ENGINEERING PLANS FOR THE DEVELOPMENT OF PHASE THREE

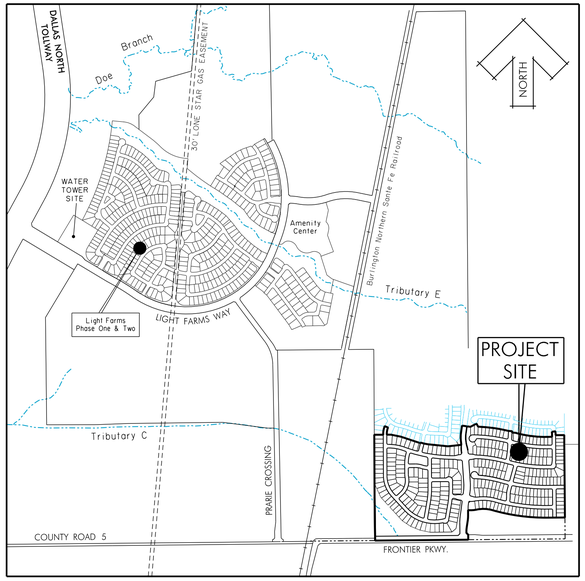
THE CYPRESS NEIGHBORHOOD
THE SAGE NEIGHBORHOOD

IN

LIGHT FARMS
ESTABLISHED 2012

HOMEGROWN COMMUNITY

COLLIN COUNTY, TEXAS



LOCATION MAP
NTS

RECORD DRAWING

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STATE OF TEXAS
ROBERT M. STENGELE
50145
REGISTERED PROFESSIONAL ENGINEER
9-16-15

Huitt-Zollars, Inc.
Firm Registration No. F-761

Owner/Developer

LFC Land Company LLC

Tony Ruggeri
8401 North Central Expressway
Suite 350 Dallas, TX 75225
Phone 214-292-3410 Fax 214-292-3411

Prepared For:

COLLIN COUNTY MUNICIPAL UTILITY DISTRICT NO. 1

C/O Republic Property Group
8401 North Central Expressway
Suite 350 Dallas, TX 75225
Phone 214-292-3410 Fax 214-292-3411

Prepared By:

HUITT-ZOLLARS

1717 McKinney Ave., Suite 1400 Dallas, Texas 75202
Phone (214) 871-3311 Fax (214) 871-0757
Contact: Robert M. Stengele, P.E.
email: rstengele@huitt-zollars.com

00-01

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P-201402-02

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STATE OF TEXAS
ROBERT M. STENGELE
50145
REGISTERED
PROFESSIONAL ENGINEER
3-16-15

Huitt-Zollars, Inc.
Firm Registration No. F-761

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INDEX SHEET

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		NA		01-3905-40	00-02

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City of Celina
CONSTRUCTION GENERAL NOTES

GENERAL

1. All construction shall be in accordance with the latest revision of the North Central Texas Council of Governments "Standard Specifications for Public Works Construction" including the Standard Drawings therein and the City of Celina's addendum thereto. Contractor shall have at least one set of approved Engineering Plans and Specifications on-site at all times.

2. Before beginning construction, the contractor shall prepare a construction sequence schedule. The construction schedule shall be such that there is minimum interference with traffic along or adjacent to the project.

3. Construction may not begin earlier than 7:00 A.M. on weekdays nor continue after dark without permission from the City of Celina. Construction on holidays and Saturday must be approved two days in advance. A fee of $300.00 a day for working on holidays and Saturday will be accessed payable to the city before work is performed. Work may not begin before 8:00 A.M. on holidays and Saturday and work on Sunday is prohibited without special permission and payment of fees.

4. Utilities shown on the plans were taken from field surveys and information provided by the utility companies. The completeness and the accuracy of this data is not guaranteed.

   The contractor is responsible for verifying the location of all underground utilities and structures and protecting them from damage during construction.

   It will be the responsibility of each contractor to protect all existing public and private utilities throughout the construction of this project. Contractor shall contact the appropriate utility companies for line locations prior to commencement of construction and shall assume full liability to those companies for any damages caused to their facilities.

DIG TESS	800-DIG-TESS
GCEC-TELECOM	903-482-7274
GCEC-ELECTRIC	903-821-3007
AT&T	972-569-3013
ATMOS ENERGY	972-881-4161
ATMOS ENERGY	214-341-9900
CROSSTEX ENERGY	817-570-6753
ONEOK	903-257-6594
COSERV-ELEC	940-321-7800
COSERV-GAS	940-321-7800
CITY OF CELINA	972-382-2682
TOWN OF PROSPER	972-347-9969
MARILEE SUD	972-382-3222
GRANDE	972-410-0583
SUDDEN LINK	469-853-0486

5. Work may not be backfilled or covered until City has inspected it.

6. Material testing shall be performed by an independent testing laboratory and paid for by the Contractor. The following material tests shall be provided by the Contractor:

   a. Embankment - One soil density test shall be performed at each location for each 500 C.Y. of backfill placed.
   b. Pavement Sub-grade - One gradation test (where lime stabilized) and one soil density test shall be performed for each 300 linear feet of pavement unless otherwise noted. Gradations must pass 100% through a 1¾" sieve and 60% through a #4 sieve.
   c. Utility Trench Backfill - One soil density test shall be performed at 300 feet intervals or as directed by the Inspector.
   d. Concrete Tests:
      (1). Compressive Strength - Four test cylinders shall be taken from a representative portion of the concrete being placed for every 150-cubic yards of concrete pavement placed, but in no case shall less than 2 sets of cylinders be taken from any one day's placement.
      (2). Air, slump and temperature tests shall be taken for every set of cylinders made. Concrete with a temperature above 95° F will be rejected.
      (3). Additional cylinders and/or tests may be required at the Inspector's discretion.

   The City shall select the location and depth of each soil density test unless otherwise directed.

7. All excavation on the project is unclassified.

8. Temporary erosion control shall be used to minimize the spread of silt and mud from the project on to existing streets, alleys, drainage ways and public and private property. Temporary erosion controls may include silt fences, rock check dams, stabilized construction entrances, straw bales, berms, dikes, swales, strips of undisturbed vegetation, check dams and other methods as required by the City Manager or his representative and shall conform to the Storm Water Quality Best Management Practices for Construction Activities as published by the North Central Texas Council of Governments and the City of Celina Erosion and Sediment Control Manual.

9. Finished slopes on public rights-of-way and easements shall not be steeper than 4:1. All slopes steeper than 6:1 shall be covered with erosion control matting and are hydro mulched and maintained by the contractor until grass covers all parts of the slope.

10. The contractor shall maintain two-way traffic at all times along the project.

11. Remove , salvage and replace all street and traffic control signs, which may be damaged by the construction of the project.

12. All trenching and excavation shall be performed in accordance with OSHA standards. Trench safety design will be the responsibility of the Contractor. Contractor shall submit a trench safety design approved by a professional engineer to the City for review prior to the start of any underground utility construction.

WATER

1. Water mains shall be AWWA C-900 or 905 PVC Class 200 unless otherwise noted. Minimum cover for waterlines is 48" below top of curb, 60" where no curbed street is present or as required to clear existing utilities, whichever is greater. Class B+ embedment unless otherwise noted.

2. All utility trench backfill shall be performed in 12" loose lifts and mechanically compacted with approved vibratory methods.

3. Marking tape shall be installed one foot above and over PVC water lines.

4. Fitting for PVC water lines shall be ductile iron and be encased in a polyethylene sheath.

5. All Mechanical Joints shall be restrained. (Mega-Lug etc.)

6. Valves, including tapping valves shall be resilient seat gate valves, unless noted otherwise.

WATER (Cont.)

7. All direct burial valves shall be provided with cast iron valve boxes with PVC stacks. Valve stacks shall be vertical and concentric with the valve stem. Stainless steel valve extensions are required on all valves where the operating nut is greater than 4 feet below finished grade.

8. Fire hydrants shall be Waterous or equal as directed or approved by the City of Celina on a case by case basis and field painted silver with bonnet and caps color-coded to pipe size.
   a. Six inch line - silver body with RED bonnet and caps.
   b. Eight inch line - silver body with BLUE bonnet and caps.
   c. Ten inch line - silver body with GREEN bonnet and caps.
   d. Twelve inch line - silver body with YELLOW bonnet and caps.

9. All exposed bolting on any buried equipment or material shall be stainless steel. Included are:
   a. Bonnet and stuffing box bolts on valves.
   b. Shoe bolts on fire hydrants.
   c. Flange bolts.
   d. "Cor-ten" mechanical joint "T" bolts are acceptable for direct burial service.

10. Depending on meter size; meter boxes shall be DFW37C-12-ISAF, DFW38C-14-ISAF, DFW65C-14-ISAF, or approved equal and shall incorporate the Celina logo in the lid.

11. One sample station shall be provided to the city for every 250 connections.

12. Provide 60" blue flat fiberglass valve markers.

PAVING

1. All embankments shall be compacted to 95% Standard Proctor density.

2. All streets and alleys shall be placed on lime stabilized sub grade with a lime content of not less than 7% or as approved by city engineer.

3. The minimum 28 day compressive strength of concrete street paving shall not be less than 3600 psi and shall be air entrained. Water may not be applied to the surface of concrete paving to improve workability.

4. All curb and gutter shall be integral with the pavement.

5. Parabolic crowns are required on all street pavements except on major thoroughfares where straight sections are required.

6. Streets and alleys shall be constructed with provisions for sidewalk ramps at all intersections.

DRAINAGE

1. Storm sewer pipe shall be reinforced concrete, Class III unless otherwise noted.

2. All structural concrete shall be Class "C" (3600 psi compressive strength at 28 days), air entrained.

3. The contractor shall install plugs in storm sewer lines or otherwise prevent mud from entering the storm sewer system during construction.

WATER AND SANITARY SEWER

1. Water mains shall be AWWA C-900 or 905 PVC Class 200 unless otherwise noted. Minimum cover for waterlines is 48" below top of curb, 60" where no curbed street is present or as required to clear existing utilities, whichever is greater. Class B+ embedment unless otherwise noted.

2. All utility trench backfill shall be performed in 12" loose lifts and mechanically compacted with approved vibratory methods.

3. Marking tape shall be installed one foot above and over PVC water lines.

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   a. Bonnet and stuffing box bolts on valves.
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   c. Flange bolts.
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10. Depending on meter size; meter boxes shall be DFW37C-12-ISAF, DFW38C-14-ISAF, DFW65C-14-ISAF, or approved equal and shall incorporate the Celina logo in the lid.

11. One sample station shall be provided to the city for every 250 connections.

Sanitary sewer mains shall be DR 35 PVC. Embedment shall be Class H unless otherwise noted.

   a. The contractor shall install and maintain watertight plugs in all connections to the City's sanitary sewer system until the City accepts the project.
   b. All sanitary sewer lines and manholes shall be leak tested before the project is accepted. Deflection testing of PVC sewer lines is required. Deflection shall be tested with a mandrel for 5% deflection.
   c. All sewer lines shall be video inspected with a copy of the video and station report submitted to the Inspector.
   d. Mandrel, Air Test and Video inspection shall not be performed until all utilities are complete, in place and backfilled.

Specifications are not meant to exclude any other manufacturer. Any specification may be replaced with an approved equal upon approval by the City of Celina.

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GENERAL NOTES (CITY)

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		NA		01-3905-40	00-03

I:/proj/0139050I/0139054O Parcel 1&2/08-DesignCAD/DGN/ph1teagenot.dgn

TCEQ
Water Distribution System
General Construction Notes

1. This water distribution system must be constructed in accordance with the current Texas Commission on Enviromental Quality (TCEQ) Rules and Regulations for Public Water Systems 30 Texas Administrative Code (TAC) Chapter 290 Subchapter D. When conflicts are noted with local standards, the more stringent requirement shall be applied. Construction for public water systems must always, at a minimum, meet TCEQ'S "Rules and Regulations for Public Water Systems.

2. An appointed engineer shall notify in writing the local TCEQ'S Regional Office when construction will start. Please keep in mind that upon completion of the water works project, the engineer or owner shall notify the commission's Water Supply Division, in writing, as to its completion and attest to the fact that the work has been completed essentially according to the plans and change orders on file with the commission as required in 30 TAC §290.39(h)(3).

3. All newly installed pipes and related products must conform to American National Standards Institute/National Sanitation Foundation (ANSI/NSF) Standard61-G and must be certified by an organization accredited by ANSI, as required by 30 TAC §290.44(a)(1).

4. All Plastic Pipe for use in public water systems must bear the National Sanitation Foundation Seal of Approval(NSF pw-G) and have an ASTM design pressure rating of at least 150 psi or a standard dimension ratio of 26 or less, as required by 30 TAC §290.44(a)(2).

5. No pipe which has been used for any purpose other than the conveyance of drinking water shall be accepted or relocated for use in any public drinking water supply, as required by 30 TAC §290.44(a)(3).

6. Water transmission and distribution lines shall be installed in accordance with the manufacturer's instructions. However, the top of the water line must be located below the frost line and in no case shall the top of the water line be less than 24 inches below ground surface, as required by 30 TAC §290.44(a)(4).

7. Pursuant to 30 TAC §290.44(a)(5). The hydrostatic leakage rate shall not exceed the amount allowed or recommended by the most current AWWA formulas for PVC pipe, cast iron and ductile iron pipe. Include the formulas in the notes on the plans.

   - The hydrostatic leakage rate for polyvinyl chloride (PVC) pipe and appurtenances shall not exceed the amount allowed or recommended by formulas in America Water Works Association (AWWA) C-605 as required in 30 TAC §290.44(a)(5). Please ensure that the formula for this calculation is correct and most current formula is in use;

$$[LD(P^{0.5})]/148{,}000$$

Where:

- Q = The quantity of makeup water in gallons per hour,
- L=The length of the pipe section being tested, in feet,
- D = the nominal diameter of the pipe in inches, and
- P = the average test pressure during the hydrostatic test in pounds per square inch (psi).

   - The hydrostatic leakage rate for ductile iron (DI) pipe and appurtenances shall not exceed the amount allowed or recommended by formulas in America Water Works Association (AWWA) C-600 as required in 30 TAC §290.44(a)(5). Please ensure that the formula for this calculation is correct and most current formula is in use;

$$[SD(P^{0.5})]/148{,}000$$

Where:

- L = The quantity of makeup water in gallons per hour,
- S=The length of the pipe section being tested, in feet,
- D = the nominal diameter of the pipe in inches, and
- P = the average test pressure during the hydrostatic test in pounds per square inch (psi).

8. Projects constructed on or after January 1, 2014 must comply with the changes to the Safe Drinking Water Act that reduce the maximum allowable lead content of pipes, pipe fittings, plumbing fittings, and fixtures to 0.25 percent.

9. The system must be designed to maintain a minimum pressure of 35 psi at all points within the distribution network at flow rates of at least 1.5 gallons per minute per connection. When the system is intended to provide firefighting capability, it must also be designed to maintain a minimum pressure of 20 psi under combined fire and drinking water flow conditions as required by 30 TAC §290.44(d).

10. The contractor shall install appropriate air release devices in the distribution system at all points where topography or other factors may create air locks in the lines. All vent openings to the atmosphere shall be covered with 16-mesh or finer, corrosion resistant screening material or an acceptable equivalent as required by 30 TAC §290.44(d)(1).

11. Pursuant to 30 TAC §290.44(d)(4), accurate water meters shall be provided. Service connections and meter locations should be shown on the plans.

12. Pursuant to 30 TAC §290.44(d)(5), sufficient valves and blowoffs to make repairs. The engineering report shall establish criteria for this design.

13. Pursuant to 30 TAC §290.44(d)(6), the system shall be designed to afford effective circulation of water with a minimum of dead ends. All dead-end mains shall be provided with acceptable flush valves and discharge piping. All dead-end lines less than two inches in diameter will not require flush valves if they end at a customer service. Where dead ends are necessary as a stage in the growth of the system, they shall be located and arranged to ultimately connect the ends to provide circulation

14. The contractor shall maintain a minimum separation distance in all directions of nine feet between the proposed waterline and wastewater collection facilities including manholes and septic tank drainfields. If this distance cannot be maintained, the contractor must immediately notify the project engineer for further direction. Separation distances, installation methods, and materials utilized must meet 30 TAC §290.44(e)(1-4) of the current rules.

15. Pursuant to 30 TAC §290.44(e) (5), the separation distance from a potable waterline to a wastewater main or lateral manhole or cleanout shall be a minimum of nine feet. Where the nine-foot separation distance cannot be achieved, the potable waterline shall be encased in a joint of at least 150 psi pressure class pipe at least 18 feet long and two nominal sizes larger than the new conveyance. The space around the carrier pipe shall be supported at five-foot intervals with spacers or be filled o the springline with washed sand. The encasement pipe shall be centered on the crossing and both ends sealed with cement grout or manufactured sealant.

16. Pursuant to 30 TAC §290.44(e)(6), fire hydrants shall not be installed within nine feet vertically or horizontally of any wastewater line, wastewater lateral, or wastewater service line regardless of construction.

17. Pursuant to 30 TAC §290.44(e)(7), suction mains to pumping equipment shall not cross wastewater mains, wastewater laterals, or wastewater service lines. Raw water supply lines shall not be installed within five feet of any tile or concrete wastewater main, wastewater lateral, or wastewater service line.

18. Pursuant to 30 TAC §290.44(e)(8), waterlines shall not be installed closer than ten feet to septic tank drainfields.

19. Pursuant to 30 TAC §290.44(f)(1), the contractor shall not place the pipe in water or where it can be flooded with water or sewage during its storage or installation.

20. Pursuant to 30 TAC §290.44(f)(2), when waterlines are laid under any flowing or intermittent stream or semi-permanent body of water the water main shall be installed in a separate watertight pipe encasement. Valves must be provided on each side of the crossing with facilities to allow the underwater portion of the system to be isolated and tested. Alternatively, and with the permission of the executive director, the watertight pipe encasement may be omitted.

21. The contractor shall disinfect the new water mains in accordance with AWWA Standard C-651 and then flush and sample the lines before being placed into service. Samples shall be collected for microbiological analysis to check the effectiveness of the disinfection procedure which shall be repeated if contamination persists. A minimum of one sample for each 1,000 feet of completed water line will be required or at the next available sampling point beyond 1,000 feet as designated by the design engineer, in accordance with 30 TAC §290.44(f)(3).

STATE OF TEXAS
ROBERT M. STENGELE
50145
REGISTERED
PROFESSIONAL ENGINEER
3-16-15

Huitt-Zollars, Inc.
Firm Registration No. F-761

RECORD DRAWING

THIS RECORD DOCUMENT HAS BEEN PREPARED BASED IN PART UPON INFORMATION FURNISED BY OTHERS. THE DESIGN PROFESSIONAL CANNOT ASSURE THE ACCURACY OF OTHERS' INFORMATION AND THUS IS NOT RESPONSIBLE FOR THE ACCURACY OF THIS RECORD DOCUMENT OR FOR ANY ERROR OR OMISSION THAT MAY HAVE BEEN INCORPORATED INTO IT AS A RESULT. THOSE RELYING ON THIS RECORD DOCUMENT ARE ADVISED TO OBTAIN INDEPENDENT VERIFICATION OF ITS ACCURACY BEFORE APPLYING IT FOR ANY PURPOSE.

GENERAL NOTES (TCEQ)

LIGHT FARMS

LFC Land Company LLC

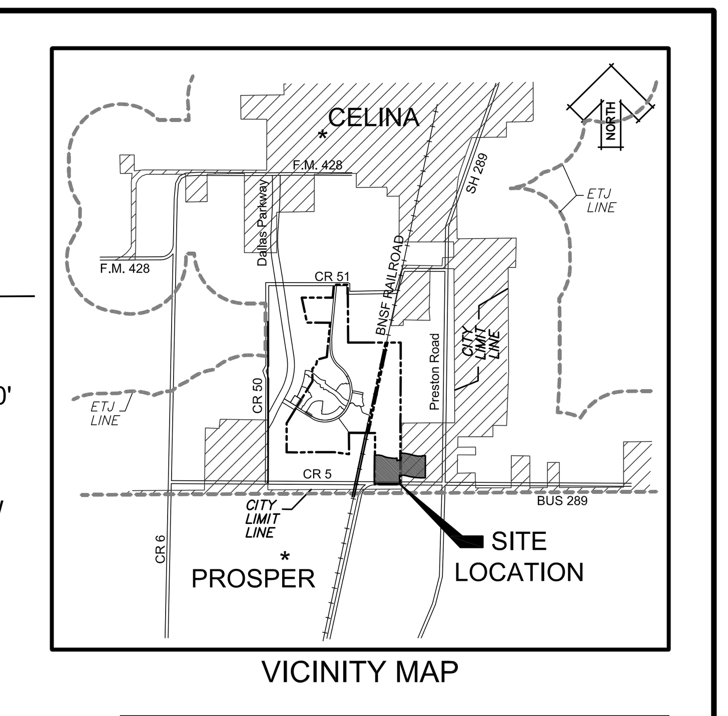
Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		NA		01-3905-40	00-04

I:/proj/0139050I/0139054O Parcel 1&2/08-DesignCAD/DGN/phlteagenot2.dgn



VICINITY MAP

CURVE	DELTA	RADIUS	LENGTH	CHORD	CHORD BEARING
C1	5°15'53"	290.00'	26.65'	26.64'	N04°18'38"W
C2	7°55'23"	275.00'	38.03'	38.00'	N04°27'56"W
C3	8°04'00"	591.00'	83.21'	83.14'	N03°31'45"E
C4	11°27'34"	600.00'	120.00'	119.80'	N01°49'58"E
C5	3°02'46"	800.00'	42.53'	42.53'	N05°25'12"W
C6	14°54'43"	418.50'	108.92'	108.61'	N00°30'47"E
C7	13°50'57"	500.00'	120.86'	120.56'	S89°21'44"E
C8	22°23'51"	600.00'	234.54'	233.05'	N85°05'17"W
C9	16°36'53"	2520.0'	730.75'	728.19'	S82°11'48"E
C10	42°08'31"	400.00'	294.21'	287.62'	S21°22'21"E
C11	65°41'04"	550.00'	630.53'	596.56'	S75°17'09"E
C12	10°13'37"	1294.00'	230.97'	230.67'	N04°48'43"E
C13	20°26'20"	625.0'	222.95'	221.77'	N80°04'56"W
C14	24°29'15"	1975.00'	844.09'	837.68'	S82°06'23"E
C15	20°29'37"	1697.00'	606.99'	603.76'	N84°06'12"W
C16	16°38'51"	1958.00'	568.90'	566.90'	S82°10'49"E
C17	21°02'42"	300.00'	110.19'	109.57'	N10°01'07"E
C18	16°08'05"	1978.00'	557.01'	555.17'	N81°55'26"W
C19	16°38'51"	1677.00'	487.26'	485.55'	S82°10'49"E
C20	10°22'31"	1100.00'	199.19'	198.92'	N08°21'18"E
C21	15°09'28"	1416.00'	374.61'	373.52'	N81°26'08"W
C22	16°38'51"	2239.00'	650.55'	648.26'	S82°10'49"E
C23	14°24'13"	300.00'	75.42'	75.22'	N04°55'48"E
C24	17°34'04"	300.00'	91.98'	91.62'	S06°30'43"W
C25	58°40'58"	250.00'	256.05'	245.01'	N18°12'54"E
C26	10°49'29"	200.00'	37.79'	37.73'	S05°42'50"E
C27	19°07'19"	500.00'	166.87'	166.10'	S09°15'34"W
C28	10°13'37"	1000.00'	178.50'	178.26'	N04°48'43"E
C29	19°56'54"	250.00'	87.04'	86.60'	S80°19'39"E
C30	19°56'54"	250.00'	87.04'	86.60'	S80°19'39"E
C31	17°54'17"	140.50'	43.91'	43.73'	N80°39'53"E
C32	15°23'02"	159.50'	42.83'	42.70'	S79°24'16"W
C33	0°24'18"	1937.50'	13.69'	13.69'	N86°53'38"E
C34	0°34'00"	1734.50'	17.15'	17.15'	S88°46'20"W
C35	18°05'29"	159.50'	50.36'	50.15'	N81°53'55"W
C36	15°13'28"	140.50'	37.33'	37.22'	S80°27'54"E
C37	15°24'34"	140.50'	37.79'	37.67'	N82°44'16"W
C38	17°52'30"	159.50'	49.76'	49.56'	S83°58'14"E
C39	15°11'18"	159.50'	42.28'	42.16'	N81°27'41"E
C40	18°07'38"	140.50'	44.47'	44.28'	S82°55'51"W
C41	116°28'24"	50.00'	101.64'	85.02'	N31°15'34"E
C42	35°03'45"	20.00'	12.24'	12.05'	S09°26'46"E
C43	75°45'32"	20.00'	26.44'	24.56'	N51°37'00"E
C44	74°23'24"	20.00'	25.97'	24.18'	S54°47'31"W
C45	252°24'43"	50.00'	220.27'	80.69'	S36°11'50"E
C46	254°43'39"	50.00'	222.29'	79.48'	S38°20'58"W
C47	72°04'42"	20.0'	25.16'	23.53'	S50°19'34"E
C48	104°43'58"	50.00'	91.40'	79.19'	N62°17'31"E
C49	42°01'29"	20.0'	14.67'	14.34'	N68°41'10"E
C50	132°01'29"	50.00'	115.21'	91.36'	N66°18'50"W
C51	17°24'19"	90.50'	27.49'	27.39'	N88°51'35"E
C52	17°24'19"	182.50'	55.44'	55.23'	S88°51'35"W
C53	17°24'19"	90.50'	27.49'	27.39'	N73°44'06"W
C54	17°24'19"	182.50'	55.44'	55.23'	S73°44'06"E
C55	07°31'59"	463.50'	60.94'	60.90'	N03°47'45"E
C56	10°30'17"	336.50'	61.69'	61.61'	N01°41'27"W
C57	10°30'17"	290.00'	53.17'	53.09'	N01°41'27"W
C58	10°30'17"	290.00'	53.17'	53.09'	N12°11'43"W
C59	10°30'17"	336.50'	61.69'	61.61'	N12°11'43"W
C60	89°17'00"	15.00'	23.37'	21.08'	N46°48'43"E
C61	87°54'50"	15.00'	23.02'	20.82'	N36°23'41"W
C62	10°59'47"	182.50'	35.03'	34.97'	N76°32'45"E
C63	22°30'33"	139.73'	54.89'	54.54'	S82°14'22"W
C64	21°40'10"	182.50'	69.02'	68.61'	N86°20'02"E
C65	11°33'32"	140.50'	28.34'	28.30'	S81°16'43"W
C66	3°20'41"	525.0'	30.65'	30.64'	N85°23'08"E

FRONTIER PARKWAY (VARIABLE WIDTH R.O.W) VOL. 2011, PG. 74 P.R.C.C.T.

LOT 1, BLOCK A
PROSPER HIGH SCHOOL
VOL. 2011, PG. 74 P.R.C.C.T.

100-YEAR FLOOD PLAIN (ZONE A) AS PER FIRM MAP PANEL NO. 48085C0120J FOR COLLIN COUNTY, TEXAS & INCORPORATED AREAS DATED JUNE 2, 2009

FRISCO TOLLWAY PARTNERS, LTD.
DOC.# 2004-0033176
O.P.R.C.C.T.

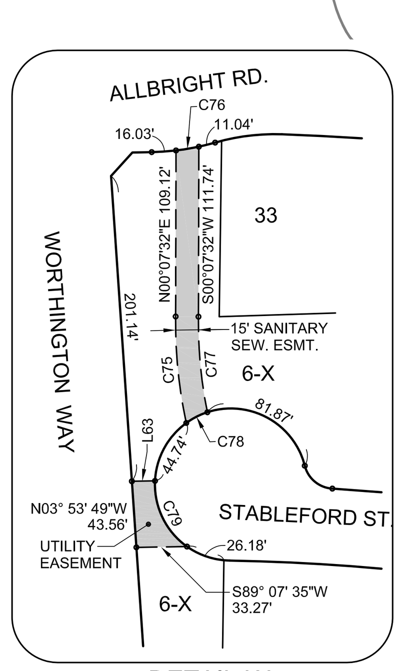
FRONTIER PARKWAY (EXISTING ROADWAY)

COLLIN COUNTY SCHOOL LAND SURVEY No.12, ABST.#147

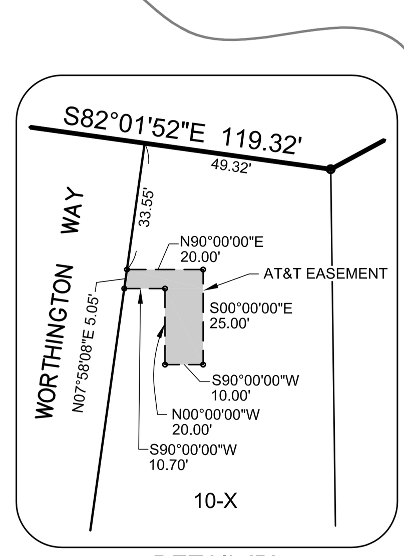
SPENCER RICE SURVEY ABST.#787

15' SANITARY SEWER EASEMENT TO TOWN OF PROSPER, TEXAS DOC.# 20130719001011940 O.P.R.C.C.T.

VICTORY WAY (45' ROW) DOC. # 2011, PG. 74 P.R.C.C.T.



DETAIL 'A'
SCALE: 1"=100'



DETAIL 'B'
SCALE: 1"=40'

LEGEND

IRF	IRON ROD FOUND
IRF (HZ)	5/8" IRON ROD FOUND WITH PLASTIC CAP STAMPED "HUITT-ZOLLARS"
IRS	5/8" IRON ROD SET W/ "HUITT-ZOLLARS" CAP
MIN. F.F	MINIMUM FINISH FLOOR
WME	WALL MAINTENANCE EASEMENT
UE	UTILITY EASEMENT
B.L.	BUILDING LINE
◆	DENOTES STREET NAME CHANGE
L.R.C.C.T.	LAND RECORDS, COLLIN COUNTY, TEXAS
P.R.C.C.T.	PLAT RECORDS, COLLIN COUNTY, TEXAS

NOTES:

1. SELLING A PORTION OF THIS ADDITION BY METES AND BOUNDS IS A VIOLATION OF CITY ORDINANCE AND STATE LAW, AND IS SUBJECT TO FINES AND WITHHOLDING OF UTILITIES AND BUILDING PERMITS.

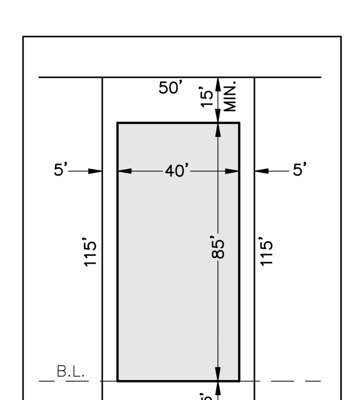
2. THE CARE AND MAINTENANCE OF ALL COMMON AREA LOTS 1-X, 2-X, 3X, 4X, 5X, 6X, 7X, 8X, 9X, 10X, 11X & 12X IS THE RESPONSIBILITY OF THE H.O.A.

3. FOR LOTS 40', 50', OR 60' WIDE WITH J-DRIVE, FRONT YARD SETBACK MAY BE REDUCED BY FIVE (5) FEET.

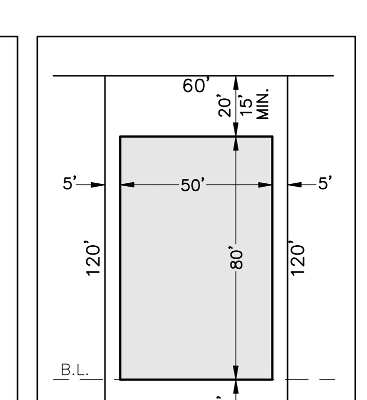
4. ALL LOT CORNERS WILL BE SET UPON COMPLETION OF CONSTRUCTION USING A 5/8 INCH REBAR WITH A YELLOW PLASTIC CAP STAMPED "HUITT-ZOLLARS" IN AREAS WHERE IT IS NOT PHYSICALLY POSSIBLE TO SET REBAR, AN X CUT OR P.K. NAIL WILL BE UTILIZED. THE CENTERLINE OF THE STREET RIGHT-OF-WAY WILL BE MONUMENTED WITH A SCRIBED "X" IN CONCRETE AT P.C.'S, P.T.'S AND INTERSECTION POINTS.

COURSE	DIRECTION	DISTANCE
L60	N73°57'28"W	9.50'
L61	N15°37'30"W	8.24'
L62	N00°18'06"W	7.00'
L63	N89°07'35"E	15.20'
L64	N88°22'37"E	73.95'
L65	S88°22'37"W	47.98'

CURVE	DELTA	RADIUS	LENGTH	CHORD	CHORD BEARING
C67	90°00'00"	20.00'	31.42'	28.28'	N45°18'06"W
C68	64°58'12"	20.00'	22.68'	21.48'	N42°24'38"E
C69	35°22'43"	30.00'	18.52'	18.23'	N83°01'52"W
C70	0°26'37"	2012.50'	15.58'	15.58'	N86°52'13"E
C71	0°26'20"	1659.50'	12.71'	12.71'	N88°50'10"E
C72	22°57'31"	250.00'	100.18'	99.51'	S11°10'39"E
C73	07°55'23"	300.00'	41.49'	41.45'	N04°27'57"E
C74	02°51'20"	475.00'	23.69'	23.67'	S85°08'28"W
C75	13°08'00"	307.50'	70.49'	70.33'	N05°43'08"W
C76	05°27'59"	159.50'	15.22'	15.21'	N80°33'52"W
C77	12°22'34"	292.50'	63.18'	63.06'	S05°19'19"E
C78	17°52'47"	50.00'	15.60'	15.54'	S54°00'43"W
C79	57°24'50"	50.00'	50.10'	48.03'	S25°57'56"E



TYPICAL LOT & SETBACK LINE DETAIL (50' WIDE LOT)



TYPICAL LOT & SETBACK LINE DETAIL (60' WIDE LOT)

COURSE	DIRECTION	DISTANCE
L1	N89°29'45"E	121.80'
L2	N00°30'15"W	32.30'
L3	N39°45'48"E	20.57'
L4	S49°21' 03"E	22.15'
L8	N12°07'54"E	28.51'
L9	N18°49'13"E	21.05'
L10	N89°41'54"E	25.0'
L11	S45°18'06"E	14.14'
L12	N44°41'54"E	14.14'
L13	S26°37'04"E	14.28'
L14	N62°30'34"E	14.21'
L15	N59°33'18"E	14.18'
L16	S31°24'38"E	13.87'
L17	S40°02'36"E	23.07'
L18	N49°00'56"E	19.56'
L19	S48°43'54"E	21.27'
L20	N42°13'47"E	20.79'
L21	N58°42'53"E	13.68'
L22	S31°31'28"E	14.49'
L23	S30°51'37"E	13.85'
L24	N58°16'19"E	14.63'
L25	S45°11'58"E	14.12'
L26	N44°41'54"E	14.14'
L27	N45°20'06"E	13.98'
L28	S44°46'51"E	14.27'
L29	S45°18'06"E	14.14'
L30	N44°41'54"E	14.14'
L31	S87°26'37"E	14.14'

COURSE	DIRECTION	DISTANCE
L32	N02°33'23"E	14.14'
L33	N58°29'53"E	13.23'
L34	S34°47'00"E	14.21'
L35	S39°42'17"E	22.04'
L36	N52°33'45"E	21.21'
L37	N51°42'31"E	20.89'
L38	S37°26'15"E	21.21'
L39	S37°25'46"E	21.22'
L40	N52°33'15"E	21.22'
L41	N57°18'27"E	14.01'
L42	S33°21'19"E	14.09'
L43	N44°29'45"E	14.14'
L44	S45°30'15"E	14.14'
L45	N59°15'38"E	14.40'
L46	S31°31'00"E	13.69'
L47	S30°43'00"E	13.89'
L48	N58°31'24"E	14.57'
L49	S45°30'15"E	14.14'
L50	N44°29'45"E	14.14'
L51	N53°37'56"E	19.10'
L52	S41°10'16"E	18.04'
L53	S36°11'21"E	15.46'
L54	N54°33'11"E	18.72'
L55	N44°29'45"E	14.14'
L56	S45°30'15"E	14.14'
L57	N44°29'45"E	14.14'
L58	S45°30'15"E	21.21'
L59	N89°29'45"E	20.00'

FINAL PLAT

LIGHT FARMS
PHASE THREE
THE CYPRESS NEIGHBORHOOD
THE SAGE NEIGHBORHOOD

291 RESIDENTIAL LOTS, & 12 OPEN SPACES
TOTALING 77.78 ACRES
SITUATED IN THE
COLLIN COUNTY SCHOOL LAND SURVEY No. 14, ABST. No. 167
COLLIN COUNTY, TEXAS

OWNER/DEVELOPER
LFC LAND COMPANY, LLC.
LFC DEVCO CYPRESS, LLC.
LFC DEVCO SAGE, LLC.
8401 North Central Expressway, Suite 350, Dallas, TX 75225
Phone 214-292-3410 Fax 214-292-3411

PREPARED BY:
HUITT-ZOLLARS
Huitt-Zollars, Inc. Dallas
1717 McKinney Avenue, Suite 1400, Dallas, TX 75202
Phone (214) 871-3311 Fax (214) 871-0757

MARCH, 2015 SHEET 1 of 2

COUNTY RECORDING INFORMATION

CAD FILE PATH: I:\proj\01390501\01390540 Parcel 1&2\08_DesignCAD\FINAL PLAT\LF-3_CYPRESS & SAGE_FINAL PLAT.dwg

PROJECT NUMBER: 01-3905-40

DWG: I:\proj\01390501\01390540 Parcel 1&2\08_DesignCAD\FINAL PLAT\LF-3_CYPRESS & SAGE_FINAL PLAT.dwg USER: aloeffel
DATE: Mar 17, 2015 7:26am XREFS: LF-3_CYPRESS & SAGE_BASE FEMA_FLOODPLAIN

OWNER'S CERTIFICATE
STATE OF TEXAS
COUNTY OF COLLIN

WHEREAS, LFC LAND COMPANY, LLC, LFC DEVCO CYPRESS, LLC and LFC DEVCO SAGE, LLC are the owners of a tract of land situated in the Collin County School Land Survey No. 14, Abstract No. 167, Collin County, Texas, and being a portion of the 209.022 acres of land described as 'Tract B' in instrument to LFC Land Company, LLC as recorded under Document No. 20120423000464780 of Official Public Records of Collin County, Texas, and a portion of the 35.94 acres of land described in instrument to LFC Devco Cypress, LLC as recorded under Document No. 20150210000147040 of the Official Public Records of Collin County, Texas, and all of the 35.22 acres of land described in instrument to LFC Devco Sage, LLC as recorded under Document No. 20150210000147100 of the Official Public Records of Collin County, Texas and being more particularly described as follows:

BEGINNING at a 3/8 inch iron rod found at the southwest corner of the aforementioned 209.022 acres of land and the southeast corner of a 7.438 acre tract of land described in instrument to Lottie Loraine Couch as recorded under County Clerk's No. 97-0002825 of the Official Public Records of Collin County, Texas, said point being in the approximate centerline of Business Route of State Highway No. 289 (and north line of Frontier Parkway, variable width as platted in Volume 2011, Page 74 of the Plat Records of Collin County, Texas);

THENCE North 0 degrees 42 minutes 12 seconds West along the west line of said Tract B a distance of 605.95 feet to a 1/2 inch iron rod found at the northeast corner of said 7.438 acre tract;

THENCE North 0 degrees 18 minutes 06 seconds West along the west line of said Tract B a distance of 872.69 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" for a corner;

THENCE North 89 degrees 41 minutes 54 seconds East departing the west line of said Tract B, a distance of 125.00 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" for a corner;

THENCE North 00 degrees 18 minutes 06 seconds West a distance of 11.99 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" at the beginning of a curve to the right having a central angle of 22 degrees 57 minutes 29 seconds, a radius of 275.00 feet and being subtended by a 109.46 foot chord which bears North 11 degrees 10 minutes 39 seconds East;

THENCE northerly along said curve to the right, an arc distance of 110.19 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" for a corner;

THENCE South 67 degrees 20 minutes 36 seconds East a distance of 50.00 to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" for a corner, said point being the beginning of a non-tangent curve to the left having a central angle of 22 degrees 57 minutes 29 seconds, a radius of 225.00 feet and being subtended by a 89.55 foot chord which bears South 11 degrees 10 minutes 39 seconds West;

THENCE southerly along said curve to the left, an arc distance of 90.16 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" at the end of said curve;

THENCE South 00 degrees 18 minutes 06 seconds East a distance of 11.99 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" for a corner;

THENCE North 89 degrees 41 minutes 54 seconds East a distance of 59.47 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" for an angle point;

THENCE South 78 degrees 33 minutes 40 seconds East a distance of 141.41 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" for a corner;

THENCE South 71 degrees 31 minutes 11 seconds East a distance of 245.84 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" for a corner;

THENCE South 75 degrees 01 minutes 15 seconds East a distance of 41.59 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" for a corner;

THENCE North 14 degrees 41 minutes 29 seconds East a distance of 5.98 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" for a corner;

THENCE South 74 degrees 44 minutes 08 seconds East a distance of 50.00 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" for a corner;

THENCE South 79 degrees 02 minutes 39 seconds East a distance of 54.61 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" for a corner;

THENCE South 84 degrees 18 minutes 59 seconds East a distance of 280.94 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" for a corner;

THENCE North 83 degrees 57 minutes 29 seconds East a distance of 148.72 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" for a corner;

THENCE North 83 degrees 03 minutes 18 seconds East a distance of 38.93 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" for a corner, said point being the beginning of a non-tangent curve to the left having a central angle of 5 degrees 15 minutes 54 seconds, a radius of 290.00 feet and being subtended by a 26.64 foot chord which bears North 04 degrees 18 minutes 38 seconds West;

THENCE northerly along said curve to the left, an arc distance of 26.65 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" at the end of said curve;

THENCE North 06 degrees 56 minutes 35 seconds West a distance of 22.70 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" at the beginning of a curve to the right having a central angle of 14 degrees 54 minutes 43 seconds, a radius of 453.50 feet and being subtended by a 117.70 foot chord which bears North 00 degrees 30 minutes 47 seconds East;

THENCE northerly along said curve to the right, an arc distance of 118.03 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" at the end of said curve;

THENCE North 07 degrees 58 minutes 08 seconds East a distance of 102.80 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" for a corner;

THENCE South 82 degrees 01 minutes 52 seconds East a distance of 119.32 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" for a corner;

THENCE North 61 degrees 36 minutes 01 second East a distance of 95.07 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" for a corner;

THENCE South 28 degrees 23 minutes 56 seconds East a distance of 49.79 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" for a corner;

THENCE South 86 degrees 33 minutes 58 seconds East a distance of 105.33 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" for a corner;

THENCE South 83 degrees 40 seconds 32 seconds East a distance of 99.58 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" for a corner;

THENCE South 81 degrees 31 minutes 49 seconds East a distance of 59.68 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" for a corner;

THENCE South 79 degrees 14 minutes 51 seconds East a distance of 89.69 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" for a corner;

THENCE South 77 degrees 12 minutes 02 seconds East a distance of 75.14 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" for a corner;

THENCE South 86 degrees 49 minutes 58 seconds East a distance of 50.00 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" for a corner;

THENCE South 03 degrees 10 minutes 02 seconds West a distance of 20.09 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" for a corner;

THENCE South 86 degrees 49 minutes 58 seconds East a distance of 46.78 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" for a corner;

THENCE South 74 degrees 55 minutes 03 seconds East a distance of 59.78 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" for a corner;

THENCE South 77 degrees 57 minutes 11 seconds East a distance of 67.72 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" for a corner;

THENCE South 80 degrees 20 minutes 39 seconds East a distance of 81.57 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" for a corner;

THENCE South 83 degrees 33 minutes 52 seconds East a distance of 99.53 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" for a corner;

THENCE South 87 degrees 42 minutes 17 seconds East a distance of 87.62 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" for a corner;

THENCE North 89 degrees 29 minutes 45 seconds East a distance of 121.80 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" for a corner;

THENCE North 00 degrees 30 minutes 15 seconds West a distance of 32.30 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" at the beginning of a curve to the left having a central angle of 7 degrees 55 minutes 23 seconds, a radius of 275.00 feet and being subtended by a 38.00 foot chord which bears North 04 degrees 27 minutes 56 seconds West;

THENCE northerly along said curve to the left, an arc distance of 38.03 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" for a corner;

THENCE North 81 degrees 34 minutes 22 seconds East a distance of 50.00 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" for a corner, said point being the beginning of a non-tangent curve to the right having a central angle of 7 degrees 55 minutes 23 seconds, a radius of 325.00 feet and being subtended by a 44.91 foot chord which bears South 04 degrees 27 minutes 56 seconds East;

THENCE southerly along said curve to the right, an arc distance of 44.94 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" at the end of said curve;

THENCE South 00 degrees 30 minutes 15 seconds East a distance of 9.59 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" for a corner;

THENCE North 89 degrees 29 minutes 45 seconds East a distance of 121.20 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" for a corner on the east line of the aforementioned 101.929 acre tract;

THENCE South 00 degrees 05 minutes 21 seconds West along the east line of said 101.9292 acre tract, a distance of 108.92 feet to a 1/2 inch iron rod found;

THENCE South 00 degrees 30 minutes 15 seconds East along the east line of said 101.9292 acre tract, a distance of 1,042.80 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" for a corner;

THENCE South 89 degrees 29 minutes 45 seconds West departing the said east line of said 101.9292 acre tract, a distance of 250.08 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" at the beginning of a curve to the right having a central angle of 16 degrees 36 minutes 53 seconds, a radius of 2,665.00 feet and being subtended by a 770.10 foot chord which bears North 82 degrees 11 minutes 48 seconds West;

THENCE westerly along said curve to the right, an arc distance of 772.80 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" at the point of reverse curvature of a curve to the left having a central angle of 28 degrees 09 minutes 19 seconds, a radius of 455.00 feet and being subtended by a 221.34 foot chord which bears North 87 degrees 58 minutes 01 second West;

THENCE westerly along said curve to the left, an arc distance of 223.59 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" at the point of reverse curvature of a curve to the right having a central angle of 17 degrees 23 minutes 15 second, a radius of 395.00 feet and being subtended by a 119.41 foot chord which bears South 86 degrees 38 minutes 57 seconds West;

THENCE westerly along said curve to the right, an arc distance of 119.87 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" for a corner;

THENCE South 00 degrees 01 minutes 45 seconds West a distance of 79.59 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" at the beginning of a curve to the right having a central angle of 8 degrees 06 minutes 03 seconds, a radius of 436.50 feet and being subtended by a 61.66 foot chord which bears South 04 degree 04 minutes 47 seconds West;

THENCE southerly along said curve to the right, an arc distance of 61.72 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" at the end of said curve;

THENCE South 08 degrees 07 minutes 49 seconds West a distance of 107.27 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" at the beginning of a curve to the left having a central angle of 8 degrees 38 minutes 04 seconds, a radius of 388.50 feet and being subtended by a 58.49 foot chord which bears South 03 degrees 48 minutes 46 seconds West;

THENCE southerly along said curve to the left, an arc distance of 58.55 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" at the end of said curve;

THENCE South 00 degrees 30 minutes 16 seconds East a distance of 13.43 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" at an angle point;

THENCE South 45 degrees 30 minutes 14 seconds East a distance of 35.36 feet to a 5/8 inch iron rod set with plastic cap stamped "Huitt-Zollars" at an angle point;

THENCE South 00 degrees 30 minutes 16 seconds East a distance of 70.00 feet point on the south line of the aforementioned Tract B, same being the approximate centerline of Business Route of State Highway No. 289 (and north line of said Frontier Parkway), from which a 3/8 inch iron rod found at the southeast corner of said Tract B bears North 89 degrees 29 minutes 58 East at a distance of 21.09 feet;

THENCE South 89 degrees 29 minutes 44 seconds West along the south line of said Tract B and approximate centerline of said Business Route of State Highway No. 289 (and north line of said Frontier Parkway) a distance of 1,301.61 feet to the POINT OF BEGIINING and containing 77.78 acres of land, more or less.

NOW, THEREFORE, KNOW ALL MEN BY THESE PRESENTS:

That LFC LAND COMPANY, LLC; LFC DEVCO CYPRESS, LLC and LFC DEVCO SAGE, LLC acting herein by and through its duly authorized officer(s), does hereby adopt this plat designating the herein above described property as LIGHT FARMS PHASE THREE, the CYPRESS and SAGE NEIGHBORHOODS an addition within the extra-territorial jurisdiction of the City of Celina, Texas, and does hereby dedicate, in fee simple, to the public use forever, the streets, rights-of-way, and other public improvements shown thereon. The streets and alleys are dedicated for street purposes. The easements and public use areas, as shown, are dedicated, for the public use forever, for the purposes indicated on this plat. No buildings, fences, trees, shrubs or other improvements or growths shall be constructed or placed upon, over or across the easements as shown, except that landscape improvements may by placed in landscape easements, if approved by the City Council of the City of Celina. In addition, utility easements may also be used for the mutual use and accommodation of all public utilities desiring to use or using the same unless the easements limits the use to particular utilities, said use by public utilities being subordinate to the public's and City of Celina's use thereof. The City of Celina and public utilities entities shall have the right to remove and keep removed all or parts of any buildings, fences, trees, shrubs or other improvements or growths which may in any way endanger or interfere with the construction, maintenance, or efficiency of their respective systems in said easements. The City of Celina and public utility entities shall at all times have the full right of ingress and egress to or from their respective easements for the purpose of constructing, reconstructing, inspecting, patrolling, maintaining, reading meters, and adding to or removing all or parts of their respective systems without the necessity at any time procuring permission from anyone.

This plat approved subject to all platting ordinances, rules, regulations and resolutions of the City of Celina, Texas,

WITNESS, my hand, this the _____ day of _____ , 2015.

By:
Authorized Signature of LFC LAND COMPANY, LLC., a Texas limited liability company, Owner

By: RJM/CELINA III, L.P., a Texas limited partnership, Manager

By: RJM/CELINA III, GP, INC., a Texas corporation, General Partner

By: _____
Tony Ruggeri, President

STATE OF TEXAS
COUNTY OF DALLAS

Before me, the undersigned authority, a Notary Public in and for the State of Texas, on this day personally appeared Tony Ruggeri, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same for the purpose and considerations therein expressed.

Given under my hand and seal of office, this _____ day of _____ , 2015.

_____
Notary Public in and for the State of Texas

My Commission Expires On: _____

WITNESS, my hand, this the _____ day of _____ , 2015.

By:
Authorized Signature of LFC DEVCO CYPRESS, LLC., a Texas limited liability company, Owner

By: RJM/CELINA III, L.P., a Texas limited partnership, Manager

By: RJM/CELINA III GP, INC., a Texas corporation, General Partner

By: _____
Tony Ruggeri, President

STATE OF TEXAS
COUNTY OF DALLAS

Before me, the undersigned authority, a Notary Public in and for the State of Texas, on this day personally appeared Tony Ruggeri, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same for the purpose and considerations therein expressed.

Given under my hand and seal of office, this _____ day of _____ , 2015.

_____
Notary Public in and for the State of Texas

My Commission Expires On: _____

WITNESS, my hand, this the _____ day of _____ , 2015.

By:
Authorized Signature of LFC DEVCO SAGE, LLC., a Texas limited liability company, Owner

By: RJM/CELINA III, L.P., a Texas limited partnership, Manager

By: RJM/CELINA III GP, INC., a Texas corporation, General Partner

By: _____
Tony Ruggeri, President

STATE OF TEXAS
COUNTY OF DALLAS

Before me, the undersigned authority, a Notary Public in and for the State of Texas, on this day personally appeared Tony Ruggeri, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same for the purpose and considerations therein expressed.

Given under my hand and seal of office, this _____ day of _____ , 2015.

_____
Notary Public in and for the State of Texas

My Commission Expires On: _____

KNOW ALL MEN BY THESE PRESENTS:

THAT, I, Eric J. Yahoudy does hereby certify that I prepared this plat from an actual and accurate survey of the land and that the corner monuments shown thereon were properly placed under my personal supervision, in accordance with the subdivision regulations of the City of Celina, Texas.

PRELIMINARY, THIS DOCUMENT SHALL NOT BE RECORDED FOR ANY PURPOSE AND SHALL NOT BE USED OR VIEWED OR RELIED UPON AS A FINAL SURVEY DOCUMENT.
ISSUED FOR REVIEW ON _____ , 2015.

_____
Eric J. Yahoudy, Registered Professional Land Surveyor
Texas Registration No. 4862
Huitt-Zollars, Inc.
Firm Registration No. 10025600

Date _____

STATE OF TEXAS
COUNTY OF DALLAS

Before me, the undersigned authority, a Notary Public in and for the State of Texas, on this day personally appeared Eric J. Yahoudy, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same for the purpose and considerations therein expressed.

Given under my hand and seal of office, this _____ day of _____ , 2015.

_____
Notary Public in and for the State of Texas

My Commission Expires On: _____

CERTIFICATE OF APPROVAL:
WITNESS, my hand, this the _____ day of _____ , 2015.
By:
Authorized Signature of COLLIN COUNTY MUNICIPAL UTILITY DISTRICT No. 1

_____
Keller Webster, President

STATE OF TEXAS
COUNTY OF DALLAS

Before me, the undersigned authority, a Notary Public in and for the State of Texas, on this day personally appeared Keller Webster, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same for the purpose and considerations therein expressed.

Given under my hand and seal of office, this _____ day of _____ , 2015.

_____ _____
Notary Public in and for the State of Texas My Commission Expires On:

PROPERTY LOCATION STATEMENT
This property is located in the extraterritorial jurisdiction of the City of Celina, Collin County, Texas.

_____ _____
Signature of Mayor Date of approval

ATTEST:

_____ _____
City Secretary Date

Approved for preparation of final plat following construction of all public improvements (or appropriate sureties thereof) necessary for the subdivision shown on the plat.

RECOMMENDED BY:	Planning and Zoning Commission City of Celina, Texas
Signature of Chairperson	Date of Recommendation
APPROVED BY:	City Council City of Celina, Texas
Signature of Mayor	Date of Approval
ATTEST:	City Council City of Celina, Texas
City Secretary	Date

FINAL PLAT
LIGHT FARMS
PHASE THREE
THE CYPRESS NEIGHBORHOOD
THE SAGE NEIGHBORHOOD
291 RESIDENTIAL LOTS, & 12 OPEN SPACES
TOTALING 77.78 ACRES
SITUATED IN THE
COLLIN COUNTY SCHOOL LAND SURVEY No. 14, ABST. No. 167
COLLIN COUNTY, TEXAS
CITY FILE No. XXXXX

OWNER/DEVELOPER
LFC LAND COMPANY, LLC.
LFC DEVCO CYPRESS, LLC.
LFC DEVCO SAGE, LLC.
8401 North Central Expressway, Suite 350, Dallas, TX 75225
Phone 214-292-3410 Fax 214-292-3411

PREPARED BY:
HUITT-ZOLLARS
Huitt-Zollars, Inc. Dallas
1717 McKinney Avenue, Suite 1400, Dallas, TX 75202
Phone (214) 871-3311 Fax (214) 871-0757

MARCH, 2015 SHEET 2 of 2

NOTE:
ALL DISTURBED AREAS MUST BE PERMANENTLY STABILIZED BY HYDROMULCH OR BROADCAST SEEDING PER NCTGOG STANDARDS TO REESTABLISH VEGETATION UNDER THE DIRECTION OF THE ENGINEER / DEVELOPER.

NOTE:
TOP OF CURB GRADES ARE SHOWN TO THE NEAREST TENTH OF A FOOT (0.1) FOR ROUGH GRADING PURPOSES.

REFER TO RETAINING WALL DETAILS FOR DATA & SPECIFICATIONS.

THE 100 YEAR SECTIONS AND ELEVATIONS ARE TAKEN FROM THE LOMR CASE NO. 14-06-2017P PREPARED BY HUITT-ZOLLARS, INC.

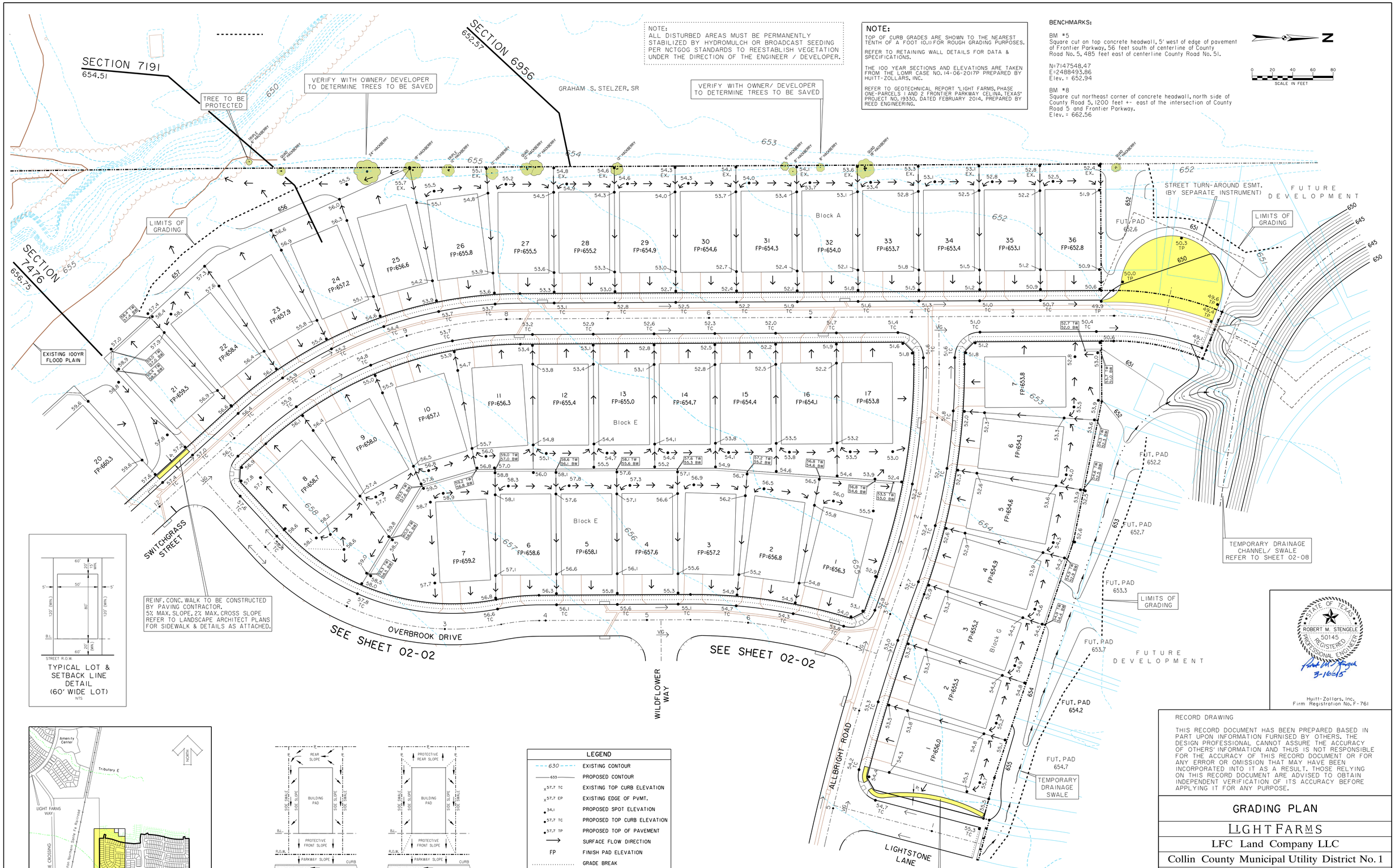
REFER TO GEOTECHNICAL REPORT "LIGHT FARMS, PHASE ONE-PARCELS 1 AND 2 FRONTIER PARKWAY CELINA, TEXAS" PROJECT NO. 19330, DATED FEBRUARY 2014, PREPARED BY REED ENGINEERING.

BENCHMARKS:

BM #5
Square cut on top concrete headwall, 5' west of edge of pavement of Frontier Parkway, 56 feet south of centerline of County Road No. 5, 485 feet east of centerline County Road No. 51.

N=7147548.47
E=2488493.86
Elev. = 652.94

BM #8
Square cut northeast corner of concrete headwall, north side of County Road 5, 1200 feet +- east of the intersection of County Road 5 and Frontier Parkway.
Elev. = 662.56



RECORD DRAWING

THIS RECORD DOCUMENT HAS BEEN PREPARED BASED IN PART UPON INFORMATION FURNISED BY OTHERS. THE DESIGN PROFESSIONAL CANNOT ASSURE THE ACCURACY OF OTHERS' INFORMATION AND THUS IS NOT RESPONSIBLE FOR THE ACCURACY OF THIS RECORD DOCUMENT OR FOR ANY ERROR OR OMISSION THAT MAY HAVE BEEN INCORPORATED INTO IT AS A RESULT. THOSE RELYING ON THIS RECORD DOCUMENT ARE ADVISED TO OBTAIN INDEPENDENT VERIFICATION OF ITS ACCURACY BEFORE APPLYING IT FOR ANY PURPOSE.

STATE OF TEXAS
ROBERT M. STENGELE
50145
REGISTERED PROFESSIONAL ENGINEER
3-16-15

Huitt-Zollars, Inc.
Firm Registration No. F-761

GRADING PLAN

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		1"=40'		01-3905-40	02-01

i:/proj/01390501/01390540 Parcel 1&2/08-Design CAD/DGN/phlgr01.dgn

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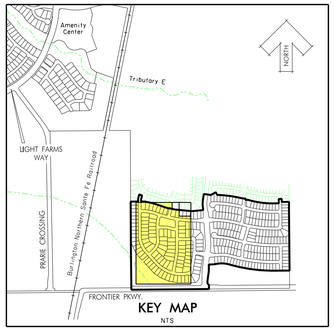
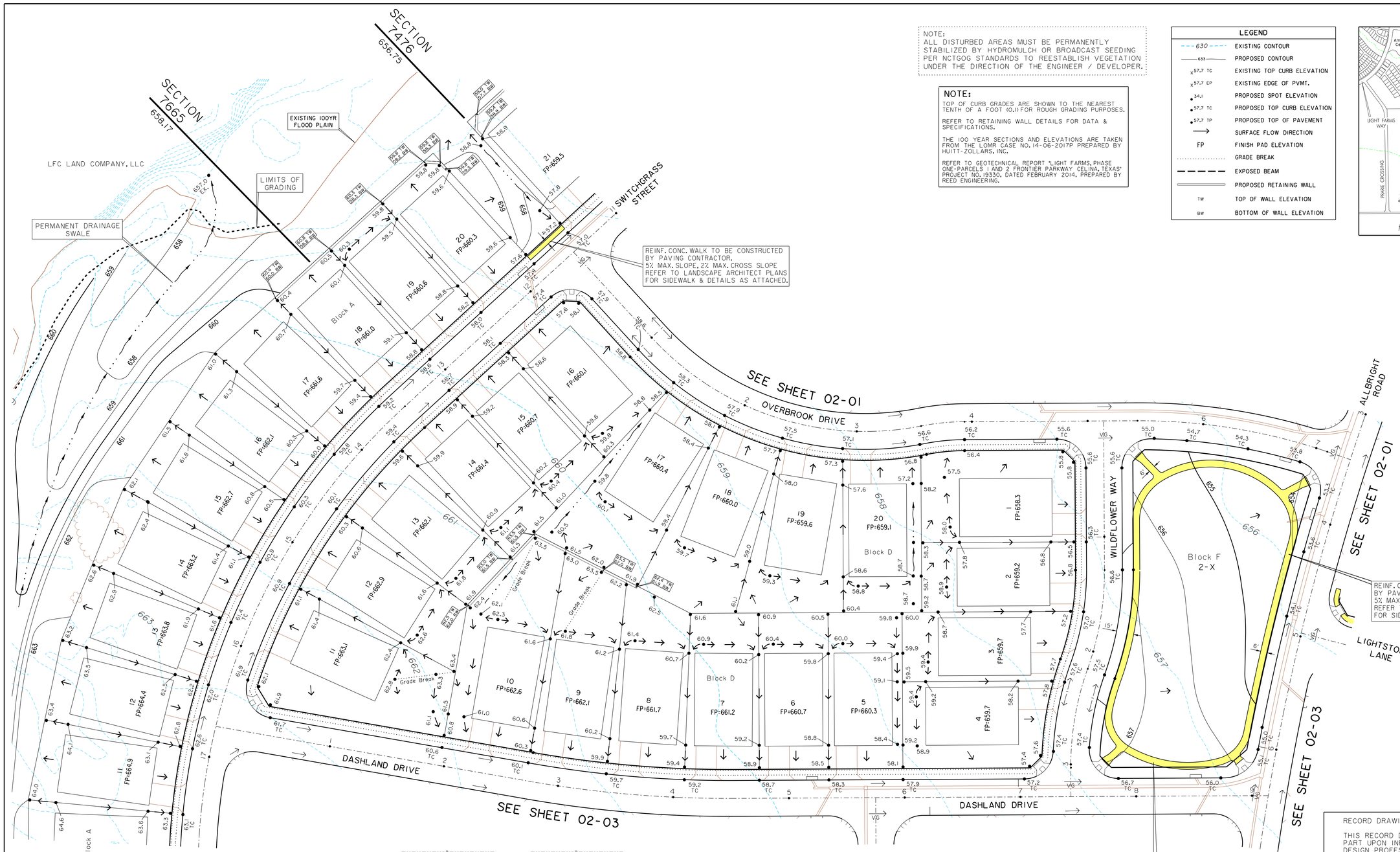
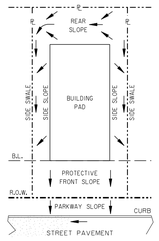
LEGEND

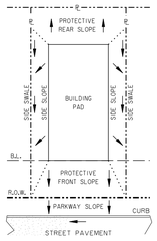
630	EXISTING CONTOUR
633	PROPOSED CONTOUR
x 57.7 TC	EXISTING TOP CURB ELEVATION
x 57.7 EP	EXISTING EDGE OF PVMT.
• 34.1	PROPOSED SPOT ELEVATION
• 57.7 TC	PROPOSED TOP CURB ELEVATION
• 57.7 TP	PROPOSED TOP OF PAVEMENT
→	SURFACE FLOW DIRECTION
FP	FINISH PAD ELEVATION
	GRADE BREAK
	EXPOSED BEAM
	PROPOSED RETAINING WALL
TW	TOP OF WALL ELEVATION
BW	BOTTOM OF WALL ELEVATION



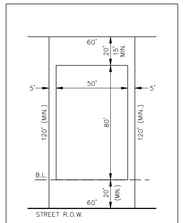




LOT GRADING TYPE 'A'
NTS
ALL DRAINAGE TO STREET



LOT GRADING TYPE 'B'
NTS
DRAINAGE TO BOTH STREET AND REAR LOT LINE



TYPICAL LOT & SETBACK LINE DETAIL (60' WIDE LOT)
NTS

REINF. CONC. WALK TO BE CONSTRUCTED BY PAVING CONTRACTOR. 5% MAX. SLOPE, 2% MAX. CROSS SLOPE REFER TO LANDSCAPE ARCHITECT PLANS FOR SIDEWALK & DETAILS AS ATTACHED.

BENCHMARKS:

BM #5
Square cut on top concrete headwall, 5' west of edge of pavement of Frontier Parkway, 56 feet south of centerline of County Road No. 5, 485 feet east of centerline County Road No. 51.

N=7147548.47
E=2488493.86
Elev. = 652.94

BM #8
Square cut northeast corner of concrete headwall, north side of County Road 5, 1200 feet +- east of the intersection of County Road 5 and Frontier Parkway.
Elev. = 662.56

STATE OF TEXAS
ROBERT M. STENGELE
50145
REGISTERED PROFESSIONAL ENGINEER
3-16-15

Huitt-Zollars, Inc.
Firm Registration No. F-761

RECORD DRAWING

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GRADING PLAN

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		1"=40'		01-3905-40	02-02

I:/proj/013905001/013905040 Parcel 1&2/08-DesignCAD/DGN/phlgr02.dgn

NOTE:
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NOTE:
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REFER TO RETAINING WALL DETAILS FOR DATA & SPECIFICATIONS.

REFER TO GEOTECHNICAL REPORT "LIGHT FARMS, PHASE ONE-PARCELS 1 AND 2 FRONTIER PARKWAY CELINA, TEXAS" PROJECT NO. 19330, DATED FEBRUARY 2014, PREPARED BY REED ENGINEERING.

BENCHMARKS:

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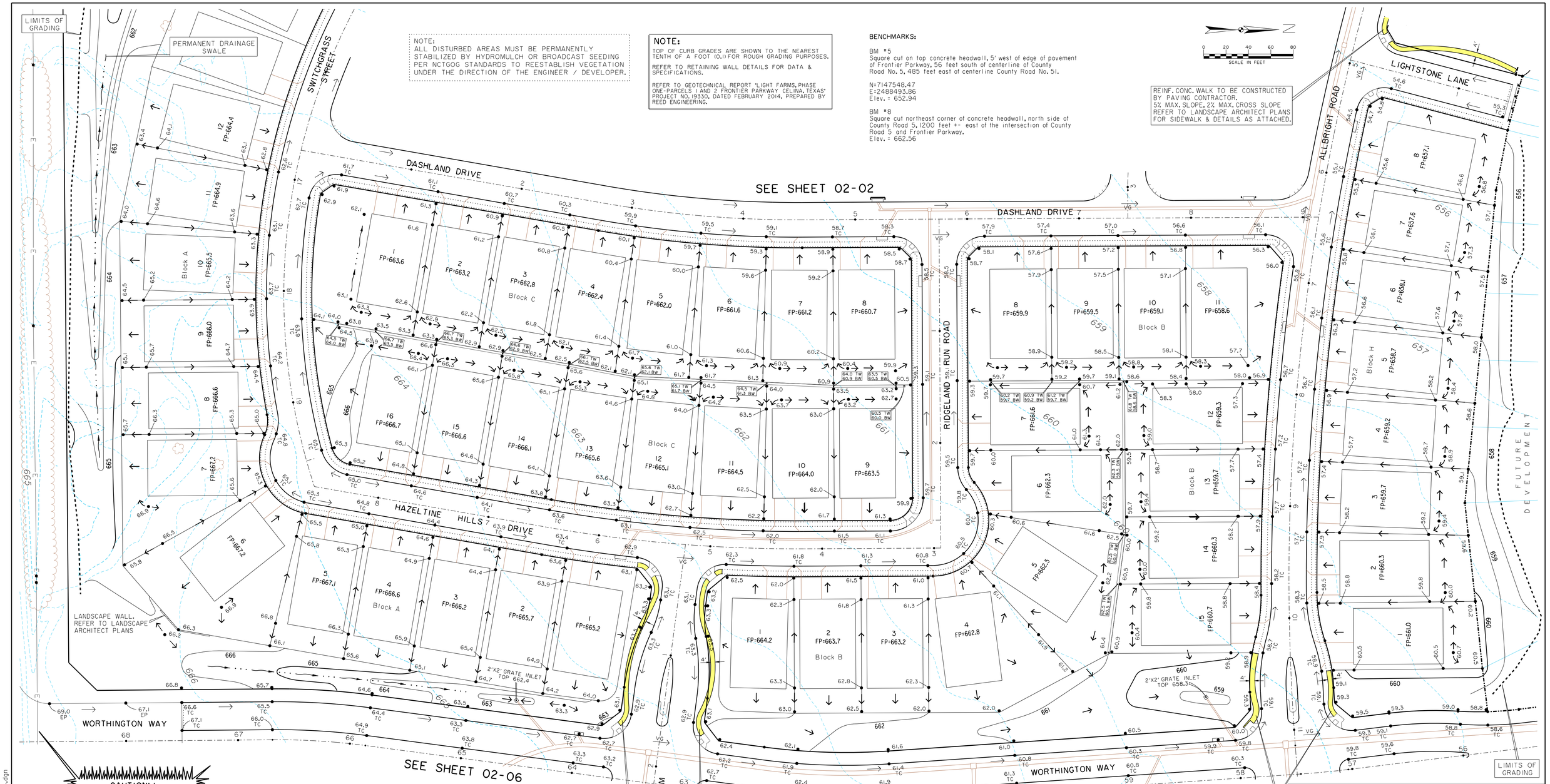
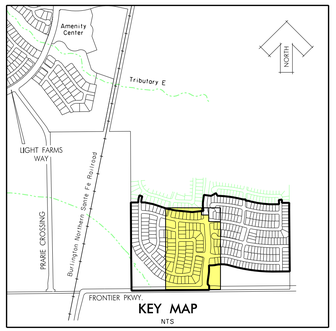


CAUTION!!
OVERHEAD POWER AND COMMUNICATION LINES IN THIS AREA

CONTACT:
Texas One call: 1-800-245-4545
48 HOURS PRIOR TO CONSTRUCTION

FOR ADJUSTMENTS OR RELOCATION OF OVERHEAD POWER AND COMMUNICATION LINES IN THIS AREA

CONTACT:
Grayson-Collin Electric Cooperative
Michael Lauer (903) 482-7100
48 HOURS PRIOR TO CONSTRUCTION



KEY MAP
NTS

LEGEND	
630	EXISTING CONTOUR
633	PROPOSED CONTOUR
x 57.7 TC	EXISTING TOP CURB ELEVATION
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• 34.1	PROPOSED SPOT ELEVATION
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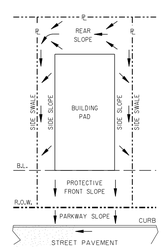
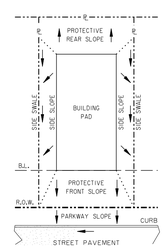
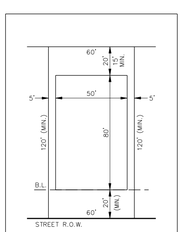


LOT GRADING TYPE 'A'
NTS
ALL DRAINAGE TO STREET



LOT GRADING TYPE 'B'
NTS
DRAINAGE TO BOTH STREET AND REAR LOT LINE



TYPICAL LOT & SETBACK LINE DETAIL (60' WIDE LOT)
NTS

REINF. CONC. WALK TO BE CONSTRUCTED BY PAVING CONTRACTOR. 5% MAX. SLOPE, 2% MAX. CROSS SLOPE REFER TO LANDSCAPE ARCHITECT PLANS FOR SIDEWALK & DETAILS AS ATTACHED.

STATE OF TEXAS
ROBERT M. STENGELE
50145
REGISTERED PROFESSIONAL ENGINEER
3-16-15

Huitt-Zollars, Inc.
Firm Registration No. F-761

RECORD DRAWING

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GRADING PLAN

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

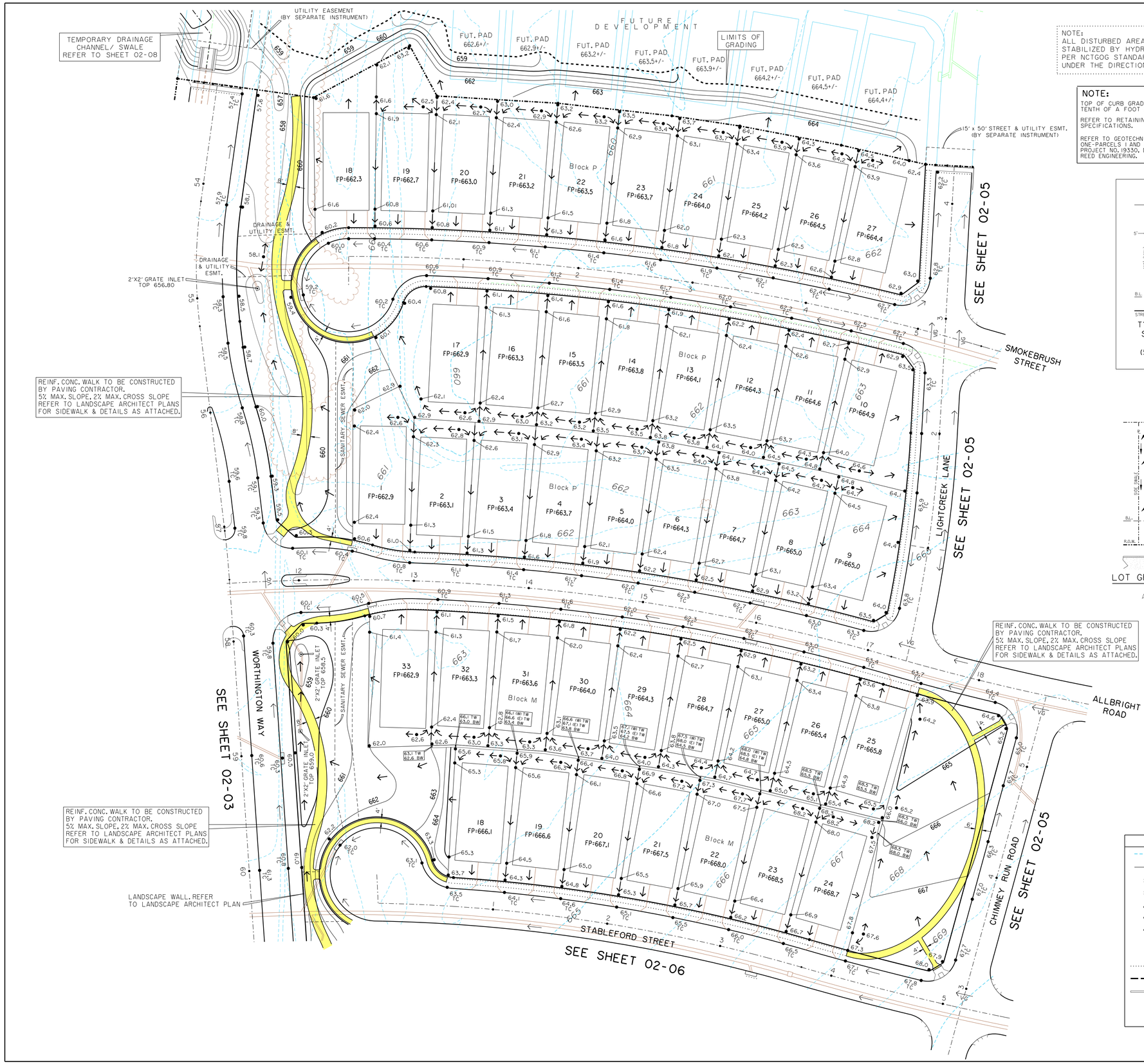
HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		1"=40'		01-3905-40	02-03

I:/proj/0139050/0139054O Parcel 1&2/08-Design CAD/DGN/pnlgr03.dgn

GRADING PLAN

P-201402-02

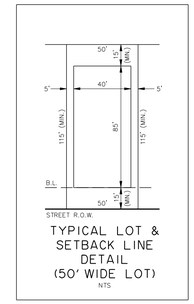


NOTE:
ALL DISTURBED AREAS MUST BE PERMANENTLY STABILIZED BY HYDROMULCH OR BROADCAST SEEDING PER NCTGOG STANDARDS TO REESTABLISH VEGETATION UNDER THE DIRECTION OF THE ENGINEER / DEVELOPER.

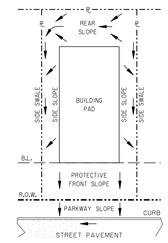
NOTE:
TOP OF CURB GRADES ARE SHOWN TO THE NEAREST TENTH OF A FOOT (0.1) FOR ROUGH GRADING PURPOSES.

REFER TO RETAINING WALL DETAILS FOR DATA & SPECIFICATIONS.

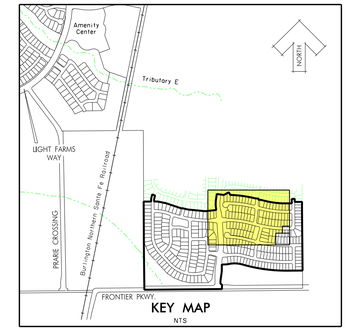
REFER TO GEOTECHNICAL REPORT "LIGHT FARMS, PHASE ONE-PARCELS 1 AND 2 FRONTIER PARKWAY CELINA, TEXAS" PROJECT NO. 19330, DATED FEBRUARY 2014, PREPARED BY REED ENGINEERING.



TYPICAL LOT & SETBACK LINE DETAIL (50' WIDE LOT)
NTS



LOT GRADING TYPE 'A'
NTS
ALL DRAINAGE TO STREET



KEY MAP
NTS

N

0 20 40 60 80
SCALE IN FEET

BENCHMARKS:

BM #5
Square cut on top concrete headwall, 5' west of edge of pavement of Frontier Parkway, 56 feet south of centerline of County Road No. 5, 485 feet east of centerline County Road No. 51.

N=7147548.47
E=2488493.86
Elev.= 652.94

BM #8
Square cut northeast corner of concrete headwall, north side of County Road 5, 1200 feet +- east of the intersection of County Road 5 and Frontier Parkway.
Elev.= 662.56

LEGEND	
630	EXISTING CONTOUR
633	PROPOSED CONTOUR
x57.7 TC	EXISTING TOP CURB ELEVATION
x57.7 EP	EXISTING EDGE OF PVMT.
•34.1	PROPOSED SPOT ELEVATION
•57.7 TC	PROPOSED TOP CURB ELEVATION
•57.7 TP	PROPOSED TOP OF PAVEMENT
→	SURFACE FLOW DIRECTION
FP	FINISH PAD ELEVATION
.....	GRADE BREAK
— — — —	EXPOSED BEAM
═══	PROPOSED RETAINING WALL
TW	TOP OF WALL ELEVATION
BW	BOTTOM OF WALL ELEVATION

STATE OF TEXAS
ROBERT M. STENGELE
50145
REGISTERED PROFESSIONAL ENGINEER
3-16-15

Huitt-Zollars, Inc.
Firm Registration No. F-761

RECORD DRAWING

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GRADING PLAN

LIGHT FARMS

LFC Land Company LLC

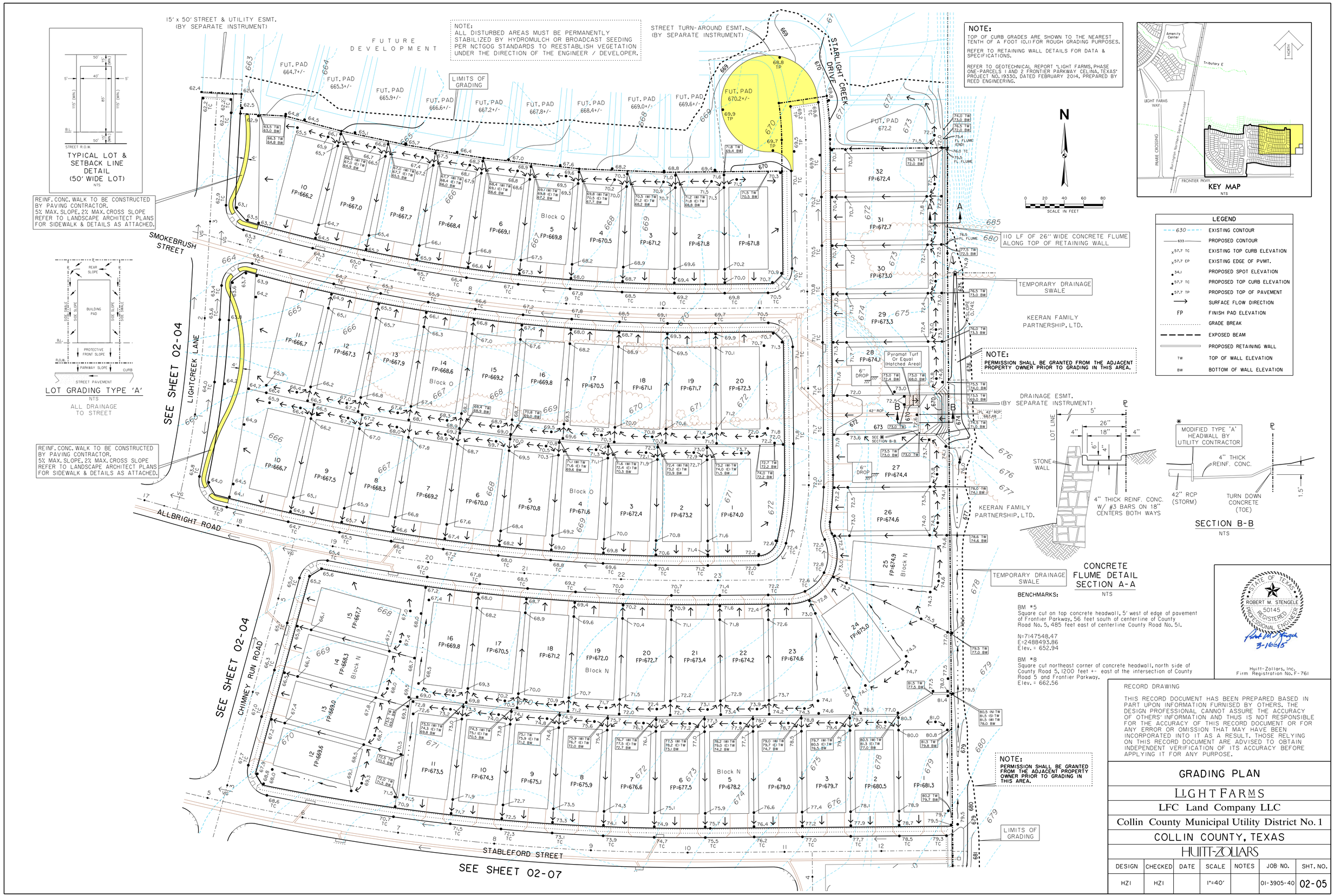
Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		1"=40'		01-3905-40	02-04

I:/proj/013905001/013905040 Parcel 1&2/08-DesignCAD/DGN/phlgr04.dgn



TYPICAL LOT & SETBACK LINE DETAIL (50' WIDE LOT)
NTS

LOT GRADING TYPE 'A'
NTS
ALL DRAINAGE TO STREET

NOTE:
TOP OF CURB GRADES ARE SHOWN TO THE NEAREST TENTH OF A FOOT (0.1) FOR ROUGH GRADING PURPOSES.

REFER TO RETAINING WALL DETAILS FOR DATA & SPECIFICATIONS.

REFER TO GEOTECHNICAL REPORT "LIGHT FARMS, PHASE ONE-PARCELS 1 AND 2 FRONTIER PARKWAY CELINA, TEXAS" PROJECT NO. 19330, DATED FEBRUARY 2014, PREPARED BY REED ENGINEERING.

KEY MAP
NTS

LEGEND

630	EXISTING CONTOUR
653	PROPOSED CONTOUR
x 57.7 TC	EXISTING TOP CURB ELEVATION
x 57.7 EP	EXISTING EDGE OF PVMT.
34.1	PROPOSED SPOT ELEVATION
57.7 TC	PROPOSED TOP CURB ELEVATION
57.7 TP	PROPOSED TOP OF PAVEMENT
	SURFACE FLOW DIRECTION
FP	FINISH PAD ELEVATION
	GRADE BREAK
	EXPOSED BEAM
	PROPOSED RETAINING WALL
TW	TOP OF WALL ELEVATION
BW	BOTTOM OF WALL ELEVATION

CONCRETE FLUME DETAIL SECTION A-A
NTS

SECTION B-B
NTS

BENCHMARKS:

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STATE OF TEXAS
ROBERT M. STENGELE
50145
REGISTERED PROFESSIONAL ENGINEER
3-16-15

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GRADING PLAN

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		1"=40'		01-3905-40	02-05

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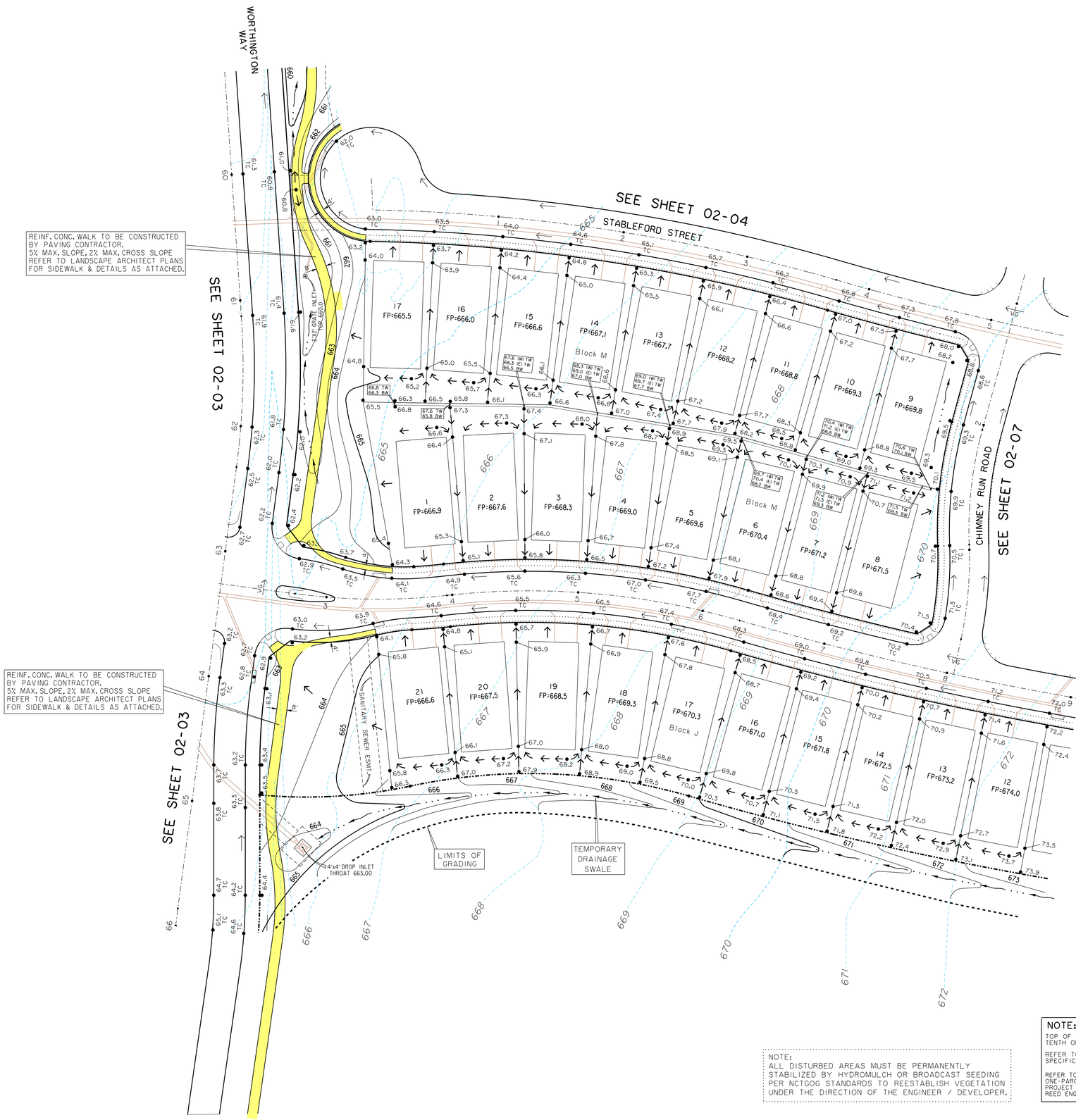
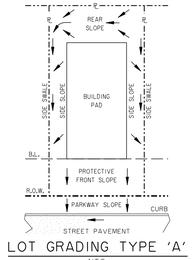
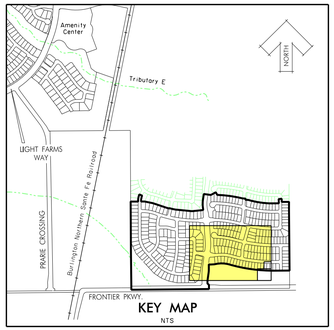




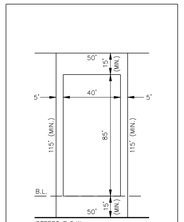
LOT GRADING TYPE 'A'
NTS
ALL DRAINAGE TO STREET



KEY MAP
NTS

N

0 20 40 60 80
SCALE IN FEET



TYPICAL LOT & SETBACK LINE DETAIL (50' WIDE LOT)
NTS

LEGEND	
630	EXISTING CONTOUR
633	PROPOSED CONTOUR
x 57.7 TC	EXISTING TOP CURB ELEVATION
x 57.7 EP	EXISTING EDGE OF PVMT.
• 34.1	PROPOSED SPOT ELEVATION
• 57.7 TC	PROPOSED TOP CURB ELEVATION
• 57.7 TP	PROPOSED TOP OF PAVEMENT
→	SURFACE FLOW DIRECTION
FP	FINISH PAD ELEVATION
	GRADE BREAK
	EXPOSED BEAM
	PROPOSED RETAINING WALL
TW	TOP OF WALL ELEVATION
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BENCHMARKS:

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3-16-15

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GRADING PLAN

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		1"=40'		01-3905-40	02-06

I:/proj/01390501/01390540 Parcel 1&2/08-DesignCAD/DGN/phlgr06.dgn

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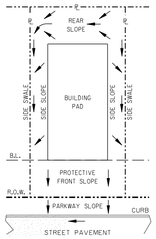
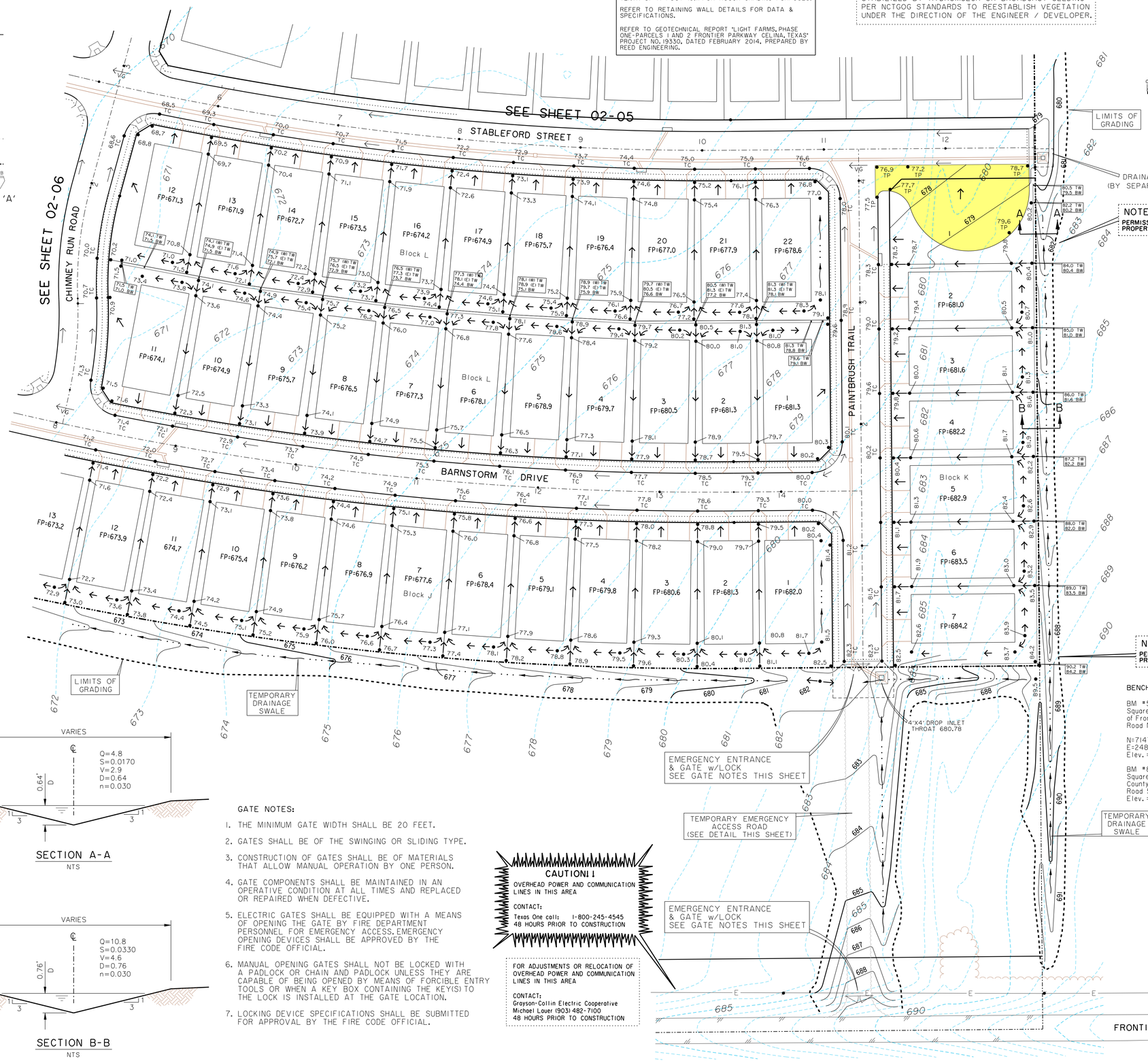
N

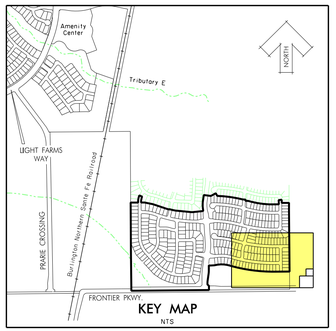
0 20 40 60 80
SCALE IN FEET



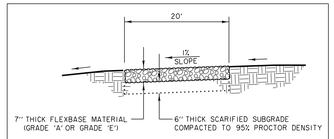
LOT GRADING TYPE 'A'
NTS
ALL DRAINAGE TO STREET



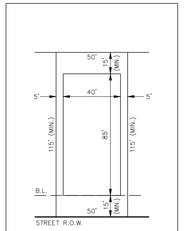
NOTE:
PERMISSION SHALL BE GRANTED FROM THE ADJACENT PROPERTY OWNER PRIOR TO GRADING IN THIS AREA.



