

CITY OF LUCAS

CONSTRUCTION PLANS FOR

WASTEWATER SYSTEM IMPROVEMENTS

WASTEWATER FORCE MAIN

AND LIFT STATION

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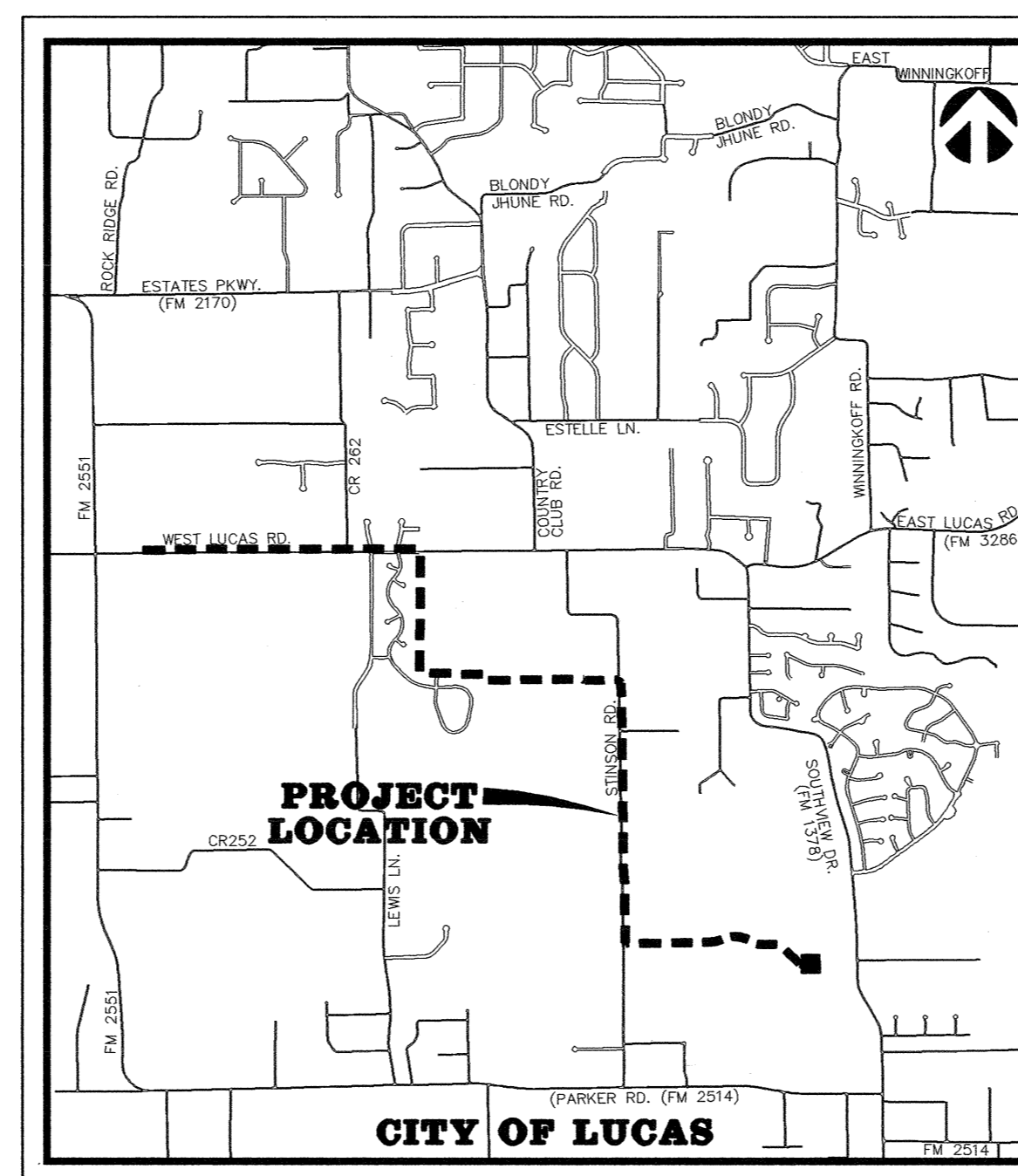
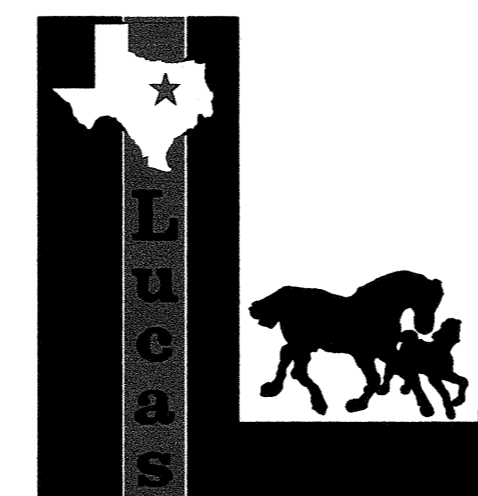
MAYOR
BILL CARMICKLE

CITY COUNCIL

MARK BARRATT	DEBBIE FISHER
REBECCA MARK	WAYNE MILLSAP
KATHLEEN PEELE	DON ZRINY

CITY MANAGER
ROBERT PATRICK

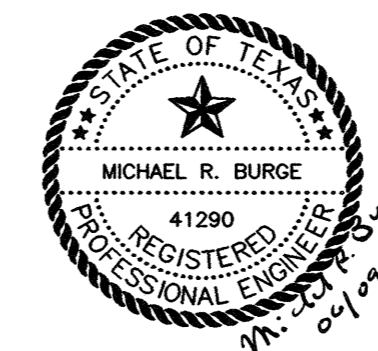
DIRECTOR OF PUBLIC WORKS
STACY CAUDELL, P.E.



VICINITY MAP

BW2 JOB NO. 09-1389

JUNE 2010



ENGINEER:



BW2 ENGINEERS, INC.

1919 S. SHILOH ROAD
SUITE 500, L.B. 27
GARLAND, TEXAS 75042
Firm Registration No. F-5290

OWNER:

CITY OF LUCAS
151 COUNTRY CLUB ROAD
LUCAS, TEXAS 75002

GENERAL NOTES:

- It is the CONTRACTOR's responsibility to maintain neat and accurate plans of record.
- The CONTRACTOR is responsible for maintaining adequate site drainage throughout the duration of this project.
- The CONTRACTOR is responsible for obtaining all necessary permits and approvals before construction begins.
- The CONTRACTOR shall replace all fence removed during construction in as good or better condition than before construction.
- The CONTRACTOR shall take all necessary precautions to ensure that electric power and telephone poles are either moved to a safe location by the affected utility company or not disturbed during construction. All costs incurred for moving electric power and telephone poles shall be included in the price bid for the construction of the project.
- The CONTRACTOR shall restore all property including driveways, public streets, sidewalks, public utilities, franchise utilities, private utilities, and all other improvements removed or damaged inside and outside the project limits during construction to as good or better condition than before construction. Restoration shall be made immediately after the property no longer interferes with construction.
- The information shown on these drawings concerning type and location of underground and other utilities is not guaranteed to be accurate or all-inclusive. The CONTRACTOR is responsible for making his own determinations as to the type and location of underground utilities and other utilities as may be necessary to avoid damage thereto.
- The CONTRACTOR shall not place fill or waste material on any private property without prior written permission from the property owner and written concurrence from the City. No excess excavated material shall be deposited in low areas or along natural drainage ways that will restrict the natural flow of water. If the CONTRACTOR places excavated material in low areas that will cause flood damage, CONTRACTOR will be responsible for all damage resulting from such fill, and he shall remove the fill at CONTRACTOR's expense.
- All streets within the scope of the Contract shall be kept accessible to fire trucks, ambulances, and other emergency vehicles.
- The CONTRACTOR shall be responsible for public safety during the duration of construction. All barricades, warning signs, lights, devices, etc., for the guidance and protection of traffic and pedestrians must conform to the installation shown in 1980 Texas Manual of Uniform Traffic Control Devices, as currently amended by the Texas Department of Transportation. CONTRACTOR shall at all times provide barricades, warning signs and lighting adequate to safeguard the public from any hazards resulting from open trenches during non-work hours.
- Filter fabric fence for erosion control shall be provided in accordance with specifications and as shown on the plans and in accordance with the EPA regulations.
- The CONTRACTOR shall use the public right-of-ways and existing utility easements for access to the job site.
- The CONTRACTOR shall select the subcontractor to be utilized for testing and lab work. The CONTRACTOR shall be responsible for paying for testing and lab work. Selection of subcontractor for this purpose will be subject to approval by the City. Testing referred to herein includes any compaction and pressure testing required on this project. Testing shall also include testing of concrete required to determine and ascertain that concrete strengths in specifications are attained for all concrete members on the project.
- The CONTRACTOR shall keep excavated trenches free of groundwater during construction. If necessary, the CONTRACTOR shall utilize dewatering procedures in order to control groundwater during construction such that it does not affect his construction work.
- The CONTRACTOR shall provide means for adequately controlling and avoiding soil erosion during construction. The CONTRACTOR shall not store spoil in drainage ways during construction.
- All disturbed earth areas are to be finish graded to original or proposed contours, fertilized and either hydromulched with bermuda seed or covered with block sod according to NCTCOG specifications immediately after construction. Backfill to be select material free of rock and other debris. CONTRACTOR shall thoroughly water the hydromulch or block sod immediately after placement. Block sod shall match the existing type of grass on a case by case basis, as determined by the City. There shall be no separate pay for matching each type of grass. The CONTRACTOR shall also be responsible for continued maintenance and watering of the newly hydromulched or sodded areas until the entire project is completed and accepted by the City of Lucas. Watering of the bermuda hydromulch or block sod shall be done in a manner and quantity as directed by City of Lucas field representative.
- No existing sprinkler/irrigations systems have been shown on the plans; however, they may exist in certain areas. It is the CONTRACTOR'S responsibility to locate any existing irrigation systems within the project limits and determine if they will be affected by this construction. If CONTRACTOR encounters any sprinkler systems during construction, he shall repair and/or replace in as good or better condition than before construction.
- The CONTRACTOR shall maintain adequate sanitary facilities for use by workers throughout construction.
- The CONTRACTOR shall conform to the Occupational Safety and Health Administration's (OSHA) standards for trench safety that are in effect during the period of construction.
- All materials and workmanship shall conform to the City of Lucas Standards and Specifications and the North Central Texas Council of Government (NCTCOG) Standards and Specifications, except as noted. In the event of a conflict, the City of Lucas Standards and Specifications shall govern.
- No existing trees shall be removed without approval of the City of Lucas.
- CONTRACTOR shall provide all necessary construction staking.
- CONTRACTOR's working hours shall be in accordance with the provisions of the current City Ordinance governing hours of construction work in the City.

GENERAL NOTES CONT'D.:

- Driveways affected by construction shall be replaced with driveway of same type material and surface as that removed for installation of proposed pipeline. Driveway culverts shall be removed when necessary to allow for construction of water line. Culverts are to be replaced in the same location if condition of culvert is deemed satisfactory by City. If culvert cannot be salvaged, a new culvert of the same type removed will be installed by the CONTRACTOR. Driveways that are disturbed during construction shall be restored to as good or better condition than they were prior to construction and materials utilized to restore the driveway shall be the same material as what the driveway is presently made of.
- All concrete shall have a minimum compressive strength of 4000 psi at 28 days (minimum 6 sacks of cement per cubic yard) unless otherwise noted. All reinforcing steel and dowel bars in pavement shall be supported and maintained at the correct clearances by the use of bar chairs or other approved support.
- All existing service lines are to remain in service during construction. If a water service line has to be cut-off, the CONTRACTOR shall coordinate with the City of Lucas to notify the affected resident at least 48 hours prior to cut-off.
- The CONTRACTOR shall phase his daily work schedule so that all driveway crossings are to be complete prior to the end of the day. No driveway crossings are to be left open overnight. During installation of the pipeline across driveways, the CONTRACTOR shall be prepared to provide access across trenches and driveways at all times in case of emergency.
- Proposed force main shall be High Density Polyethylene (HDPE).
- CONTRACTOR shall install valves at locations shown on plans unless otherwise directed by City. City may direct CONTRACTOR to locate valves at locations other than those shown on plans. Also, City may add additional valves as required for operational purposes.
- The CONTRACTOR is responsible for keeping streets, parking areas, sidewalks, etc., adjacent to the project free of mud and debris from construction.
- The CONTRACTOR shall assume responsibility for protection of public utilities in the construction of this project. All manholes, valve boxes, etc., must be adjusted to proper line and grade by the CONTRACTOR prior to and/or after placing any permanent paving. The CONTRACTOR shall also be responsible for support of existing utility poles, street signs, etc., when excavating in the vicinity of such poles.
- The City of Lucas Public Works Department is to be notified 48 hours (2 working days) prior to any construction of paving and utilities in rights-of-way, easements and alleys.
- Arrangements for construction water shall be made through the City of Lucas.
- All locations of underground utility lines are approximate. CONTRACTOR shall contact the proper utility companies at least 48 hours prior to construction, shall inform them of beginning of construction and shall make arrangements to have utilities located by flagging. Flagging of utilities shall be completed prior to beginning construction.
- HDPE pipe shall be manufactured from components capable of meeting the highest performance standards of the applicable ASTM specifications.
- Construction sites shall be secure at all times. Safety precautions shall be taken to protect the public from any injury which might result from construction activities.
- As part of bid item, "EROSION CONTROL", the CONTRACTOR shall be responsible for implementing any and all erosion control measures as needed to control runoff of siltation from the project site. This shall include, but is not limited to, silt fencing, rock berms, inlet protection, etc. The CONTRACTOR shall maintain these erosion control measures as required until the construction is completed and sod has been placed over disturbed areas.
- CONTRACTOR shall furnish and install four (4) isolation gate valves at locations on the force main, as determined by the City.
- There is no separate pay resulting from any of the work required as a result of the requirements included in these General Notes. All work required shall be included in the price bid for the project.

GENERAL TRAFFIC CONTROL NOTES

- All temporary signs, markings, cones, channelizing devices, warning lights and barricades shall be in accordance with the current State of Texas Manual on Uniform Traffic Control Devices (MUTCD).
- Type "A" warning lights shall be placed on all advance warning signs. In addition, flags shall be placed on all advance warning signs that detour traffic.
- Any existing conflicting markings shall be removed prior to shifting traffic.
- All temporary pavement markings required during construction shall be of the removable type. Temporary markings and striping may be required to transition travel lanes between construction phases. All pavement markings and striping shall be reflective.
- The spacing of signs and channelization devices may be adjusted to fit the geometric conditions encountered, such as driveways, intersecting roadways, vertical and horizontal alignment, etc., as approved by the City of Lucas.
- Advance warning signs shall not be displayed more than forty-eight (48) hours before physical construction begins. Signs may be erected up to one week before needed, if the sign face is fully covered.
- Use of barricades, portable barrier rails, vertical panels, and drums shall be limited to the immediate areas of construction where a hazard is present. These devices shall not be stored along the roadway within thirty (30) feet of the edge of the traveled way before or after use unless protected by guardrail, bridge rail, and/or barriers installed for other purposes. These devices shall be removed from the construction work zone when the City of Lucas determines they are no longer needed. Where there is insufficient right-of-way to provide for this thirty (30) foot setback, the City of Lucas shall approve alternate locations.
- The posted speed for warning signage is to be determined at the site by the City of Lucas.
- Reduced speed warning signage should be placed prior to and at regular intervals within the construction zone.
- As part of the bid item, "Construction Barricading/Signing/Traffic Control," the CONTRACTOR is required to submit a traffic control plan for construction a minimum of 3 days prior to changes in traffic handling or movement. These plans are to be reviewed and approved by the City of Lucas prior to construction of that phase.
- The CONTRACTOR shall accommodate existing traffic during construction and shall maintain at least one open lane of traffic at all times. Use of flag men, barricades, vertical panels, etc. shall be required and shall be considered subsidiary to "Construction Barricading/Signing/Traffic Control". Two-way traffic shall be re-established in each instance at the end of the work day.
- CONTRACTOR shall be required to place temporary pavement markings and/or buttons as needed to maintain traffic in a safe and efficient manner after removal of existing markings. These temporary markings shall not be paid for separately but shall be considered subsidiary to "CONSTRUCTION BARRICADING/SIGNING/TRAFFIC CONTROL".

NTMWD NOTES:

- North Texas Municipal Water District (NTMWD) water transmission pipelines located within limits of construction.
- Operation of heavy earth moving equipment, compaction equipment or heavy construction equipment, such as concrete trucks, shall be restricted to specific crossing points across NTMWD easements, as approved by the NTMWD. The crossings shall be designated and verified to provide a minimum of five feet of cover.
- To assure that placing of significant loads over the NTMWD pipeline does not damage the existing pipeline, no materials shall be stockpiled on the NTMWD easement without authorization from the NTMWD. If the CONTRACTOR desires to use NTMWD's easement for stockpile of materials, contact NTMWD Engineering at (972) 442-5405 so your plans for use of NTMWD's easement can be reviewed.
- Unless otherwise shown or required, a minimum of one-foot clearance shall be provided for all utilities crossing the NTMWD pipelines.
- The CONTRACTOR shall contact NTMWD Engineering at (972) 442-5404 at least 48 hours prior to performing any work in the vicinity of the NTMWD facilities.
- For open cut where crossing under the NTMWD pipeline, within ten feet either side of centerline of pipeline, the trench width shall be limited to four-foot with vertical walls, no sloping banks and with the appropriate trench safety. The entire excavation within the limits noted above shall be backfilled with sand to one-foot above top of NTMWD pipeline. One-foot minimum vertical clearance is required between NTMWD pipeline and proposed utilities.
- Limits of bore shall be a minimum of the NTMWD easement width.
- The casing pipe shall terminate outside of the NTMWD easement.
- Boring and receiving pits shall be located outside of NTMWD easements.
- A minimum of two-foot horizontal and one-foot vertical clearance is required between proposed pipelines and NTMWD pipelines.
- Pipelines crossing the NTMWD easement shall be installed in compliance with the applicable NTMWD Rules and Regulations.

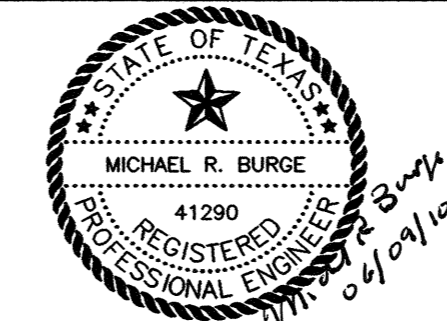
!! CAUTION !!
 THERE ARE EXISTING AND/OR PROPOSED UTILITIES IN PROJECT AREA. UTILITY INFORMATION SHOWN ON PLANS REPRESENTS APPROXIMATE LOCATIONS OF EXISTING UTILITIES AND IS NOT NECESSARILY ALL-INCLUSIVE. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING EXACT LOCATIONS OF ALL EXISTING UTILITIES AND SHALL BE REQUIRED TO PROTECT UTILITIES TO AVOID DAMAGE.
PRIOR TO ANY EXCAVATION, CONTRACTOR SHALL CONTACT DIG-TESS, TEXAS ONE CALL, LONE STAR NOTIFICATION AND OTHERS AS REQUIRED TO LOCATE EXISTING UTILITIES.
 CONTRACTOR SHALL ALSO CONTACT APPROPRIATE CITY UTILITY DEPARTMENT FOR FIELD LOCATES OF MUNICIPAL INFRASTRUCTURE 48 HOURS PRIOR TO CONSTRUCTION.

6			
5			
4			
3			
2			
1			
NO.	DATE	REVISION	REVIEWED

DRAWN: _____ BW2
 DESIGN: _____ MRB
 REVIEWED: _____ JFW
 SCALE: _____ NO SCALE
 DATE: _____ JUNE 2010
 DWG. NAME: _____ 1389GENNOTE

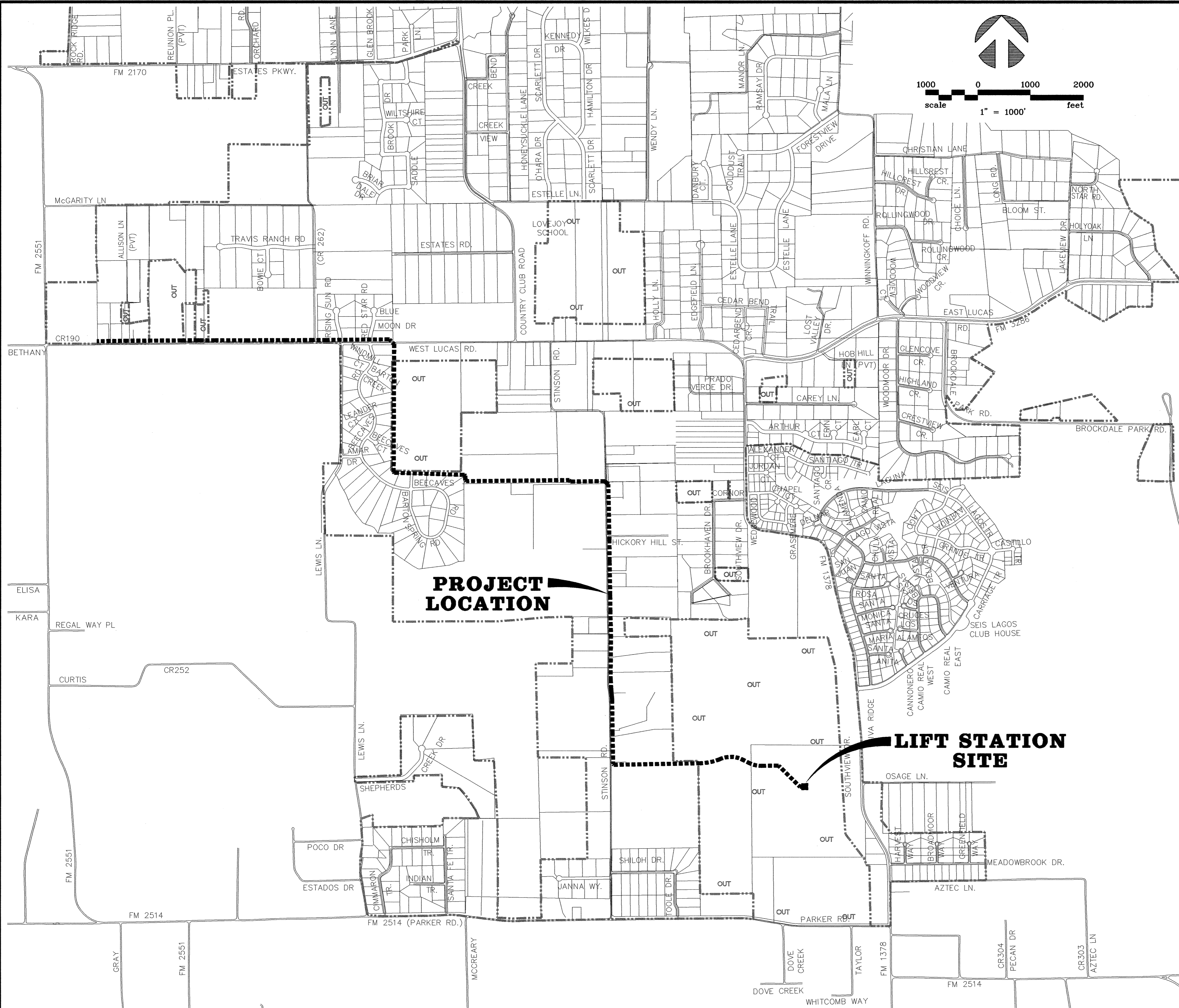


BW2 Engineers, Inc.
 1919 S. Shiloh Road
 Suite 500, L.B. 27
 Garland, Texas 75042
 (972) 864-8200 (T) (972) 864-8220 (F)
 Firm Registration No. F-5290



**WASTEWATER SYSTEM IMPROVEMENTS
 WASTEWATER FORCE MAIN AND LIFT STATION**
 GENERAL NOTES
CITY OF LUCAS

SHEET NO. **C1**
 OF SHEETS
 JOB NO. **09-1389**

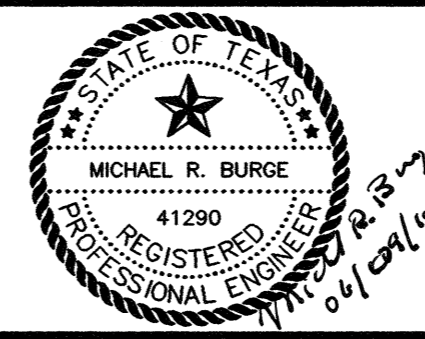


6			
5			
4			
3			
2			
1			
NO.	DATE	REVISION	REVIEWED

DRAWN: BW2
 DESIGN: MRB
 REVIEWED: JFW
 SCALE: 1" = 1000'
 DATE: JUNE 2010
 DWG. NAME: 1389LOCMAP



BW2 Engineers, Inc.
 1919 S. Shiloh Road
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 Garland, Texas 75042
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 Firm Registration No. F-5290



WASTEWATER SYSTEM IMPROVEMENTS
 WASTEWATER FORCE MAIN AND LIFT STATION
 PROJECT LOCATION MAP
CITY OF LUCAS

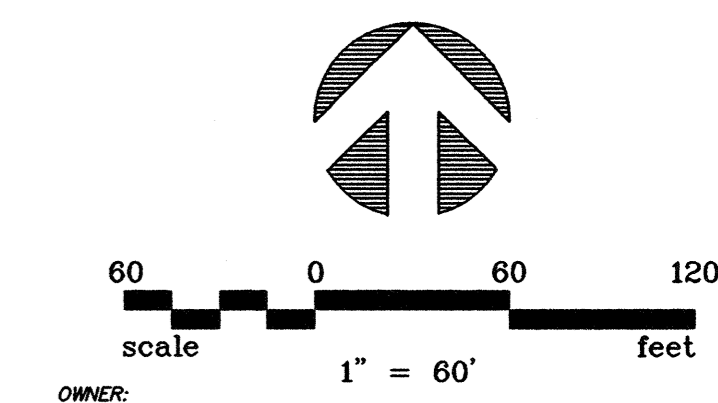
SHEET NO. C2
 OF SHEETS
 JOB NO. 09-1389

LINE 'FM' COORDINATES

STATION	NORTHING	EASTING
B.O.P. STA. 0+00.00	7084144.7473	2545590.9786
P.I. STA. 5+77.37	7084152.9228	2546168.2932
P.I. STA. 16+48.23	7084159.0438	2547239.1347
P.I. STA. 19+76.75	7084162.8863	2547567.6285

HORIZONTAL AND VERTICAL CONTROL POINTS

NO.	DESCRIPTION	NORTHING	EASTING	ELEVATION
2	1/2" I.R. W/CAP	7084094.9054	2546001.1273	628.16
3	1/2" I.R. W/CAP	7084102.8362	2547063.7061	622.72



OWNER:
S.C. LUCAS ROAD, L.P.
VOL. 1745, PG. 556
D.R.C.C.T

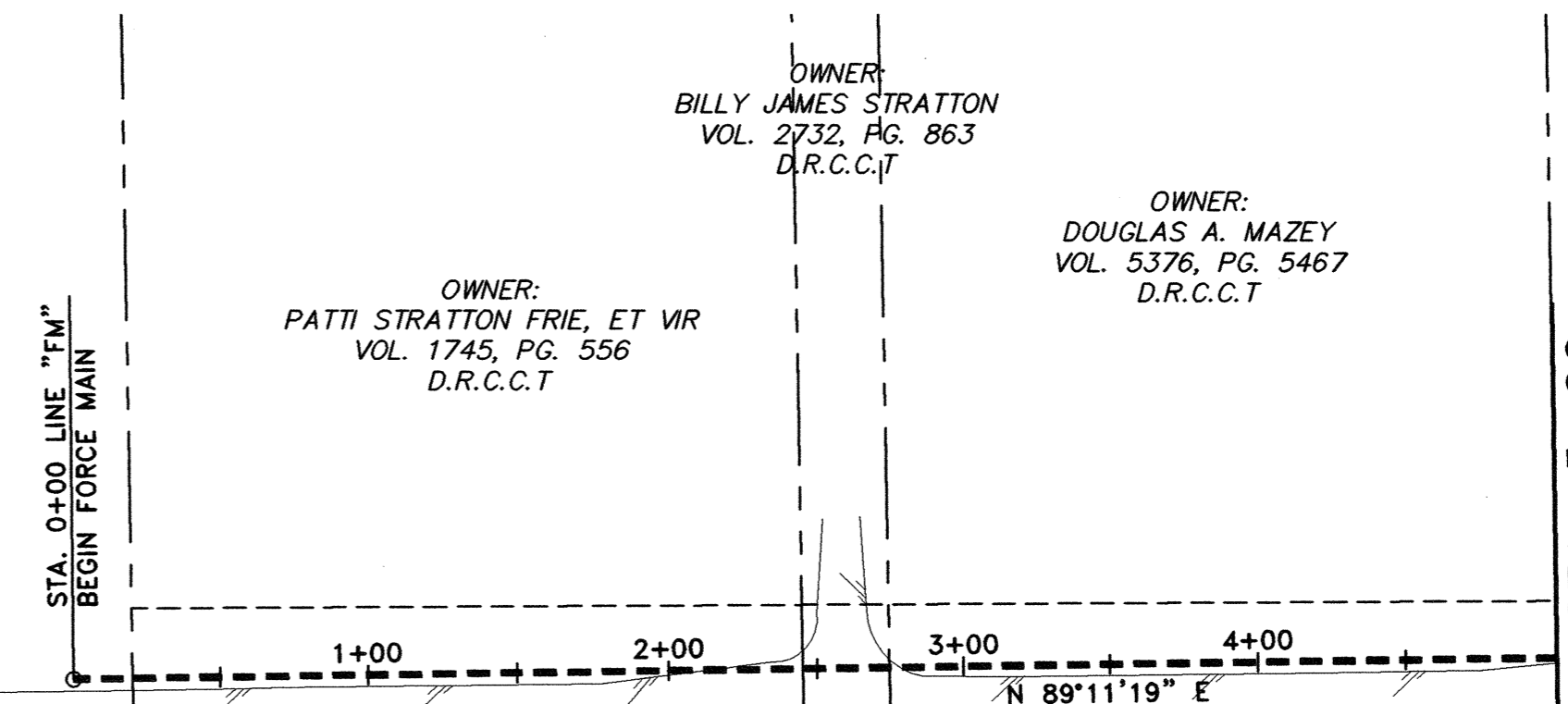
OWNER:
PATTI STRATTON FRIE, ET VIR
VOL. 1745, PG. 556
D.R.C.C.T

OWNER:
DOUGLAS A. MAZEY
VOL. 5376, PG. 5467
D.R.C.C.T

F.M. 2551

MATCH LINE STA. 5+00

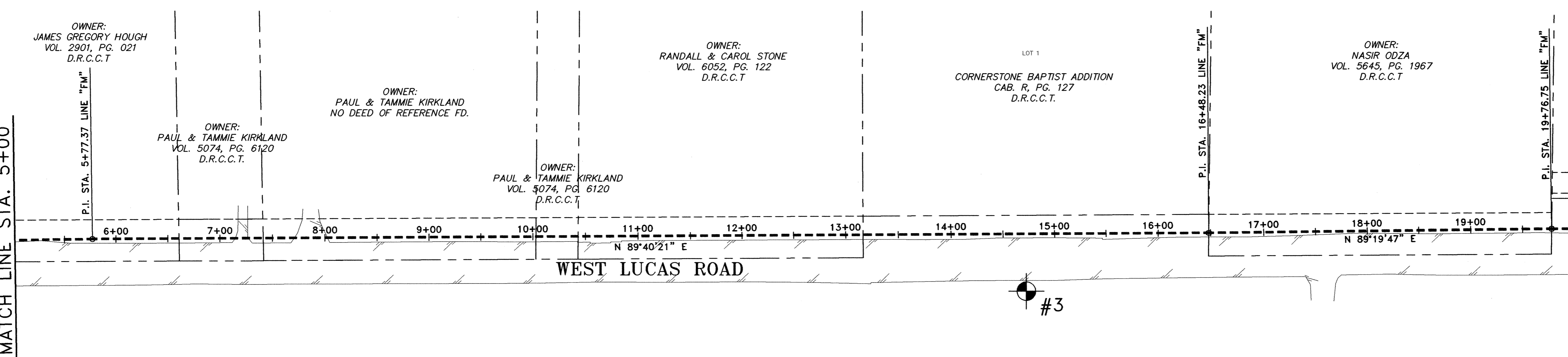
WEST LUCAS ROAD



MATCH LINE STA. 5+00

MATCH LINE STA. 20+00

WEST LUCAS ROAD



OWNER:
JAMES GREGORY HOUGH
VOL. 2901, PG. 021
D.R.C.C.T

OWNER:
PAUL & TAMMIE KIRKLAND
VOL. 5074, PG. 6120
D.R.C.C.T

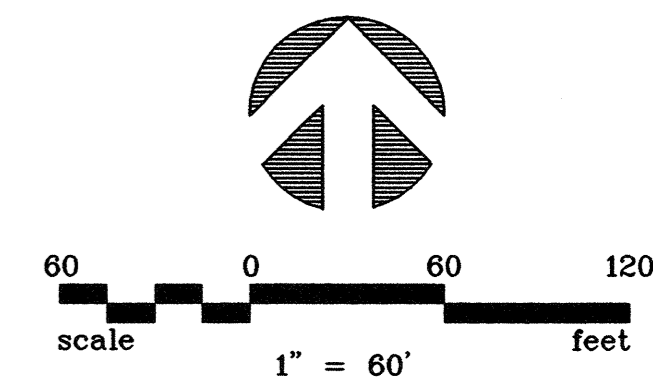
OWNER:
PAUL & TAMMIE KIRKLAND
NO DEED OF REFERENCE FD.

OWNER:
PAUL & TAMMIE KIRKLAND
VOL. 5074, PG. 6120
D.R.C.C.T

OWNER:
RANDALL & CAROL STONE
VOL. 6052, PG. 122
D.R.C.C.T

LOT 1
CORNERSTONE BAPTIST ADDITION
CAB. R, PG. 127
D.R.C.C.T

OWNER:
NASIR ODZA
VOL. 5645, PG. 1967
D.R.C.C.T



NOTES:

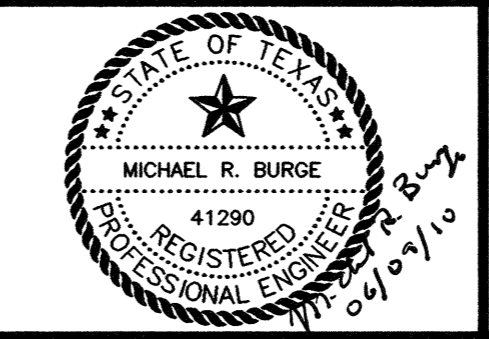
1. BASIS FOR HORIZONTAL CONTROL IS THE NAD 83 STATE PLANE COORDINATE SYSTEM, TEXAS NORTH CENTRAL ZONE (4202). HORIZONTAL CONTROL IS AT SURFACE USING A SCALE FACTOR OF 1.000152710 (COLLIN CO.), ABOUT 0.0.
2. BASIS FOR VERTICAL CONTROL IS NAVD 88.

NO.	DATE	REVISION	REVIEWED
6			
5			
4			
3			
2			
1			

DRAWN: BW2
 DESIGN: JCT
 REVIEWED: MRB
 SCALE: 1" = 60'
 DATE: JUNE 2010
 DWG. NAME: 1389HORCTRL01

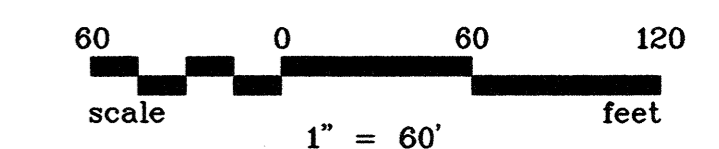
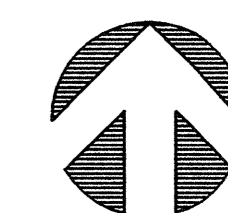


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**WASTEWATER SYSTEM IMPROVEMENTS
 WASTEWATER FORCE MAIN AND LIFT STATION
 HORIZONTAL AND VERTICAL CONTROL PLAN
 (STA. 0+00 TO STA. 20+00)**
CITY OF LUCAS

SHEET NO. **C3**
 OF SHEETS
 JOB NO. 09-1389



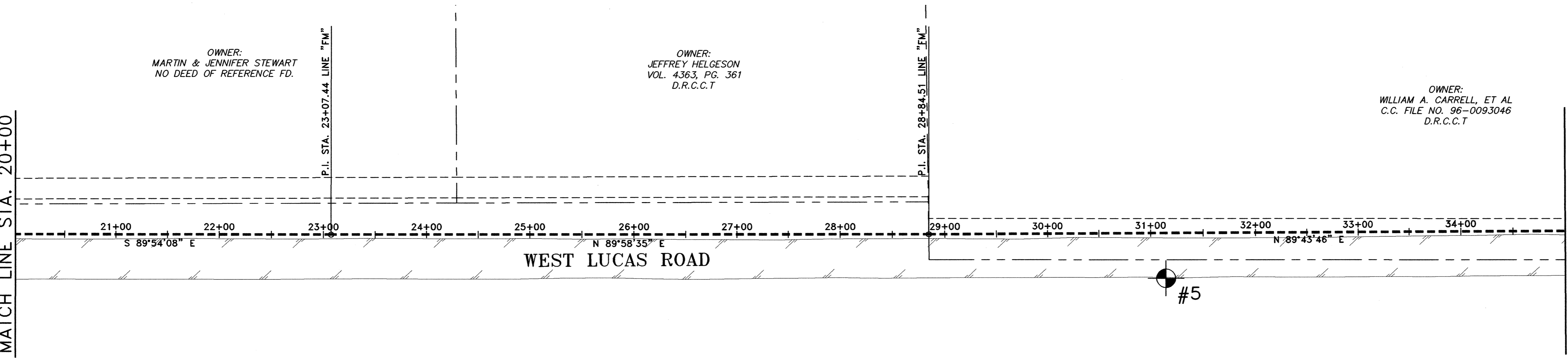
MATCH LINE STA. 20+00

OWNER:
MARTIN & JENNIFER STEWART
NO DEED OF REFERENCE FD.

OWNER:
JEFFREY HELGESON
VOL. 4363, PG. 361
D.R.C.C.T

OWNER:
WILLIAM A. CARRELL, ET AL
C.C. FILE NO. 96-0093046
D.R.C.C.T

MATCH LINE STA. 35+00

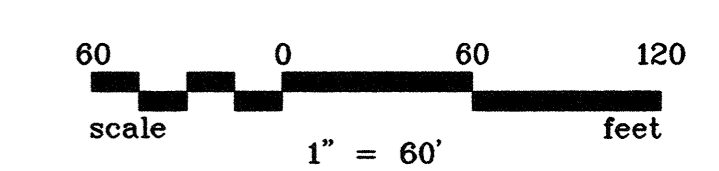
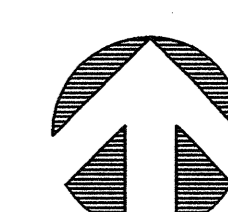


LINE 'FM' COORDINATES

STATION	NORTHING	EASTING
P.I. STA. 23+07.44	7084162.3213	2547898.3245
P.I. STA. 28+84.51	7084162.5583	2548475.3925
P.I. STA. 36+21.87	7084166.0385	2549212.7400
P.I. STA. 41+23.50	7084167.0599	2549714.3735
P.I. STA. 43+55.32	7084169.7839	2549946.1706

HORIZONTAL AND VERTICAL CONTROL POINTS

NO.	DESCRIPTION	NORTHING	EASTING	ELEVATION
5	1/2" I.R. W/CAP	7084119.7666	2548705.7122	614.55
6	1/2" I.R. W/CAP	7084114.8478	2549521.8696	619.51
7	1/2" I.R. W/CAP	7084117.6277	2550330.3529	619.36



MATCH LINE STA. 35+00

OWNER:
WILLIAM A. CARRELL, ET AL
C.C. FILE NO. 96-0093046
D.R.C.C.T

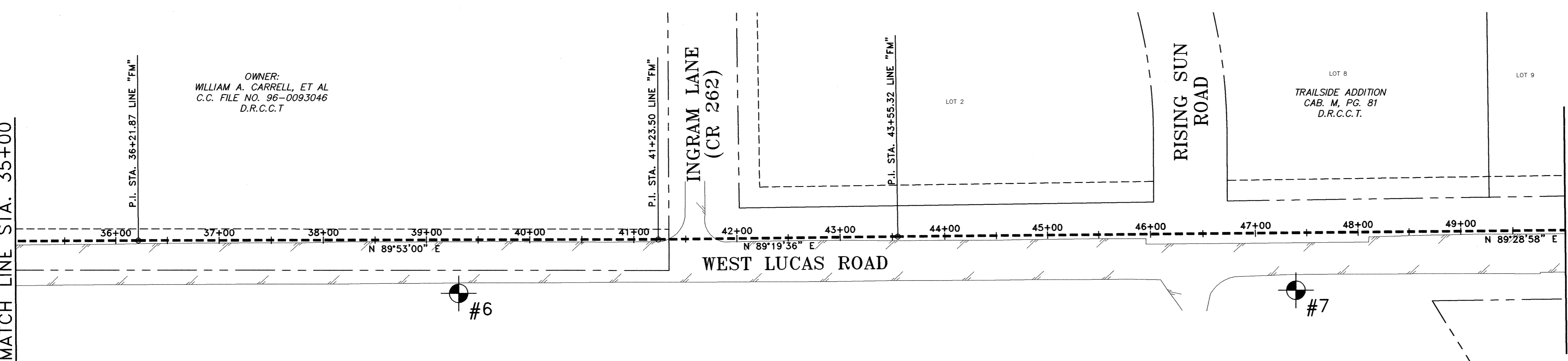
INGRAM LANE
(CR 262)

RISING SUN
ROAD

LOT 8
TRAILSIDE ADDITION
CAB. M, PG. 81
D.R.C.C.T.

LOT 9

MATCH LINE STA. 50+00



NOTES:

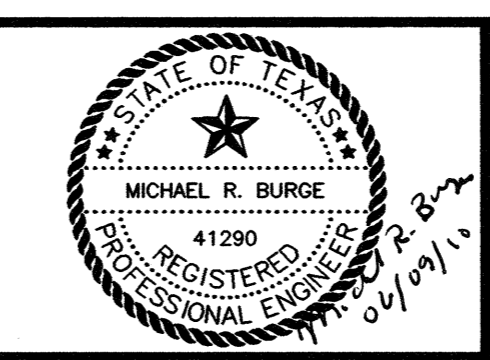
1. BASIS FOR HORIZONTAL CONTROL IS THE NAD 83 STATE PLANE COORDINATE SYSTEM, TEXAS NORTH CENTRAL ZONE (4202). HORIZONTAL CONTROL IS AT SURFACE USING A SCALE FACTOR OF 1.000152710 (COLLIN CO.), ABOUT 0.0.
2. BASIS FOR VERTICAL CONTROL IS NAVD 88.

NO.	DATE	REVISION	REVIEWED
6			
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DRAWN: BW2
 DESIGN: JCT
 REVIEWED: MRB
 SCALE: 1" = 60'
 DATE: JUNE 2010
 DWG. NAME: 1389HORCTRL02

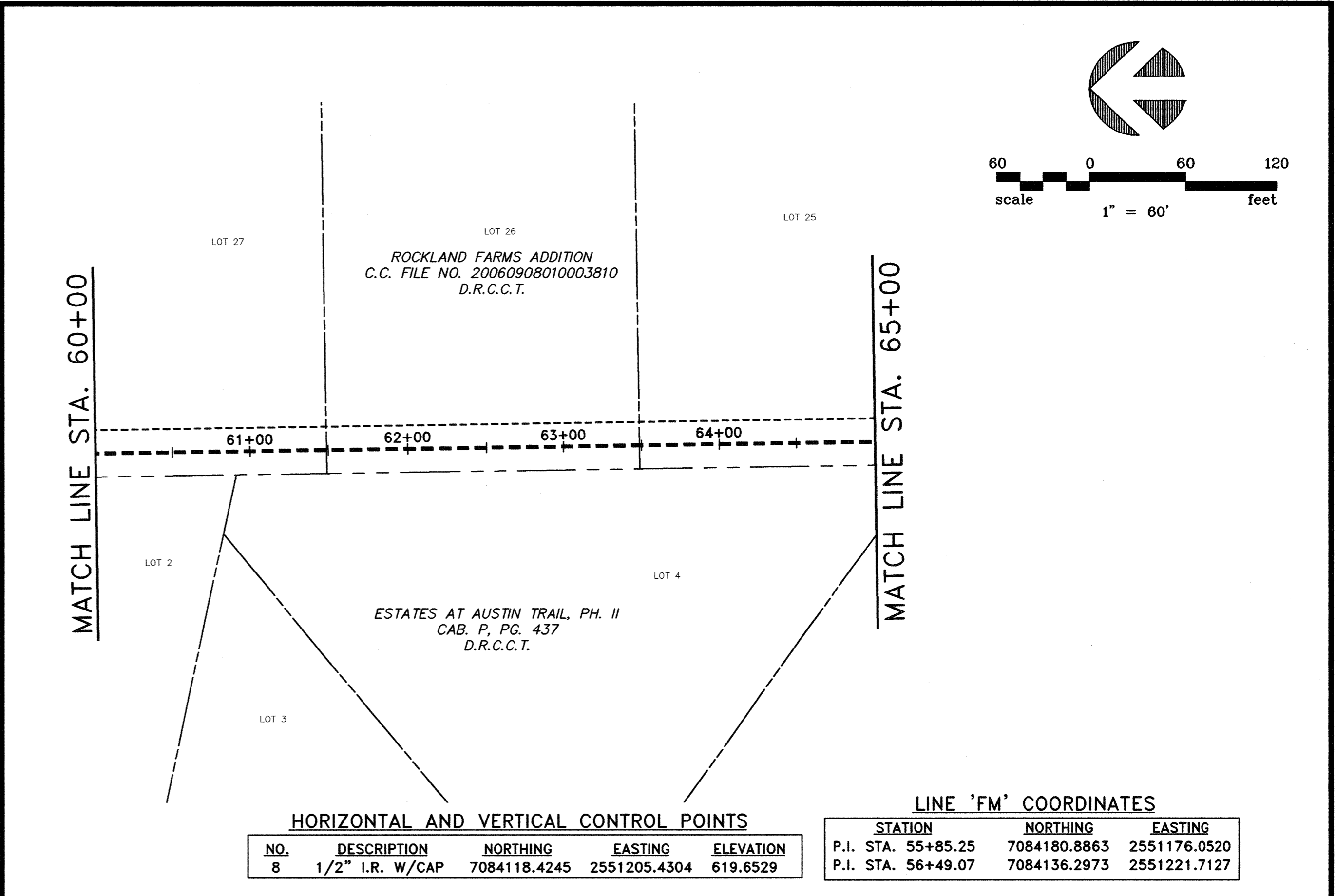
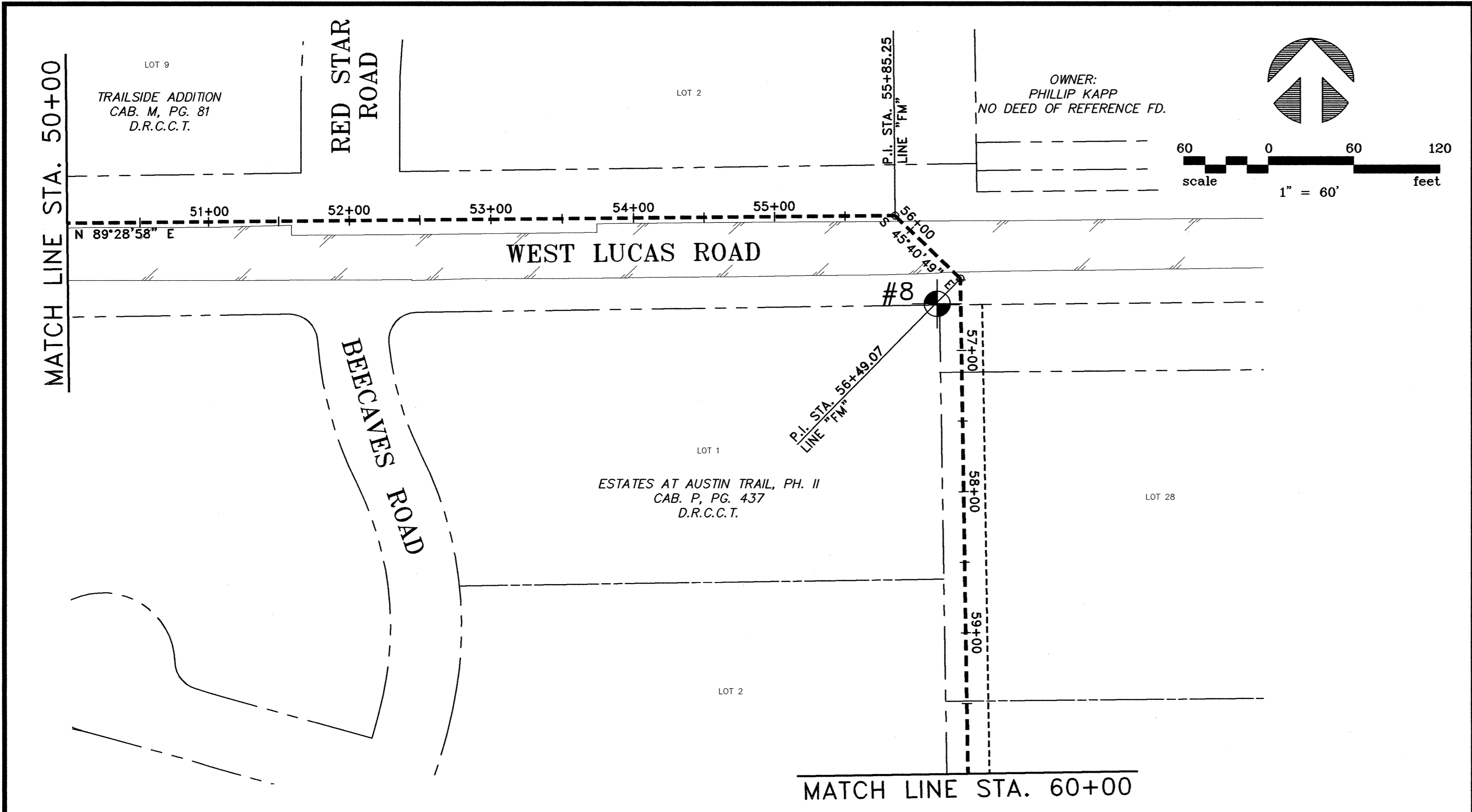


BW2 Engineers, Inc.
 1919 S. Shiloh Road
 Suite 500, L.B. 27
 Garland, Texas 75042
 (972) 864-8200 (T) (972) 864-8220 (F)
 Firm Registration No. F-5290



**WASTEWATER SYSTEM IMPROVEMENTS
 WASTEWATER FORCE MAIN AND LIFT STATION
 HORIZONTAL AND VERTICAL CONTROL PLAN
 (STA. 20+00 TO STA. 50+00)**
CITY OF LUCAS

SHEET NO. **C4**
 OF SHEETS
 JOB NO. 09-1389

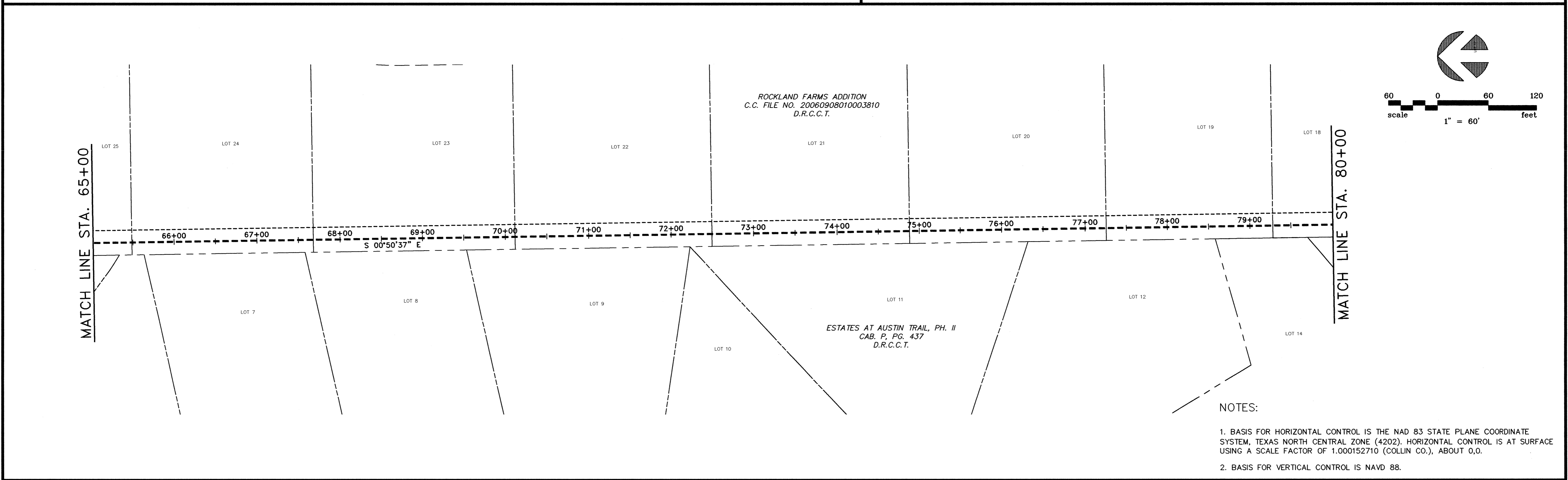


HORIZONTAL AND VERTICAL CONTROL POINTS

NO.	DESCRIPTION	NORTHING	EASTING	ELEVATION
8	1/2" I.R. W/CAP	7084118.4245	2551205.4304	619.6529

LINE 'FM' COORDINATES

STATION	NORTHING	EASTING
P.I. STA. 55+85.25	7084180.8863	2551176.0520
P.I. STA. 56+49.07	7084136.2973	2551221.7127



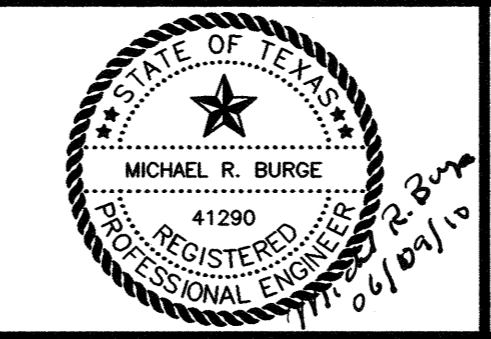
- NOTES:**
1. BASIS FOR HORIZONTAL CONTROL IS THE NAD 83 STATE PLANE COORDINATE SYSTEM, TEXAS NORTH CENTRAL ZONE (4202). HORIZONTAL CONTROL IS AT SURFACE USING A SCALE FACTOR OF 1.000152710 (COLLIN CO.), ABOUT 0.0.
 2. BASIS FOR VERTICAL CONTROL IS NAVD 88.

