING SHALL BE CENTERED BETWEEN JOINTS OF THE WASTEWATER LINE.
- MINIMUM WASTEWATER PIPE STIFFNESS OF 115 PSI AT 5% DEFLECTION.
- EMBED WASTEWATER LINE IN CEMENT STABILIZED SAND TO AT LEAST 12" INCHES BEYOND EACH JOINT OF CROSSED SECTION OF PIPE.

SL-WA-10



FOR A LINE TO PASS OVER AN OBSTRUCTION RATHER THAN UNDER, IT MUST HAVE ADEQUATE COVER AND BE APPROVED BY THE ENGINEERING DEPARTMENT.

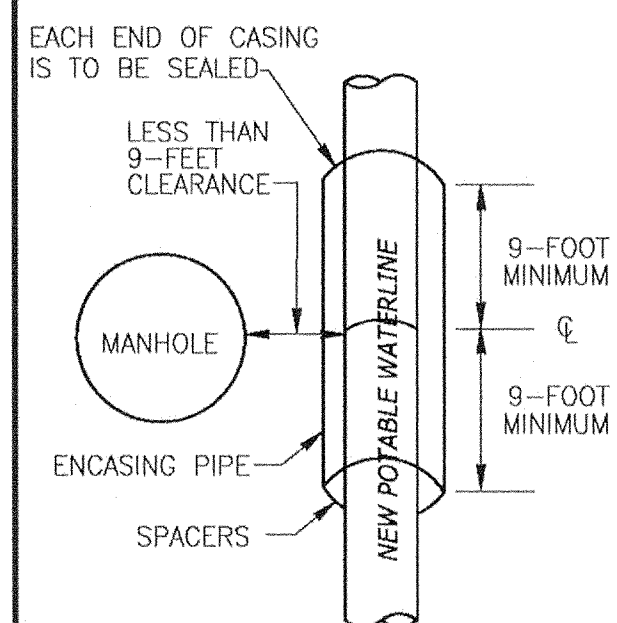
MIN. PIPE WALL THICKNESS	
4"	0.250"
6"	0.280"
8"	0.322"
12"	0.375"
AND LARGER	

- NOTES:
- PIPE MATERIAL SHALL BE AWWA C900 PVC, DR-14, 200 PSI WITH INTEGRAL PVC RESTRAINED JOINTS.
  - OFFSET ASSEMBLY MUST PASS OVER THE OBSTRUCTION AS LONG AS THE MINIMUM CLEARANCE IS MAINTAINED. SPECIFIC APPROVAL FROM THE UTILITIES DEPARTMENT MUST BE GRANTED FOR THE OFFSET TO PASS UNDER THE OBSTRUCTION.
  - MATERIAL AND COATINGS SHALL BE IN ACCORDANCE WITH WATER MAIN STANDARD SPECIFICATIONS.
  - RESTRAIN EXISTING PIPING BEYOND OFFSET SECTION AS REQUIRED TO PREVENT MOVEMENT.
  - ALL PVC PRODUCTS MUST BE LISTED ON CITY OF SUGAR LAND'S APPROVED PRODUCTS LIST.

PVC WATER PIPE OFFSET ASSEMBLY

SL-WA-11

DETAIL OF WATER LINE CROSSING WASTEWATER FACILITIES WHERE SEPARATION IS LESS THAN 9' (NINE FEET)

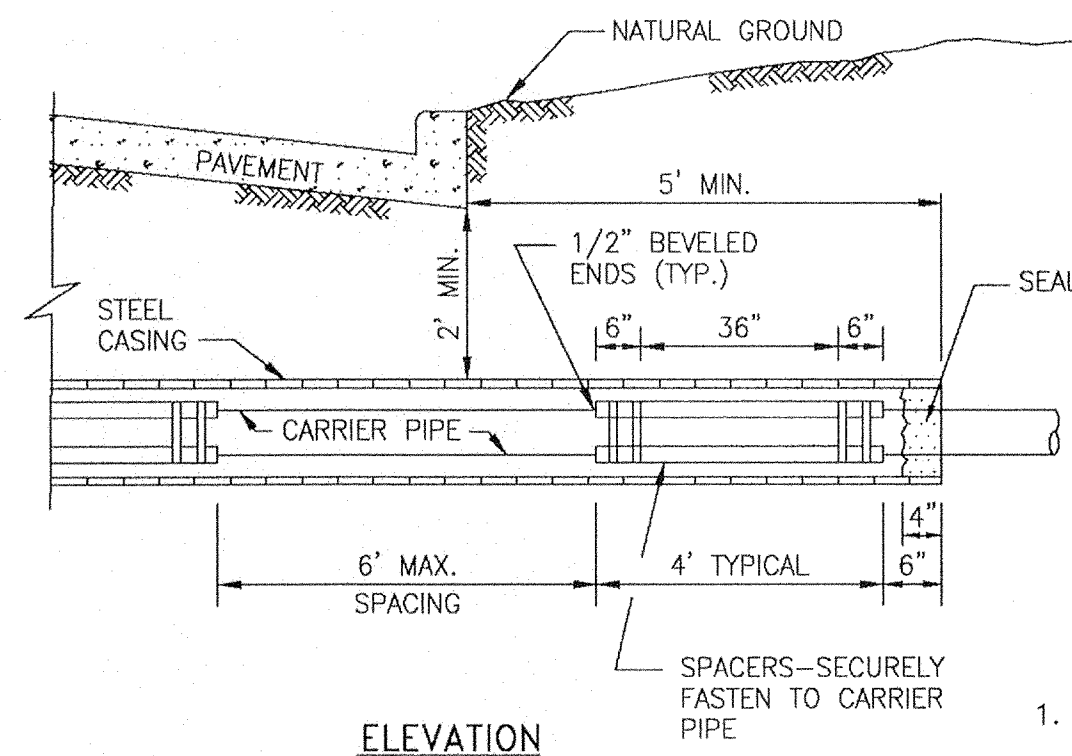


ENCASING PIPE

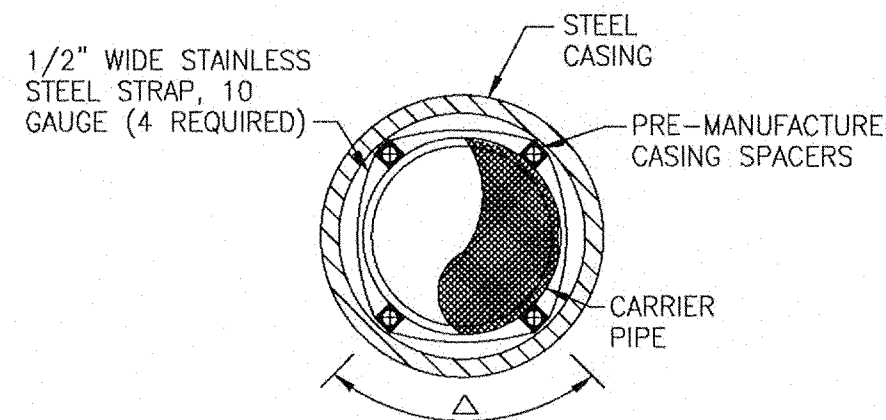
- 150 PSI PRESSURE CLASS PIPE
- MINIMUM 18 FEET LONG
- DIAMETER = 2 X WATERLINE DIAMETER
- SPACE AROUND CARRIER PIPE SHALL BE SUPPORTED AT FIVE (5) FOOT (OR LESS INTERVALS WITH SPACERS)
- CENTERED ON CROSSING
- BOTH ENDS SEALED WITH CEMENT GROUT OR A MANUFACTURED WATER TIGHT SEAL.

MANHOLE CLEARANCE

SL-WA-12



ELEVATION



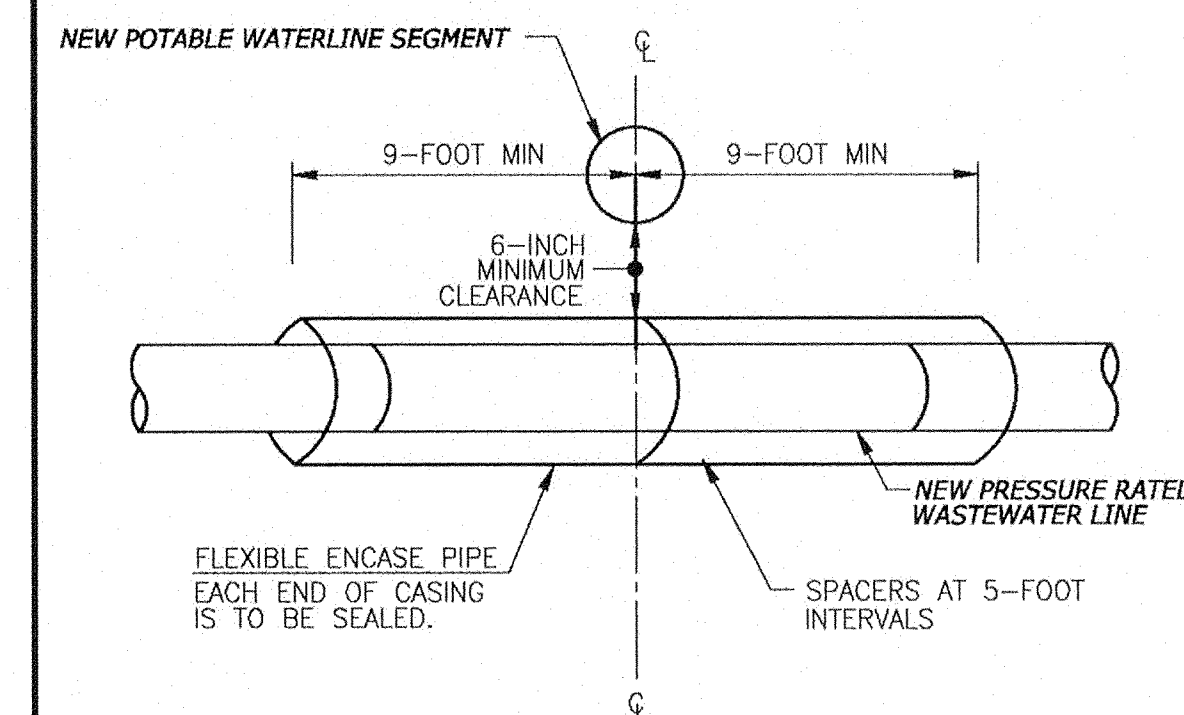
CASING SCHEDULE		
CARRIER PIPE	NOMINAL CASING	MIN. WALL THICKNESS (IN.)
6"	12"	0.11
8"	14"	0.15
10"	16"	0.18
12"	18"	0.20

- CASING SIZE AND THICKNESS SHALL CONFORM TO THE MINIMUM REQUIREMENTS AS SHOWN ON CASING SCHEDULE, OTHER PERMITS AS REQUIRED.
- MAINTAIN 1/2" MINIMUM CLEARANCE BETWEEN THE MAXIMUM OUTSIDE DIAMETER OF CARRIER PIPE AND CASING AT ALL LOCATIONS.
- DIMENSIONS ARE APPROXIMATE ONLY. CONTRACTOR SHALL INSTALL ADEQUATELY SIZED CASING TO ACCOMMODATE THE CARRIER PIPE.

SL-WA-13

ENCASED WASTEWATER LINE

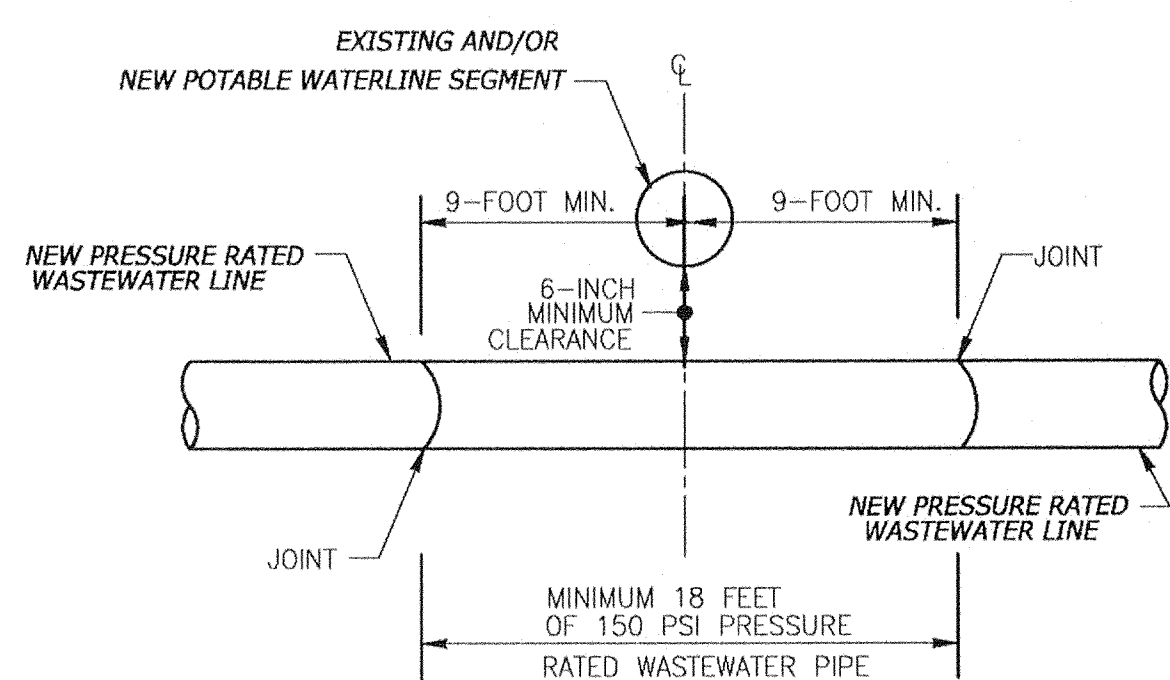
NEW POTABLE WATERLINE CROSSING NEW PRESSURE RATED WASTEWATER LINE WITH SEGMENT LENGTHS OF LESS THAN EIGHTEEN (18) FEET



- MINIMUM CASING PIPE STIFFNESS OF 115 PSI AT 5% DEFLECTION.
- MINIMUM CASING PIPE DIAMETER \* 2 X WASTEWATER LINE DIAMETER.
- THE SPACE AROUND THE CARRIER PIPE SHALL BE SUPPORTED AT FIVE (5) FOOT (OR LESS) INTERVALS WITH SPACERS
- EACH END CASING IS TO BE SEALED WITH WATER TIGHT NO-SHRINK GROUT OR MANUFACTURED WATER TIGHT SEAL.