KEY MAP
NTS



TYPICAL SECTION
TEMPORARY EMERGENCY ACCESS ROAD
N.T.S.



TYPICAL LOT & SETBACK LINE DETAIL
(50' WIDE LOT)
NTS

LEGEND	
630	EXISTING CONTOUR
635	PROPOSED CONTOUR
x 57.7 TC	EXISTING TOP CURB ELEVATION
x 57.7 EP	EXISTING EDGE OF PVMT.
• 34.1	PROPOSED SPOT ELEVATION
• 57.7 TC	PROPOSED TOP CURB ELEVATION
• 57.7 TP	PROPOSED TOP OF PAVEMENT
→	SURFACE FLOW DIRECTION
FP	FINISH PAD ELEVATION
.....	GRADE BREAK
— — —	EXPOSED BEAM
═══	PROPOSED RETAINING WALL
TW	TOP OF WALL ELEVATION
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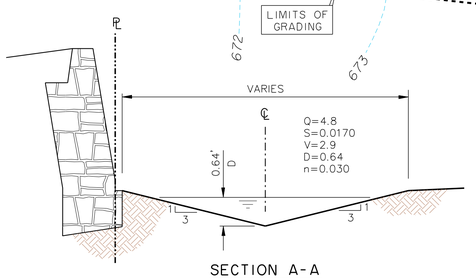
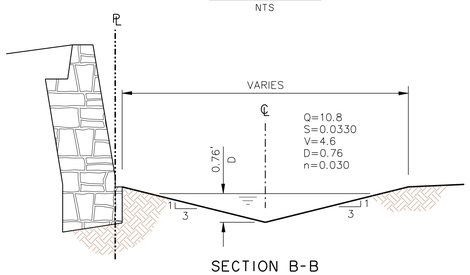


SECTION A-A
NTS



SECTION B-B
NTS

GATE NOTES:

1. THE MINIMUM GATE WIDTH SHALL BE 20 FEET.
2. GATES SHALL BE OF THE SWINGING OR SLIDING TYPE.
3. CONSTRUCTION OF GATES SHALL BE OF MATERIALS THAT ALLOW MANUAL OPERATION BY ONE PERSON.
4. GATE COMPONENTS SHALL BE MAINTAINED IN AN OPERATIVE CONDITION AT ALL TIMES AND REPLACED OR REPAIRED WHEN DEFECTIVE.
5. ELECTRIC GATES SHALL BE EQUIPPED WITH A MEANS OF OPENING THE GATE BY FIRE DEPARTMENT PERSONNEL FOR EMERGENCY ACCESS. EMERGENCY OPENING DEVICES SHALL BE APPROVED BY THE FIRE CODE OFFICIAL.
6. MANUAL OPENING GATES SHALL NOT BE LOCKED WITH A PADLOCK OR CHAIN AND PADLOCK UNLESS THEY ARE CAPABLE OF BEING OPENED BY MEANS OF FORCIBLE ENTRY TOOLS OR WHEN A KEY BOX CONTAINING THE KEY(S) TO THE LOCK IS INSTALLED AT THE GATE LOCATION.
7. LOCKING DEVICE SPECIFICATIONS SHALL BE SUBMITTED FOR APPROVAL BY THE FIRE CODE OFFICIAL.

CAUTION!!
OVERHEAD POWER AND COMMUNICATION LINES IN THIS AREA

CONTACT:
Texas One call: 1-800-245-4545
48 HOURS PRIOR TO CONSTRUCTION

FOR ADJUSTMENTS OR RELOCATION OF OVERHEAD POWER AND COMMUNICATION LINES IN THIS AREA

CONTACT:
Grayson-Collin Electric Cooperative
Michael Lauer (903) 482-7100
48 HOURS PRIOR TO CONSTRUCTION

NOTE:
PERMISSION SHALL BE GRANTED FROM THE ADJACENT PROPERTY OWNER PRIOR TO GRADING IN THIS AREA.

BENCHMARKS:

BM #5
Square cut on top concrete headwall, 5' west of edge of pavement of Frontier Parkway, 56 feet south of centerline of County Road No. 5, 485 feet east of centerline County Road No. 51.

N=7147548.47
E=2488493.86
Elev. = 652.94

BM #8
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Elev. = 662.56

STATE OF TEXAS
ROBERT M. STENGELE
50145
REGISTERED PROFESSIONAL ENGINEER
3-16-15

Huitt-Zollars, Inc.
Firm Registration No. F-761

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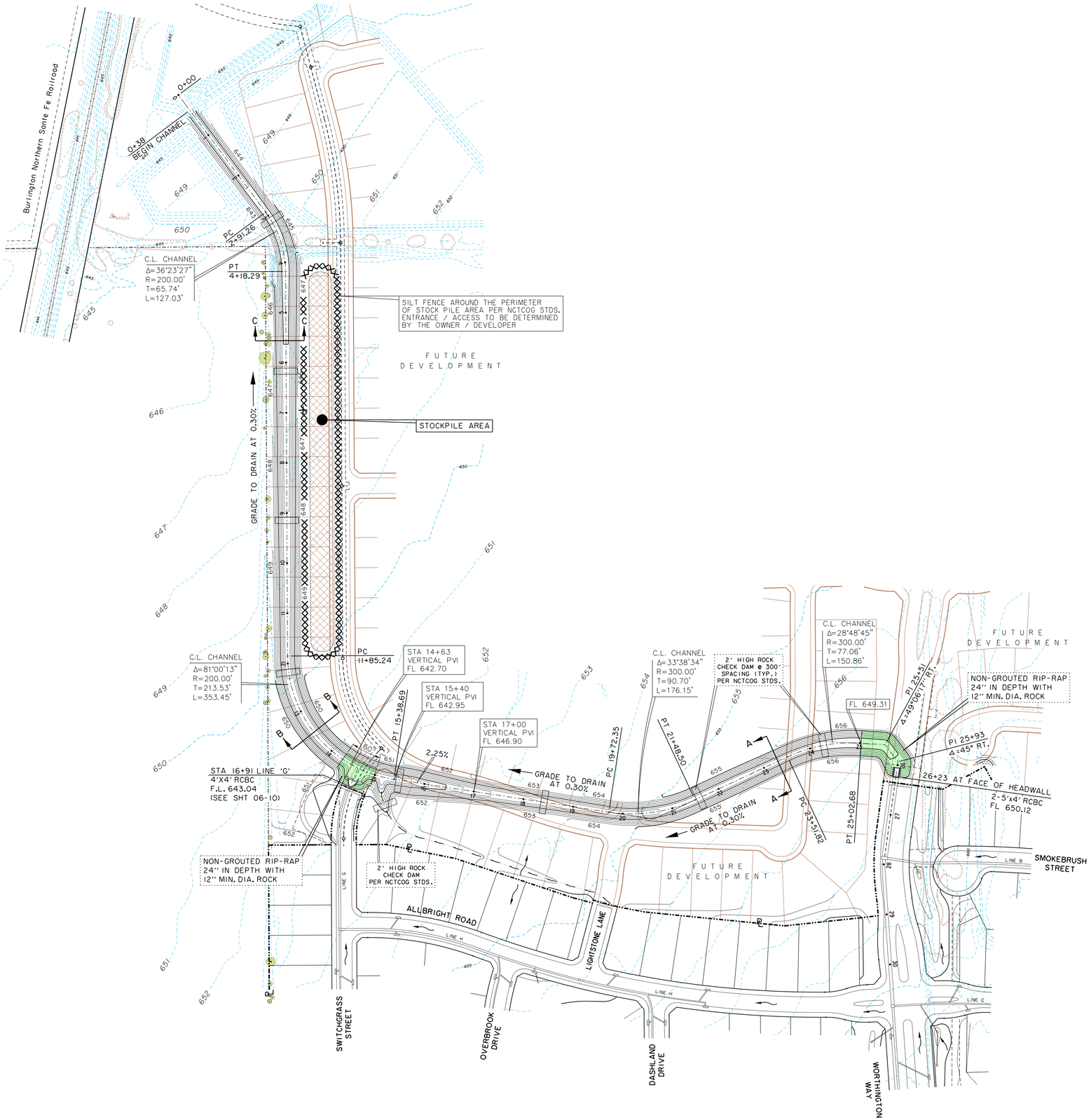
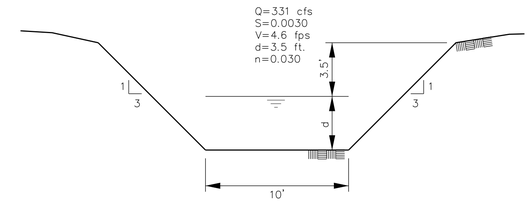
GRADING PLAN

LIGHT FARMS
LFC Land Company LLC
Collin County Municipal Utility District No. 1
COLLIN COUNTY, TEXAS
HUITT-ZOLLARS

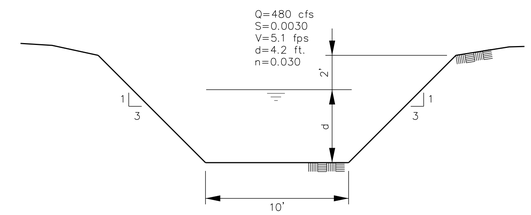
DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		1"=40'		01-3905-40	02-07

I:/proj/01390501/01390540 Parcel 1&2/08-DesignCAD/DGN/phlgr07.dgn

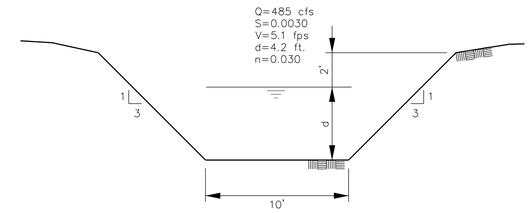




SECTION A-A
NTS



SECTION B-B
NTS



SECTION C-C
NTS

N

0 50 100 150 200
SCALE IN FEET

BENCHMARKS:

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STATE OF TEXAS
ROBERT M. STENGELE
50145
REGISTERED PROFESSIONAL ENGINEER
3-16-15

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OFFSITE GRADING PLAN
DRAINAGE CHANNEL

LIGHT FARMS

LFC Land Company LLC

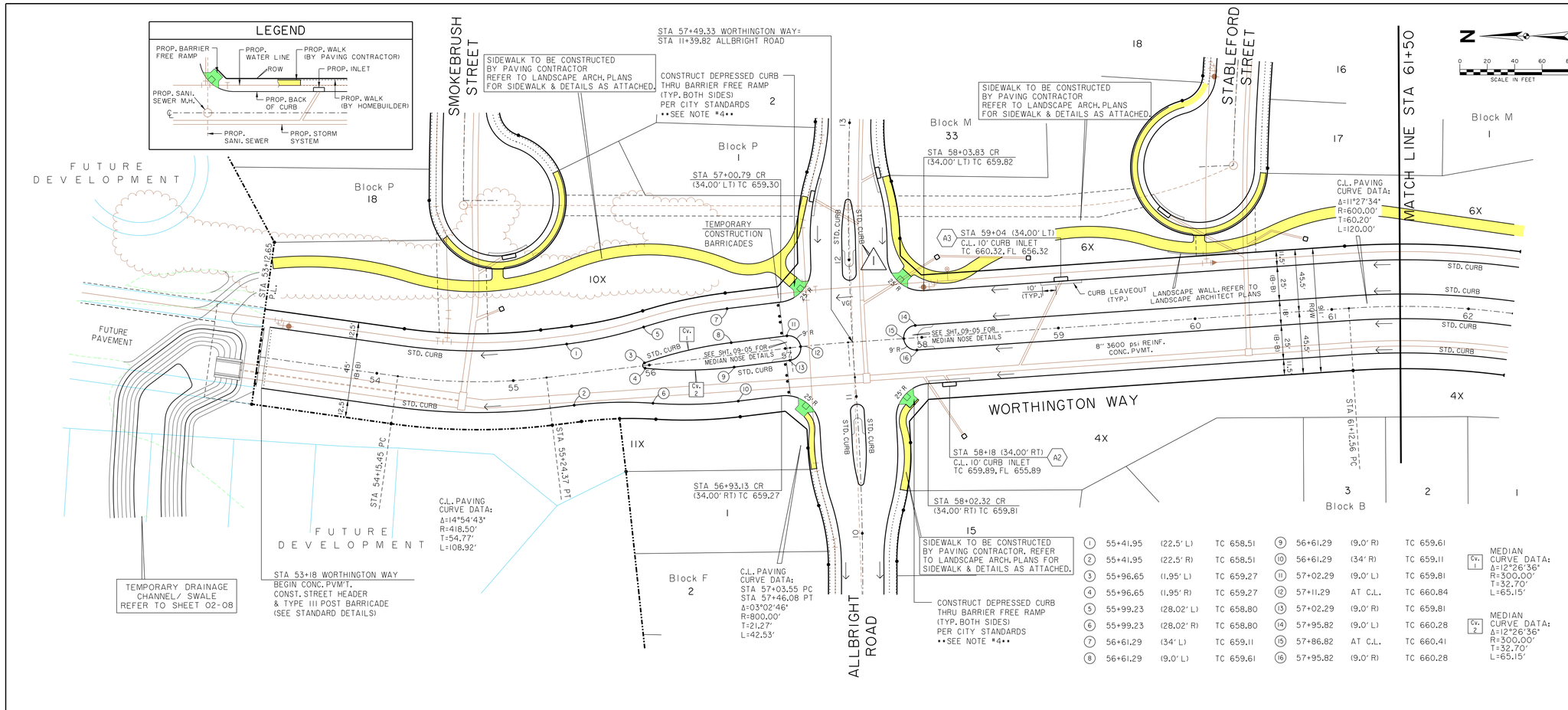
Collin County Municipal Utility District No. 1

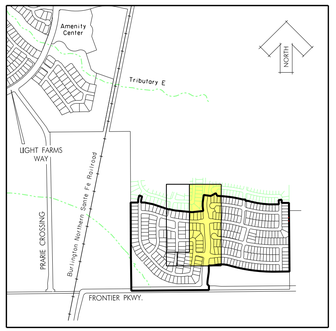
COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		1"=100'		01-3905-40	02-08

I:/proj/01390501/01390540 Parcel 1&2/08-Design/CAD/DGN/phlosgr01.dgn





KEY MAP
NTS

NOTE:

1. ALL PAVEMENT DIMENSIONS ARE FROM BACK OF CURB.
2. ALL CURBS WILL BE 4000 PSI REINFORCED CONCRETE MOUNTABLE CURB, EXCEPT AS NOTED. (SEE STD. & MOUNTABLE CURB DETAILS SHT. 09-05)
3. TYPICAL STREET WITH 31' B-B TO BE 5" PARABOLIC CROWN.
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1	55+41.95	(22.5' L)	TC 658.51	9	56+61.29	(9.0' R)	TC 659.61
2	55+41.95	(22.5' R)	TC 658.51	10	56+61.29	(34' R)	TC 659.11
3	55+96.65	(1.95' L)	TC 659.27	11	57+02.29	(9.0' L)	TC 659.81
4	55+96.65	(1.95' R)	TC 659.27	12	57+11.29	AT C.L.	TC 660.84
5	55+99.23	(28.02' L)	TC 658.80	13	57+02.29	(9.0' R)	TC 659.81
6	55+99.23	(28.02' R)	TC 658.80	14	57+95.82	(9.0' L)	TC 660.28
7	56+61.29	(34' L)	TC 659.11	15	57+86.82	AT C.L.	TC 660.41
8	56+61.29	(9.0' L)	TC 659.61	16	57+95.82	(9.0' R)	TC 660.28

Cv. 1 MEDIAN CURVE DATA: Δ=12°26'36" R=300.00' T=32.70' L=65.15'

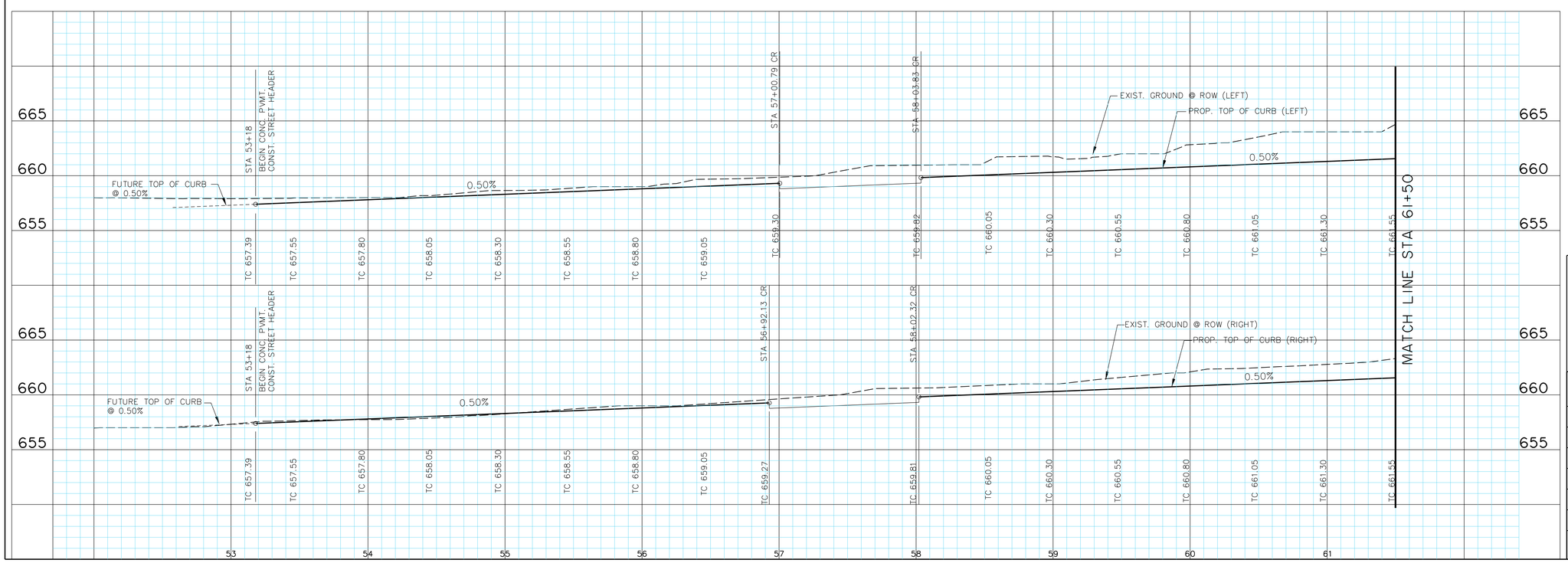
Cv. 2 MEDIAN CURVE DATA: Δ=12°26'36" R=300.00' T=32.70' L=65.15'

BENCHMARKS:

BM #5
Square cut on top concrete headwall, 5' west of edge of pavement of Frontier Parkway, 56 feet south of centerline of County Road No. 5, 485 feet east of centerline County Road No. 51.

N=7147548.47
E=2488493.86
Elev. = 652.94

BM #8
Square cut northeast corner of concrete headwall, north side of County Road 5, 1200 feet +- east of the intersection of County Road 5 and Frontier Parkway.
Elev. = 662.56



STATE OF TEXAS
ROBERT M. STENGELE
50145
REGISTERED PROFESSIONAL ENGINEER
3-16-15

Huitt-Zollars, Inc.
Firm Registration No. F-761

RECORD DRAWING

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PAVING PLAN & PROFILE
WORTHINGTON WAY

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

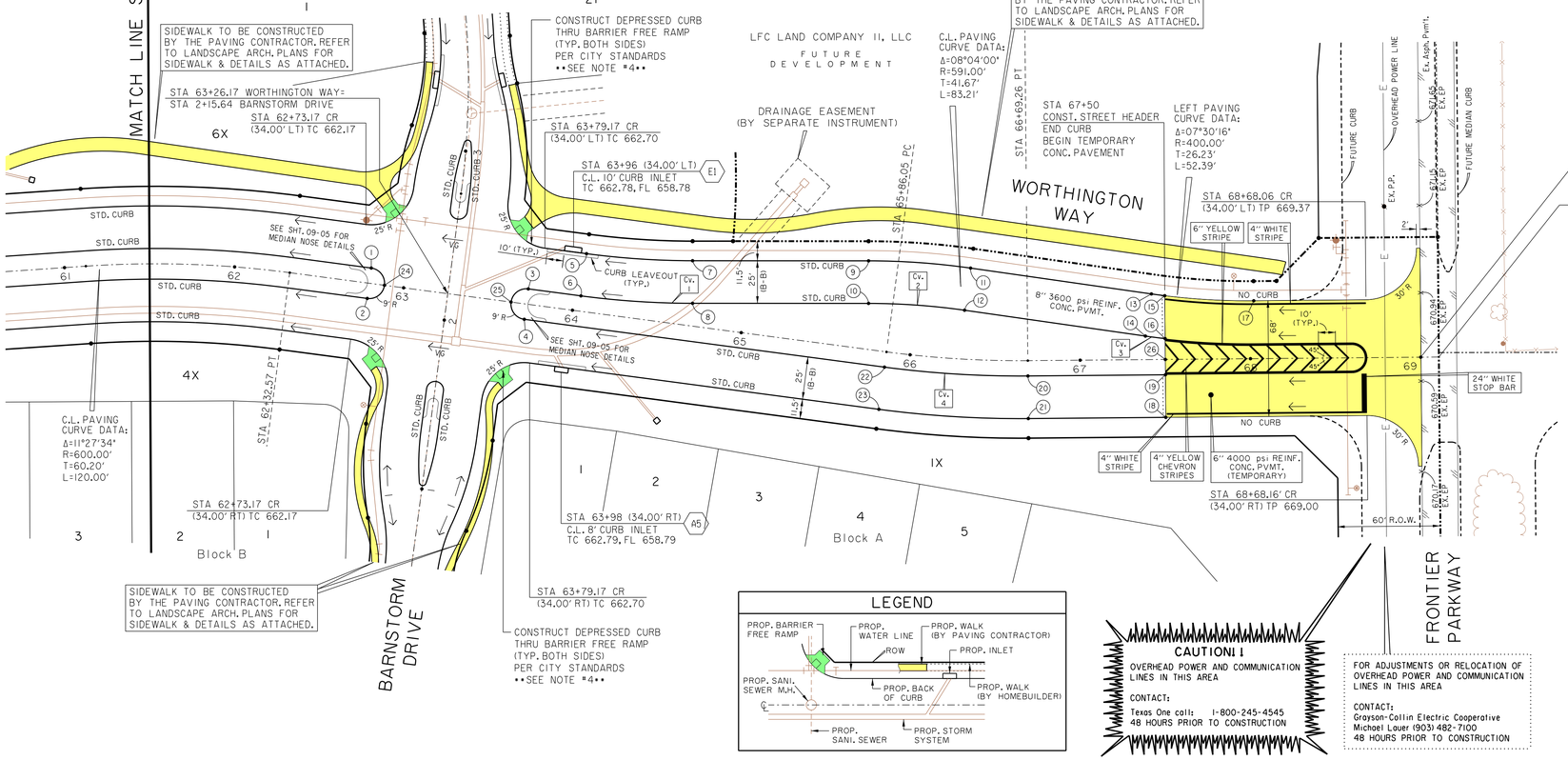
HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		H: 1"=40' V: 1"= 5'		01-3905-40	03-01

WORTHINGTON WAY

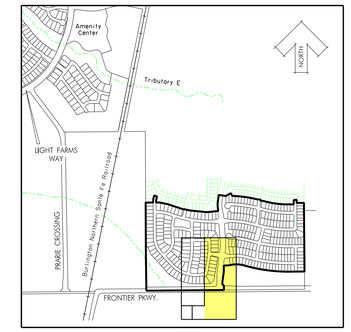
P-201402-02

I:/proj/01390501/01390540 Parcel 1&2/08-DesignCAD/DGN/phlpv01.dgn



Cv. 1	MEDIAN CURVE DATA: Δ=07°31'59" R=500.00' T=32.92' L=65.74'	Cv. 3	MEDIAN CURVE DATA: Δ=08°38'04" R=425.00' T=32.08' L=64.05'
Cv. 2	MEDIAN CURVE DATA: Δ=08°06'03" R=400.00' T=28.31' L=56.55'	Cv. 4	MEDIAN CURVE DATA: Δ=08°04'00" R=600.00' T=42.31' L=84.47'

1	62+79.67	(9.0' L)	TC 662.70
2	62+79.67	(9.0' R)	TC 662.70
3	63+72.67	(9.0' L)	TC 663.17
4	63+72.67	(9.0' R)	TC 663.17
5	64+03.86	(34.0' L)	TC 662.82
6	64+03.86	(9.0' L)	TC 663.32
7	64+66.13	(38.10' L)	TC 663.13
8	64+69.41	(13.32' L)	TC 663.63
9	65+68.59	(51.65' L)	TC 664.21
10	65+71.86	(26.86' L)	TC 664.71
11	66+32.80	(53.62' L)	TC 665.05
12	66+30.46	(28.71' L)	TC 665.55
13	67+42.19	(38.53' L)	TC 666.50
14	67+38.43	(13.82' L)	TC 667.00
15	67+50.00	(37.43' L)	TC 666.60
16	67+50.00	(12.22' L)	TC 667.10
17	68+02.24	34.0' L)	TP 667.23
18	67+50.00	(34.0' R)	TC 666.60
19	67+50.00	(9.0' R)	TC 667.10
20	66+69.26	(9.0' R)	TC 666.03
21	66+69.26	(34.0' R)	TC 665.53
22	65+86.05	(9.0' R)	TC 664.94
23	65+86.05	(34.0' R)	TC 664.44
24	62+88.67		TC 662.93
25	63+63.67		TC 663.30
26	67+50.00		TP 666.78



KEY MAP
NTS

N

0 20 40 60 80
SCALE IN FEET

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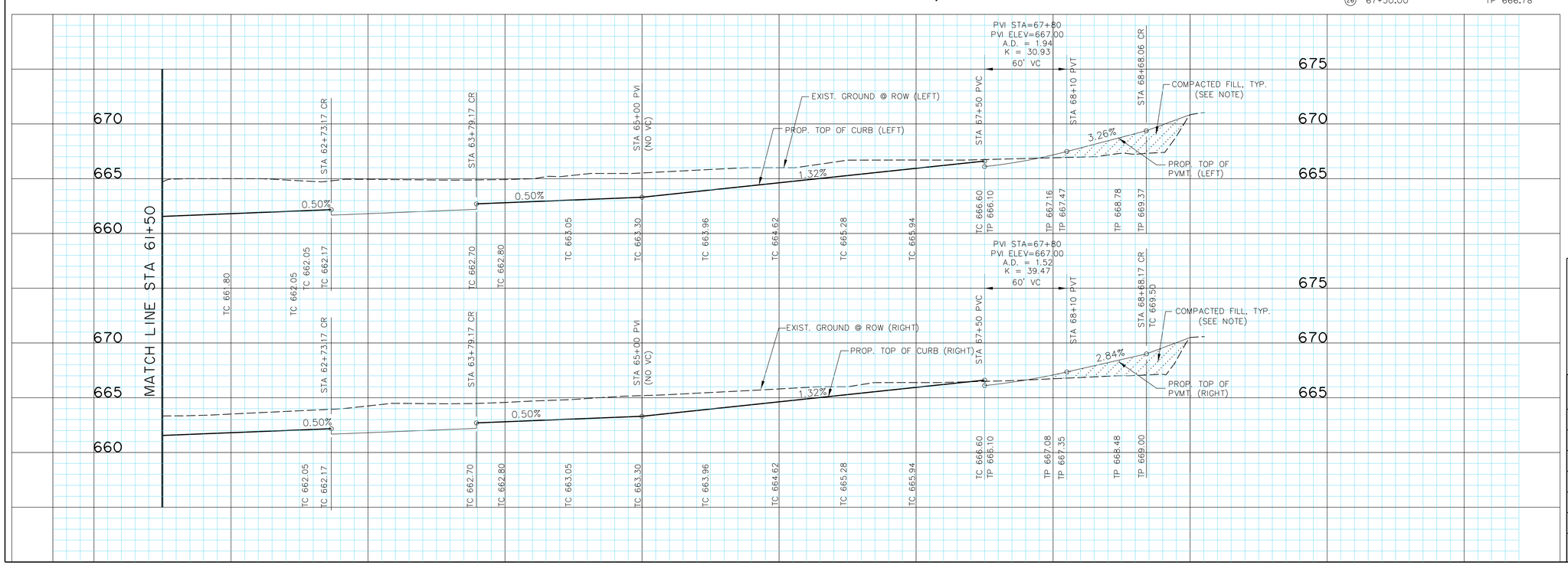

ROBERT M. STENGELE
50145
REGISTERED PROFESSIONAL ENGINEER
STATE OF TEXAS
3-16-15

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Firm Registration No. F-761

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PAVING PLAN & PROFILE
WORTHINGTON WAY (CONT.)

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
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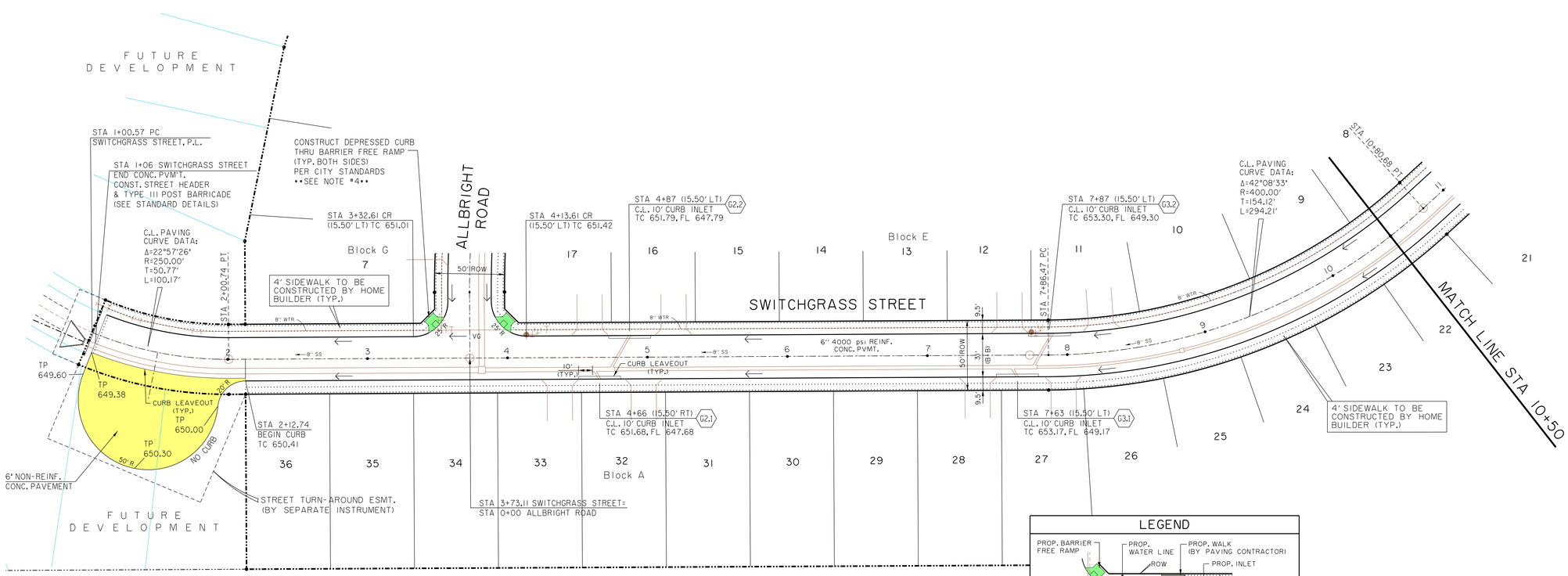
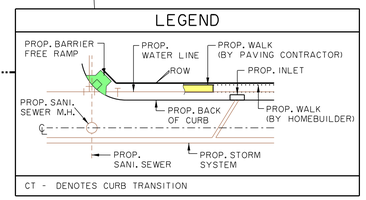
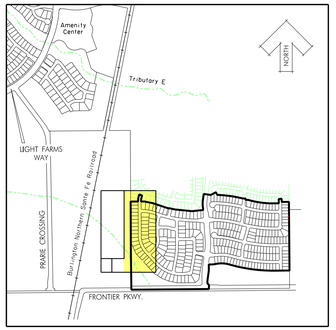
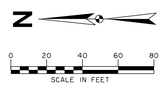






KEY MAP
NTS



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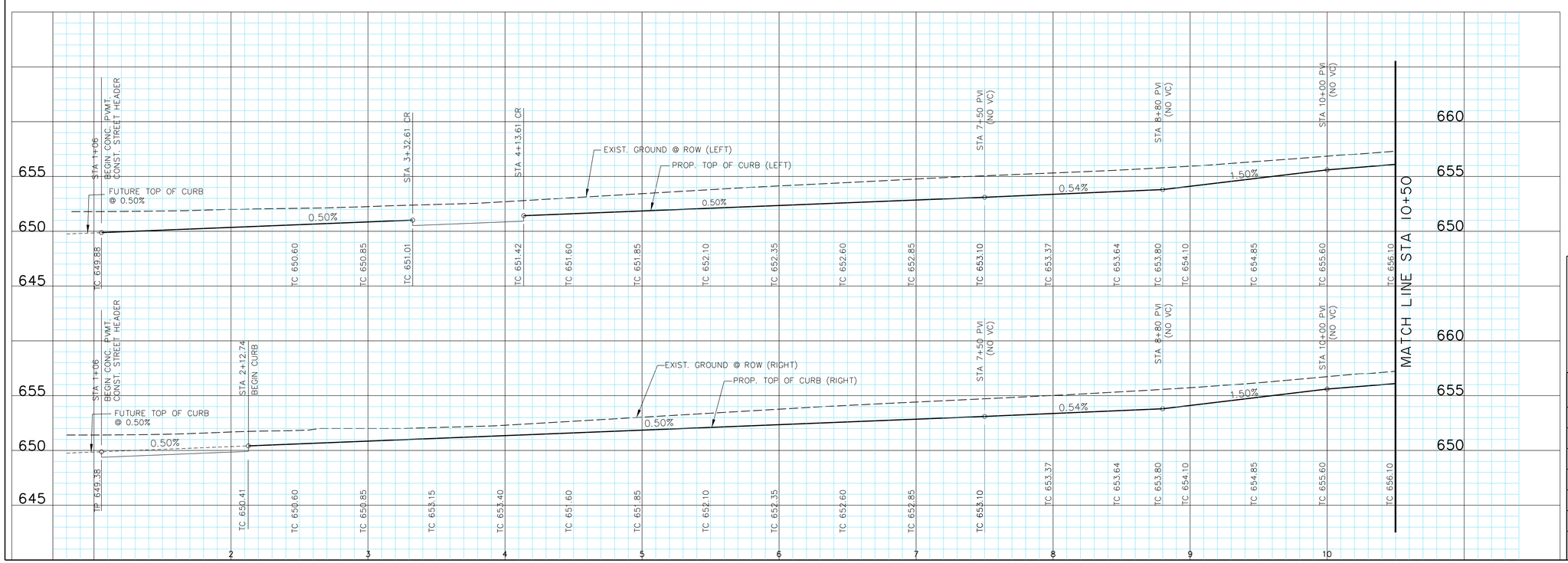

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STATE OF TEXAS
ROBERT M. STENGELE
50145
REGISTERED
PROFESSIONAL ENGINEER
3-16-15

Huitt-Zollars, Inc.
Firm Registration No. F-761

PAVING PLAN & PROFILE
SWITCHGRASS STREET

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
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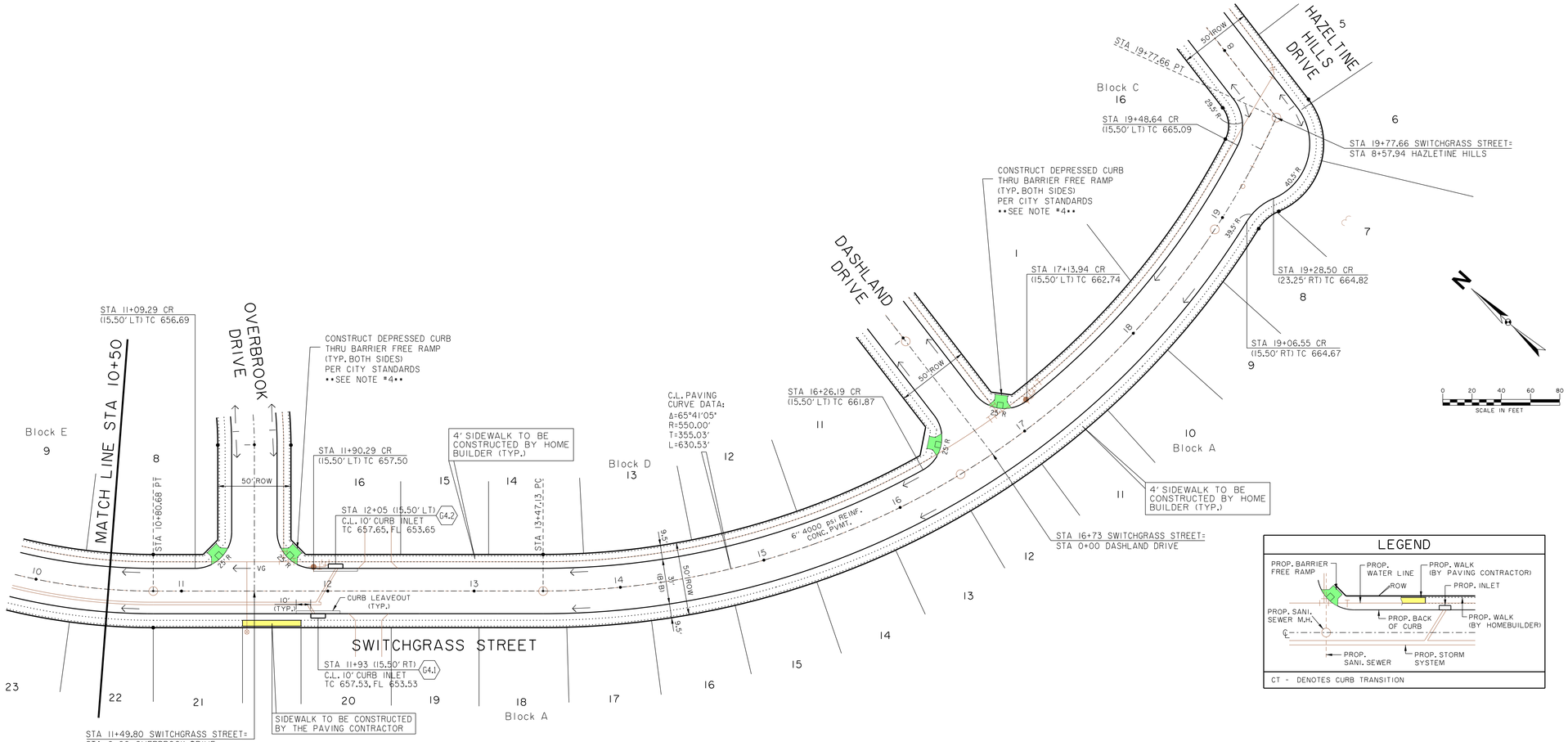

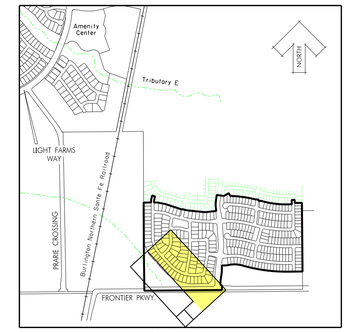

KEY MAP
NTS

LEGEND

CT - DENOTES CURB TRANSITION

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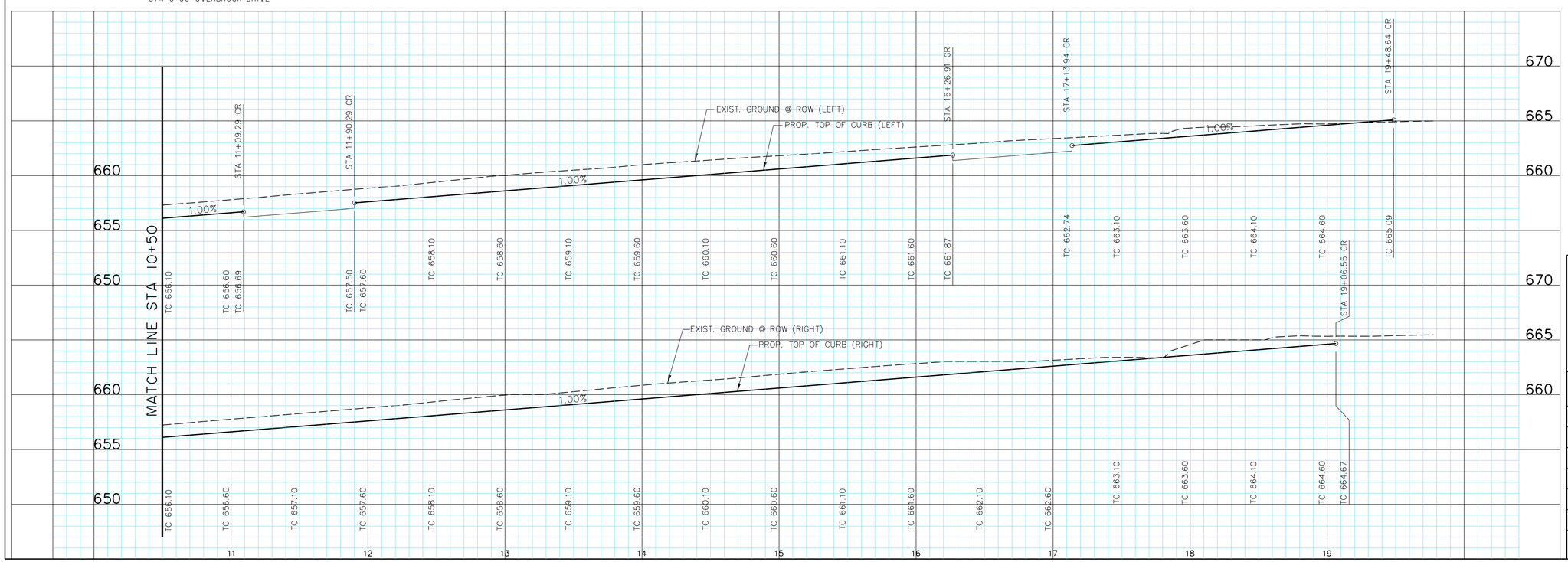

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PAVING PLAN & PROFILE
SWITCHGRASS STREET (CONT.)

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

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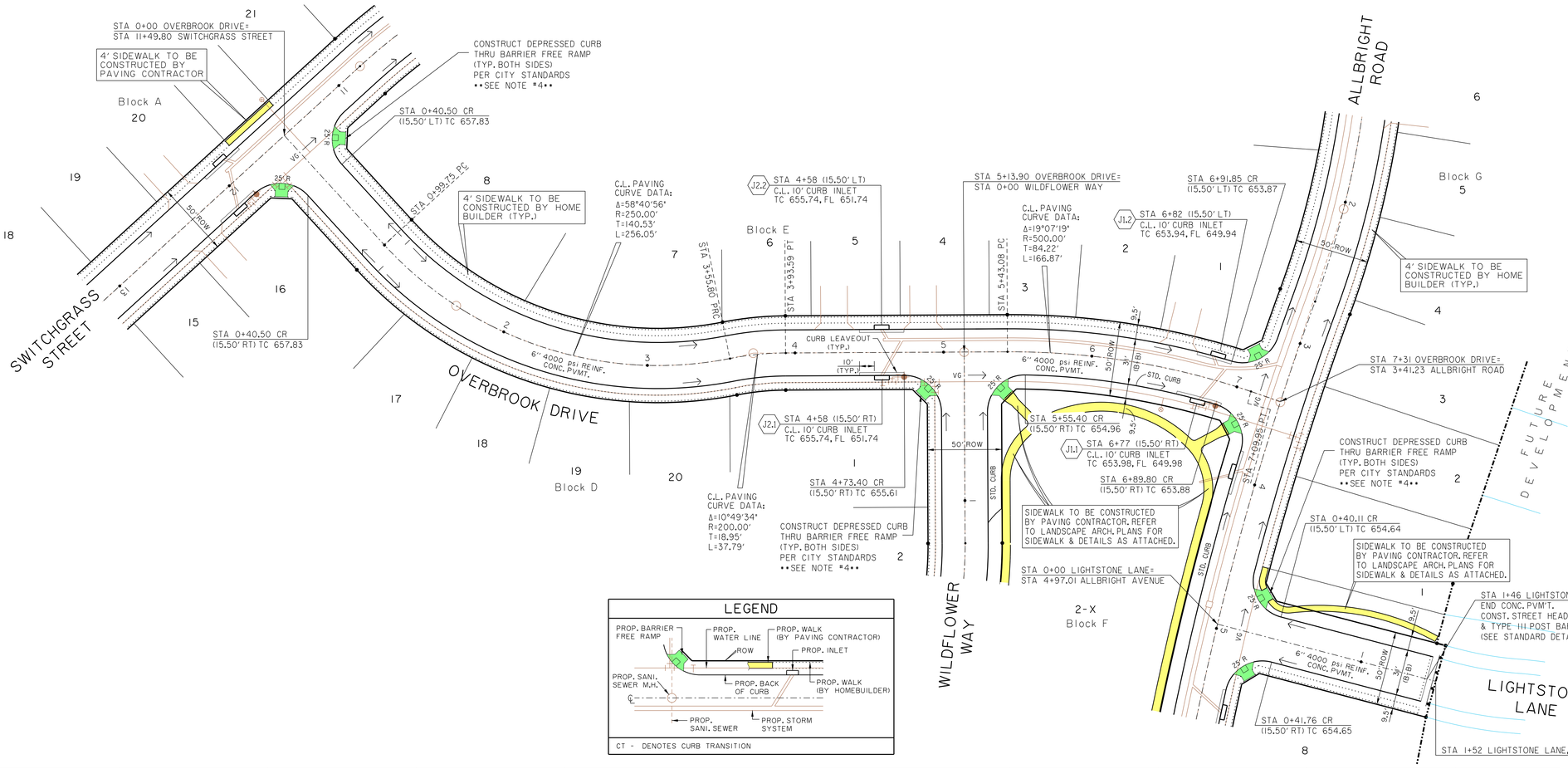
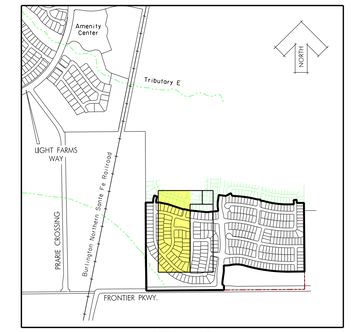
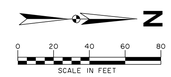




KEY MAP
NTS



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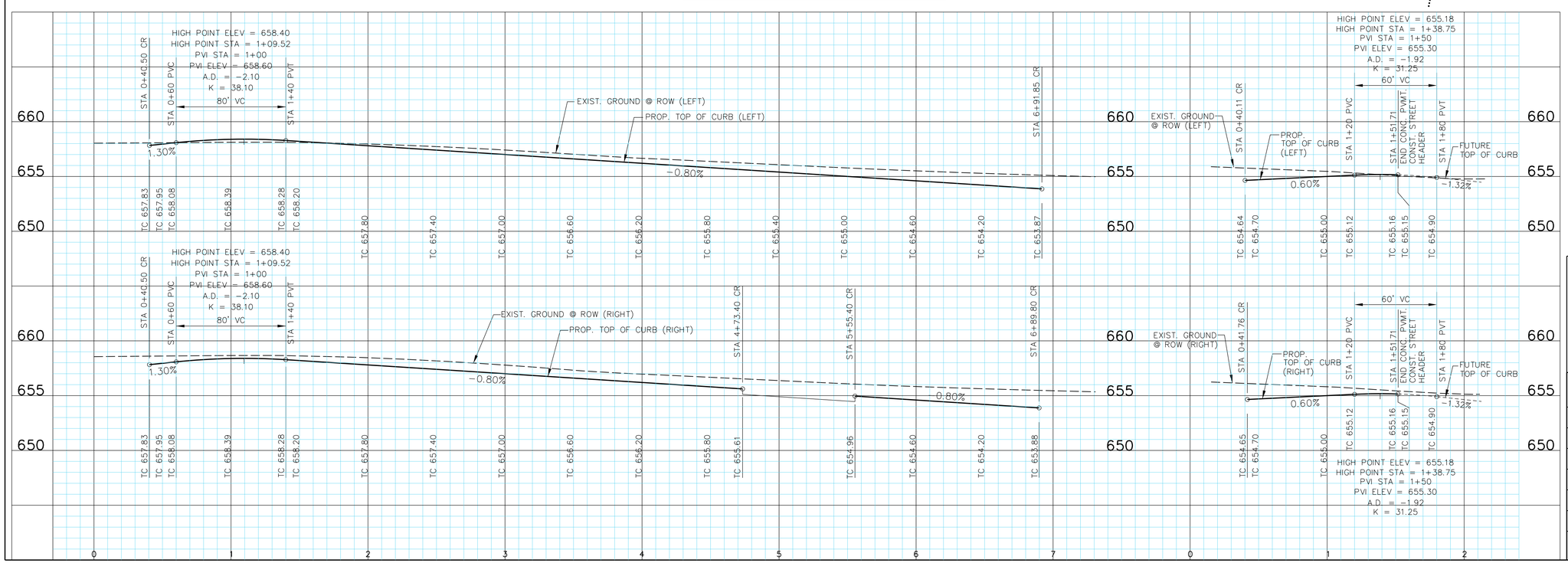
LEGEND

PROP. BARRIER FREE RAMP
PROP. WATER LINE
PROP. WALK (BY PAVING CONTRACTOR)
ROW
PROP. INLET
PROP. SANI. SEWER M.H.
PROP. BACK OF CURB
PROP. WALK (BY HOMEBUILDER)
PROP. SANI. SEWER
PROP. STORM SYSTEM

CT - DENOTES CURB TRANSITION



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PAVING PLAN & PROFILE
OVERBROOK DRIVE & LIGHTSTONE LANE

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

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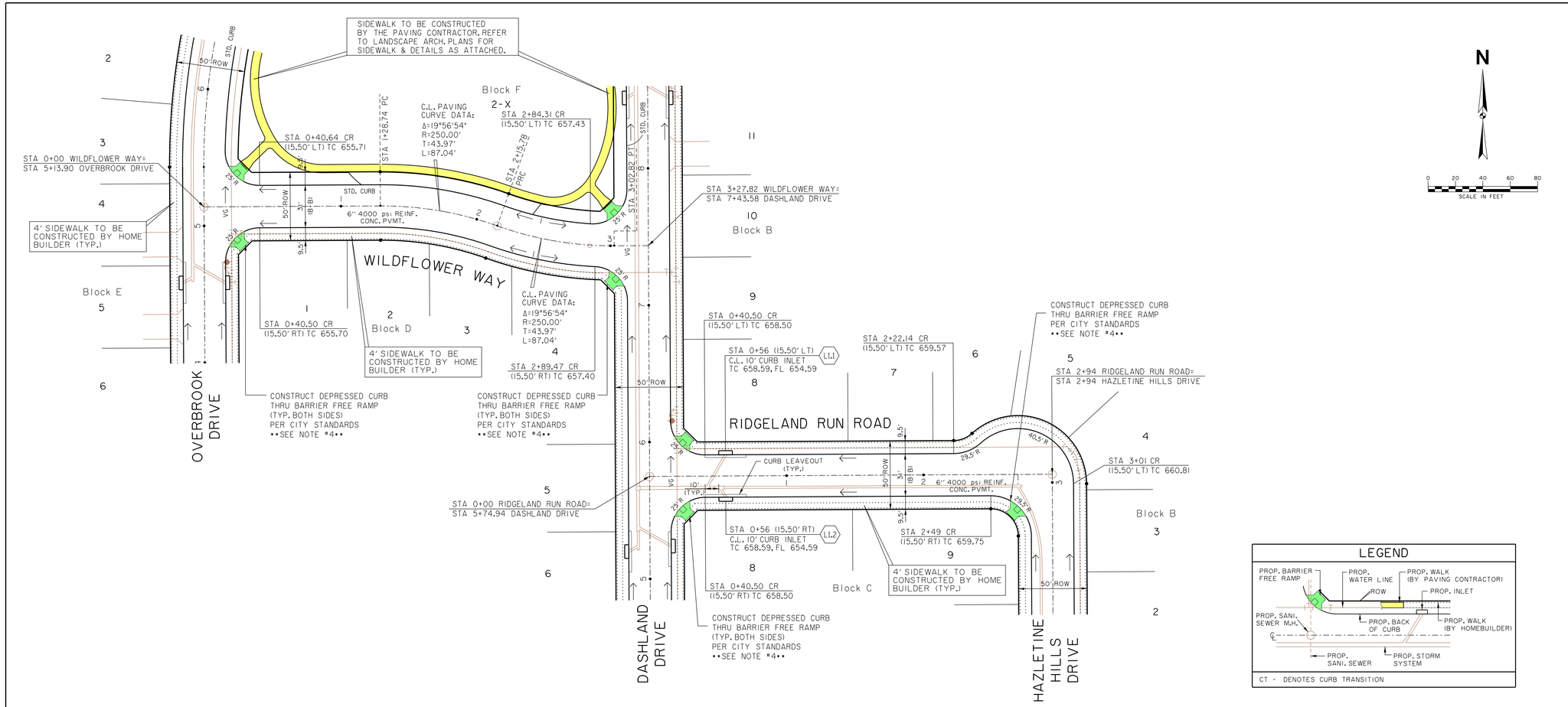

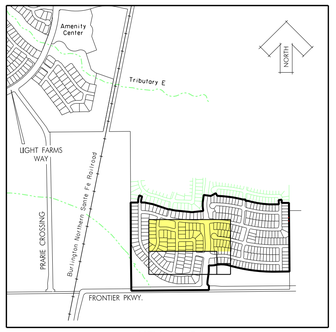

KEY MAP
NTS

NOTE:

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LEGEND

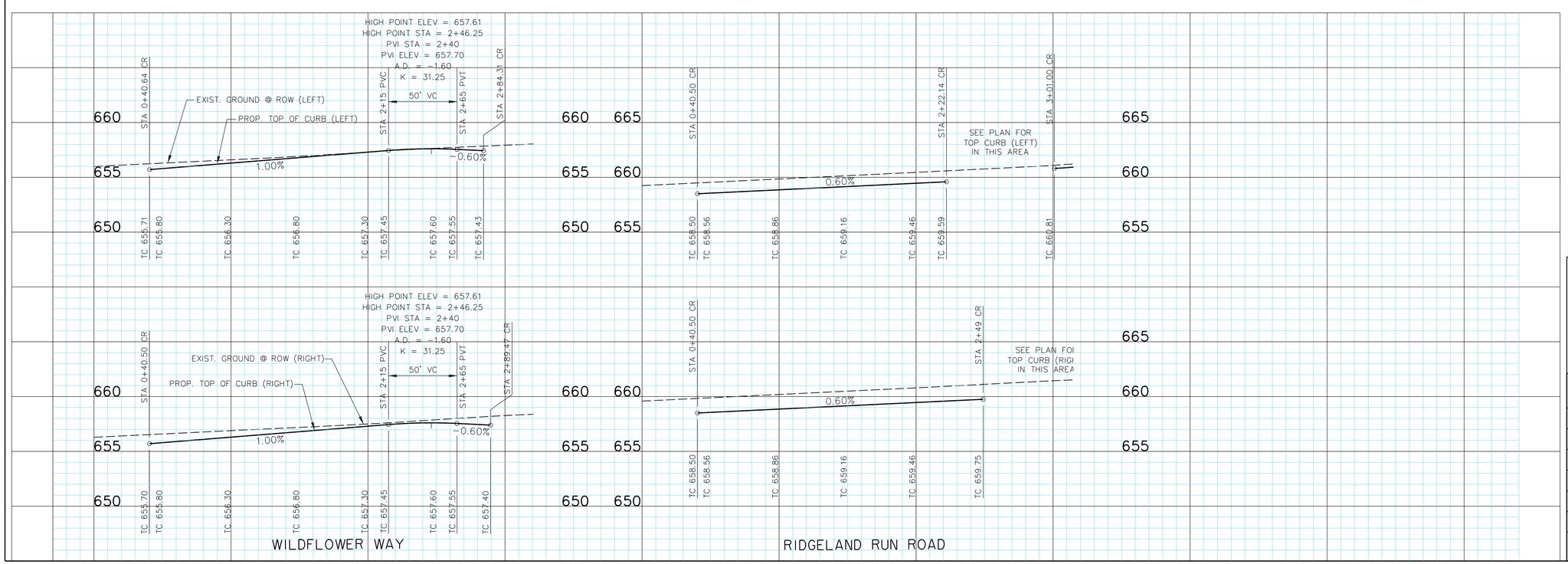
CT - DENOTES CURB TRANSITION

BENCHMARKS:

BM #5
Square cut on top concrete headwall, 5' west of edge of pavement of Frontier Parkway, 56 feet south of centerline of County Road No. 5, 485 feet east of centerline County Road No. 51.

N=7147548.47
E=2488493.86
Elev. = 652.94

BM #8
Square cut northeast corner of concrete headwall, north side of County Road 5, 1200 feet +- east of the intersection of County Road 5 and Frontier Parkway.
Elev. = 662.56



Huitt-Zollars, Inc.
Firm Registration No. F-761

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PAVING PLAN & PROFILE
WILDFLOWER WAY & RIDGELAND RUN ROAD

LIGHT FARMS

LFC Land Company LLC

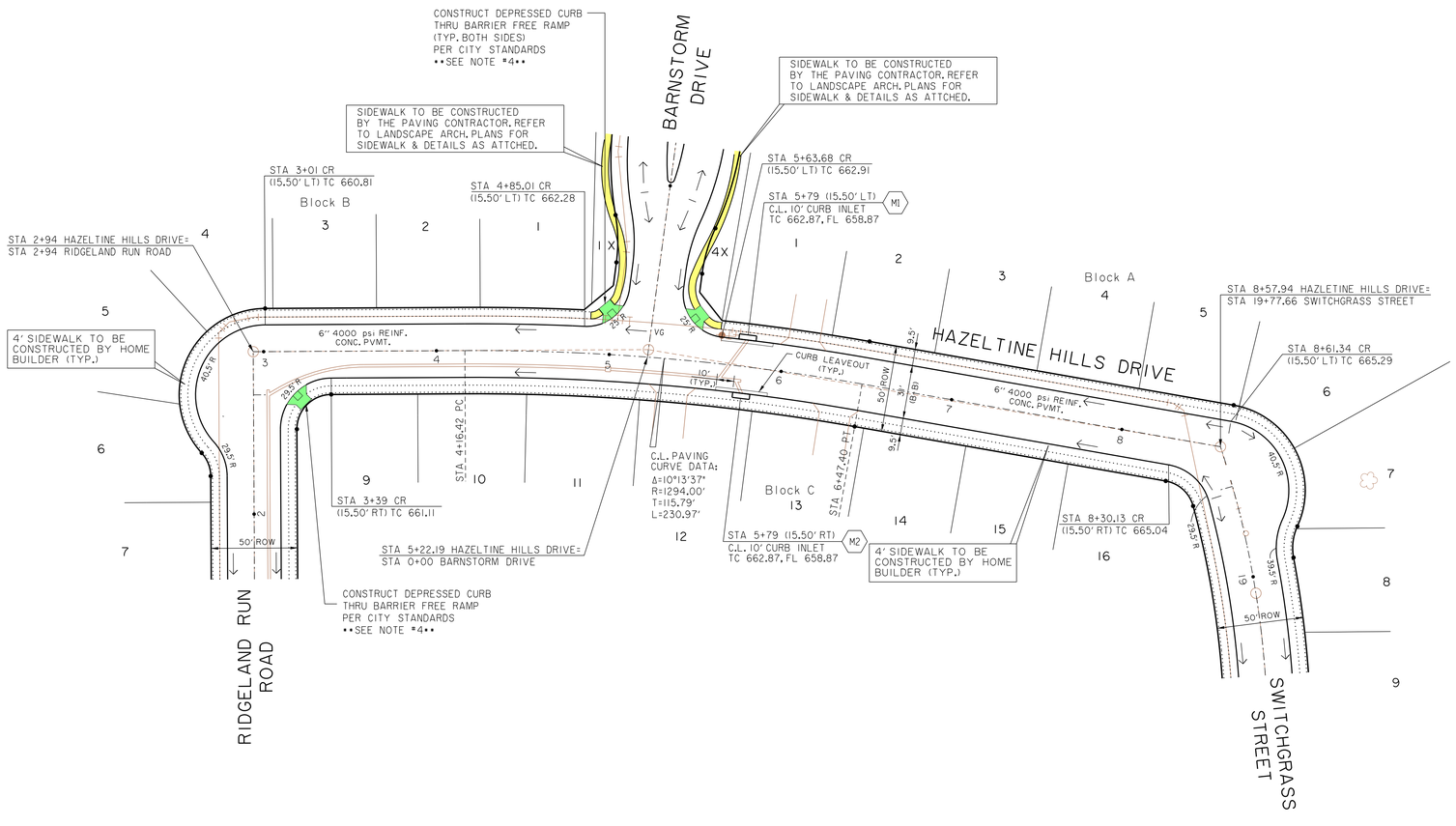
Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		H: 1"=40' V: 1"= 5'		01-3905-40	03-06

I:/proj/01390501/01390540 Parcel 1&2/08-DesignCAD/DGN/phipv06.dgn



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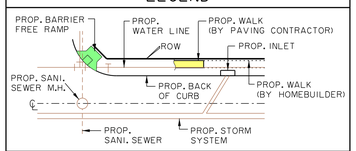

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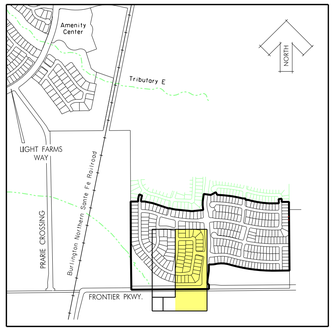

KEY MAP
NTS

N

0 20 40 60 80
SCALE IN FEET

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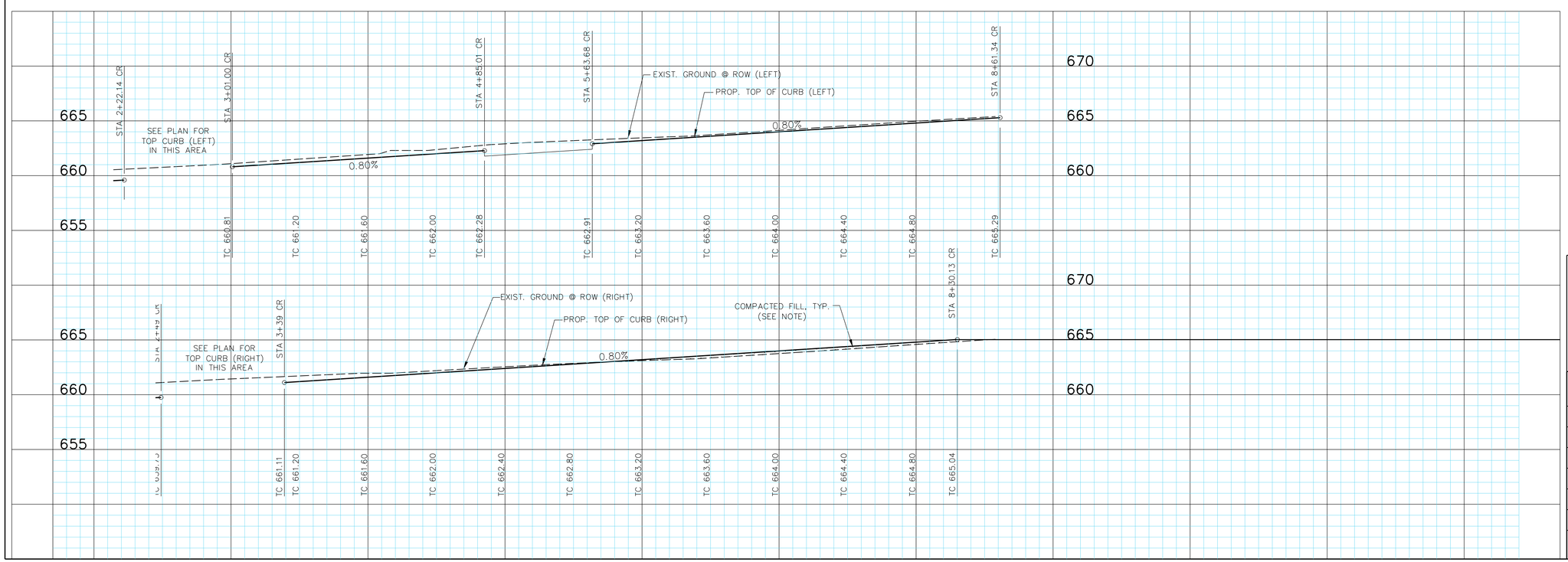

STATE OF TEXAS
ROBERT M. STENGELE
50145
REGISTERED PROFESSIONAL ENGINEER
3-16-15

Huitt-Zollars, Inc.
Firm Registration No. F-761

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PAVING PLAN & PROFILE
HAZELTINE HILLS DRIVE

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

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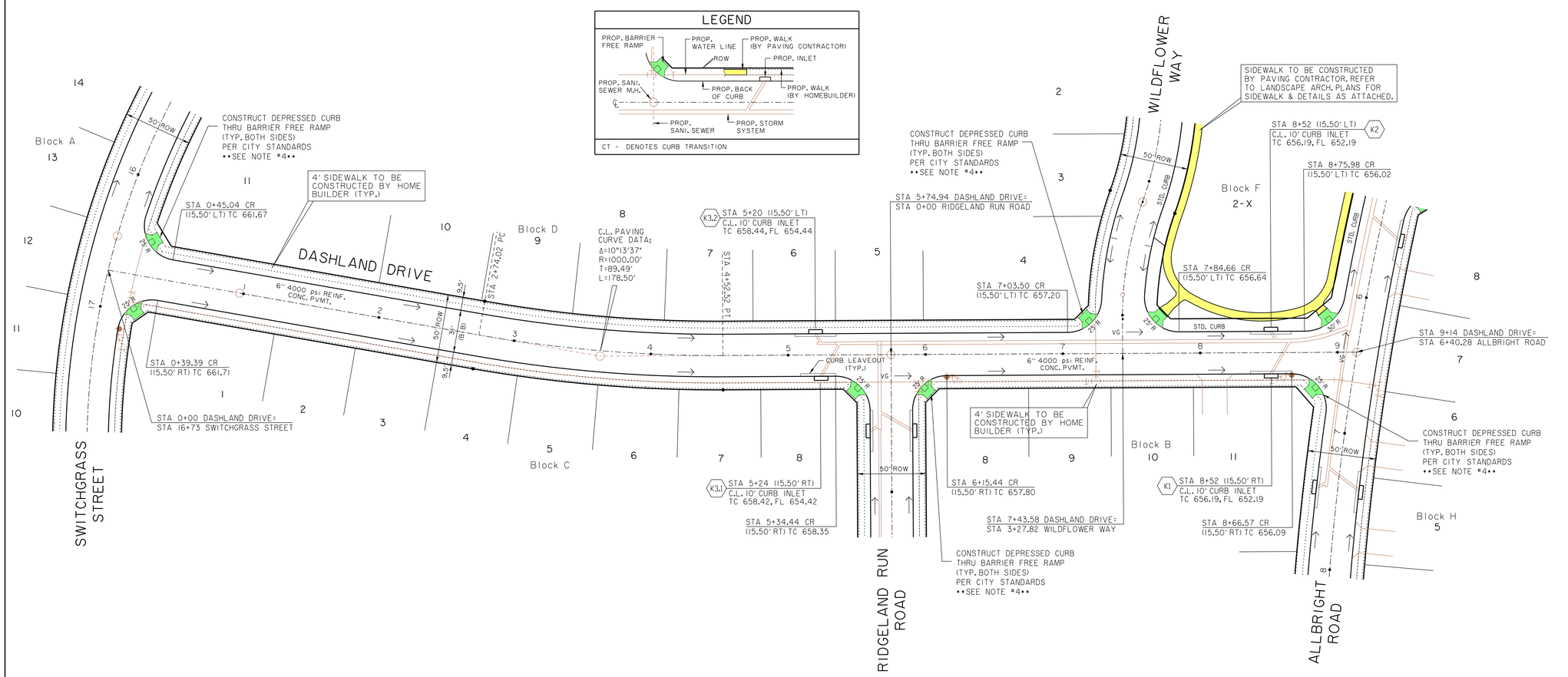
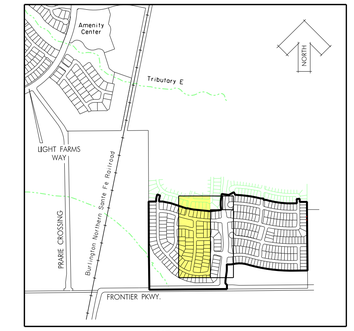
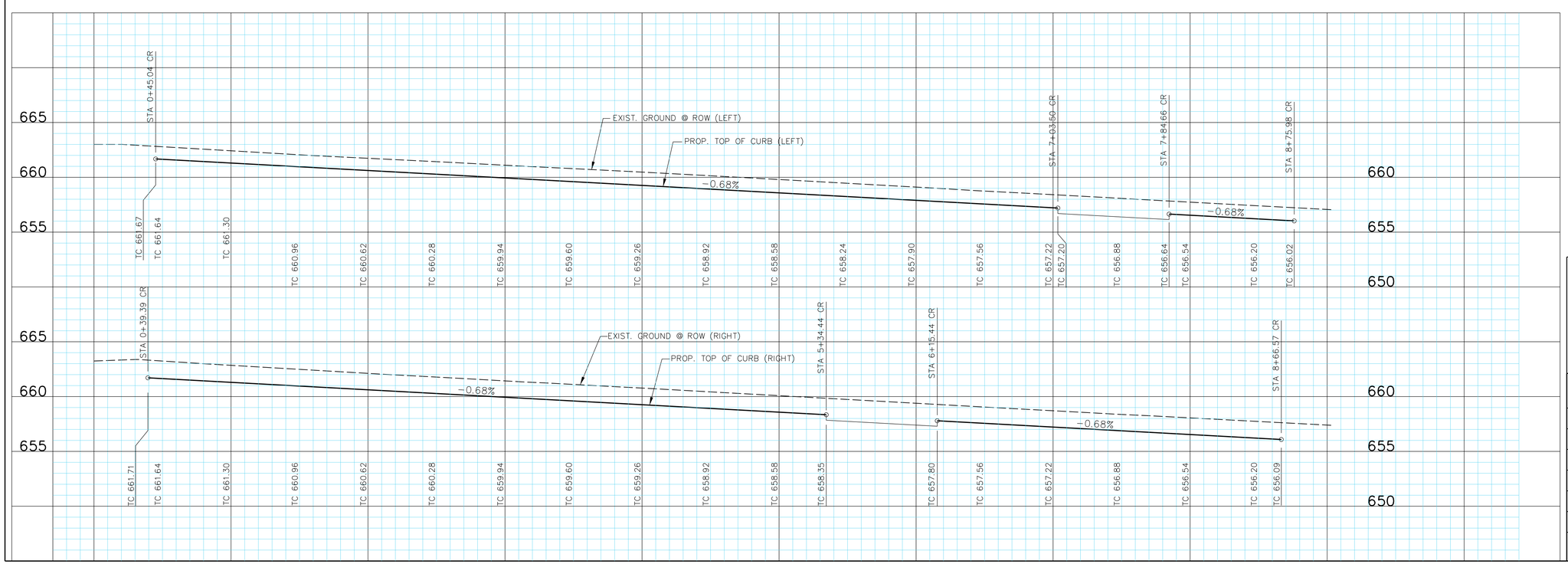




KEY MAP
NTS



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STATE OF TEXAS
ROBERT M. STENGELE
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PAVING PLAN & PROFILE
DASHLAND DRIVE

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
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DASHLAND DRIVE

P-201402-02

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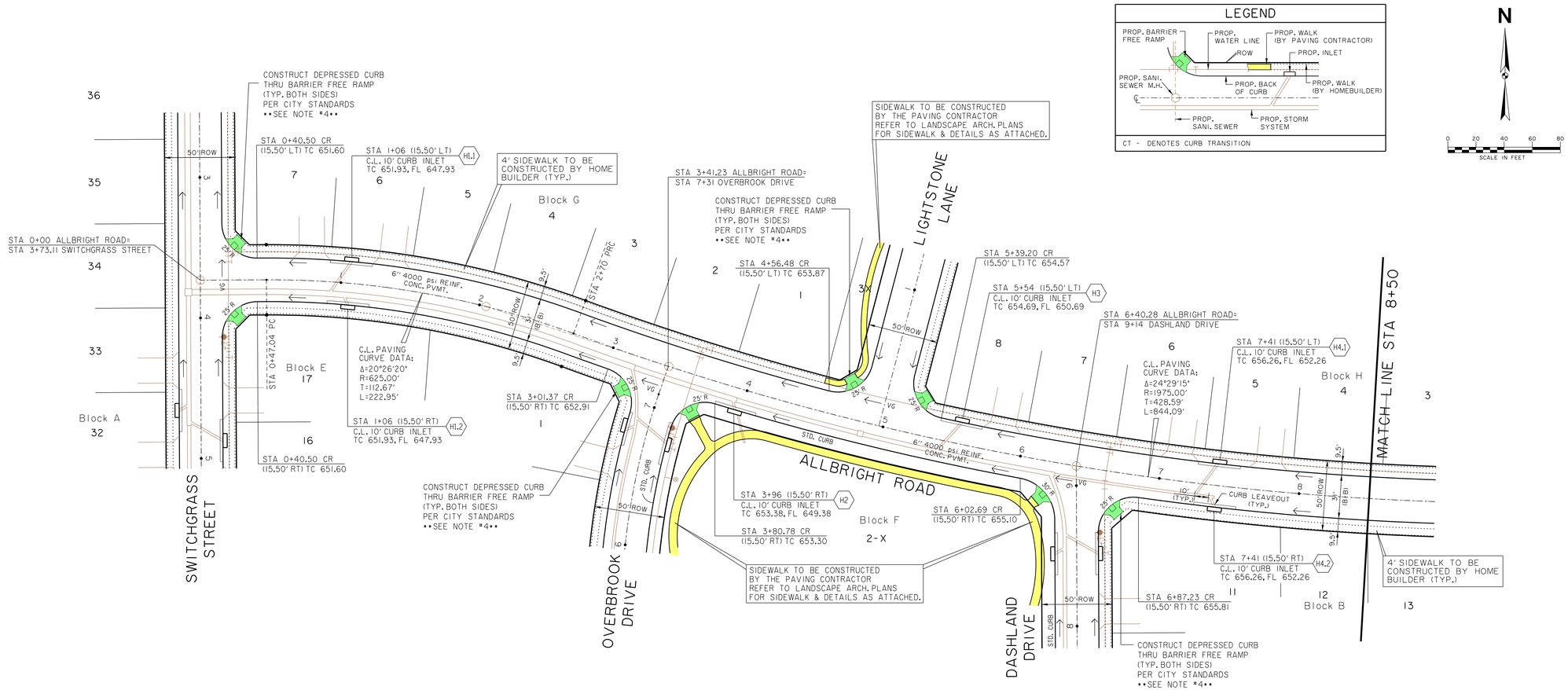

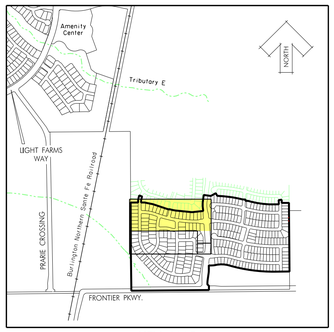

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PAVING PLAN & PROFILE
ALLBRIGHT ROAD

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

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ALLBRIGHT ROAD

P-201402-02

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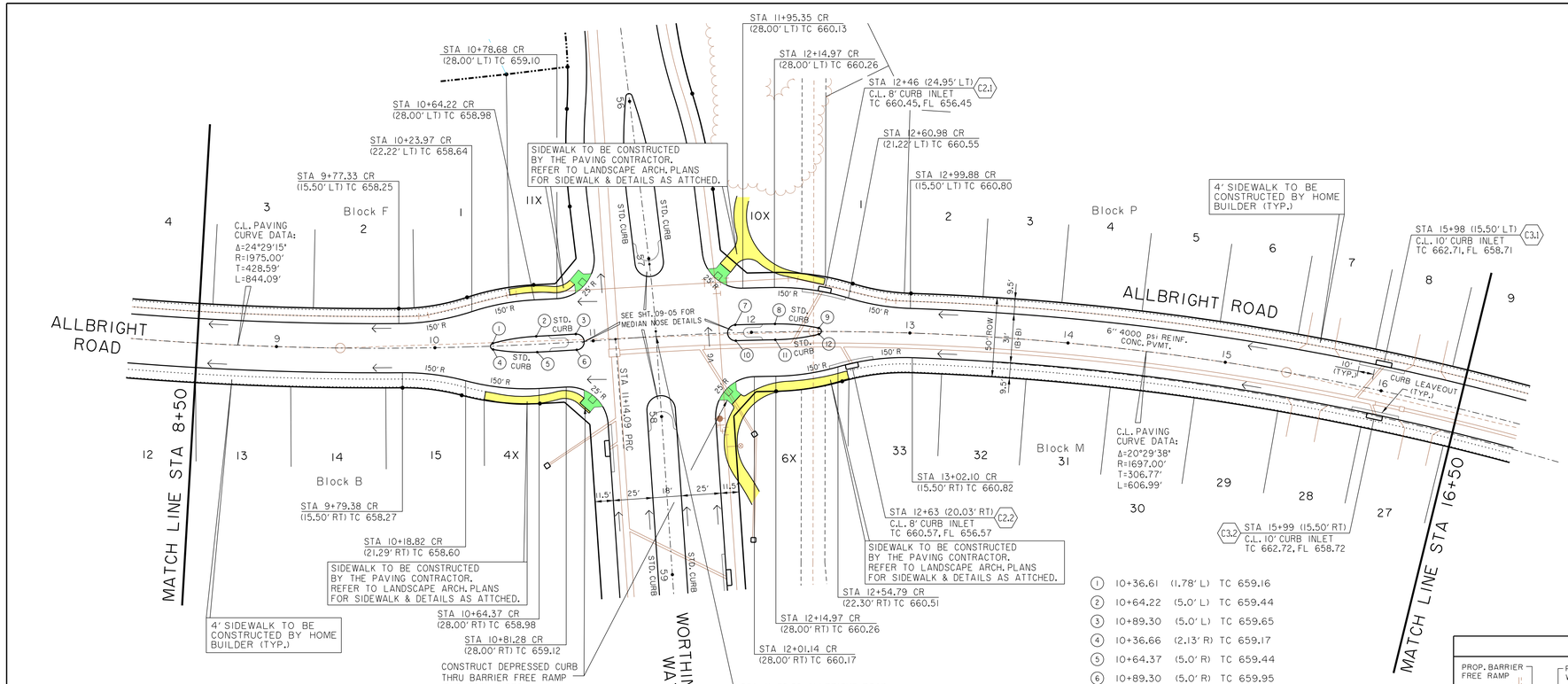
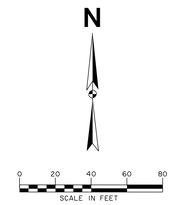


1	10+36.61	(1.78' L)	TC 659.16
2	10+64.22	(5.0' L)	TC 659.44
3	10+89.30	(5.0' L)	TC 659.65
4	10+36.66	(2.13' R)	TC 659.17
5	10+64.37	(5.0' R)	TC 659.44
6	10+89.30	(5.0' R)	TC 659.95
7	11+89.96	(5.0' L)	TC 660.56
8	12+14.97	(5.0' L)	TC 660.72
9	12+42.59	(2.18' L)	TC 660.92
10	11+89.96	(5.0' R)	TC 660.56
11	12+14.97	(5.0' R)	TC 660.72
12	12+42.65	(1.73' R)	TC 660.93



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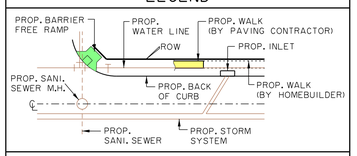
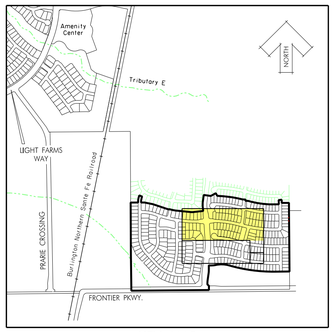


CT - DENOTES CURB TRANSITION



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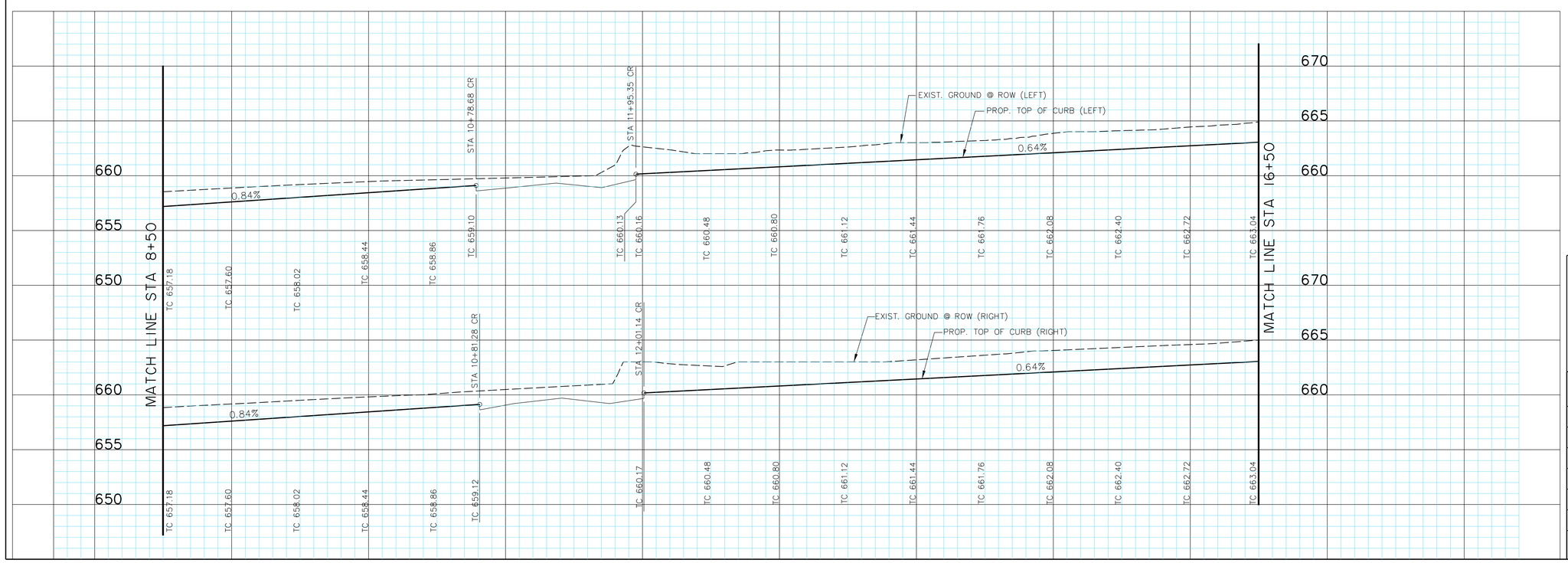

STATE OF TEXAS
ROBERT M. STENGELE
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3-16-15

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PAVING PLAN & PROFILE
ALLBRIGHT ROAD (CONT.)

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

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ALLBRIGHT ROAD (CONT.)

P-201402-02

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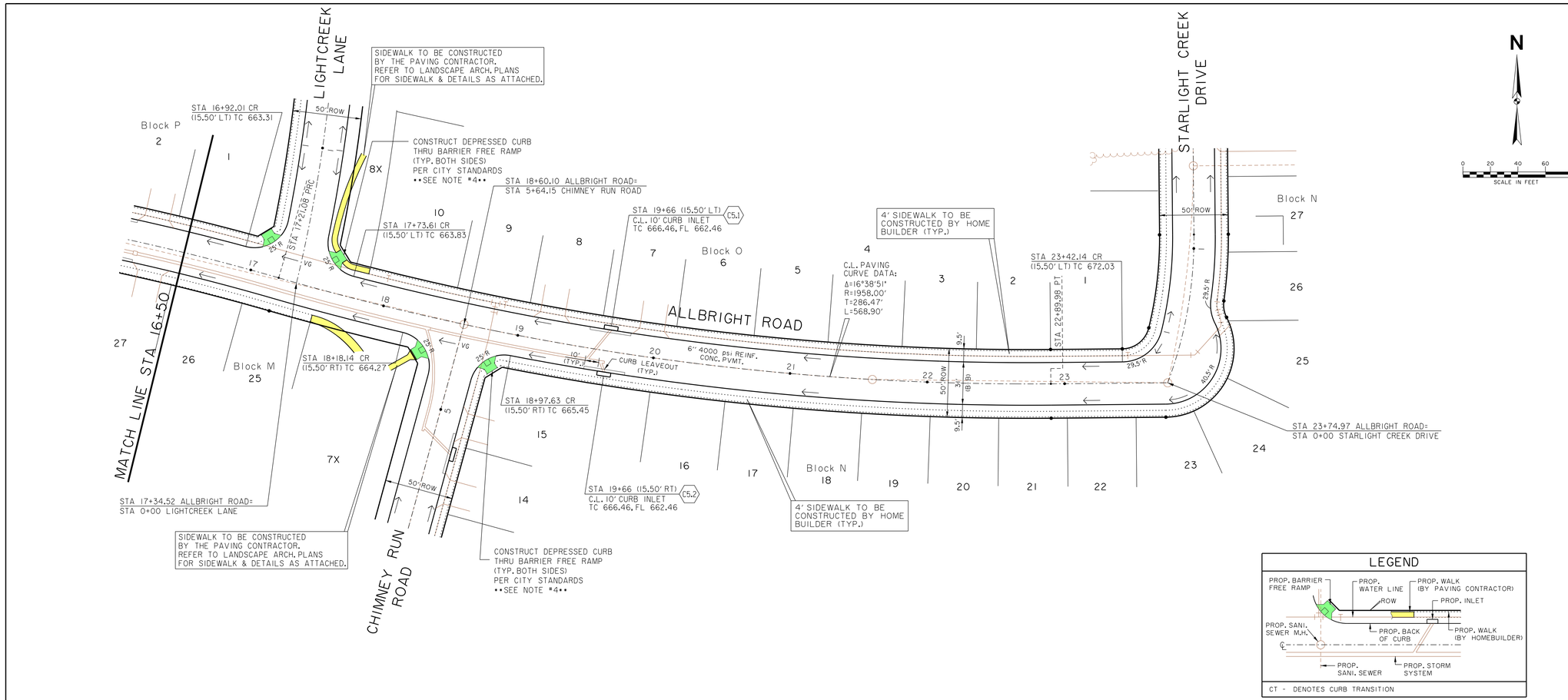

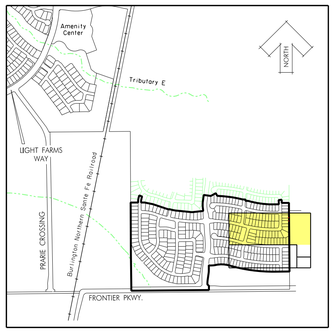

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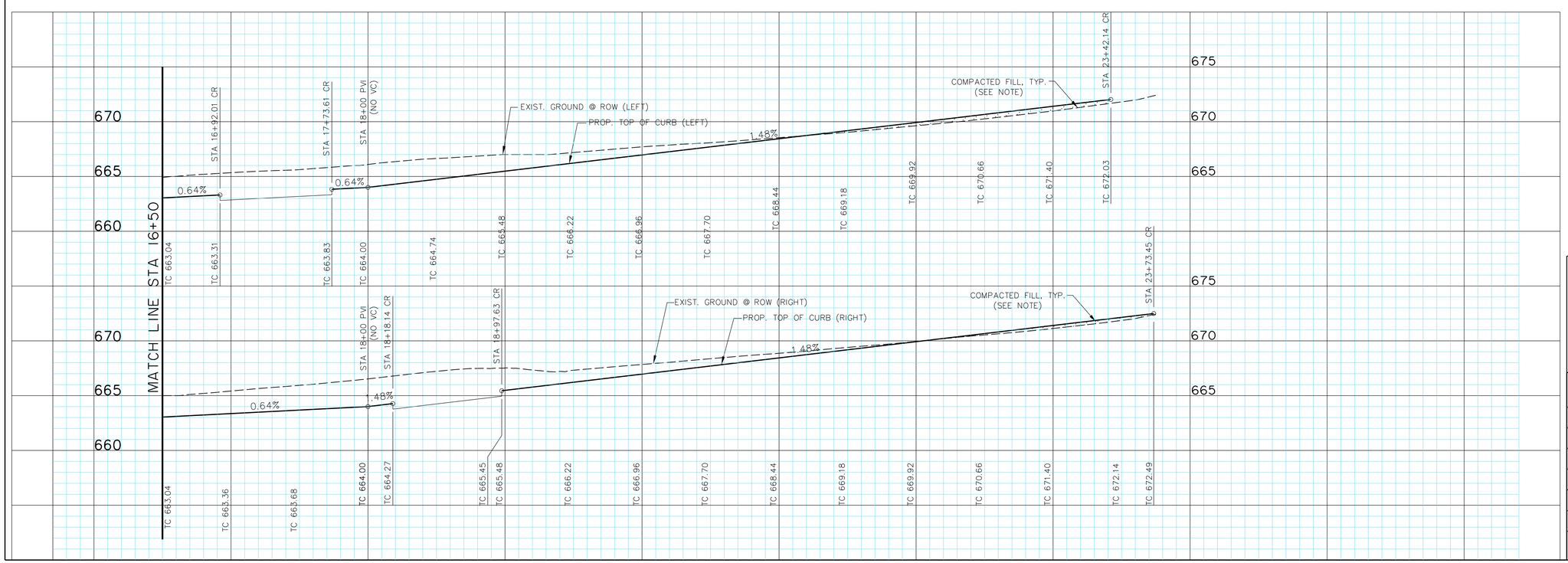

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50145
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3-16-15

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PAVING PLAN & PROFILE
ALLBRIGHT ROAD (CONT.)

LIGHT FARMS

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COLLIN COUNTY, TEXAS

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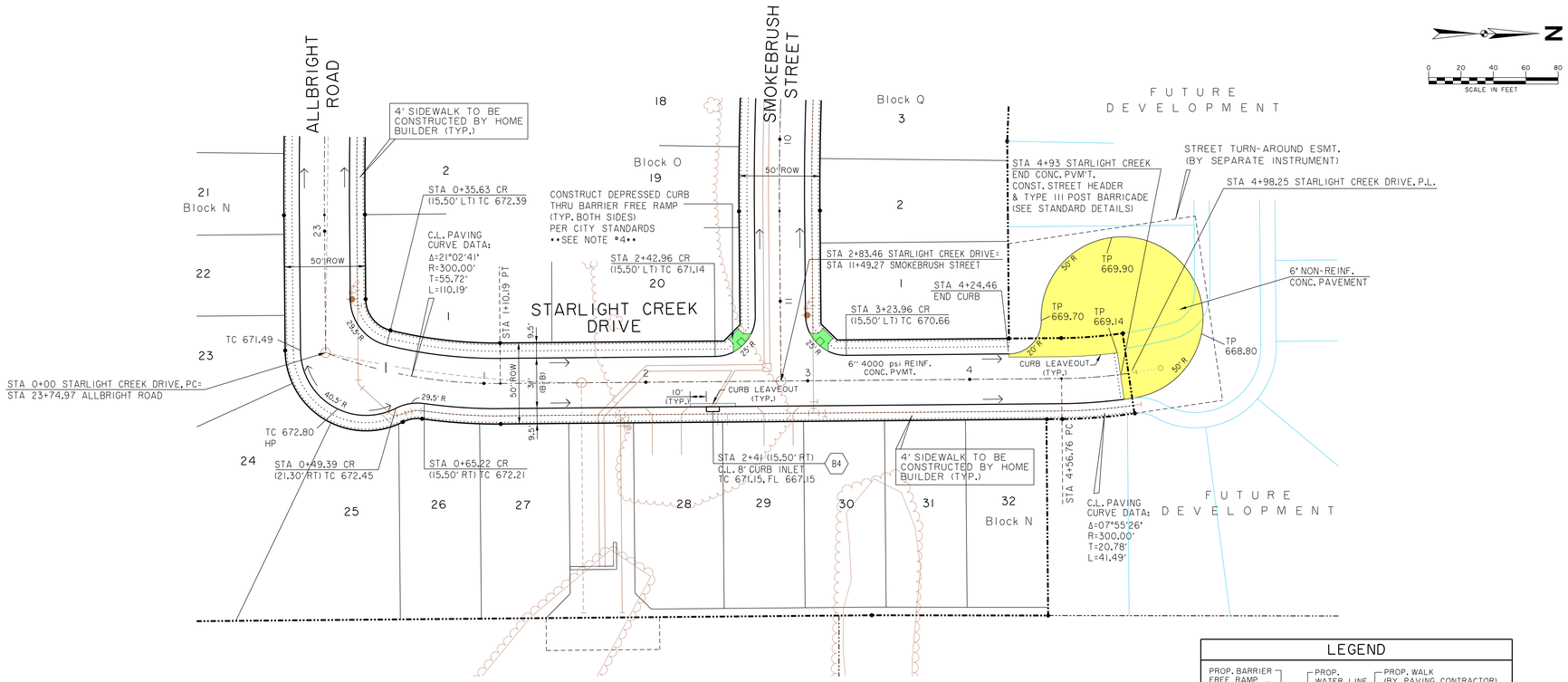
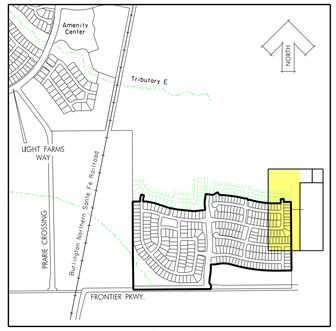
ALLBRIGHT ROAD (CONT.)

P-201402-02

i:/proj/01390501/01390540 Parcel 1&2/08-Design CAD/DGN/phlpv11.dgn





KEY MAP
NTS

NOTE:

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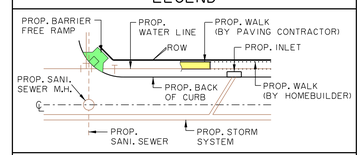
LEGEND



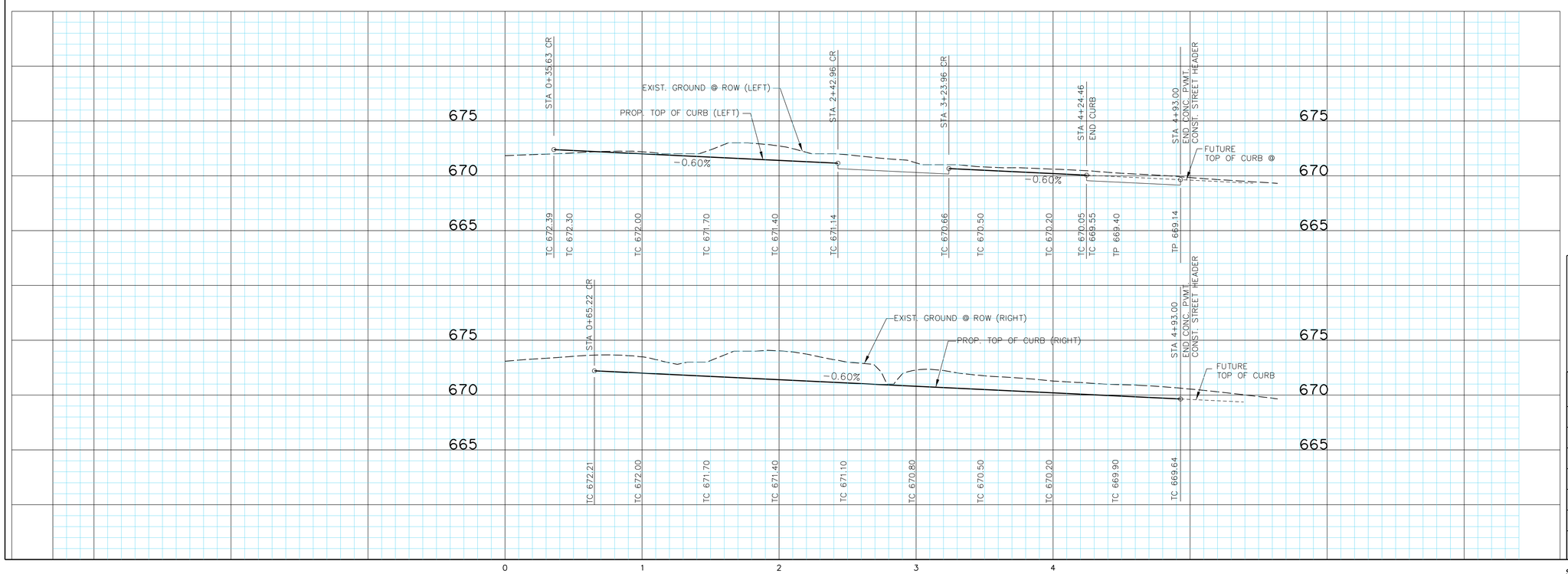
CT - DENOTES CURB TRANSITION

BENCHMARKS:

BM #5
Square cut on top concrete headwall, 5' west of edge of pavement of Frontier Parkway, 56 feet south of centerline of County Road No. 5, 485 feet east of centerline County Road No. 51.