NO.	DATE	REVISION	REVIEWED
6			
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DRAWN: _____ BW2
 DESIGN: _____ JCT
 REVIEWED: _____ MRB
 SCALE: _____ 1" = 100'
 DATE: _____ JUNE 2010
 DWG. NAME: _____ 1389HORCTRL03

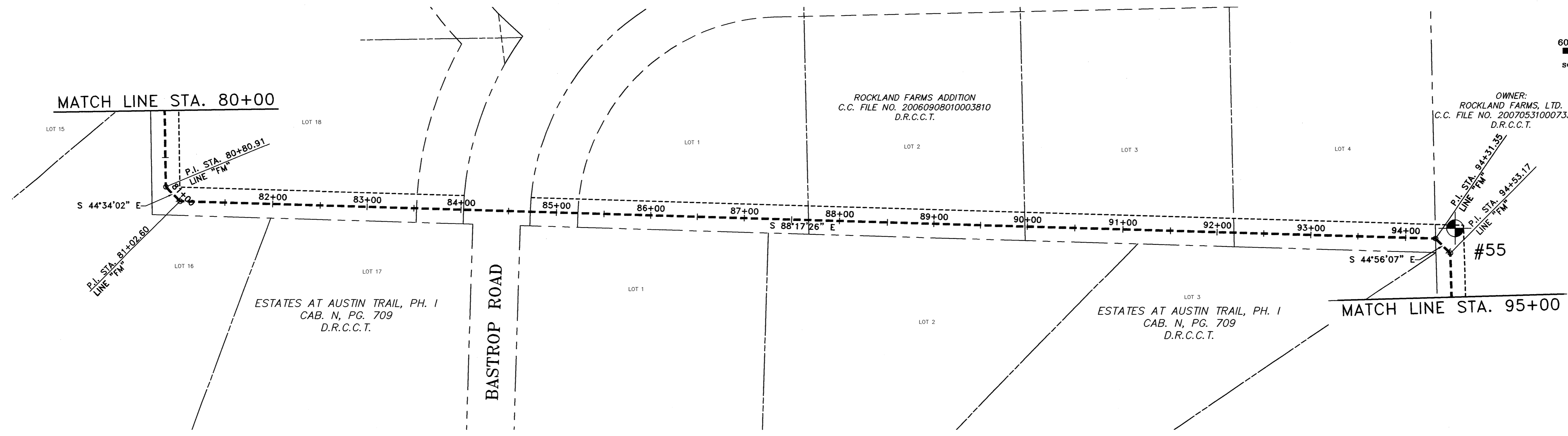
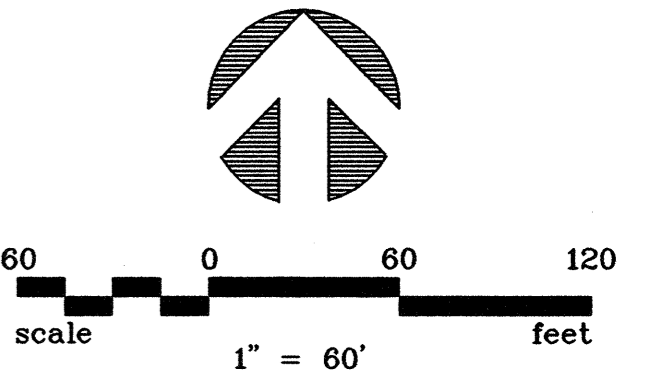


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 Firm Registration No. F-5290



**WASTEWATER SYSTEM IMPROVEMENTS
 WASTEWATER FORCE MAIN AND LIFT STATION
 HORIZONTAL AND VERTICAL CONTROL PLAN
 (STA. 50+00 TO STA. 80+00)**
CITY OF LUCAS

SHEET NO. **C5**
 OF SHEETS
 JOB NO. 09-1389

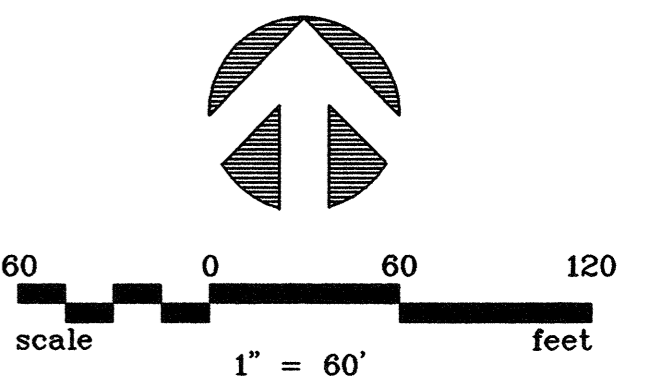


LINE 'FM' COORDINATES

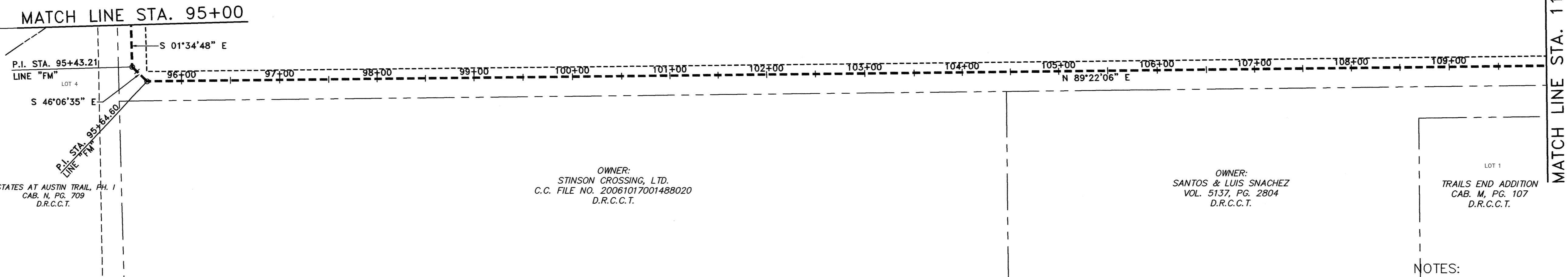
STATION	NORTHING	EASTING
P.I. STA. 80+80.91	7081704.7139	2551257.5177
P.I. STA. 81+02.60	7081689.2680	2551272.7319
P.I. STA. 94+31.35	7081649.6301	2552600.8971
P.I. STA. 94+53.17	7081634.1883	2552616.3040
P.I. STA. 95+43.21	7081544.1759	2552618.7870
P.I. STA. 95+64.60	7081529.3470	2552634.2018

HORIZONTAL AND VERTICAL CONTROL POINTS

NO.	DESCRIPTION	NORTHING	EASTING	ELEVATION
55	1/2" I.R. W/CAP	7081660.5265	2552621.4399	599.73



OWNER:
ROCKLAND FARMS, LTD.
C.C. FILE NO. 20070531000733320
D.R.C.C.T.



NOTES:

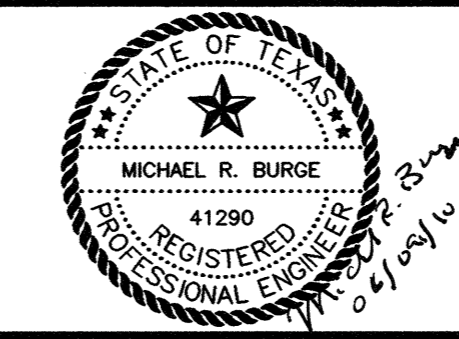
1. BASIS FOR HORIZONTAL CONTROL IS THE NAD 83 STATE PLANE COORDINATE SYSTEM, TEXAS NORTH CENTRAL ZONE (4202). HORIZONTAL CONTROL IS AT SURFACE USING A SCALE FACTOR OF 1.000152710 (COLLIN CO.), ABOUT 0.0.
2. BASIS FOR VERTICAL CONTROL IS NAVD 88.

NO.	DATE	REVISION	REVIEWED
6			
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DRAWN: BW2
 DESIGN: JCT
 REVIEWED: MRB
 SCALE: 1" = 60'
 DATE: JUNE 2010
 DWG. NAME: 1389HORCTRL04

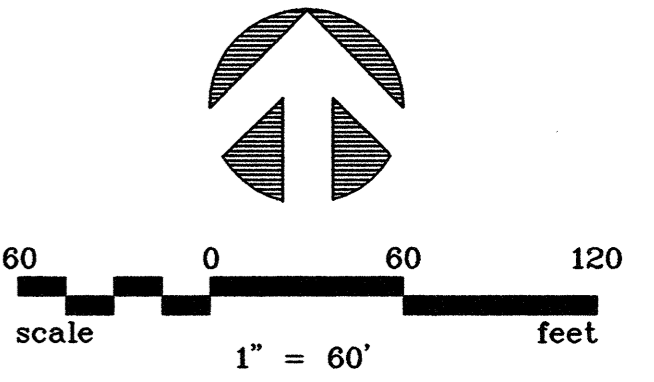


BW2 Engineers, Inc.
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 (972) 864-8200 (T) (972) 864-8220 (F)
 Firm Registration No. F-5290



WASTEWATER SYSTEM IMPROVEMENTS
WASTEWATER FORCE MAIN AND LIFT STATION
HORIZONTAL AND VERTICAL CONTROL PLAN
 (STA. 80+00 TO STA. 110+00)
CITY OF LUCAS

SHEET NO. **C6**
 OF SHEETS
 JOB NO. 09-1389



MATCH LINE STA. 110+00

OWNER:
ROCKLAND FARMS, LTD.
C.C. FILE NO. 20070531000733320
D.R.C.C.T.

LOT 1
LEROZA FARMS ADDITION
CAB. M, PG. 318
D.R.C.C.T.

LOT 1
MATHENY ADDITION
CAB. G, PG. 213
D.R.C.C.T.

LOT 1
TRAILS END ADDITION
CAB. M, PG. 107
D.R.C.C.T.

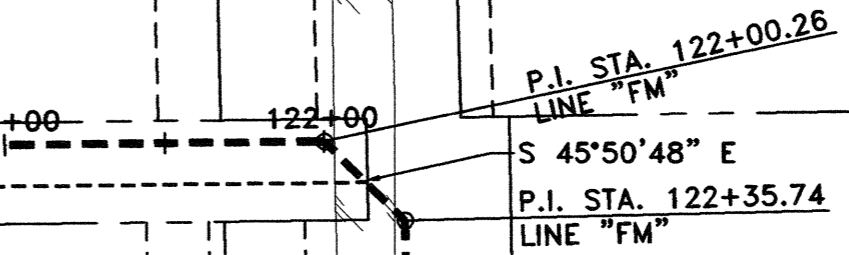
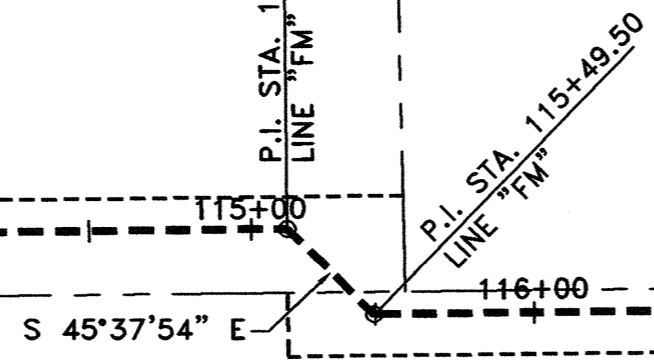
LOT 1
MATHENY ADDITION
CAB. G, PG. 213
D.R.C.C.T.

LINE 'FM' COORDINATES

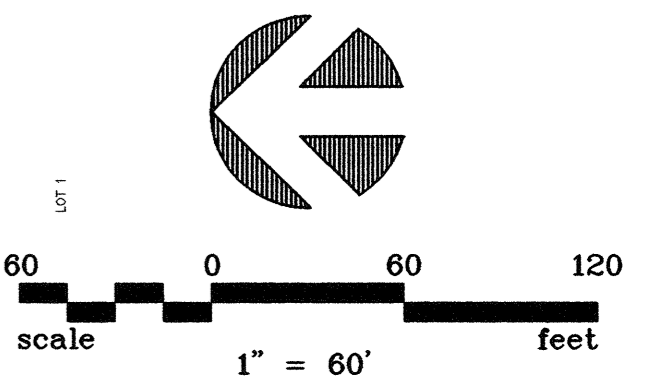
STATION	NORTHING	EASTING
P.I. STA. 115+11.31	7081550.8111	2554580.7941
P.I. STA. 115+49.50	7081524.1098	2554608.0908
P.I. STA. 122+00.26	7081531.3276	2555258.8102
P.I. STA. 122+35.74	7081506.6091	2555284.2701
P.I. STA. 133+20.47	7080422.0615	2555304.2931
P.I. STA. 137+31.31	7080011.2477	2555308.7555

HORIZONTAL AND VERTICAL CONTROL POINTS

NO.	DESCRIPTION	NORTHING	EASTING	ELEVATION
10	1/2" I.R. W/CAP	7081664.7578	2555289.9012	590.36
11	1/2" I.R. W/CAP	7080760.6395	2555244.6257	600.16



MATCH LINE STA. 125+00



MATCH LINE STA. 125+00

SKIDMORE ADDITION
CAB. J, PG. 420
D.R.C.C.T.

HICKORY HILL COUNTRY ESTATES
CAB. C, PG. 716
D.R.C.C.T.

LOT 1
HICKORY HILL COUNTRY ESTATES
CAB. C, PG. 716
D.R.C.C.T.

LOT 1
JACK O'NEILL ADDITION
CAB. G, PG. 129
D.R.C.C.T.

LOT 1
TRAILS END ADDITION
CAB. M, PG. 107
D.R.C.C.T.

LOT 3
TRAILS END ADDITION
CAB. M, PG. 107
D.R.C.C.T.

OWNER:
LUCAS PARTNERS, LTD.
C.C. FILE NO. 2006040300042536
D.R.C.C.T.

STINSON ROAD

MATCH LINE STA. 140+00

NOTES:

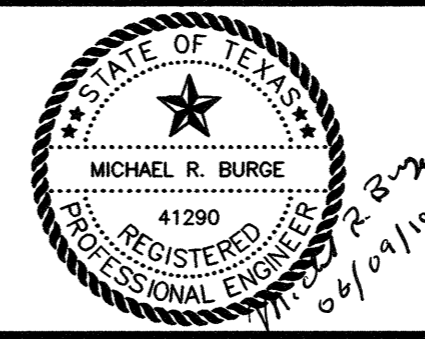
1. BASIS FOR HORIZONTAL CONTROL IS THE NAD 83 STATE PLANE COORDINATE SYSTEM, TEXAS NORTH CENTRAL ZONE (4202). HORIZONTAL CONTROL IS AT SURFACE USING A SCALE FACTOR OF 1.000152710 (COLLIN CO.), ABOUT 0.0.
2. BASIS FOR VERTICAL CONTROL IS NAVD 88.

NO.	DATE	REVISION	REVIEWED
6			
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DRAWN: BW2
DESIGN: JCT
REVIEWED: MRB
SCALE: 1" = 60'
DATE: JUNE 2010
DWG. NAME: 1389HORCTRL05

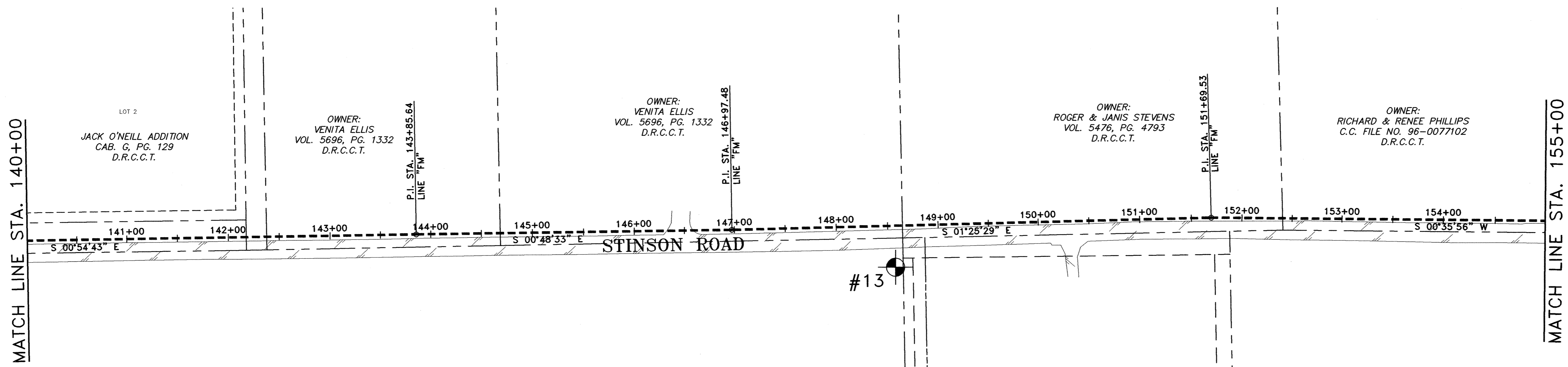
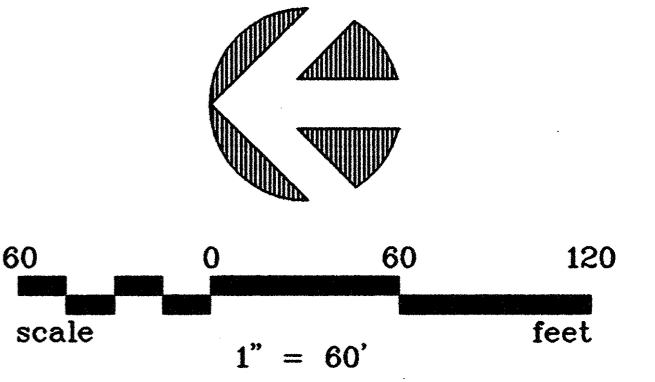


BW2 Engineers, Inc.
1919 S. Shiloh Road
Suite 500, L.B. 27
Garland, Texas 75042
(972) 864-8200 (T) (972) 864-8220 (F)
Firm Registration No. F-5290



**WASTEWATER SYSTEM IMPROVEMENTS
WASTEWATER FORCE MAIN AND LIFT STATION
HORIZONTAL AND VERTICAL CONTROL PLAN
(STA. 110+00 TO STA. 140+00)**
CITY OF LUCAS

SHEET NO. **C7**
OF SHEETS
JOB NO. 09-1389

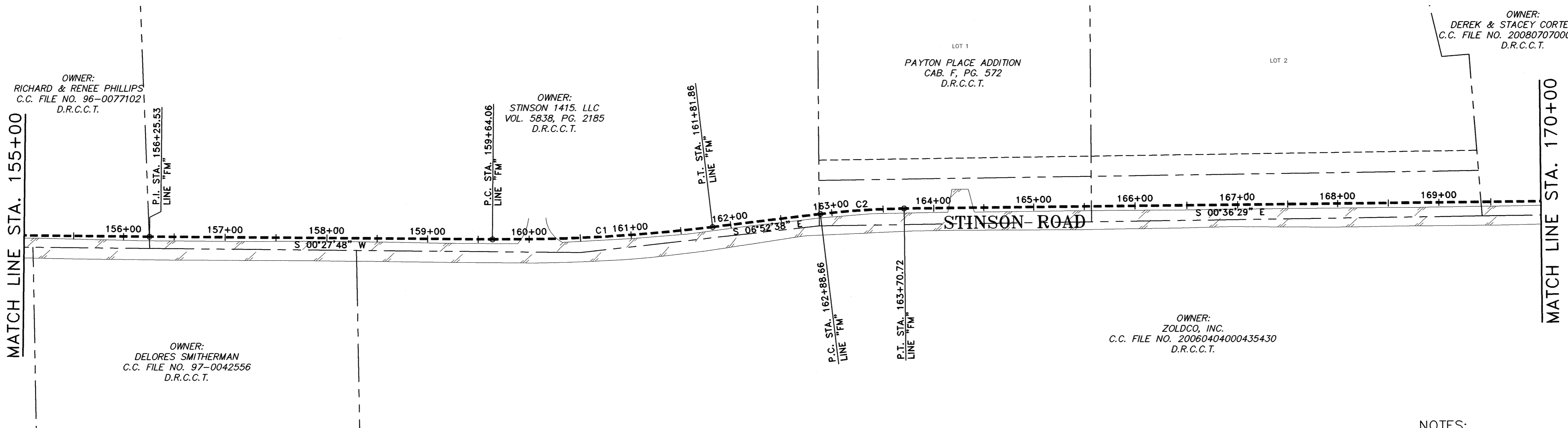
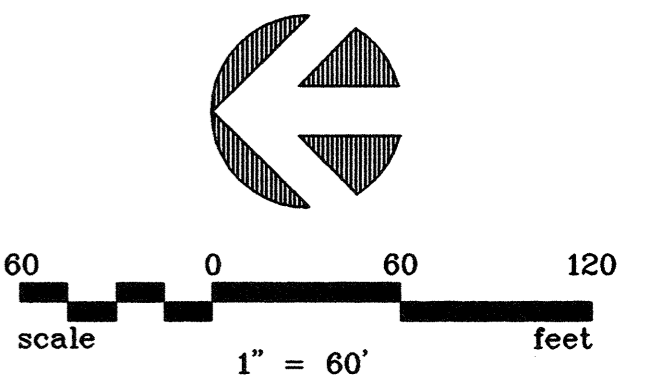


LINE 'FM' COORDINATES

STATION	NORTHING	EASTING
P.I. STA. 143+85.64	7079357.0027	2555319.1693
P.I. STA. 146+97.48	7079045.1942	2555323.5732
P.I. STA. 151+69.53	7078573.2898	2555335.3101
P.I. STA. 156+25.53	7078117.3108	2555330.5448
P.C. STA. 159+64.06	7077778.7982	2555327.8068
P.T. STA. 161+81.86	7077561.4885	2555339.9824
P.C. STA. 162+88.66	7077455.4521	2555352.7713
P.T. STA. 163+70.72	7077373.6069	2555358.1252

HORIZONTAL AND VERTICAL CONTROL POINTS

NO.	DESCRIPTION	NORTHING	EASTING	ELEVATION
13	1/2" I.R. W/CAP	7078884.9649	2555286.4029	574.18



C/L CURVE TABLE

NUMBER	RADIUS	DELTA ANGLE	ARC LENGTH	CHORD DIRECTION	CHORD LENGTH
C1	1700.00	07°20'26"	217.80	S 03°12'25" E	217.65
C2	750.00	06°16'08"	82.06	S 03°44'34" E	82.02

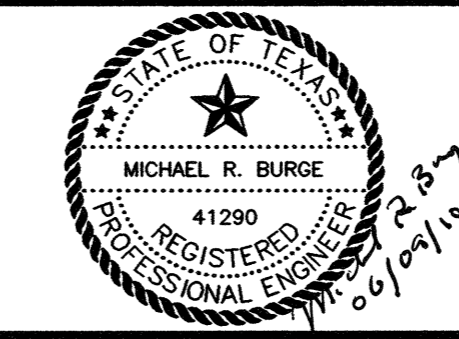
- NOTES:**
1. BASIS FOR HORIZONTAL CONTROL IS THE NAD 83 STATE PLANE COORDINATE SYSTEM, TEXAS NORTH CENTRAL ZONE (4202). HORIZONTAL CONTROL IS AT SURFACE USING A SCALE FACTOR OF 1.000152710 (COLLIN CO.), ABOUT 0.0.
 2. BASIS FOR VERTICAL CONTROL IS NAVD 88.

NO.	DATE	REVISION	REVIEWED
6			
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DRAWN: _____ BW2
 DESIGN: _____ JCT
 REVIEWED: _____ MRB
 SCALE: _____ 1" = 60'
 DATE: _____ JUNE 2010
 DWG. NAME: _____ 1389HORCTRL06

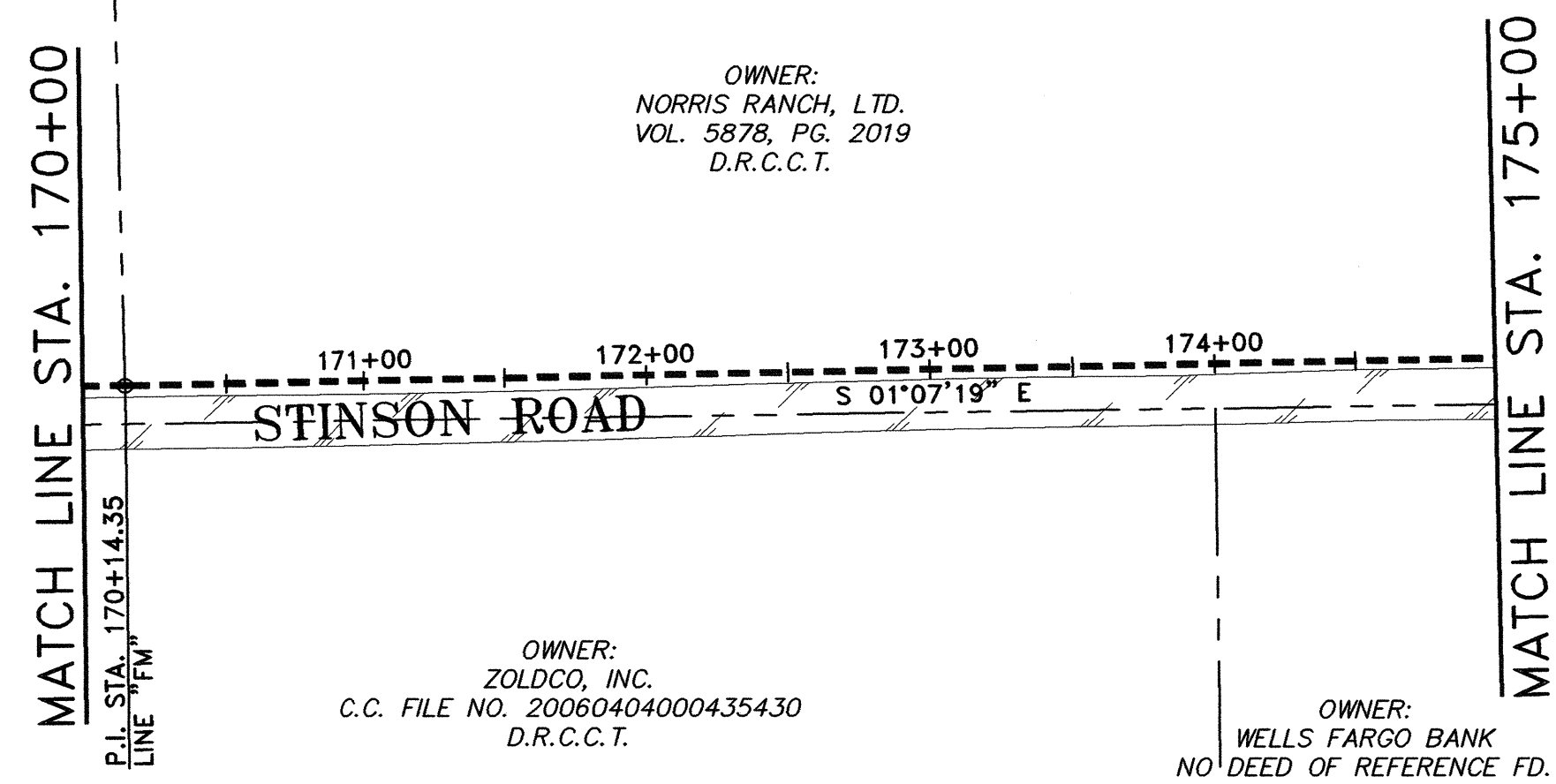
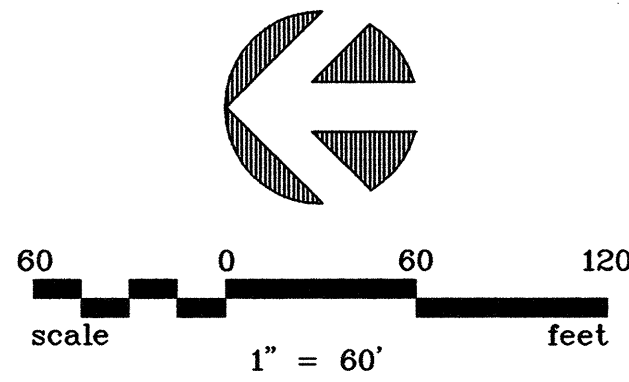


BW2 Engineers, Inc.
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 Garland, Texas 75042
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 Firm Registration No. F-5290



**WASTEWATER SYSTEM IMPROVEMENTS
 WASTEWATER FORCE MAIN AND LIFT STATION
 HORIZONTAL AND VERTICAL CONTROL PLAN
 (STA. 140+00 TO STA. 170+00)**
CITY OF LUCAS

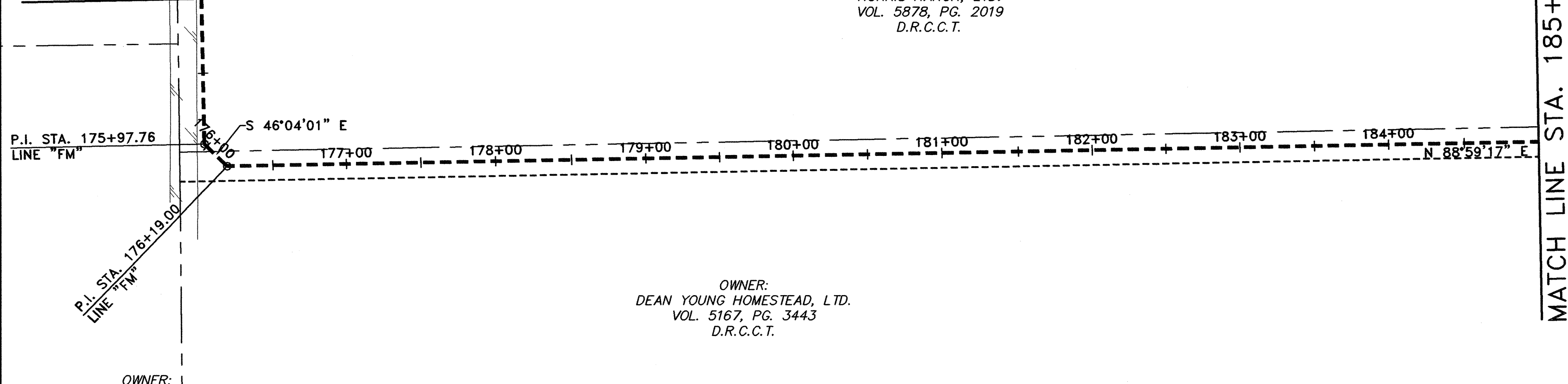
SHEET NO. **C8**
 OF SHEETS
 JOB NO. 09-1389



LINE 'FM' COORDINATES

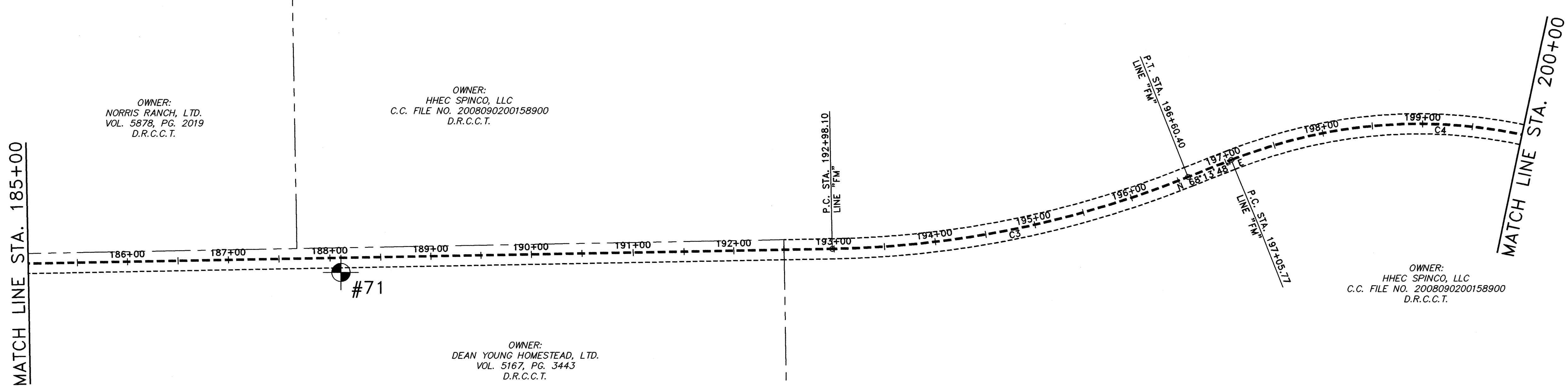
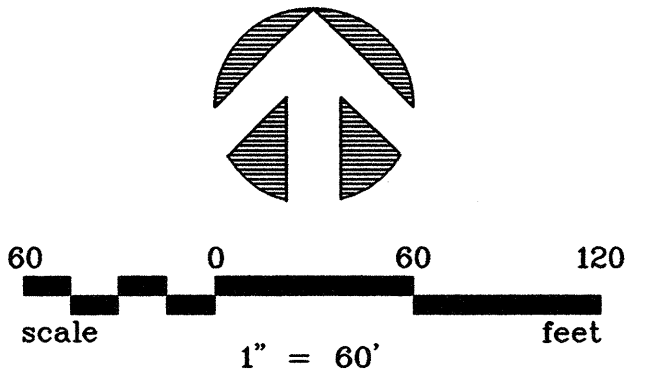
STATION	NORTHING	EASTING
P.I. STA. 170+14.35	7076730.0204	2555364.9567
P.I. STA. 175+97.76	7076146.7143	2555376.3809
P.I. STA. 176+19.00	7076131.9820	2555391.6723
P.C. STA. 192+98.10	7076161.6359	2557070.5169
P.T. STA. 196+60.40	7076232.7996	2557423.7375
P.C. STA. 197+05.77	7076249.6279	2557465.8755

MATCH LINE STA. 175+00



HORIZONTAL AND VERTICAL CONTROL POINTS

NO.	DESCRIPTION	NORTHING	EASTING	ELEVATION
71	1/2" I.R. W/CAP	7076138.4242	2556583.1909	565.84



C/L CURVE TABLE

NUMBER	RADIUS	DELTA ANGLE	ARC LENGTH	CHORD DIRECTION	CHORD LENGTH
C3	1000.00	20°45'29"	362.30	N 78°36'33" E	360.32
C4	500.00	48°36'26"	424.18	S 87°27'59" E	411.57

NOTES:

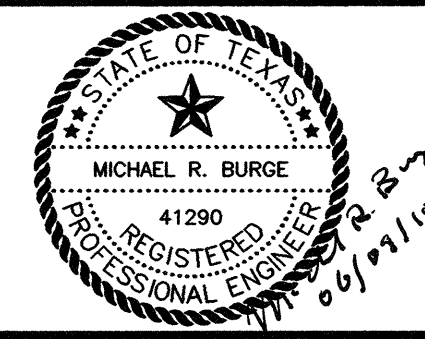
1. BASIS FOR HORIZONTAL CONTROL IS THE NAD 83 STATE PLANE COORDINATE SYSTEM, TEXAS NORTH CENTRAL ZONE (4202). HORIZONTAL CONTROL IS AT SURFACE USING A SCALE FACTOR OF 1.000152710 (COLLIN CO.), ABOUT 0.0.
2. BASIS FOR VERTICAL CONTROL IS NAVD 88.

NO.	DATE	REVISION	REVIEWED
6			
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DRAWN: _____ BW2
 DESIGN: _____ JCT
 REVIEWED: _____ MRB
 SCALE: _____ 1" = 60'
 DATE: _____ JUNE 2010
 DWG. NAME: _____ 1389HORCTRL07

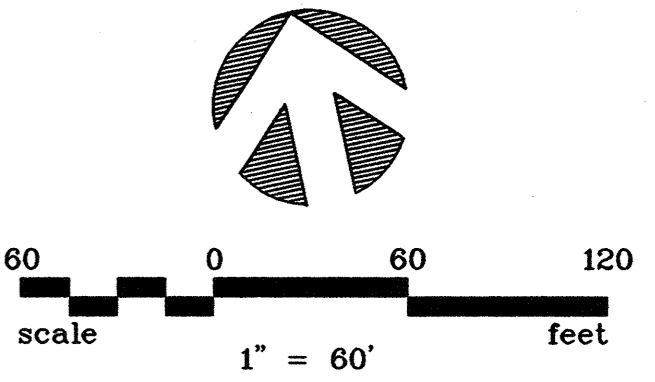


BW2 Engineers, Inc.
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 Garland, Texas 75042
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 Firm Registration No. F-5290



**WASTEWATER SYSTEM IMPROVEMENTS
 WASTEWATER FORCE MAIN AND LIFT STATION
 HORIZONTAL AND VERTICAL CONTROL PLAN
 (STA. 170+00 TO STA. 200+00)**
CITY OF LUCAS

SHEET NO. **C9**
 OF SHEETS
 JOB NO. 09-1389



MATCH LINE STA. 200+00

OWNER:
HHEC SPINCO, LLC
C.C. FILE NO. 2008090200158900
D.R.C.C.T.

OWNER:
HHEC SPINCO, LLC
C.C. FILE NO. 2008090200158900
D.R.C.C.T.

OWNER:
HHEC SPINCO, LLC
C.C. FILE NO. 2008090200158900
D.R.C.C.T.

LINE 'FM' COORDINATES

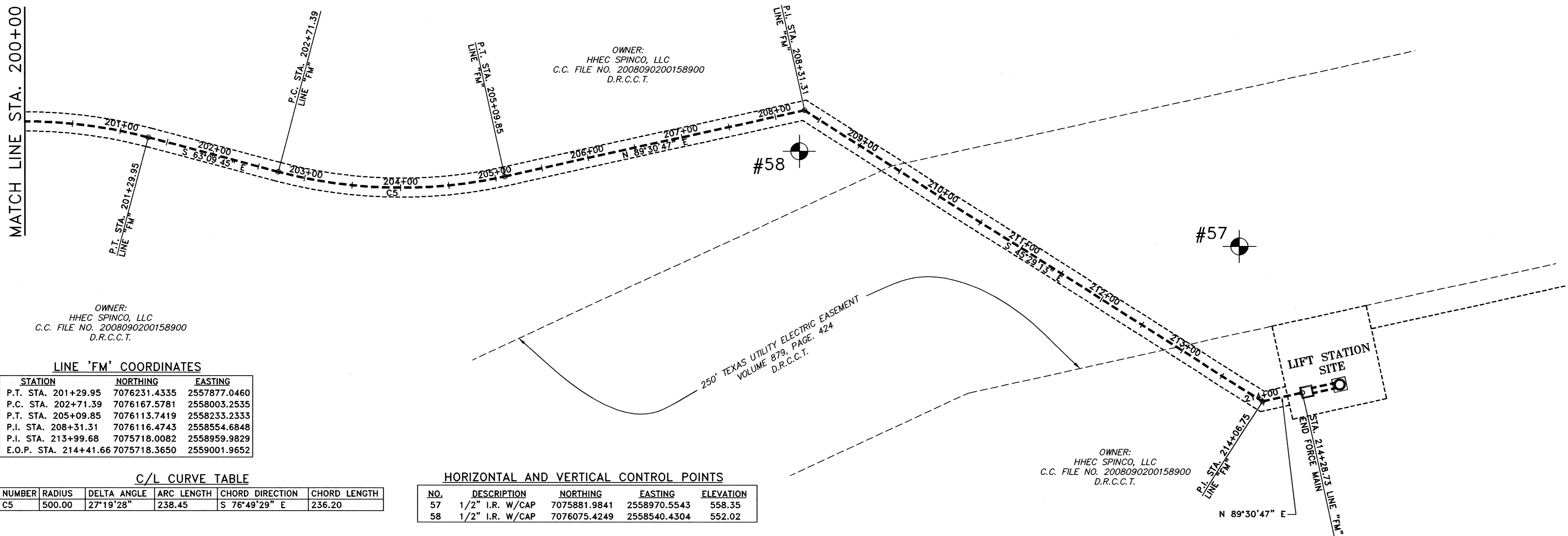
STATION	NORTHING	EASTING
P.T. STA. 201+29.95	7076231.4335	2557877.0460
P.C. STA. 202+71.39	7076167.5781	2558003.2535
P.T. STA. 205+09.85	7076113.7419	2558233.2333
P.I. STA. 208+31.31	7076116.4743	2558554.6848
P.I. STA. 213+99.68	7075718.0082	2558959.9829
E.O.P. STA. 214+41.66	7075718.3650	2559001.9652

C/L CURVE TABLE

NUMBER	RADIUS	DELTA ANGLE	ARC LENGTH	CHORD DIRECTION	CHORD LENGTH
C5	500.00	27°19'28"	238.45	S 76°49'29" E	236.20

HORIZONTAL AND VERTICAL CONTROL POINTS

NO.	DESCRIPTION	NORTHING	EASTING	ELEVATION
57	1/2" I.R. W/CAP	7075881.9841	2558970.5543	558.35
58	1/2" I.R. W/CAP	7076075.4249	2558540.4304	552.02



NOTES:

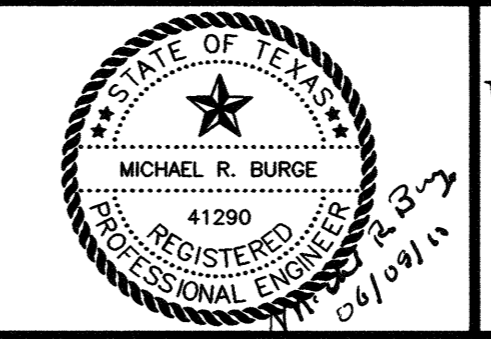
1. BASIS FOR HORIZONTAL CONTROL IS THE NAD 83 STATE PLANE COORDINATE SYSTEM, TEXAS NORTH CENTRAL ZONE (4202). HORIZONTAL CONTROL IS AT SURFACE USING A SCALE FACTOR OF 1.000152710 (COLLIN CO.), ABOUT 0.0.
2. BASIS FOR VERTICAL CONTROL IS NAVD 88.

NO.	DATE	REVISION	REVIEWED
6			
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DRAWN: _____ BW2
 DESIGN: _____ JCT
 REVIEWED: _____ MRB
 SCALE: _____ 1" = 60'
 DATE: _____ JUNE 2010
 DWG. NAME: _____ 1389HORCTRL08

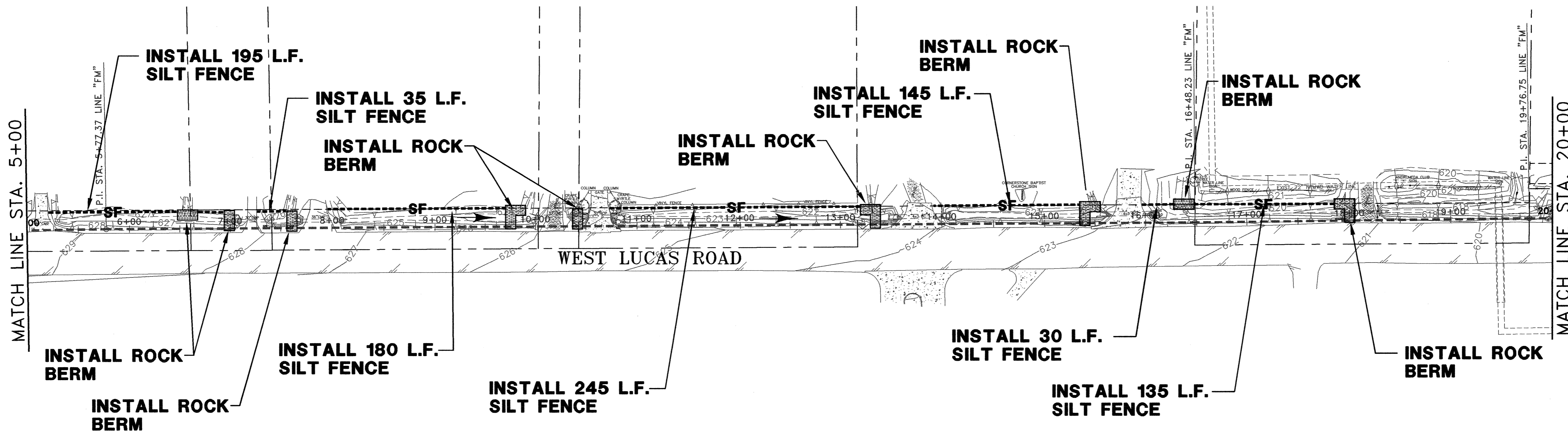
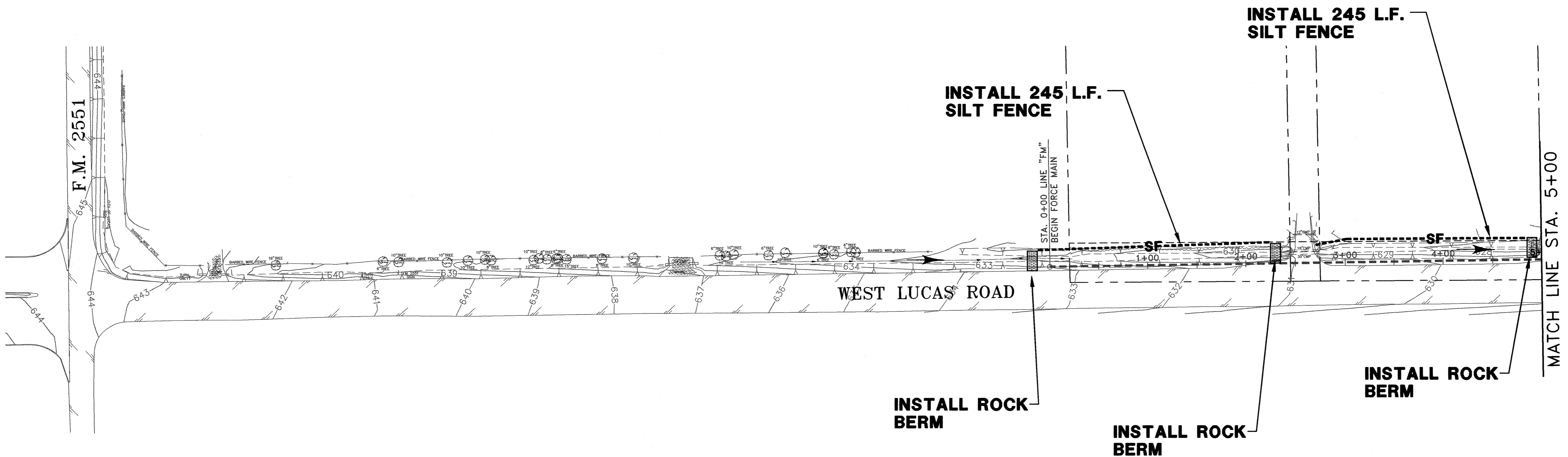


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 Firm Registration No. F-5290



**WASTEWATER SYSTEM IMPROVEMENTS
 WASTEWATER FORCE MAIN AND LIFT STATION
 HORIZONTAL AND VERTICAL CONTROL PLAN
 (STA. 200+00 TO STA. 214+41.66)**
CITY OF LUCAS

SHEET NO. C10
 OF SHEETS
 JOB NO. 09-1389



LEGEND:

- SF--- SILT FENCE
- ROCK BERM
- ← FLOW DIRECTION
- IEP INLET EROSION PROTECTION

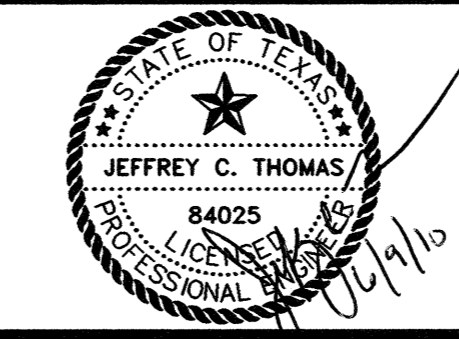
NOTE:
 1. REFER TO NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS (NCTCOG) INLET PROTECTION-DROP, BLOCK AND GRAVEL STANDARD DRAWING NO. 1130 AND STANDARD SPECIFICATION REFERENCE 201.14.

6			
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1			
NO.	DATE	REVISION	REVIEWED

DRAWN: BW2
 DESIGN: JCT
 REVIEWED: MRB
 SCALE: 1" = 60'
 DATE: JUNE 2010
 DWG. NAME: 1389EROTRL01

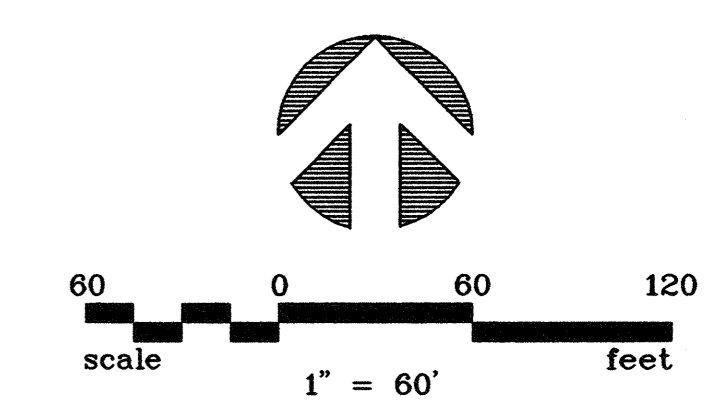
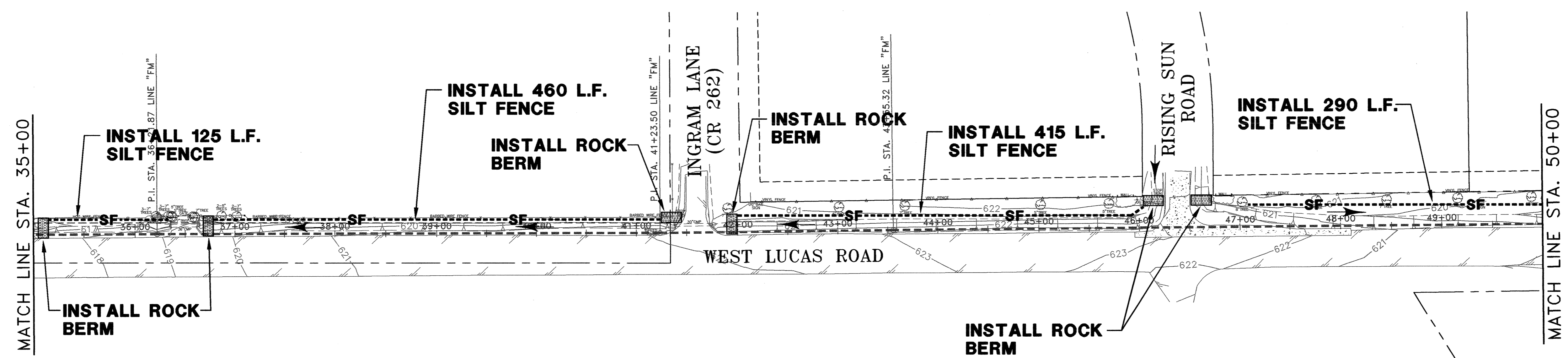
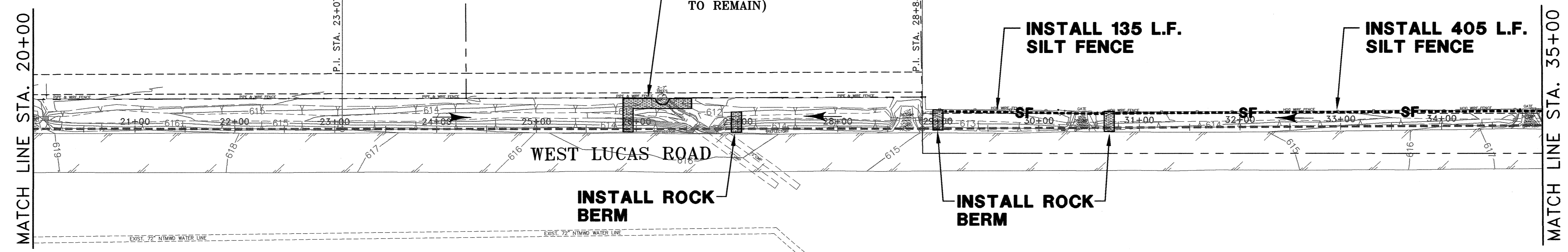
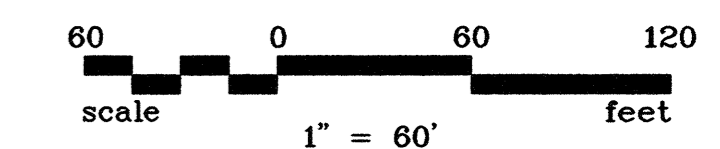
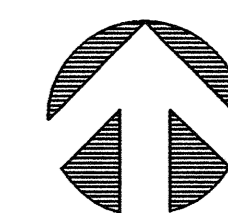


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 Firm Registration No. F-5290



**WASTEWATER SYSTEM IMPROVEMENTS
 WASTEWATER FORCE MAIN AND LIFT STATION
 EROSION CONTROL PLAN
 (STA. 0+00 TO STA. 20+00)
 CITY OF LUCAS**

SHEET NO. C11
 OF SHEETS
 JOB NO. 09-1389



LEGEND:

- SF--- SILT FENCE
- [Hatched Box] ROCK BERM
- ← FLOW DIRECTION
- IEP INLET EROSION PROTECTION

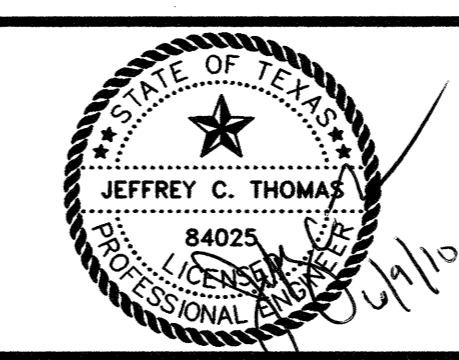
NOTE:
 1. REFER TO NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS (NCTCOG) INLET PROTECTION-DROP, BLOCK AND GRAVEL STANDARD DRAWING NO. 1130 AND STANDARD SPECIFICATION REFERENCE 201.14.