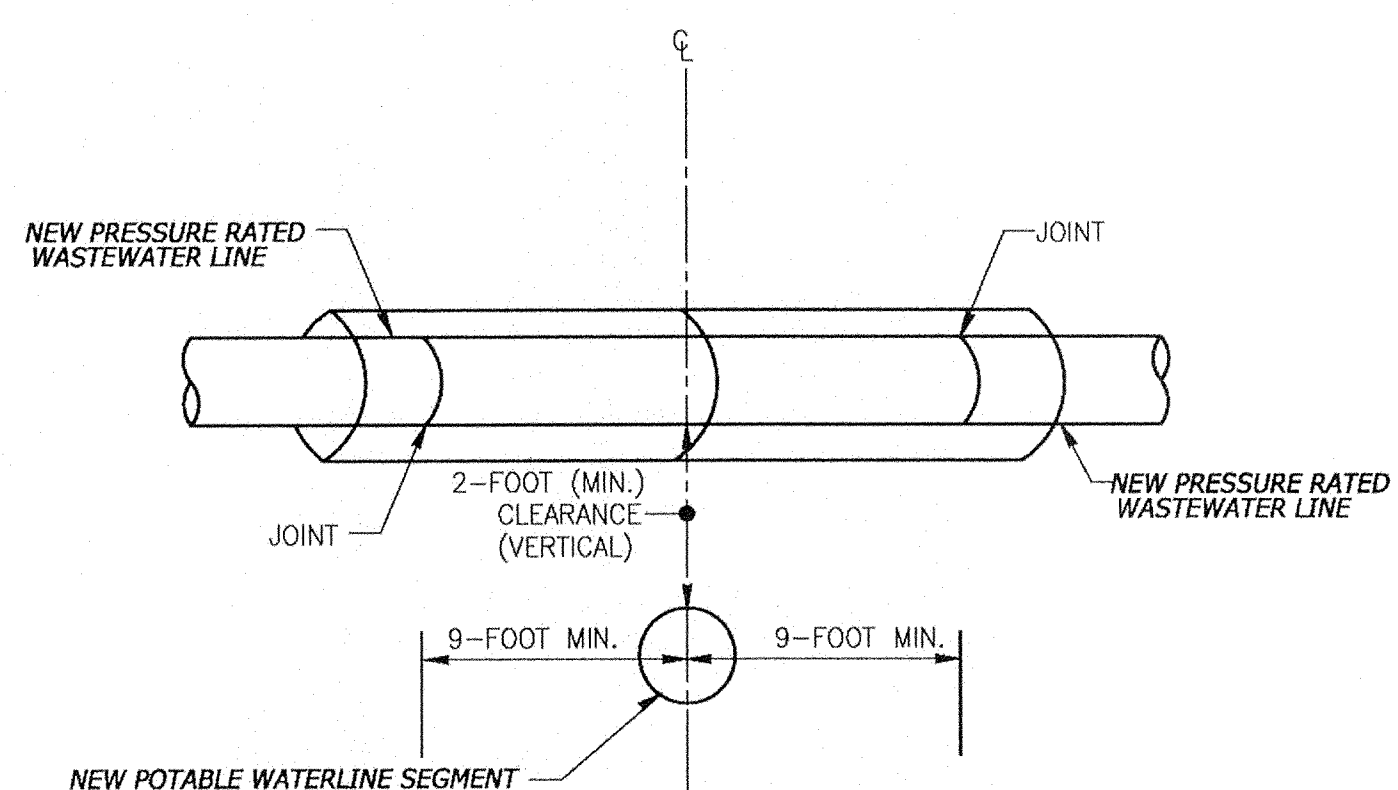
SL-WA-17

ALTERNATIVE A: PRESSURE RATED WASTEWATER PIPE



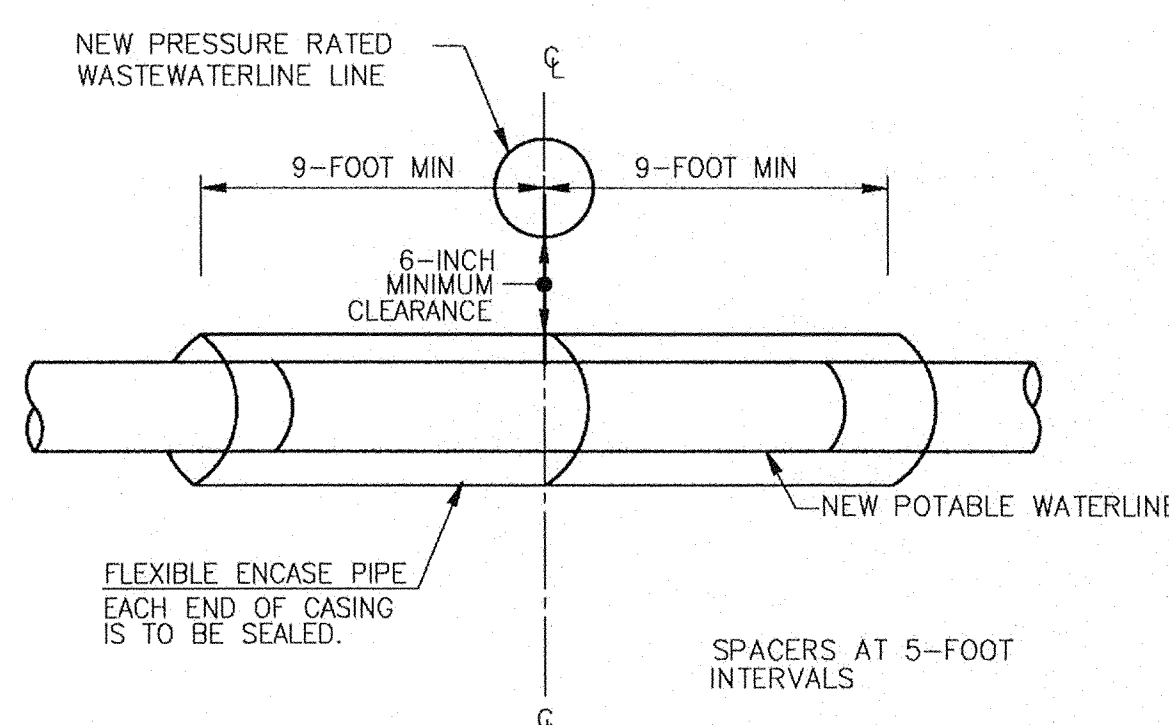
SL-WA-14

ALTERNATIVE B: EXISTING POTABLE WATERLINE CROSSING EXISTING PRESSURE RATED WASTEWATER LINE



SL-WA-15

ALTERNATIVE C: ENCASE NEW POTABLE WATERLINE UNDER A NEW PRESSURE RATED WASTEWATER LINE



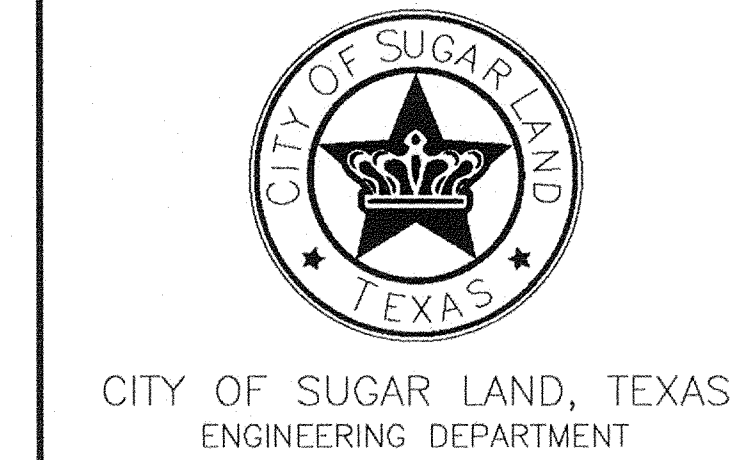
- SAME ENCASEMENT CRITERIA AS "ALTERNATIVE B" OR
- NEW WATERLINE (WITHOUT CASING) TO BE CONSTRUCTED OF PVC C-900 (DR-18), DUCTILE IRON WITH MECHANICAL JOINT OR STEEL PIPE WITH WELDED JOINTS.
- BOTH WATERLINE AND WASTEWATER LINE MUST PASS A PRESSURE AND LEAKAGE TEST AS SPECIFIED IN AWWA C600 STANDARDS.

SL-WA-16

SL-WA-18

No.	DATE	REVISION

SEAL: TEXAS ENGINEERING & MAPPING CO. REGISTRATION # F-2906  
 CARLOS J. BARILLAS 50474  
 PROFESSIONAL ENGINEER  
 DESIGN ENGINEER: [Signature] DATE: 5/3/13



CITY OF SUGAR LAND, TEXAS ENGINEERING DEPARTMENT

CONSTRUCTION PLANS FOR:

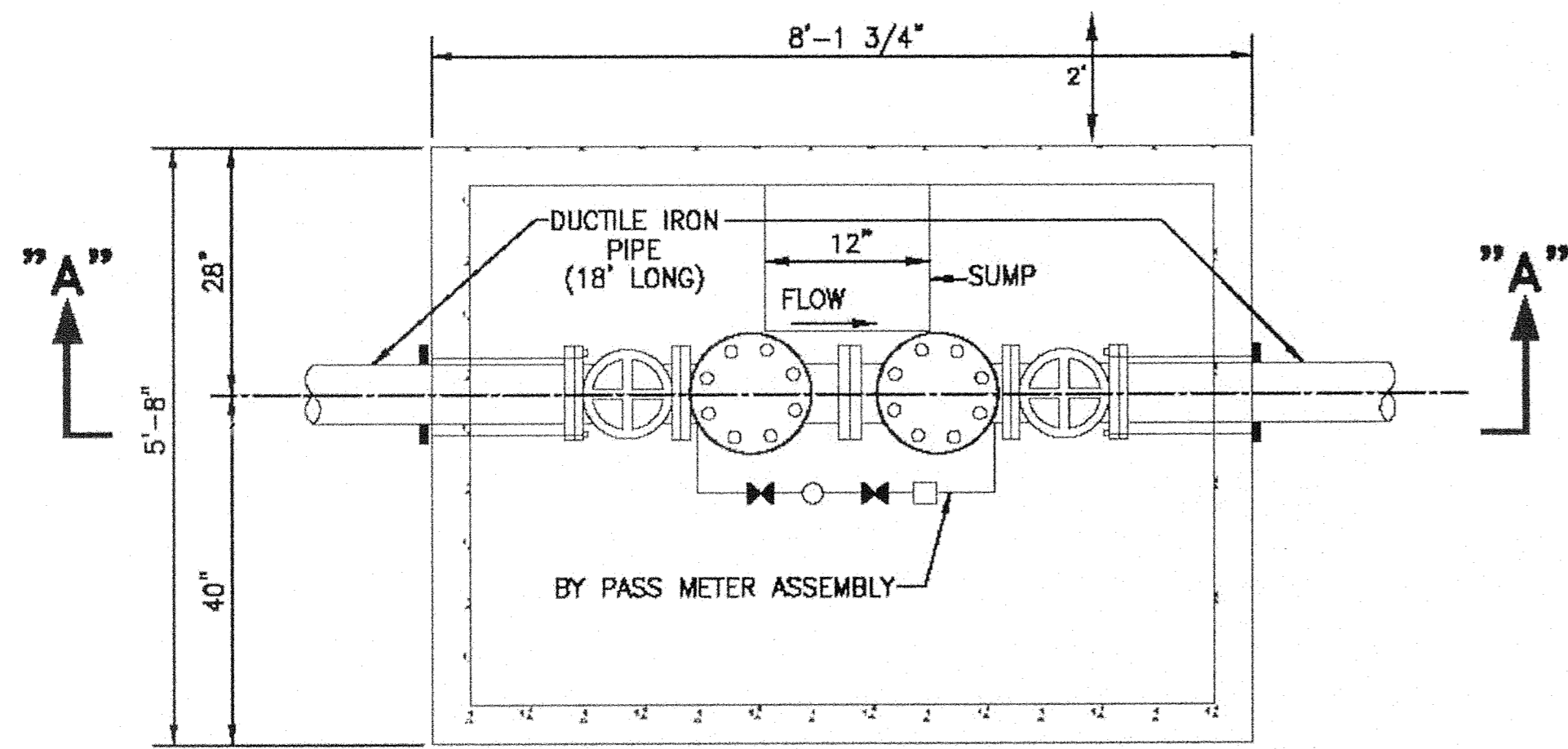
WATER LINE CROSSING DETAILS

JOB No.:  
 DATE:  
 DESIGNED BY:  
 DRAWN BY:  
 CHECKED BY:  
 SCALE:

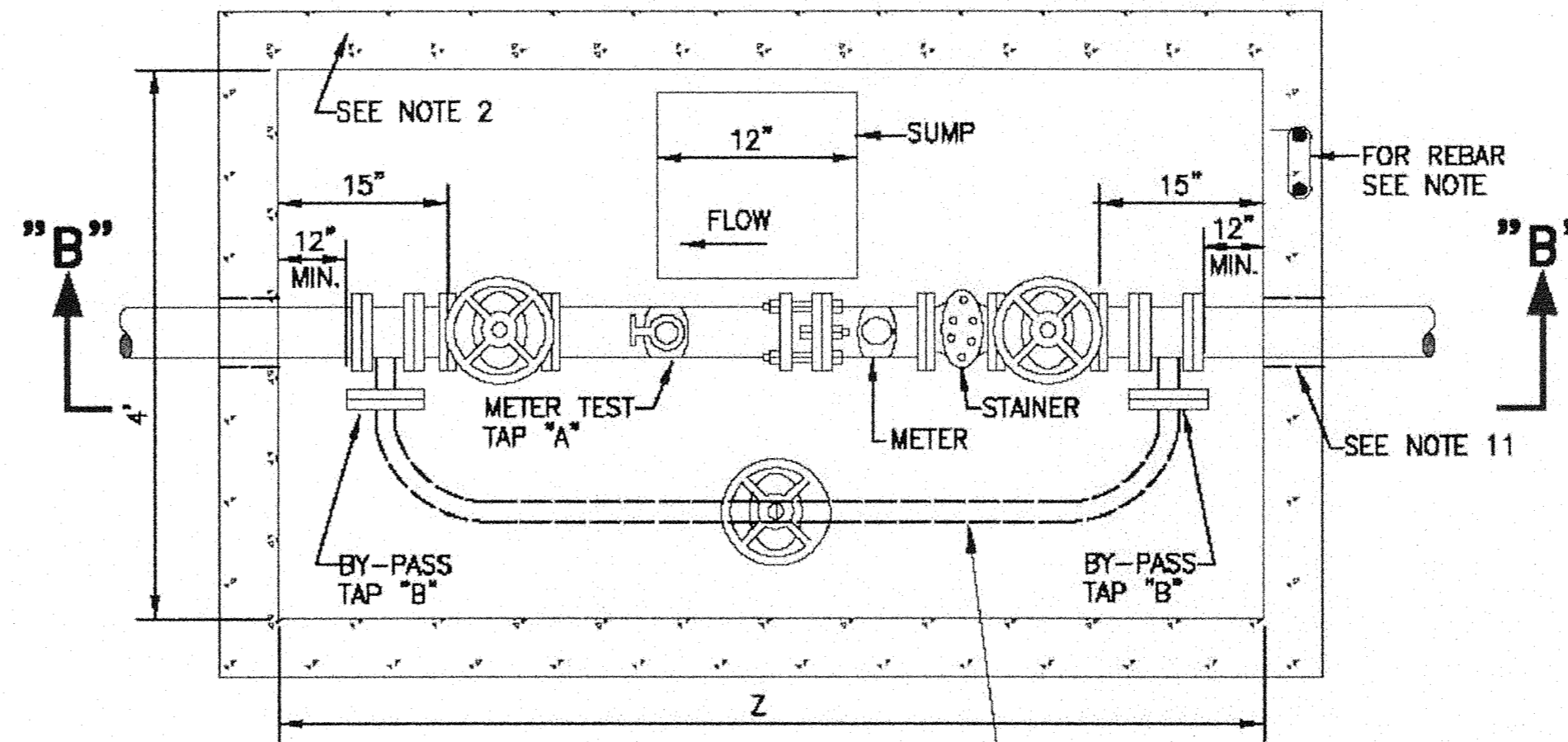
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CAD FILE PATH:  
PLOT DATE:

PLOT TIME:

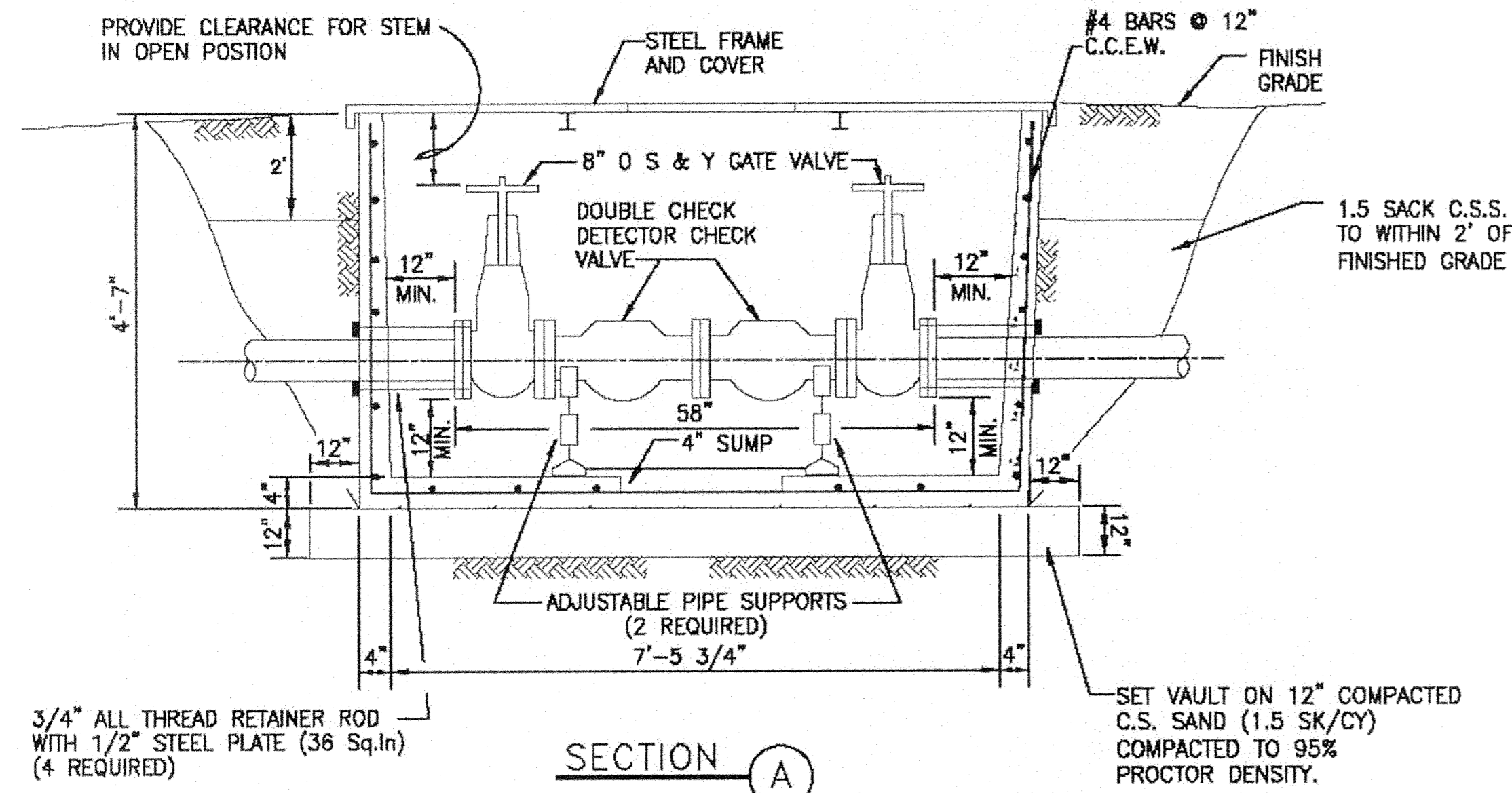


PLAN VIEW



PLAN VIEW

DUCTILE IRON BYPASS FOR 3" AND ABOVE

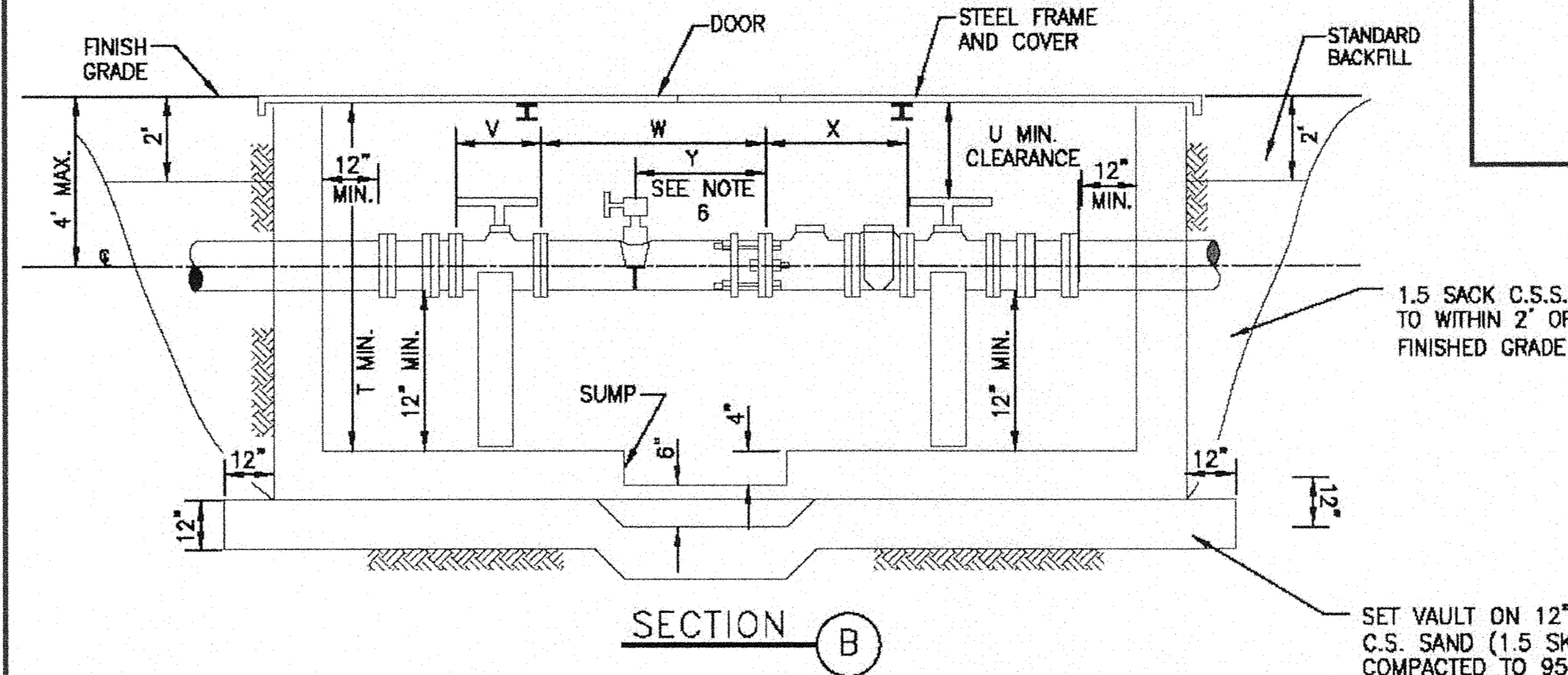


SECTION A

DETECTOR CHECK VALVE

N.T.S.

SL-WA-20



SECTION B

SET VAULT ON 12" INCHES C.S. SAND (1.5 SK/CY) COMPACTED TO 95% PROCTOR DENSITY.

METER VAULT															
DOMESTIC															
METER SIZE	T	U	V	W	X	Y	Z	METER SIZE	T	U	V	Z			
3"	4'-6"	25"	8"	11-1/2"	24"	9"	6'-10"	3"	4'-6"	25"	8"	16-1/2"	19"	9"	6'-10"
4"	4'-6"	22"	9"	13-1/2"	29"	10"	7'-7"	4"	4'-6"	22"	9"	19-1/2"	23"	10"	7'-7"
6"	5'-2"	26"	10-1/2"	13-1/2"	33"	13"	8'-2"	6"	5'-2"	26"	10-1/2"	19-1/2"	27"	13"	8'-2"
8"	6'-0"	31"	11-1/2"					8"	6'-0"	31"	11-1/2"	25-1/2"	30"	17"	9'-1"
10"	7'-0"	37"	13"					10"	7'-0"	37"	13"	29-1/2"	41"	21"	10'-7"

3" TO 10" METER

N.T.S.

NOTES:

- NOTIFY THE ENGINEERING DEPARTMENT AT (281) 275-2780 PRIOR TO CONSTRUCTION OF VAULT OR BY-PASS ASSEMBLY.
- THE METER VAULT CAN BE EITHER POURED IN PLACE OR PREFABRICATED. CONCRETE SHALL BE SIX INCHES (6") THICK AND BE 3,000 PSI WITH #4 REINFORCEMENT STEEL ON TWELVE INCH (12") CENTERS EACH WAY IF THE VAULT IS POURED IN PLACE. PREFABRICATED VAULTS SHALL BE FOUR INCHES (4") THICK AND BE 4,500 PSI CONCRETE WITH #4 REINFORCEMENT STEEL ON EIGHT INCH (8") CENTERS EACH WAY. THESE ARE MINIMAL SPECIFICATIONS.
- THE VAULT WILL NOT BE LOCATED IN ANY DRIVE OR PARKING AREAS AND MUST BE LOCATED IN A WATER METER EASEMENT.
- THE VAULT LID SHALL BE A BILCO LID, TYPE Q-4 SINGLE LEAF DESIGN. ANGLE FRAME IS 1/4-INCH STEEL WITH STRAP ANCHORS BOLTED TO THE EXTERIOR. THE LEAF IS 1/4-INCH STEEL DIAMOND PATTERN PLATE, PIVOTING ON TORSION BARS FOR EASY OPERATION. THE MINIMUM LIVE LOAD CAPACITY IS 150 POUNDS PER SQUARE FOOT. THE SIZE OF THE DOOR IS THREE FEET (3') BY THREE FEET (3').
- THE LID SHALL BE PAINTED WITH 43-38 TNEC DIFFUSED ALUMINUM PAINT OR APPROVED EQUAL, AND CENTERED OVER METER/NO.
- THE BY-PASS AND METER TEST TAP SHALL BE INSTALLED INSIDE THE VAULT. TAP "A" MUST BE AT LEAST TWO (2) PIPE DIAMETERS DOWNSTREAM OF THE METER. TAPS "B" AND "C" MUST BE MADE AT APPROXIMATE FORTY-FIVE DEGREE (45°) ANGLE ON EACH END OF THE PIPE AND CENTERED TEN INCHES (10") AWAY FROM THE WALL. ALL TAPS SHALL BE TWO INCHES (2") AND SHALL BE HARD PIPED.
- THE STRAINER, METER AND FLEXIBLE COUPLING WILL NOT BE SET UNTIL THE METER VAULT AND TAPS ARE ACCEPTED BY THE DISTRICT OPERATOR. ALL UTILITIES MUST ALSO HAVE BEEN ACCEPTED AND RELEASED BY THE CITY OF SUGAR LAND PUBLIC WORKS DEPARTMENT PRIOR TO METER.
- THE VALVES SHALL BE ANY RESILIENT WEDGE DESIGN GATE VALVE WHICH HAS RECEIVED FORMAL APPROVAL FROM THE CITY OF SUGAR LAND ENGINEERING DEPARTMENT. ALL VALVES SHALL BE FLANGED BOTH ENDS AND HAVE HAND WHEELS.
- THE METER VAULT SHALL BE SET ON 12" C.S.S. BEDDING AS SHOWN ON DETAIL DRAWINGS. A SUMP FOUR-INCHES (4") DEEP AND TWELVE INCHES (12") IN DIAMETER SHALL BE INSTALLED TO ONE SIDE IN THE CENTER OF THE BOTTOM SLAB. IF PRECAST VAULT IS USED, RAM-NEK SHALL BE USED TO SEAL ALL COLD JOINTS.
- ALL THE WALL PENETRATIONS SHALL BE MADE WITH A CAST IN PLACE WALL SLEEVE AS APPROVED BY THE CITY OF SUGAR LAND ENGINEERING DEPARTMENT. BREAKING OUT THE WALL USING A JACKHAMMER OR USING KNOCKOUT PANELS WILL NOT BE ALLOWED.
- A CONCRETE SUPPORT WILL BE INSTALLED UNDER EACH VALVE.
- DEPTH OF VAULT SHALL BE A MINIMUM OF 4-1/2' AND A MAXIMUM OF 6'
- ALL PIPING INSIDE THE VAULT SHALL BE DUCTILE IRON WITH FLANGE FITTINGS. ALL PIPING SHALL CONFORM TO THE REQUIREMENTS OF THE CITY OF SUGAR LAND ENGINEERING DEPARTMENT
- THE TYPE OF METER, TURBINE OR COMPOUND, WILL BE DETERMINED BASED ON THE APPLICATION AND APPROVED BY THE ENGINEERING DEPARTMENT.

SL-WA-22

No.	DATE	REVISION

SEAL: TEXAS ENGINEERING & MAPPING CO. REGISTRATION # F-2906  
 CARLOS J. BARRILLAS 50474  
 PROFESSIONAL ENGINEER  
 DESIGN ENGINEER: *Carlos J. Barrillas* DATE: 11/1/13

SL-WA-21



CITY OF SUGAR LAND, TEXAS  
ENGINEERING DEPARTMENT

CONSTRUCTION PLANS FOR:

WATER LINE METER VAULT DETAILS

JOB No.:  
DATE:  
DESIGNED BY:  
DRAWN BY:  
CHECKED BY:  
SCALE:

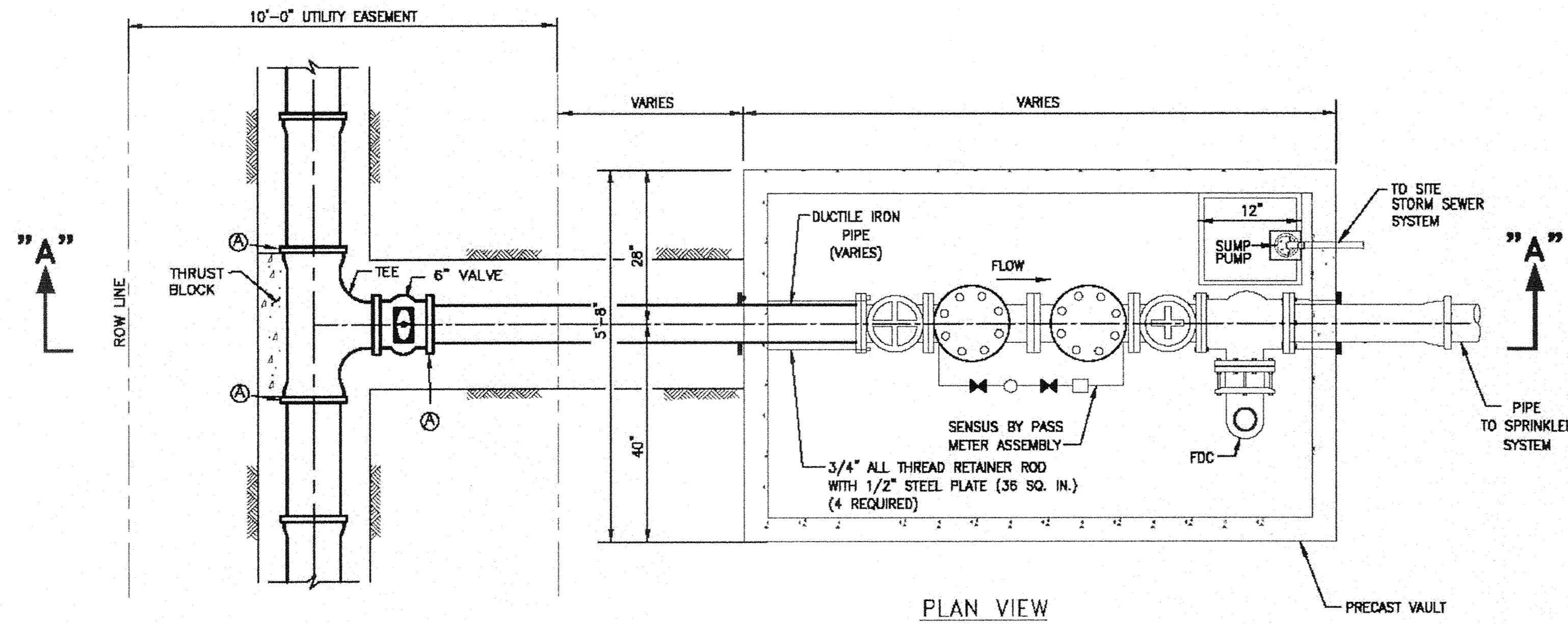
SL-17

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CAD FILE PATH:  
PLOT DATE:

SL-WA-19

PLOT TIME

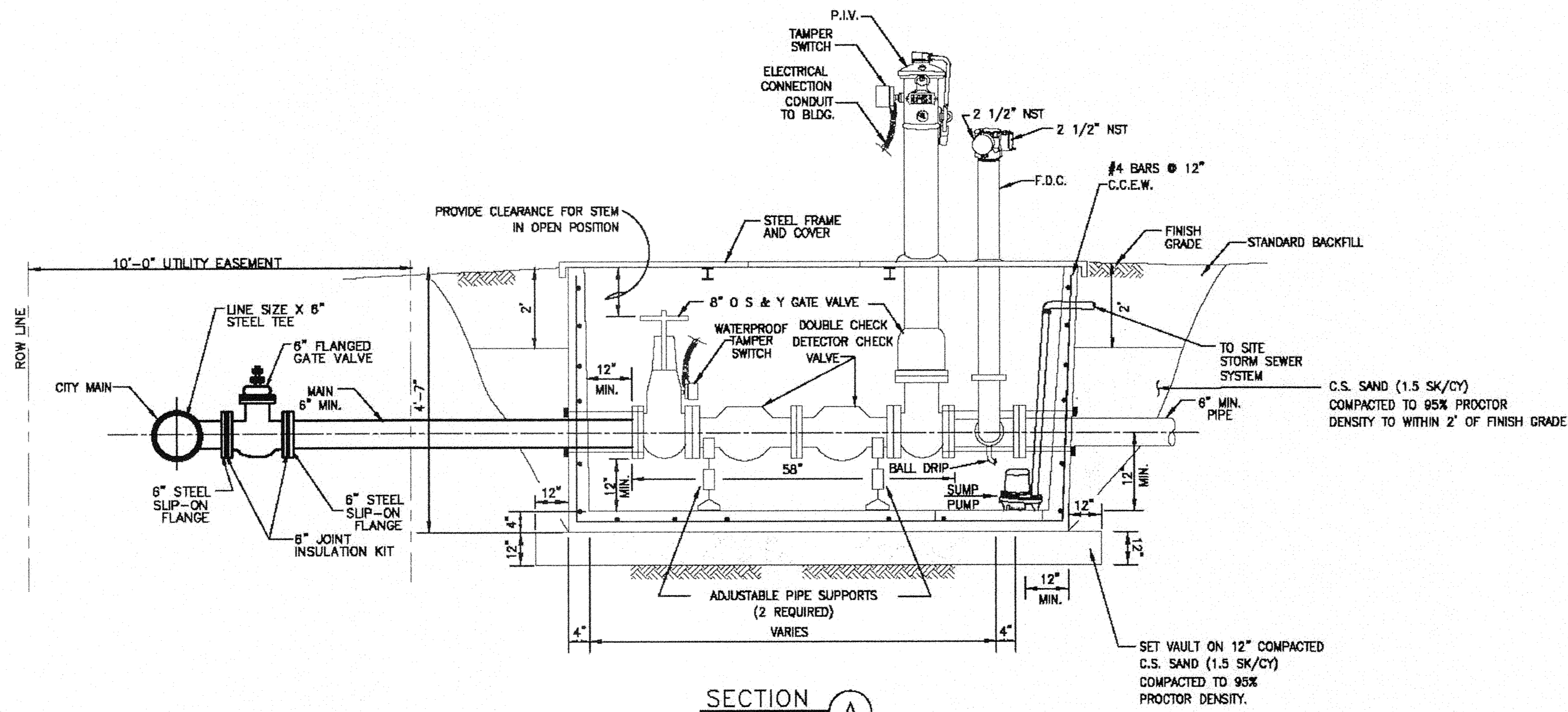


TYPICAL FIRE SERVICE METER (A) = RESTRAINED JOINT

NOTES:

1. FIRE HYDRANT REQUIRED WITHIN 50' LINEAR FEET OF THE FIRE DEPARTMENT CONNECTION.
2. FIRE VALVE MAY BE SUBSTITUTED FOR GATE VALVE ON THE CUSTOMER SIDE. SUPPLIED BY PARK EQUIPMENT COMPANY, OR APPROVED EQUAL.
3. ALL FIRE LINE VAULTS SHALL BE EQUIPPED WITH A SUMP PUMP CAPABLE OF MAINTAINING WATER LEVELS BELOW THE CENTER LINE OF THE CHECK VALVES. OUTLET SHALL BE CONNECTED TO SITE STORM SEWER SYSTEM.
4. SUMP PUMP MAY BE ELIMINATED IF BOX CAN BE DRAINED VIA GRAVITY TO SITE STORM SEWER SYSTEM.
5. ALL COMPONENTS SHALL BE INSTALLED IN ACCORDANCE WITH NFPA 13 "STANDARDS FOR THE INSTALLATION OF SPRINKLER SYSTEMS".
6. REFER TO GENERAL NOTES, WATER LINE AND STORM SEWER NOTES.
7. ALL FITTINGS AND PIPE JOINTS WITHIN 10' OF A FITTING SHALL HAVE RESTRAINT JOINTS

SL-WA-23



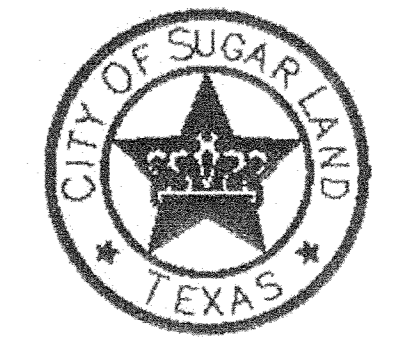
TYPICAL FIRE SERVICE METER

No.	DATE	REVISION

TEXAS ENGINEERING & MAPPING CO.  
REGISTRATION # F-2906

CARLOS J. BARILLAS  
PROFESSIONAL ENGINEER  
50474

DESIGN ENGINEER: *Carlos J. Barillas* DATE: 11/11/13



CITY OF SUGAR LAND, TEXAS  
ENGINEERING DEPARTMENT

CONSTRUCTION PLANS FOR:

WATER LINE  
FIRE SERVICE METER VAULT

JOB No.:  
DATE:  
DESIGNED BY:  
DRAWN BY:  
CHECKED BY:  
SCALE:

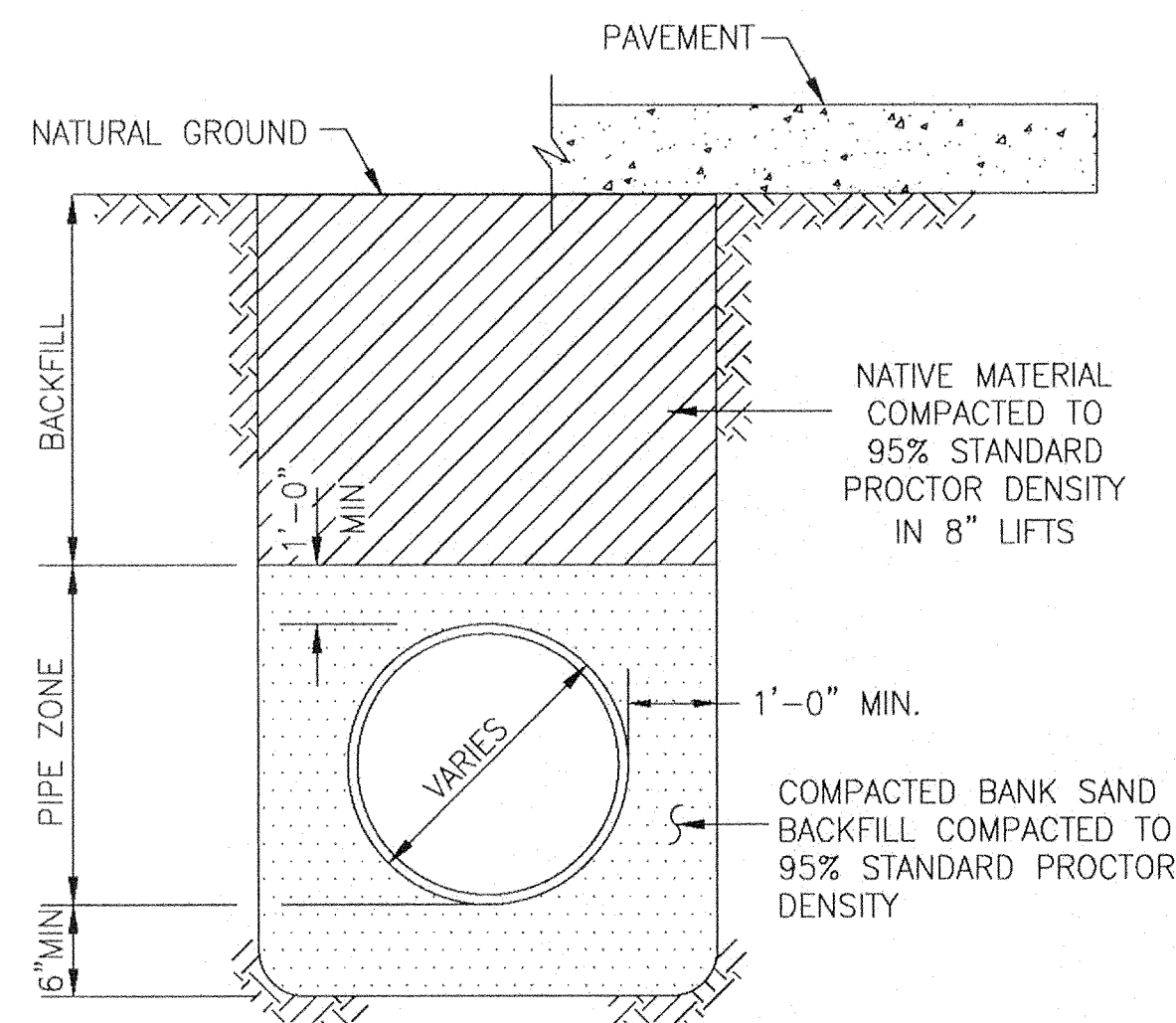
SL-18

SHEET OF

SL-WA-24

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PLOT TIME:

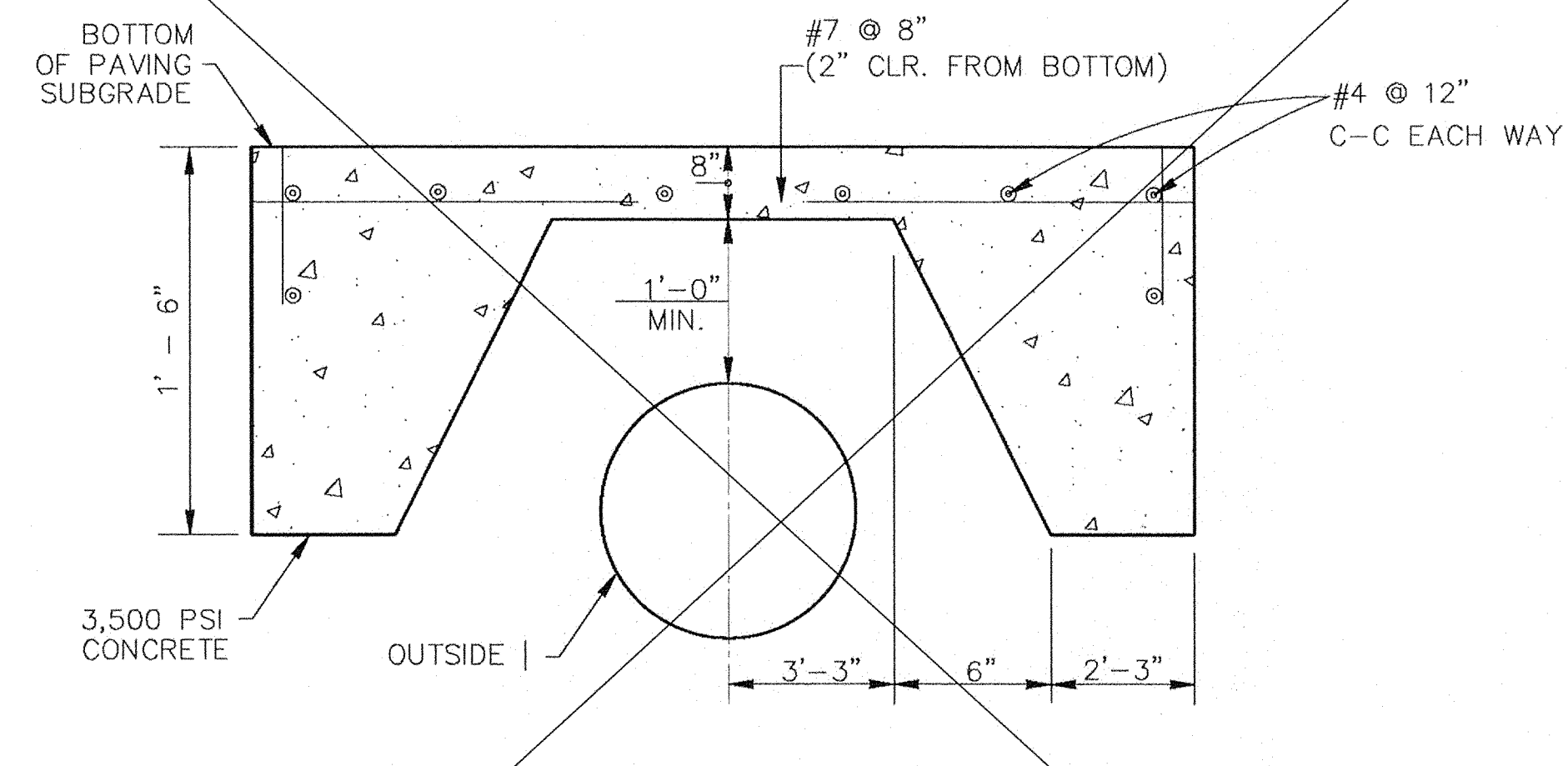


P.V.C. PIPE BEDDING & BACKFILL

N.T.S.  
\*SEE CONSTRUCTION NOTES

### SANITARY FORCE MAIN & WATER LINE BEDDING AND BACKFILL

SL-BB-01



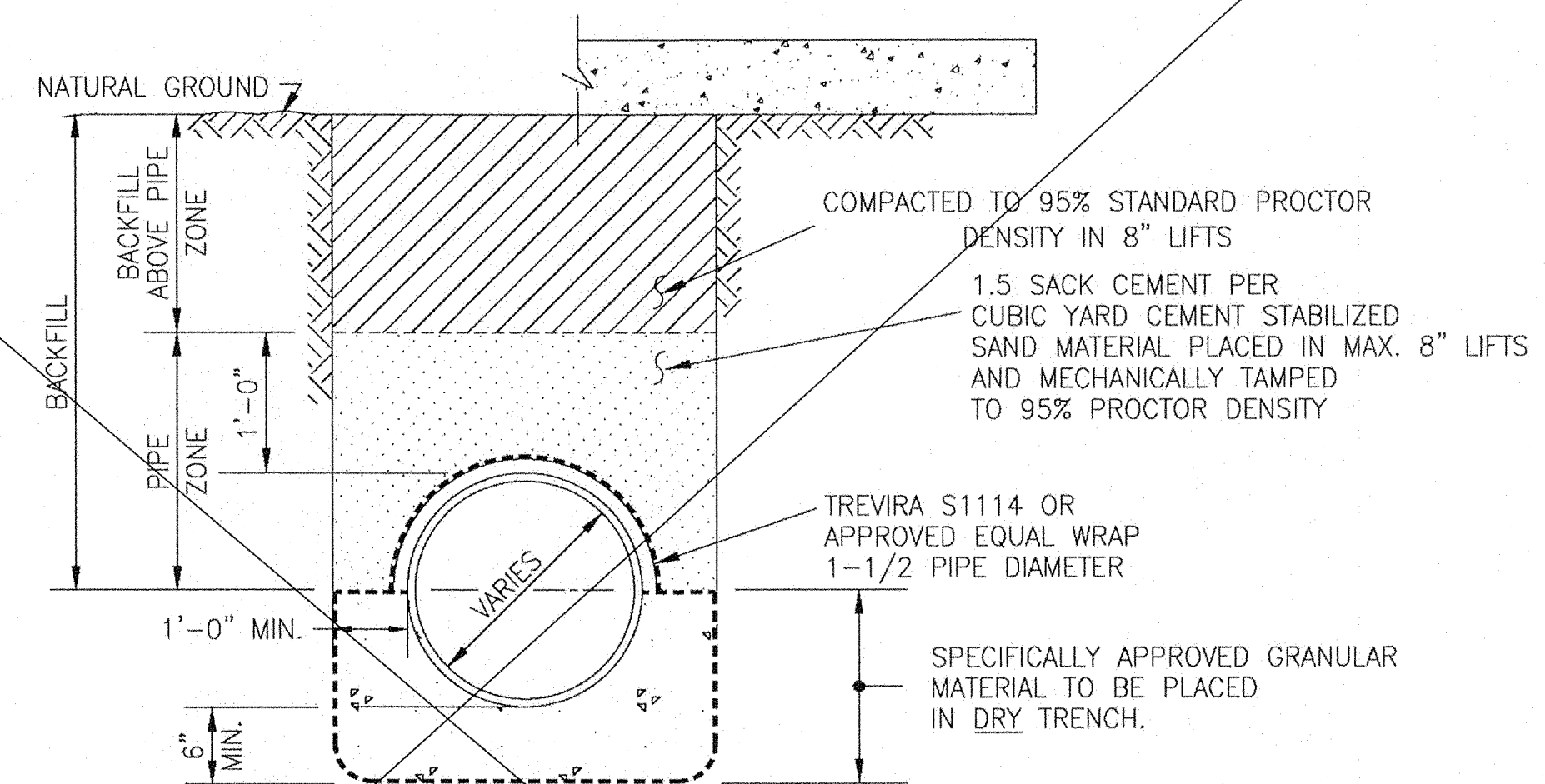
PROTECTIVE SLAB DETAIL  
ZERO LOAD TRANSFER CONCRETE SLAB