N=7147548.47
E=2488493.86
Elev. = 652.94

BM #8
Square cut northeast corner of concrete headwall, north side of County Road 5, 1200 feet +- east of the intersection of County Road 5 and Frontier Parkway.
Elev. = 662.56



STATE OF TEXAS
ROBERT M. STENGELE
50145
REGISTERED PROFESSIONAL ENGINEER
3-16-15

Huitt-Zollars, Inc.
Firm Registration No. F-761

RECORD DRAWING

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PAVING PLAN & PROFILE
STARLIGHT CREEK DRIVE

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

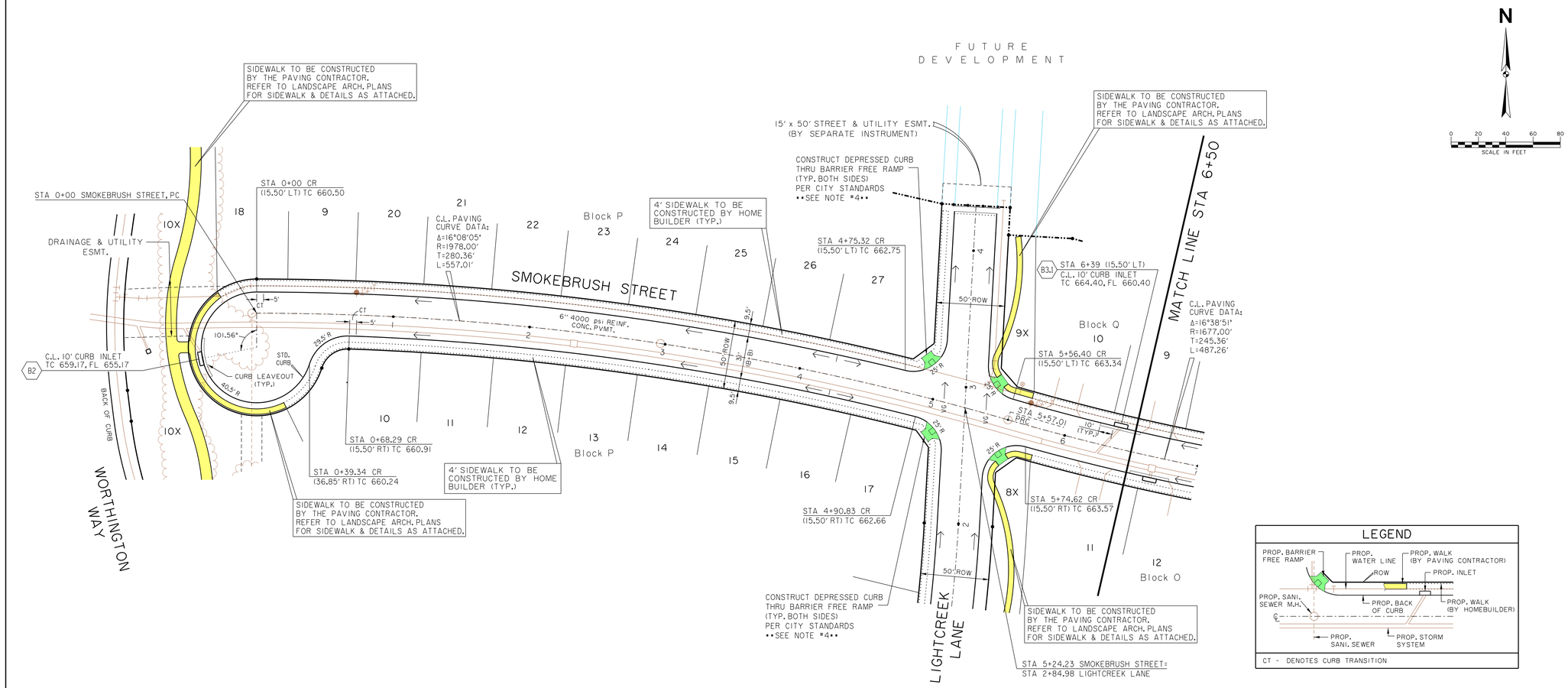
HUITT-ZOLLARS

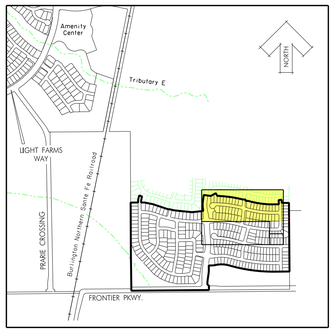
DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		H: 1"=40' V: 1"= 5'		01-3905-40	03-12

STARLIGHT CREEK DRIVE

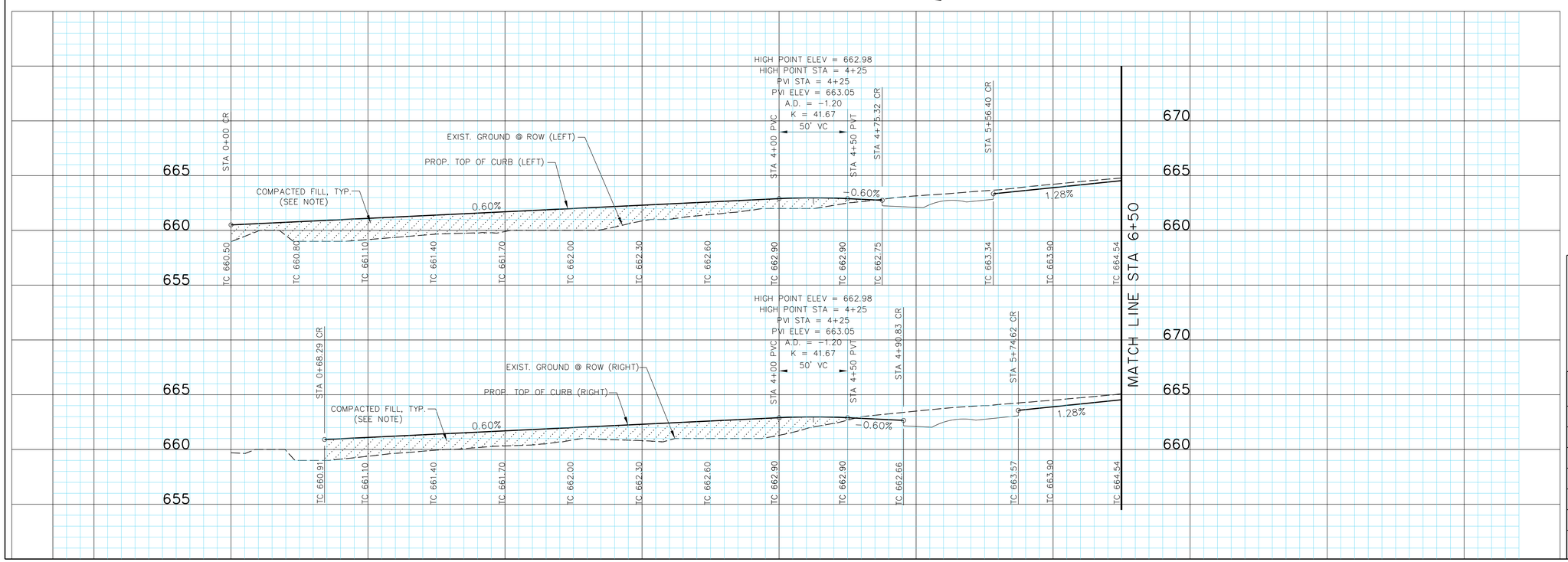
P-201402-02

I:/proj/01390501/01390540 Parcel 1&2/08-DesignCAD/DGN/phipvl2.dgn





KEY MAP
NTS



LEGEND

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STATE OF TEXAS
ROBERT M. STENGELE
50145
REGISTERED PROFESSIONAL ENGINEER
3-16-15

Huitt-Zollars, Inc.
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PAVING PLAN & PROFILE
SMOKEBRUSH STREET

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
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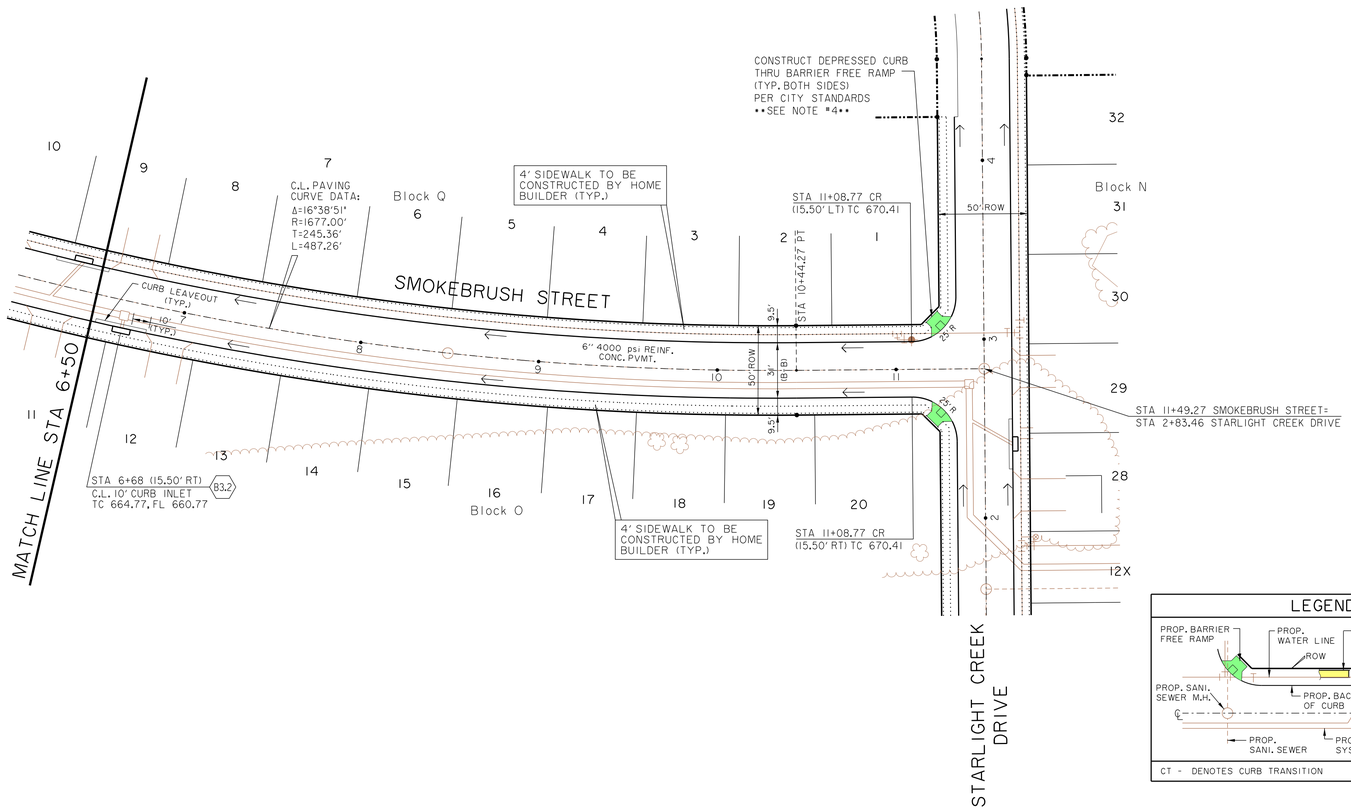
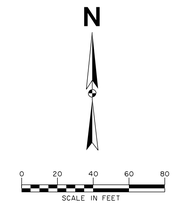
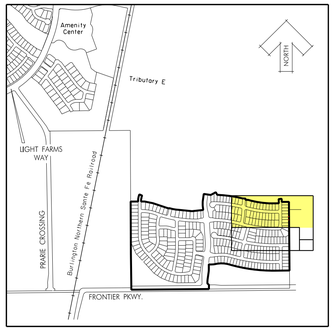
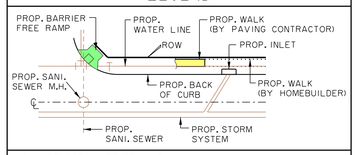






KEY MAP
NTS

LEGEND



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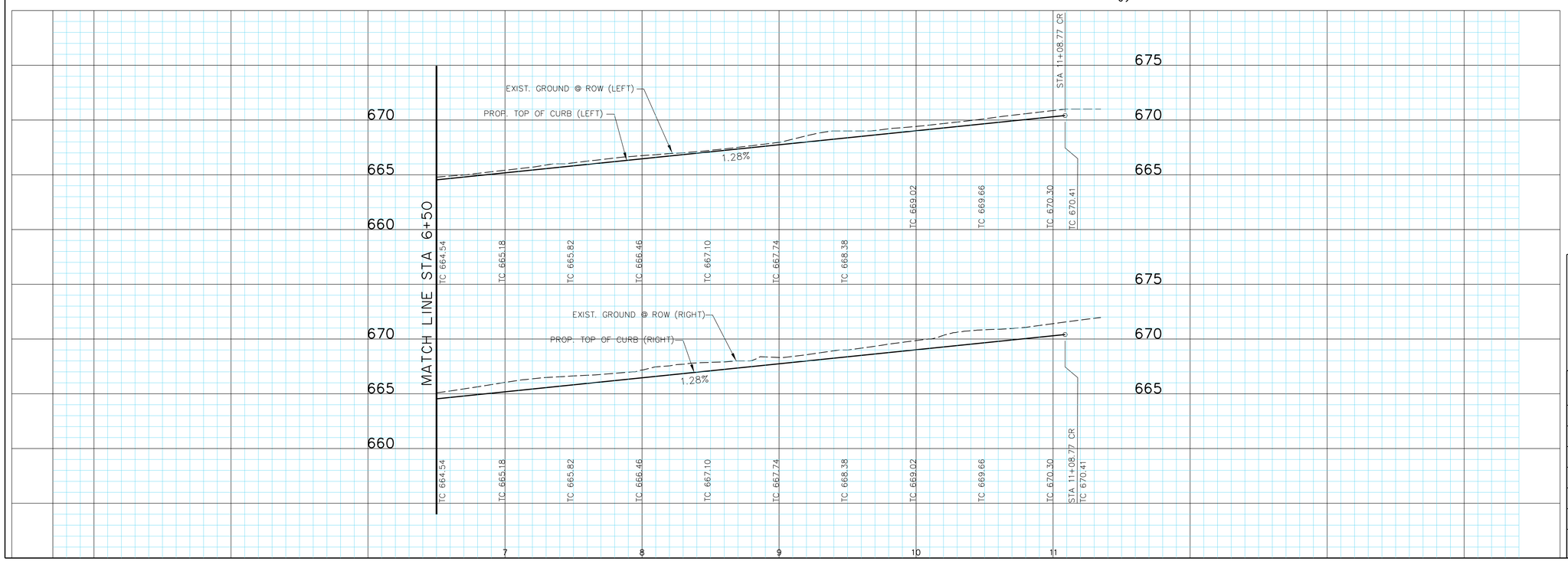

Huitt-Zollars, Inc.
Firm Registration No. F-761

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PAVING PLAN & PROFILE
SMOKEBRUSH STREET (CONT.)

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		H: 1"=40' V: 1"= 5'		01-3905-40	03-14

P-201402-02

I:/proj/013905001390540 Parcel 1&2/08-DesignCAD/DGN/phpv14.dgn

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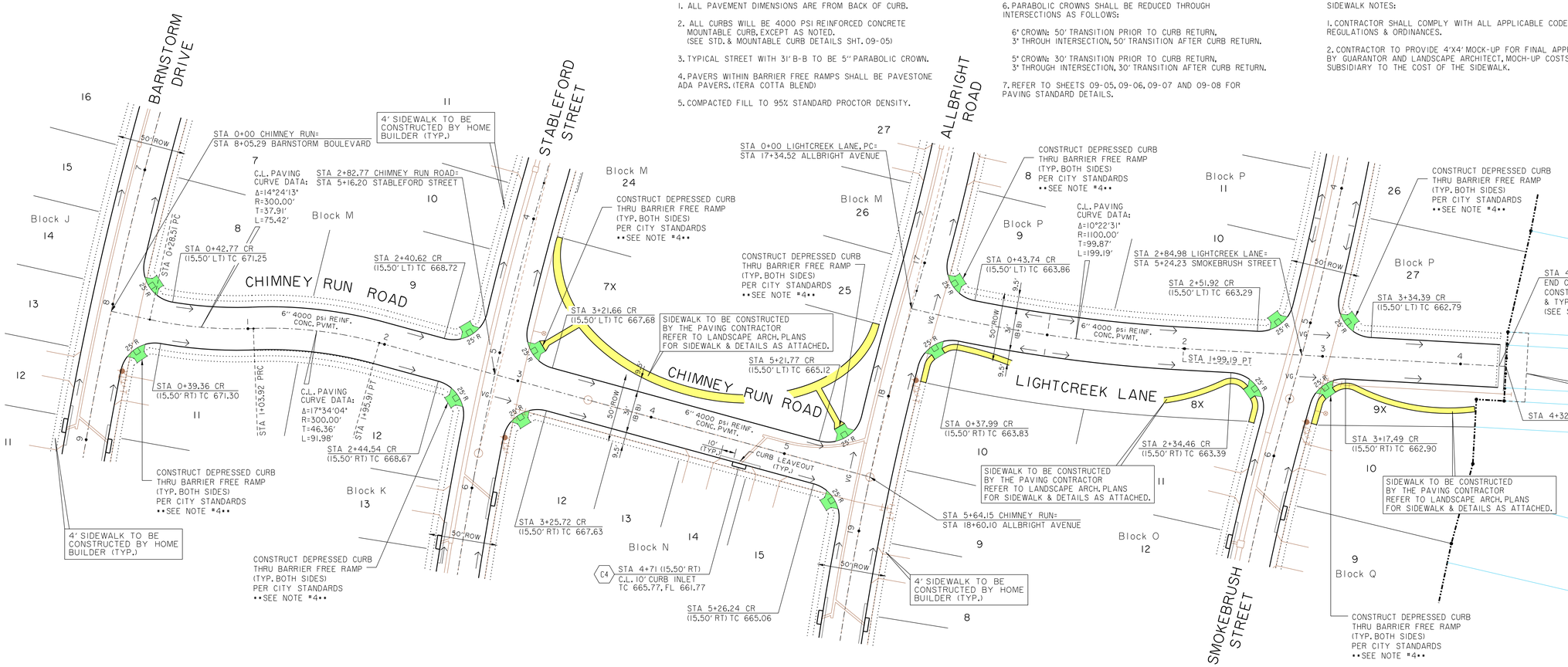
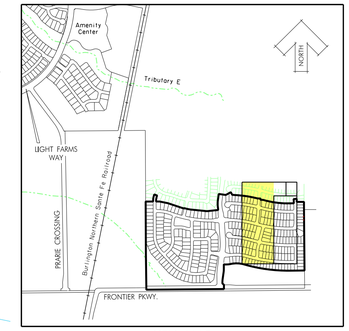
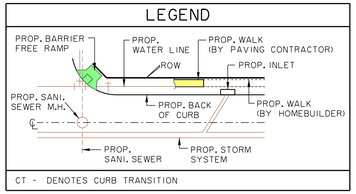




KEY MAP
NTS

LEGEND



CT - DENOTES CURB TRANSITION

BENCHMARKS:

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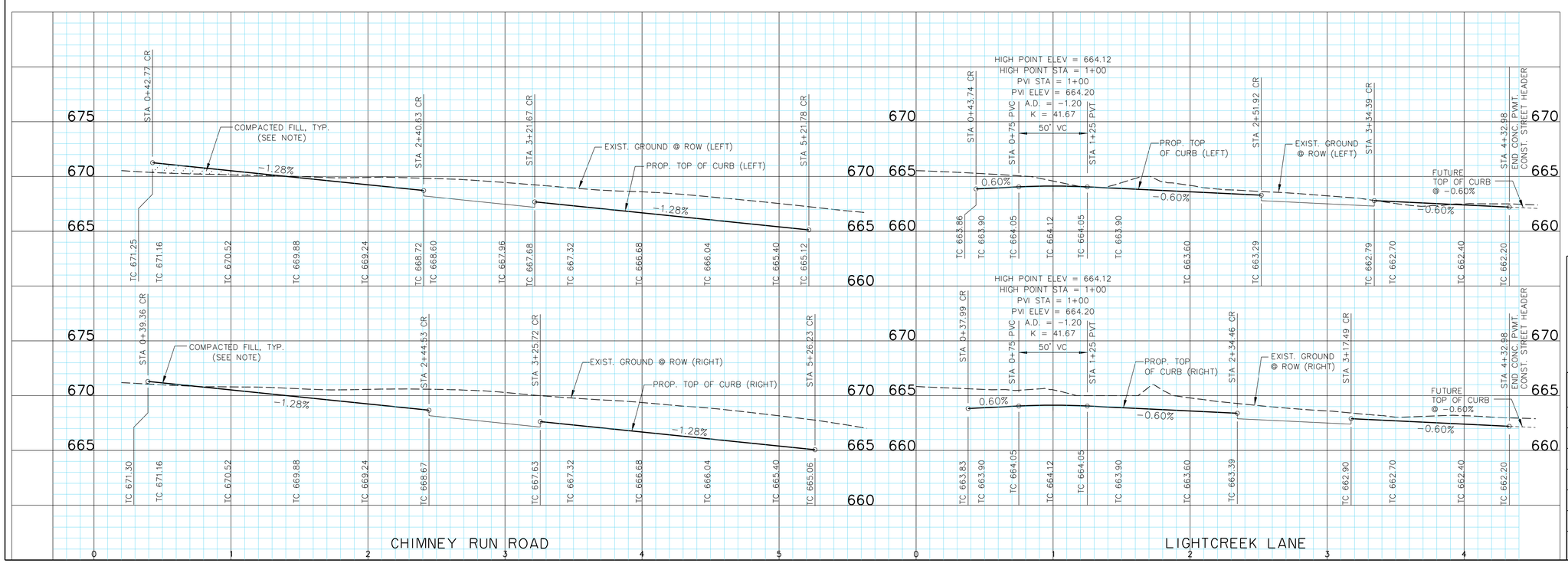

STATE OF TEXAS
ROBERT M. STENGELE
50145
REGISTERED PROFESSIONAL ENGINEER
3-16-15

Huitt-Zollars, Inc.
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PAVING PLAN & PROFILE
CHIMNEY RUN ROAD & LIGHTCREEK LANE

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
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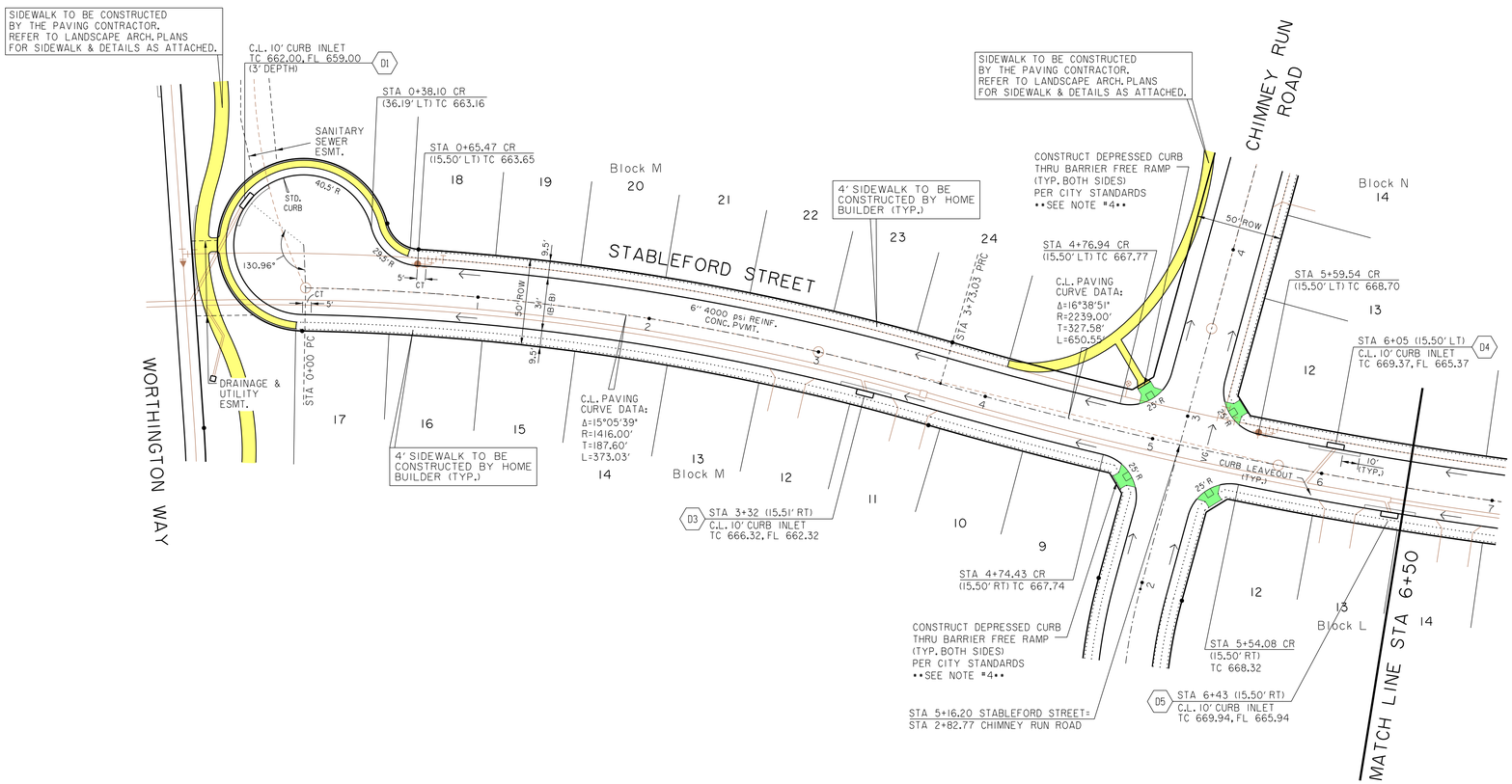

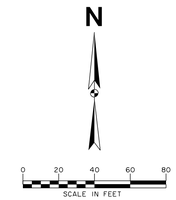

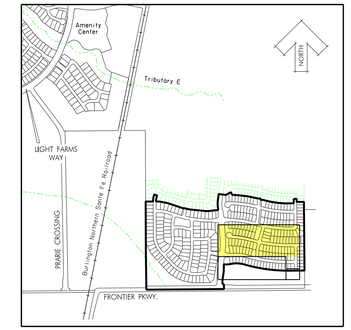

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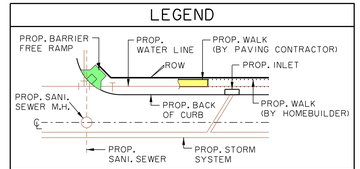

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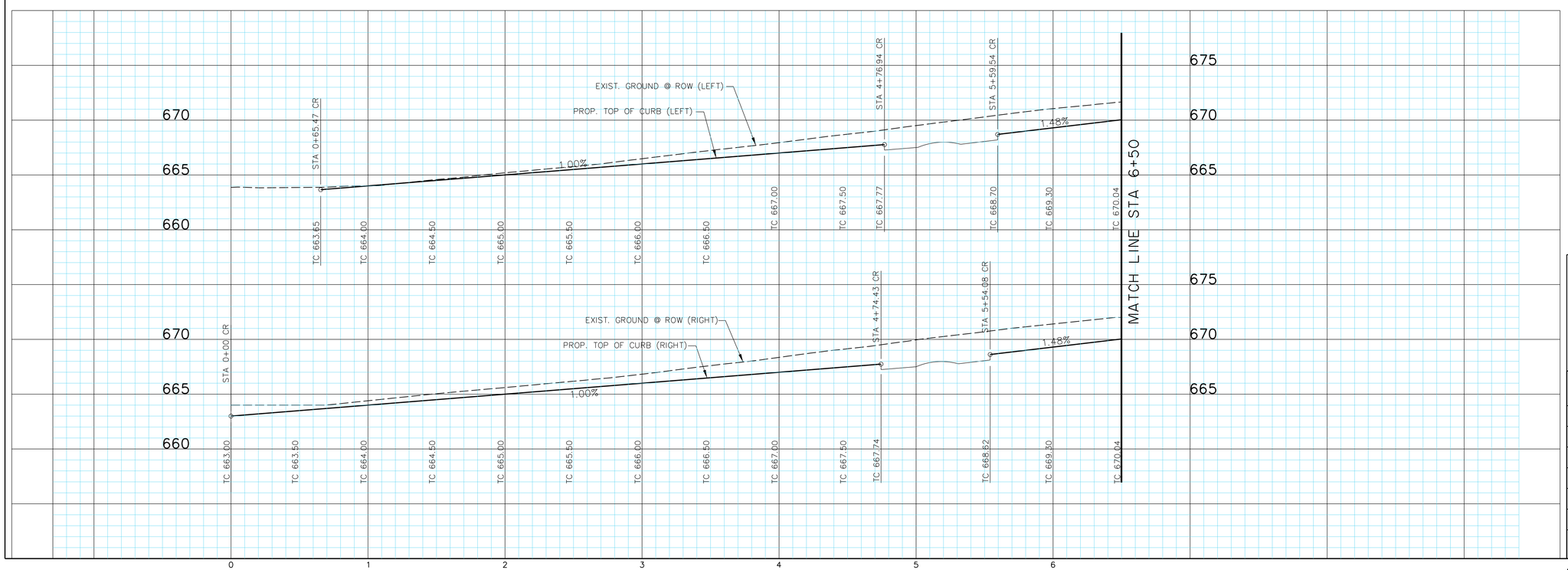

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3-16-15

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PAVING PLAN & PROFILE
STABLEFORD STREET

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
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STABLEFORD STREET

P-201402-02

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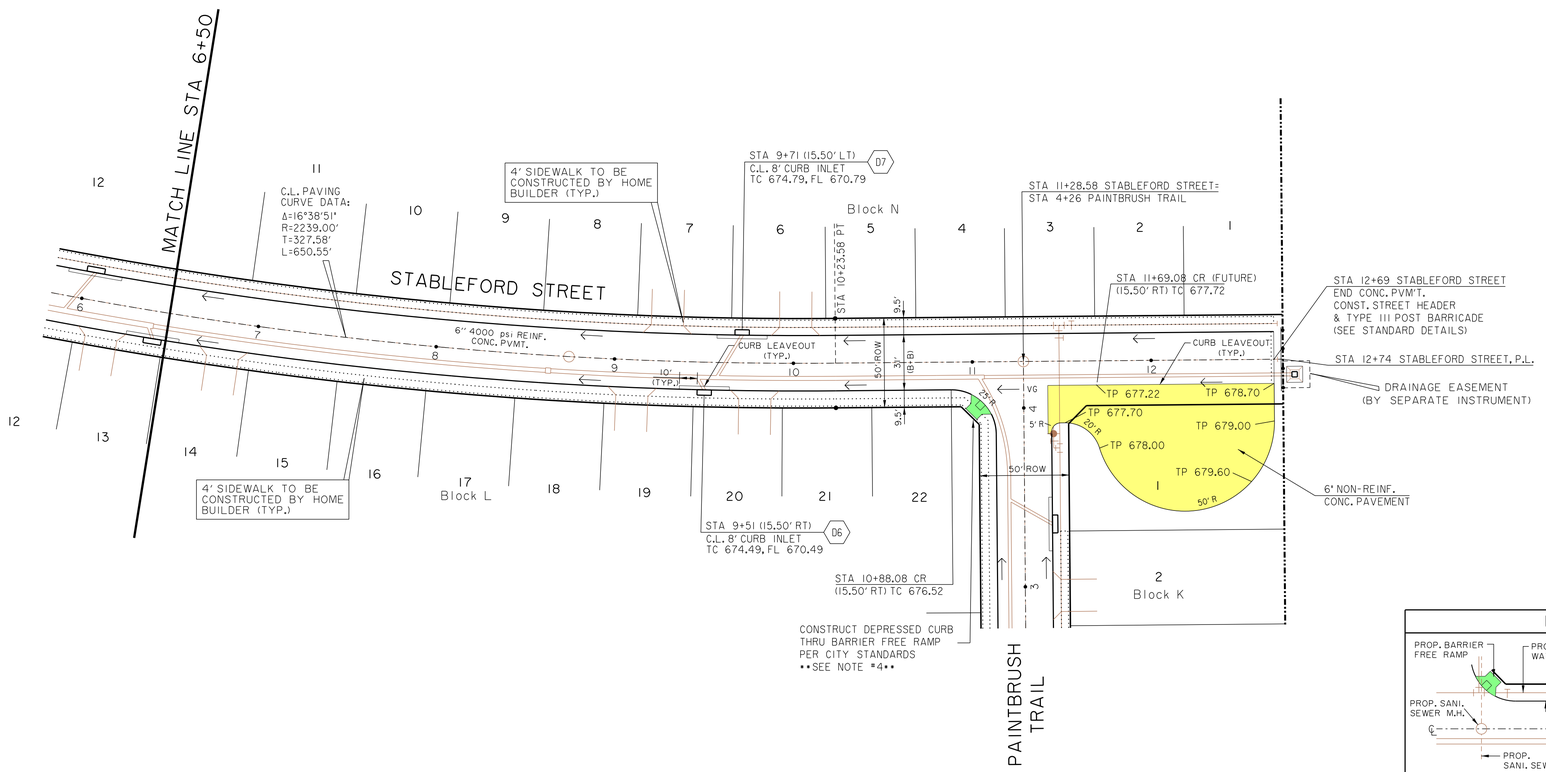

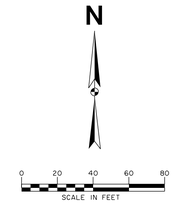

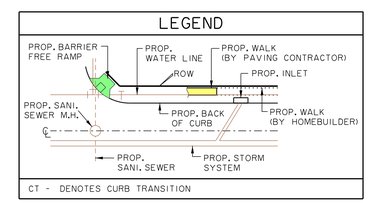

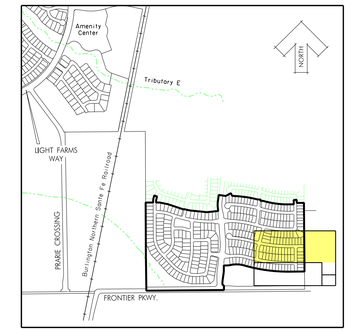

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7. REFER TO SHEETS 09-05, 09-06, 09-07 AND 09-08 FOR PAVING STANDARD DETAILS.

SIDEWALK NOTES:

1. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE CODES, REGULATIONS & ORDINANCES.

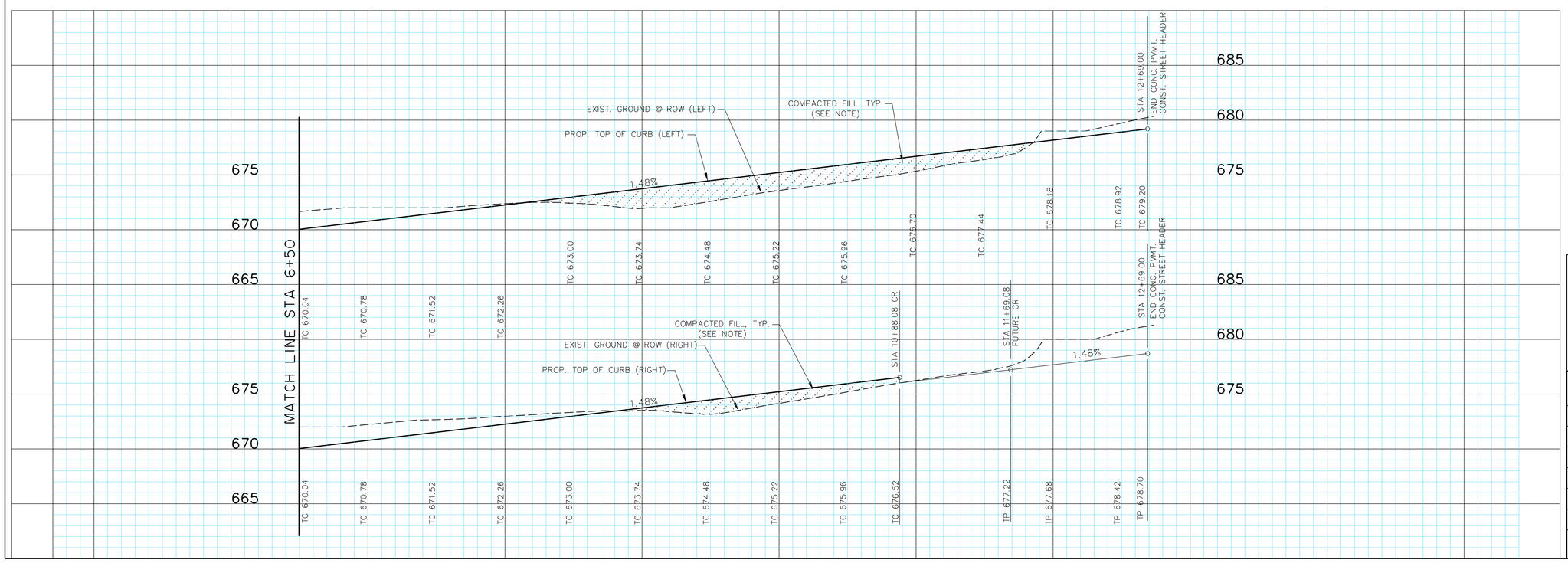
2. CONTRACTOR TO PROVIDE 4'X4' MOCK-UP FOR FINAL APPROVAL BY GUARANTOR AND LANDSCAPE ARCHITECT. MOCH-UP COSTS ARE SUBSIDIARY TO THE COST OF THE SIDEWALK.

BENCHMARKS:

BM #5
Square cut on top concrete headwall, 5' west of edge of pavement of Frontier Parkway, 56 feet south of centerline of County Road No. 5, 485 feet east of centerline County Road No. 51.

N=7147548.47
E=2488493.86
Elev. = 652.94

BM #8
Square cut northeast corner of concrete headwall, north side of County Road 5, 1200 feet +- east of the intersection of County Road 5 and Frontier Parkway.
Elev. = 662.56



ROBERT M. STENGELE
50145
REGISTERED PROFESSIONAL ENGINEER
STATE OF TEXAS
3-16-15

Huitt-Zollars, Inc.
Firm Registration No. F-761

RECORD DRAWING

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PAVING PLAN & PROFILE
STABLEFORD STREET (CONT.)

LIGHT FARMS

LFC Land Company LLC

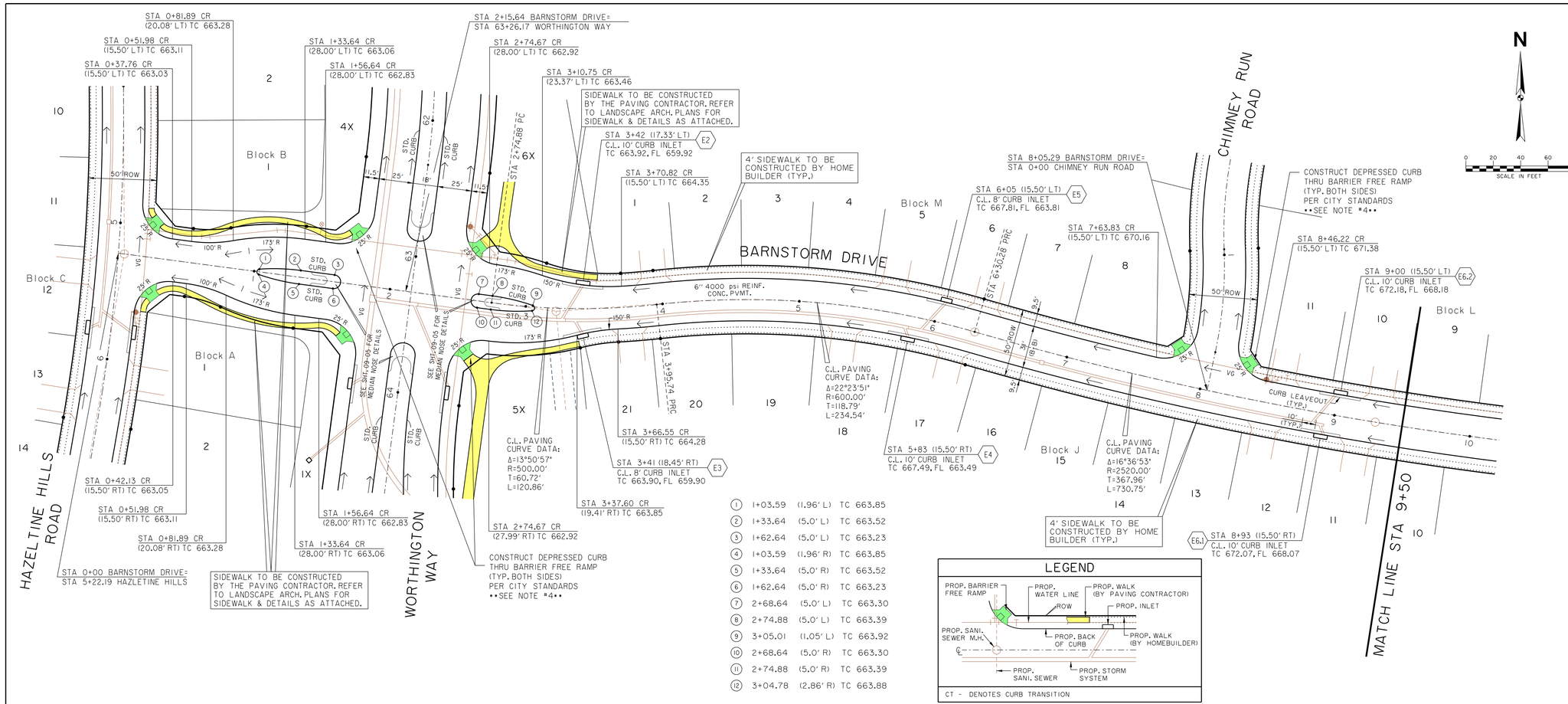
Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		H: 1"=40' V: 1"= 5'		01-3905-40	03-17

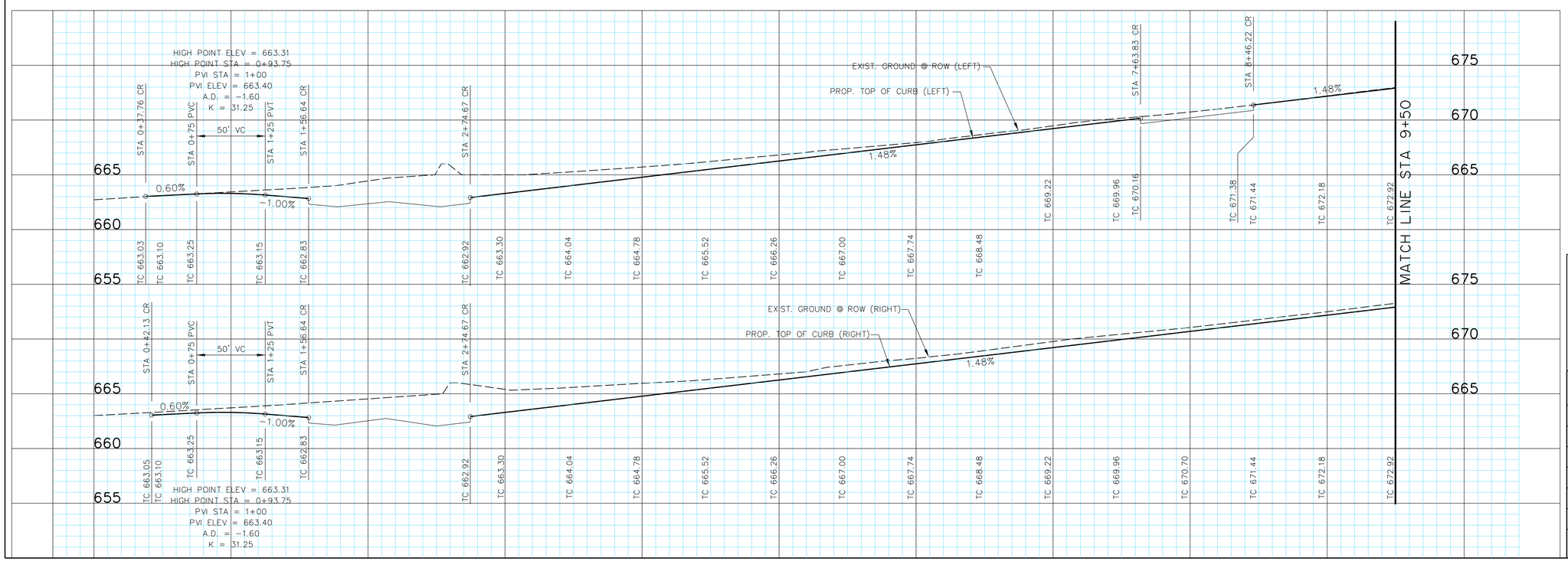
I:/proj/013905001/01390540 Parcel 1&2/08-DesignCAD/DGN/phlpvl7.dgn

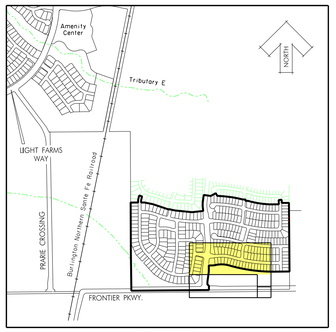


1	1+03.59	(1.96' L)	TC 663.85
2	1+33.64	(5.0' L)	TC 663.52
3	1+62.64	(5.0' L)	TC 663.23
4	1+03.59	(1.96' R)	TC 663.85
5	1+33.64	(5.0' R)	TC 663.52
6	1+62.64	(5.0' R)	TC 663.23
7	2+68.64	(5.0' L)	TC 663.30
8	2+74.88	(5.0' L)	TC 663.39
9	3+05.01	(1.05' L)	TC 663.92
10	2+68.64	(5.0' R)	TC 663.30
11	2+74.88	(5.0' R)	TC 663.39
12	3+04.78	(2.86' R)	TC 663.88

LEGEND

CT - DENOTES CURB TRANSITION





KEY MAP
NTS

NOTE:

1. ALL PAVEMENT DIMENSIONS ARE FROM BACK OF CURB.
2. ALL CURBS WILL BE 4000 PSI REINFORCED CONCRETE MOUNTABLE CURB, EXCEPT AS NOTED. (SEE STD. & MOUNTABLE CURB DETAILS SHT. 09-05)
3. TYPICAL STREET WITH 31' B-B TO BE 5" PARABOLIC CROWN.
4. PAVERS WITHIN BARRIER FREE RAMPS SHALL BE PAVESTONE ADA PAVERS. (TERA COTTA BLEND)
5. COMPACTED FILL TO 95% STANDARD PROCTOR DENSITY.
6. PARABOLIC CROWNS SHALL BE REDUCED THROUGH INTERSECTIONS AS FOLLOWS:

   6" CROWN: 50' TRANSITION PRIOR TO CURB RETURN, 3' THROUH INTERSECTION, 50' TRANSITION AFTER CURB RETURN.

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STATE OF TEXAS
ROBERT M. STENGELE
50145
REGISTERED PROFESSIONAL ENGINEER
3-16-15

Huitt-Zollars, Inc.
Firm Registration No. F-761

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PAVING PLAN & PROFILE
BARNSTORM DRIVE

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
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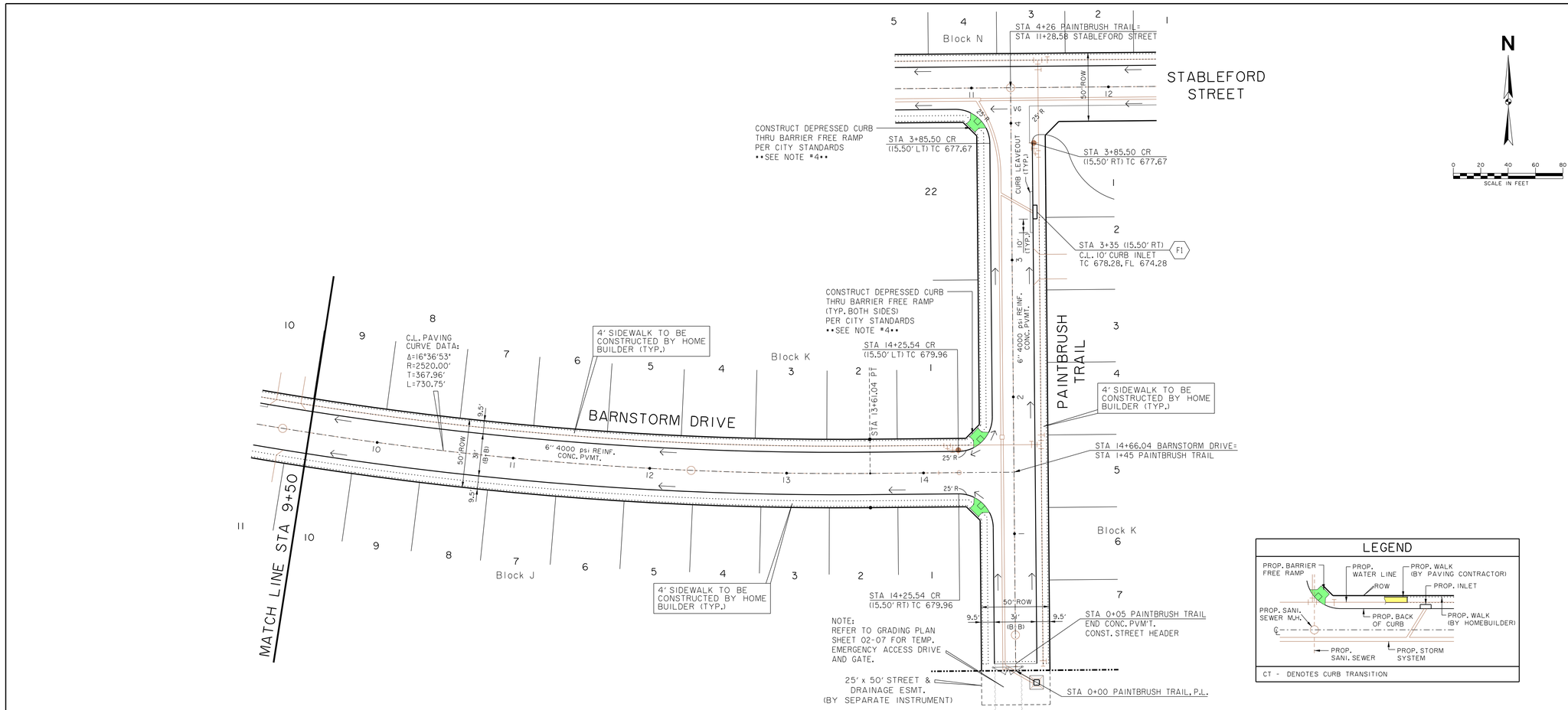
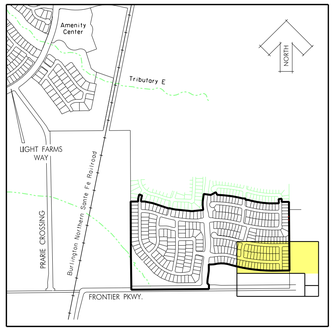
BARNSTORM DRIVE

P-201402-02

I:/proj/01390501/01390540 Parcel 1&2/08-Design CAD/DGN/phlpv18.dgn





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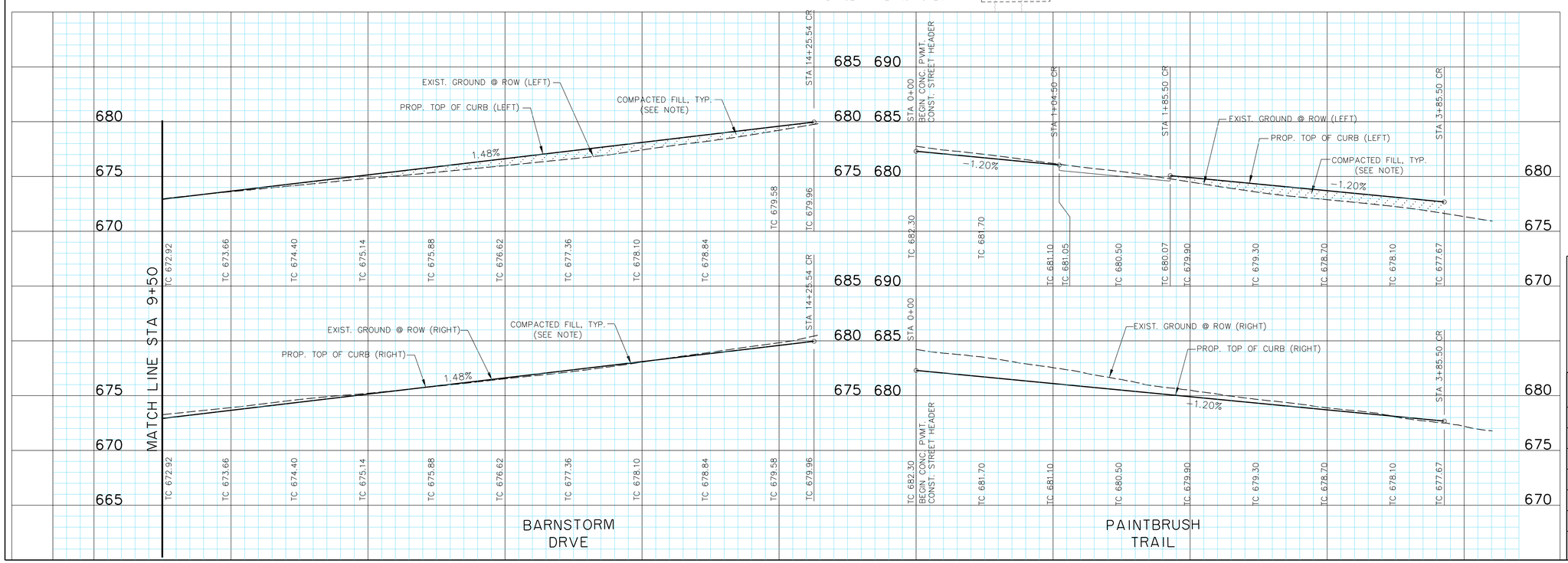
CT - DENOTES CURB TRANSITION



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3-16-15

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PAVING PLAN & PROFILE
BARNSTORM DRIVE (CONT.) & PAINTBRUSH TRAIL

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		H: 1"=40' V: 1"= 5'		01-3905-40	03-19

BARNSTORM DRIVE (CONT.) & PAINTBRUSH TRAIL

P-201402-02

I:/proj/01390501/01390540 Parcel 1&2/08-DesignCAD/DGN/phlpv19.dgn

NOTE:
EXISTING SEDIMENTATION BASIN FOR THIS AREA NORTH OF PROJECT SITE. BASIN TO BE UTILIZED FOR EROSION CONTROL MEASURES FOR THIS PHASE.

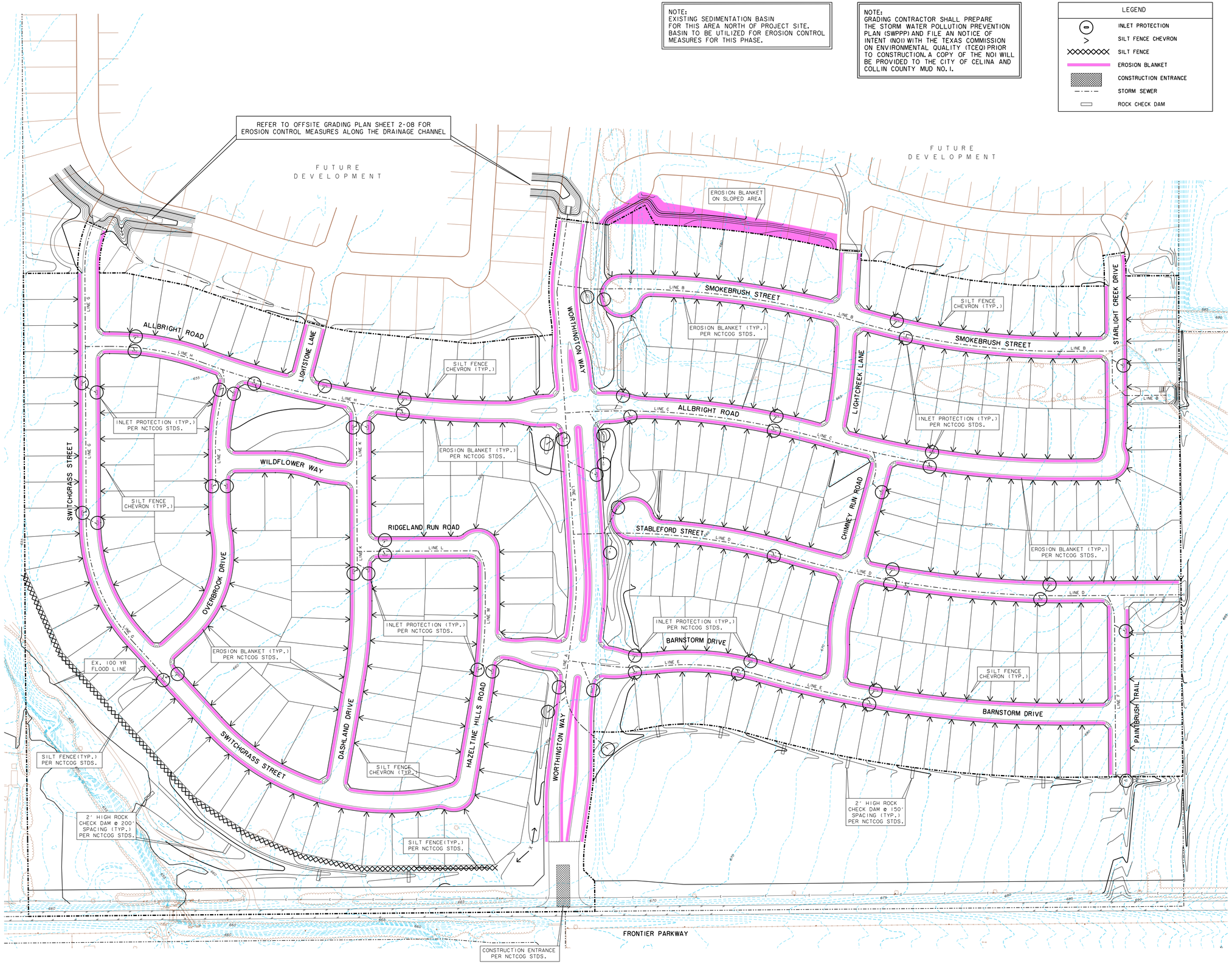
NOTE:
GRADING CONTRACTOR SHALL PREPARE THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP) AND FILE AN NOTICE OF INTENT (NOI) WITH THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) PRIOR TO CONSTRUCTION. A COPY OF THE NOI WILL BE PROVIDED TO THE CITY OF CELINA AND COLLIN COUNTY MUD NO. 1.

LEGEND

- INLET PROTECTION
- SILT FENCE CHEVRON
- SILT FENCE
- EROSION BLANKET
- CONSTRUCTION ENTRANCE
- STORM SEWER
- ROCK CHECK DAM

N

0 50 100 150 200
SCALE IN FEET



AREA OF DISTURBANCE 76.3 AC.

PHASES OF EROSION CONTROL:

A. GRADING:

1) INSTALL SILT FENCE
2) INSTALL CONST. ENTRANCE
3) INSTALL CHECK DAM

B. UTILITIES:

1) MAINTAIN SILT FENCE
2) MAINTAIN CONST. ENTRANCE
3) MAINTAIN CHECK DAMS
4) INSTALL INLET PROTECTION

C. MOISTURE CONDITIONING OF PADS:

1) MAINTAIN SILT FENCE
2) MAINTAIN CONST. ENTRANCE
3) MAINTAIN CHECK DAMS
4) MAINTAIN INLET PROTECTION
6) MOISTURE CONDITION PADS

D. PAVING:

1) MAINTAIN SILT FENCE
2) MAINTAIN CHECK DAMS
3) REMOVE CONST. ENTRANCE
4) MAINTAIN INLET PROTECTION
5) INSTALL EROSION CONTROL BLANKET ALONG BACK OF CURB & ON SLOPED AREAS
6) INSTALL LOT SWALE SILT FENCE CHEVRONS

E. POST EROSION CONTRIOL

REMOVE ALL EROSION CONTROL DEVICES AFTER COMPLETION AND VEGETATION IS ESTABLISHED. NOTIFY OWNER PRIOR TO REMOVAL OF DEVICES.

NOTES:

SUBDIVISION CONTRACTOR REQUIRED TO REPAIR AND/OR REPLACE DAMAGED EROSION CONTROL DEVICES CAUSED BY HIS ACTIVITES.

REFER TO SHEET 09-16 FOR EROSION CONTROL DETAILS.

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EROSION CONTROL PLAN

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		1"=100'		01-3905-40	04-01

I:/proj/0139050i/0139054O Parcel 1&2/OB-DesignCAD/DGN/phtecO1.dgn

NOTE 1:
DETENTION FOR THIS PARCEL IS ACCOUNTED FOR IN THE DESIGN OF THE LAKES AND PONDS FOR THE LIGHT FARMS PHASE ONE PLAT (RECORDED 6/14/13 - 2013/279) AND MODELED IN THE LIGHT FARMS DRAINAGE REPORT LOMR APPROVED BY FEMA.
ISSUE DATE: JUNE 12, 2013
CASE NO.: 13-06-1085P

NOTE 2:
DRAINAGE AREAS 'B5', 'D8' & 'F2' ARE OFFSITE AND WILL REQUIRE DETENTION.

NOTE 3:
THE 100 YEAR SECTIONS AND ELEVATIONS ARE TAKEN FROM THE LOMR CASE NO. 14-06-2017P PREPARED BY HUITT-ZOLLARS, INC.

NOTE:
REFER TO SHEET 05-02 FOR DESIGN FLOW CALCULATIONS

LEGEND

EXISTING CONTOUR — 500 —
DRAINAGE DIVIDE LINE
SURFACE FLOW DIRECTION
DRAINAGE AREA — AREA NO / ACRES / Q 100 cfs

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DRAINAGE AREA MAP

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

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I:/proj/01390501/01390540 Parcel 1&2/08-Design CAD/DGN/phldam01.dgn

DESIGN FLOW (Q_R) BY RATIONAL METHOD

LOCATION, AREA DESIGNATION	INTENSITY "I_{100}" (in/hr)	DRAINAGE AREA "A" (AC)	RUNOFF COEFFICIENT "C"	FREQUENCY (YRS.)	DESIGN FLOW "Q_{100}"= C*I*A (CFS)
1	3	4	5	6	7
A1	7.52	0.35	0.60	100	1.58
A2	7.52	0.92	0.60	100	4.15
A3	7.52	0.89	0.60	100	4.02
A4	7.52	0.52	0.60	100	2.35
A5	7.52	0.53	0.60	100	2.39
A6	8.74	6.60	0.90	100	51.92
B1	7.52	0.48	0.60	100	2.17
B2	7.52	2.80	0.60	100	12.63
B3.1	7.52	1.57	0.60	100	7.06
B3.2	7.52	1.57	0.60	100	7.06
B4	7.52	0.80	0.60	100	3.61
B5	7.52	28.20	0.40	100	84.82
C1	7.52	0.55	0.60	100	2.48
C2.1	7.52	1.10	0.60	100	4.94
C2.2	7.52	1.10	0.60	100	4.94
C3.1	7.52	1.14	0.60	100	5.14
C3.2	7.52	1.14	0.60	100	5.14
C4	7.52	1.12	0.60	100	5.05
C5.1	7.52	1.43	0.60	100	6.43
C5.2	7.52	1.43	0.60	100	6.43
D1	7.52	2.52	0.60	100	11.37
D2	7.52	0.56	0.60	100	2.53
D3	7.52	0.71	0.60	100	3.20
D4	7.52	1.06	0.60	100	4.78
D5	7.52	1.15	0.60	100	5.19
D6	7.52	1.05	0.60	100	4.74
D7	7.52	0.94	0.60	100	4.24
D8	7.52	4.00	0.40	100	12.03
E1	7.52	0.92	0.60	100	4.15
E2	7.52	0.88	0.60	100	3.97
E3	7.52	0.73	0.60	100	3.29
E4	7.52	1.03	0.60	100	4.65
E5	7.52	0.50	0.60	100	2.26
E6.1	7.52	1.74	0.60	100	7.83
E6.2	7.52	1.74	0.60	100	7.83
F1	7.52	1.06	0.60	100	4.78
F2	7.52	3.80	0.40	100	11.43
G1	7.52	2.26	0.60	100	10.20
G2.1	7.52	1.04	0.60	100	4.67
G2.2	7.52	1.04	0.60	100	4.67
G3.1	7.52	1.25	0.60	100	5.64
G3.2	7.52	1.25	0.60	100	5.64
G4.1	7.52	1.89	0.60	100	8.53
G4.2	7.52	1.89	0.60	100	8.53
H1.1	7.52	1.00	0.60	100	4.51
H1.2	7.52	1.00	0.60	100	4.51
H2	7.52	0.62	0.60	100	2.80
H3	7.52	0.66	0.60	100	2.98
H4.1	7.52	1.17	0.60	100	5.28
H4.2	7.52	1.17	0.60	100	5.28
J1.1	7.52	1.07	0.60	100	4.81
J1.2	7.52	1.07	0.60	100	4.81
J2.1	7.52	1.13	0.60	100	5.08
J2.2	7.52	1.13	0.60	100	5.08
K1	7.52	0.75	0.60	100	3.38
K2	7.52	0.81	0.60	100	3.65
K3.1	7.52	1.75	0.60	100	7.90
K3.2	7.52	1.75	0.60	100	7.90
L1.1	7.52	1.52	0.60	100	6.86
L1.2	7.52	1.52	0.60	100	6.86
M1	7.52	0.90	0.60	100	4.06
M2	7.52	0.85	0.60	100	3.84

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DRAINAGE DATA
DESIGN FLOW

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

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I:/proj/01390501/01390540 Parcel 1&2/08-DesignCAD/DGN/phidrcalc01.dgn

Line or Lateral Name	RUNOFF COLLECTION POINT (Inlet or Manhole)		Distance Between Collection Points (ft)	INCREMENTAL DRAINAGE AREA				Accum-ulated "CA"	Time at Upstream Station (minutes)	Design Storm Frequency (yrs)	Intensity "I" (inches/hr)	Storm Water Runoff "Q" (c.f.s.)	Slope of Hydraulic Gradient "S" (ft/ft)	Selected Storm Sewer Size	Slope of Storm Pipe (ft/ft)	Pipe Capacity (c.f.s.)	Velocity in Sewer Between Collection Points "V" (f.p.s.)	Depth of Flow In Pipe "Dp" (ft.)	Remarks
	Upstream Station	Downstream Station		Area No.	Drainage Area "A" (Acres)	Runoff Coeff. "C"	Incremental "CA"												
	1	2	3	4	5	6	7	8	9	10	11.00	12.00	13	14			15		20
LINE A																			
A6	38+90.00	37+38.00	152	A6	6.60	0.9	5.94	5.94	10.00	100	8.74	51.92	0.0027	42	0.0050	71.14	8.08	2.23	PARTIAL FLOW
LAT A5	37+38.00	37+13.00	25	A5	0.53	0.6	0.32	7.22	15.00	100	7.52	54.33	0.0029	42	0.0050	71.14	8.14	2.29	PARTIAL FLOW
LAT A4	37+13.00	36+55.00	58	A4	0.52	0.6	0.31	7.54	15.00	100	7.52	56.67	0.0032	42	0.0050	71.14	8.21	2.36	PARTIAL FLOW
LINE E	36+55.00	33+63.00	292	LINE E	7.53	0.6	4.52	12.05	15.00	100	7.52	90.65	0.0040	48	0.0050	101.57	9.14	2.95	PARTIAL FLOW
LINE D	33+63.00	31+95.00	168	LINE D	16.85		8.55	20.60	15.00	100	7.52	154.94	0.0040	5	0.0050	173.42	10.31	3.12	PARTIAL FLOW
LAT A3	31+95.00	31+39.00	56	A3	0.89	0.6	0.53	21.14	15.00	100	7.52	158.96	0.0042	5	0.0050	173.42	10.40	3.10	PARTIAL FLOW
LAT A2	31+39.00	31+24.00	15	A2	0.92	0.6	0.55	21.69	15.00	100	7.52	163.11	0.0044	5	0.0050	173.42	10.45	3.20	PARTIAL FLOW
LAT A1	31+24.00	30+83.00	41	A1	0.35	0.6	0.21	21.90	15.00	100	7.52	164.69	0.0045	5	0.0050	173.42	10.45	3.21	PARTIAL FLOW
	30+83.00	27+87.00	296	LINE C	8.99	0.6	5.39	27.29	15.00	100	7.52	205.25	0.0044	6	0.0050	219.06	11.08	3.20	PARTIAL FLOW
	27+87.00	26+23.00	164	LINE B	35.41		15.61	42.90	15.00	100	7.52	322.61	0.0043	5	0.0050	346.84	10.42	3.16	PARTIAL FLOW
LAT A1	0+21.00	0+00.00	21	A1	0.35	0.6	0.21	0.21	15.00	100	7.52	1.58	0.0002	18	0.0706	27.91	8.46	0.24	PARTIAL FLOW
LAT A2	0+08.00	0+00.00	8	A2	0.92	0.6	0.55	0.55	15.00	100	7.52	4.15	0.0016	18	0.2400	51.46	17.49	0.29	PARTIAL FLOW
LAT A3	0+70.00	0+00.00	70	A3	0.89	0.6	0.53	0.53	15.00	100	7.52	4.02	0.0015	18	0.0299	18.16	8.28	0.48	PARTIAL FLOW
LAT A4	0+10.00	0+00.00	10	A4	0.52	0.6	0.31	0.31	15.00	100	7.52	2.35	0.0005	18	0.1750	43.94	14.29	0.27	PARTIAL FLOW
LAT A5	0+53.00	0+00.00	53	A5	0.53	0.6	0.32	0.32	15.00	100	7.52	2.39	0.0005	18	0.0629	26.34	8.82	0.32	PARTIAL FLOW
LINE B																			
B5	15+18.00	13+28.00	190	B5	28.20	0.4	11.28	11.28	15.00	100	7.52	84.83	0.0071	42	0.0080	89.99	10.64	2.72	PARTIAL FLOW
LAT B4	13+28.00	13+08.00	20	B4	0.80	0.6	0.48	11.76	15.00	100	7.52	88.44	0.0077	42	0.0080	89.99	10.66	2.82	PARTIAL FLOW
	13+08.00	8+33.00	475			0.6	0.00	11.76	15.00	100	7.52	88.44	0.0077	42	0.0120	110.21	12.74	2.38	PARTIAL FLOW
LAT B3.2	8+33.00	7+90.00	43	B3.2	1.57	0.6	0.94	12.70	15.00	100	7.52	95.50	0.0090	42	0.0160	127.26	14.54	2.28	PARTIAL FLOW
LAT B3.1	7+90.00	7+50.00	40	B3.1	1.57	0.6	0.94	13.64	15.00	100	7.52	102.56	0.0104	42	0.0160	127.26	14.73	2.39	PARTIAL FLOW
	7+50.00	4+00.00	350			0.6	0.00	13.64	15.00	100	7.52	102.56	0.0051	48	0.0064	114.91	10.34	2.95	PARTIAL FLOW
	4+00.00	1+50.00	250			0.6	0.00	13.64	15.00	100	7.52	102.56	0.0051	48	0.0064	114.91	10.34	2.95	PARTIAL FLOW
	1+50.00	1+13.00	37			0.6	0.00	13.64	15.00	101	7.52	102.56	0.0051	48	0.0064	114.91	10.34	2.95	PARTIAL FLOW
LAT B2	1+13.00	0+80.00	33	B2	2.80	0.6	1.68	15.32	15.00	100	7.52	115.19	0.0064	48	0.0080	128.48	11.57	2.97	PARTIAL FLOW
LAT B2	0+80.00	0+20.00	60	B1	0.48	0.6	0.29	15.61	15.00	100	7.52	117.36	0.0067	48	0.0080	128.48	11.60	3.01	PARTIAL FLOW
LAT B2	0+23.00	0+00.00	23	B2	2.80	0.6	1.68	1.68	15.00	100	7.52	12.63	0.0064	21	0.0535	36.64	13.90	0.72	PARTIAL FLOW
LAT B3.1	0+28.00	0+00.00	28	B3.1	1.57	0.6	0.94	0.94	15.00	100	7.52	7.06	0.0045	18	0.0535	24.30	11.91	0.55	PARTIAL FLOW
LAT B3.2	0+07.00	0+00.00	7	B3.2	1.57	0.6	0.94	0.94	15.00	100	7.52	7.06	0.0045	18	0.0243	16.37	8.94	0.69	PARTIAL FLOW
LAT B4	0+28.00	0+00.00	28	B4	0.80	0.6	0.48	0.48	15.00	100	7.52	3.61	0.0012	18	0.0614	26.03	10.36	0.38	PARTIAL FLOW

STATE OF TEXAS
ROBERT M. STENGELE
50145
REGISTERED
PROFESSIONAL ENGINEER

3-16-15

Huitt-Zollars, Inc.
Firm Registration No. F-761

RECORD DRAWING

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DRAINAGE DATA
STORM SEWER CALCULATIONS

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		NA		01-3905-40	05-03

i:/proj/01390501/01390540 Parcel 1&2/08-Design CAD/DGN/phidrcalc02.dgn

Line or Lateral Name	RUNOFF COLLECTION POINT (Inlet or Manhole)		Distance Between Collection Points (ft)	INCREMENTAL DRAINAGE AREA				Accum-ulated "CA"	Time at Upstream Station (minutes)	Design Storm Frequency (yrs)	Intensity "I" (inches/hr)	Storm Water Runoff "Q" (c.f.s.)	Slope of Hydraulic Gradient "S" (ft/ft)	Selected Storm Sewer Size	Slope of Storm Pipe (ft/ft)	Pipe Capacity (c.f.s.)	Velocity in Sewer Between Collection Points "V" (f.p.s.)	Depth of Flow In Pipe "Dp" (ft.)	Remarks
	Upstream Station	Downstream Station		Area No.	Drainage Area "A" (Acres)	Runoff Coeff. "C"	Incremental "CA"												
	1	2	3	4	5	6	7	8	9	10	11.00	12.00	13	14			15		20
LINE C																			
	8+51.00	8+48.00	3			0.6	0.00	0.00	15.00	100	7.52	0.00	0.0000	21	0.0150	19.41			
LAT C5.2	8+48.00	8+38.00	10	C5.2	1.43	0.6	0.86	0.86	15.00	100	7.52	6.43	0.0016	21	0.0150	19.41	7.25	0.69	PARTIAL FLOW
LAT C5.1	8+38.00	7+23.00	115	C5.1	1.43	0.6	0.86	1.71	15.00	100	7.52	12.86	0.0066	21	0.0150	19.41	8.62	1.04	PARTIAL FLOW
	7+23.00	7+20.00	3			0.6	0.00	1.71	15.00	100	7.52	12.86	0.0032	24	0.0150	27.71	8.69	0.96	PARTIAL FLOW
LAT C4	7+20.00	7+00.00	20	C4	1.12	0.6	0.67	2.38	15.00	100	7.52	17.91	0.0063	24	0.0150	27.71	9.39	1.17	PARTIAL FLOW
	7+00.00	5+00.00	200			0.6	0.00	2.38	15.00	100	7.52	17.91	0.0063	24	0.0064	18.10	6.57	1.60	PARTIAL FLOW
	5+00.00	4+83.00	17			0.6	0.00	2.38	15.00	100	7.52	17.91	0.0063	24	0.0064	18.10	6.57	1.60	PARTIAL FLOW
	4+83.00	4+80.00	3			0.6	0.00	2.38	15.00	100	7.52	17.91	0.0019	30	0.0064	32.81	6.85	1.32	PARTIAL FLOW
LAT C3.2	4+80.00	4+70.00	10	C3.2	1.14	0.6	0.68	3.07	15.00	100	7.52	23.06	0.0032	30	0.0064	32.81	7.25	1.55	PARTIAL FLOW
LAT C3.1	4+70.00	1+46.00	324	C3.1	1.14	0.6	0.68	3.75	15.00	100	7.52	28.20	0.0047	30	0.0064	32.81	7.52	1.79	PARTIAL FLOW
	1+46.00	1+43.00	3			0.6	0.00	3.75	15.00	100	7.52	28.20	0.0047	30	0.0092	39.34	8.73	1.57	PARTIAL FLOW
LAT C2.2	1+43.00	1+12.00	31	C2.2	1.10	0.6	0.66	4.41	15.00	100	7.52	33.14	0.0065	30	0.0092	39.34	8.98	1.76	PARTIAL FLOW
LAT C2.1	1+12.00	0+57.00	55	C2.1	1.10	0.6	0.66	5.06	15.00	100	7.52	38.08	0.0086	30	0.0092	39.34	9.13	1.99	PARTIAL FLOW
	0+57.00	0+54.00	3			0.6	0.00	5.06	15.00	101	7.52	38.08	0.0052	33	0.0092	50.73	9.39	1.79	PARTIAL FLOW
LAT C1	0+54.00	0+00.00	54	C1	0.55	0.6	0.33	5.39	15.00	100	7.52	40.56	0.0059	33	0.0092	50.73	9.50	1.87	PARTIAL FLOW
LAT C1	0+47.00	0+00.00	47	C1	0.55	0.6	0.33	0.33	15.00	100	7.52	2.48	0.0006	18	0.0209	15.19	6.38	0.42	PARTIAL FLOW
LAT C2.1	0+39.00	0+00.00	39	C2.1	1.10	0.6	0.66	0.66	15.00	100	7.52	4.94	0.0022	18	0.0377	20.40	9.54	0.51	PARTIAL FLOW
LAT C2.2	0+13.00	0+00.00	13	C2.2	1.10	0.6	0.66	0.66	15.00	100	7.52	4.94	0.0022	18	0.0692	27.63	11.88	0.43	PARTIAL FLOW
LAT C3.1	0+28.00	0+00.00	28	C3.1	1.14	0.6	0.68	0.68	15.00	100	7.52	5.14	0.0024	18	0.0336	19.25	9.24	0.53	PARTIAL FLOW
LAT C3.2	0+08.00	0+00.00	8	C3.2	1.14	0.6	0.68	0.68	15.00	100	7.52	5.14	0.0024	18	0.1100	34.84	14.17	0.39	PARTIAL FLOW
LAT C4	0+76.00	0+73.00	3			0.6	0.00	0.00	15.00	100	7.52	0.00	0.0000	18	0.0224	15.72			PARTIAL FLOW
	0+73.00	0+00.00	73	C4	1.12	0.6	0.67	0.67	15.00	100	7.52	5.05	0.0023	18	0.0224	15.72	7.92	0.58	PARTIAL FLOW
LAT C4	0+08.00	0+00.00	8	C4	1.12	0.6	0.67	0.67	15.00	100	7.52	5.05	0.0023	18	0.0118	11.41	6.28	0.70	PARTIAL FLOW
LAT C5.1	0+28.00	0+00.00	28	C5.1	1.43	0.6	0.86	0.86	15.00	100	7.52	6.43	0.0037	18	0.0271	17.29	9.11	0.63	PARTIAL FLOW
LAT C5.2	0+08.00	0+00.00	8	C5.2	1.43	0.6	0.86	0.86	15.00	100	7.52	6.43	0.0037	18	0.0938	32.16	14.25	0.46	PARTIAL FLOW
LINE D																			
LAT D8	14+16.00	12+44.00	172	D8	4.00	0.4	1.60	1.60	15.00	100	7.52	12.03	0.0058	21	0.0150	19.41	8.52	1.00	
	12+44.00	12+41.00	3				0.00	1.60	15.00	100	7.52	12.03	0.0015	27	0.0150	37.93	8.47	0.87	PARTIAL FLOW
LINE F	12+41.00	10+94.00	147	LINE F	4.86		2.16	3.76	15.00	100	7.52	28.24	0.0083	27	0.0150	37.93	10.47	1.45	PARTIAL FLOW
LAT D7	10+94.00	10+84.00	10	D7	0.94	0.6	0.56	4.32	15.00	100	7.52	32.48	0.0110	27	0.0150	37.93	10.73	1.61	PARTIAL FLOW
LAT D6	10+84.00	10+00.00	84	D6	1.05	0.6	0.63	4.95	15.00	100	7.52	37.22	0.0144	27	0.0150	37.93	10.87	1.81	PARTIAL FLOW
	10+00.00	7+78.00	222			0.6	0.00	4.95	15.00	100	7.52	37.22	0.0144	27	0.0159	39.05	11.18	1.76	PARTIAL FLOW
	7+78.00	7+75.00	3			0.6	0.00	4.95	15.00	100	7.52	37.22	0.0031	36	0.0100	66.70	9.70	1.61	PARTIAL FLOW
LAT D5	7+75.00	7+27.00	48	D5	1.15	0.6	0.69	5.64	15.00	100	7.52	42.41	0.0040	36	0.0100	66.70	10.02	1.75	PARTIAL FLOW
LAT D4	7+27.00	5+00.00	227	D4	1.06	0.6	0.64	6.28	15.00	100	7.52	47.19	0.0050	36	0.0100	66.70	10.23	1.86	PARTIAL FLOW
	5+00.00	4+63.00	37			0.6	0.00	6.28	15.00	100	7.52	47.19	0.0050	36	0.0100	66.70	10.23	1.86	PARTIAL FLOW
LAT D3	4+63.00	1+50.00	313	D3	0.71	0.6	0.43	6.70	15.00	100	7.52	50.40	0.0057	36	0.0100	66.70	10.37	1.95	PARTIAL FLOW
	1+50.00	0+78.00	72			0.6	0.00	6.70	15.00	100	7.52	50.40	0.0057	36	0.0248	105.04	14.75	1.47	PARTIAL FLOW
LAT D2	0+78.00	0+70.00	8	D2	0.56	0.6	0.34	7.04	15.00	100	7.52	52.92	0.0063	36	0.0100	66.70	10.48	2.02	PARTIAL FLOW
LAT D1	0+70.00	0+01.00	69	D1	2.52	0.6	1.51	8.55	15.00	100	7.52	64.29	0.0093	36	0.0100	66.70	10.75	2.37	PARTIAL FLOW
LAT D1	0+63.00	0+00.00	63	D1	2.52	0.6	1.51	1.51	15.00	100	7.52	11.37	0.0117	18	0.0232	16.00	9.84	0.94	PARTIAL FLOW
LAT D2	0+30.00	0+00.00	30	D2	0.56	0.6	0.34	0.34	15.00	100	7.52	2.53	0.0006	18	0.0100	10.50	5.01	0.52	PARTIAL FLOW
LAT D3	0+08.00	0+00.00	8	D3	0.71	0.6	0.43	0.43	15.00	100	7.52	3.20	0.0009	18	0.1388	39.13	13.44	0.29	PARTIAL FLOW
LAT D4	0+28.00	0+00.00	28	D4	1.06	0.6	0.64	0.64	15.00	100	7.52	4.78	0.0021	18	0.0551	24.66	10.84	0.45	PARTIAL FLOW
LAT D5	0+08.00	0+00.00	8	D5	1.15	0.6	0.69	0.69	15.00	100	7.52	5.19	0.0024	18	0.1788	44.41	16.84	0.35	PARTIAL FLOW
LAT D6	0+08.00	0+00.00	8	D6	1.05	0.6	0.63	0.63	15.00	100	7.52	4.74	0.0020	18	0.1213	36.58	14.37	0.36	PARTIAL FLOW
LAT D7	0+28.00	0+00.00	28	D7	0.94	0.6	0.56	0.56	15.00	100	7.52	4.24	0.0016	18	0.0403	21.09	9.34	0.46	PARTIAL FLOW

STATE OF TEXAS
ROBERT M. STENGELE
50145
REGISTERED PROFESSIONAL ENGINEER
3-16-15

Huitt-Zollars, Inc.
Firm Registration No. F-761

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DRAINAGE DATA
STORM SEWER CALCULATIONS

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		NA		01-3905-40	05-04

i:/proj/01390501/013905040 Parcel 1&2/08-Design CAD/DGN/phldrcalc03.dgn

Line or Lateral Name	RUNOFF COLLECTION POINT (Inlet or Manhole)		Distance Between Collection Points (ft)	INCREMENTAL DRAINAGE AREA				Accum-ulated "CA"	Time at Upstream Station (minutes)	Design Storm Frequency (yrs)	Intensity "I" (inches/hr)	Storm Water Runoff "Q" (c.f.s.)	Slope of Hydraulic Gradient "S" (ft/ft)	Selected Storm Sewer Size	Slope of Storm Pipe (ft/ft)	Pipe Capacity (c.f.s.)	Velocity in Sewer Between Collection Points "V" (f.p.s.)	Depth of Flow In Pipe "Dp" (ft.)	Remarks
	Upstream Station	Downstream Station		Area No.	Drainage Area "A" (Acres)	Runoff Coeff. "C"	Incremental "CA"												
	1	2	3	4	5	6	7	8	9	10	11.00	12.00	13	14			15		20
LINE E																			
	7+11.00	7+08.00	3			0.6	0.00	0.00	15.00	100	7.52	0.00	0.0000	21	0.0150	19.41			
LAT E6.2	7+08.00	7+02.00	6	E6.2	1.74	0.6	1.04	1.04	15.00	100	7.52	7.83	0.0024	21	0.0150	19.41	7.65	0.78	PARTIAL FLOW
LAT E6.1	7+02.00	5+00.00	202	E6.1	1.74	0.6	1.04	2.08	15.00	100	7.52	15.66	0.0098	21	0.0150	19.41	8.99	1.20	PARTIAL FLOW
	5+00.00	4+08.00	92			0.6	0.00	2.08	15.00	100	7.52	15.66	0.0098	21	0.0150	19.41	8.99	1.20	PARTIAL FLOW
LAT E5	4+08.00	3+99.00	9	E5	0.50	0.6	0.30	2.38	15.00	100	7.52	17.91	0.0128	21	0.0150	19.41	9.16	1.33	PARTIAL FLOW
	3+99.00	3+96.00	3			0.6	0.00	2.38	15.00	100	7.52	17.91	0.0063	24	0.0150	27.71	9.39	1.17	PARTIAL FLOW
LAT E4	3+96.00	1+55.00	241	E4	1.03	0.6	0.62	3.00	15.00	100	7.52	22.56	0.0099	24	0.0150	27.71	9.84	1.37	PARTIAL FLOW
LAT E3	1+55.00	1+48.00	7	E3	0.73	0.6	0.44	3.44	15.00	100	7.52	25.85	0.0131	24	0.0150	27.71	10.03	1.54	PARTIAL FLOW
	1+48.00	1+45.00	3			0.6	0.00	3.44	15.00	100	7.52	25.85	0.0070	27	0.0100	30.97	8.72	1.57	PARTIAL FLOW
LAT E2	1+45.00	0+39.00	106	E2	0.88	0.6	0.53	3.97	15.00	100	7.52	29.82	0.0093	27	0.0100	30.97	8.87	1.78	PARTIAL FLOW
	0+39.00	0+36.00	3			0.6	0.00	3.97	15.00	100	7.52	29.82	0.0053	30	0.0100	41.02	9.12	1.58	PARTIAL FLOW
LAT E1	0+36.00	0+06.00	30	E1	0.92	0.6	0.55	4.52	15.00	100	7.52	33.98	0.0069	30	0.0100	41.02	9.34	1.74	PARTIAL FLOW
LAT E1	0+65.00	0+00.00	65	E1	0.92	0.6	0.55	0.55	15.00	100	7.52	4.15	0.0016	18	0.0175	13.90	6.75	0.54	PARTIAL FLOW
LAT E2	0+30.00	0+00.00	30	E2	0.88	0.6	0.53	0.53	15.00	100	7.52	3.97	0.0014	18	0.0357	19.85	8.79	0.46	PARTIAL FLOW
LAT E3	0+12.00	0+00.00	12	E3	0.73	0.6	0.44	0.44	15.00	100	7.52	3.29	0.0010	18	0.0675	27.29	10.44	0.35	PARTIAL FLOW
LAT E4	0+08.00	0+00.00	8	E4	1.03	0.6	0.62	0.62	15.00	100	7.52	4.65	0.0020	18	0.0963	32.59	13.15	0.39	PARTIAL FLOW
LAT E5	0+38.00	0+00.00	38	E5	0.50	0.6	0.30	0.30	15.00	100	7.52	2.26	0.0005	18	0.0283	17.67	6.89	0.36	PARTIAL FLOW
LAT E6.1	0+28.00	0+00.00	28	E6.1	1.74	0.6	1.04	1.04	15.00	100	7.52	7.83	0.0056	18	0.0281	17.61	9.69	0.70	PARTIAL FLOW
LAT E6.2	0+28.00	0+00.00	28	E6.2	1.74	0.6	1.04	1.04	15.00	100	7.52	7.83	0.0056	18	0.0688	27.54	13.46	0.55	PARTIAL FLOW
LINE F																			
LAT F2	4+36.00	3+50.00	86	F2	3.80	0.4	1.52	1.52	15.00	100	7.52	11.43	0.0052	21	0.0060	12.27	5.80	1.34	PARTIAL FLOW
	3+50.00	2+50.00	100			0.6	0.00	1.52	15.00	100	7.52	11.43	0.0052	21	0.0120	17.36	7.72	1.04	PARTIAL FLOW
	2+50.00	0+80.00	170			0.6	0.00	1.52	15.00	100	7.52	11.43	0.0052	21	0.0120	17.36	7.72	1.04	PARTIAL FLOW
	0+80.00	0+72.00	8			0.6	0.00	1.52	15.00	100	7.52	11.43	0.0052	21	0.0190	21.84	9.21	0.91	PARTIAL FLOW
LAT F1	0+72.00	0+00.00	72	F1	1.06	0.6	0.64	2.16	15.00	100	7.52	16.21	0.0105	21	0.0190	21.84	9.95	1.12	PARTIAL FLOW
LAT F1	0+28.00	0+00.00	28	F1	1.06	0.6	0.64	0.64	15.00	100	7.52	4.78	0.0021	18	0.0285	17.73	8.56	0.54	PARTIAL FLOW
LINE G																			
	27+99.00	27+96.00	3			0.6	0.00	0.00	15.00	100	7.52	0.00	0.0000	21	0.0118	17.21			
LAT G4.2	27+96.00	27+90.00	6	G4.2	1.89	0.6	1.13	1.13	15.00	100	7.52	8.53	0.0029	21	0.0118	17.21	7.16	0.88	PARTIAL FLOW
LAT G4.1	27+90.00	24+80.00	310	G4.1	1.89	0.6	1.13	2.27	15.00	100	7.52	17.06	0.0116	21	0.0118	17.21	8.16	1.43	PARTIAL FLOW
	24+80.00	23+76.00	104			0.6	0.00	2.27	15.00	100	7.52	17.06	0.0030	27	0.0050	21.90	6.10	1.50	PARTIAL FLOW
	23+76.00	23+73.00	3			0.6	0.00	2.27	15.00	100	7.52	17.06	0.0017	30	0.0050	29.00	6.15	1.38	PARTIAL FLOW
LAT G3.2	23+73.00	23+57.00	16	G3.2	1.25	0.6	0.75	3.02	15.00	100	7.52	22.70	0.0031	30	0.0050	29.00	6.54	1.67	PARTIAL FLOW
LAT G3.1	23+57.00	20+74.00	283	G3.1	1.25	0.6	0.75	3.77	15.00	100	7.52	28.34	0.0048	30	0.0050	29.00	6.73	2.00	PARTIAL FLOW
	20+74.00	20+71.00	3			0.6	0.00	3.77	15.00	100	7.52	28.34	0.0018	36	0.0050	47.16	6.99	1.68	PARTIAL FLOW
LAT G2.2	20+71.00	20+59.00	12	G2.2	1.04	0.6	0.62	4.39	15.00	100	7.52	33.01	0.0024	36	0.0050	47.16	7.22	1.85	PARTIAL FLOW
LAT G2.1	20+59.00	19+79.00	80	G2.1	1.04	0.6	0.62	5.01	15.00	100	7.52	37.68	0.0032	36	0.0050	47.16	7.42	2.04	PARTIAL FLOW
	19+79.00	16+91.00	288	LINE H	19.85	0.6	11.91	16.92	15.00	100	7.52	127.24	0.0048	4	0.0050	129.32	9.50	3.36	PARTIAL FLOW
LAT G2.1	0+28.00	0+00.00	28	G2.1	1.04	0.6	0.62	0.62	15.00	100	7.52	4.67	0.0020	18	0.1238	36.96	14.40	0.36	PARTIAL FLOW
LAT G2.2	0+08.00	0+00.00	8	G2.2	1.04	0.6	0.62	0.62	15.00	100	7.52	4.67	0.0020	18	0.0394	20.85	9.56	0.49	PARTIAL FLOW
LAT G3.1	0+28.00	0+00.00	28	G3.1	1.25	0.6	0.75	0.75	15.00	100	7.52	5.64	0.0029	18	0.0988	33.02	13.96	0.42	PARTIAL FLOW
LAT G3.2	0+08.00	0+00.00	8	G3.2	1.25	0.6	0.75	0.75	15.00	100	7.52	5.64	0.0029	18	0.0357	19.85	9.70	0.55	PARTIAL FLOW
LAT G4.1	0+28.00	0+00.00	28	G4.1	1.89	0.6	1.13	1.13	15.00	100	7.52	8.53	0.0066	18	0.0525	24.07	12.48	0.62	PARTIAL FLOW
LAT G4.2	0+08.00	0+00.00	8	G4.2	1.89	0.6	1.13	1.13	15.00	100	7.52	8.53	0.0066	18	0.0195	14.67	8.61	0.82	PARTIAL FLOW

STATE OF TEXAS
ROBERT M. STENGELE
50145
REGISTERED PROFESSIONAL ENGINEER
3-16-15

Huitt-Zollars, Inc.
Firm Registration No. F-761

RECORD DRAWING

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DRAINAGE DATA
STORM SEWER CALCULATIONS

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		NA		01-3905-40	05-05

i:/proj/01390501/01390540 Parcel 1&2/08-DesignCAD/DGN/phidrcalc04.dgn

Line or Lateral Name	RUNOFF COLLECTION POINT (Inlet or Manhole)		Distance Between Collection Points (ft)	INCREMENTAL DRAINAGE AREA				Accum-ulated "CA"	Time at Upstream Station (minutes)	Design Storm Frequency (yrs)	Intensity "I" (inches/hr)	Storm Water Runoff "Q" (c.f.s.)	Slope of Hydraulic Gradient "S" (ft/ft)	Selected Storm Sewer Size	Slope of Storm Pipe (ft/ft)	Pipe Capacity (c.f.s.)	Velocity in Sewer Between Collection Points "V" (f.p.s.)	Depth of Flow In Pipe "Dp" (ft.)	Remarks
	Upstream Station	Downstream Station		Area No.	Drainage Area "A" (Acres)	Runoff Coeff. "C"	Incremental "CA"												
	1	2	3	4	5	6	7	8	9	10	11.00	12.00	13	14			15		20
LINE K																			
	3+89.00	3+86.00	3			0.6	0.00	0.00	15.00	100	7.52	0.00	0.0000	18	0.0068	8.66			
LAT K3.2	3+86.00	3+76.00	10	K3.2	1.75	0.6	1.05	1.05	15.00	100	7.52	7.90	0.0057	18	0.0068	8.66	5.56	1.13	PARTIAL FLOW
	3+76.00	3+73.00	3			0.6	0.00	1.05	15.00	100	7.52	7.90	0.0012	24	0.0068	18.65	5.70	0.91	PARTIAL FLOW
LAT K3.1	3+73.00	3+44.00	29	K3.1	1.75	0.6	1.05	2.10	15.00	100	7.52	15.79	0.0049	24	0.0068	18.65	6.66	1.41	PARTIAL FLOW
	3+44.00	0+60.00	284	LINE L	4.79	0.6	2.87	4.97	15.00	100	7.52	37.40	0.0083	30	0.0084	37.59	8.73	2.03	PARTIAL FLOW
	0+60.00	0+54.00	6			0.6	0.00	4.97	15.00	100	7.52	37.40	0.0083	30	0.0124	45.67	10.39	1.73	PARTIAL FLOW
LAT K2	0+54.00	0+45.00	9	K2	0.81	0.6	0.49	5.46	15.00	100	7.52	41.06	0.0100	30	0.0124	45.67	10.57	1.86	PARTIAL FLOW
LAT K1	0+45.00	0+00.00	45	K1	0.75	0.6	0.45	5.91	15.00	100	7.52	44.44	0.0117	30	0.0124	45.67	10.60	1.99	PARTIAL FLOW
LAT K1	0+28.00	0+00.00	28	K1	0.75	0.6	0.45	0.45	15.00	100	7.52	3.38	0.0010	18	0.0531	24.21	9.68	0.38	PARTIAL FLOW
LAT K2	0+08.00	0+00.00	8	K2	0.81	0.6	0.49	0.49	15.00	100	7.52	3.65	0.0012	18	0.1700	43.31	15.04	0.30	PARTIAL FLOW
LAT K3.1	0+28.00	0+00.00	28	K3.1	1.75	0.6	1.05	1.05	15.00	100	7.52	7.90	0.0057	18	0.0243	16.37	9.23	0.74	PARTIAL FLOW
LAT K3.2	0+08.00	0+00.00	8	K3.2	1.75	0.6	1.05	1.05	15.00	100	7.52	7.90	0.0057	18	0.0463	22.59	11.66	0.61	PARTIAL FLOW
LINE L																			
	2+89.00	2+86.00	3			0.6	0.00	0.00	15.00	100	7.52	0.00	0.0000	18	0.0060	8.14			
	2+86.00	0+63.00	223	LINE M	1.75	0.6	1.05	1.05	15.00	100	7.52	7.90	0.0057	18	0.0060	8.14	5.25	1.20	PARTIAL FLOW
	0+63.00	0+60.00	3			0.6	0.00	1.05	15.00	100	7.52	7.90	0.0006	27	0.0060	23.99	5.42	0.89	PARTIAL FLOW
LAT L1.2	0+60.00	0+50.00	10	L1.2	1.52	0.6	0.91	1.96	15.00	100	7.52	14.75	0.0023	27	0.0060	23.99	6.35	1.28	PARTIAL FLOW
LAT L1.1	0+50.00	0+08.00	42	L1.1	1.52	0.6	0.91	2.87	15.00	100	7.52	21.61	0.0049	27	0.0060	23.99	6.83	1.67	PARTIAL FLOW
LAT L1.1	0+28.00	0+00.00	28	L1.1	1.52	0.6	0.91	0.91	15.00	100	7.52	6.86	0.0043	18	0.0426	21.68	10.90	0.58	PARTIAL FLOW
LAT L1.2	0+08.00	0+00.00	8	L1.2	1.52	0.6	0.91	0.91	15.00	100	7.52	6.86	0.0043	18	0.1013	33.42	14.92	0.46	PARTIAL FLOW
LINE M																			
	2+77.00	2+74.00	3			0.6	0.00	0.00	15.00	100	7.52	0.00	0.0000	18	0.0080	9.40			
LAT M2	2+74.00	2+64.00	10	M2	0.85	0.6	0.51	0.51	15.00	100	7.52	3.84	0.0013	18	0.0080	9.40	5.06	0.67	PARTIAL FLOW
LAT M1	2+64.00	2+00.00	64	M1	0.90	0.6	0.54	1.05	15.00	100	7.52	7.90	0.0057	18	0.0080	9.40	5.96	1.05	PARTIAL FLOW
	2+00.00	0+50.00	150			0.6	0.00	1.05	15.00	100	7.52	7.90	0.0057	18	0.0080	9.40	5.96	1.05	PARTIAL FLOW
	0+50.00	0+00.00	50			0.6	0.00	1.05	15.00	100	7.52	7.90	0.0057	18	0.0250	16.61	9.29	0.73	PARTIAL FLOW
LAT M1	0+28.00	0+00.00	28	M1	0.90	0.6	0.54	0.54	15.00	100	7.52	4.06	0.0015	18	0.0217	15.47	7.38	0.52	PARTIAL FLOW
LAT M2	0+08.00	0+00.00	8	M2	0.85	0.6	0.51	0.51	15.00	100	7.52	3.84	0.0013	18	0.0650	26.78	10.80	0.39	PARTIAL FLOW

STATE OF TEXAS
ROBERT M. STENGELE
50145
REGISTERED
PROFESSIONAL ENGINEER

3-16-15

Huitt-Zollars, Inc.
Firm Registration No. F-761

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DRAINAGE DATA
STORM SEWER CALCULATIONS

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		NA		01-3905-40	05-06

i:/proj/01390501/01390540 Parcel 1&2/08-DesignCAD/DGN/phldrcalc04.dgn

INLET		DESIGN STORM FREQUENCY (yr)	AREA RUNOFF Q=CIA					CARRY-OVER FROM UPSTREAM INLET (cfs)	TOTAL GUTTER FLOW (cfs)	GUTTER CAPACITY (cfs)	GUTTER SLOPE (ft/100 ft)	CROWN TYPE	SELECTED INLET		CARRY-OVER TO DOWNSTREAM INLET (cfs)
NO.	LOCATION (PAVING STATION)		TIME OF CONC. (min)	INTENSITY I (in/hr)	RUNOFF COEFF. "C"	AREA (ac)	"Q" (cfs)						LENGTH "Li" (feet)	TYPE	
1	2	3	4	5	6	7	8	9.0	10	11	12	13	14	15	16
A2	58+18.00 CYPRESS CREEK WAY	100	15	7.52	0.60	0.92	4.2	0.0	4.2	18.98	0.005	STRAIGHT GRADE	10	ON GRADE	0.0
A3	59+04.00 CYPRESS CREEK WAY	100	15	7.52	0.60	0.89	4.0	0.0	4.0	18.98	0.005	STRAIGHT GRADE	10	ON GRADE	0.0
A4	63+98.00 CYPRESS CREEK WAY	100	15	7.52	0.60	0.52	2.3		2.3	18.98	0.005	STRAIGHT GRADE	8	ON GRADE	0.0
B2	0+00.00 SMOKEBRUSH STREET	100	15	7.52	0.60	2.80	12.6		12.6	N/A	N/A	5" PARABOLIC	10	SAG	0.0
B3.1	6+39.00 SMOKEBRUSH STREET	100	15	7.52	0.60	1.57	7.1		7.1	15.44	0.0128	5" PARABOLIC	10	ON GRADE	0.0
B3.2	6+68.00 SMOKEBRUSH STREET	100	15	7.52	0.60	1.57	7.1		7.1	15.44	0.0128	5" PARABOLIC	10	ON GRADE	0.0
B4	2+41.00 STARLIGHT CREEK DRIVE	100	15	7.52	0.60	0.80	3.6		3.6	10.57	0.006	5" PARABOLIC	8	ON GRADE	0.0
C2.1	12+46.00 ALLBRIGHT ROAD	100	15	7.52	0.60	1.10	4.9	0.0	4.9	10.92	0.0064	5" PARABOLIC	8	ON GRADE	0.0
C2.2	12+63.00 ALLBRIGHT ROAD	100	15	7.52	0.60	1.10	4.9	0.0	4.9	10.92	0.0064	5" PARABOLIC	8	ON GRADE	0.0
C3.1	15+98.00 ALLBRIGHT ROAD	100	15	7.52	0.60	1.14	5.1	0.0	5.1	10.92	0.0064	5" PARABOLIC	10	ON GRADE	0.0
C3.2	15+99.00 ALLBRIGHT ROAD	100	15	7.52	0.60	1.14	5.1	0.0	5.1	10.92	0.0064	5" PARABOLIC	10	ON GRADE	0.0
C4	4+71.00 CHIMNEY RUN ROAD	100	15	7.52	0.60	1.12	5.1	0.0	5.1	15.44	0.0128	5" PARABOLIC	10	ON GRADE	0.0
C5.1	19+66.00 ALLBRIGHT ROAD	100	15	7.52	0.60	1.43	6.4		6.4	16.60	0.0148	5" PARABOLIC	10	ON GRADE	0.0
C5.2	19+66.00 ALLBRIGHT ROAD	100	15	7.52	0.60	1.43	6.4		6.4	16.60	0.0148	5" PARABOLIC	10	ON GRADE	0.0
D1	0+00.00 STABLEFORD STREET	100	15	7.52	0.60	2.52	11.4	0.0	11.4	N/A	N/A	5" PARABOLIC	10	SAG	0.0
D3	3+32.00 STABLEFORD STREET	100	15	7.52	0.60	0.71	3.2		3.2	13.65	0.01	5" PARABOLIC	10	ON GRADE	0.0
D4	6+05.00 STABLEFORD STREET	100	15	7.52	0.60	1.06	4.8	0.0	4.8	16.60	0.0148	5" PARABOLIC	10	ON GRADE	0.0
D5	6+43.00 STABLEFORD STREET	100	15	7.52	0.60	1.15	5.2	0.0	5.2	16.60	0.0148	5" PARABOLIC	10	ON GRADE	0.0
D6	9+51.00 STABLEFORD STREET	100	15	7.52	0.60	1.05	4.7	0.0	4.7	16.60	0.0148	5" PARABOLIC	8	ON GRADE	0.0
D7	9+71.00 STABLEFORD STREET	100	15	7.52	0.60	0.94	4.2		4.2	16.60	0.0148	5" PARABOLIC	8	ON GRADE	0.0
E1	63+96.00 CYPRESS CREEK WAY	100	15	7.52	0.60	0.92	4.2		4.2	18.98	0.005	STRAIGHT GRADE	10	ON GRADE	0.0
E2	3+42.00 BARNSTORM DRIVE	100	15	7.52	0.60	0.88	4.0	0.0	4.0	16.60	0.0148	5" PARABOLIC	10	ON GRADE	0.0
E3	3+41.00 BARNSTORM DRIVE	100	15	7.52	0.60	0.73	3.3	0.0	3.3	16.60	0.0148	5" PARABOLIC	8	ON GRADE	0.0
E4	5+83.00 BARNSTORM DRIVE	100	15	7.52	0.60	1.03	4.6	0.3	4.9	16.60	0.0148	5" PARABOLIC	10	ON GRADE	0.0
E5	9+05.00 BARNSTORM DRIVE	100	15	7.52	0.60	0.50	2.3	0.3	2.5	16.60	0.0148	5" PARABOLIC	8	ON GRADE	0.0
E6.1	9+00.00 BARNSTORM DRIVE	100	15	7.52	0.60	1.74	7.8		7.8	16.60	0.0148	5" PARABOLIC	10	ON GRADE	0.3
E6.2	8+93.00 BARNSTORM DRIVE	100	15	7.52	0.60	1.74	7.8		7.8	16.60	0.0148	5" PARABOLIC	10	ON GRADE	0.3
F1	3+35.00 PAINTBRUSH TRAIL	100	15	7.52	0.60	1.06	4.8		4.8	14.95	0.012	5" PARABOLIC	10	ON GRADE	0.0
G2.1	4+66.00 SWITCHGRASS STREET	100	15	7.52	0.60	1.04	4.7	0.0	4.7	9.65	0.005	5" PARABOLIC	10	ON GRADE	0.0
G2.2	4+87.00 SWITCHGRASS STREET	100	15	7.52	0.60	1.04	4.7	0.0	4.7	9.65	0.005	5" PARABOLIC	10	ON GRADE	0.0
G3.1	7+63.00 SWITCHGRASS STREET	100	15	7.52	0.60	1.25	5.6	0.0	5.6	10.03	0.0054	5" PARABOLIC	10	ON GRADE	0.0
G3.2	7+87.00 SWITCHGRASS STREET	100	15	7.52	0.60	1.25	5.6	0.0	5.6	10.03	0.0054	5" PARABOLIC	10	ON GRADE	0.0
G4.1	11+93.00 SWITCHGRASS STREET	100	15	7.52	0.60	1.89	8.5		8.5	13.65	0.01	5" PARABOLIC	10	ON GRADE	0.0
G4.2	12+05.00 SWITCHGRASS STREET	100	15	7.52	0.60	1.89	8.5		8.5	13.65	0.01	5" PARABOLIC	10	ON GRADE	0.0
H1.1	1+06.00 ALLBRIGHT ROAD	100	15	7.52	0.60	1.00	4.5	0.0	4.5	9.65	0.005	5" PARABOLIC	10	ON GRADE	0.0
H1.2	1+06.00 ALLBRIGHT ROAD	100	15	7.52	0.60	1.00	4.5	0.0	4.5	9.65	0.005	5" PARABOLIC	10	ON GRADE	0.0
H2	3+96.00 ALLBRIGHT ROAD	100	15	7.52	0.60	0.62	2.8	0.0	2.8	9.65	0.005	5" PARABOLIC	10	ON GRADE	0.0
H3	5+39.20 ALLBRIGHT ROAD	100	15	7.52	0.60	0.66	3.0	0.0	3.0	12.51	0.0084	5" PARABOLIC	10	ON GRADE	0.0
H4.1	7+41.00 ALLBRIGHT ROAD	100	15	7.52	0.60	1.17	5.28	0.0	5.3	12.51	0.0084	5" PARABOLIC	10	ON GRADE	0.0
H4.2	7+41.00 ALLBRIGHT ROAD	100	15	7.52	0.60	1.17	5.28	0.0	5.3	12.51	0.0084	5" PARABOLIC	10	ON GRADE	0.0
J1.1	6+77.00 OVERBROOK DRIVE	100	15	7.52	0.60	1.07	4.8	0.0	4.8	12.21	0.008	5" PARABOLIC	10	ON GRADE	0.0
J1.2	6+77.00 OVERBROOK DRIVE	100	15	7.52	0.60	1.07	4.8	0.0	4.8	12.21	0.008	5" PARABOLIC	10	ON GRADE	0.0
J2.1	4+58.00 OVERBROOK DRIVE	100	15	7.52	0.60	1.13	5.1		5.1	12.21	0.008	5" PARABOLIC	10	ON GRADE	0.0
J2.2	4+58.00 OVERBROOK DRIVE	100	15	7.52	0.60	1.13	5.1		5.1	12.21	0.008	5" PARABOLIC	10	ON GRADE	0.0
K1	8+52.00 DASHLAND DRIVE	100	15	7.52	0.60	0.75	3.4	0.0	3.4	11.25	0.0068	5" PARABOLIC	10	ON GRADE	0.0
K2	8+52.00 DASHLAND DRIVE	100	15	7.52	0.60	0.81	3.7	0.0	3.7	11.25	0.0068	5" PARABOLIC	10	ON GRADE	0.0
K3.1	5+16.00 DASHLAND DRIVE	100	15	7.52	0.60	1.75	7.9		7.9	11.25	0.0068	5" PARABOLIC	10	ON GRADE	0.0
K3.2	5+16.00 DASHLAND DRIVE	100	15	7.52	0.60	1.75	7.9		7.9	11.25	0.0068	5" PARABOLIC	10	ON GRADE	0.0
L1.1	0+56.00 RIDGELAND RUN	100	15	7.52	0.60	1.52	6.9	0.0	6.9	10.57	0.006	5" PARABOLIC	10	ON GRADE	0.0
L1.2	0+56.00 RIDGELAND RUN	100	15	7.52	0.60	1.52	6.9	0.0	6.9	10.57	0.006	5" PARABOLIC	10	ON GRADE	0.0
M1	5+79.00 HAZELTINE HILLS DRIVE	100	15	7.52	0.60	0.90	4.1		4.1	12.21	0.008	5" PARABOLIC	10	ON GRADE	0.0
M2	5+79.00 HAZELTINE HILLS DRIVE	100	15	7.52	0.60	0.85	3.8		3.8	12.21	0.008	5" PARABOLIC	10	ON GRADE	0.0
	PRIVATE' GRATE AREA DRAINS (HOA Maintained)														
A1		100	15	7.52	0.60	0.35	1.6	0.0	1.6	NA	NA	NA	2x2	SAG	0.0
A5		100	15	7.52	0.60	0.53	2.4	0.0	2.4	NA	NA	NA	2x2	SAG	0.0
B1		100	15	7.52	0.60	0.48	2.2	0.0	2.2	NA	NA	NA	2x2	SAG	0.0
C1		100	15	7.52	0.60	0.55	2.5	0.0	2.5	NA	NA	NA	2x2	SAG	0.0
D2		100	15	7.52	0.60	0.56	2.5	0.0	2.5	NA	NA	NA	2x2	SAG	0.0

STATE OF TEXAS
ROBERT M. STENGELE
50145
REGISTERED PROFESSIONAL ENGINEER
3-16-15

Huitt-Zollars, Inc.
Firm Registration No. F-761

RECORD DRAWING

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DRAINAGE DATA
INLET DESIGN

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		NA		01-3905-40	05-07

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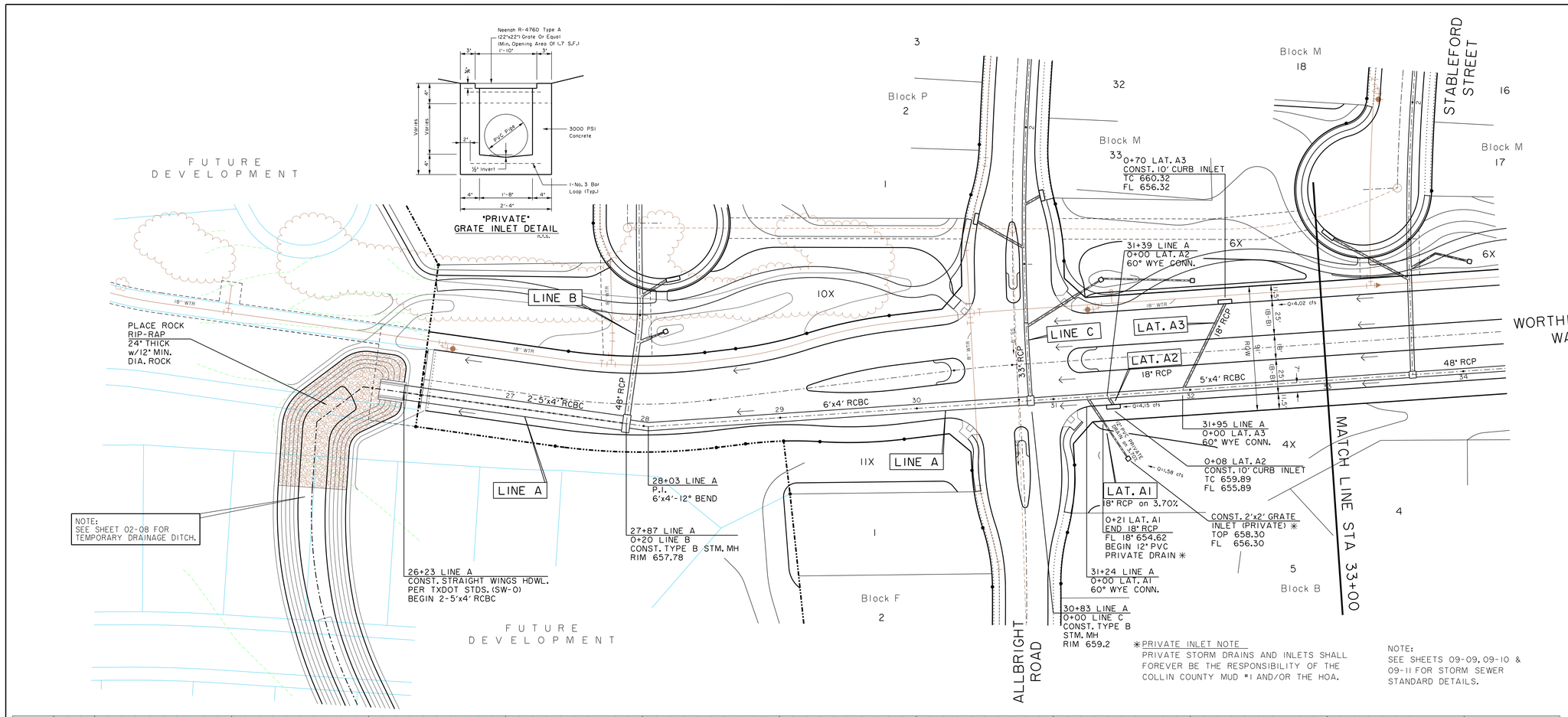
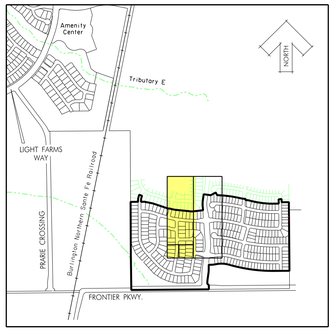




KEY MAP
NTS

SCALE IN FEET

LEGEND

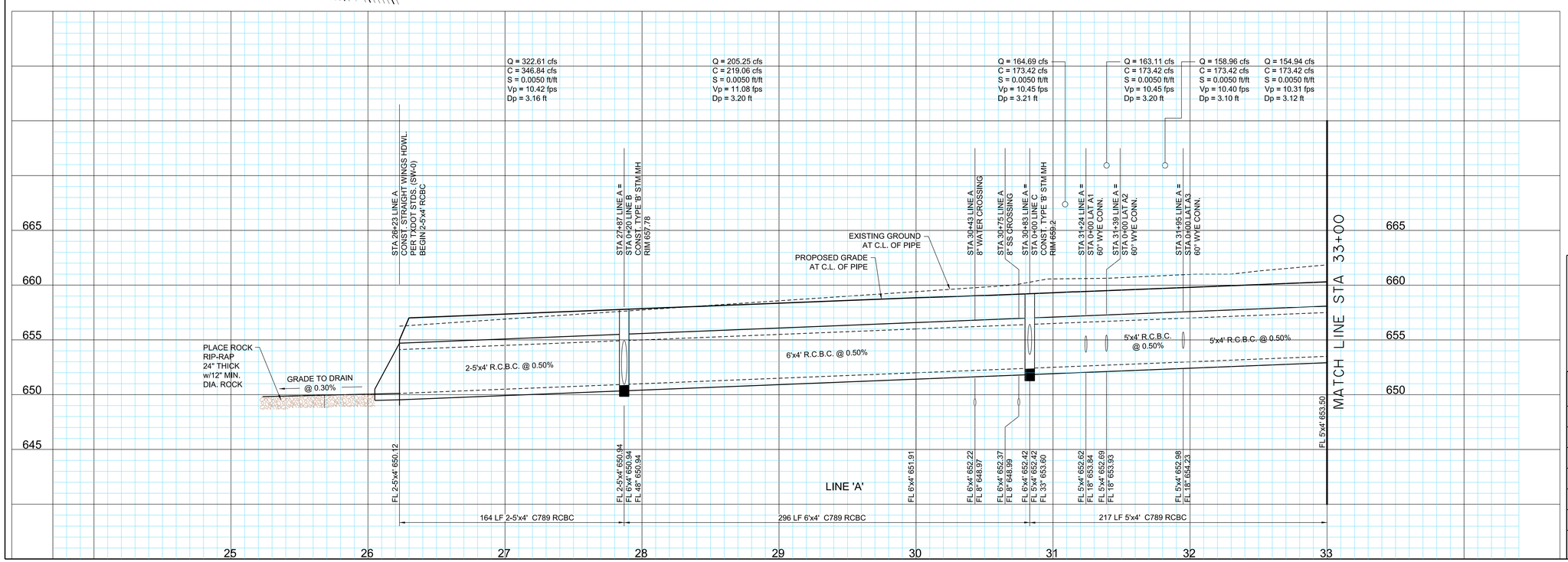
- PROPOSED STORM SEWER (RCP)
- EXISTING STORM SEWER (RCP)
- PROPOSED STORM INLET
- EXISTING STORM INLET
- PROPOSED STORM MANHOLE
- EXISTING STORM MANHOLE
- SURFACE FLOW DIRECTION

BENCHMARKS:

BM #5
Square cut on top concrete headwall, 5' west of edge of pavement of Frontier Parkway, 56 feet south of centerline of County Road No. 5, 485 feet east of centerline County Road No. 51.

N=7147548.47
E=2488493.86
Elev. = 652.94

BM #8
Square cut northeast corner of concrete headwall, north side of County Road 5, 1200 feet +- east of the intersection of County Road 5 and Frontier Parkway.
Elev. = 662.56



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50145
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3-16-15

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Firm Registration No. F-761

STORM SEWER PLAN & PROFILE
LINE A

LIGHT FARMS

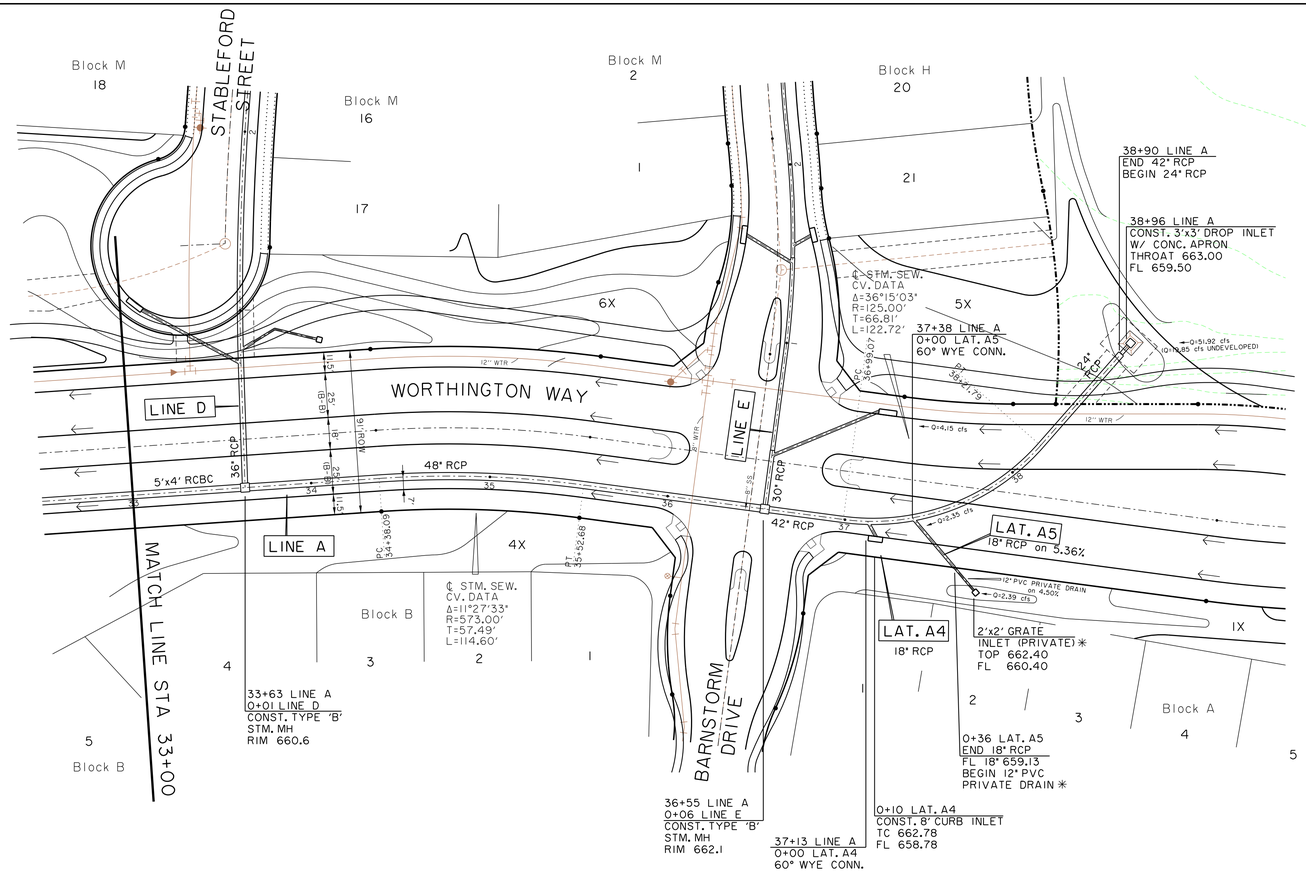
LFC Land Company LLC

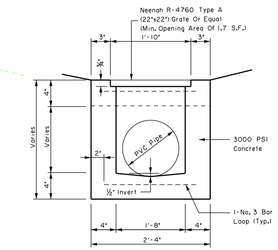
Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

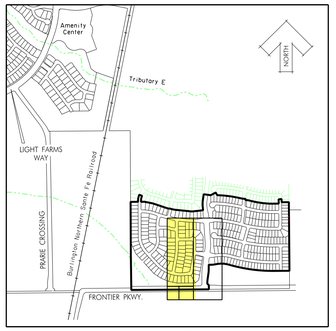
HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		H: 1"=40' V: 1"= 5'		01-3905-40	06-01

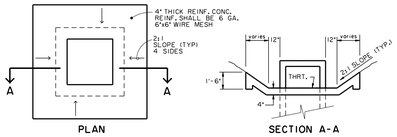




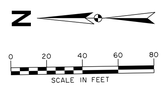
"PRIVATE" GRATE INLET DETAIL
n.t.s.



KEY MAP
NTS



CONC. APRON DETAIL
(NTS)



✳ PRIVATE INLET NOTE
PRIVATE STORM DRAINS AND INLETS SHALL FOREVER BE THE RESPONSIBILITY OF THE COLLIN COUNTY MUD #1 AND/OR THE HOA.

LEGEND

═══	PROPOSED STORM SEWER (RCP)
═══	EXISTING STORM SEWER (RCP)
▭	PROPOSED STORM INLET
▭	EXISTING STORM INLET
○	PROPOSED STORM MANHOLE
○	EXISTING STORM MANHOLE
→	SURFACE FLOW DIRECTION

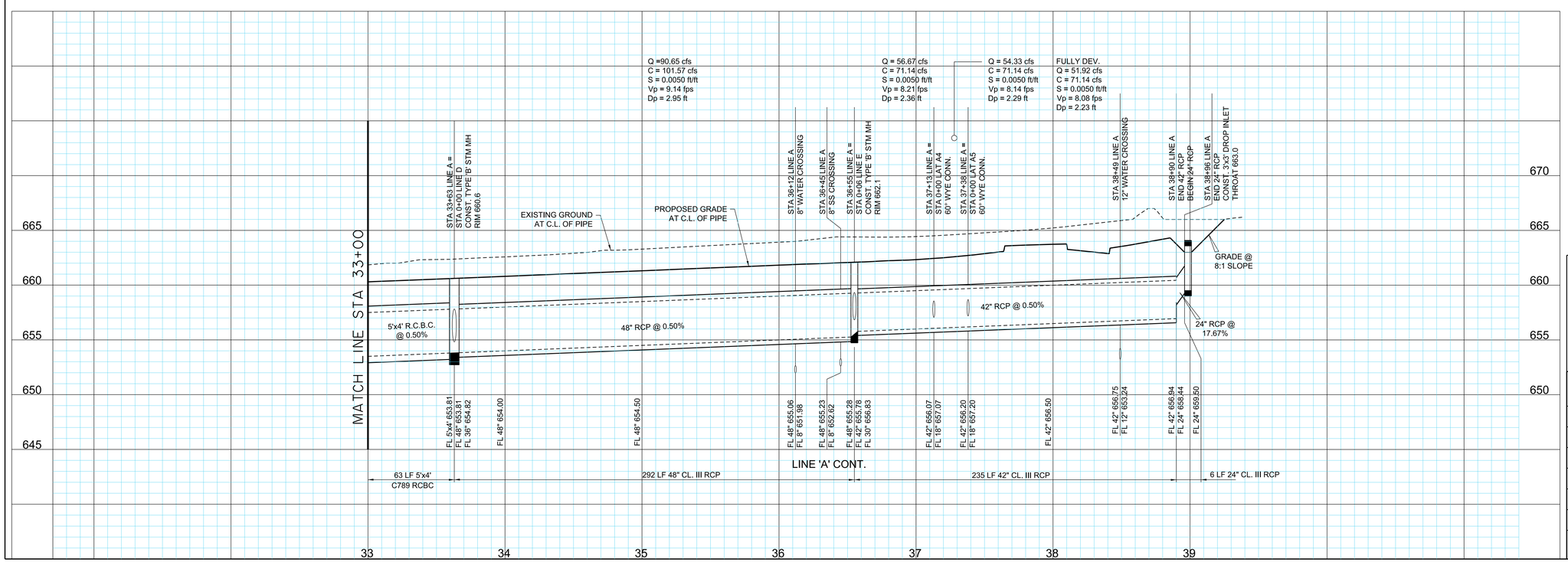
NOTE:
SEE SHEETS 09-09, 09-10 & 09-11 FOR STORM SEWER STANDARD DETAILS.

BENCHMARKS:

BM #5
Square cut on top concrete headwall, 5' west of edge of pavement of Frontier Parkway, 56 feet south of centerline of County Road No. 5, 485 feet east of centerline County Road No. 51.

N=7147548.47
E=2488493.86
Elev. = 652.94

BM #8
Square cut northeast corner of concrete headwall, north side of County Road 5, 1200 feet +- east of the intersection of County Road 5 and Frontier Parkway.
Elev. = 662.56



STATE OF TEXAS
ROBERT M. STENGELE
50145
REGISTERED PROFESSIONAL ENGINEER
3-16-15

Huitt-Zollars, Inc.
Firm Registration No. F-761

RECORD DRAWING

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STORM SEWER PLAN & PROFILE
LINE A (Cont.)

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		H: 1"=40' V: 1"= 5'		01-3905-40	06-02

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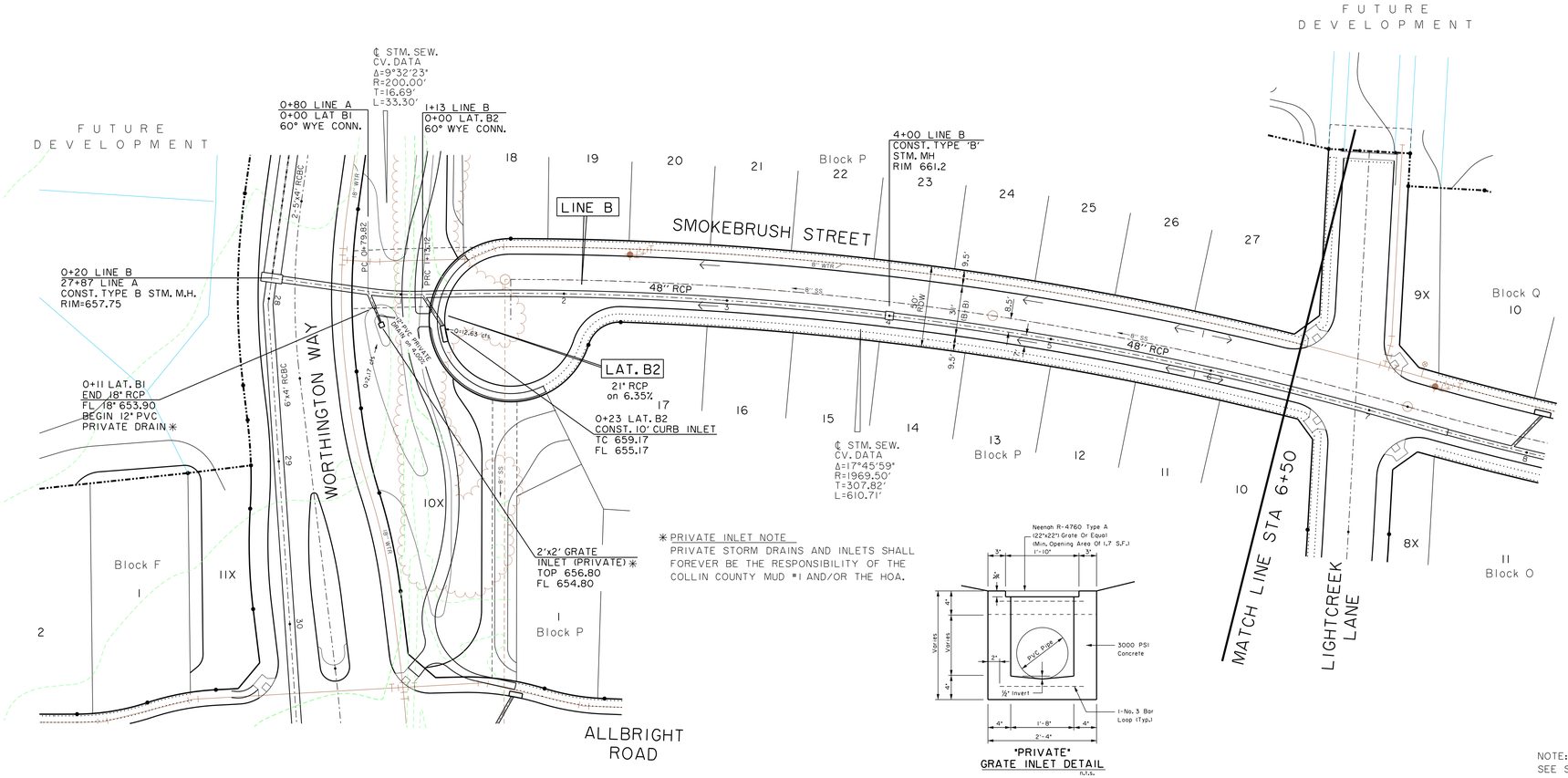
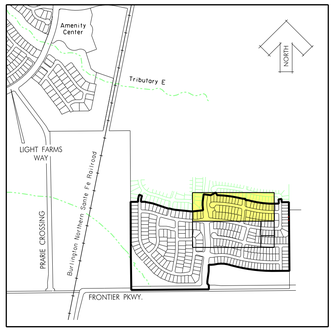


"PRIVATE" GRATE INLET DETAIL
N.T.S.



KEY MAP
NTS

SCALE IN FEET

NOTE:
SEE SHEETS 09-09, 09-10 & 09-11 FOR STORM SEWER STANDARD DETAILS.

LEGEND

- PROPOSED STORM SEWER (RCP)
- EXISTING STORM SEWER (RCP)
- PROPOSED STORM INLET
- EXISTING STORM INLET
- PROPOSED STORM MANHOLE
- EXISTING STORM MANHOLE
- SURFACE FLOW DIRECTION

BENCHMARKS:

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Square cut on top concrete headwall, 5' west of edge of pavement of Frontier Parkway, 56 feet south of centerline of County Road No. 5, 485 feet east of centerline County Road No. 51.

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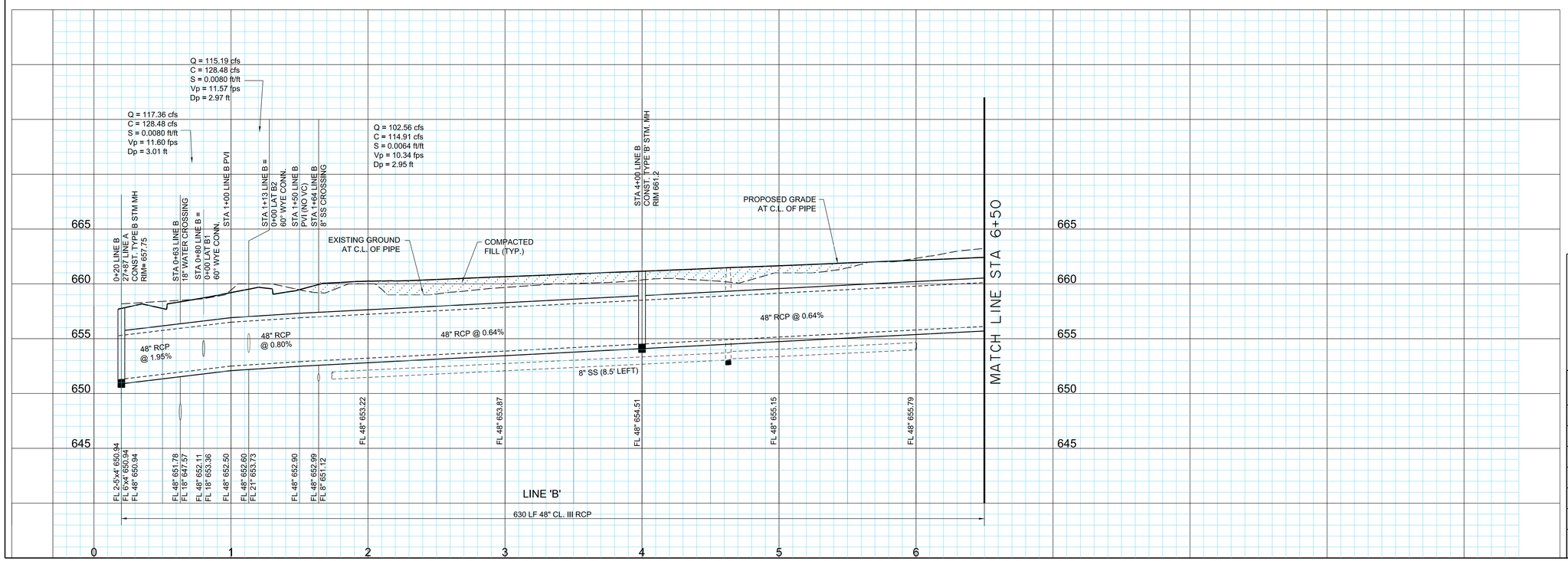

STATE OF TEXAS
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50145
REGISTERED PROFESSIONAL ENGINEER
3-16-15

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STORM SEWER PLAN & PROFILE
LINE B

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		H: 1"=40' V: 1"=5'		01-3905-40	06-03

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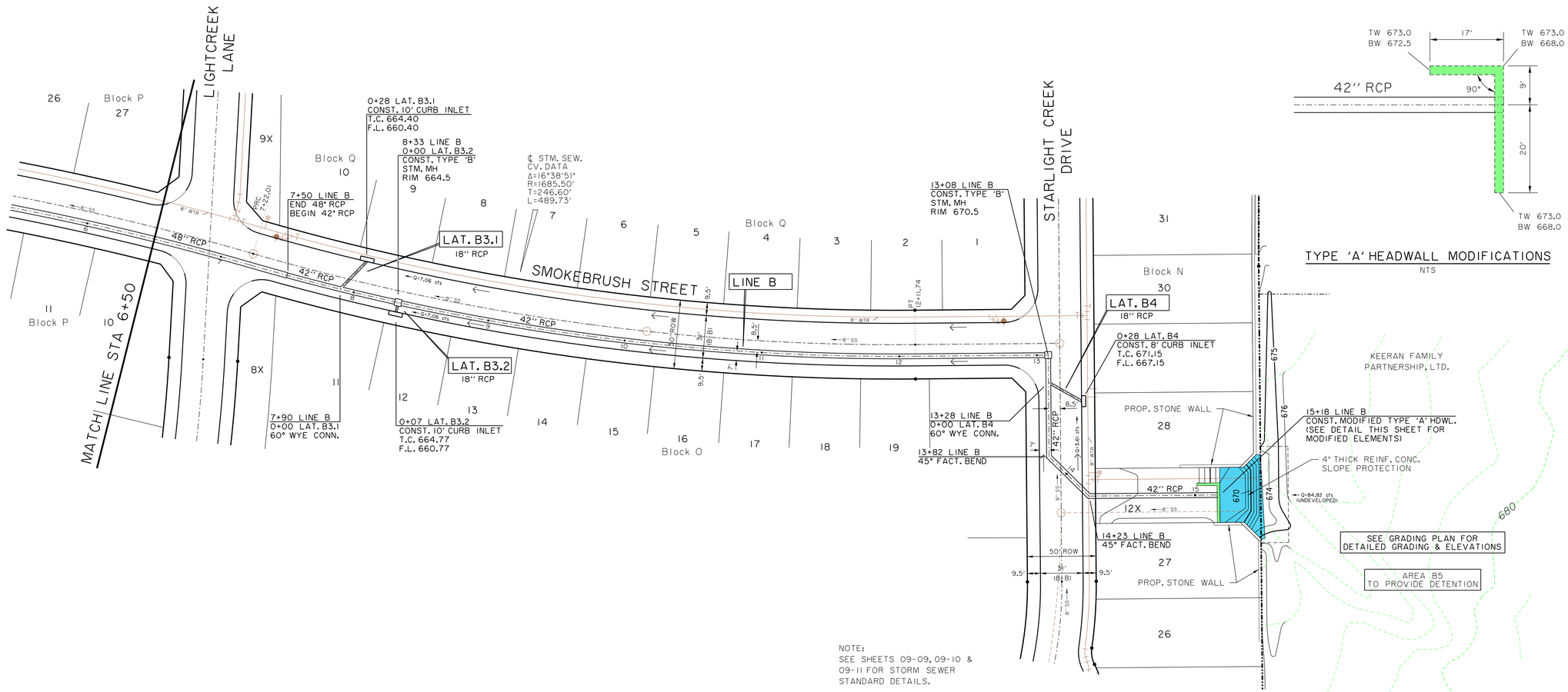

NOTE:
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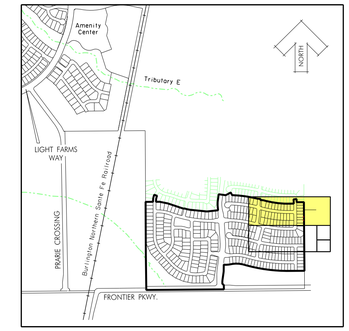
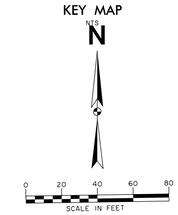
TYPE 'A' HEADWALL MODIFICATIONS
NTS



KEY MAP
NTS



LEGEND

- PROPOSED STORM SEWER (RCP)
- EXISTING STORM SEWER (RCP)
- PROPOSED STORM INLET
- EXISTING STORM INLET
- PROPOSED STORM MANHOLE
- EXISTING STORM MANHOLE
- SURFACE FLOW DIRECTION

BENCHMARKS:

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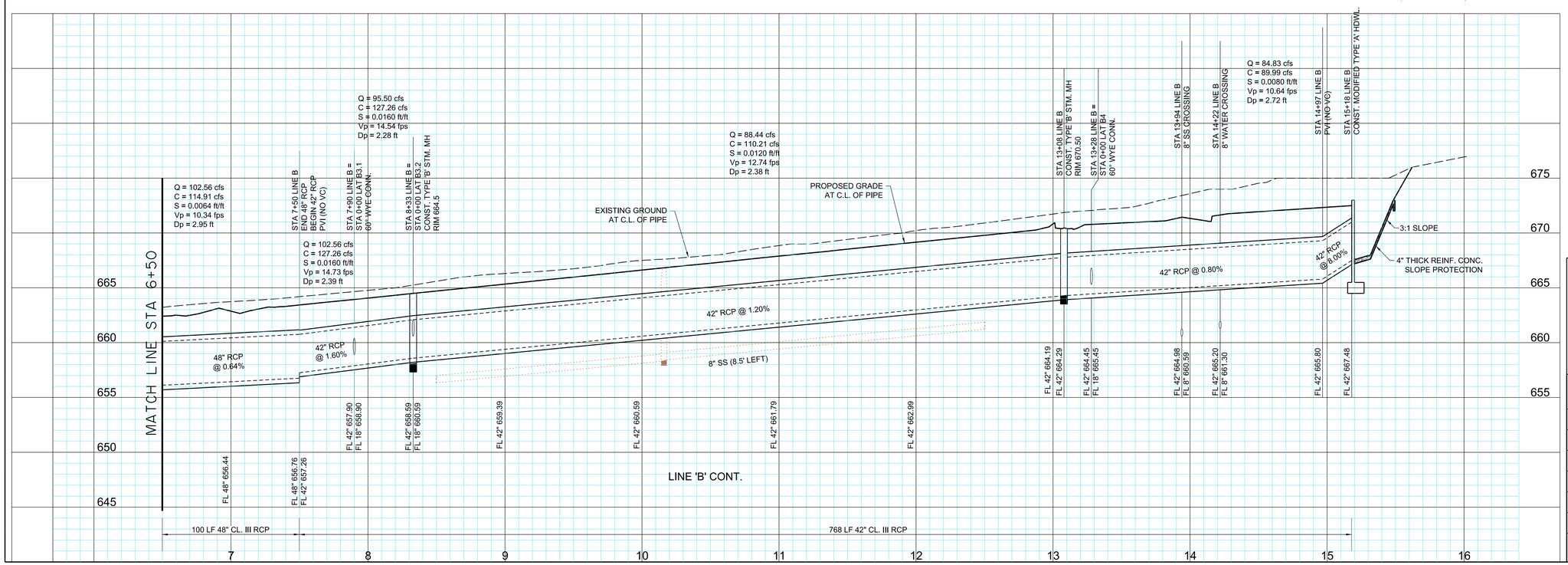

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3-16-15

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STORM SEWER PLAN & PROFILE
LINE B (CONT.)

LIGHT FARMS
LFC Land Company LLC
Collin County Municipal Utility District No. 1
COLLIN COUNTY, TEXAS
HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		H: 1"=40' V: 1"=5'		01-3905-40	06-04

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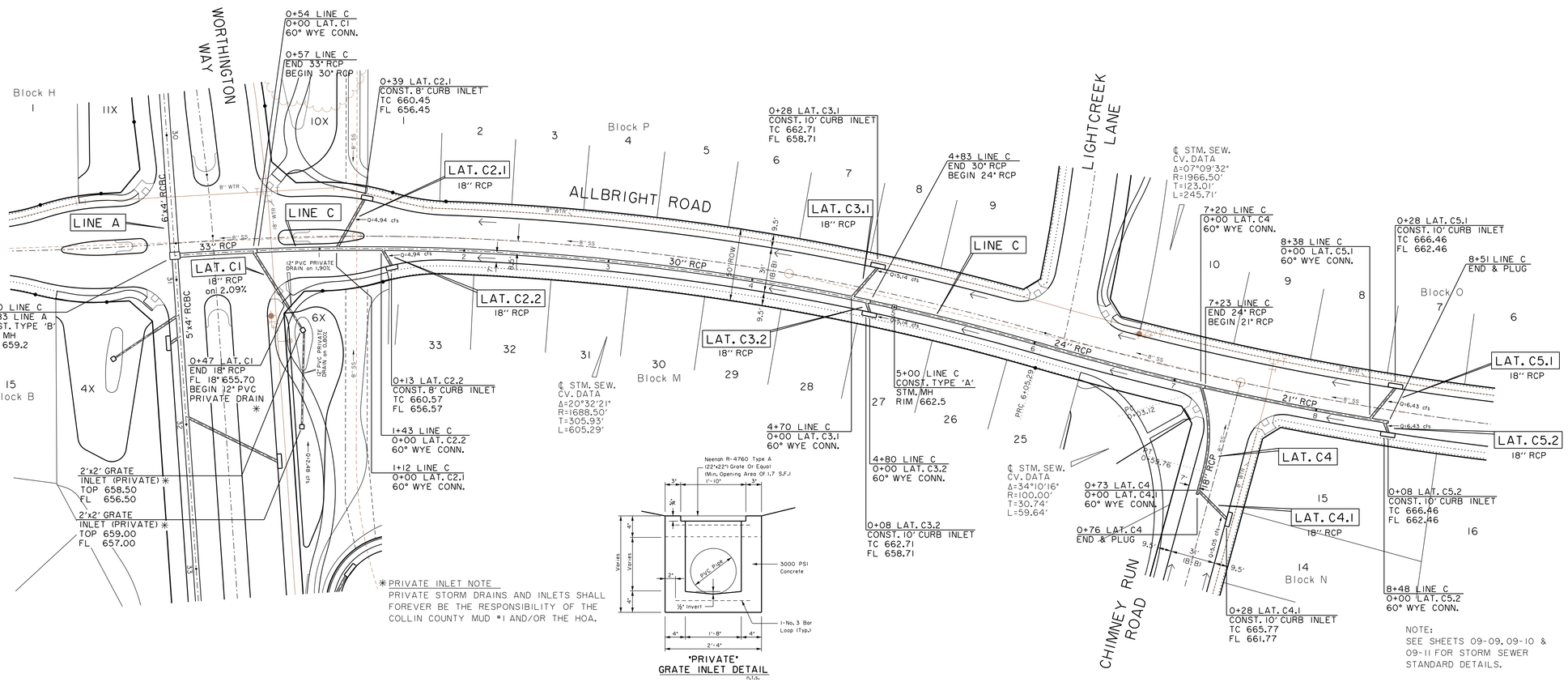

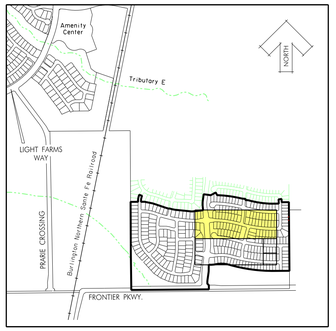

KEY MAP

NTS

N

0 20 40 60 80

SCALE IN FEET

LEGEND

	PROPOSED STORM SEWER (RCP)
	EXISTING STORM SEWER (RCP)
	PROPOSED STORM INLET
	EXISTING STORM INLET
	PROPOSED STORM MANHOLE
	EXISTING STORM MANHOLE
	SURFACE FLOW DIRECTION

BENCHMARKS:

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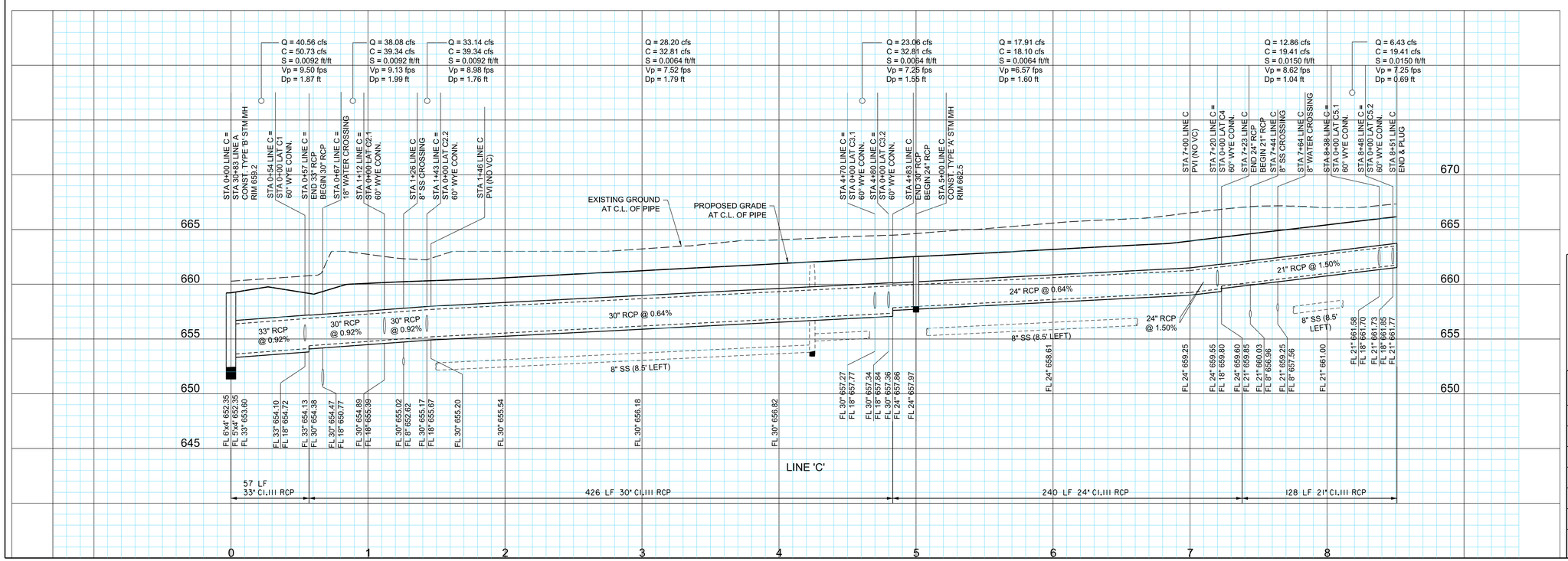

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STATE OF TEXAS
3-16-15

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STORM SEWER PLAN & PROFILE
LINE C

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		H: 1"=40' V: 1"=5'		01-3905-40	06-05

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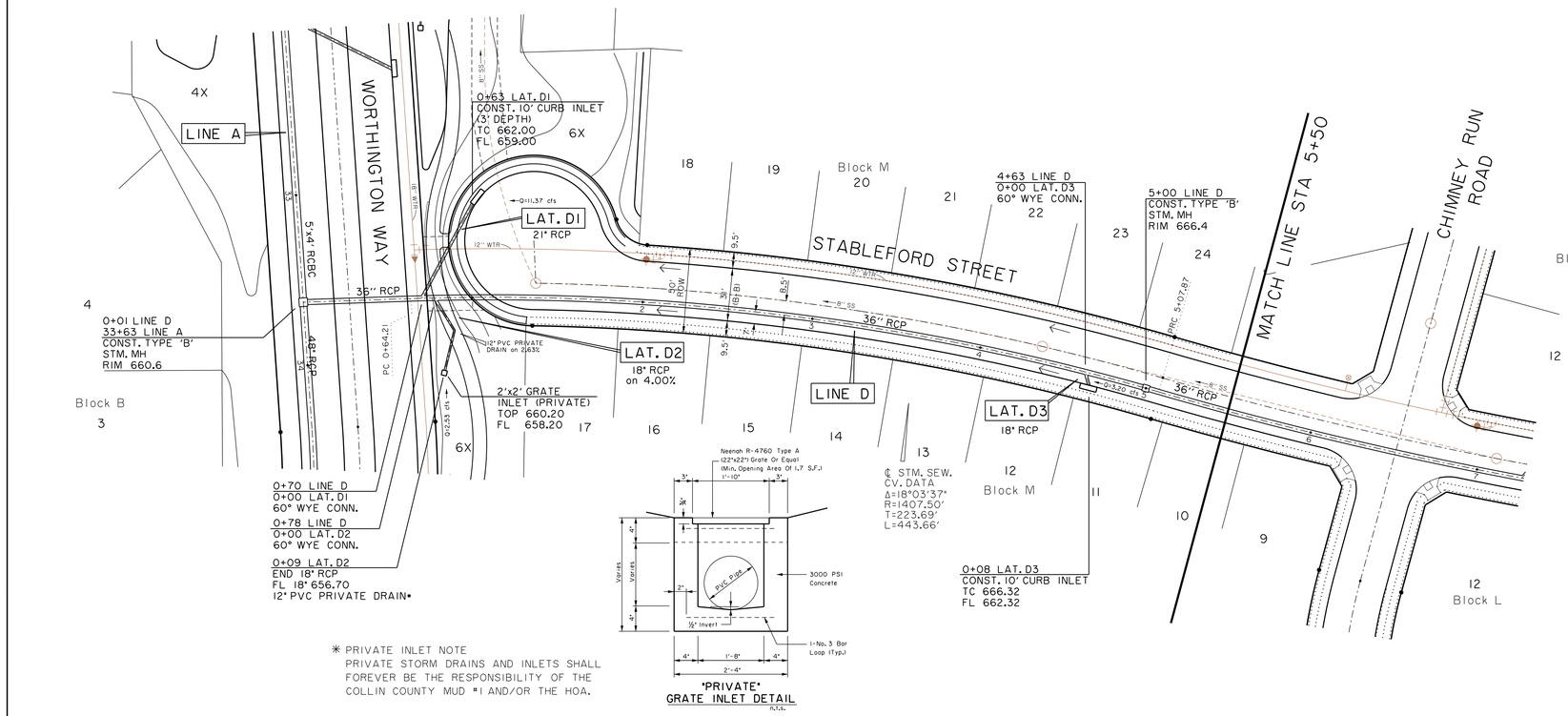

* PRIVATE INLET NOTE
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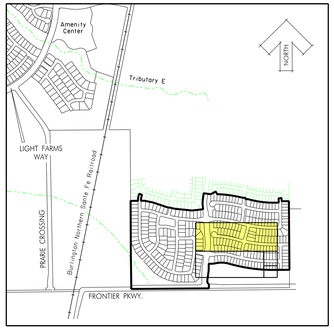

KEY MAP

NTS

N

0 20 40 60 80
SCALE IN FEET

NOTE:
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LEGEND

	PROPOSED STORM SEWER (RCP)
	EXISTING STORM SEWER (RCP)
	PROPOSED STORM INLET
	EXISTING STORM INLET
	PROPOSED STORM MANHOLE
	EXISTING STORM MANHOLE
	SURFACE FLOW DIRECTION

BENCHMARKS:

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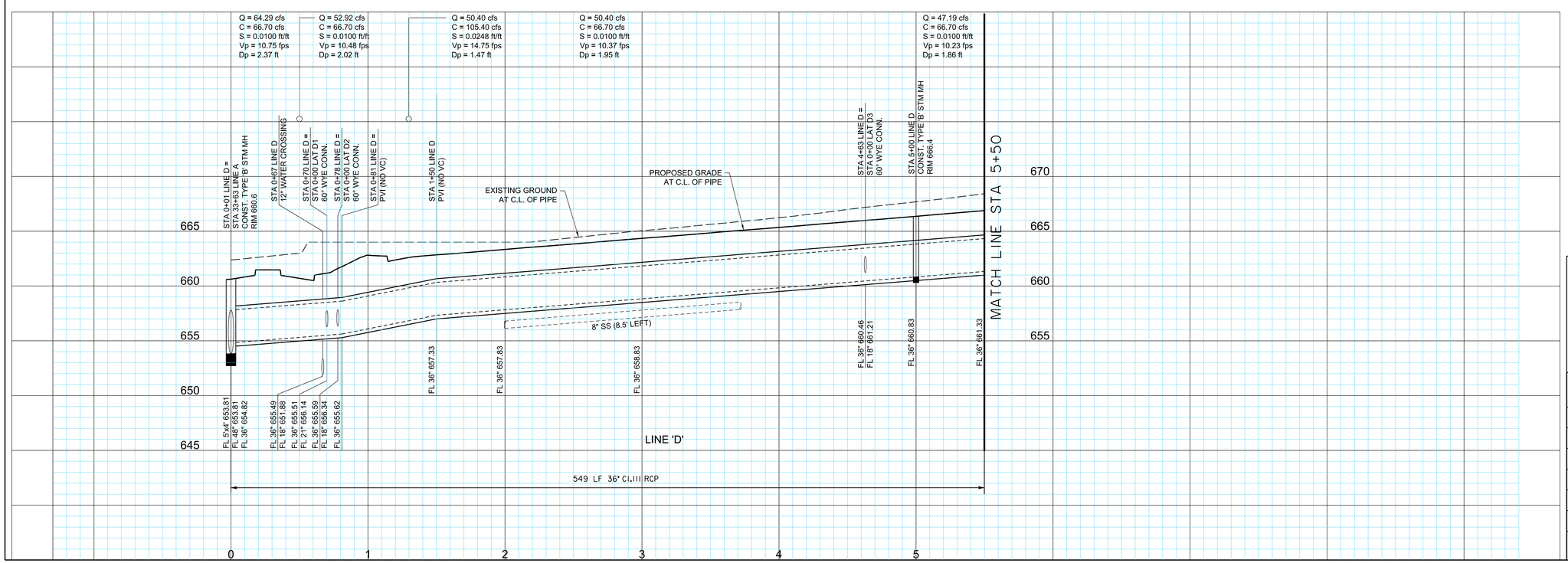
Square cut northeast corner of concrete headwall, north side of County Road 5, 1200 feet +- east of the intersection of County Road 5 and Frontier Parkway.
Elev. = 662.56



STATE OF TEXAS
ROBERT M. STENGELE
50145
REGISTERED
PROFESSIONAL ENGINEER
3-16-15

Huitt-Zollars, Inc.
Firm Registration No. F-761

RECORD DRAWING

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STORM SEWER PLAN & PROFILE
LINE D

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		H: 1"=40' V: 1"=5'		01-3905-40	06-06

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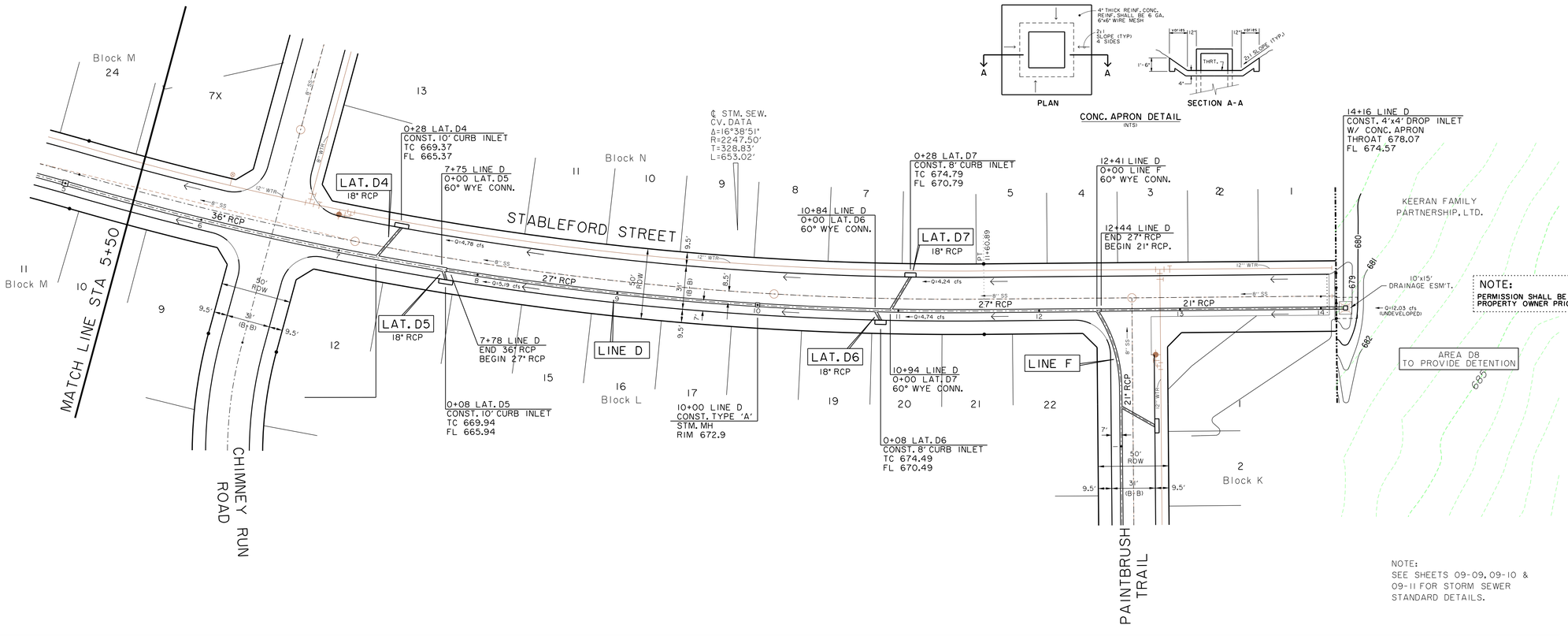
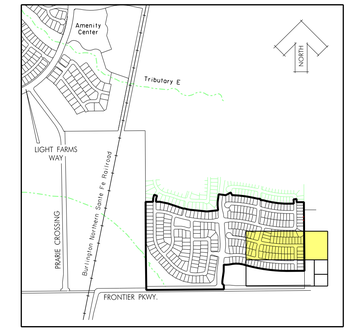


CONC. APRON DETAIL
(NTS)



KEY MAP
NTS

N

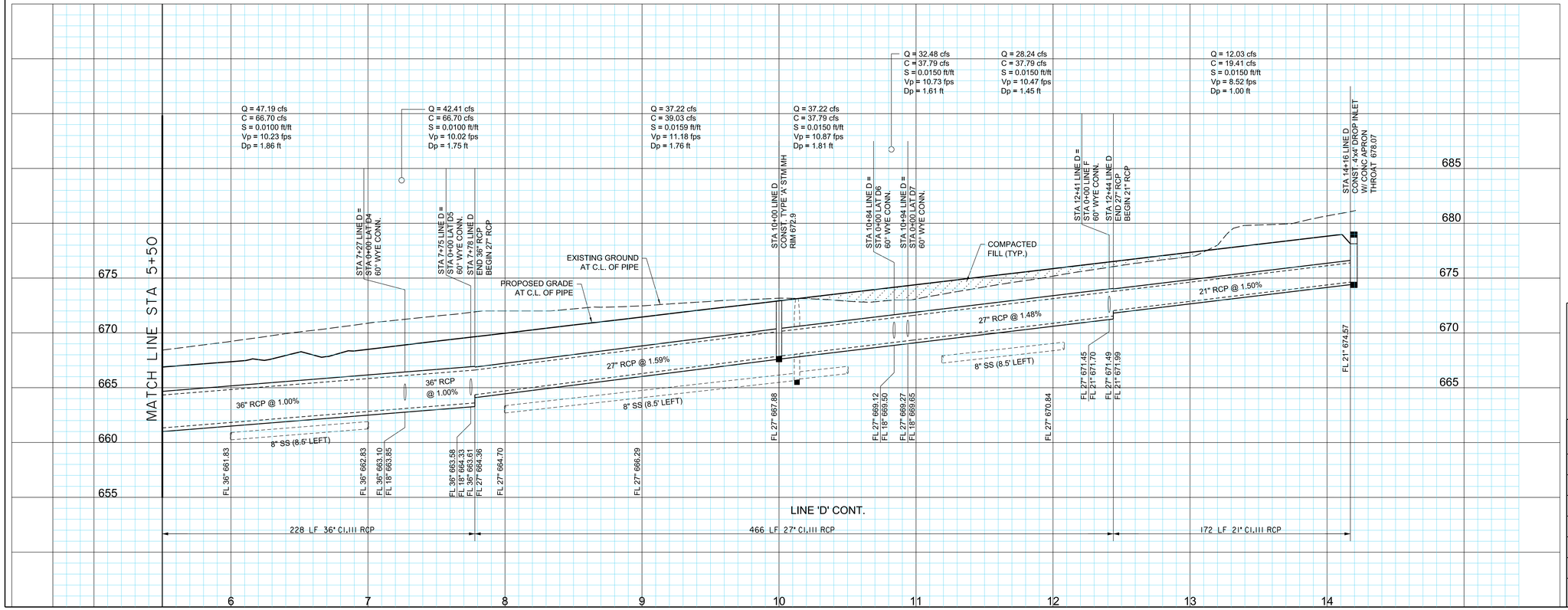
0 20 40 60 80
SCALE IN FEET

NOTE:
PERMISSION SHALL BE GRANTED FROM THE ADJACENT PROPERTY OWNER PRIOR TO GRADING IN THIS AREA.

NOTE:
SEE SHEETS 09-09, 09-10 & 09-11 FOR STORM SEWER STANDARD DETAILS.

LEGEND

- PROPOSED STORM SEWER (RCP)
- EXISTING STORM SEWER (RCP)
- PROPOSED STORM INLET
- EXISTING STORM INLET
- PROPOSED STORM MANHOLE
- EXISTING STORM MANHOLE
- SURFACE FLOW DIRECTION



BENCHMARKS:

BM #5
Square cut on top concrete headwall, 5' west of edge of pavement of Frontier Parkway, 56 feet south of centerline of County Road No. 5, 485 feet east of centerline County Road No. 51.

N=7147548.47
E=2488493.86
Elev. = 652.94

BM #8
Square cut northeast corner of concrete headwall, north side of County Road 5, 1200 feet +- east of the intersection of County Road 5 and Frontier Parkway.
Elev. = 662.56

STATE OF TEXAS
ROBERT M. STENGELE
50145
REGISTERED PROFESSIONAL ENGINEER
3-16-15

Huitt-Zollars, Inc.
Firm Registration No. F-761

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STORM SEWER PLAN & PROFILE
LINE D (CONT.)

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		H: 1"=40' V: 1"=5'		01-3905-40	06-07

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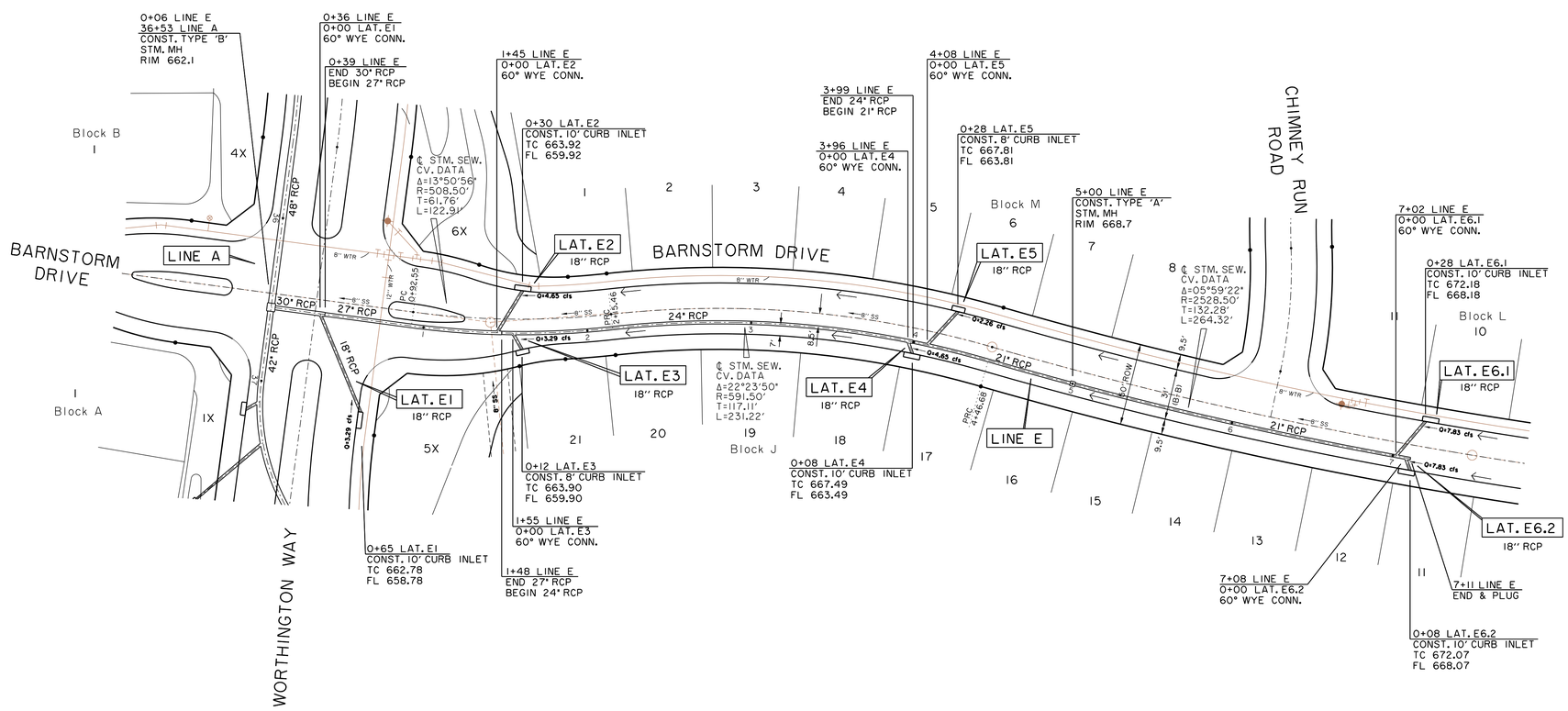
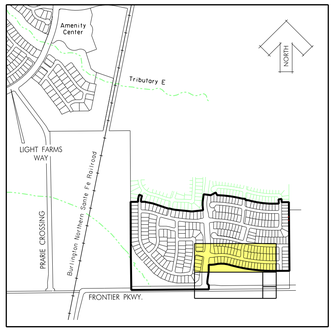




KEY MAP

NTS

N

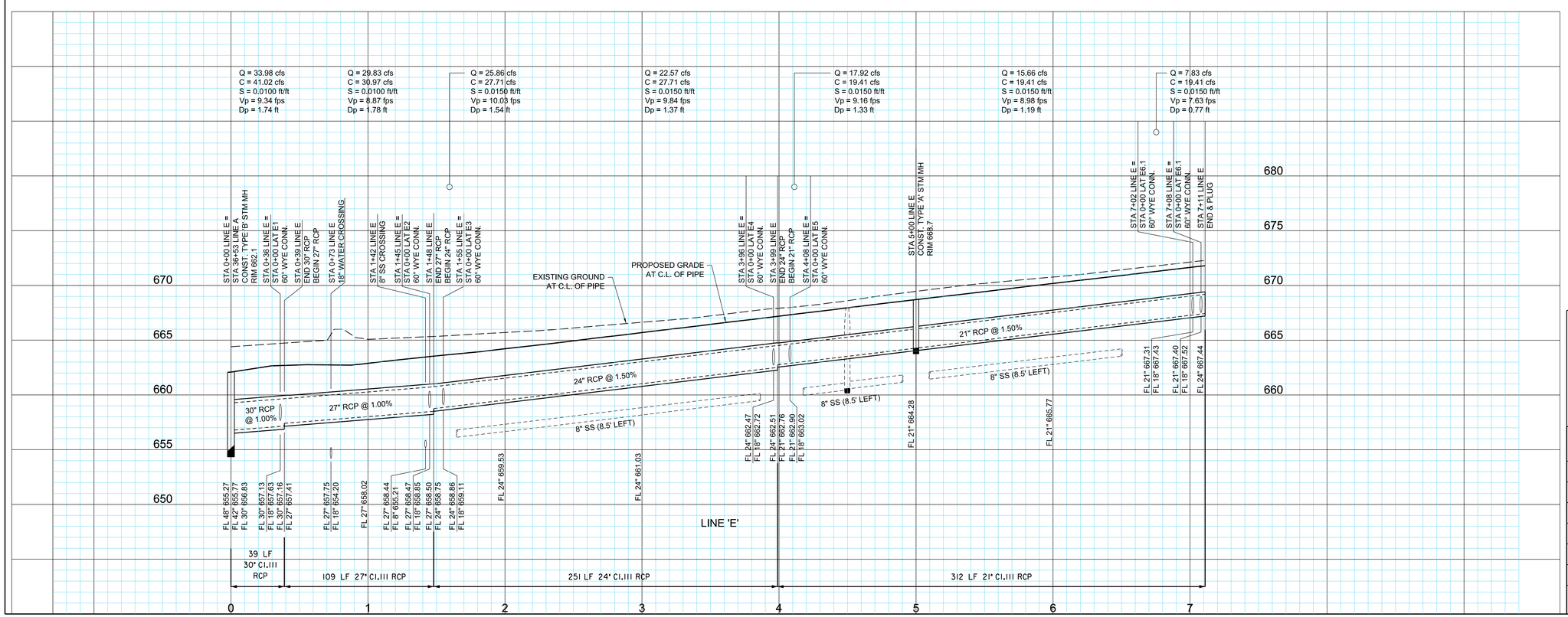
0 20 40 60 80

SCALE IN FEET

NOTE:
SEE SHEETS 09-09, 09-10 & 09-11 FOR STORM SEWER STANDARD DETAILS.

LEGEND

	PROPOSED STORM SEWER (RCP)
	EXISTING STORM SEWER (RCP)
	PROPOSED STORM INLET
	EXISTING STORM INLET
	PROPOSED STORM MANHOLE
	EXISTING STORM MANHOLE
	SURFACE FLOW DIRECTION



BENCHMARKS:

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E=2488493.86
Elev. = 652.94

BM #8
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Elev. = 662.56

STATE OF TEXAS
ROBERT M. STENGELE
50145
REGISTERED PROFESSIONAL ENGINEER
3-16-15

Huitt-Zollars, Inc.
Firm Registration No. F-761

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STORM SEWER PLAN & PROFILE
LINE E

LIGHT FARMS

LFC Land Company LLC

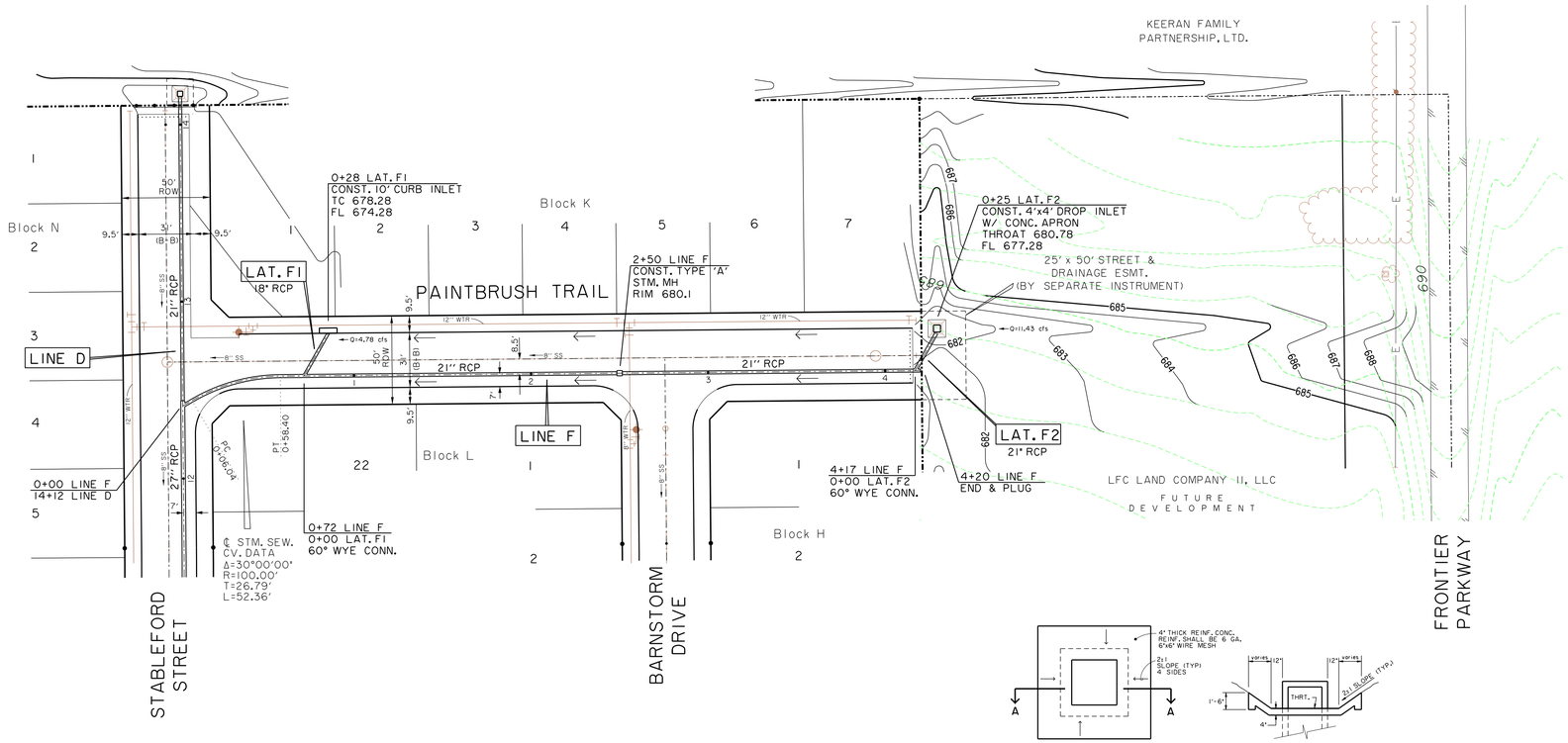
Collin County Municipal Utility District No. 1

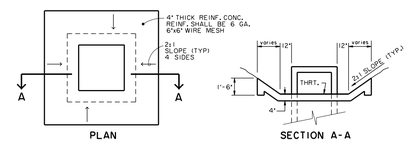
COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		H: 1"=40' V: 1"=5'		01-3905-40	06-08

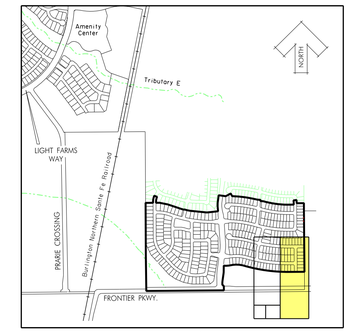
I:/proj/0139050/01390540 Parcel 1&2/08-Design CAD/DGN/phis107.dgn





CONC. APRON DETAIL
(NTS)

NOTE:
SEE SHEETS 09-09, 09-10 &
09-11 FOR STORM SEWER
STANDARD DETAILS.

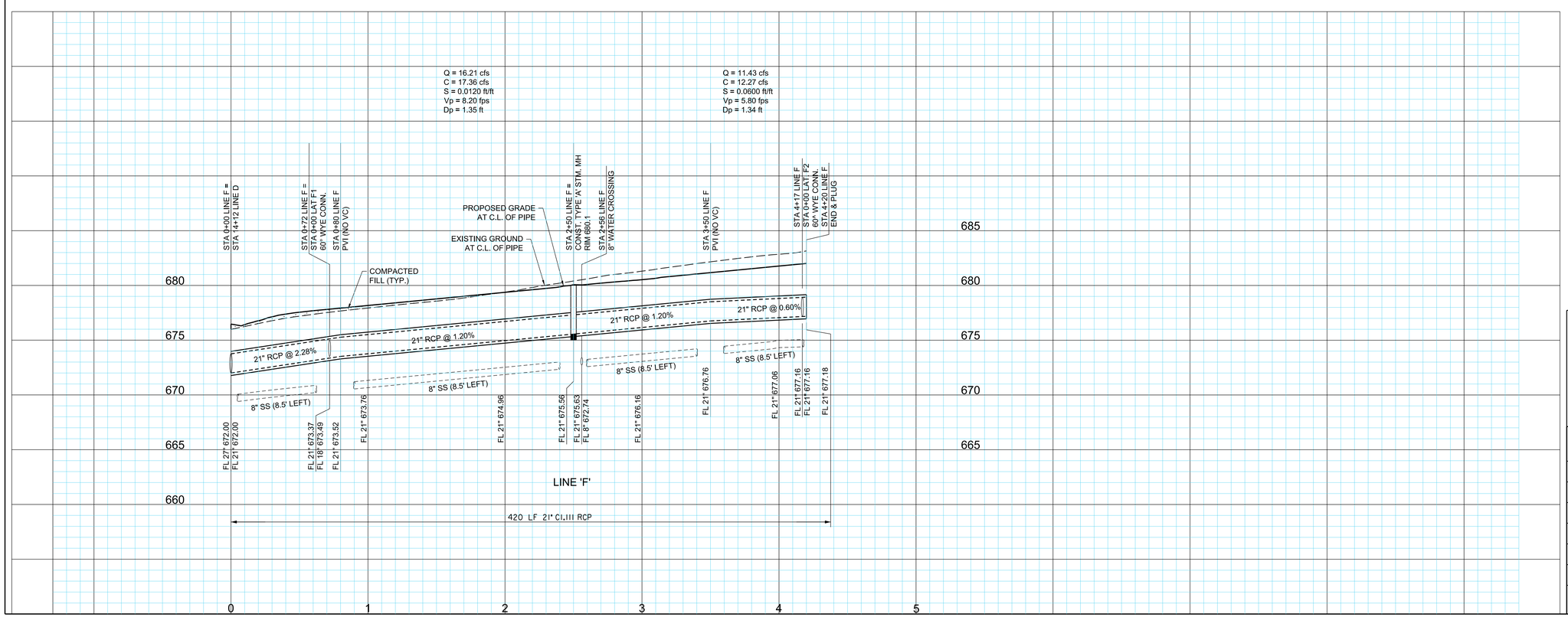


KEY MAP
NTS

SCALE IN FEET

LEGEND

	PROPOSED STORM SEWER (RCP)
	EXISTING STORM SEWER (RCP)
	PROPOSED STORM INLET
	EXISTING STORM INLET
	PROPOSED STORM MANHOLE
	EXISTING STORM MANHOLE
	SURFACE FLOW DIRECTION



BENCHMARKS:

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STATE OF TEXAS
ROBERT M. STENGELE
50145
REGISTERED PROFESSIONAL ENGINEER
3-16-15

Huitt-Zollars, Inc.
Firm Registration No. F-761

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STORM SEWER PLAN & PROFILE
LINE F

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		H: 1"=40' V: 1"= 5'		01-3905-40	06-09

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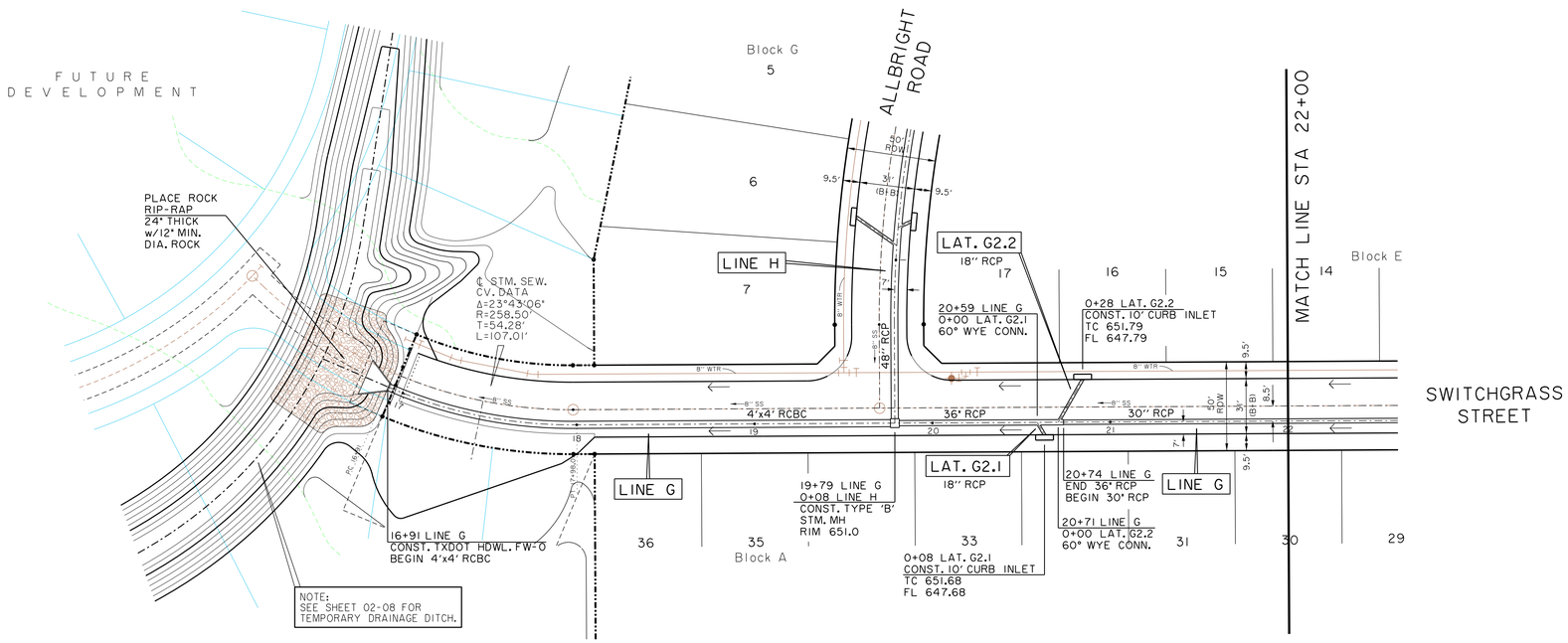
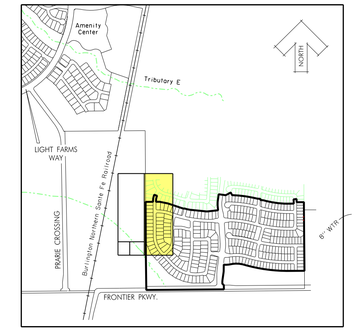
STORM SEWER LINE F

P-201402-02





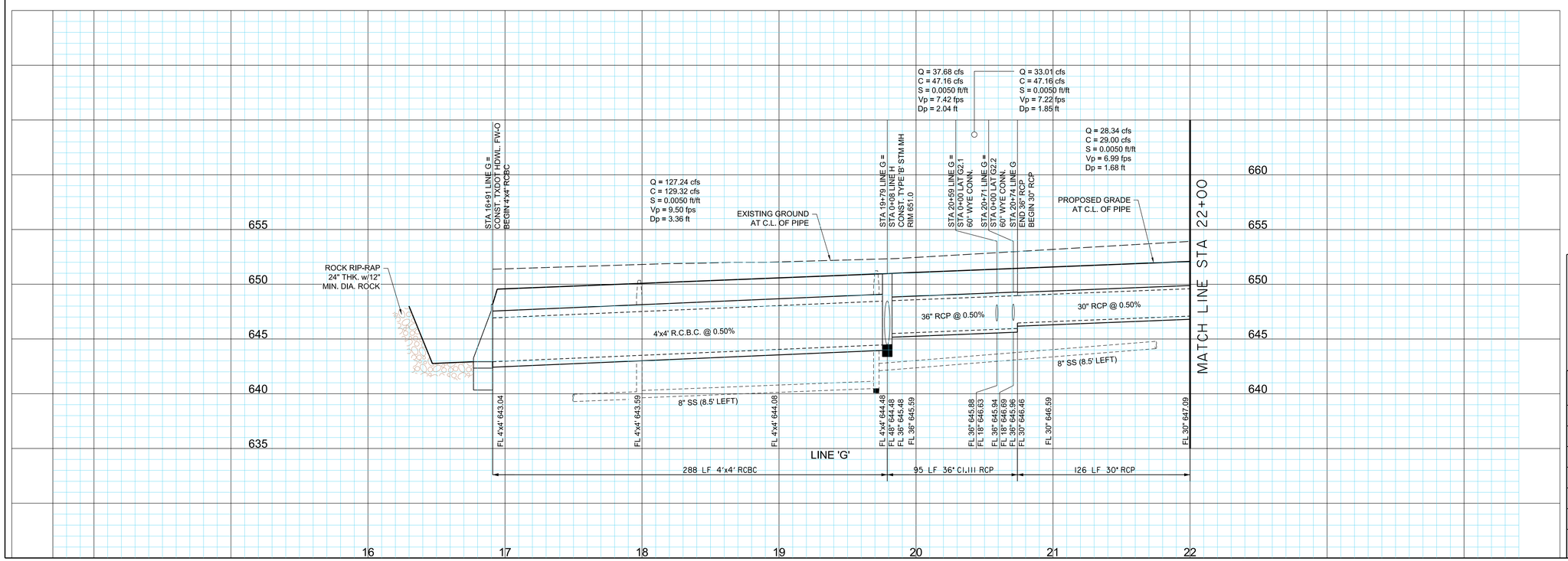
KEY MAP
NTS

N

0 20 40 60 80
SCALE IN FEET

LEGEND	
	PROPOSED STORM SEWER (RCP)
	EXISTING STORM SEWER (RCP)
	PROPOSED STORM INLET
	EXISTING STORM INLET
	PROPOSED STORM MANHOLE
	EXISTING STORM MANHOLE
	SURFACE FLOW DIRECTION

NOTE:
SEE SHEETS 09-09, 09-10 & 09-11 FOR STORM SEWER STANDARD DETAILS.



BENCHMARKS:

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STATE OF TEXAS
ROBERT M. STENGELE
50145
REGISTERED PROFESSIONAL ENGINEER
3-16-15

Huitt-Zollars, Inc.
Firm Registration No. F-761

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STORM SEWER PLAN & PROFILE
LINE G

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		H: 1"=40' V: 1"= 5'		01-3905-40	06-10

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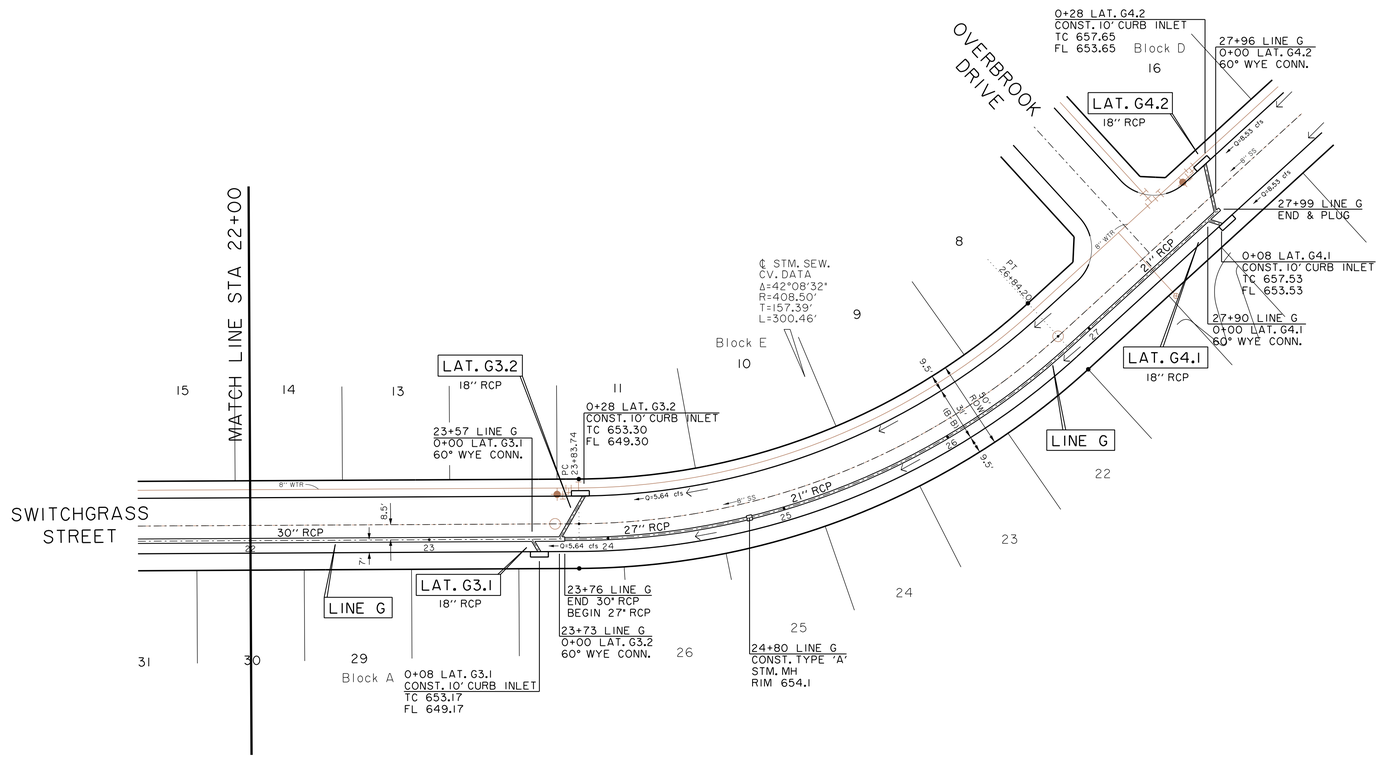

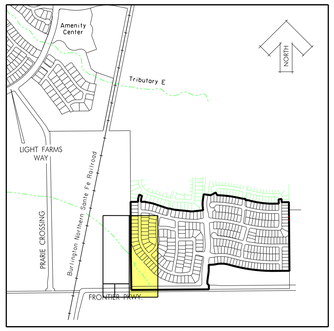

KEY MAP
NTS

SCALE IN FEET

LEGEND

- PROPOSED STORM SEWER (RCP)
- EXISTING STORM SEWER (RCP)
- PROPOSED STORM INLET
- EXISTING STORM INLET
- PROPOSED STORM MANHOLE
- EXISTING STORM MANHOLE
- SURFACE FLOW DIRECTION

NOTE:
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BENCHMARKS:

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Elev. = 652.94

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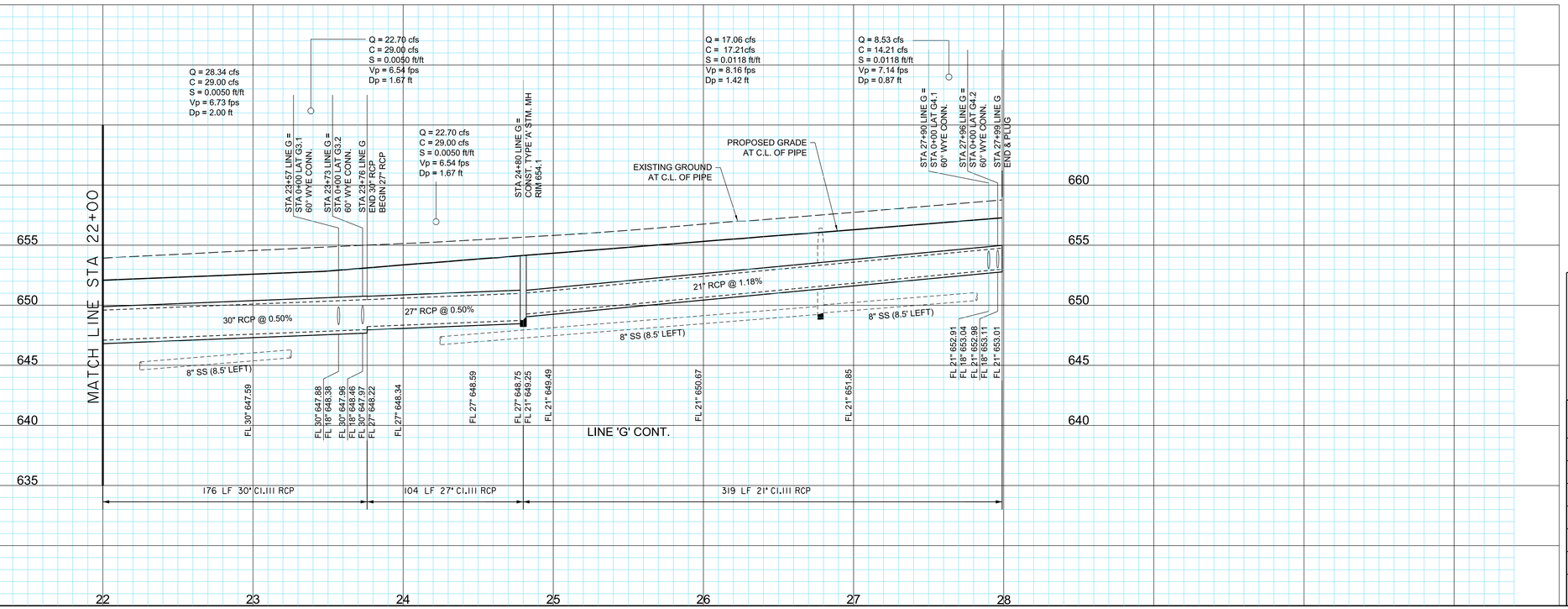

STATE OF TEXAS
ROBERT M. STENGELE
50145
REGISTERED PROFESSIONAL ENGINEER
3-16-15

Huitt-Zollars, Inc.
Firm Registration No. F-761

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STORM SEWER PLAN & PROFILE
LINE G (Cont.)

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		H: 1"=40' V: 1"= 5'		01-3905-40	06-11

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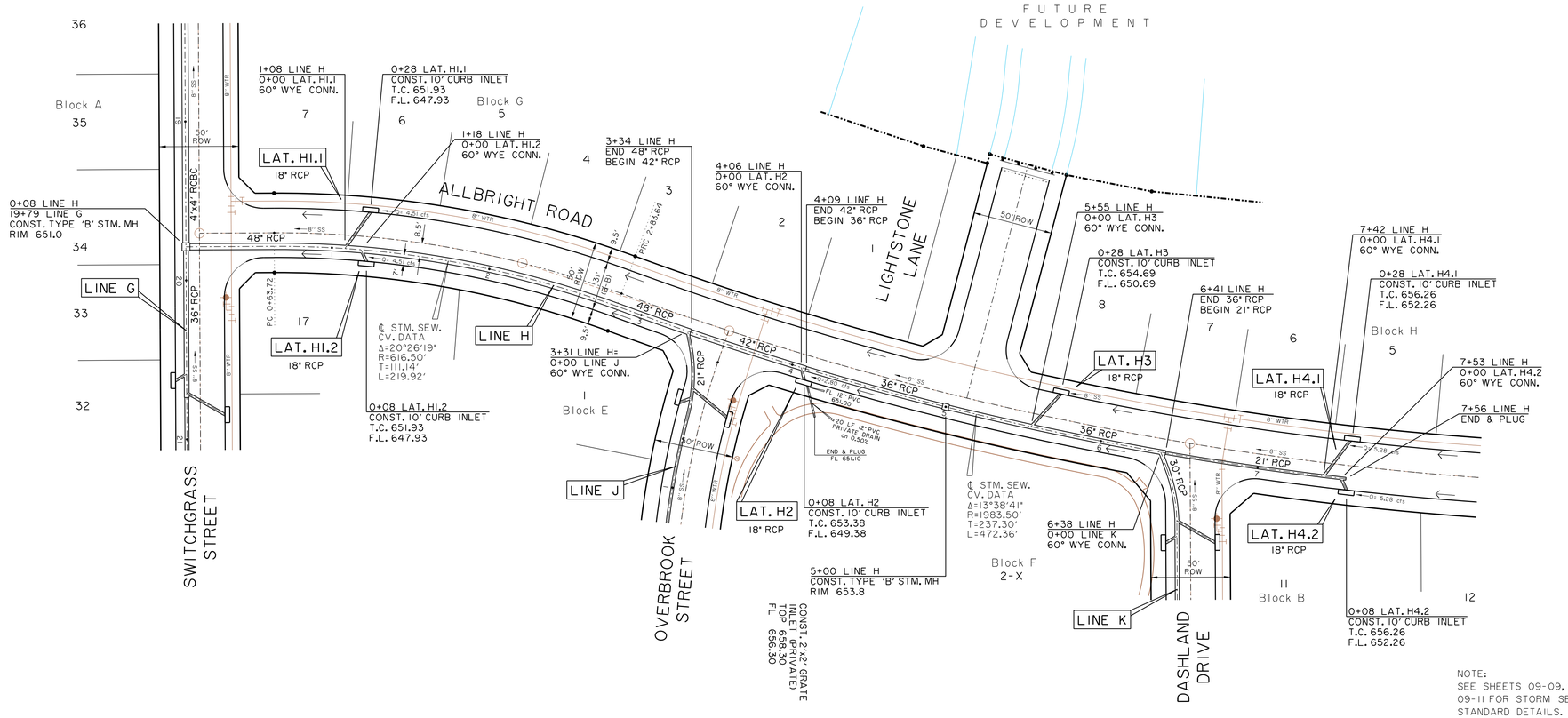

NOTE:
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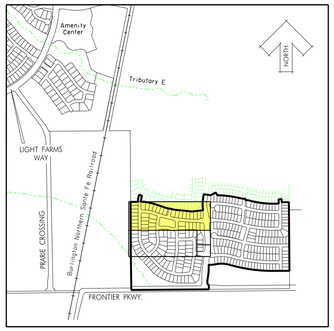


KEY MAP

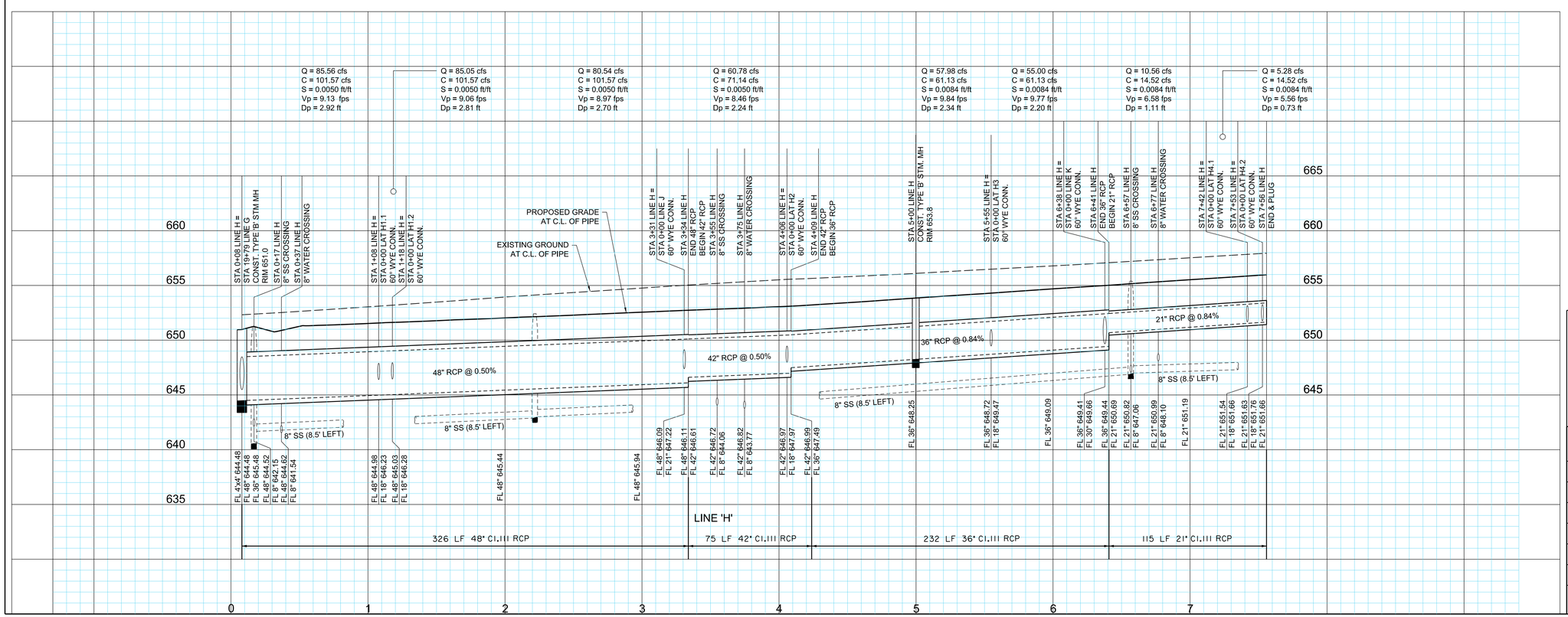
NTS

N

0 20 40 60 80
SCALE IN FEET

LEGEND

	PROPOSED STORM SEWER (RCP)
	EXISTING STORM SEWER (RCP)
	PROPOSED STORM INLET
	EXISTING STORM INLET
	PROPOSED STORM MANHOLE
	EXISTING STORM MANHOLE
	SURFACE FLOW DIRECTION



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STATE OF TEXAS
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REGISTERED PROFESSIONAL ENGINEER
3-16-15

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STORM SEWER PLAN & PROFILE
LINE H

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

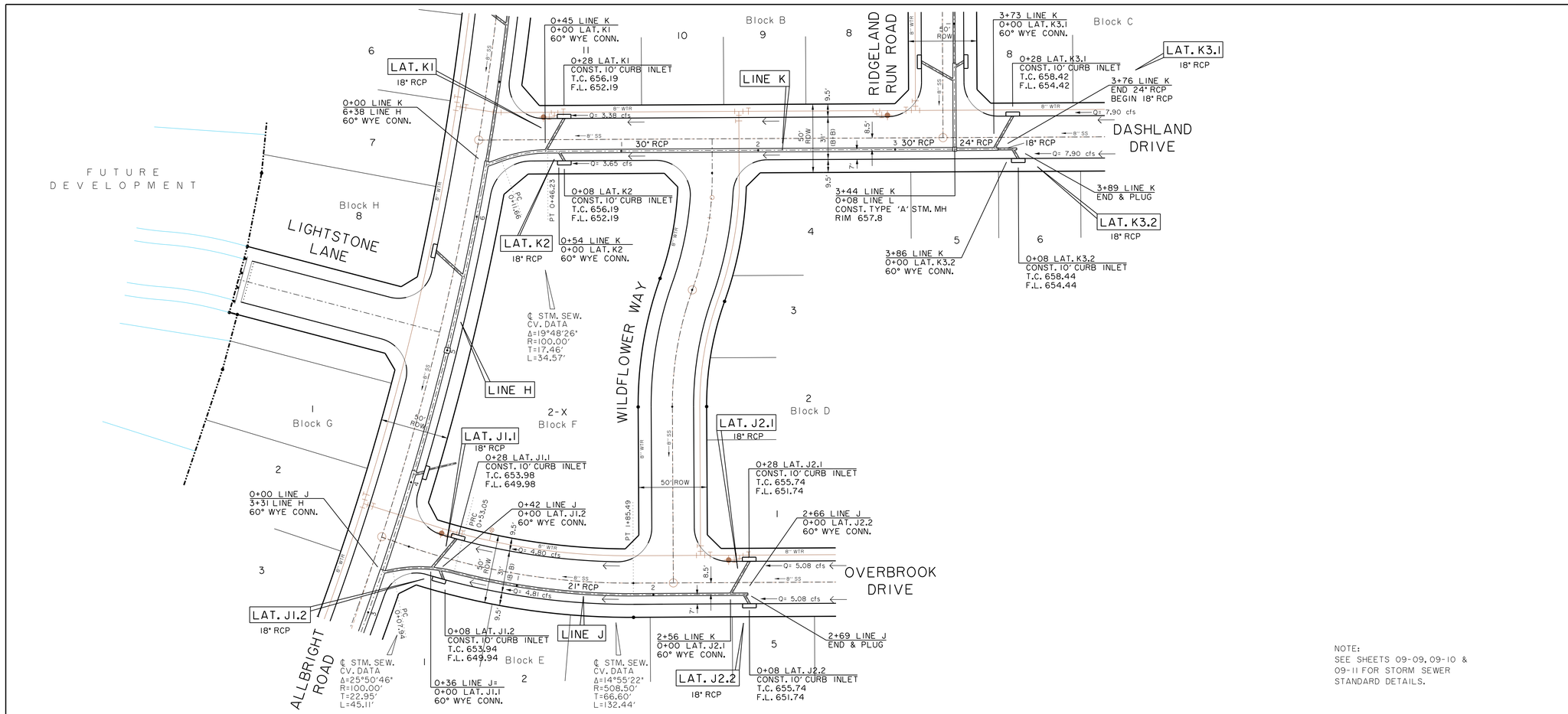
HUITT-ZOLLARS

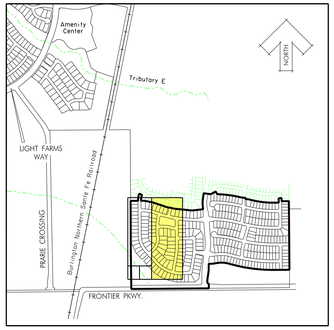
DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		H: 1"=40' V: 1"=5'		01-3905-40	06-12

STORM SEWER LINE H

P-201402-02

I:/proj/0139050/0139054O Parcel 1&2/08-Design CAD/DGN/phs110.dgn





KEY MAP
NTS

N

0 20 40 60 80
SCALE IN FEET

LEGEND

	PROPOSED STORM SEWER (RCP)
	EXISTING STORM SEWER (RCP)
	PROPOSED STORM INLET
	EXISTING STORM INLET
	PROPOSED STORM MANHOLE
	EXISTING STORM MANHOLE
	SURFACE FLOW DIRECTION

NOTE:
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BENCHMARKS:

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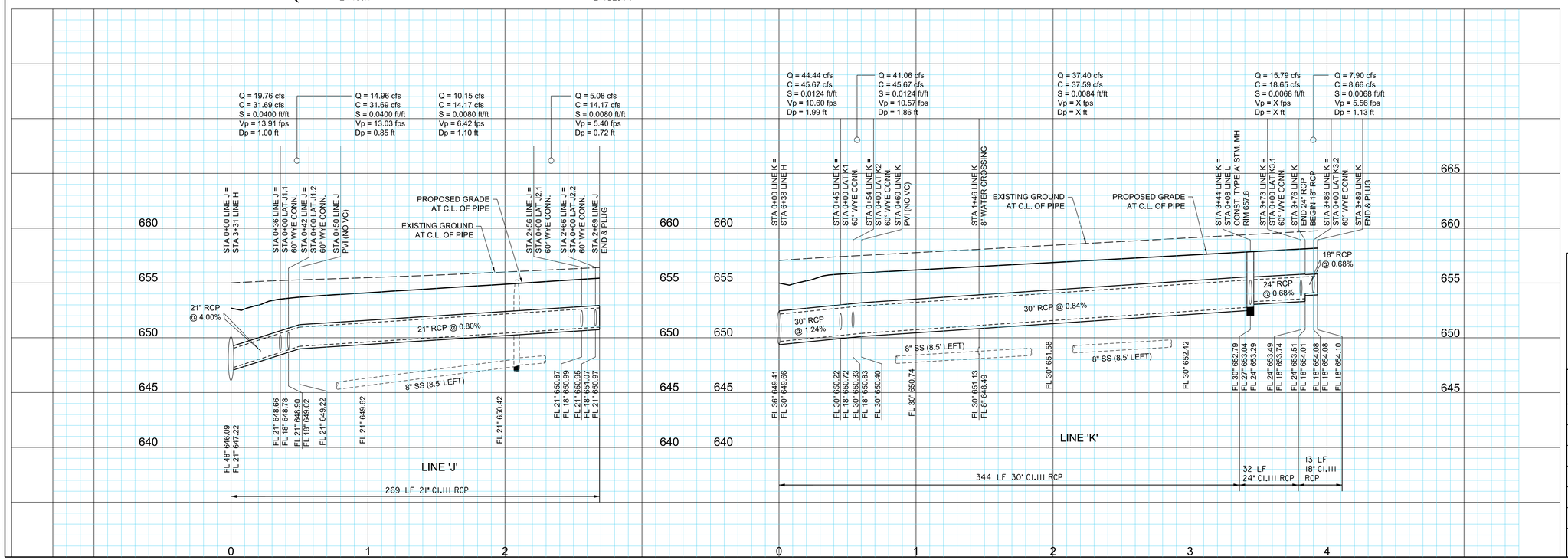

STATE OF TEXAS
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3-16-15

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STORM SEWER PLAN & PROFILE
LINES J & K

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		H: 1"=40' V: 1"= 5'		01-3905-40	06-13

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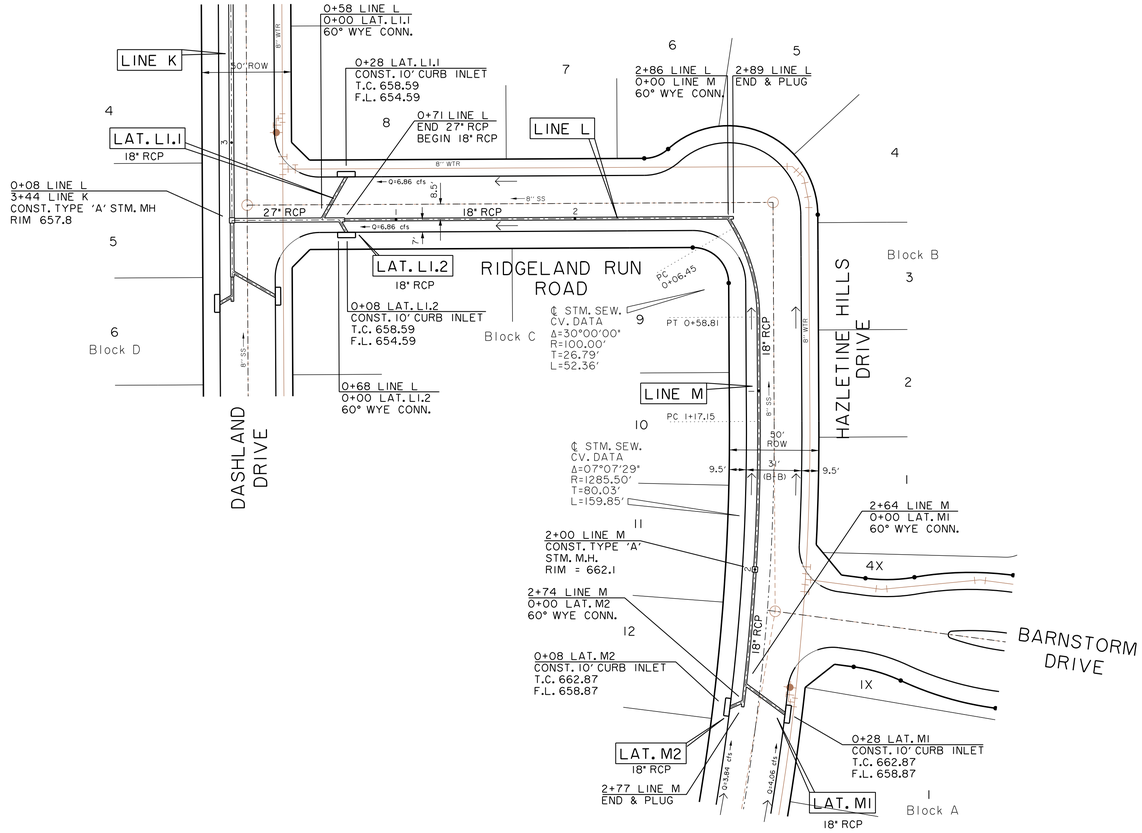
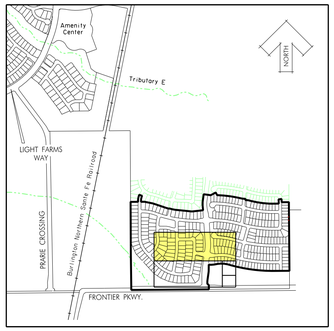




KEY MAP

NTS

N

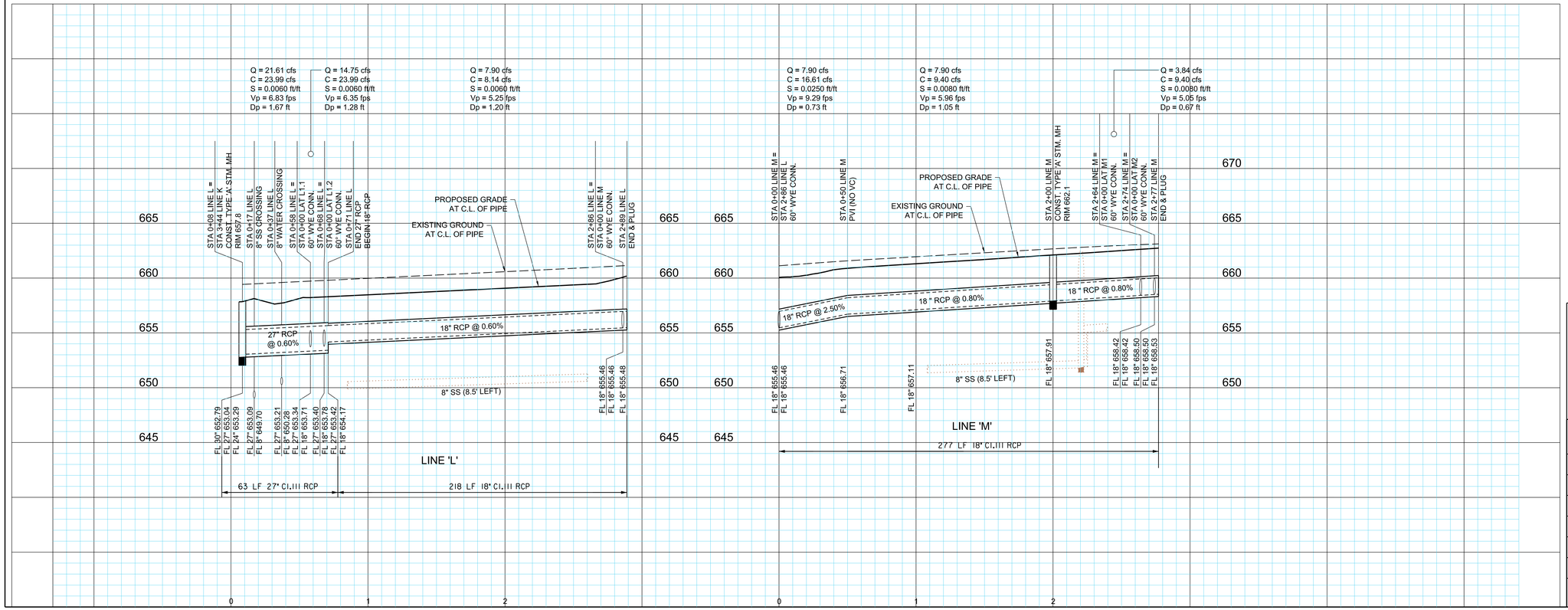
0 20 40 60 80

SCALE IN FEET

LEGEND

	PROPOSED STORM SEWER (RCP)
	EXISTING STORM SEWER (RCP)
	PROPOSED STORM INLET
	EXISTING STORM INLET
	PROPOSED STORM MANHOLE
	EXISTING STORM MANHOLE
	SURFACE FLOW DIRECTION

NOTE:
SEE SHEETS 09-09, 09-10 & 09-11 FOR STORM SEWER STANDARD DETAILS.



BENCHMARKS:

BM #5
Square cut on top concrete headwall, 5' west of edge of pavement of Frontier Parkway, 56 feet south of centerline of County Road No. 5, 485 feet east of centerline County Road No. 51.

N=7147548.47
E=2488493.86
Elev. = 652.94

BM #8
Square cut northeast corner of concrete headwall, north side of County Road 5, 1200 feet +- east of the intersection of County Road 5 and Frontier Parkway.
Elev. = 662.56

STATE OF TEXAS
ROBERT M. STENGELE
50145
REGISTERED PROFESSIONAL ENGINEER
3-16-15

Huitt-Zollars, Inc.
Firm Registration No. F-761

RECORD DRAWING

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STORM SEWER PLAN & PROFILE
LINES L & M

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		H: 1"=40' V: 1"=5'		01-3905-40	06-14

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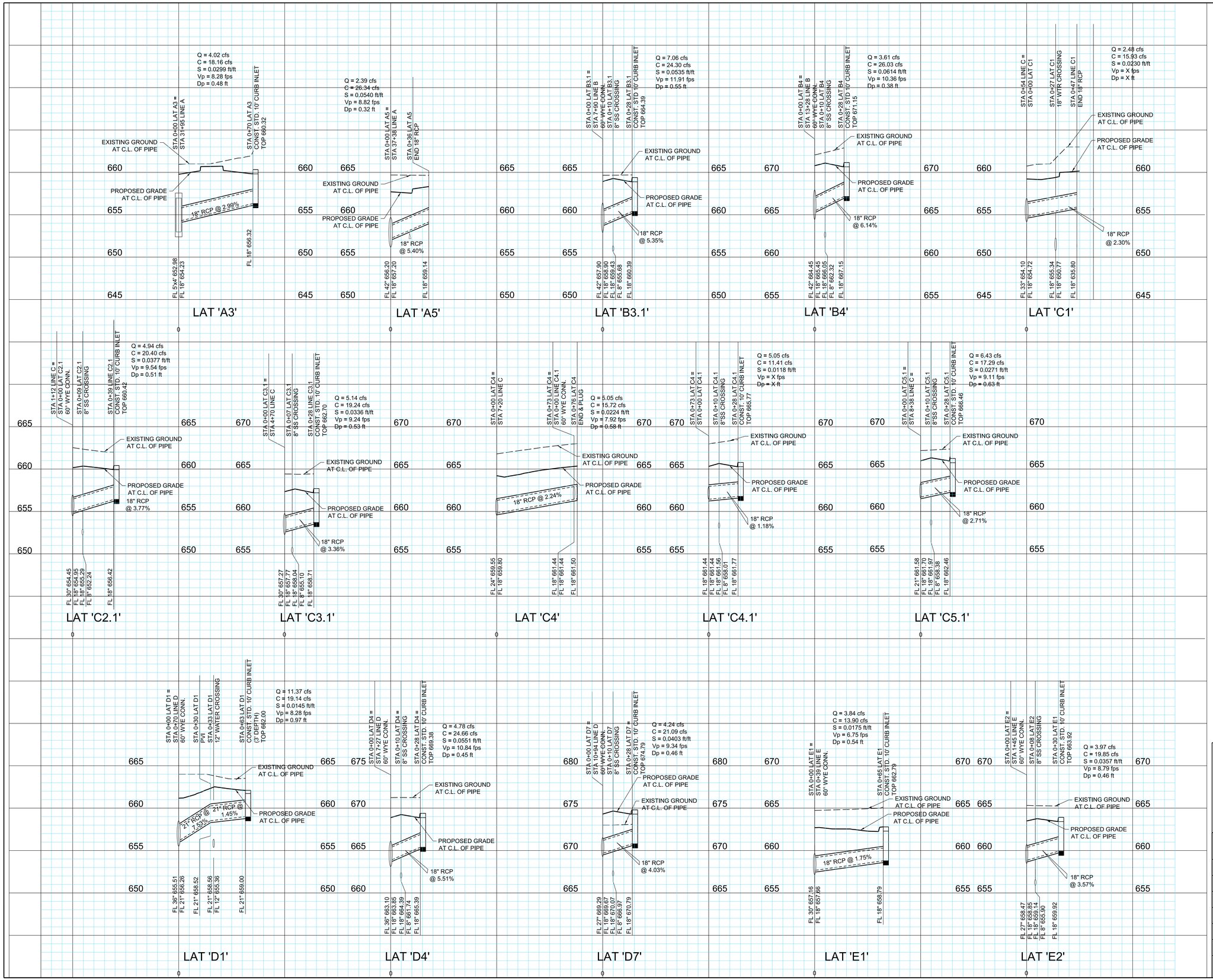
STORM SEWER LINES L & M

P-201402-02



BENCHMARKS:

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STORM SEWER LATERAL PROFILES

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		H: 1"=40' V: 1"= 5'		01-3905-40	06-15

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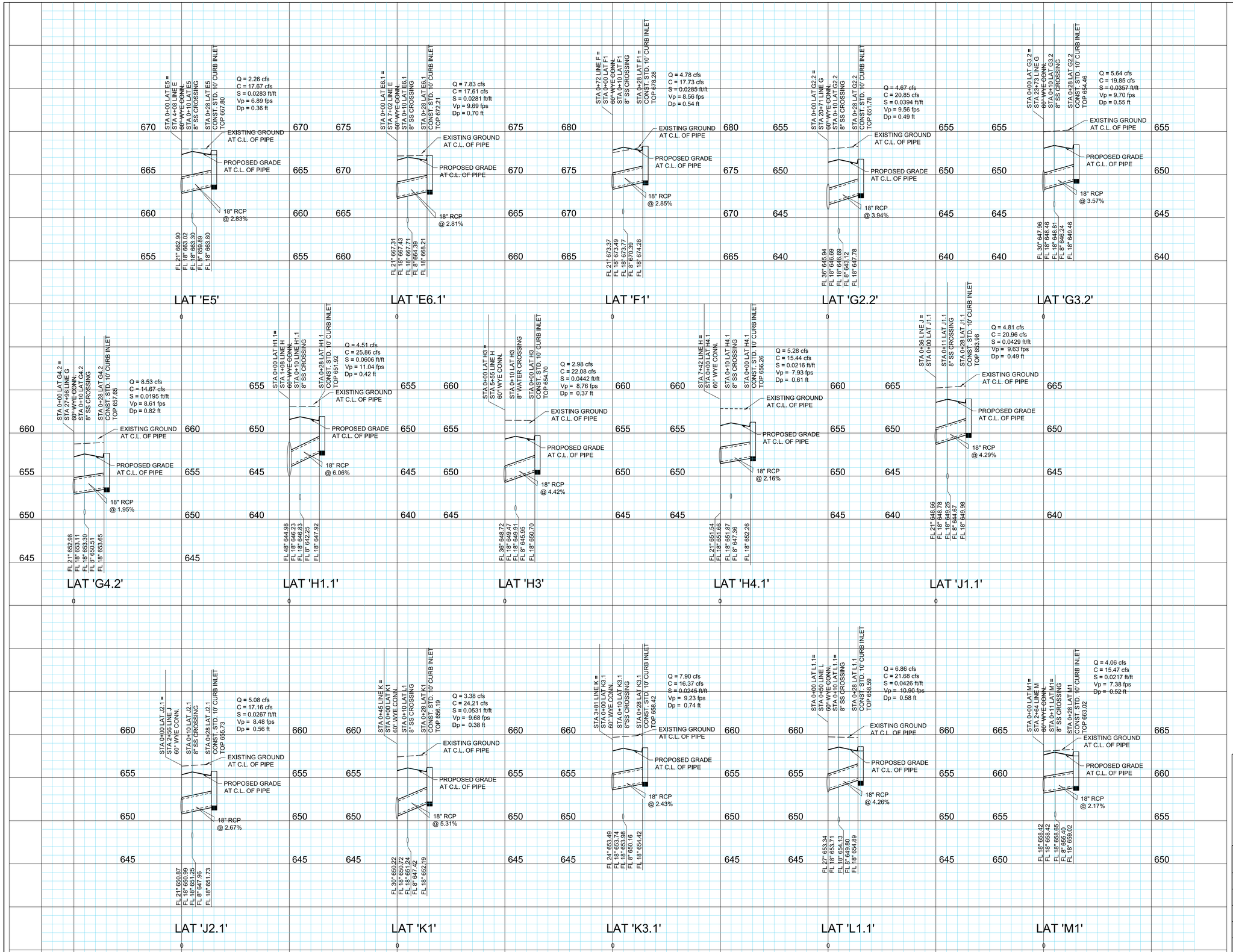

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STORM SEWER LATERAL PROFILES

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

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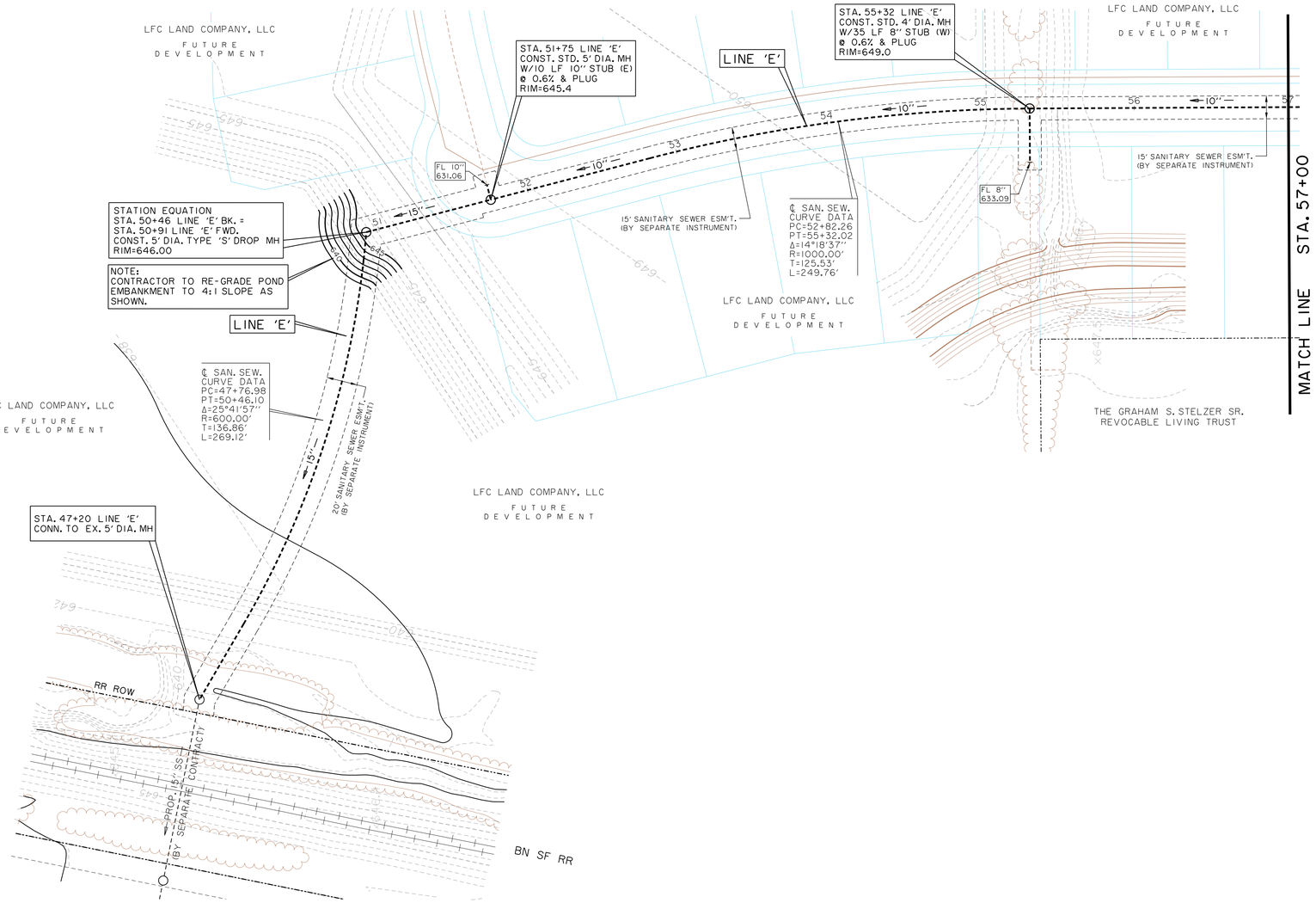
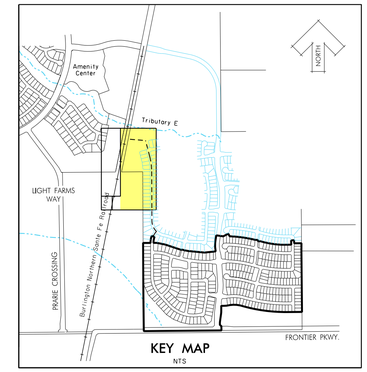


LEGEND

- PROPOSED WATER MAIN (PVC)
- EXISTING WATER MAIN (PVC)
- PROPOSED SANITARY SEWER (PVC)
- EXISTING SANITARY SEWER (PVC)
- PROPOSED FIRE HYDRANT
- EXISTING FIRE HYDRANT
- PROPOSED SANITARY SEWER M.H.
- EXISTING SANITARY SEWER M.H.
- PROPOSED WATER VALVE
- EXISTING WATER VALVE
- PROPOSED WATER SERVICE
- PROPOSED SANITARY SEWER LATERAL
- PROPOSED SANITARY SEWER CLEANOUT



KEY MAP
NTS

N

0 20 40 60 80
SCALE IN FEET

BENCHMARKS:

BM #5
Square cut on top concrete headwall, 5' west of edge of pavement of Frontier Parkway, 56 feet south of centerline of County Road No. 5, 485 feet east of centerline County Road No. 51.

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BM #8
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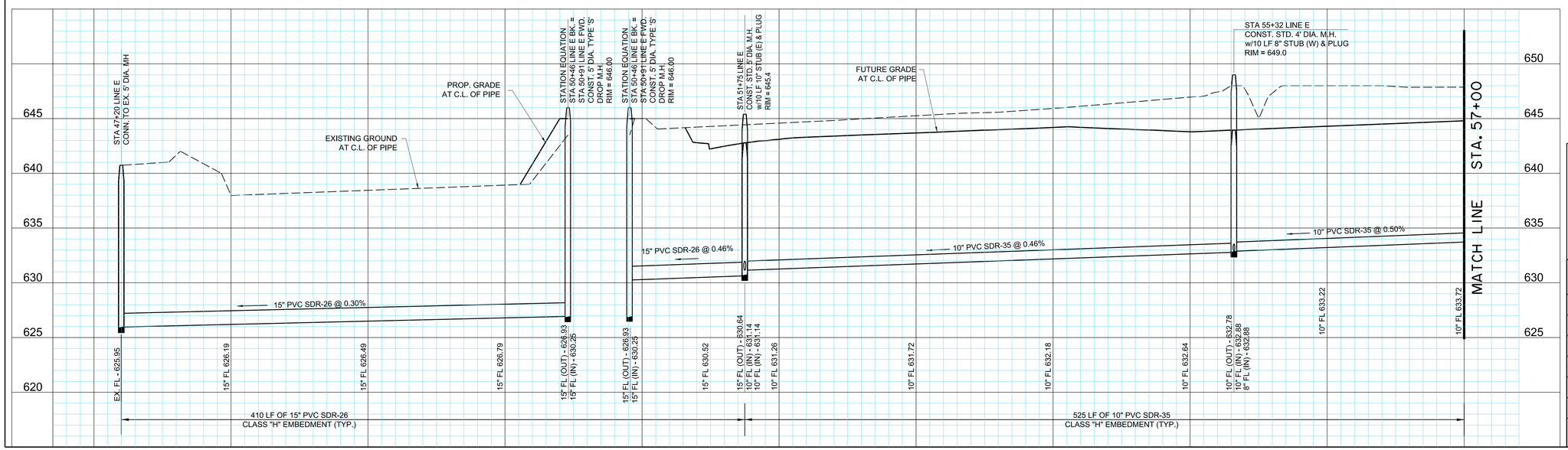

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SANITARY SEWER - LINE 'E'
STA. 47+42 TO STA. 57+00

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		H: 1"=40' V: 1"= 5'		01-3905-40	07-01

I:/proj/01390501/01390540 Parcel 1&2/08-DesignCAD/DGN/phase01.dgn

SANITARY SEWER - LINE 'E'

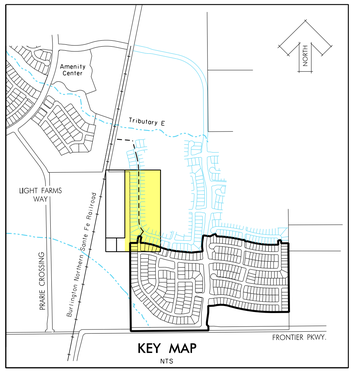
P-201402-02

LEGEND

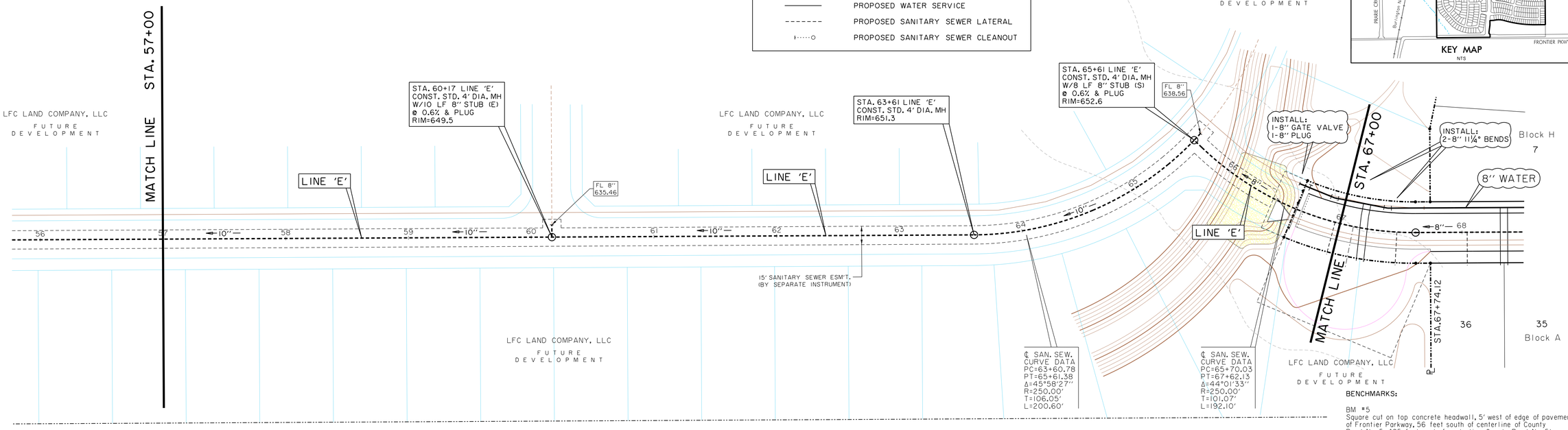
- PROPOSED WATER MAIN (PVC)
- EXISTING WATER MAIN (PVC)
- PROPOSED SANITARY SEWER (PVC)
- EXISTING SANITARY SEWER (PVC)
- PROPOSED FIRE HYDRANT
- EXISTING FIRE HYDRANT
- PROPOSED SANITARY SEWER M.H.
- EXISTING SANITARY SEWER M.H.
- PROPOSED WATER VALVE
- EXISTING WATER VALVE
- PROPOSED WATER SERVICE
- PROPOSED SANITARY SEWER LATERAL
- PROPOSED SANITARY SEWER CLEANOUT

N

0 20 40 60 80
SCALE IN FEET



KEY MAP
NTS



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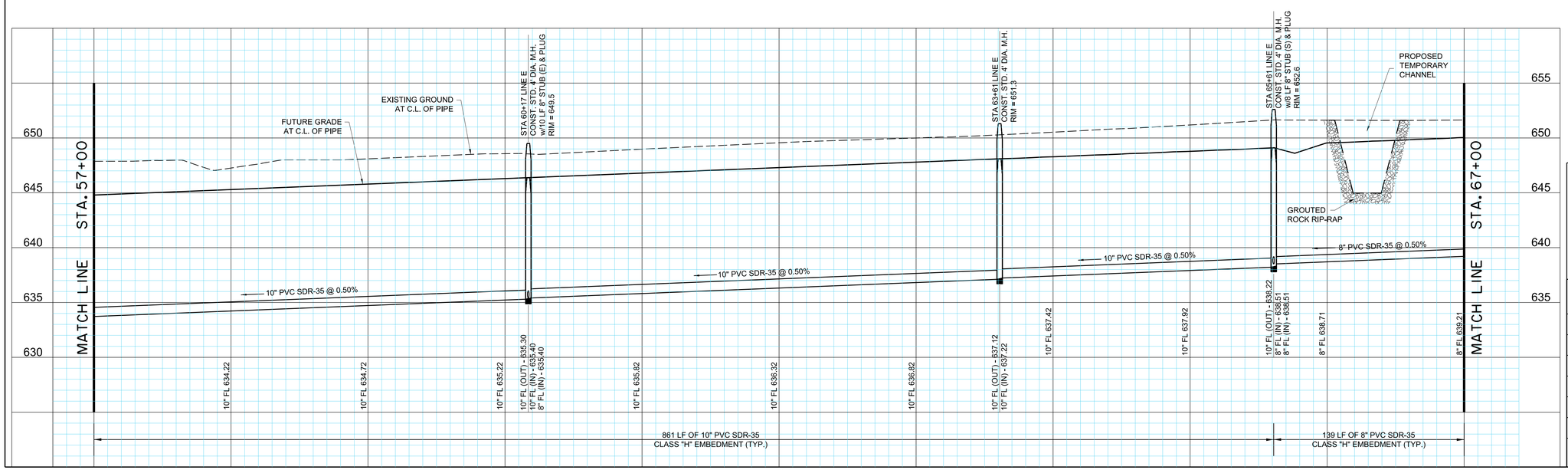

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SANITARY SEWER - LINE 'E' (CONT.)
STA. 57+00 TO STA. 67+00

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

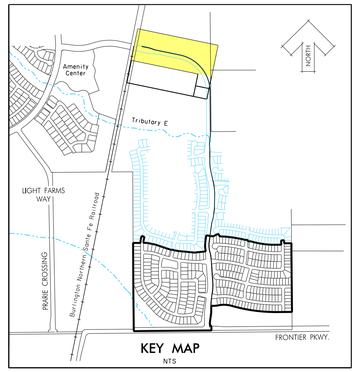
HUITT-ZOLLARS

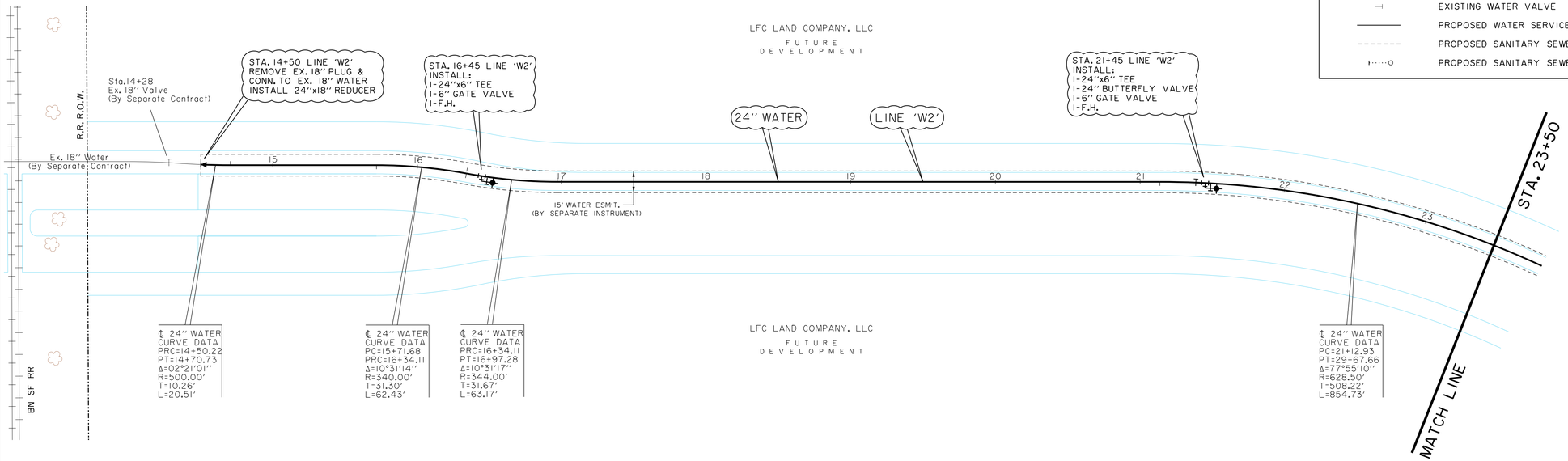
DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		H: 1"=40' V: 1"= 5'		01-3905-40	07-02

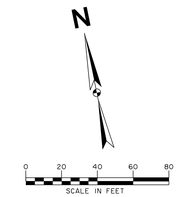
I:/proj/01390501/01390540 Parcel 1&2/08-DesignCAD/DGN/phiosx02.dgn

LEGEND

- PROPOSED WATER MAIN (PVC)
- EXISTING WATER MAIN (PVC)
- PROPOSED SANITARY SEWER (PVC)
- EXISTING SANITARY SEWER (PVC)
- PROPOSED FIRE HYDRANT
- EXISTING FIRE HYDRANT
- PROPOSED SANITARY SEWER M.H.
- EXISTING SANITARY SEWER M.H.
- PROPOSED WATER VALVE
- EXISTING WATER VALVE
- PROPOSED WATER SERVICE
- PROPOSED SANITARY SEWER LATERAL
- PROPOSED SANITARY SEWER CLEANOUT







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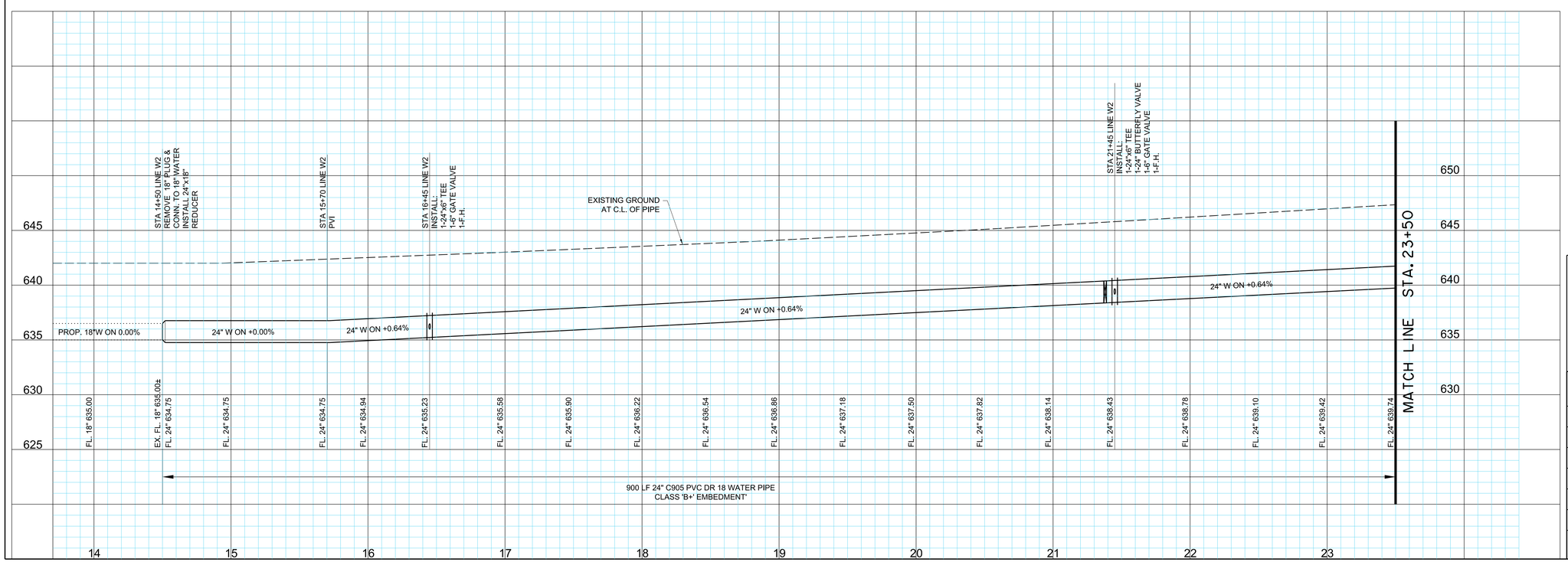

STATE OF TEXAS
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PROFESSIONAL ENGINEER
3-16-15

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WATER LINE 'W2' PLAN & PROFILE
STA. 14+50 TO STA. 23+50

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		H: 1"=40' V: 1"= 5'		01-3905-40	07-03

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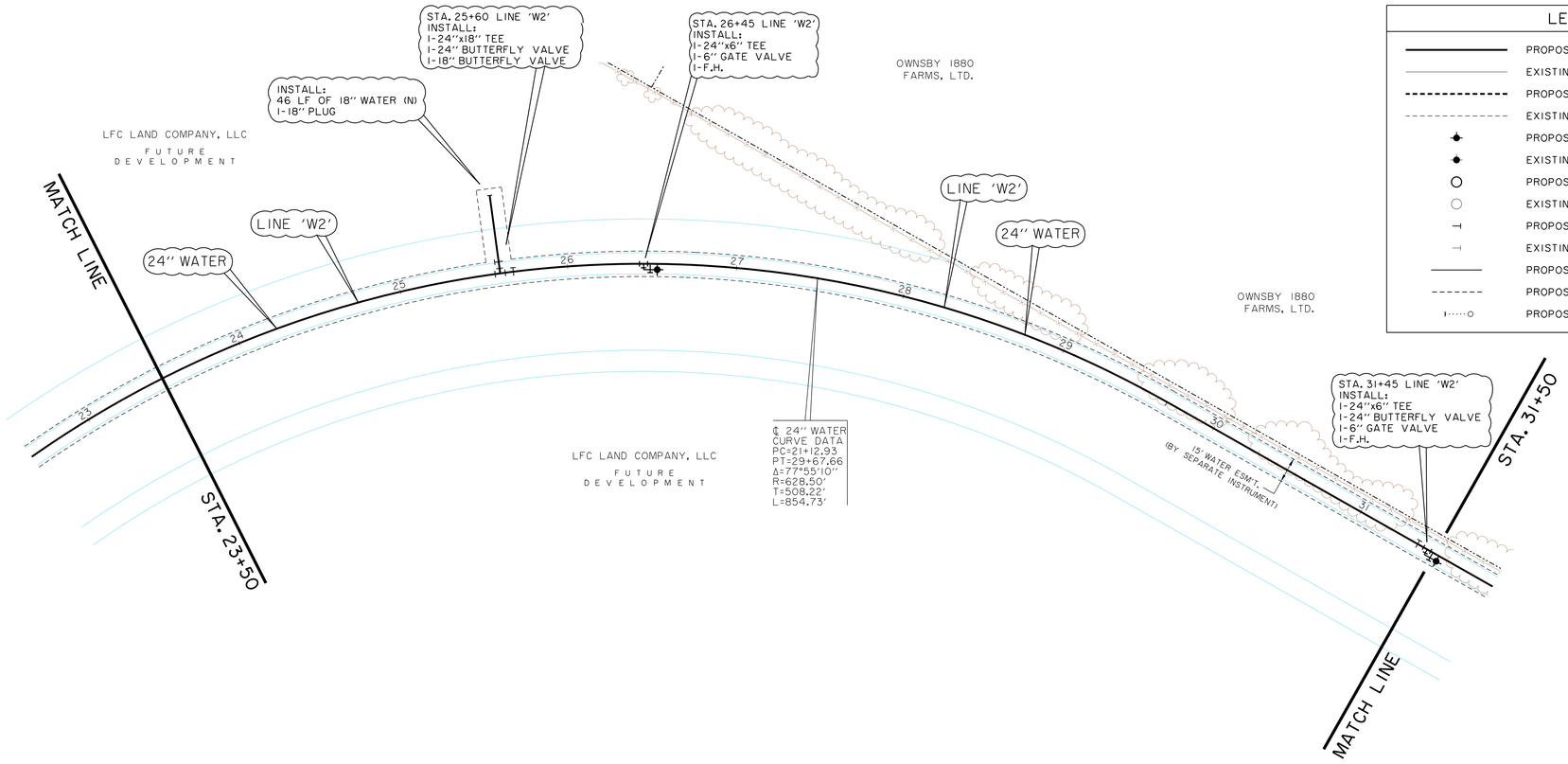
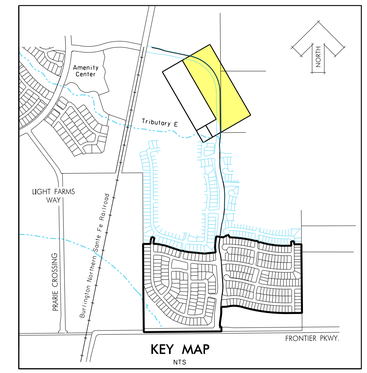
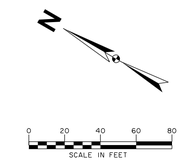


LEGEND

- PROPOSED WATER MAIN (PVC)
- EXISTING WATER MAIN (PVC)
- PROPOSED SANITARY SEWER (PVC)
- EXISTING SANITARY SEWER (PVC)
- PROPOSED FIRE HYDRANT
- EXISTING FIRE HYDRANT
- PROPOSED SANITARY SEWER M.H.
- EXISTING SANITARY SEWER M.H.
- PROPOSED WATER VALVE
- EXISTING WATER VALVE
- PROPOSED WATER SERVICE
- PROPOSED SANITARY SEWER LATERAL
- PROPOSED SANITARY SEWER CLEANOUT





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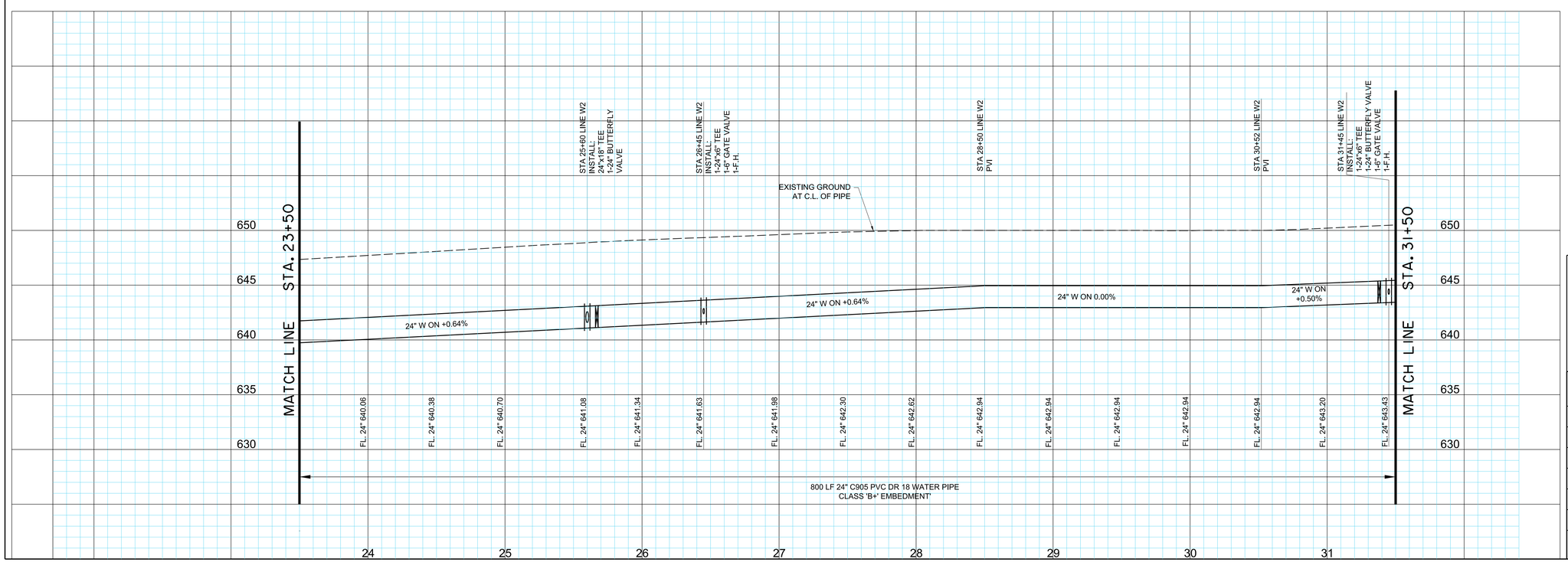

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WATER LINE 'W2' PLAN & PROFILE (CONT.)
STA. 24+50 TO STA. 31+50

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

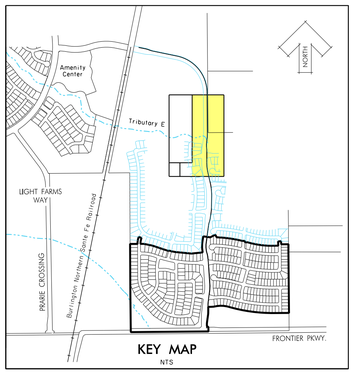
HUITT-ZOLLARS

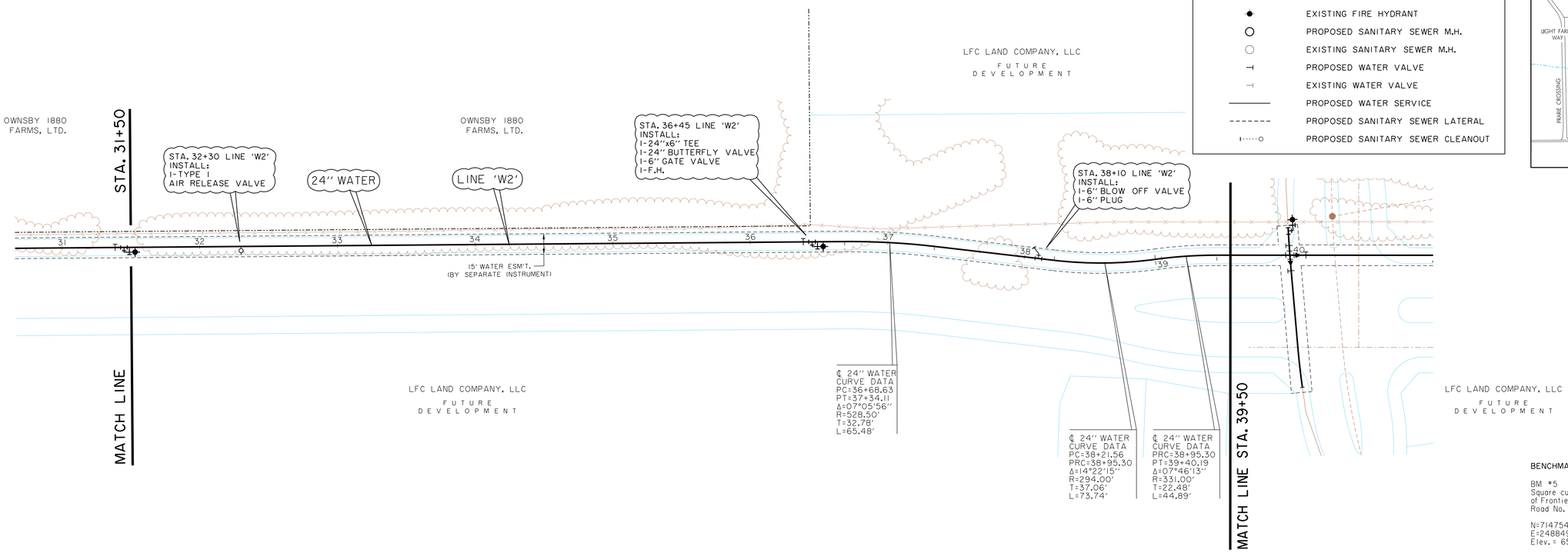
DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		H: 1"=40' V: 1"= 5'		01-3905-40	07-04

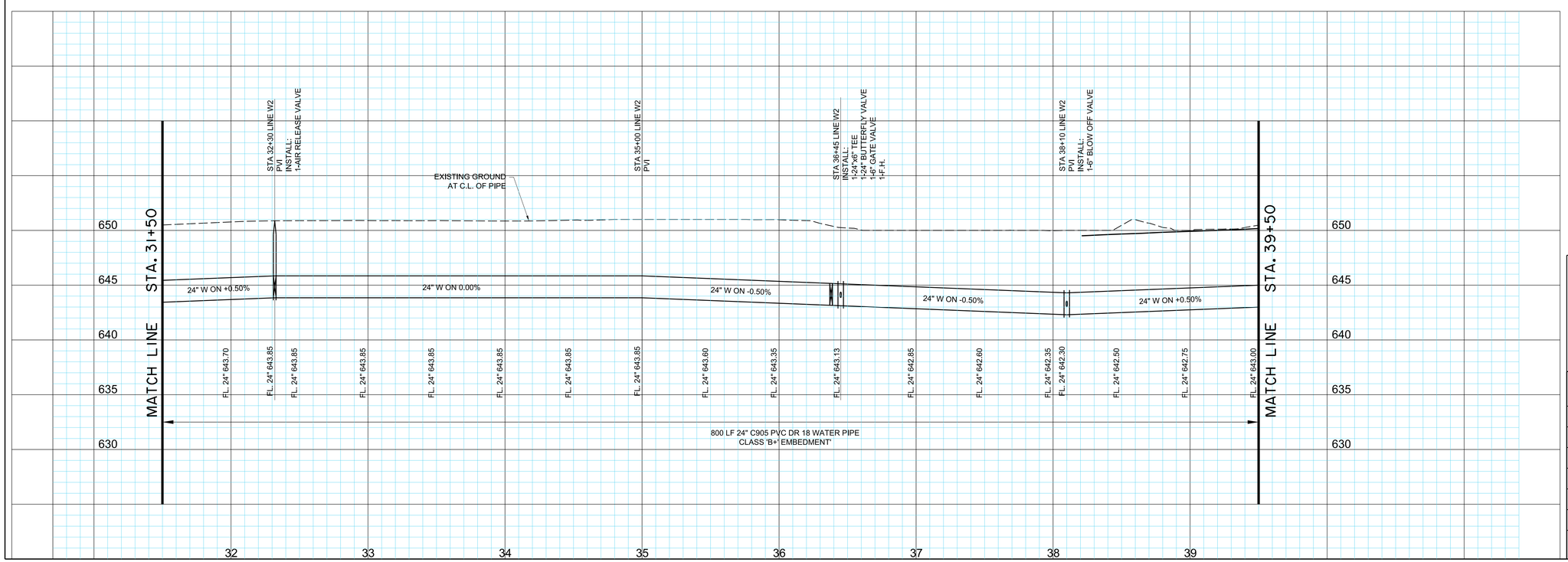
I:/proj/0139050I/0139054O Parcel 1&2/08-DesignCAD/DGN/phlws02.dgn

LEGEND

- PROPOSED WATER MAIN (PVC)
- EXISTING WATER MAIN (PVC)
- PROPOSED SANITARY SEWER (PVC)
- EXISTING SANITARY SEWER (PVC)
- PROPOSED FIRE HYDRANT
- EXISTING FIRE HYDRANT
- PROPOSED SANITARY SEWER M.H.
- EXISTING SANITARY SEWER M.H.
- PROPOSED WATER VALVE
- EXISTING WATER VALVE
- PROPOSED WATER SERVICE
- PROPOSED SANITARY SEWER LATERAL
- PROPOSED SANITARY SEWER CLEANOUT







N

0 20 40 60 80
SCALE IN FEET

BENCHMARKS:

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WATER LINE 'W2' PLAN & PROFILE (CONT.)
STA. 31+50 TO STA. 39+50

LIGHT FARMS

LFC Land Company LLC

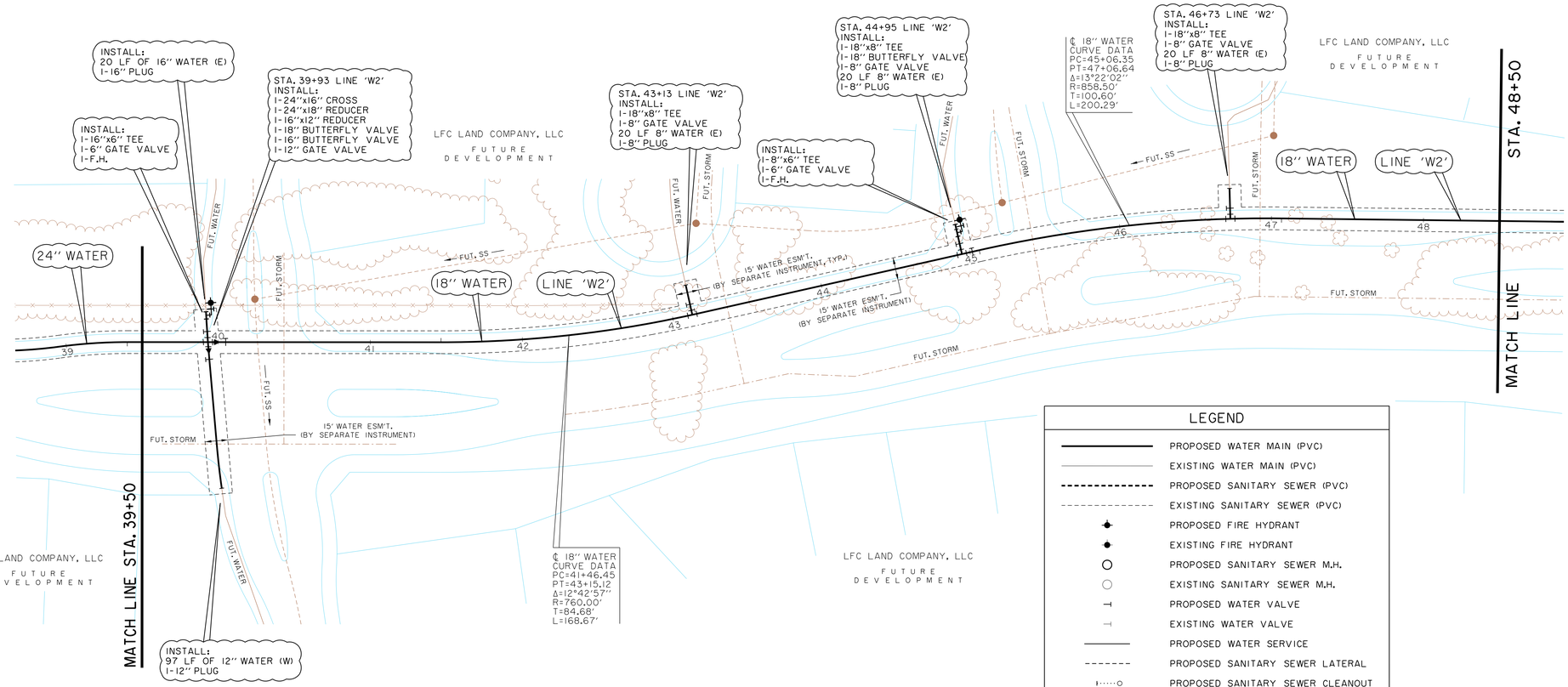
Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

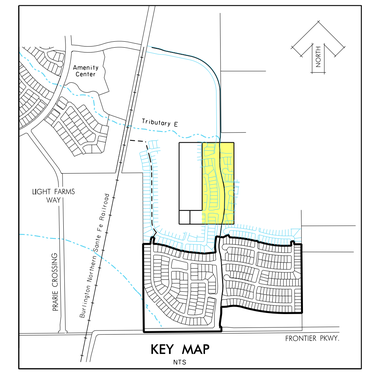
DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		H: 1"=40' V: 1"= 5'		01-3905-40	07-05

I:/proj/0139050/0139054O Parcel 1&2/08-DesignCAD/DGN/phlws03.dgn



LEGEND

- PROPOSED WATER MAIN (PVC)
- EXISTING WATER MAIN (PVC)
- PROPOSED SANITARY SEWER (PVC)
- EXISTING SANITARY SEWER (PVC)
- PROPOSED FIRE HYDRANT
- EXISTING FIRE HYDRANT
- PROPOSED SANITARY SEWER M.H.
- EXISTING SANITARY SEWER M.H.
- PROPOSED WATER VALVE
- EXISTING WATER VALVE
- PROPOSED WATER SERVICE
- PROPOSED SANITARY SEWER LATERAL
- PROPOSED SANITARY SEWER CLEANOUT



N

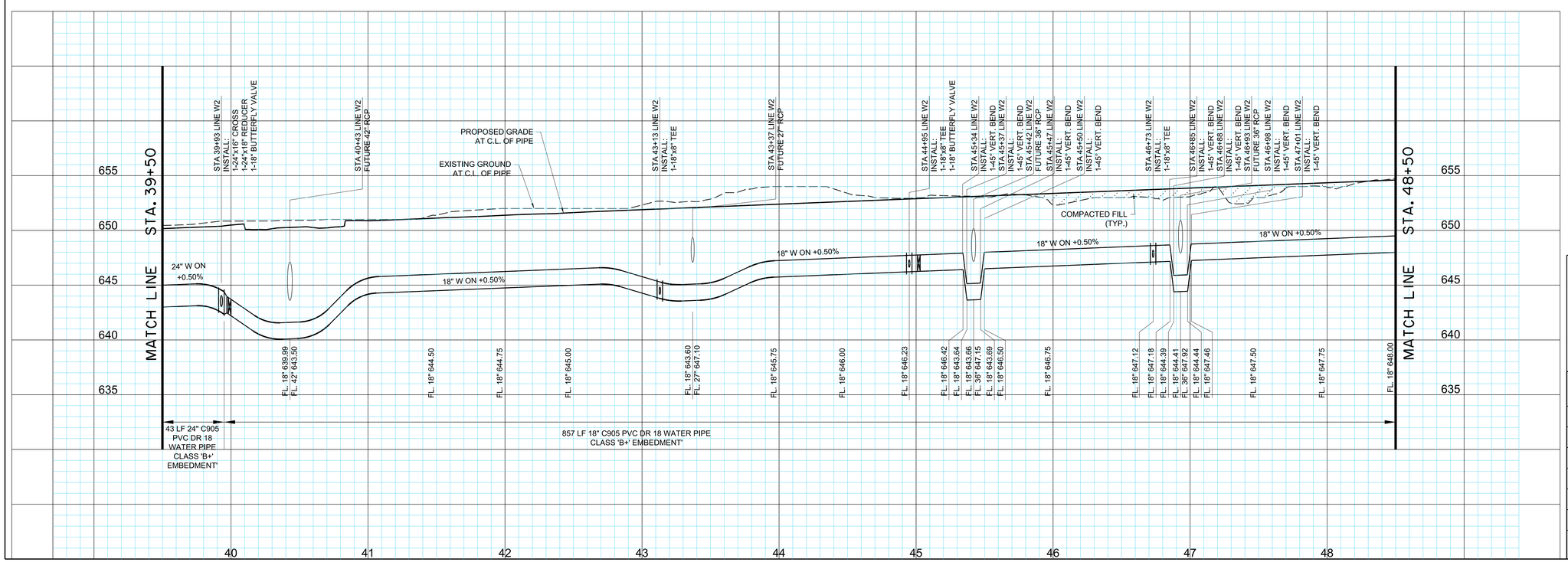
0 20 40 60 80
SCALE IN FEET

BENCHMARKS:

BM #5
Square cut on top concrete headwall, 5' west of edge of pavement of Frontier Parkway, 56 feet south of centerline of County Road No. 5, 485 feet east of centerline County Road No. 51.

N=7147548.47
E=2488493.86
Elev. = 652.94

BM #8
Square cut northeast corner of concrete headwall, north side of County Road 5, 1200 feet +- east of the intersection of County Road 5 and Frontier Parkway.
Elev. = 662.56



STATE OF TEXAS
ROBERT M. STENGELE
50145
REGISTERED
PROFESSIONAL ENGINEER
3-16-15

Huitt-Zollars, Inc.
Firm Registration No. F-761

RECORD DRAWING

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WATER LINE 'W2' PLAN & PROFILE (CONT.)
STA. 39+50 TO STA. 48+50

LIGHT FARMS

LFC Land Company LLC

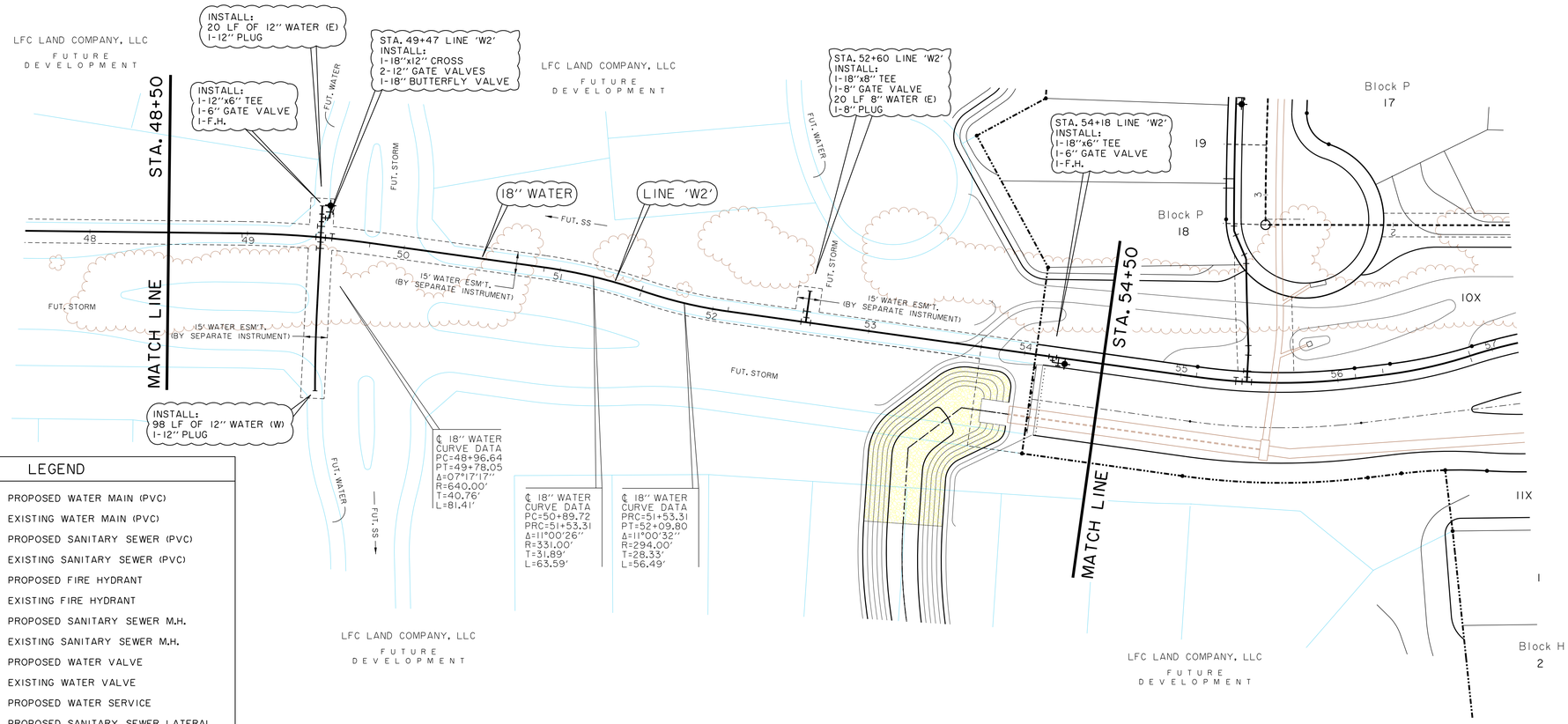
Collin County Municipal Utility District No. 1

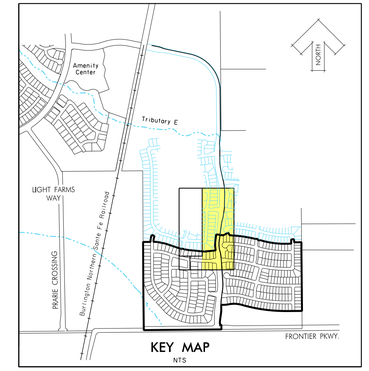
COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		H: 1"=40' V: 1"= 5'		01-3905-40	07-06

I:/proj/0139050/0139054O Parcel 1&2/08-DesignCAD/DGN/phlws04.dgn



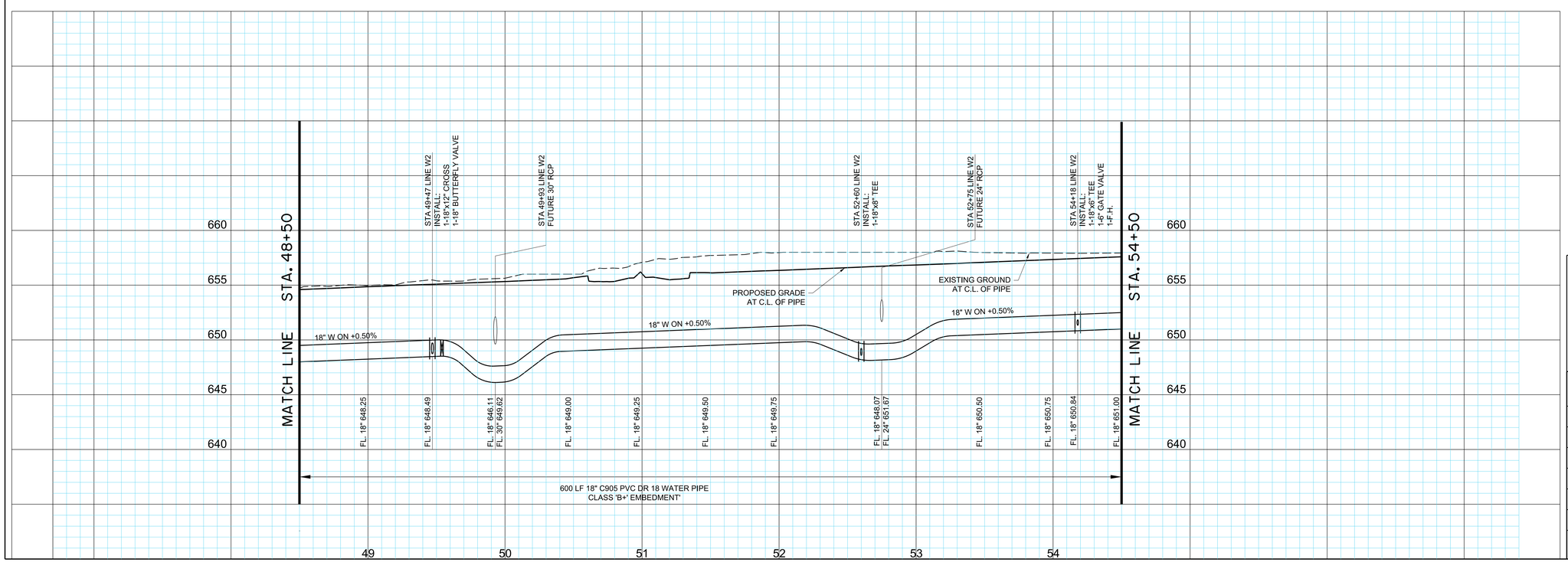


N

0 20 40 60 80
SCALE IN FEET

LEGEND

═══	PROPOSED WATER MAIN (PVC)
═══	EXISTING WATER MAIN (PVC)
- - - -	PROPOSED SANITARY SEWER (PVC)
- - - -	EXISTING SANITARY SEWER (PVC)
	PROPOSED FIRE HYDRANT
	EXISTING FIRE HYDRANT
○	PROPOSED SANITARY SEWER M.H.
○	EXISTING SANITARY SEWER M.H.
⊣	PROPOSED WATER VALVE
⊣	EXISTING WATER VALVE
═══	PROPOSED WATER SERVICE
- - - -	PROPOSED SANITARY SEWER LATERAL
ı·····o	PROPOSED SANITARY SEWER CLEANOUT



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WATER LINE 'W2' PLAN & PROFILE (CONT.)
STA. 48+50 TO STA. 54+50

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		H: 1"=40' V: 1"= 5'		01-3905-40	07-07

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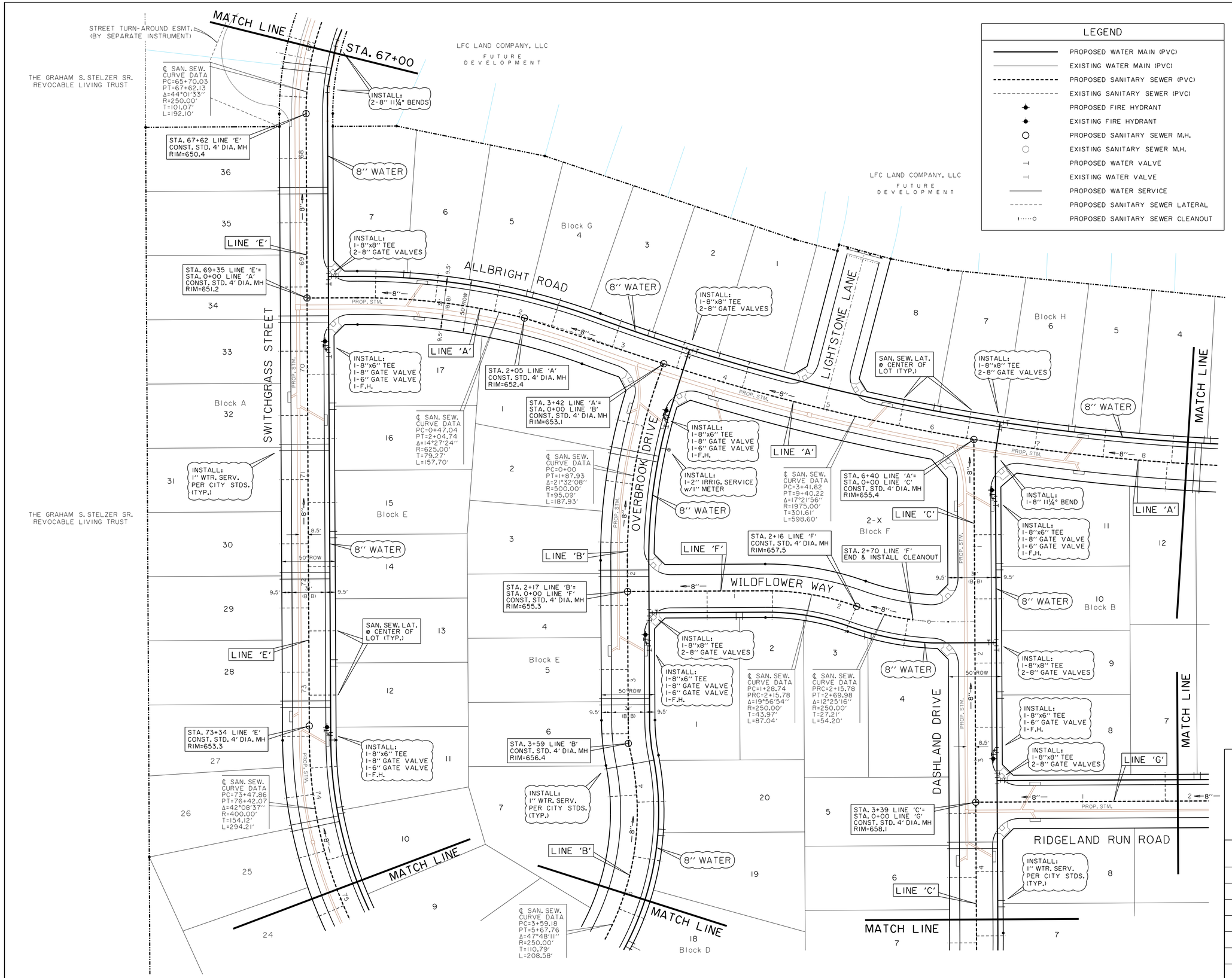
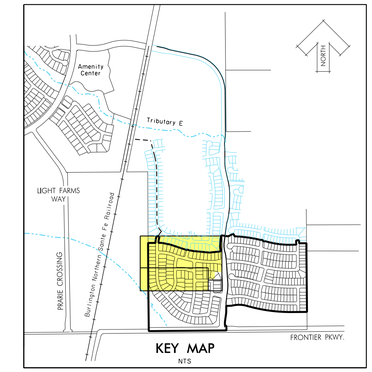


LEGEND

- PROPOSED WATER MAIN (PVC)
- EXISTING WATER MAIN (PVC)
- PROPOSED SANITARY SEWER (PVC)
- EXISTING SANITARY SEWER (PVC)
- PROPOSED FIRE HYDRANT
- EXISTING FIRE HYDRANT
- PROPOSED SANITARY SEWER M.H.
- EXISTING SANITARY SEWER M.H.
- PROPOSED WATER VALVE
- EXISTING WATER VALVE
- PROPOSED WATER SERVICE
- PROPOSED SANITARY SEWER LATERAL
- PROPOSED SANITARY SEWER CLEANOUT



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SCALE IN FEET

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WATER & SANITARY SEWER PLAN

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

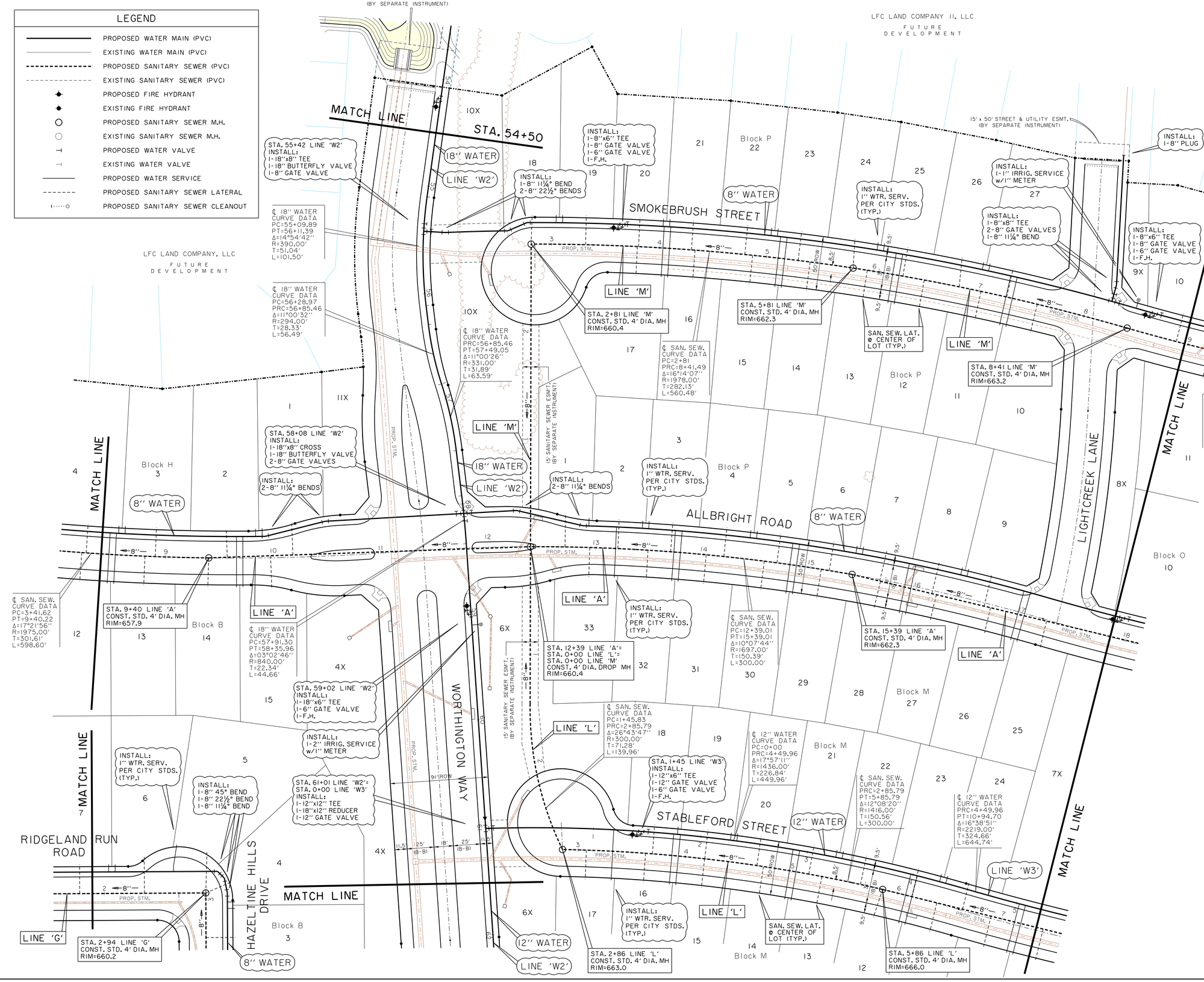
HUITT-ZOLLARS

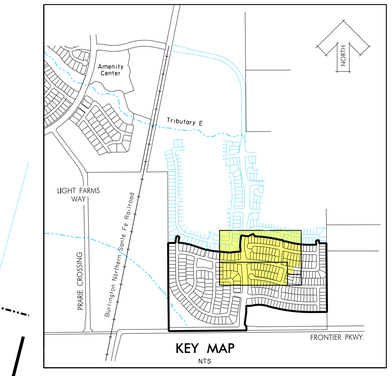
DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		1"=40'		01-3905-40	07-08

I:/proj/0139050I/0139054O Parcel I&2/08-DesignCAD/DGN/phlws06.dgn

LEGEND

- PROPOSED WATER MAIN (PVC)
- EXISTING WATER MAIN (PVC)
- PROPOSED SANITARY SEWER (PVC)
- EXISTING SANITARY SEWER (PVC)
- PROPOSED FIRE HYDRANT
- EXISTING FIRE HYDRANT
- PROPOSED SANITARY SEWER M.H.
- EXISTING SANITARY SEWER M.H.
- PROPOSED WATER VALVE
- EXISTING WATER VALVE
- PROPOSED WATER SERVICE
- PROPOSED SANITARY SEWER LATERAL
- PROPOSED SANITARY SEWER CLEANOUT





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LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
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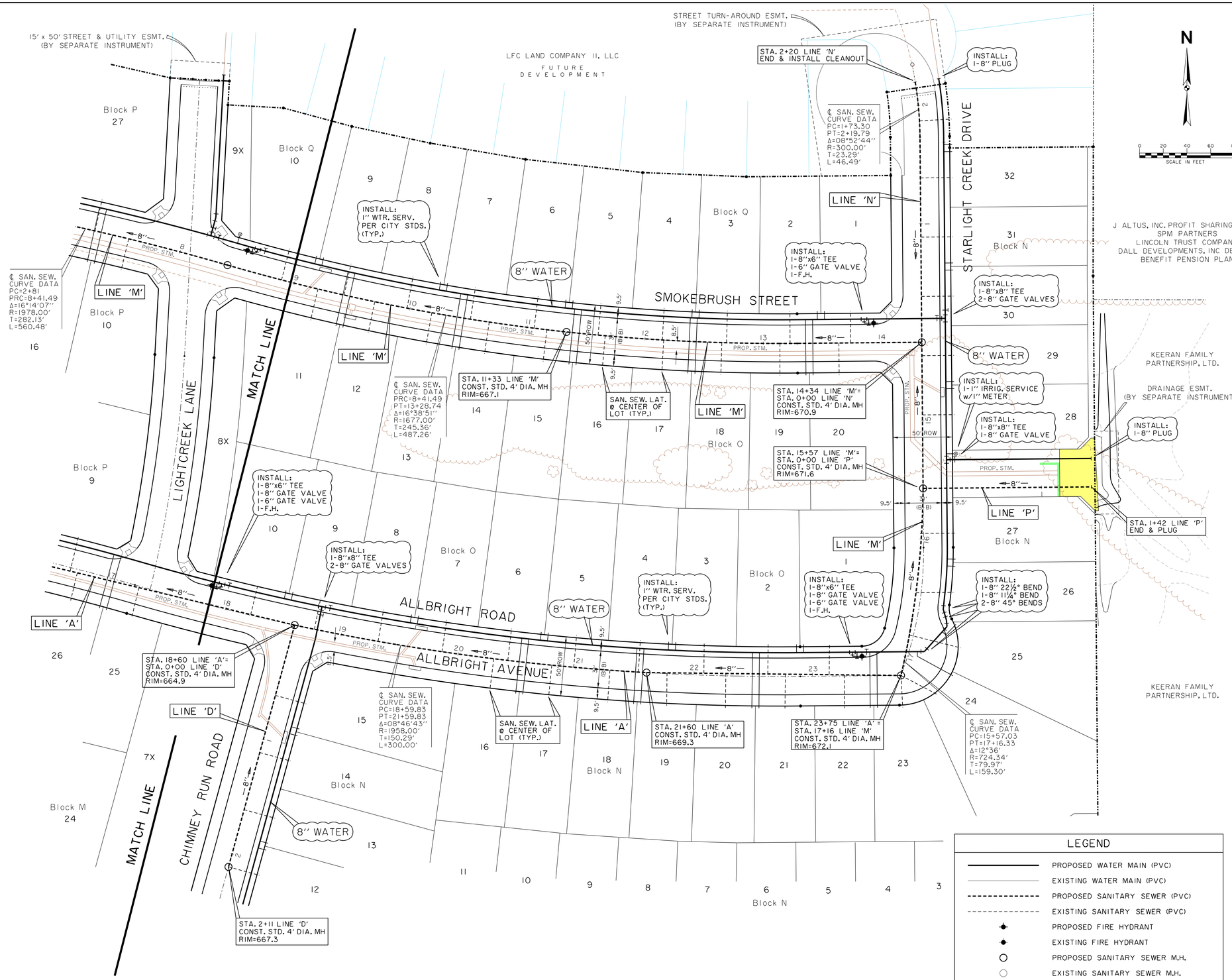

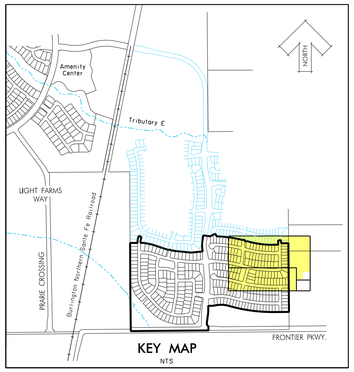

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LEGEND

———	PROPOSED WATER MAIN (PVC)
———	EXISTING WATER MAIN (PVC)
- - - - -	PROPOSED SANITARY SEWER (PVC)
- - - - -	EXISTING SANITARY SEWER (PVC)
	PROPOSED FIRE HYDRANT
	EXISTING FIRE HYDRANT
	PROPOSED SANITARY SEWER M.H.
	EXISTING SANITARY SEWER M.H.
	PROPOSED WATER VALVE
	EXISTING WATER VALVE
———	PROPOSED WATER SERVICE
- - - - -	PROPOSED SANITARY SEWER LATERAL
	PROPOSED SANITARY SEWER CLEANOUT

STATE OF TEXAS
ROBERT M. STENGELE
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3-16-15

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WATER & SANITARY SEWER PLAN

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		1"=40'		01-3905-40	07-10

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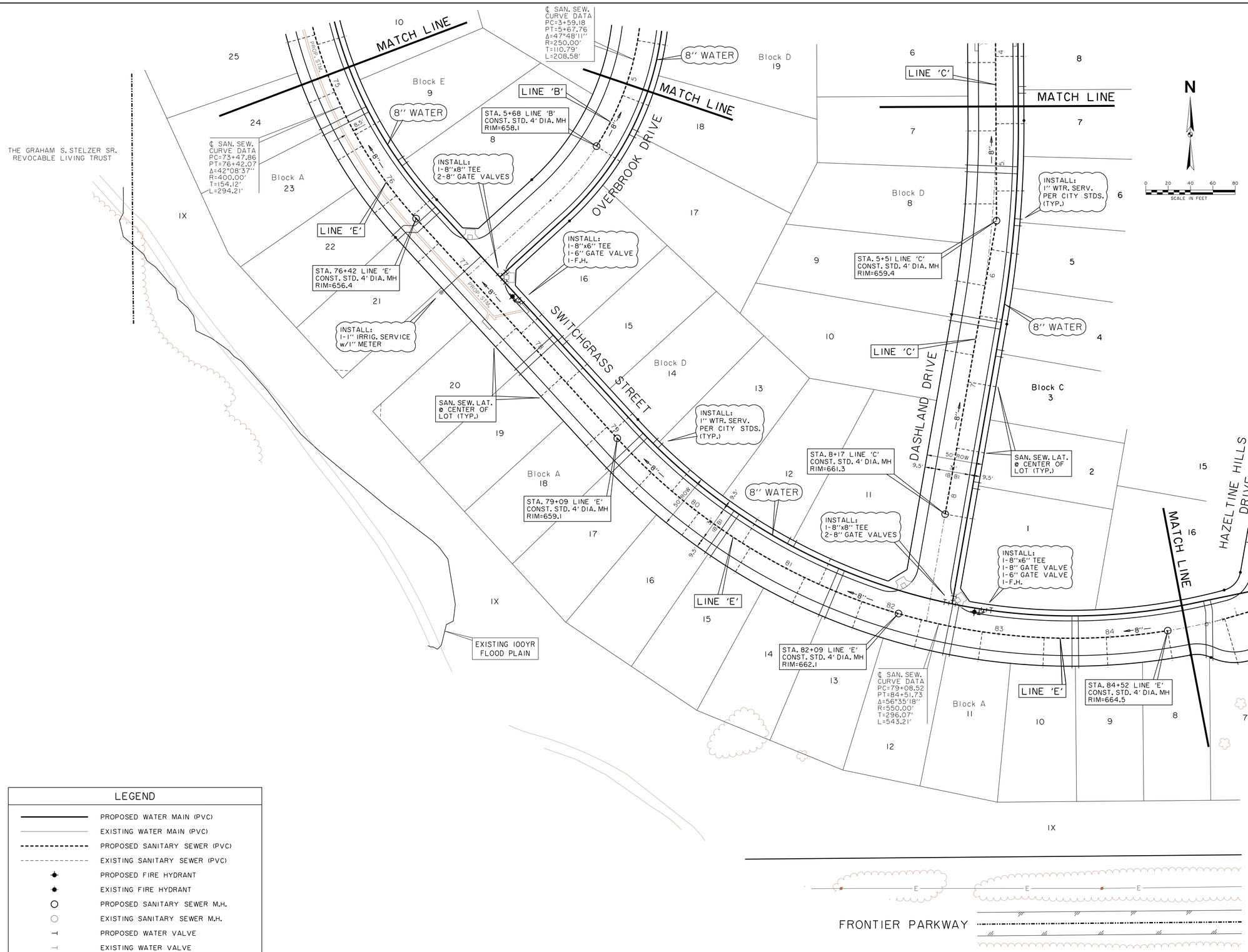

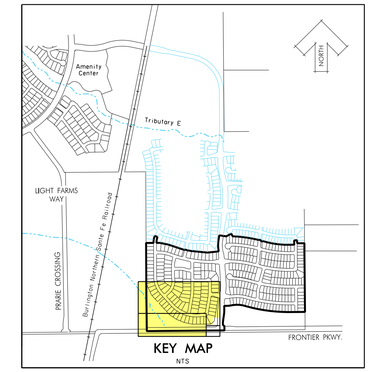

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- EXISTING SANITARY SEWER M.H.
- PROPOSED WATER VALVE
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STATE OF TEXAS
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WATER & SANITARY SEWER PLAN

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		1"=40'		01-3905-40	07-11

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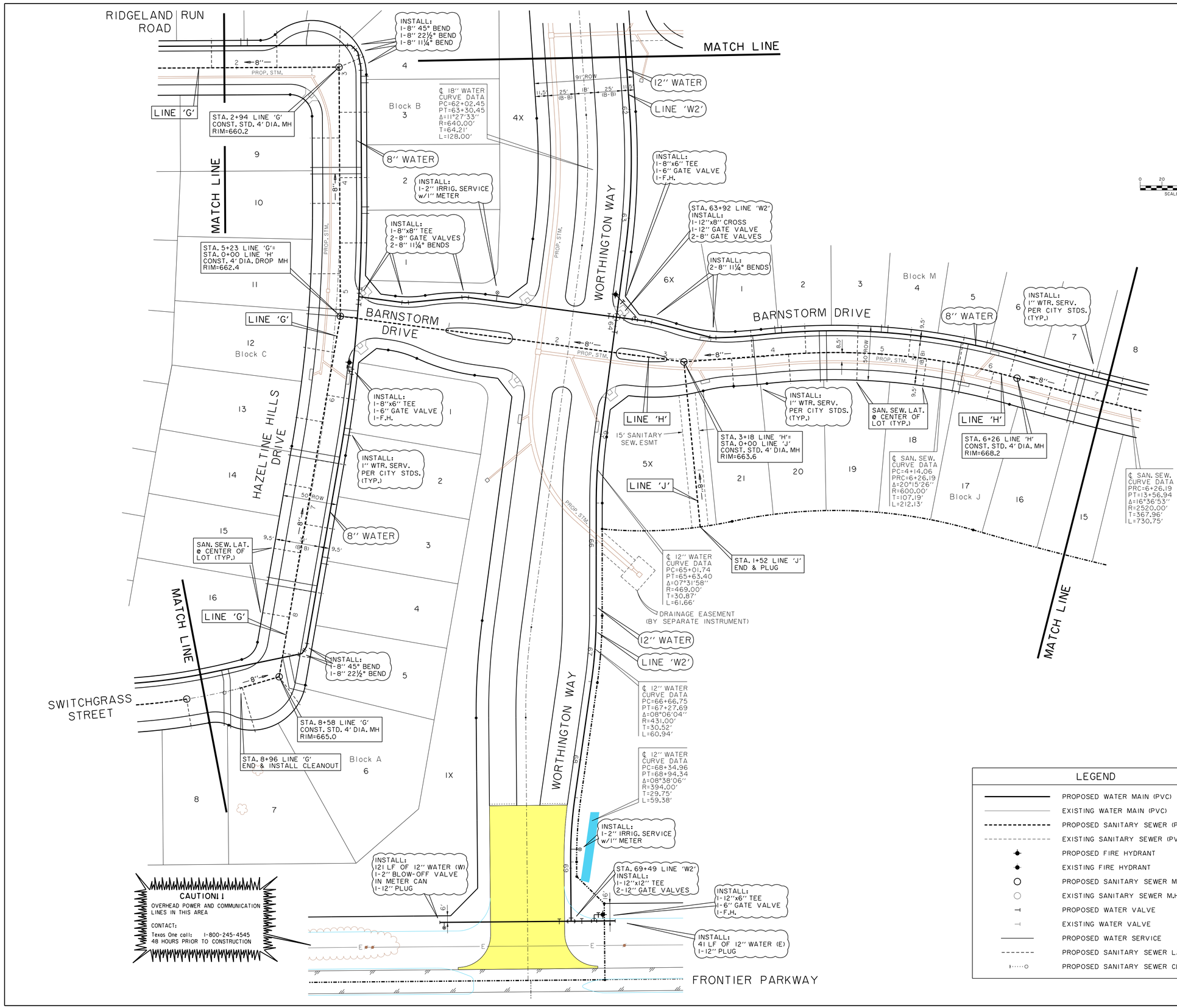

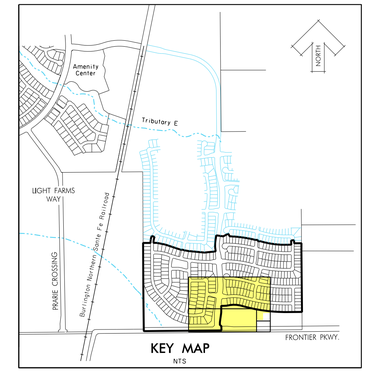

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LEGEND

———	PROPOSED WATER MAIN (PVC)
———	EXISTING WATER MAIN (PVC)
- - - -	PROPOSED SANITARY SEWER (PVC)
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	PROPOSED FIRE HYDRANT
	EXISTING FIRE HYDRANT
	PROPOSED SANITARY SEWER M.H.
	EXISTING SANITARY SEWER M.H.
	PROPOSED WATER VALVE
	EXISTING WATER VALVE
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LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

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HZI	HZI		1"=40'		01-3905-40	07-12

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LEGEND

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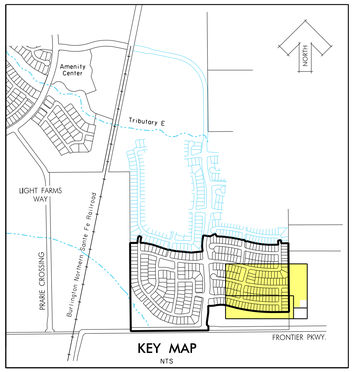
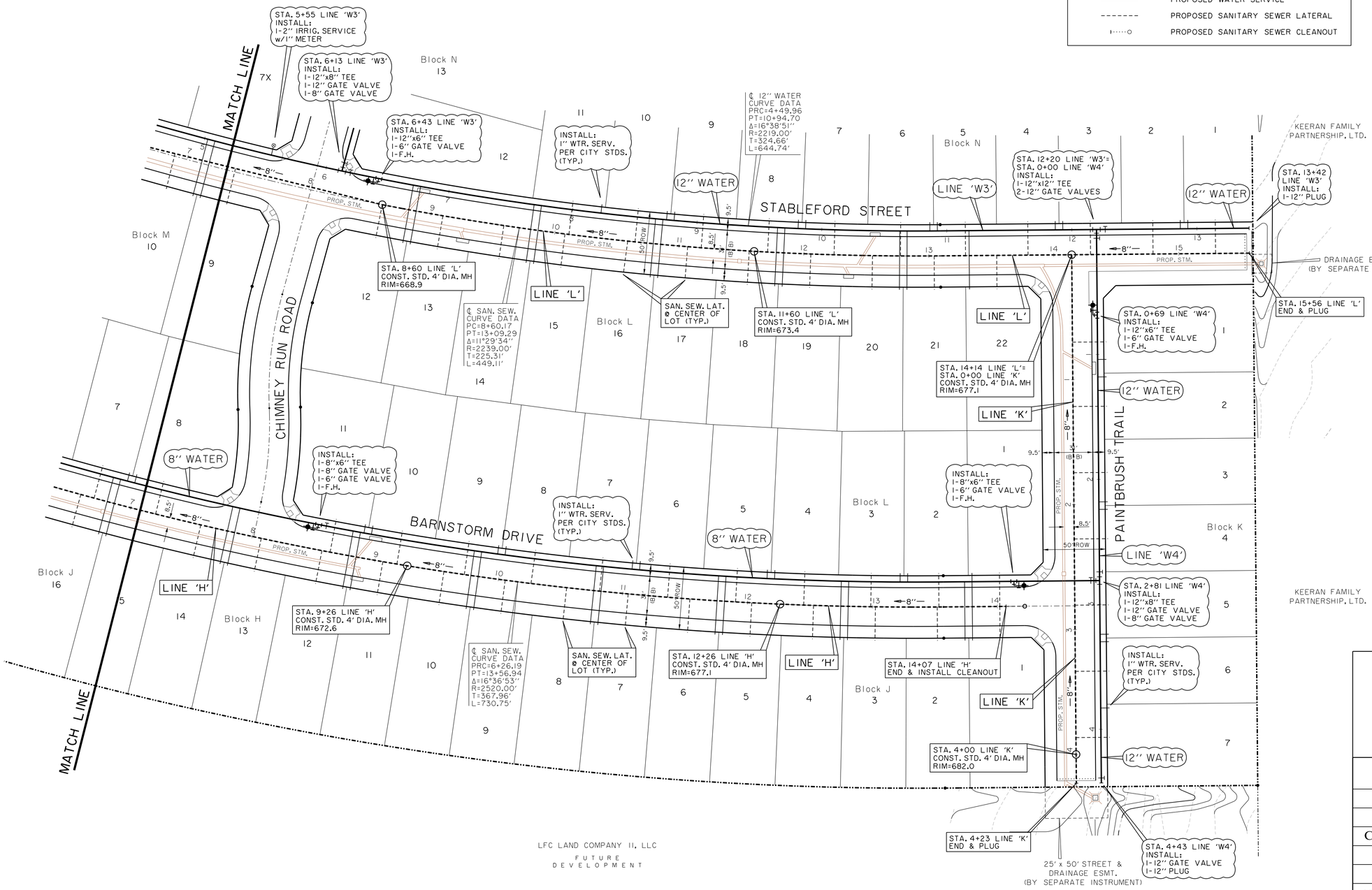


KEY MAP
NTS

N

0 20 40 60 80
SCALE IN FEET



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LIGHT FARMS

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COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

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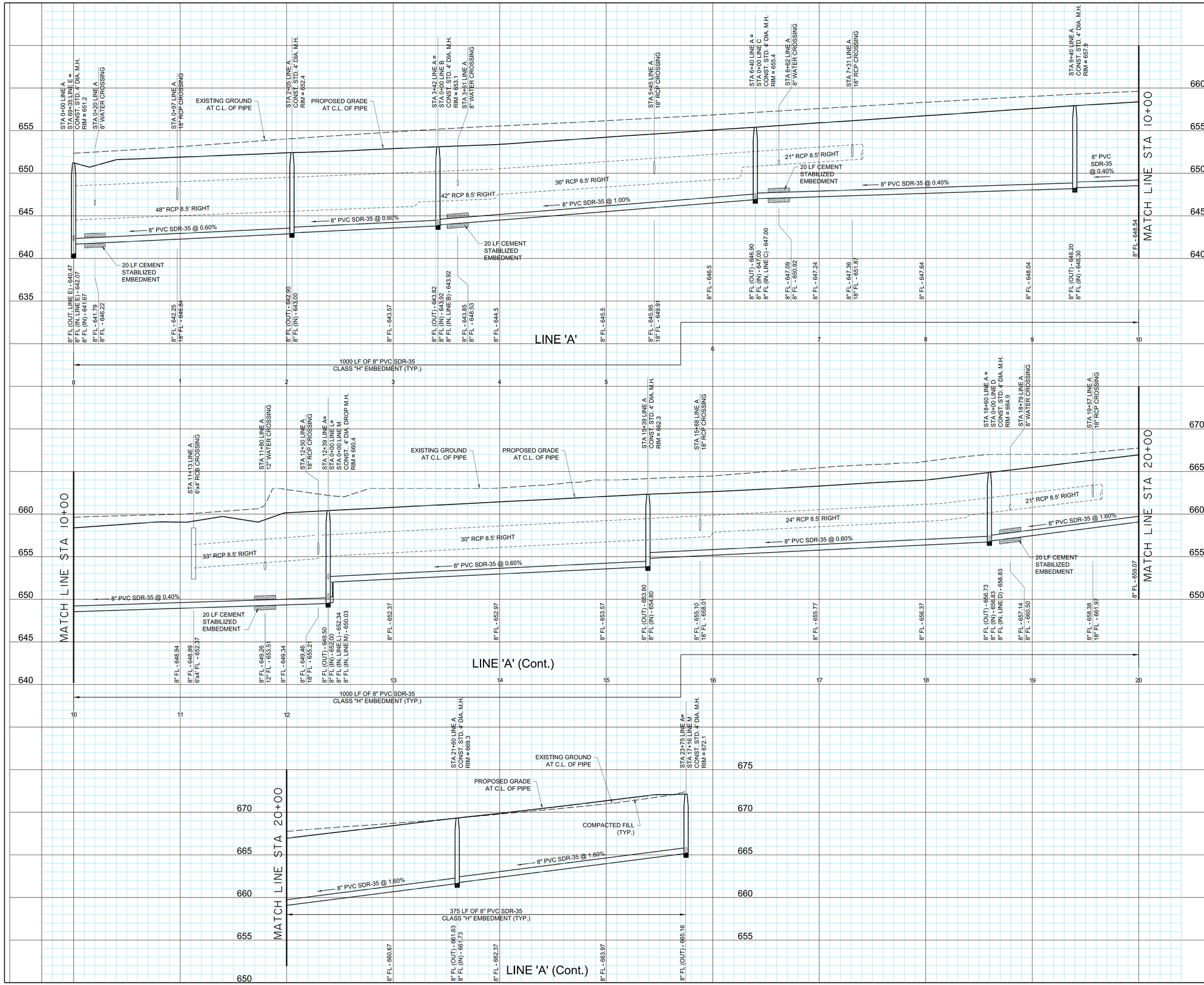

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SANITARY SEWER PROFILES
LINE 'A'

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		H: 1"=40' V: 1"= 5'		01-3905-40	07-14

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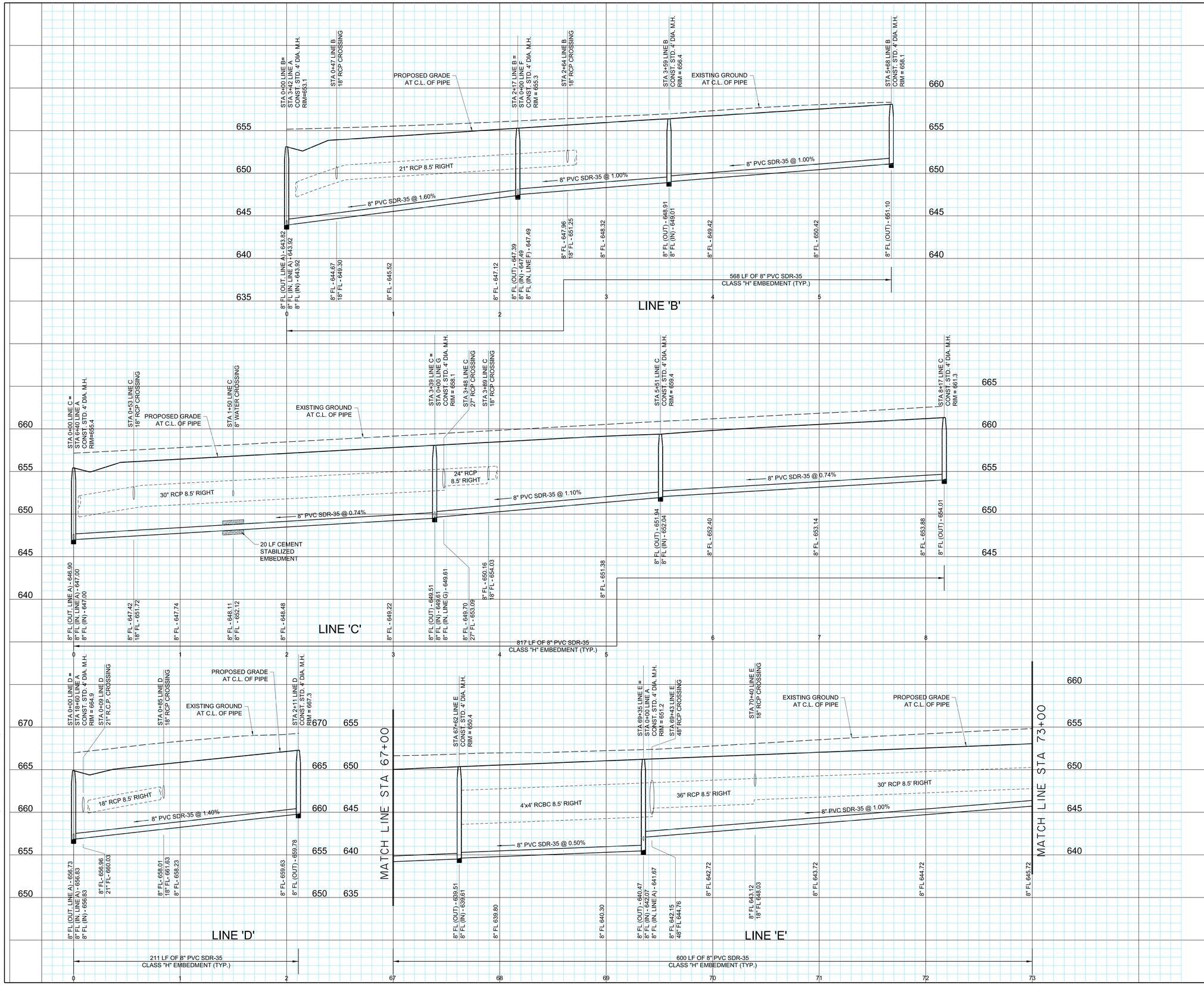
SANI. SEWER PROFILES (LINE 'A')

P-201402-02



BENCHMARKS:

BM #5
Square cut on top concrete headwall, 5' west of edge of pavement of Frontier Parkway, 56 feet south of centerline of County Road No. 5, 485 feet east of centerline County Road No. 51.

N=7147548.47
E=2488493.86
Elev. = 652.94

BM #8
Square cut northeast corner of concrete headwall, north side of County Road 5, 1200 feet +- east of the intersection of County Road 5 and Frontier Parkway.
Elev. = 662.56

STATE OF TEXAS
ROBERT M. STENGELE
50145
REGISTERED PROFESSIONAL ENGINEER
3-16-15

Huitt-Zollars, Inc.
Firm Registration No. F-761

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SANITARY SEWER PROFILES
LINES 'B', 'C', 'D' & 'E'

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

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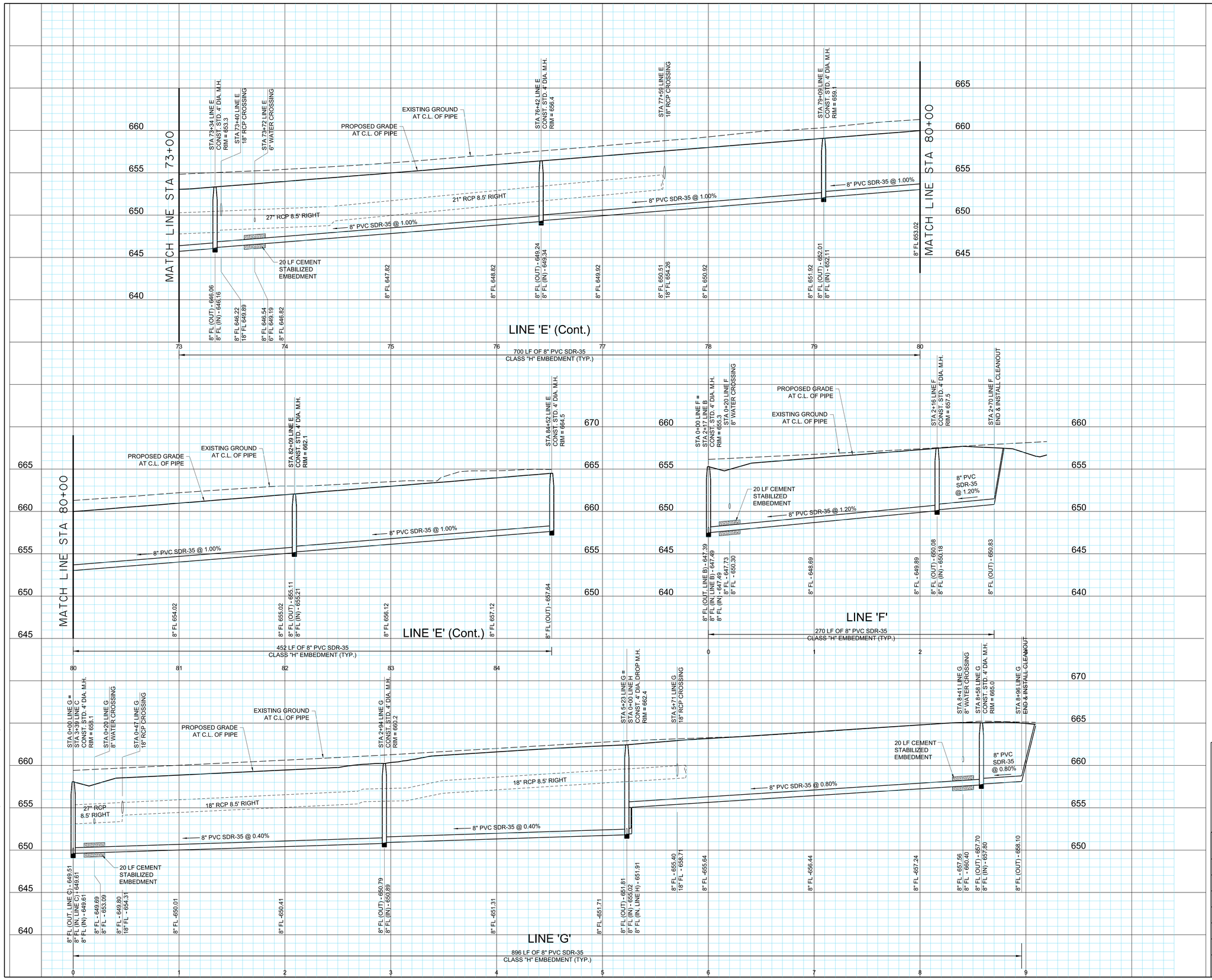
SANI. SEWER PROFILES (LINES 'B', 'C', 'D' & 'E')

P-201402-02



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SANITARY SEWER PROFILES
LINES 'E' (Cont.), 'F', & 'G'

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

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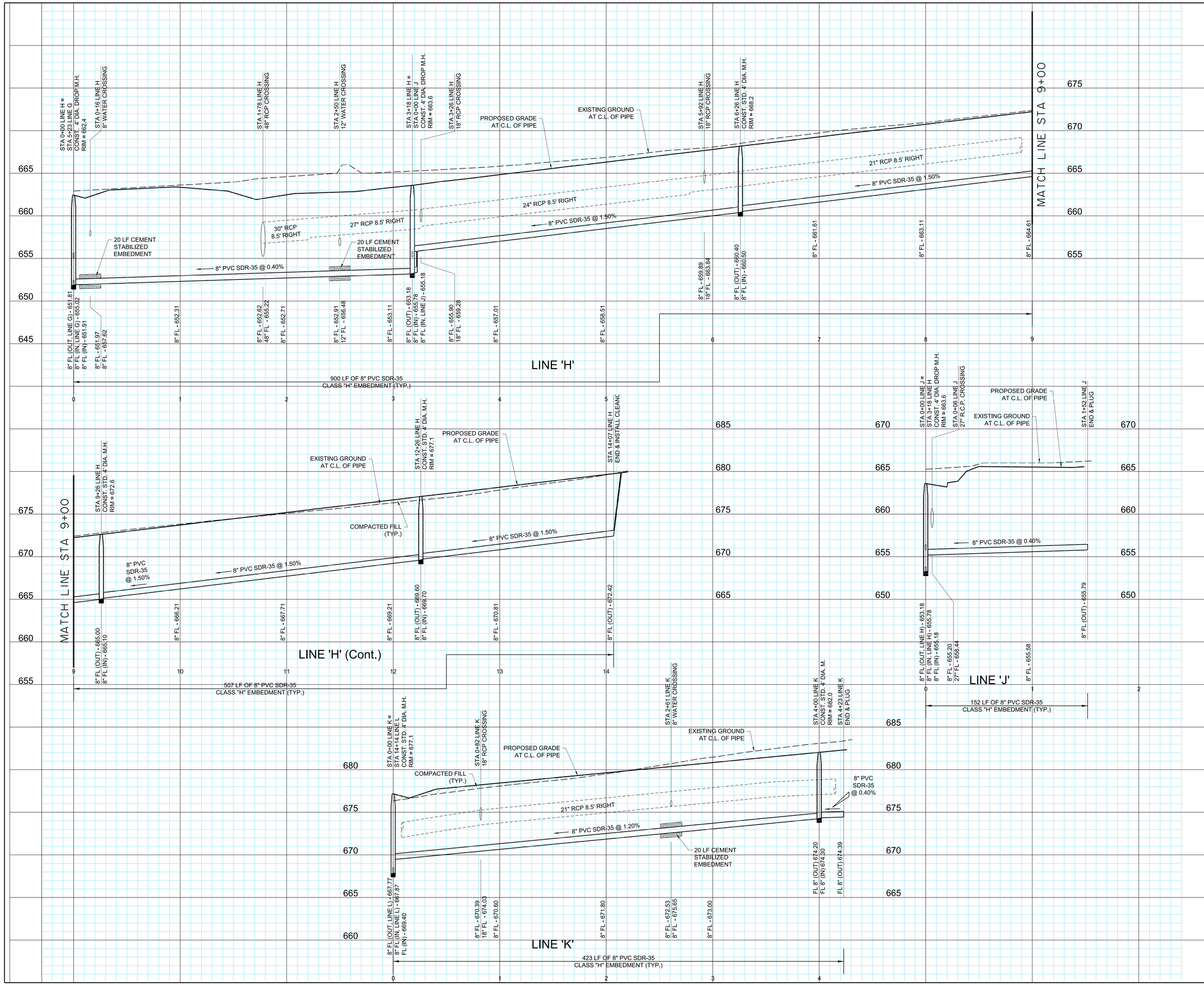
SANI. SEWER PROFILES (LINES 'E' (Cont.), 'F', & 'G')

P-201402-02



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SANITARY SEWER PROFILES
LINES 'H', 'J', & 'K'

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

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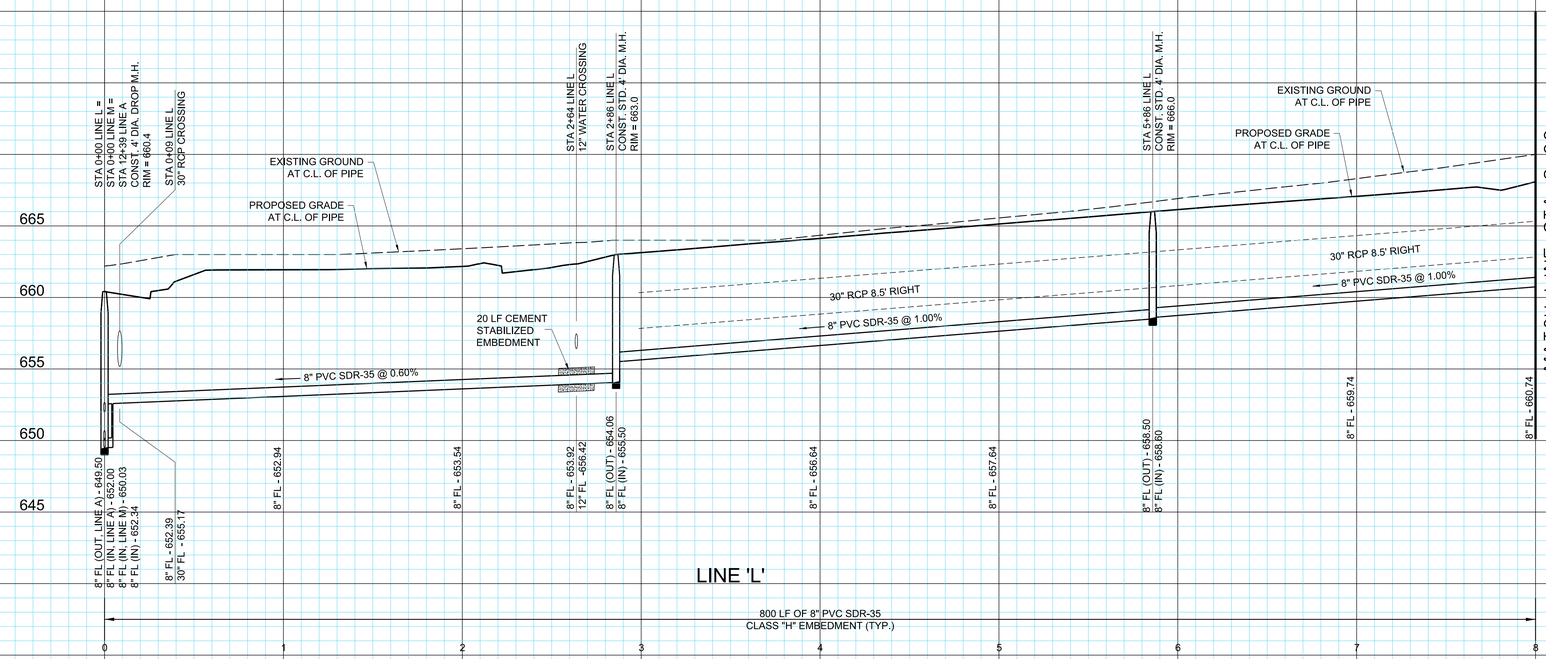

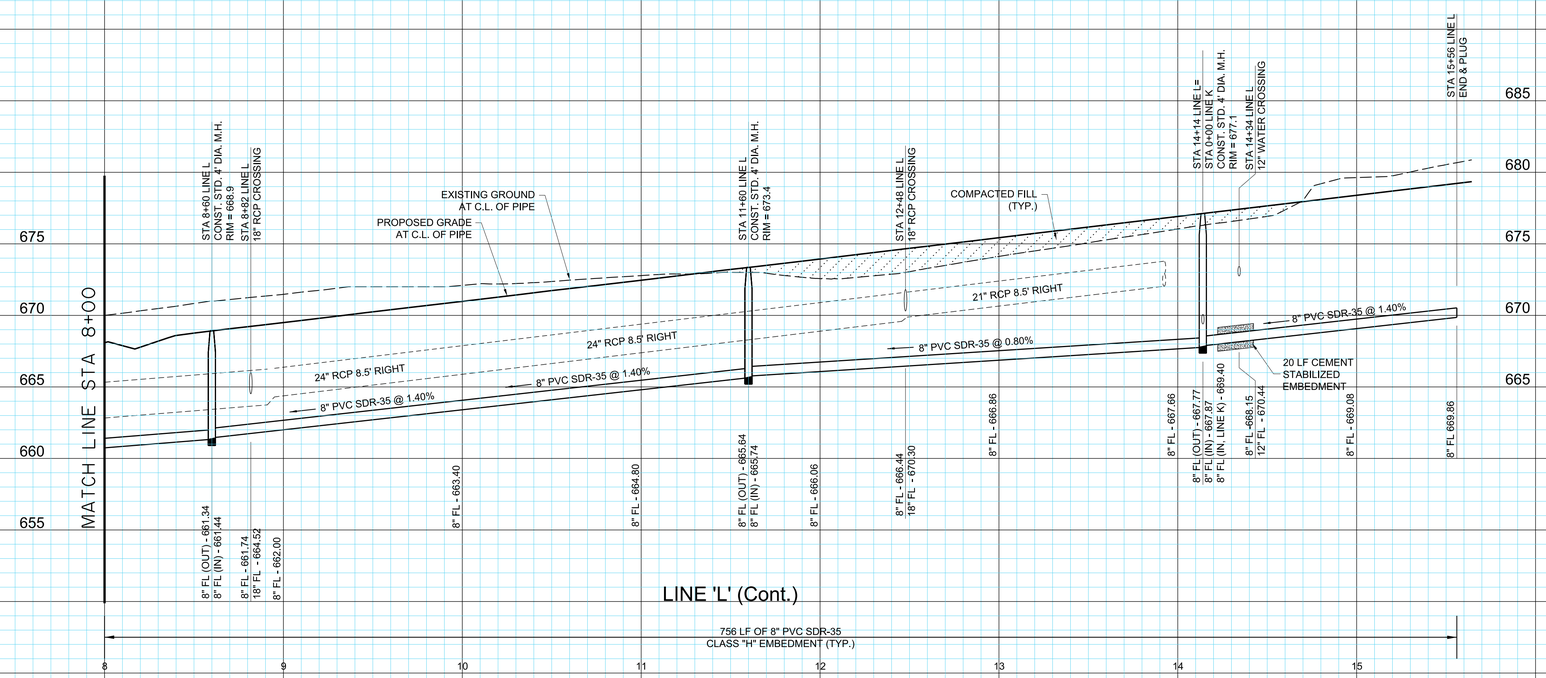

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SANITARY SEWER PROFILES
LINE 'L'

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

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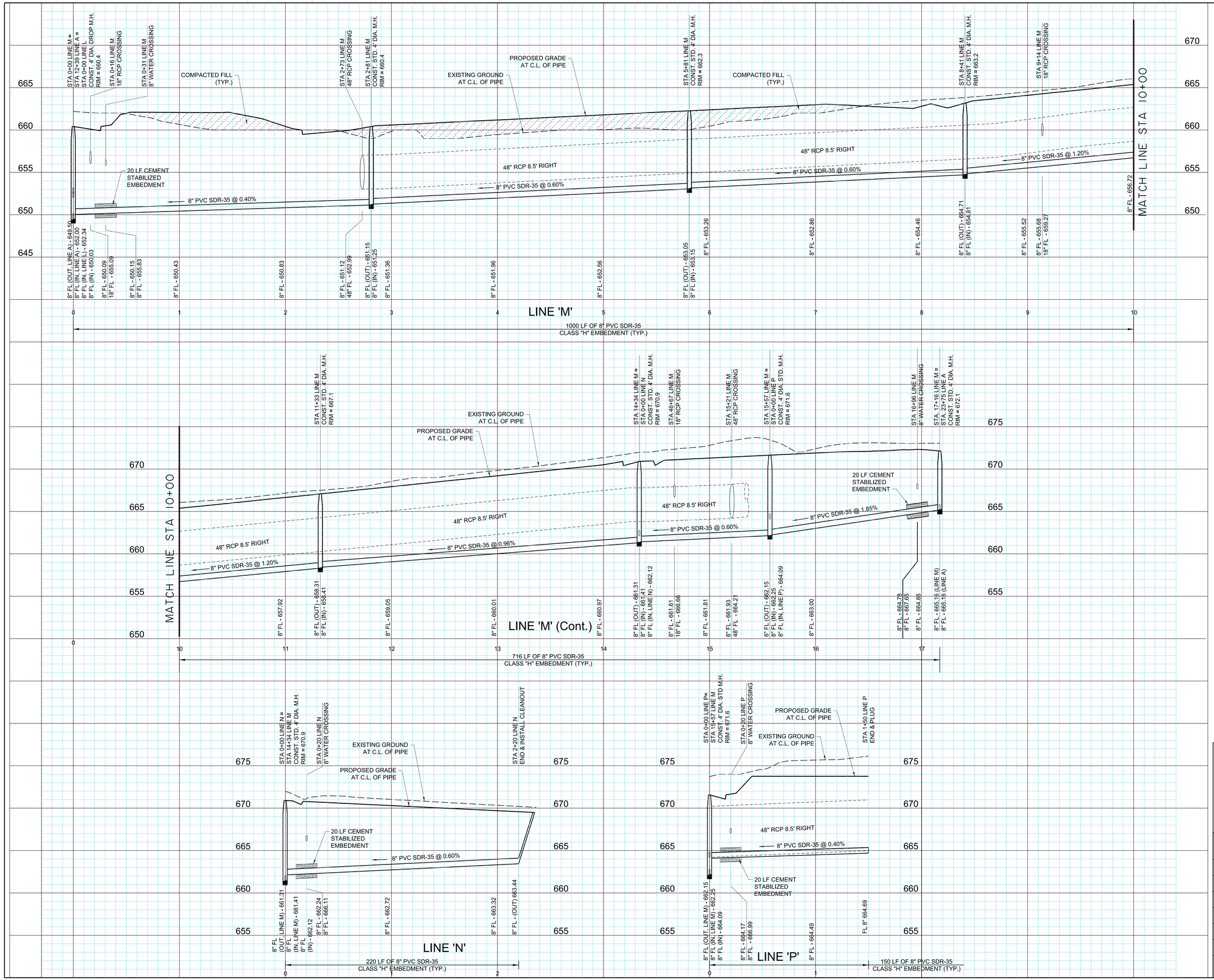

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SANITARY SEWER PROFILES
LINES 'M','N' & 'O'

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

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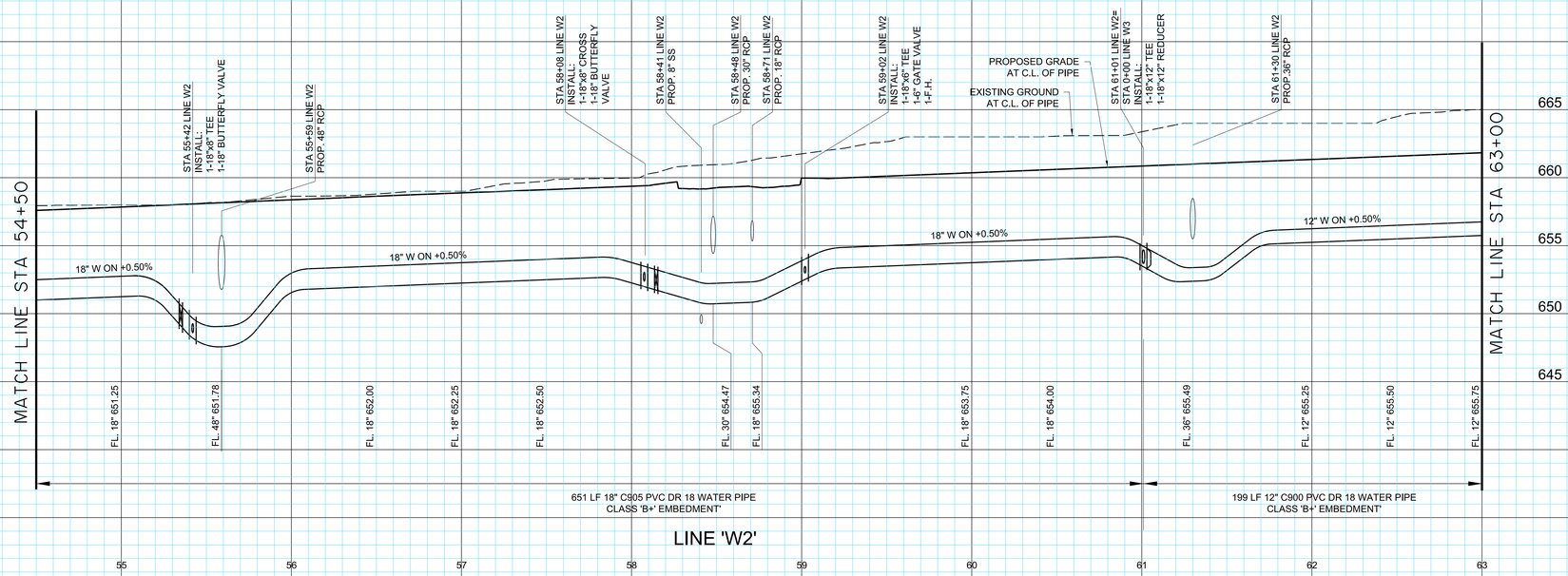
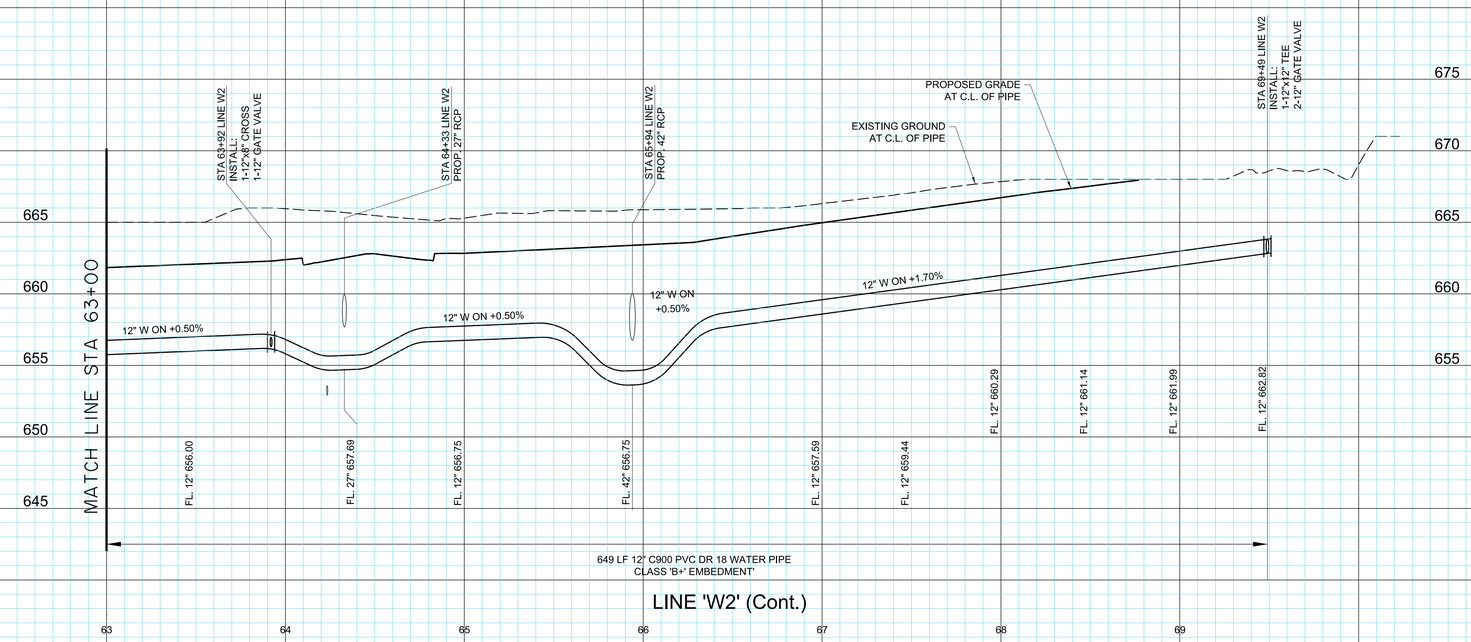


LINE 'W2'



LINE 'W2' (Cont.)

BENCHMARKS:

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WATER LINE PROFILE 'W2'
STA. 54+50 TO STA. 69+49

LIGHT FARMS

LFC Land Company LLC

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HUITT-ZOLLARS

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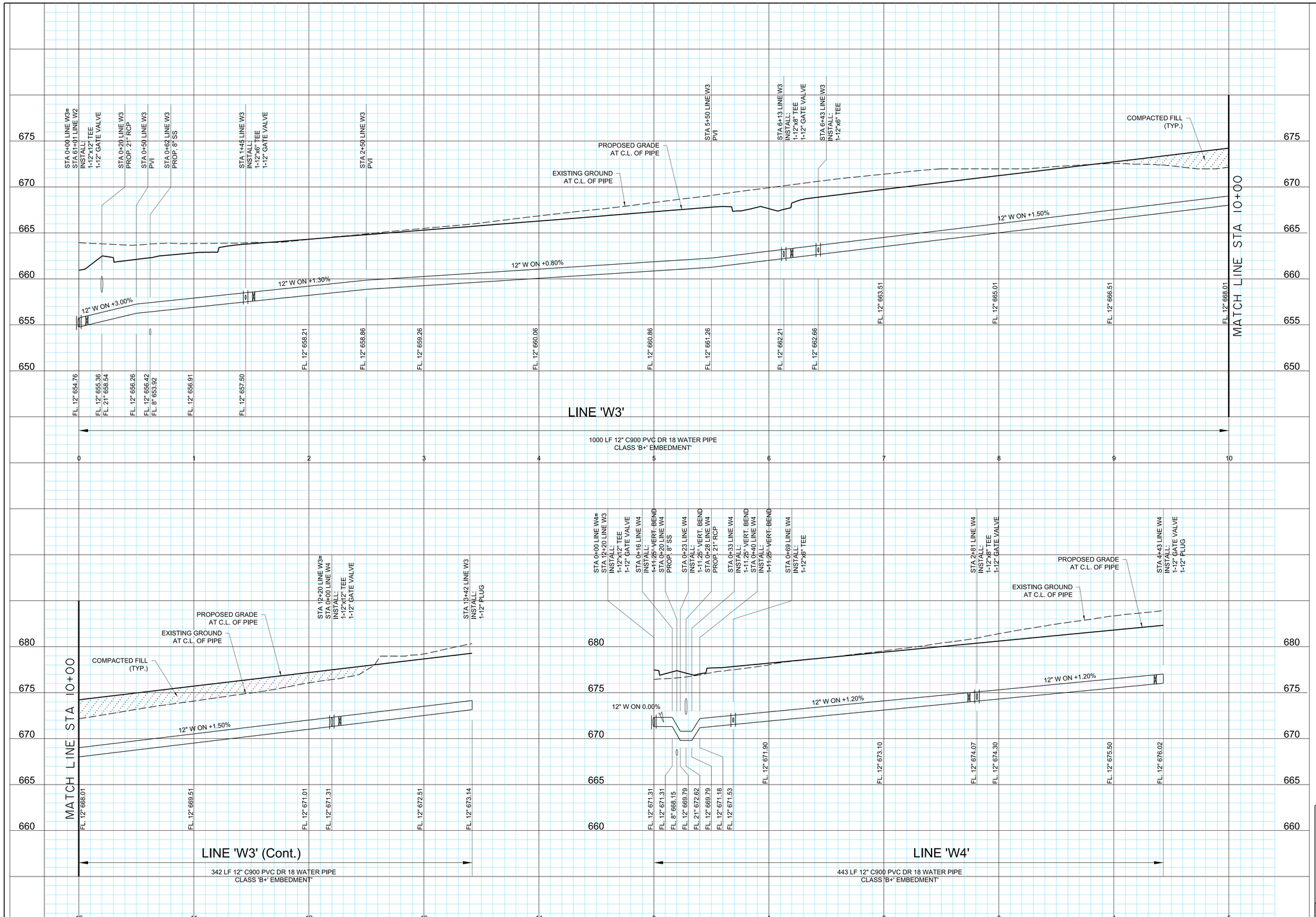

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WATER LINE PROFILES 'W3' & 'W4'

LIGHT FARMS

LFC Land Company LLC

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COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

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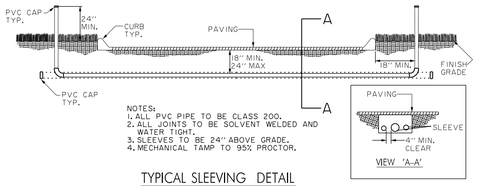
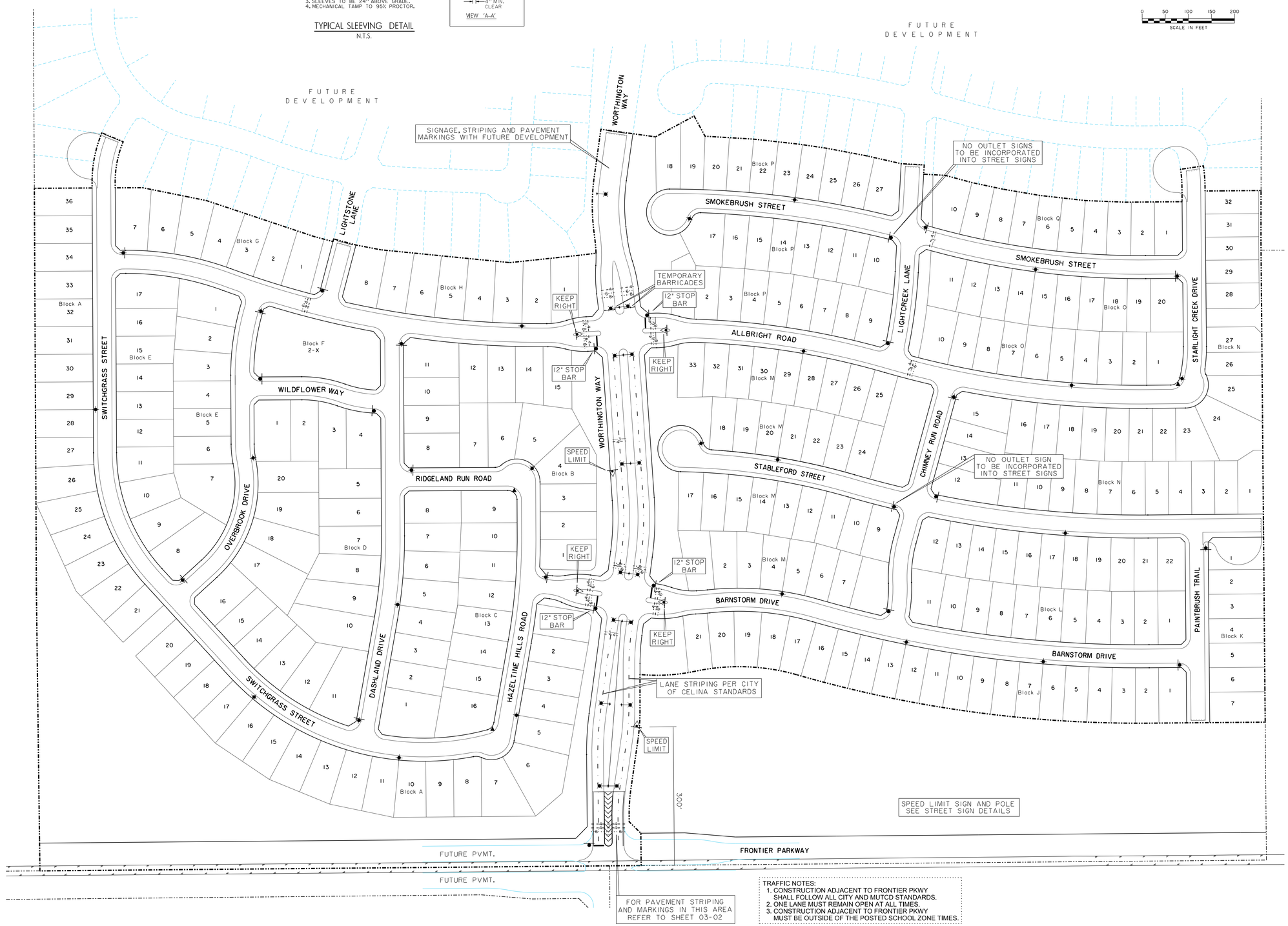


NOTES:
1. ALL PVC PIPE TO BE CLASS 200.
2. ALL JOINTS TO BE SOLVENT WELDED AND WATER TIGHT.
3. SLEEVES TO BE 24" ABOVE GRADE.
4. MECHANICAL TAMP TO 95% PROCTOR.

TYPICAL SLEEVING DETAIL
N.T.S.



FOR PAVEMENT STRIPING AND MARKINGS IN THIS AREA REFER TO SHEET 03-02

TRAFFIC NOTES:
1. CONSTRUCTION ADJACENT TO FRONTIER PKWY SHALL FOLLOW ALL CITY AND MUTCD STANDARDS.
2. ONE LANE MUST REMAIN OPEN AT ALL TIMES.
3. CONSTRUCTION ADJACENT TO FRONTIER PKWY MUST BE OUTSIDE OF THE POSTED SCHOOL ZONE TIMES.

LEGEND

- SINGLE LIGHT (BY GCEC)
- SINGLE STREET LIGHT (BY GCEC)
- DOUBLE LIGHT (BY GCEC)
- STREET SIGN
- STREET SIGN AND STOP SIGN (SEE STREET SIGN DETAILS)
- STOP BAR (PER CELINA STD. DETAILS)
- STREET SIGN AND STOP SIGN ON SINGLE LIGHT POLE
- REGULATORY SIGN (SEE STREET SIGN DETAILS)

NOTE:
SIGN POST AND LIGHT POST TYPE AND COLOR TO BE APPROVED BY THE CITY.

LEGEND

2-2" SLEEVE	—2-2—
3" SLEEVE	—3—
4" SLEEVE	- - -4- - -
6" SLEEVE	·····6·····
8" SLEEVE	·····8·····
12" SLEEVE	—12—

NOTE:
STREET LIGHT LOCATIONS SHOWN ARE FOR GENERAL LOCATION ONLY AND TO BE COORDINATED WITH AND APPROVED BY THE CITY PRIOR TO INSTALLATION BY THE ELECTRIC COMPANY PROVIDER.

REFER TO SHEET 09-03 FOR STREET LIGHT, SIGN AND POLE DETAILS.

BENCHMARKS:

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3-16-15

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09/08/14 REVISED IRRIGATION SLEEVES

LIGHTING, SIGNAGE, STRIPING & SLEEVING PLAN

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

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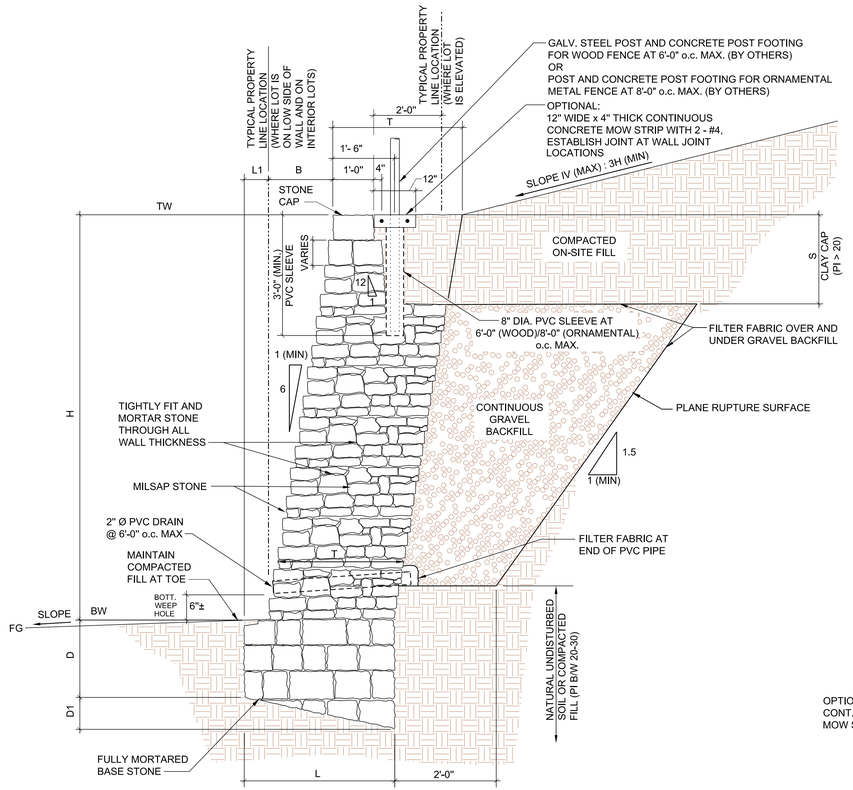


1 RETAINING WALL DESIGN SECTION

SCALE: N.T.S.

MASONRY WALL SCHEDULE (SUBGRADE BEARING: STIFF NATIVE SOIL OR COMPACTED & TESTED SOIL)									
H	B	L	L1	T	D	D1	S	WALL/BASE CONSTRUCTION	MIN. REQ'D. BEARING CAPACITY
2'-0"	0'-4"	1'-7"	0'-1"	1'-6"	0'-9"	0'-6"	1'-0"	FULLY MORTARED	1500 psf (CONFIRM)
3'-0"	0'-6"	1'-10"	0'-2"	1'-8"	0'-9"	0'-7"	1'-0"	FULLY MORTARED	
4'-0"	0'-8"	2'-3"	0'-3"	2'-0"	1'-0"	0'-8"	1'-0"	FULLY MORTARED	

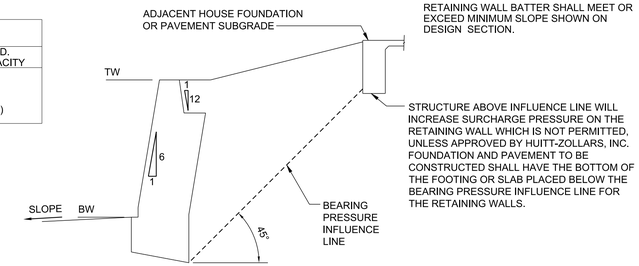
2 RETAINING WALL DESIGN SCHEDULE

SCALE: N.T.S.

RETAINING WALL SHALL HAVE OWNER FENCE PLACED AS SHOWN INSIDE FRONT FACE OF STONE CAP AT TOP OF WALL.

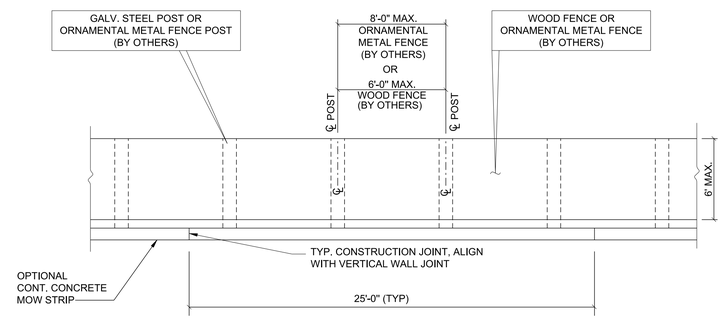
RETAINING WALL SHALL NOT HAVE ADDITIONAL LIVE LOAD SURCHARGE PLACED BEHIND WALL EXCEPT AS PERMITTED WITH PLAN NOTES.

RETAINING WALL BATTER SHALL MEET OR EXCEED MINIMUM SLOPE SHOWN ON DESIGN SECTION.



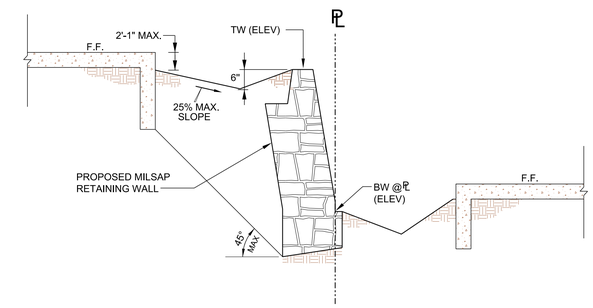
3 TYPICAL WALL SECTION WITH NOTED DESIGN CONSTRAINTS

SCALE: N.T.S.



4 SCHEMATIC DETAIL - WOOD FENCE/ORNAMENTAL METAL FENCE

SCALE: N.T.S. (TYP. CONSTRUCTION JOINT LOCATIONS)



SECTION A-A

SIDE YARD RETAINING WALL SWALE

SCALE: N.T.S.

PLAN NOTES:

DESIGN AND CONSTRUCTION CODE:

1. INTERNATIONAL BUILDING CODE, 2006 EDITION - SECTION 1611.6.

GEOTECHNICAL CRITERIA:

1. GEOTECHNICAL ENGINEERING REPORT NO. 19330, LIGHT FARMS - PARCELS 1 & 2, PHASE 1, CELINA, TEXAS, DATED FEBRUARY , 2014 , BY REED ENGINEERING GROUP, PHONE NO. 214-350-5600.

2. WALL FOOTING SHALL BEAR IN STIFF CLAY OR COMPACTED AND TESTED SOIL.

3. ALLOWABLE BEARING = 2500 PSF (>18") AND 1500 PSF (9"-18") BELOW FINISH GRADE, VERIFY WITH GEOTECHNICAL ENGINEER. CONTACT HUITT-ZOLLARS FOR FURTHER WALL DESIGN AT SUBGRADE LOCATIONS WHERE BEARING CAPACITY IS LESS THAN DESIGN ALLOWABLE. PROOF-ROLL WHERE FEASIBLE TO DETECT ANY SOFT AREAS. IF SOFT AREAS DETECTED, SCARIFY AND RE-COMPACT THE SOIL TO 95% STANDARD PROCTOR NEAR OPTIMUM MOISTURE CONTENT.

4. BACKFILL SOIL PARAMETERS ASTM C33 (COARSE OR FINE AGGREGATE).
BACKFILL SOIL SHALL BE POORLY-GRADED, CLEAN AND FREE-DRAINING SAND OR GRAVEL MATERIAL OR CRUSHED LIMESTONE GRAVEL. GRAVEL SIZE MAY VARY FROM ½" TO 4" (GRADE 57) WITH LESS THAN 5% PASSING THE NO. 200 SIEVE. FOR SAND MATERIAL, PROVIDE BACKFILL WITH A SAND EQUIVALENT OF AT LEAST 80 IN ACCORDANCE WITH TXDOT TEX-203-F PROCEDURE.
BACKFILL ANGLE OF INTERNAL FRICTION, PHI-I=32 DEGREES.
EQUIVALENT FLUID PRESSURE PER COULOMB THEORY, EFP=34 PCF WITH BACKSLOPE.
UNIT WEIGHT = 125 PCF.
COMPACTION FOR GRAVEL: TAMP/COMPACT AT 70% RELATIVE DENSITY, ASTM D4253/4254.
COMPACTION FOR SAND/SELECT: 95% OF STANDARD PROCTOR DRY DENSITY (ASTM D698) NEAR OPTIMUM MOISTURE CONTENT. COMPACT BACKFILL IN LOOSE LIFTS NOT TO EXCEED 10-INCHES.
FRICTION ANGLE BETWEEN BACK OF WALL AND SOIL, DELTA=21 DEGREES.

5. BASE SOIL PARAMETERS (TO BE VERIFIED BY GEOTECHNICAL ENGINEER)
a. SOIL AT BASE SHALL BE NATURAL UNDISTURBED OR COMPACTED FILL SOILS.
b. ANGLE OF INTERNAL FRICTION PHI-B=22 DEGREES.
c. MASONRY FRICTION REDUCTION FACTOR, Ub=0.55.
d. COHESION BETWEEN BOTTOM OF FOOTING AND SUBGRADE, C=200 PSF.
e. ALLOWABLE PASSIVE RESISTANCE IS 150 PSF ACTING ON VERTICAL PROJECTION OF SLOPED BASE AT FOOTING.
f. AT SANDY BASE CONDITION, PHI-B=24.5 DEGREES WITH ZERO COHESION.

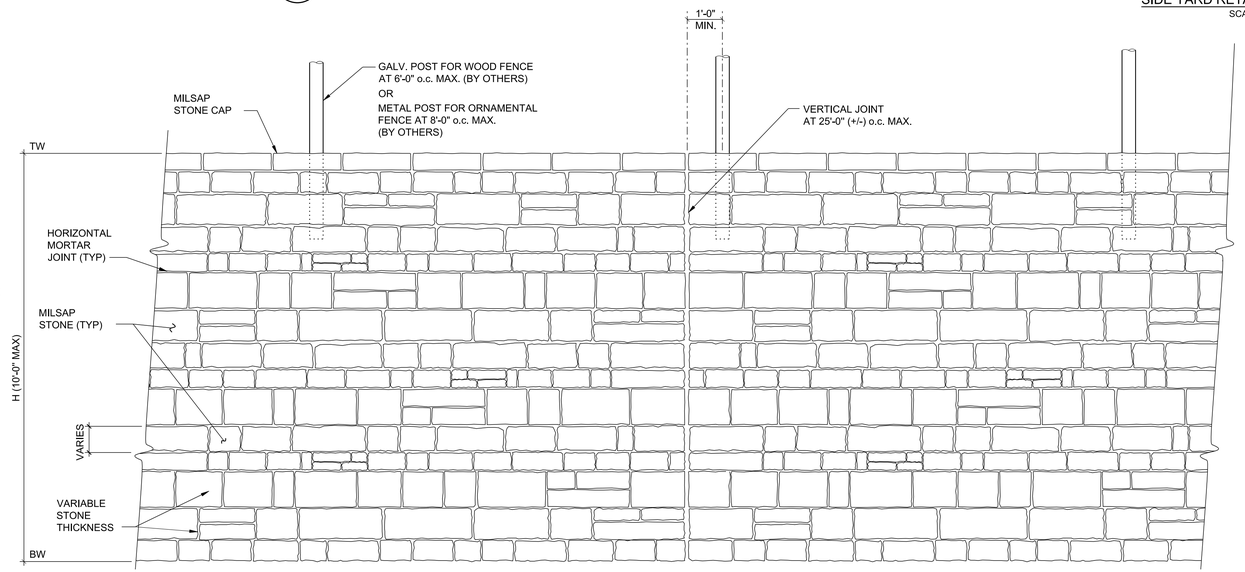
6. REFER GEOTECHNICAL ENGINEER (ALPHA TESTING, INC.) FOR RECOMMENDED TECHNICAL PROVISIONS FOR THE CONSTRUCTION PRACTICE IN SHORING AND SLOPING OF EXCAVATIONS AND REQUIRED COMPACTION REQUIREMENTS.

7. MAXIMUM VERTICAL LIVE LOAD DESIGN SURCHARGE: 50 PSF.

MATERIALS

1. CONCRETE MORTAR - A MIXTURE OF PORTLAND CEMENT (ASTM C150-TYPE I/II) AND SAND (ASTM C33) WITH MINIMUM STRENGTH OF f'c = 3000 PSI AT 28 DAYS.

2. ASSUMED DENSITY OF MASONRY STONE WALL APPROXIMATELY 140 PCF.



5 RETAINING WALL ELEVATION

SCALE: N.T.S.

STATE OF TEXAS
ROBERT M. STENGELE
50145
REGISTERED PROFESSIONAL ENGINEER
3-16-15

Huitt-Zollars, Inc.
Firm Registration No. F-761

RECORD DRAWING

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RETAINING WALL DETAILS
0'-0" TO 4'-0" HEIGHT

LIGHT FARMS

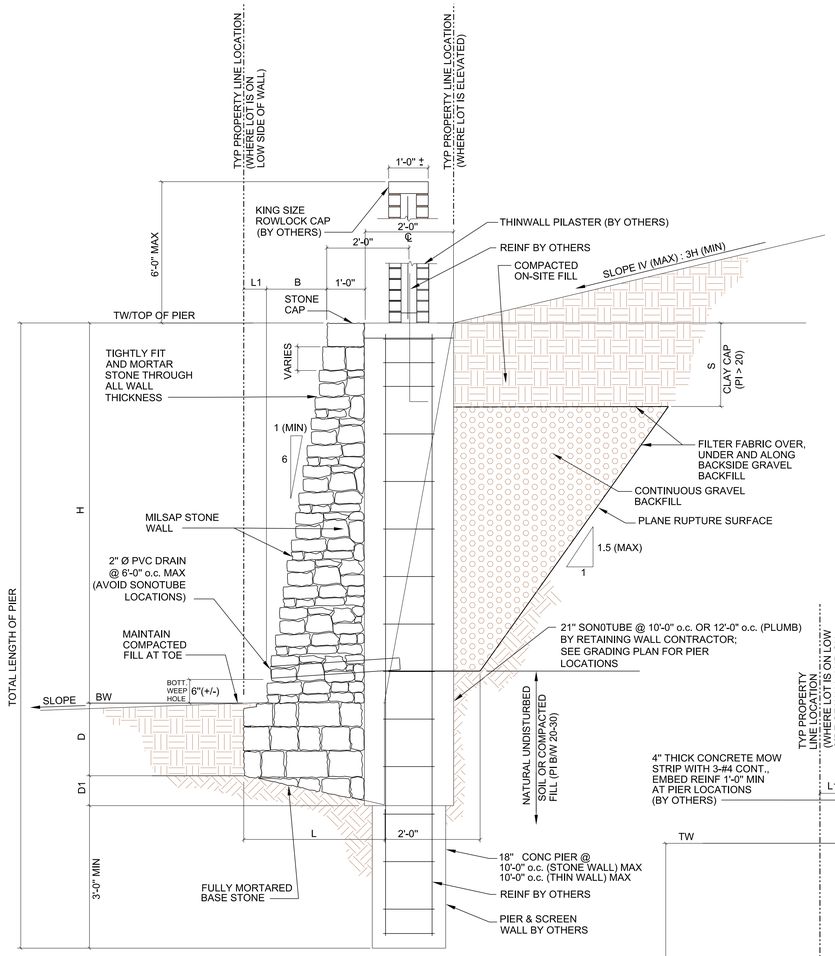
LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

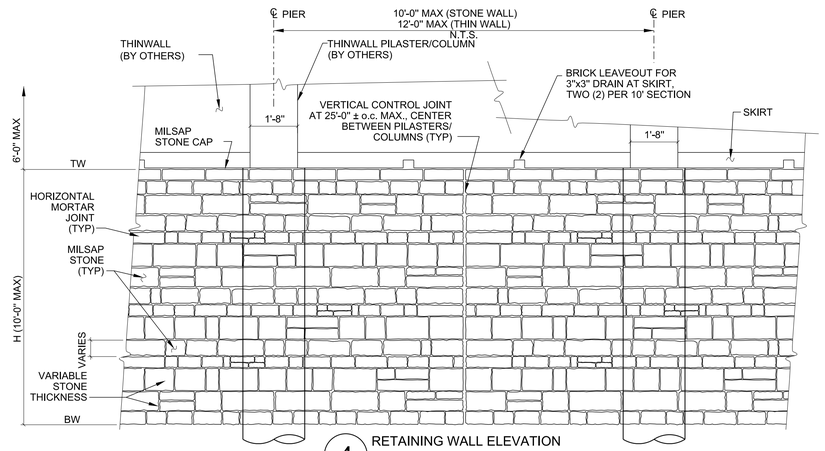
HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		NA		01-3905-40	09-01



1 RETAINING WALL DESIGN SECTION & SCHEDULE

SCALE:N.T.S. (AT PIER LOCATION)



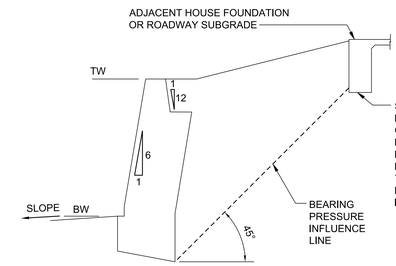
4 RETAINING WALL ELEVATION

SCALE: N.T.S.

CONTINUOUS SCREEN WALL PLACED ON TOP OF RETAINING WALL SHALL BE SUPPORTED WITH REINFORCED CONCRETE PIERS (BY OTHERS) PLACED BEHIND STONE CAP AT TOP OF WALL.

RETAINING WALL SHALL NOT HAVE ADDITIONAL LIVE LOAD SURCHARGE PLACED BEHIND WALL EXCEPT AS PERMITTED WITH PLAN NOTES.

RETAINING WALL BATTER SHALL MEET OR EXCEED MINIMUM SLOPE SHOWN ON DESIGN SECTION.



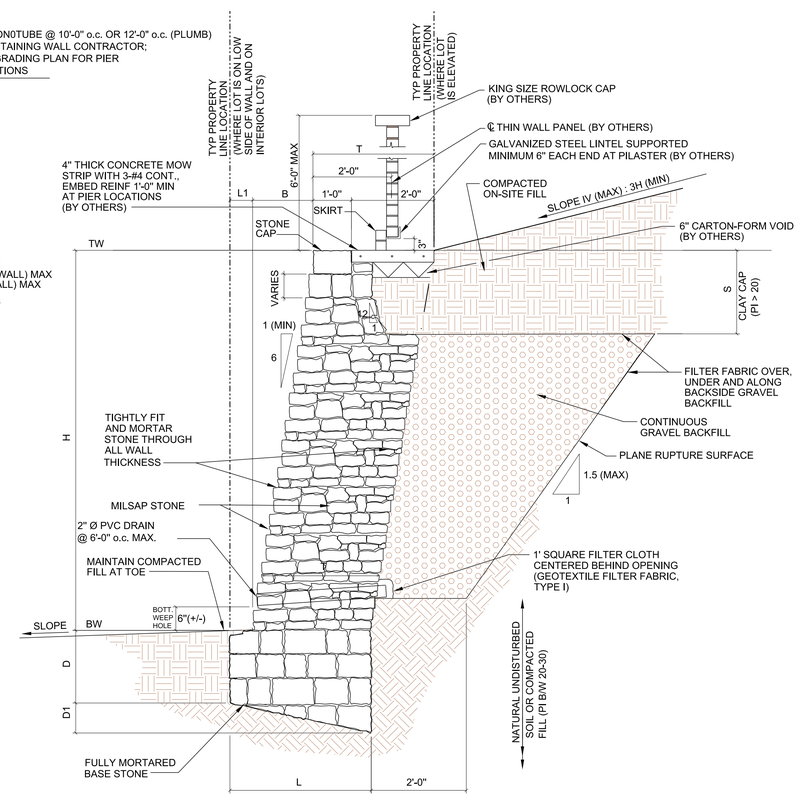
5 TYPICAL WALL SECTION WITH NOTED DESIGN CONSTRAINTS

SCALE: N.T.S.

3 RETAINING WALL DESIGN SCHEDULE

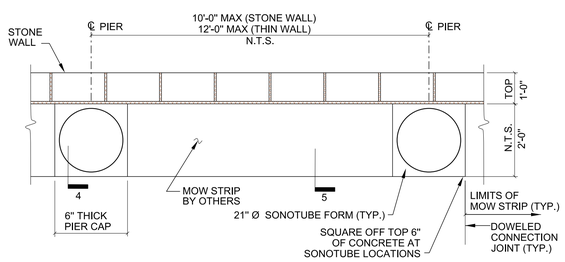
MASONRY WALL SCHEDULE
(SUBGRADE BEARING: STIFF NATIVE SOIL OR COMPACTED & TESTED SOIL)

H	B	L	L1	T	D	D1	S	WALL/BASE CONSTRUCTION	MIN. REQ'D. BEARING CAPACITY
2'-0"	0'-4"	1'-7"	0'-1"	1'-6"	0'-9"	0'-6"	1'-0"	FULLY MORTARED	1500 psf (CONFIRM)
3'-0"	0'-6"	1'-10"	0'-2"	1'-8"	0'-9"	0'-7"	1'-0"	FULLY MORTARED	
4'-0"	0'-8"	2'-3"	0'-3"	2'-0"	1'-0"	0'-8"	1'-0"	FULLY MORTARED	
5'-0"	0'-10"	2'-9"	0'-3"	2'-6"	1'-3"	0'-9"	1'-3"	FULLY MORTARED	
6'-0"	1'-0"	3'-2"	0'-3"	2'-11"	1'-6"	0'-11"	1'-3"	FULLY MORTARED	2000 psf (CONFIRM)
7'-0"	1'-2"	3'-8"	0'-5"	3'-3"	1'-8"	1'-0"	1'-3"	FULLY MORTARED	
8'-0"	1'-4"	4'-3"	0'-7"	3'-8"	1'-10"	1'-2"	1'-6"	FULLY MORTARED	
9'-0"	1'-6"	4'-7"	0'-7"	4'-0"	2'-0"	1'-4"	1'-6"	FULLY MORTARED	2500 psf (CONFIRM)
10'-0"	1'-8"	5'-2"	0'-10"	4'-4"	2'-2"	1'-6"	1'-6"	FULLY MORTARED	



2 THIN WALL DETAIL AT RETAINING WALL

SCALE: N.T.S.



6 PARTIAL PLAN

SCALE: N.T.S. (STONE RETAINING WALL)

PLAN NOTES:

DESIGN AND CONSTRUCTION CODE:

1. INTERNATIONAL BUILDING CODE, 2006 EDITION - SECTION 1611.6.

GEOTECHNICAL CRITERIA:

1. GEOTECHNICAL ENGINEERING REPORT 19330, LIGHT FARMS - PARCELS 1 & 2, PHASE 1, CELINA, TEXAS, DATED FEBRUARY , 2014 BY ENGINEERING GROUP, PHONE NO. 214-350-5600.

2. WALL FOOTING SHALL BEAR IN STIFF CLAY OR COMPACTED AND TESTED SOIL.

3. ALLOWABLE BEARING = 2500 PSF (>18") AND 2000 PSF (9"-18") BELOW FINISH GRADE, VERIFY WITH GEOTECHNICAL ENGINEER. CONTACT HUITT-ZOLLARS FOR FURTHER WALL DESIGN AT SUBGRADE LOCATIONS WHERE BEARING CAPACITY IS LESS THAN DESIGN ALLOWABLE.

4. BACKFILL SOIL PARAMETERS ASTM C33 GR 57.
BACKFILL SOIL SHALL BE POORLY-GRADED FREE-DRAINING MATERIAL: CRUSHED LIMESTONE GRAVEL, REMANUFACTURED CONCRETE GRAVEL OR SANDSTONE GRAVEL. GRAVEL SIZE MAY VARY FROM ½" TO 4" WITH LESS THAN 5% PASSING NO. 200 SLEEVE.
BACKFILL ANGLE OF INTERNAL FRICTION, PHI-1=32 DEGREES.
EQUIVALENT FLUID PRESSURE PER COULOMB THEORY, EFP=34 PCF WITH BACKSLOPE.
UNIT WEIGHT = 125 PCF.
COMPACTION: TAMP/COMPACT AT 70% RELATIVE DENSITY, ASTM D4253/4254.
FRICTION ANGLE BETWEEN BACK OF WALL AND SOIL, DELTA=21 DEGREES.

5. BASE SOIL PARAMTERS (TO BE VERIFIED BY GEOTECNICAL ENGINEER)
a. SOIL AT BASE SHALL BE NATURAL UNDISTURBED OR COMPACTED FILL SOILS.
b. ANGLE OF INTERNAL FRICTION PHI-B=22 DEGREES.
c. MASONRY FRICTION REDUCTION FACTOR, Ub=0.55.
d. COHESION BETWEEN BOTTOM OF FOOTING AND SUBGRADE, C=200 PSF.
e. ALLOWABLE PASSIVE RESISTANCE IS 150 PSF ACTING ON VERTICAL COMPONENT OF SLOPED BASE AT FOOTING.
f. AT SANDY BASE CONDITION, PHI-B=28 DEGREES WITH ZERO COHESION.

6. REFER GEOTECHNICAL ENGINEER (ALPHA TESTING, INC.) FOR RECOMMENDED TECHNICAL PROVISIONS FOR THE CONSTRUCTION PRACTICE IN SHORING AND SLOPING OF EXCAVATIONS AND REQUIRED COMPACTION REQUIREMENTS.

7. MAXIMUM VERTICAL LIVE LOAD DESIGN SURCHARGE: 50 PSF.

MATERIALS

1. CONCRETE MORTAR - A MIXTURE OF PORTLAND CEMENT (ASTM C150-TYPE I/II) AND SAND (ASTM C33) WITH MINIMUM STRENGTH OF f'c = 3000 PSI AT 28 DAYS.

2. ASSUMED DENSITY OF MASONRY STONE WALL APPROXIMATELY 140 PCF.

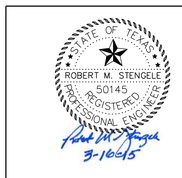
CONSTRUCTION:

1. CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTION STAGING.

2. SONOTUBE FORMING SHALL BE PROTECTED DURING CONSTRUCTION AND LEFT IN PLACE.

3. DRILLING CONSTRUCTION OF PIERS AND CONCRETE PLACEMENT SHALL NOT SURCHARGE STONE GRAVITY WALL FOR ALL WALL HEIGHTS.

4. SONOTUBE SHALL EXTEND TO BOTTOM OF FOOTING. TOTAL LENGTH OF PIER SHALL BE 9'-0" MINIMUM.



Huitt-Zollars, Inc.
Firm Registration No. F-761

RECORD DRAWING

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RETAINING WALL DETAILS
2'-0" TO 10'-0" HEIGHT

LIGHT FARMS

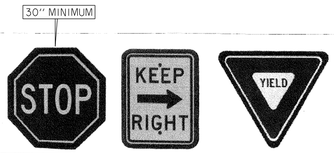
LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		NA		01-3905-40	09-02



Cast Aluminum Backplate Highlights:

Heavy cast aluminum design with 1" wide and ¾" thick raised border.

Designed to accept D.O.T. standard street signs in sizes and shapes below.

Easy installation on 3", 4" or 5" O.D., straight, round poles, with no alterations to pole, with two (2) of our 3", 4" or 5" mounting collars.

Installation on 3", 4" or 5" O.D., tapered round poles, may be accomplished by using our 3", 4" or 5" mounting collars with extra setscrews for levelling.

All Stainless Steel hardware

Durable Powder coat finish, (Medium Gloss Black Polyester, Standard).

Custom colors available.

18" Stop Signs available for golf course cart path application.*

Applied Vinyl, aluminum, D.O.T. standard, street signs are available but not included. **(See our "SIGN" section)**

Ordering Information:

Sample catalog number
#TSC-24x24-D-4S-BLK

Type	Size	Orientation	Mounting	Color
TSC	24x24	D	4S	BLK

Stop Sign - Cast Aluminum Back plate, with two mtg. collars:

Type & Nominal Size	Actual size of Stop Sign
STC-18	18" (For Golf Courses Only)
STC-24	24"
STC-30	30"
STC-36	36"

Traffic Sign - Cast Aluminum Back plate with two mtg. collars:

Type & Nominal Size	Actual size of Sign
TSC-6x12	6" x 12" (Needs only one mtg. collar)
TSC-12x18	12" x 18"
TSC-18x18	18" x 18"
TSC-18x24	18" x 24"
TSC-24x24	24" x 24"
TSC-24x30	24" x 30"
TSC-30x30	30" x 30"

Orientation of Traffic Sign
D Diamond

Yield Sign - Cast Aluminum Back plate, with two mtg. collars:

Type & Nominal Size	Actual size of Sign
YDC-30	30"
YDC-36	36"

Mounting collar size and type

3S	Two 3" Mounting Collars for 3" straight pole
4S	Two 4" Mounting Collars for 4" straight pole
5S	Two 5" Mounting Collars for 5" straight pole
3T	Two 3" Mounting Collars for tapered pole
4T	Two 4" Mounting Collars for tapered pole
5T	Two 5" Mounting Collars for tapered pole
6.5T	Two 6.5" x 2" Mounting collars for tapered poles
BOS	Two Bolt or strap on brackets for any pole

Colors

BLK	Medium Gloss Black Polyester (Standard)
BLKP	Medium Gloss Black Polyester, Orange Peel Texture.
RAL-6012	Dark Green Polyester
WHT	White Polyester
CC	Custom Colors.

Notes
1. Contact us for pricing.
2. Mounting collars are shipped in seperate, individual boxes.
3. Applied Vinyl, aluminum, D.O.T. standard, street signs are available but not included. **(See our "SIGN" section)**
4. Tapered poles must be accurately measured at of mounting points. Next size collar must be used when pole diameter is larger than standard size.

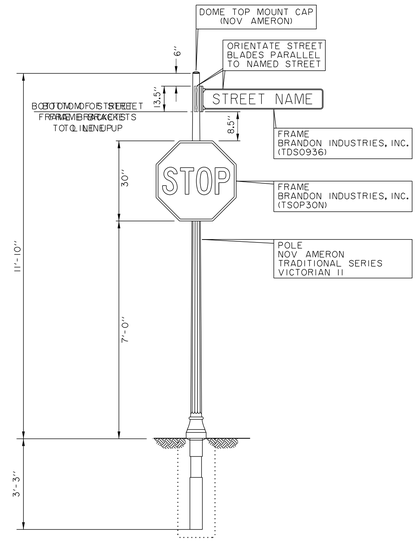
Celina Street Sign Example

Street Name: 6" initial uppercase letter followed by 4.5" lowercase letters
Must meet 2009 (or latest) MUTCD requirements
9" flat blank, high intensity prismatic

Front:
(Left to Right)

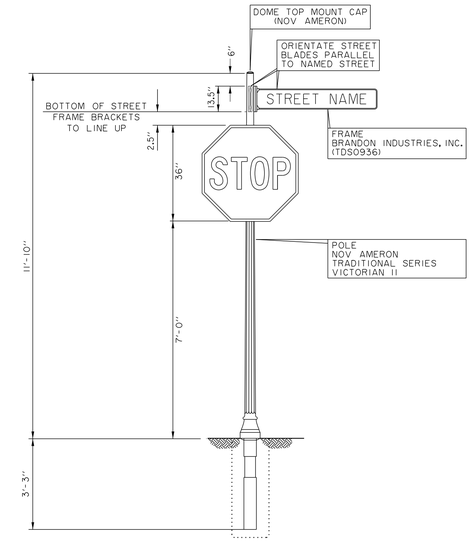
NOTE:
USE NEW CELINA LOGO

Back:
(Left to Right)



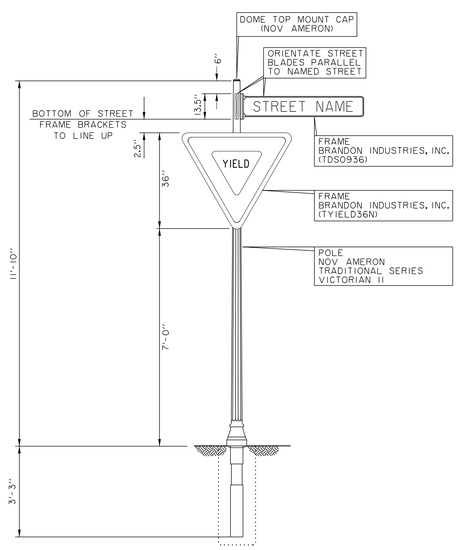
TYPICAL SIGN & POLE DETAIL
30" STOP SIGN
NTS

NOTE:
USE MANUFACTURERS
INSTALLATION GUIDELINES
AND PROCEDURES.
(PER CITY APPROVAL)



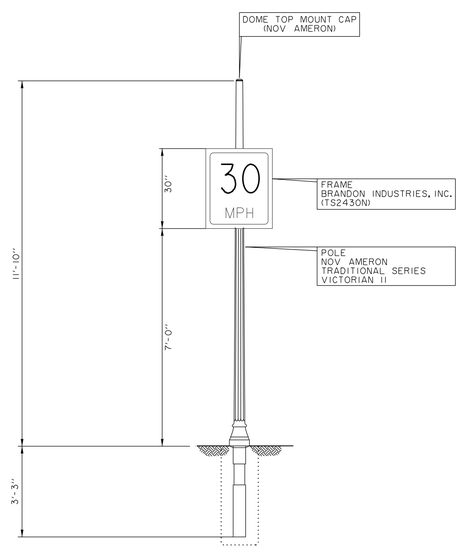
TYPICAL SIGN & POLE DETAIL
36" STOP SIGN
(Cypress Creek Way At Frontier Parkway)
NTS

NOTE:
USE MANUFACTURERS
INSTALLATION GUIDELINES
AND PROCEDURES.
(PER CITY APPROVAL)



TYPICAL SIGN & POLE DETAIL
36" X 36" YIELD SIGN
NTS

NOTE:
USE MANUFACTURERS
INSTALLATION GUIDELINES
AND PROCEDURES.
(PER CITY APPROVAL)



TYPICAL SIGN & POLE DETAIL
24" X 30" SPEED LIMIT SIGN
NTS

NOTE:
USE MANUFACTURERS
INSTALLATION GUIDELINES
AND PROCEDURES.
(PER CITY APPROVAL)

MANUFACTURERS

BRANDON INDUSTRIES, INC.
1601 W. WILMETH ROAD
MCKINNEY, TEXAS
75069-8250
PHONE: 1-800-247-1274

NOV AMERON
SOUTH CENTRAL DIVISION
8505 CLAY HIBBINS ROAD
KELLER, TEXAS
76248
PHINE: 817-999-6867

SPECIFICATIONS ARE NOT MEANT TO EXCLUDE ANY OTHER MANUFACTURER. ANY SPECIFICATION MAY BE REPLACED WITH AN APPROVED EQUAL UPON APPROVAL BY THE CITY OF CELINA.

STREET SIGN DETAILS

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		NA		01-3905-40	09-03

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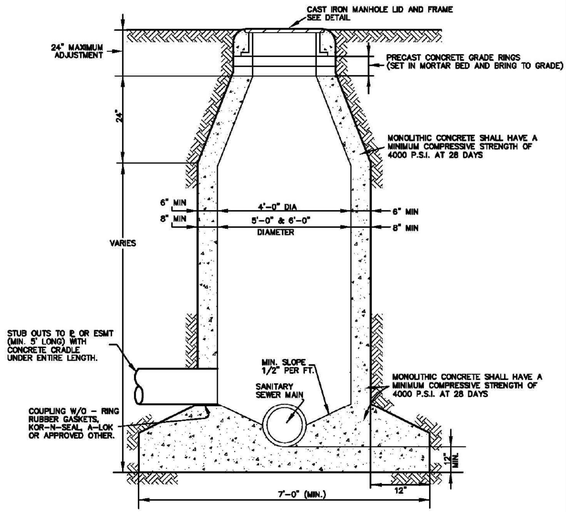
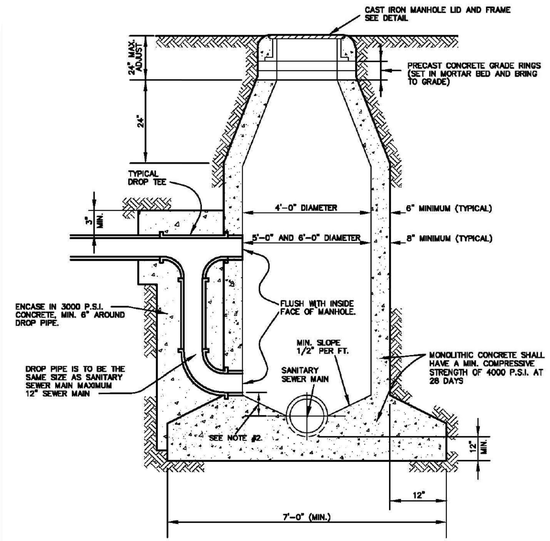


NOTES:
1. THE DIAMETER OF A MANHOLE CONSTRUCTED OVER THE CENTER OF A SEWER SHOULD VARY WITH THE SIZE OF THE SEWER. FOR EIGHT-INCH (8"), TEN-INCH (10"), AND TWELVE-INCH (12"), THE MANHOLE SHALL BE FOUR-FOOT (4') MINIMUM DIAMETER. FOR FIFTEEN-INCH (15"), EIGHTEEN-INCH (18"), TWENTY-ONE-INCH (21"), TWENTY-FOUR-INCH (24") AND TWENTY-SEVEN-INCH (27") SHALL BE FIVE-FOOT (5') MINIMUM DIAMETER; THIRTY-INCH (30") AND THIRTY-SIX-INCH (36") SHALL BE SIX-FOOT (6') MINIMUM DIAMETER. MANHOLES DEEPER THAN FIFTEEN FEET (15') SHALL BE A MINIMUM OF FIVE-FOOT (5') DIAMETER.

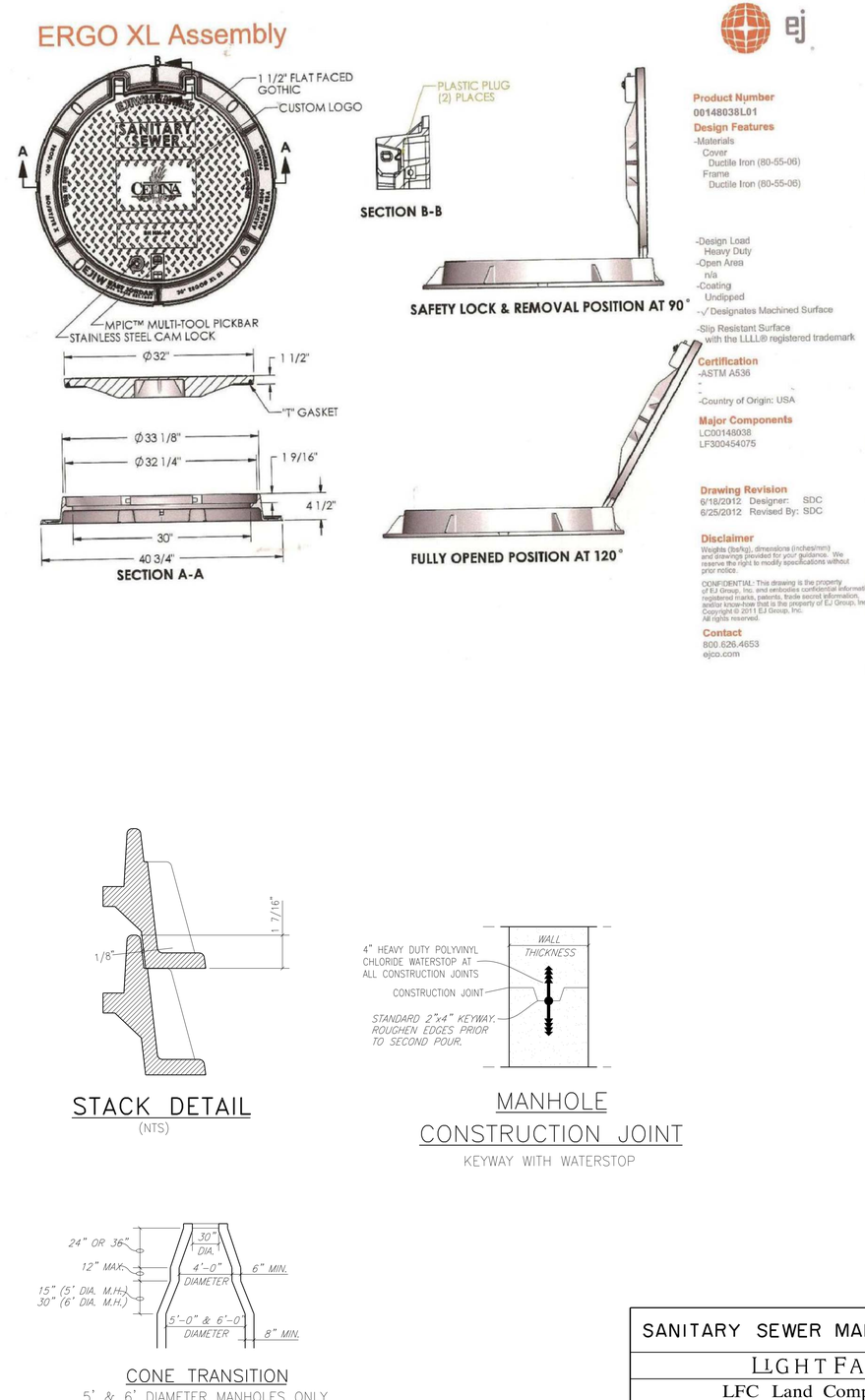
STANDARD
CAST IN PLACE MANHOLE
NTS

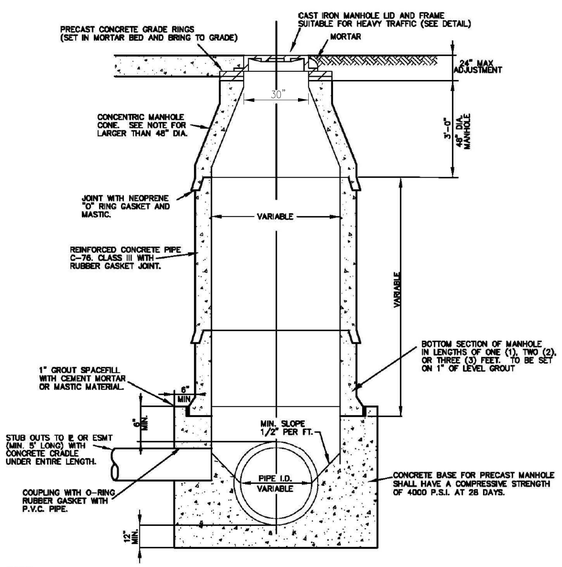


NOTES:
1. THE DIAMETER OF A MANHOLE CONSTRUCTED OVER THE CENTER OF A SEWER SHOULD VARY WITH THE SIZE OF THE SEWER. FOR EIGHT-INCH (8"), TEN-INCH (10"), AND TWELVE-INCH (12"), THE MANHOLE SHALL BE FOUR-FOOT (4') MINIMUM DIAMETER. FOR FIFTEEN-INCH (15"), EIGHTEEN-INCH (18"), TWENTY-ONE-INCH (21"), TWENTY-FOUR-INCH (24") AND TWENTY-SEVEN-INCH (27") SHALL BE FIVE-FOOT (5') MINIMUM DIAMETER; THIRTY-INCH (30") AND THIRTY-SIX-INCH (36") SHALL BE SIX-FOOT (6') MINIMUM DIAMETER. MANHOLES DEEPER THAN FIFTEEN FEET (15') SHALL BE A MINIMUM OF FIVE-FOOT (5') DIAMETER.

2. FLOWLINE OF DROP SHALL BE LOCATED BETWEEN THE CENTERLINE AND TOP OF SEWER MAIN.

MANHOLE
DROP CONNECTION
NTS





NOTES:
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2. DROP MANHOLES SHALL BE REQUIRED WHEN THE INFLOW ELEVATION IS MORE THAN TWENTY-FOUR INCHES (24") ABOVE THE OUTFALL ELEVATION.

PRECAST
CONCRETE PIPE MANHOLE
NTS

STACK DETAIL
(NTS)

MANHOLE
CONSTRUCTION JOINT
KEYWAY WITH WATERSTOP

CONE TRANSITION
5' & 6' DIAMETER MANHOLES ONLY

MANHOLE CONE NOTE:
FOR MANHOLES WITH DIAMETER LARGER THAN 48" I.D., A PRE-CAST FLAT TOP MANHOLE COVER AS PER A.S.T.M. C478 SHALL BE INSTALLED.

SANITARY SEWER MANHOLE DETAILS						
LIGHT FARMS						
LFC Land Company LLC						
Collin County Municipal Utility District No. 1						
COLLIN COUNTY, TEXAS						
HUITT-ZOLLARS						
DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI				01-3905-40	09-04

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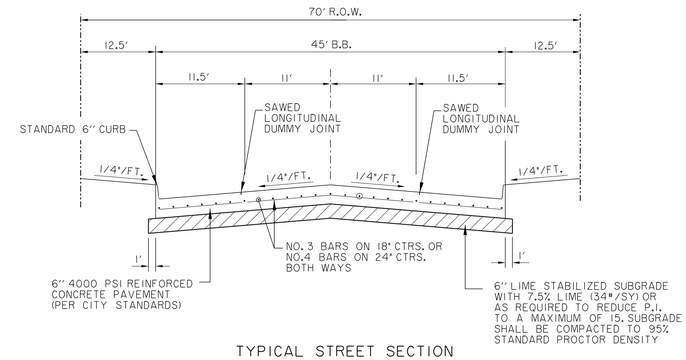
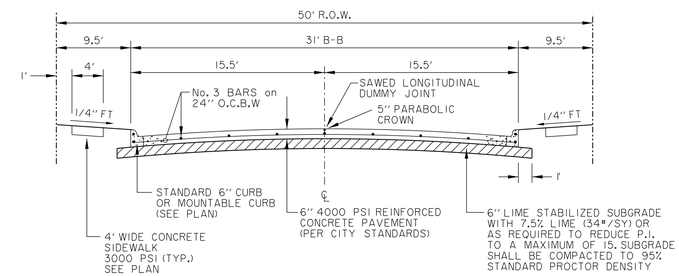


TYPICAL STREET SECTION

(70' R.O.W. - 45' B-B)

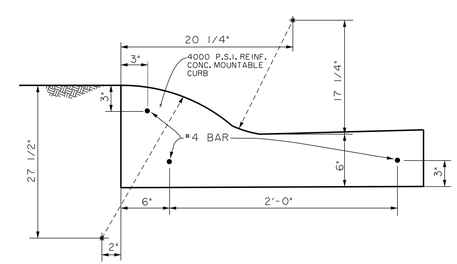
N.T.S.



TYPICAL STREET SECTION

(50' R.O.W. - 31' B-B)

N.T.S.



MOUNTABLE CURB

DETAILS

NTS

NOTE:
SEE SHEETS 09-06 THRU 09-08 FOR PAVING STANDARD DETAILS.

DATE	DESCRIPTION	REF NO.
05/20/14	2nd City Submittal	

PAVING DETAILS
SECTIONS

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI		NA		01-3905-40	09-05

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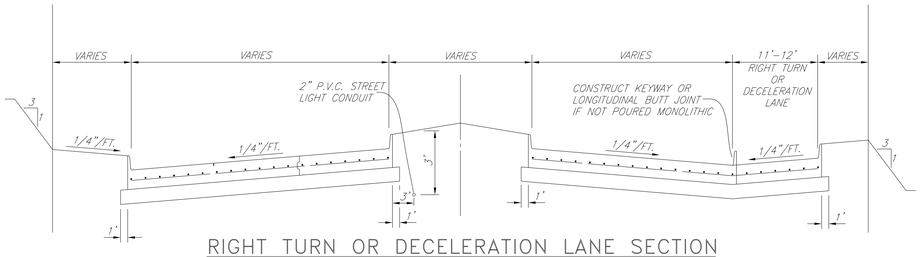
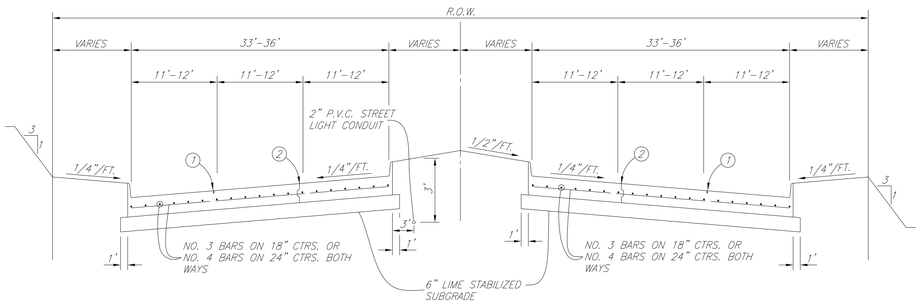


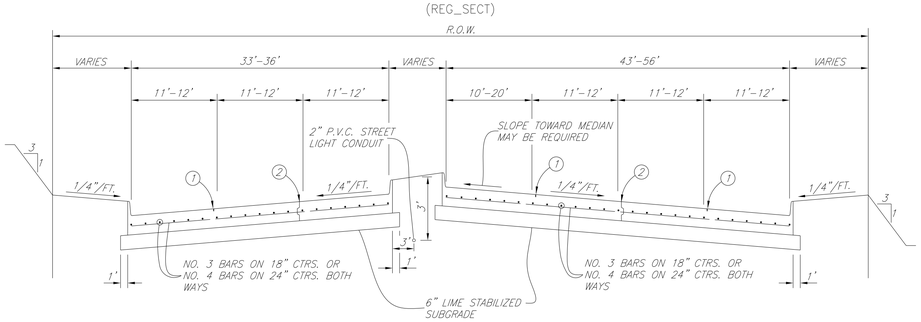
RIGHT TURN OR DECELERATION LANE SECTION



REGULAR SECTION

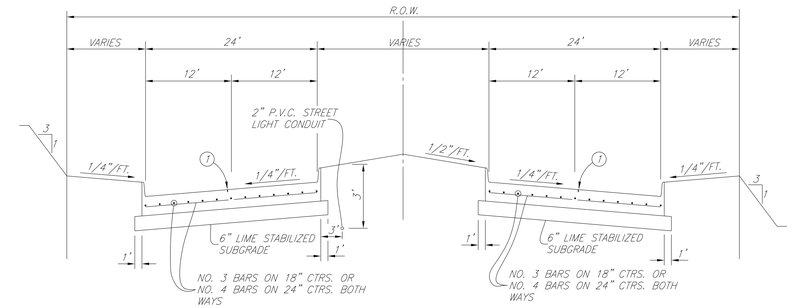
M6D & P6D

(REG_SECT)



LEFT TURN SECTION

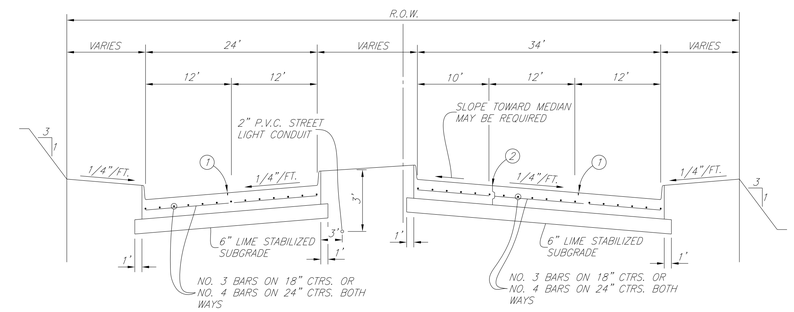
(LTURN_SECT)



REGULAR SECTION

M4D

(REG_SECT2)



LEFT TURN SECTION

NOTE:
FOR RETROFIT TURN LANES AND MEDIAN OPENINGS. TWO ADDITIONAL INCHES OF CONCRETE CAN BE PLACED IN LIEU OF LIME STABILIZATION.

(LTURN_SECT2)

M60, P60, M4D SECTIONS SHALL HAVE MINIMUM PAVEMENT THICKNESS OF 8 INCHES.

LIME STABILIZED SUBGRADE – THE RATE OF HYDRATED LIME SHALL BE 7 1/2% BY UNIT DRY WEIGHT OR THAT PERCENT TO REDUCE THE SOIL P.I. TO LESS THAN 15. CONTRACTOR TO PROVIDE CITY WITH LIME SERIES TEST TO DETERMINE THE OPTIMUM LIME CONTENT.

LEGEND

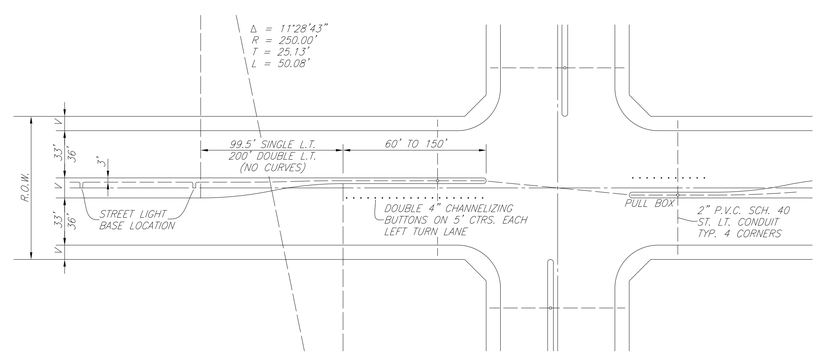
(1) – SAWED LONGITUDINAL DUMMY JOINT

A. CONSTRUCTION JOINT (FULL WIDTH PVMT. IS ALLOWED WHERE APPROVED BY CITY).

(2) – B. DELETE IT WHEN PAVING IS 25 FT. WIDTH TO BE WIDENED IN FUTURE.

C. INSTALL CURB IF PAVING IS LESS THAN FULL WIDTH OF 33'-36'.

(LEGNED_PVMT)



LEFT TURN PLAN

(PVMT-PLAN)

09-06

CITY OF CELINA, TEXAS

PAVING
STANDARD DETAILS

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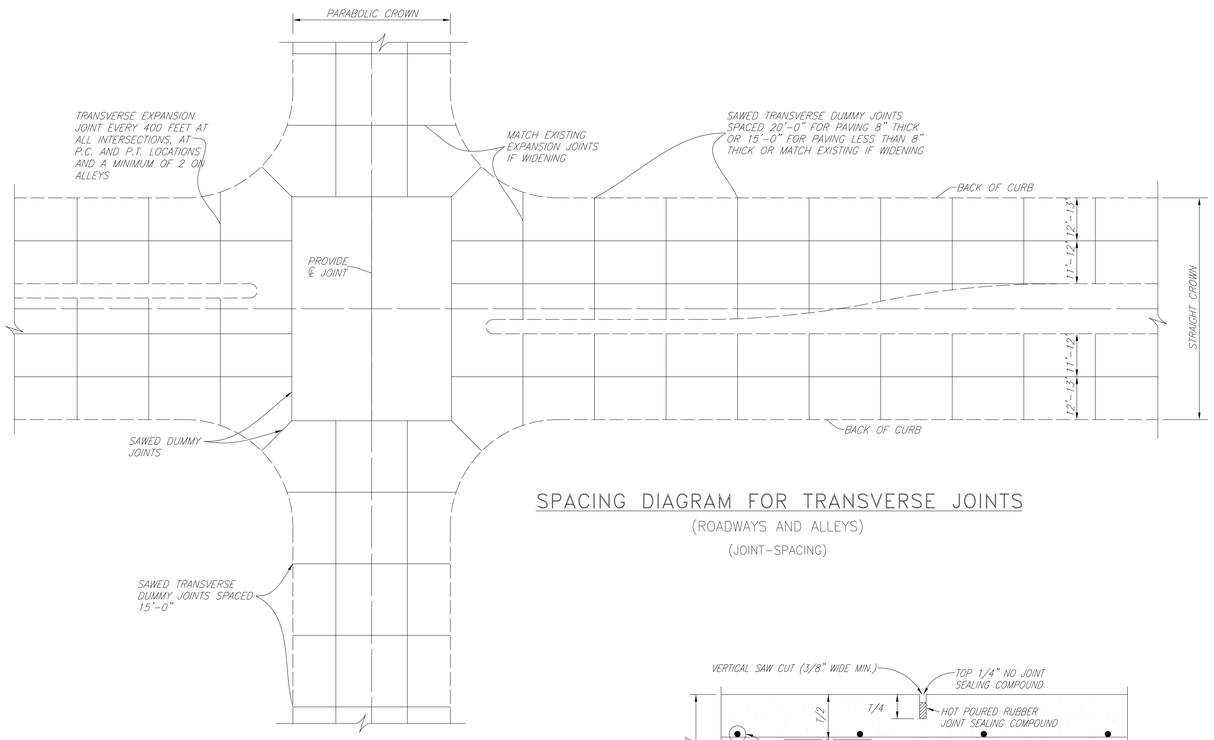
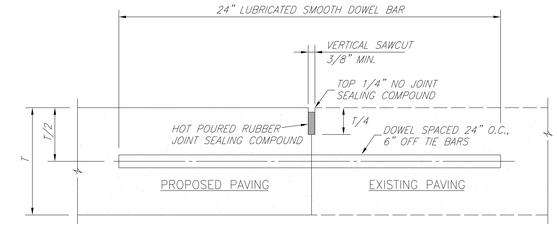


SPACING DIAGRAM FOR TRANSVERSE JOINTS

(ROADWAYS AND ALLEYS)

(JOINT-SPACING)

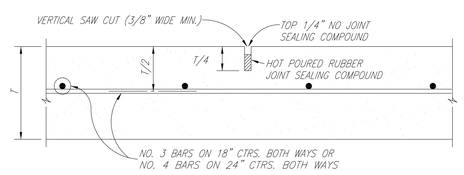


NOTE:

1. T-8" AND GREATER NO. 6 BAR, T-6" AND LESS NO. 5 BAR
2. LONGITUDINAL BUTT CONSTRUCTION MAY BE UTILIZED IN PLACE OF LONGITUDINAL HINGED (KEYWAY) JOINT AT CONTRACTORS OPTION.
3. DOWEL BARS SHALL BE DRILLED INTO PAVEMENT HORIZONTALLY BY USE OF A MECHANICAL RIG. HAND DRILLING NOT ACCEPTABLE. DAMAGE TO EXISTING PAVEMENT SHALL BE REMOVED BY CONTRACTOR AND JOINT CONSTRUCTED AT CONTRACTORS EXPENSE.
4. DOWEL BAR SHOWN IS IN ADDITION TO TIE BARS (12" O.C.-6" OFF DOWELS).
5. TIE BARS SHALL BE NO. 5 BAR DEFORMED. TIE BAR SHALL HAVE A LENGTH OF 24 INCHES.

LONGITUDINAL BUTT JOINT

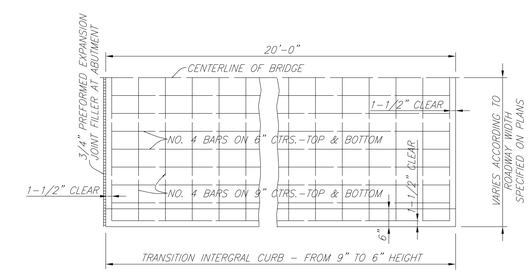
(BUTTJNT)



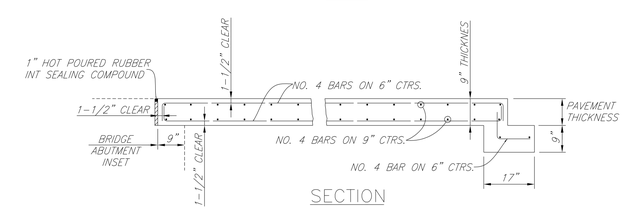
TRANSVERSE JOINTS SPACED 15 FT. C.-C. (MAX.)
LONGITUDINAL JOINTS SPACED 20 FT. C.-C. (MAX.)

SAWED DUMMY JOINT

(DUMMYJNT)



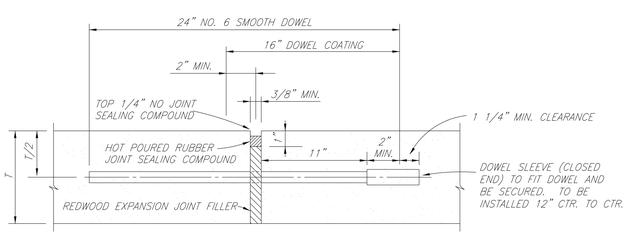
PLAN



SECTION

BRIDGE APPROACH SLAB

(APPROACHSLAB)

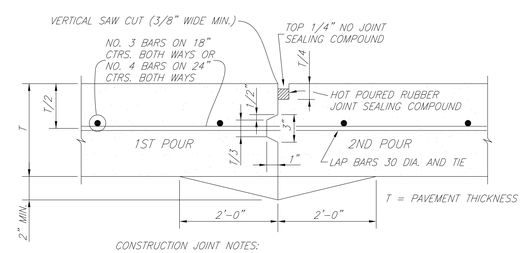


TRANSVERSE EXPANSION JOINT NOTES:

1. DOWELS AND REINFORCING BARS SHALL BE SUPPORTED BY AN APPROVED DEVICE.
2. TRANSVERSE EXPANSION JOINTS SHALL BE SPACED AT 400 FT. MAXIMUM AND AT ALL INTERSECTIONS.

TRANSVERSE EXPANSION JOINT

(EXPJNT)



CONSTRUCTION JOINT NOTES:

1. CONTRACTOR SHALL PROTECT KEYWAY PRIOR TO SECOND POUR. IF LONGITUDINAL KEYWAY IS DAMAGED, CONTRACTOR SHALL REPAIR WITH THE USE OF LONGITUDINAL BUTT JOINT (DRILL DOWELS INTO FIRST POUR).
2. THICKENED EDGES ARE REQUIRED FOR FUTURE WIDENING ONLY.

CONSTRUCTION JOINT

(CONSTJNT)

09-07

CITY OF CELINA, TEXAS

PAVING
STANDARD DETAILS

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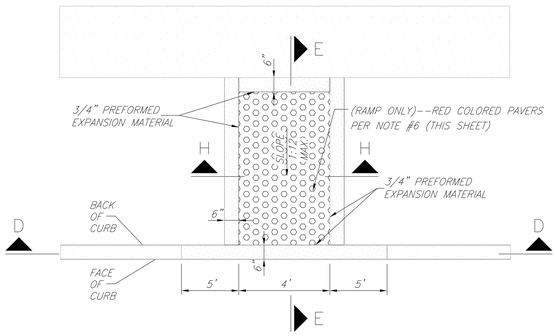
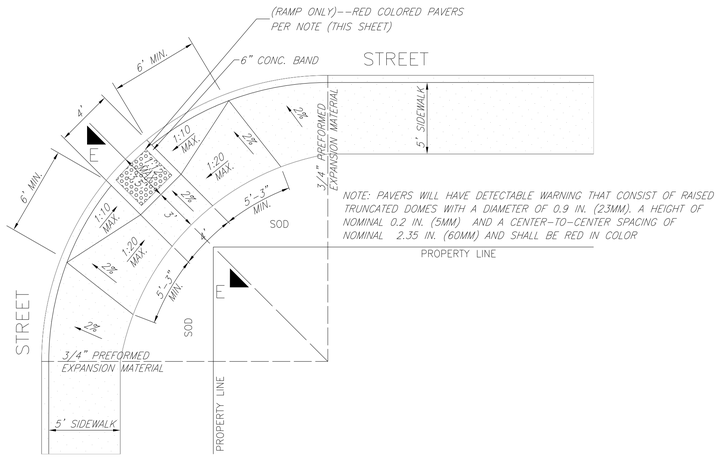
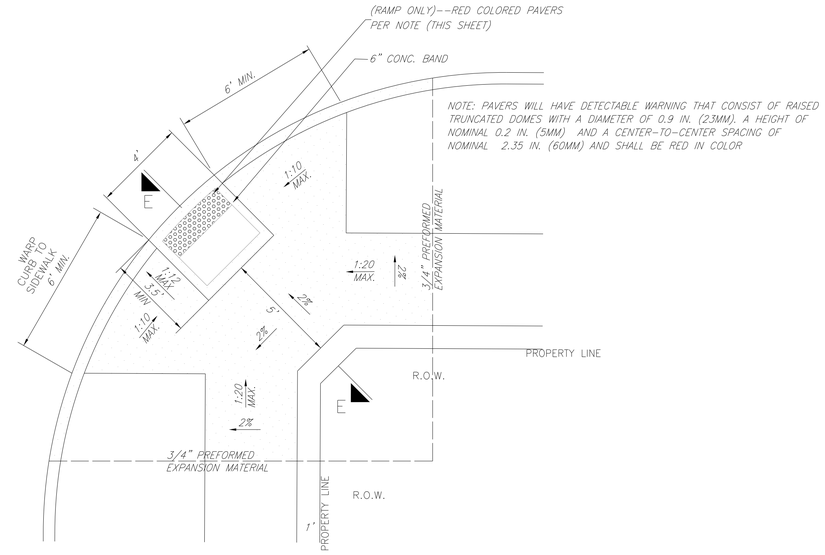


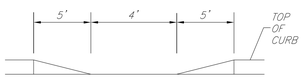
BARRIER FREE RAMP @ STRAIGHT CURB



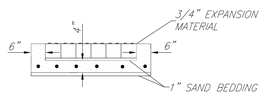
RAMP FOR 5 FEET SIDEWALK NEXT TO CURB



BARRIER FREE RAMP
STREET INTERSECTION
PLAN VIEW
NTS



SECTION D–D

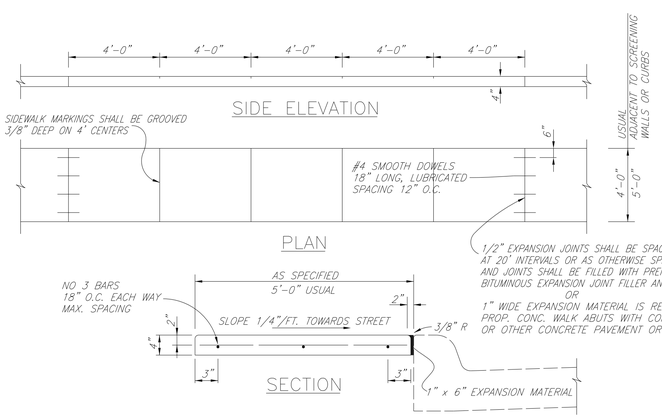


SECTION H–H

GENERAL NOTES:

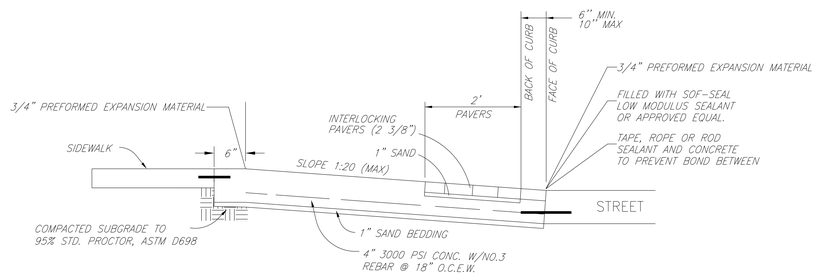
1. BARRIER FREE RAMPS SHALL BE CONSTRUCTED AS EXTENSIONS OF STANDARD CONCRETE SIDEWALKS EXCEPT AS NOTED IN THESE DETAILS.
2. MAXIMUM SLOPE ON BARRIER FREE RAMPS SHALL NOT EXCEED 1" PER FOOT AT ANY LOCATION.
3. DESIGNS SHOWN ARE FOR 6" CURBS. FOR CURBS WITH HEIGHT GREATER THAN 6", DIMENSIONS SHALL BE INCREASED PROPORTIONATELY.
4. STREETS ON STEEP GRADE WILL REQUIRE LONGER TRANSITIONS ON UPGRADE SIDE.
5. LOCATION OF BARRIER FREE RAMP MAY BE SHIFTED TO CLEAR OBSTRUCTIONS WITH THE APPROVAL OF THE CITY ENGINEER.
6. ACCESS RAMP FROM STREET GRADE SHALL HAVE DETECTABLE WARNING GROVES THAT SHALL BE 1/4" TO 3/4" WIDE, 1/8" DEEP, SPACED 2" APART.
7. ALL LANDINGS ARE TO BE 5'X5' AREAS WITH 2% (MAX) SLOPES IN ANY DIRECTION

RAMP WITH DOMES



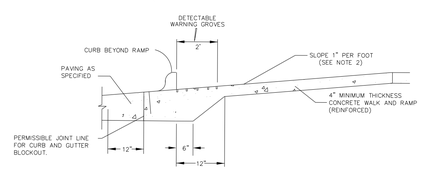
REINFORCED CONCRETE SIDEWALK

(SIDEWALK)



SECTION E–E

(BARRIER_FREE)



BARRIER FREE RAMP
TYPICAL SECTION THRU RESIDENTIAL RAMP
NTS

09-08

CITY OF CELINA, TEXAS

PAVING
STANDARD DETAILS

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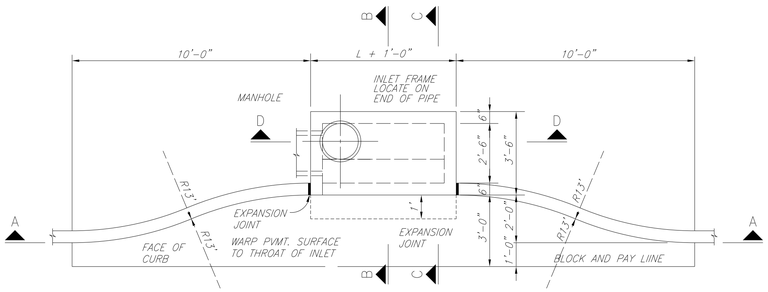
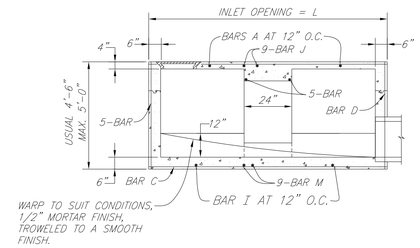


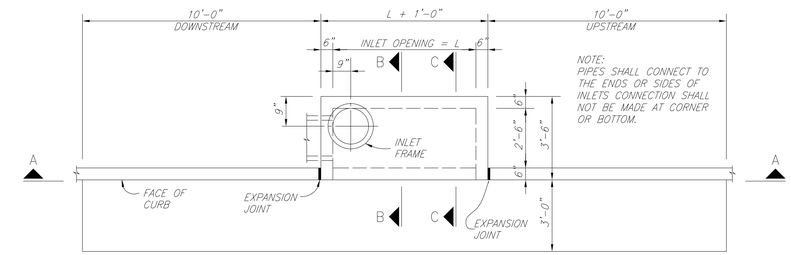
PLAN – RECESSED INLET

(REC–INT1)



SECTION A–A – STANDARD AND RECESSED INLETS

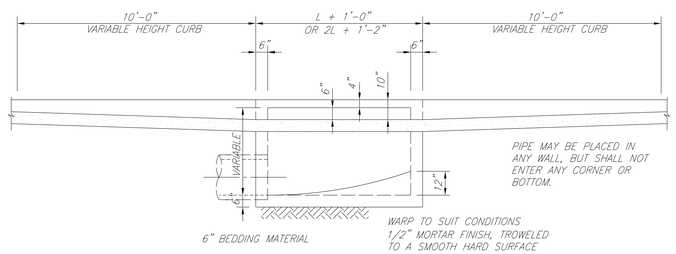
(SECT_A–A1)



PLAN – STANDARD INLET

4, 6, 8 AND 10 FOOT INLETS

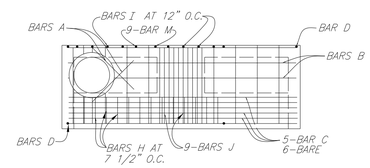
(STDINLT1)



SECTION A–A–RECESSED AND STANDARD INLETS

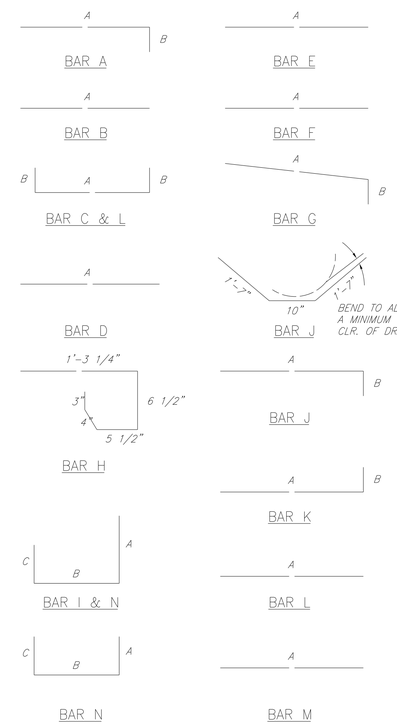
4, 6, 8, AND 10 FOOT INLETS

(PLAN–10)



PLAN – STANDARD INLET

(PLAN_STDINL)



BAR DIAGRAMS

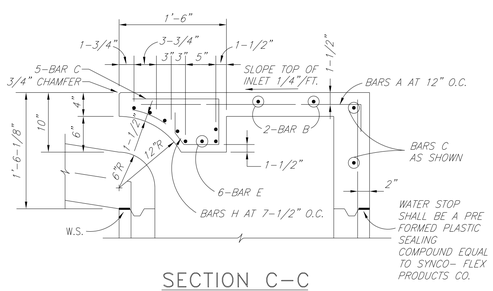
(BARDIAG)

REINFORCING STEEL SCHEDULE

DIMENSIONS SHOWN ARE FOR MAXIMUM SIZE INLETS

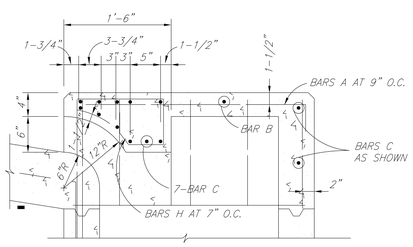
INLET LENGTH	BAR TYPE	BAR DIA. (1/8 IN.)	NO. REQ'D	BAR DIMENSIONS		
				A	B	C
4	A	3	6	3'–2"	0'–3"	–
	B	3	1	2'–10"	–	–
	C	4	15	4'–8"	0'–6"	–
	D	4	5	4'–8"	–	–
	F	4	1	3'–2"	–	–
	G	3	5	2'–0"	1'–3"	–
	H	3	6	*	*	*
	N	3	3	3'–2"	3'–2"	3'–2"
6	A	3	9	3'–2"	0'–3"	–
	B	3	1	4'–10"	–	–
	C	4	15	6'–8"	0'–6"	–
	D	4	5	4'–8"	–	–
	F	4	1	3'–2"	–	–
	G	3	5	2'–0"	1'–3"	–
	H	3	9	*	*	*
	N	3	3	3'–2"	3'–2"	3'–2"
8	A	3	12	3'–2"	0'–3'	–
	B	4	1	6'–10"	–	–
	C	4	15	8'–8"	0'–6"	–
	D	4	5	4'–8"	–	–
	F	4	1	3'–2"	–	–
	G	3	5	2'–0'	1'–3"	–
	H	3	12	*	*	*
	N	3	3	3'–2"	3'–2"	3'–2"
10	A	3	13	3'–2"	0'–3'	–
	B	3	2	8'–10"	–	–
	C	4	16	10'–8"	0'–6"	–
	D	4	4	4'–8"	–	–
	E	5	6	10'–8"	–	–
	G	3	5	2'–0"	1'–3"	–
	H	3	14	*	*	*
	I	4	8	4'–8"	3'–2"	3'–2"
	L	4	5	4'–3"	–	–

* SEE DIAGRAM FOR DIMENSIONS. 4', 6', 8' AND 10' INLETS



SECTION C–C

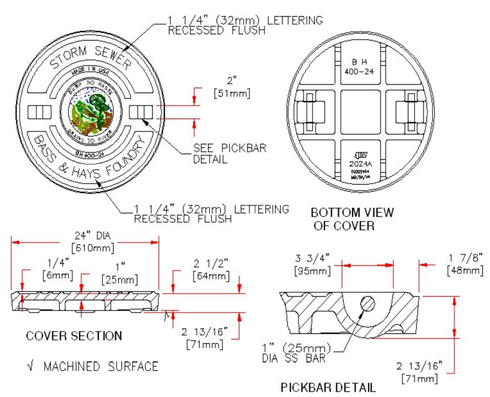
(SECT_C–C)



NOTE: FOR ADDITIONAL INFORMATION SEE SECTION C–C

SECTION E–E

(SECT_E–E)



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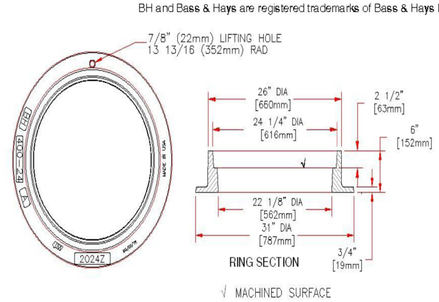
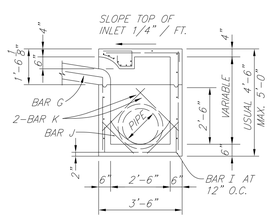


NOTES:

THE FLOOR OF THE EXCAVATION FOR INLET BOX MUST PROVIDE A FIRM, LEVEL BED FOR THE BASE SECTION TO REST UPON.

A MINIMUM OF 6 INCHES OF 1" DIAMETER (MAXIMUM) ROCK OR GRAVEL SHALL BE USED TO PREPARE THE BEDDING TO FINAL GRADE OR LIEU OF THIS, AT LEAST 6 INCHES OF 2–SACK CEMENT STABILIZED SAND SHALL BE USED TO PREPARE THE BEDDING TO GRADE. CEMENT STABILIZED–SAND SHALL BE ALLOWED TO SET BY KEEPING HOLE PUMPED DRY.

AFTER CASING HAS BEEN INSTALLED ON THE PROPER BEDDING, THE BACKFILL MATERIAL, WHICH IS FREE FLOWING AND CLEAR OF ROCKS, IN EXCESS OF 4" DIAMETER AND OTHER LUMPS WHICH WOULD PROHIBIT PROPER COMPACTION, SHALL BE COMMENCED IN LIFTS OF NO MORE THAN 18". THE MATERIAL USED FOR BACKFILL SHOULD BE A TYPE SUITABLE TO OBTAIN THE DENSITY REQUIREMENTS FOR THE SPECIFIC JOB.



SECTION B–B

(SECT_B–B)

09-09

CITY OF CELINA, TEXAS

DRAINAGE
STANDARD DETAILS

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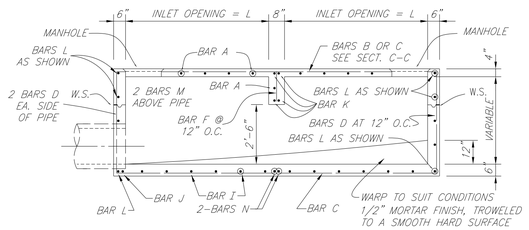
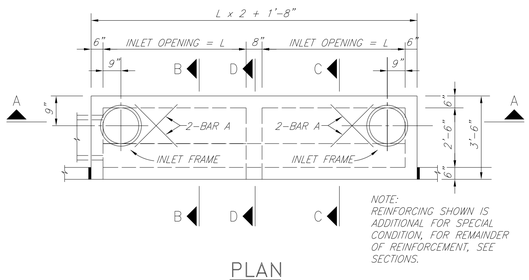


SECTION A–A

12, 14, 16 AND 20 FOOT INLETS

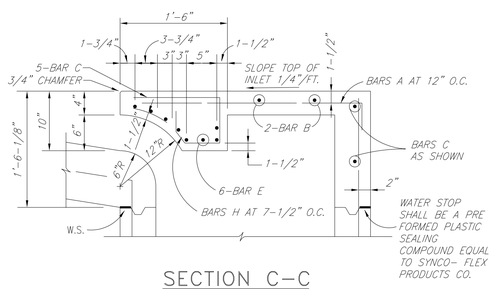
(SECT_A–A)



PLAN

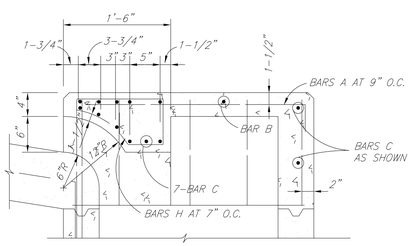
20 FOOT INLETS

(PLAN_20)



SECTION C–C

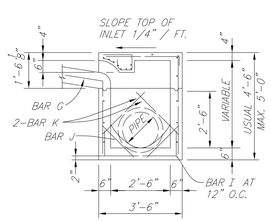
(SECT_C–C)



NOTE: FOR ADDITIONAL INFORMATION SEE SECTION C–C

SECTION D–D

(SECT_D–D)



SECTION B–B

(SECT_B–B)

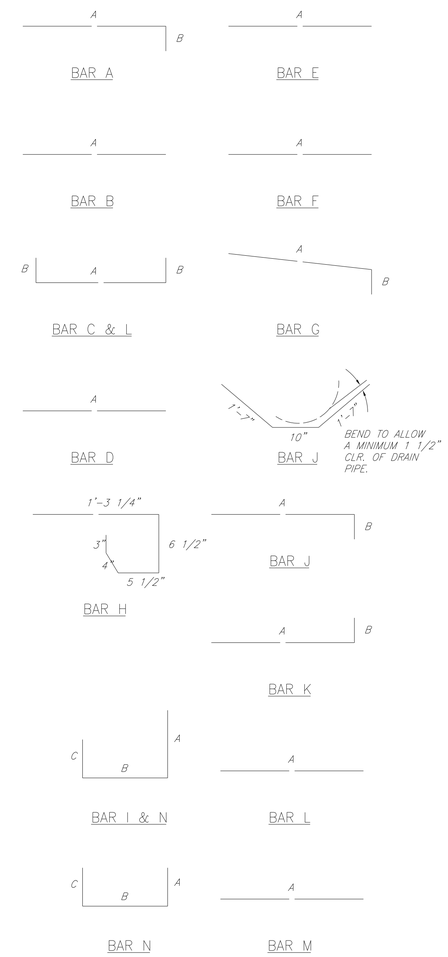
DOUBLE INLETS

DIMENSIONS SHOWN ARE FOR MAXIMUM SIZE INLETS

INLET LENGTH	BAR TYPE	BAR DIA. (1/8 IN.)	NO. REQ'D	BAR DIMENSIONS		
				A	B	C
6 FT.	A	3	15	3'-2"	0'-6"	–
	B	3	2	11'-6"	–	–
	C	4	16	13-4"	0'-6"	–
	D	4	9	4'-8"	–	–
	E	5	6	13-4"	–	–
	F	4	5	1'-2"	–	–
	G	3	12	2'-0"	1'-3"	–
	H	3	26	*	*	*
	I	4	12	4'-8"	3'-2"	3'-2"
	J	5	1	*	*	*
	K	5	6	3'-2"	0'-6"	–
	L	4	11	3'-2"	0'-6"	–
	M	4	2	3'-0" **	–	–
	N	4	2	4'-8"	3'-2"	4'-8"
7 FT.	A	3	17	3'-2"	0'-6"	–
	B	3	2	13'-6"	–	–
	C	4	16	15'-4"	0'-3'	–
	D	4	9	4'-8"	–	–
	E	5	6	15'-4"	–	–
	F	4	5	1'-2"	–	–
	G	3	15	2'-0"	1'-3"	–
	H	3	32	*	*	*
	I	4	14	4'-8"	3'-2"	3'-2"
	J	5	1	*	*	*
	K	5	6	3'-2"	0'-6"	–
	L	4	11	3'-2"	0'-6"	–
	M	4	2	3'-0" **	–	–
	N	4	2	4'-8"	3'-2"	4'-8"
8 FT.	A	3	19	3'-2"	0'-6"	–
	B	3	2	15'-6"	–	–
	C	4	16	17'-4"	0'-6"	–
	D	4	9	4'-8"	–	–
	E	5	6	17'-4"	–	–
	F	4	5	1'-2"	–	–
	G	3	12	2'-0"	1'-3"	–
	H	3	26	*	*	*
	I	4	16	4'-8"	3'-2"	3'-2"
	J	5	1	*	*	*
	K	5	6	3'-2"	0'-6"	–
	L	4	11	3'-2"	0'-6"	–
	M	4	2	3'-0" **	–	–
	N	4	2	4'-8"	3'-2"	4'-8"
10 FT.	A	3	23	3'-2"	0'-6"	–
	B	3	2	19'-6"	–	–
	C	4	16	21'-4"	0'-6"	–
	D	4	9	4'-8"	–	–
	E	5	6	21'-4"	–	–
	F	4	5	1'-2"	–	–
	G	3	15	2'-0"	1'-3"	–
	H	3	32	*	*	*
	I	4	20	4'-8"	3'-2"	3'-2"
	J	5	1	*	*	*
	K	5	6	3'-2"	0'-6"	–
	L	4	11	3'-2"	0'-6"	–
	M	4	2	3'-0" **	–	–
	N	4	2	4'-8"	3'-2"	4'-8"

* SEE DIAGRAM FOR DIMENSIONS.
** FIELD CUT AS REQUIRED TO ACCOMMODATE DRAIN PIPE 16' AND 20' INLETS

REINFORCING STEEL SCHEDULE



△ BEND TO ALLOW A MINIMUM 1 1/2" CIR. OF DRAIN PIPE
* SEE DIAGRAMS FOR DIMENSIONS
** FIELD CUT AS REQUIRED TO ACCOMODATE DRAIN PIPE

BAR BENDING DIAGRAMS

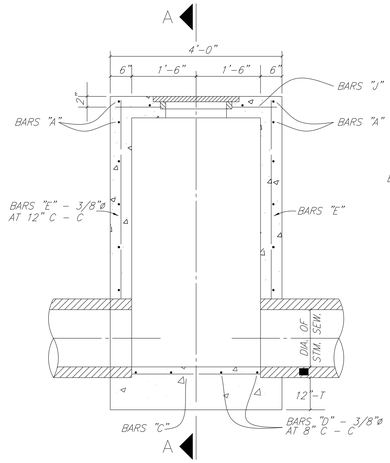
(BARLIST2)

09-10

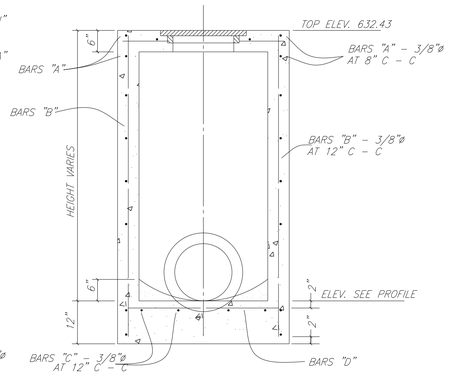
CITY OF CELINA, TEXAS

DRAINAGE
STANDARD DETAILS

I:/proj/0139050/0139054O Parcel 1&2/08-DesignCAD/DGN/phase107.dgn



ELEVATION

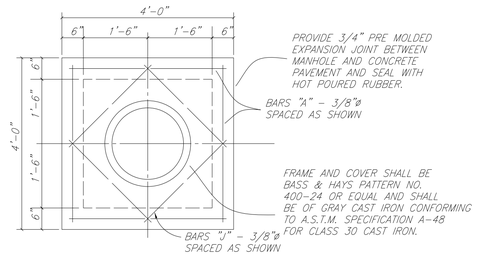


SECTION A–A

STORM SEWER TYPE A MANHOLE

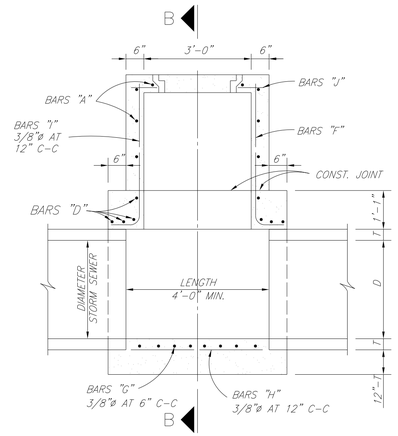
MAX. PIPE SIZE 30"

(TYPEAMH)

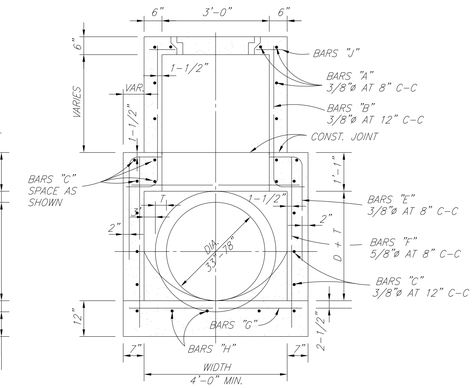


TOP PLAN
TYPE A & TYPE B
STORM SEWER MANHOLE

(MH_TOP)



ELEVATION

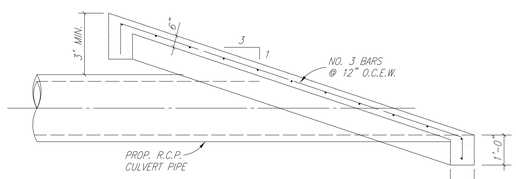


SECTION B–B

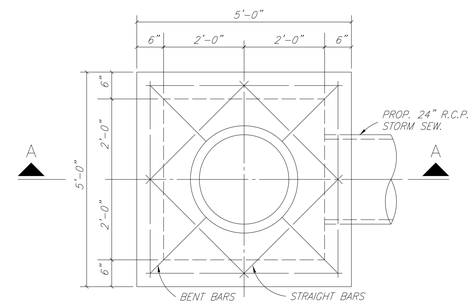
TYPE B STORM SEWER MANHOLE

MAX. PIPE SIZE 78"

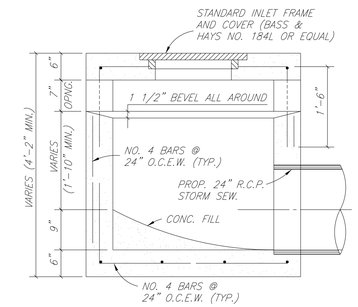
(TYPEBMH)



SECTION A–A



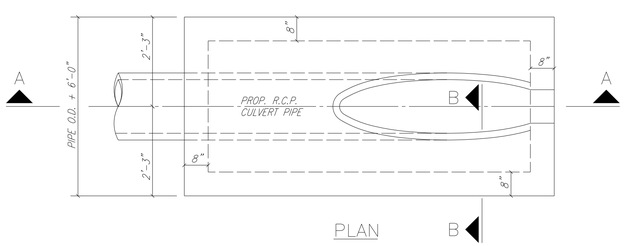
PLAN



SECTION A–A

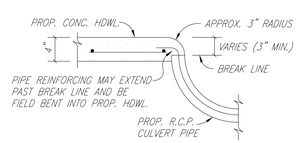
STANDARD DROP INLET

(DROPINLET)



PLAN

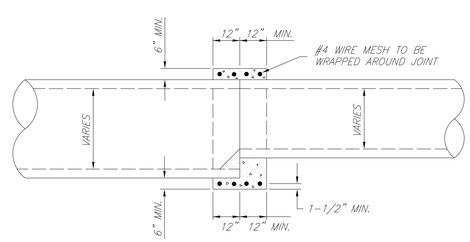
B



SECTION B–B

SLOPED CONCRETE HEADWALL

(SLOPEHWL)



DETAIL OF CONCRETE COLLAR FOR R.C.P. OR R.C.A.P. CONNECTIONS

INSIDE JOINT SHALL BE CONCRETE MORTAR

(CONCCOL)

09-11

CITY OF CELINA, TEXAS

DRAINAGE
STANDARD DETAILS

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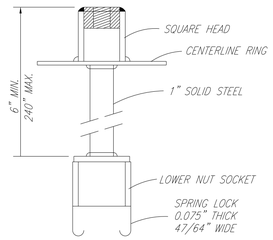
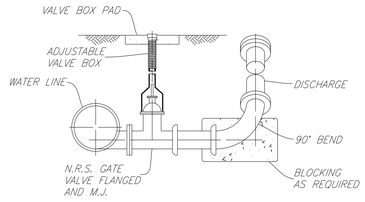
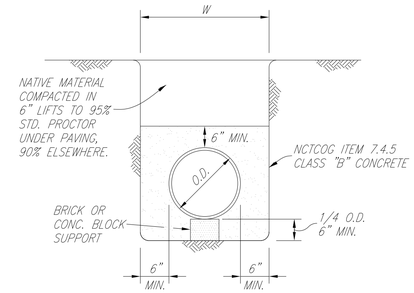


SPRING LOCK VALVE EXTENSION



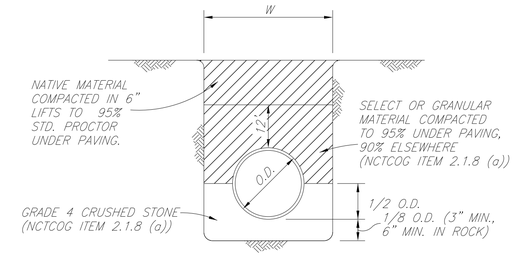
BLOW OFF VALVE



CLASS G EMBEDMENT

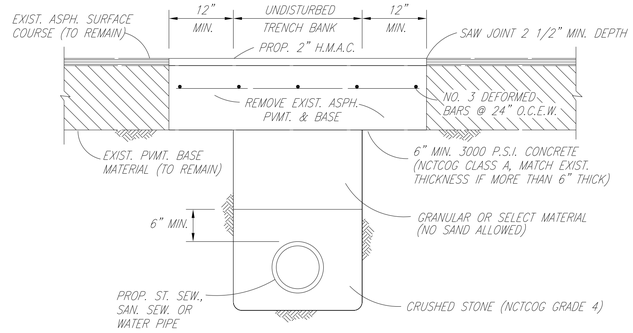
CONCRETE ENCASEMENT

NO SCALE



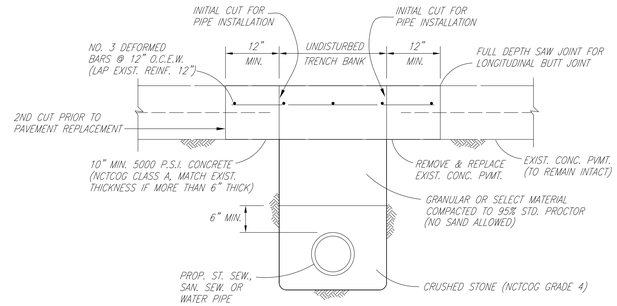
CLASS B+ EMBEDMENT

STD PVC WATER



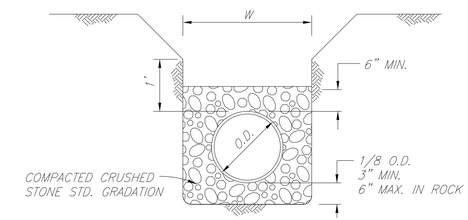
ASPHALT STREET REPAIR

NO SCALE



CONCRETE STREET REPAIR

NO SCALE

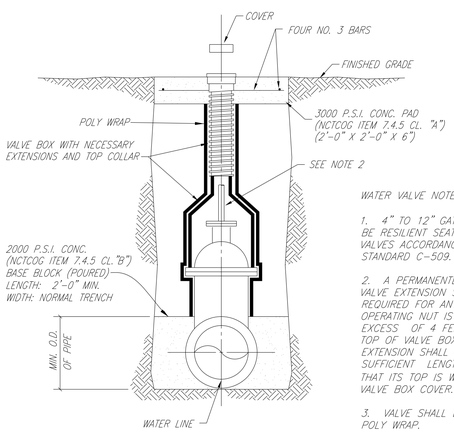


CLASS H EMBEDMENT

P.V.C. PIPE ONLY

STD. P.V.C. SEWER INSTALLATION

STD. P.V.C., R.C.C.P. & DUCTILE WATER INSTALLATION



WATER VALVE NOTES:

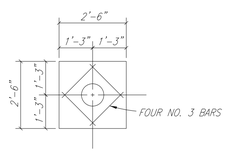
1. 4" TO 12" GATE VALVE SHALL BE RESILIENT SEATED WEDGE GATE VALVES ACCORDANCE WITH AWWA STANDARD C-509.

2. A PERMANENTLY ATTACHED VALVE EXTENSION STEM SHALL BE REQUIRED FOR ANY VALVE WHOSE OPERATING NUT IS LOCATED IN EXCESS OF 4 FEET BELOW THE TOP OF VALVE BOX. THIS EXTENSION SHALL BE OF SUFFICIENT LENGTH TO INSURE THAT ITS TOP IS WITHIN 4" OF THE VALVE BOX COVER.

3. VALVE SHALL BE WRAPPED IN POLY WRAP.

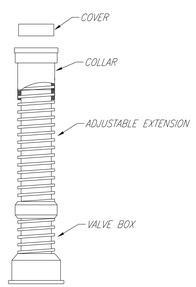
VALVE SETTING & BOX

NO SCALE



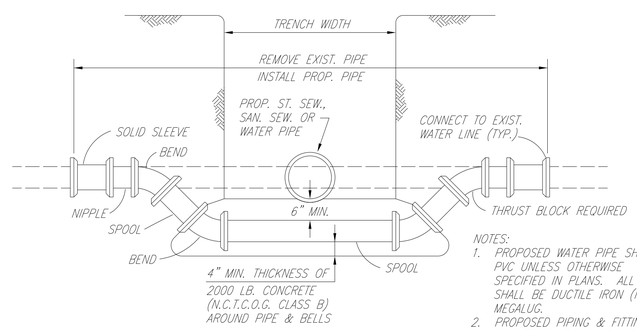
VALVE BOX PAD PLAN

NO SCALE



VALVE BOX WITH EXTENSION

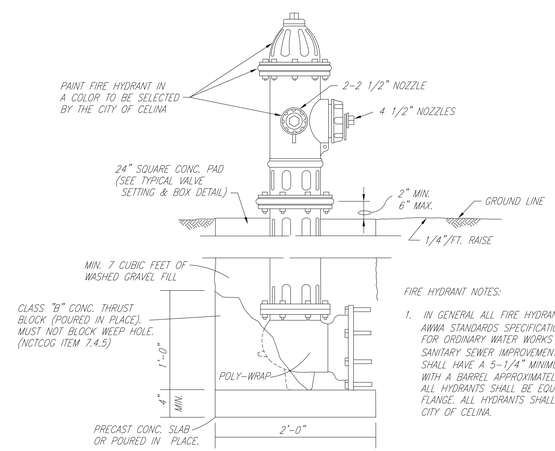
NO SCALE



NOTES:

1. PROPOSED WATER PIPE SHALL BE PVC UNLESS OTHERWISE SPECIFIED IN PLANS. ALL FITTINGS SHALL BE DUCTILE IRON (M.J.-P.E.) MEGALUG.
2. PROPOSED PIPING & FITTINGS ARE SYMMETRIC ABOUT CENTER OF PROP. SAN. SEW. OR ST. SEW. PIPE AND SHALL RETAIN TEST PRESSURES.
3. ALL THRUST BLOCKING SHALL BE SUBSIDIARY TO UNIT PRICE.
4. CROSSING OF SANITARY SEWER SHALL BE IN ACCORDANCE WITH T.N.R.C.C. REQUIREMENTS. (CHAPTER 317.13 APPENDIX E)

WATER MAIN LOWERING



FIRE HYDRANT NOTES:

1. IN GENERAL ALL FIRE HYDRANTS SHALL CONFORM TO AWWA STANDARDS SPECIFICATIONS FOR FIRE HYDRANTS FOR ORDINARY WATER WORKS SERVICE FOR WATER AND SANITARY SEWER IMPROVEMENTS. FIRE HYDRANTS SHALL HAVE A 5-1/4" MINIMUM VALVE OPENING AND WITH A BARREL APPROXIMATELY 7" INSIDE DIAMETER. ALL HYDRANTS SHALL BE EQUIPPED WITH A BREAKAWAY FLANGE. ALL HYDRANTS SHALL BE APPROVED BY THE CITY OF CELINA.

TYPICAL FIRE HYDRANT INSTALLATION

NO SCALE

09-12

CITY OF CELINA, TEXAS

WATER DISTRIBUTION SYSTEM
STANDARD DETAILS

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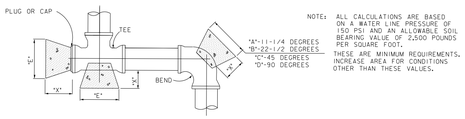


NOTE: ALL CALCULATIONS ARE BASED ON A WATER LINE PRESSURE OF 150 PSI AND AN ALLOWABLE SOIL BEARING VALUE OF 2,500 POUNDS PER SQUARE FOOT.

THESE ARE MINIMUM REQUIREMENTS. INCREASE AREA FOR CONDITIONS OTHER THAN THESE VALUES.

HORIZONTAL BLOCKING TABLE

PIPE SIZE	"X" DIM. IN FT.	11-1/4 DEGREES		22-1/2 DEGREES		45 DEGREES		90 DEGREES		TEE & PLUG	
		"A"	MIN. AREA	"B"	MIN. AREA	"C"	MIN. AREA	"D"	MIN. AREA	"E"	MIN. AREA
4"	1.5	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.06	1.00	1.00
6"	1.5	1.00	1.00	1.00	1.00	1.14	1.30	1.55	2.40	1.30	1.70
8"	1.5	1.00	1.00	1.08	1.18	1.52	2.31	2.07	4.27	1.74	3.02
10"	1.5	1.00	1.00	1.35	1.84	1.90	3.61	2.58	6.66	2.17	4.71
12"	1.5	1.00	1.33	1.63	2.65	1.86	5.19	3.10	9.60	2.61	6.79
14"	1.5	1.03	1.81	1.90	3.60	2.66	7.07	3.61	13.06	3.04	9.24
16"	2.0	1.18	2.36	2.17	4.71	3.04	9.23	4.13	17.06	3.47	12.06
18"	2.0	1.33	2.99	2.44	5.96	3.42	11.69	4.65	21.59	3.91	15.27
20"	2.0	1.48	3.70	2.71	7.35	3.80	14.43	5.16	26.66	4.34	18.85
21"	2.0	1.55	4.07	2.85	8.11	3.99	15.91	5.42	29.39	4.56	20.78
24"	2.0	1.77	5.32	3.25	10.59	4.56	20.77	6.20	38.39	5.21	27.14
27"	2.5	1.99	6.73	3.66	13.40	5.13	26.29	6.97	48.58	5.86	34.35
30"	2.5	2.22	8.31	4.07	16.55	5.70	32.46	7.74	59.98	6.51	42.41
33"	2.5	2.44	10.06	4.47	20.02	6.27	39.28	8.52	72.57	7.16	51.31
36"	2.5	2.66	11.97	4.88	23.83	6.84	46.74	9.29	86.37	7.81	61.07
39"	3.0	2.88	14.05	5.29	27.97	7.41	54.86	10.07	101.36	8.47	71.68
42"	3.0	3.10	16.30	5.69	32.43	7.98	63.62	10.85	117.56	9.12	83.13

NOTE: CLASS 'B' CONCRETE 2,000 PSI SHALL BE USED FOR ALL BLOCKING UNLESS OTHERWISE NOTED ON STANDARD DETAILS AND / OR PLANS.

THE MINIMUM VERTICAL DIMENSION OF ALL BLOCKING SHALL BE 1.5 TIMES THE PIPE DIAMETER WITH AT LEAST 0.75 TIMES THE PIPE DIAMETER EXTENDING BOTH ABOVE AND BELOW THE PIPE CENTERLINE. THIS DIMENSION DETERMINES THE "A" DIMENSION FOR 11-1/4° BENDS.

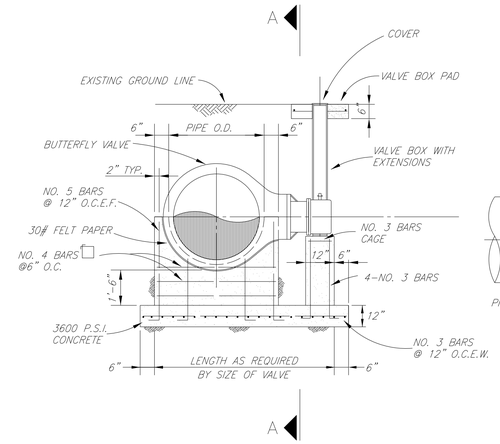
FOR 22-1/2°, 45°, 90°, AND TEES AND PLUGS, THE VERTICAL DIMENSION SHALL BE EQUAL TO THE HORIZONTAL DIMENSION SHOWN TO PRODUCE THE REQUIRED MINIMUM AREA.

ALL MINIMUM AREAS ARE IN SQUARE FEET.

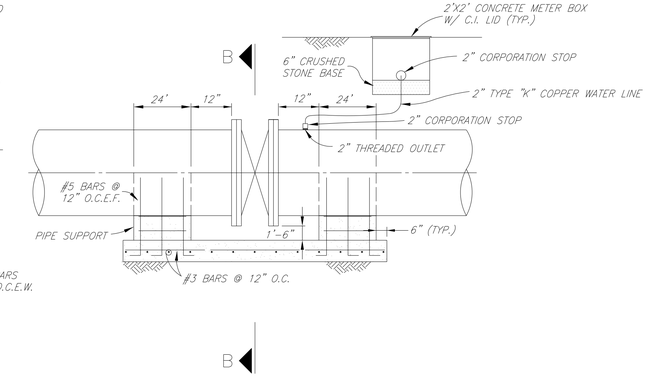
BLOCKING TO BE AGAINST UNDISTURBED TRENCH WALLS AND BOTTOM.

HORIZONTAL THRUST BLOCKING DETAIL

NO SCALE

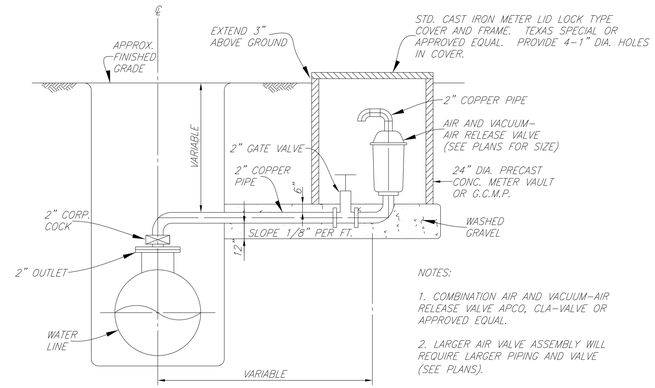


SECTION B–B



SECTION A–A

BUTTERFLY VALVE INSTALLATION



NOTES:

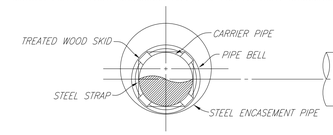
1. COMBINATION AIR AND VACUUM-AIR RELEASE VALVE APCO, CLA-VALVE OR APPROVED EQUAL.

2. LARGER AIR VALVE ASSEMBLY WILL REQUIRE LARGER PIPING AND VALVE (SEE PLANS).

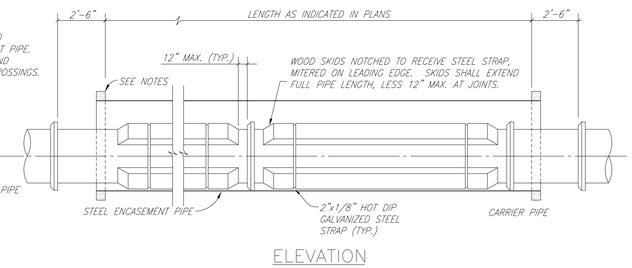
AIR AND VACUUM – AIR RELEASE VALVE INSTALLATION

BORING NOTES:

1. 2 MORTAR BANDS FOR R.C.C.P. AND CEMENT LINED & COATED STEEL PIPE MAY BE USED IN LIEU OF SKIDS & STRAPS.
2. CONTRACTOR SHALL PROVIDE SUPPORT UNDER CARRIER PIPE TO HAVE MIN. 1" CLEARANCE BETWEEN PIPE BELL AND ENCASEMENT PIPE.
3. ENDS OF ENCASEMENT PIPE SHALL BE PLUGGED WITH BRICK AND MORTAR FOR ROADWAY CROSSINGS AND CLAY FOR RAILROAD CROSSINGS.

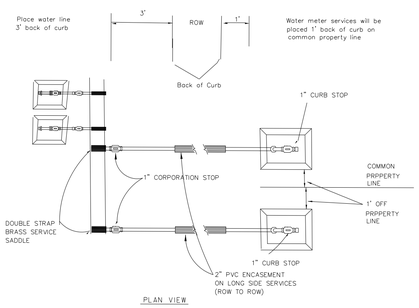


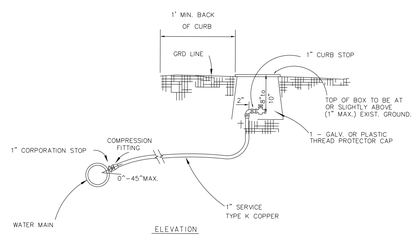
SECTION



ELEVATION

ENCASED ROAD OR RAILROAD BORE



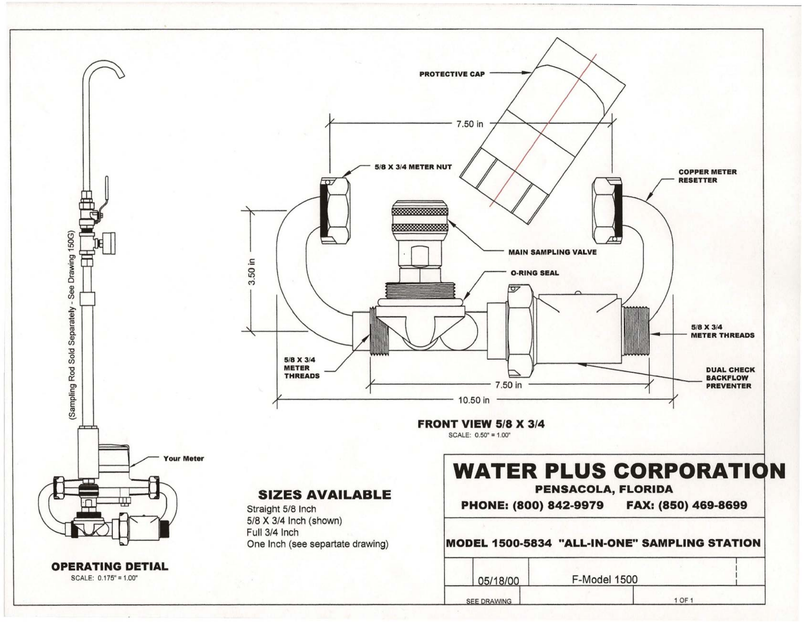


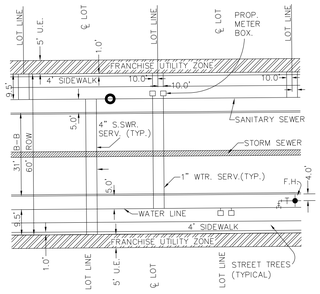
NOTES

1. WHERE TAPPING EXISTING MAINS OR PVC WATER MAINS, DOUBLE STRAPPED BRONZE, STAINLESS STEEL, OR EPOXY COATED DUCTILE IRON SADDLES SHALL BE USED.
2. COPPER SERVICES SHALL BE CONTINUOUS WITH NO JOINTS FROM CORP. STOP TO QUARTER BEND.
3. ALL COPPER FITTINGS SHALL BE COMPRESSION FITTINGS.
4. METERS SHALL NOT BE INSTALLED IN EXISTING OR PROPOSED SIDEWALK OR DRIVEWAYS.

SERVICE CONNECTION DETAIL

NO SCALE





UTILITY PLACEMENT DETAIL

NO SCALE

09-13

CITY OF CELINA, TEXAS

WATER DISTRIBUTION SYSTEM
STANDARD DETAILS

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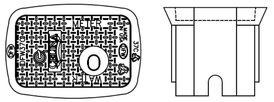
DFW PLASTICS, INC.

PO Box 648
Bedford, Texas 76095
Tel: 817.439.3600
Fax: 817.439.3700
www.dfwplasticsinc.com



DFW37C-12-1SAF CELINA

21x14x12 Black Polymer Box w/
Black Polymer AMR/AMI Lid w/ Security Lock & Knockout

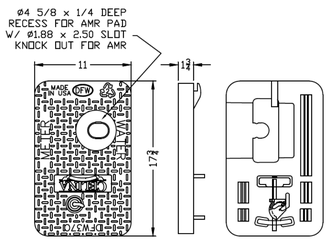
This product is designed to withstand loading in non-deliberate and incidental traffic. Not to be installed in roadway. Meter Box shall be black and constructed out of modified polyethylene material for maximum durability and corrosion resistance. The black material is for maximum UV protection. The black material shall be uniform throughout the Meter Box for maximum longevity and **not have** a foaming agent that creates air pockets within the plastic wall.

Vertical and Lateral Load Rating:

- Compliant with AASHTO, Design Load of H-10; ASTM C 857-12a, Design Load of A-8, 8,000 lbs. transferred through a 10" x 10" steel plate centered in the cover and body.
- Compliant with AASHTO, Design Load of H-20; ASTM C 857-12a, Design Load of A-16, 16,000 lbs. transferred through a 10" x 20" steel plate centered on the cover and body.
- This product is designed to withstand H-10 and H-20 loading in non-deliberate or incidental traffic areas. **NOT INTENDED TO BE INSTALLED IN ROADWAYS.**

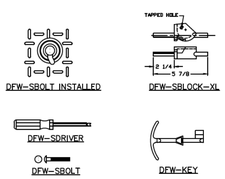
Polymer Lid

- The polymer lid shall have a molded key hole and Security Lock underneath lid (DFW-SBLOCK-XL) - *as illustrated.*
- The polymer lid shall have one (1) **MOLDED knock out plug (1.88" x 2.50"), recessed (4 5/8" x 1/4") deep** - *as illustrated.*
- The polymer lid shall have a molded slide mount bracket for placement of AMR/AMI device - *as illustrated.*
- The polymer lid shall seat securely and evenly inside the Meter Box and shall not overlap the top edge of the Meter Box.
- The polymer lid shall have molded **tread-pattern** for skid resistance - **tread dimensions shall be 0.188" x 0.938" x 0.150" deep.**
- The polymer lid shall have "Water Meter" molded into the lid - **Font shall be Std Fadal CNC Font with 1" characters x 0.150" deep.**
- The polymer lid shall have "CELINA" molded into the lid - *as illustrated.*
- The polymer lid shall retrofit existing cast iron meter boxes with similar dimensions and be able to adjust in the field.
- The polymer lid shall be black and have a molded recycled emblem with a minimum of 50% Post Consumer Recycled and 50% Post Industrial/ Pre Consumer Recycled Content- Verified with a **Leed Product Documentation.**
- The polymer lid shall be DFW Plastics Inc, **MADE IN USA.** - Domestic Only.



DFW37C-1SAF CELINA-LID

OPTIONAL SECURITY HARDWARE



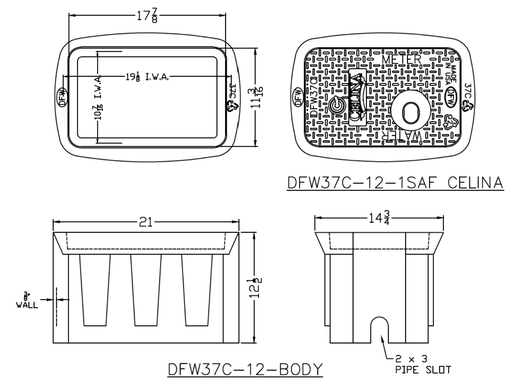
This product is designed to withstand loading in non-deliberate and incidental traffic. Not to be installed in roadway. Meter Box shall be black and constructed out of modified polyethylene material for maximum durability and corrosion resistance. The black material is for maximum UV protection. The black material shall be uniform throughout the Meter Box for maximum longevity and not have a foaming agent that creates air pockets within the plastic wall.

Vertical and Lateral Load Rating:

- Compliant with AASHTO, Design Load of H-10; ASTM C 857-12a, Design Load of A-8, 8,000 lbs. transferred through a 10" x 10" steel plate centered in the cover and body.
- Compliant with AASHTO, Design Load of H-20; ASTM C 857-12a, Design Load of A-16, 16,000 lbs. transferred through a 10" x 20" steel plate centered on the cover and body.
- This product is designed to withstand H-10 and H-20 loading in non-deliberate or incidental traffic areas. **NOT INTENDED TO BE INSTALLED IN ROADWAYS.**

Polymer Body

- The polymer body shall be BLACK and have a **Minimum** of 3/8" wall thickness - *as illustrated.*
- The polymer body shall have **Minimum** inside working room of (19 3/8" x 10 7/16") - *as illustrated.*
- The polymer body shall have crush resistant ribbing along the outside of the box.
- The polymer body shall have a flange around the lid opening to help prevent settling and aide in the adjustment to grade.
- The polymer body shall have one pipe slot molded on each end of the body that measures (3" x 4").
- The polymer body shall be black and have a molded recycled emblem with a minimum of 35% Post Industrial/ Pre Consumer Recycled Content - Verified with a **Leed Product Documentation.**
- The polymer Body shall be DFW Plastics Inc., **MADE IN USA.** - Domestic Only.



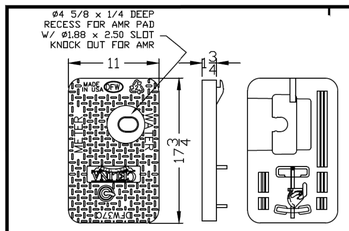
Meter Box shall be C Series by DFW Plastics, Inc. or an approved equal. All Specs are subject to change without notice.

Part No.	Series	Size	Height	Width	Length
DFW37C-12-BODY	37C	21" x 14"	12"	Top - 14-3/4"	Top- 21"
DFW37C-12-1SAF CELINA	37C	21" x 14"	12"	Base - 11-1/4"	Base- 21"
DFW37C-1SAF CELINA-LID	37C	21" x 14"	1-7/8"	11"	17-3/4"

Single Service Box for 5/8", 3/4", & 1" Meters
File: Submittal -DFW37C-12-1SAF CELINA
Rev. A July 2013

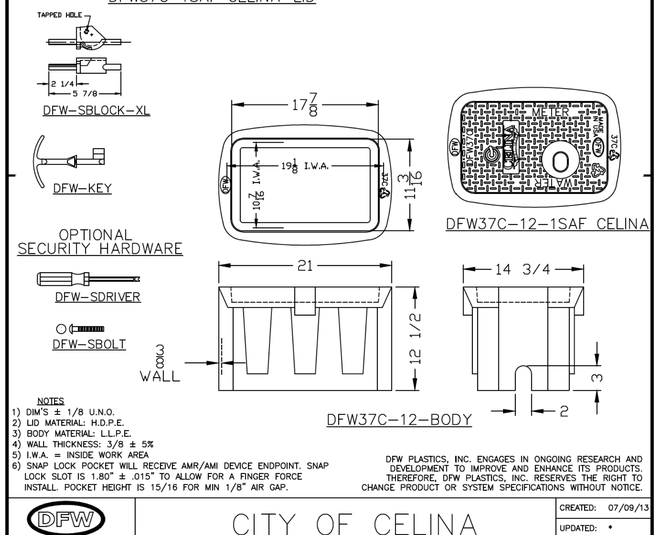
Submitted by:

REVISIONS		
REV	DESCRIPTION	DATE
NR	NEW RELEASE	07/09/13



DFW37C-1SAF CELINA-LID

LID KEY	
1	BLACK COLOR
S	BRASS LOCK, SECURITY
A	AMR SLIDE MOUNT
F	KNOCKOUT
CELINA	CELINA ENGRAVING



NOTES
1) DIM'S ± 1/8 U.N.O.
2) LID MATERIAL: H.D.P.E.
3) BODY MATERIAL: L.L.P.E.
4) WALL THICKNESS: 3/8 ± 5%
5) I.W.A. = INSIDE WORK AREA
6) SNAP LOCK POCKET WILL RECEIVE AMR/AMI DEVICE ENDPOINT. SNAP LOCK SLOT IS 1.80" ± .015" TO ALLOW FOR A FINGER FORCE INSTALL. POCKET HEIGHT IS 15/16 FOR MIN 1/8" AIR GAP.

DFW PLASTICS, INC. ENGAGES IN ONGOING RESEARCH AND DEVELOPMENT TO IMPROVE AND ENHANCE ITS PRODUCTS. THEREFORE, DFW PLASTICS, INC. RESERVES THE RIGHT TO CHANGE PRODUCT OR SYSTEM SPECIFICATIONS WITHOUT NOTICE.

DFW PLASTICS, INC.
PO BOX 648
BEDFORD, TEXAS 76095
(817) 439-3600
(817) 439-3700 (f)
www.dfwplasticsinc.com

CITY OF CELINA

DFW37C-12-1SAF CELINA

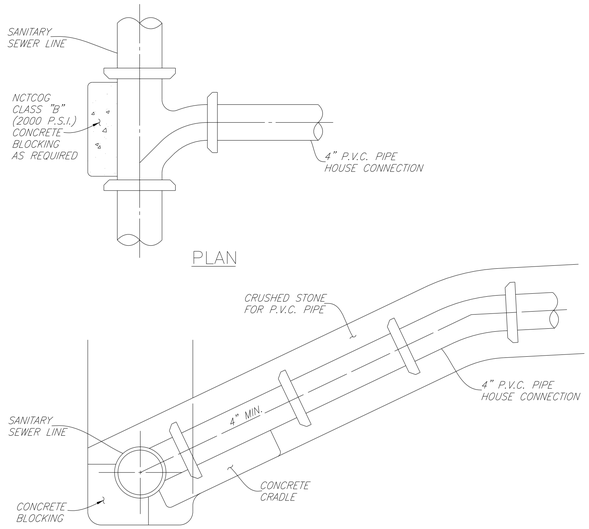
CREATED: 07/09/13
UPDATED: *
ACCEPTED: BMcK
DRAWN BY: J.C.A.
PLOT SCALE: 1:10

09-14

CITY OF CELINA, TEXAS

WATER DISTRIBUTION SYSTEM
STANDARD DETAILS

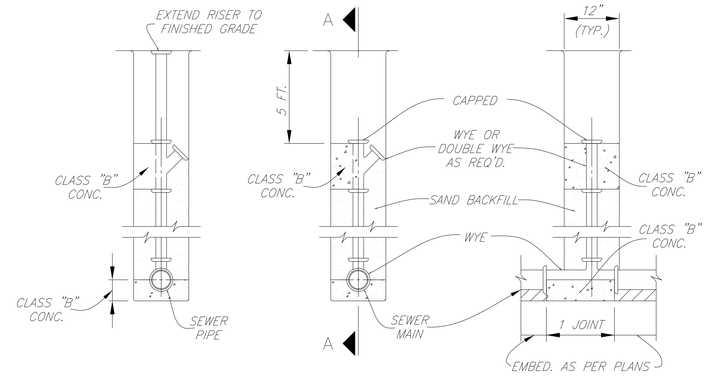
I:/proj/01390501/01390540 Parcel 1&2/08-DesignCAD/DGN/phldetl1.dgn



TYPICAL SEWER HOUSE SERVICE CONNECTION

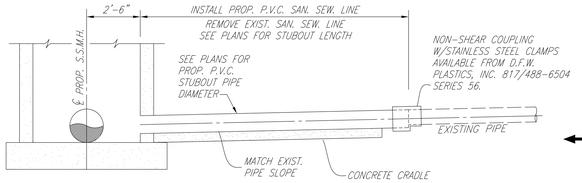
SANITARY SEWER CLEANOUT BOOTS SHALL BE BASS & HAYS # 339 OR APPROVED EQUAL.

(HOUSE_SERVICE)



DEEP CUT CLEANOUT

(DEEPCUT-CO)

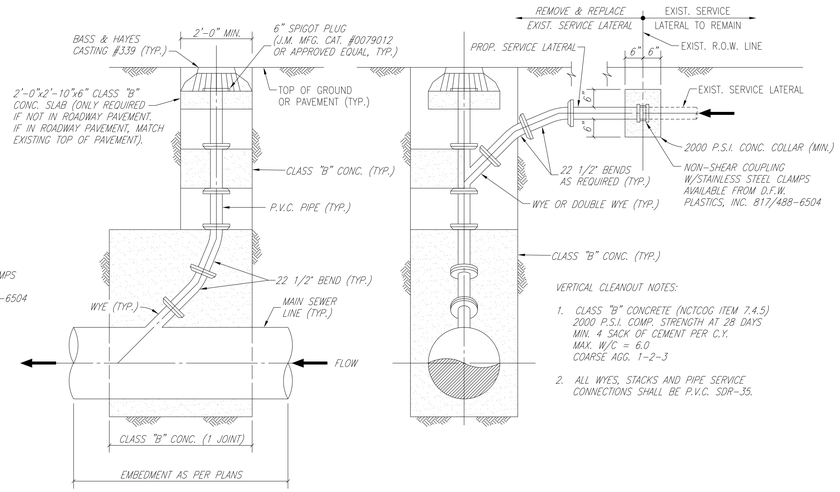


TYPICAL STUBOUT CONNECTION

NO SCALE

NOTE:
MATCH SOFFITS UPSTREAM OF MANHOLE
MATCH FLOW LINES DOWNSTREAM OF MANHOLE

(STUBOUT)



VERTICAL CLEANOUT NOTES:

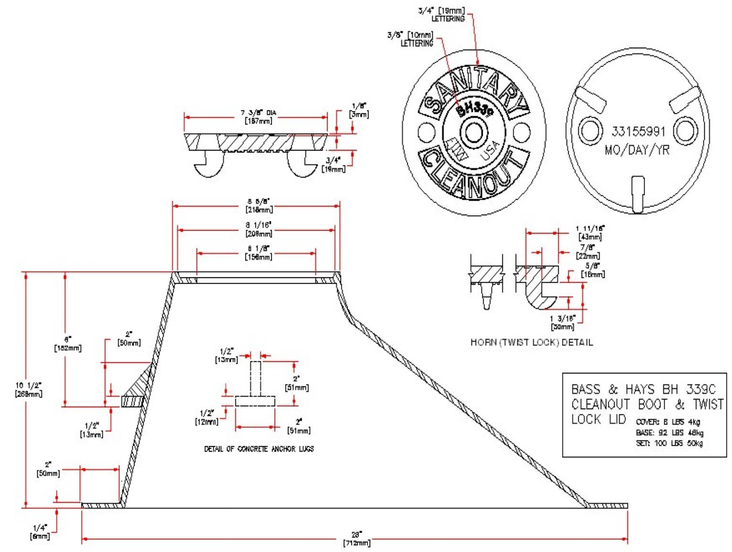
1. CLASS "B" CONCRETE (NCTCOG ITEM 7.4.5) 2000 P.S.I. COMP. STRENGTH AT 28 DAYS MIN. 4 SACK OF CEMENT PER C.Y. MAX. W/C = 6.0 COARSE AGG. 1-2-3
2. ALL WYES, STACKS AND PIPE SERVICE CONNECTIONS SHALL BE P.V.C. SDR-35.

VERTICAL CLEANOUT CONNECTION

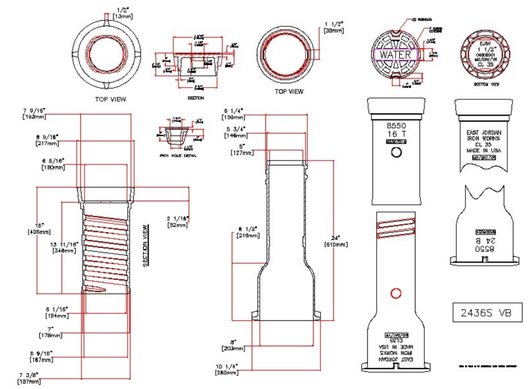
(CONNECTION, WYE, CONCRETE, BENDS, CASTING, ETC. ALL SUBSIDIARY TO CLEANOUT)

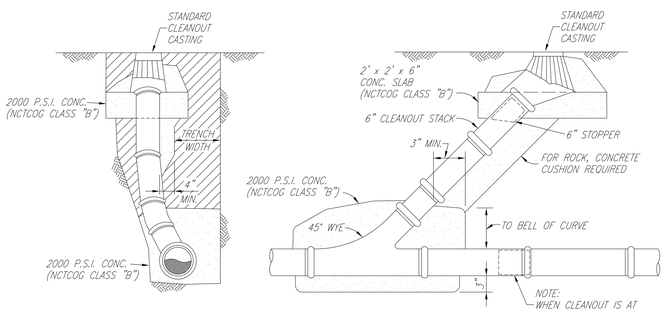
(VERT-CO)

Cleanout



Valve box

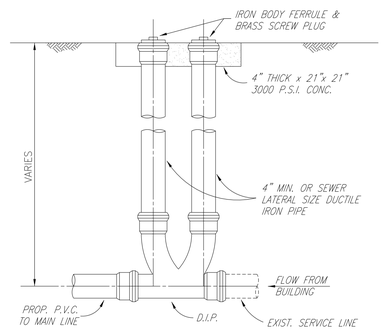




STANDARD CLEANOUT

NO SCALE

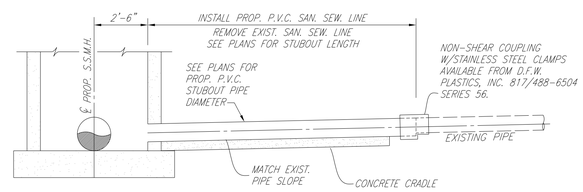
(CLEANOUT)



TYPICAL TWO WAY CLEANOUT

NO SCALE

(2-WAY-CO)



TYPICAL STUBOUT CONNECTION

NO SCALE

NOTE:
MATCH SOFFITS UPSTREAM OF MANHOLE
MATCH FLOW LINES DOWNSTREAM OF MANHOLE

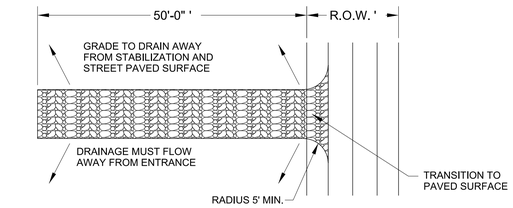
(STUBOUT)

09-15

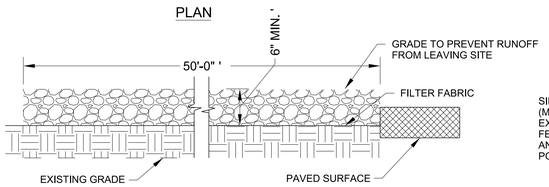
CITY OF CELINA, TEXAS

SANITARY SEWER SYSTEM
STANDARD DETAILS

i:/proj/013905101390540 Parcel 1&2/08-DesignCAD/DGN/phidet12.dgn



PLAN



PROFILE

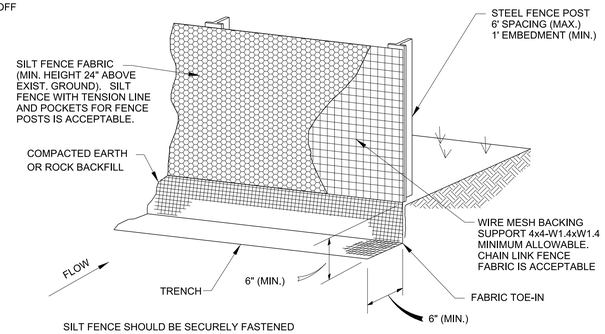
STABILIZED CONSTRUCTION ENTRANCE / EXIT

NCTCOG 02270.G
STORM WATER QUALITY
BEST MANAGEMENT PRACTICES
FOR CONSTRUCTION ACTIVITIES

DETAIL 'A'

N.T.S.

The Stabilized Construction Entrance / Exit Is To Be Used As A Vehicle Wash Down Area For Debris And Soil Removal Before Exiting The Site Onto The Existing Roadway. Location For Installation Should Be Identified On The Project's Erosion Control Plan. An Alternate Location Must Be Approved By Owner Or Engineer Prior To Installation. Stabilized Construction Entrance / Exit Shall Be Top Dressed With Additional Stone As Necessary.



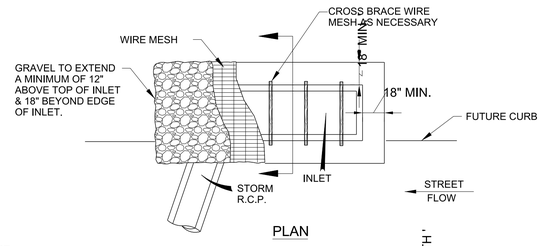
SILT FENCE SHOULD BE SECURELY FASTENED TO BACKING SUPPORT AND POSTS.

SILT FENCE

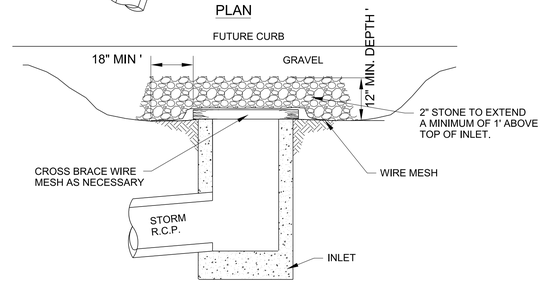
NCTCOG 02270.B
STORM WATER QUALITY
BEST MANAGEMENT PRACTICES
FOR CONSTRUCTION ACTIVITIES

DETAIL 'B'

N.T.S.



PLAN



CROSS-SECTION

INLET PROTECTION WIRE MESH & GRAVEL

NCTCOG 02270.G
STORM WATER QUALITY
BEST MANAGEMENT PRACTICES
FOR CONSTRUCTION ACTIVITIES

DETAIL 'C'

N.T.S.

CONTRACTOR SHALL INTERCEPT FLOW AND INSTALL INLET PROTECTION MEASURES AS SOON AS PRACTICABLE.

SILT FENCE GENERAL NOTES:

1. STEEL POSTS WHICH SUPPORT THE SILT FENCE SHALL BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF ONE FOOT.

2. THE TOE OF THE SILT FENCE SHALL BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWNSLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW. WHERE FENCE CANNOT BE TRENCHED IN (e.g. PAVEMENT), WEIGHT FABRIC FLAP WITH ROCK ON UPHILL SIDE TO PREVENT FLOW FROM SEEPING UNDER FENCE.

3. THE TRENCH MUST BE A MINIMUM OF 6 INCHES DEEP AND 6 INCHES WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.

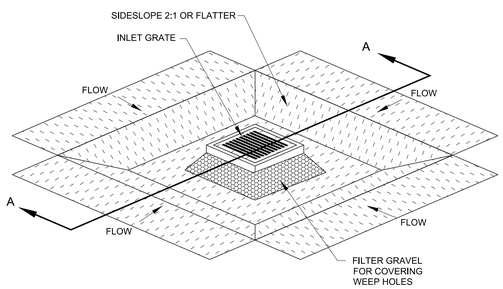
4.SILT FENCE SHOULD BE SECURELY FASTENED TO EACH STEEL SUPPORT POST OR TO WOVEN WIRE, WHICH IS IN TURN ATTACHED TO THE STEEL FENCE POST.

5. THERE SHALL BE A 3 FOOT OVERLAP, SECURELY FASTENED WHERE ENDS OF FABRIC MEET.

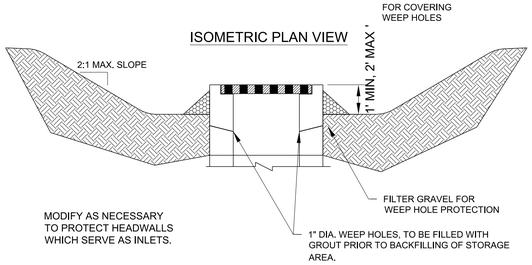
6. INSPECTION SHALL BE MADE WEEKLY AND AFTER EACH RAINFALL. REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.

7. SILT FENCE SHALL BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

8. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF HALF THE HEIGHT OF THE FENCE. THE SILT SHALL BE DISPOSED OF AT AN APPROVED SITE AND IN SUCH A MANNER AS TO NOT CONTRIBUTE TO TO ADDITIONAL SILTATION.



ISOMETRIC PLAN VIEW

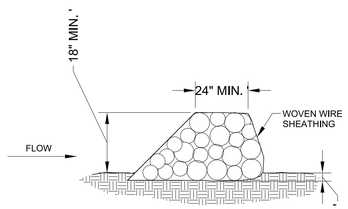


SECTION A-A

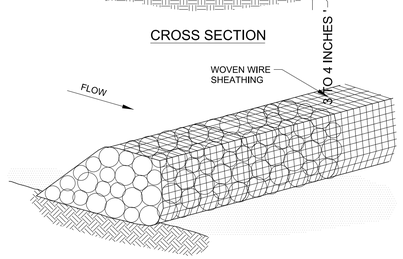
EXCAVATED IMPOUNDMENT INLET PROTECTION

DETAIL 'D'

N.T.S.



CROSS SECTION



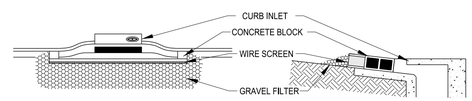
ISOMETRIC PLAN VIEW

ROCK BERM

DETAIL 'E'

N.T.S.

METHODOLOGY APPLIES TO RECESSED AND STANDARD CURB INLETS. CARE SHOULD BE TAKEN TO KEEP MEASURE OUT OF TRAFFIC.



CURB INLET PROTECTION

DETAIL "F"

N.T.S.

STATE OF TEXAS
ROBERT M. STENGELE
50145
REGISTERED PROFESSIONAL ENGINEER
3-16-15

Huitt-Zollars, Inc.
Firm Registration No. F-761

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EROSION CONTROL DETAILS

LIGHT FARMS

LFC Land Company LLC

Collin County Municipal Utility District No. 1

COLLIN COUNTY, TEXAS

HUITT-ZOLLARS

DESIGN	CHECKED	DATE	SCALE	NOTES	JOB NO.	SHT. NO.
HZI	HZI				01-3905-40	09-16

i:/proj/013905/01390540 Parcel 1&2/08-DesignCAD/DGN/phlecde101.dgn

P-201402-02

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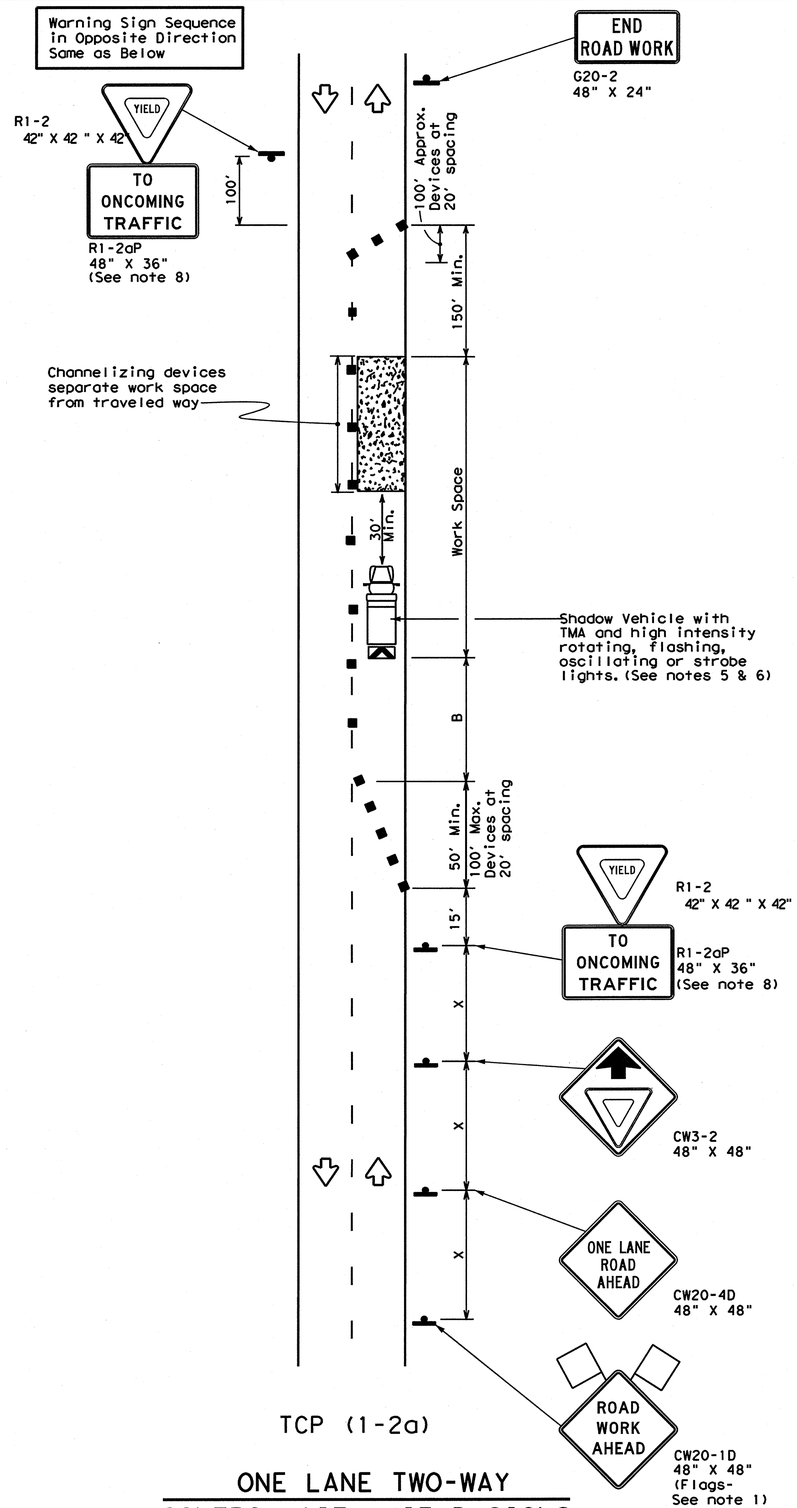
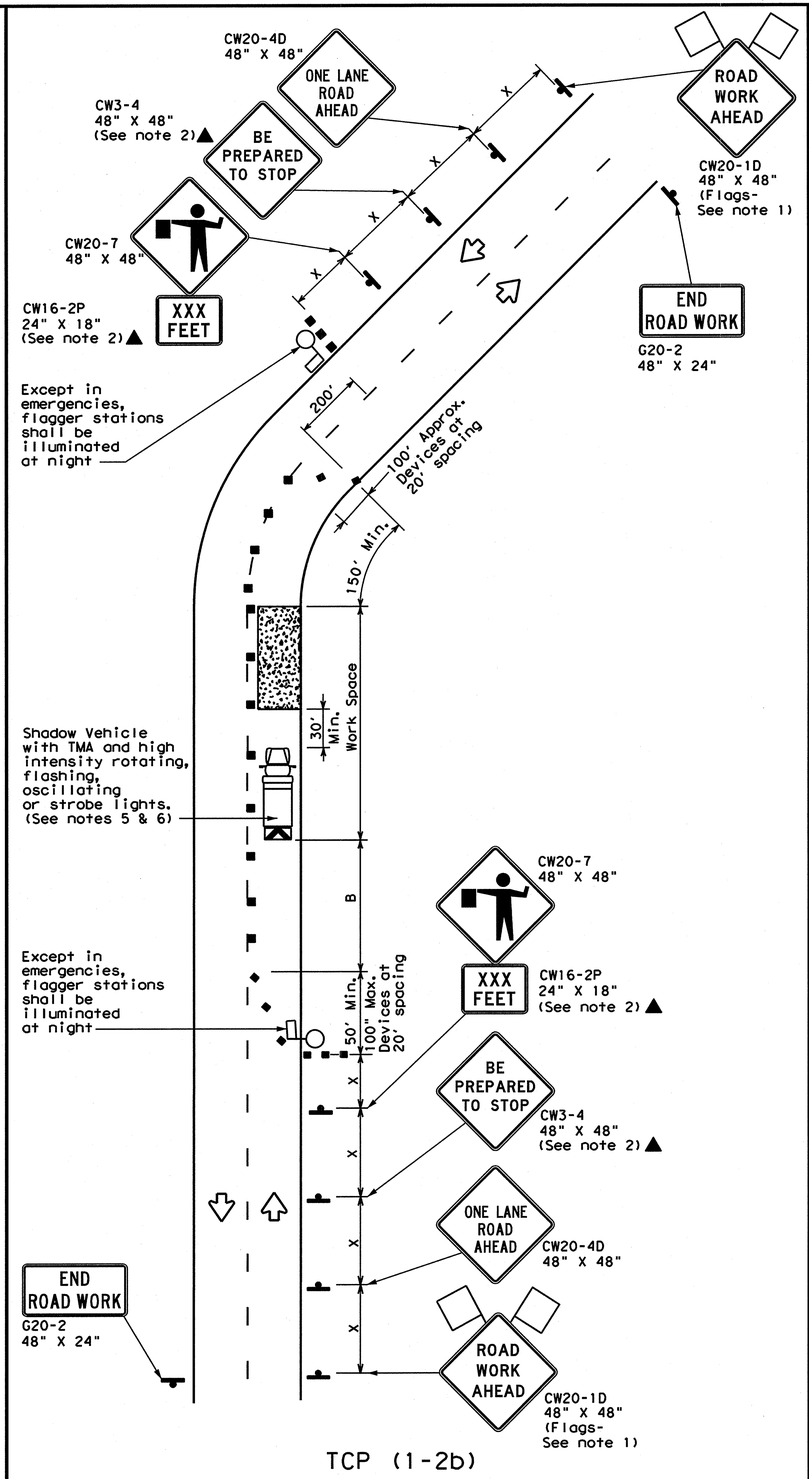


TCP (1-2a)

ONE LANE TWO-WAY CONTROL WITH YIELD SIGNS

(Less than 2000 ADT - See note 7)



TCP (1-2b)

ONE LANE TWO-WAY CONTROL WITH FLAGGERS

LEGEND

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

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"	Stopping Sight Distance
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'	200'
35		205'	225'	245'	35'	70'	160'	120'	250'
40		265'	295'	320'	40'	80'	240'	155'	305'
45	L = WS	450'	495'	540'	45'	90'	320'	195'	360'
50		500'	550'	600'	50'	100'	400'	240'	425'
55		550'	605'	660'	55'	110'	500'	295'	495'
60		600'	660'	720'	60'	120'	600'	350'	570'
65		650'	715'	780'	65'	130'	700'	410'	645'
70		700'	770'	840'	70'	140'	800'	475'	730'
75		750'	825'	900'	75'	150'	900'	540'	820'

* Conventional Roads Only

** Taper lengths have been rounded off.

L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

TYPICAL USAGE

MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
	✓	✓		

GENERAL NOTES

1. Flags attached to signs where shown are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. The CW3-4 "BE PREPARED TO STOP" sign may be installed after the CW20-4D "ONE LANE ROAD AHEAD" sign, but proper sign spacing shall be maintained.
4. Sign spacing may be increased or an additional CW20-1D "ROAD WORK AHEAD" sign may be used if advance warning ahead of the flagger or R1-2 "YIELD" sign is less than 1500 feet.
5. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
6. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.

TCP (1-2a)

7. R1-2 "YIELD" sign traffic control may be used on projects with approaches that have adequate sight distance. For projects in urban areas, work spaces should be no longer than one half city block. In rural areas on roadways with less than 2000 ADT, work spaces should be no longer than 400 feet.
8. R1-2 "YIELD" sign with R1-2aP "TO ONCOMING TRAFFIC" plaque shall be placed on a support at a 7 foot minimum mounting height.

TCP (1-2b)

9. Flaggers should use two-way radios or other methods of communication to control traffic.
10. Length of work space should be based on the ability of flaggers to communicate.
11. If the work space is located near a horizontal or vertical curve, the buffer distances should be increased in order to maintain adequate stopping sight distance to the flagger and a queue of stopped vehicles (see table above).
12. Channelizing devices on the center-line may be omitted when a pilot car is leading traffic and approved by the Engineer.
13. Flaggers should use 24" STOP/SLOW paddles to control traffic. Flags should be limited to emergency situations.

For construction or maintenance contract work, specific project requirements for shadow vehicles can be found in the project GENERAL NOTES for Item 502, Barricades, Signs and Traffic Handling.

Texas Department of Transportation
Traffic Operations Division

TRAFFIC CONTROL PLAN ONE-LANE TWO-WAY TRAFFIC CONTROL

TCP(1-2)-12

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DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

REVISIONS
4-90 2-12
2-94
1-97
4-98

CONT	SECT	JOB	HIGHWAY
DIST		COUNTY	SHEET NO.

DATE:
FILE:

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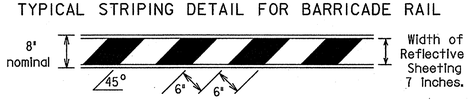
TYPE III BARRICADES

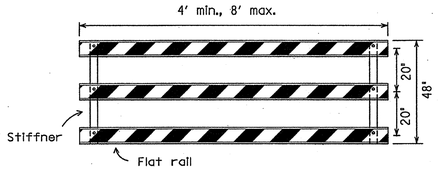
1. Refer to the Compliant Work Zone Traffic Control Devices List (CWZTCD) for details of the Type III Barricades and a list of all materials used in the construction of Type III Barricades.
2. Type III Barricades shall be used at each end of construction projects closed to all traffic.
3. Barricades extending across a roadway should have stripes that slope downward in the direction toward which traffic must turn in detouring. When both right and left turns are provided, the chevron striping may slope downward in both directions from the center of the barricade. Where no turns are provided at a closed road striping should slope downward in both directions toward the center of roadway.
4. Striping of rails, for the right side of the roadway, should slope downward to the left. For the left side of the roadway, striping should slope downward to the right.
5. Identification markings may be shown only on the back of the barricade rails. The maximum height of letters and/or company logos used for identification shall be 1".
6. Barricades shall not be placed parallel to traffic unless an adequate clear zone is provided.
7. Warning lights shall NOT be installed on barricades.
8. Where barricades require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand is recommended. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight. Sand bags shall not be stacked in a manner that covers any portion of a barricade rails reflective sheeting. Rock, concrete, iron, steel or other solid objects will NOT be permitted. Sandbags should weigh a minimum of 35 lbs and a maximum of 50 lbs. Sandbags shall be made of a durable material that tears upon vehicular impact. Rubber (such as tire inner tubes) shall not be used for sandbags. Sandbags shall only be placed along or upon the base supports of the device and shall not be suspended above ground level or hung with rope, wire, chains or other fasteners.
9. Sheeting for barricades shall be retroreflective Type C (High Specific Intensity) conforming to Departmental Material Specification DMS-8300 unless otherwise noted.

Barricades shall NOT be used as a sign support.

TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



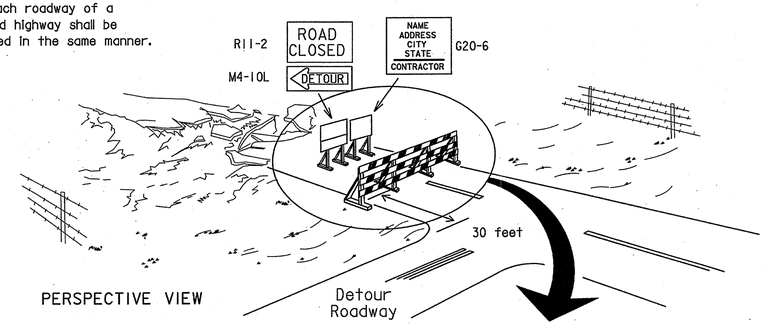
TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES



Stiffner may be inside or outside of support, but no more than 2 stiffeners shall be allowed on one barricade.

TYPE III BARRICADE (POST AND SKID) TYPICAL APPLICATION

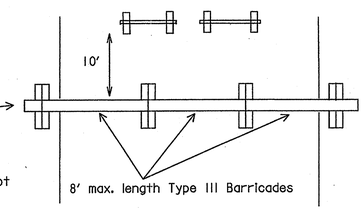
Each roadway of a divided highway shall be barricaded in the same manner.



PERSPECTIVE VIEW

The three rails on Type III barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.

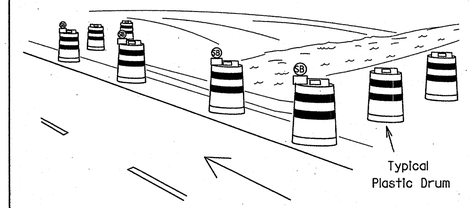
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type III Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

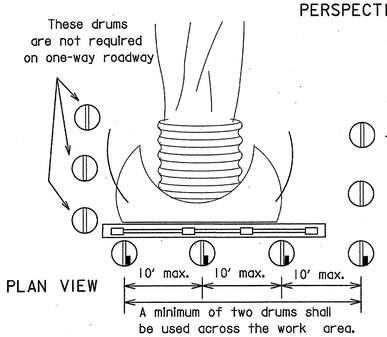
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



PERSPECTIVE VIEW

1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder width is greater than 12 feet, steady-burn lights may be omitted if drums are used.
5. Drums must extend the length of the culvert widening.

These drums are not required on one-way roadway



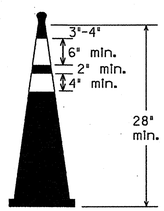
PLAN VIEW

Increase number of plastic drums on the side of approaching traffic if the crown width makes it necessary. (minimum of 2 and maximum of 4 drums)

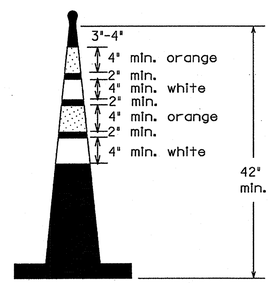
Legend

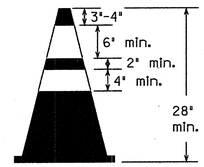
- Plastic drum
- Plastic drum with steady burn light or yellow warning reflector
- (SB) Steady burn warning light or yellow warning reflector

CONES

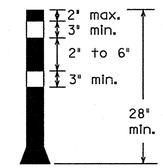


Two-Piece cones





One-Piece cones

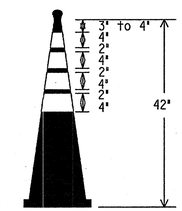


Tubular Marker

28" Cones shall have a minimum weight of 9 1/2 lbs.

42" 2-piece cones shall have a minimum weight of 30 lbs. including base.

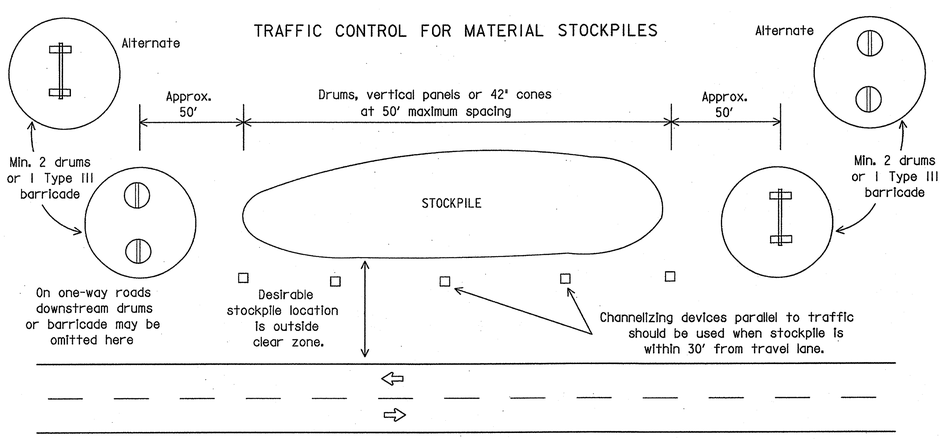
1. Traffic cones and tubular markers shall be a minimum of 28 inches in height when used either on freeways or at nighttime.
2. Cones or tubular markers shall be predominantly orange, fluorescent red-orange, or fluorescent yellow-orange. They should be kept clean and bright for maximum visibility.
3. Cones used only for daytime operations do not require the reflectorized bands.
4. Cones and tubular markers used for nighttime operations shall be reflectorized. Reflectorized material shall have a smooth, sealed outer surface that displays the same approximate color during the day and night. The reflectorized bands shall be retroreflective Type C (High Specific Intensity) conforming to Departmental Material Specification DMS-8300, unless otherwise noted.
5. When used at night, appropriate personnel shall ensure that cones and tubular markers remain in their proper location and in an upright position.
6. Reflectorization of 28"cones shall consist of a minimum 6 inch band placed at least 3 inches but not more than 4 inches from the top, supplemented by a minimum 4 inch band spaced a minimum of 2 inches below the 6 inch band.
7. Reflectorization of 42" cones shall be provided by alternating 4 to 6" orange and white stripes with orange on top.
8. Reflectorization of tubular markers shall be a minimum of two 3 inch bands placed a maximum of 2 inches from the top with a maximum of 6 inches between bands.
9. One-piece cones or tubular markers are generally suitable for temporary usage (up to 8 hours) with other channelization devices such as vertical panels, drums or two-piece cones for long term usage. Care should be taken to ensure they remain in their proper location and in an upright position.
10. Cones or tubular markers used on each project shall be of the same size and shape.
11. The handle may be designed as a hook or other shape, fabricated from non-rigid materials similar to the cone material, and may extend up to a maximum of 8 inches above the top of cone. Length of the handle shall not be considered with regard to the overall height of the cone.



EDGELINE CHANNELIZER

1. This device is intended only for use in place of a vertical panel to channelize traffic by indicating the edge of the travel lane. It is not intended to be used in transitions or tapers.
2. This device shall not be used to separate lanes of traffic (opposing or otherwise) or warn of objects.
3. This device is based on a 42 inch, two-piece cone with an alternate striping pattern: four 4 inch retroreflective bands, with an approximate 2 inch gap between bands. The color of the band should correspond to the color of the edgeline (yellow for left edgeline, white for right edgeline) for which the device is substituted or for which it supplements. The reflectorized bands shall be retroreflective Type C encapsulated bead (High Specific Intensity) conforming to Departmental Material Specification DMS-8300, unless otherwise noted.
4. The base must weigh a minimum of 30 lbs.

TRAFFIC CONTROL FOR MATERIAL STOCKPILES



Texas Department of Transportation
Traffic Operations Division

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES STANDARD

10 of 12 BC(10)-07

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9-07 REVISIONS	CONT	SECT	JOB	HIGHWAY
	DIST		COUNTY	SHEET NO.

109A

DATE:
FILE:

TABLE OF DIMENSIONS & REINFORCING STEEL
(Wings for One Structure End)

Dimensions					Variable Reinforcing				Estimated Quantities per ft of wing length (2~Wings) (3)	
Maximum Wingwall Height Hw	W	X	Y	Z	Bars J1		Bars J2			
					Size	Spa	Size	Spa	Reinf (Lb/Ft)	Conc (CY/Ft)
2'-6"	2'- 5"	1'- 0"	9"	7"	#4	1'-0"	#4	1'-0"	33.73	0.248
3'-0"	2'- 5"	1'- 0"	9"	7"	#4	1'-0"	#4	1'-0"	37.07	0.261
3'-6"	2'- 5"	1'- 0"	9"	7"	#4	1'-0"	#4	1'-0"	37.74	0.273
4'-0"	2'- 5"	1'- 0"	9"	7"	#4	1'-0"	#4	1'-0"	38.41	0.285
4'-6"	3'- 2"	1'- 6"	1'- 0"	7"	#4	1'-0"	#4	1'-0"	41.75	0.330
5'-0"	3'- 2"	1'- 6"	1'- 0"	7"	#4	1'-0"	#4	1'-0"	45.09	0.343
5'-6"	3'- 2"	1'- 6"	1'- 0"	7"	#4	1'-0"	#4	1'-0"	45.75	0.355
6'-0"	3'- 2"	1'- 6"	1'- 0"	7"	#4	1'-0"	#4	1'-0"	46.42	0.367
7'-0"	3'- 8"	1'- 9"	1'- 3"	7"	#4	1'-0"	#4	1'-0"	52.77	0.414
8'-0"	4'- 2"	2'- 0"	1'- 6"	8"	#5	1'-0"	#4	1'-0"	60.19	0.486
9'-0"	4'- 8"	2'- 3"	1'- 9"	8"	#4	6"	#4	6"	81.49	0.535
10'-0"	5'- 2"	2'- 6"	2'- 0"	8"	#5	6"	#4	6"	97.25	0.584
11'-0"	5'- 8"	2'- 9"	2'- 3"	8"	#6	6"	#5	6"	133.65	0.634
12'-0"	6'- 2"	3'- 0"	2'- 6"	9"	#7	6"	#5	6"	162.29	0.721
13'-0"	6'- 8"	3'- 3"	2'- 9"	11"	#7	6"	#5	6"	178.80	0.856
14'-0"	7'- 2"	3'- 6"	3'- 0"	1'- 0"	#8	6"	#5	6"	216.78	0.959
15'-0"	7'- 8"	4'- 0"	3'- 0"	1'- 1"	#9	6"	#6	6"	283.06	1.068
16'-0"	8'- 2"	4'- 6"	3'- 0"	1'- 3"	#9	6"	#6	6"	297.02	1.234

TABLE OF WINGWALL REINFORCING (2~Wings)

Bar	Size	No.	Spa
D	#5	~	1'-0"
E	#4	~	1'-0"
F	#4	~	1'-0"
G	#6	4	~
M	#4	4	~
P	#4	~	1'-0"
R	#5	6	~
V	#4	~	1'-0"

TABLE OF ESTIMATED CULVERT TOEWALL QUANTITIES

Bar	Size	No.	Spa
L	#4	~	1'-6"
Q	#4	1	~
Reinf (Lb/Ft)			2.45
Conc (CY/Ft)			0.037

WING DIMENSION CALCULATIONS:

Formulas: (All values are in Feet)

Hw = H + T + C - 0.250'

Lw = (Hw - 0.333') (SL)

For Cast-in-place culverts:

Ltw = (N) (S) + (N + 1) (U)

For Precast culverts:

Ltw = (N) (2U + S) + (N - 1) (0.5')

Total Wingwall Area (Two Wings ~ S.F.) = (Hw + 0.333') (Lw)

Hw = Height of Wingwall
SL:1 = Side Slope Ratio (Horizontal:1 Vertical)
Lw = Length of Wingwall
Ltw = Culvert Toewall Length
N = Number of Culvert Spans

See applicable box culvert standard for H, S, T, and U values.

(1) Extend Bars P 3'-0" minimum into bottom slab of Box Culvert.

(2) Adjust to fit as necessary to maintain 1 ¼" clear cover and 4" minimum between bars.

(3) Quantities shown are based on an average wing height for two wings (one structure end). To determine total quantities for two wings multiply the tabulated values by Lw.

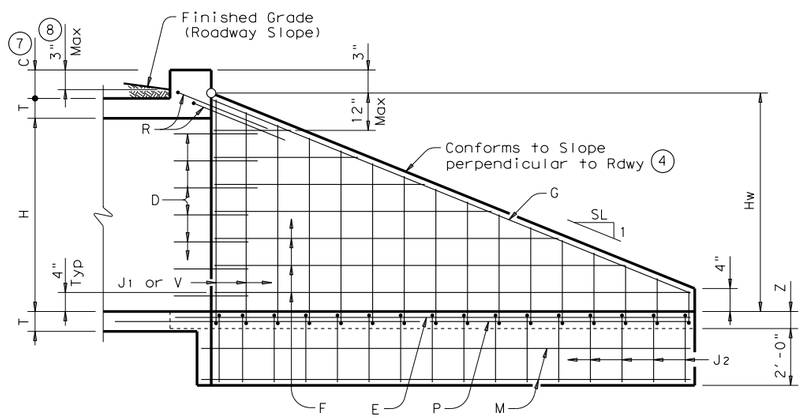
(4) Recommended values of Slope are: 2:1, 3:1, 4:1, & 6:1.

(5) When shown elsewhere on the plans, a 5" deep concrete riprap shall be constructed. Payment for riprap shall be as required by Item 432, "Riprap". Unless otherwise shown on the plans or directed by the Engineer, the riprap shall have a 6" wide by 1'-6" deep reinforced concrete toewall along all edges adjacent to natural ground; the toewall shall be reinforced by extending typical riprap reinforcing into the toewall; construction joints or grooved joints, oriented in the direction of flow, shall extend across the full distance of the riprap, at intervals of approximately 20'. When such riprap is provided, the culvert toewall shown in SECTION B-B will not be required.

(6) At Contractor's option, Culvert Toewall may be ended flush with Wingwall Toewall. Adjust reinforcing from that shown as necessary.

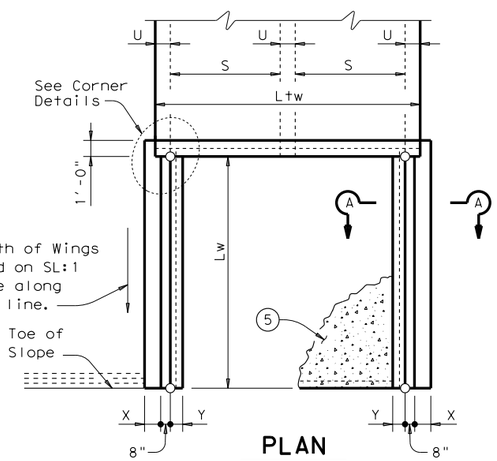
(7) 0" min to 5'-0" max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail, bicycle rail or curbs taller than 1'-0", refer to ECD standard. For structures with T6 bridge rail, refer to T6-CM standard. For structures with traffic rail, other than T6, refer to RAC standard.

(8) For vehicle safety, curb heights and wall heights shall be reduced, if necessary, to provide a maximum 3" projection above finished grade. No changes will be made in quantities and no additional compensation will be allowed for this work.



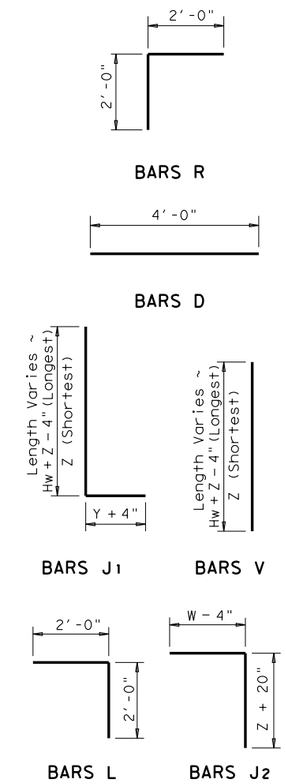
INSIDE ELEVATION

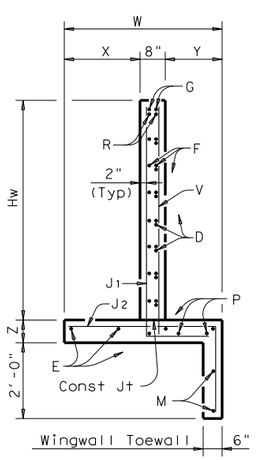
(Showing reinforcing. Culvert and Culvert Toewall reinforcing not shown for clarity.)



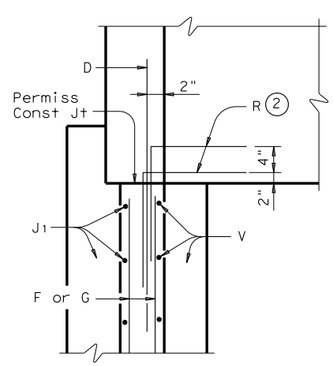
PLAN

(Showing Dimensions)

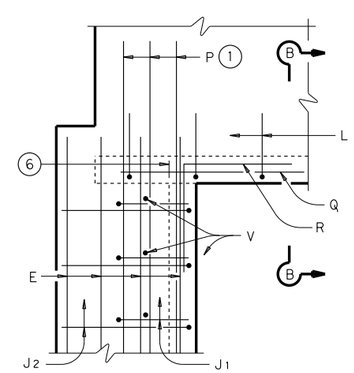




SECTION A-A

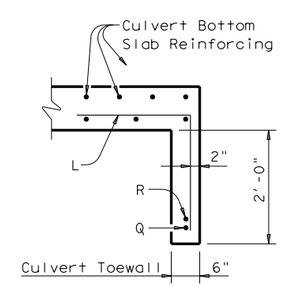


WINGWALL



FOOTING AND TOEWALL

CORNER DETAILS



SECTION B-B (5)

GENERAL NOTES:

Designed according to AASHTO LRFD Specifications.

All reinforcing steel shall be Grade 60.

Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.

All concrete shall be Class "C" and shall have a minimum compressive strength of 3600 psi.

All reinforcing bars shall be adjusted to provide a minimum of 1 ¼" clear cover.

When structure is founded on solid rock, depth of toewalls for culverts and wingwalls may be reduced or eliminated as directed by the Engineer.

See BCS sheet for additional dimensions and information.

The quantities for concrete and reinforcing steel resulting from the formulas given on this sheet are for Contractor's information only.

Texas Department of Transportation — Bridge Division Standard

CONCRETE WINGWALLS
WITH STRAIGHT WINGS FOR 0° SKEW BOX CULVERTS

SW-0

FILE: sw-0stde.dgn	DN: GAF	CK: CAT	DW: TxDOT	CK: GAF
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REVISIONS				
11-10: Add note for synthetic fibers.	DIST	COUNTY		SHEET NO.

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DATE:
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TABLE OF DIMENSIONS & REINFORCING STEEL
(Wings for One Structure End)

Dimensions					Variable Reinforcing				Estimated Quantities per ft of wing length (2~Wings) (3)	
					Bars J1		Bars J2			
Maximum Wingwall Height Hw	W	X	Y	Z	Size	Spa	Size	Spa	Reinf (Lb/Ft)	Conc (CY/Ft)
2'-6"	2'- 5"	1'- 0"	9"	7"	#4	1'-0"	#4	1'-0"	33.73	0.248
3'-0"	2'- 5"	1'- 0"	9"	7"	#4	1'-0"	#4	1'-0"	37.07	0.261
3'-6"	2'- 5"	1'- 0"	9"	7"	#4	1'-0"	#4	1'-0"	37.74	0.273
4'-0"	2'- 5"	1'- 0"	9"	7"	#4	1'-0"	#4	1'-0"	38.41	0.285
4'-6"	3'- 2"	1'- 6"	1'- 0"	7"	#4	1'-0"	#4	1'-0"	41.75	0.330
5'-0"	3'- 2"	1'- 6"	1'- 0"	7"	#4	1'-0"	#4	1'-0"	45.09	0.343
5'-6"	3'- 2"	1'- 6"	1'- 0"	7"	#4	1'-0"	#4	1'-0"	45.75	0.355
6'-0"	3'- 2"	1'- 6"	1'- 0"	7"	#4	1'-0"	#4	1'-0"	46.42	0.367
7'-0"	3'- 8"	1'- 9"	1'- 3"	7"	#4	1'-0"	#4	1'-0"	52.77	0.414
8'-0"	4'- 2"	2'- 0"	1'- 6"	8"	#5	1'-0"	#4	1'-0"	60.19	0.486
9'-0"	4'- 8"	2'- 3"	1'- 9"	8"	#4	6"	#4	6"	81.49	0.535
10'-0"	5'- 2"	2'- 6"	2'- 0"	8"	#5	6"	#4	6"	97.25	0.584
11'-0"	5'- 8"	2'- 9"	2'- 3"	8"	#6	6"	#5	6"	133.65	0.634
12'-0"	6'- 2"	3'- 0"	2'- 6"	9"	#7	6"	#5	6"	162.29	0.721
13'-0"	6'- 8"	3'- 3"	2'- 9"	11"	#7	6"	#5	6"	178.80	0.856
14'-0"	7'- 2"	3'- 6"	3'- 0"	1'- 0"	#8	6"	#5	6"	216.78	0.959
15'-0"	7'- 8"	4'- 0"	3'- 0"	1'- 1"	#9	6"	#6	6"	283.06	1.068
16'-0"	8'- 2"	4'- 6"	3'- 0"	1'- 3"	#9	6"	#6	6"	297.02	1.234

TABLE OF WINGWALL REINFORCING (2~Wings)

Bar	Size	No.	Spa
D	#5	~	1'-0"
E	#4	~	1'-0"
F	#4	~	1'-0"
G	#6	4	~
M	#4	4	~
P	#4	~	1'-0"
R	#5	6	~
V	#4	~	1'-0"

TABLE OF ESTIMATED CULVERT TOEWALL QUANTITIES

Bar	Size	No.	Spa
L	#4	~	1'-6"
Q	#4	1	~
Reinf (Lb/Ft)			2.45
Conc (CY/Ft)			0.037

WING DIMENSION CALCULATIONS:

Formulas: (All values are in Feet)

Hw = H + T + C − 0.250'
A = (Hw − 0.333') (SL)
B = (A) Tangent (30°)
Lw = (A) ÷ Cosine (30°)

For Cast-in-place culverts:

Ltw = (N) (S) + (N + 1) (U)

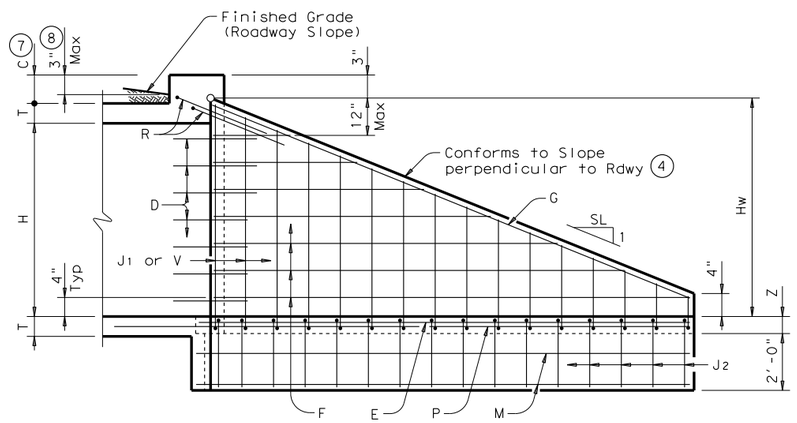
For Precast culverts:

Ltw = (N) (2U + S) + (N − 1) (0.500')

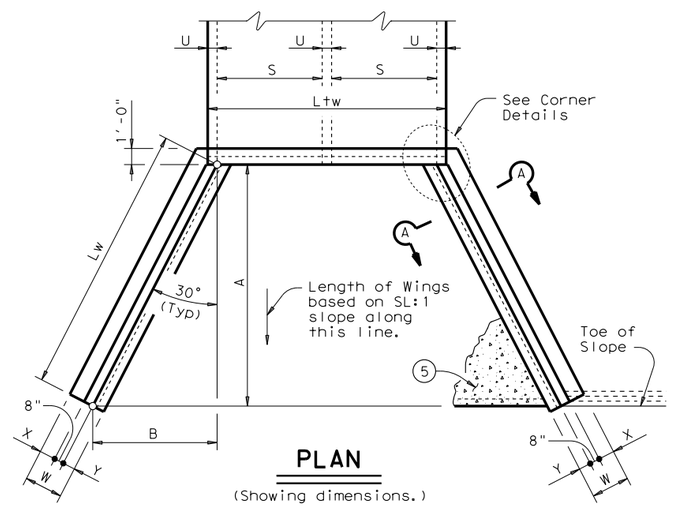
Total Wingwall Area (Two Wings ~ S.F.) = (Hw + 0.333') (Lw)

Hw = Height of Wingwall
SL:1 = Side Slope Ratio (Horizontal:1 Vertical)
Lw = Length of Wingwall
Ltw = Culvert Toewall Length
N = Number of Culvert Spans

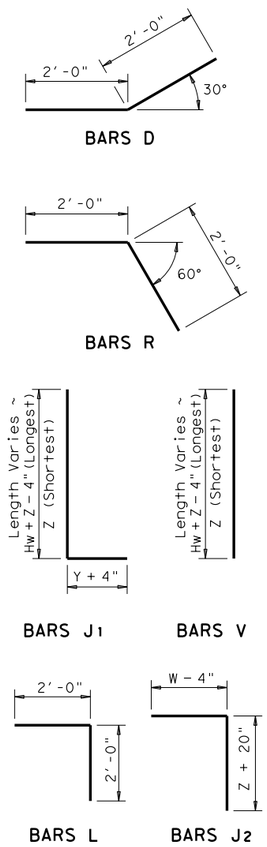
See applicable box culvert standard for H, S, T, and U values.



INSIDE ELEVATION
(Showing reinforcing. Culvert and Culvert Toewall reinforcing not shown for clarity.)



PLAN
(Showing dimensions.)



(1) Extend Bars P 3'-0" minimum into bottom slab of Box Culvert.

(2) Adjust to fit as necessary to maintain 1 ¼" clear cover and 4" minimum between bars.

(3) Quantities shown are based on an average wing height for two wings (one structure end). To determine total quantities for two wings multiply the tabulated values by Lw.

(4) Recommended values of Slope are: 2:1, 3:1, 4:1, & 6:1.

(5) When shown elsewhere on the plans, a 5" deep concrete riprap shall be constructed. Payment for riprap shall be as required by Item 432, "Riprap". Unless otherwise shown on the plans or directed by the Engineer, the riprap shall have a 6" wide by 1'-6" deep reinforced concrete toewall along all edges adjacent to natural ground; the toewall shall be reinforced by extending typical riprap reinforcing into the toewall; construction joints or grooved joints, oriented in the direction of flow, shall extend across the full distance of the riprap, at intervals of approximately 20'. When such riprap is provided, the culvert toewall shown in SECTION B-B will not be required.

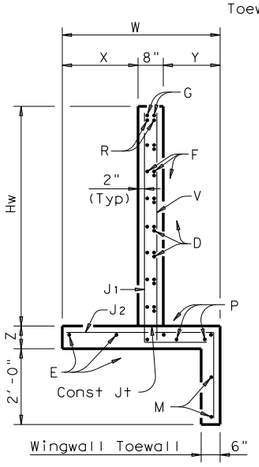
(6) At Contractor's option, Culvert Toewall may be ended flush with Wingwall Toewall. Adjust reinforcing from that shown as necessary.

(7) 0" min to 5'-0" max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail, bicycle rail or curbs taller than 1'-0", refer to ECD standard. For structures with T6 bridge rail, refer to T6-CM standard. For structures with traffic rail, other than T6, refer to RAC standard.

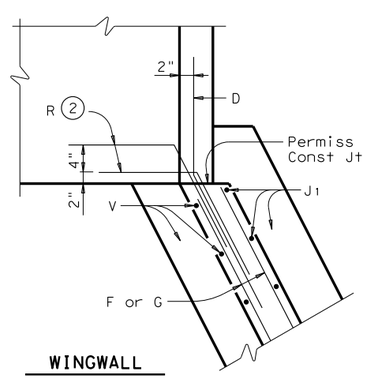
(8) For vehicle safety, curb heights and wall heights shall be reduced, if necessary, to provide a maximum 3" projection above finished grade. No changes will be made in quantities and no additional compensation will be allowed for this work.

GENERAL NOTES:

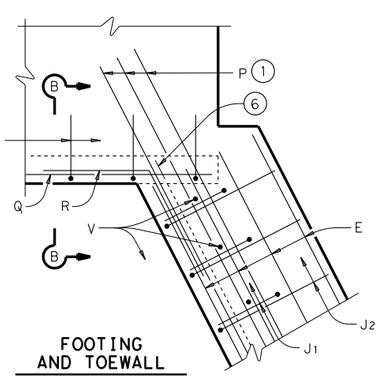
Designed according to AASHTO LRFD Specifications.
All reinforcing steel shall be Grade 60.
Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.
All concrete shall be Class "C" and shall have a minimum compressive strength of 3600 psi.
All reinforcing bars shall be adjusted to provide a minimum of 1 ¼" clear cover.
When structure is founded on solid rock, depth of toewalls for culverts and wingwalls may be reduced or eliminated as directed by the Engineer.
See BCS sheet for additional dimensions and information.
The quantities for concrete and reinforcing steel resulting from the formulas given on this sheet are for Contractor's information only.



SECTION A-A

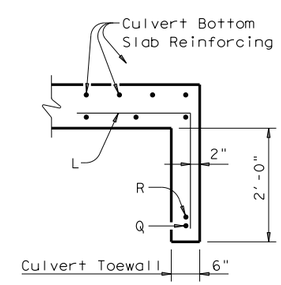


WINGWALL



FOOTING AND TOEWALL

CORNER DETAILS
(Culvert and Culvert Toewall reinforcing not shown for clarity.)



SECTION B-B (5)

Texas Department of Transportation — Bridge Division Standard

CONCRETE WINGWALLS
WITH FLARED WINGS FOR 0° SKEW BOX CULVERTS

FW-0

FILE: fw-0stde.dgn	DN: GAF	CK: CAT	DW: TxDOT	CK: GAF
©TxDOT February 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS				
11-10: Add note for synthetic fibers.	DIST	COUNTY		SHEET NO.

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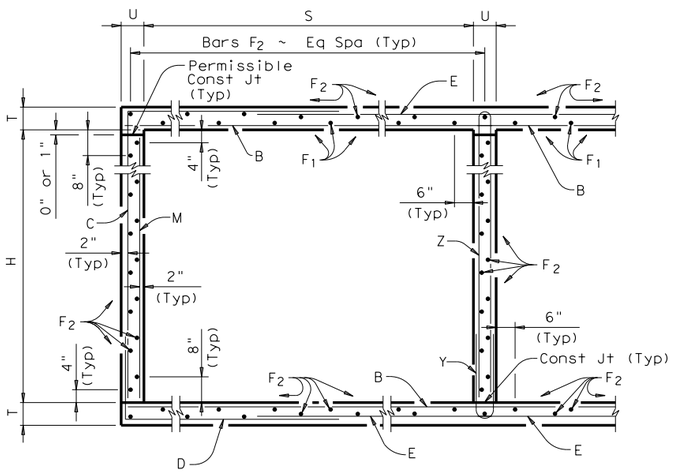
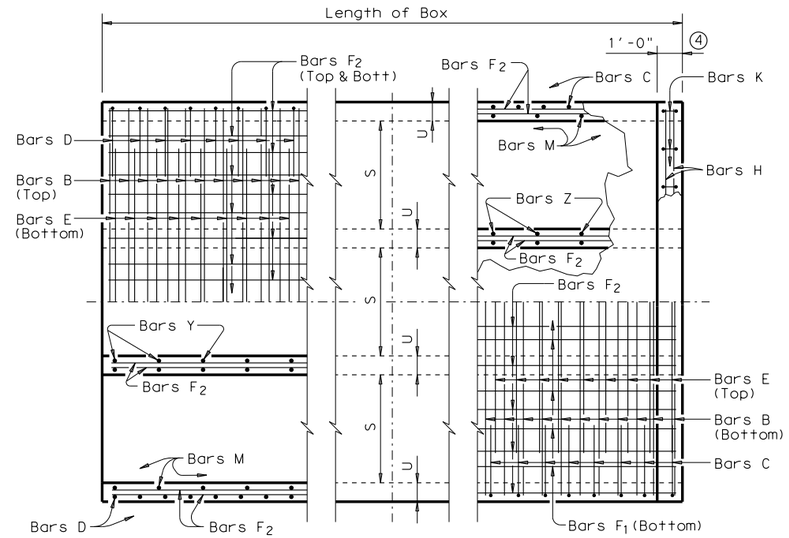


TYPICAL SECTION



BOTTOM SLAB

TOP SLAB

PART PLANS

1. 0" min to 5'-0" max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail, bicycle rail or curbs taller than 1'-0", refer to ECD standard. For structures with T6 bridge rail, refer to T6-CM standard. For structures with traffic rail, other than T6, refer to RAC standard.

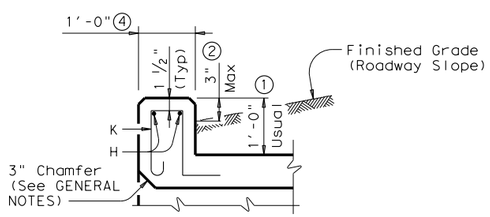
2. For vehicle safety, the following requirements must be met:
   - For structures without bridge rail, curbs shall project no more than 3" above finished grade.
   - For structures with bridge rail, curbs shall be flush with finished grade.
   Curb heights shall be reduced, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

3. For curbs less than 1'-0" high, tilt bars K or reduce bar height as necessary to maintain cover. For curbs less than 3" high, bars K may be omitted.

4. 1'-0" typical. 2'-0" when RAC standard is referred to elsewhere in the plans.

Deformed welded wire reinforcement (WWR) meeting the requirements of ASTM A1064 may be used to replace conventional reinforcement shown at the Contractor's option. The area of required reinforcement may be reduced by the ratio of 60 ksi / 70 ksi. Spacing of WWR is limited to 4" Min and 18" Max. When required, provide lap splices in the WWR of the same length required for the equivalent bar size, rounded up for wire sizes between conventional bar sizes.

Example Conversion: Replacement of No. 6 Gr 60 at 6" Spacing with WWR.
WWR required = (0.44 sq in/ 0.5') x (60 ksi/70 ksi) = 0.754 sq in/ft.
If D30.6 wire is used to meet the 0.754 sq in/ft requirement in this example, the required spacing = (0.306 sq in/ 0.754 sq in/ft) x 12 in/ft = 4.87" Max spacing.
Required lap length for the provided D30.6 wire is 2'-2" (Lap required for uncoated No. 5 bars, as shown in Item 440).

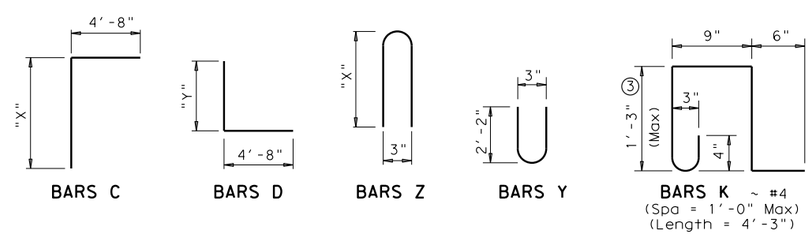


SECTION THRU CURB

H	Bar Dimensions	
	"X"	"Y"
2'-0"	2'-5"	2'-2"
3'-0"	3'-5"	2'-2"
4'-0"	4'-5"	2'-2"
5'-0"	5'-5"	2'-2"

GENERAL NOTES:

Designed according to AASHTO LRFD Specifications.
Designed to the maximum fill height shown.
All reinforcing steel shall be Grade 60.
All concrete shall be Class "C" with these exceptions: use Class "S" for top slabs of culverts with overlay, with 1-to-2 course surface treatment, or with the top slab as the final riding surface.
Class "C" concrete shall have a minimum compressive strength of 3,600 psi. Class "S" concrete shall have a minimum compressive strength of 4,000 psi.
The use of permanent forms is not allowed.
The bottom edge of the top slab shall be chamfered 3" at the entrance.
Reinforcing bars shall be adjusted to provide a minimum of 1 1/4" clear cover.
Construction joints shown at the flow line may be raised a maximum of 6" at the Contractor's option. If this option is used, Bars M may be cut off or raised, Bars C and D may be reversed, and Bars Y and Z may be reversed.
See standard MC-MD for skewed ends, angle sections and lengthening details.



HL93 LOADING

SHEET 1 OF 2

Texas Department of Transportation

Bridge Division Standard

MULTIPLE BOX CULVERTS CAST-IN-PLACE

5'-0" SPAN

0' TO 20' FILL

MC-5-20

FILE: mc520ste.dgn	DN: GAF	CK: LMW	DW: BWH/TxDOT	CK: GAF
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REVISIONS				
10-12: Added WWR	DIST	COUNTY		SHEET NO.

DATE:
FILE:

BILLS OF REINFORCING STEEL (For Box Length = 40 feet)

NUMBER OF SPANS	SECTION DIMENSIONS				Bars B					Bars C & D							Bars E					Bars F_1 ~#4				Bars F_2 ~#4 at 1'-6" Max			Bars M~#4 at 1'-6" Max			Bars Y & Z~#4 at 1'-0" Max					Bars H 4~#4		Bars K		QUANTITIES Per foot of Barrel		Curb		Total	
													Bar C		Bar D																															
	S	H	T	U	No.	Size	Spa	Length	Wt	No.	Size	Spa	Length	Wt	Length	Wt	No.	Size	Spa	Length	Wt	No.	Spa	Length	Wt	No.	Length	Wt	No.	Length	Wt	No.	Bar Y Length	Bar Y Wt	Bar Z Length	Bar Z Wt	Length	Weight	No.	Weight	Conc (CY)	Reinf (Lb)	Conc (CY)	Reinf (Lb)	Conc (CY)	Reinf (Lb)
2	5'-0"	2'-0"	7"	7"	194	#4	5"	11'- 6"	1,490	162	#4	6"	7'- 1"	767	6'-10"	739	162	#5	6"	5'- 8"	957	14	8"	39'-9"	372	38	39'-9"	1,009	56	2'- 0"	75	41	4'- 6"	123	5'- 0"	137	11'- 6"	31	26	74	0.637	141.7	0.9	105	26.4	5,774
3	5'-0"	2'-0"	7"	7"	194	#4	5"	17'- 1"	2,214	162	#4	6"	7'- 1"	767	6'-10"	739	162	#5	6"	11'- 3"	1,901	21	8"	39'-9"	558	54	39'-9"	1,434	56	2'- 0"	75	82	4'- 6"	246	5'- 0"	274	17'- 1"	46	36	102	0.922	205.2	1.3	148	38.2	8,356
4	5'-0"	2'-0"	7"	7"	194	#4	5"	22'- 8"	2,937	162	#4	6"	7'- 1"	767	6'-10"	739	162	#5	6"	16'-10"	2,844	28	8"	39'-9"	743	70	39'-9"	1,859	56	2'- 0"	75	123	4'- 6"	370	5'- 0"	411	22'- 8"	61	48	136	1.206	268.6	1.7	197	49.9	10,942
5	5'-0"	2'-0"	7"	7"	194	#4	5"	28'- 3"	3,661	162	#4	6"	7'- 1"	767	6'-10"	739	162	#5	6"	22'- 5"	3,788	35	8"	39'-9"	929	86	39'-9"	2,284	56	2'- 0"	75	164	4'- 6"	493	5'- 0"	548	28'- 3"	75	60	170	1.491	332.1	2.1	245	61.7	13,529
6	5'-0"	2'-0"	7"	7"	194	#4	5"	33'-10"	4,385	162	#4	6"	7'- 1"	767	6'-10"	739	162	#5	6"	28'- 0"	4,731	42	8"	39'-9"	1,115	102	39'-9"	2,708	56	2'- 0"	75	205	4'- 6"	616	5'- 0"	685	33'-10"	90	70	199	1.775	395.5	2.5	289	73.5	16,110
2	5'-0"	3'-0"	7"	7"	194	#4	5"	11'- 6"	1,490	138	#4	7"	8'- 1"	745	6'-10"	630	162	#5	6"	5'- 8"	957	14	8"	39'-9"	372	44	39'-9"	1,168	56	3'- 0"	112	41	4'- 6"	123	7'- 0"	192	11'- 6"	31	26	74	0.702	144.7	0.9	105	29.0	5,894
3	5'-0"	3'-0"	7"	7"	194	#4	5"	17'- 1"	2,214	138	#4	7"	8'- 1"	745	6'-10"	630	162	#5	6"	11'- 3"	1,901	21	8"	39'-9"	558	62	39'-9"	1,646	56	3'- 0"	112	82	4'- 6"	246	7'- 0"	383	17'- 1"	46	36	102	1.008	210.9	1.3	148	41.6	8,583
4	5'-0"	3'-0"	7"	7"	194	#4	5"	22'- 8"	2,937	138	#4	7"	8'- 1"	745	6'-10"	630	162	#5	6"	16'-10"	2,844	28	8"	39'-9"	743	80	39'-9"	2,124	56	3'- 0"	112	123	4'- 6"	370	7'- 0"	575	22'- 8"	61	48	136	1.314	277.0	1.7	197	54.3	11,277
5	5'-0"	3'-0"	7"	7"	194	#4	5"	28'- 3"	3,661	138	#4	7"	8'- 1"	745	6'-10"	630	162	#5	6"	22'- 5"	3,788	35	8"	39'-9"	929	98	39'-9"	2,602	56	3'- 0"	112	164	4'- 6"	493	7'- 0"	767	28'- 3"	75	60	170	1.620	343.2	2.1	245	66.9	13,972
6	5'-0"	3'-0"	7"	7"	194	#4	5"	33'-10"	4,385	138	#4	7"	8'- 1"	745	6'-10"	630	162	#5	6"	28'- 0"	4,731	42	8"	39'-9"	1,115	116	39'-9"	3,080	56	3'- 0"	112	205	4'- 6"	616	7'- 0"	959	33'-10"	90	70	199	1.926	409.3	2.5	289	79.5	16,662
2	5'-0"	4'-0"	7"	7"	194	#4	5"	11'- 6"	1,490	138	#4	7"	9'- 1"	837	6'-10"	630	162	#5	6"	5'- 8"	957	14	8"	39'-9"	372	44	39'-9"	1,168	56	4'- 0"	150	41	4'- 6"	123	9'- 0"	246	11'- 6"	31	26	74	0.767	149.3	0.9	105	31.6	6,078
3	5'-0"	4'-0"	7"	7"	194	#4	5"	17'- 1"	2,214	138	#4	7"	9'- 1"	837	6'-10"	630	162	#5	6"	11'- 3"	1,901	21	8"	39'-9"	558	62	39'-9"	1,646	56	4'- 0"	150	82	4'- 6"	246	9'- 0"	493	17'- 1"	46	36	102	1.095	216.9	1.3	148	45.1	8,823
4	5'-0"	4'-0"	7"	7"	194	#4	5"	22'- 8"	2,937	138	#4	7"	9'- 1"	837	6'-10"	630	162	#5	6"	16'-10"	2,844	28	8"	39'-9"	743	80	39'-9"	2,124	56	4'- 0"	150	123	4'- 6"	370	9'- 0"	739	22'- 8"	61	48	136	1.422	284.4	1.7	197	58.6	11,571
5	5'-0"	4'-0"	7"	7"	194	#4	5"	28'- 3"	3,661	138	#4	7"	9'- 1"	837	6'-10"	630	162	#5	6"	22'- 5"	3,788	35	8"	39'-9"	929	98	39'-9"	2,602	56	4'- 0"	150	164	4'- 6"	493	9'- 0"	986	28'- 3"	75	60	170	1.750	351.9	2.1	245	72.1	14,321
6	5'-0"	4'-0"	7"	7"	194	#4	5"	33'-10"	4,385	138	#4	7"	9'- 1"	837	6'-10"	630	162	#5	6"	28'- 0"	4,731	42	8"	39'-9"	1,115	116	39'-9"	3,080	56	4'- 0"	150	205	4'- 6"	616	9'- 0"	1,232	33'-10"	90	70	199	2.078	419.4	2.5	289	85.6	17,065
2	5'-0"	5'-0"	7"	7"	194	#4	5"	11'- 6"	1,490	138	#4	7"	10'- 1"	930	6'-10"	630	162	#5	6"	5'- 8"	957	14	8"	39'-9"	372	50	39'-9"	1,328	56	5'- 0"	187	41	4'- 6"	123	11'- 0"	301	11'- 6"	31	26	74	0.832	158.0	0.9	105	34.2	6,423
3	5'-0"	5'-0"	7"	7"	194	#4	5"	17'- 1"	2,214	138	#4	7"	10'- 1"	930	6'-10"	630	162	#5	6"	11'- 3"	1,901	21	8"	39'-9"	558	70	39'-9"	1,859	56	5'- 0"	187	82	4'- 6"	246	11'- 0"	603	17'- 1"	46	36	102	1.181	228.2	1.3	148	48.5	9,276
4	5'-0"	5'-0"	7"	7"	194	#4	5"	22'- 8"	2,937	138	#4	7"	10'- 1"	930	6'-10"	630	162	#5	6"	16'-10"	2,844	28	8"	39'-9"	743	90	39'-9"	2,390	56	5'- 0"	187	123	4'- 6"	370	11'- 0"	904	22'- 8"	61	48	136	1.530	298.4	1.7	197	62.9	12,132
5	5'-0"	5'-0"	7"	7"	194	#4	5"	28'- 3"	3,661	138	#4	7"	10'- 1"	930	6'-10"	630	162	#5	6"	22'- 5"	3,788	35	8"	39'-9"	929	110	39'-9"	2,921	56	5'- 0"	187	164	4'- 6"	493	11'- 0"	1,205	28'- 3"	75	60	170	1.880	368.6	2.1	245	77.3	14,989
6	5'-0"	5'-0"	7"	7"	194	#4	5"	33'-10"	4,385	138	#4	7"	10'- 1"	930	6'-10"	630	162	#5	6"	28'- 0"	4,731	42	8"	39'-9"	1,115	130	39'-9"	3,452	56	5'- 0"	187	205	4'- 6"	616	11'- 0"	1,506	33'-10"	90	70	199	2.229	438.8	2.5	289	91.7	17,841

Deformed welded wire reinforcement (WWR) meeting the requirements of ASTM A1064 may be used to replace conventional reinforcement shown at the Contractor's option. The area of required reinforcement may be reduced by the ratio of 60 ksi / 70 ksi. Spacing of WWR is limited to 4" Min and 18" Max. When required, provide lap splices in the WWR of the same length required for the equivalent bar size, rounded up for wire sizes between conventional bar sizes.

Example Conversion: Replacement of No. 6 Gr 60 at 6" Spacing with WWR.
WWR required = (0.44 sq in/ 0.5') x (60 ksi/70 ksi) = 0.754 sq in/ft.
If D30.6 wire is used to meet the 0.754 sq in/ft requirement in this example, the required spacing = (0.306 sq in/ 0.754 sq in/ft) x 12 in/ft = 4.87" Max spacing.
Required lap length for the provided D30.6 wire is 2'-2" (Lap required for uncoated No. 5 bars, as shown in Item 440).

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HL93 LOADING

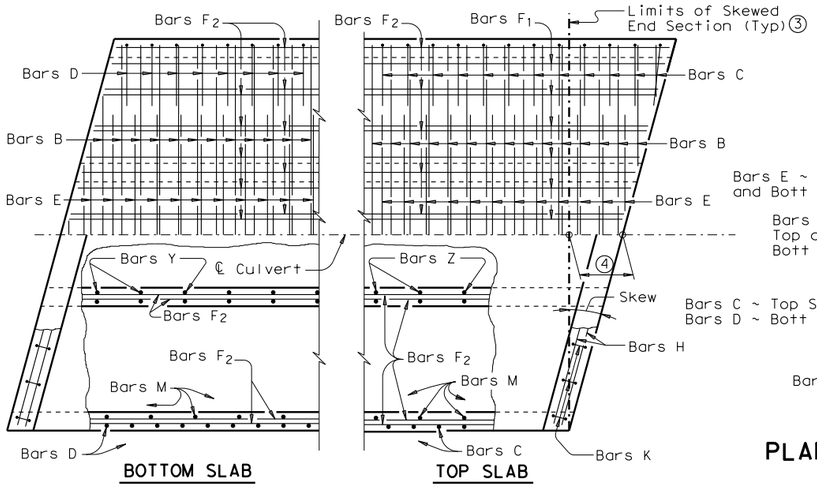
Texas Department of Transportation — Bridge Division Standard

MULTIPLE BOX CULVERTS CAST-IN-PLACE
5'-0" SPAN
0' TO 20' FILL

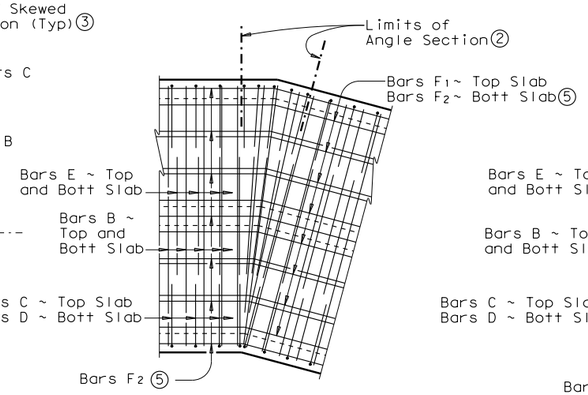
MC-5-20

FILE: mc520ste.dgn	DN: GAF	CK: LMW	DW: BWH/TxDOT	CK: GAF
©TxDOT February 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS				
10-12: Added WWR	DIST	COUNTY		SHEET NO.

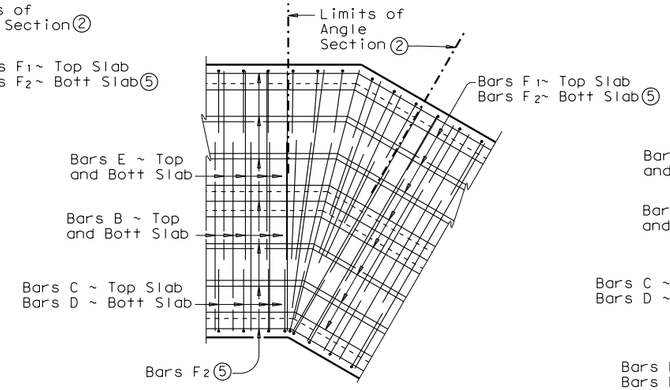
DATE:
FILE:



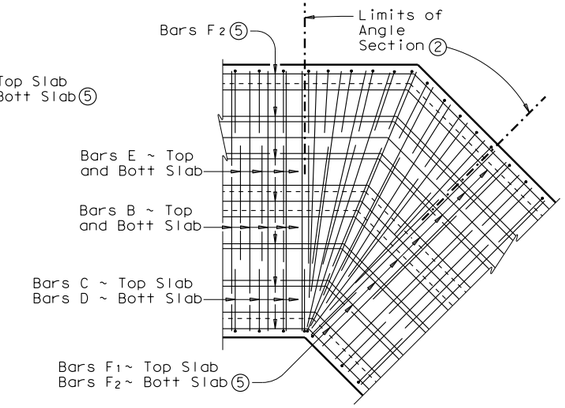
PLAN OF SKEWED ENDS ~ FROM 0° TO 15° ⑦



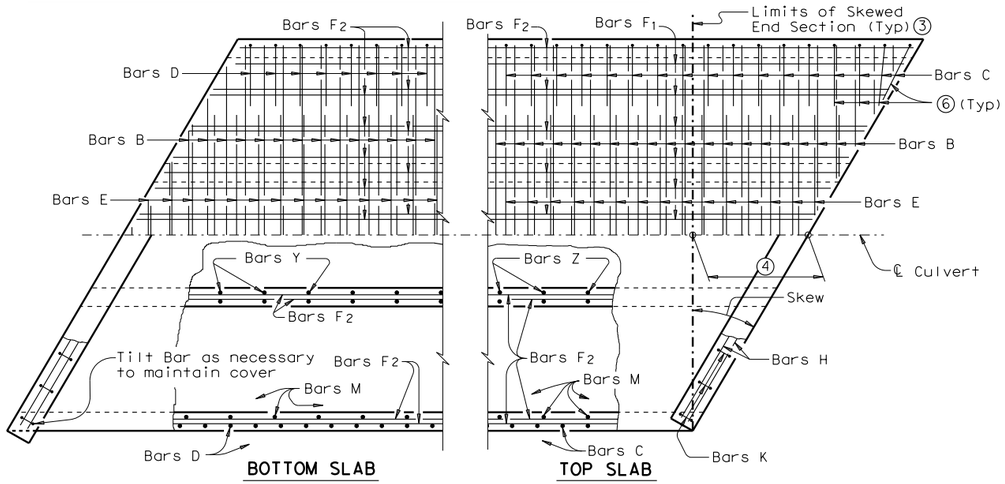
PLAN OF ANGLE SECTION ~ FROM 0° TO 15°



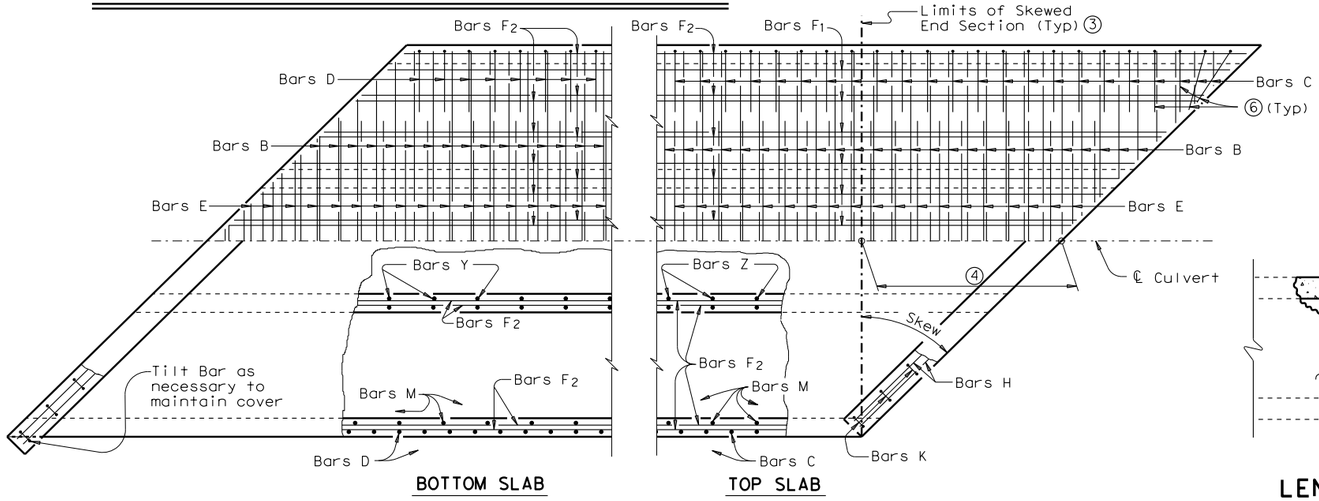
PLAN OF ANGLE SECTION ~ OVER 15° TO 30°



PLAN OF ANGLE SECTION ~ OVER 30° TO 45°



PLAN OF SKEWED ENDS ~ OVER 15° TO 30°



PLAN OF SKEWED ENDS ~ OVER 30° TO 45°

GENERAL NOTES:

Designed according to AASHTO LRFD Specifications.

All reinforcing steel shall be Grade 60.

All concrete shall be Class "C" with these exceptions: use Class "S" for top slabs of culverts with overlay, with 1-to-2 course surface treatment, or with the top slab as the final riding surface.

Class "C" concrete shall have a minimum compressive strength of 3,600 psi. Class "S" concrete shall have a minimum compressive strength of 4,000 psi.

Refer to Multiple Box Culverts Cast-in-Place standard for details of straight sections of culvert. For skewed sections and angle sections refer to Multiple Box Culverts Cast-in-Place standard for slab and wall dimensions, bar sizes, maximum bar spacing, and any other details not shown. For Skewed ends with curbs, adjust length of Bars H, number of Bars K, curb concrete volume and reinforcing steel weight by dividing the values shown on the culvert standards by the cosine of the skew angle.

The use of permanent forms is not allowed.

Laps for Bars H, when required, shall be 1'-9" for uncoated bars and 2'-7" for epoxy coated.

① For box culverts with less than 2'-0" of fill, the top slab shall be broken back to provide a minimum 1'-10" lap of the existing longitudinal bars with the longitudinal bars in the extension. If the depth of fill is 2'-0" or greater, the top slab shall be broken back to provide a 1'-0" minimum embedment of existing longitudinal reinforcing into the extension. Alternatively, if the fill height is greater than 2'-0", the existing curb may be left in place and 2'-0" long #6 bars shall be drilled and grouted 1'-0" into the existing top slab at 1'-6" center to center spacing. Wings and apron shall be broken back as necessary to install the extension. Exposed wingwall and apron reinforcing may be removed or cleaned and included in the extension. When lengthening existing box culverts with dimensions different than current standard dimensions, horizontal and vertical transitions shall be formed as directed by the Engineer. Bottom slabs shall match to maintain an uninterrupted flow line. Existing and new reinforcing shall be field bent into transition maintaining specified cover requirements. For top slabs of culverts with overlay, with 1-to-2 course surface treatment, or with the top slab as the final riding surface, the "H" dimension may be adjusted to provide a smooth riding surface.

② When the spacing between Bars B or Bars E becomes less than half of the normal spacing, bars shall be cut to avoid fouling

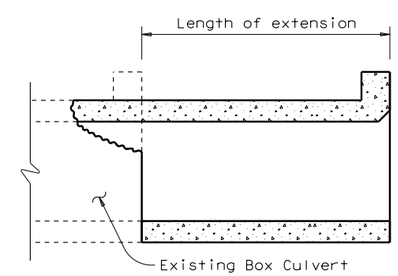
③ The length of Bars B and E will vary in the skewed end sections

④ [One half of overall width] x [Tan of the skew angle]

⑤ Bars F1 and F2 shall be continuous through the angle section. They shall be bent to remain parallel to the walls of the Box Culvert.

⑥ When necessary to avoid fouling in acute corners, the slab extension leg of Bars C and Bars D may be shortened to a minimum of 1'-6" for skews of 30° and 45°.

⑦ For skews of 15° or less, the contractor has the option of placing Bars B, C, D and E parallel to the skewed end while maintaining spacing along centerline box. Lengths of Bars B and E shown on the standards shall be increased to accommodate the skew.



LENGTHENING DETAIL ①

HL93 LOADING

Texas Department of Transportation

Bridge Division Standard

MULTIPLE BOX CULVERTS CAST-IN-PLACE MISCELLANEOUS DETAILS

MC-MD

FILE: mc-mdste.dgn	DN: GAF	CK: LMW	DW: BWH/TxDOT	CK: GAF
©TxDOT February 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST		COUNTY	SHEET NO.

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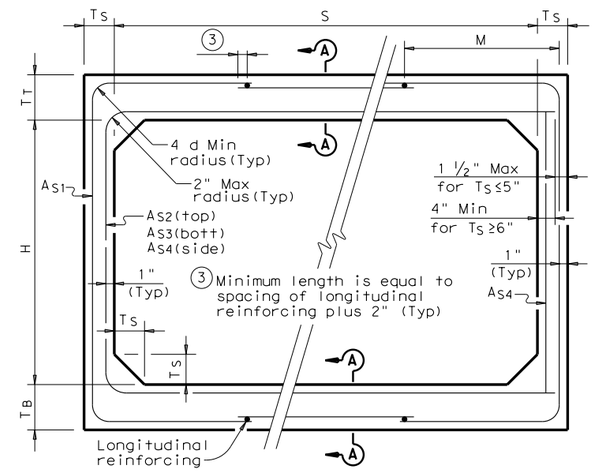
BOX DATA

SECTION DIMENSIONS S (ft)	H (ft)	T_T (in)	T_B (in)	T_S (in)	Fill Height (ft)	M (Min) (in)	REINFORCING (in²/ft) ② A_{S1}	A_{S2}	A_{S3}	A_{S4}	A_{S5}	A_{S6}	A_{S7}	A_{S8}	① Lift Weight (Tons)
4	2	7.5	6	5	<2	-	0.18	0.27	0.15	0.12	0.18	0.18	0.18	0.14	4.5
4	2	5	5	5	2<3	38	0.18	0.19	0.17	0.12	-	-	-	-	3.6
4	2	5	5	5	3-5	38	0.13	0.13	0.13	0.12	-	-	-	-	3.6
4	2	5	5	5	10	38	0.12	0.12	0.12	0.12	-	-	-	-	3.6
4	2	5	5	5	15	38	0.14	0.16	0.16	0.12	-	-	-	-	3.6
4	2	5	5	5	20	38	0.18	0.20	0.21	0.12	-	-	-	-	3.6
4	2	5	5	5	25	38	0.23	0.25	0.25	0.12	-	-	-	-	3.6
4	2	5	5	5	30	38	0.28	0.30	0.30	0.12	-	-	-	-	3.6
4	3	7.5	6	5	<2	-	0.18	0.31	0.18	0.12	0.18	0.18	0.18	0.14	5.0
4	3	5	5	5	2<3	38	0.15	0.23	0.20	0.12	-	-	-	-	4.1
4	3	5	5	5	3-5	38	0.12	0.16	0.16	0.12	-	-	-	-	4.1
4	3	5	5	5	10	38	0.12	0.14	0.14	0.12	-	-	-	-	4.1
4	3	5	5	5	15	38	0.12	0.18	0.18	0.12	-	-	-	-	4.1
4	3	5	5	5	20	38	0.14	0.23	0.24	0.12	-	-	-	-	4.1
4	3	5	5	5	25	38	0.17	0.29	0.29	0.12	-	-	-	-	4.1
4	3	5	5	5	30	38	0.21	0.35	0.35	0.12	-	-	-	-	4.1
4	4	7.5	6	5	<2	-	0.18	0.33	0.20	0.12	0.18	0.18	0.18	0.14	5.5
4	4	5	5	5	2<3	38	0.12	0.26	0.23	0.12	-	-	-	-	4.6
4	4	5	5	5	3-5	38	0.12	0.18	0.18	0.12	-	-	-	-	4.6
4	4	5	5	5	10	38	0.12	0.15	0.15	0.12	-	-	-	-	4.6
4	4	5	5	5	15	38	0.12	0.19	0.20	0.12	-	-	-	-	4.6
4	4	5	5	5	20	38	0.12	0.25	0.25	0.12	-	-	-	-	4.6
4	4	5	5	5	25	38	0.14	0.31	0.31	0.12	-	-	-	-	4.6
4	4	5	5	5	30	38	0.17	0.37	0.37	0.12	-	-	-	-	4.6

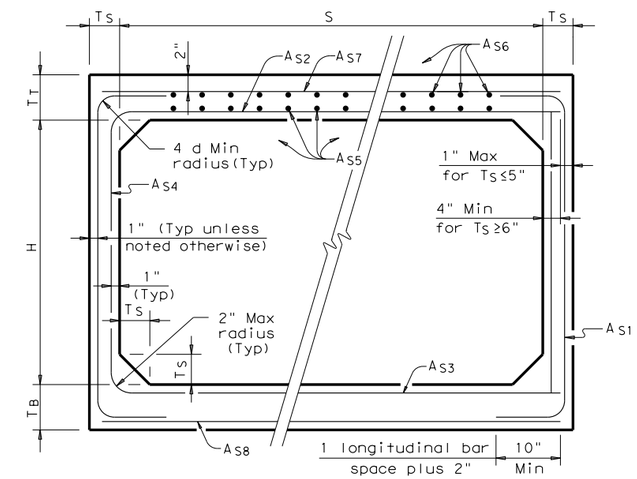
① For Box Length = 8'-0"

② A_{S1} thru A_{S4}, A_{S7} and A_{S8} are minimum required areas of reinforcement per linear foot of box length. A_{S6} and A_{S5} are minimum required areas of reinforcement per linear foot of box width.



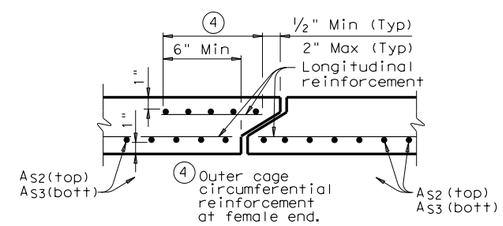
CORNER OPTION "A" CORNER OPTION "B"

FILL HEIGHT 2 FT AND GREATER



CORNER OPTION "A" CORNER OPTION "B"

FILL HEIGHT LESS THAN 2 FT



SECTION A-A

(TOP AND BOTTOM SLAB JOINT REINFORCEMENT)

GENERAL NOTES:

Designs shown conform to ASTM C1577.

Refer to ASTM C1577 for information or details not shown.

All concrete shall be Class "H" Concrete with a minimum compressive strength of 5,000 psi.

See SCP-MD standard sheet for miscellaneous details and notes not shown.

In lieu of furnishing the designs shown on this sheet, the contractor may furnish an alternate design that is equal to or exceeds the box design for the design fill height in the table. Shop plans for alternate designs shall be submitted in accordance with Item "Precast Concrete Structures".

HL93 LOADING

Texas Department of Transportation — Bridge Division Standard

SINGLE BOX CULVERTS PRECAST

4'-0" SPAN

SCP-4

FILE: scp04ste.dgn	DN: GAF	CK: LMW	DW: BWH/TxDOT	CK: GAF
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REVISIONS				
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BOX DATA

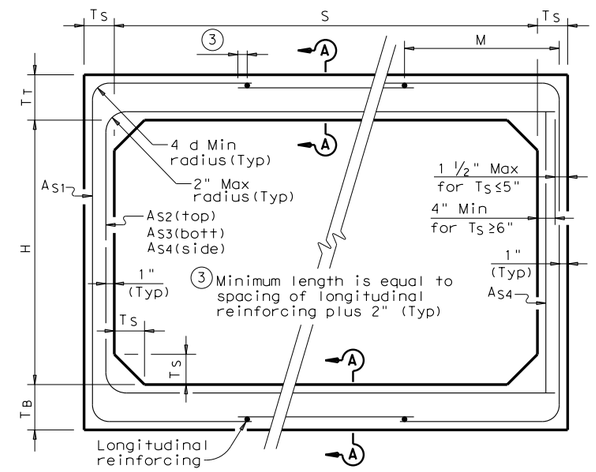
SECTION DIMENSIONS S (ft)	H (ft)	T_T (in)	T_B (in)	T_S (in)	Fill Height (ft)	M (Min) (in)	REINFORCING (in^2/ft) ② A_{S1}	A_{S2}	A_{S3}	A_{S4}	A_{S5}	A_{S6}	A_{S7}	A_{S8}	① Lift Weight (Tons)
5	3	8	7	6	<2	-	0.19	0.31	0.21	0.14	0.19	0.19	0.19	0.17	6.6
5	3	6	6	6	2<3	45	0.18	0.24	0.19	0.14	-	-	-	-	5.7
5	3	6	6	6	3-5	36	0.14	0.17	0.16	0.14	-	-	-	-	5.7
5	3	6	6	6	10	36	0.14	0.16	0.17	0.14	-	-	-	-	5.7
5	3	6	6	6	15	35	0.16	0.21	0.22	0.14	-	-	-	-	5.7
5	3	6	6	6	20	35	0.21	0.27	0.28	0.14	-	-	-	-	5.7
5	3	6	6	6	25	35	0.26	0.34	0.34	0.14	-	-	-	-	5.7
5	3	6	6	6	30	35	0.31	0.41	0.41	0.14	-	-	-	-	5.7
5	4	8	7	6	<2	-	0.19	0.33	0.24	0.14	0.19	0.19	0.19	0.17	7.2
5	4	6	6	6	2<3	45	0.16	0.27	0.22	0.14	-	-	-	-	6.3
5	4	6	6	6	3-5	45	0.14	0.19	0.18	0.14	-	-	-	-	6.3
5	4	6	6	6	10	36	0.14	0.18	0.18	0.14	-	-	-	-	6.3
5	4	6	6	6	15	35	0.14	0.23	0.24	0.14	-	-	-	-	6.3
5	4	6	6	6	20	35	0.17	0.30	0.31	0.14	-	-	-	-	6.3
5	4	6	6	6	25	35	0.21	0.37	0.38	0.14	-	-	-	-	6.3
5	4	6	6	6	30	35	0.25	0.44	0.45	0.14	-	-	-	-	6.3
5	5	8	7	6	<2	-	0.19	0.35	0.26	0.14	0.19	0.19	0.19	0.17	7.8
5	5	6	6	6	2<3	45	0.14	0.29	0.24	0.14	-	-	-	-	6.9
5	5	6	6	6	3-5	45	0.14	0.21	0.20	0.14	-	-	-	-	6.9
5	5	6	6	6	10	45	0.14	0.19	0.20	0.14	-	-	-	-	6.9
5	5	6	6	6	15	36	0.14	0.24	0.25	0.14	-	-	-	-	6.9
5	5	6	6	6	20	35	0.15	0.31	0.32	0.14	-	-	-	-	6.9
5	5	6	6	6	25	35	0.18	0.38	0.39	0.14	-	-	-	-	6.9
5	5	6	6	6	30	35	0.21	0.46	0.47	0.14	-	-	-	-	6.9
5	2	8	7	6	<2	-	0.20	0.31	0.20	0.14	0.22	0.19	0.19	0.17	6.0
5	2	6	6	6	30	44	0.39	0.33	0.34	0.14	-	-	-	-	5.1

⑤

① For Box Length = 8'-0"

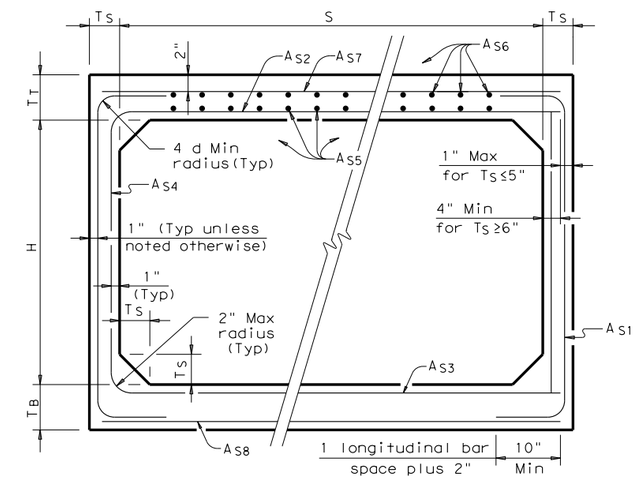
② A_{S1} thru A_{S4}, A_{S7} and A_{S8} are minimum required areas of reinforcement per linear foot of box length. A_{S6} and A_{S5} are minimum required areas of reinforcement per linear foot of box width.

⑤ These designs were created by TxDOT and are not shown in the ASTM Specifications.



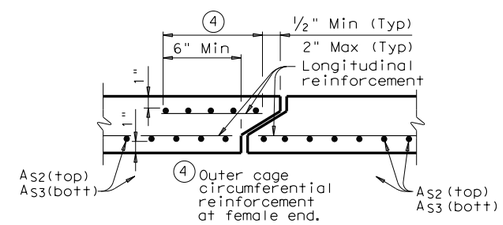
CORNER OPTION "A" CORNER OPTION "B"

FILL HEIGHT 2 FT AND GREATER



CORNER OPTION "A" CORNER OPTION "B"

FILL HEIGHT LESS THAN 2 FT



SECTION A-A

(TOP AND BOTTOM SLAB JOINT REINFORCEMENT)

GENERAL NOTES:

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See SCP-MD standard sheet for miscellaneous details and notes not shown.

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HL93 LOADING

Texas Department of Transportation — Bridge Division Standard

SINGLE BOX CULVERTS PRECAST

5'-0" SPAN

SCP-5

FILE: scp05ste.dgn	DN: GAF	CK: LMW	DW: BWH/TxDOT	CK: GAF
©TxDOT February 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY		SHEET NO.

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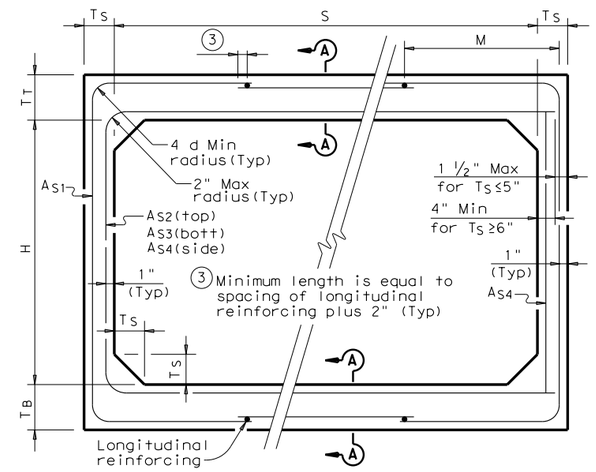
BOX DATA

SECTION DIMENSIONS S (ft)	H (ft)	T_T (in)	T_B (in)	T_S (in)	Fill Height (ft)	M (Min) (in)	REINFORCING (in²/ft) ② A_{S1}	A_{S2}	A_{S3}	A_{S4}	A_{S5}	A_{S6}	A_{S7}	A_{S8}	① Lift Weight (Tons)
6	3	8	7	7	<2	-	0.20	0.31	0.22	0.17	0.19	0.19	0.19	0.17	7.9
6	3	7	7	7	2<3	43	0.21	0.24	0.19	0.17	-	-	-	-	7.5
6	3	7	7	7	3-5	39	0.17	0.18	0.17	0.17	-	-	-	-	7.5
6	3	7	7	7	10	39	0.17	0.18	0.19	0.17	-	-	-	-	7.5
6	3	7	7	7	15	38	0.22	0.24	0.24	0.17	-	-	-	-	7.5
6	3	7	7	7	20	38	0.28	0.31	0.31	0.17	-	-	-	-	7.5
6	3	7	7	7	25	38	0.35	0.38	0.39	0.17	-	-	-	-	7.5
6	3	7	7	7	30	38	0.42	0.46	0.46	0.17	-	-	-	-	7.5
6	4	8	7	7	<2	-	0.19	0.34	0.25	0.17	0.19	0.19	0.19	0.17	8.6
6	4	7	7	7	2<3	43	0.19	0.27	0.21	0.17	-	-	-	-	8.2
6	4	7	7	7	3-5	39	0.17	0.21	0.19	0.17	-	-	-	-	8.2
6	4	7	7	7	10	39	0.17	0.20	0.21	0.17	-	-	-	-	8.2
6	4	7	7	7	15	38	0.18	0.27	0.27	0.17	-	-	-	-	8.2
6	4	7	7	7	20	38	0.24	0.34	0.35	0.17	-	-	-	-	8.2
6	4	7	7	7	25	38	0.29	0.43	0.42	0.17	-	-	-	-	8.2
6	4	7	7	7	30	38	0.35	0.51	0.52	0.17	-	-	-	-	8.2
6	5	8	7	7	<2	-	0.19	0.37	0.28	0.17	0.19	0.19	0.19	0.17	9.3
6	5	7	7	7	2<3	43	0.17	0.30	0.24	0.17	-	-	-	-	8.9
6	5	7	7	7	3-5	43	0.17	0.23	0.21	0.17	-	-	-	-	8.9
6	5	7	7	7	10	39	0.17	0.22	0.23	0.17	-	-	-	-	8.9
6	5	7	7	7	15	38	0.17	0.28	0.29	0.17	-	-	-	-	8.9
6	5	7	7	7	20	38	0.20	0.37	0.38	0.17	-	-	-	-	8.9
6	5	7	7	7	25	38	0.25	0.45	0.46	0.17	-	-	-	-	8.9
6	5	7	7	7	30	38	0.30	0.54	0.55	0.17	-	-	-	-	8.9
6	6	8	7	7	<2	-	0.19	0.38	0.30	0.17	0.19	0.19	0.19	0.17	10.0
6	6	7	7	7	2<3	52	0.17	0.32	0.26	0.17	-	-	-	-	9.6
6	6	7	7	7	3-5	52	0.17	0.24	0.22	0.17	-	-	-	-	9.6
6	6	7	7	7	10	43	0.17	0.23	0.24	0.17	-	-	-	-	9.6
6	6	7	7	7	15	39	0.17	0.29	0.31	0.17	-	-	-	-	9.6
6	6	7	7	7	20	39	0.18	0.38	0.39	0.17	-	-	-	-	9.6
6	6	7	7	7	25	38	0.23	0.46	0.48	0.17	-	-	-	-	9.6
6	6	7	7	7	30	38	0.27	0.55	0.57	0.17	-	-	-	-	9.6

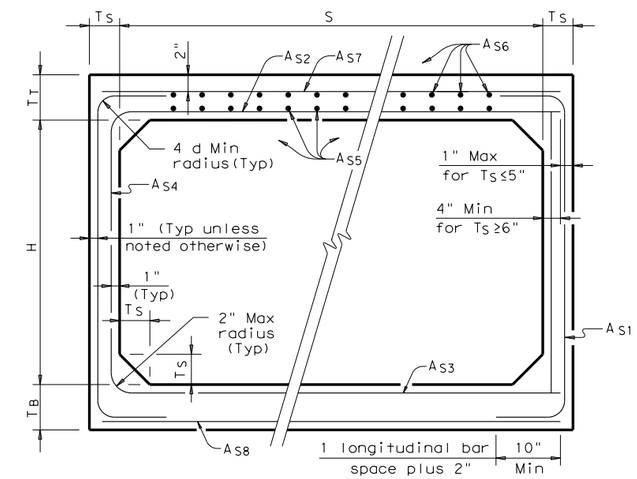
① For Box Length = 8'-0"

② A_{S1} thru A_{S4}, A_{S7} and A_{S8} are minimum required areas of reinforcement per linear foot of box length. A_{S6} and A_{S5} are minimum required areas of reinforcement per linear foot of box width.



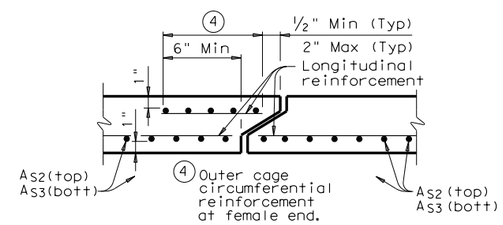
CORNER OPTION "A" CORNER OPTION "B"

FILL HEIGHT 2 FT AND GREATER



CORNER OPTION "A" CORNER OPTION "B"

FILL HEIGHT LESS THAN 2 FT



SECTION A-A

(TOP AND BOTTOM SLAB JOINT REINFORCEMENT)

GENERAL NOTES:

Designs shown conform to ASTM C1577.

Refer to ASTM C1577 for information or details not shown.

All concrete shall be Class "H" Concrete with a minimum compressive strength of 5,000 psi.

See SCP-MD standard sheet for miscellaneous details and notes not shown.

In lieu of furnishing the designs shown on this sheet, the contractor may furnish an alternate design that is equal to or exceeds the box design for the design fill height in the table. Shop plans for alternate designs shall be submitted in accordance with Item "Precast Concrete Structures".

HL93 LOADING

Texas Department of Transportation — Bridge Division Standard

SINGLE BOX CULVERTS PRECAST

6'-0" SPAN

SCP-6

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