NO.	DATE	REVISION	REVIEWED
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DRAWN: BW2
 DESIGN: JCT
 REVIEWED: MRB
 SCALE: 1" = 60'
 DATE: JUNE 2010
 DWG. NAME: 1389EROCRTL02

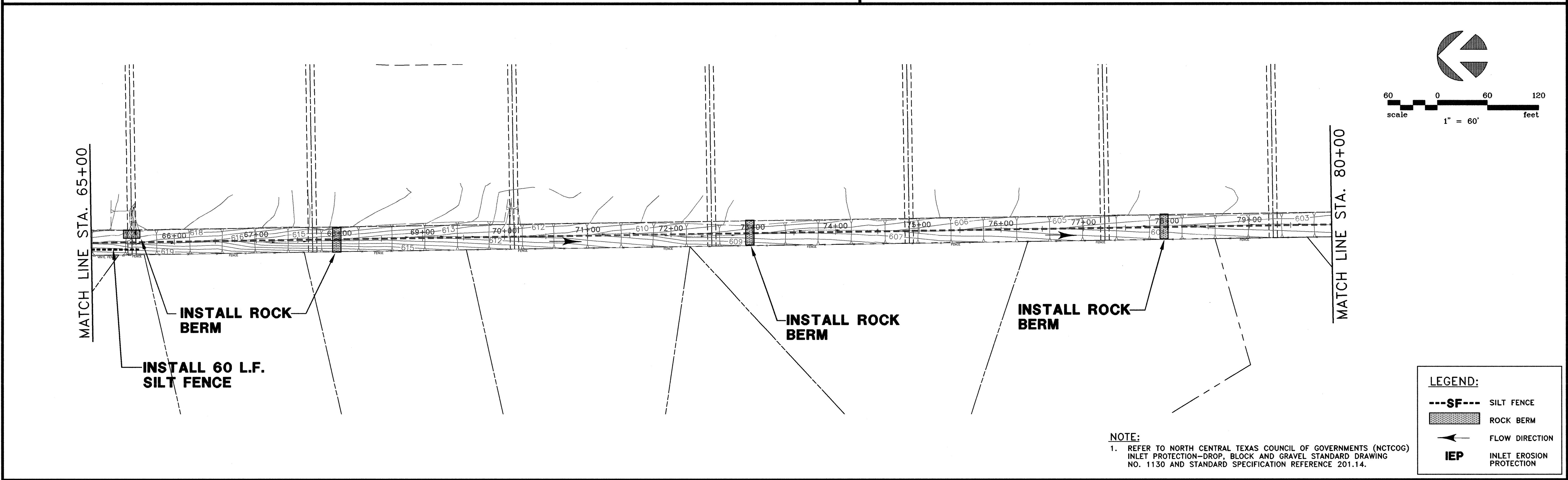
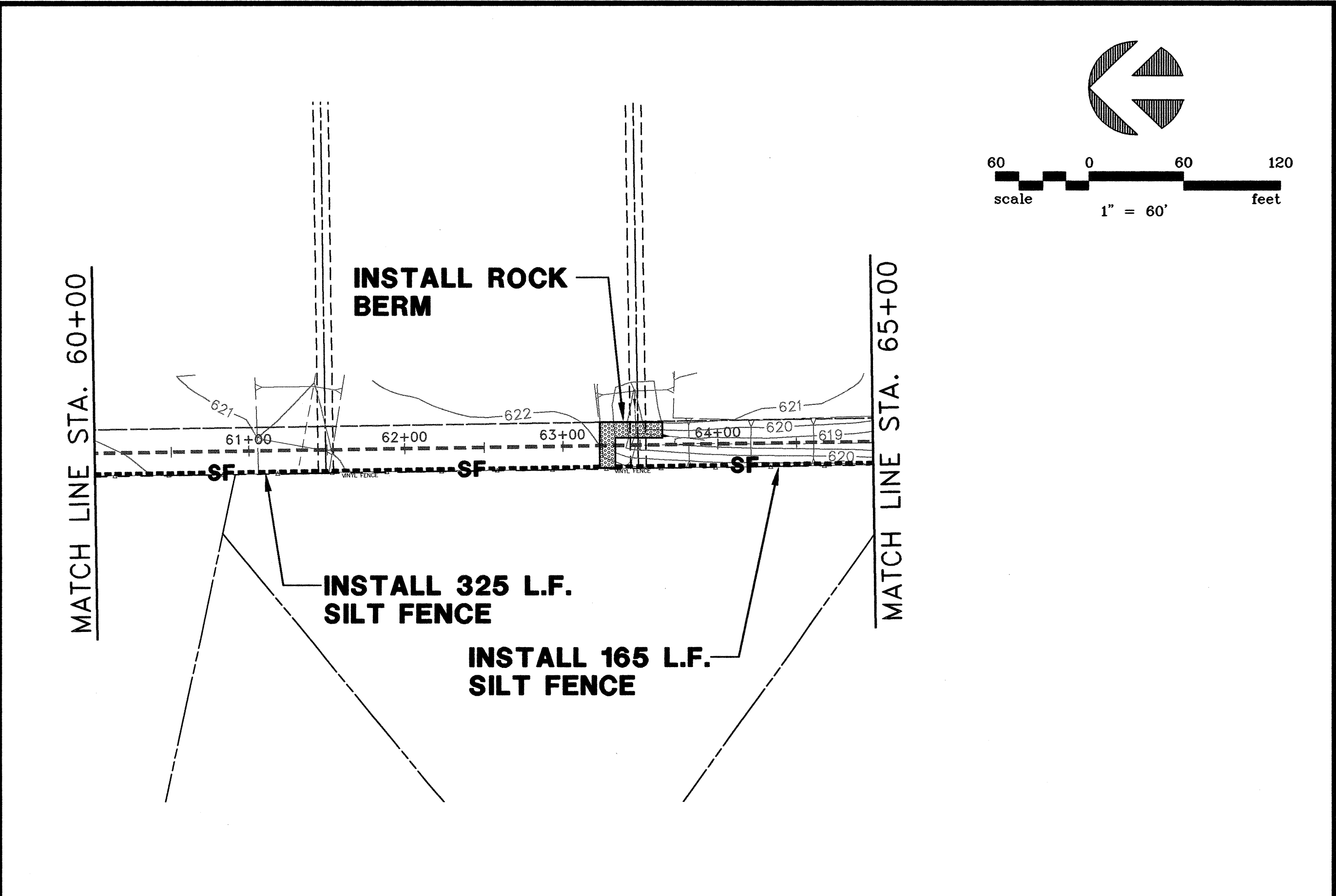
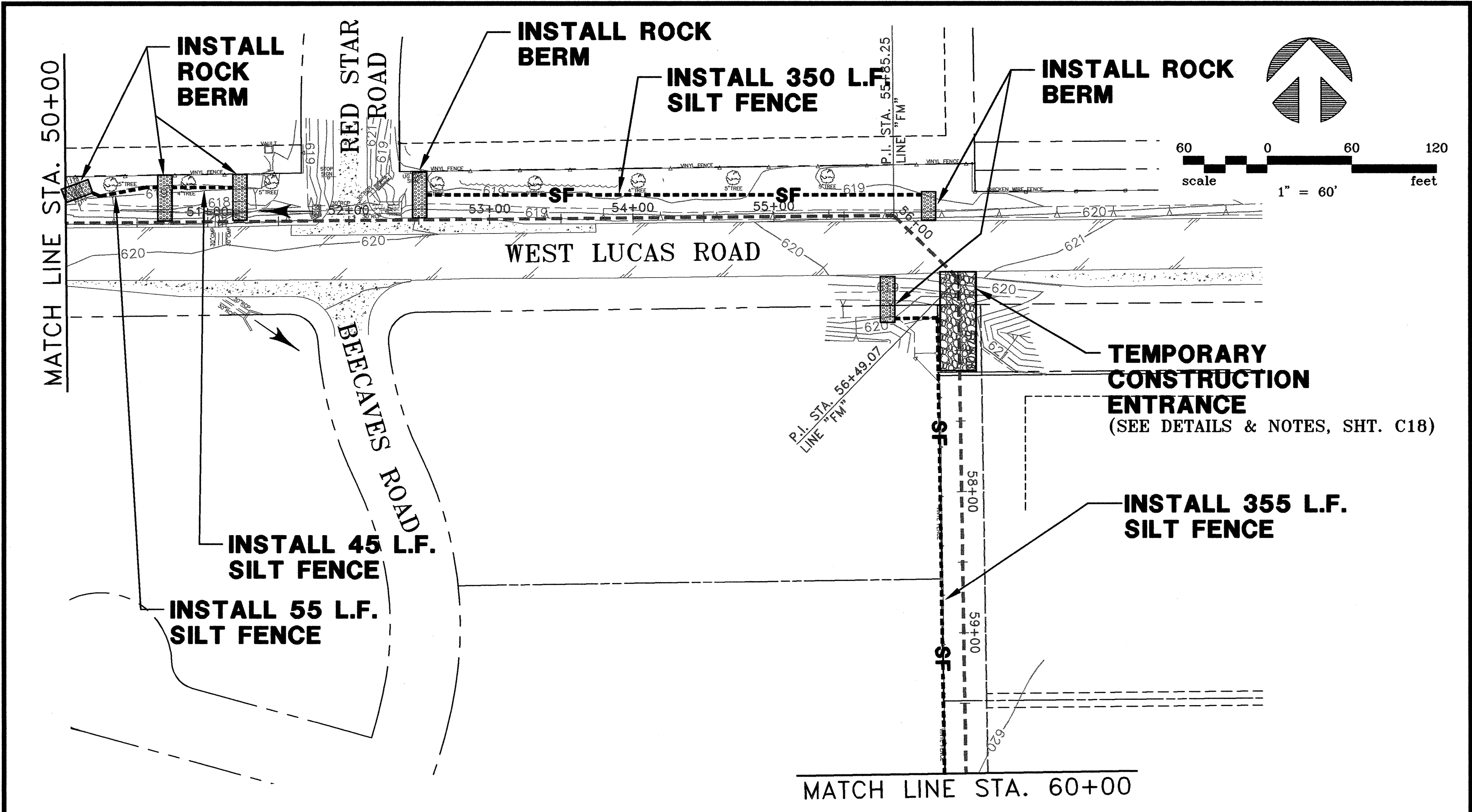


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**WASTEWATER SYSTEM IMPROVEMENTS
 WASTEWATER FORCE MAIN AND LIFT STATION
 EROSION CONTROL PLAN
 (STA. 20+00 TO STA. 50+00)
 CITY OF LUCAS**

SHEET NO. **C12**
 OF SHEETS
 JOB NO. **09-1389**



LEGEND:

- SF--- SILT FENCE
- [Hatched Box] ROCK BERM
- ← FLOW DIRECTION
- IEP INLET EROSION PROTECTION

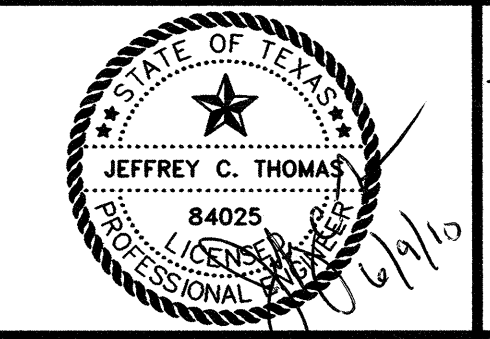
NOTE:
 1. REFER TO NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS (NCTCOG) INLET PROTECTION-DROP BLOCK AND GRAVEL STANDARD DRAWING NO. 1130 AND STANDARD SPECIFICATION REFERENCE 201.14.

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NO.	DATE	REVISION	REVIEWED

DRAWN: BW2
 DESIGN: JCT
 REVIEWED: MRB
 SCALE: 1" = 100'
 DATE: JUNE 2010
 DWG. NAME: 1389ERCTRL03

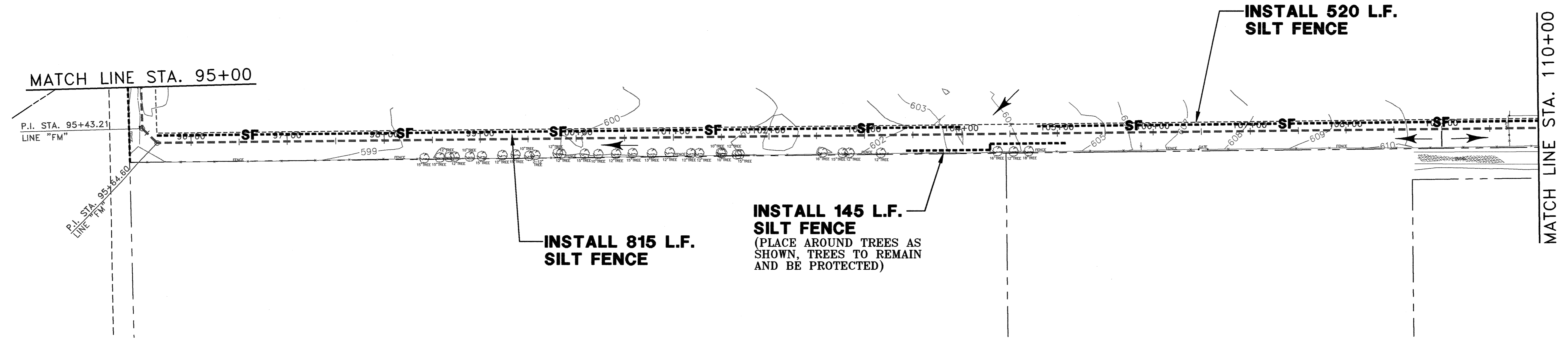
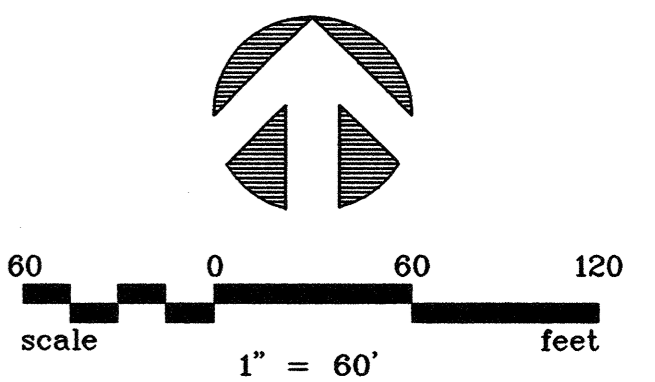
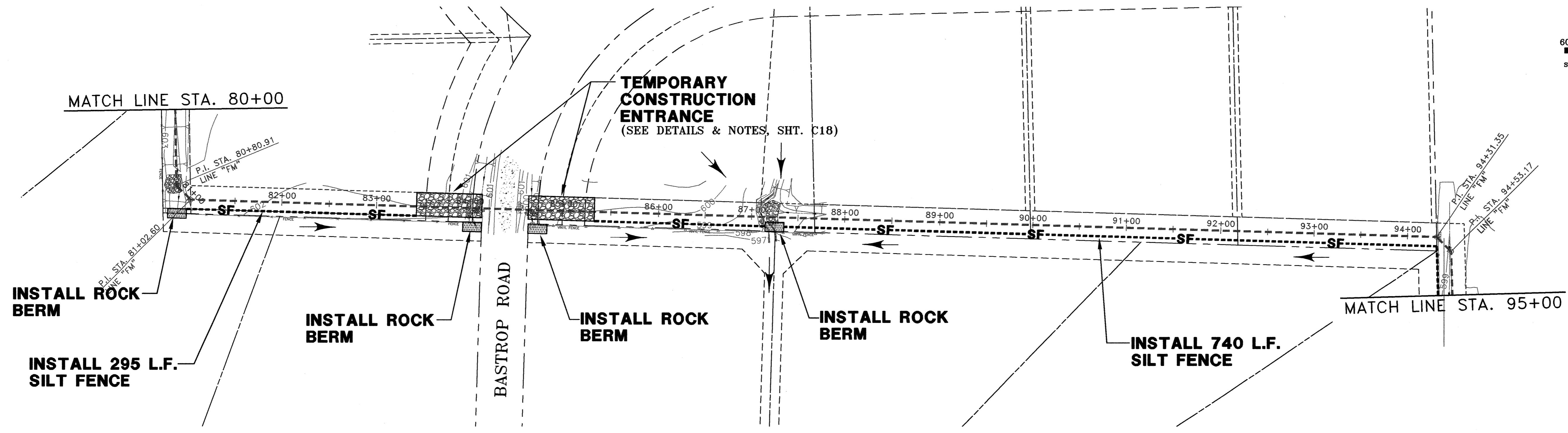
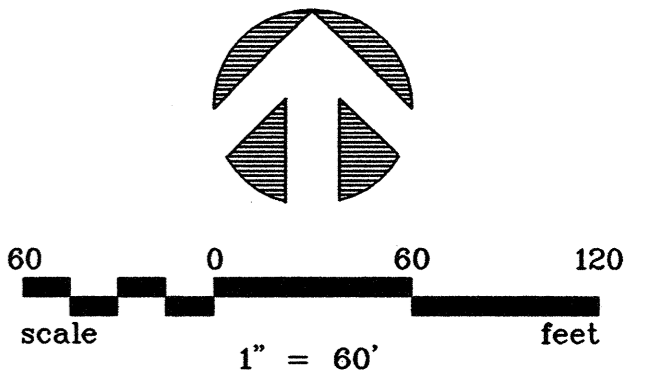


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**WASTEWATER SYSTEM IMPROVEMENTS
 WASTEWATER FORCE MAIN AND LIFT STATION
 EROSION CONTROL PLAN
 (STA. 50+00 TO STA. 80+00)
 CITY OF LUCAS**

SHEET NO. **C13**
 OF SHEETS
 JOB NO. 09-1389



LEGEND:

- SF--- SILT FENCE
- [Hatched Box] ROCK BERM
- ← FLOW DIRECTION
- IEP INLET EROSION PROTECTION

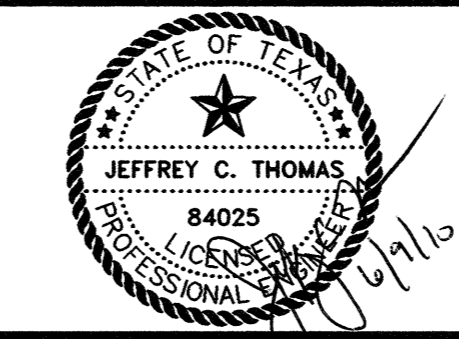
NOTE:
 1. REFER TO NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS (NCTCOG) INLET PROTECTION-DROP, BLOCK AND GRAVEL STANDARD DRAWING NO. 1130 AND STANDARD SPECIFICATION REFERENCE 201.14.

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DRAWN: BW2
 DESIGN: JCT
 REVIEWED: MRB
 SCALE: 1" = 60'
 DATE: JUNE 2010
 DWG. NAME: 1389ER0CTRL04

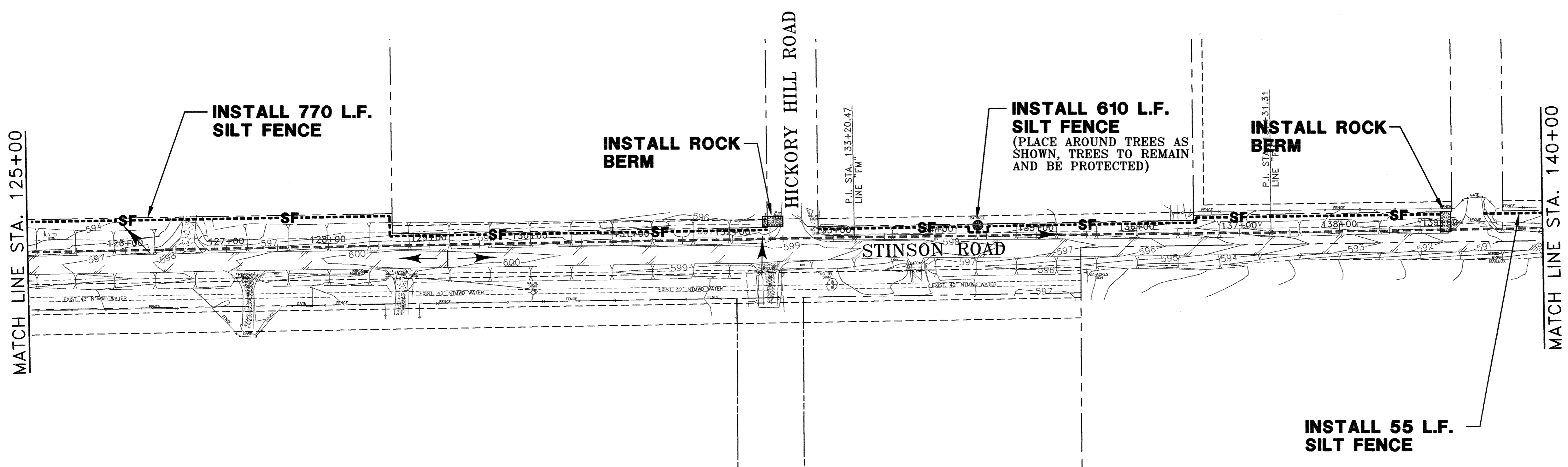
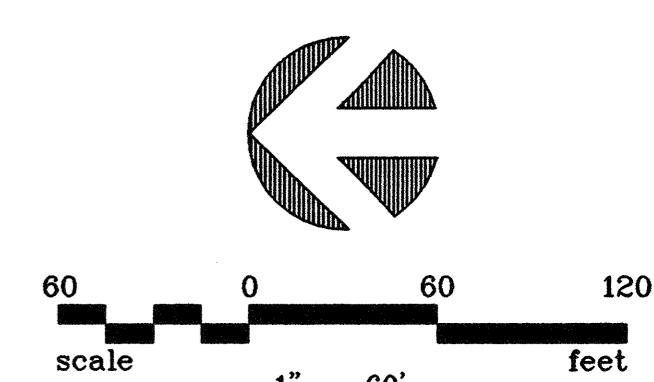
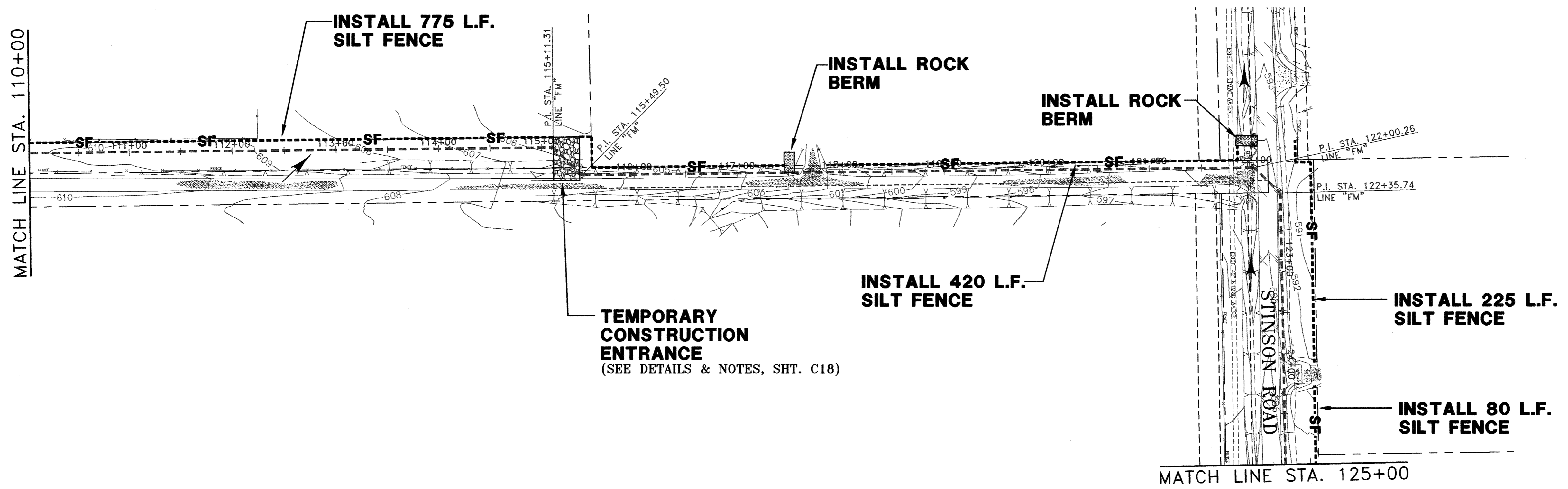
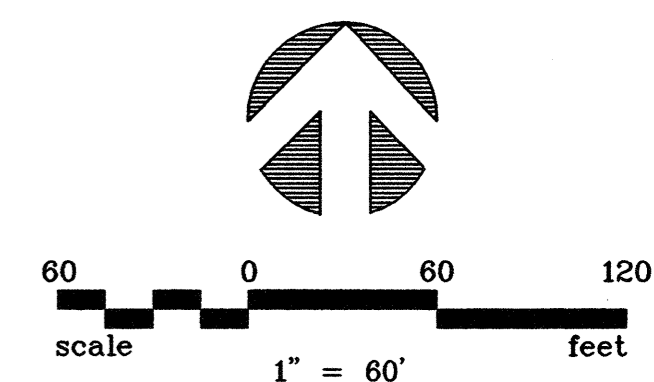


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**WASTEWATER SYSTEM IMPROVEMENTS
 WASTEWATER FORCE MAIN AND LIFT STATION
 EROSION CONTROL PLAN
 (STA. 80+00 TO STA. 110+00)
 CITY OF LUCAS**

SHEET NO. C14
 OF SHEETS
 JOB NO. 09-1389



LEGEND:

---SF---	SILT FENCE
[Hatched Box]	ROCK BERM
←	FLOW DIRECTION
IEP	INLET EROSION PROTECTION

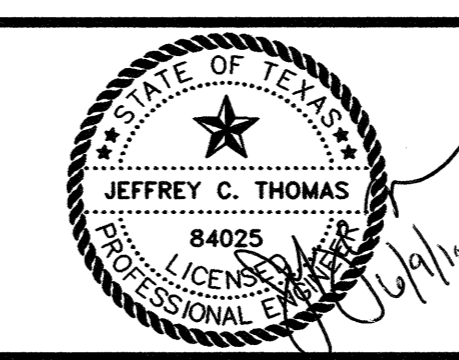
NOTE:
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NO.	DATE	REVISION	REVIEWED

DRAWN: BW2
 DESIGN: JCT
 REVIEWED: MRB
 SCALE: 1" = 60'
 DATE: JUNE 2010
 DWG. NAME: 1389EROCRTL05

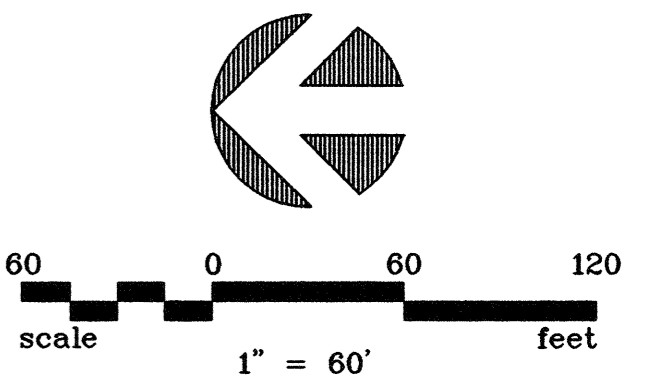
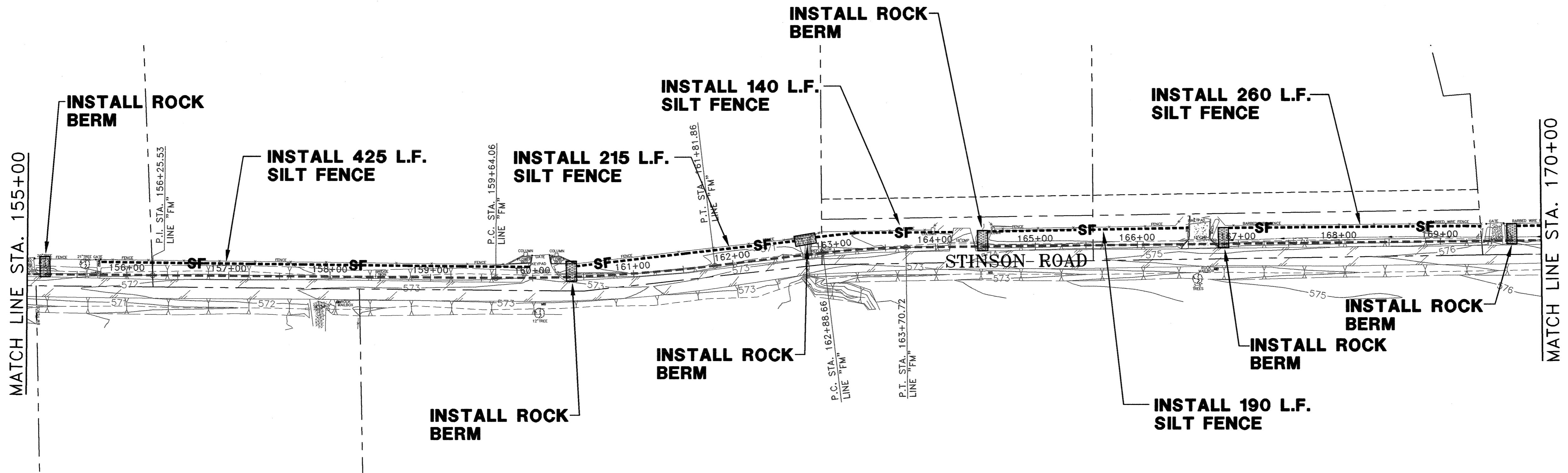
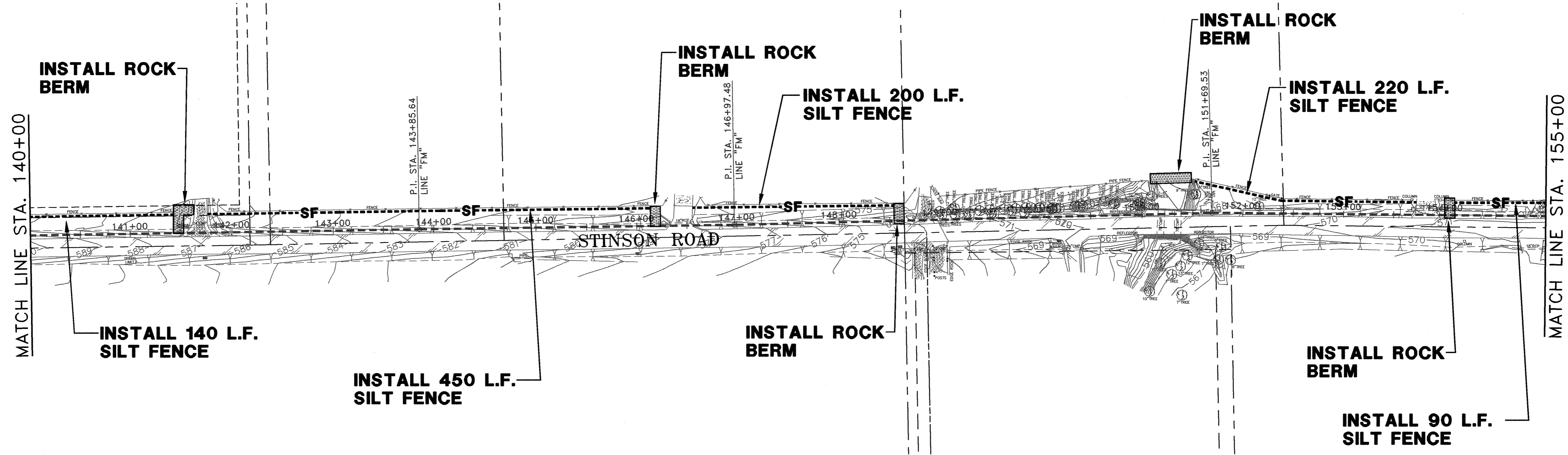
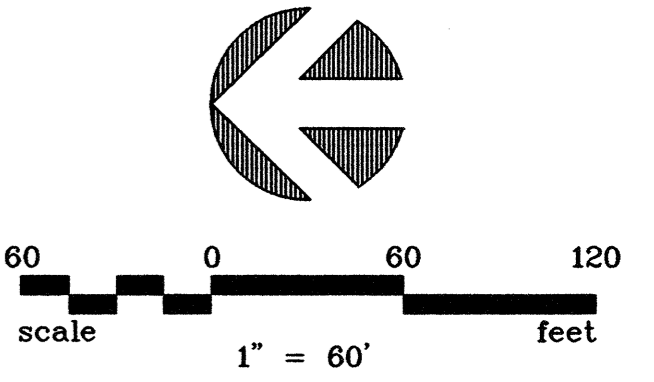


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WASTEWATER SYSTEM IMPROVEMENTS
WASTEWATER FORCE MAIN AND LIFT STATION
EROSION CONTROL PLAN
 (STA. 110+00 TO STA. 140+00)
CITY OF LUCAS

SHEET NO. C15
 OF SHEETS
 JOB NO. 09-1389



LEGEND:

- SF--- SILT FENCE
- [Hatched Box] ROCK BERM
- ← FLOW DIRECTION
- IEP INLET EROSION PROTECTION

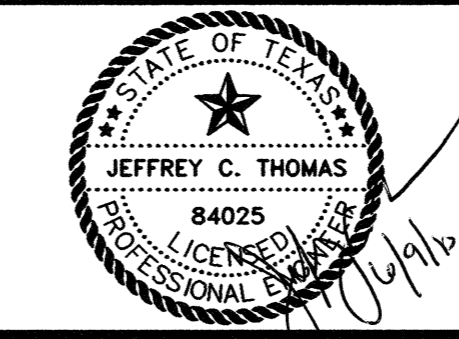
NOTE:
 1. REFER TO NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS (NCTCOG) INLET PROTECTION-DROP BLOCK AND GRAVEL STANDARD DRAWING NO. 1130 AND STANDARD SPECIFICATION REFERENCE 201.14.

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NO.	DATE	REVISION	REVIEWED

DRAWN: BW2
 DESIGN: JCT
 REVIEWED: MRB
 SCALE: 1" = 60'
 DATE: JUNE 2010
 DWG. NAME: 1389EROCRTL06

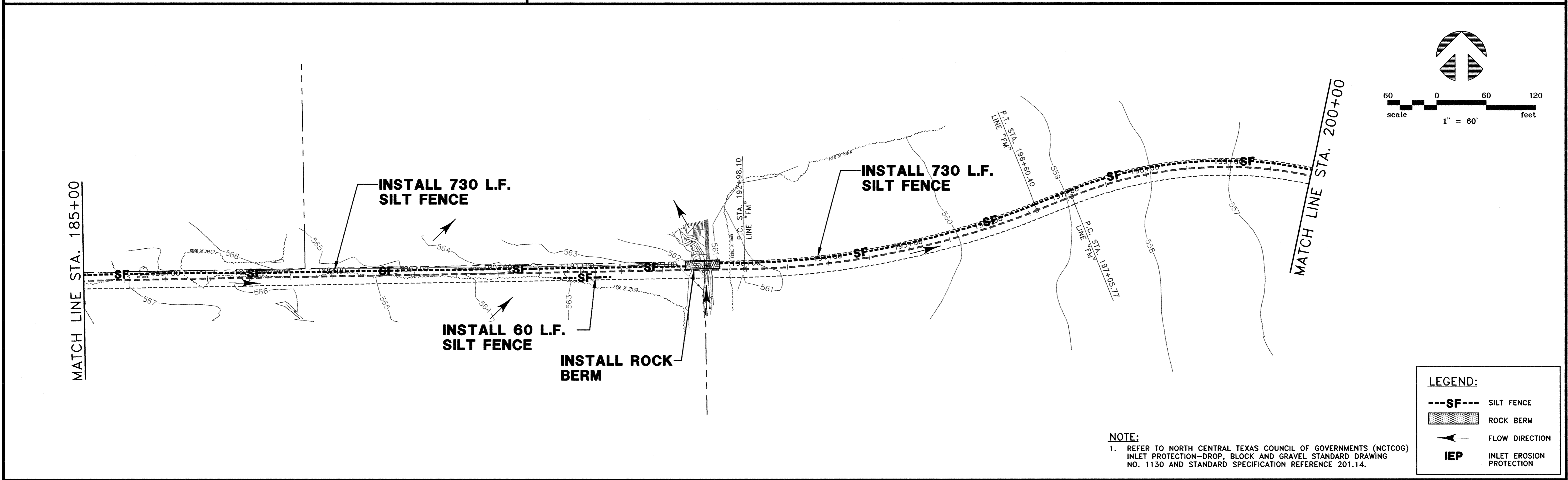
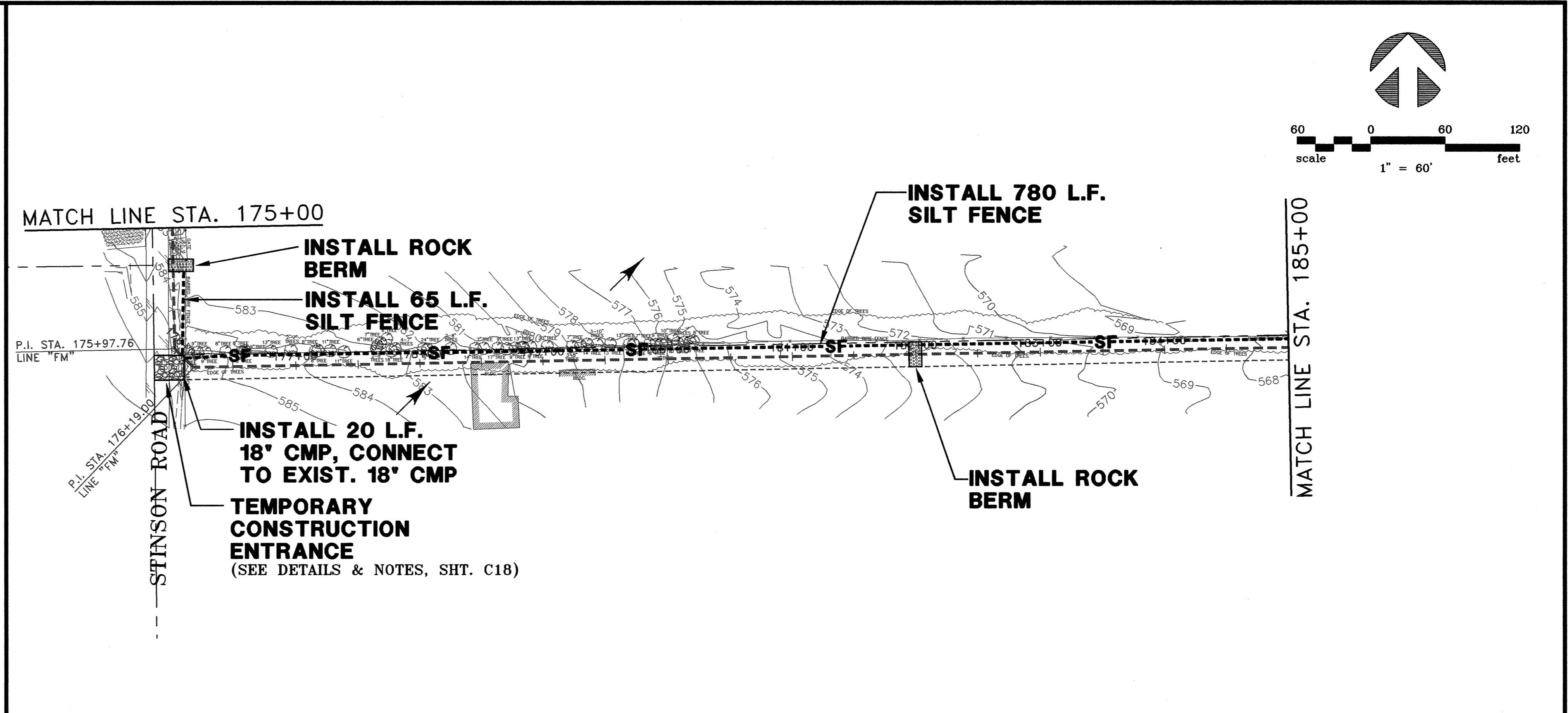
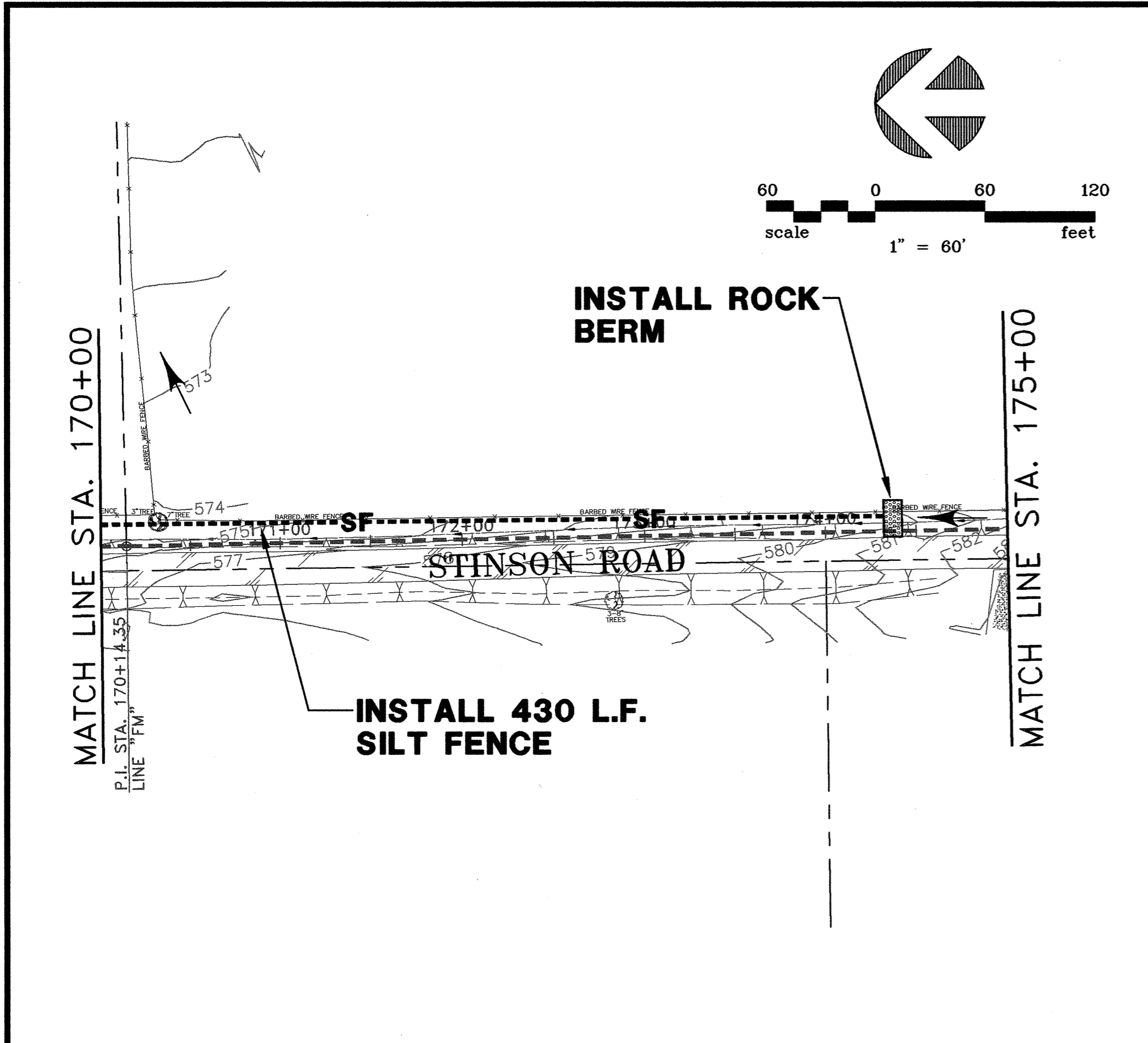


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**WASTEWATER SYSTEM IMPROVEMENTS
 WASTEWATER FORCE MAIN AND LIFT STATION
 EROSION CONTROL PLAN
 (STA. 140+00 TO STA. 170+00)
 CITY OF LUCAS**

SHEET NO. **C16**
 OF SHEETS
 JOB NO. **09-1389**



LEGEND:

- SF--- SILT FENCE
- [Hatched Box] ROCK BERM
- ← FLOW DIRECTION
- IEP INLET EROSION PROTECTION

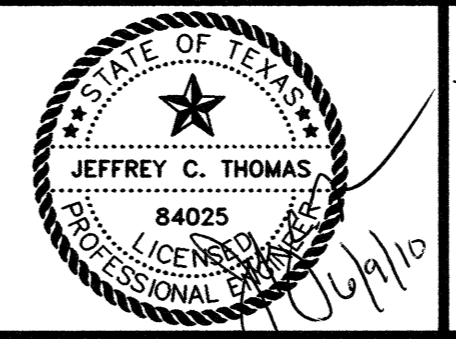
NOTE:
 1. REFER TO NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS (NCTCOG) INLET PROTECTION-DROP BLOCK AND GRAVEL STANDARD DRAWING NO. 1130 AND STANDARD SPECIFICATION REFERENCE 201.14.

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NO.	DATE	REVISION	REVIEWED

DRAWN: BW2
 DESIGN: JCT
 REVIEWED: MRB
 SCALE: 1" = 60'
 DATE: JUNE 2010
 DWG. NAME: 1389EROCRTL07



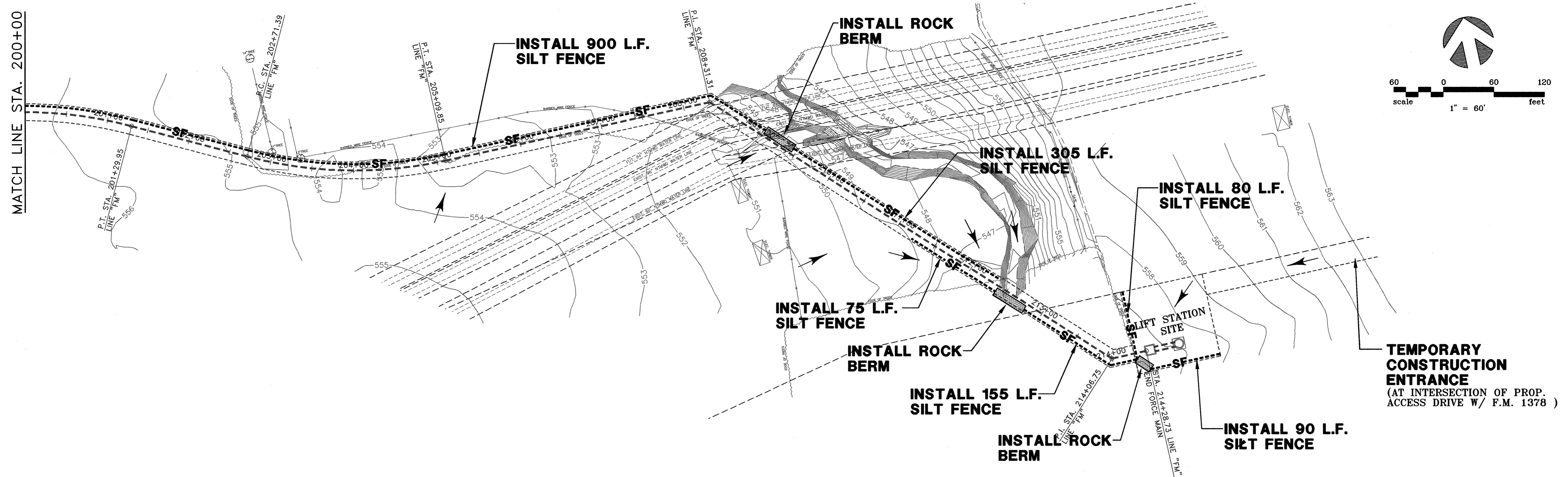
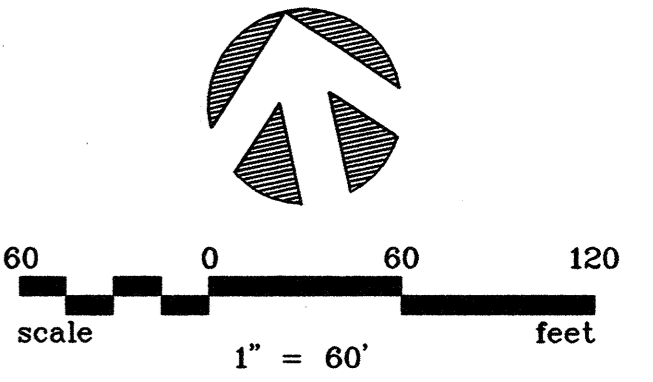
BW2 Engineers, Inc.
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 Garland, Texas 75042
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 Firm Registration No. F-5290



**WASTEWATER SYSTEM IMPROVEMENTS
 WASTEWATER FORCE MAIN AND LIFT STATION
 EROSION CONTROL PLAN
 (STA. 170+00 TO STA. 200+00)
 CITY OF LUCAS**

SHEET NO. **C17**
 OF SHEETS
 JOB NO. **09-1389**

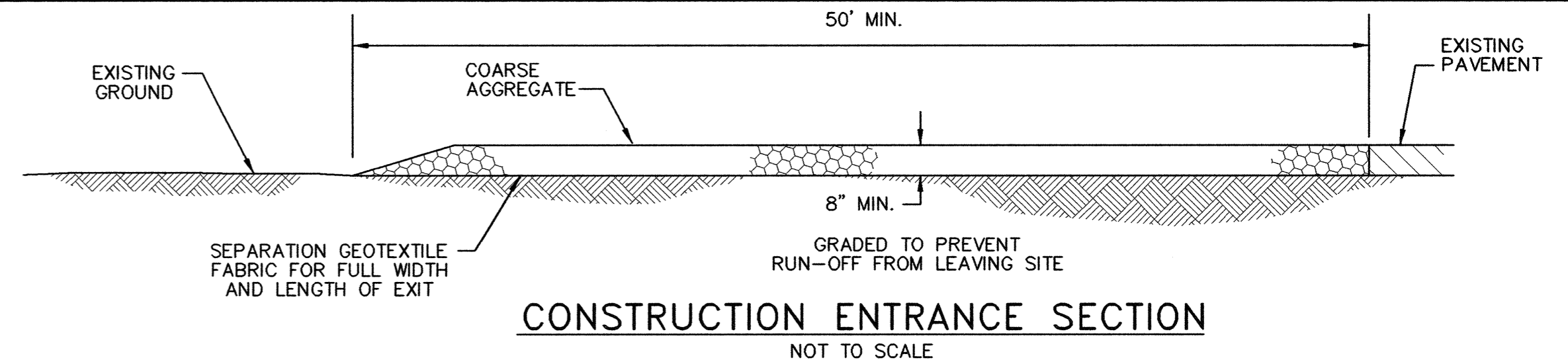
MATCH LINE STA. 200+00



EROSION CONTROL NOTES:

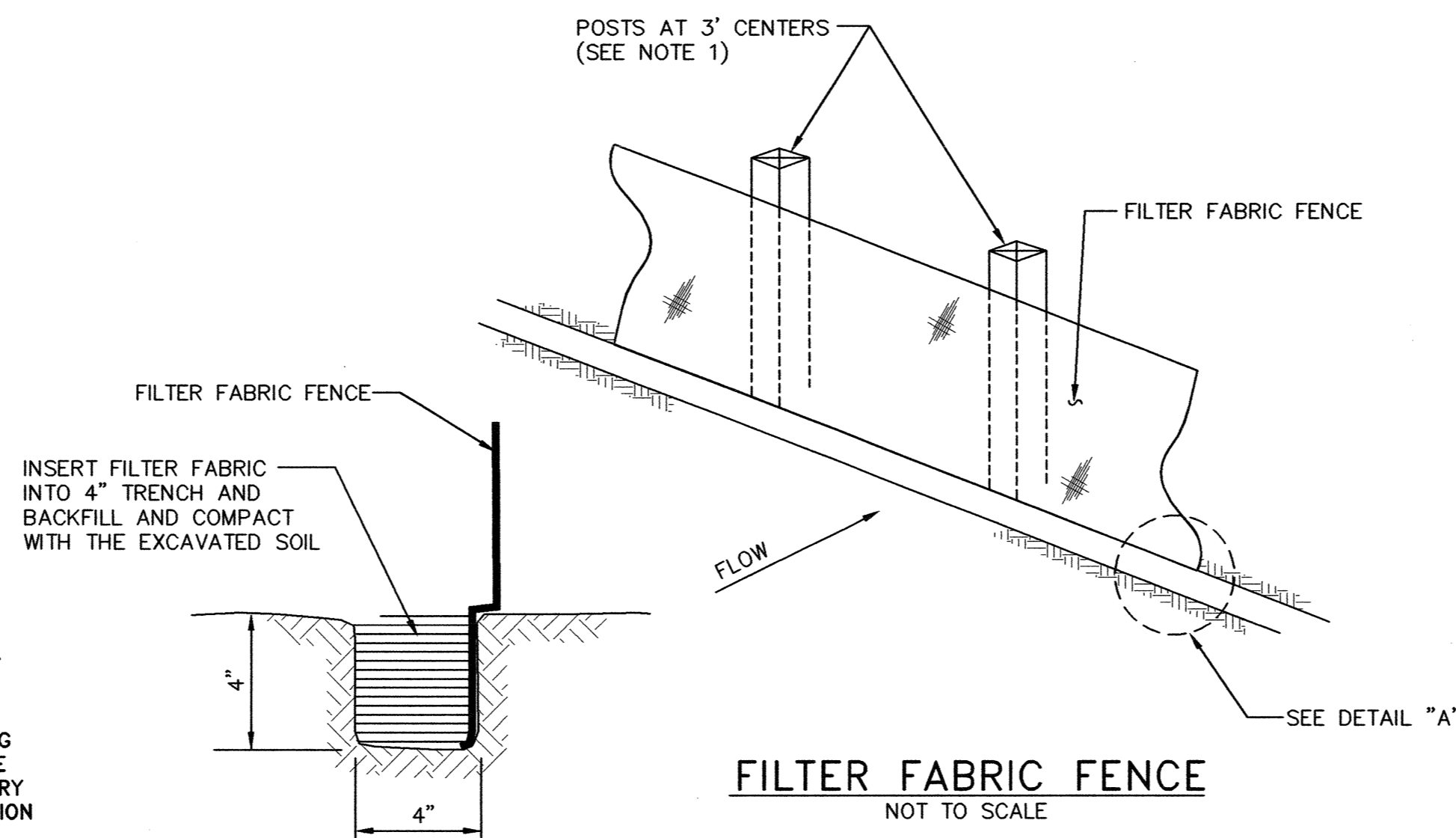
- EROSION CONTROL DEVICES AS SHOWN ON THE EROSION CONTROL PLAN FOR THE PROJECT SHALL BE INSTALLED PRIOR TO THE START OF LAND DISTURBING ACTIVITIES ON THE PROJECT.
- ALL EROSION CONTROL DEVICES ARE TO BE INSTALLED IN ACCORDANCE WITH THE APPROVED PLANS AND SPECIFICATIONS FOR THE PROJECT. CHANGES ARE TO BE APPROVED BEFORE CONSTRUCTION BY THE DESIGN ENGINEER AND CITY OF LUCAS.
- IF THE EROSION CONTROL PLANS AS APPROVED CANNOT CONTROL EROSION AND OFF-SITE SEDIMENTATION FROM THE PROJECT, THE EROSION CONTROL PLAN WILL BE REVISED AND/OR ADDITIONAL EROSION CONTROL DEVICES WILL BE REQUIRED ON SITE (NO SEPARATE PAY).
- IF OFF-SITE SOIL BORROW OR SPOIL SITES ARE USED IN CONJUNCTION WITH THIS PROJECT, THIS INFORMATION SHALL BE DISCLOSED AND SHOWN ON THE EROSION CONTROL PLAN. STAGING, BORROW, AND SPOIL AREAS (INCLUDING THOSE LOCATED OFF-SITE) ARE CONSIDERED A PART OF THE PROJECT SITE AND THEREFORE SHALL COMPLY WITH THE CITY OF LUCAS'S EROSION CONTROL REQUIREMENTS. PERIMETER CONTROLS WILL BE PROVIDED BY THE CONTRACTOR FOR THESE AREAS. THEY SHALL BE STABILIZED WITH PERMANENT GROUND COVER PRIOR TO FINAL APPROVAL OF THE PROJECT.
- ALL EROSION CONTROL DEVICES SHALL BE INSPECTED WEEKLY BY THE CONTRACTOR AND AFTER ALL MAJOR RAIN EVENTS. ANY DEVICES THAT ARE DAMAGED OR DISPLACED WILL BE RESTORED (NO SEPARATE PAY).
- ALL NON-IMPERVIOUS AREAS AFTER CONSTRUCTION SHALL BE COVERED WITH SOD OR LANDSCAPED IN ACCORDANCE WITH THE LANDSCAPE DRAWINGS. ALL OTHER REMAINING AREAS SHALL BE HYDROMULCHED OR COVERED WITH CURLEX BLANKET (WHERE SHOWN) AND MAINTAINED UNTIL ESTABLISHED.
- TEMPORARY STONE STABILIZED CONSTRUCTION ENTRANCE SHALL HAVE THE FOLLOWING MINIMUM DIMENSIONS (UNLESS OTHERWISE SHOWN): 25' WIDE X 50' LONG X 8" DEEP. (3"-5" COURSE AGGREGATE). PLACE FILTER FABRIC UNDER STONE PER NCTCOG ITEM 2.23.3.
- THE STABILIZED CONSTRUCTION ENTRANCE IS TO BE USED AS A VEHICLE WASH DOWN AREA FOR DEBRIS AND SOIL REMOVAL PRIOR TO EXITING THE SITE. THIS STABILIZED ENTRANCE SHALL BE TOP DRESSED WITH ADDITIONAL STONE AS NECESSARY. LOCATION OF STABILIZED ENTRANCE MAY BE MODIFIED IF APPROVED BY CITY OF LUCAS AND THE DESIGN ENGINEER.
- WHERE CONSTRUCTION ENTRANCES CROSS EXISTING BAR DITCHES, THE CONTRACTOR SHALL PLACE AND COMPACT A SUFFICIENT AMOUNT OF FILL (IN ADDITION TO THE COARSE AGGREGATE) TO CREATE A SUITABLE GRADE FOR CONSTRUCTION VEHICLES ACCESS. EXCEPT AS NOTED IN THE PLANS, A MINIMUM 18" PIPE CULVERT WILL BE PLACED UNDER EACH CONSTRUCTION ENTRANCE ALONG THE FLOW LINE OF THE BAR DITCH TO MAINTAIN EXISTING DRAINAGE PATTERNS. THE TEMPORARY CULVERT PIPE SHALL BE OF ADEQUATE STRUCTURAL STRENGTH TO HANDLE CONSTRUCTION TRAFFIC LOADS WITHOUT CRUSHING OR SHIFTING. THE CONTRACTOR SHALL REMOVE ALL TEMPORARY CONSTRUCTION ENTRANCES (INCLUDING ALL APPURTENANCES) AND RESTORE THE AFFECTED AREAS TO PRE-CONSTRUCTION CONDITION OR BETTER AFTER THE PROPOSED WORK IS COMPLETE. THERE WILL BE NO SEPARATE PAY FOR THE INSTALLATION, REPAIR AND REMOVAL OF THE CONSTRUCTION ENTRANCES AND APPURTENANCES.
- THE CONTRACTOR SHALL BE RESPONSIBLE, AS THE ENTITY EXERCISING OPERATIONAL CONTROL, FOR ALL PERMITTING AS REQUIRED BY THE EPA/TCEQ. THIS INCLUDES, BUT IS NOT LIMITED TO, MEETING ALL REQUIREMENTS OF TPDES GENERAL PERMIT TXR150000 AND PAYMENT OF ALL ASSOCIATED FEES.