SL-BB-04

#### CONSTRUCTION NOTES

1. CONTRACTOR SHALL CONTACT SUGAR LAND ENGINEERING DEPARTMENT IMMEDIATELY IF WET SAND CONDITIONS ARE ENCOUNTERED.
2. LIMESTONE AND RECYCLED CONCRETE DIMENSIONS SHOWN ARE TYPICAL BUT MAY BE VARIED BY ORDER OF CITY ENGINEER.
3. LIMESTONE OR RECYCLED CONCRETE SHALL BE IN ACCORDANCE WITH TXDOT SPECIFICATION No. 248 FLEXIBLE BASE, TYPE A, GRADE 2 AGGREGATE.
4. NO BEDDING SHALL BE INSTALLED IN WET CONDITIONS. WHEN WELL POINTING OR IN WET SAND CONDITIONS, MAINTAIN GROUND WATER 1 (FT) BELOW BOTTOM OF TRENCH FOR A MINIMUM OF 24-HRS AFTER BEDDING AND BACKFILL IS IN PLACE.
5. ALL MATERIALS SHALL BE FROM THE APPROVED PRODUCTS LIST UNLESS SPECIFICALLY APPROVED BY THE CITY ENGINEER.
6. SANITARY SEWER BEDDING FOR WET SAND CONDITIONS SHALL BE AS PER MODIFIED "A".
7. ALL SAND BEDDING FOR WATER LINES SHALL BE CLEAN, MECHANICALLY COMPACTED BANK SAND.