- IT SHOULD BE NOTED THAT THE AREA OF IMPACT ON THIS PROJECT WILL REQUIRE A SMALL CONSTRUCTION PERMIT THROUGH TCEQ.
- IT IS VERY IMPORTANT THAT MUD AND OTHER DEBRIS BE KEPT OFF ALL ROADS. CONTRACTOR SHALL IMMEDIATELY REMOVE ANY MUD AND DEBRIS DEPOSITED ON ROADS.
- CONTRACTOR WILL REPLACE ANY EROSION CONTROL DEVICES THAT ARE DAMAGED AND/OR DISPLACED DURING CONSTRUCTION (NO SEPARATE PAY).



CONSTRUCTION ENTRANCE NOTES:

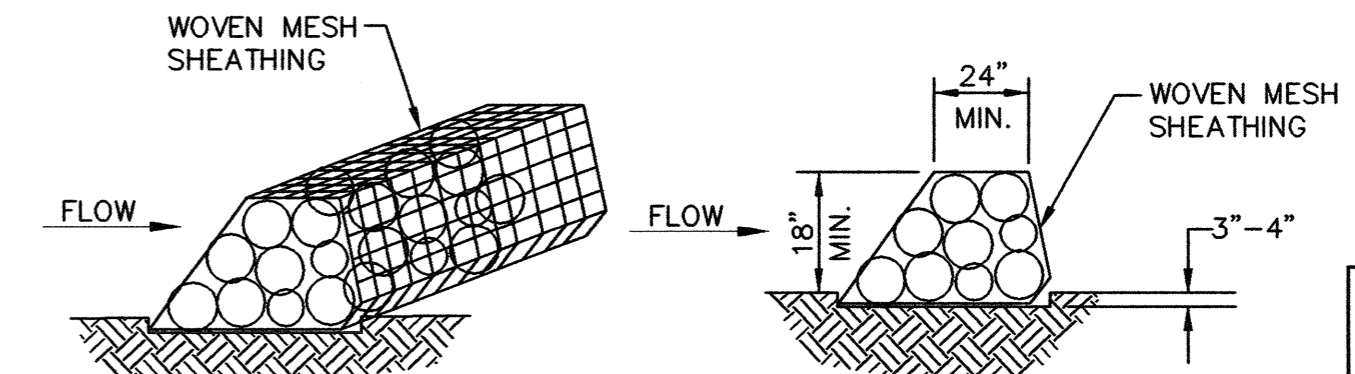
- LENGTH SHALL BE AS SHOWN ON THE CONSTRUCTION DRAWINGS, BUT NOT LESS THAN 50 FEET, UNLESS OTHERWISE SHOWN.
- THICKNESS SHALL NOT BE LESS THAN 8 INCHES.
- WIDTH SHALL NOT BE LESS THAN 25 FEET, UNLESS OTHERWISE SHOWN.
- STABILIZATION FOR OTHER AREAS SHALL HAVE THE SAME AGGREGATE THICKNESS AND WIDTH REQUIREMENTS AS THE STABILIZED CONSTRUCTION ENTRANCE, UNLESS OTHERWISE SHOWN ON THE CONSTRUCTION DRAWINGS.
- STABILIZED CONSTRUCTION ENTRANCES ARE REQUIRED FOR ANY STAGING, BORROW, AND SPOIL AREAS.



DETAIL "A"
NOT TO SCALE

NOTES:

- IF FACTORY PREASSEMBLED FENCE WITH SUPPORT NETTING IS USED, SPACING OF POSTS MAY INCREASE TO 8' MAXIMUM.
- FILTER FABRIC SHALL BE AS PER ASTM D4833.
- WHEN TWO SECTIONS OF FILTER FABRIC ADJOIN EACH OTHER, PROVIDE 6" OF OVERLAP AT THE POST AND FOLD.



ROCK BERM DETAIL
NOT TO SCALE

LEGEND:

- SF--- SILT FENCE
- ROCK BERM
- ← FLOW DIRECTION
- IEP INLET EROSION PROTECTION

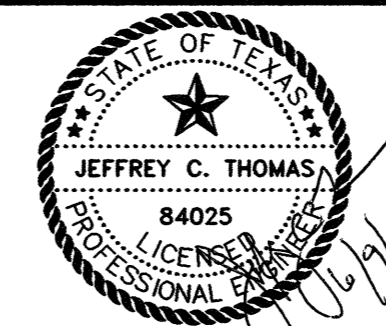
- NOTE:**
- REFER TO NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS (NCTCOG) INLET PROTECTION-DROP, BLOCK AND GRAVEL STANDARD DRAWING NO. 1130 AND STANDARD SPECIFICATION REFERENCE 201.14.

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NO.	DATE	REVISION	REVIEWED

DRAWN: BW2
 DESIGN: JCT
 REVIEWED: MRB
 SCALE: 1" = 60'
 DATE: JUNE 2010
 DWG. NAME: 1389EROCRTL08

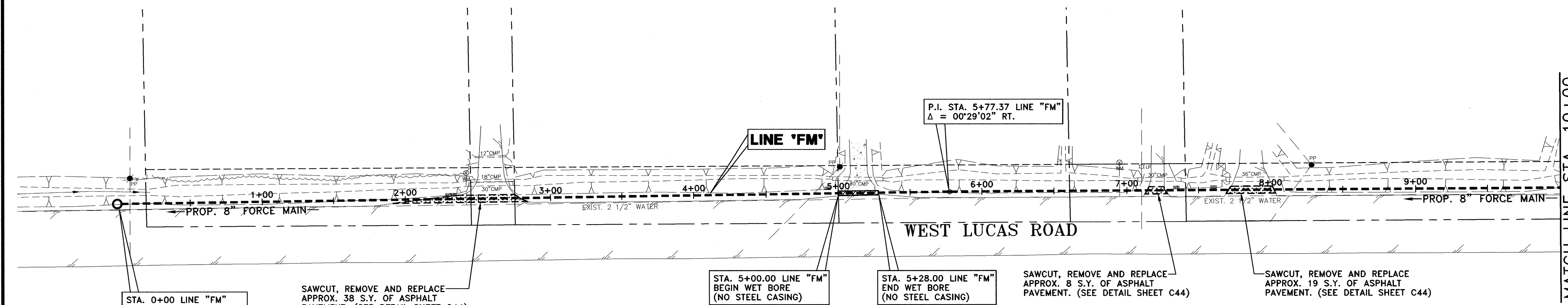
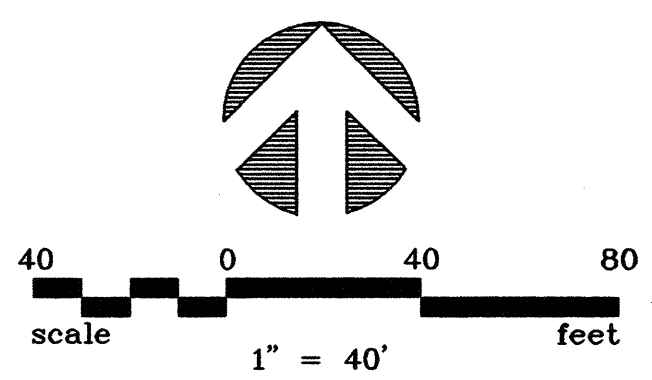


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 Firm Registration No. F-5290



**WASTEWATER SYSTEM IMPROVEMENTS
 WASTEWATER FORCE MAIN AND LIFT STATION
 EROSION CONTROL PLAN
 (STA. 200+00 TO STA. 214+41.66)
 CITY OF LUCAS**

SHEET NO. **C18**
 OF SHEETS
 JOB NO. **09-1389**

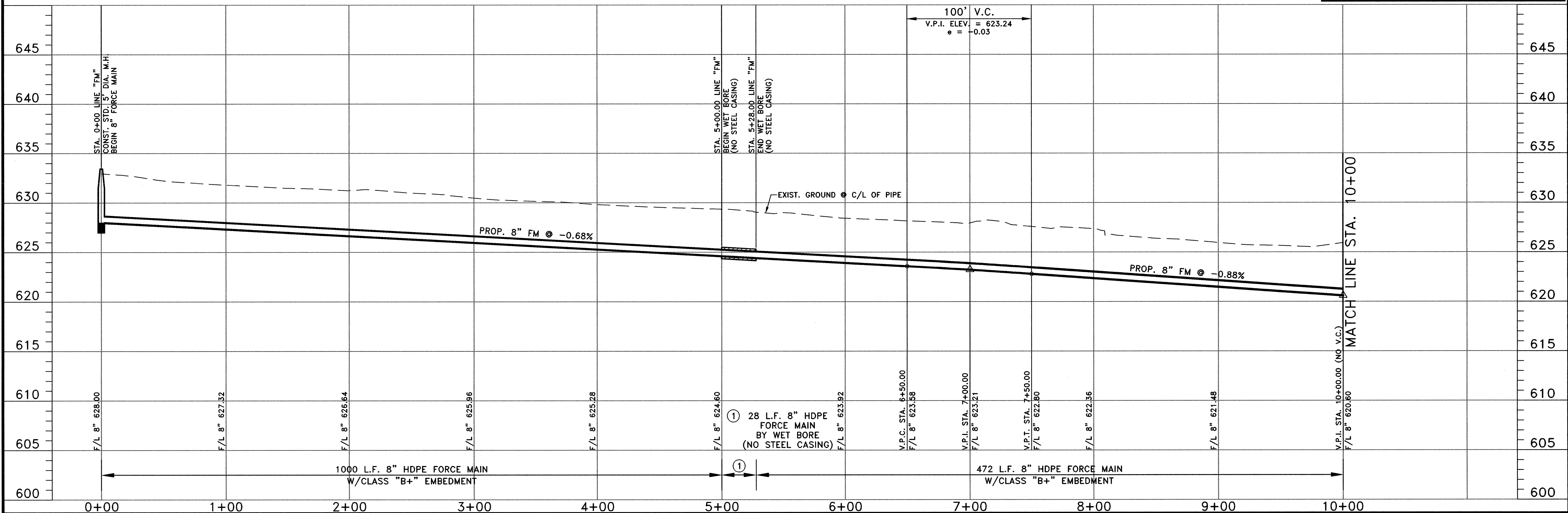


!! CAUTION !!

THERE ARE EXISTING AND/OR PROPOSED UTILITIES IN PROJECT AREA. UTILITY INFORMATION SHOWN ON PLANS REPRESENTS APPROXIMATE LOCATIONS OF EXISTING UTILITIES AND IS NOT NECESSARILY ALL-INCLUSIVE. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING EXACT LOCATIONS OF ALL EXISTING UTILITIES AND SHALL BE REQUIRED TO PROTECT UTILITIES TO AVOID DAMAGE.

PRIOR TO ANY EXCAVATION, CONTRACTOR SHALL CONTACT DIG-TESS, TEXAS ONE CALL, LONE STAR NOTIFICATION AND OTHERS AS REQUIRED TO LOCATE EXISTING UTILITIES.

CONTRACTOR SHALL ALSO CONTACT APPROPRIATE CITY UTILITY DEPARTMENT FOR FIELD LOCATES OF MUNICIPAL INFRASTRUCTURE 48 HOURS PRIOR TO CONSTRUCTION.

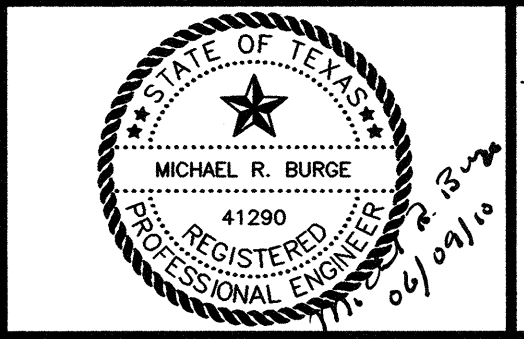


NO.	DATE	REVISION	REVIEWED
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DRAWN: BW2
 DESIGN: MRB
 REVIEWED: JFW
 SCALE: (H)1"=40', (V)1"=5'
 DATE: JUNE 2010
 DWG. NAME: 1389FMPP01



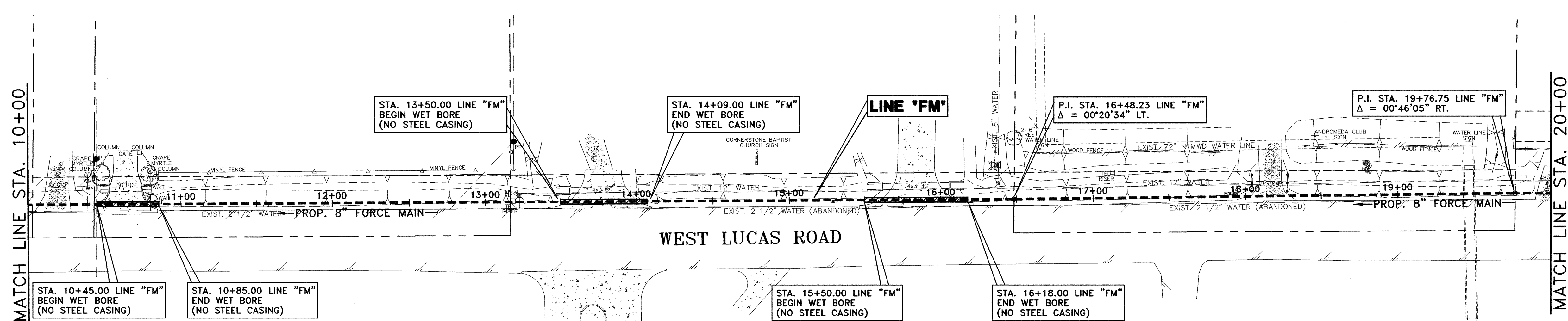
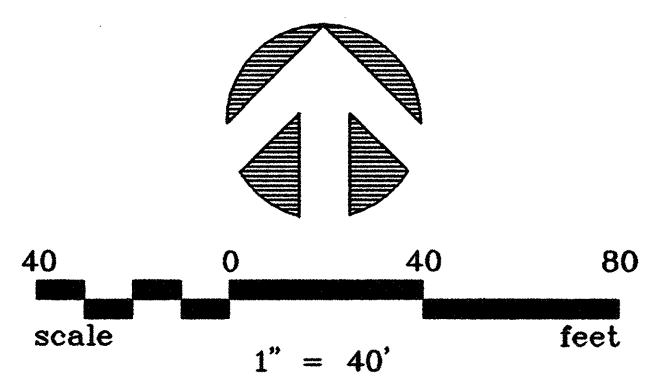
BW2 Engineers, Inc.
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 Suite 500, L.B. 27
 Garland, Texas 75042
 (972) 864-8200 (T) (972) 864-8220 (F)
 Firm Registration No. F-5290



**WASTEWATER SYSTEM IMPROVEMENTS
 WASTEWATER FORCE MAIN AND LIFT STATION
 FORCE MAIN - PLAN AND PROFILE
 (STA. 0+00 TO STA. 10+00)**

CITY OF LUCAS

SHEET NO. C19
 OF SHEETS
 JOB NO. 09-1389

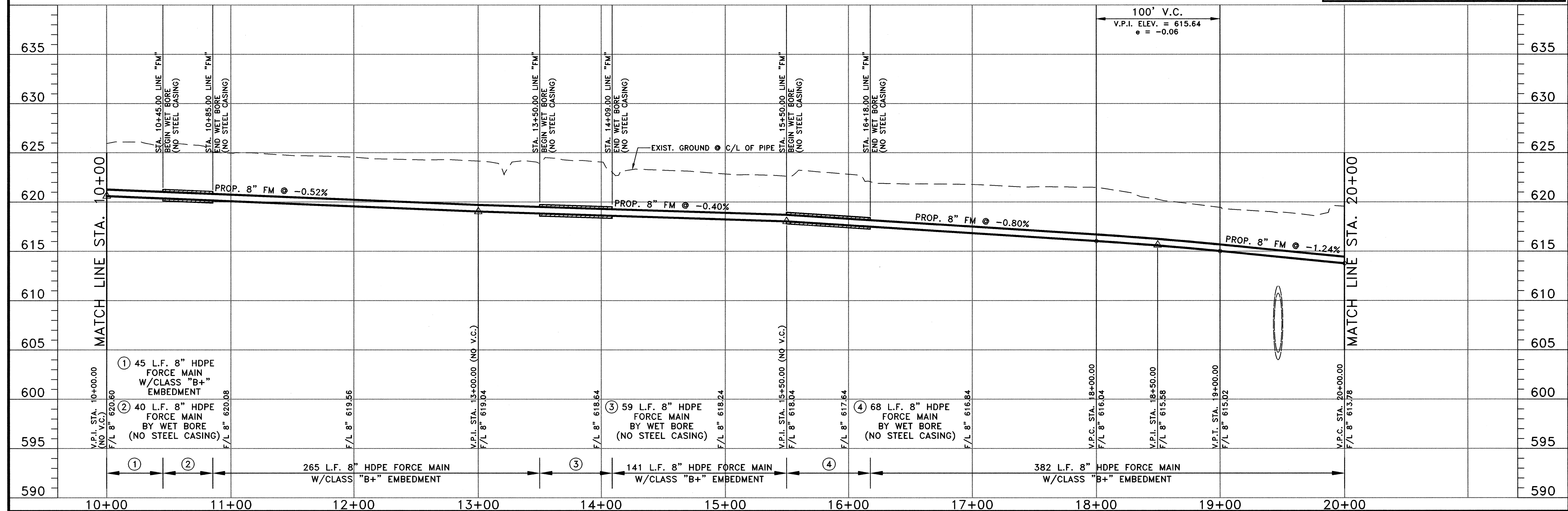


!! CAUTION !!

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CONTRACTOR SHALL ALSO CONTACT APPROPRIATE CITY UTILITY DEPARTMENT FOR FIELD LOCATES OF MUNICIPAL INFRASTRUCTURE 48 HOURS PRIOR TO CONSTRUCTION.

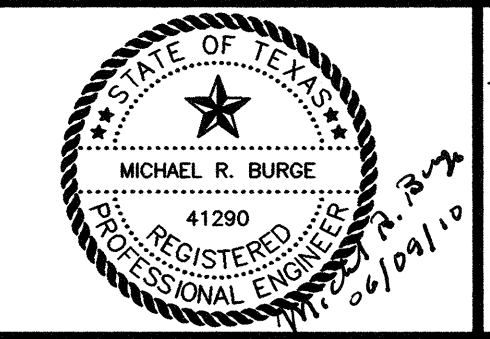


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DRAWN: BW2
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 SCALE: (H)1"=40', (V)1"=5'
 DATE: JUNE 2010
 DWG. NAME: 1389FMPP02

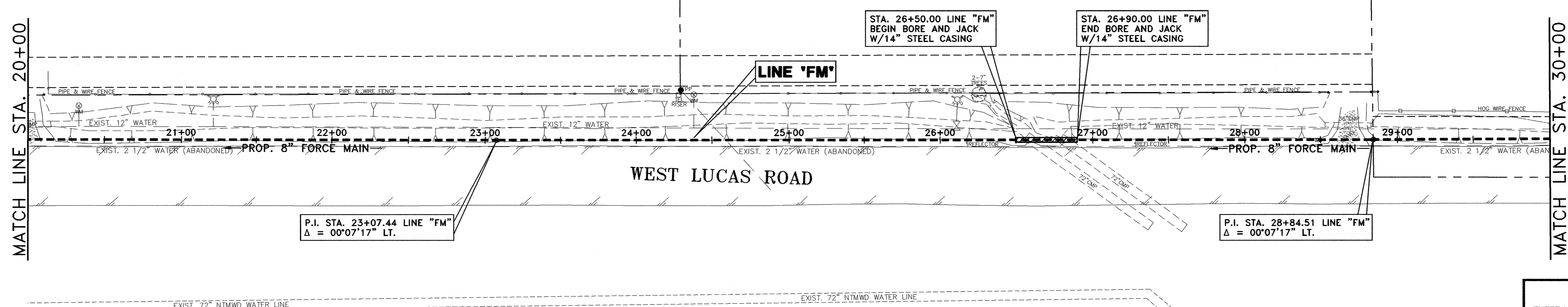
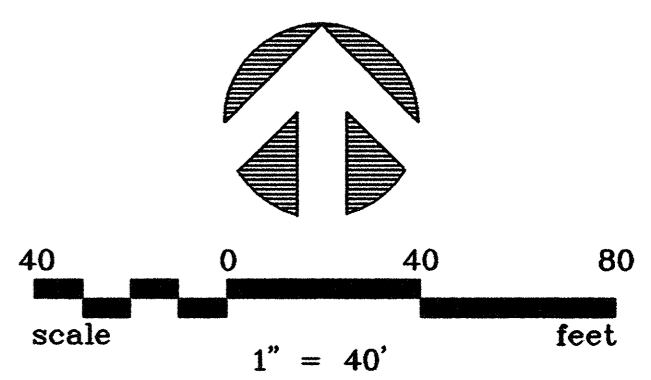


BW2 Engineers, Inc.
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WASTEWATER SYSTEM IMPROVEMENTS
WASTEWATER FORCE MAIN AND LIFT STATION
FORCE MAIN - PLAN AND PROFILE
 (STA. 10+00 TO STA. 20+00)
CITY OF LUCAS

SHEET NO. C20
 OF SHEETS
 JOB NO. 09-1389

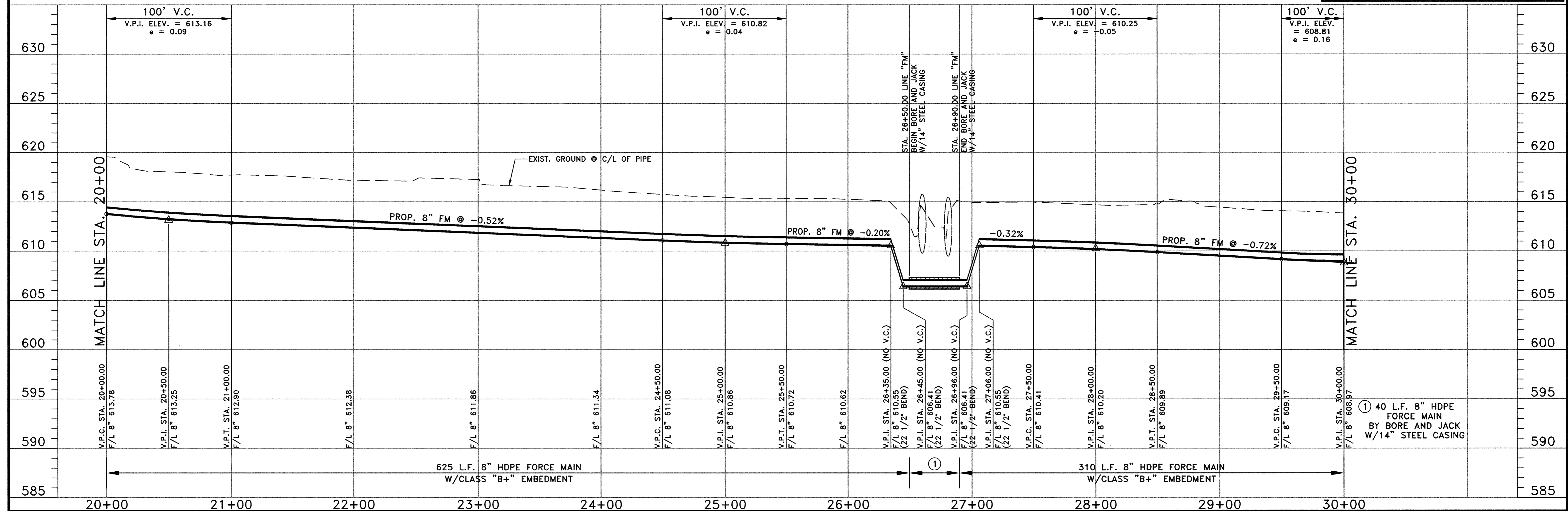


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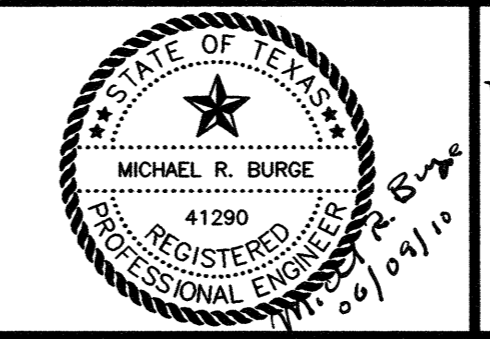


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 DATE: JUNE 2010
 DWG. NAME: 1389FMPP03

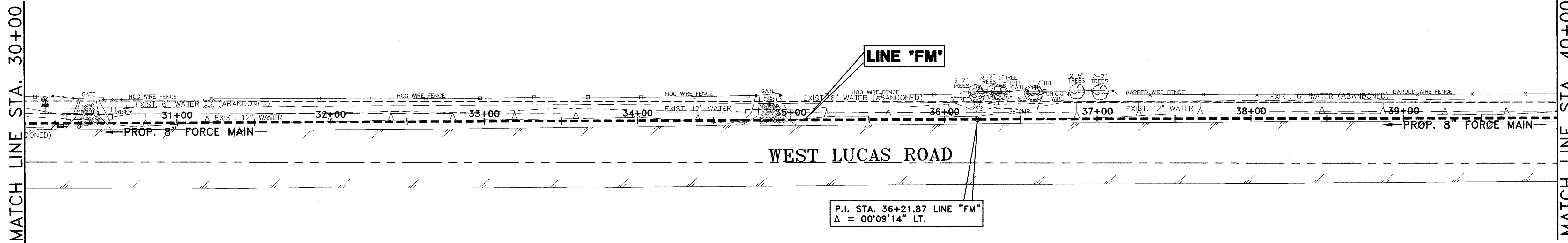
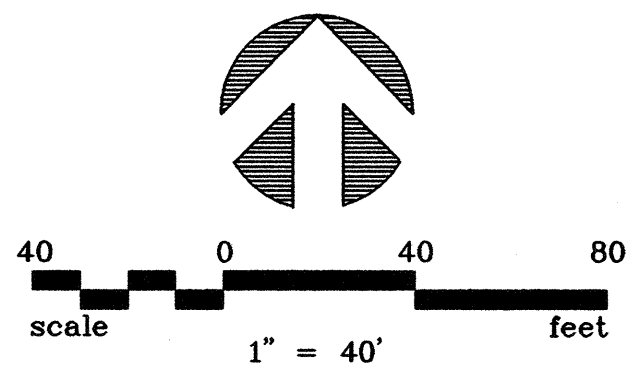


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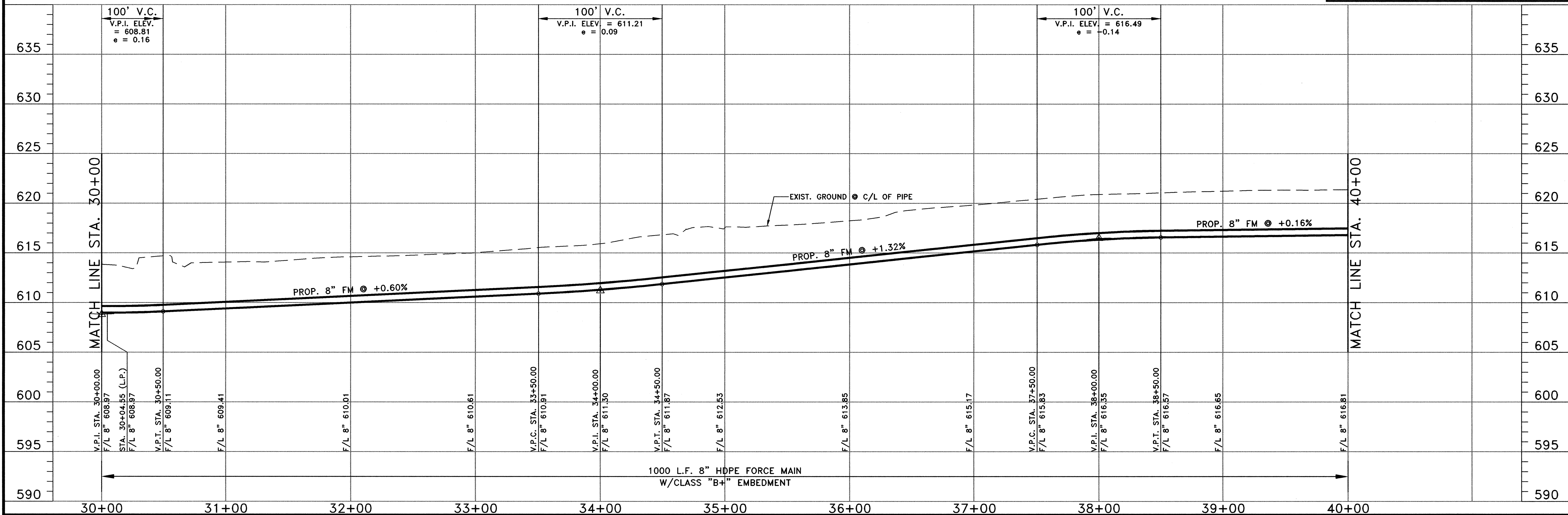


WASTEWATER SYSTEM IMPROVEMENTS
WASTEWATER FORCE MAIN AND LIFT STATION
FORCE MAIN - PLAN AND PROFILE
 (STA. 20+00 TO STA. 30+00)
CITY OF LUCAS

SHEET NO. C21
 OF SHEETS
 JOB NO. 09-1389



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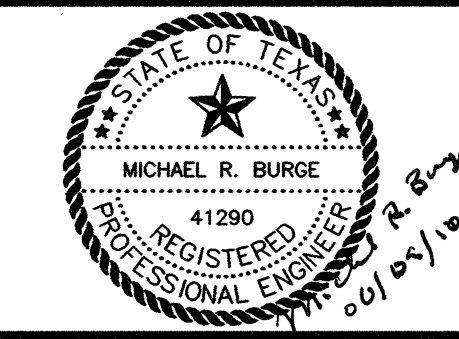


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 DATE: JUNE 2010
 DWG. NAME: 1389FMPP04

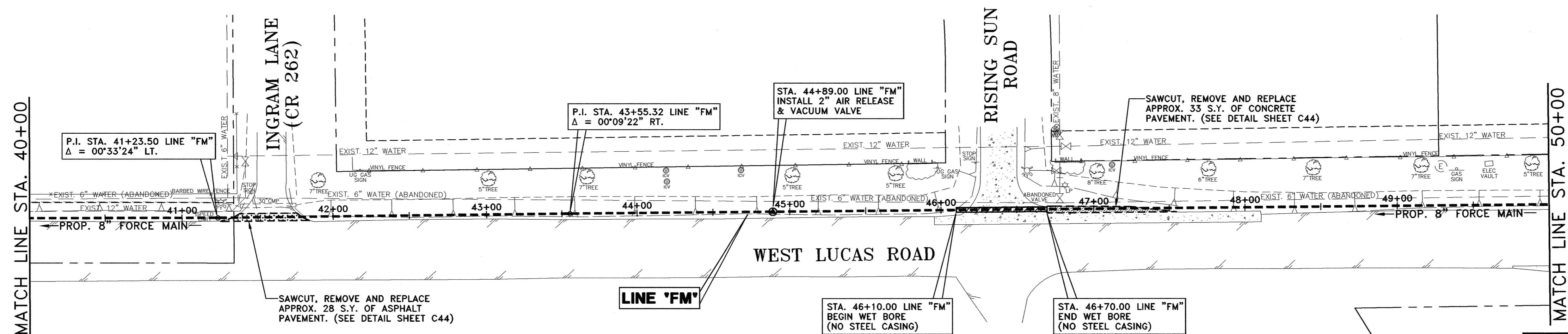
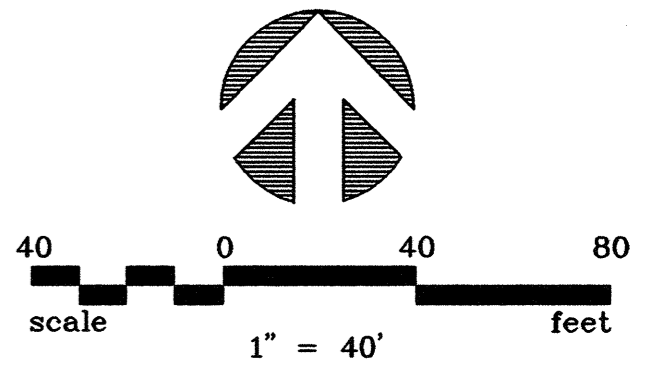


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WASTEWATER SYSTEM IMPROVEMENTS
 WASTEWATER FORCE MAIN AND LIFT STATION
 FORCE MAIN - PLAN AND PROFILE
 (STA. 30+00 TO STA. 40+00)
CITY OF LUCAS

SHEET NO. C22
 OF SHEETS
 JOB NO. 09-1389

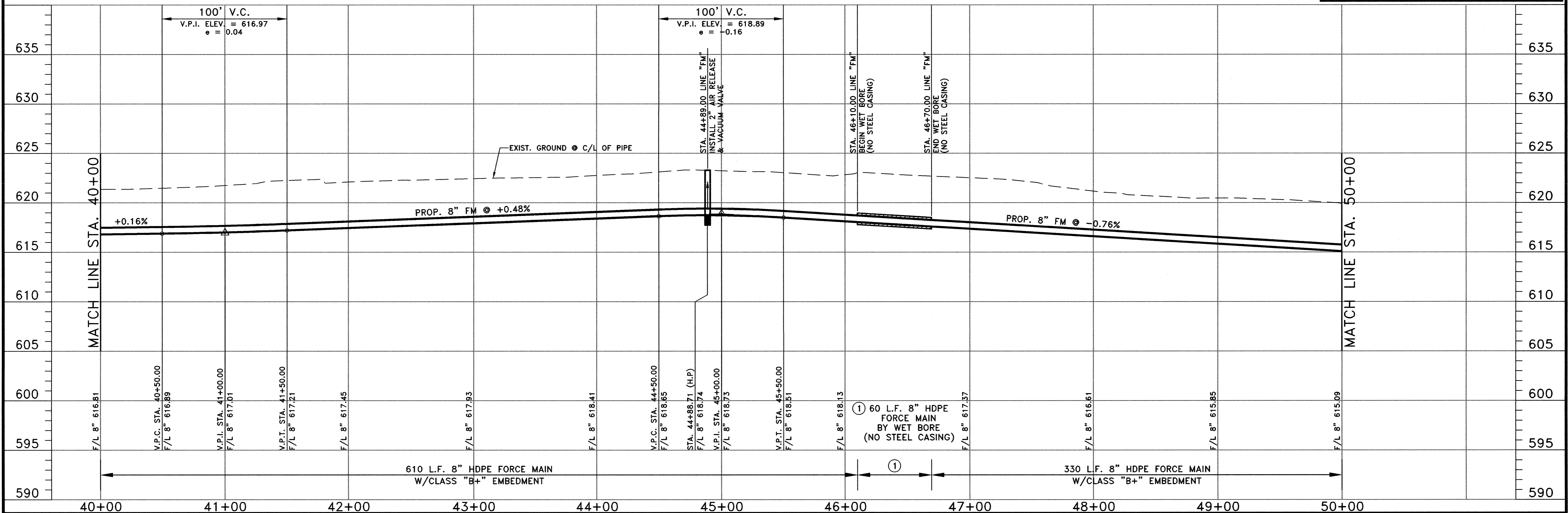


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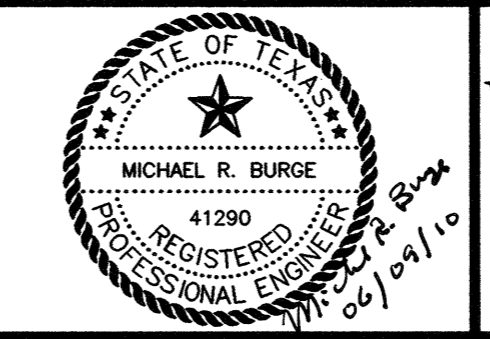


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NO.	DATE	REVISION	REVIEWED

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 DWG. NAME: 1389FMPP05



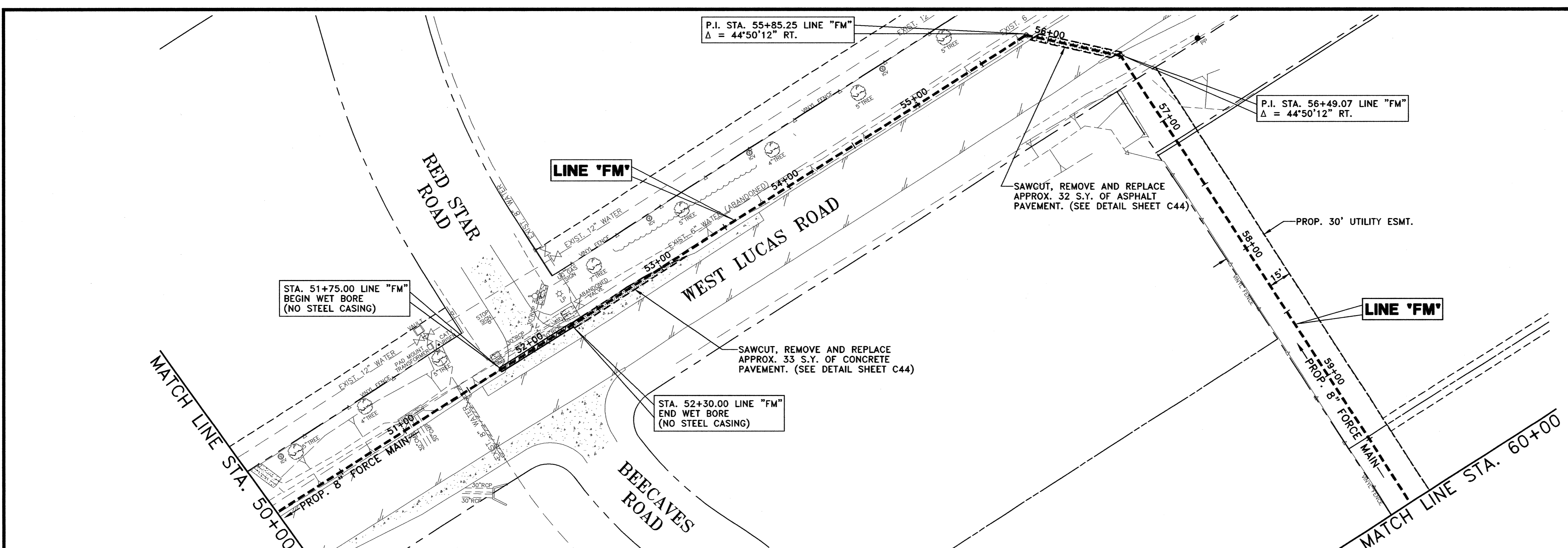
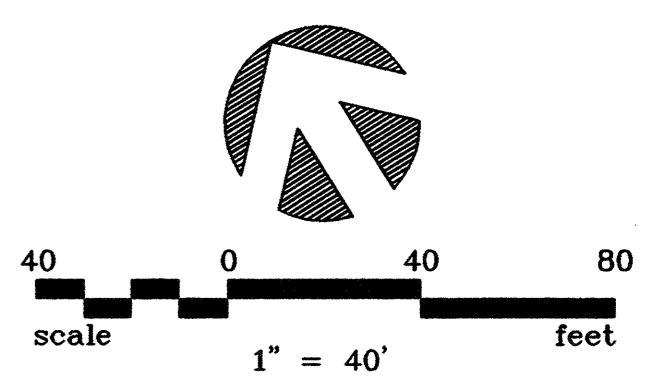
BW2 Engineers, Inc.
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**WASTEWATER SYSTEM IMPROVEMENTS
 WASTEWATER FORCE MAIN AND LIFT STATION
 FORCE MAIN - PLAN AND PROFILE
 (STA. 40+00 TO STA. 50+00)**

CITY OF LUCAS

SHEET NO. C23
 OF SHEETS
 JOB NO. 09-1389

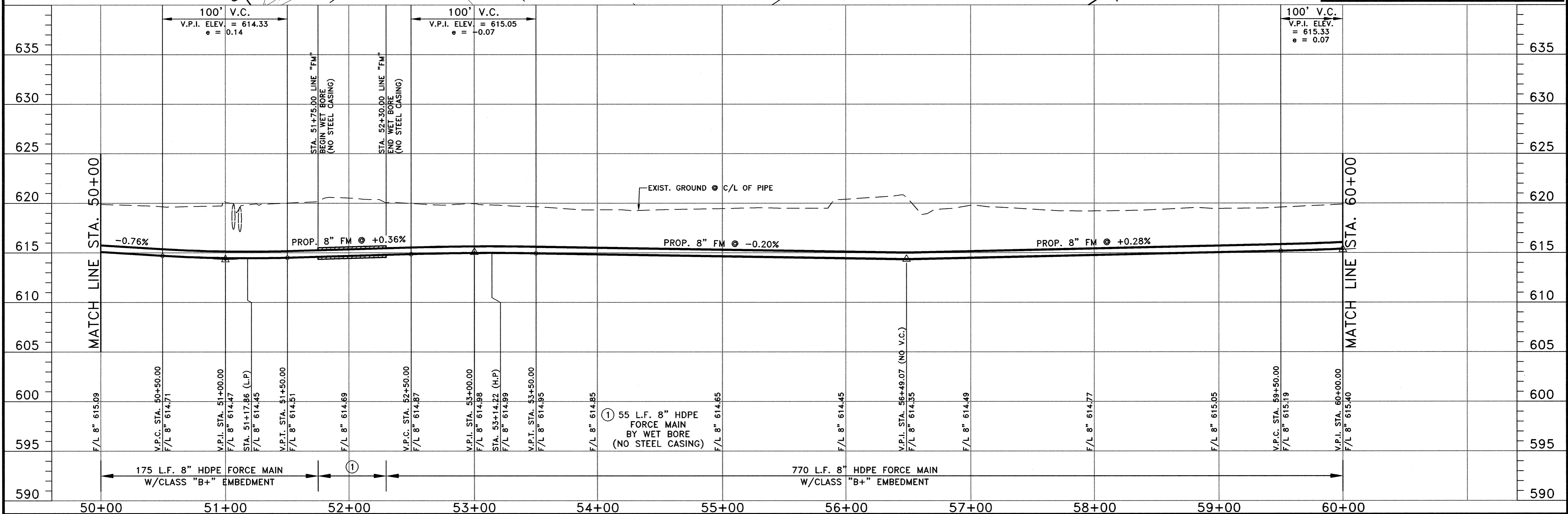


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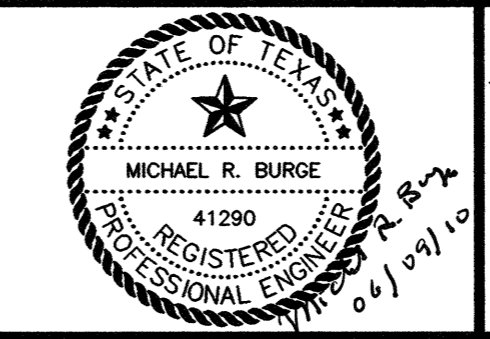


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DRAWN: BW2
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 DATE: JUNE 2010
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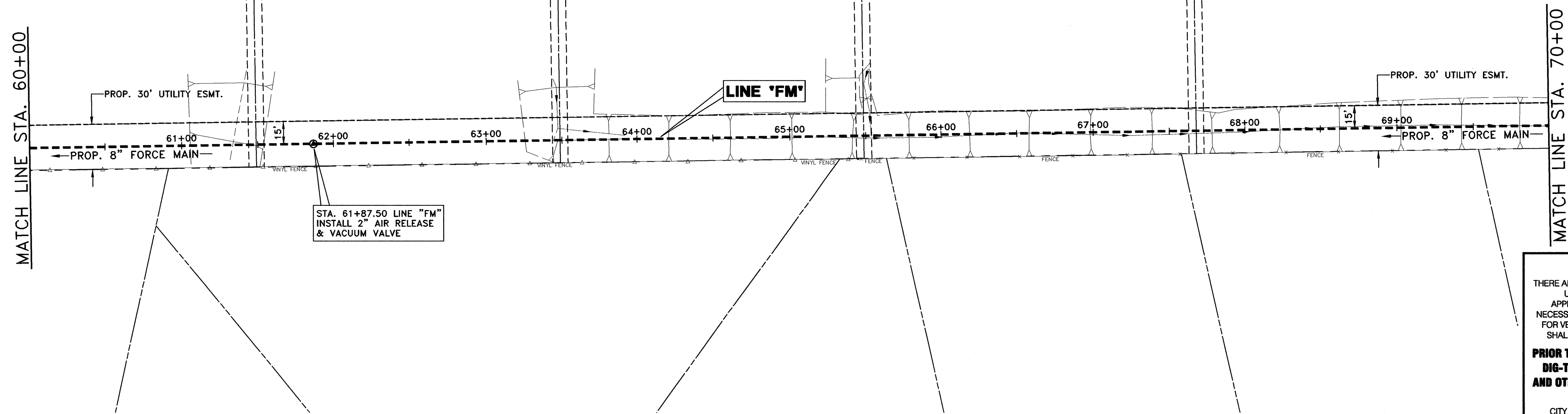
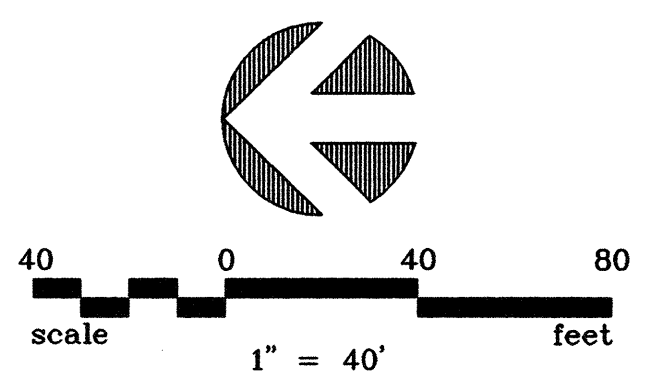


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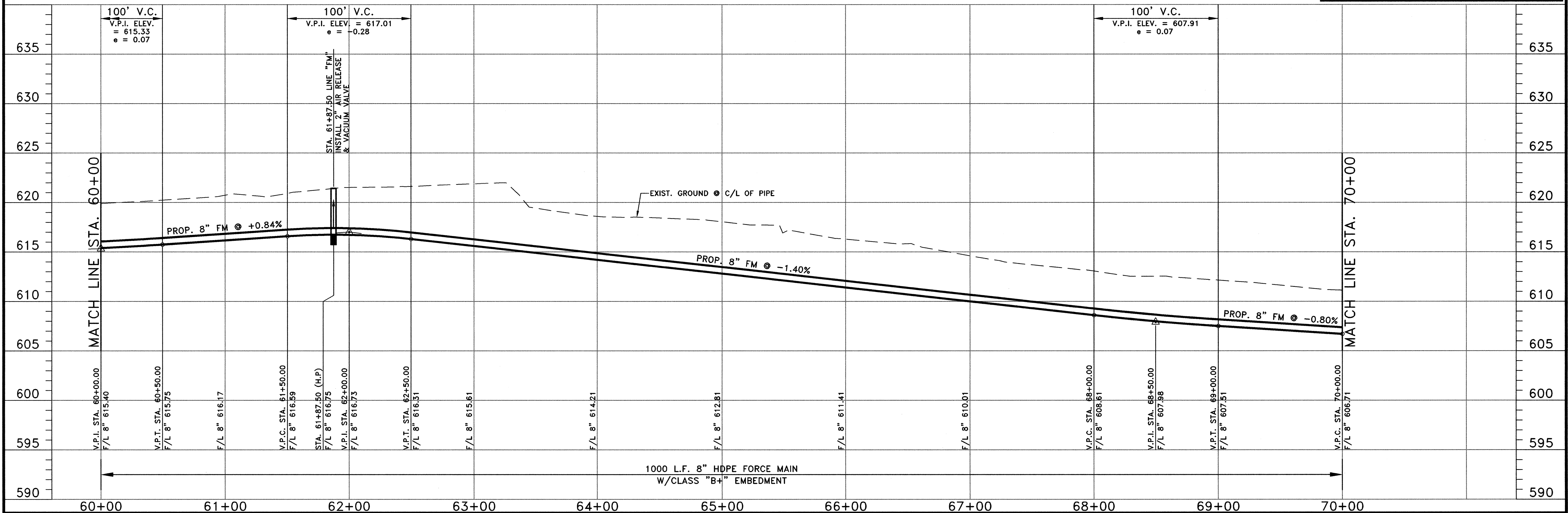


WASTEWATER SYSTEM IMPROVEMENTS
 WASTEWATER FORCE MAIN AND LIFT STATION
 FORCE MAIN - PLAN AND PROFILE
 (STA. 50+00 TO STA. 60+00)
CITY OF LUCAS

SHEET NO. C24
 OF SHEETS
 JOB NO. 09-1389



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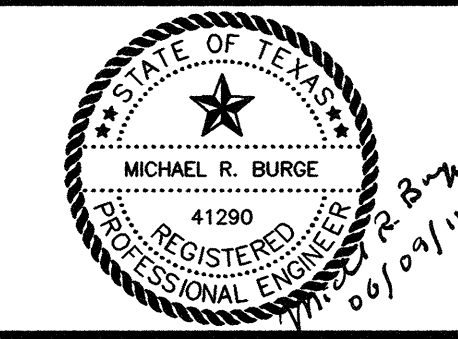


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DRAWN: BW2
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 DATE: JUNE 2010
 DWG. NAME: 1389FMPP07

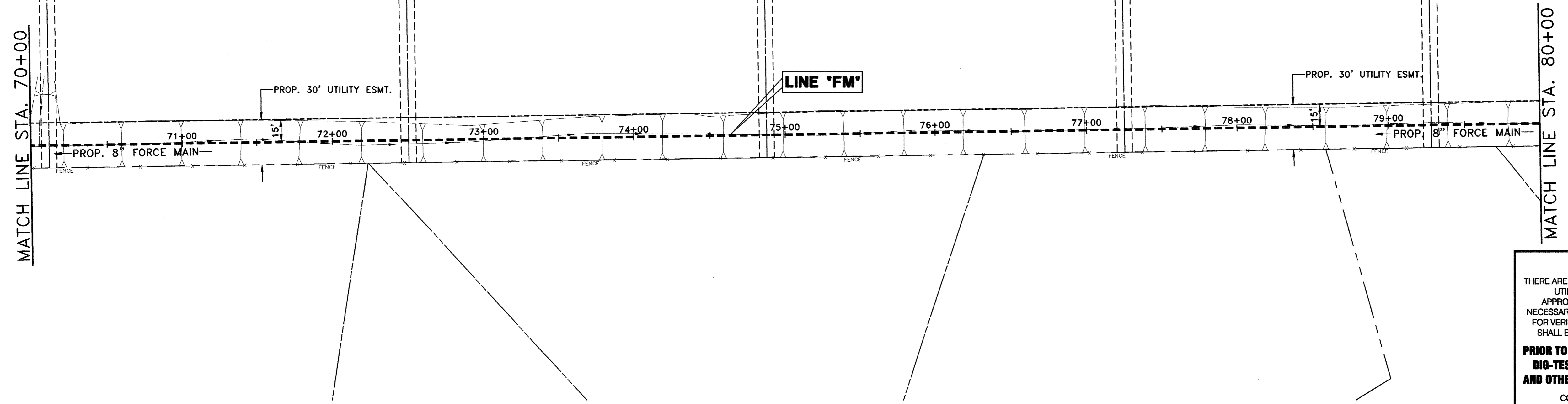
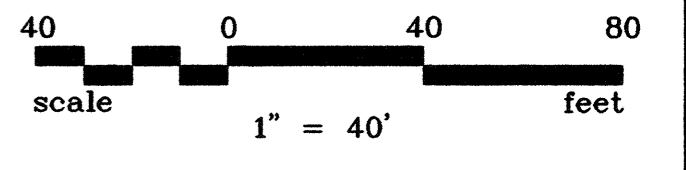
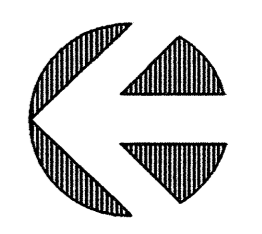


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WASTEWATER SYSTEM IMPROVEMENTS
 WASTEWATER FORCE MAIN AND LIFT STATION
 FORCE MAIN - PLAN AND PROFILE
 (STA. 60+00 TO STA. 70+00)
CITY OF LUCAS

SHEET NO. C25
 OF SHEETS
 JOB NO. 09-1389

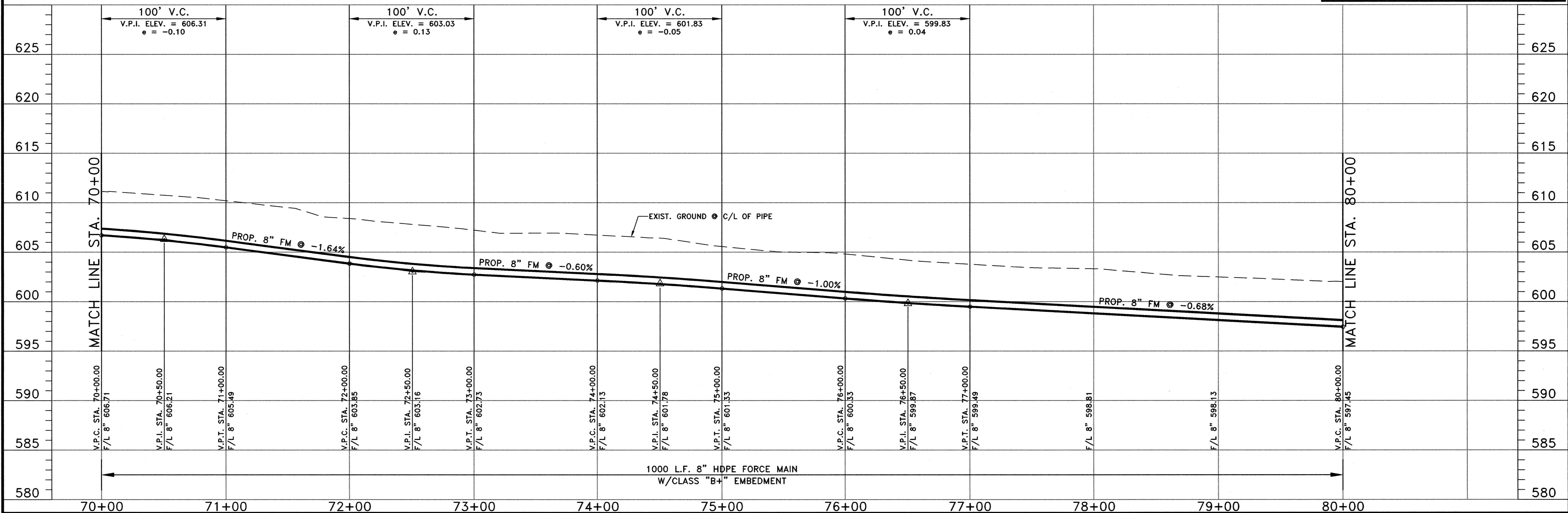


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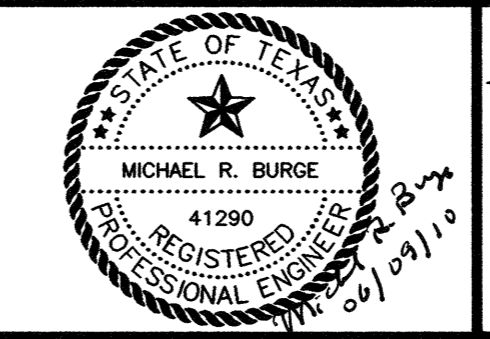


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DRAWN: BW2
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 DATE: JUNE 2010
 DWG. NAME: 1389FMPP08



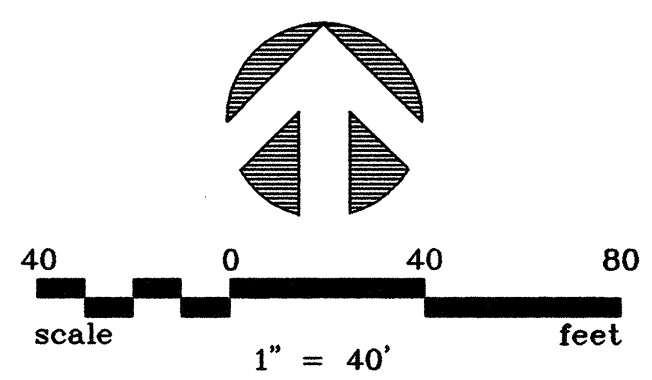
BW2 Engineers, Inc.
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 Suite 500, L.B. 27
 Garland, Texas 75042
 (972) 864-8200 (T) (972) 864-8220 (F)
 Firm Registration No. F-5290



**WASTEWATER SYSTEM IMPROVEMENTS
 WASTEWATER FORCE MAIN AND LIFT STATION
 FORCE MAIN - PLAN AND PROFILE
 (STA. 70+00 TO STA. 80+00)**

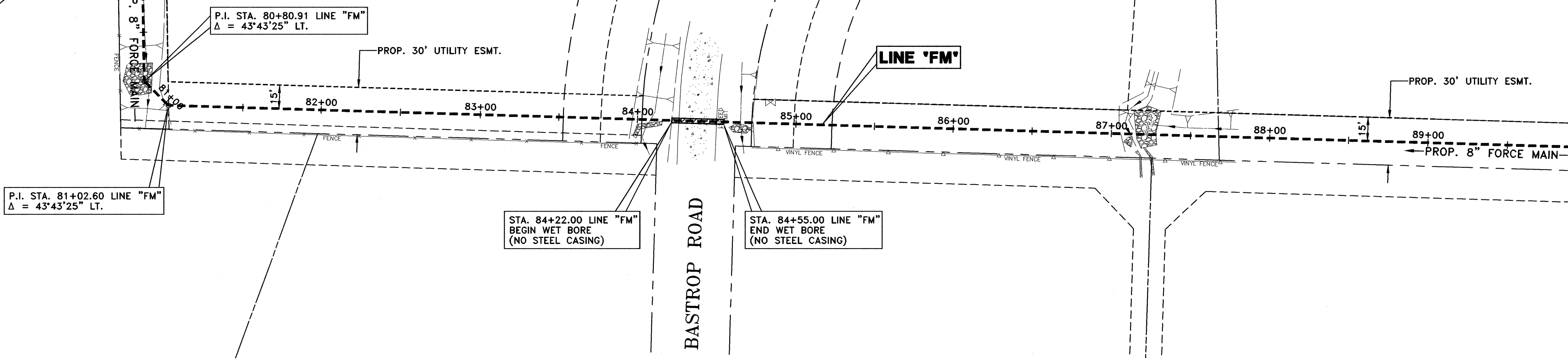
CITY OF LUCAS

SHEET NO. C26
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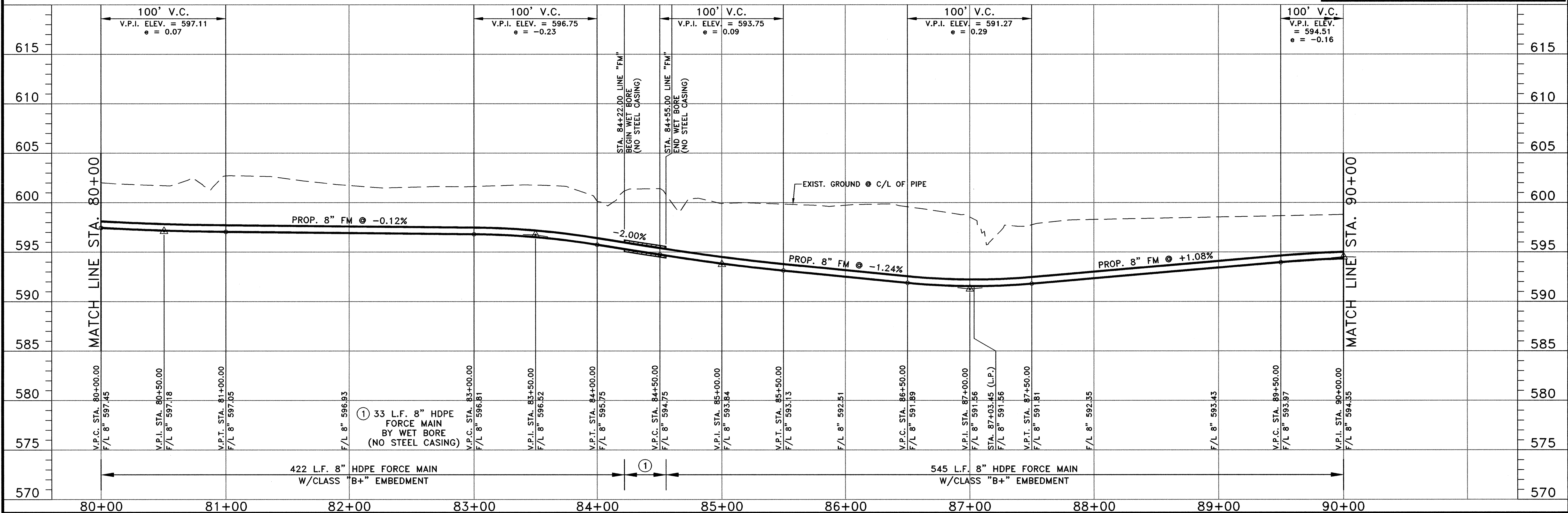


MATCH LINE STA. 80+00

MATCH LINE STA. 90+00



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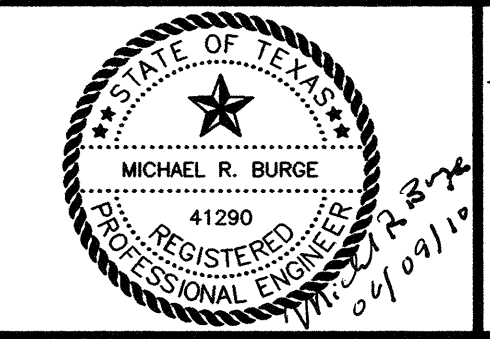


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 DATE: JUNE 2010
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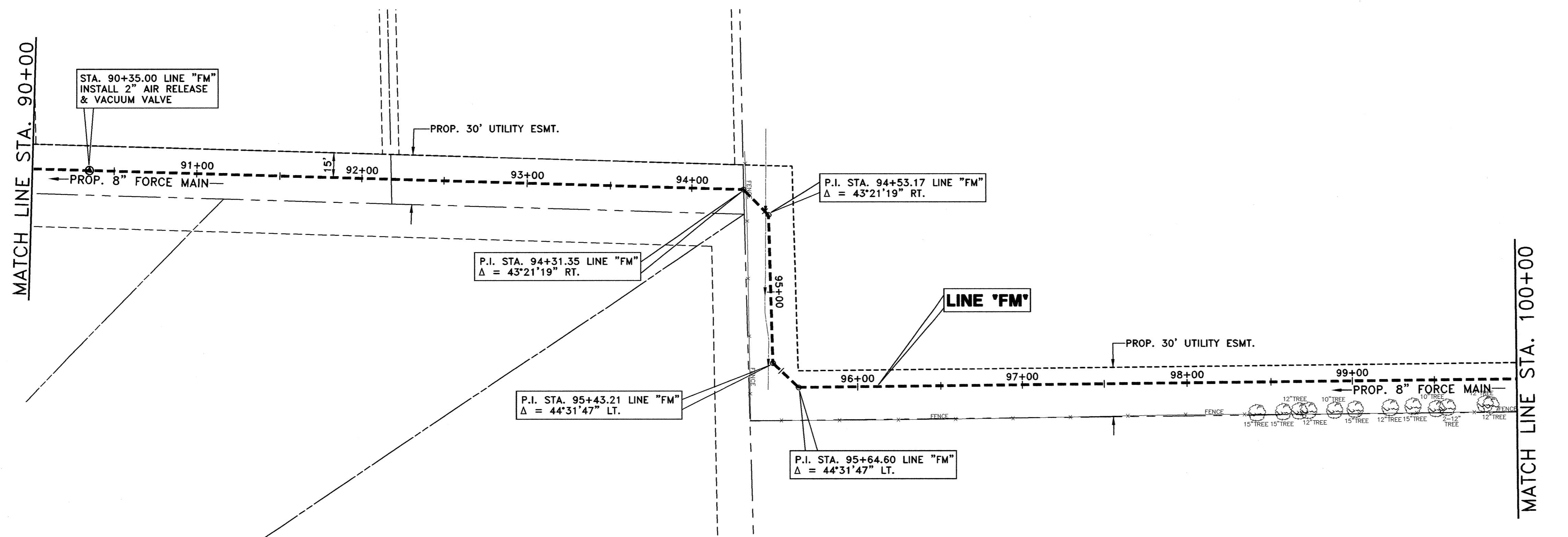
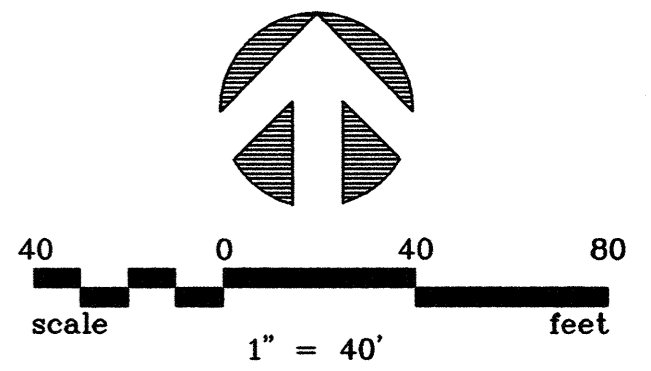


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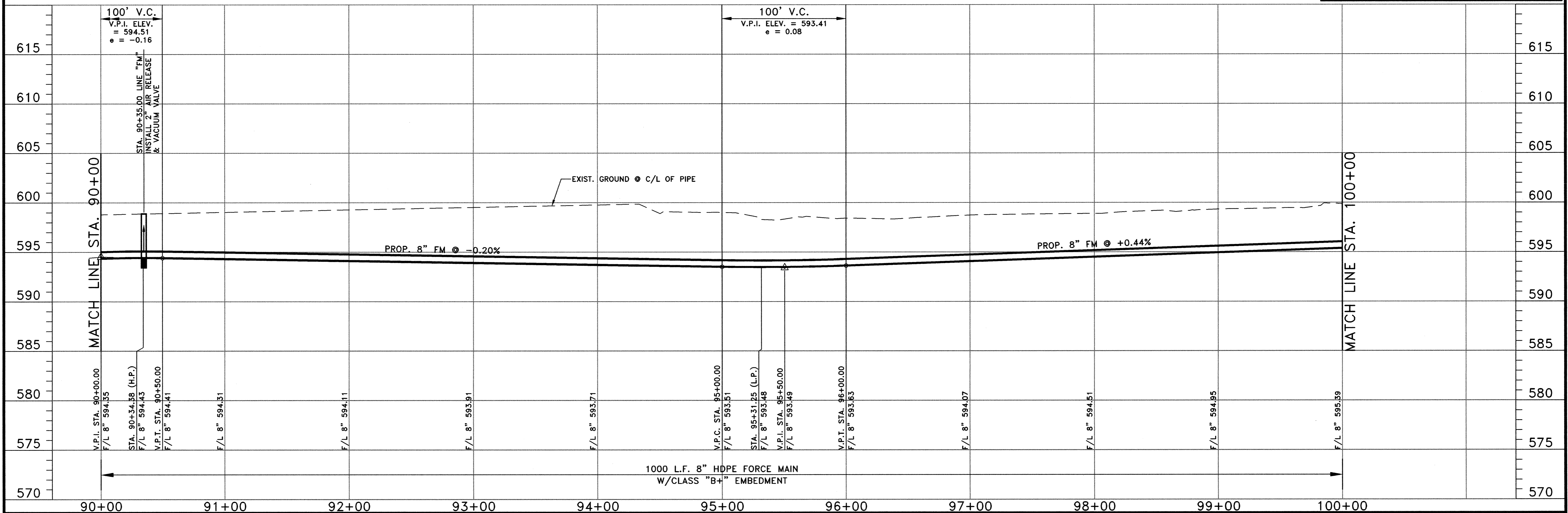


WASTEWATER SYSTEM IMPROVEMENTS
 WASTEWATER FORCE MAIN AND LIFT STATION
 FORCE MAIN - PLAN AND PROFILE
 (STA. 80+00 TO STA. 90+00)
CITY OF LUCAS

SHEET NO. C27
 OF SHEETS
 JOB NO. 09-1389



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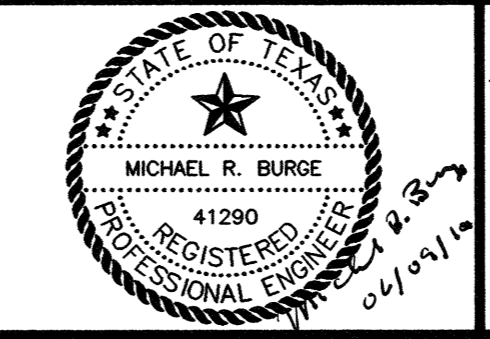


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DRAWN: BW2
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 DATE: JUNE 2010
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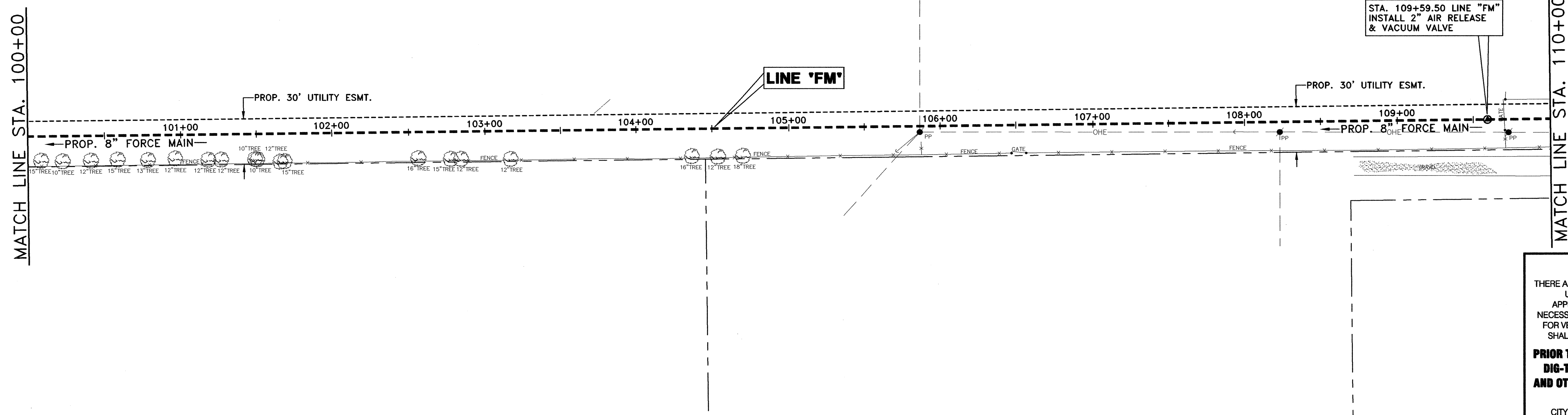
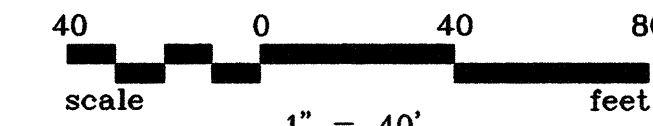
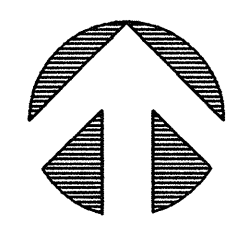


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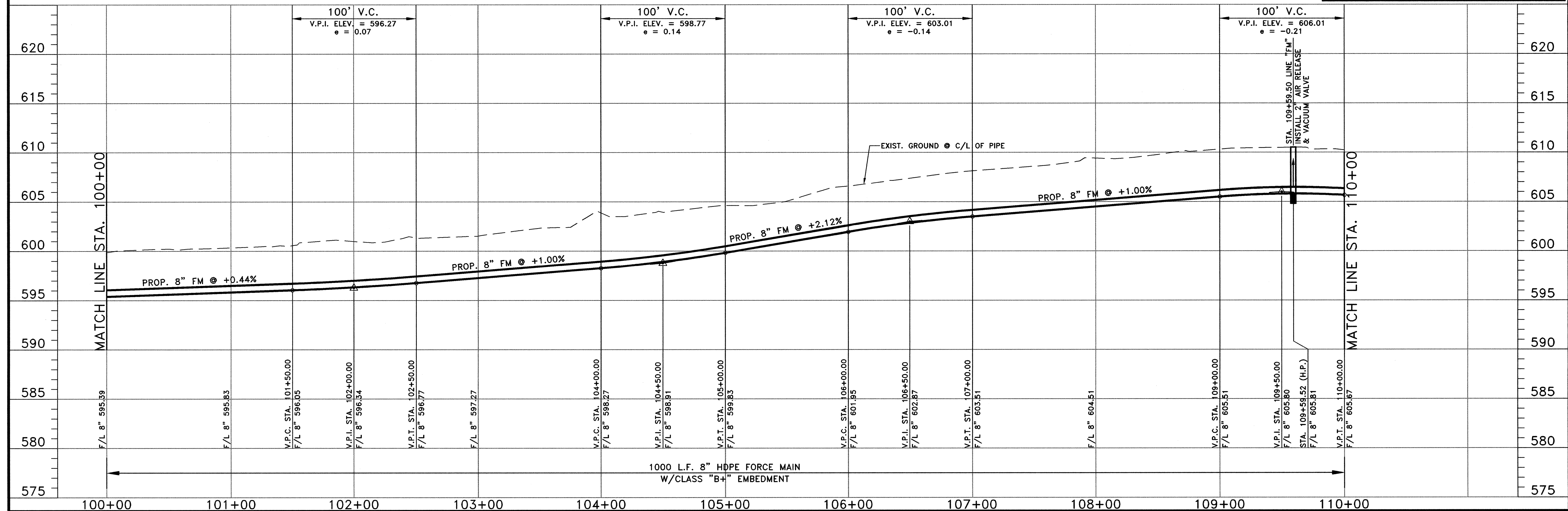


**WASTEWATER SYSTEM IMPROVEMENTS
 WASTEWATER FORCE MAIN AND LIFT STATION
 FORCE MAIN - PLAN AND PROFILE
 (STA. 90+00 TO STA. 100+00)**
CITY OF LUCAS

SHEET NO. C28
 OF SHEETS
 JOB NO. 09-1389



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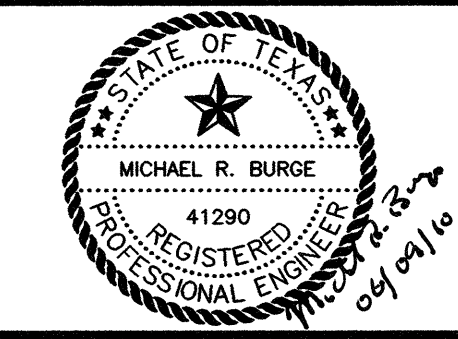


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 DATE: JUNE 2010
 DWG. NAME: 1389FMPP11

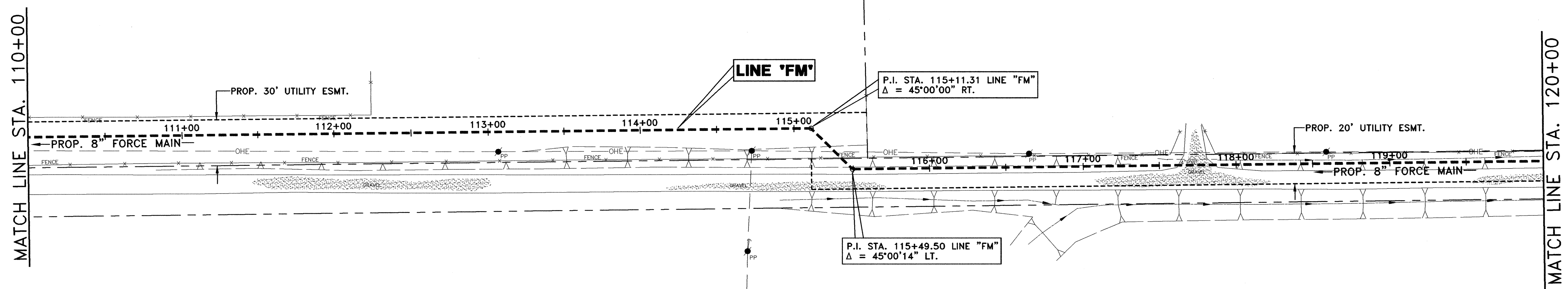
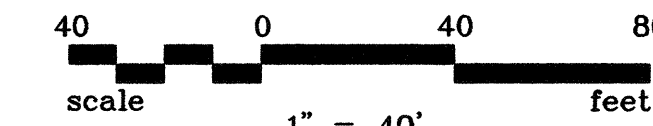
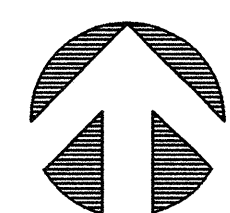


BW2 Engineers, Inc.
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 Garland, Texas 75042
 (972) 864-8200 (T) (972) 864-8220 (F)
 Firm Registration No. F-5290



**WASTEWATER SYSTEM IMPROVEMENTS
 WASTEWATER FORCE MAIN AND LIFT STATION
 FORCE MAIN - PLAN AND PROFILE
 (STA. 100+00 TO STA. 110+00)**
CITY OF LUCAS

SHEET NO. C29
 OF SHEETS
 JOB NO. 09-1389

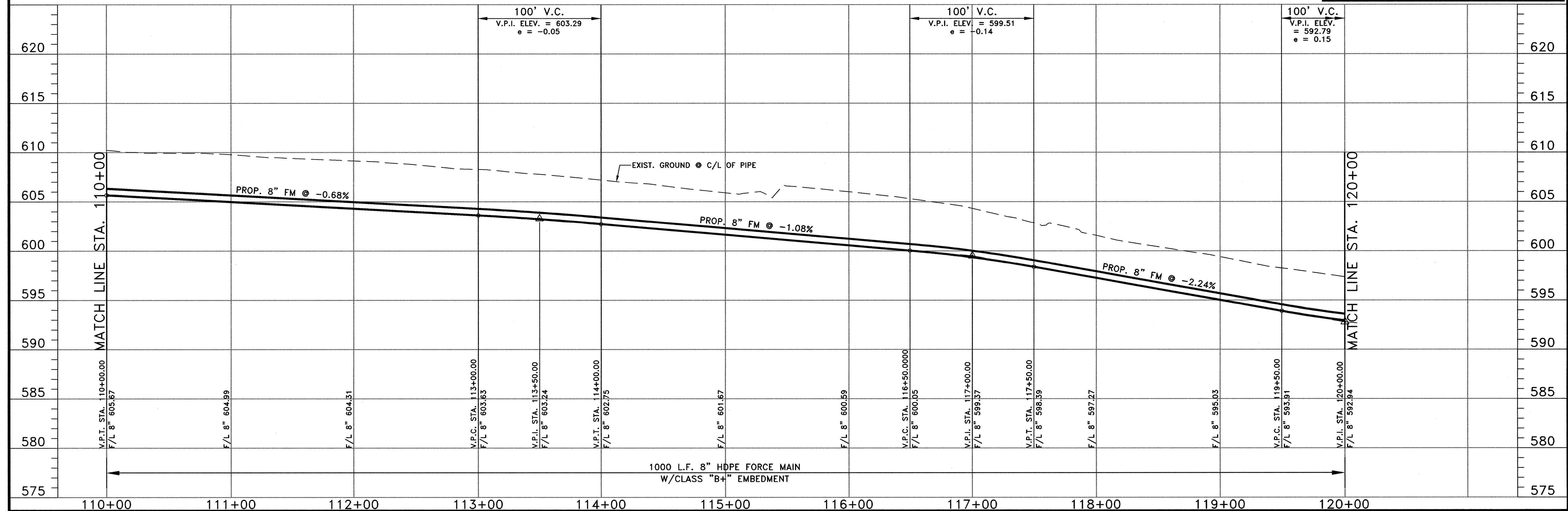


!! CAUTION !!

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CONTRACTOR SHALL ALSO CONTACT APPROPRIATE CITY UTILITY DEPARTMENT FOR FIELD LOCATES OF MUNICIPAL INFRASTRUCTURE 48 HOURS PRIOR TO CONSTRUCTION.

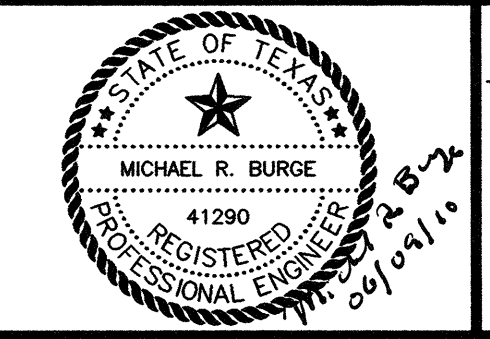


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DRAWN: BW2
 DESIGN: MRB
 REVIEWED: JFW
 SCALE: (H)1"=40', (V)1"=5'
 DATE: JUNE 2010
 DWG. NAME: 1389FMPP12

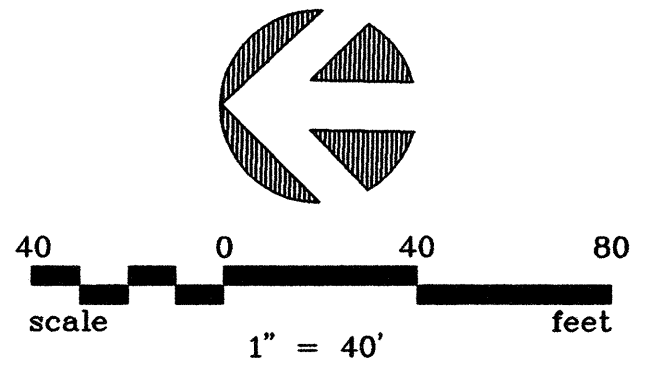
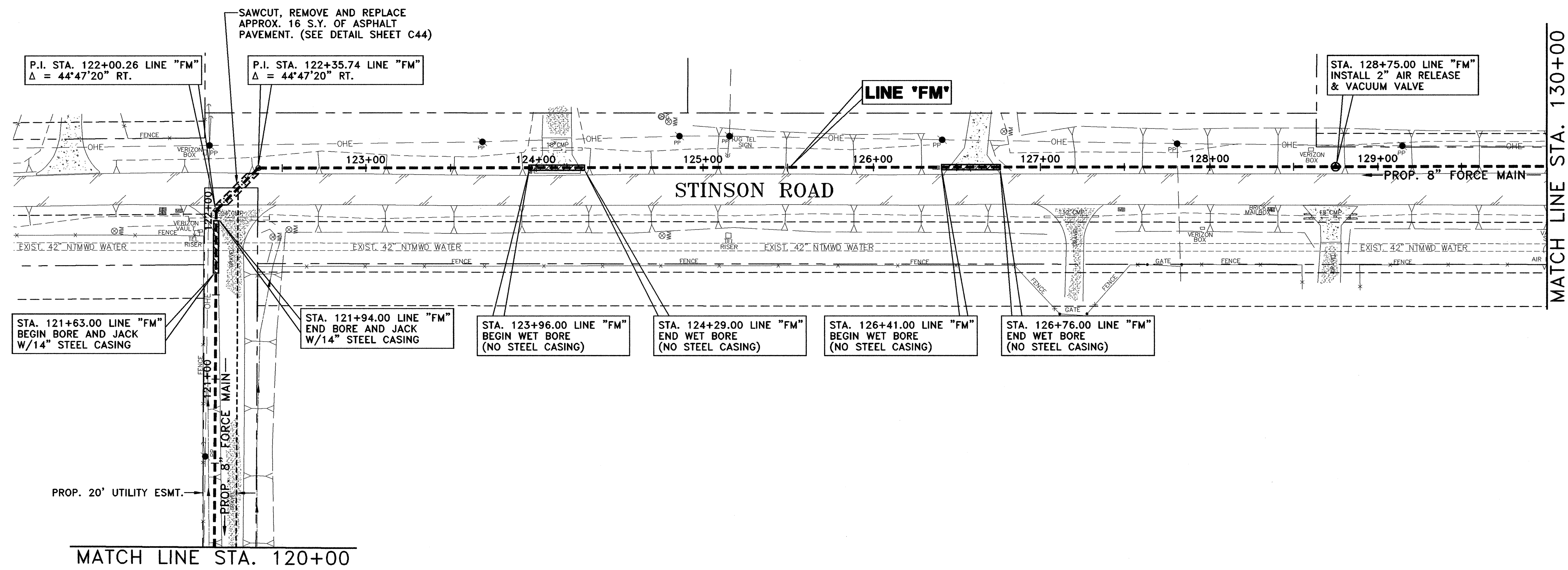


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 Firm Registration No. F-5290



WASTEWATER SYSTEM IMPROVEMENTS
 WASTEWATER FORCE MAIN AND LIFT STATION
 FORCE MAIN - PLAN AND PROFILE
 (STA. 110+00 TO STA. 120+00)
CITY OF LUCAS

SHEET NO. C30
 OF SHEETS
 JOB NO. 09-1389

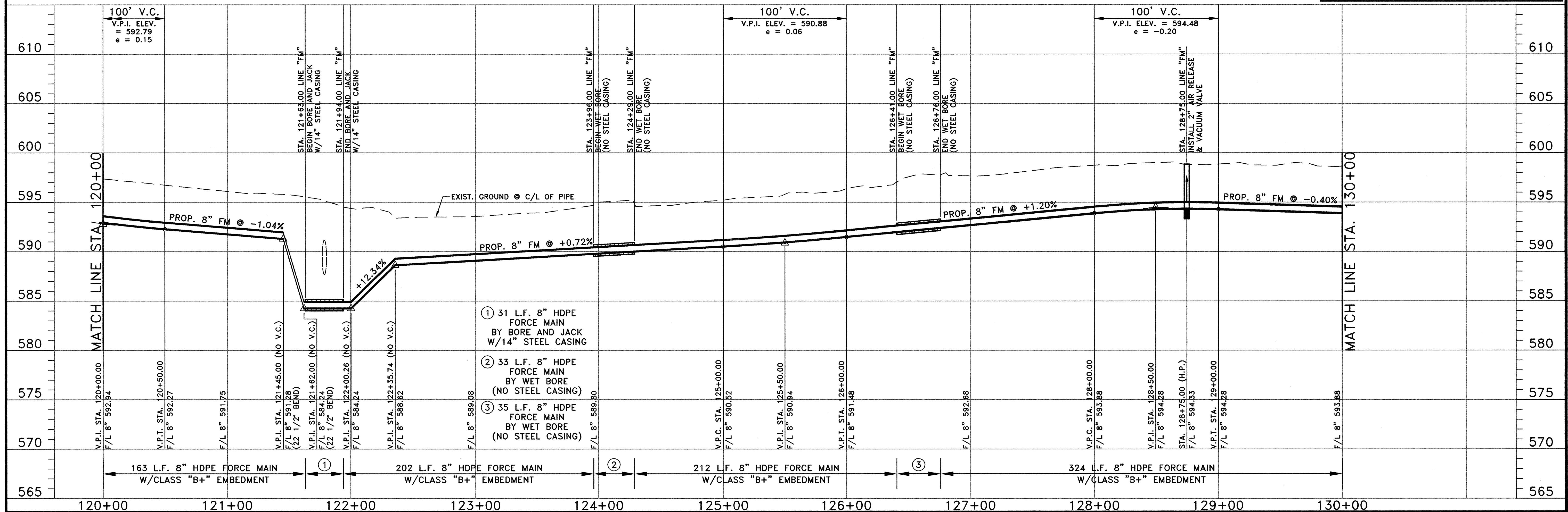


!! CAUTION !!

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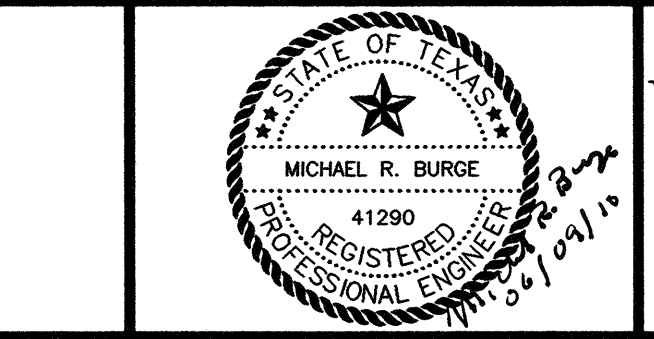


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DRAWN: BW2
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 SCALE: (H)1"=40', (V)1"=5'
 DATE: JUNE 2010
 DWG. NAME: 1389FMP13

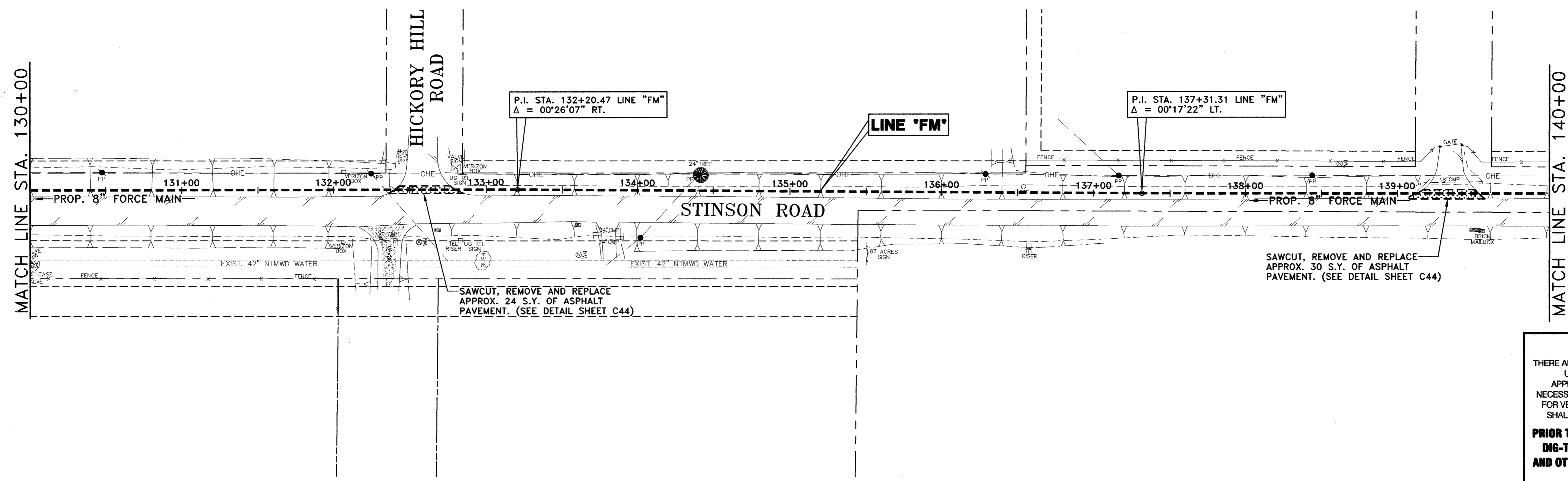
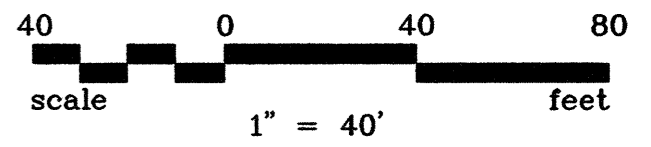
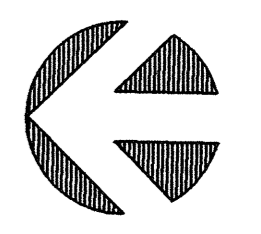


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 Firm Registration No. F-5290



WASTEWATER SYSTEM IMPROVEMENTS
 WASTEWATER FORCE MAIN AND LIFT STATION
 FORCE MAIN - PLAN AND PROFILE
 (STA. 120+00 TO STA. 130+00)
CITY OF LUCAS

SHEET NO. C31
 OF SHEETS
 JOB NO. 09-1389

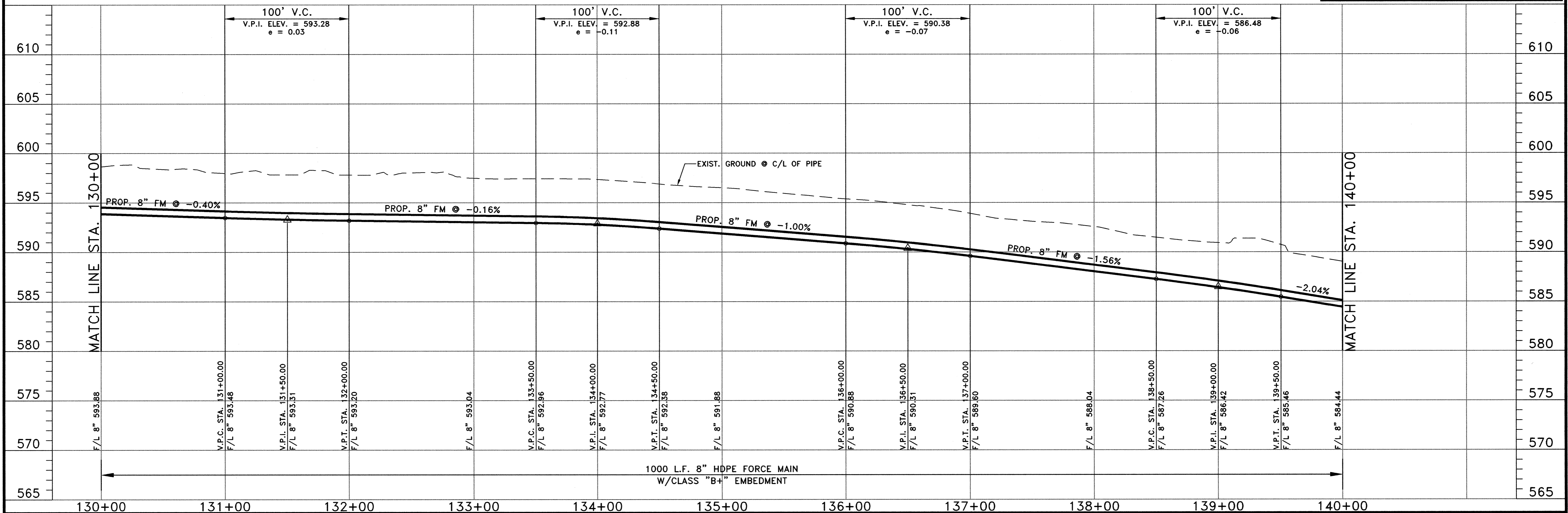


!! CAUTION !!

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CONTRACTOR SHALL ALSO CONTACT APPROPRIATE CITY UTILITY DEPARTMENT FOR FIELD LOCATES OF MUNICIPAL INFRASTRUCTURE 48 HOURS PRIOR TO CONSTRUCTION.

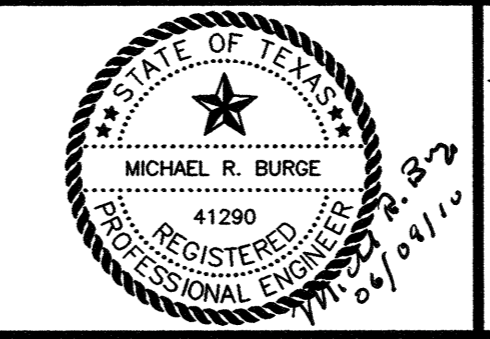


NO.	DATE	REVISION	REVIEWED
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DRAWN: BW2
 DESIGN: MRB
 REVIEWED: JFW
 SCALE: (H)1"=40', (V)1"=5'
 DATE: JUNE 2010
 DWG. NAME: 1389FMPP14

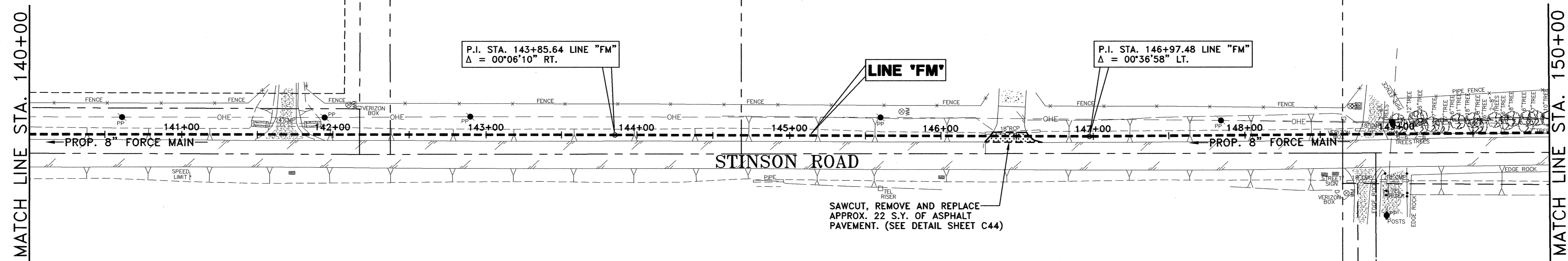
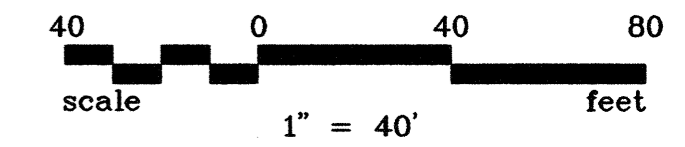
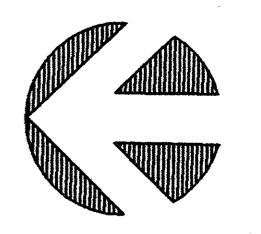


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 Firm Registration No. F-5290



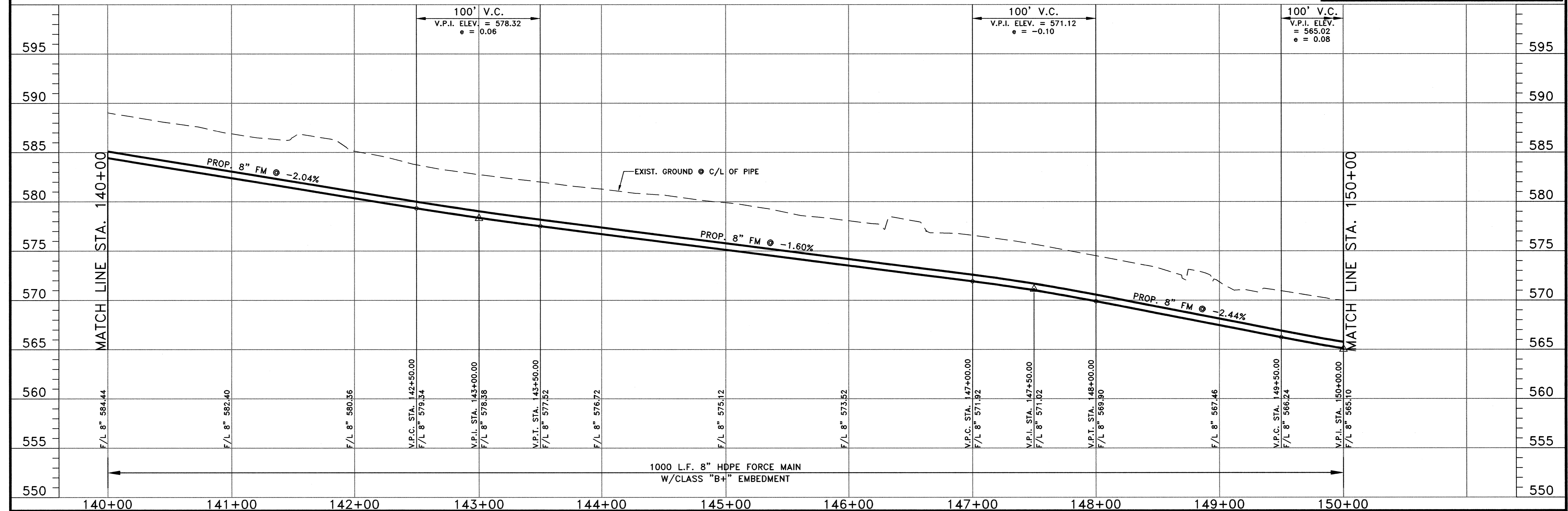
WASTEWATER SYSTEM IMPROVEMENTS
 WASTEWATER FORCE MAIN AND LIFT STATION
 FORCE MAIN - PLAN AND PROFILE
 (STA. 130+00 TO STA. 140+00)
CITY OF LUCAS

SHEET NO. C32
 OF SHEETS
 JOB NO. 09-1389



SAWCUT, REMOVE AND REPLACE APPROX. 22 S.Y. OF ASPHALT PAVEMENT. (SEE DETAIL SHEET C44)

!! CAUTION !!
THERE ARE EXISTING AND/OR PROPOSED UTILITIES IN PROJECT AREA. UTILITY INFORMATION SHOWN ON PLANS REPRESENTS APPROXIMATE LOCATIONS OF EXISTING UTILITIES AND IS NOT NECESSARILY ALL-INCLUSIVE. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING EXACT LOCATIONS OF ALL EXISTING UTILITIES AND SHALL BE REQUIRED TO PROTECT UTILITIES TO AVOID DAMAGE.
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CONTRACTOR SHALL ALSO CONTACT APPROPRIATE CITY UTILITY DEPARTMENT FOR FIELD LOCATES OF MUNICIPAL INFRASTRUCTURE 48 HOURS PRIOR TO CONSTRUCTION.

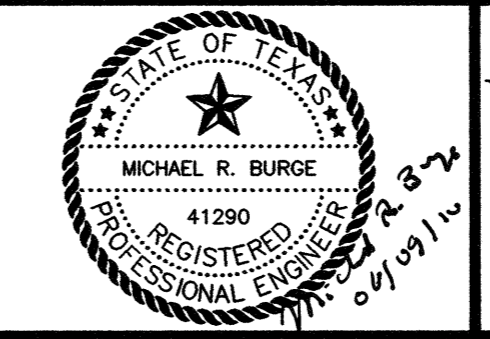


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NO.	DATE	REVISION

DRAWN: BW2
 DESIGN: MRB
 REVIEWED: JFW
 SCALE: (H)1"=40', (V)1"=5'
 DATE: JUNE 2010
 DWG. NAME: 1389FMPP15



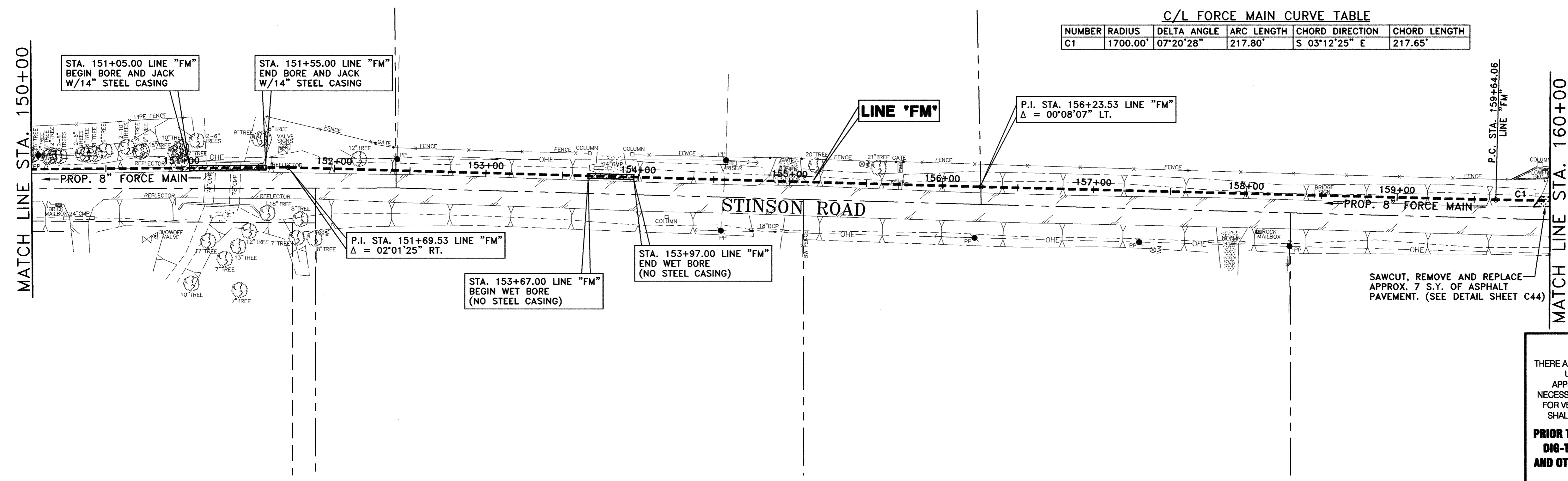
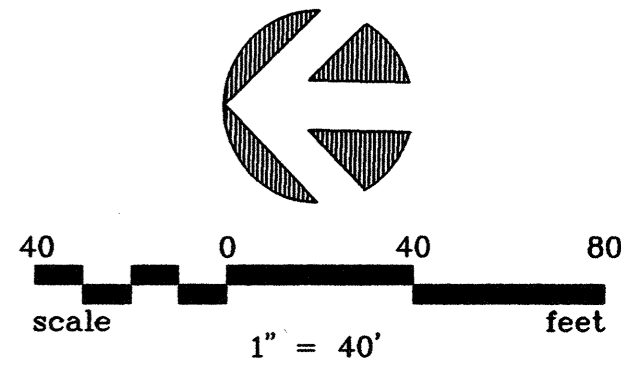
BW2 Engineers, Inc.
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 Garland, Texas 75042
 (972) 864-8200 (T) (972) 864-8220 (F)
 Firm Registration No. F-5290



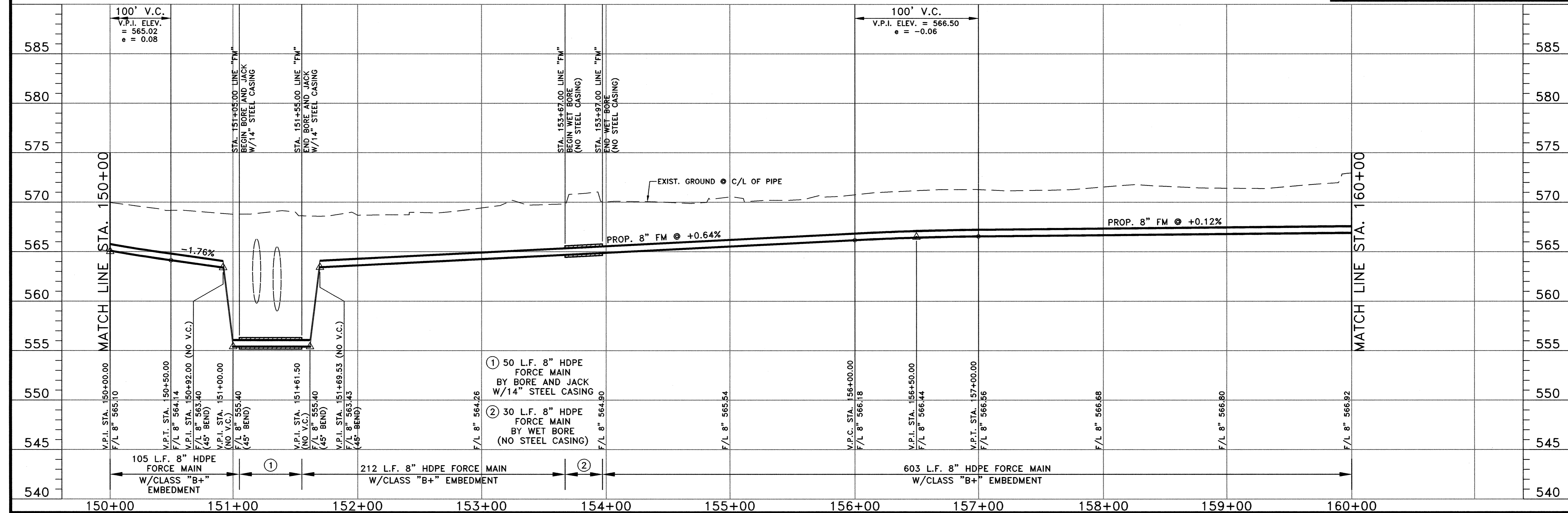
WASTEWATER SYSTEM IMPROVEMENTS
 WASTEWATER FORCE MAIN AND LIFT STATION
 FORCE MAIN - PLAN AND PROFILE
 (STA. 140+00 TO STA. 150+00)
CITY OF LUCAS

SHEET NO. C33
 OF SHEETS
 JOB NO. 09-1389

C/L FORCE MAIN CURVE TABLE					
NUMBER	RADIUS	DELTA ANGLE	ARC LENGTH	CHORD DIRECTION	CHORD LENGTH
C1	1700.00'	07°20'28"	217.80'	S 03°12'25" E	217.65'



!! CAUTION !!
 THERE ARE EXISTING AND/OR PROPOSED UTILITIES IN PROJECT AREA. UTILITY INFORMATION SHOWN ON PLANS REPRESENTS APPROXIMATE LOCATIONS OF EXISTING UTILITIES AND IS NOT NECESSARILY ALL-INCLUSIVE. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING EXACT LOCATIONS OF ALL EXISTING UTILITIES AND SHALL BE REQUIRED TO PROTECT UTILITIES TO AVOID DAMAGE.
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 CONTRACTOR SHALL ALSO CONTACT APPROPRIATE CITY UTILITY DEPARTMENT FOR FIELD LOCATES OF MUNICIPAL INFRASTRUCTURE 48 HOURS PRIOR TO CONSTRUCTION.

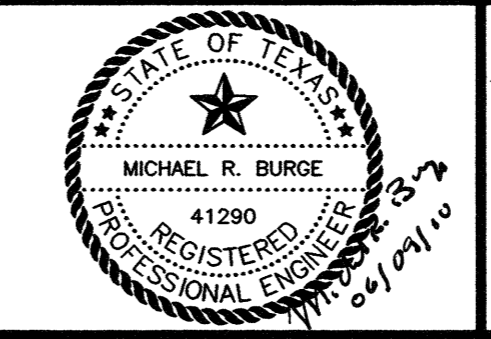


NO.	DATE	REVISION	REVIEWED
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DRAWN: BW2
 DESIGN: MRB
 REVIEWED: JFW
 SCALE: (H)1"=40', (V)1"=5'
 DATE: JUNE 2010
 DWG. NAME: 1389FMP16



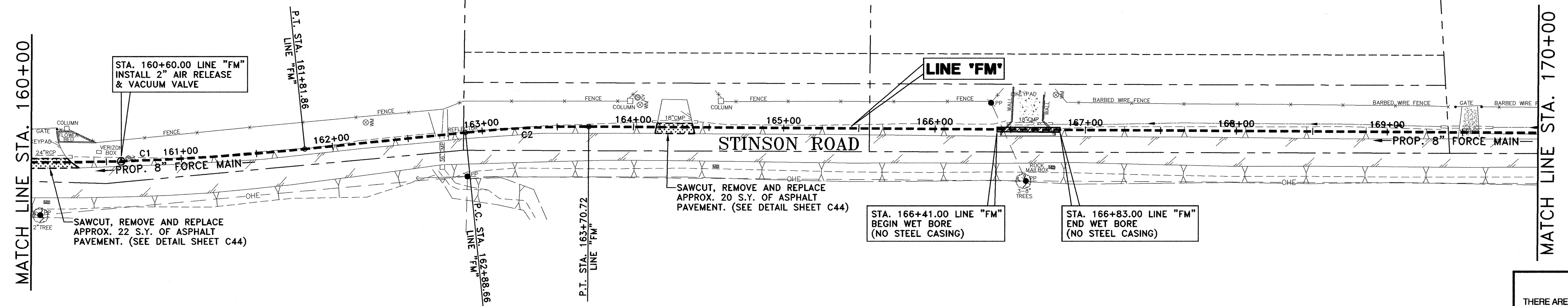
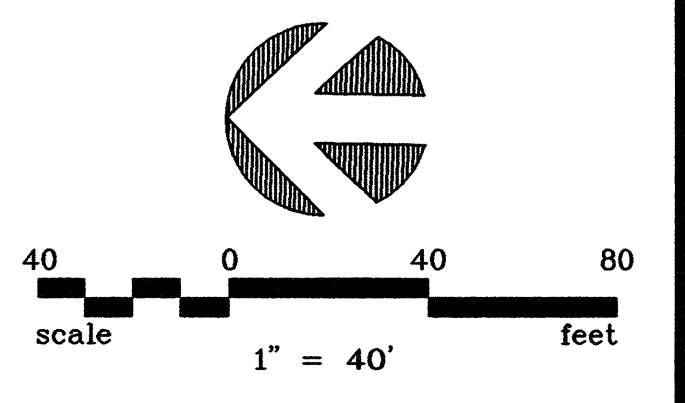
BW2 Engineers, Inc.
 1919 S. Shiloh Road
 Suite 500, L.B. 27
 Garland, Texas 75042
 (972) 864-8200 (T) (972) 864-8220 (F)
 Firm Registration No. F-5290



**WASTEWATER SYSTEM IMPROVEMENTS
 WASTEWATER FORCE MAIN AND LIFT STATION
 FORCE MAIN - PLAN AND PROFILE
 (STA. 150+00 TO STA. 160+00)**
CITY OF LUCAS

SHEET NO. C34
 OF SHEETS
 JOB NO. 09-1389

C/L FORCE MAIN CURVE TABLE					
NUMBER	RADIUS	DELTA ANGLE	ARC LENGTH	CHORD DIRECTION	CHORD LENGTH
C1	1700.00'	07°20'28"	217.80'	S 03°12'25" E	217.65'
C2	750.00'	06°16'08"	82.06'	S 03°44'34" E	82.02'

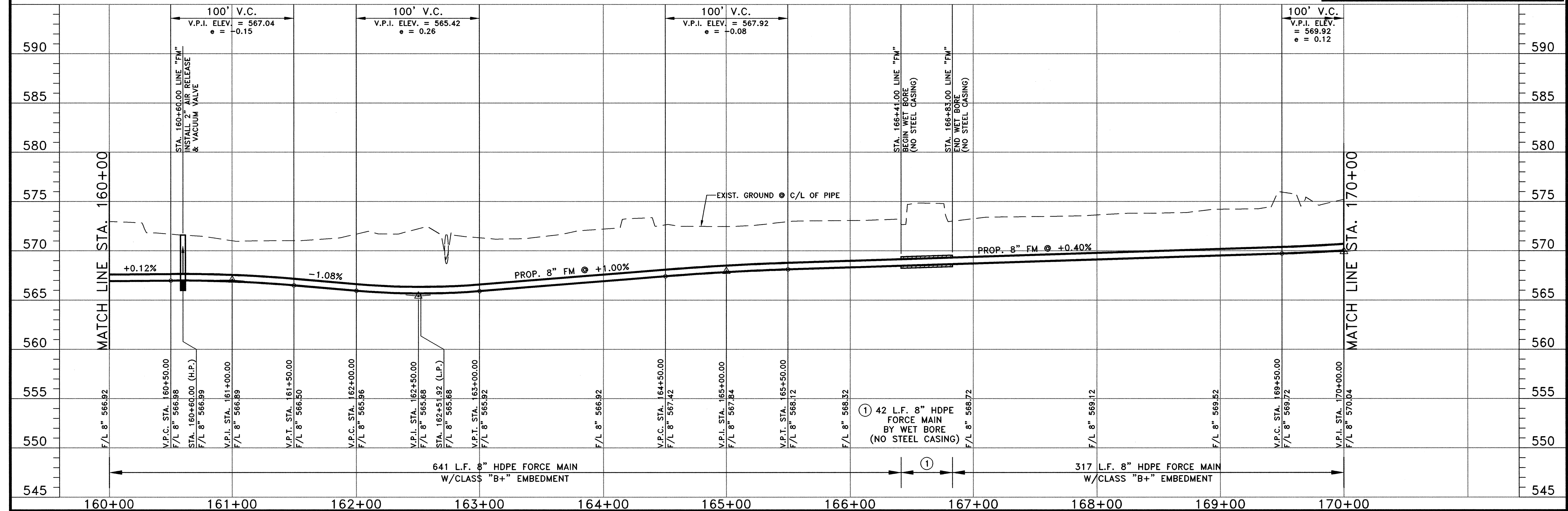


!! CAUTION !!

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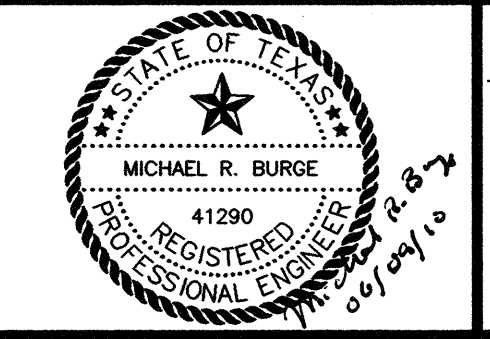


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DRAWN: BW2
 DESIGN: MRB
 REVIEWED: JFW
 SCALE: (H)1"=40', (V)1"=5'
 DATE: JUNE 2010
 DWG. NAME: 1389FMPP17

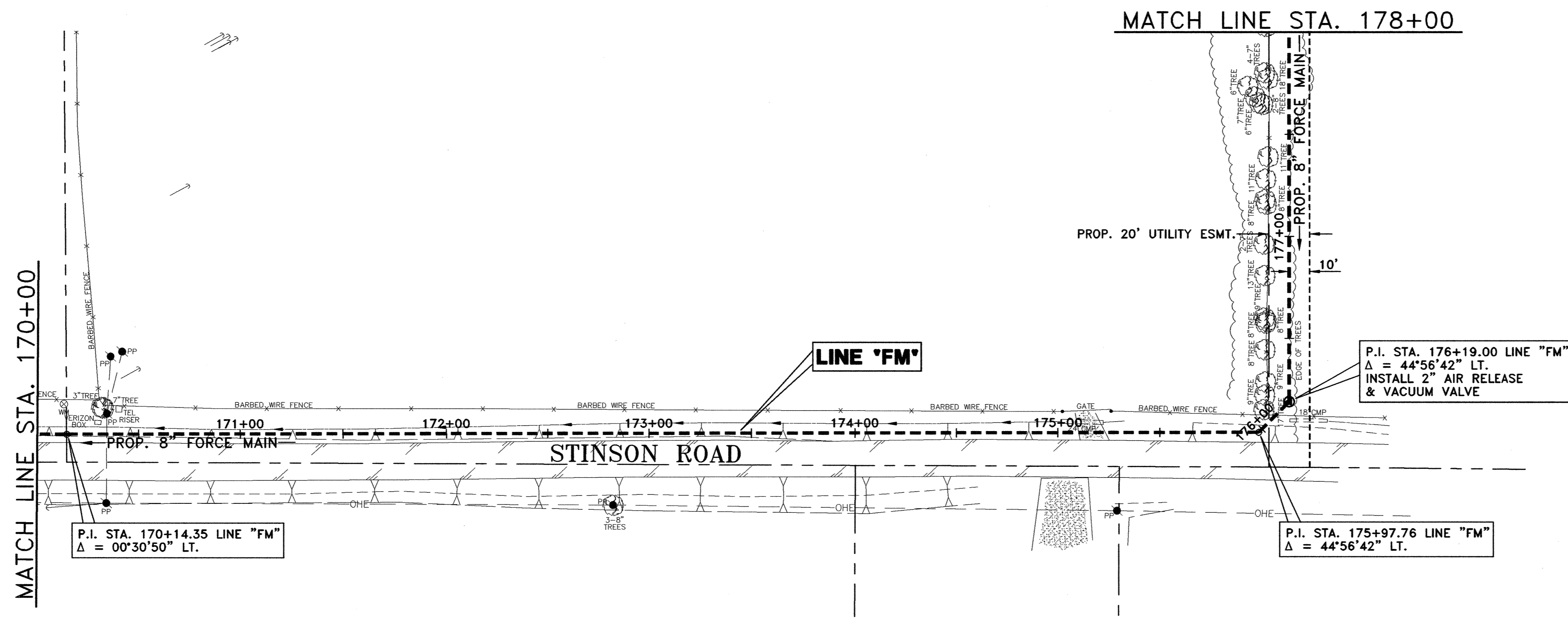
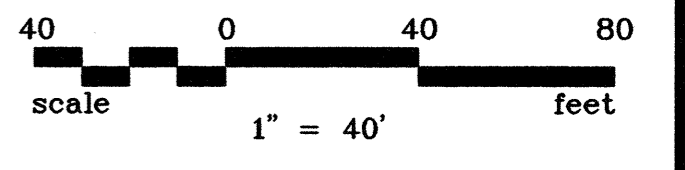
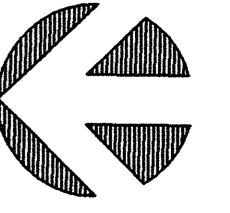


BW2 Engineers, Inc.
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 Firm Registration No. F-5290



WASTEWATER SYSTEM IMPROVEMENTS
 WASTEWATER FORCE MAIN AND LIFT STATION
 FORCE MAIN - PLAN AND PROFILE
 (STA. 160+00 TO STA. 170+00)
CITY OF LUCAS

SHEET NO. C35
 OF SHEETS
 JOB NO. 09-1389

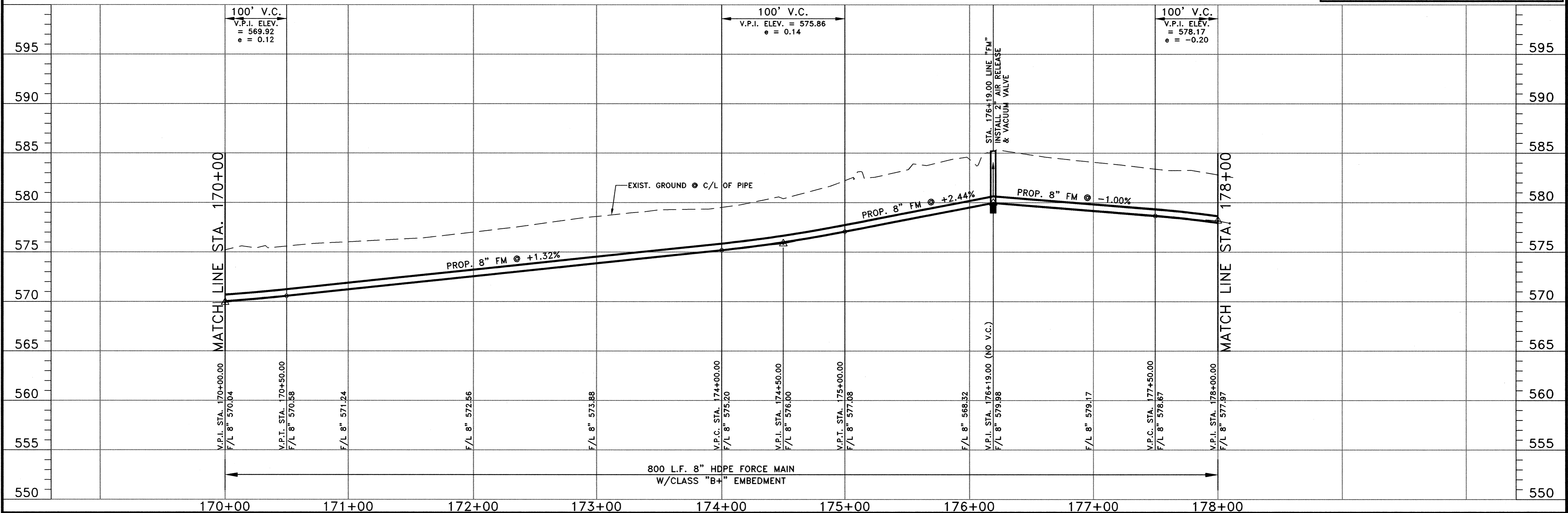


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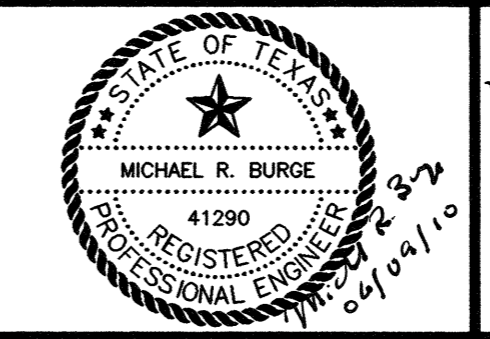


NO.	DATE	REVISION	REVIEWED
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DRAWN: BW2
 DESIGN: MRB
 REVIEWED: JFW
 SCALE: (H)1"=40', (V)1"=5'
 DATE: JUNE 2010
 DWG. NAME: 1389FMPP18



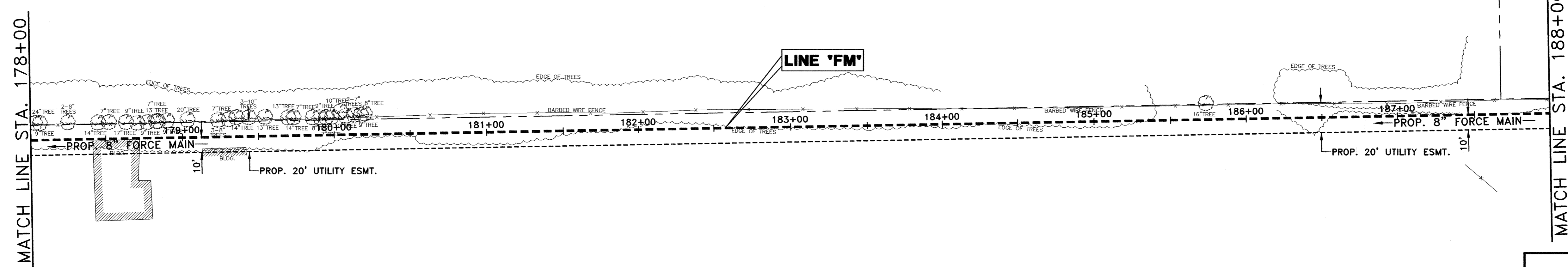
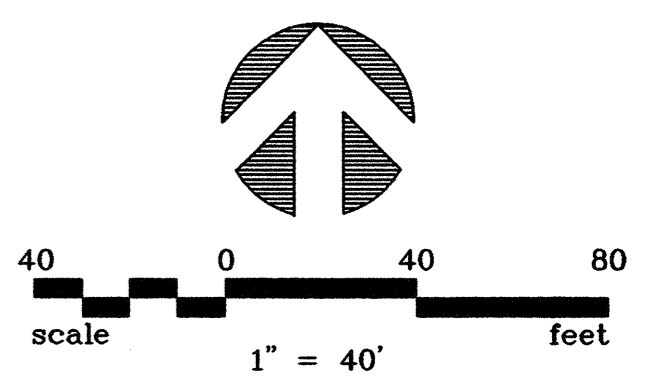
BW2 Engineers, Inc.
 1919 S. Shiloh Road
 Suite 500, L.B. 27
 Garland, Texas 75042
 (972) 864-8200 (T) (972) 864-8220 (F)
 Firm Registration No. F-5290



**WASTEWATER SYSTEM IMPROVEMENTS
 WASTEWATER FORCE MAIN AND LIFT STATION
 FORCE MAIN - PLAN AND PROFILE
 (STA. 170+00 TO STA. 178+00)**

CITY OF LUCAS

SHEET NO. **C36**
 OF SHEETS
 JOB NO. 09-1389

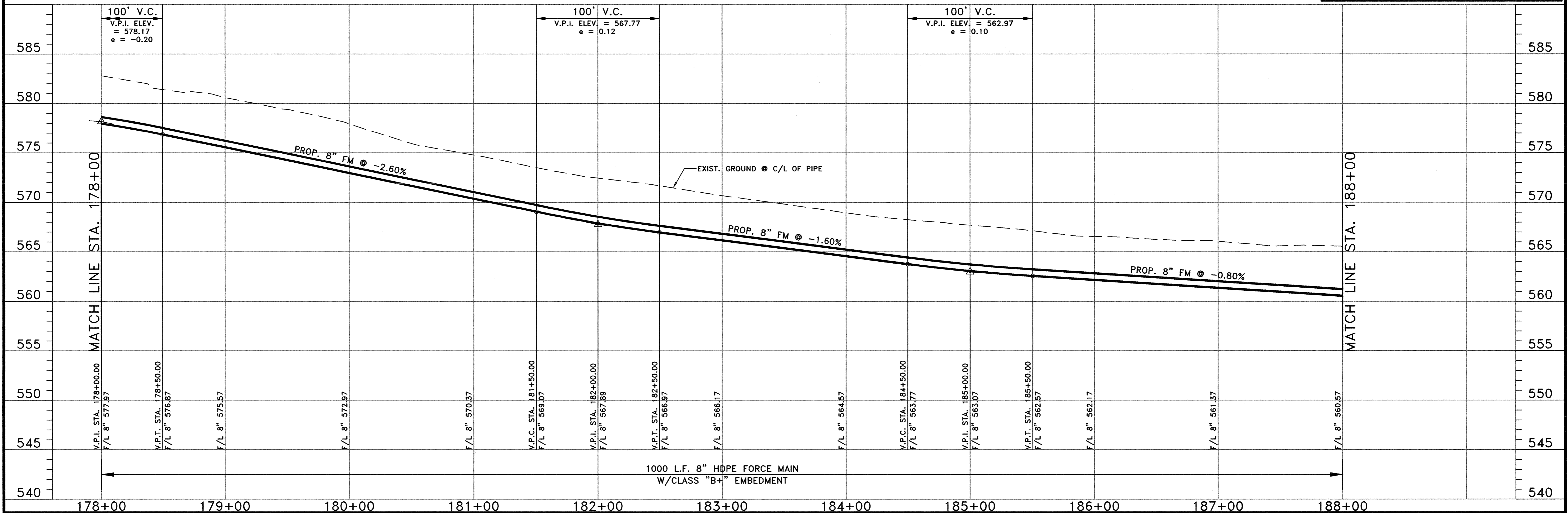


!! CAUTION !!

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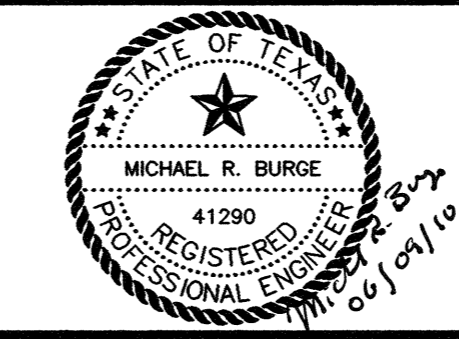


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DRAWN: BW2
 DESIGN: MRB
 REVIEWED: JFW
 SCALE: (H)1"=40', (V)1"=5'
 DATE: JUNE 2010
 DWG. NAME: 1389FMPP19



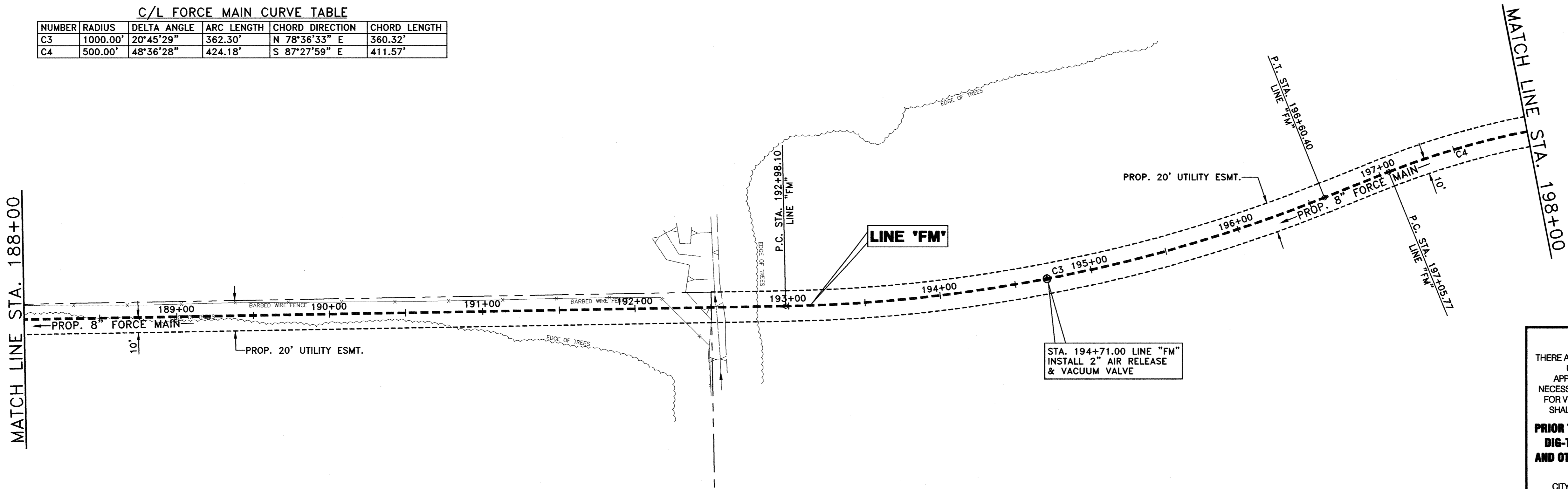
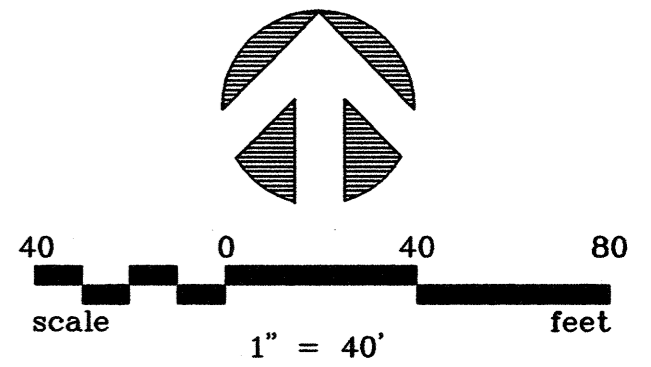
BW2 Engineers, Inc.
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 Suite 500, L.B. 27
 Garland, Texas 75042
 (972) 864-8200 (T) (972) 864-8220 (F)
 Firm Registration No. F-5290



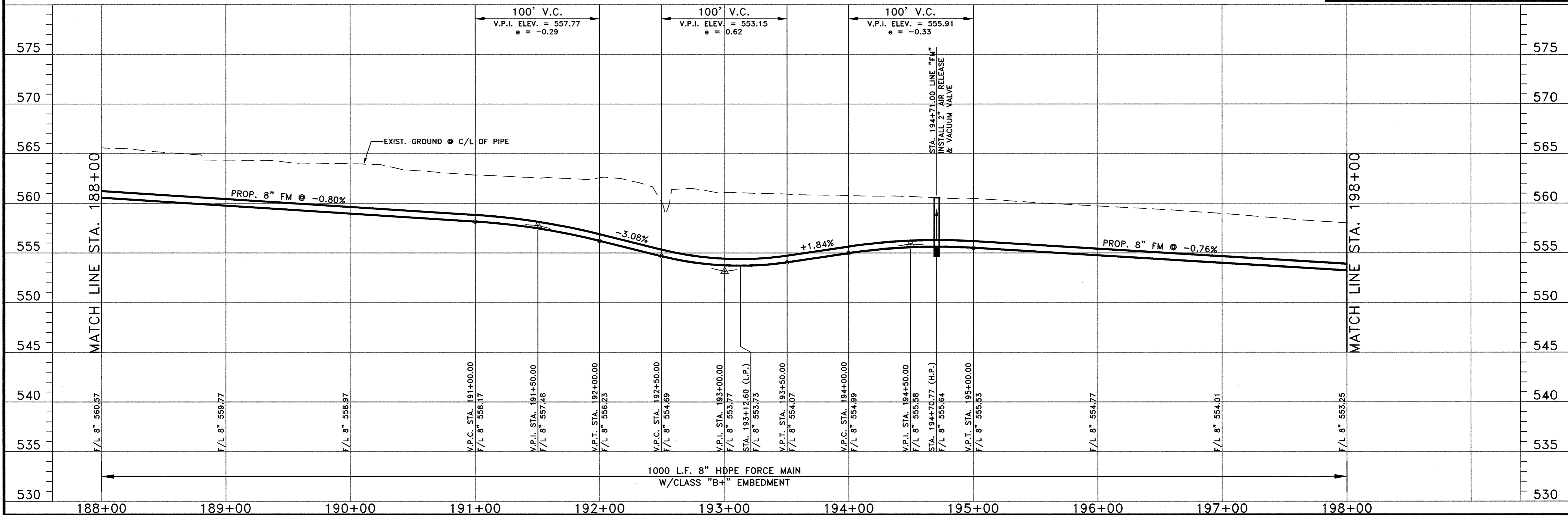
WASTEWATER SYSTEM IMPROVEMENTS
 WASTEWATER FORCE MAIN AND LIFT STATION
 FORCE MAIN - PLAN AND PROFILE
 (STA. 178+00 TO STA. 188+00)
CITY OF LUCAS

SHEET NO. C37
 OF SHEETS
 JOB NO. 09-1389

C/L FORCE MAIN CURVE TABLE					
NUMBER	RADIUS	DELTA ANGLE	ARC LENGTH	CHORD DIRECTION	CHORD LENGTH
C3	1000.00'	20°45'29"	362.30'	N 78°36'33" E	360.32'
C4	500.00'	48°36'28"	424.18'	S 87°27'59" E	411.57'



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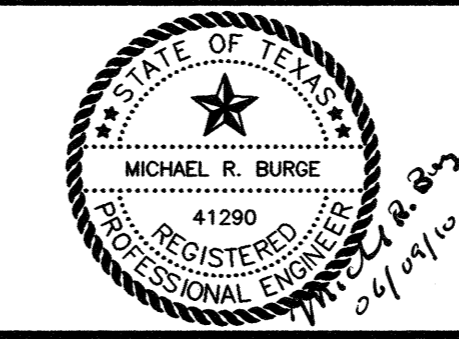


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DRAWN: BW2
 DESIGN: MRB
 REVIEWED: JFW
 SCALE: (H)1"=40', (V)1"=5'
 DATE: JUNE 2010
 DWG. NAME: 1389FMP20



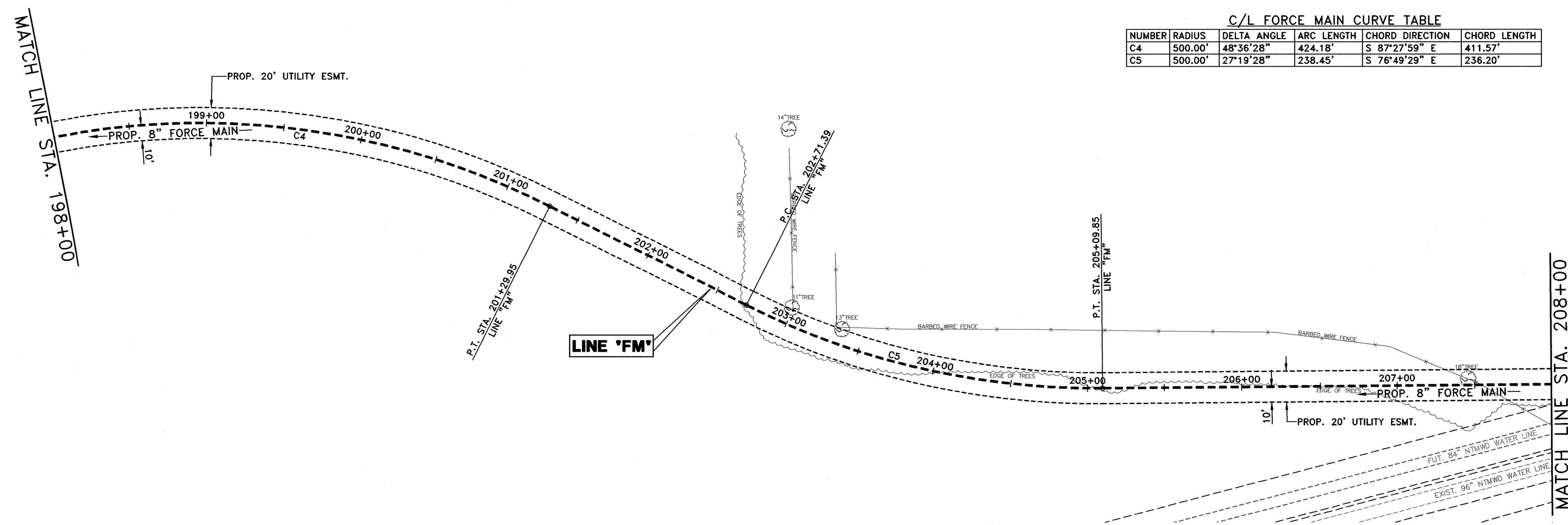
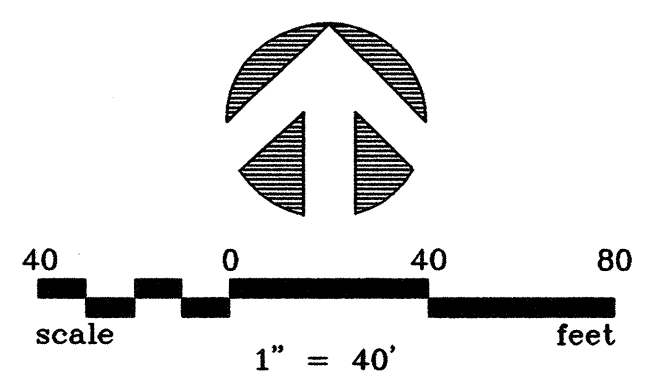
BW2 Engineers, Inc.
 1919 S. Shiloh Road
 Suite 500, L.B. 27
 Garland, Texas 75042
 (972) 864-8200 (T) (972) 864-8220 (F)
 Firm Registration No. F-5290



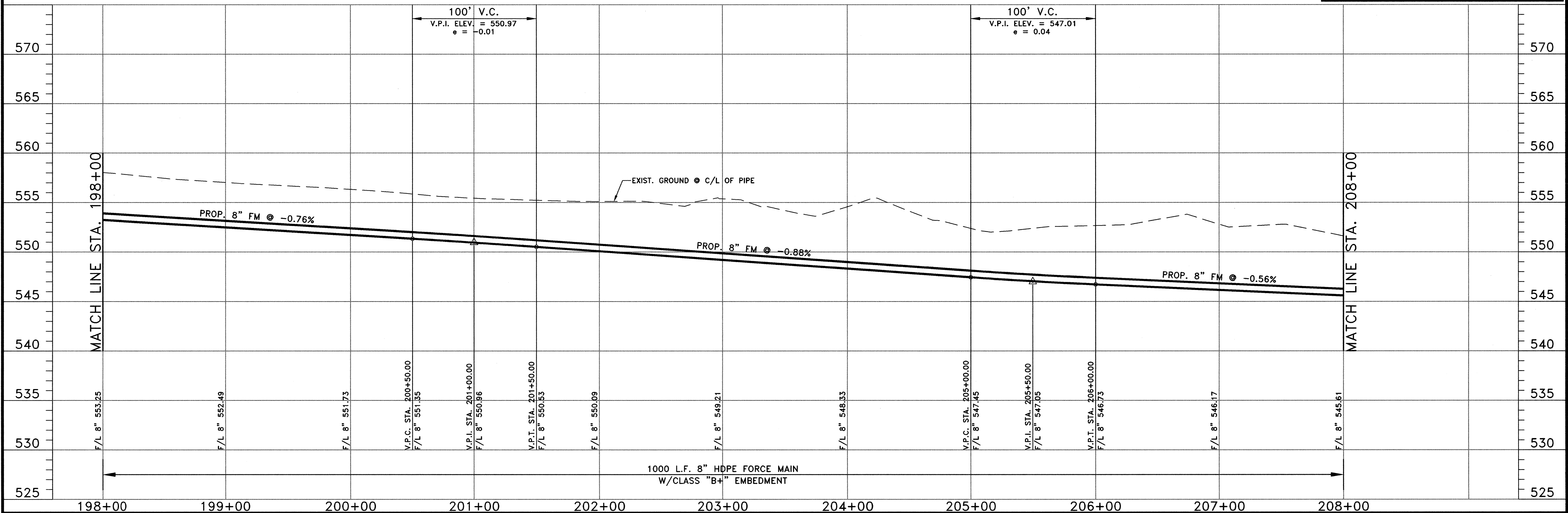
**WASTEWATER SYSTEM IMPROVEMENTS
 WASTEWATER FORCE MAIN AND LIFT STATION
 FORCE MAIN - PLAN AND PROFILE
 (STA. 188+00 TO STA. 198+00)**
CITY OF LUCAS

SHEET NO. C38
 OF SHEETS
 JOB NO. 09-1389

C/L FORCE MAIN CURVE TABLE					
NUMBER	RADIUS	DELTA ANGLE	ARC LENGTH	CHORD DIRECTION	CHORD LENGTH
C4	500.00'	48°36'28"	424.18'	S 87°27'59" E	411.57'
C5	500.00'	27°19'28"	238.45'	S 76°49'29" E	236.20'



!! CAUTION !!
 THERE ARE EXISTING AND/OR PROPOSED UTILITIES IN PROJECT AREA. UTILITY INFORMATION SHOWN ON PLANS REPRESENTS APPROXIMATE LOCATIONS OF EXISTING UTILITIES AND IS NOT NECESSARILY ALL-INCLUSIVE. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING EXACT LOCATIONS OF ALL EXISTING UTILITIES AND SHALL BE REQUIRED TO PROTECT UTILITIES TO AVOID DAMAGE.
PRIOR TO ANY EXCAVATION, CONTRACTOR SHALL CONTACT DIG-TESS, TEXAS ONE CALL, LONE STAR NOTIFICATION AND OTHERS AS REQUIRED TO LOCATE EXISTING UTILITIES.
 CONTRACTOR SHALL ALSO CONTACT APPROPRIATE CITY UTILITY DEPARTMENT FOR FIELD LOCATES OF MUNICIPAL INFRASTRUCTURE 48 HOURS PRIOR TO CONSTRUCTION.

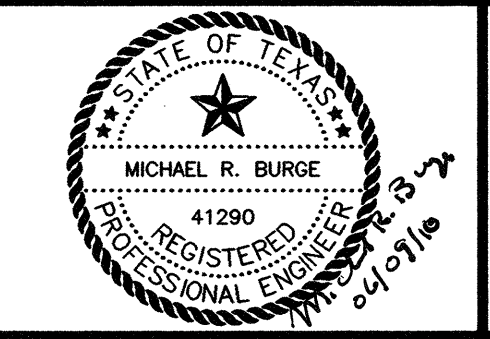


NO.	DATE	REVISION	REVIEWED
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DRAWN: BW2
 DESIGN: MRB
 REVIEWED: JFW
 SCALE: (H)1"=40', (V)1"=5'
 DATE: JUNE 2010
 DWG. NAME: 1389FMPP21

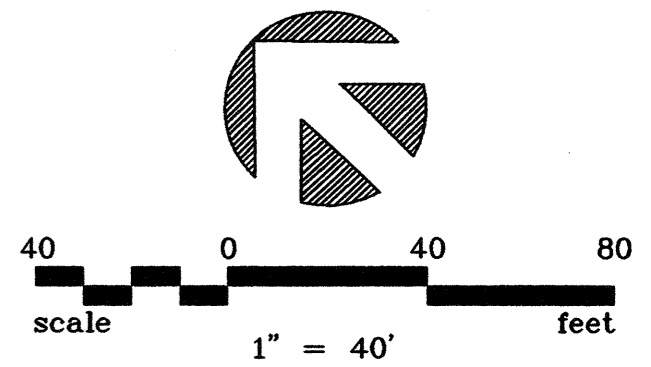


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 Firm Registration No. F-5290



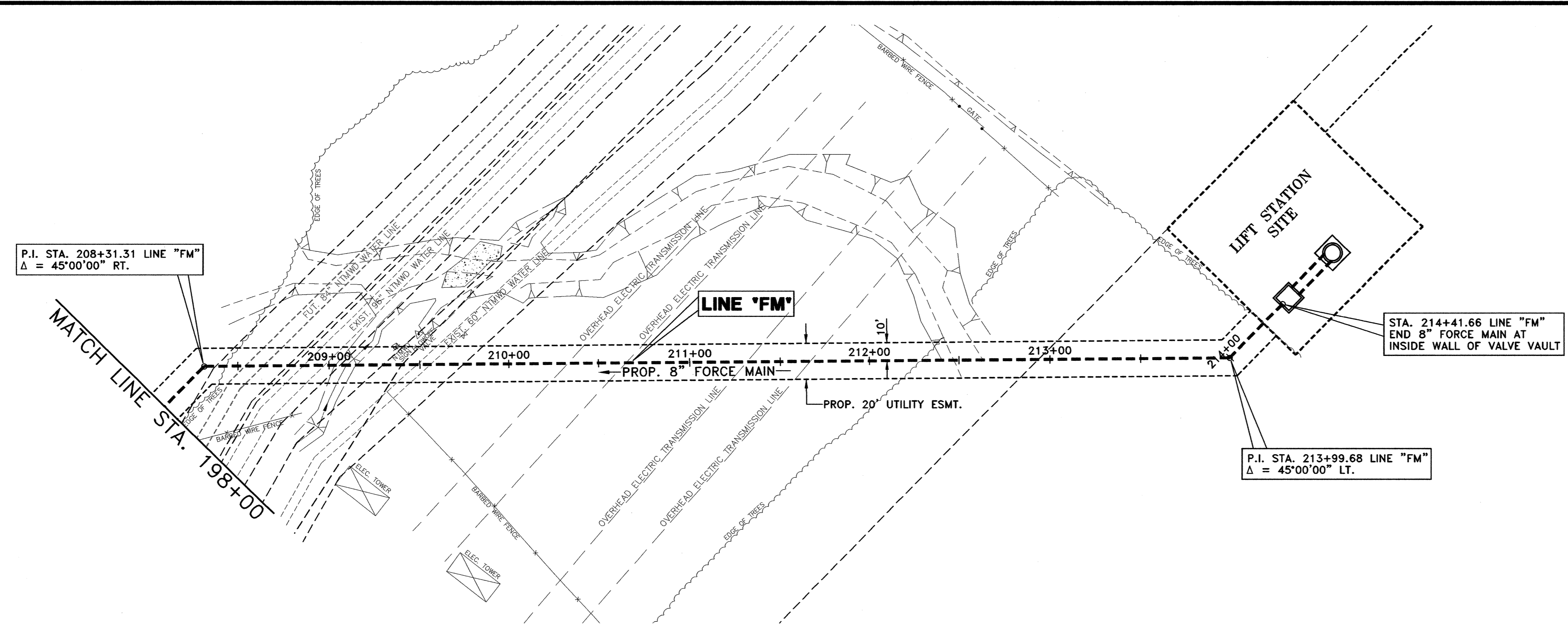
WASTEWATER SYSTEM IMPROVEMENTS
 WASTEWATER FORCE MAIN AND LIFT STATION
 FORCE MAIN - PLAN AND PROFILE
 (STA. 198+00 TO STA. 208+00)
CITY OF LUCAS

SHEET NO. C39
 OF SHEETS
 JOB NO. 09-1389



P.I. STA. 208+31.31 LINE "FM"
 $\Delta = 45^{\circ}00'00''$ RT.

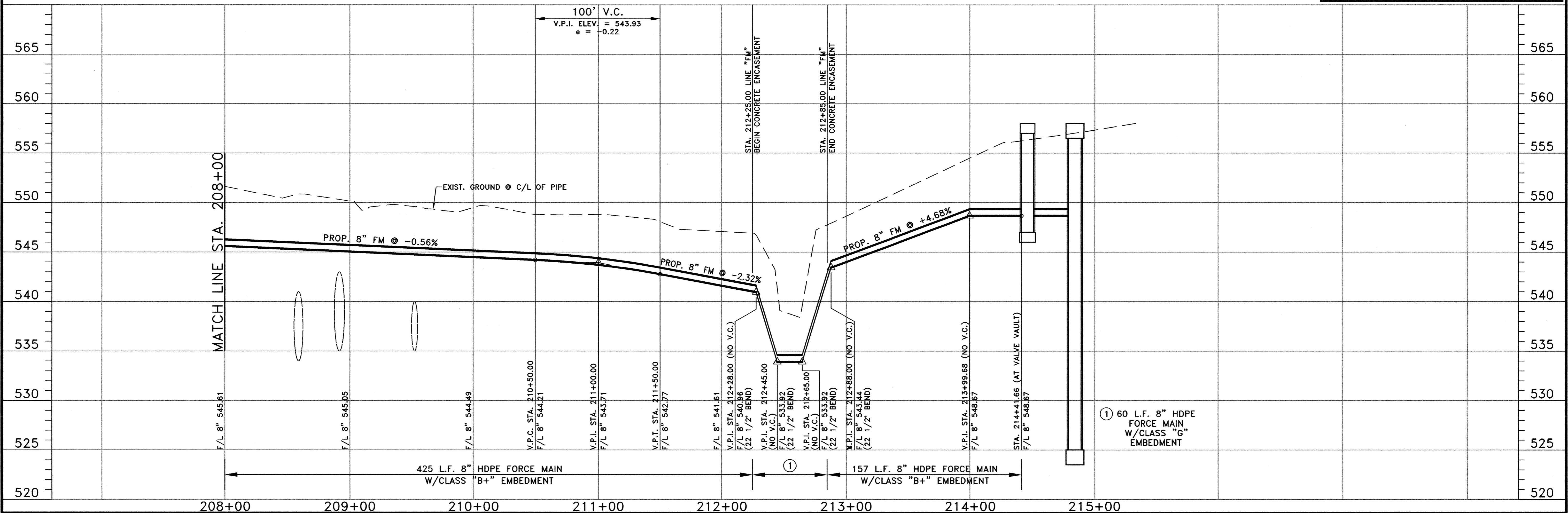
MATCH LINE STA. 198+00



STA. 214+41.66 LINE "FM"
 END 8" FORCE MAIN AT
 INSIDE WALL OF VALVE VAULT

P.I. STA. 213+99.68 LINE "FM"
 $\Delta = 45^{\circ}00'00''$ LT.

!! CAUTION !!
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PRIOR TO ANY EXCAVATION, CONTRACTOR SHALL CONTACT DIG-TESS, TEXAS ONE CALL, LONE STAR NOTIFICATION AND OTHERS AS REQUIRED TO LOCATE EXISTING UTILITIES.
 CONTRACTOR SHALL ALSO CONTACT APPROPRIATE CITY UTILITY DEPARTMENT FOR FIELD LOCATES OF MUNICIPAL INFRASTRUCTURE 48 HOURS PRIOR TO CONSTRUCTION.



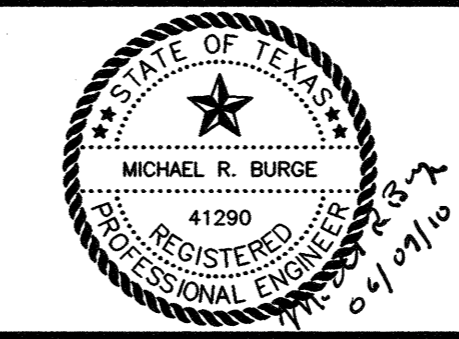
① 60 L.F. 8" HDPE FORCE MAIN W/CLASS "G" EMBEDMENT

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NO.	DATE	REVISION	REVIEWED

DRAWN: BW2
 DESIGN: MRB
 REVIEWED: JFW
 SCALE: (H)1"=40', (V)1"=5'
 DATE: JUNE 2010
 DWG. NAME: 1389FMPP22



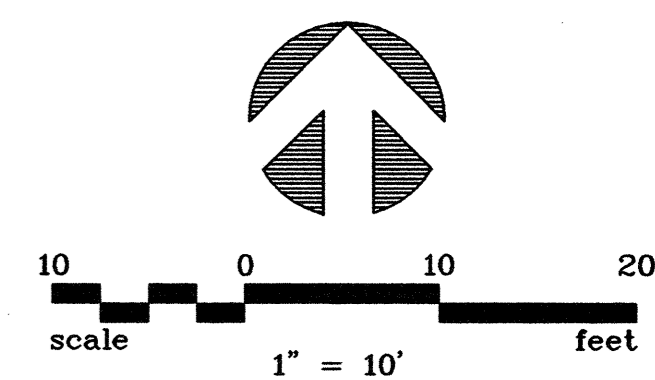
BW2 Engineers, Inc.
 1919 S. Shiloh Road
 Suite 500, L.B. 27
 Garland, Texas 75042
 (972) 864-8200 (T) (972) 864-8220 (F)
 Firm Registration No. F-5290



**WASTEWATER SYSTEM IMPROVEMENTS
 WASTEWATER FORCE MAIN AND LIFT STATION
 FORCE MAIN - PLAN AND PROFILE
 (STA. 208+00 TO STA. 214+41.66)**
CITY OF LUCAS

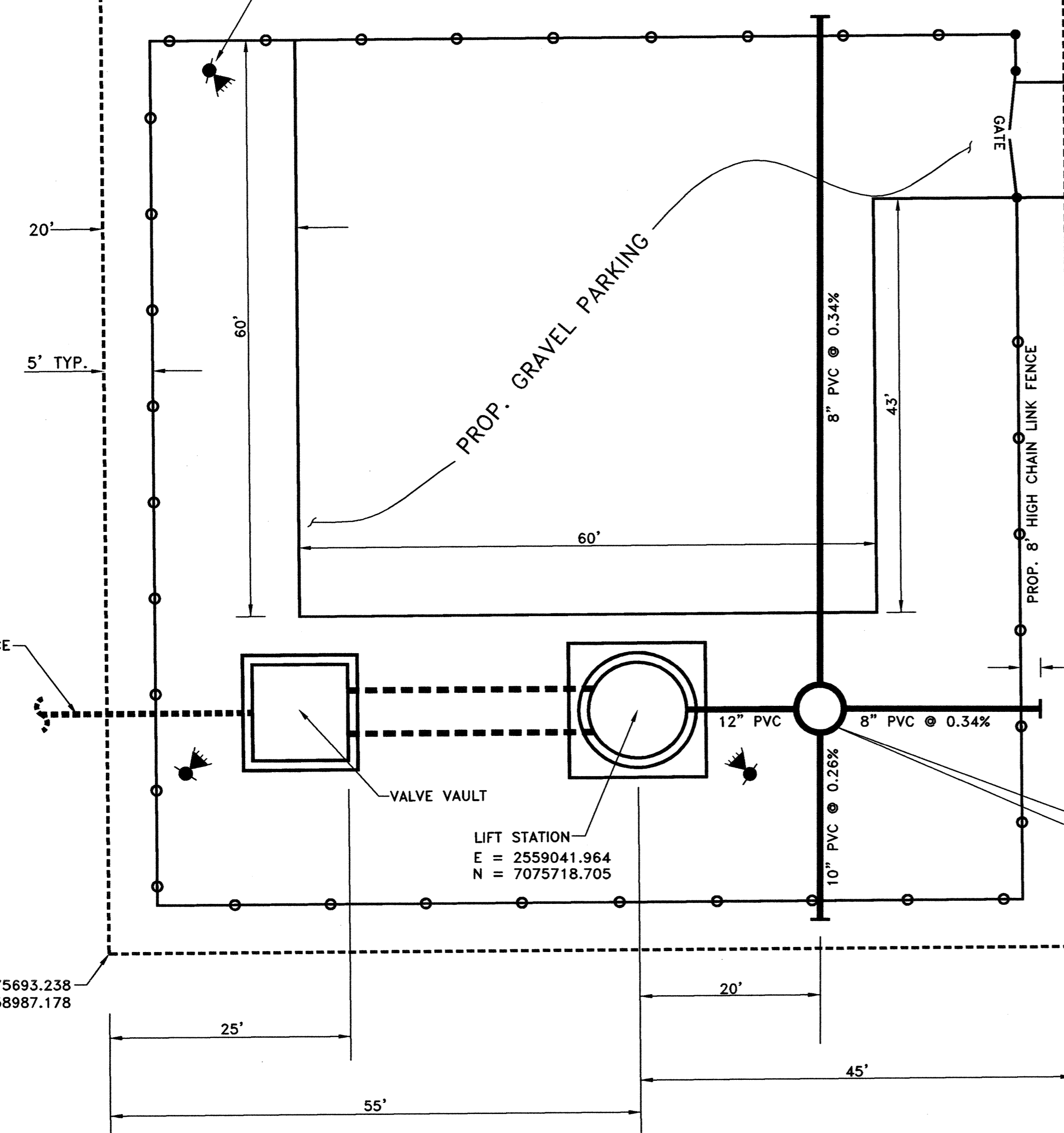
SHEET NO. C40
 OF SHEETS
 JOB NO. 09-1389

POWER LINE TRANSMISSION EASEMENT



N = 7075793.235
E = 2558986.328

N = 7075794.085
E = 2559086.325



PROP. GRAVEL PARKING

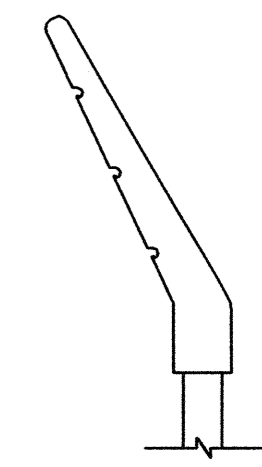
VALVE VAULT

LIFT STATION
E = 2559041.964
N = 7075718.705

N = 7075718.867
E = 2559060.963
CONST. STD. 5' DIA. M.H.
F/L 12" 529.20 (OUT)
F/L 10" 529.50 (S)
F/L 8" 529.50 (N)
F/L 8" 529.50 (E)

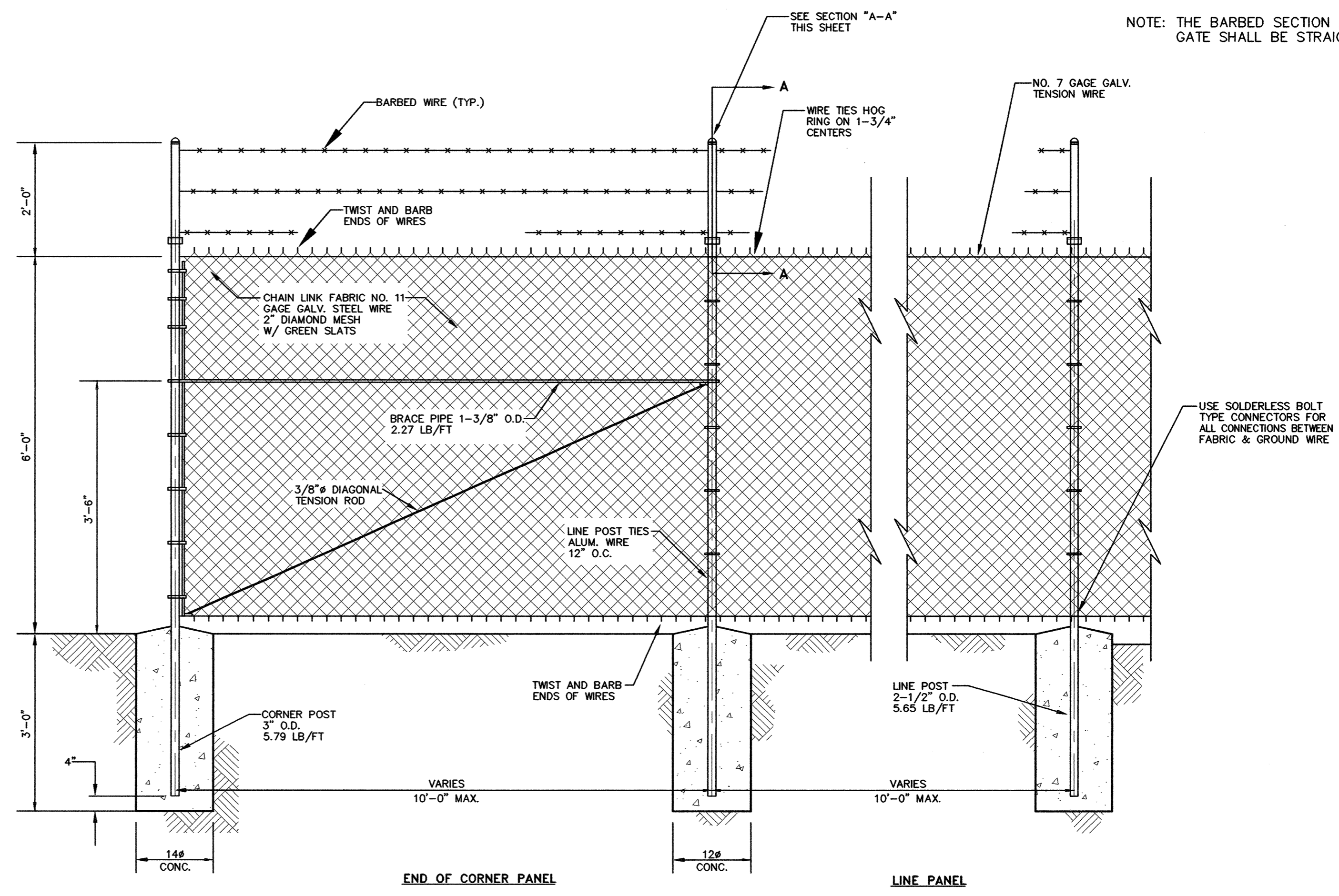
POWER POLE LINE
(BY OTHERS)

PROPOSED 25' ACCESS & POWER LINE EASEMENT



SECTION "A-A"
N.T.S.

NOTE: THE BARBED SECTION AT THE GATE SHALL BE STRAIGHT UP.



TYPICAL CHAIN LINK FENCE w/ PVC SLATS
N.T.S.

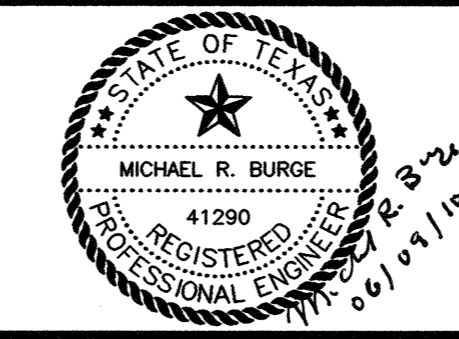
NOTE:
1. DETAILS REGARDING ELECTRICAL COMPONENTS ARE INCLUDED IN THE TECHNICAL SPECIFICATIONS.

NO.	DATE	REVISION	REVIEWED
6			
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DRAWN: _____ BW2
DESIGN: _____ MRB
REVIEWED: _____ JFW
SCALE: _____ 1" = 10'
DATE: _____ JUNE 2010
DWG. NAME: _____ 1389SITEPLAN

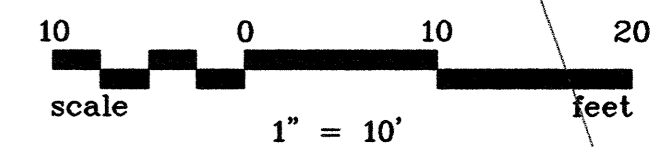
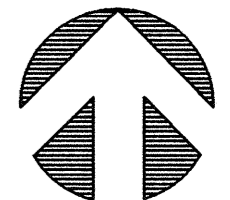


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Firm Registration No. F-5290



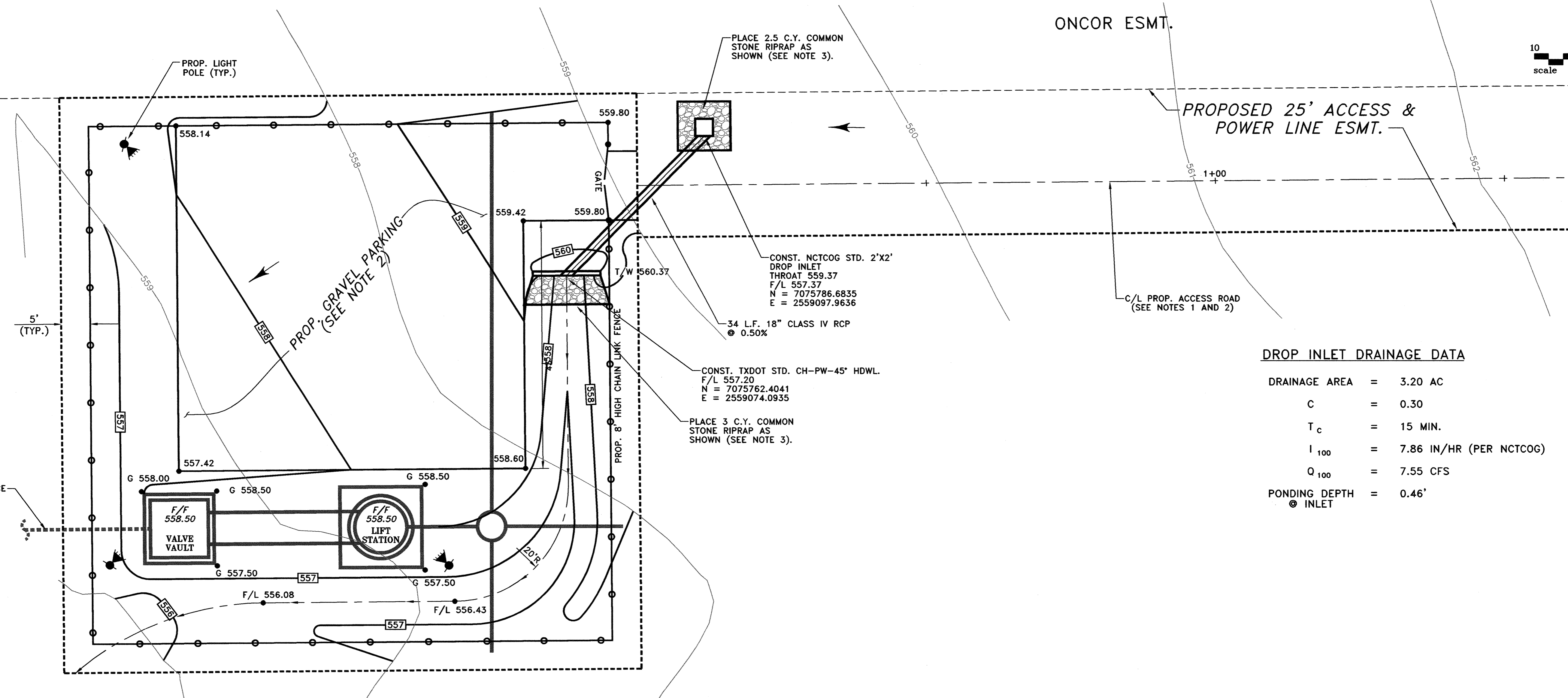
WASTEWATER SYSTEM IMPROVEMENTS
WASTEWATER FORCE MAIN AND LIFT STATION
LIFT STATION - SITE PLAN
CITY OF LUCAS

SHEET NO. C41
OF SHEETS
JOB NO. 09-1389



ONCOR ESMT.

PROPOSED 25' ACCESS & POWER LINE ESMT.



DROP INLET DRAINAGE DATA

DRAINAGE AREA	=	3.20 AC
C	=	0.30
T _c	=	15 MIN.
I ₁₀₀	=	7.86 IN/HR (PER NCTCOG)
Q ₁₀₀	=	7.55 CFS
PONDING DEPTH @ INLET	=	0.46'

LEGEND:

- 512 — EXIST. CONTOUR
- 512 — PROPOSED CONTOUR
- F/L 556.43 PROPOSED SWALE FLOWLINE
- G 558.00 PROPOSED TOP OF GROUND ELEVATION
- 557.42 PROPOSED TOP OF PAVEMENT ELEVATION
- T/W 500.00 PROPOSED TOP OF WALL ELEVATION

NOTES:

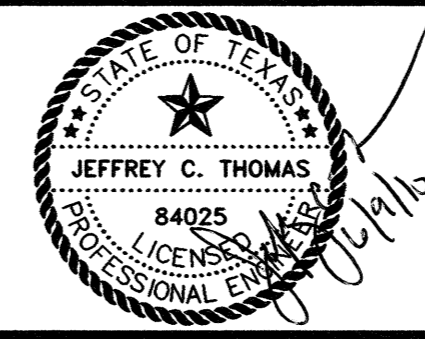
1. PROPOSED GRAVEL ACCESS ROAD SHALL BE CONSTRUCTED TO FM 1378 (APPROXIMATELY 1000' IN LENGTH)
2. THE PROPOSED GRAVEL PARKING AND ACCESS ROAD SHALL BE PER TXDOT ITEM 247: FLEXIBLE BASE (2004 STANDARD AND SPECIFICATIONS). THE GRAVEL SHALL BE COMPOSED OF 8" THICK TYPE 'C' FLEXIBLE BASE, WITH GRADE 1 AGGREGATE. THE CONTRACTOR SHALL SUBMIT MATERIAL DATA SHEETS TO CITY FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION OF THE GRAVEL PARKING AND ACCESS ROAD.
3. RIPRAP SHALL BE PER TXDOT ITEM 432 (2004 STANDARD SPECIFICATIONS) AND BE 12" THICK.

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NO.	DATE	REVISION

DRAWN: _____ BW2
 DESIGN: _____ JCT
 REVIEWED: _____ MRB
 SCALE: _____ 1" = 10'
 DATE: _____ JUNE 2010
 DWG. NAME: _____ 1389GRADING



BW2 Engineers, Inc.
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 Firm Registration No. F-5290



**WASTEWATER SYSTEM IMPROVEMENTS
 WASTEWATER FORCE MAIN AND LIFT STATION
 LIFT STATION - SITE/GRADING PLAN
 CITY OF LUCAS**

SHEET NO. C42
 OF SHEETS
 JOB NO. 09-1389

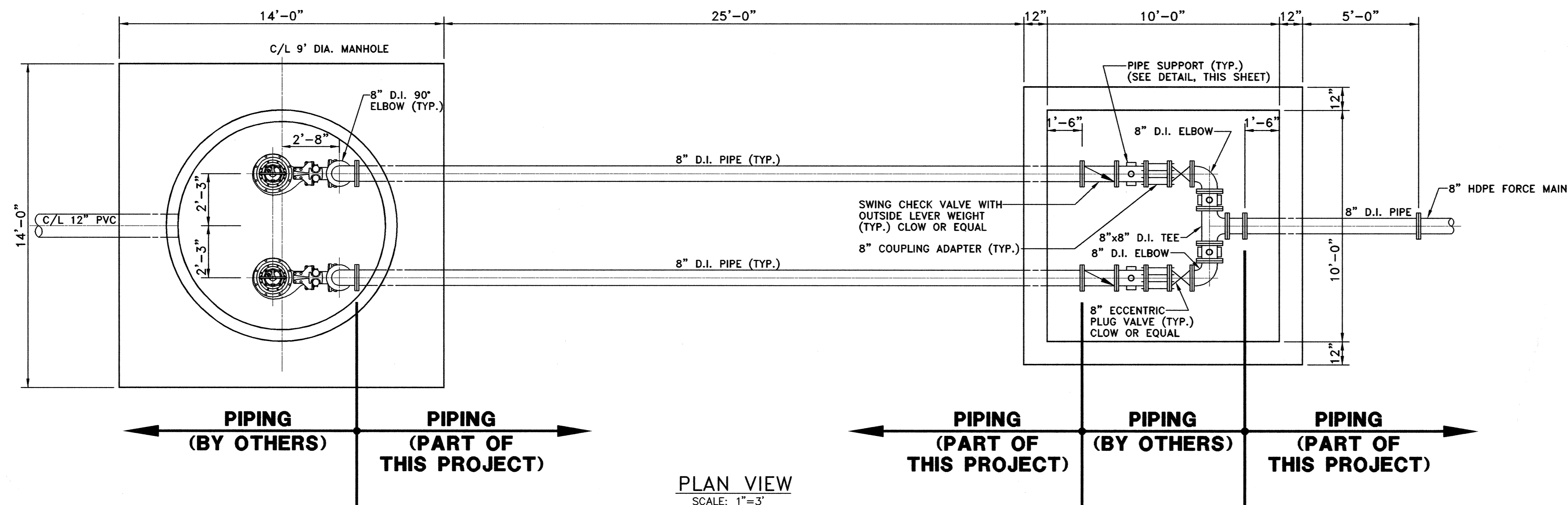
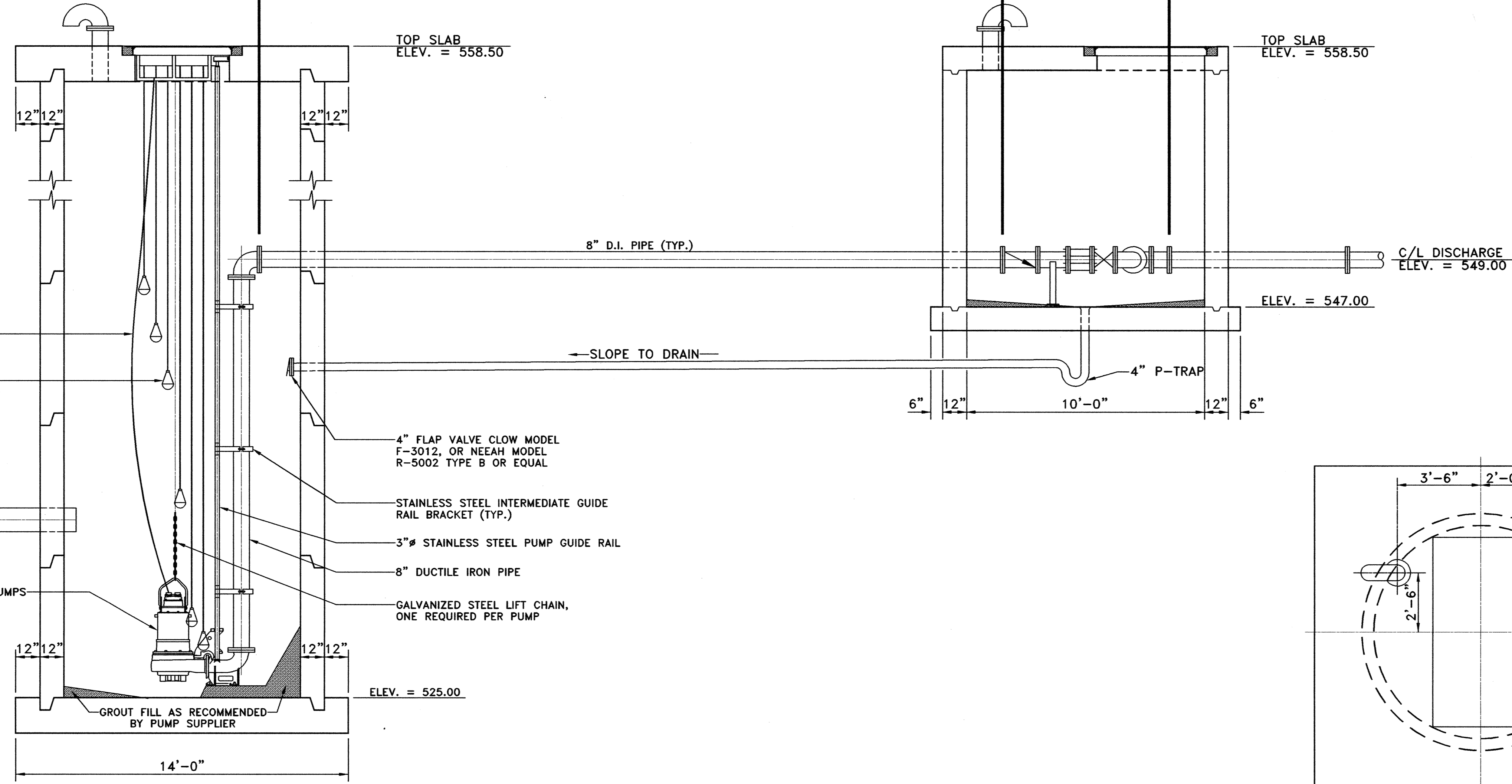
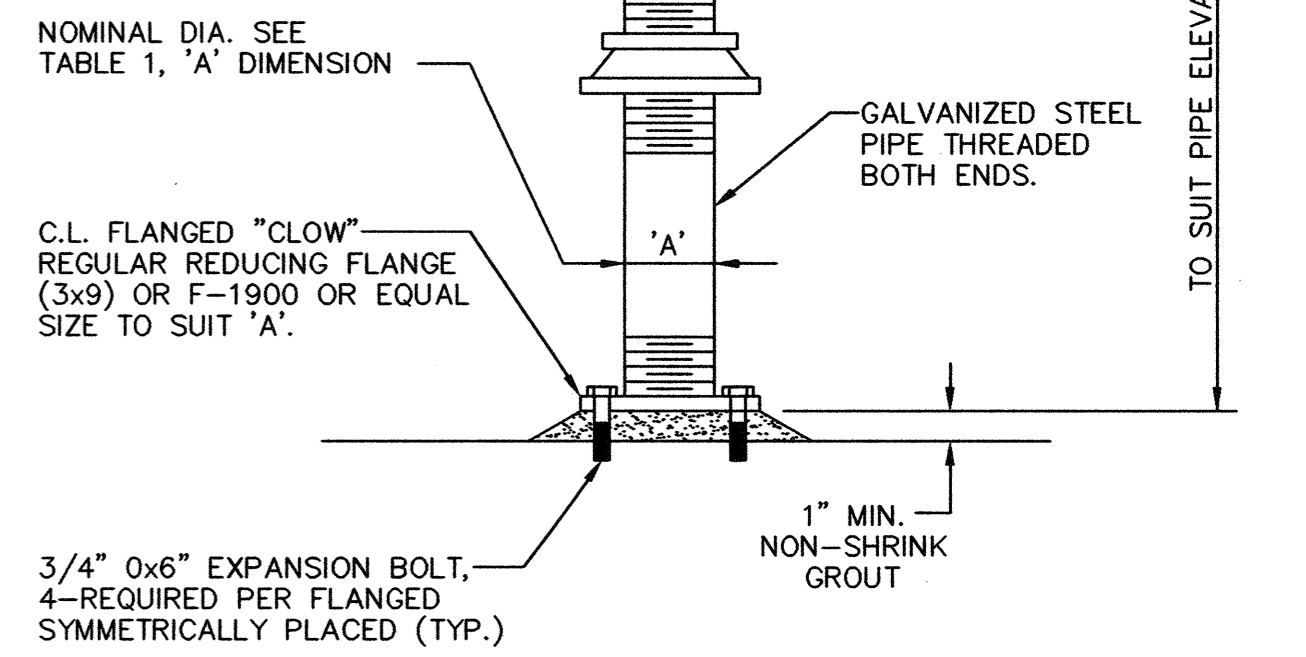
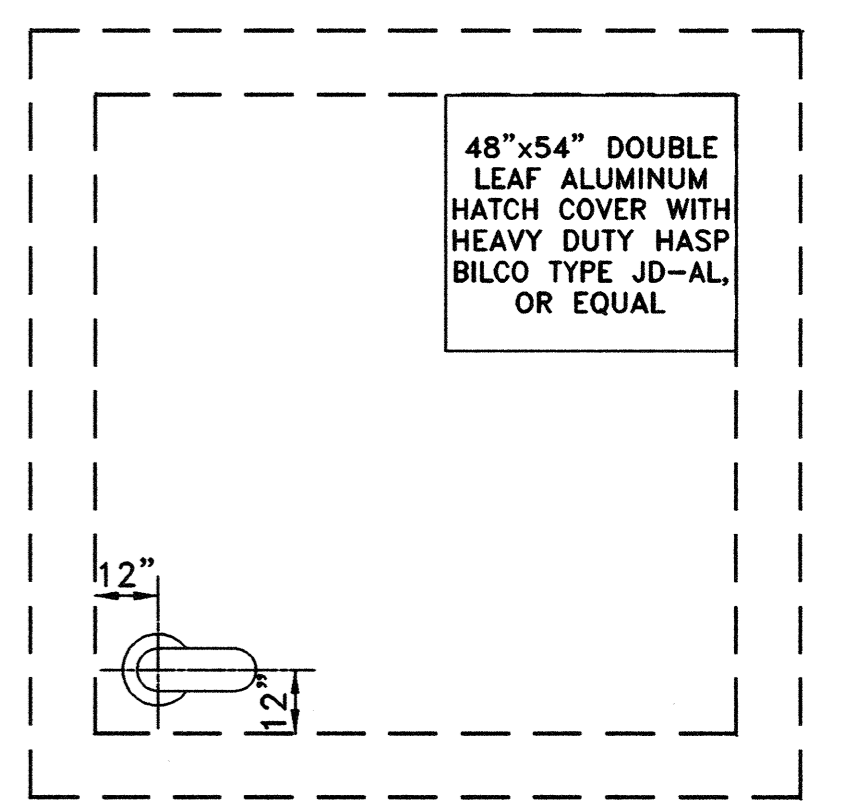
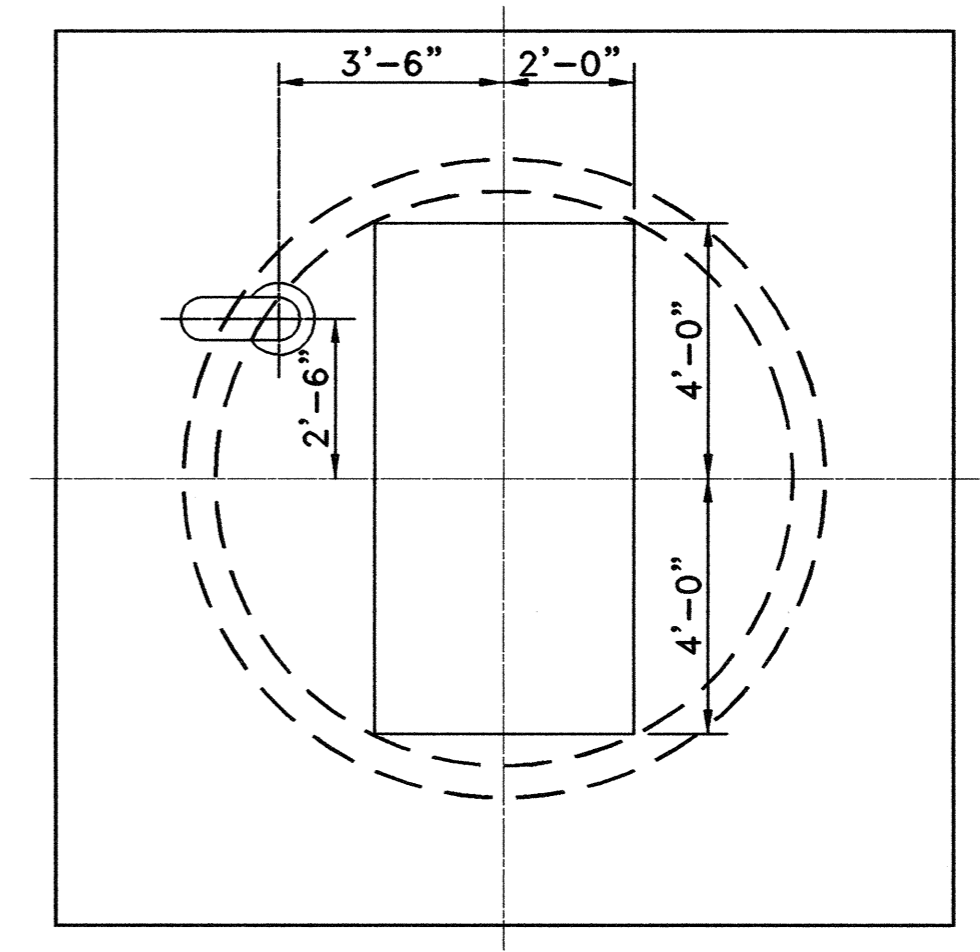


TABLE 1	
SUPPORTED PIPE SIZE	'A'
LESS THAN 3-1/2"	2"
4" THRU 12"	3"
14" THRU 16"	4"
16" AND OVER	6"



- NOTES:**
1. DETAILS REGARDING ELECTRICAL COMPONENTS ARE INCLUDED IN THE TECHNICAL SPECIFICATIONS.
 2. SUBMERSIBLE PUMPS AND ASSOCIATED COMPONENTS SHALL BE FURNISHED AND INSTALLED BY OTHERS.

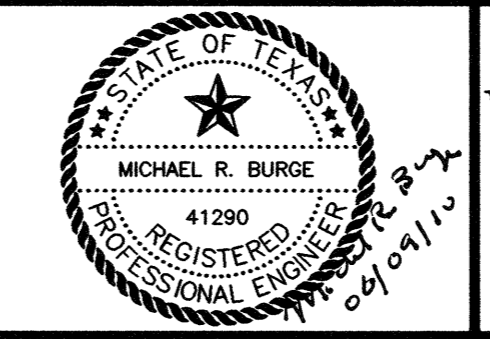


NO.	DATE	REVISION	REVIEWED
6			
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DRAWN: BW2
 DESIGN: MRB
 REVIEWED: JFW
 SCALE: AS SHOWN
 DATE: JUNE 2010
 DWG. NAME: 1389MECH

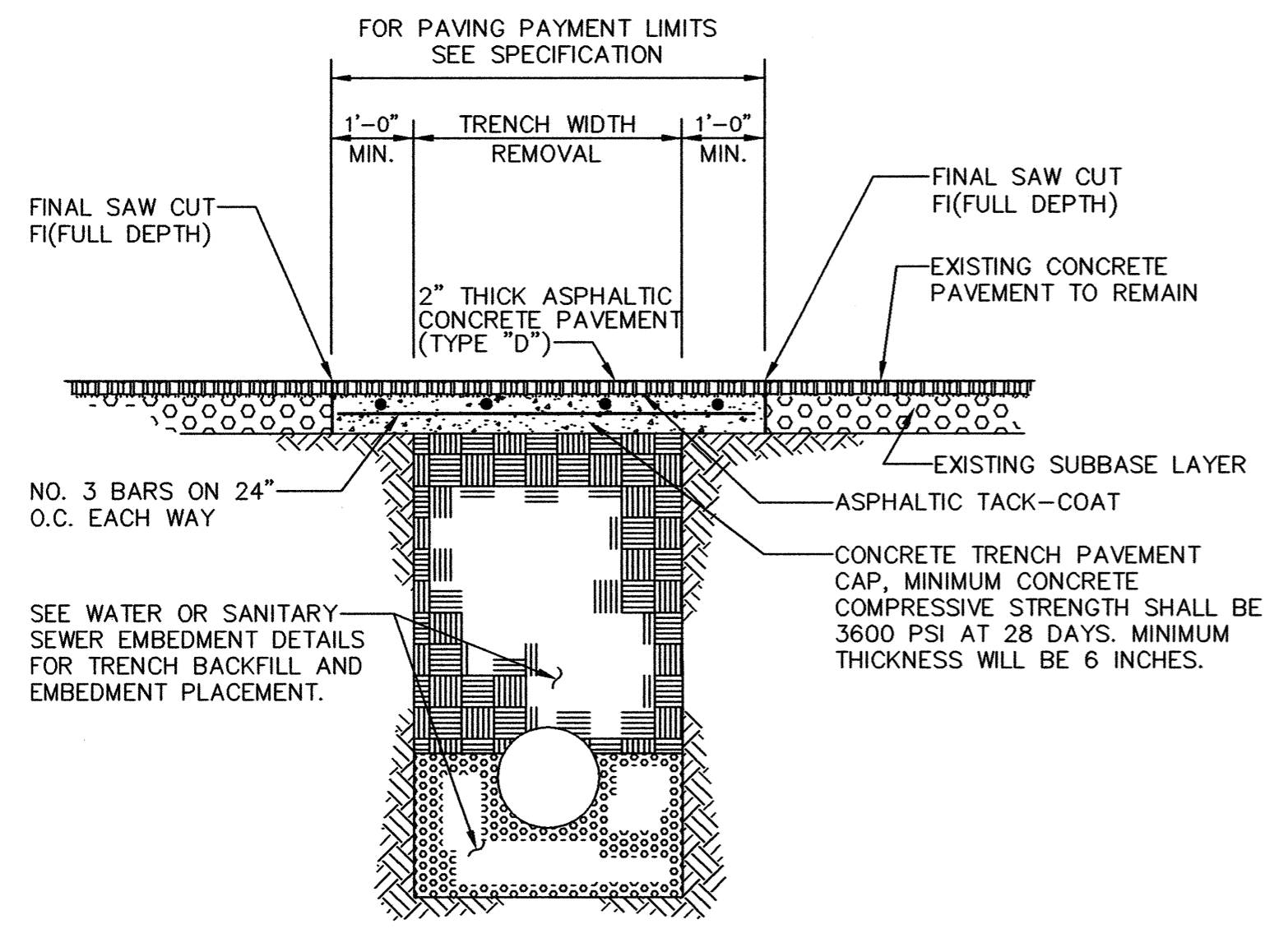


BW2 Engineers, Inc.
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 Firm Registration No. F-5290

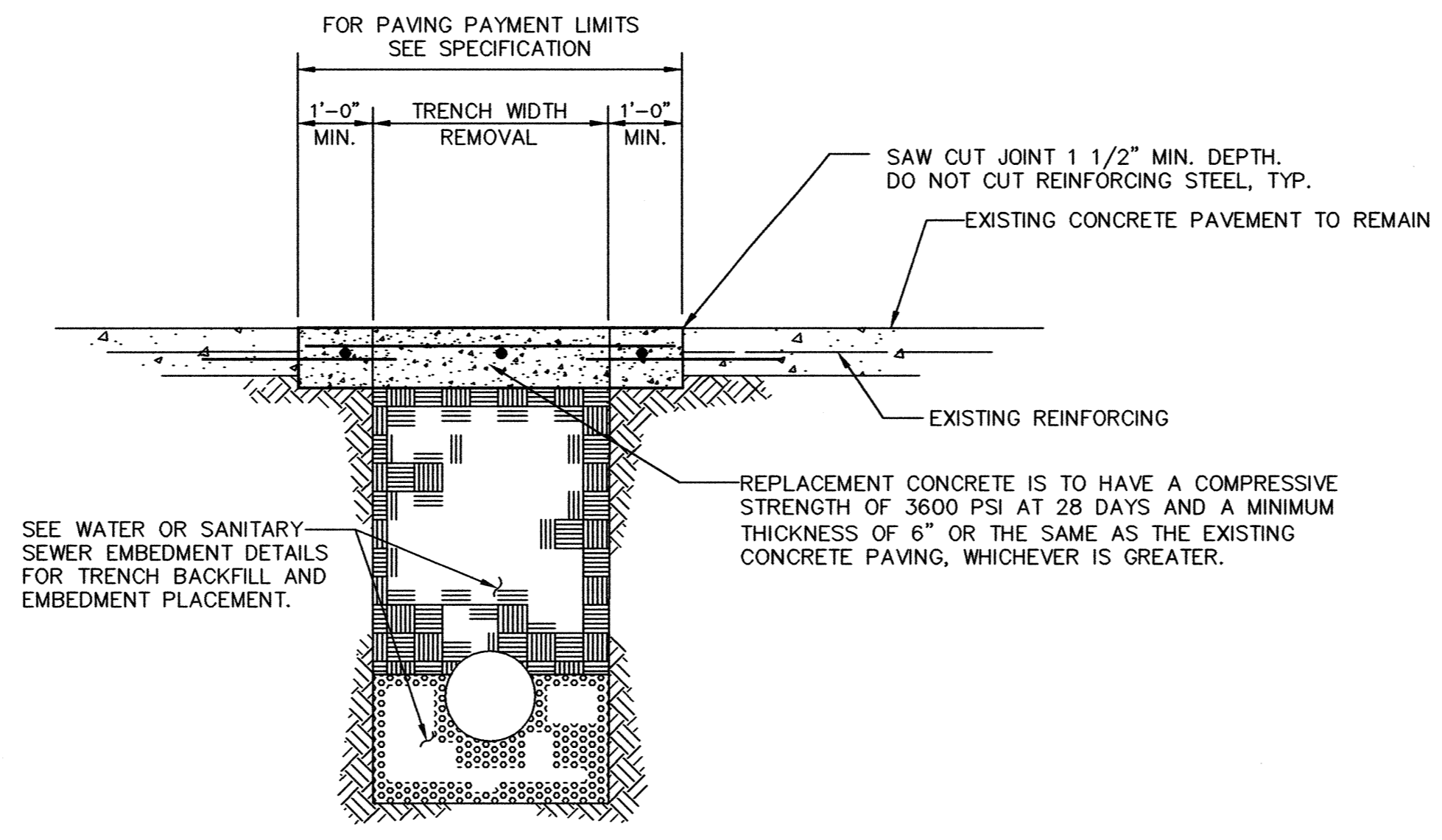


**WASTEWATER SYSTEM IMPROVEMENTS
 WASTEWATER FORCE MAIN AND LIFT STATION
 LIFT STATION - MECHANICAL PLAN
 CITY OF LUCAS**

SHEET NO. **C43**
 OF SHEETS
 JOB NO. 09-1389



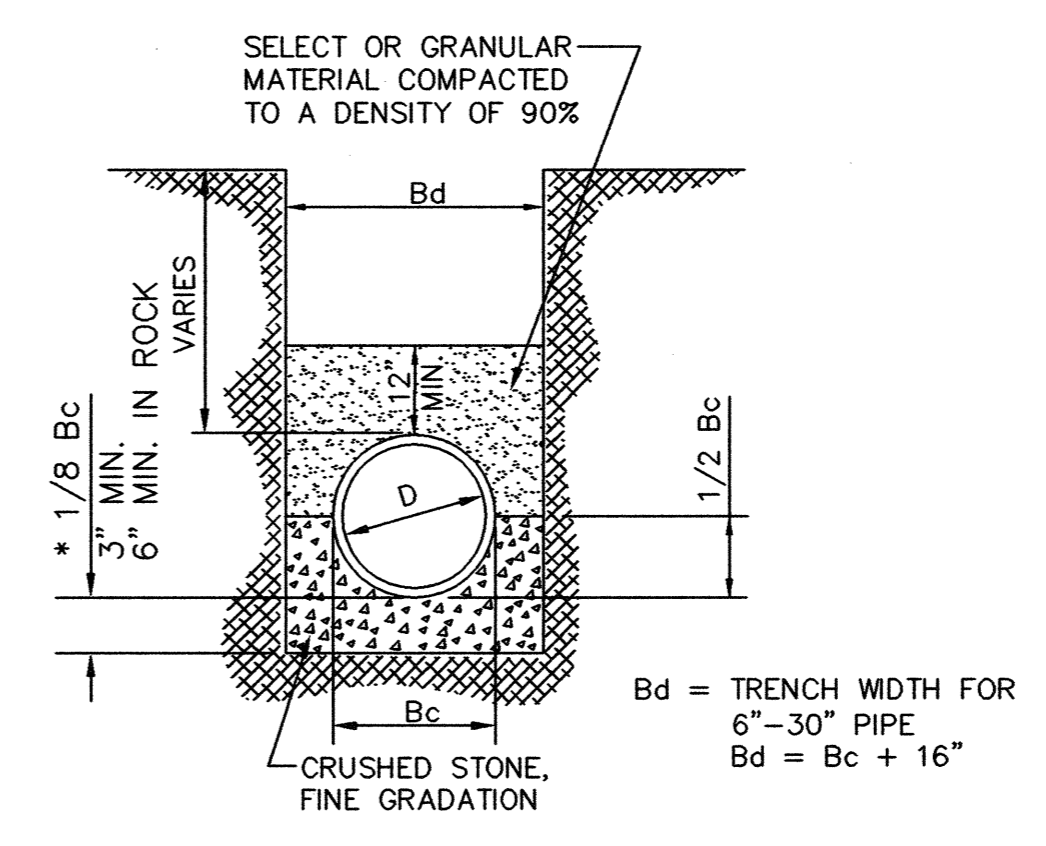
FLEXIBLE BASE AND ASPHALTIC CONCRETE SURFACE



REINFORCED CONCRETE PAVEMENT

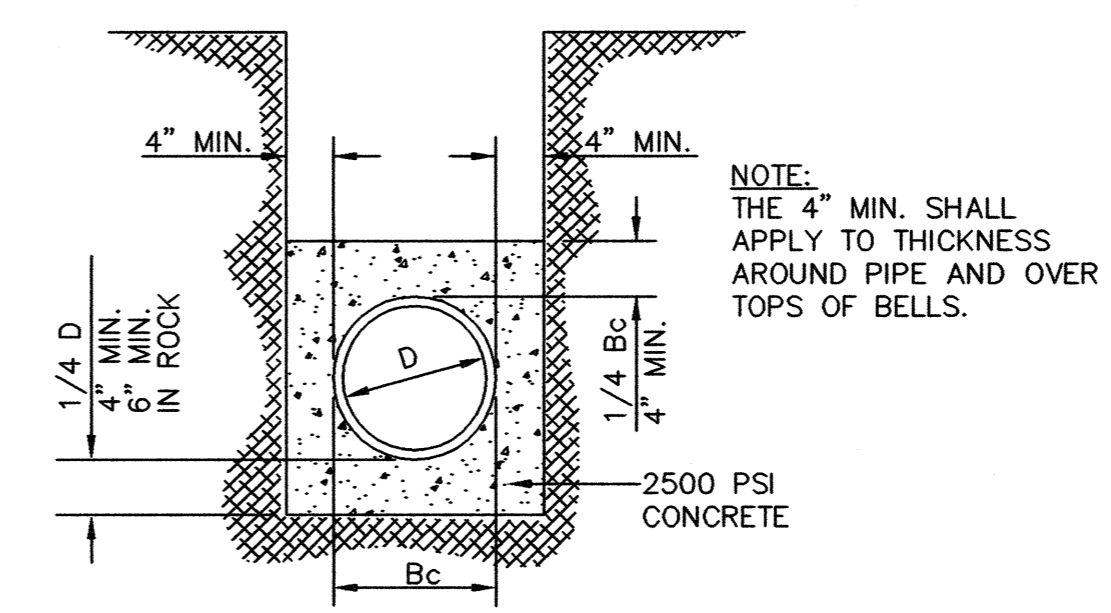
TYPICAL PAVEMENT REPAIR DETAILS

N.T.S.



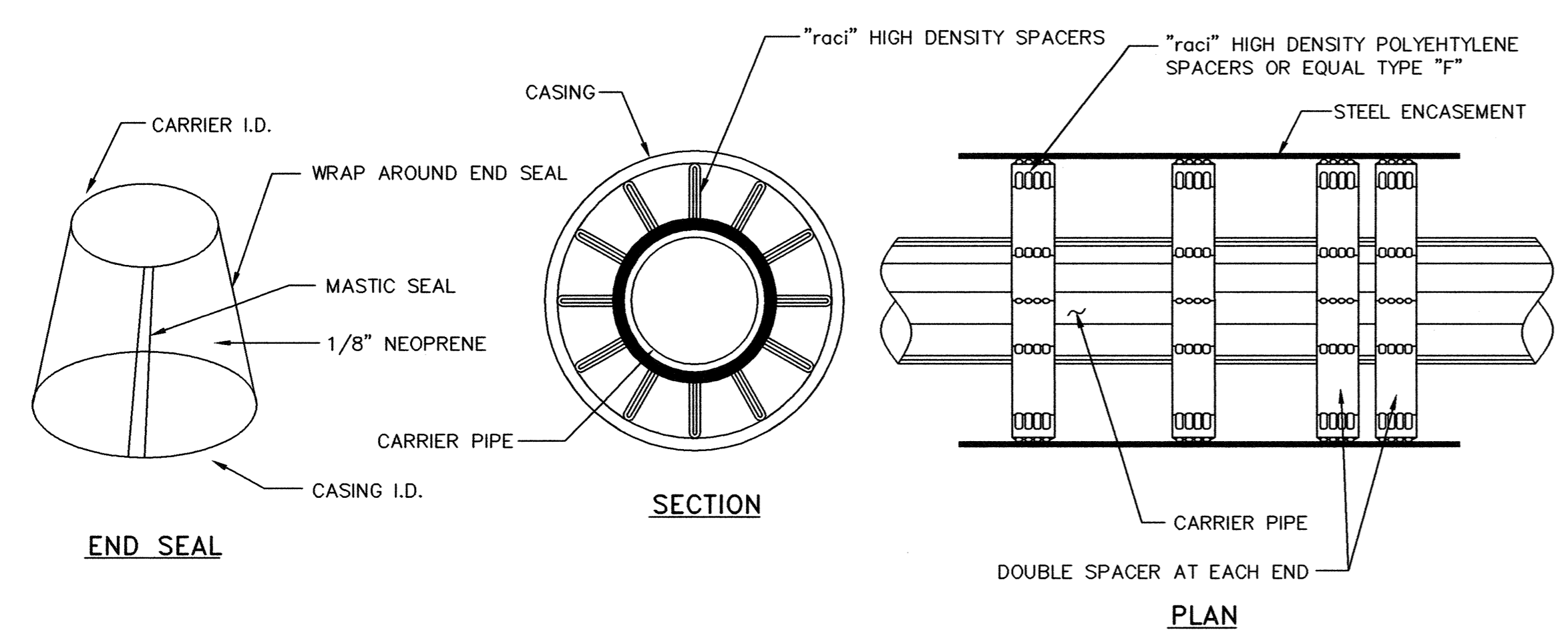
CLASS "B+" EMBEDMENT

N.T.S.



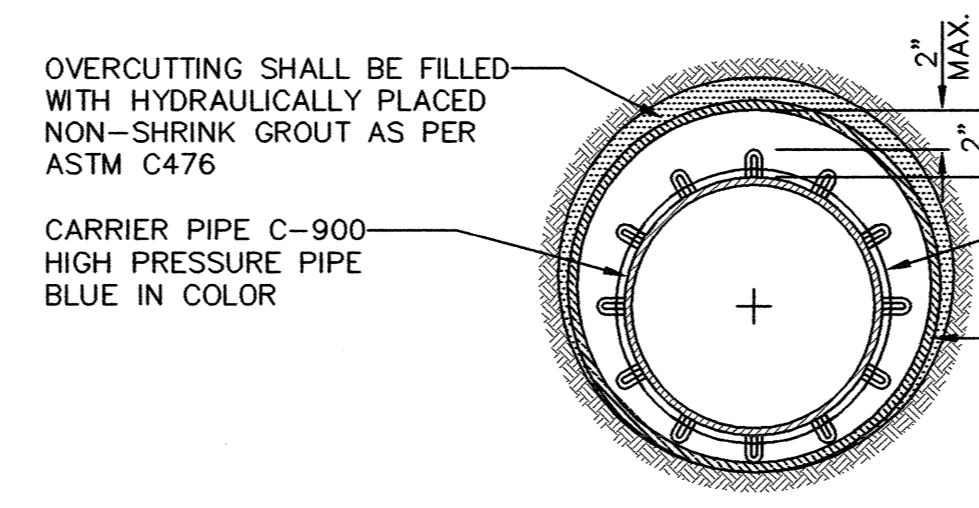
CLASS "G" EMBEDMENT (CONCRETE ENCASEMENT)

N.T.S.



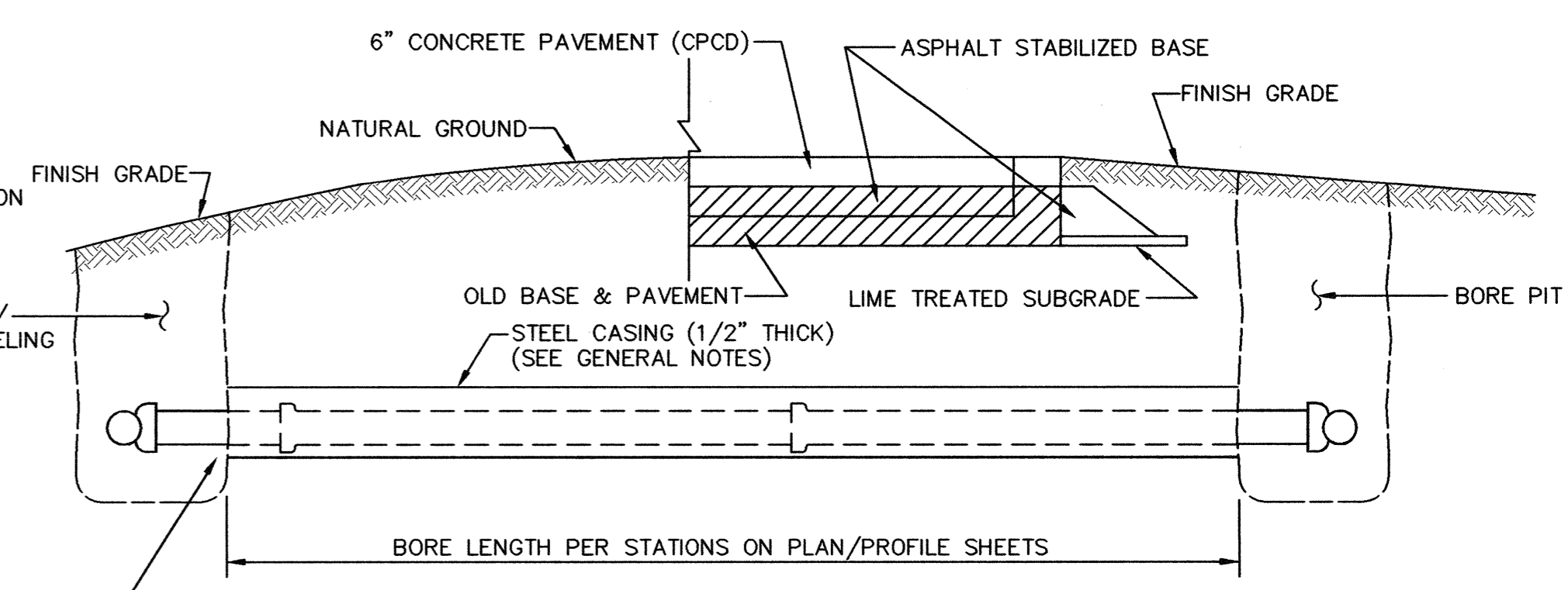
PIPE CASING SPACERS DETAIL

N.T.S.



CROSS-SECTION OF BORE WITH STEEL CASING

N.T.S.



BORING DETAIL

N.T.S.

GENERAL NOTES:

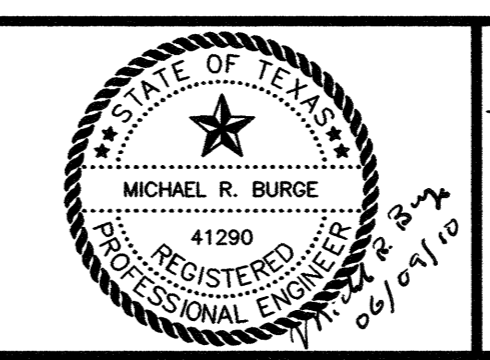
- ALL CONSTRUCTION ACTIVITIES SHALL BE RESTRICTED TO THE EASEMENTS.
- WHERE A BORE/TUNNELING PIT EXCEEDS FIVE (5) FEET IN DEPTH THE CONTRACTOR SHALL INSTALL SHORING OF THE PIT WALLS AS REQUIRED BY TEXAS STATE LAW (HB 662 AND HB 665) REGARDING THE SAFETY SYSTEMS TO BE USED DURING TRENCH EXCAVATION (AS STATED IN THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATIONS STANDARDS).
- ALL BORE/TUNNELING PITS SHALL BE BACKFILLED WITHIN FORTY-EIGHT (48) HOURS OF UTILITY INSTALLATION. NO BORE/TUNNELING PIT SHALL REMAIN OPEN IN EXCESS OF SEVENTY-TWO (72) HOURS WITHOUT SHORING TO PREVENT THE CAVING OF PIT WALLS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PHYSICALLY VERIFYING ALL UTILITY CLEARANCES PRIOR TO BEGINNING INSTALLATION.
- CONTRACTOR SHALL REMOVE UNSTABLE MATERIAL FROM THE BOTTOM OF THE BORE PITS ONCE CONSTRUCTION OF THE TUNNEL IS COMPLETE AND CARRIER PIPE HAS BEEN INSTALLED AND SHALL REPLACE THIS UNSTABLE MATERIAL WITH DRY STABLE MATERIAL THAT WILL ADEQUATELY AND SUFFICIENTLY SUPPORT THE PROPOSED PIPELINE.
- CONTRACTOR SHALL INSTALL RACI SPACERS (OR EQUAL) IN ANNULAR SPACE BETWEEN CARRIER PIPE AND CASING PIPE.

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NO.	DATE	REVISION	REVIEWED

DRAWN: BW2
 DESIGN: MRB
 REVIEWED: JFW
 SCALE: N.T.S.
 DATE: JUNE 2010
 DWG. NAME: 1389DETAIL1



BW2 Engineers, Inc.
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 Firm Registration No. F-5290



WASTEWATER SYSTEM IMPROVEMENTS
 WASTEWATER FORCE MAIN AND LIFT STATION
 GENERAL CONSTRUCTION DETAILS - SHEET 1
CITY OF LUCAS

SHEET NO. **C44**
 OF SHEETS
 JOB NO. 09-1389

GENERAL TRAFFIC CONTROL NOTES

1. ALL TEMPORARY SIGNS, MARKINGS, CONES, CHANNELIZING DEVICES, WARNING LIGHTS AND BARRICADES SHALL BE IN ACCORDANCE WITH THE CURRENT STATE OF TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
2. TYPE "A" WARNING LIGHTS SHALL BE PLACED ON ALL ADVANCE WARNING SIGNS.
3. REDUCED SPEED WARNING SIGNAGE SHOULD BE PLACED PRIOR TO AND AT REGULAR INTERVALS NEAR CONSTRUCTION AREA.

GENERAL STRUCTURAL NOTES:

FOUNDATION:

1. THE FOUNDATIONS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE SOILS REPORT PREPARED BYDATED..... PROJECT NO.....
2. THE CONTRACTOR AND ALL SUBCONTRACTORS SHOULD BE TOTALLY FAMILIAR WITH THE CONTENTS OF THE SOILS REPORT.
3. ANY CONDITION FOUND, PRIOR TO OR DURING CONSTRUCTION, THAT IS DIFFERENT THAN THAT DESCRIBED IN THE SOILS REPORT AND THAT WOULD AFFECT THE FOUNDATIONS AS DESIGNED, SHALL BE BROUGHT TO THE ATTENTION OF BW2 ENGINEERS AND/OR JOE P. HILL, P. E., INC.
4. IN NO CASE SHALL CONSTRUCTION PROCEED IF THE PERFORMANCE OF THE FOUNDATIONS, AS DESIGNED, WILL BE COMPROMISED.
5. PRIOR TO ANY NEW CONSTRUCTION, THE SITE SHALL BE CLEARED OF ANY AND ALL OBSTRUCTIONS THAT WOULD HINDER THE PROPER PREPARATION OF THE SITE FOR CONSTRUCTION.
6. ALL CLEARED DEBRIS SHALL BE REMOVED AND DISPOSED OF PROPERLY.
7. ANY FILL MATERIAL USED FOR GENERAL SITE FILL SHALL CONSIST OF ON-SITE MATERIALS OR IMPORTED MATERIALS AS APPROVED BY THE SOILS ENGINEERS.
8. IMPORTED FILL SHALL HAVE A LIQUID LIMIT LESS THAN 35.
9. IMPORTED FILL SHALL BE FREE OF ROOTS, VEGETATION OR ANY OTHER UNDESIRABLE MATTER IN THE SOIL AND HAVE NO ROCKS LARGER THAN 4 INCHES IN DIAMETER.
10. THE SELECT FILL SHALL BE PLACED IN LOOSE LIFTS OF NINE (9) INCHES OR LESS AND COMPACTED TO AT LEAST 95% OF ITS STANDARD PROCTOR DRY DENSITY AT A MOISTURE CONTENT RANGING FROM -1% TO +3% ABOVE ITS OPTIMUM VALUE.
11. BEFORE PLACING THE SELECT FILL, THE SUB GRADE SHALL BE SCARIFIED TO A DEPTH OF AT LEAST NINE (9) INCHES, MOISTURE CONDITIONED TO AT LEAST 2% ABOVE THE OPTIMUM VALUE (AT A WORKABLE MOISTURE LEVEL) AND COMPACTED TO AT LEAST 95% OF THE MAXIMUM STANDARD PROCTOR DRY DENSITY.
12. SITE GRADING OPERATIONS, WHERE REQUIRED, SHALL BE PERFORMED IN ACCORDANCE WITH THE RECOMMENDATIONS PROVIDED IN THE SOILS REPORT.
13. SITE GRADING PLANS AND CONSTRUCTION SHALL STRIVE TO ACHIEVE POSITIVE DRAINAGE AROUND ALL SIDES OF THE PROPOSED STRUCTURE.
14. INADEQUATE DRAINAGE AROUND STRUCTURES BUILT ON GRADE CAN CAUSE EXCESSIVE VERTICAL DIFFERENTIAL MOVEMENTS TO OCCUR.
15. THE GEOTECHNICAL ENGINEER SHALL MONITOR FOUNDATION CONSTRUCTION TO VERIFY CONDITIONS ARE AS ANTICIPATED.
16. FOUNDATION EXCAVATION SHALL BE DRY AND FREE OF LOOSE MATERIAL.
17. EXCAVATION FOR FOUNDATIONS SHALL BE FILLED WITH CONCRETE BEFORE THE END OF THE WORKDAY OR SOONER IF NECESSARY TO PREVENT DETERIORATION OF THE BEARING SURFACE.
18. ALL EXCAVATIONS SHALL BE SLOPED, SHORED OR SHIELDED IN ACCORDANCE WITH OSHA REQUIREMENTS.

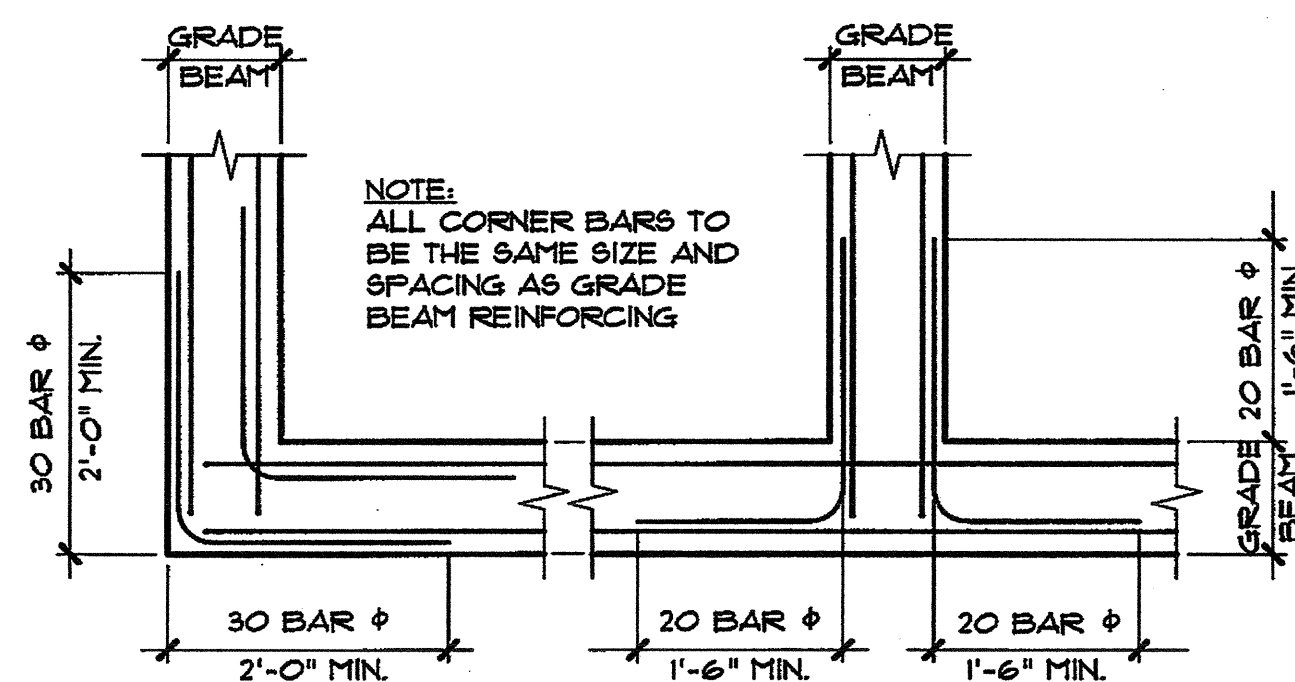
CONCRETE:

1. CONCRETE WORK SHALL BE EXECUTED IN STRICT ACCORDANCE WITH THE LATEST EDITION OF THE AMERICAN CONCRETE INSTITUTE BUILDING CODE (ACI 318-05).
2. CONCRETE AND REINFORCING SPECIFICATIONS AS FOLLOWS:

	28 DAY STRENGTH	SACK CONTENT	AGGREGATE	SLUMP
Typical	4,000 PSI	6/C.Y.	H.R.	4" TO 6"
3. PORTLAND CEMENT SHALL CONFORM TO ASTM C-33.
4. REINFORCING STEEL SHALL CONFORM TO ASTM 615, GRADE 60; GRADE 40 FOR STIRRUPS AND TIES.
5. ALL WELDED WIRE FABRIC SHALL CONFORM TO ASTM A82, GRADE 60.
6. REINFORCING STEEL SHALL BE DESIGNED, DETAILED, FABRICATED, AND PLACED IN ACCORDANCE WITH THE LATEST ACI "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES" (ACI 315).
7. SLAB REINFORCING SHALL BE LOCATED IN THE SLABS AS NOTED ON THE DRAWINGS.
8. ALL GRADE BEAM REINFORCING TO BE AS SHOWN IN SECTIONS ON THE DRAWINGS.
9. PROVIDE 2 - #5 BARS EACH SIDE OF ALL OPENINGS. EXTEND BARS TWO (2) FEET PAST OPENINGS EACH DIRECTION.
10. CORNER REINFORCING BARS SHALL BE USED AT ALL CORNERS AND INTERSECTIONS.
11. REINFORCING SPLICES SHALL OCCUR AT POINTS OF MINIMUM STRESS AND LAP THIRTY (30) BAR DIAMETERS UNLESS OTHERWISE NOTED.
12. LAP ALL WELDED WIRE FABRIC EIGHT (8) INCHES MINIMUM.
13. THE INTERIOR FLOOR AREAS THAT DO NOT RECEIVE RESILIENT FLOORING OR SURFACE MATERIAL SHALL BE SEALED. THE TIMING OF THE APPLICATION OF THIS MATERIAL MUST BE APPROVED BY THE ENGINEER. THE MATERIAL IS TO BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S PUBLISHED INSTRUCTIONS. (TWO COATS MINIMUM).
14. ALL INTERIOR CONCRETE FLOOR WORK SHALL BE COATED WITH CURING COMPOUND. APPLICATION SHALL BE IN STRICT ACCORDANCE WITH THE MANUFACTURER'S PUBLISHED INSTRUCTIONS.
15. ALL EXTERIOR CONCRETE WALKS AND DRIVES SHALL BE CONSTRUCTED USING AIR-ENTRAINED CONCRETE. SUFFICIENT AIR-ENTRAINING AGENT SHALL BE USED TO REDUCE THE WEIGHT OF THE CONCRETE BY 6% TO 8%.
16. SEE ARCHITECTURAL, CIVIL AND MECHANICAL PLANS FOR VERIFICATION OF ALL DEPRESSIONS, OPENINGS, CAST-IN-PLACE ACCESSORIES, ETC.

VALVE VAULT:

1. THE EXCAVATIONS FOR VALVE VAULT SHALL BE ADEQUATE ENOUGH IN SIZE AND DEPTH TO ACCOMPLISH THE NECESSARY FORMING AND CONCRETE PLACEMENT OPERATIONS.
2. SIDE WALLS FOR ALL EXCAVATION DEEPER THAN 3'-0" SHALL BE EITHER PROPERLY SLOPED BACK OR PROPERLY BRACED PER OSHA REQUIREMENTS.
3. MEANS AND METHODS ARE THE RESPONSIBILITY OF THE CONTRACTOR.
4. PROVIDE A SAND CUSHION BASE OF AT LEAST FOUR (4) INCHES BELOW THE BOTTOM OF THE VALVE VAULT.
5. THE SIDES SHALL BE WATERPROOFED AS REQUIRED.
6. BACKFILL AROUND THE PERIMETER OF THE VAULT, AFTER THEY ARE CONSTRUCTED, SHALL BE SELECT FILL OR GRAVEL, HAND TAMPED/COMPACTED IN PLACE, IN NINE (9) INCH LIFTS.
7. THE FINAL LIFT, TOP CAP, SHALL BE GOOD, CLEAN ON-SITE MATERIAL.



1 TYPICAL CORNER BAR DETAIL
N. T. S.



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 TEXAS FIRM REG. No. F-2335

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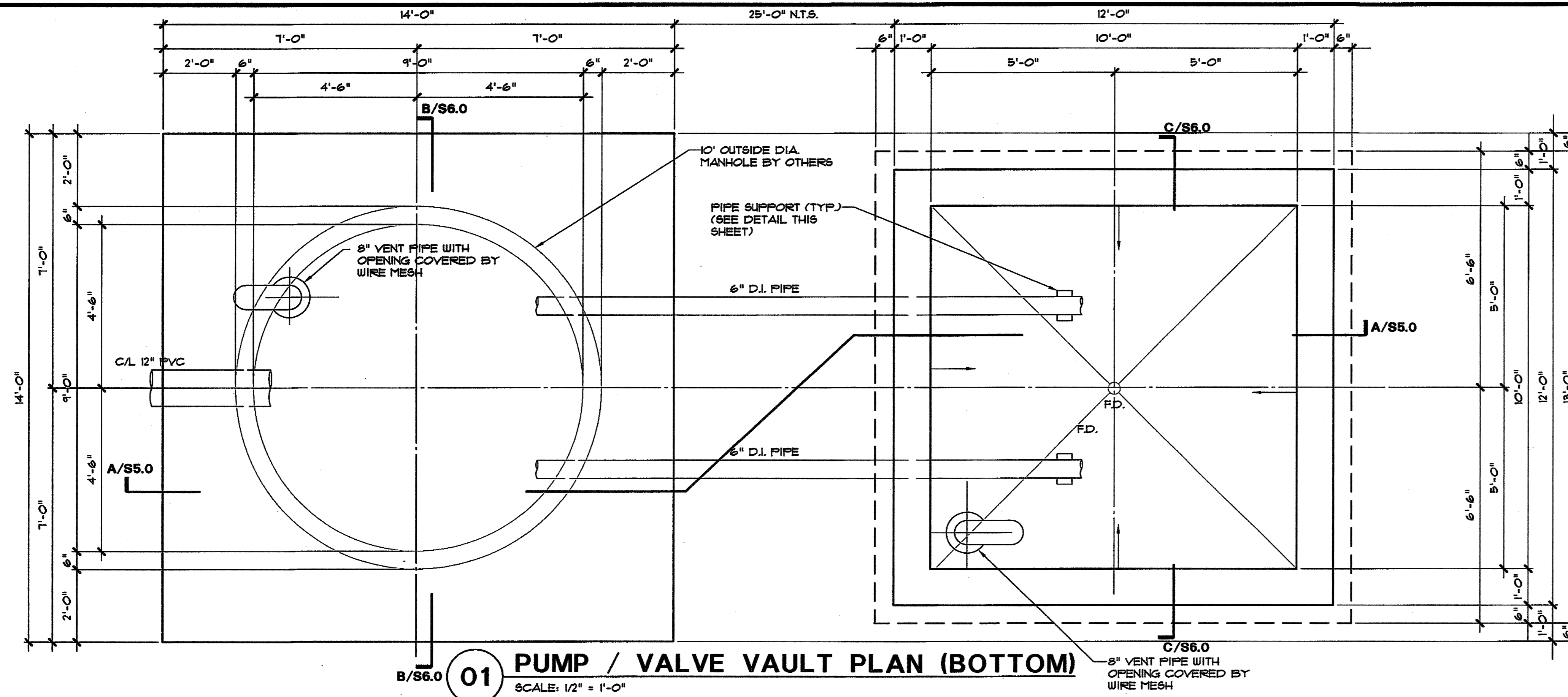


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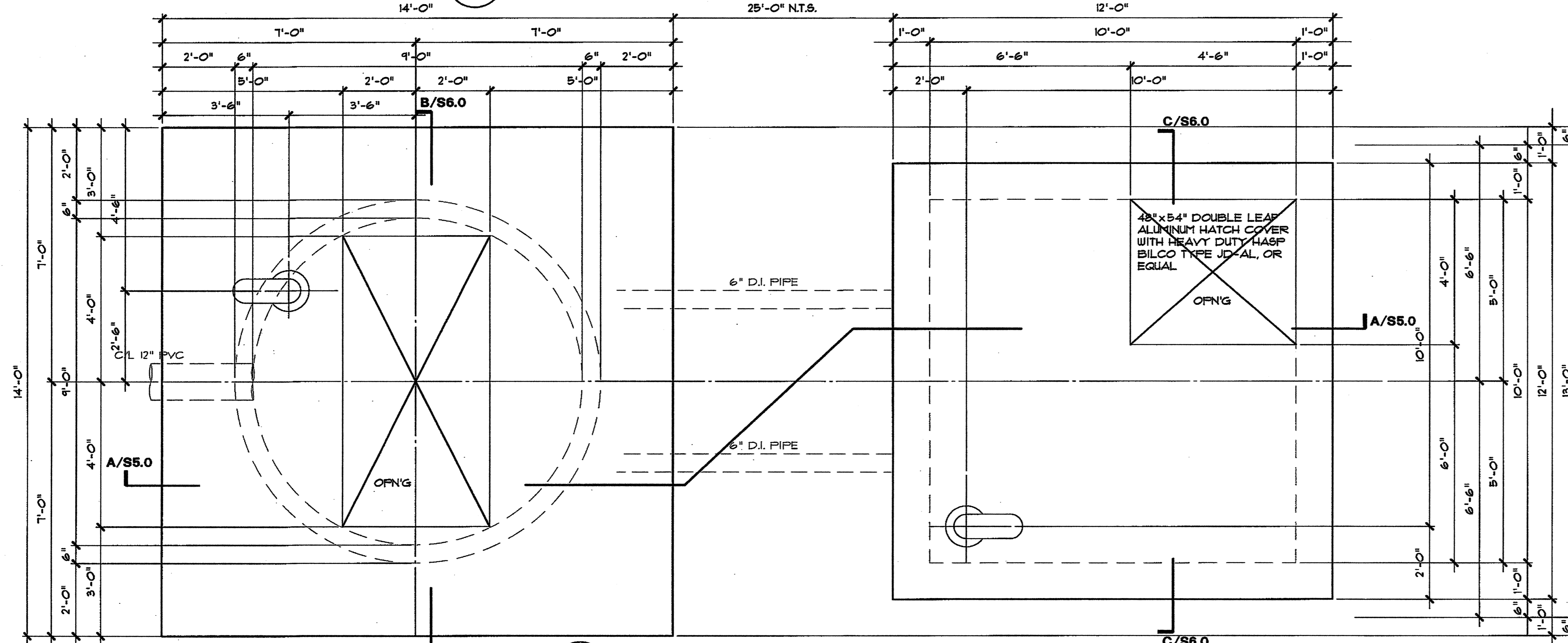
WASTEWATER SYSTEM IMPROVEMENTS
WASTEWATER FORCE MAIN AND LIFT STATION
GENERAL STRUCTURAL NOTES
CITY OF LUCAS

SHEET NO. **S10**
 OF SHEETS
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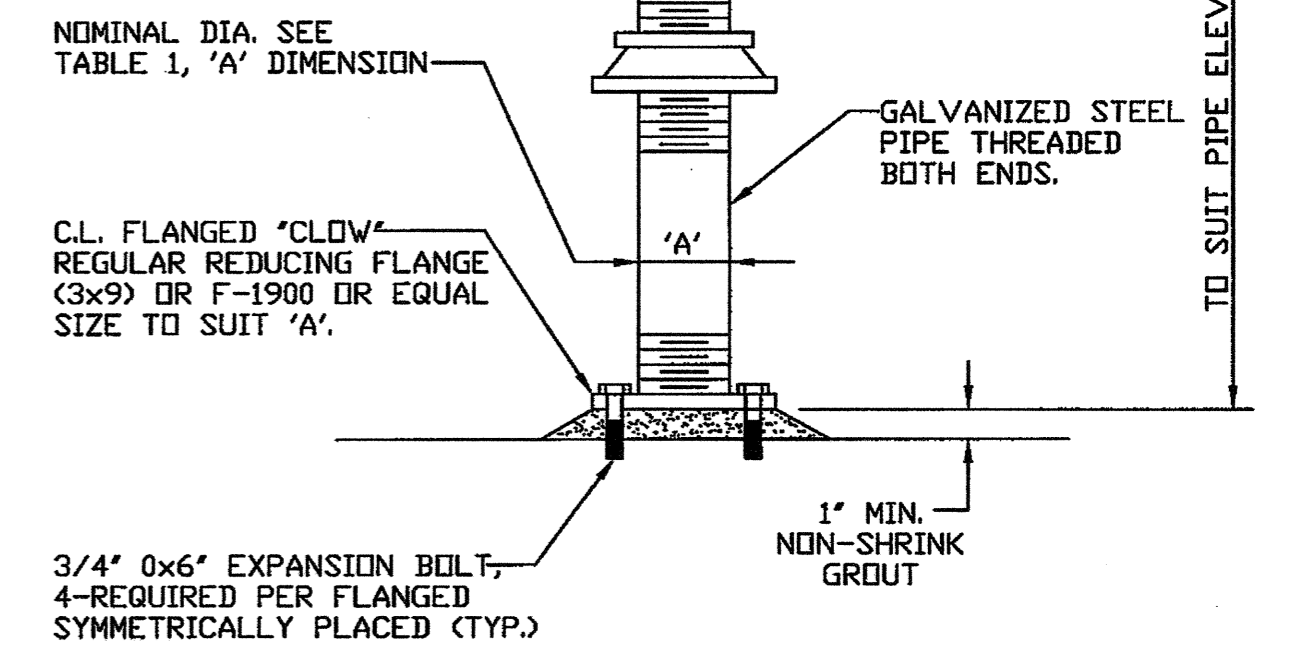
01 PUMP / VALVE VAULT PLAN (BOTTOM)
SCALE: 1/2" = 1'-0"



02 PUMP / VALVE VAULT PLAN VIEW (TOP)
SCALE: 1/2" = 1'-0"

TABLE 1

SUPPORTED PIPE SIZE	'A'
LESS THAN 3-1/2"	2'
4" THRU 12"	3'
14" THRU 16"	4'
16" AND OVER	6'



ADJUSTABLE PIPE SUPPORT
NOT TO SCALE



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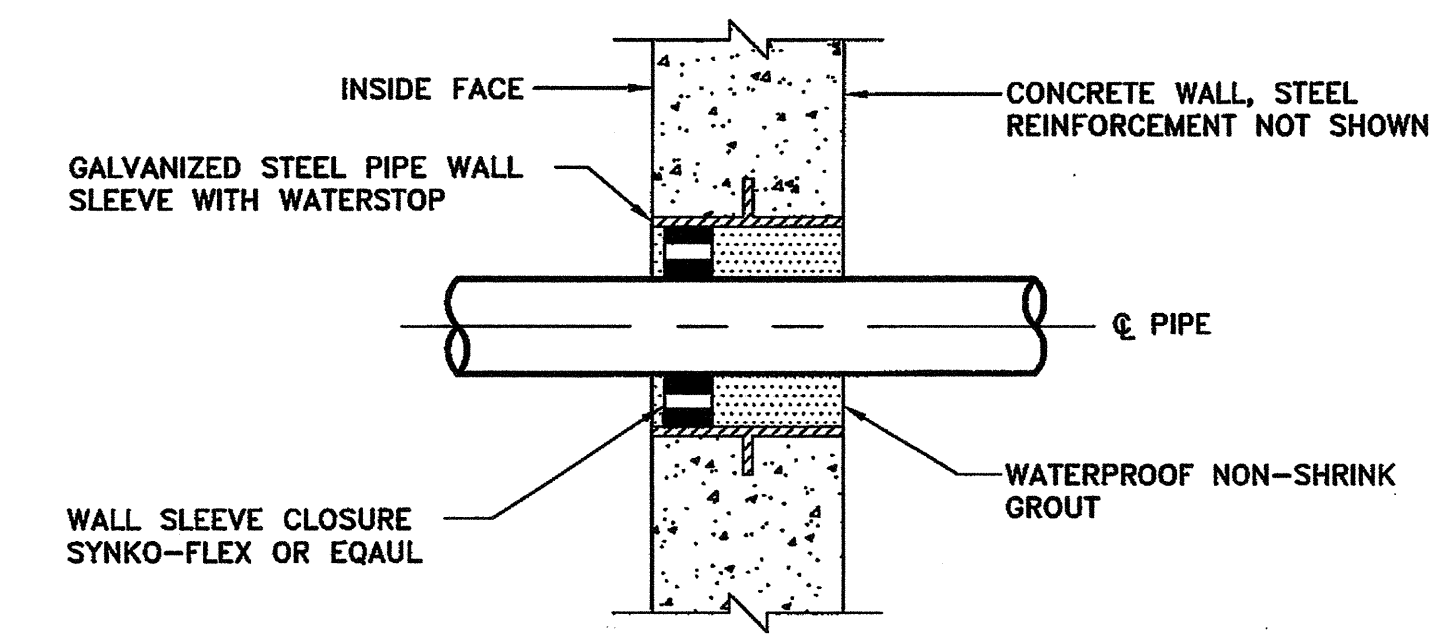
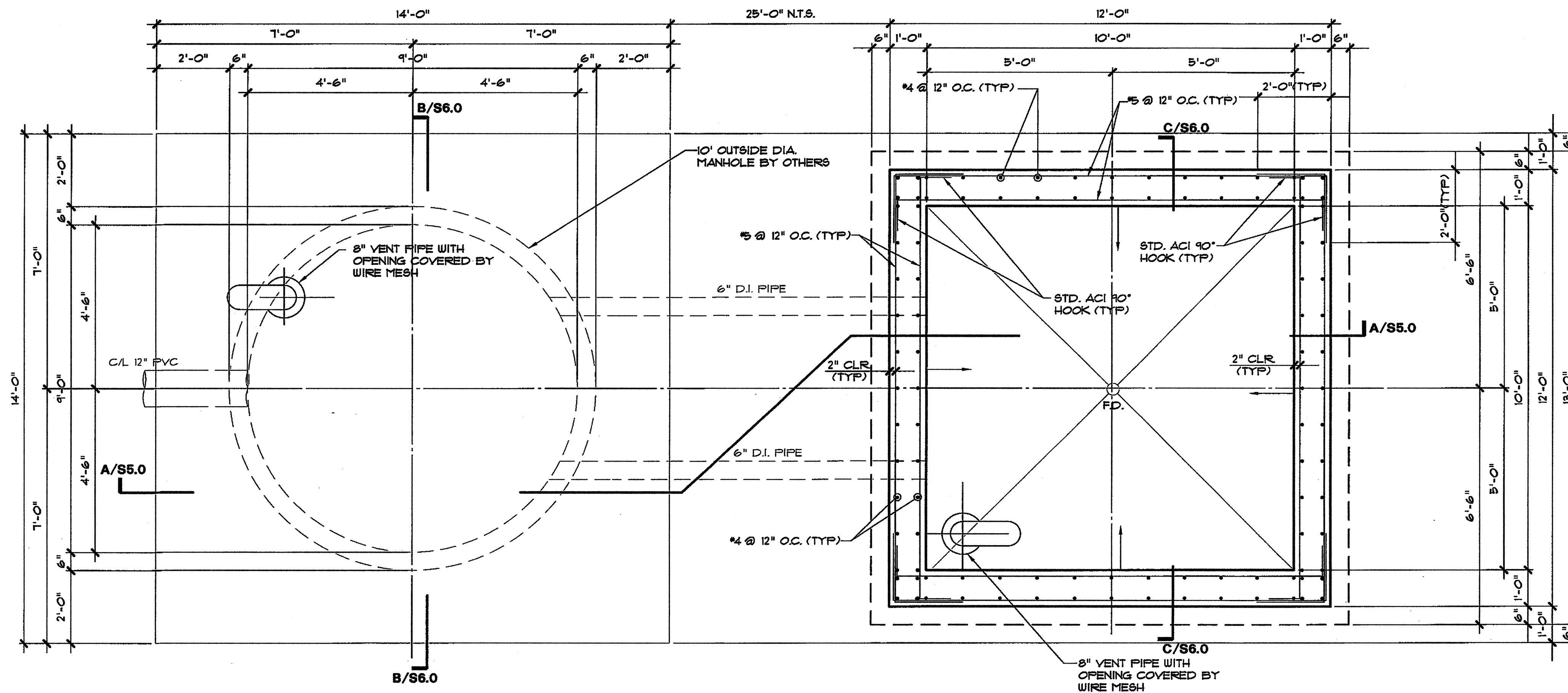
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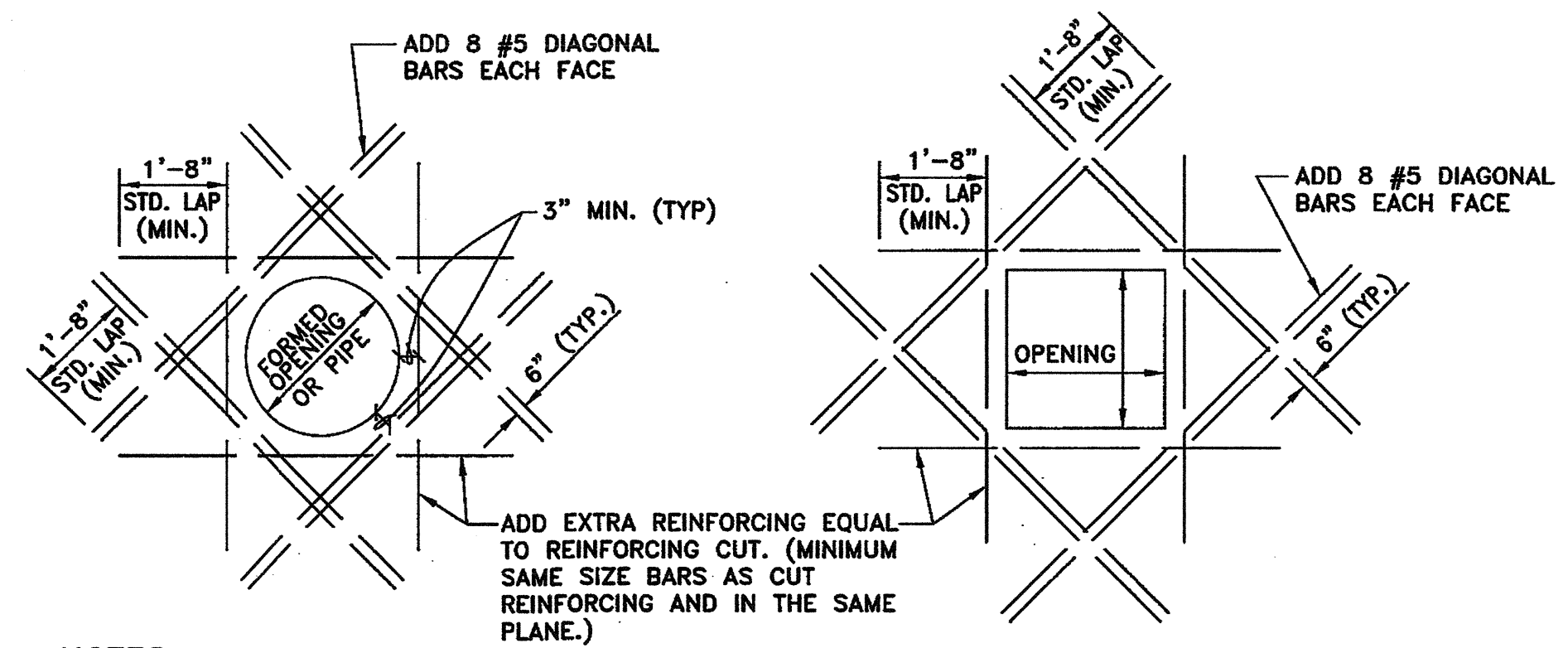
**WASTEWATER SYSTEM IMPROVEMENTS
WASTEWATER FORCE MAIN AND LIFT STATION
PUMP / VALVE VAULT PLANS
CITY OF LUCAS**

SHEET NO. **S2.0**
OF SHEETS
JOB NO.



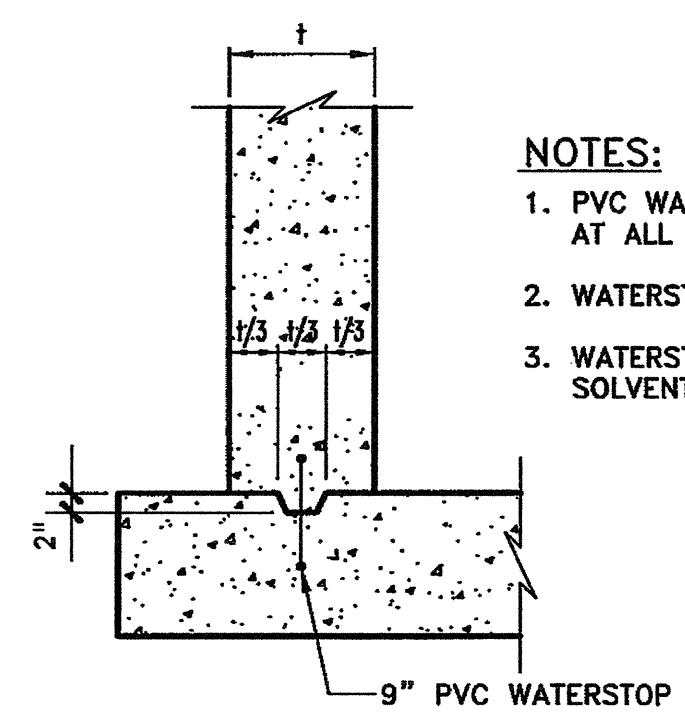
WALL SLEEVE CLOSURE DETAIL
NOT TO SCALE

01 PUMP / VALVE VAULT WALL REINFORCING PLAN
SCALE: 1/2" = 1'-0"



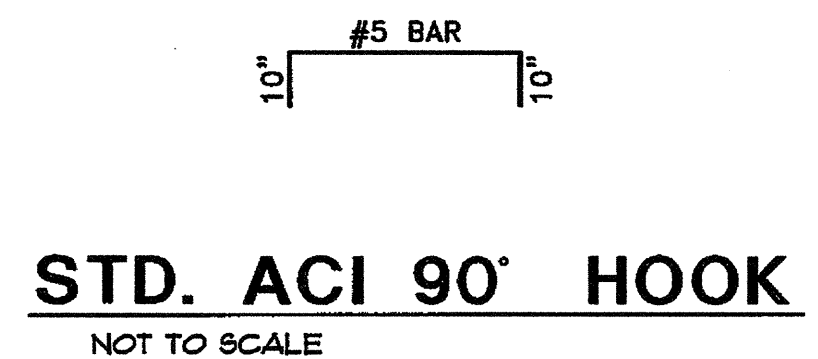
- NOTES:**
1. SPREAD AND/OR CUT REINFORCING AT OPENINGS. SPREAD BARS NO MORE THAN ONE HALF TYPICAL BAR SPACE.
 2. TWO ADDITIONAL #5 VERTICAL BARS SHALL BE LOCATED TO EITHER SIDE OF THE OPENING, EACH FACE.

REINFORCING AT WALL AND SLAB PENETRATION
SCALE: 1/2" = 1'-0"



WATERSTOP DETAIL
NOT TO SCALE

- NOTES:**
1. PVC WATERSTOP SHALL BE INSTALLED AT ALL CONSTRUCTION JOINTS.
 2. WATERSTOP SHALL BE CONTINUOUS.
 3. WATERSTOP SPLICES SHALL BE SOLVENT WELDED.



STD. ACI 90' HOOK
NOT TO SCALE



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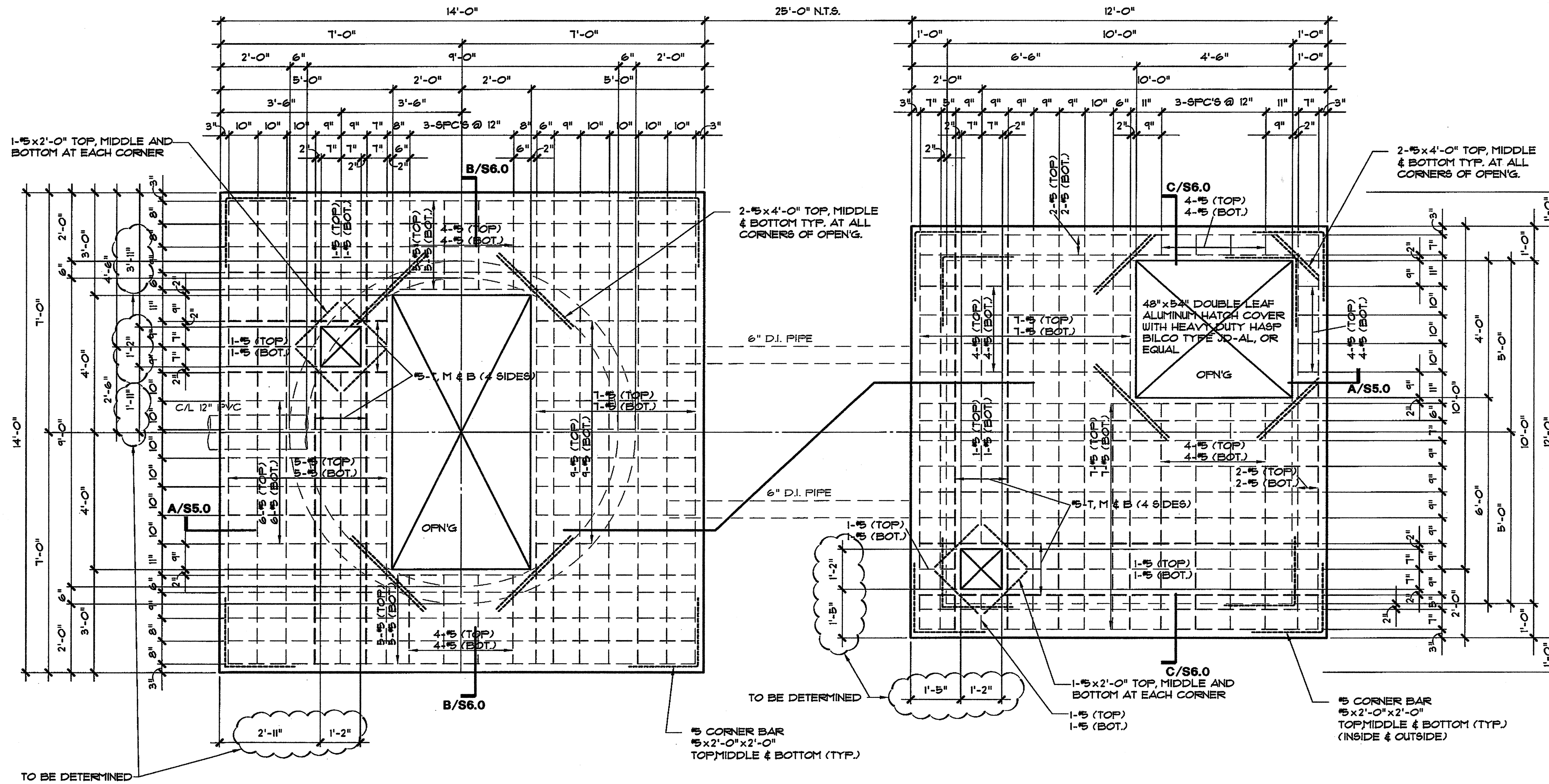
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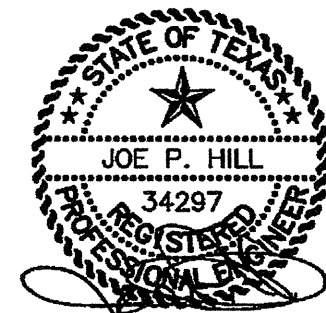
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WASTEWATER SYSTEM IMPROVEMENTS
WASTEWATER FORCE MAIN AND LIFT STATION
PUMP / VALVE VAULT WALL REINFORCING PLAN
CITY OF LUCAS

SHEET NO. **S3.0**
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01 PUMP / VALVE VAULT TOP REINFORCING PLAN
SCALE: 1/2" = 1'-0"



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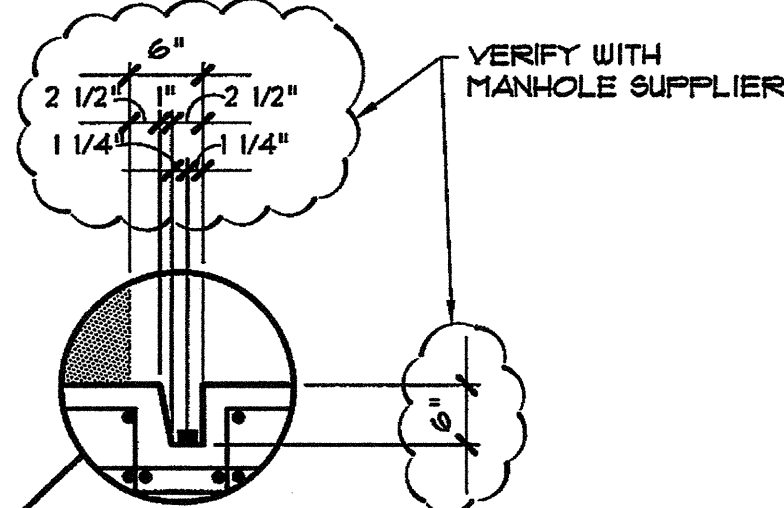
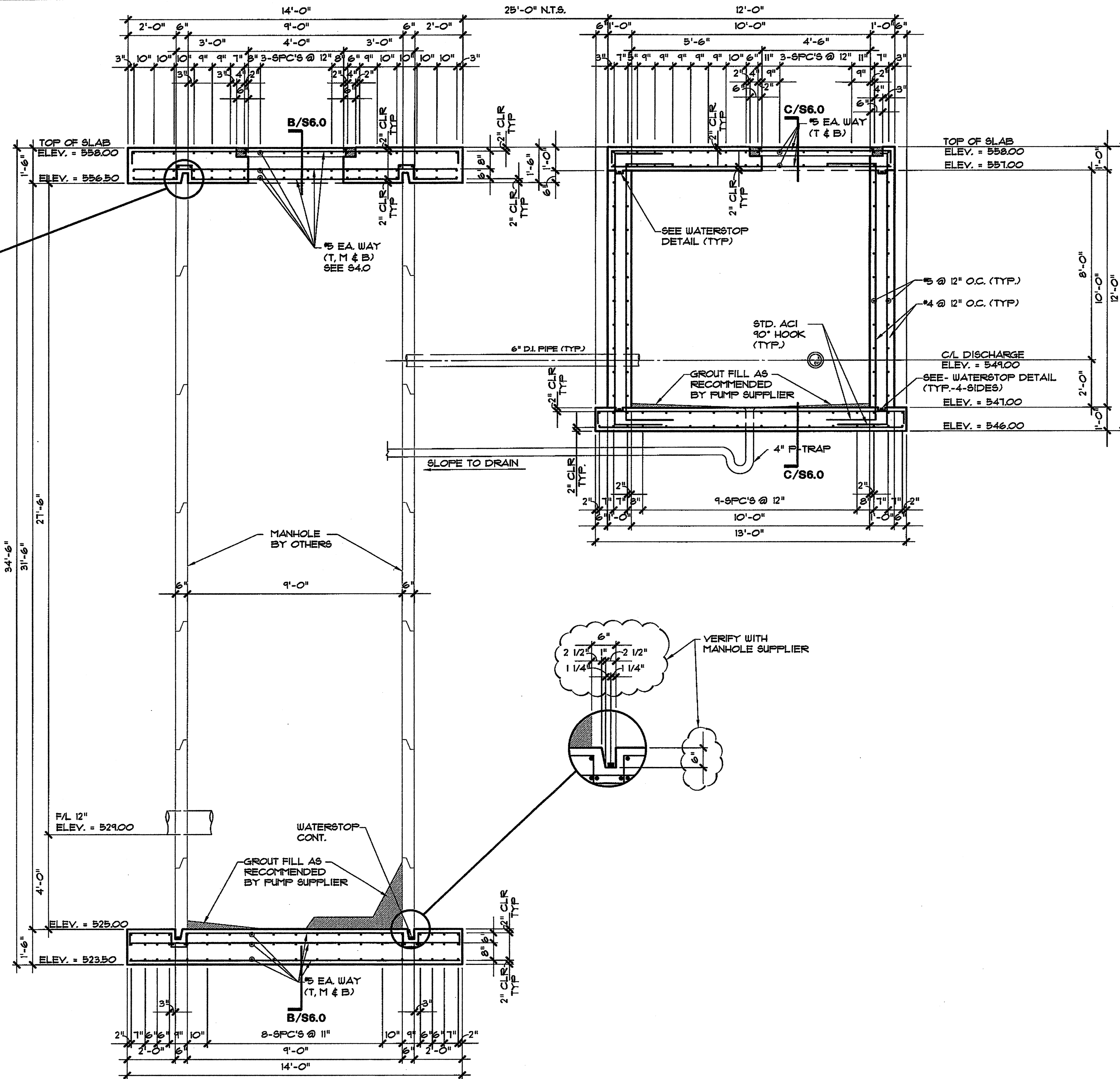
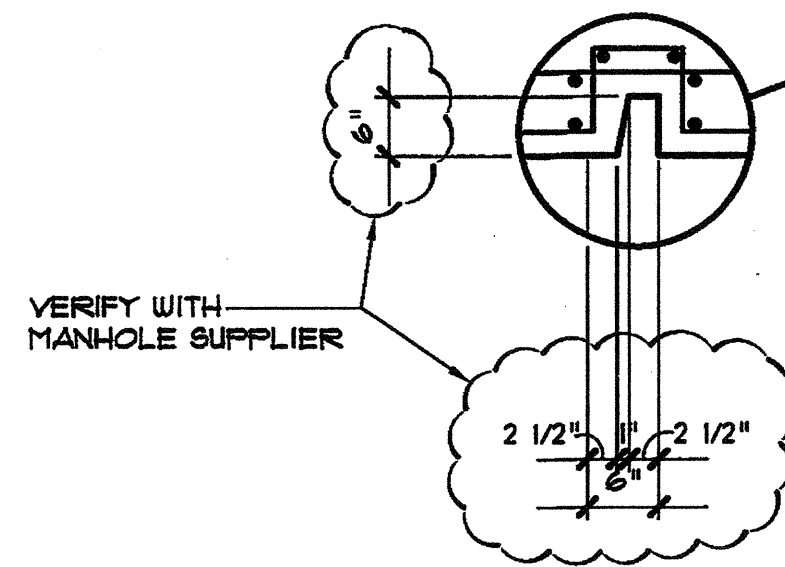
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WASTEWATER SYSTEM IMPROVEMENTS
WASTEWATER FORCE MAIN AND LIFT STATION
PUMP / VALVE VAULT TOP REINFORCING PLAN
CITY OF LUCAS

SHEET NO. **S4.0**
OF SHEETS
JOB NO.



A-A PUMP / VALVE VAULT SECTIONS / REINFORCING
SCALE: 3/8" = 1'-0"



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Joe P., P.E. Job No. 10119

JOE P. HILL P.E.
 TEXAS FIRM REG. No. F-2335

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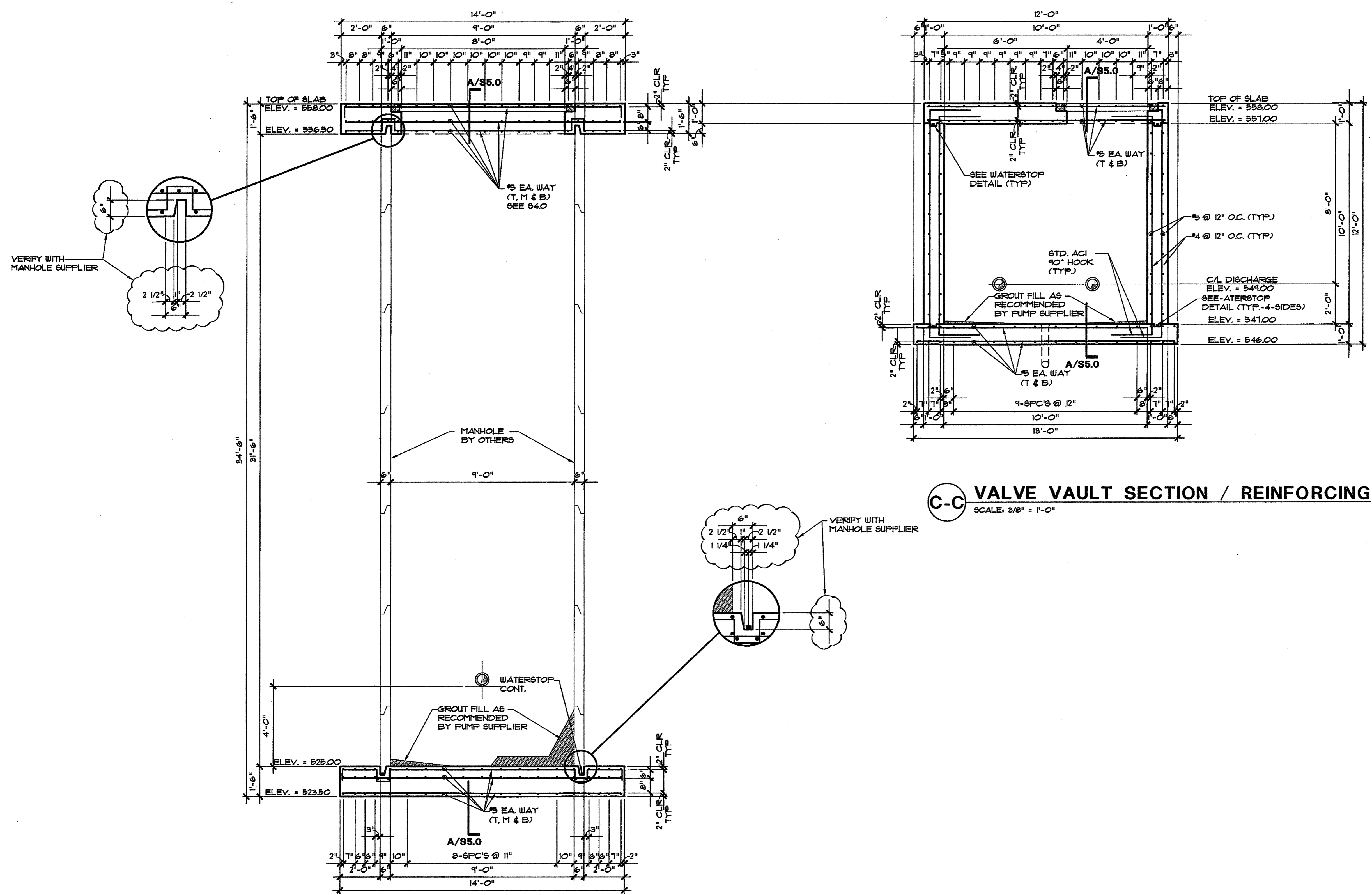
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WASTEWATER SYSTEM IMPROVEMENTS
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WASTEWATER SYSTEM IMPROVEMENTS
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