8. REFER TO: MANHOLE DETAILS, SANITARY, C.S.S., GENERAL, WATER CROSSING, WATER DISTRIBUTION DETAILS AND NOTES.
9. ALL BEDDING WILL BE COMPACTED TO 95% STANDARD PROCTOR DENSITY.
10. A GEOTECHNICAL REPORT MAY BE REQUIRED TO ANALYZE THE BEARING CAPACITY OF EXISTING SOILS AND MAKE A DETERMINATION IF ADDITIONAL BEDDING AND BACKFILL IS APPROPRIATE.

SL-BB-05



MODIFIED "A"

N.T.S.

NOTE: C.S.S. SHALL BE INSTALLED A MIN. 1' ABOVE TOP OF PIPE.

### SANITARY SEWER BEDDING AND BACKFILL

SL-BB-03

#### REFER TO:

1. GENERAL NOTES
2. C.S.S. NOTES

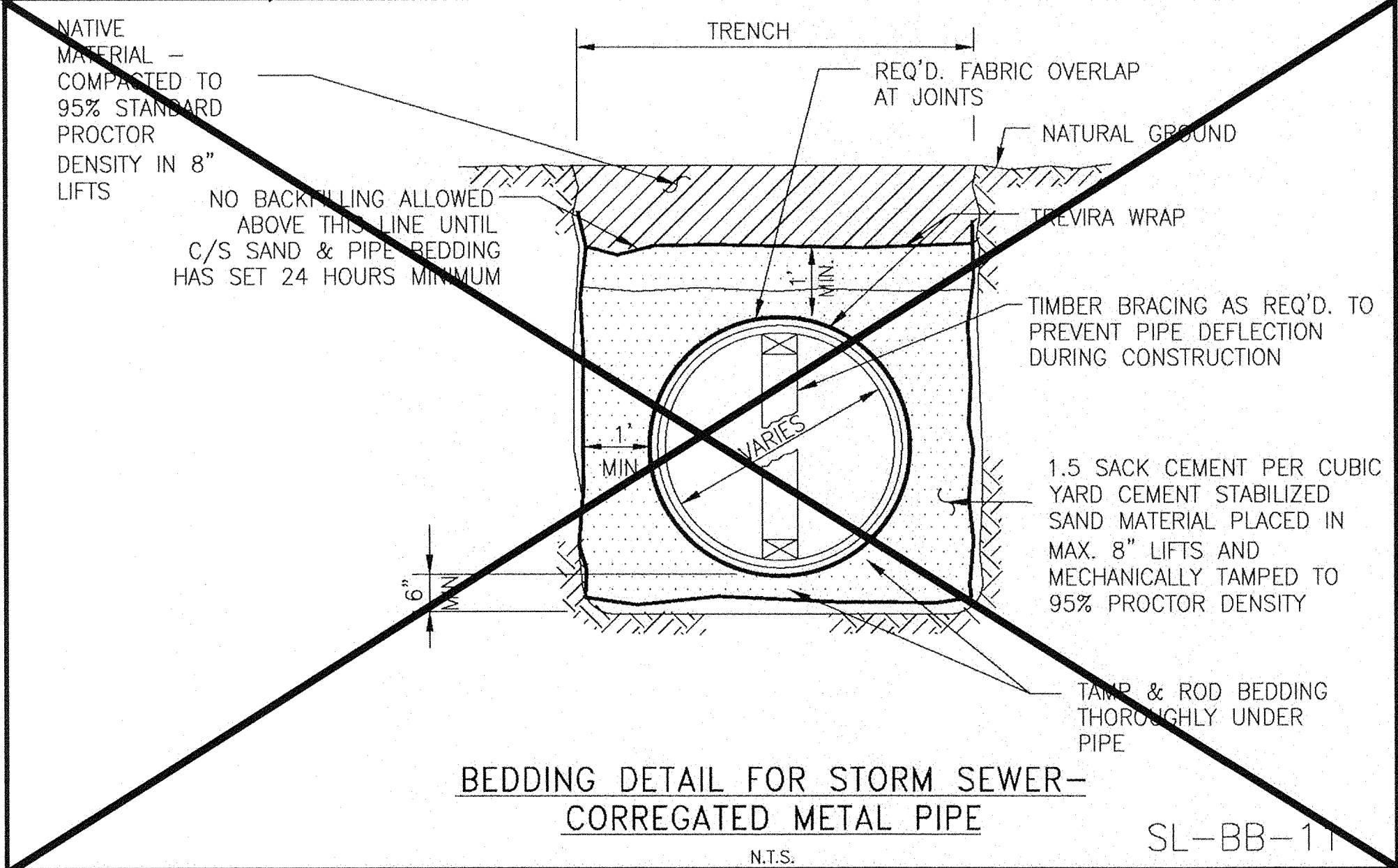
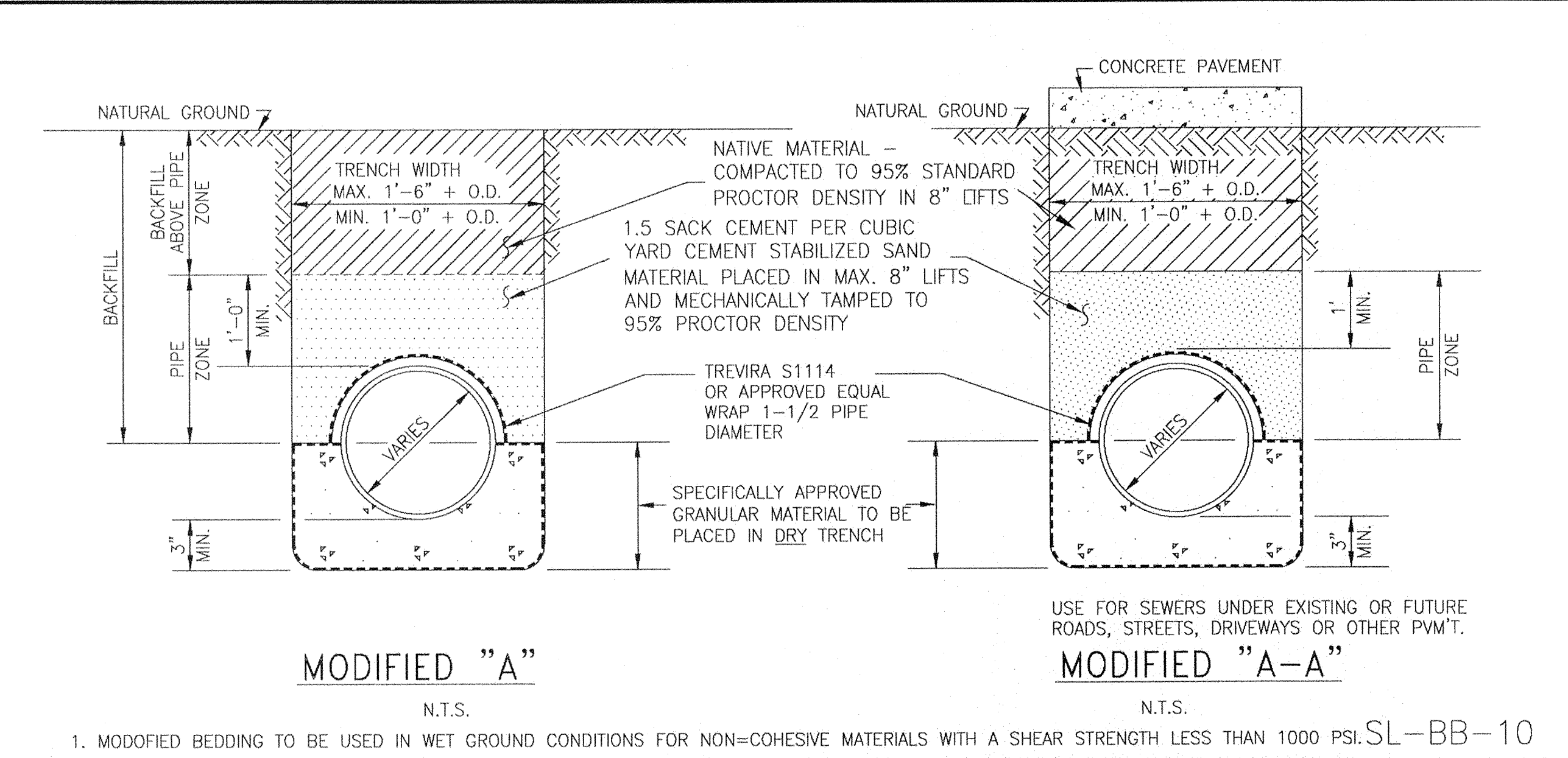
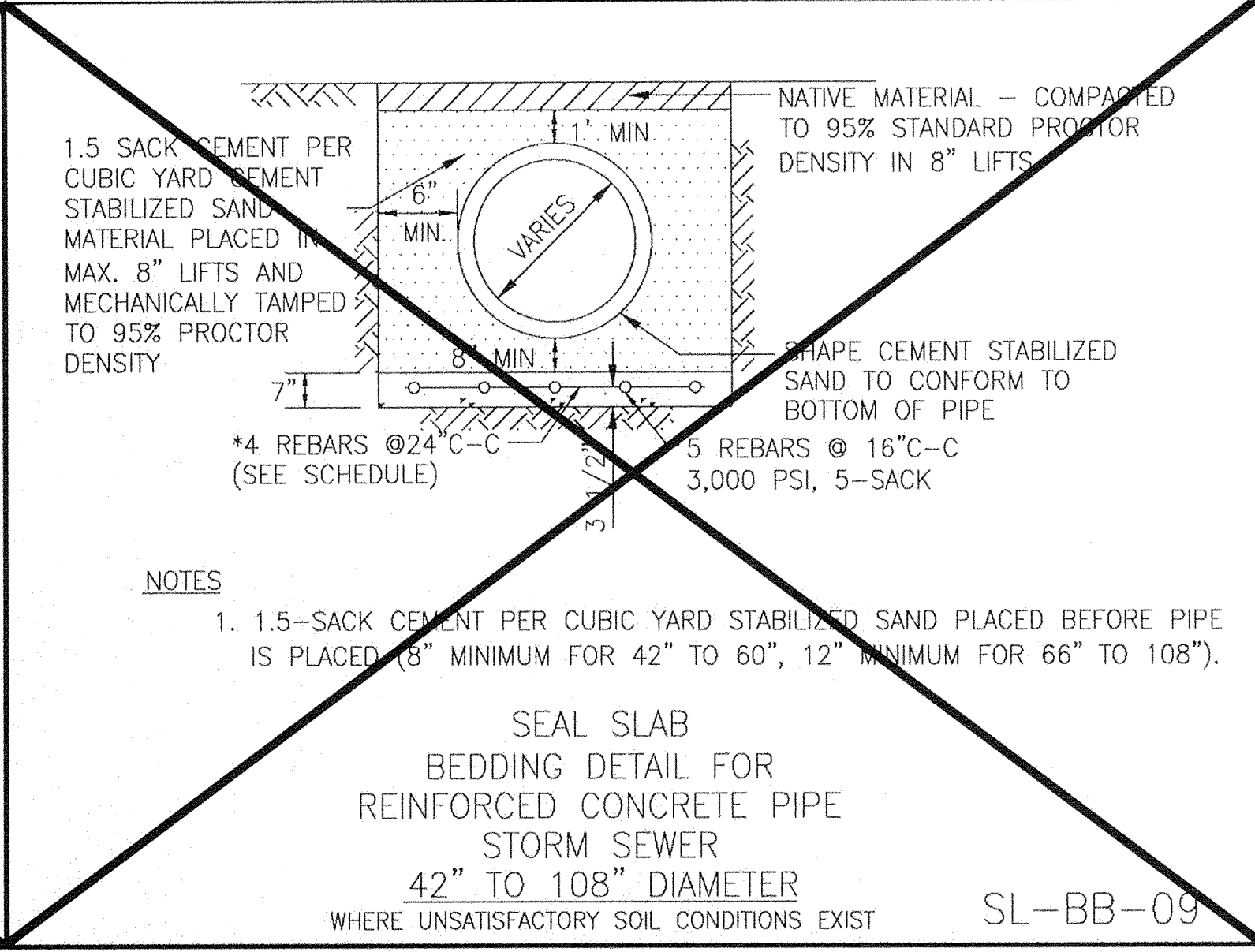
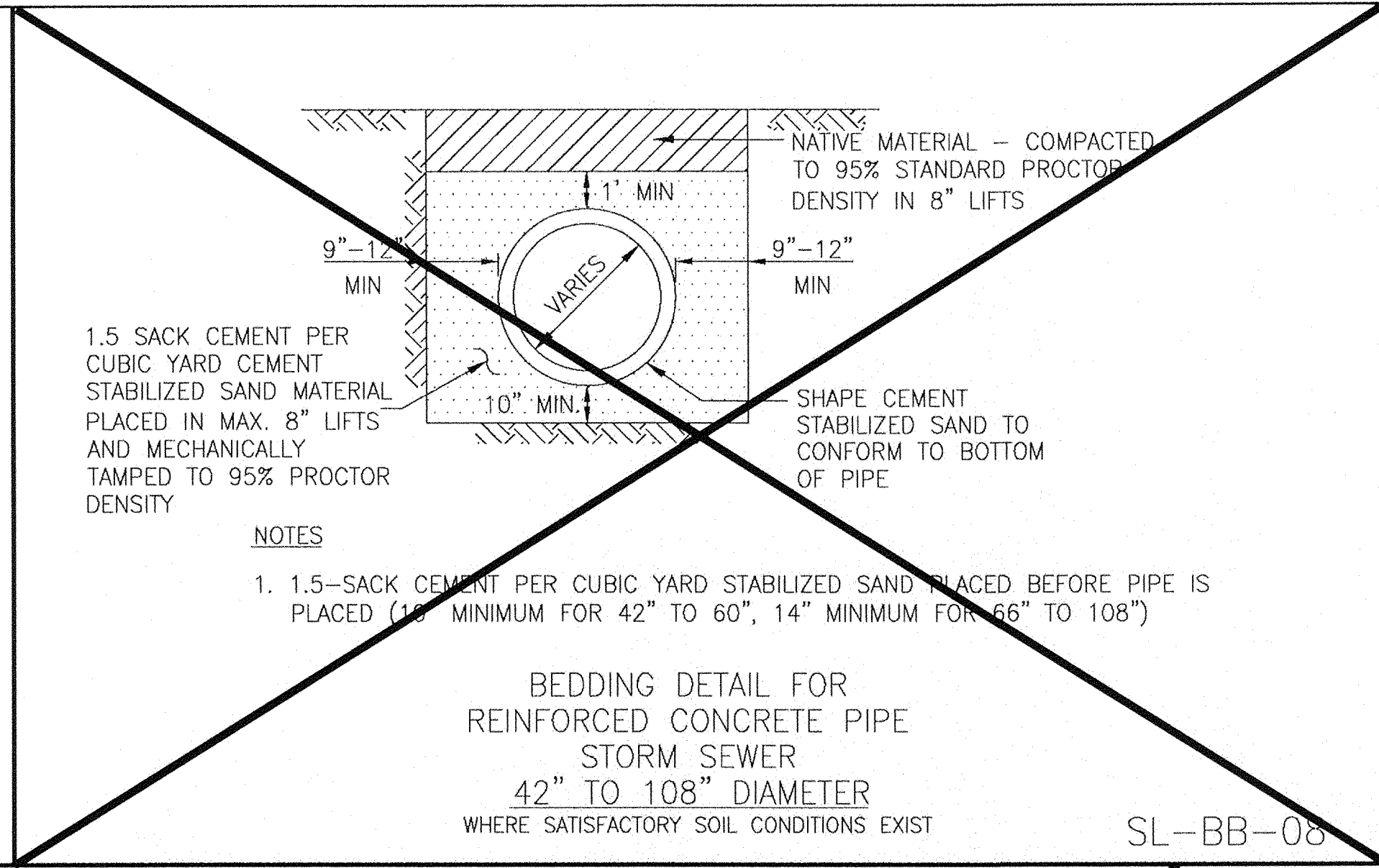
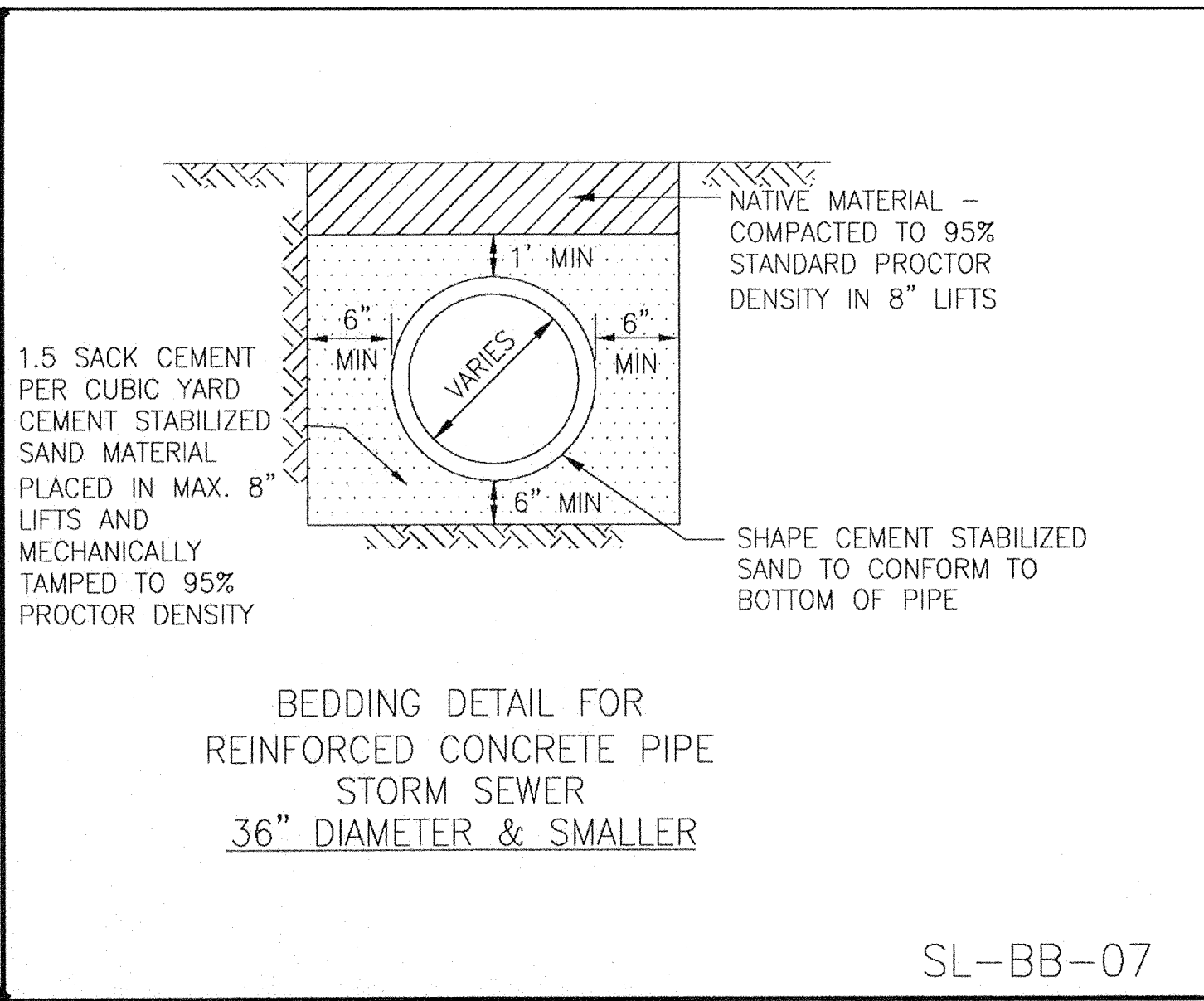
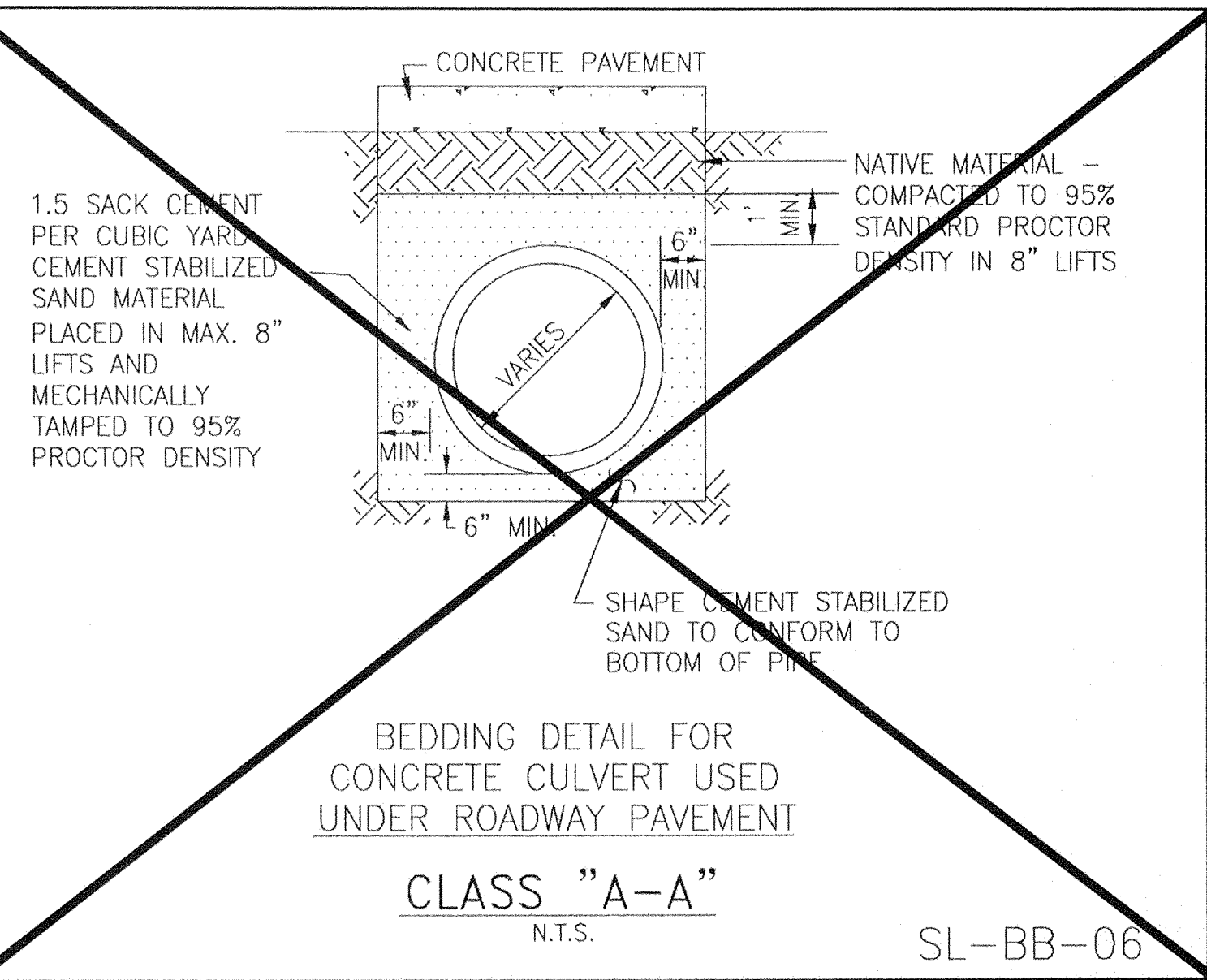
No.	DATE	REVISION

SEAL: TEXAS ENGINEERING & MAPPING CO.  
REGISTRATION # F-2906  
CARLOS J. BARILLAS  
50474  
REGISTERED PROFESSIONAL ENGINEER  
DESIGN ENGINEER: *Carlos J. Barillas* DATE: 5/2/13

CITY OF SUGAR LAND, TEXAS  
ENGINEERING DEPARTMENT

CONSTRUCTION PLANS FOR:  
WATER LINE, SANITARY SEWER  
FORCE MAIN BEDDING DETAILS  
JOB No.:  
DATE:  
DESIGNED BY:  
DRAWN BY:  
CHECKED BY:  
SCALE:  
SL-19  
SHEET OF

CAD FILE PATH:  
PLOT DATE:



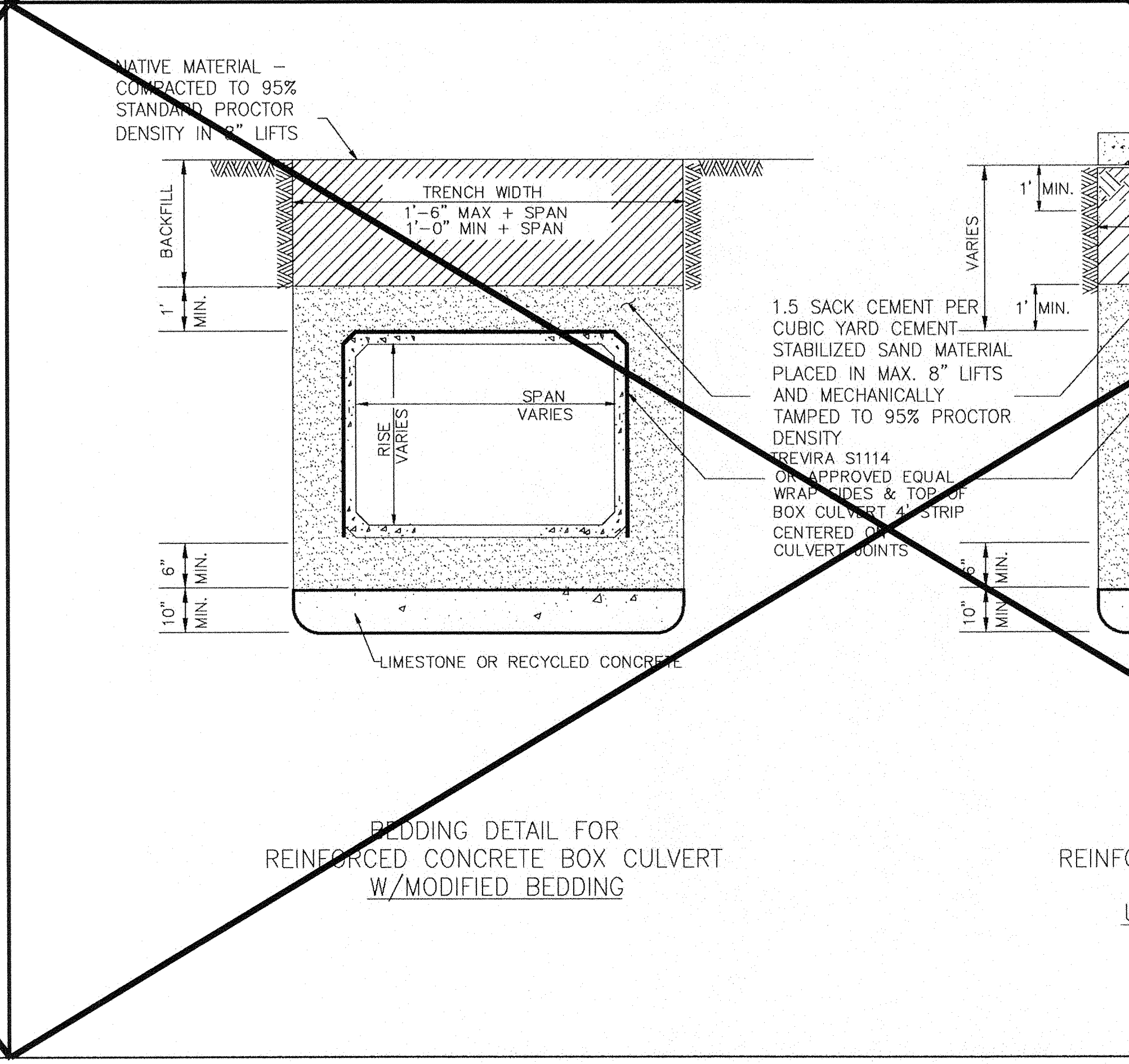
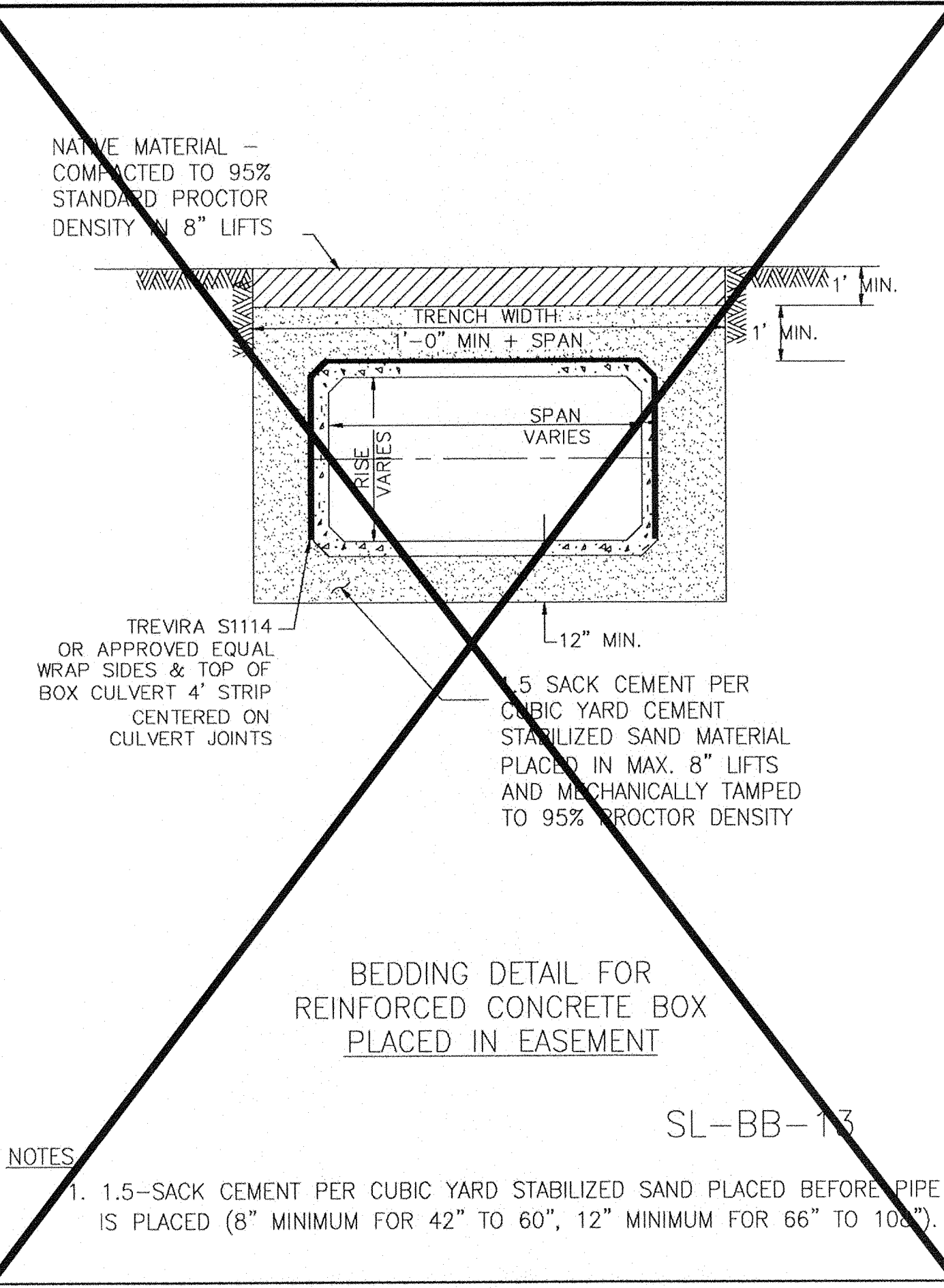
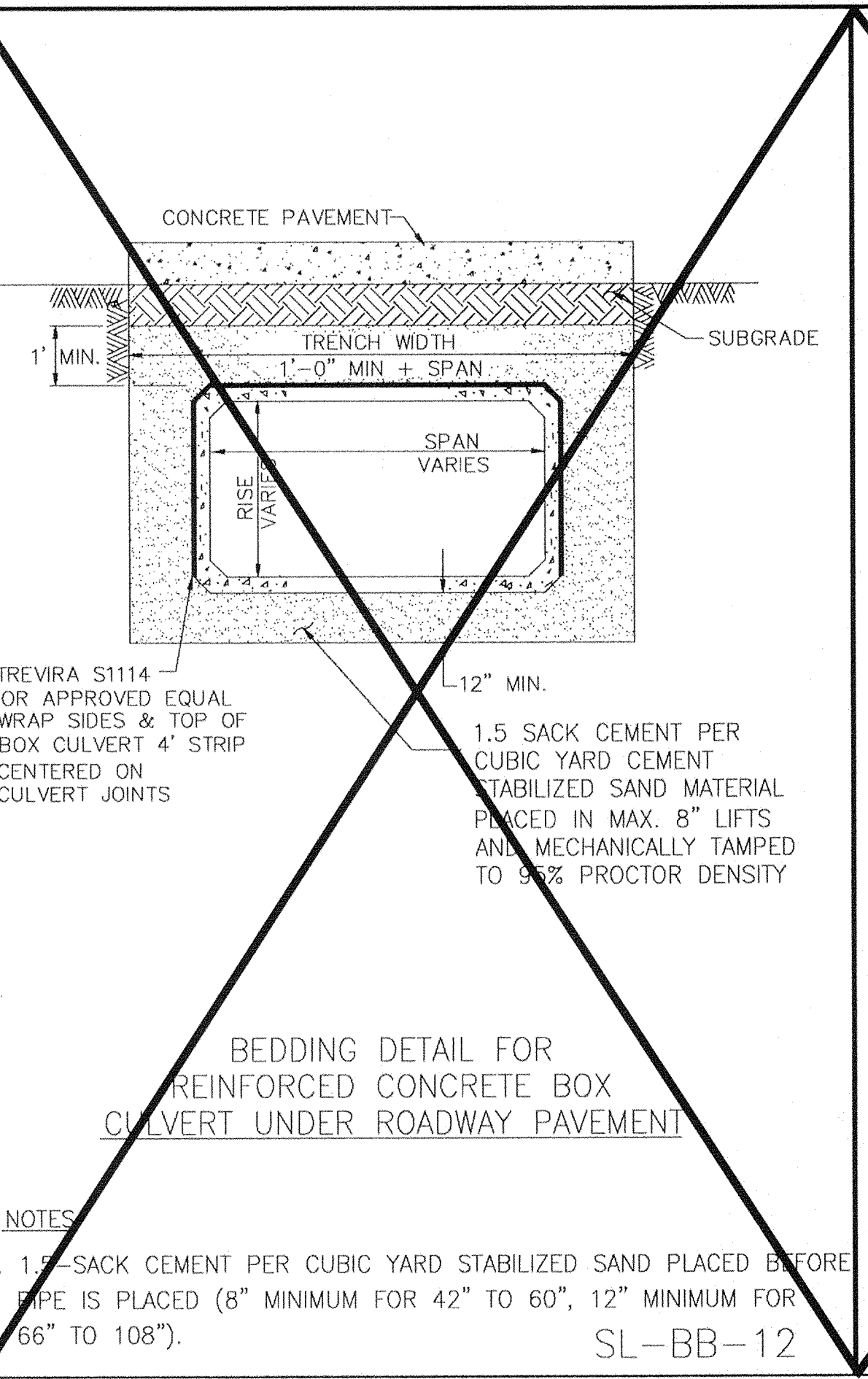
CONSTRUCTION NOTES

- CONTRACTOR SHALL CONTACT SUGAR LAND ENGINEERING DEPARTMENT IMMEDIATELY IF WET SAND CONDITIONS ARE ENCOUNTERED.
- SPECIFICALLY APPROVED GRANULAR MATERIAL DIMENSIONS SHOWN ARE TYPICAL BUT MAY BE VARIED BY ORDER OF CITY ENGINEER.
- SPECIFICALLY APPROVED GRANULAR MATERIAL SHALL BE IN ACCORDANCE WITH TXDOT SPECIFICATION No. 247 FLEXIBLE BASE, TYPE A, GRADE 2 AGGREGATE.
- NO BEDDING SHALL BE INSTALLED IN WET CONDITIONS. WHEN WELL POINTING OR IN WET SAND CONDITIONS, MAINTAIN GROUND WATER 1' (FT.) BELOW BOTTOM OF TRENCH FOR A MINIMUM OF 24-HRS AFTER BEDDING AND BACKFILL IS IN PLACE.
- R.C.P. AND BOX CULVERTS SHALL BE INSTALLED WITH APPROVED GASKETS ONLY.
- MANHOLES SHALL BE PROVIDED WHERE MODIFIED "A" OR MODIFIED "A-A" BEDDING IS USED. STACKS ARE NOT ALLOWED.
- REFER TO: MANHOLE DETAILS, INLETS, OUTFALL AND END TREATMENT DETAILS, C.S.S., GENERAL NOTES, AND STORM NOTES.
- SPECIFIC DESIGNS MUST BE SUBMITTED AND APPROVED BY THE CITY ENGINEER FOR MANHOLE ACCESS TO BOX CULVERTS AS REQUIRED.
- ALL BACKFILL WITHIN THE R.O.W. SHALL BE COMPACTED TO 95% STANDARD PROCTOR DENSITY.
- A GEOTECHNICAL REPORT MAY BE REQUIRED TO ANALYZE THE BEARING CAPACITY OF EXISTING SOILS AND MAKE A DETERMINATION IF ADDITIONAL BEDDING AND BACKFILL IS APPROPRIATE.

TYPICAL SEAL SLAB BAR SCHEDULE (OR AS DIRECTED BY ENGINEER)

PIPE SIZE	LGT #4 BARS	LAT #5 BARS	NO LONGIT
42"	5'4"		5
48"	6'8"		6
54"	6'8"		6
60"	8'0"		7
66"	8'0"		7
72"	9'4"		8
78"	9'4"		8
84"	9'4"		8
90"	10'8"		9
96"	10'8"		9
102"	12'0"		10
108"	12'0"		10

SL-BB-15



REVISIONS

No.	DATE	REVISION

SEAL: CARLOS J. BARRILLAS, REGISTERED PROFESSIONAL ENGINEER, TEXAS ENGINEERING & MAPPING CO., REGISTRATION # F-2906, DATE 8/2/12

DESIGN ENGINEER

CITY OF SUGAR LAND, TEXAS ENGINEERING DEPARTMENT

CONSTRUCTION PLANS FOR:

STORM SEWER PIPE BEDDING AND BACKFILL DETAILS

SL-BB-14

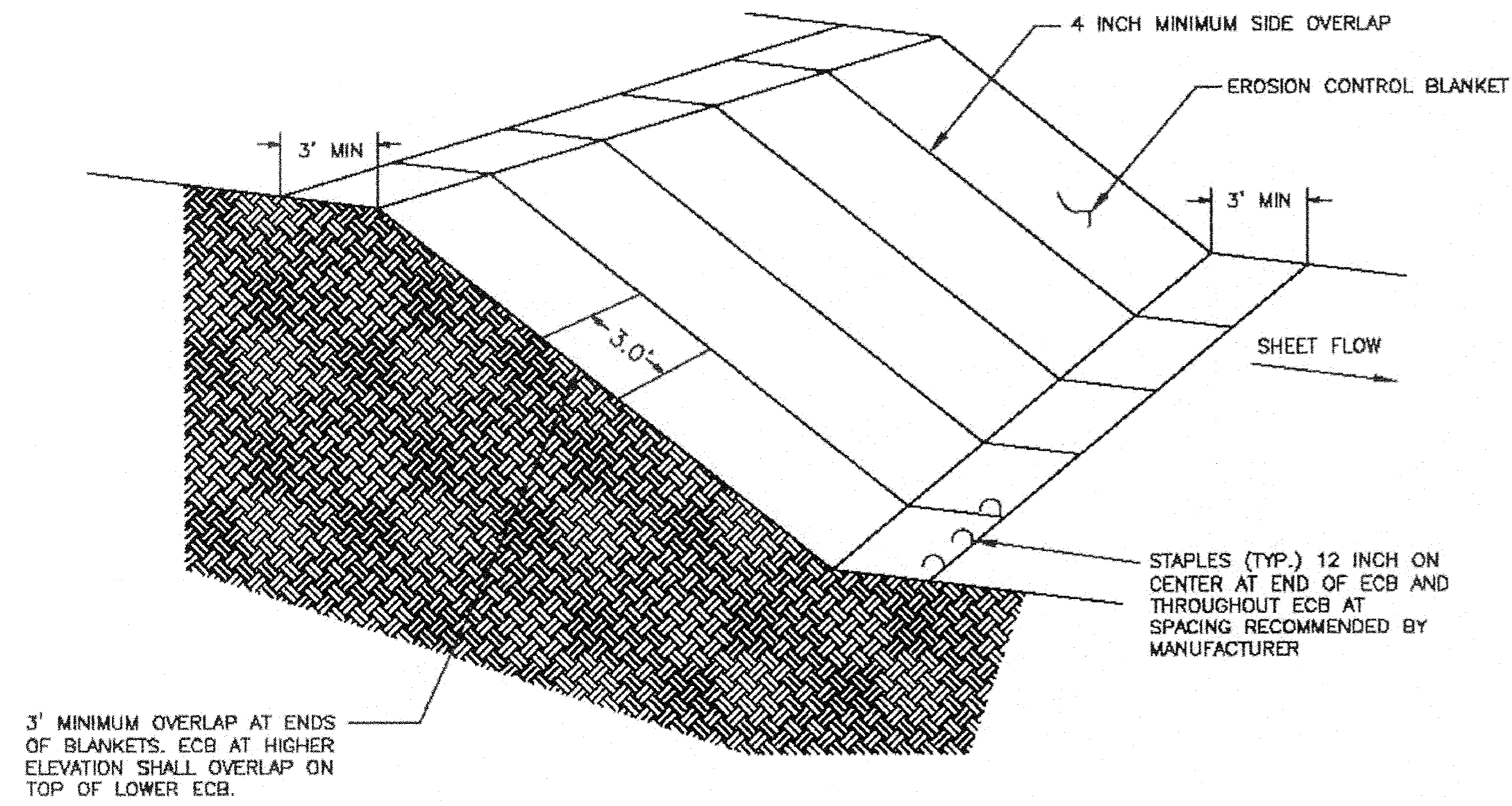
SL-20

SHEET OF

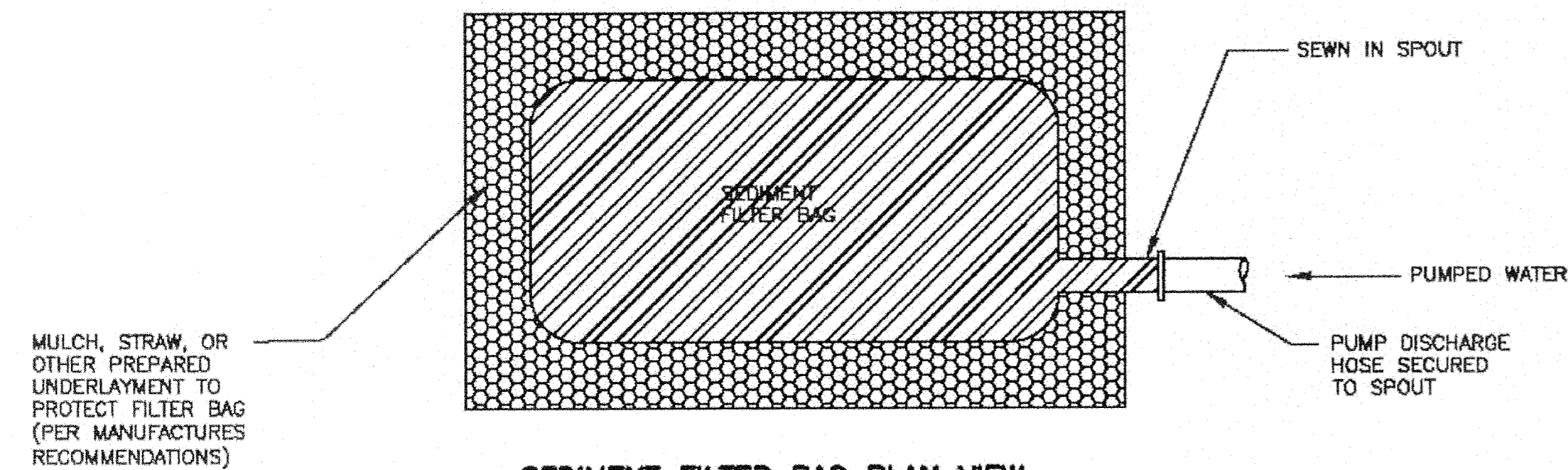




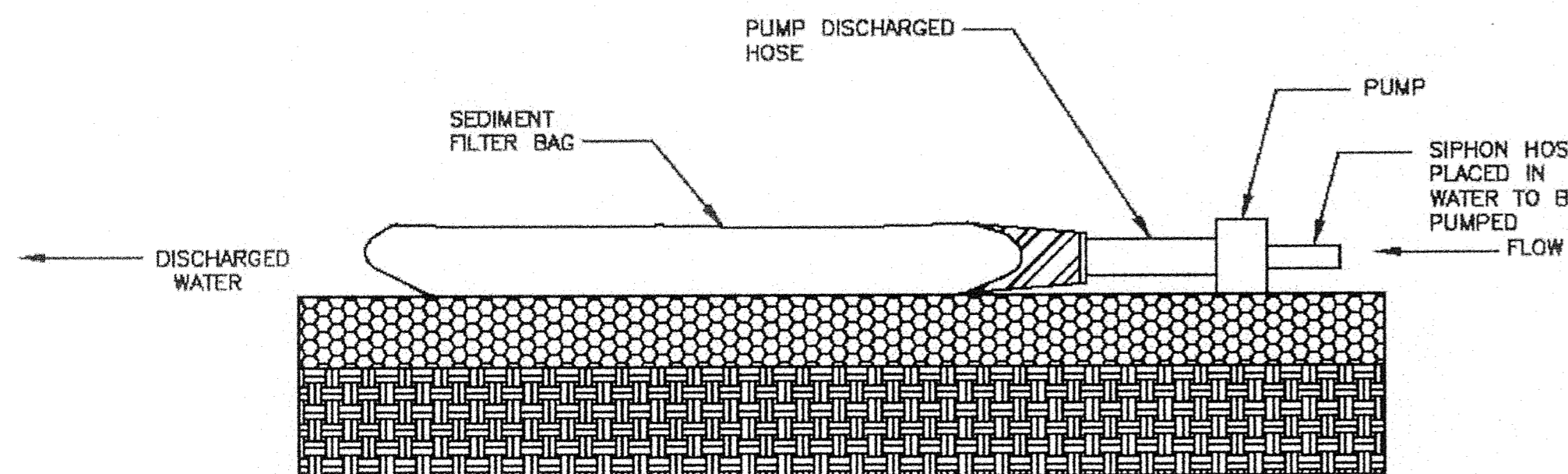
PLOT TIME:



**EROSION CONTROL BLANKETS**  
N.T.S.



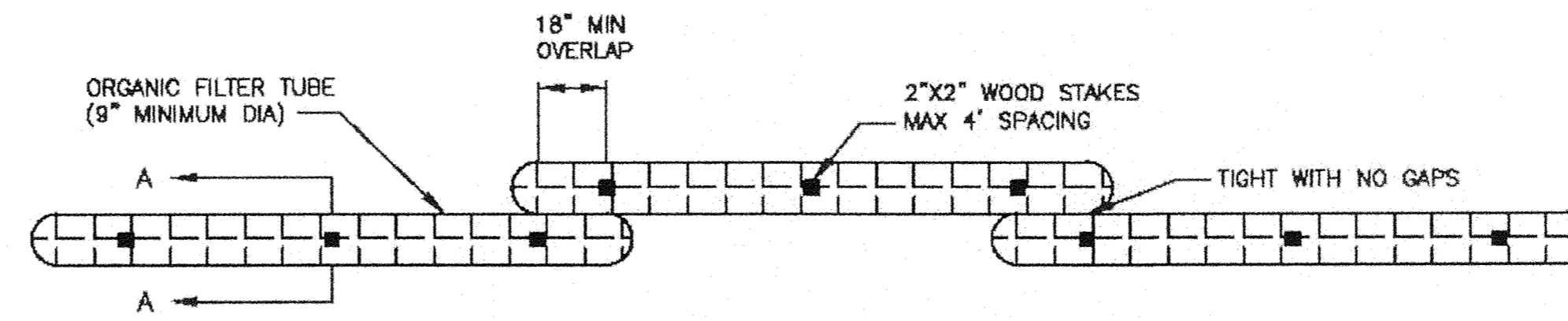
**SEDIMENT FILTER BAG PLAN VIEW**  
N.T.S.



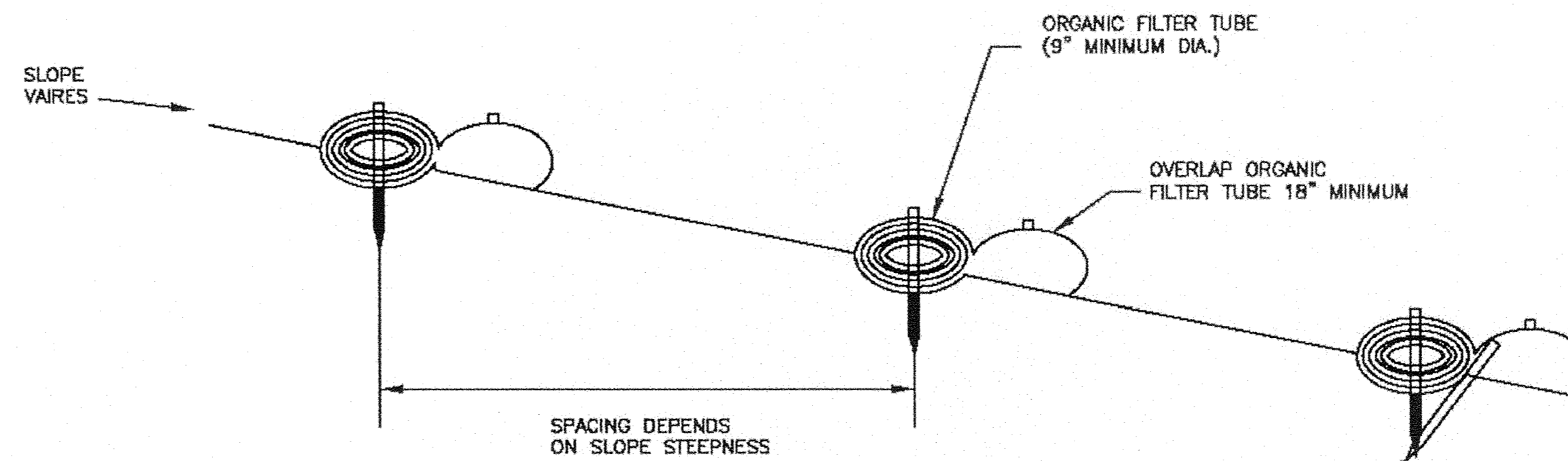
**SEDIMENT FILTER BAG PROFILE**  
N.T.S.

NOTE: A FILTRATION BAG IS NOT REQUIRED IF THE DRAINAGE SYSTEM CAN BE ADEQUATELY PROTECTED

**DEWATERING CONTROLS**  
N.T.S.



**ORGANIC FILTER TUBE PERIMETER CONTROL PLAN VIEW**  
N.T.S.



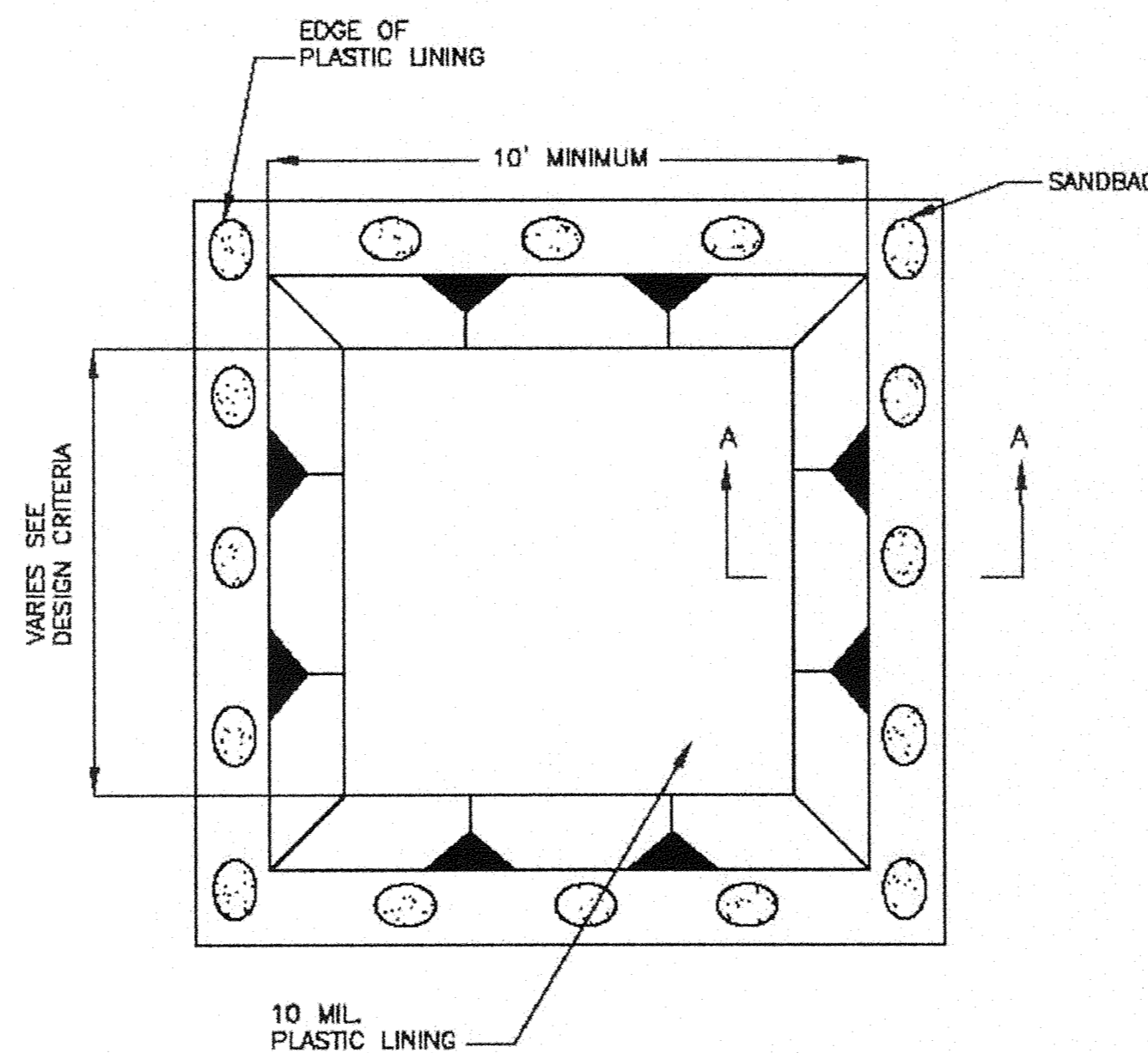
FOR SLOPES OF 2:1 OR STEEPER, A SECOND STAKE AGAINST THE DOWNSLOPE FACE OF THE TUBE MAY BE NEEDED DEPENDING ON SOIL TYPE

**ORGANIC FILTER TUBE PERIMETER CONTROL PROFILE**  
N.T.S.

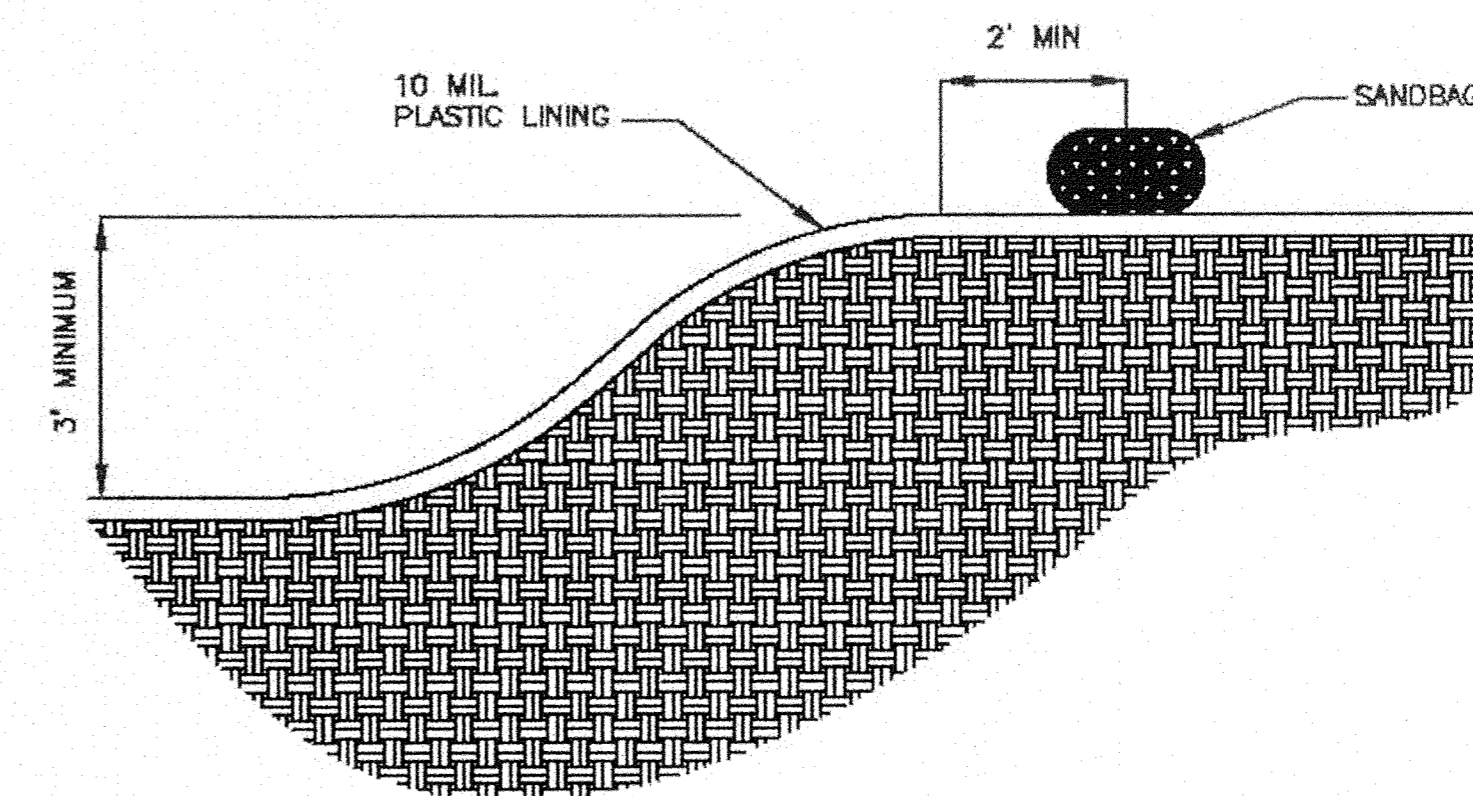
**ORGANIC FILTER TUBES NOTES**

1. TYPE OF NETTING, FILTER MATERIAL, DIAMETER OF TUBE, AND SPACING OF TUBES SHALL BE SPECIFIED BY THE DESIGNER BASED ON THE FOLLOWING SITE PARAMETERS:
  - SIZE OF CONTRIBUTING DRAINAGE AREA
  - STEEPNESS OF SLOPE
  - GROUND CONDITIONS (SOIL OR PAVEMENT)
2. DESIGNER SHALL SHOW ON THE DRAWINGS THE LOCATIONS WHERE TUBE ARE TO BE TURNED UPSLOPE. UPSLOPE LENGTHS SHALL BE MINIMUM OF 10 FEET.

**FILTER TUBE**  
N.T.S.



**CONCRETE WASHOUT PLAN VIEW**  
N.T.S.



**CONCRETE WASHOUT SECTION A-A**  
N.T.S.

**CONCRETE WASHOUT NOTES**

1. SANDBAGS MAYBE REPLACED BY A SOIL BERM TO ANCHOR THE PLASTIC BAG

**CONCRETE WASHOUT AREA**  
N.T.S.

No.	DATE	REVISION

SEAL: TEXAS ENGINEERING & MAPPING CO. REGISTRATION # F-2906  
DESIGN ENGINEER: *Carlos J. Barillas* DATE: 11/1/12



CITY OF SUGAR LAND, TEXAS  
ENGINEERING DEPARTMENT

CONSTRUCTION PLANS FOR:

**EROSION CONTROL DETAILS - 2**

JOB No.:  
DATE:  
DESIGNED BY:  
DRAWN BY:  
CHECKED BY:  
SCALE:

SL-35

SHEET OF

CAD FILE PATH:  
PLOT DATE: