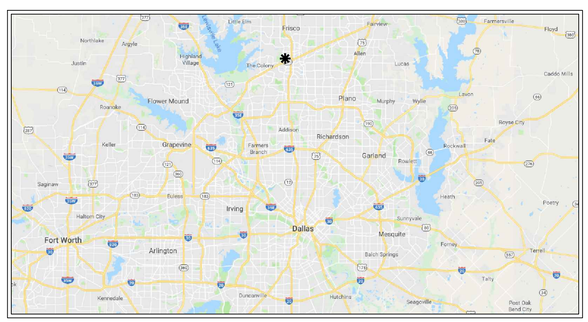
CITY OF FRISCO
CONSTRUCTION PLANS FOR

TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)

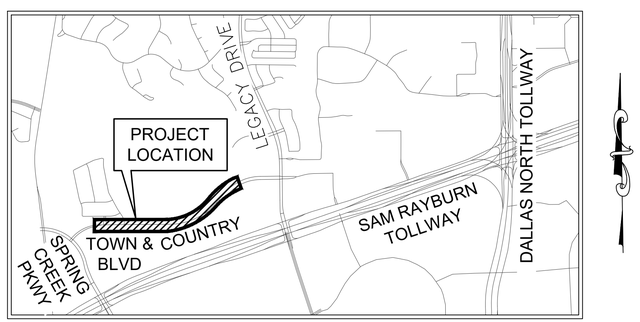
DESIGN SPEED = 45 MPH
COBB FENDLEY PROJECT NO. 1612-046-01
90% SUBMITTAL

JAN 2020
PROJECT NO. - 16111
BID NO. XXXX-XXXX

LOCATION MAP



VICINITY MAP
N.T.S.



LOCATION MAP
N.T.S.

Know what's below. Call before you dig.

CITY OF FRISCO

ENGINEERING SERVICES DEPARTMENT
6101 FRISCO SQUARE BOULEVARD
FRISCO, TEXAS 75034
PH. 972-292-5400
FX. 972-292-5016

SUBMITTAL LOG

NO.	DATE	DESCRIPTION
1.	05/10/2017	60% SUBMITTAL (FOR PRELIMINARY REVIEW ONLY)
2.	01/24/2020	90% SUBMITTAL (FOR PRELIMINARY REVIEW ONLY)

CITY COUNCIL

JEFF CHENEY	MAYOR
JOHN KEATING	MAYOR PRO TEM, PLACE 1
SHONA HUFFMAN	COUNCIL MEMBER, PLACE 2
WILL SOWELL	COUNCIL MEMBER, PLACE 3
BILL WOODARD	DEPUTY MAYOR PRO TEM, PLACE 4
TIM NELSON	COUNCIL MEMBER, PLACE 5
BRIAN LIVINGSTON	COUNCIL MEMBER, PLACE 6

STAFF

GEORGE PUREFOY	CITY MANAGER
PAUL KNIPPEL	DIRECTOR OF PUBLIC WORKS AND ENGINEERING SERVICES

THESE CONSTRUCTION PLANS HAVE BEEN REVIEWED BY THE CITY OF FRISCO. THE CITY HAS DETERMINED THAT THEY ARE IN GENERAL COMPLIANCE WITH THE CITY'S MASTER PLANS AND ENGINEERING DESIGN STANDARDS. THE CITY'S REVIEW AND RELEASE OF THESE PLANS DOES NOT REPRESENT THAT THE CITY HAS RE-ENGINEERED OR VERIFIED THE ENGINEERING OF THE PROPOSED IMPROVEMENTS. THE DESIGN ENGINEER IS RESPONSIBLE FOR ALL ENGINEERING AND RECOGNIZES THAT SPECIFIC SITE CIRCUMSTANCES OR CONDITIONS MAY REQUIRE IMPROVEMENTS CONSTRUCTED TO EXCEED MINIMUM STANDARDS CONTAINED IN THE CITY'S ENGINEERING DESIGN STANDARDS. THE DESIGN ENGINEER IS RESPONSIBLE FOR THE APPLICABILITY AND ACCURACY OF THE PLANS AND SPECIFICATIONS CONTAINED HEREIN.

THE STANDARD CITY OF FRISCO AND TXDOT DETAILS SPECIFICALLY IDENTIFIED IN THIS SET OF CONSTRUCTION PLANS, OR SPECIFICALLY INCLUDED IN THESE BIDDING/CONTRACT DOCUMENTS HAVE BEEN SELECTED BY ME OR UNDER MY DIRECT RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

PRELIMINARY

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF SCOTT L. MAYNOR, P.E. #94654 ON 1/24/2020. IT IS NOT TO BE USED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.

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1612-046-01 " TOWN & COUNTRY BOULEVARD (SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY) " JAN 2020

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NO.	DATE	COMMENT

REVISIONS

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PRELIMINARY
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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)

SHEET INDEX

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DATE: JAN 2020	JOB NUMBER: 1612-046-01

SHEET 02

Dwg Info: F:\Projects\2016\1204\6.Frisco - Town & Country\CAD\Cover Sheet.dwg - Plotted: 1/24/2020

GN – General Notes

Overview

The following General Notes shall apply to all construction projects, public or private. The Owner's Engineer may supplement the General Notes with project-specific notes with City approval.

General Notes for All Construction Activities

1. All construction, testing, and materials shall be in accordance with the City's current standards, details, and specifications.

2. Testing and inspection of materials shall be performed by a commercial testing laboratory approved by the City. Contractor shall furnish materials or specimens for testing, and shall furnish suitable evidence that the materials proposed to be incorporated into the work are in accordance with the specifications.

3. Contractor shall notify the City at least 48 hours prior to beginning construction.

4. Contractor is responsible for obtaining all necessary permits and approvals prior to beginning any construction. Contact ROW Inspection division of Public Works at 972-292-5820 for a permit to work within City ROW.

5. Contractors are allowed to make connections to the City water system by opening an account and renting a fire hydrant meter from the Department of Public Works. The company or individual is solely responsible for the cost of the rental equipment and its proper use within the City of Frisco water system. The company or individual is also responsible for the cost of the water used. Refer to the City of Frisco Fire Hydrant Meter Policy (http://friscotexas.gov/DocumentCenter/View/11332) for fees and requirements.

6. Contractor must keep available onsite, at all times, approved construction plans and copies of any required permits along with the appropriate versions of the following references: City of Frisco Engineering Standards, NCTCOG specifications, TxDOT specifications, TxDOT standard drawings.

7. All shop drawings, working drawings or other documents which require review by the City, shall be submitted by the Contractor sufficiently in advance of scheduled construction to allow no less than 14 calendar days for review and response by the City.

8. Contractor shall be responsible for all required construction surveying and staking and shall notify the City of any discrepancies prior to proceeding with any work.

9. Contractor shall be responsible for protecting all survey markers including iron rods, property corners, or survey monuments within the limits of construction and outside ROW during construction. Any survey markers disturbed during construction shall be replaced by the Contractor at no cost to the City.

10. Contractor shall provide a construction schedule and weekly progress reports.

11. Contractor is responsible for keeping streets and driveways adjacent to the project free of mud and debris at all times. Contractor shall clean up and remove all loose material resulting from construction operations. The Contractor shall take all available precautions to control dust.

12. The existence and locations of the public and franchise utilities shown on the drawings were obtained from available records and are approximate. The Contractor shall determine the depth and location of existing underground utilities prior to excavating, trenching, or drilling and shall be required to take any precautionary measures to protect all lines shown and / or any other underground utilities not of record or not shown on the plans. The Contractor shall be responsible for contacting all public agencies and franchise utilities 48 hours prior to construction. (Texas811 1-800-344-8377) The Contractor may be required expose these facilities at no cost to the City. The Contractor will be responsible for damages to utilities if the damage is caused by negligence or failure to have locates performed.

13. Contractor shall be responsible for any damage to existing facilities or adjacent properties during construction. Any removal or damage to existing facilities shall be replaced or repaired to equal or better condition by the Contractor.

14. Contractor shall not store materials, equipment or other construction items on adjacent properties or right-of-way without the prior written consent of the property owner and the City.

15. Temporary fencing shall be installed prior to the removal of existing fencing. Temporary fencing shall be removed after proposed fencing is approved by the City. All temporary and proposed fencing locations shall be subject to field revisions as directed by the City.

16. Unusable excavated material, or construction debris shall be removed and disposed of offsite at an approved disposal facility by the Contractor at his expense.

17. It is the Contractor's responsibility to maintain a neat and accurate record of construction for the City's records.

General Notes for Traffic Control

1. Contractor shall be responsible for furnishing and installing all temporary and permanent traffic control in accordance with the minimum requirements of the latest revision of the Texas Manual on Uniform Traffic Control Devices (TMUTCD) and TxDOT Barricade and Construction Standards.

2. Contractor shall not impede traffic on existing streets, driveways, alleys, or fire lanes open to the public. In the event the construction work requires the closure of an existing street, alley, or fire lane, the Contractor shall request the road closure through the City Traffic Division 972-292-5400 a minimum of 48 hours in advance of the requested closure. Closures will not be allowed prior to 9:00 a.m. or after 3:30 p.m., Monday through Friday unless otherwise approved by the City.

General Notes for Paving

1. All paving construction, testing, and materials, including concrete, reinforcement, jointing, and subgrade preparation and treatment shall be in accordance with the City's current standards, details, and specifications unless otherwise noted.

2. No earthwork, lime application, or other preparation of the subgrade for paving of streets, alleys, or fire lanes shall be initiated without authorization from the City. The City will authorize the subgrade work in preparation for paving after utility trench backfill testing has been completed and verified to meet the City requirements.

REVISIONS			
NO.	DATE	COMMENT	

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PRELIMINARY
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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)

GENERAL NOTES 1

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DATE: JAN 2020	JOB NUMBER: 1612-046-01

SHEET 03

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3. Placing of Concrete Pavement:

   A. Machine Finished: A Slip-form paving machine shall be used for all public streets and alleys unless otherwise approved by the Director of Engineering Services.

   B. Hand Finished: Hand finished pavement is permitted for turn lanes, deceleration lanes, driveway approaches, or panel replacement of public streets or alleys.

4. Contractor is responsible for ensuring all pedestrian work meets or exceeds the current American with Disabilities Act Accessibility Guidelines (ADAAG) and the Texas Accessibility Standards (TAS). The Contractor shall remove and replace any constructed or installed items not meeting the current ADAAG and TAS requirements at no additional cost to the City.

General Notes for Traffic Signals and Street Lighting

1. All traffic signal and street lighting construction, testing, and materials shall be in accordance with the City's current standards, details, and specifications unless otherwise noted. All electrical work shall be in accordance with the most current National Electrical Code, City and TxDOT specifications and standards.

2. Contractor shall notify the Traffic Department (Tracy Nichols) at least 7 business days prior to any work, provide a construction schedule and weekly progress reports to the Traffic Department, and notify the Traffic Department at least 48 hours prior to signal turn-on.

3. Contractor shall coordinate electrical services with the City and either ONCOR or COSERV representatives (according to their respective area).

4. Contractor shall coordinate with the electric company to de-energize any overhead or underground power lines. Any cost associated with de-energizing the power line and/or any other protective measures required shall be at no cost to City.

5. The Contractor shall coordinate with the appropriate utility company and TxDOT/NTTA (if within TxDOT/NTTA ROW) prior to beginning erection of poles, luminaries and structures located near any overhead or underground utilities.

6. Proposed concrete foundation and conduit alignment shall be staked by the Contractor and approved by the City prior to installation.

7. Contractor shall contact the City Traffic Department (between 8 am – 5pm) for inspection prior to pouring any concrete foundation and digging for conduit runs at least 48 hours in advance.

8. Contractor shall have a qualified IMSA Level II or a TRF453 certified technician on the project site to place the traffic signals in operation.

9. Electrical work shall be performed by certified persons in accordance with the requirements of the contract and may be rejected as unsuitable for use due to poor workmanship. The required electrical certification course is available and is scheduled periodically by TEEX. Alternatively, the Contractor may purchase an entire course for their personnel to be held at a time and location of their choice as negotiated through TEEX. For more information, contact: TEXAS ENGINEERING EXTENSION SERVICE (TEEX), TxDOT ELECTRICAL SYSTEM COURSE, (979) 845-6563.

10. The Contractor shall not place pedestrian crosswalk and stop bar pavement markings until signal is operational.

11. All lighting poles, fixtures, and arms which are removed shall be delivered to the City Public Works facility (11300 Research Road, Frisco, Texas 75034) by the Contractor and will remain the property of the City. Contact the Traffic Department at least 24 hours in advance of delivery.

12. During the 30-day traffic signal test period, Contractor shall respond to and diagnose all trouble calls with qualified personnel within a reasonable travel time from a Dallas address, but not more than two (2) hours maximum. Contractor shall repair any malfunctions of signal equipment supplied by Contractor on the project. A local telephone number (not subject to frequent changes) where trouble calls are to be received on a 24-hour basis shall be provided to the City by the Contractor. Appropriate repairs shall be made within 24 hours. The Contractor shall keep a record of each trouble call reported in the logbook provided by the City and shall notify the City of each trouble call. The error log in the malfunction management unit (MMU) shall not be cleared during the 30-day test period without the approval of the City.

13. Texas State Law, Article 1436C, makes it unlawful to operate equipment or machines within 10-feet of any overhead electrical lines unless danger against contact with high voltage overhead lines has been effectively guarded against pursuant to the provisions of this Article. When construction operations require working near an overhead electrical line, the Contractor shall contact the owner/operator of the overhead electrical line to make adequate arrangements and to take necessary safety precautions to ensure that all laws, electrical line owner/operator requirements and standard safety practices are met.

General Notes for Storm Drain

1. All storm drain construction, testing, and materials shall be in accordance with the City's current standards, details, and specifications unless otherwise noted.

2. Contractor shall submit a Trench Safety Plan prior to the Pre-Construction Meeting.

3. Two weeks prior to connecting to existing storm drain lines, the contractor should inspect the existing line and contact the stormwater inspector should the line need to be cleaned.

4. Contractor should inspect all storm drain outfalls no earlier than two weeks prior to final inspection and remove all silt and debris.

General Notes for Water and Wastewater

1. All water and wastewater construction, testing, and materials shall be in accordance with the City's current standards, details, and specifications unless otherwise noted.

2. Contractor shall submit a Trench Safety Plan prior to the Pre-Construction Meeting.

3. Contractor shall not operate existing valves. Contact the City's Public Works Department to request valve changes.

General Notes for Landscaping

1. All landscaping construction, installation, testing, and materials shall be in accordance with the City's current standards, details, and specifications unless otherwise noted.

REVISIONS		
NO.	DATE	COMMENT

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)

GENERAL NOTES 2

FRISCO

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DATE: JAN 2020	JOB NUMBER: 1612-046-01

SHEET 04

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2. Contractor shall avoid damage to existing trees. When necessary, trees and shrub trimming for construction shall be performed by certified tree worker or under the direction of a registered landscape architect or certified arborist.

3. Contractor shall locate and protect all existing landscape irrigation systems. Damage to existing irrigation systems and landscape materials shall be restored to equal or better condition at no cost to City.

4. Prior to obtaining a grading permit or scheduling a pre-construction meeting:

   A. Where transplanting or tree removal is required, Contractor must apply for a Tree Permit. Contact Development Services Landscape Architect for Tree Permit.

   B. All tree markings and protective fencing must be installed by the Contractor and be inspected by the City's Landscape Architect.

5. All trees which are to remain on site shall be protected with a 4' tall brightly colored plastic fence placed at the drip line of the trees.

6. Trees to be removed may be chipped and used for mulch on site or hauled off-site. Burning of removed trees, stumps, or foliage requires written approval by the Fire Department.

7. Plant materials shall not impede or obstruct vision or route of travel for vehicular, pedestrian, or bicycle traffic along City right-of-way, visibility easements, sidewalks or other easements.

8. No signs, wires, or other attachments other than those of a protective nature shall be attached to any tree to remain on site.

General Notes for Irrigation

1. All irrigation construction, installation, testing, and materials shall be in accordance with the City's current standards, details, and specifications unless otherwise noted.

2. A permit from the Building Inspection Division is required for each irrigation system.

3. Contractor shall notify the Parks Department prior to any modifications to the existing irrigation system.

4. Contractor shall contact the Parks Department to coordinate work prior to commencing work on any existing irrigation and prior to any installation of new irrigation.

5. Contractor shall locate and protect all existing landscape irrigation systems. Damage to existing irrigation systems and landscape materials shall be restored to equal or better condition at no cost to City.

6. Contractor shall program each controller zone based on sprinkler type, plant variety, soil characteristic, slope and solar orientation as designated on the plans. The Contractor shall coordinate with the City Parks Department for approval of the controller settings.

7. Contractor shall be responsible for coordinating with franchise utility provider to provide power to each irrigation controller. Contractor shall have underground power lines installed from power source up to the controller. Contractor shall meet controller specifications for power requirements.

8. Contractor shall set a temporary controller to establish landscape. Once landscape is established, Contractor shall contact the City's Parks and Recreation Department for assistance on installation of a Motorola controller.

General Notes for Erosion Control & Stormwater

1. Erosion control devices shall be installed on all projects prior to beginning construction and shall be maintained throughout the project in a condition acceptable to the City.

2. Steel posts shall not be used to install erosion control measures within City ROW.

3. Wire reinforcement shall be used on all silt fence used for erosion control.

4. Asphalt bags shall be placed at construction entrances to prevent curb damage.

5. Geotextile fabric shall be placed on subgrade prior to stone placement for construction entrances.

6. No equipment shall be cleaned on-site, or other liquids deposited and allowed to flow overland or subterranean within the limits of the critical root zone of trees that remain on site. This includes paint, oil, solvents, asphalt, concrete, concrete equipment wash water, mortar of similar materials.

General Notes for Water Wells

1. All water well materials, construction, and testing, shall be in accordance with the City's current standards, details, and specifications unless otherwise noted.

2. Components and Materials in Contact with Water for Human Consumption shall comply with the requirements of the Safe Drinking Water Act and other applicable federal, state, and local requirements. Provide certification by manufacturer or an accredited certification organization recognized by the Authority Having Jurisdiction that components and materials comply with the maximum lead content standard in accordance with NSF/ANSI 61 and NSF/ANSI 372.

3. All required submittals shall be directed to the City of Frisco Utility Operations Superintendent.

4. Contractor shall submit copies of all permits and associated permitting information required to complete the Work. Where applicable, Contractor will obtain drilling permits from the appropriate regulatory districts and authorities.

5. Contractor shall be licensed in the State of Texas 16 Texas Administrative Code, Chapter 76, Water Well Drillers and Water Well Pump Installers. Contractor shall submit a copy of the Texas Water Well Driller's License for the Field Superintendent and copies of licenses for all other personnel working on the Project that possess a designation as a Texas Water Well Driller or Driller's Apprentice

6. Contractor shall submit a diagram showing the diameter and depth of all holes.

7. Contractor shall site the well in accordance with Title 16, Texas Administrative Code, Chapter 76.100, Technical Requirements--Locations and Standards of Completion for Wells.

8. Downhole tools and equipment that may be positioned directly above borehole or completed well shall arrive onsite free of surface deposits of friable solids; for example, mud, sand, grout, caked on cuttings and cleaned of grease, oils, and other petroleum products. Exception is provided for normal

NO.	DATE	COMMENT

REVISIONS

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)

GENERAL NOTES 3

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DESIGN BY: MEA	DRAWN BY: MEA
DATE: JAN 2020	JOB NUMBER: 1612-046-01

SHEET 05

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amounts of thread joint compound on drill pipe and tool joints, and normal amounts of lubricating grease on mechanical equipment is allowed.

9. Contractor shall comply with applicable permits, laws, and regulations in disposing of drilling fluids, drill cuttings, and water generated during grouting. The permits, laws and regulations shall include, but not be limited to, the following:

   A. The water quality effluent limitations specified in the project's NPDES Permit.

   B. Federal, state, and local laws, regulations, and ordinances related to disposing of materials generated in constructing wells.

10. Do not empty, spill, splash, or slosh containerized drilling mud and fluids onto ground surface while moving containers, pipes and equipment.

11. Volatile wastes and other potential sources of pollution shall be properly stored in covered metal containers at least 150 feet from the well.

12. Wastes shall not be buried or burned on the Site or disposed of into storm drains, sanitary sewers, streams, or waterways. All wastes shall be removed from the Site and disposed of in a manner complying with local ordinances and antipollution laws. Waste from spilled oils and material from maintenance activities are specifically prohibited from being disposed of onsite.

13. Factory Tests are required for motors greater than 75 horsepower in accordance with IEEE 112 for polyphase motors.

14. Contractor shall submit copies of all required data and as-built construction records required to be submitted to regulatory districts and authorities for well registration.

General Notes for Sodding

1. Install top soil and evenly spread on the prepared area to a uniform depth of 4" (Native topsoil specs: 2-20% organics / PH range 5.5 -7.6) See sheet 153 for Buffalo Grass specs.

2. Restore disturbed irrigation & all its components to owner's satisfaction and to complete functionality.

3. Submittal of proper soil being used may be requested by owner.

4. Restore existing sod on all medians disturbed by construction.

5. Sod shall be free of weeds or undesirable foreign plants, large stones, roots or other materials which might be detrimental to the development of the sod or to future maintenance

6. Sod will be laid within a 24-hour period

7. Coordinate with Parks department on any trees that require being transplanted/removed from medians

8. Remove all construction debris. Remove clods and rocks that are 1" in any dimension and larger

9. Sod shall be pressed firmly into contact with topsoil by rolling with approved equipment.

10. Sod shall be flush with adjacent paving and produce a smooth leveled positive draining grade.

11. Any sodded areas that become eroded, damaged or any areas of sod that fail to become established or satisfactorily according to the owner shall be repaired or replaced at no additional expense to the owner.

12. Maintenance shall consist of but not be limited to the following:
    A. Weeding
    B. Watering
    C. Mowing and Edging
    D. Spraying
    E. Fertilizing
    F. Repair of Erosion Damage

13. Maintain newly laid sod until entire Project is accepted by the owner

NO.	DATE	COMMENT
REVISIONS		

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)

GENERAL NOTES 4

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SHEET 06

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QUANTITY SUMMARY

ITEM NO.	CITY SPEC	TxDOT SPEC	*SC	DESCRIPTION	UNIT	REMOVAL				PAVING							SIDEWALKS			DRAINAGE							MARKINGS & SIGNAGE				TOTAL	UNIT
						SH 16	SH 17	SH 18	SH 19	SH 20	SH 21	SH 22	SH 23	SH 24	SH 25	SH 26	SH 36	SH 37	SH 38	SH 46	SH 47	SH 48	SH 49	SH 50	SH 52	SH 53	SH 58	SH 59	SH 60	SH 61		
PAVING ITEMS																																
P1	017113		SC	MOBILIZATION (5% MAX)	LS																										1	LS
P2	024100		SC	GENERAL SITE PREPARATION	LS																										1	LS
P3	312500			EROSION CONTROL	LS																										1	LS
P4	347113		SC	BARRICADES, SIGNS, AND TRAFFIC HANDLING	LS																										1	LS
P5	015813			PROJECT SIGN	EA																										2	EA
P6	312500			CONSTRUCTION ENTRANCE/EXIT (INSTALL/MAINTAIN/REMOVE)	EA																										1	EA
P7	024100			FULL DEPTH SAWCUT	LF	125	25	148	586																						884	LF
P8	024100			REMOVE & DISPOSE EXISTING CONCRETE (ALL DEPTHS, TYPES)	SY	3,586	3,320	3,379	630																						10,920	SY
P9	024100			REMOVE GUARDRAIL	LF		300																								300	LF
P10	024100			REMOVE LIGHTPOLE	EA		2	1																							3	EA
P11		TxDOT 677		REMOVE TRAFFIC SIGN	EA	9		6																							15	EA
P12	024100			REMOVE 18" RCP	LF		90																								90	LF
P13	024100			REMOVE 21" RCP	LF		43	105																							148	LF
P14	024100			REMOVE 24" RCP	LF		192	123																							315	LF
P15	024100			REMOVE STRUCTURE (INLET)	EA	2	2	2																							6	EA
P16	024100			REMOVE STRUCTURE (S.E.T.)	EA		1																								1	EA
P17	024100			REMOVE STRUCTURE (HEADWALL)	EA		1																								1	EA
P18	312316	TxDOT 110	SC	UNCLASSIFIED ROADWAY EXCAVATION	CY																										25,000	CY
P19	312413	TxDOT 132		EMBANKMENT (ROADWAY)(DENSITY CONTROL) (TY D)	CY																										1,025	CY
P20	321313		SC	8" REINFORCED CONCRETE PAVEMENT W/ 6" MONO CURB (STREET) (CLASS P1 OR P2)	SY					3,942	3,222	3,122	3,592	4,126	1,164	378															19,600	SY
P21	321112			MOISTURE TREATED SUBGRADE (72 IN)	SY					4,180	3,420	3,310	3,810	4,380	1,240	410															20,750	SY
P22	321113		SC	12" LIME STABILIZED SUBGRADE	SY					4,180	3,420	3,310	3,810	4,380	1,240	410															20,750	SY
P23	321113			HYDRATED LIME (97 LB/SY)	TON					203	166	161	185	212	60	20															1,006	TON
P24	034660			MONOLITHIC MEDIAN NOSE (TYPE 1) WITH BRICK PAVERS	EA											1															1	EA
P25	034660			MONOLITHIC MEDIAN NOSE (TYPE 2) WITH BRICK PAVERS	EA					2	1			2		1															6	EA
P26	321665			STREET HEADER	LF					67					75																142	LF
P27	321650			4" REINFORCED CONCRETE PAVEMENT (SIDEWALK) (CLASS A)	SY												951	1304	680												2,935	SY
P28		TxDOT 450	SC	PEDESTRIAN HANDRAIL (TY E)	LF							325																			325	LF
P29	321655			BARRIER FREE RAMP (TYPE 7)	EA												4	2	4												10	EA
P30	321723			REFL PAV MRK TY I & TY II (W) 4" BRK	LF																						1,096	2,000	1,804	1,525	6,425	LF
P31	321723			REFL PAV MRK TY I & TY II (W) 4" SOLID	LF																						100	2,075	1,630	295	4,100	LF
P32	321723			REFL PAV MRK TY I & TY II (W) 8" SOLID	LF																						179	75	91	315	660	LF
P33	321723			REFL PAV MRK TY I & TY II (W) 24" SOLID	LF																							64			64	LF
P34	321723			REFL PAV MRK TY I & TY II (W) HELMETED BICYCLIST AND ARROW	EA																						1	3	4	1	9	EA
P35	344150		SC	SMALL ROADSIDE SIGNS	EA																						5	5	1	4	15	EA
P36	331219		SC	FURNISH & INSTALL NEW FIRE HYDRANT	EA					1	1	1	1																		4	EA
P37	331217			ADJUST WATER VALVE STACK	EA					3	3	1	3	6																	16	EA
P38	333913			ADJUST SANITARY SEWER MANHOLE RING & COVER	EA																										3	EA
DRAINAGE ITEMS																																
D1	334113		SC	18" CL III RCP	LF															85	360	405	100	11							961	LF
D2	334113		SC	21" CL III RCP	LF															41											41	LF
D3	334113		SC	24" CL III RCP	LF															101			293	103							497	LF
D4	334113		SC	36" CL III RCP	LF																37										37	LF
D5	334113		SC	66" CL III RCP	LF																				102						102	LF
D6	334200		SC	CONCRETE BOX CULVERT (6'x5') (PRECAST)	LF																					203					203	LF
D7	033100			CONNECT TO EXISTING STORM	EA															4	1		4	1	2						12	EA
D8	334920		SC	3'x3' DROP INLET W/ APRON	EA																		2								2	EA
D9	334920		SC	6'x6' DROP INLET W/ APRON	EA																1										1	EA
D10	334920		SC	10' RECESSED CURB INLET	EA																			2							2	EA
D11	334920		SC	16' RECESSED CURB INLET	EA															5	1	2	2								10	EA
D12	334914		SC	CONCRETE HEADWALL WITH PARALLEL WING WALLS	EA																				1						1	EA
D13	334914		SC	CONCRETE HEADWALL ADDITION	EA																					2					2	EA
D14	334913			TOP SLAB WITH MANHOLE FRAME AND COVER	EA																1										1	EA
D15	334113			PLUG EXISTING STORM DRAIN	EA															1			1	1							3	EA
D16	044200	TxDOT 427	SC	DECORATIVE STONE VENEER	SF																					100					100	SF
D17	313700			GROUTED ROCK RIPRAP AT HEADWALL	SY																				122	213					335	SY
D18		TxDOT 465		STORM SEWER MANHOLE (5' TxDOT TYPE M)	EA																1										1	EA
LANDSCAPE																																
L1	329119		SC	4" DEPTH TOPSOIL	SY																										1	SY
L2	329223	TxDOT 162	SC	SOLID SOD (BUFFALO GRASS '609') - ROLL 24" MIN. WIDE	SY																										1	SY
L3	329223	TxDOT 162	SC	MEXICAN FEATHERGRASS	GAL																										6,710	GAL
L4	329600			TREE PROTECTION	EA					5	5																				10	EA
L5	329300			SHUMARD RED OAK	EA																										45	EA
L6	328000			IRRIGATION SYSTEM (INSTALL)	LS																										1	LS
L7	260501			IRRIGATION ELECTRIC SERVICE	EA																										1	EA
L8	331213			2" WATER METER	EA																										1	EA
L9	328000			TEMPORARY IRRIGATION CONTROL	EA																										1	EA
ILLUMINATION																																
ILL1	260500			ELEC CONDUCTOR (NO. 8) INSULATED	LF																										4,900	LF
ILL2	260501			ELEC SERV TY A(240/280)100(NS)AL(E)PS(U)	EA																										25	EA
ILL3	270500			CONDUIT DUCT BANK (3-4" PVC) (SCH40) (OPEN CUT)	LF																										4,900	LF
ILL4	330510			CONDUIT TRENCH SAFETY	LF																										4,900	LF
ILL5	270500			2" SERVICE CONDUIT	LF																										4,900	LF
ILL6	344135			GROUND BOX TY A (122311) WITH APRON	EA																										1	EA
ILL7	265619			LUMINAIRE POLE	EA																										25	EA
ILL8	265620			LUMINAIRE FIXTURE (INSTALL ONLY)	EA																										50	EA
ILL9	033101			DRILL SHAFT (30" DIA, 8' DEEP)	LF																										200	LF

NO.	DATE	COMMENT

REVISIONS

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)

QUANTITY SUMMARY

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DATE: JAN 2020	JOB NUMBER: 1612-046-01

SHEET 07

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ABBREVIATIONS

B

B-B	BACK TO BACK
B.O.C.	BACK OF CURB
BLDG	BUILDING

C

CAB	CABINET
CB	CHORD BEARING
CFA	COBB, FENDLEY & ASSOCIATES
℄	CENTERLINE
C.I.R.	CAPPED IRON ROD
C.I.R.F.	CAPPED IRON ROD FOUND
CL	CHORD LENGTH
CO	CLEAN OUT
CONC	CONCRETE
CPB	COMMUNICATION PULL BOX

E

E	EAST
ECAB	ELECTRIC CABINET
EG	EXISTING GRADE
ELEC	ELECTRIC
ELEV	ELEVATION
EM	ELECTRIC METER
EMH	ELECTRIC MANHOLE
EOP	EDGE OF PAVEMENT
EP	END POINT
EPB	ELECTRIC PULL BOX
ESMT	EASEMENT
EX	EXISTING

F

FH	FIRE HYDRANT
FL	FLOW LINE
FT	FOOT OR FEET

G

GTL	GAS TEST LINE
GW	GUY WIRE

H

H.D.P.E.	HIGH-DENSITY POLYETHYLENE

I

ICV	IRRIGATION CONTROL VALVE

L

L	LENGTH
LF	LINEAR FEET
LP	LIGHT POLE
LT	LEFT

M

MH	MANHOLE

N

N	NORTH
NEPI	NO EXTRA PAY ITEM
NW	NORTHWEST

O

OHW	OVERHEAD WIRE

P

PC	POINT OF CURVE
PCC	POINT OF COMPOUND CURVATURE
PI	POINT OF INTERSECTION
PG	PROPOSED GRADE
PP	POWER POLE
PPR	POWER POLE RISER
PROP	PROPOSED
PRC	POINT OF REVERSE CURVATURE
PT	POINT OF TANGENCY
PVC	POLYVINYL CHLORIDE
PVI	POINT OF VERTICAL INTERSECTION

R

R	RADIUS
RCB	REINFORCED CONCRETE BOX
R.C.C.P.	REINFORCED CONCRETE CYLINDER PIPE
RCP	REINFORCED CONCRETE PIPE
RFD	ROCK FILER DAM
R.O.W.	RIGHT OF WAY
RT	RIGHT

S

S	SOUTH
SAN	SANITARY
SCF	SEDIMENT CONTROL FENCE
SH	SPRINKLER HEAD
SS	SANITARY SEWER
SSMH	SANITARY SEWER MANHOLE
STA	STATION
STM	STORM
STMH	STORM MANHOLE
SWR	SEWER

T

T	TANGENT
TCP	TRAFFIC CONTROL PLAN
TELE	TELEPHONE
TH	TEST HOLE
THT	THROAT
T.O.P.	TOP OF PIPE
TPED	TELEPHONE PEDISTAL
TYP	TYPICAL

U

UE	UNDERGROUND ELECTRIC

V

VLV	VALVE

W

W	WEST
W/	WITH
WM	WATER METER
WV	WATER VALVE

LEGEND

EXISTING

- 585 — MINOR CONTOUR
- 585 — MAJOR CONTOUR
- EASEMENT LINE
- PROPORTY LINE
- FENCE LINE
- SS — SANITARY SEWER LINE
- W — WATER LINE
- UE — UNDERGROUND ELECTRIC
- OHW — OVERHEAD ELECTRIC
- TREE LINE
- BRICK COLUMN
- SIGN
- MH — MANHOLE
- GUY WIRE
- POWER POLE RISER
- POWER POLE
- LIGHT POLE
- E — ELECTRIC MANHOLE
- GAS TEST
- PULL BOX
- E — ELECTRIC METER
- BOLLARD
- FIRE HYDRANT
- WATER VALVE
- SPRINKLER HEAD
- SANITARY SEWER VALVE
- SS — SANITARY SEWER MANHOLE
- CLEAN OUT
- SW — STORM SEWER MANHOLE
- TREE
- ROCK RIP RAP
- SIDEWALK PAVEMENT
- CONCRETE PAVEMENT

PROPOSED

- EASEMENT LINE
- SANITARY SEWER LINE
- W — WATER LINE
- N 1000.00 / E 1000.00 — STRUCTURE, BUILDING OR FACILITY LOCATION POINT - COORDINATES
- SURVEY CONTROL POINT
- SS — SANITARY SEWER MANHOLE
- STREET LIGHT FOUNDATION
- ROCK RIP RAP
- SIDEWALK PAVEMENT
- CONCRETE PAVEMENT

SURVEY ABBREVIATIONS

WV	WATER VALVE
WM	WATER METER
ICV	IRRIGATION CONTROL VALVE
FH	FIRE HYDRANT
SSCO	SANITARY SEWER CLEANOUT
SSMH	SANITARY SEWER MANHOLE
CO	CLEANOUT
TSPB	TRAFFIC SIGNAL PULL BOX
TSP	TRAFFIC SIGNAL POLE
TMH	TELEPHONE MANHOLE
EMH	ELECTRICAL MANHOLE
PP	POWER POLE
LP	LIGHT POLE
MB	MAILBOX
GLM	GAS LINE MARKER
EPB	ELECTRIC PULL BOX
TSCAB	TRAFFIC SIGNAL CABINET
GTL/GLM	GAS TEST LINE/GAS LINE MARKER
CP	CONTROL POINT
XS	X CUT SET

NO.	DATE	COMMENT

REVISIONS

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)

ABBREVIATIONS & SYMBOLS

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SHEET 08

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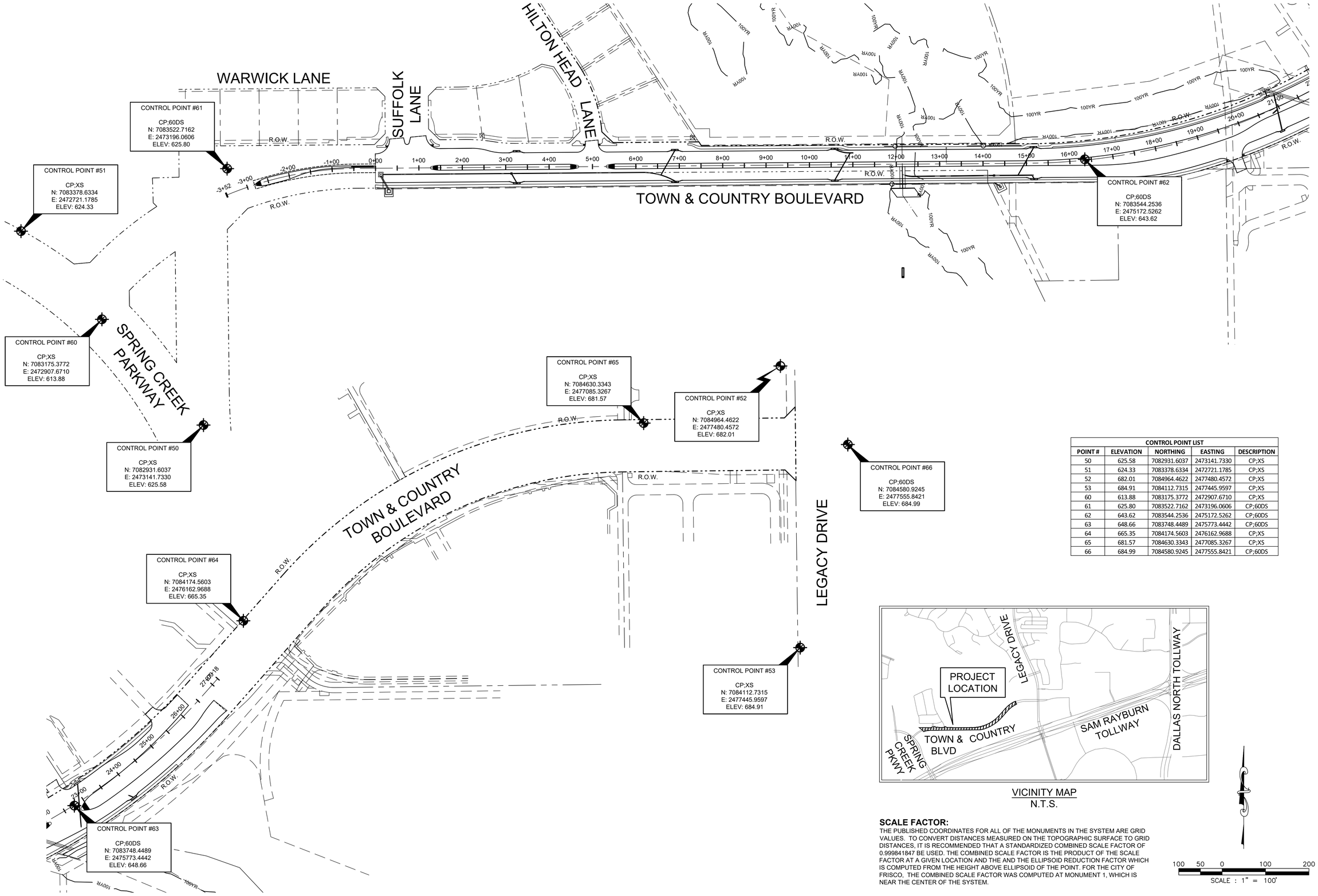

CONTROL POINT LIST				
POINT #	ELEVATION	NORTHING	EASTING	DESCRIPTION
50	625.58	7082931.6037	2473141.7330	CP;XS
51	624.33	7083378.6334	2472721.1785	CP;XS
52	682.01	7084964.4622	2477480.4572	CP;XS
53	684.91	7084112.7315	2477445.9597	CP;XS
60	613.88	7083175.3772	2472907.6710	CP;XS
61	625.80	7083522.7162	2473196.0606	CP;60DS
62	643.62	7083544.2536	2475172.5262	CP;60DS
63	648.66	7083748.4489	2475773.4442	CP;60DS
64	665.35	7084174.5603	2476162.9688	CP;XS
65	681.57	7084630.3343	2477085.3267	CP;XS
66	684.99	7084580.9245	2477555.8421	CP;60DS

VICINITY MAP
N.T.S.

SCALE FACTOR:
THE PUBLISHED COORDINATES FOR ALL OF THE MONUMENTS IN THE SYSTEM ARE GRID VALUES. TO CONVERT DISTANCES MEASURED ON THE TOPOGRAPHIC SURFACE TO GRID DISTANCES, IT IS RECOMMENDED THAT A STANDARDIZED COMBINED SCALE FACTOR OF 0.99984184 7 BE USED. THE COMBINED SCALE FACTOR IS THE PRODUCT OF THE SCALE FACTOR AT A GIVEN LOCATION AND THE AND THE ELLIPSOID REDUCTION FACTOR WHICH IS COMPUTED FROM THE HEIGHT ABOVE ELLIPSOID OF THE POINT. FOR THE CITY OF FRISCO, THE COMBINED SCALE FACTOR WAS COMPUTED AT MONUMENT 1, WHICH IS NEAR THE CENTER OF THE SYSTEM.

100 50 0 100 200
SCALE : 1" = 100'

NO.	DATE	COMMENT

REVISIONS

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)

PROJECT CONTROL

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DATE: JAN 2020	JOB NUMBER: 1612-046-01

SHEET 09

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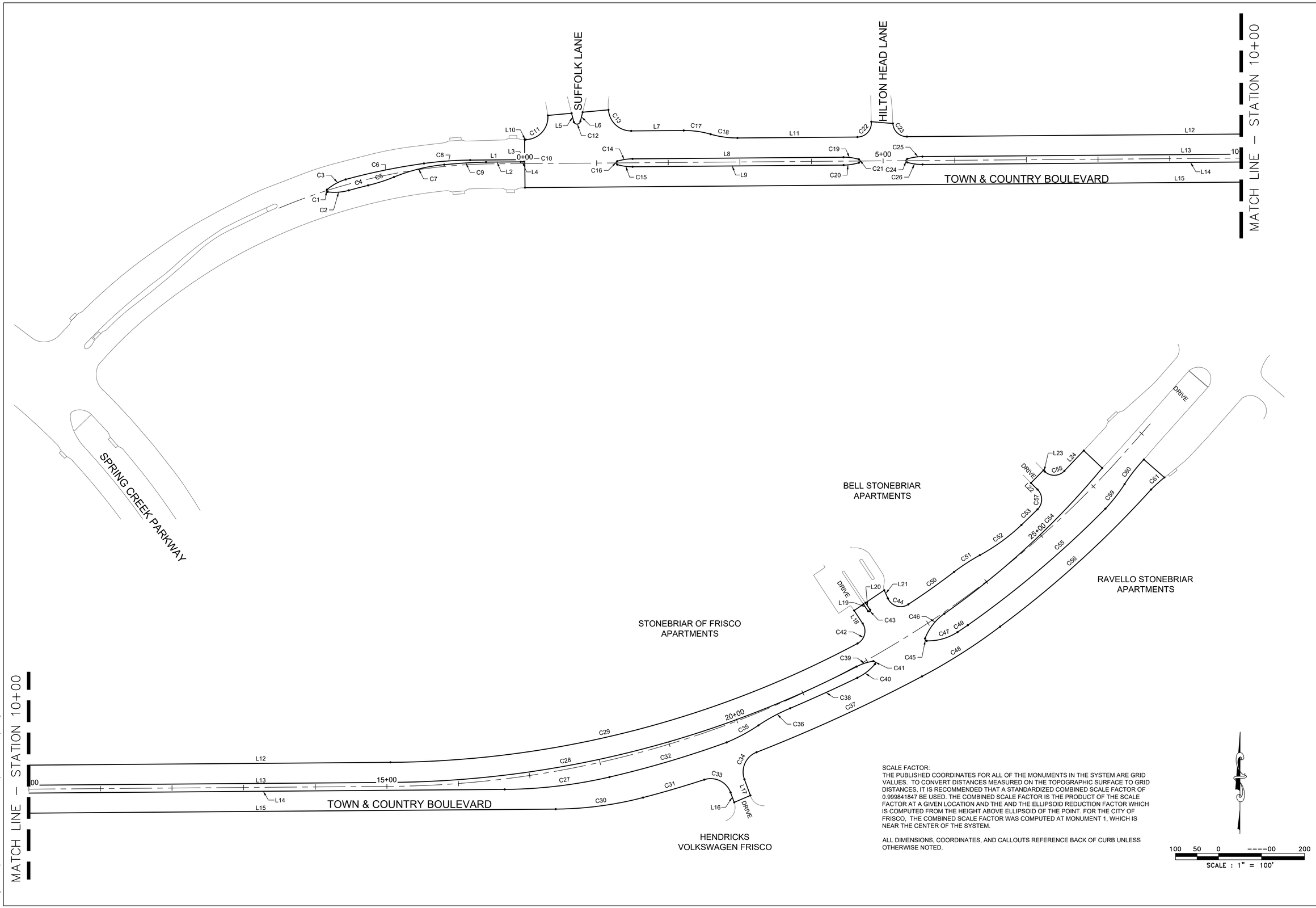

SCALE FACTOR:
THE PUBLISHED COORDINATES FOR ALL OF THE MONUMENTS IN THE SYSTEM ARE GRID VALUES. TO CONVERT DISTANCES MEASURED ON THE TOPOGRAPHIC SURFACE TO GRID DISTANCES, IT IS RECOMMENDED THAT A STANDARDIZED COMBINED SCALE FACTOR OF 0.999841847 BE USED. THE COMBINED SCALE FACTOR IS THE PRODUCT OF THE SCALE FACTOR AT A GIVEN LOCATION AND THE AND THE ELLIPSOID REDUCTION FACTOR WHICH IS COMPUTED FROM THE HEIGHT ABOVE ELLIPSOID OF THE POINT. FOR THE CITY OF FRISCO, THE COMBINED SCALE FACTOR WAS COMPUTED AT MONUMENT 1, WHICH IS NEAR THE CENTER OF THE SYSTEM.

ALL DIMENSIONS, COORDINATES, AND CALLOUTS REFERENCE BACK OF CURB UNLESS OTHERWISE NOTED.

NO.	DATE	COMMENT

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)

GEOMETRIC LAYOUT

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DATE: JAN. 2020	JOB NUMBER: 1612-046-01

SHEET 10

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CURVE TABLE

CURVE	RADIUS	DELTA	LENGTH	TANGENT	START	END
C1	1.80'	132°14'09"	4.15'	4.07	N 7083484.14 E 2473262.56	N 7083487.29 E 2473261.62
C2	74.50'	022°46'14"	29.61'	15.00	N 7083484.14 E 2473262.56	N 7083486.24 E 2473291.89
C3	70.84'	024°15'16"	29.99'	15.22	N 7083487.29 E 2473261.62	N 7083501.55 E 2473287.74
C4	790.00'	002°01'42"	27.97'	13.99	N 7083486.24 E 2473291.89	N 7083493.23 E 2473318.97
C5	249.50'	008°42'39"	37.93'	19.00	N 7083493.23 E 2473318.97	N 7083504.82 E 2473355.05
C6	871.37'	007°20'06"	111.55'	55.85	N 7083501.55 E 2473287.74	N 7083523.84 E 2473396.97
C7	250.50'	016°37'01"	72.65'	36.58	N 7083504.82 E 2473355.05	N 7083522.17 E 2473425.34
C8	499.50'	007°25'32"	64.73'	32.41	N 7083523.84 E 2473396.97	N 7083528.53 E 2473461.48
C9	801.00'	004°10'34"	58.38'	29.20	N 7083522.17 E 2473425.34	N 7083525.70 E 2473483.60
C10	1.00'	167°32'37"	2.92'	9.16	N 7083528.60 E 2473536.66	N 7083526.61 E 2473536.67
C11	31.50'	093°02'21"	51.15'	33.22	N 7083557.13 E 2473539.06	N 7083590.83 E 2473569.94
C12	4.86'	143°29'10"	12.17'	14.73	N 7083581.51 E 2473606.21	N 7083582.64 E 2473615.37
C13	31.50'	086°38'26"	47.63'	29.70	N 7083598.67 E 2473654.58	N 7083569.26 E 2473686.25
C14	74.50'	016°35'52"	21.58'	10.87	N 7083527.01 E 2473666.86	N 7083530.28 E 2473688.11
C15	74.50'	016°35'53"	21.58'	10.87	N 7083522.22 E 2473666.89	N 7083519.28 E 2473688.20
C16	2.50'	146°48'16"	6.41'	8.39	N 7083522.22 E 2473666.89	N 7083527.01 E 2473666.86
C17	131.09'	016°41'16"	38.18'	19.23	N 7083569.83 E 2473759.59	N 7083564.60 E 2473797.28
C18	130.09'	016°41'16"	37.89'	19.08	N 7083564.60 E 2473797.28	N 7083559.41 E 2473834.67
C19	74.50'	016°35'52"	21.58'	10.87	N 7083532.55 E 2473982.72	N 7083529.61 E 2474004.03
C20	74.50'	016°35'52"	21.58'	10.87	N 7083521.55 E 2473982.81	N 7083524.82 E 2474004.07
C21	2.50'	146°48'16"	6.41'	8.39	N 7083529.61 E 2474004.03	N 7083524.82 E 2474004.07

CURVE TABLE

CURVE	RADIUS	DELTA	LENGTH	TANGENT	START	END
C22	19.50'	095°07'51"	32.38'	21.33	N 7083560.70 E 2474002.18	N 7083582.10 E 2474021.44
C23	19.50'	087°08'06"	29.66'	18.55	N 7083579.61 E 2474051.65	N 7083561.24 E 2474071.27
C24	2.50'	146°48'16"	6.41'	8.39	N 7083525.34 E 2474071.65	N 7083530.13 E 2474071.61
C25	74.50'	016°35'52"	21.58'	10.87	N 7083530.13 E 2474071.61	N 7083533.40 E 2474092.86
C26	74.50'	016°35'53"	21.58'	10.87	N 7083525.34 E 2474071.65	N 7083522.40 E 2474092.95
C27	672.50'	012°34'10"	147.53'	74.06	N 7083530.97 E 2475202.46	N 7083548.21 E 2475348.68
C28	1435.71'	027°00'18"	676.69'	344.75	N 7083540.74 E 2475043.16	N 7083702.31 E 2475693.84
C29	1407.71'	027°39'11"	679.41'	346.46	N 7083568.74 E 2475042.99	N 7083734.60 E 2475695.07
C30	500.50'	014°06'51"	123.29'	61.96	N 7083503.52 E 2475273.65	N 7083519.57 E 2475395.58
C31	1455.76'	003°30'06"	88.97'	44.50	N 7083519.57 E 2475395.58	N 7083544.54 E 2475480.96
C32	1416.76'	006°54'30"	170.82'	85.51	N 7083548.21 E 2475348.68	N 7083596.60 E 2475512.40
C33	29.50'	087°46'50"	45.20'	28.38	N 7083544.54 E 2475480.96	N 7083526.72 E 2475517.77
C34	29.50'	088°49'37"	45.73'	28.90	N 7083545.15 E 2475537.15	N 7083582.81 E 2475554.10
C35	249.50'	011°32'51"	50.28'	25.23	N 7083596.60 E 2475512.40	N 7083620.31 E 2475556.65
C36	250.50'	011°32'58"	50.49'	25.33	N 7083620.31 E 2475556.65	N 7083644.12 E 2475601.08
C37	2232.26'	006°31'27"	254.19'	127.23	N 7083582.81 E 2475554.10	N 7083688.63 E 2475785.06
C38	2193.26'	002°41'19"	102.92'	51.47	N 7083644.12 E 2475601.08	N 7083686.68 E 2475694.78
C39	74.50'	018°53'24"	24.56'	12.39	N 7083702.31 E 2475693.84	N 7083709.86 E 2475717.09
C40	74.45'	024°03'43"	31.26'	15.87	N 7083686.68 E 2475694.78	N 7083705.70 E 2475719.31
C41	2.50'	141°11'56"	6.16'	7.10	N 7083709.86 E 2475717.09	N 7083705.70 E 2475719.31
C42	19.50'	095°03'17"	32.35'	21.30	N 7083734.60 E 2475695.07	N 7083762.46 E 2475702.21

CURVE TABLE

CURVE	RADIUS	DELTA	LENGTH	TANGENT	START	END
C43	1.72'	179°55'34"	5.39'	2661.84	N 7083779.67 E 2475709.83	N 7083781.60 E 2475712.67
C44	19.50'	099°18'58"	33.80'	22.96	N 7083797.51 E 2475737.45	N 7083789.12 E 2475765.96
C45	2.50'	108°53'34"	4.75'	3.50	N 7083738.19 E 2475791.60	N 7083741.58 E 2475789.35
C46	74.50'	034°07'51"	44.38'	22.87	N 7083741.58 E 2475789.35	N 7083776.08 E 2475816.21
C47	74.50'	034°53'15"	45.36'	23.41	N 7083738.19 E 2475791.60	N 7083750.37 E 2475834.57
C48	800.50'	009°16'07"	129.50'	64.89	N 7083688.63 E 2475785.06	N 7083758.16 E 2475894.14
C49	772.50'	001°17'17"	17.37'	8.68	N 7083750.37 E 2475834.57	N 7083760.06 E 2475848.98
C50	1089.00'	004°07'21"	78.36'	39.19	N 7083789.12 E 2475765.96	N 7083834.42 E 2475829.88
C51	280.50'	008°46'09"	42.93'	21.51	N 7083834.42 E 2475829.88	N 7083857.78 E 2475865.84
C52	279.50'	014°44'30"	71.91'	36.16	N 7083857.78 E 2475865.84	N 7083899.92 E 2475923.87
C53	1100.00'	001°38'06"	31.39'	15.70	N 7083899.92 E 2475923.87	N 7083921.80 E 2475946.38
C54	1128.00'	015°16'47"	300.82'	151.31	N 7083776.08 E 2475816.21	N 7083979.39 E 2476036.71
C55	1418.06'	010°10'55"	252.00'	126.33	N 7083760.06 E 2475848.98	N 7083922.66 E 2476041.08
C56	1446.06'	011°17'38"	285.04'	142.99	N 7083758.16 E 2475894.14	N 7083949.39 E 2476104.89
C57	19.50'	090°16'58"	30.73'	19.60	N 7083921.80 E 2475946.38	N 7083949.44 E 2475946.32
C58	19.50'	089°20'50"	30.41'	19.28	N 7083974.52 E 2475956.42	N 7083975.35 E 2475983.83
C59	249.50'	010°00'02"	43.55'	21.83	N 7083922.66 E 2476041.08	N 7083956.90 E 2476067.89
C60	250.50'	010°00'08"	43.73'	21.92	N 7083956.90 E 2476067.89	N 7083991.29 E 2476094.81
C61	279.50'	005°08'32"	25.08'	12.55	N 7083949.39 E 2476104.89	N 7083966.22 E 2476123.48

LINE TABLE

LINE	LENGTH	BEARING	START	END
L1	70.54	N89° 33' 27.76"E	N 7083528.53 E 2473461.48	N 7083529.07 E 2473532.02
L2	48.44	N89° 33' 27.76"E	N 7083525.70 E 2473483.60	N 7083526.07 E 2473532.04
L3	4.66	S84° 12' 50.88"E	N 7083529.07 E 2473532.02	N 7083528.60 E 2473536.66
L4	4.66	N83° 19' 46.39"E	N 7083526.07 E 2473532.04	N 7083526.61 E 2473536.67
L5	12.79	S14° 17' 08.83"E	N 7083593.91 E 2473603.05	N 7083581.51 E 2473606.21
L6	13.09	N13° 59' 14.07"E	N 7083582.64 E 2473615.37	N 7083595.34 E 2473618.54
L7	73.34	N89° 33' 27.76"E	N 7083569.26 E 2473686.25	N 7083569.83 E 2473759.59
L8	294.62	N89° 33' 27.76"E	N 7083530.28 E 2473688.11	N 7083532.55 E 2473982.72
L9	294.62	N89° 33' 27.76"E	N 7083519.28 E 2473688.20	N 7083521.55 E 2473982.81
L10	1.53	N89° 01' 03.45"E	N 7083557.10 E 2473537.52	N 7083557.13 E 2473539.06
L11	167.51	N89° 33' 27.76"E	N 7083559.41 E 2473834.67	N 7083560.70 E 2474002.18
L12	971.76	N89° 33' 27.76"E	N 7083561.24 E 2474071.27	N 7083568.74 E 2475042.99
L13	950.32	N89° 33' 27.76"E	N 7083533.40 E 2474092.86	N 7083540.74 E 2475043.16
L14	1109.54	N89° 33' 27.76"E	N 7083522.40 E 2474092.95	N 7083530.97 E 2475202.46
L15	1735.66	N89° 33' 27.76"E	N 7083490.12 E 2473538.04	N 7083503.52 E 2475273.65
L16	14.75	S20° 16' 39.50"E	N 7083526.72 E 2475517.77	N 7083512.89 E 2475522.88
L17	24.10	N20° 10' 54.85"W	N 7083522.53 E 2475545.47	N 7083545.15 E 2475537.15
L18	21.67	N33° 09' 07.14"W	N 7083762.46 E 2475702.21	N 7083780.60 E 2475690.36
L19	11.69	N33° 36' 46.50"W	N 7083779.67 E 2475709.83	N 7083789.40 E 2475703.36
L20	11.69	N34° 09' 14.43"W	N 7083781.60 E 2475712.67	N 7083791.27 E 2475706.10
L21	12.53	S23° 57' 01.66"E	N 7083808.96 E 2475732.36	N 7083797.51 E 2475737.45

LINE TABLE

LINE	LENGTH	BEARING	START	END
L22	12.93	N45° 16' 44.72"W	N 7083949.44 E 2475946.32	N 7083958.54 E 2475937.13
L23	2.47	N47° 03' 06.20"W	N 7083974.52 E 2475956.42	N 7083976.20 E 2475954.62
L24	39.26	N43° 36' 03.85"E	N 7083975.35 E 2475983.83	N 7084003.78 E 2476010.91

NO.	DATE	COMMENT

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)

GEOMETRIC LAYOUT

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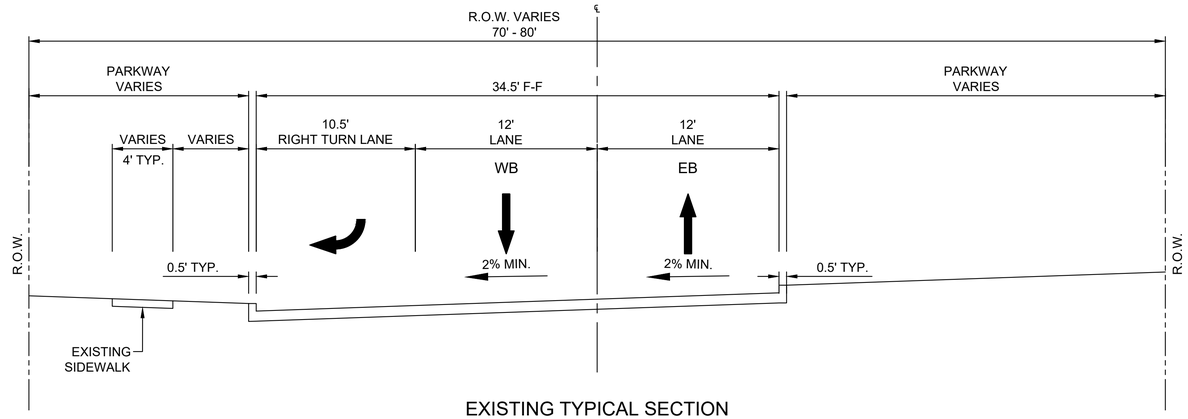
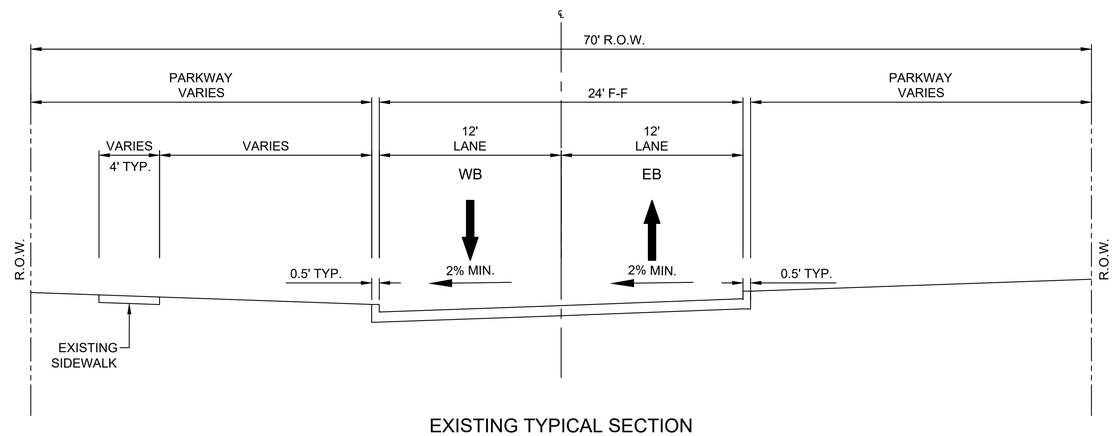
DESIGN BY: MEA	DRAWN BY: MEA
DATE: JAN 2020	JOB NUMBER: 1612-046-01

SHEET
11

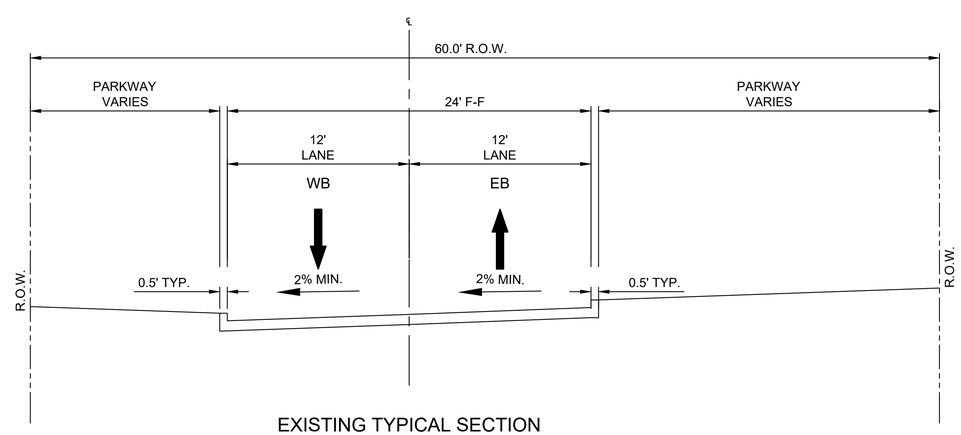
Dwg Info: F:\Projects\2016\12046 Frisco - Town & Country\CAD\Geometric Layout.dwg - Plotted: 1/24/2020



EXISTING TYPICAL SECTION
RIGHT TURN LANE
(TOWN & COUNTRY BOULEVARD)
SCALE: 1"=5'



EXISTING TYPICAL SECTION
(TOWN & COUNTRY BOULEVARD)
SCALE: 1"=5'



EXISTING TYPICAL SECTION
W/O SIDEWALK
(TOWN & COUNTRY BOULEVARD)
SCALE: 1"=5'

NO.	DATE	COMMENT

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)

EXISTING TYPICAL SECTIONS

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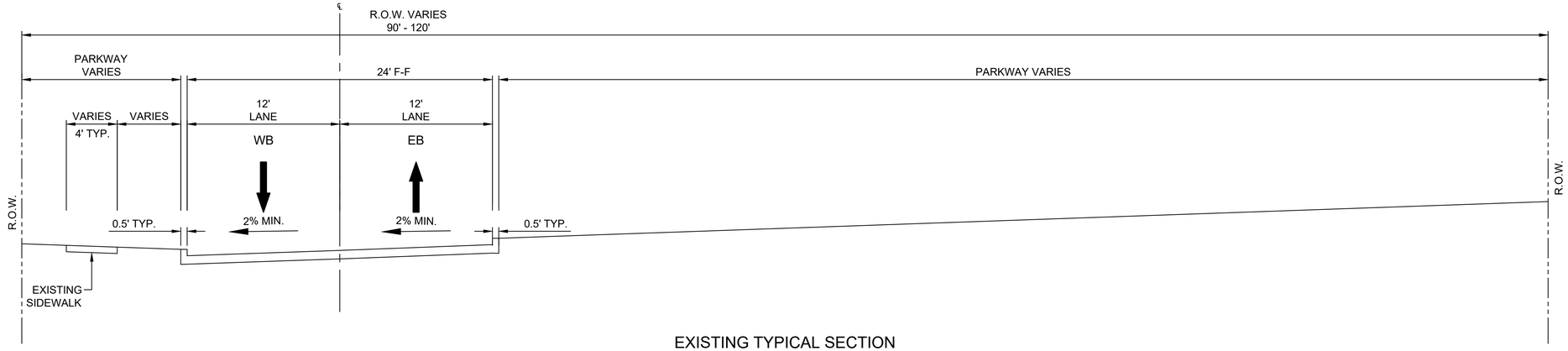
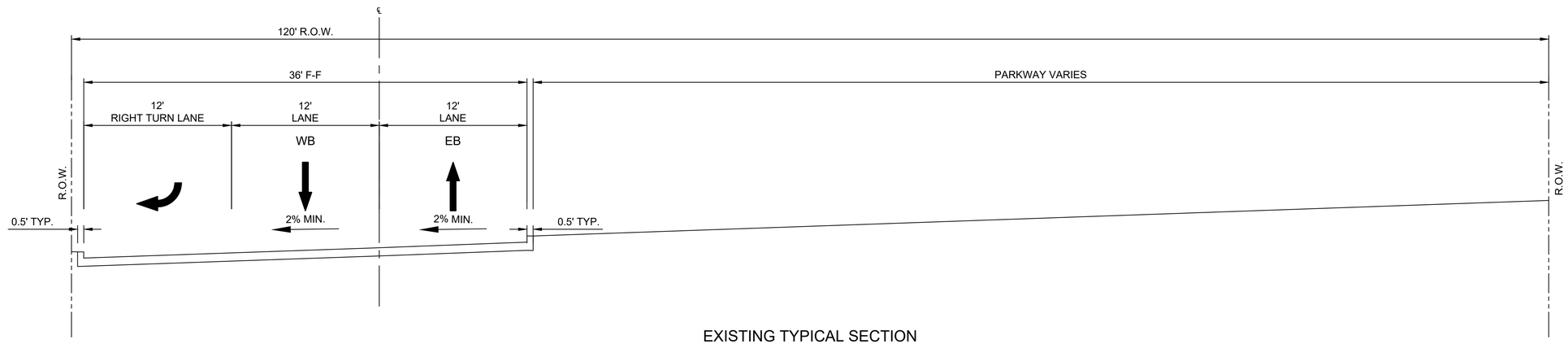


EXISTING TYPICAL SECTION
W/ SIDEWALK
(TOWN & COUNTRY BOULEVARD)
SCALE: 1"=5'



EXISTING TYPICAL SECTION
RIGHT TURN LANE W/O SIDEWALK
(TOWN & COUNTRY BOULEVARD)
SCALE: 1"=5'

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)

EXISTING TYPICAL SECTIONS

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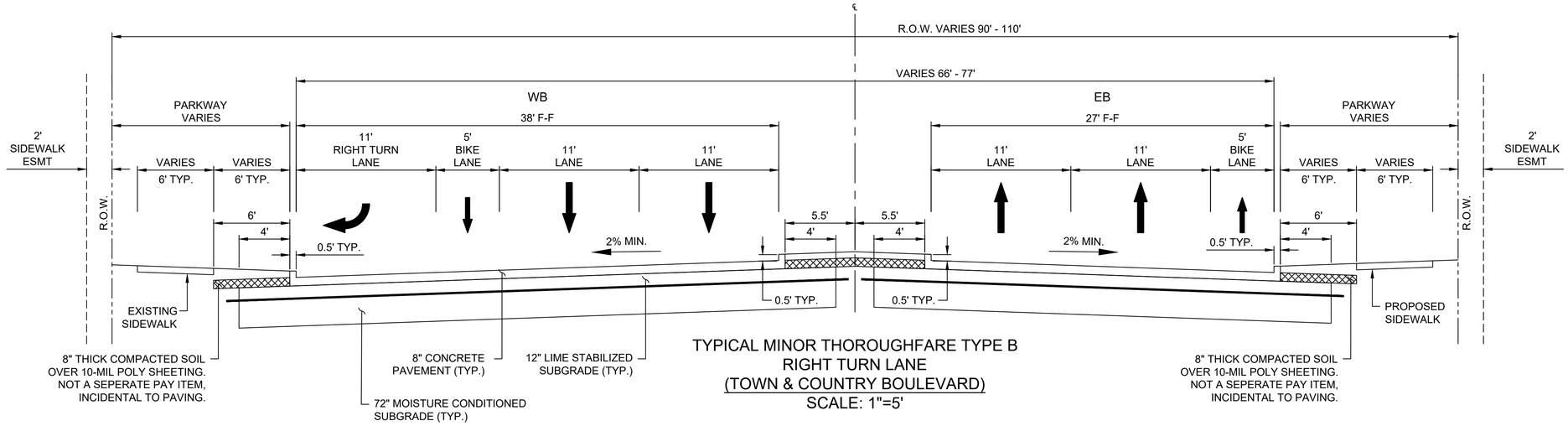
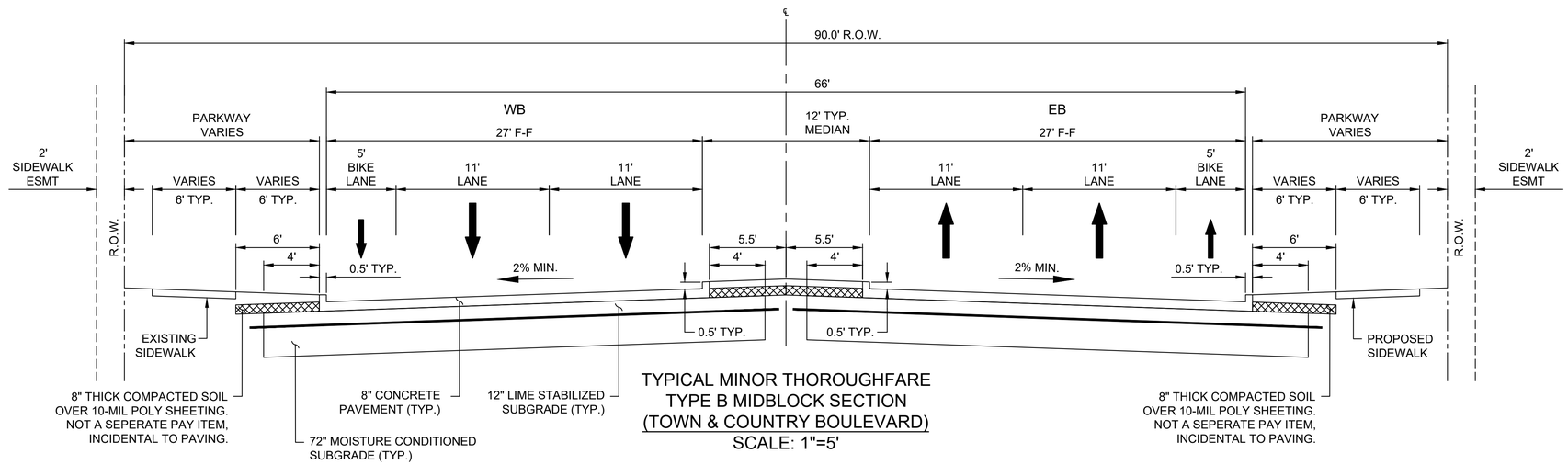
13

Dwg Info: F:\Projects\2016\12046 Frisco - Town & Country\CAD\Typical Sections.dwg - Plotted: 1/24/2020



TYPICAL MINOR THOROUGHFARE TYPE B
RIGHT TURN LANE
(TOWN & COUNTRY BOULEVARD)
SCALE: 1"=5'



TYPICAL MINOR THOROUGHFARE
TYPE B MIDBLOCK SECTION
(TOWN & COUNTRY BOULEVARD)
SCALE: 1"=5'

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)

PROPOSED TYPICAL SECTIONS

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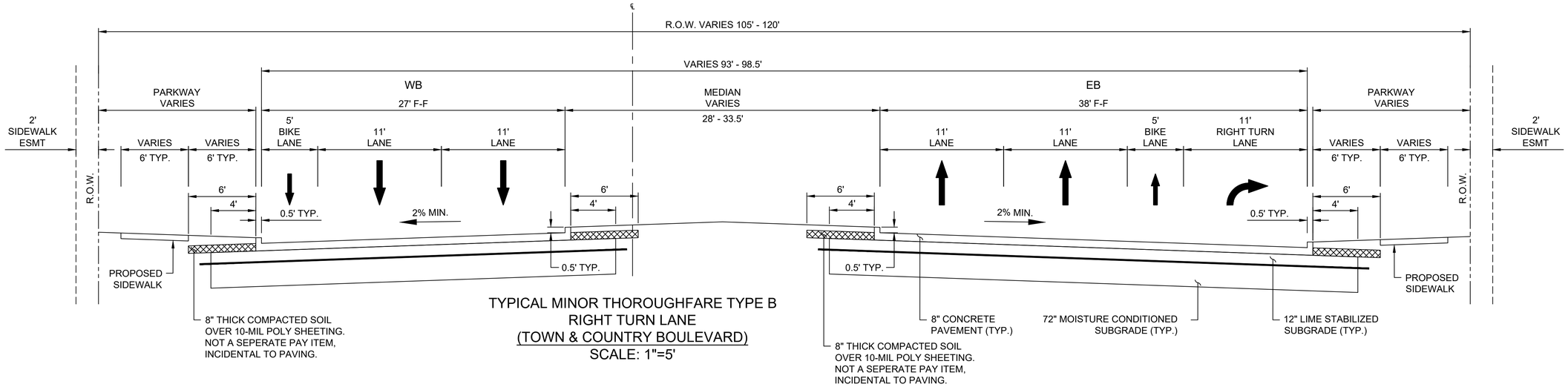
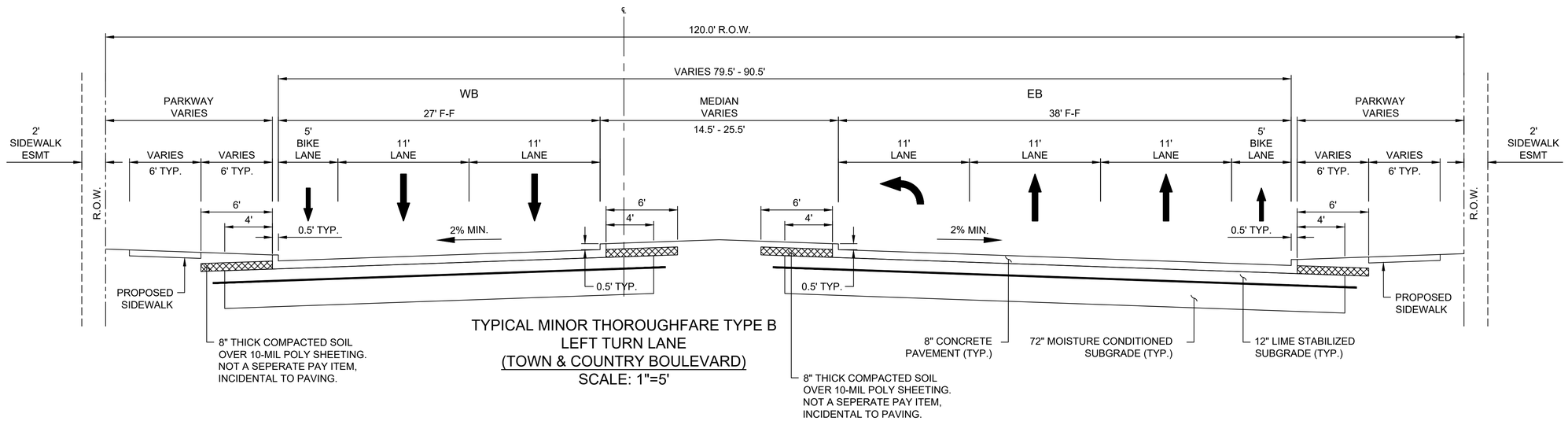
Dwg Info: F:\Projects\2016\12046 Frisco - Town & Country\CAD\Typical Sections.dwg - Plotted: 1/24/2020



TYPICAL MINOR THOROUGHFARE TYPE B
RIGHT TURN LANE
(TOWN & COUNTRY BOULEVARD)
SCALE: 1"=5'



TYPICAL MINOR THOROUGHFARE TYPE B
LEFT TURN LANE
(TOWN & COUNTRY BOULEVARD)
SCALE: 1"=5'

NO.	DATE	COMMENT

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)

PROPOSED TYPICAL SECTIONS

FRISCO

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DATE: JAN 2020	JOB NUMBER: 1612-046-01

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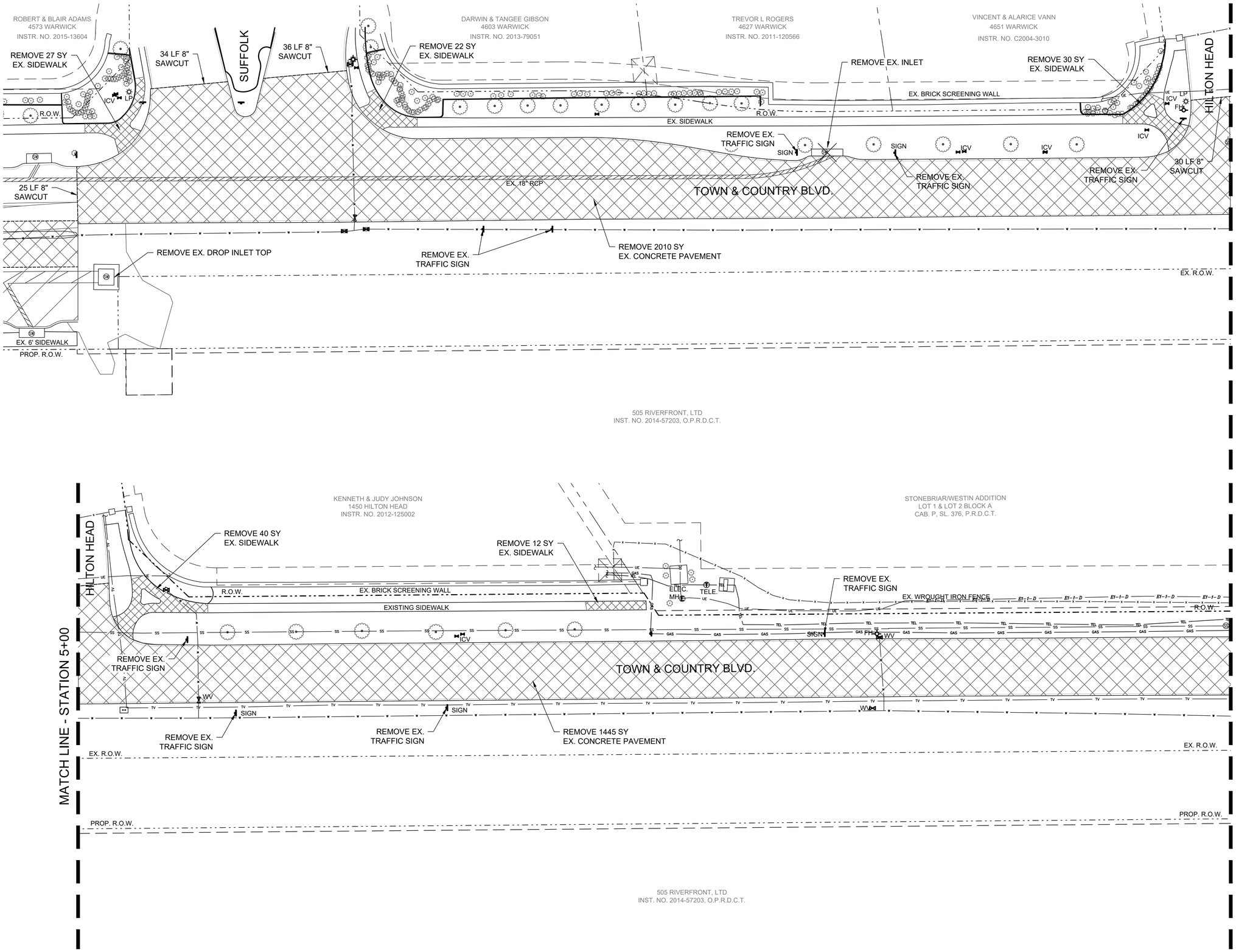
15

Dwg Info: F:\Projects\2016\12046 Frisco - Town & Country\CAD\Typical Sections.dwg - Plotted: 1/24/2020



20 10 0 20 40

SCALE : 1" = 20'

GENERAL NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR VERIFYING LOCATIONS OF ALL ADJACENT AND/OR CONFLICTING UTILITIES PRIOR TO CONSTRUCTION IN ORDER THAT ADJUSTMENTS CAN BE MADE TO PROVIDE ADEQUATE CLEARANCES IF REQUIRED. CONTRACTOR SHALL VERIFY THE DEPTH OF ALL UTILITIES PRIOR TO COMMENCING CONSTRUCTION.
2. THE CONTRACTOR SHALL PRESERVE AND PROTECT ALL UTILITIES AT ALL TIMES DURING CONSTRUCTION. ANY DAMAGE TO UTILITIES RESULTING FROM THE CONTRACTORS OPERATIONS SHALL BE RESTORED AT HIS EXPENSE.
3. THE ENGINEER AND OWNER SHALL BE NOTIFIED WHEN PROPOSED FACILITY GRADE CONFLICTS WITH EXISTING UTILITIES.
4. THE CONTRACTOR SHALL ADJUST VALVE STACKS AND MANHOLES TO FINISHED GRADE.

LEGEND

- EX. CONCRETE TO BE REMOVED
- EX. SIDEWALK TO BE REMOVED
- PROP. SAWCUT
- PROP. CENTERLINE
- ROW
- EASEMENT

NO.	DATE	COMMENT
REVISIONS		

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)

REMOVAL PLAN STA 0+00 - 10+00

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TBPLS Firm Registration No. 100467
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Frisco, Texas 75034
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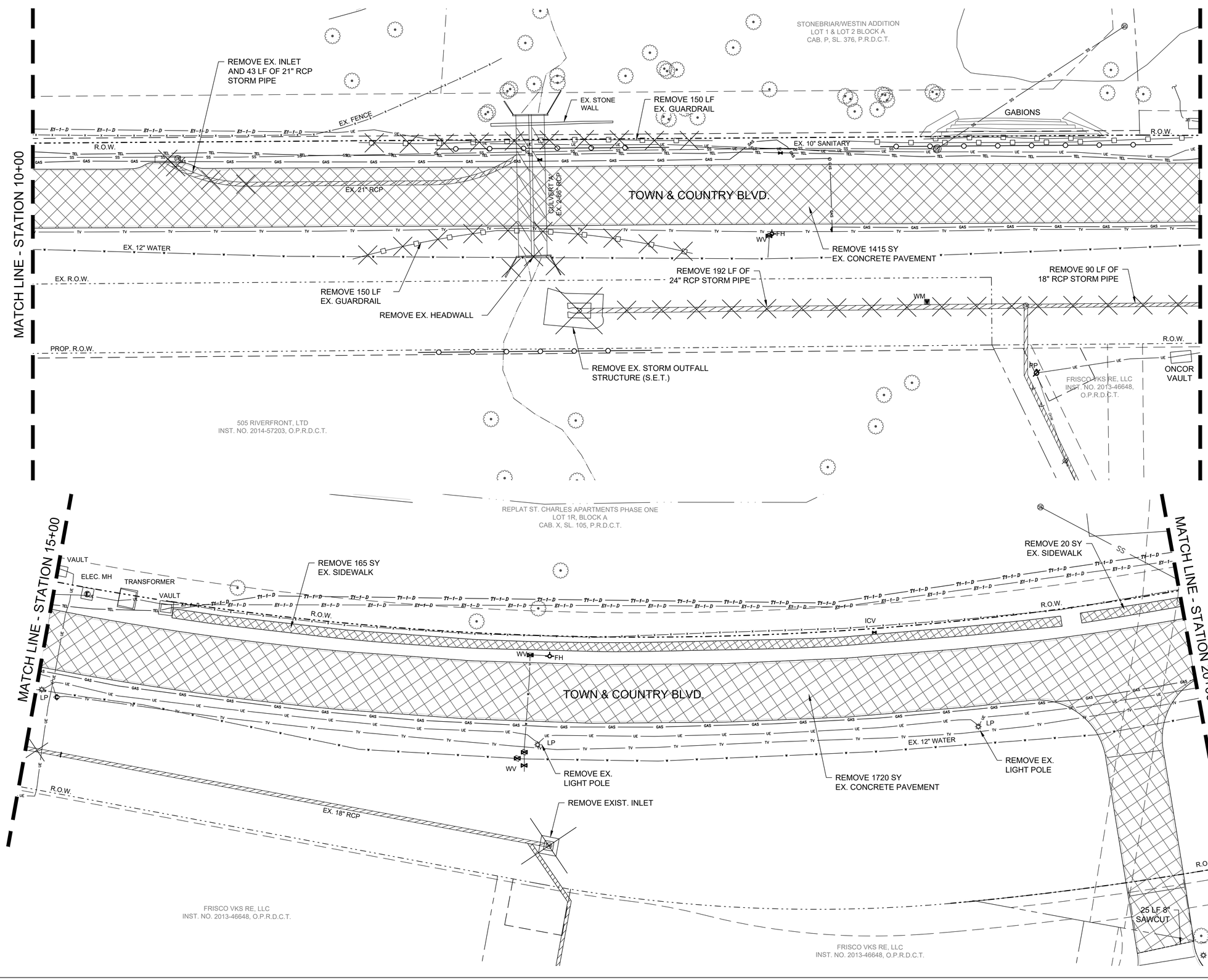
DATE: JAN 2020	JOB NUMBER: 1612-046-01

SHEET 16

Dwg Info: F:\Projects\2016\12046 Frisco - Town & Country\CAD\Removal Plan.dwg - Plotted: 1/24/2020



SCALE : 1" = 20'

GENERAL NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR VERIFYING LOCATIONS OF ALL ADJACENT AND/OR CONFLICTING UTILITIES PRIOR TO CONSTRUCTION IN ORDER THAT ADJUSTMENTS CAN BE MADE TO PROVIDE ADEQUATE CLEARANCES IF REQUIRED. CONTRACTOR SHALL VERIFY THE DEPTH OF ALL UTILITIES PRIOR TO COMMENCING CONSTRUCTION.
2. THE CONTRACTOR SHALL PRESERVE AND PROTECT ALL UTILITIES AT ALL TIMES DURING CONSTRUCTION. ANY DAMAGE TO UTILITIES RESULTING FROM THE CONTRACTORS OPERATIONS SHALL BE RESTORED AT HIS EXPENSE.
3. THE ENGINEER AND OWNER SHALL BE NOTIFIED WHEN PROPOSED FACILITY GRADE CONFLICTS WITH EXISTING UTILITIES.
4. THE CONTRACTOR SHALL ADJUST VALVE STACKS AND MANHOLES TO FINISHED GRADE.

LEGEND

- EX. CONCRETE TO BE REMOVED
- EX. SIDEWALK TO BE REMOVED
- PROP. SAWCUT
- PROP. CENTERLINE
- ROW
- EASEMENT

NO.	DATE	COMMENT

REVISIONS

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PRELIMINARY
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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)

REMOVAL PLAN STA 10+00 - 20+00

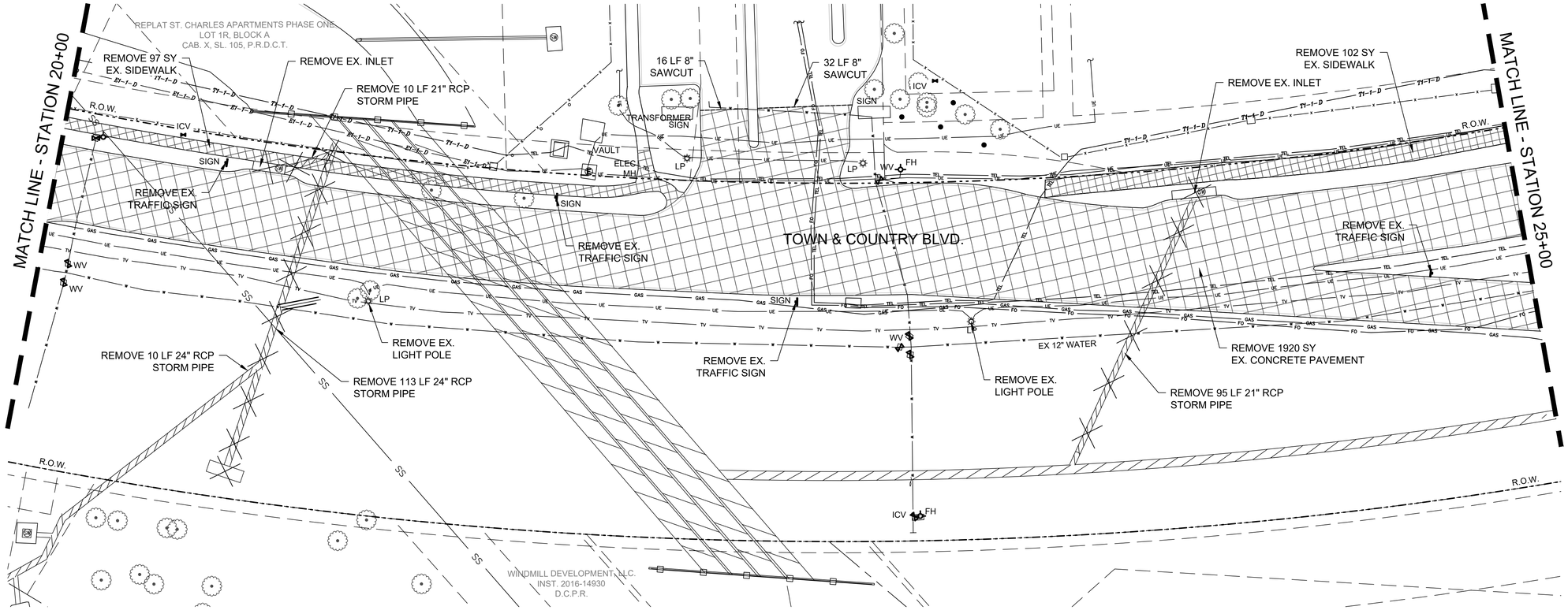
FRISCO

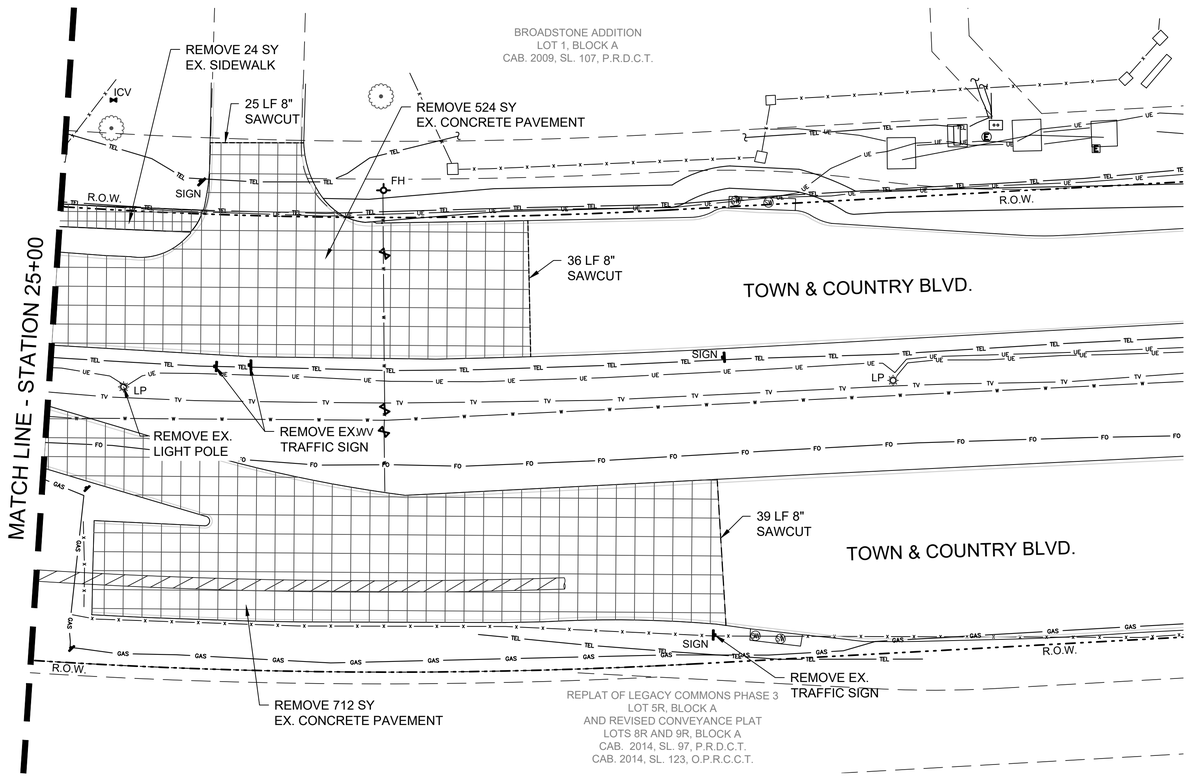
CobbFendley
TBPE Firm Registration No. 274
TBPLS Firm Registration No. 100467
2801 Network Boulevard, Suite 800
Frisco, Texas 75034
972.335.3214 | fax 972.335.3202 | www.cobbfendley.com

DESIGN BY: MEA	DRAWN BY: MEA
DATE: JAN 2020	JOB NUMBER: 1612-048-01

SHEET 17

Dwg Info: F:\Projects\2016\12046.Frisco - Town & Country\CAD\Removal Plan.dwg - Plotted: 1/24/2020





20 10 0 20 40

SCALE : 1" = 20'

GENERAL NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR VERIFYING LOCATIONS OF ALL ADJACENT AND/OR CONFLICTING UTILITIES PRIOR TO CONSTRUCTION IN ORDER THAT ADJUSTMENTS CAN BE MADE TO PROVIDE ADEQUATE CLEARANCES IF REQUIRED. CONTRACTOR SHALL VERIFY THE DEPTH OF ALL UTILITIES PRIOR TO COMMENCING CONSTRUCTION.
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LEGEND

- EX. CONCRETE TO BE REMOVED
- EX. SIDEWALK TO BE REMOVED
- PROP. SAWCUT
- PROP. CENTERLINE
- ROW
- EASEMENT

NO.	DATE	COMMENT

REVISIONS

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)

REMOVAL PLAN STA 20+00 - END

FRISCO

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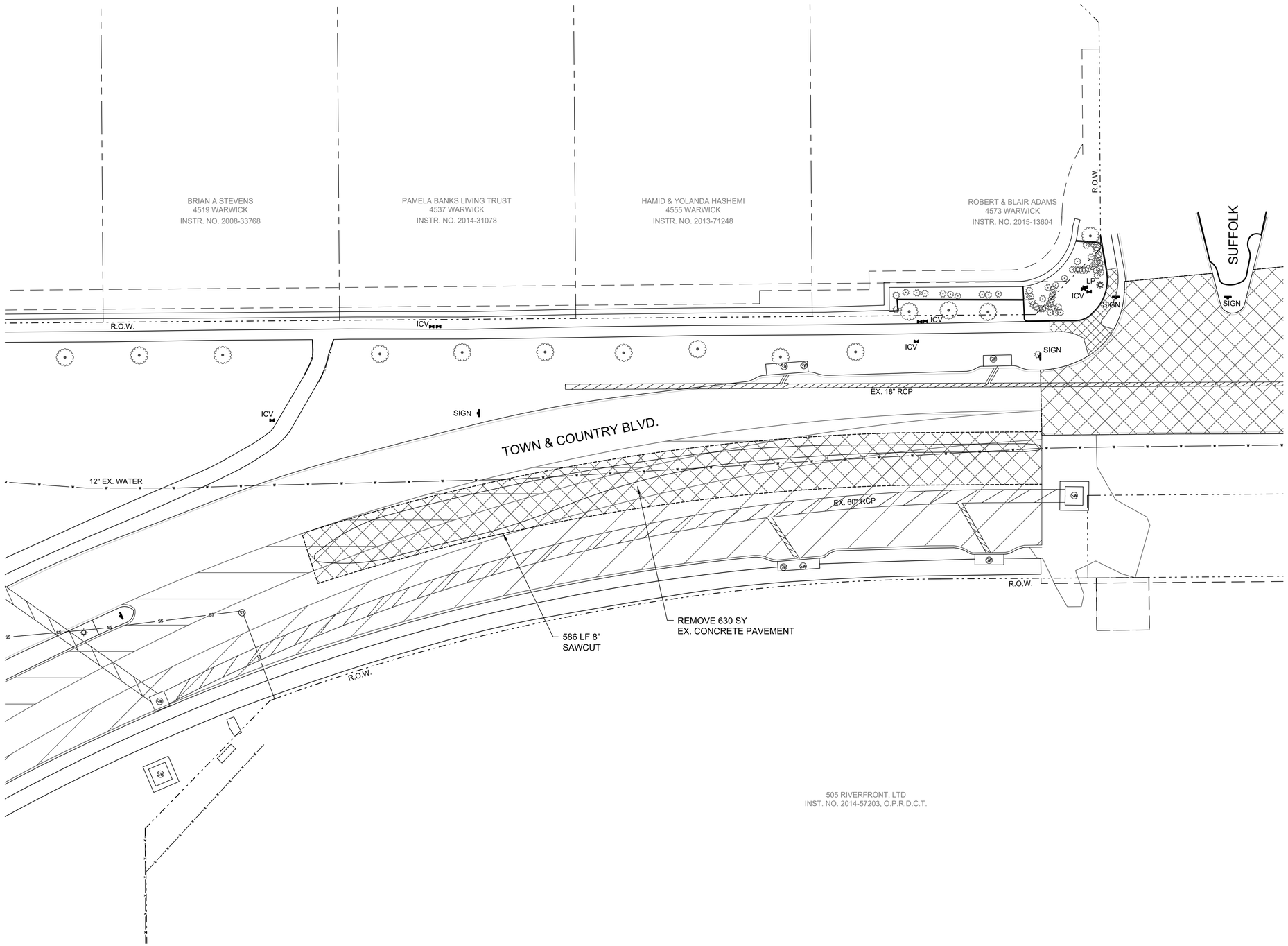
TBPE Firm Registration No. 274
TBPLS Firm Registration No. 100467
2801 Network Boulevard, Suite 800
Frisco, Texas 75034
972.335.3214 | fax 972.335.3202 | www.cobbfendley.com

DESIGN BY: MEA	DRAWN BY: MEA
DATE: JAN 2020	JOB NUMBER: 1612-046-01

SHEET 18

Dwg Info: F:\Projects\2016\12046 Frisco - Town & Country\CAD\Removal Plan.dwg - Plotted: 1/24/2020



20 10 0 20 40

SCALE : 1" = 20'

GENERAL NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR VERIFYING LOCATIONS OF ALL ADJACENT AND/OR CONFLICTING UTILITIES PRIOR TO CONSTRUCTION IN ORDER THAT ADJUSTMENTS CAN BE MADE TO PROVIDE ADEQUATE CLEARANCES IF REQUIRED. CONTRACTOR SHALL VERIFY THE DEPTH OF ALL UTILITIES PRIOR TO COMMENCING CONSTRUCTION.
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LEGEND

- EX. CONCRETE TO BE REMOVED
- EX. SIDEWALK TO BE REMOVED
- PROP. SAWCUT
- PROP. CENTERLINE
- ROW
- EASEMENT

NO.	DATE	COMMENT

REVISIONS

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)
REMOVAL PLAN PROPOSED MEDIAN
WEST OF PROJECT AREA

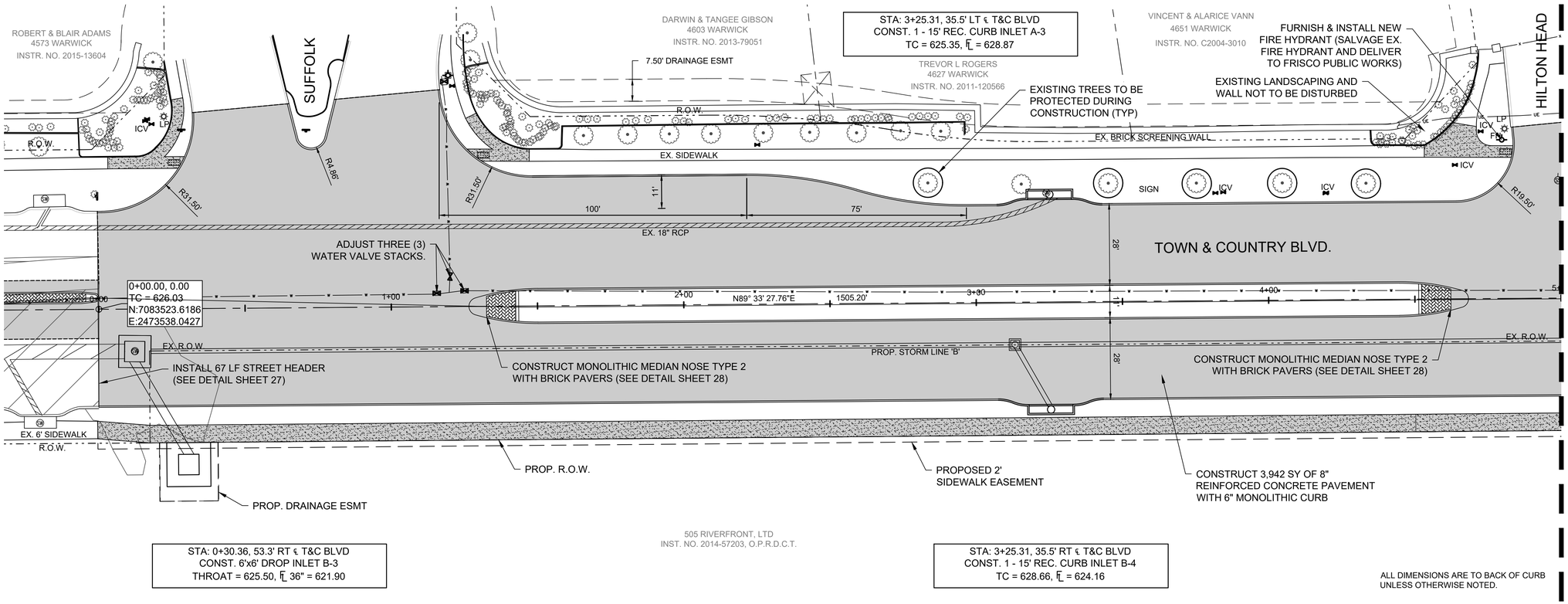
FRISCO

CobbFendley
TBPE Firm Registration No. 274
TBPLS Firm Registration No. 100467
2801 Network Boulevard, Suite 800
Frisco, Texas 75034
972.335.3214 | fax 972.335.3202 | www.cobbfendley.com

DESIGN BY: MEA	DRAWN BY: MEA
DATE: JAN 2020	JOB NUMBER: 1612-046-01

SHEET 19

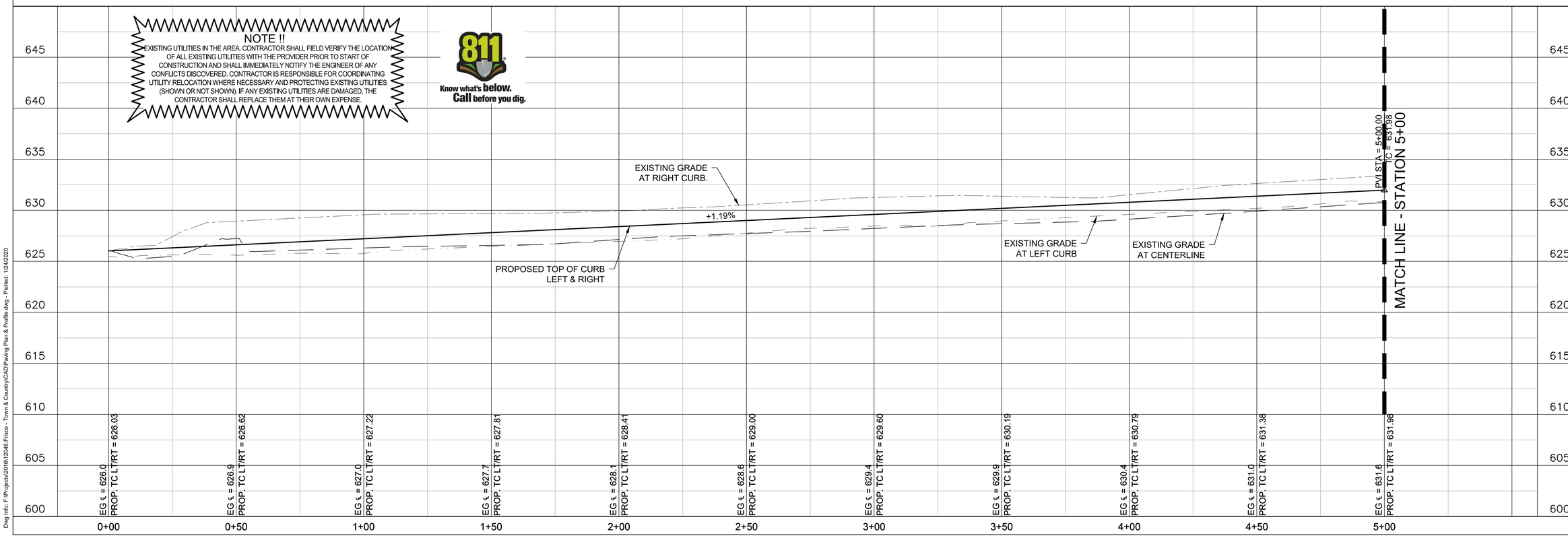
Dwg Info: F:\Projects\2016\12046-Frisco - Town & Country\CAD\Removal Plan.dwg - Plotted: 1/24/2020



NOTE !!

EXISTING UTILITIES IN THE AREA. CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF ALL EXISTING UTILITIES WITH THE PROVIDER PRIOR TO START OF CONSTRUCTION AND SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY CONFLICTS DISCOVERED. CONTRACTOR IS RESPONSIBLE FOR COORDINATING UTILITY RELOCATION WHERE NECESSARY AND PROTECTING EXISTING UTILITIES (SHOWN OR NOT SHOWN). IF ANY EXISTING UTILITIES ARE DAMAGED, THE CONTRACTOR SHALL REPLACE THEM AT THEIR OWN EXPENSE.

811 Know what's below. Call before you dig.



NO.	DATE	COMMENT

REVISIONS

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PRELIMINARY
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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)

PAVING PLAN AND PROFILE STA 0+00 TO 5+00

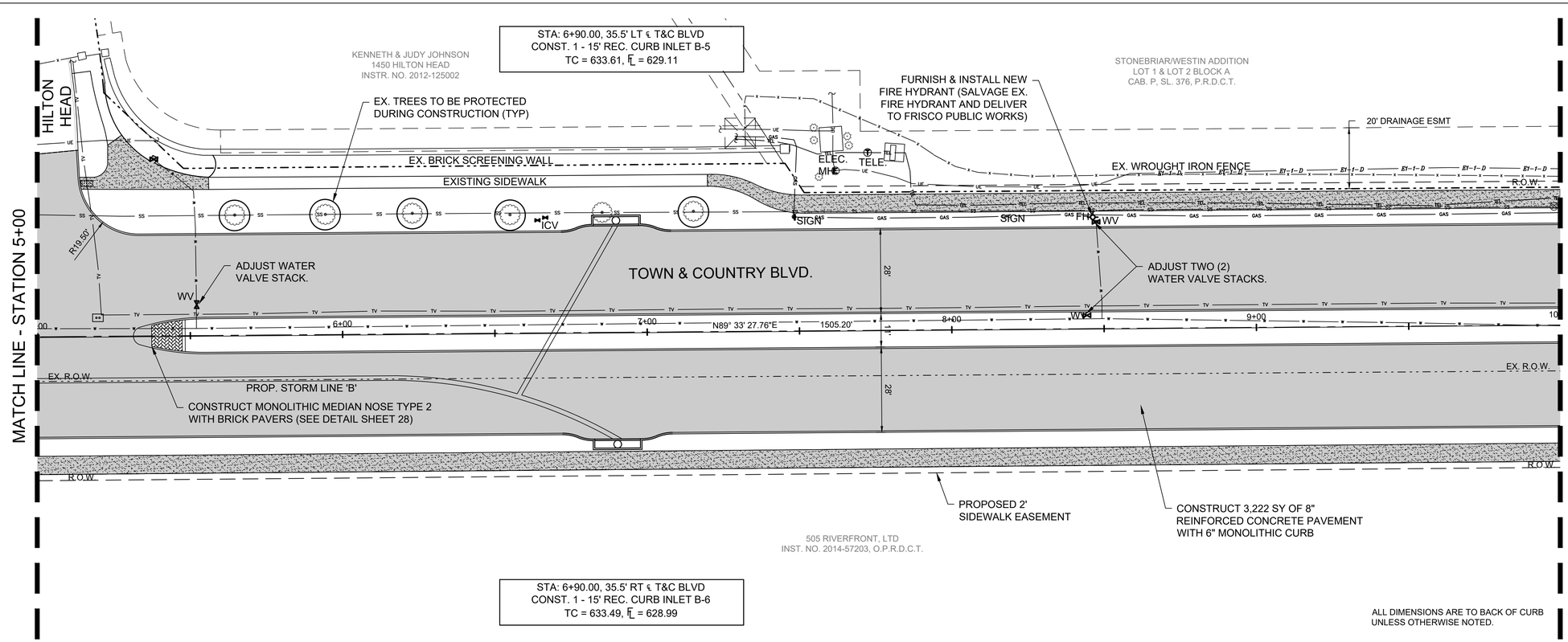
FRISCO

CobbFendley
TBPE Firm Registration No. 274
TBPLS Firm Registration No. 100467
2801 Network Boulevard, Suite 800
Frisco, Texas 75034
972.335.3214 | fax 972.335.3202 | www.cobbfendley.com

DESIGN BY: MEA	DRAWN BY: MEA
DATE: JAN 2020	JOB NUMBER: 1612-048-01

SHEET 20

Dwg Info: F:\Projects\2016\12046.Frisco - Town & Country\CAD\Paving Plan & Profile.dwg - Plotted: 1/24/2020



NOTE !!

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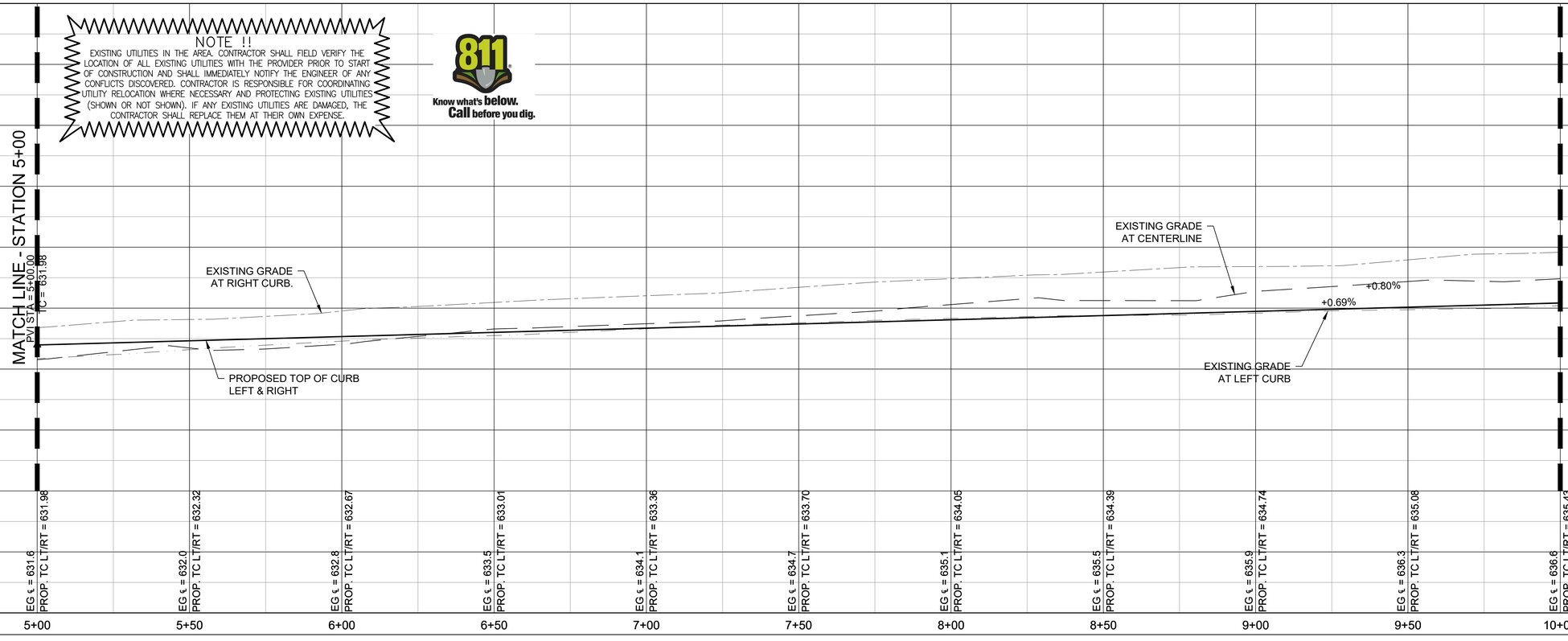
Know what's below. Call before you dig.



NO.	DATE	COMMENT

REVISIONS

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)

PAVING PLAN AND PROFILE STA 5+00 TO 10+00

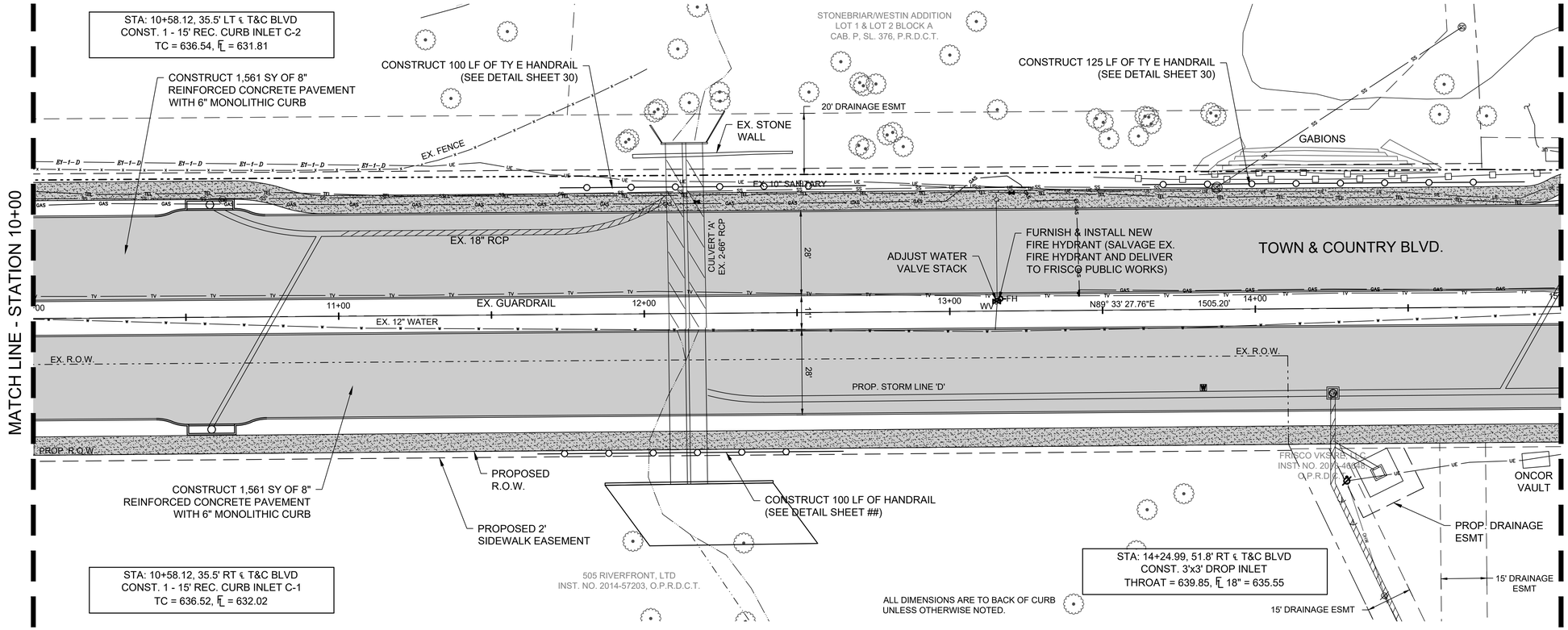
FRISCO

CobbFendley
TBPE Firm Registration No. 274
TBPLS Firm Registration No. 100467
2801 Network Boulevard, Suite 800
Frisco, Texas 75034
972.335.3214 | fax 972.335.3202 | www.cobbfendley.com

DESIGN BY:	DRAWN BY:
MEA	MEA
DATE: JAN. 2020	JOB NUMBER: 1612-046-01

SHEET 21

Dwg Info: F:\Projects\2016\12046.Frisco - Town & Country\CAD\Paving Plan & Profile.dwg - Plotted: 1/24/2020



NOTE !!

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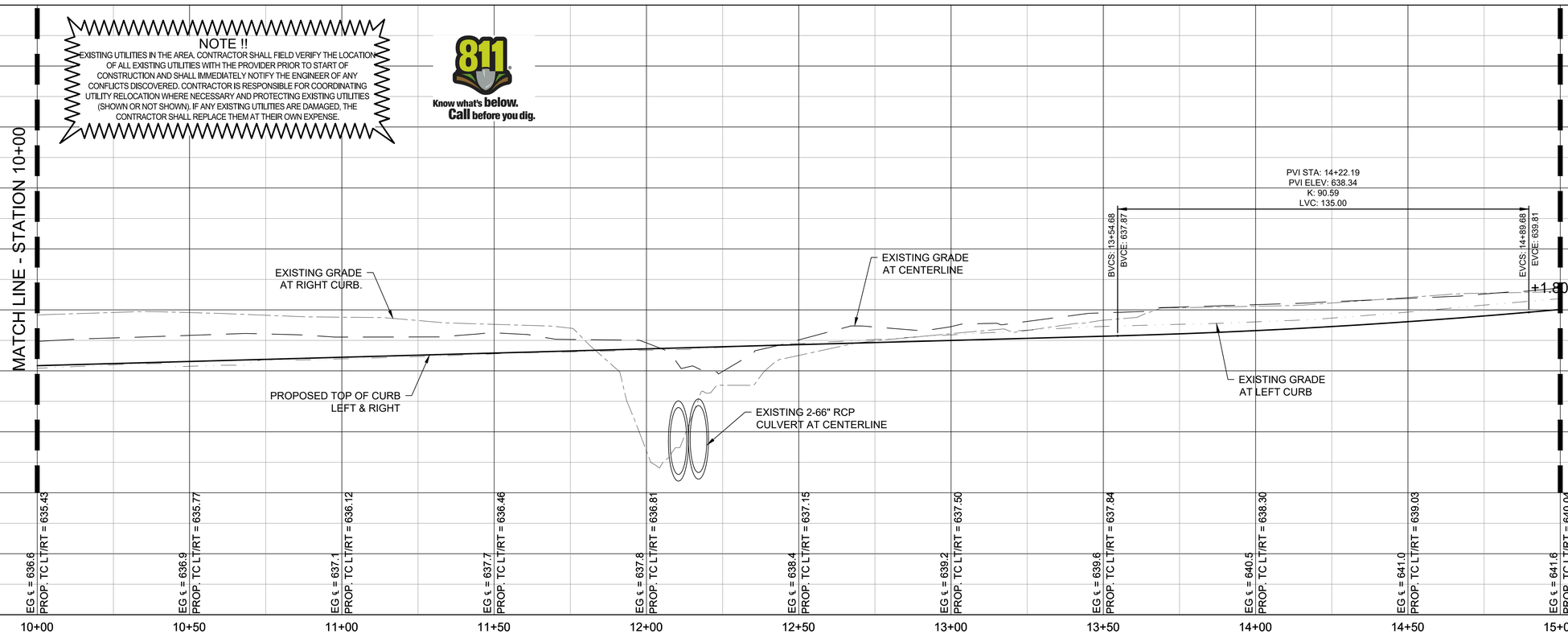
811 Know what's below. Call before you dig.



NO.	DATE	COMMENT

REVISIONS

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)
PAVING PLAN AND PROFILE STA 10+00 TO 15+00

FRISCO

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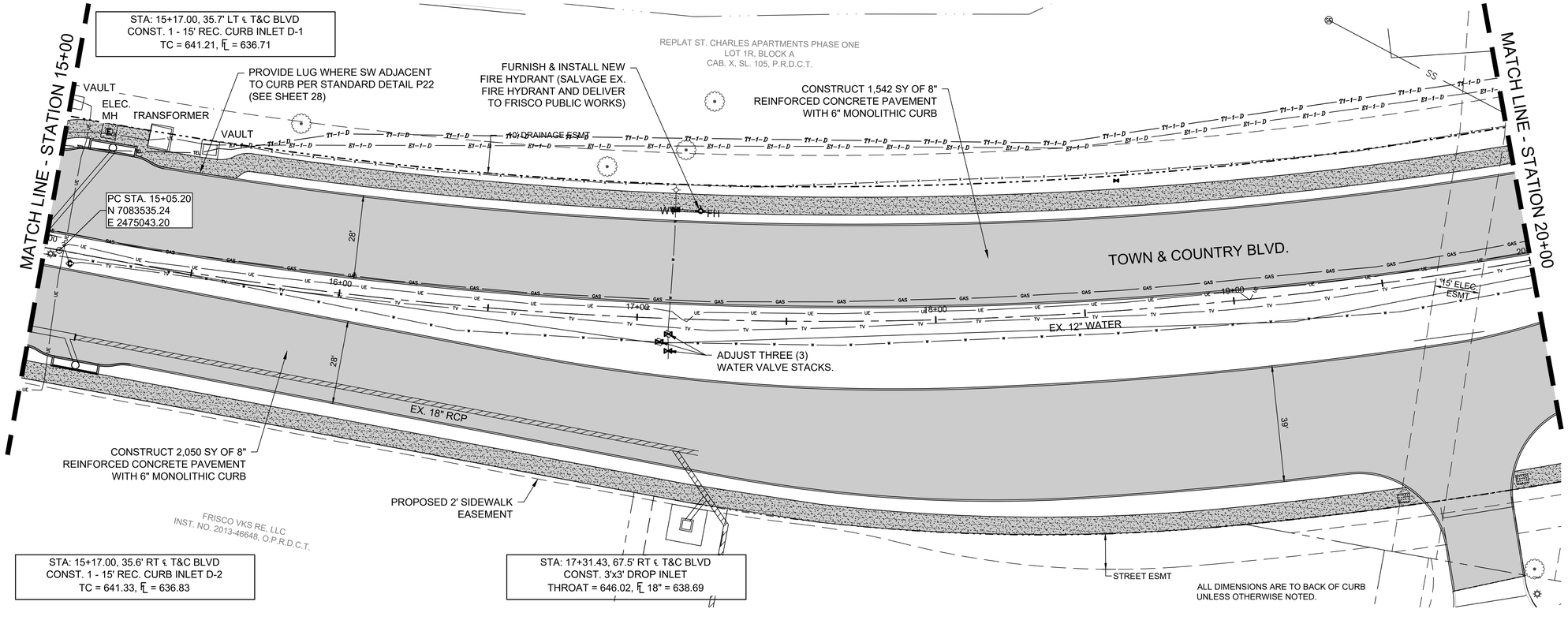
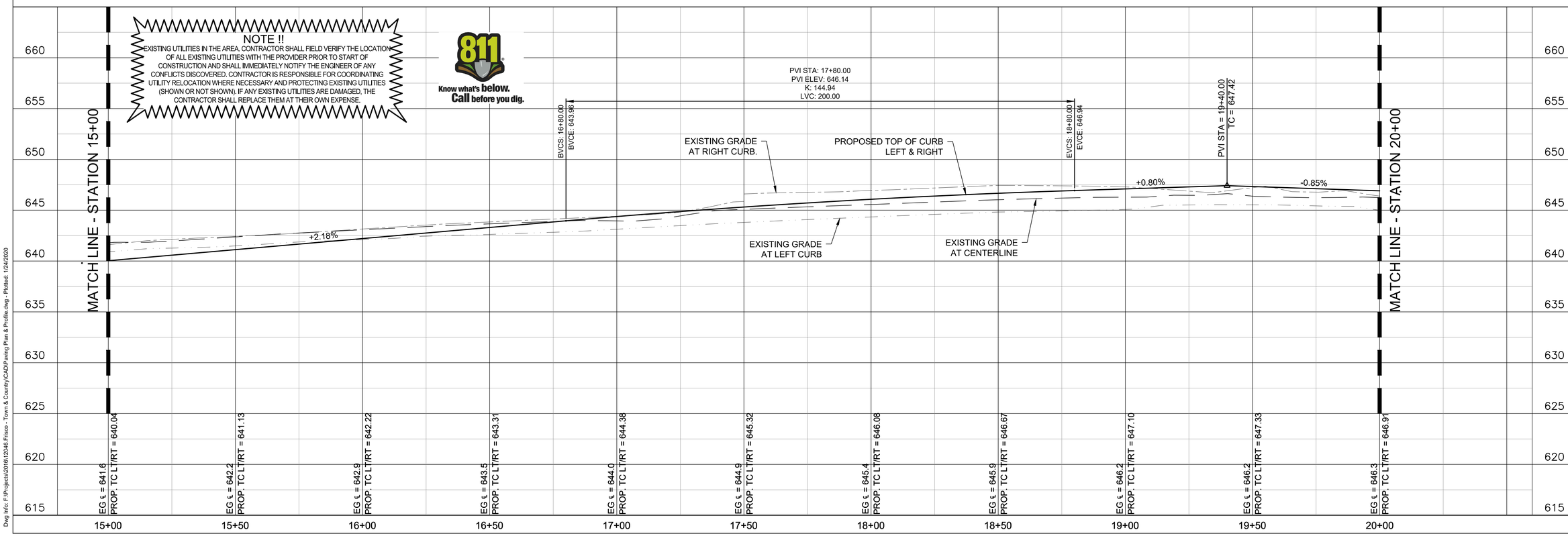
TBPE Firm Registration No. 274
TBPLS Firm Registration No. 100467
2801 Network Boulevard, Suite 800
Frisco, Texas 75034
972.335.3214 | fax 972.335.3202 | www.cobbfendley.com

DESIGN BY: MEA	DRAWN BY: MEA
DATE: JAN 2020	JOB NUMBER: 1612-046-01

SHEET 22

Dwg Info: F:\Projects\2016\12046 Frisco - Town & Country\CAD\Paving Plan & Profile.dwg - Plotted: 1/24/2020





NO.	DATE	COMMENT

REVISIONS

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)
PAVING PLAN AND PROFILE STA 15+00 TO 20+00

FRISCO

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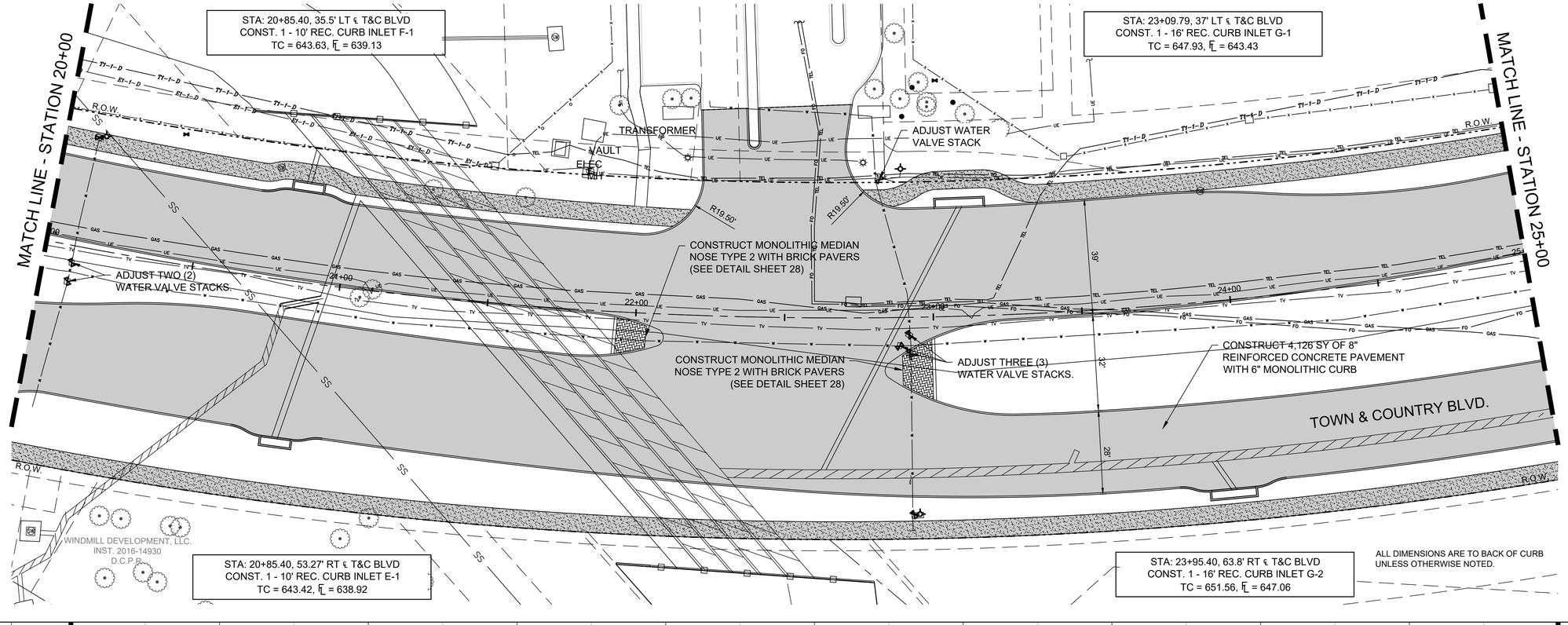
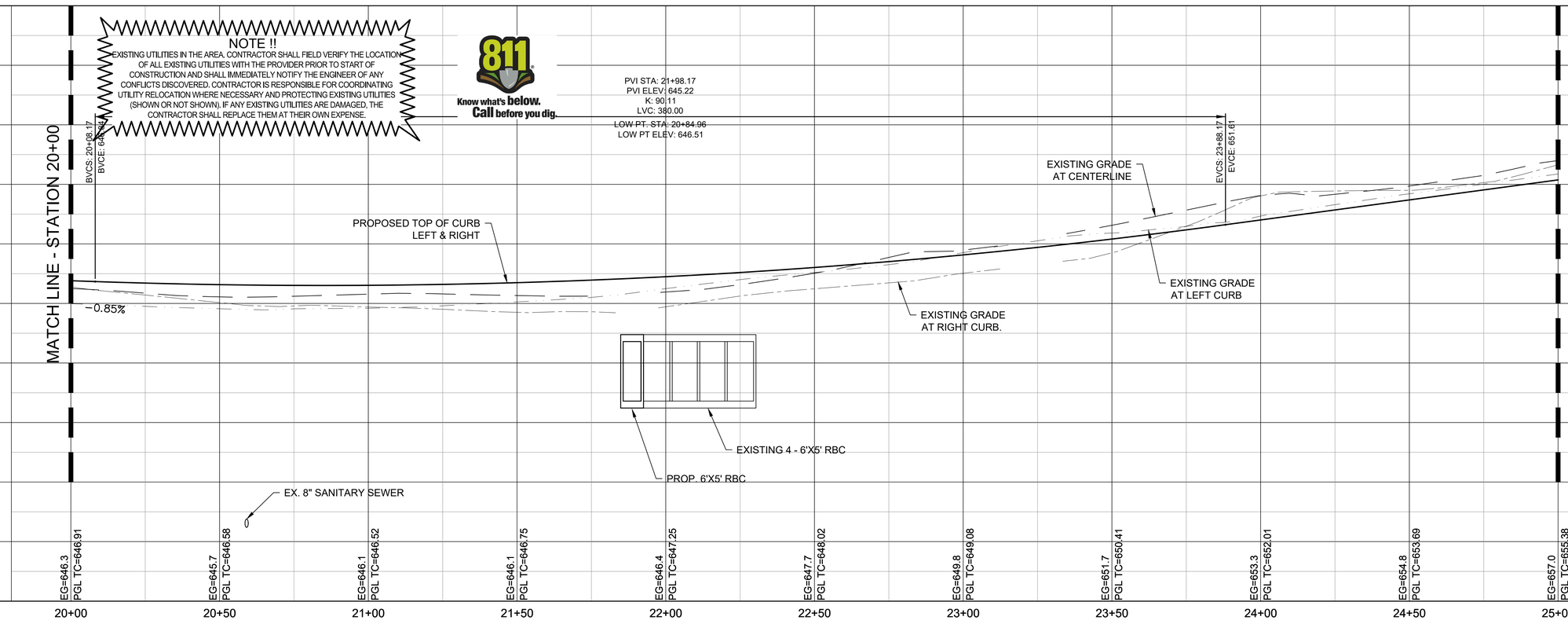
TBPLS Firm Registration No. 100467
2801 Network Boulevard, Suite 800
Frisco, Texas 75034
972.335.3214 | fax 972.335.3202 | www.cobbfendley.com

DESIGN BY: MEA	DRAWN BY: MEA
DATE: JAN 2020	JOB NUMBER: 1612-046-01

SHEET 23

Dwg Info: F:\Projects\2016\12046 Frisco - Town & Country\CAD\Paving Plan & Profile.dwg - Plotted: 1/24/2020





NO.	DATE	COMMENT

REVISIONS

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)
PAVING PLAN AND PROFILE STA 20+00 TO 25+00

FRISCO

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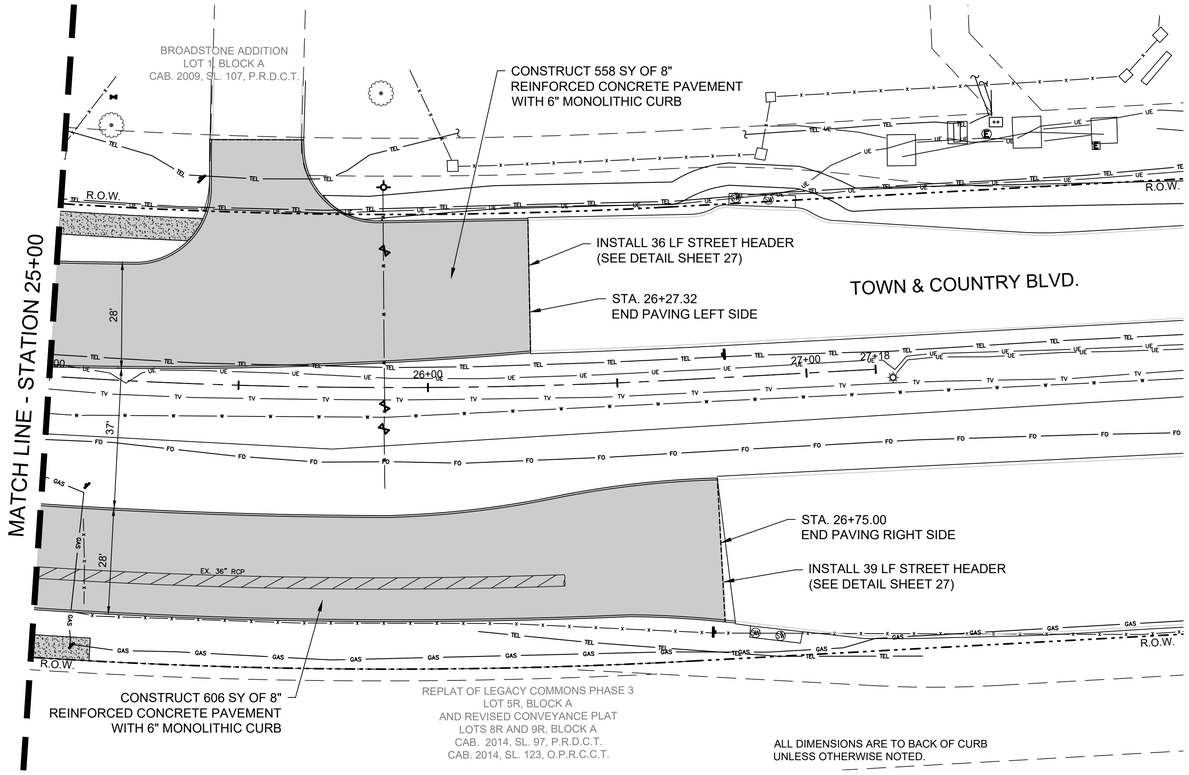
TBPE Firm Registration No. 274
TBPLS Firm Registration No. 10046
2801 Network Boulevard, Suite 800
Frisco, Texas 75034
972.335.3214 | fax 972.335.3202 | www.cobbfendley.com

DESIGN BY: MEA	DRAWN BY: MEA
DATE: JAN 2020	JOB NUMBER: 1612-046-01

SHEET 24

Dwg Info: F:\Projects\2016\12046 Frisco - Town & Country\CAD\Paving Plan & Profile.dwg - Plotted: 1/24/2020



ALL DIMENSIONS ARE TO BACK OF CURB
UNLESS OTHERWISE NOTED.

20 10 0 20 40

SCALE : 1" = 20'
VERT: 1" = 5'

GENERAL NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR VERIFYING LOCATIONS OF ALL ADJACENT AND/OR CONFLICTING UTILITIES PRIOR TO CONSTRUCTION IN ORDER THAT ADJUSTMENTS CAN BE MADE TO PROVIDE ADEQUATE CLEARANCES IF REQUIRED. CONTRACTOR SHALL VERIFY THE DEPTH OF ALL UTILITIES PRIOR TO COMMENCING CONSTRUCTION.
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4. THE CONTRACTOR SHALL ADJUST VALVE STACKS AND MANHOLES TO FINISHED GRADE.

LEGEND

- PROP. CONCRETE
- PROP. SIDEWALK
- PROP. CENTERLINE
- ROW

NOTE !!

EXISTING UTILITIES IN THE AREA. CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF ALL EXISTING UTILITIES WITH THE PROVIDER PRIOR TO START OF CONSTRUCTION AND SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY CONFLICTS DISCOVERED. CONTRACTOR IS RESPONSIBLE FOR COORDINATING UTILITY RELOCATION WHERE NECESSARY AND PROTECTING EXISTING UTILITIES (SHOWN OR NOT SHOWN). IF ANY EXISTING UTILITIES ARE DAMAGED, THE CONTRACTOR SHALL REPLACE THEM AT THEIR OWN EXPENSE.

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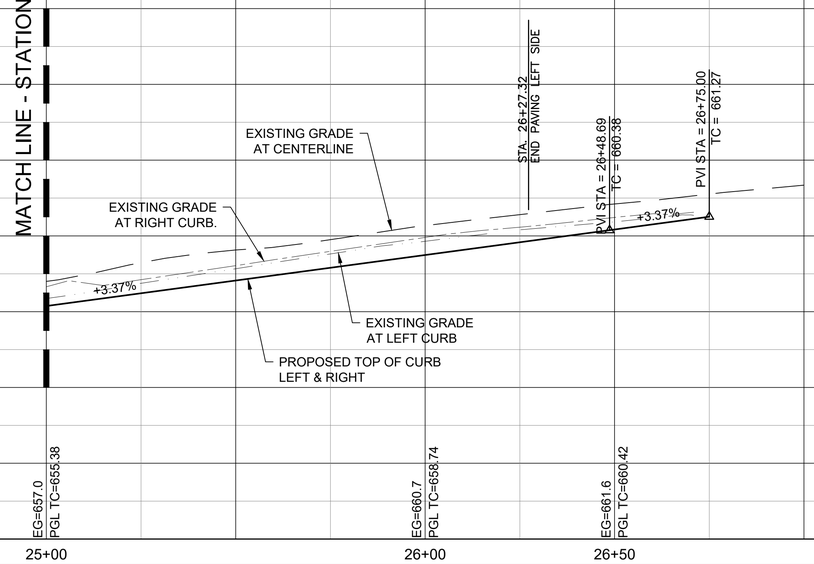

NO.	DATE	COMMENT

REVISIONS

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PRELIMINARY
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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)
PAVING PLAN AND PROFILE STA 25+00
TO END

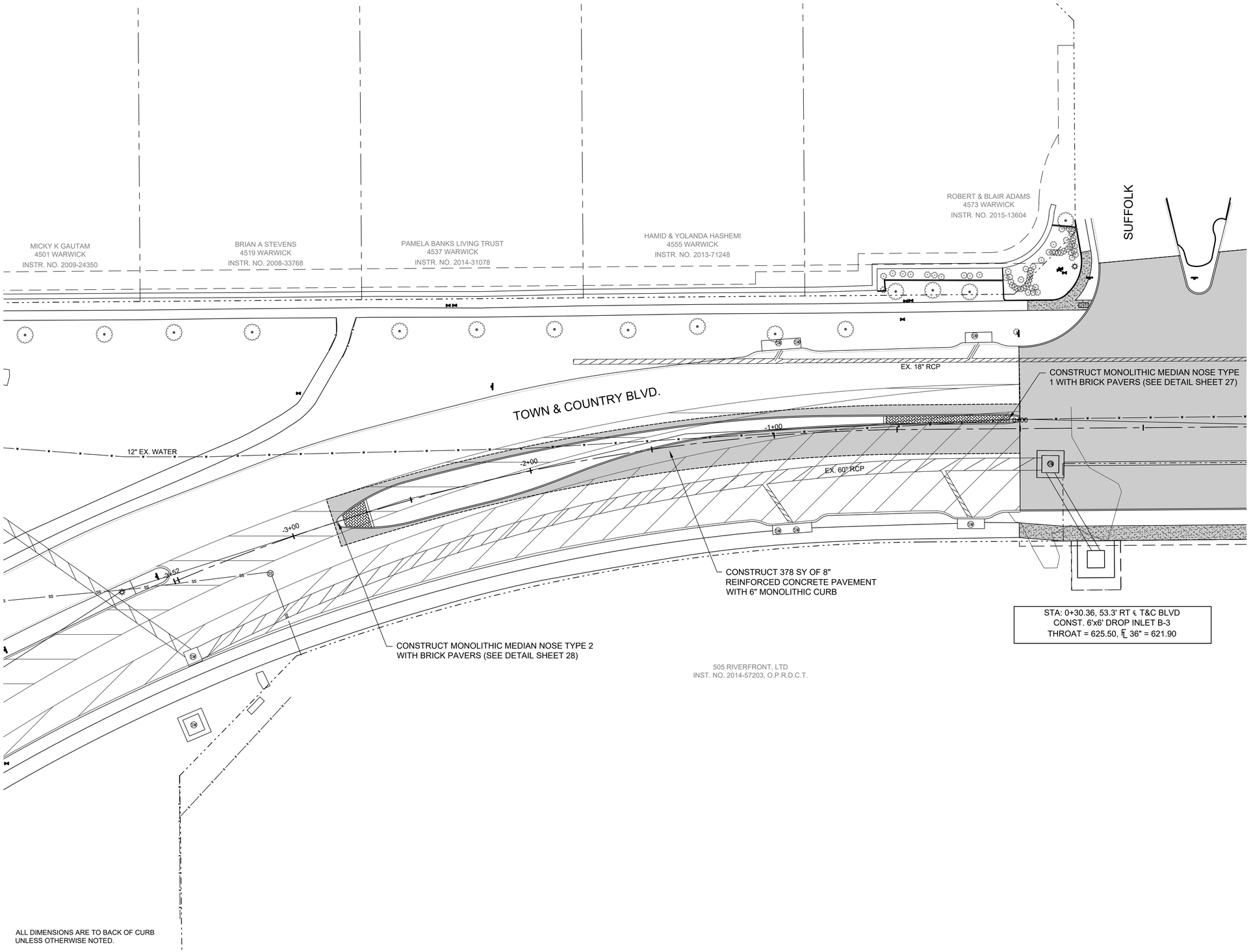
FRISCO

CobbFendley
TBPE Firm Registration No. 274
TBPLS Firm Registration No. 100467
2801 Network Boulevard, Suite 800
Frisco, Texas 75034
972.335.3214 | fax 972.335.3202 | www.cobbfendley.com

DESIGN BY: MEA	DRAWN BY: MEA
DATE: JAN 2020	JOB NUMBER: 1612-046-01

SHEET 25

Dwg Info: F:\Projects\2016\12046 Frisco - Town & Country\CAD\Paving Plan & Profile.dwg - Plotted: 1/24/2020



ALL DIMENSIONS ARE TO BACK OF CURB UNLESS OTHERWISE NOTED.

20 10 0 20 40

SCALE : 1" = 20'
VERT: 1" = 5'

LEGEND

- PROP. CONCRETE
- PROP. SIDEWALK
- PROP. CENTERLINE
- ROW

NO.	DATE	COMMENT

REVISIONS

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PRELIMINARY
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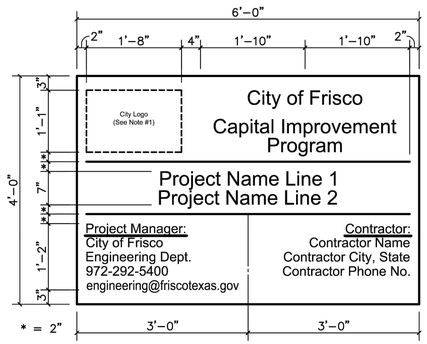
CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)
PAVING - PROPOSED MEDIAN WEST OF PROJECT AREA

CobbFendley
TBPE Firm Registration No. 274
TBPLS Firm Registration No. 100467
2801 Network Boulevard, Suite 800
Frisco, Texas 75034
972.335.3214 | fax 972.335.3202 | www.cobbfendley.com

DESIGN BY: MEA	DRAWN BY: MEA
DATE: JAN 2020	JOB NUMBER: 1612-046-01

SHEET 26

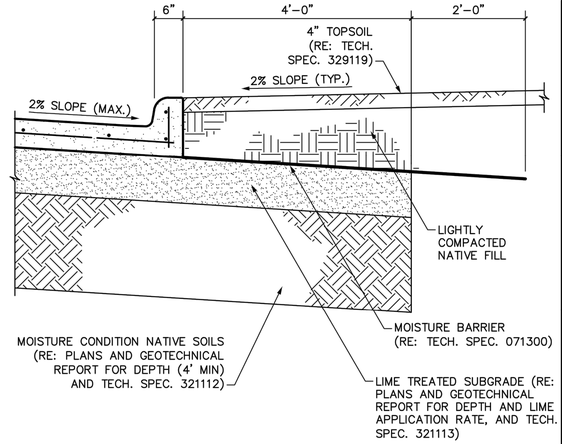
Dwg Info: F:\Projects\2016\12046 Frisco - Town & Country\CAD\Paving Plan & Profile.dwg - Plotted: 1/24/2020



NOTES:

1. LOGO AVAILABLE FROM CITY OF FRISCO BY REQUEST. LOGO COLOR SHALL BE PMS 1795 (0C/94M/100Y/0K). TAG LINE COLOR SHALL BE BLACK.
2. SIGN SHALL HAVE A WHITE BACKGROUND WITH BLACK LETTERING. LETTERING (EXCEPT LOGO) SHALL BE ARIAL FONT.
3. SIGN LAYOUT SHALL BE APPROVED BY CITY PRIOR TO FABRICATION.
4. SIGN MAY BE SKID MOUNTED OR POST MOUNTED. CONTRACTOR IS RESPONSIBLE FOR REMOVING SIGN STRUCTURE AND RESTORING GROUND PRIOR TO FINAL ACCEPTANCE.
5. REFER TO TECHNICAL SPECIFICATION 015813.

FRISCO PROGRESS IN MOTION. | STANDARD CONSTRUCTION DETAIL **PROJECT SIGN** | SCALE: 3/4"=1'–0" | REVISED: MAR 2012 | G01

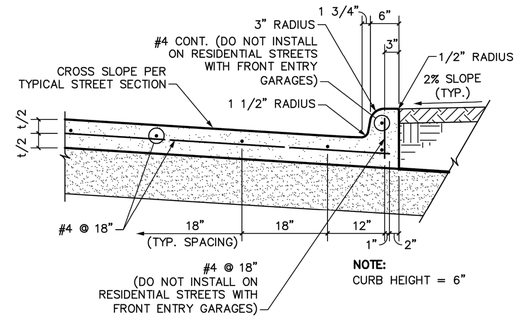


	ROW WIDTH	PAVEMENT WIDTH (FACE TO FACE)
TYPE A	120'	DIVIDED–36' EACH WAY
TYPE B	90'	DIVIDED–24' EACH WAY
TYPE C	60'	36'
TYPE D	60'	36'
TYPE E	50'	26'
TYPE F	60'	30'
TYPE G	60'	26'

NOTES:

1. REFER TO TECHNICAL SPECIFICATION 321313 FOR CONCRETE PAVEMENT.
2. REFER TO DETAIL P03 FOR CONCRETE PAVEMENT REINFORCEMENT.
3. CARE SHALL BE TAKEN NOT TO RIP OR TEAR THE MOISTURE BARRIER DURING PLACEMENT OF THE COVER FILL.

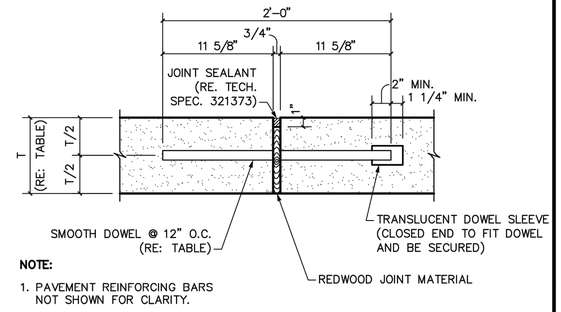
FRISCO PROGRESS IN MOTION. | STANDARD CONSTRUCTION DETAIL **THOROUGHFARE CLASSES "A" THROUGH "G" TYPICAL SECTION (WITH MOISTURE CONDITIONING)** | SCALE: 3/4"=1'–0" | REVISED: FEB 2017 | P01



NOTES:

1. REFER TO TECHNICAL SPECIFICATION 321313 FOR CONCRETE PAVEMENT.
2. ALL REINFORCING STEEL SHALL BE #4 DEFORMED STEEL BARS CONFORMING TO ASTM A615 (GRADE 60) IN ACCORDANCE WITH TECHNICAL SPECIFICATION 032100.
3. INITIAL TRANSVERSE REINFORCING STEEL SPACING SHALL BE 12".
4. INITIAL LONGITUDINAL REINFORCING STEEL SPACING SHALL BE 12" AS SHOWN ABOVE.

FRISCO PROGRESS IN MOTION. | STANDARD CONSTRUCTION DETAIL **TYPICAL PAVEMENT REINFORCEMENT AND CONCRETE CURB** | SCALE: 3/4"=1'–0" | REVISED: FEB 2017 | P03



NOTE:

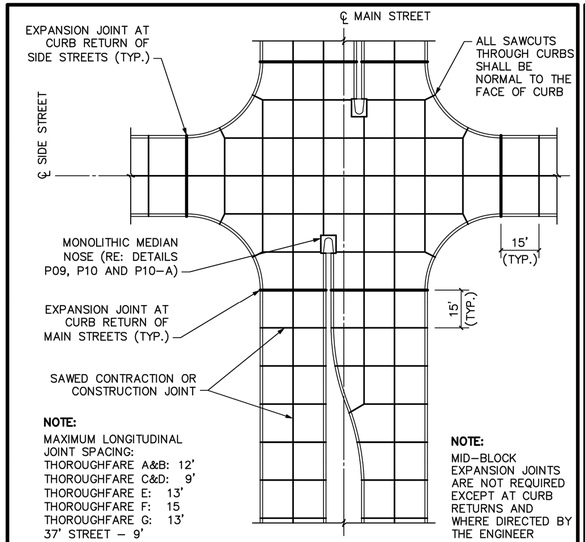
1. PAVEMENT REINFORCING BARS NOT SHOWN FOR CLARITY.

TABLE			
STREET CLASS	T (IN.)	DOWEL SIZE (IN.)	DOWEL LENGTH (L) (IN.)
A	9	1.0	24
B	8	1.0	24
C	7	0.75	24
D	6	0.75	24
E	6	0.75	24
F	6	0.75	24
G	6	0.75	24

NOTES:

1. REFER TO TECHNICAL SPECIFICATION 321313 FOR CONCRETE PAVEMENT.
2. CAPPED AND UNCAPPED ENDS SHALL ALTERNATE.
3. DOWEL SUPPORT MATERIALS AND LAYOUT SHALL BE SUBMITTED TO THE CITY FOR REVIEW AND APPROVAL PRIOR TO ORDERING MATERIALS AND CONSTRUCTION.
4. CAPPED END OF THE DOWEL SHALL BE LUBRICATED.
5. DOWELS MUST BE INSTALLED IN THE PAVEMENT PARALLEL TO THE PAVEMENT SURFACE AND TO THE CENTERLINE.

FRISCO PROGRESS IN MOTION. | STANDARD CONSTRUCTION DETAIL **CONCRETE PAVEMENT EXPANSION JOINT** | SCALE: 1 1/2"=1'–0" | REVISED: FEB 2017 | P07



NOTE:

MAXIMUM LONGITUDINAL JOINT SPACING:
THOROUGHFARE A&B: 12'
THOROUGHFARE C&D: 9'
THOROUGHFARE E: 13'
THOROUGHFARE F: 15
THOROUGHFARE G: 13'
37' STREET – 9'

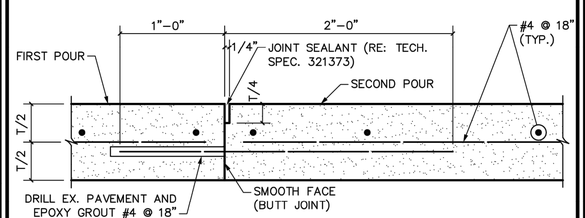
NOTE:

MID–BLOCK EXPANSION JOINTS ARE NOT REQUIRED EXCEPT AT CURB RETURNS AND WHERE DIRECTED BY THE ENGINEER

NOTES:

1. REFER TO TECHNICAL SPECIFICATION 321313 FOR CONCRETE PAVEMENT.
2. ALL PAVEMENT JOINTS ARE EITHER SAWED CONTRACTION OR CONSTRUCTION JOINTS UNLESS NOTED OTHERWISE.
3. MAXIMUM TRANSVERSE JOINT SPACING IS 15'.
4. LONGITUDINAL JOINT SPACING SHALL MATCH LANE LINES UNLESS NOTED OTHERWISE.
5. ALL SAWCUTS SHALL BE 1/8" TO 1/4" WIDE AND ONE–FOURTH THE DEPTH OF THE PAVEMENT THICKNESS.
6. ALL PAVEMENT JOINTS SHALL BE SEALED. JOINT SEALANT SHALL BE PROVIDED IN ACCORDANCE TECHNICAL SPECIFICATION 321373.

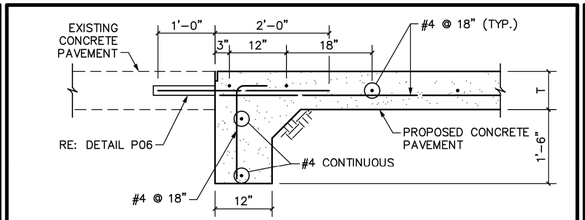
FRISCO PROGRESS IN MOTION. | STANDARD CONSTRUCTION DETAIL **CONCRETE PAVEMENT JOINTING LAYOUT** | SCALE: 1"=30' | REVISED: FEB 2017 | P05



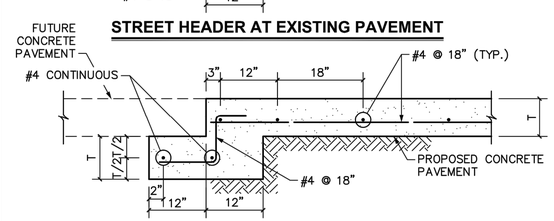
NOTES:

1. REFER TO TECHNICAL SPECIFICATION 321313 FOR CONCRETE PAVEMENT.
2. DOWELS MUST BE INSTALLED IN THE PAVEMENT PARALLEL TO THE PAVEMENT SURFACE.
3. DOWELS IN TRANSVERSE JOINTS MUST BE INSTALLED IN THE PAVEMENT PARALLEL TO THE PAVEMENT CENTERLINE.
4. DOWELS IN LONGITUDINAL JOINTS MUST BE INSTALLED IN THE PAVEMENT NORMAL TO THE PAVEMENT CENTERLINE.

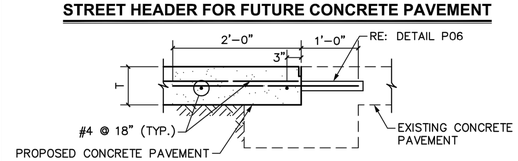
FRISCO PROGRESS IN MOTION. | STANDARD CONSTRUCTION DETAIL **CONCRETE PAVEMENT CONSTRUCTION JOINT** | SCALE: 1 1/2"=1'–0" | REVISED: FEB 2017 | P06



STREET HEADER AT EXISTING PAVEMENT



STREET HEADER FOR FUTURE CONCRETE PAVEMENT

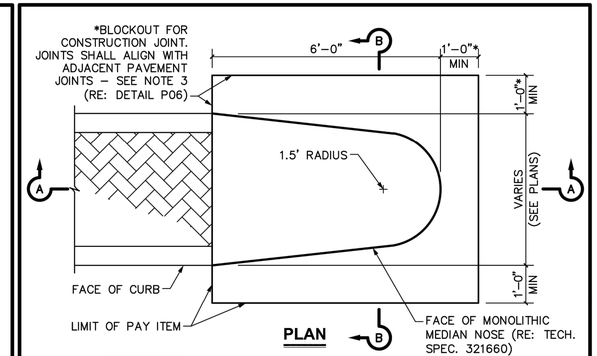


CONCRETE PAVEMENT AT STREET HEADER

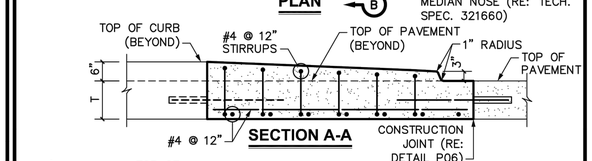
NOTES:

1. REFER TO TECHNICAL SPECIFICATION 321313 FOR CONCRETE PAVEMENT.
2. REFERENCE TYPICAL SECTIONS FOR PROPOSED CONCRETE PAVEMENT THICKNESS AND SUBGRADE TREATMENT.

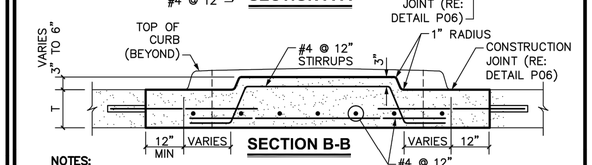
FRISCO PROGRESS IN MOTION. | STANDARD CONSTRUCTION DETAIL **CONCRETE STREET HEADERS** | SCALE: 3/4"=1'–0" | REVISED: FEB 2017 | P08



PLAN



SECTION A-A



SECTION B-B

NOTES:

1. REFER TO TECHNICAL SPECIFICATION 321313 FOR CONCRETE PAVEMENT.
2. PROVIDE TYPE 1 MONOLITHIC MEDIAN NOSE AT ALL MEDIANS 8' WIDE OR LESS.
3. CONSTRUCTION JOINT MAY BE AN EXPANSION JOINT WHEN INSTALLING MONOLITHIC MEDIAN NOSE ADJACENT TO EXISTING PAVEMENT AT DISCRETION OF ENGINEER.

FRISCO PROGRESS IN MOTION. | STANDARD CONSTRUCTION DETAIL **MONOLITHIC MEDIAN NOSE TYPE 1** | SCALE: 1/2"=1'–0" | REVISED: FEB 2017 | P09

NO.	DATE	COMMENT
REVISIONS		

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)

PAVING DETAILS (1 OF 2)

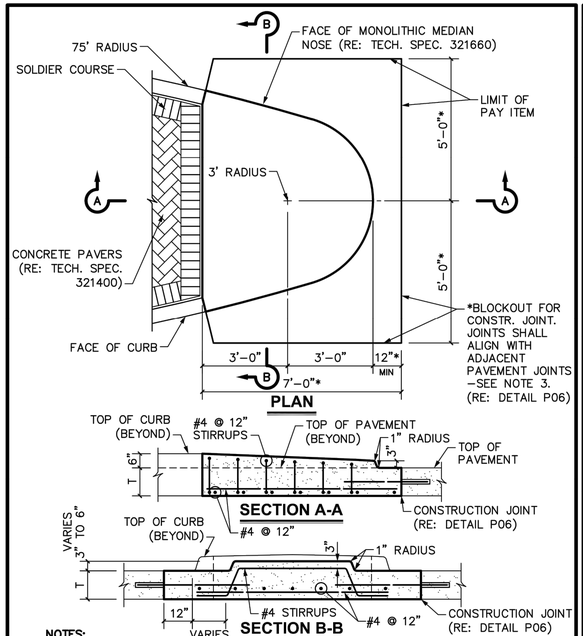
FRISCO

CobbFendley
TBPE Firm Registration No. 274
TBPLS Firm Registration No. 10046?
2801 Network Boulevard, Suite 800
Frisco, Texas 75034
972.335.3214 | fax 972.335.3202 | www.cobbfendley.com

DESIGN BY: MEA	DRAWN BY: MEA
DATE: JAN 2020	JOB NUMBER: 1612-046-01

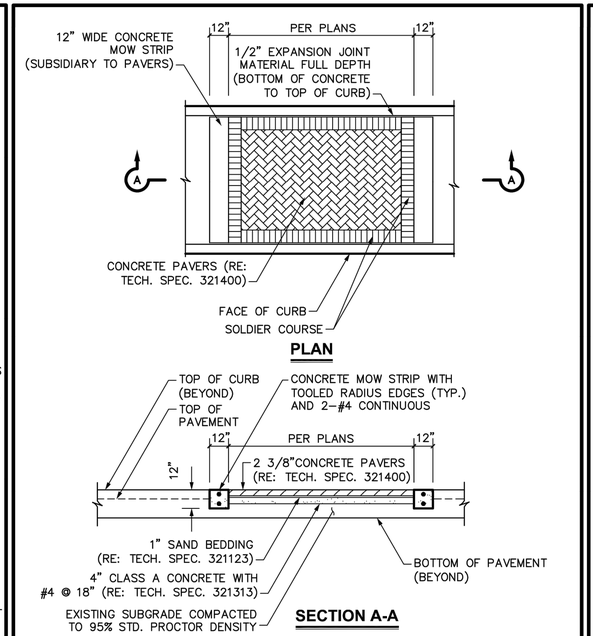
SHEET 27

Dwg Info: F:\Projects\2016\1246.Frisco - Town & Country\CAD\Details - Paving.dwg - Plotted: 1/24/2020



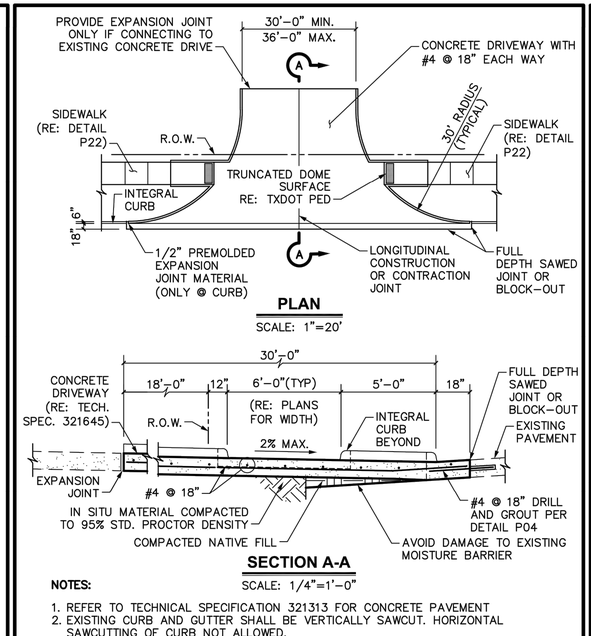
NOTES:
1. REFER TO TECHNICAL SPECIFICATION 321313 FOR CONCRETE PAVEMENT.
2. PROVIDE TYPE 2 MONOLITHIC MEDIAN NOSE AT ALL MEDIANS GREATER THAN 8' WIDE.
3. CONSTRUCTION JOINT MAY BE AN EXPANSION JOINT WHEN INSTALLING MONOLITHIC MEDIAN NOSE ADJACENT TO EXISTING PAVEMENT AT DISCRETION OF ENGINEER.

FRISCO PROGRESS IN MOTION.	STANDARD CONSTRUCTION DETAIL **MONOLITHIC MEDIAN NOSE TYPE 2**	SCALE: 3/8"=1'-0" REVISED: FEB 2017 P10



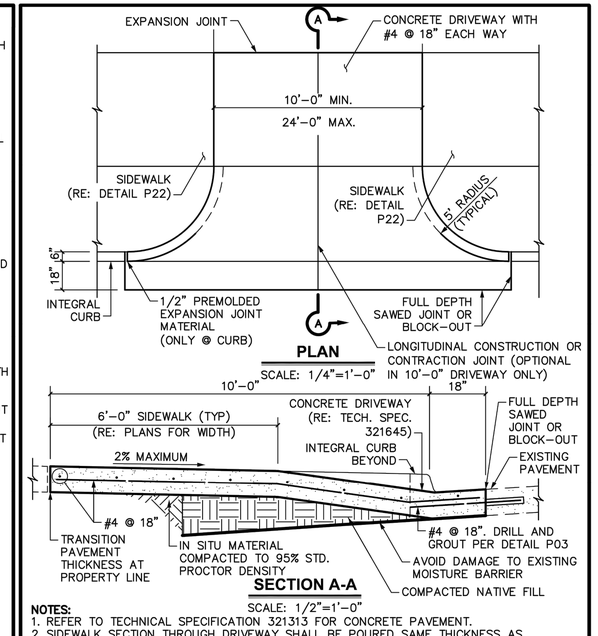
NOTE:
1. REFER TO TECHNICAL SPECIFICATION 321313 FOR CONCRETE PAVEMENT.

FRISCO PROGRESS IN MOTION.	STANDARD CONSTRUCTION DETAIL **MEDIAN PAVERS**	SCALE: 1/4"=1'-0" REVISED: FEB 2017 P11



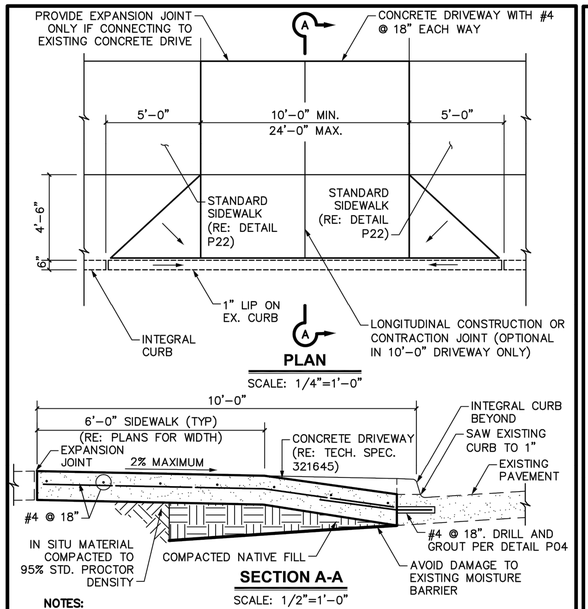
NOTES:
1. REFER TO TECHNICAL SPECIFICATION 321313 FOR CONCRETE PAVEMENT
2. EXISTING CURB AND GUTTER SHALL BE VERTICALLY SAWCUT. HORIZONTAL SAWCUTTING OF CURB NOT ALLOWED.
3. SIDEWALK SECTION THROUGH DRIVEWAY SHALL BE POURED SAME THICKNESS AS DRIVEWAY APPROACH (EXISTING SIDEWALK, IF ANY, SHALL BE REMOVED).
4. DRIVEWAY THICKNESS TO MATCH STREET PAVEMENT THICKNESS (6" MINIMUM).

FRISCO PROGRESS IN MOTION.	STANDARD CONSTRUCTION DETAIL **COMMERCIAL DRIVEWAY APPROACH**	SCALE: AS MARKED REVISED: FEB 2017 P12



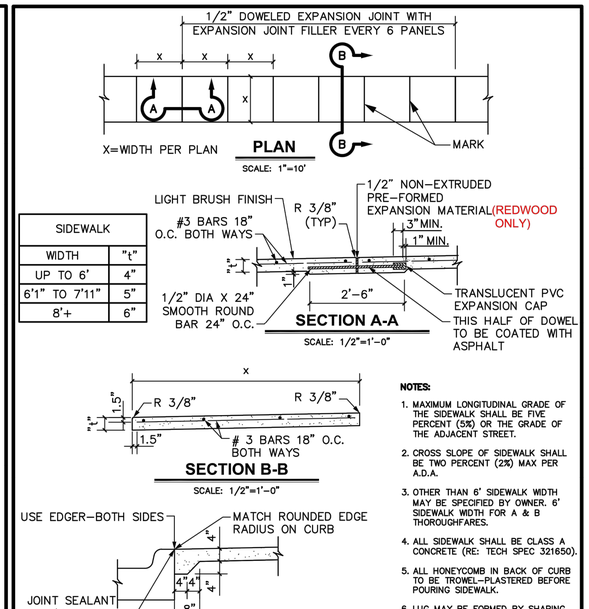
NOTES:
1. REFER TO TECHNICAL SPECIFICATION 321313 FOR CONCRETE PAVEMENT.
2. SIDEWALK SECTION THROUGH DRIVEWAY SHALL BE POURED SAME THICKNESS AS DRIVEWAY APPROACH (EXISTING SIDEWALK, IF ANY, SHALL BE REMOVED).
3. DRIVEWAY THICKNESS TO MATCH STREET PAVEMENT THICKNESS (6" MINIMUM).
4. DRIVEWAYS CONSTRUCTED ON PRIVATE PROPERTY SHALL TAPER AT 1:1 RATIO TO INTERSECT AT PROPERTY LINE NO GREATER THAN 24' WIDTH.

FRISCO PROGRESS IN MOTION.	STANDARD CONSTRUCTION DETAIL **RESIDENTIAL DRIVEWAY APPROACH WITH VERTICAL SAWCUT**	SCALE: AS MARKED REVISED: FEB 2017 P13



NOTES:
1. REFER TO TECHNICAL SPECIFICATION 321313 FOR CONCRETE PAVEMENT.
2. SIDEWALK SECTION THROUGH DRIVEWAY SHALL BE POURED SAME THICKNESS AS DRIVEWAY APPROACH (EXISTING SIDEWALK, IF ANY, SHALL BE REMOVED).
3. DRIVEWAY THICKNESS TO MATCH STREET PAVEMENT THICKNESS (6" MINIMUM).
4. DRIVEWAYS CONSTRUCTED ON PRIVATE PROPERTY SHALL TAPER AT A 1:1 RATIO TO INTERSECT APPROACH AT SIDEWALK NO GREATER THAN 24' WIDTH.

FRISCO PROGRESS IN MOTION.	STANDARD CONSTRUCTION DETAIL **RESIDENTIAL DRIVEWAY APPROACH WITH HORIZONTAL SAWCUT**	SCALE: AS MARKED REVISED: FEB 2017 P14



SIDEWALK	
WIDTH	"t"
UP TO 6'	4"
6'1" TO 7'11"	5"
8'+	6"

NOTES:
1. MAXIMUM LONGITUDINAL GRADE OF THE SIDEWALK SHALL BE FIVE PERCENT (5%) OR THE GRADE OF THE ADJACENT STREET.
2. CROSS SLOPE OF SIDEWALK SHALL BE TWO PERCENT (2%) MAX PER A.D.A.
3. OTHER THAN 6' SIDEWALK WIDTH MAY BE SPECIFIED BY OWNER. 6' SIDEWALK WIDTH FOR A & B THOROUGHFARES.
4. ALL SIDEWALK SHALL BE CLASS A CONCRETE (RE: TECH SPEC 321650).
5. ALL HONEYCOMB IN BACK OF CURB TO BE TROWEL-PLASTERED BEFORE POURING SIDEWALK.
6. LUG MAY BE FORMED BY SHAPING SUBGRADE TO APPROXIMATE DIMENSIONS SHOWN.
7. SUBGRADE SHALL BE COMPACTED TO ATLEAST 90% OF MAXIMUM DENSITY (RE: TECH SPEC 321650).
8. EXPANSION JOINTS SHALL BE SEALED (RE: TECH SPEC 321373)

FRISCO PROGRESS IN MOTION.	STANDARD CONSTRUCTION DETAIL **REINFORCED CONCRETE SIDEWALK**	SCALE: AS MARKED REVISED: SEP 2019 P22

NO.	DATE	COMMENT

REVISIONS

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)
PAVING DETAILS (2 OF 2)

CobbFendley
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DESIGN BY: MEA	DRAWN BY: MEA
DATE: JAN 2020	JOB NUMBER: 1612-046-01

SHEET 28

Dwg Info: F:\Projects\2016\12046 Frisco - Town & Country\CAD\Details - Paving.dwg - Plotted: 1/24/2020

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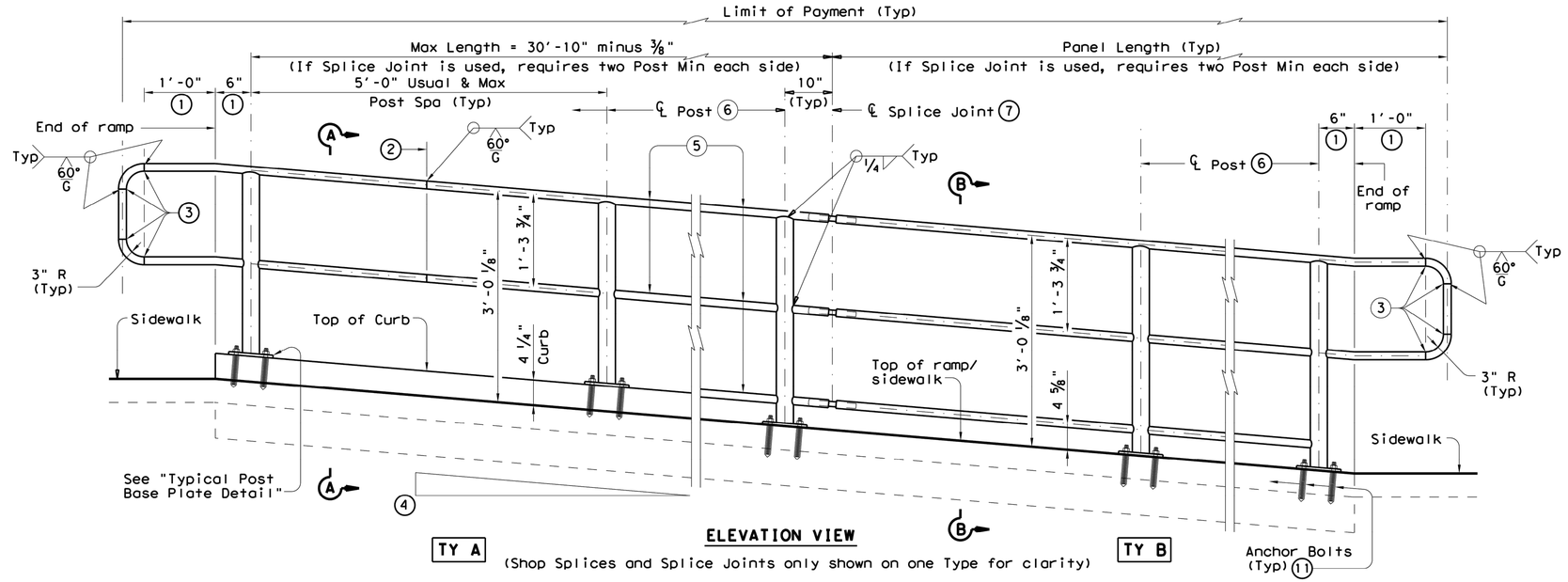
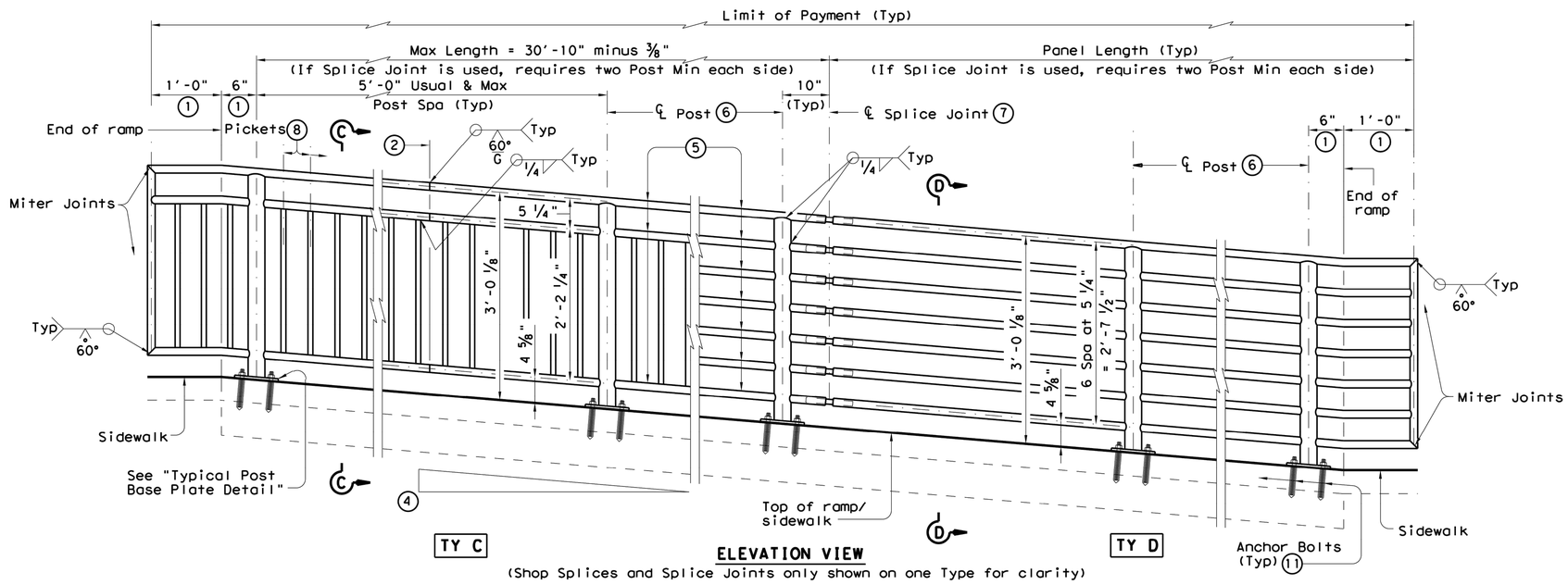
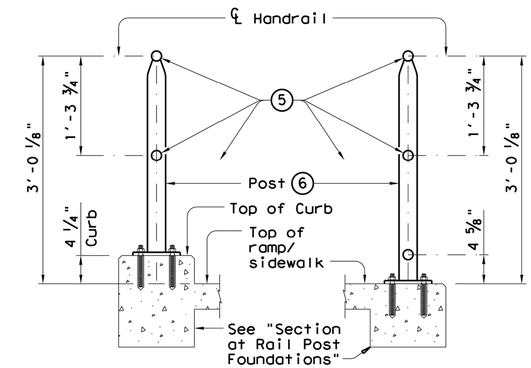


ELEVATION VIEW
(Shop Splices and Splice Joints only shown on one Type for clarity)



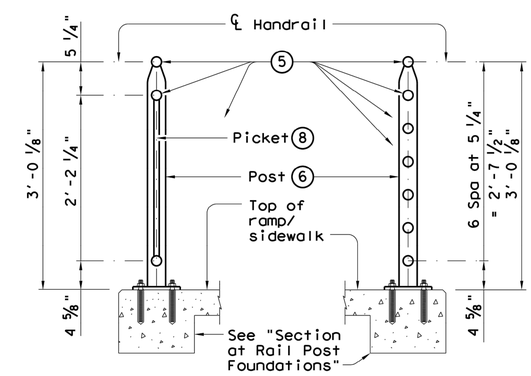
ELEVATION VIEW
(Shop Splices and Splice Joints only shown on one Type for clarity)

RECOMMENDED USAGE (9)(10)	
Dropoff Height/ Condition	Recommended Rail Options
<30" dropoff	TY A, TY B, TY C, or TY D
≥ 30" dropoff, or along Bike Path	TY E or TY F



SECTION A-A
(Showing Handrail **TY A**)

SECTION B-B
(Showing Handrail **TY B**)



SECTION C-C
(Showing Handrail **TY C**)

SECTION D-D
(Showing Handrail **TY D**)

SHEET 1 OF 3

1. Parallel to ground.
2. One shop splice per panel is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.
3. Shop splice is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.
4. See Ramp Details located elsewhere in plans for ramp slope and dimensions. Maximum ramp slope will not exceed 8.3 percent. Level landing required for each 30" rise if grade exceeds 5 percent.
5. 1 ½" Dia. Standard Pipe (1.900" O.D., 0.145" wall thickness). Parallel to ramp / sidewalk. Provide holes as needed in 1 ½" Dia. pipe for galvanizing drainage and venting.
6. 2 ½" Dia. Standard Pipe (2.875" O.D., 0.203" wall thickness). See "Post Mount Detail" for crimping and trimming post to fit Dia. of top rail. Provide holes as needed in post for galvanizing drainage and venting. Plumb all posts.
7. See "Handrail Fabrication Details" for Splice Joints.
8. ℄ ⅝" Dia. Round Bar equal spacing at 4 ½" Max. Plumb all pickets.
9. When needed for accessibility (grade > 5 percent) or as needed for pedestrian safety.
10. Not to be used on bridges.
11. See "General Notes" for anchor bolt information.

Texas Department of Transportation — Design Division Standard

PEDESTRIAN HANDRAIL DETAILS

PRD-13

FILE: prd13.dgn	DN: TxDOT	CK: AM	DW: JTR	CK: CGL
© TxDOT Decmeber 2006	CONT	SECT	JOB	HIGHWAY
REVISIONS REVISED MAY, 2013 (VP)	DIST		COUNTY	SHEET NO. 29

DATE:
FILE:

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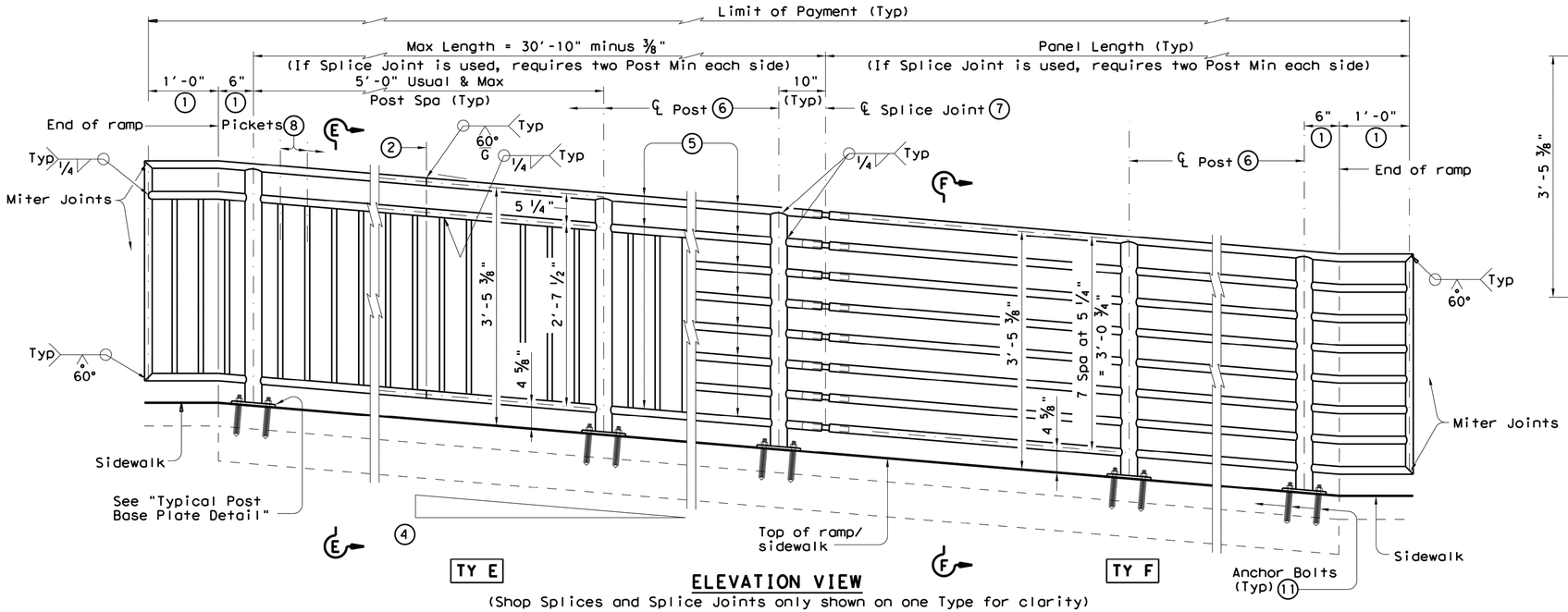
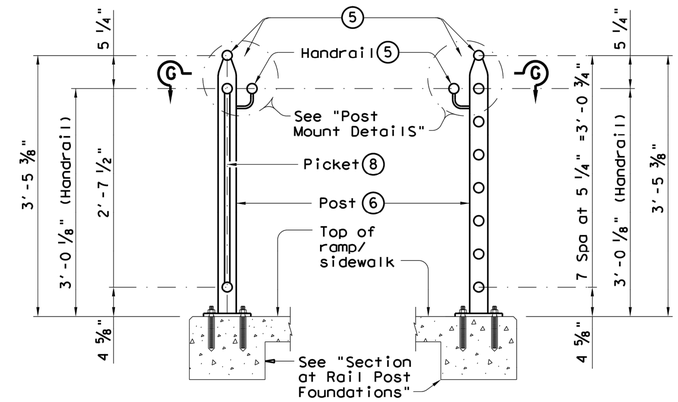


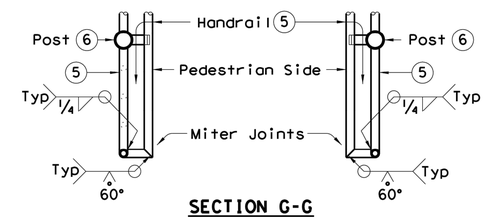
ELEVATION VIEW

(Shop Splices and Splice Joints only shown on one Type for clarity)

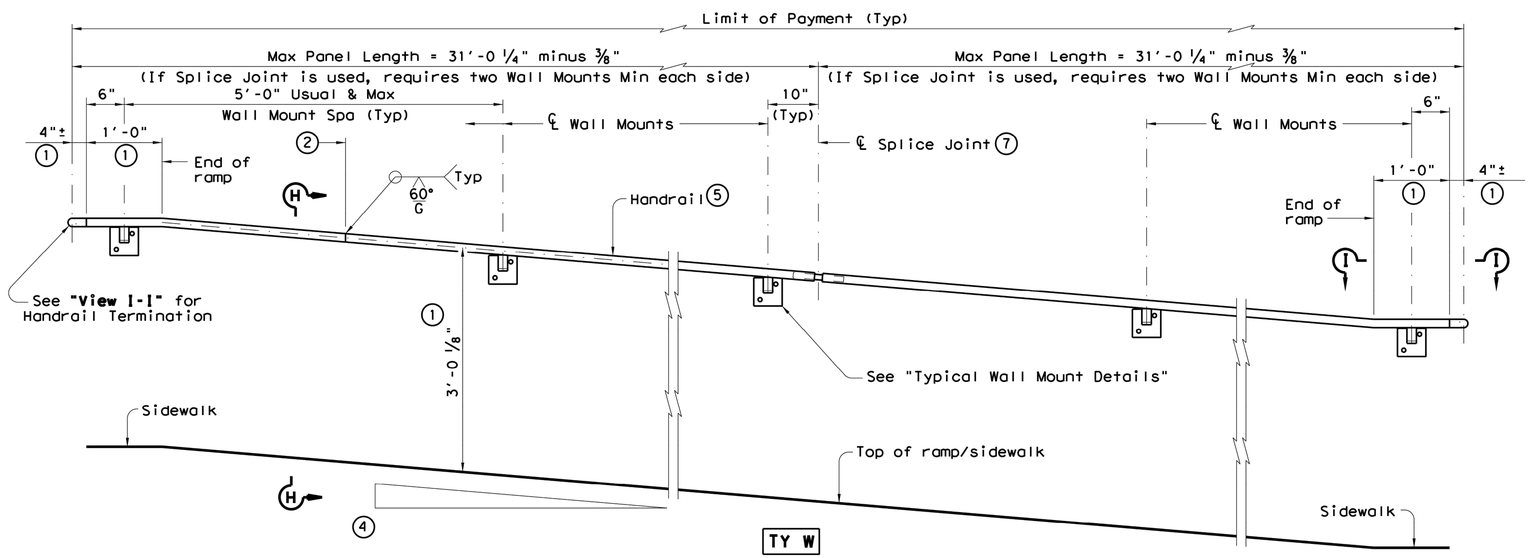


SECTION E-E
(Showing Handrail **TY E**)

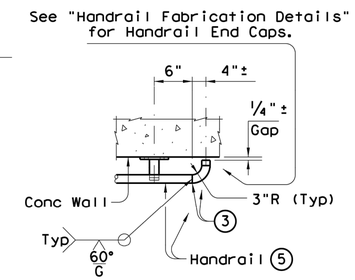
SECTION F-F
(Showing Handrail **TY F**)



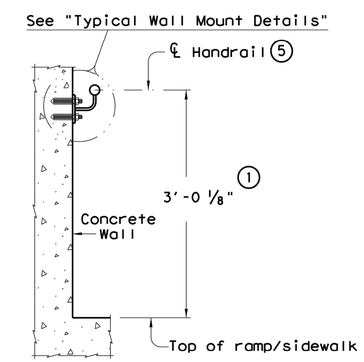
SECTION G-G
(Showing Handrail Termination)



ELEVATION VIEW



VIEW I-I
(Showing Handrail Termination)



SECTION H-H
(Showing Handrail **TY W**)

1. Parallel to ground.
2. One shop splice per panel is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.
3. Shop splice is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.
4. See Ramp Details located elsewhere in plans for ramp slope and dimensions. Maximum ramp slope will not exceed 8.3 percent. Level landing required for each 30" rise if grade exceeds 5 percent.
5. 1 1/2" Dia. Standard Pipe (1.900" O.D., 0.145" wall thickness). Parallel to ramp / sidewalk. Provide holes as needed in 1 1/2" Dia. pipe for galvanizing drainage and venting.
6. 2 1/2" Dia. Standard Pipe (2.875" O.D., 0.203" wall thickness). See "Post Mount Detail" for crimping and trimming post to fit Dia. of top rail. Provide holes as needed in post for galvanizing drainage and venting. Plumb all posts.
7. See "Handrail Fabrication Details" for Splice Joints.
8. ℄ 5/8" Dia. Round Bar equal spacing at 4 1/2" Max. Plumb all pickets.
11. See "General Notes" for anchor bolt information.

SHEET 2 OF 3

Texas Department of Transportation — Design Division Standard

PEDESTRIAN HANDRAIL DETAILS

PRD-13

FILE: prd13.dgn	DN: TxDOT	CK: AM	DW: JTR	CK: CGL
© TxDOT December 2006	CONT	SECT	JOB	HIGHWAY
REVISIONS REVISED MAY, 2013 (VP)	DIST		COUNTY	SHEET NO. 30

DATE:
FILE:

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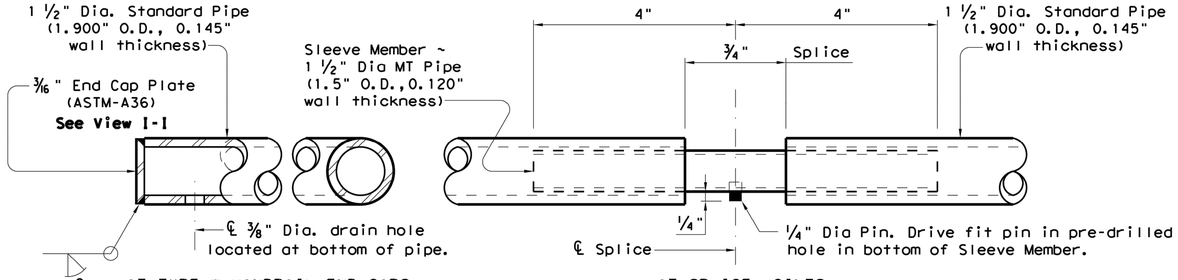
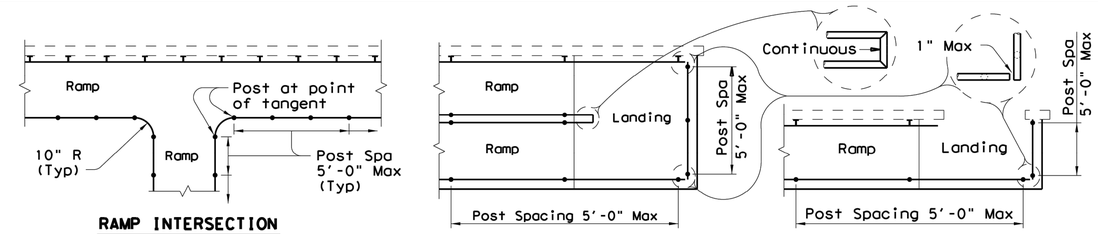


AT TYPE W HANDRAIL END CAPS

AT SPLICE JOINTS

HANDRAIL FABRICATION DETAILS

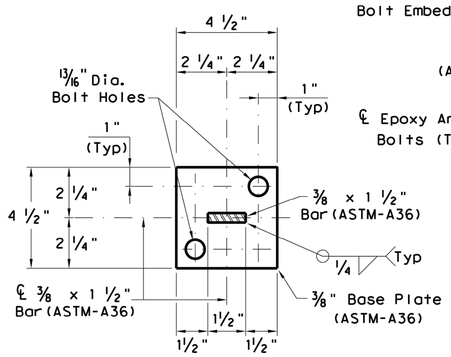


RAMP INTERSECTION

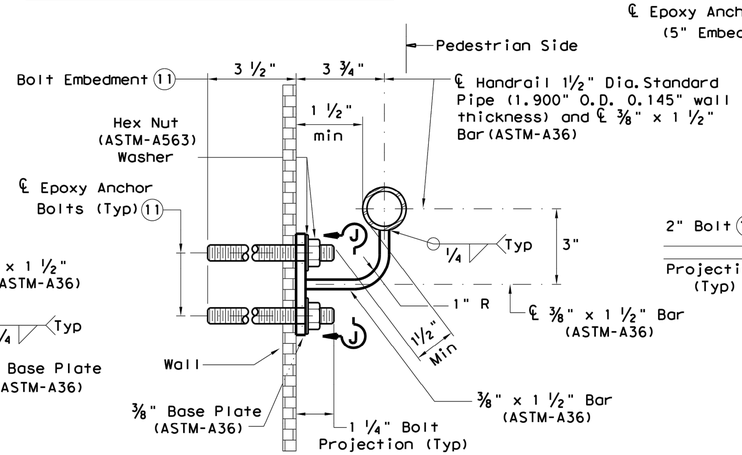
MULTI-LEVEL RAMP

SINGLE-LEVEL RAMP

PLAN SHOWING RAIL AT RAMP CONDITIONS

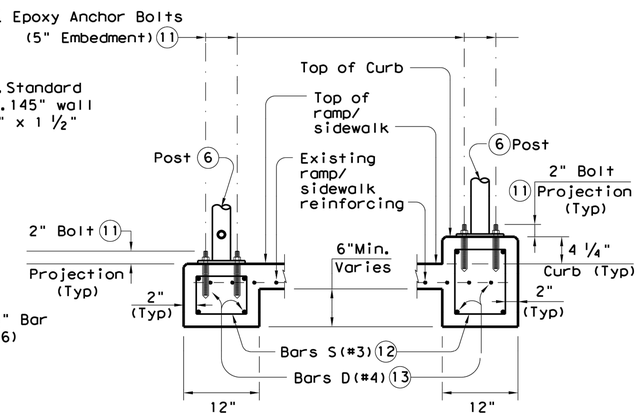


SECTION J-J
(Anchor Bolts not shown for clarity)



SECTION AT WALL MOUNT

TYPICAL WALL MOUNT DETAILS



WITHOUT CURB

WITH CURB

SECTION AT RAIL POST FOUNDATIONS

GENERAL NOTES

Designed according to ADAAG, Texas Accessibility Standards, Uniform Building Code, and AASHTO LRFD Specifications.

Handrail anchorage details shown on this standard may require modification for select structure types. See appropriate details elsewhere in plans for these modifications.

Pipe will conform to ASTM-A53 Grade B or A500 Grade B. Steel plates and steel bars will conform to ASTM-A36. Mechanical tubing (MT) will conform to ASTM A513 Grade 1015 or higher. Galvanize all steel components except reinforcing steel unless noted otherwise.

Concrete for foundations will be in accordance with Item 531 "Sidewalks". All reinforcing steel must be Grade 60. Bar laps, where required, will be as follows: Uncoated ~ #4 = 1'-5" Epoxy coated ~ #4 = 2'-1"

When the plans require painted steel, follow the requirements for painting galvanized steel in Item 446, "Cleaning and Painting Steel". Sleeve Members will receive galvanization and only get field painted after installation unless directed otherwise by Engineer.

Epoxy Anchor bolts for wall mount and post base plate will be 5/8" Dia. ASTM A36 threaded rods with one hex nut and one hardened steel washer at each bolt. 5/8" Dia. threaded rod embedment depth for wall mounts is 3 ½" and embedment depth for post base plate is 5".

Embed threaded rods into concrete with a Type III (Class C) epoxy meeting the requirements of DMS-6100, "Epoxies and Adhesives". Mix and dispense adhesive with the manufacturer's static mixing nozzle/dual cartridge system. Core drill holes (percussion drilling not permitted).

At the contractor's option the post base plate anchor bolts may be cast with the Ramp/Sidewalk (See Cast-in-Place Anchor Bolt Options).

Optional cast-in-place anchor bolts will be 5/8" Dia ASTM A307 Grade A bolts (or A36 threaded rods with one tack welded hex nut each) with one hex nut and one hardened steel washer at each bolt. Embedment depth of cast-in-place bolt will be 8" for post base plate.

Handrails and any wall or other surface adjacent to them will be free of any sharp or abrasive elements.

Submit shop drawings to the Engineer unless otherwise noted. For curved handrail applications, fabricate the handrail to the curve if radius is less than 600 ft. Shop drawings are required when rail is fabricated to the curve.

For all handrails, erection drawings will be submitted to the Engineer for approval to ensure proper installation.

Drawings will show handrail mount locations with bolts setting, spacing, ramp slope, and/or splice joint locations, and handrail lengths with identification showing where each handrail goes on the layout.

Payment for concrete sidewalks or curb ramps will be paid for in accordance with Item 531 "Sidewalks".

Payment for all items shown is to be included in unit price bid in accordance with Item 450 "Railing" of the type specified.

All exposed edges will be rounded or chamfered to approximately 1/8" by grinding.

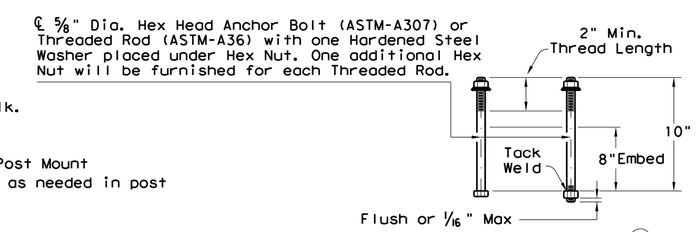
(5) 1 ½" Dia. Standard Pipe (1.900" O.D., 0.145" wall thickness). Parallel to ramp/sidewalk. Provide holes as needed in 1 ½" Dia. pipe for galvanizing drainage and venting.

(6) 2 ½" Dia. Standard Pipe (2.875" O.D., 0.203" wall thickness). Plumb all posts. See "Post Mount Detail" for crimping and trimming post to fit the diamenter of top rail. Provide holes as needed in post for galvanizing drainage and venting.

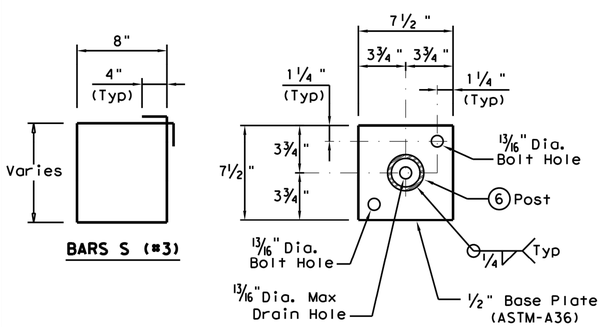
(11) See "General Notes" for anchor bolt information.

(12) Bars S(#3) spaced at 12" Max (Spaced 3" from outside edge of overall length of Ramp/Sidewalk).

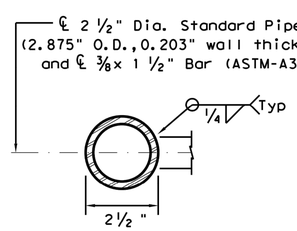
(13) Provide 1 ½" end cover to Bars D(#4) from outside edge of overall length of Ramp/Sidewalk.



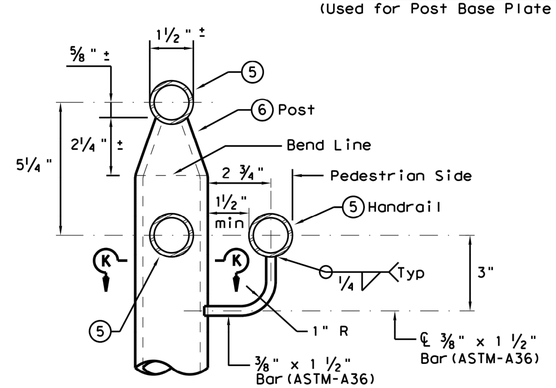
CAST-IN-PLACE ANCHOR BOLT OPTIONS (11)
(Used for Post Base Plate only)



TYPICAL POST BASE PLATE DETAIL



SECTION K-K



ELEVATION

POST MOUNT DETAILS

SHEET 3 OF 3

Texas Department of Transportation — Design Division Standard

PEDESTRIAN HANDRAIL DETAILS

PRD-13

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© TxDOT December 2006	CONT	SECT	JOB	HIGHWAY
REVISIONS REVISED MAY, 2013 (VP)	DIST		COUNTY	SHEET NO. 31

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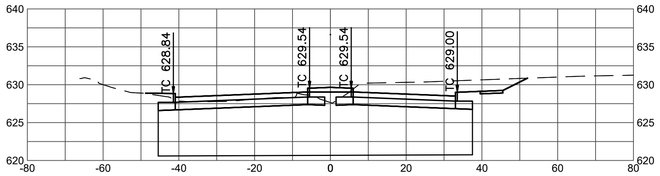

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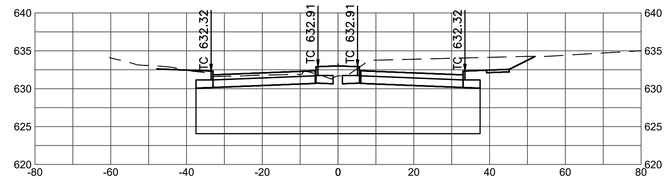

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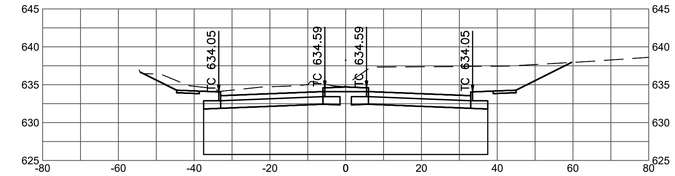

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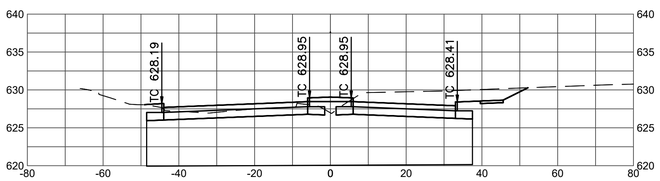

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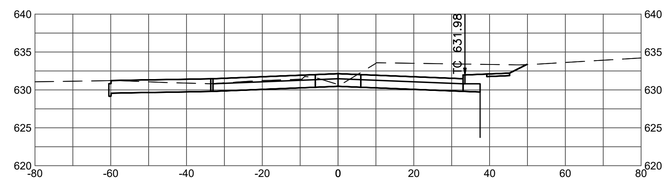

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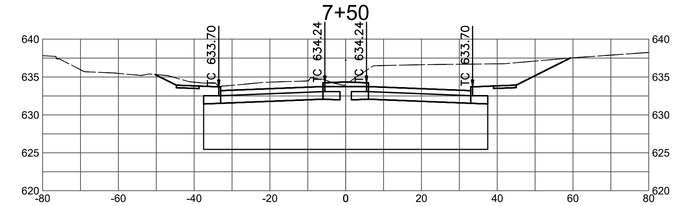

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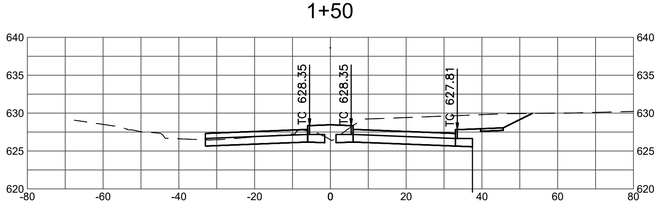

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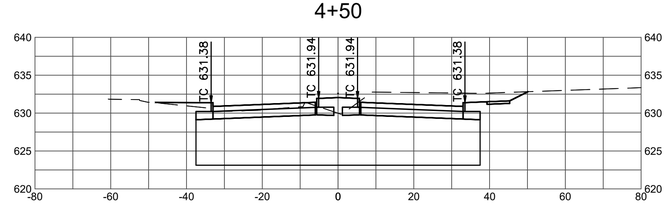

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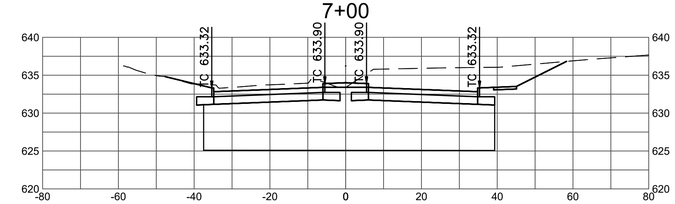

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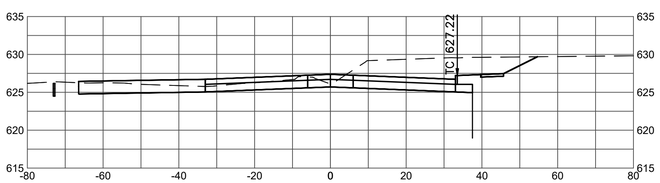

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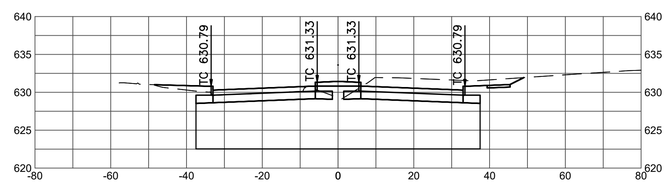

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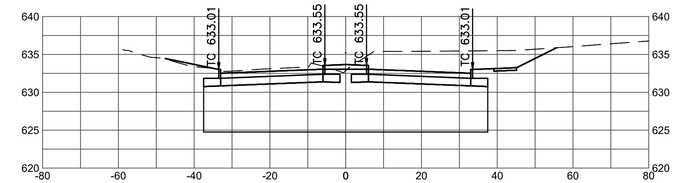

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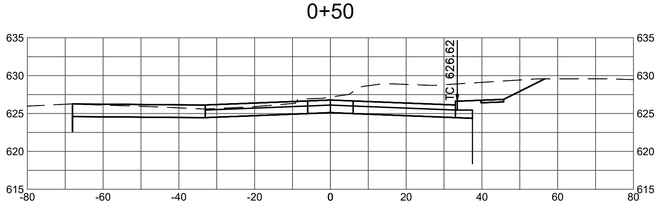

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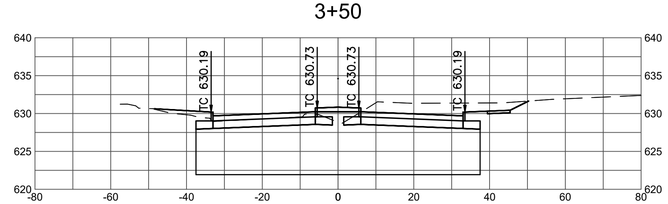

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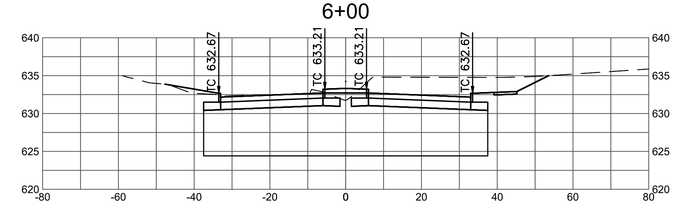

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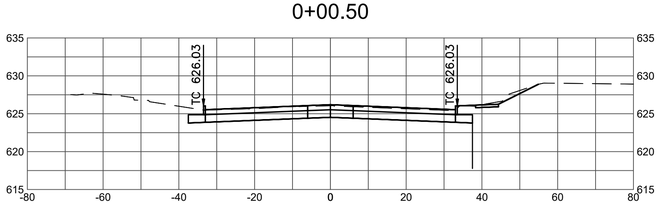

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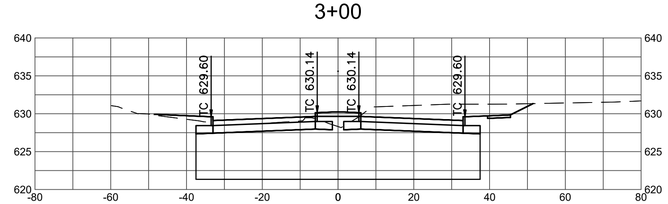

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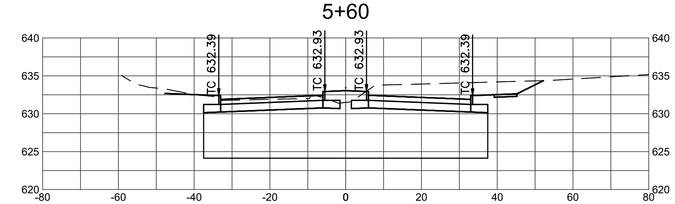

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NO.	DATE	COMMENT

REVISIONS

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)

CROSS SECTIONS 1

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DESIGN BY: MEA	DRAWN BY: MEA
DATE: JAN 2020	JOB NUMBER: 1612-046-01

SHEET 32

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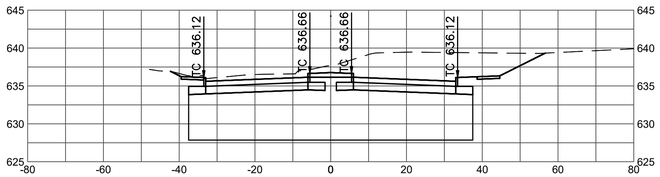

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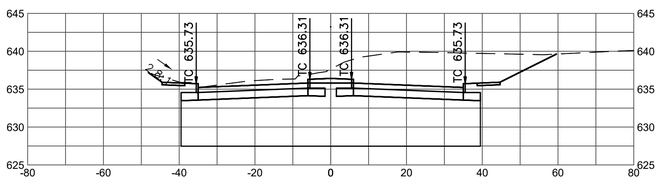

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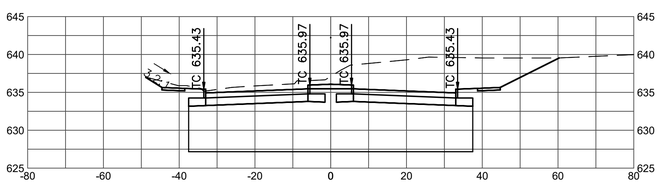

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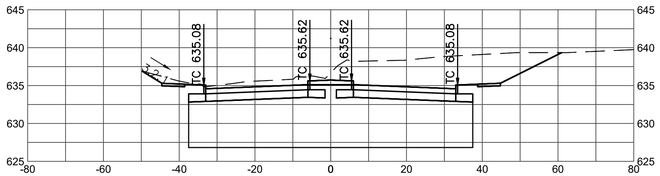

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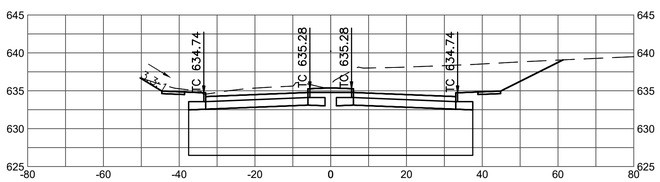

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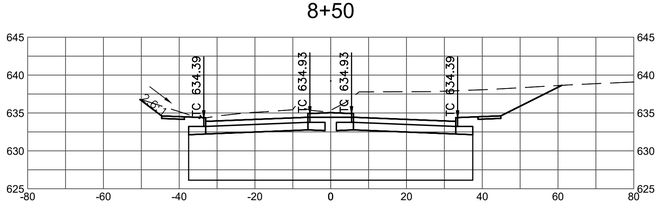

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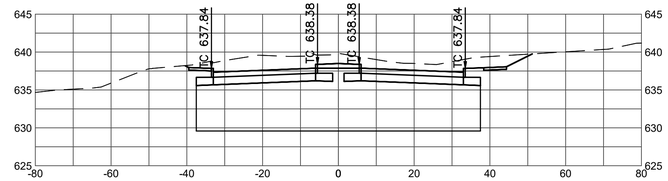

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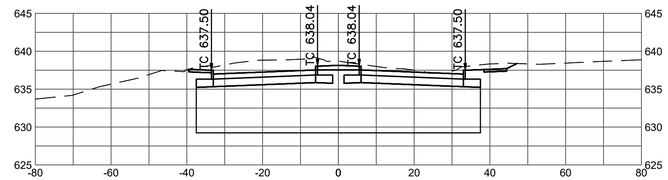

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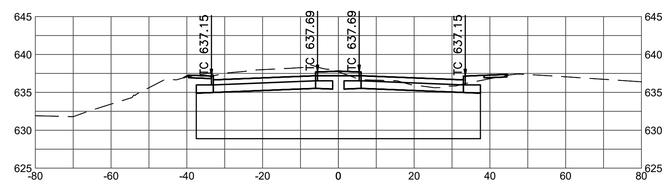

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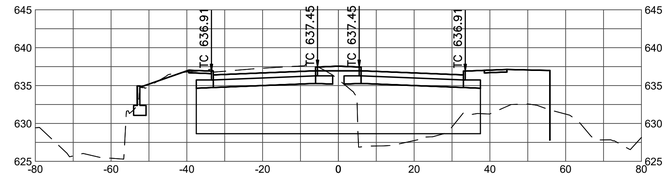

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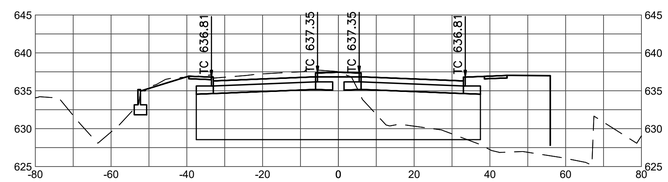

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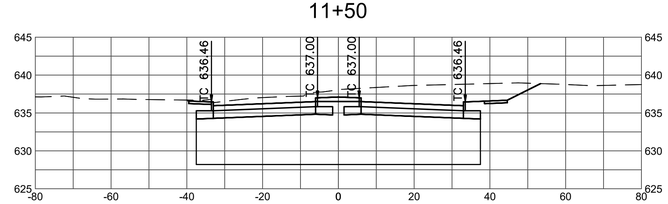

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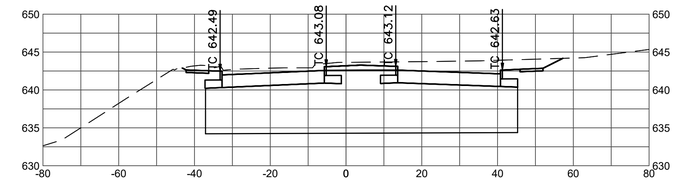

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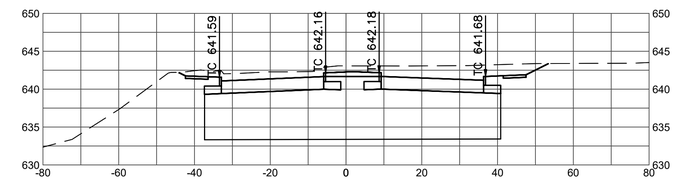

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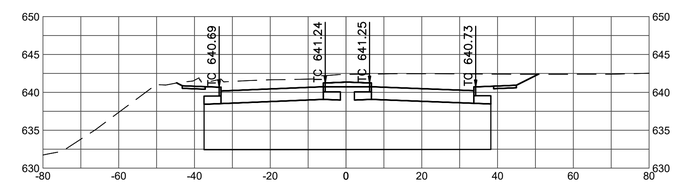

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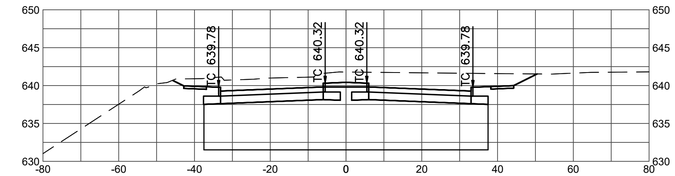

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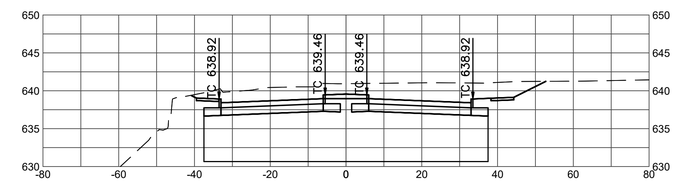

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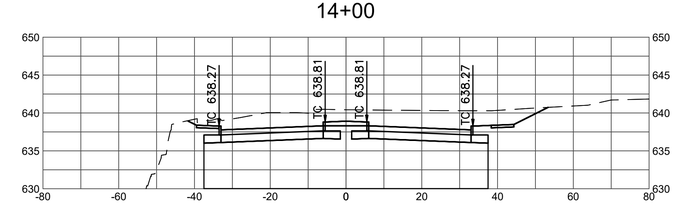

NO.	DATE	COMMENT

REVISIONS

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)

CROSS SECTIONS 2

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DESIGN BY:	DRAWN BY:
MEA	MEA
DATE:	JOB NUMBER:
JAN 2020	1612-046-01

SHEET 33

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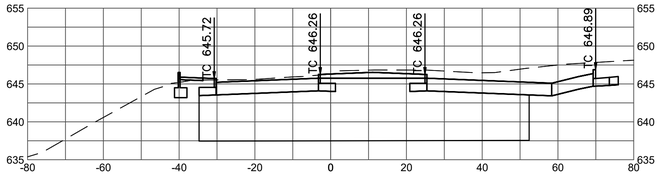

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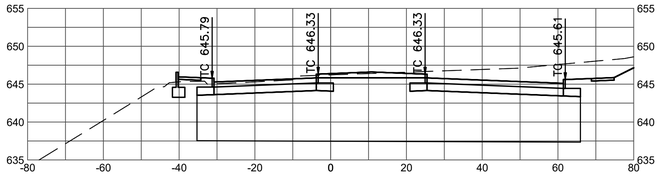

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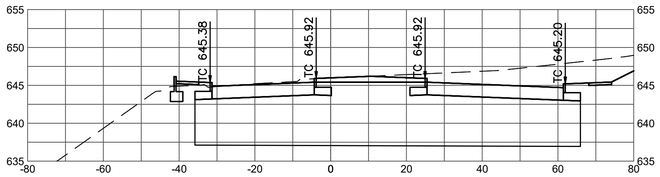

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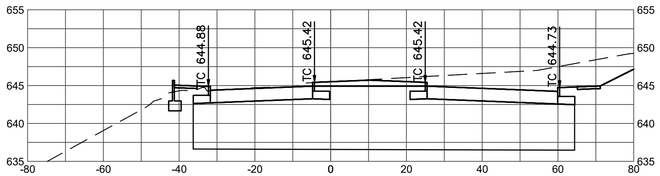

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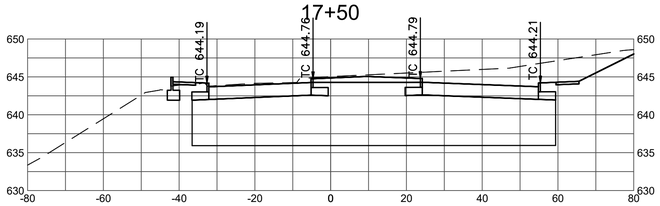

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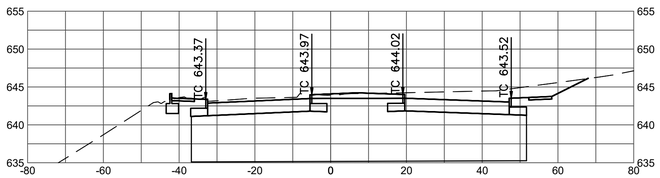

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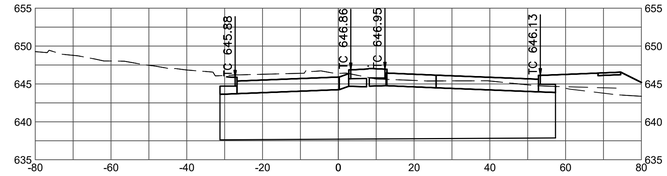

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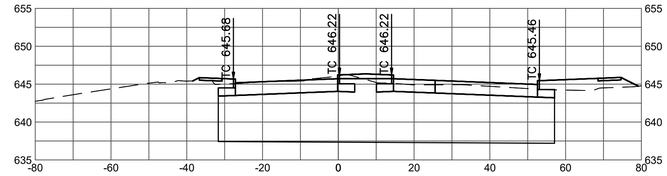

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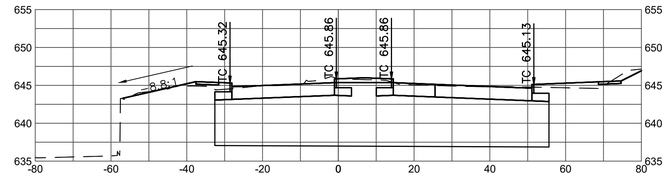

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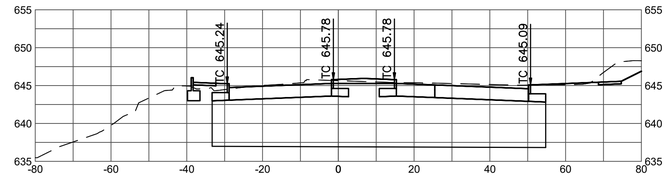

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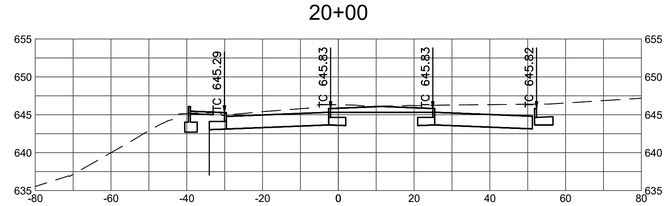

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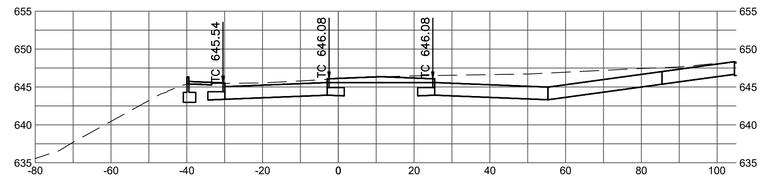

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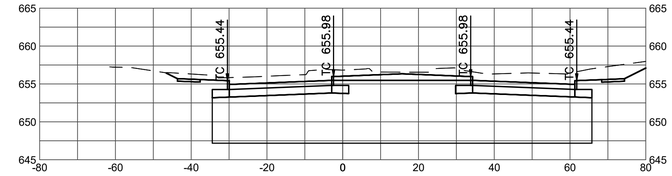

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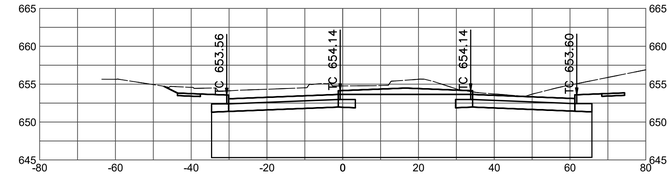

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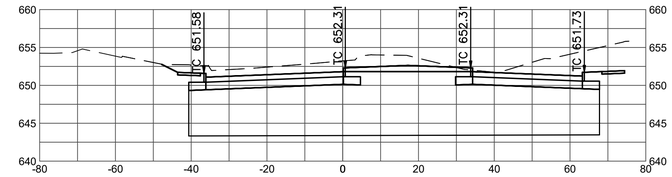

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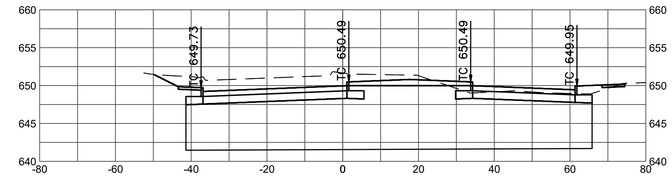

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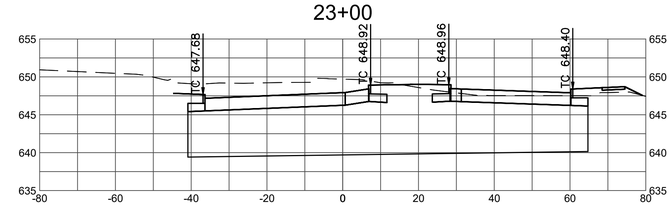

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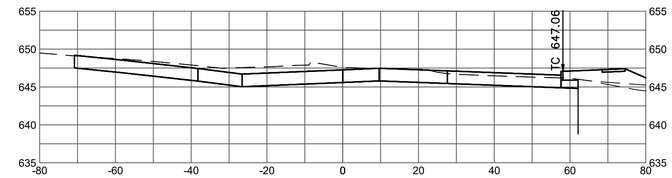

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)

CROSS SECTIONS 3

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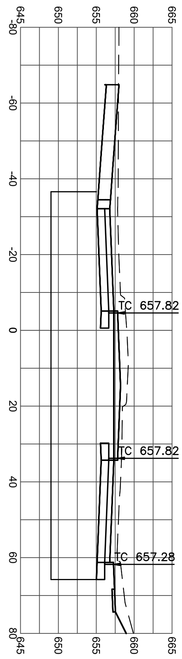
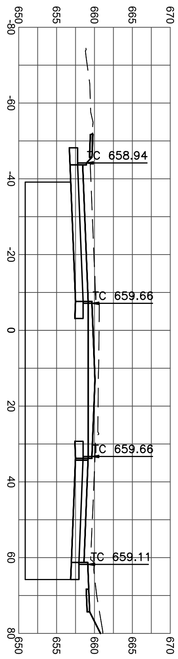
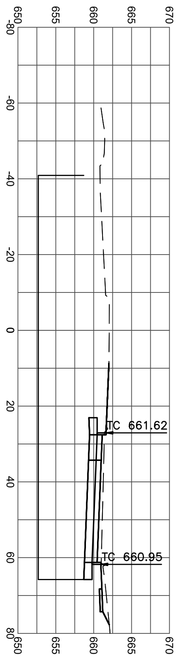
MEA	MEA
DATE:	JOB NUMBER:
JAN 2020	1612-046-01

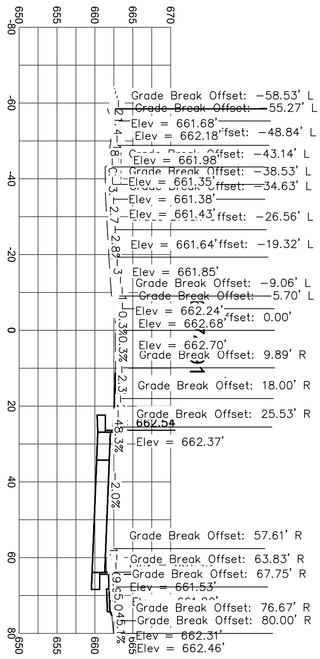
SHEET 34

Dwg Info: F:\Projects\2016\12046 Frisco - Town & Country\CAD_1612-046-01 p-base_CrossSections.dwg - Plotted: 1/24/2020









DATE: JAN 2020
DESIGN BY: DRAWN BY:
JOB NUMBER: 1612-046-01

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
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CROSS SECTIONS 4

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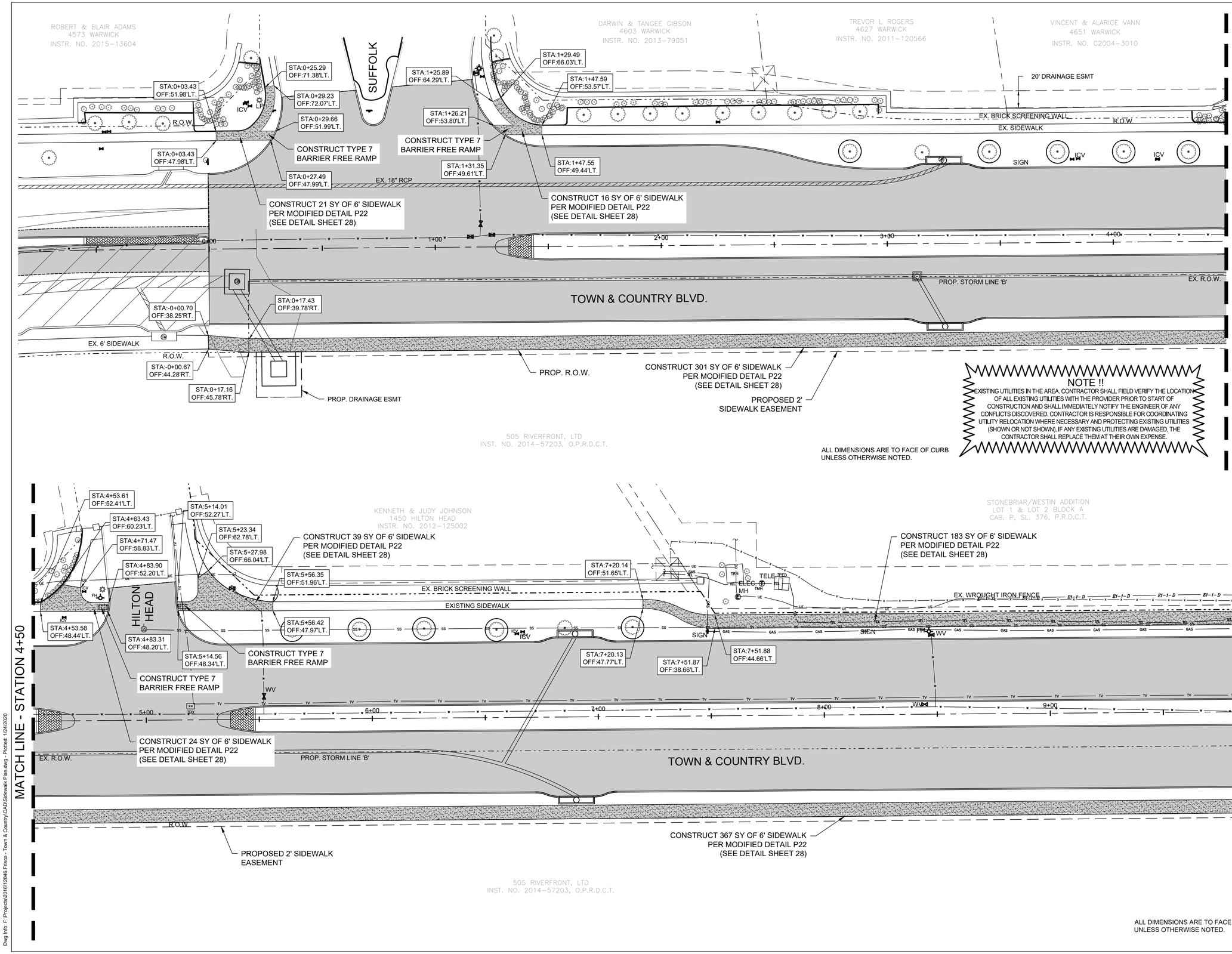

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)

SIDEWALK PLAN STA 0+00 TO 10+00

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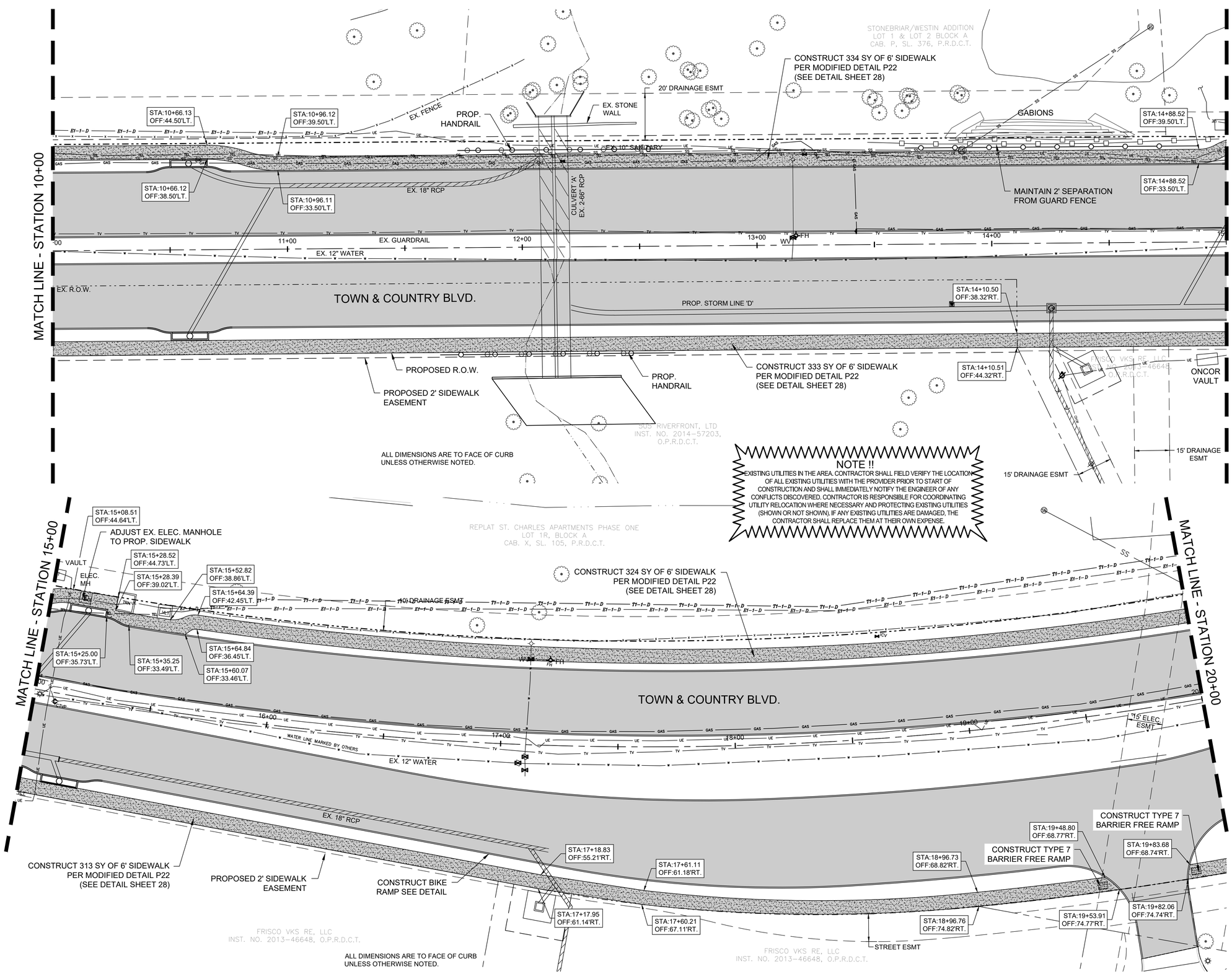
SHEET 36

Dwg Info: F:\Projects\2016\12046 Frisco - Town & Country\CAD\Sidewalk Plan.dwg - Plotted: 1/24/2020



NOTE !!

EXISTING UTILITIES IN THE AREA. CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF ALL EXISTING UTILITIES WITH THE PROVIDER PRIOR TO START OF CONSTRUCTION AND SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY CONFLICTS DISCOVERED. CONTRACTOR IS RESPONSIBLE FOR COORDINATING UTILITY RELOCATION WHERE NECESSARY AND PROTECTING EXISTING UTILITIES (SHOWN OR NOT SHOWN). IF ANY EXISTING UTILITIES ARE DAMAGED, THE CONTRACTOR SHALL REPLACE THEM AT THEIR OWN EXPENSE.

20 10 0 20 40

SCALE : 1" = 20'

LEGEND

- PROP. CONCRETE
- PROP. SIDEWALK
- PROP. CENTERLINE
- ROW

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)

SIDEWALK PLAN STA 10+00 TO 20+00

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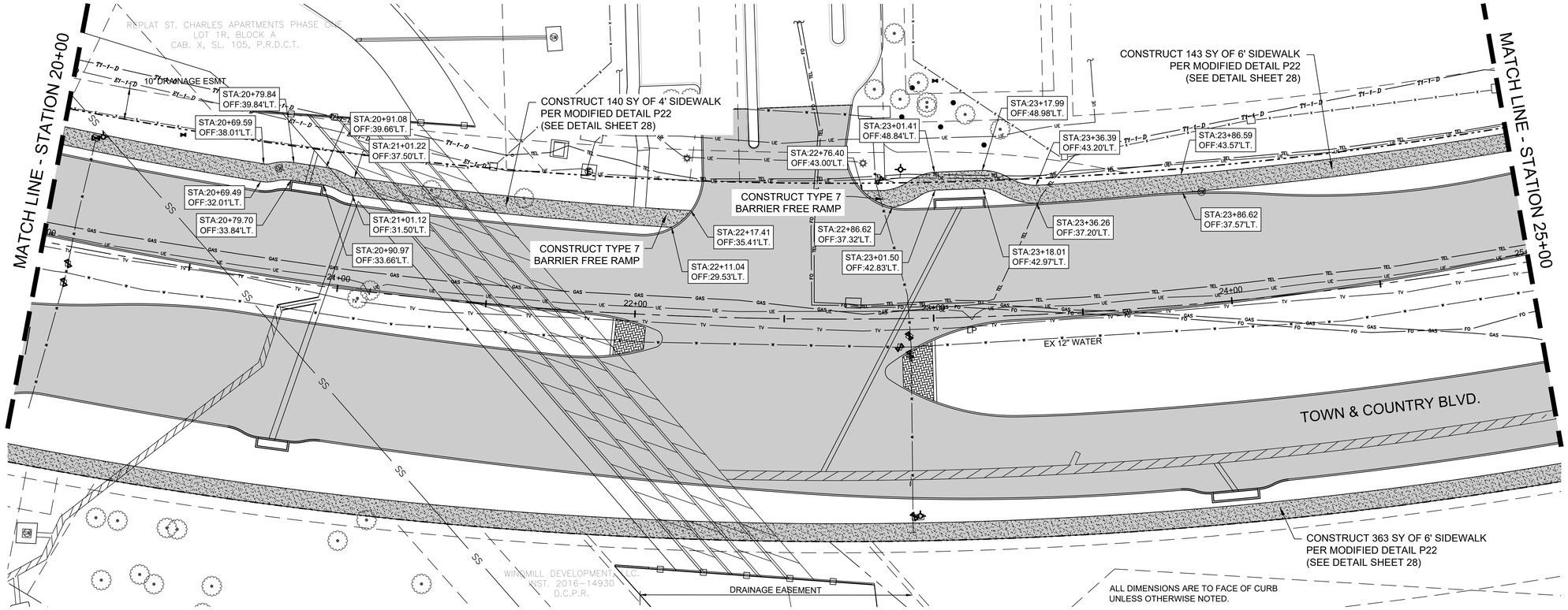
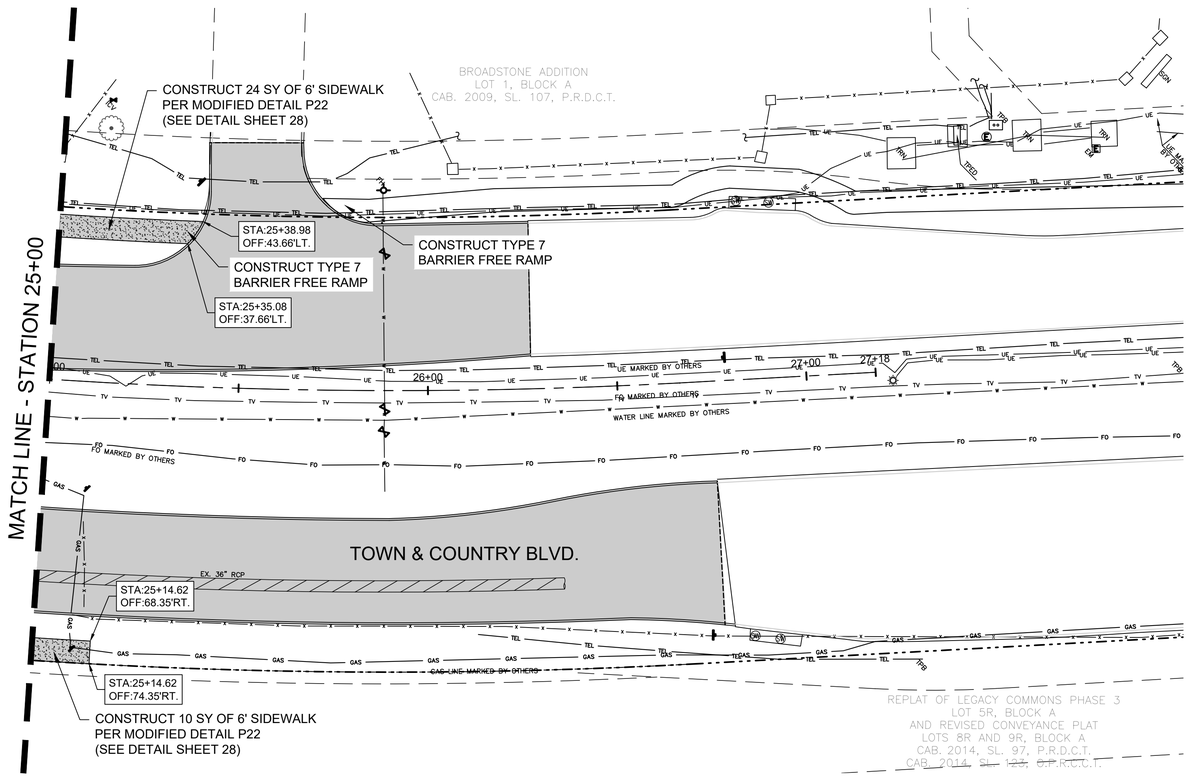
DATE: JAN 2020	JOB NUMBER: 1612-046-01

SHEET 37

Dwg Info: F:\Projects\2016\12046 Frisco - Town & Country\CAD\Sidewalk Plan.dwg - Plotted: 1/24/2020





20 10 0 20 40
SCALE : 1" = 20'

LEGEND

- PROP. CONCRETE
- PROP. SIDEWALK
- PROP. CENTERLINE
- ROW

NOTE !!

EXISTING UTILITIES IN THE AREA. CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF ALL EXISTING UTILITIES WITH THE PROVIDER PRIOR TO START OF CONSTRUCTION AND SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY CONFLICTS DISCOVERED. CONTRACTOR IS RESPONSIBLE FOR COORDINATING UTILITY RELOCATION WHERE NECESSARY AND PROTECTING EXISTING UTILITIES (SHOWN OR NOT SHOWN). IF ANY EXISTING UTILITIES ARE DAMAGED, THE CONTRACTOR SHALL REPLACE THEM AT THEIR OWN EXPENSE.

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
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SIDEWALK PLAN STA 20+00 TO END

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DATE: JAN 2020	JOB NUMBER: 1612-046-01

SHEET 38

Dwg Info: F:\Projects\2016\12046 Frisco - Town & Country\CAD\Sidewalk Plan.dwg - Plotted: 1/24/2020

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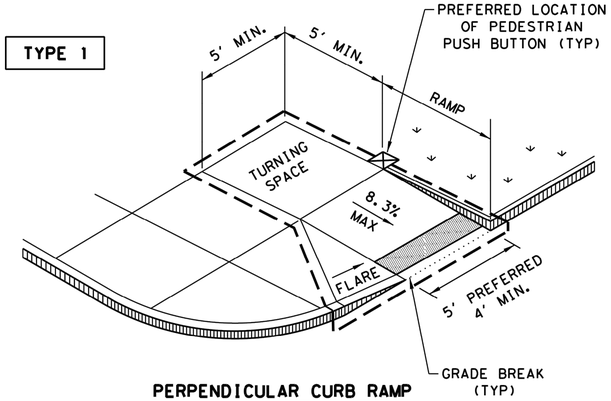
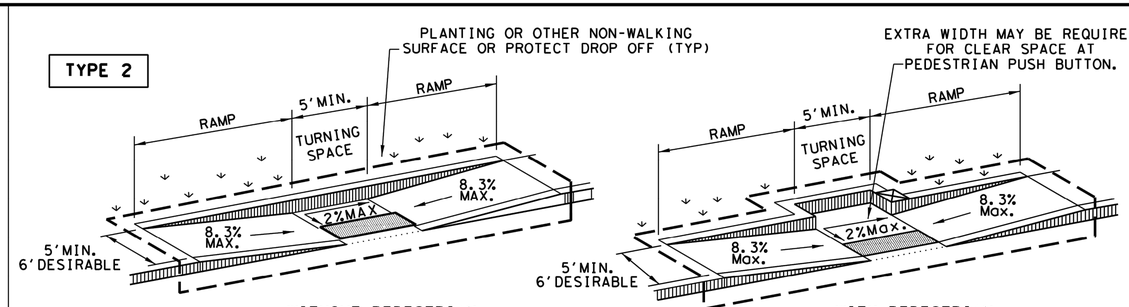


PERPENDICULAR CURB RAMP

TYPE 2

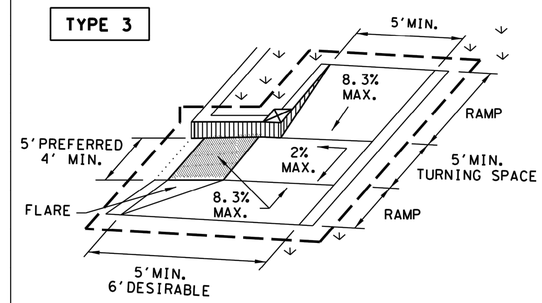


WITHOUT PEDESTRIAN PUSH BUTTON

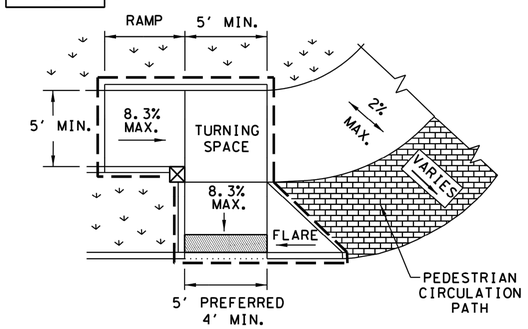
WITH PEDESTRIAN PUSH BUTTON

PARALLEL CURB RAMP

TYPE 3

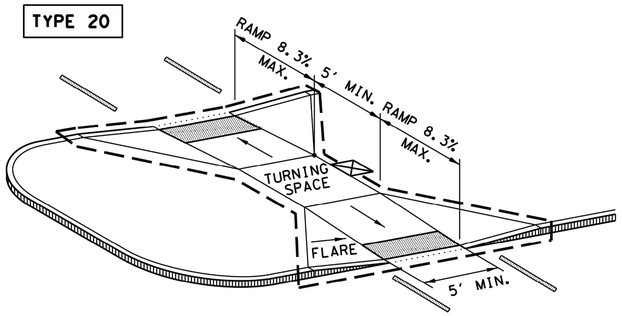


TYPE 6



COMBINATION CURB RAMPS

TYPE 20

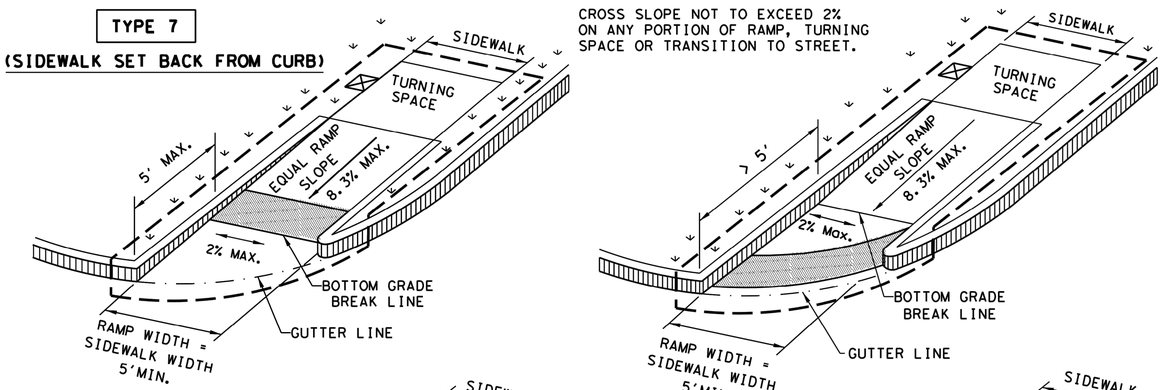


CURB RAMPS AT MEDIAN ISLANDS

TYPE 7

(SIDEWALK SET BACK FROM CURB)

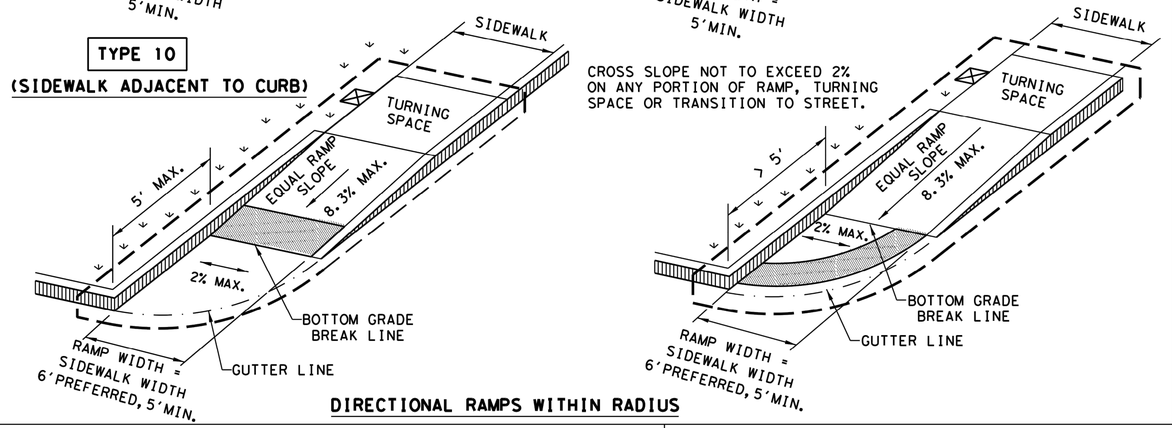
CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.



TYPE 10

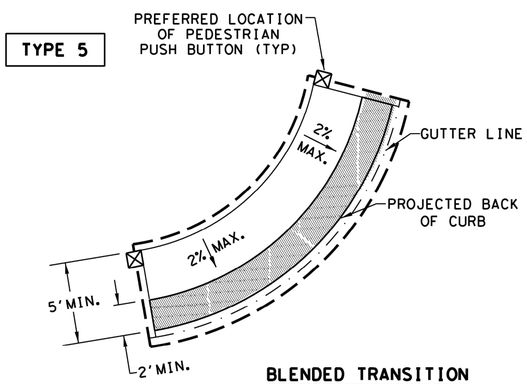
(SIDEWALK ADJACENT TO CURB)

CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.



DIRECTIONAL RAMPS WITHIN RADIUS

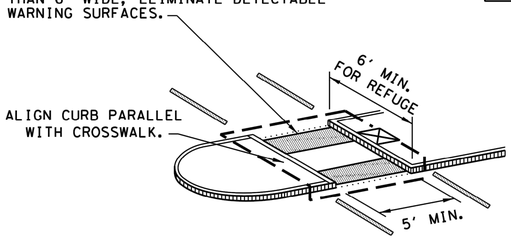
TYPE 5



BLENDED TRANSITION
(FLUSH LANDING)

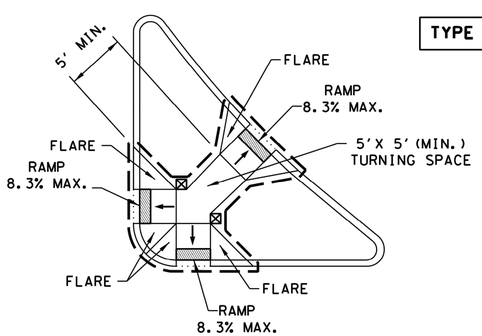
TYPE 21

INSTALL DETECTABLE WARNING SURFACE AT EACH END OF THE CUT-THROUGH RAMP WITH A MINIMUM 2' USUAL SIDEWALK SURFACE BETWEEN. IF MEDIAN IS LESS THAN 6' WIDE, ELIMINATE DETECTABLE WARNING SURFACES.



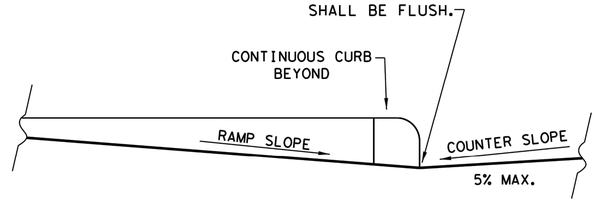
NOTE: CURB DETAILS ARE SHOWN ELSEWHERE IN THE PLANS.

TYPE 22



COMBINATION ISLAND RAMPS

BOTTOM GRADE BREAK OF CURB RAMP WILL NORMALLY BE AT GUTTER LINE. SURFACE SLOPES AT GRADE BREAKS SHALL BE FLUSH.



TYPICAL SECTION OF PERPENDICULAR CURB RAMP AT CONNECTION TO ROADWAY

NOTES / LEGEND:

SEE GENERAL NOTES ON SHEET 2 OF 4 FOR MORE INFORMATION.

DENOTES PLANTING OR NON-WALKING SURFACE NOT PART OF PEDESTRIAN CIRCULATION PATH.

GUTTER LINE

DETECTABLE WARNING SURFACE

GRADE BREAK

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON IF APPLICABLE.

RAMP LIMITS OF PAYMENT

SHEET 1 OF 4

Texas Department of Transportation

Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS				
REVISED 08, 2005	DIST	COUNTY		SHEET NO.
REVISED 06, 2012				
REVISED 01, 2018				39

DATE:
FILE:

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GENERAL NOTES

CURB RAMPS

1. Install a curb ramp or blended transition at each pedestrian street crossing.
2. All slopes shown are maximum allowable. Cross slopes of 1.5% and lesser running should be used. Adjust curb ramp length or grade of approach sidewalks as directed.
3. Maximum allowable cross slope on sidewalk and curb ramp surfaces is 2%.
4. The minimum sidewalk width is 5'. Where the sidewalk is adjacent to the back of curb, a 6' sidewalk width is desirable. Where a 5' sidewalk cannot be provided due to site constraints, sidewalk width may be reduced to 4' for short distances. 5'x 5' passing areas at intervals not to exceed 200' are required.
5. Turning Spaces shall be 5'x 5' minimum. Cross slope shall be maximum 2%.
6. Clear space at the bottom of curb ramps shall be a minimum of 4'x 4' wholly contained within the crosswalk and wholly outside the parallel vehicular travel path.
7. Provide flared sides where the pedestrian circulation path crosses the curb ramp. Flared sides shall be sloped at 10% maximum, measured parallel to the curb. Returned curbs may be used only where pedestrians would not normally walk across the ramp, either because the adjacent surface is planted, substantially obstructed, or otherwise protected.
8. Additional information on curb ramp location, design, light reflective value and texture may be found in the latest draft of the Proposed Guidelines for Pedestrian Facilities in the Public Right of Way (PROWAG) as published by the U.S. Architectural and Transportation Barriers Compliance Board (Access Board).
9. To serve as a pedestrian refuge area, the median should be a minimum of 6' wide, measured from back of curbs. Medians should be designed to provide accessible passage over or through them.
10. Small channelization islands, which do not provide a minimum 5'x 5' landing at the top of curb ramps, shall be cut through level with the surface of the street.
11. Crosswalk dimensions, crosswalk markings and stop bar locations shall be as shown elsewhere in the plans. At intersections where crosswalk markings are not required, curb ramps shall align with theoretical crosswalks unless otherwise directed.
12. Provide curb ramps to connect the pedestrian access route at each pedestrian street crossing. Handrails are not required on curb ramps.
13. Curb ramps and landings shall be constructed and paid for in accordance with Item 531 "Sidewalks".
14. Place concrete at a minimum depth of 5" for ramps, flares and landings, unless otherwise directed.
15. Furnish and install No. 3 reinforcing steel bars at 18" o.c. both ways, unless otherwise directed.
16. Provide a smooth transition where the curb ramps connect to the street.
17. Curbs shown on sheet 1 within the limits of payment are considered part of the curb ramp for payment, whether it is concrete curb, gutter, or combined curb and gutter.
18. Existing features that comply with applicalble standards may remain in place unless otherwise shown on the plans.

DETECTABLE WARNING MATERIAL

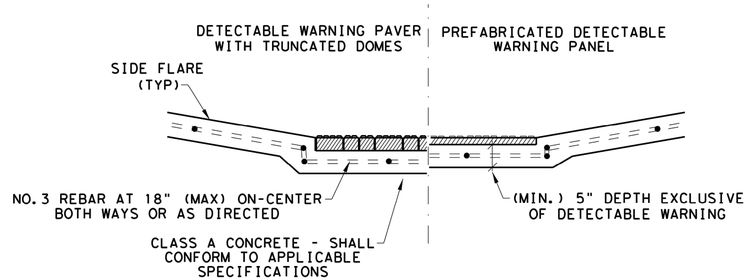
19. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with PROWAG. The surface must contrast visually with adjoining surfaces, including side flares. Furnish and install an approved cast-in-place dark brown or dark red detectable warning surface material adjacent to uncolored concrete, unless specified elsewhere in the plans.
20. Detectable Warning Materials must meet TxDOT Departmental Materials Specification DMS 4350 and be listed on the Material Producer List. Install products in accordance with manufacturer's specifications.
21. Detectable warning surfaces must be firm, stable and slip resistant.
22. Detectable warning surfaces shall be a minimum of 24 inches in depth in the direction of pedestrian travel, and extend the full width of the curb ramp or landing where the pedestrian access route enters the street.
23. Detectable warning surfaces shall be located so that the edge nearest the curb line is at the back of curb and neither end of that edge is greater than 5 feet from the back of curb. Detectable warning surfaces may be curved along the corner radius.
24. Shaded areas on Sheet 1 of 4 indicate the approximate location for the detectable warning surface for each curb ramp type.

DETECTABLE WARNING PAVERS (IF USED)

25. Furnish detectable warning paver units meeting all requirements of ASTM C-936, C-33. Lay in a two by two unit basket weave pattern or as directed.
26. Lay full-size units first followed by closure units consisting of at least 25 percent (25%) of a full unit. Cut detectable warning paver units using a power saw.

SIDEWALKS

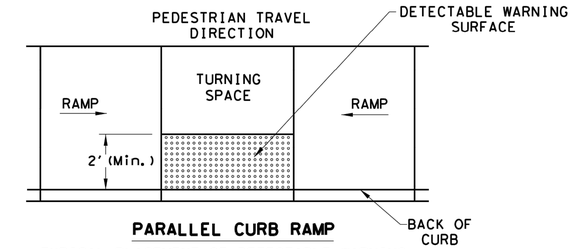
27. Provide clear ground space at operable parts, including pedestrian push buttons. Operable parts shall be placed within unobstructed reach range specified in PROWAG section R406.
28. Place traffic signal or illumination poles, ground boxes, controller boxes, signs, drainage facilities and other items so as not to obstruct the pedestrian access route or clear ground space.
29. Street grades and cross slopes shall be as shown elsewhere in the plans.
30. Changes in level greater than 1/4 inch are not permitted.
31. The least possible grade should be used to maximize accessibility. The running slope of sidewalks and crosswalks within the public right of way may follow the grade of the parallel roadway. Where a continuous grade greater than five percent (5%) must be provided, handrails may be desirable to improve accessibility. Handrails may also be needed to protect pedestrians from potentially hazardous conditions. If provided, handrails shall comply with PROWAG R409.
32. Handrail extensions shall not protrude into the usable landing area or into intersecting pedestrian routes.
33. Driveways and turnouts shall be constructed and paid for in accordance with Item "Intersections, Driveways and Turnouts". Sidewalks shall be constructed and paid for in accordance with Item, "Sidewalks".
34. Sidewalk details are shown elsewhere in the plans.



SECTION VIEW DETAIL

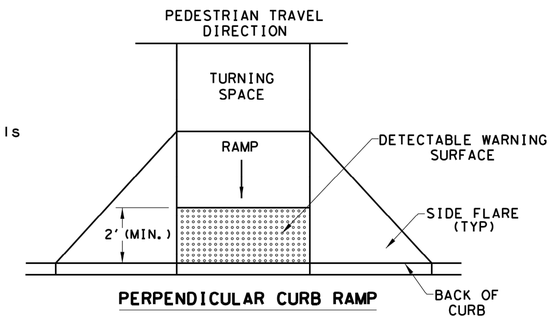
CURB RAMP AT DETECTIBLE WARNINGS

DETECTABLE WARNING SURFACE DETAILS



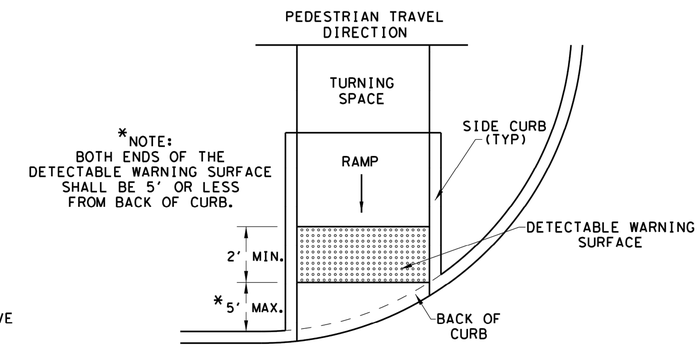
PARALLEL CURB RAMP

TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON LANDING AT STREET EDGE.



PERPENDICULAR CURB RAMP

TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.



DIRECTIONAL CURB RAMP

TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.

SHEET 2 OF 4

Texas Department of Transportation — Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS REVISED 08, 2005 REVISED 06, 2012 REVISED 01, 2018	DIST	COUNTY		SHEET NO.
				40

DATE:
FILE:

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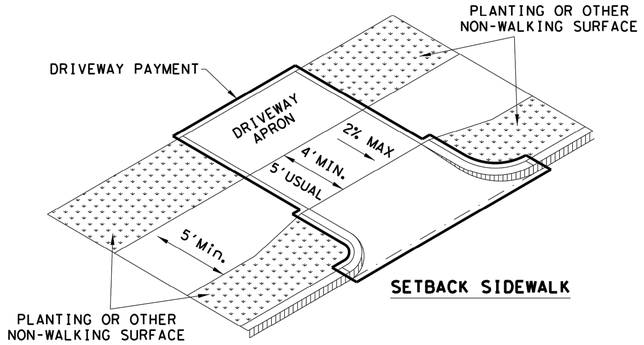
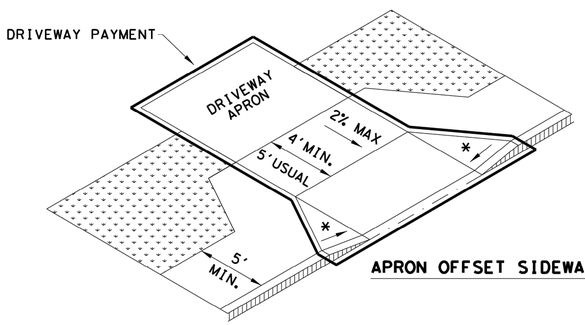
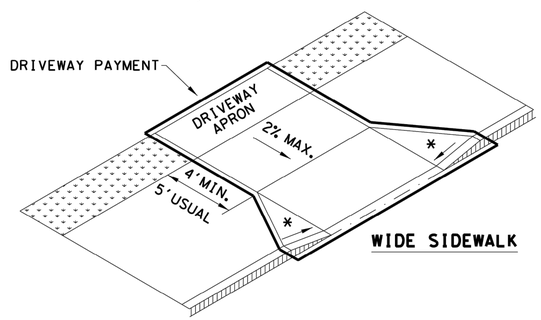
SIDEWALK TREATMENT AT DRIVEWAYS



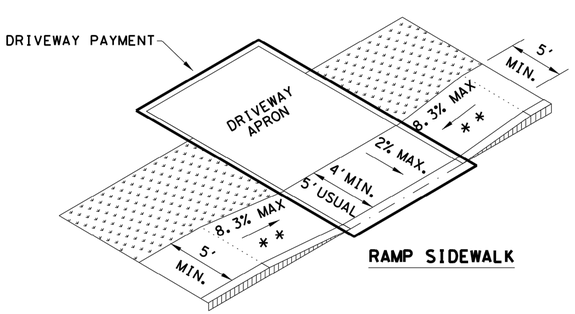
SETBACK SIDEWALK



APRON OFFSET SIDEWALK



WIDE SIDEWALK

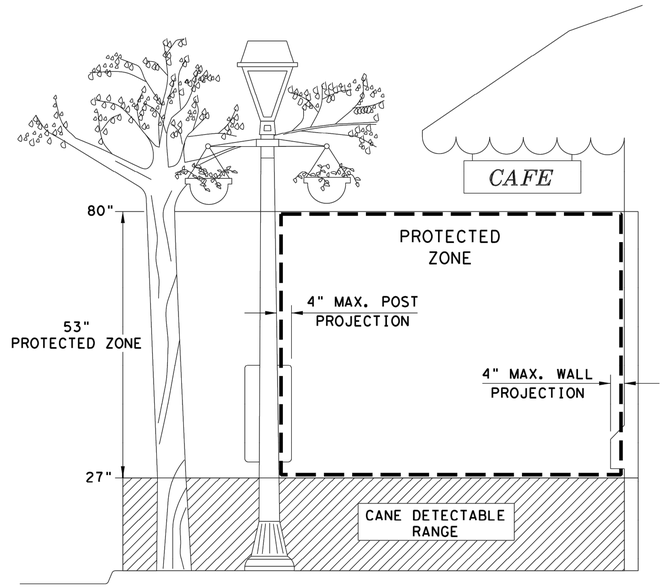


RAMP SIDEWALK

NOTES:

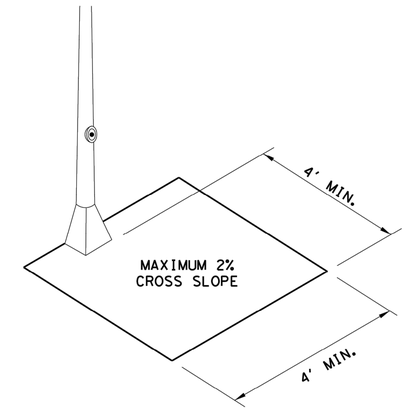
* WHERE DRIVEWAYS CROSS THE PEDESTRIAN ROUTE, SIDES SHALL BE FLARED AT 10% MAX SLOPE.

* * IF CURB HEIGHT IS GREATER THAN 6 INCHES, USE GRADE LESS THAN OR EQUAL TO 5%. HANDRAIL AND DETECTABLE WARNING ARE NOT REQUIRED.

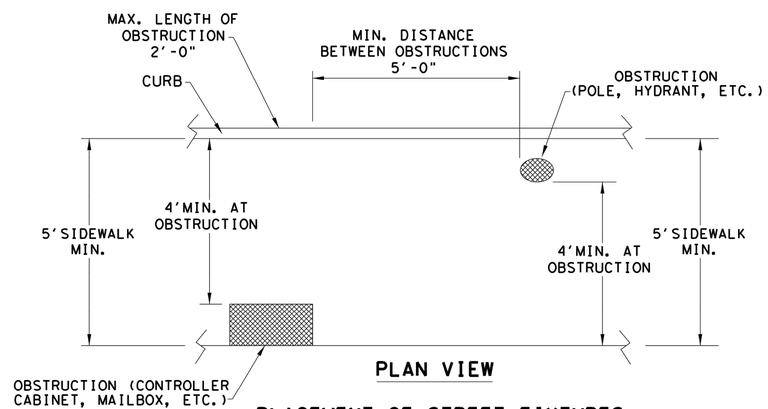


PROTECTED ZONE

NOTE: IN PEDESTRIAN CIRCULATION AREA, MAXIMUM 4" PROJECTION FOR POST OR WALL MOUNTED OBJECTS BETWEEN 27" AND 80" ABOVE THE SURFACE.



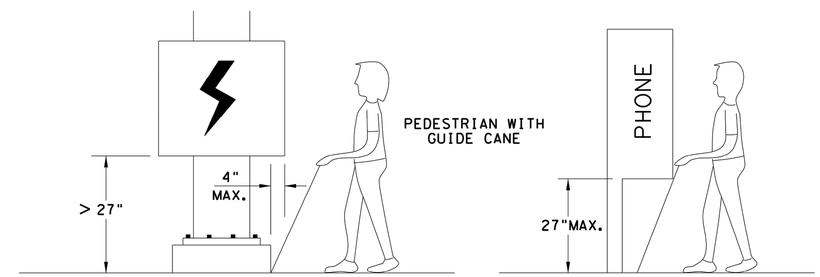
CLEAR SPACE ADJACENT TO PEDESTRIAN PUSH BUTTON



PLAN VIEW

PLACEMENT OF STREET FIXTURES

NOTE: ITEMS NOT INTENDED FOR PUBLIC USE. MINIMUM 4' X 4' CLEAR GROUND SPACE REQUIRED AT PUBLIC USE FIXTURES.



WHEN AN OBSTRUCTION OF A HEIGHT GREATER THAN 27" FROM THE SURFACE WOULD CREATE A PROTRUSION OF MORE THAN 4" INTO THE PEDESTRIAN CIRCULATION AREA, CONSTRUCT ADDITIONAL CURB OR FOUNDATION AT THE BOTTOM TO PROVIDE A MAXIMUM 4" OVERHANG.

PROTRUDING OBJECTS OF A HEIGHT ≤27" ARE DETECTABLE BY CANE AND DO NOT REQUIRE ADDITIONAL TREATMENT.

DETECTION BARRIER FOR VERTICAL CLEARANCE < 80"

SHEET 3 OF 4

Texas Department of Transportation — Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST		COUNTY	SHEET NO. 41

DATE:
FILE:

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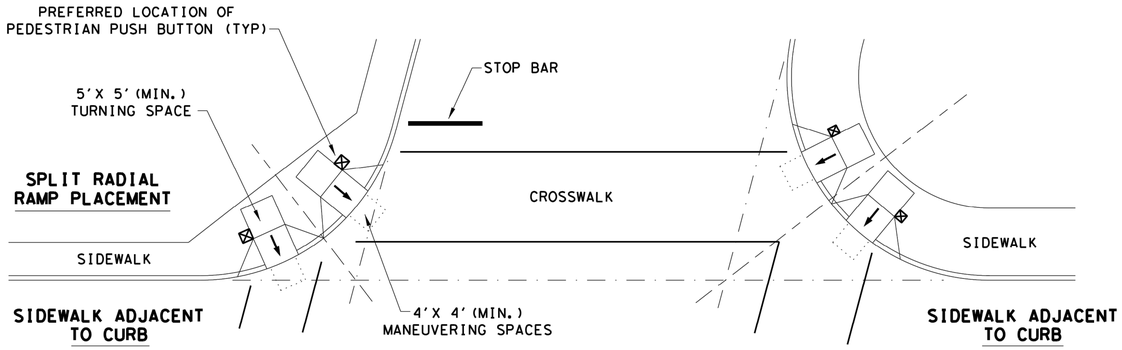
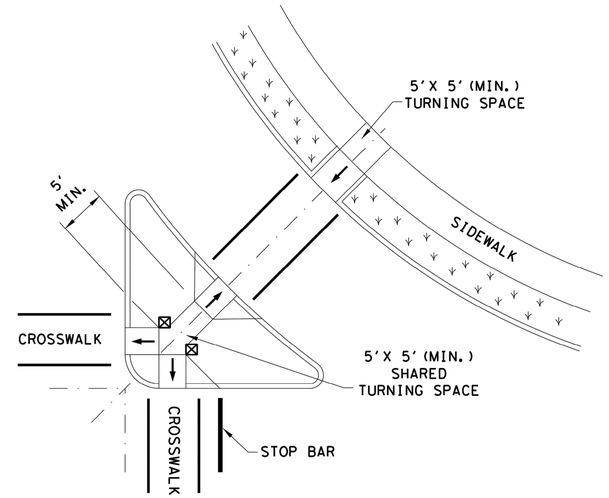
TYPICAL CROSSING LAYOUTS

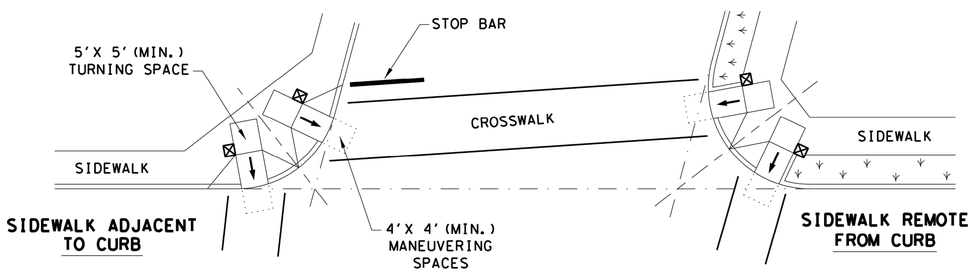
SEE SHEET 1 OF 4 FOR DETAILS AND DIMENSIONS



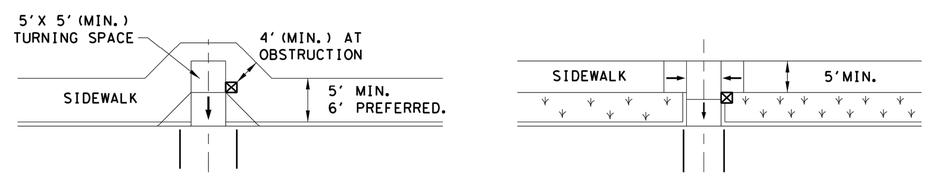
SKEWED INTERSECTION WITH "LARGE" RADIUS



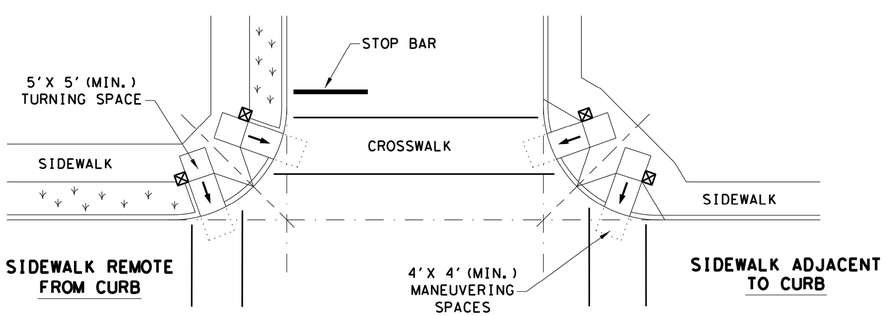
AT INTERSECTION W/FREE RIGHT TURN & ISLAND



SKEWED INTERSECTION WITH "SMALL" RADIUS



MID-BLOCK PLACEMENT PERPENDICULAR RAMPS



NORMAL INTERSECTION WITH "SMALL" RADIUS

LEGEND:

SHOWS DOWNWARD SLOPE. →

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON (IF APPLICABLE). ⊠

DENOTES PLANTING OR NON-WALKING SURFACE NOT PART OF PEDESTRIAN CIRCULATION PATH.

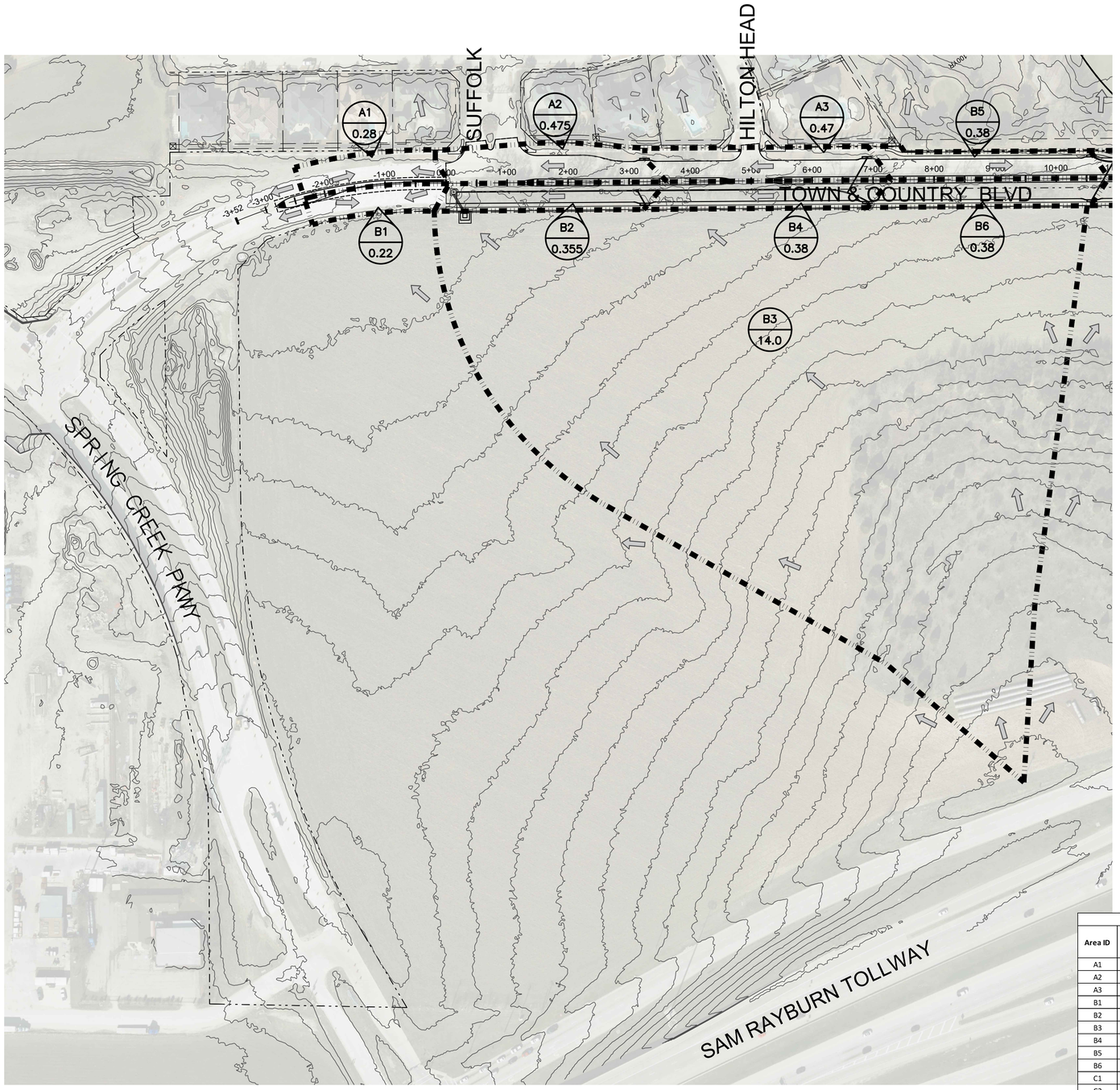
Texas Department of Transportation — Design Division Standard

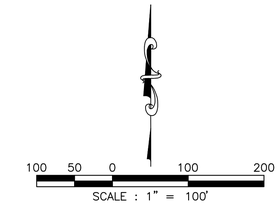
PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS				
REVISED 08, 2005	DIST	COUNTY		SHEET NO.
REVISED 06, 2012				
REVISED 01, 2018				42

DATE:
FILE:





LEGEND

- DIRECTION OF FLOW
- AREA BOUNDARY
- FEMA 100 YEAR FLOOD PLAIN
- X-X / X.XXX AC — AREA ID / ACREAGE

RATIONAL METHOD COMPUTATIONS

Area ID	Acreage 'A'	Runoff Coefficient 'C'	C x A'	Time of Concentration (min)	I_2 (in/hr)	I_{25} (in/hr)	I_{100} (in/hr)	Q_2 (cfs)	Q_{25} (cfs)	Q_{100} (cfs)	Comment
A1	0.280	0.90	0.25	10	4.91	7.26	8.74	1.24	1.83	2.20	
A2	0.475	0.90	0.43	10	4.91	7.26	8.74	2.10	3.10	3.74	
A3	0.470	0.90	0.42	10	4.91	7.26	8.74	2.08	3.07	3.70	
B1	0.220	0.90	0.20	10	4.91	7.26	8.74	0.97	1.44	1.73	
B2	0.355	0.90	0.32	10	4.91	7.26	8.74	1.57	2.32	2.79	
B3	14.000	0.55	7.70	15	4.21	6.36	7.69	32.42	48.97	59.20	
B4	0.380	0.90	0.34	10	4.91	7.26	8.74	1.68	2.48	2.99	
B5	0.380	0.90	0.34	10	4.91	7.26	8.74	1.68	2.48	2.99	
B6	0.380	0.90	0.34	10	4.91	7.26	8.74	1.68	2.48	2.99	
C1	0.475	0.90	0.43	10	4.91	7.26	8.74	2.10	3.10	3.74	
C2	0.490	0.90	0.44	10	4.91	7.26	8.74	2.17	3.20	3.85	
D1	0.420	0.90	0.38	10	4.91	7.26	8.74	1.86	2.74	3.30	
D2	0.455	0.90	0.41	10	4.91	7.26	8.74	2.01	2.97	3.58	
E1	0.675	0.90	0.61	10	4.91	7.26	8.74	2.98	4.41	5.31	
F1	0.765	0.90	0.69	10	4.91	7.26	8.74	3.38	5.00	6.02	
G1	0.355	0.90	0.32	10	4.91	7.26	8.74	1.57	2.32	2.79	
G2	0.380	0.90	0.34	10	4.91	7.26	8.74	1.68	2.48	2.99	
H1	0.985	0.90	0.89	10	4.91	7.26	8.74	4.35	6.44	7.75	
H2	0.605	0.90	0.54	10	4.91	7.26	8.74	2.67	3.95	4.76	

NO.	DATE	COMMENT

REVISIONS

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PRELIMINARY
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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)

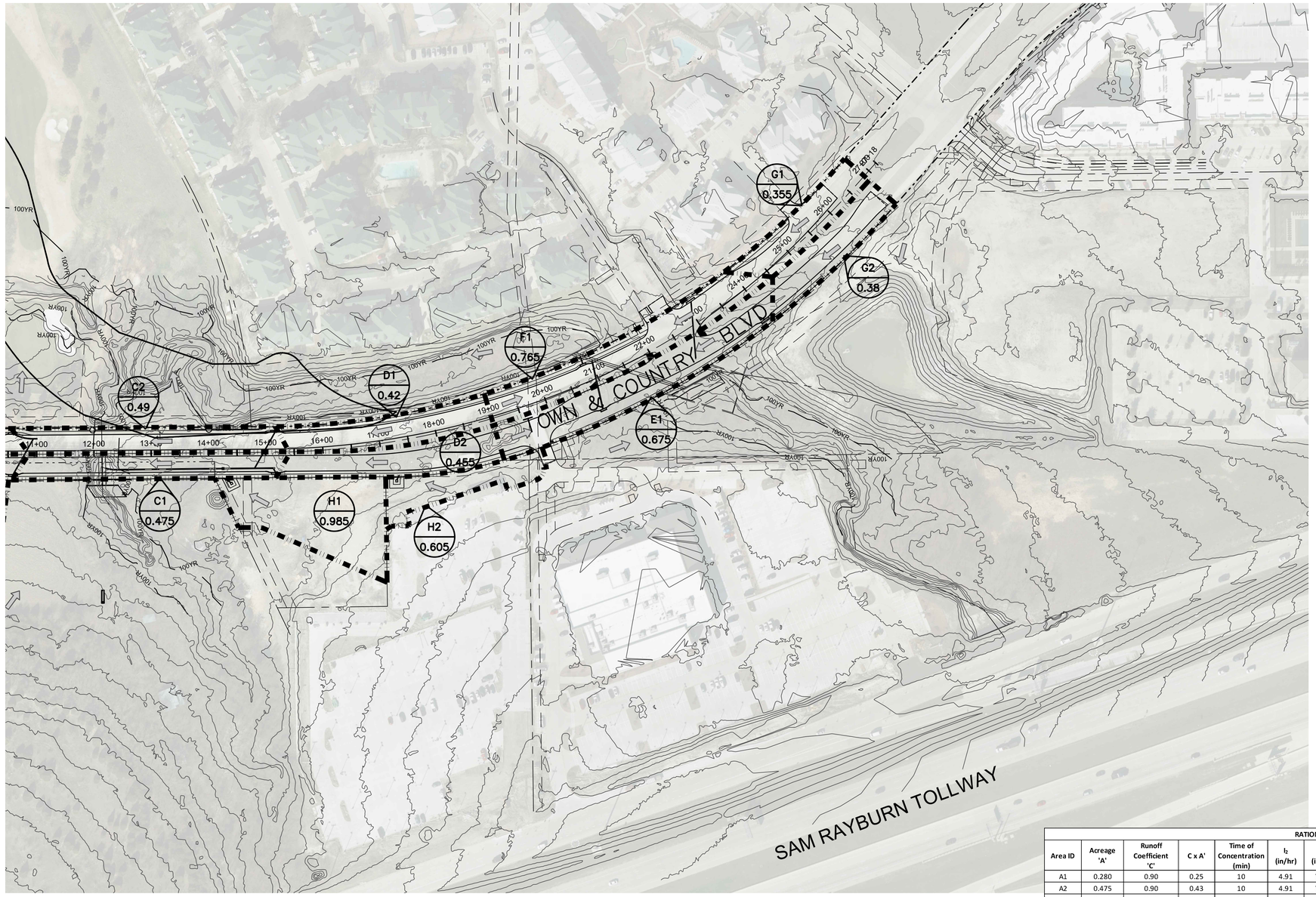
DRAINAGE AREA MAP

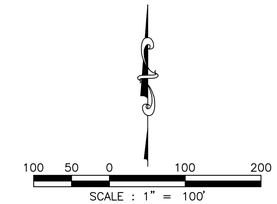
CobbFendley
TBPE Firm Registration No. 274
TBPLS Firm Registration No. 100467
2801 Network Boulevard, Suite 800
Frisco, Texas 75034
972.335.3214 | fax 972.335.3202 | www.cobbfendley.com

DESIGN BY: MEA	DRAWN BY: MEA
DATE: JAN 2020	JOB NUMBER: 1612-046-01

SHEET 43

Dwg Info: F:\Projects\2016\12046 Frisco - Town & County\CAD\Drainage Area Map.dwg - Plotted: 1/24/2020





LEGEND

- DIRECTION OF FLOW
- AREA BOUNDARY
- FEMA 100 YEAR FLOOD PLAIN
- X-X / X.XXX AC — AREA ID / ACREAGE

RATIONAL METHOD COMPUTATIONS

Area ID	Acreage 'A'	Runoff Coefficient 'C'	C x A'	Time of Concentration (min)	I_2 (in/hr)	I_{25} (in/hr)	I_{100} (in/hr)	Q_2 (cfs)	Q_{25} (cfs)	Q_{100} (cfs)	Comment
A1	0.280	0.90	0.25	10	4.91	7.26	8.74	1.24	1.83	2.20	
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B1	0.220	0.90	0.20	10	4.91	7.26	8.74	0.97	1.44	1.73	
B2	0.355	0.90	0.32	10	4.91	7.26	8.74	1.57	2.32	2.79	
B3	14.000	0.55	7.70	15	4.21	6.36	7.69	32.42	48.97	59.20	
B4	0.380	0.90	0.34	10	4.91	7.26	8.74	1.68	2.48	2.99	
B5	0.380	0.90	0.34	10	4.91	7.26	8.74	1.68	2.48	2.99	
B6	0.380	0.90	0.34	10	4.91	7.26	8.74	1.68	2.48	2.99	
C1	0.475	0.90	0.43	10	4.91	7.26	8.74	2.10	3.10	3.74	
C2	0.490	0.90	0.44	10	4.91	7.26	8.74	2.17	3.20	3.85	
D1	0.420	0.90	0.38	10	4.91	7.26	8.74	1.86	2.74	3.30	
D2	0.455	0.90	0.41	10	4.91	7.26	8.74	2.01	2.97	3.58	
E1	0.675	0.90	0.61	10	4.91	7.26	8.74	2.98	4.41	5.31	
F1	0.765	0.90	0.69	10	4.91	7.26	8.74	3.38	5.00	6.02	
G1	0.355	0.90	0.32	10	4.91	7.26	8.74	1.57	2.32	2.79	
G2	0.380	0.90	0.34	10	4.91	7.26	8.74	1.68	2.48	2.99	
H1	0.985	0.90	0.89	10	4.91	7.26	8.74	4.35	6.44	7.75	
H2	0.605	0.90	0.54	10	4.91	7.26	8.74	2.67	3.95	4.76	

NO.	DATE	COMMENT

REVISIONS

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)

DRAINAGE AREA MAP

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DESIGN BY: MEA	DRAWN BY: MEA
DATE: JAN 2020	JOB NUMBER: 1612-046-01

SHEET 44

Dwg Info: F:\Projects\2016\12046 Frisco - Town & County\CAD\Drainage Area Map.dwg - Plotted: 1/24/2020

Inlet Capacity Calculation Table

Inlet: Design Point	Inlet: Inlet No.	Inlet: Station	Drainage Area: Area No.	Drainage Area: Areas (acres)	Drainage Area: Runoff "c"	Drainage Area: Conc. Time (min.)	100-year Intensity (in/hr)	100-year Runoff (cfs)	100-year Carryover Flow (cfs)	100-year Total Gutter Q (cfs)	Sag Inlet Percentage of flow from: Lower Station (%)	Sag Inlet Percentage of flow from: Higher Station (%)	Sag Inlet Split 100-year Runoff (cfs)		"S_L" Street Long. Slope (%)		Street Section (type)	Roadway Cross Slope "S_x" (%)	Manning's coefficient for pavement "n"	Street Capacity (cfs)	Right-of-Way Capacity (cfs)		100-year Depth of Flow (ft)		100-year Spread of Flow "T" (ft)		Gutter Cross Slope "Sw" (%)	Width of Depressed Gutter "W" (ft)	100-year Ratio of Flow "E_0"	Gutter Depression Depth "a" (ft)	Equivalent Cross Slope "S_e" (%)	100-year Required Length "L_T" (ft)	Length Provided "L" (ft)	Inlet Efficiency "E"	100-year Captured Flow "Q_i" (cfs)	100-year Inlet Capacity (cfs)	100-year Carryover Flow "Q" (cfs)	Target Inlet	Comments
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
SAG																																							
A	1	-0+95.00	A1	0.280	0.90	10	8.743	2.203	0.367	2.571	60	40	1.542	1.028	1.00	0.30	Straight Crown	2	0.0175	9.010			0.212	0.266	10.60	13.28	2	2	0.35	0.333	7.882	5.18	16	1.000	2.571	8.049	No Carryover		
B	1	-0+95.00	B1	0.220	0.90	10	8.743	1.731	0.087	1.818	60	40	1.091	0.727	1.00	0.30	Straight Crown	2	0.0175	9.010			0.186	0.233	9.31	11.66	2	2	0.39	0.333	8.574	3.95	16	1.000	1.818	6.625	No Carryover		
ON GRADE																																							
A	2	-0+20.00	A2	0.475	0.90	10	8.743	3.738	0	3.738	0	0	0	0	1.22	N/A	Straight Crown	2	0.0175	9.951999		N/A	0.235	N/A	11.75	N/A	2	2	0.39	0.333	8.534	13.80	10	0.902	3.370	1.734	0.367	A1	
B	2	-0+20.00	B2	0.355	0.90	10	8.743	2.793	0	2.793	0	0	0	0	1.22	N/A	Straight Crown	2	0.0175	9.951999		N/A	0.211	N/A	10.53	N/A	2	2	0.43	0.333	9.161	11.71	10	0.969	2.706	1.919	0.087	A2	
ON GRADE																																							
A	3	3+25.31	A3	0.470	0.90	10	8.743	3.698	0	3.698	0	0	0	0	0.80	N/A	Straight Crown	2	0.0175	8.059		N/A	0.253	N/A	12.66	N/A	2	2	0.37	0.333	8.128	12.47	16	1.000	3.698	6.691	No Carryover		
B	4	3+25.31	B4	0.380	0.90	10	8.743	2.990	0	2.990	0	0	0	0	0.80	N/A	Straight Crown	2	0.0175	8.059		N/A	0.234	N/A	11.69	N/A	2	2	0.39	0.333	8.559	11.06	16	1.000	2.990	7.204	No Carryover		
B	5	6+90.00	B5	0.380	0.90	10	8.743	2.990	0	2.990	0	0	0	0	1.20	N/A	Straight Crown	2	0.0175	9.870		N/A	0.217	N/A	10.84	N/A	2	2	0.42	0.333	8.992	12.12	16	1.000	2.990	5.787	No Carryover		
B	6	6+90.00	B6	0.380	0.90	10	8.743	2.990	0	2.990	0	0	0	0	1.20	N/A	Straight Crown	2	0.0175	9.870		N/A	0.217	N/A	10.84	N/A	2	2	0.42	0.333	8.992	12.12	16	1.000	2.990	5.787	No Carryover		
ON GRADE																																							
C	2	10+58.12	C2	0.490	0.90	10	8.743	3.856	0	3.856	0	0	0	0	0.80	N/A	Straight Crown	2	0.0175	8.059		N/A	0.257	N/A	12.86	N/A	2	2	0.36	0.333	8.046	12.77	16	1.000	3.856	6.595	No Carryover		
C	1	10+58.12	C1	0.475	0.90	10	8.743	3.738	0	3.738	0	0	0	0	0.80	N/A	Straight Crown	2	0.0175	8.059		N/A	0.254	N/A	12.71	N/A	2	2	0.37	0.333	8.107	12.54	16	1.000	3.738	6.667	No Carryover		
D	1	15+17.00	D1	0.420	0.90	10	8.743	3.305	0	3.305	0	0	0	0	1.80	N/A	Straight Crown	2	0.0175	12.088		N/A	0.209	N/A	10.43	N/A	2	2	0.43	0.333	9.220	14.06	16	1.000	3.305	4.490	No Carryover		
D	2	15+17.00	D2	0.455	0.90	10	8.743	3.580	0	3.580	0	0	0	0	1.80	N/A	Straight Crown	2	0.0175	12.088		N/A	0.215	N/A	10.75	N/A	2	2	0.42	0.333	9.042	14.72	16	1.000	3.580	4.367	No Carryover		
SAG																																							
F	1	20+85.40	F1	0.765	0.90	10	8.743	6.020	0	6.020	30	70	1.806	4.214	0.15	0.15	Straight Crown	2	0.0175	3.490			0.416	0.416	20.81	20.81	2	2	0.24	0.333	5.937	3.87	10	1.000	6.020	10.954	No Carryover		
E	1	20+85.40	E1	0.675	0.90	10	8.743	5.311	0.000	5.311	30	70	1.593	3.718	0.15	0.15	Straight Crown	2	0.0175	3.490			0.397	0.397	19.85	19.85	2	2	0.25	0.333	6.110	3.48	10	1.000	5.311	10.209	No Carryover		
ON GRADE																																							
G	1	23+95.40	G1	0.355	0.90	10	8.743	2.793	0	2.793	0	0	0	0	4.07	N/A	Straight Crown	2	0.0175	18.177		N/A	0.168	N/A	8.40	N/A	2	2	0.52	0.333	10.592	15.40	16	1.000	2.793	3.057	No Carryover		
G	2	23+95.40	G2	0.380	0.90	10	8.743	2.990	0	2.990	0	0	0	0	4.07	N/A	Straight Crown	2	0.0175	18.177		N/A	0.172	N/A	8.62	N/A	2	2	0.51	0.333	10.422	16.00	16	1.000	2.990	2.987	0.000001		

Storm Drain Calculation Table

From	To	Pipe Length	Drainage Area: Incremental No.	Drainage Area: Incremental Area	Drainage Area: Total Area	Runoff "c"	Incr. cA	Total cA	Time of Concentration: Inlet	Time of Concentration: Travel	Time of Concentration: Total	100-year Intensity	100-year Runoff	Total 100-year Runoff	Inlet Carryover (To Inlet)	Inlet Carryover "q" (From Inlet)	Q pipe	Pipe Size Diameter	Box Size: Width	Box Size: Height	n	S_f	HGL: U/S	HGL: D/S	Head Loss Calculations: V1 (in)	V2 (out)	$V1^2/2g$	$V2^2/2g$	Kj	$KjV1^2/2G$	Hk	Design HGL	Invert Elevation: From	Invert Elevation: To	T/C or Ground Elev.	Comments
		ft		acres	acres				min	min	min	in/hr	cfs	cfs	cfs	cfs	cfs	in	ft	ft		ft/ft	ft	ft	ft/s	ft/s	ft	ft		ft	ft	ft	ft	ft	ft	
1	2	3	4	5	6	7	8	9	10	11	12	13	14		15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
System A																																				
2+60.41	6+09.12	348.71	A3	0.470	0.470	0.90	0.423	0.423	10	2.78	12.78	8.743	3.698	3.698	0	0	11.370	18	-	-	0.013	0.0012	623.24	622.81	2.09	4.21	0.0680	0.2749	1.25	0.0850	0.3437	623.58	621.27	625.35	628.87	
1+81.85	2+60.41	78.56	A2	0.475	0.475	0.90	0.428	0.428	10	0.31	13.09	8.743	3.738	7.436	0	0.367	11.620	18	-	-	0.013	0.0050	622.71	622.32	4.21	3.07	0.2749	0.1462	0.35	0.0962	0.1000	622.81	620.31	621.27	625.29	
1+00.00	1+81.85	81.85	A1	0.280	0.280	0.90	0.252	0.252	10	0.44	13.53	8.743	2.203	9.639	0.367	0	16.004	24	-	-	0.013	0.0018	622.03	621.88	3.07	4.69	0.1462	0.3416	0.35	0.0512	0.2904	622.32	619.65	620.06	624.81	
System B																																				
10+03.76	10+40.29	36.53	B6	0.380	0.380	0.90	0.342	0.342	10	0.36	10.36	8.743	2.990	2.990	0	0	12.541	18	-	-	0.013	0.0008	627.49	627.46	1.69	3.38	0.0445	0.1778	1.25	0.0556	0.2223	627.71	628.47	628.99	633.49	
6+58.81	10+03.76	344.95	B5	0.380	0.380	0.90	0.342	0.342	10	1.70	12.06	8.743	2.990	5.980	0	0	12.541	18	-	-	0.013	0.0032	627.12	626.01	3.38	5.08	0.1778	0.4001	0.35	0.0622	0.3379	627.46	623.56	628.47	632.60	
3+57.88	6+58.81	300.93	B4	0.380	0.380	0.90	0.342	0.342	10	0.99	13.05	8.743	2.990	8.970	0	0	9.402	18	-	-	0.013	0.0072	625.91	623.73	5.08	3.47	0.4001	0.1872	0.35	0.1400	0.1000	626.01	621.15	623.56	628.39	
3+12.87	3+57.88	45.01	B3	14.000	14.000	0.55	7.700	7.700	15	0.22	13.26	7.688	59.198	68.168	0	0	177.953	60	-	-	0.013	0.0007	623.62	623.59	3.47	3.61	0.1872	0.2028	0.50	0.0936	0.1092	623.73	619.19	619.40	625.99	
2+39.86	3+12.87	73.01	B2	0.355	0.355	0.90	0.320	0.320	10	0.34	13.60	8.743	2.793	70.961	0	0.087	177.953	60	-	-	0.013	0.0007	623.45	623.40	3.61	3.70	0.2028	0.2128	0.35	0.0710	0.1418	623.59	618.85	619.19	625.62	
2+00.00	2+39.86	39.86	B1	0.220	0.220	0.90	0.198	0.198	10	0.18	13.78	8.743	1.731	72.692	0.087	0	177.953	60	-	-	0.013	0.0008	623.27	623.24	3.70	3.64	0.2128	0.2057	0.35	0.0745	0.1312	623.40	618.66	618.85	625.38	
System C																																				
1+15.47	1+50.99	35.52	C2	0.490	0.490	0.90	0.441	0.441	10	0.27	10.27	8.743	3.856	3.856	0	0	12.917	18	-	-	0.013	0.0013	634.50	634.45	2.18	4.30	0.0739	0.2867	1.25	0.0924	0.3584	634.86	631.27	631.81	636.54	
0+00.00	1+15.47	115.47	C1	0.475	0.475	0.90	0.428	0.428	10	0.45	10.72	8.743	3.738	7.593	0	0	12.916	18	-	-	0.013	0.0052	631.94	631.34	4.30	12.97	0.2867	2.6121	0.35	0.1003	2.5118	634.45	629.53	631.27	636.39	
System D																																				
2+92.30	5+05.93	213.63	-	-	-	-	-	-	-	0.77	0.77	-	8.200	8.200	0	0	12.348	18	-	-	0.013	0.0061	640.78	639.48	4.64	3.75	0.3343	0.2183	0.35	0.1170	0.1013	640.88	635.79	638.77	644.15	
2+59.82	2+92.30	32.48	D2	0.455	0.455	0.90	0.410	0.410	10	0.14	10.91	8.743	3.580	11.780	0	0	26.588	24	-	-	0.013	0.0027	639.20	639.11	3.75	4.80	0.2183	0.3580	0.35	0.0764	0.2816	639.48	635.34	635.79	640.81	
2+04.79	2+59.82	55.03	D1	0.420	0.420	0.90	0.378	0.378	10	0.19	11.10	8.743	3.305	15.085	0	0	26.588	24	-	-	0.013	0.0044	638.16	637.92	4.80	8.33	0.3580	1.0788	0.35	0.1253	0.9534	639.11	634.58	635.34	640.21	
0+86.22	2+04.79	118.57	-	-	-	-	-	-	-	0.24	11.34	-	11.100	26.185	0	0	40.487	24	-	-	0.013	0.0133	637.82	636.24	8.33	3.53	1.0788	0.1938	0.35	0.3776	0.1000	637.92	630.79	634.58	639.08	
0+00.00	0+86.22	86.22	-	-	-	-	-	-	-	0.17	11.51	-	11.100	26.185	0	0	29.459	24	-	-	0.013	0.0133	634.26	633.11	3.53	11.84	0.1938	2.1768	1.00	0.1938	1.9829	636.24	629.33	630.79	637.52	
System E																																				
0+44.69	0+85.69	41.00	E1	0.675	0.675	0.90	0.608	0.608	10	0.40	10.40	8.743	5.311	5.311	0.020	0	24.080	24	-	-	0.013	0.0005	642.24	642.22	1.69	5.03	0.0444	0.3933	1.25	0.0555	0.4917	642.73	638.46	638.92	643.42	
0+00.00	0+44.69	44.69	-	-	-	-	-	-	-	0.15	10.55	-	10.500	15.811	0	0	24.081	24	-	-	0.013	0.0049	641.42	641.20	5.03	8.39	0.3933	1.0930	0.75	0.2950	0.7980	642.22	637.95	638.46	644.10	
System F																																				
0+00.00	0+05.38	5.38	F1	0.765	0.765	0.90	0.689	0.689	10	0.03	10.03	8.743	6.020	6.020	0.004	0	50.868	18	-	-	0.013	0.0033	641.14	641.12	3.41	8.39	0.1802	1.0930	1.25	0.2252	1.3663	642.50	637.87	639.13	643.63	
System G																																				
1+64.32	2+00.00	35.68	-	-	-	-	-	-	-	0.04	0.04	-	101.800	101.800	0	0	127.626	36	-	-	0.013	0.0232	649.24	648.41	14.40	14.82	3.2207	3.4126	1.00	3.2207	0.1920	649.43	644.69	646.00	650.91	
1+16.28	1+64.32	48.04	G2	0.380	0.380	0.90	0.342	0.342	10	0.05	10.10	8.743	2.990	104.790	0	0.020	127.626	36	-	-	0.013	0.0245	646.01	644.83	14.82	15.22	3.4126	3.5970	0.35	1.1944	2.4026	648.41	642.93	644.69	649.53	
0+00.00	1+16.28	116.28	G1	0.355	0.355	0.90	0.320	0.320	10	0.13	10.22	8.743	2.793	107.583	0	0.004	127.626	36	-	-	0.013	0.0259	644.73	641.72	15.22	8.39	3.5970	1.0930	0.35	1.2590	0.1000	644.83	638.68	642.93	647.74	

Wye Inlet Capacity Table

Inlet: Design Point	Inlet: Inlet No.	Inlet: Station	Drainage Area: Area No.	Drainage Area: Areas (acres)	Drainage Area: Runoff "c"	Drainage Area: Conc. Time (min.)	100-year Intensity (in/hr)	100-year Runoff (cfs)	100-year Carryover Flow (cfs)	100-year Total Q (cfs)	Perimeter of Opening (ft)	Head/Depth (ft)	Wye Inlet Capacity (cfs)	100-year Carryover Flow "Q" (cfs)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
B	3	x	B3	14.00	0.55	15	7.688	59.198	0	59.198	24	1	74.40	No Carryover
H	1	x	H1	0.800	0.35	20	6.89	1.929	0	1.929	12	0.5	13.15	No Carryover
H	2	x	H2	0.605	0.90	10	8.743	4.761	0	4.761	12	0.5	13.15	No Carryover

Storm Lateral Calculation Table

From	To	Pipe Length	Drainage Area: Incremental No.	Drainage Area: Incremental Area	Drainage Area: Total Area	Runoff "c"	Incr. cA	Total cA	Time of Concentration: Inlet	Time of Concentration: Travel	Time of Concentration: Total	100-year Intensity	100-year Runoff	Inlet Carryover (To Inlet)	Inlet Carryover "q" (From Inlet)	Q pipe	Pipe Size Diameter	Box Size: Width	Box Size: Height	n	S_f	HGL: U/S	HGL: D/S	Head Loss Calculations: V1 (in)	V2 (out)	$V1^2/2g$	$V2^2/2g$	Kj	$KjV1^2/2G$	Hk	Design HGL	Invert Elevation: From	Invert Elevation: To	T/C or Ground Elev.	Comments
		ft		acres	acres				min	min	min	in/hr	cfs	cfs	cfs	cfs	in	ft	ft		ft/ft	ft	ft	ft/s	ft/s	ft	ft		ft	ft	ft	ft	ft	ft	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
Lateral A1																																			
0+00.00	0+05.40	5.40	A1	0.280	0.280	0.90	0.252	0.252	10	0.07	10.07	8.743	2.203	0.367	0	33.849	18	-	-	0.013	0.0004	622.32	622.32	1.25	3.07	0.0241	0.1463	1.25	0.0302	0.1829	622.51	620.31	620.87	625.36	
Lateral A2																																			
0+00.00	0+08.33	8.33	A2	0.475	0.475	0.90	0.428	0.428	10	0.07	10.07	8.743	3.738	0	0.367	32.370	18	-	-	0.013	0.0013	622.82	622.81	2.12	4.21	0.0695	0.2752	1.25	0.0868	0.3440	623.16	621.27	622.06	625.74	
Lateral B1																																			
0+00.00	0+22.39	22.39	B1	0.220	0.220	0.90	0.198	0.198	10	0.38	10.38	8.743	1.731	0.087	0	12.761	18	-	-	0.013	0.0003	623.41	623.40	0.98	3.70	0.0149	0.2126	1.25	0.0186	0.2657	623.67	620.60	620.93	625.45	
Lateral B2																																			
0+00.00	0+25.31	25.31	B2	0.355	0.355	0.90	0.320	0.320	10	0.27	10.27	8.743	2.793	0	0.087	11.056	18	-	-	0.013	0.0007	623.61	623.59	1.58	3.61	0.0388	0.2024	1.25	0.0485	0.2530	623.86	620.94	621.22	625.83	
Lateral B3																																			
0+00.00	0+36.66	36.66	B3	14.000	14.000	0.55	7.700	7.700	15	0.07	15.07	7.688	59.198	0	0	123.185	36	-	-	0.013	0.0078	624.02	623.73	8.37	3.47	1.0891	0.1870	1.25	1.3613	0.2337	624.25	620.65	621.90	627.77	
Lateral B4																																			
0+00.00	0+24.27	24.27	B4	0.380	0.380	0.90	0.342	0.342	10	0.24	10.24	8.743	2.990	0	0	16.527	18	-	-	0.013	0.0008	626.03	626.01	1.69	5.08	0.0445	0.4007	1.25	0.0556	0.5009	626.53	623.56	624.16	628.66	
Lateral B5																																			
0+00.00	0+64.96	64.96	B5	0.380	0.380	0.90	0.342	0.342	10	0.64	10.64	8.743	2.990	0	0	10.433	18	-	-	0.013	0.0008	627.51	627.46	1.69	3.38	0.0445	0.1774	1.25	0.0556	0.2217	627.73	628.47	629.11	633.61	
Lateral C1																																			
0+00.00	0+72.17	72.17	C1	0.490	0.490	0.90	0.441	0.441	10	0.55	10.55	8.743	3.856	0	0	10.715	18	-	-	0.013	0.0013	634.55	634.45	2.18	4.30	0.0739	0.2871	1.25	0.0924	0.3589	634.91	631.27	632.02	636.52	
Lateral D1																																			
0+00.00	0+73.10	73.10	D1	0.420	0.420	0.90	0.378	0.378	10	0.65	10.65	8.743	3.305	0	0	14.390	18	-	-	0.013	0.0010	639.18	639.11	1.87	4.80	0.0543	0.3578	1.25	0.0679	0.4472	639.63	635.34	636.71	641.21	
Lateral D2																																			
0+00.00	0+09.19	9.19	D2	0.455	0.455	0.90	0.410	0.410	10	0.08	10.08	8.743	3.580	0	0	35.360	18	-	-	0.013	0.0012	639.49	639.48	2.03	3.75	0.0637	0.2184	1.25	0.0797	0.2730	639.76	635.79	636.83	641.33	
Lateral G1																																			
0+00.00	1+12.45	112.45	G1	0.355	0.355	0.90	0.320	0.320	10	1.19	11.19	8.743	2.793	0	0.004	11.602	18	-	-	0.013	0.0007	644.91	644.83	1.58	15.22	0.0388	3.5970	1.25	0.0485	4.4963	649.41	644.43	645.80	650.30	
Lateral G2																																			
0+00.00	0+13.34	13.34	G2	0.380	0.380	0.90	0.342	0.342	10	0.13	10.13	8.743	2.990	0	0.020	12.870	18	-	-	0.013	0.0008	648.42	648.41	1.69	14.82	0.0445	3.4104	1.25	0.0556	4.2631	652.68	645.44	645.64	650.14	

NO.	DATE	COMMENT

REVISIONS

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)

DRAINAGE CALCULATIONS

FRISCO

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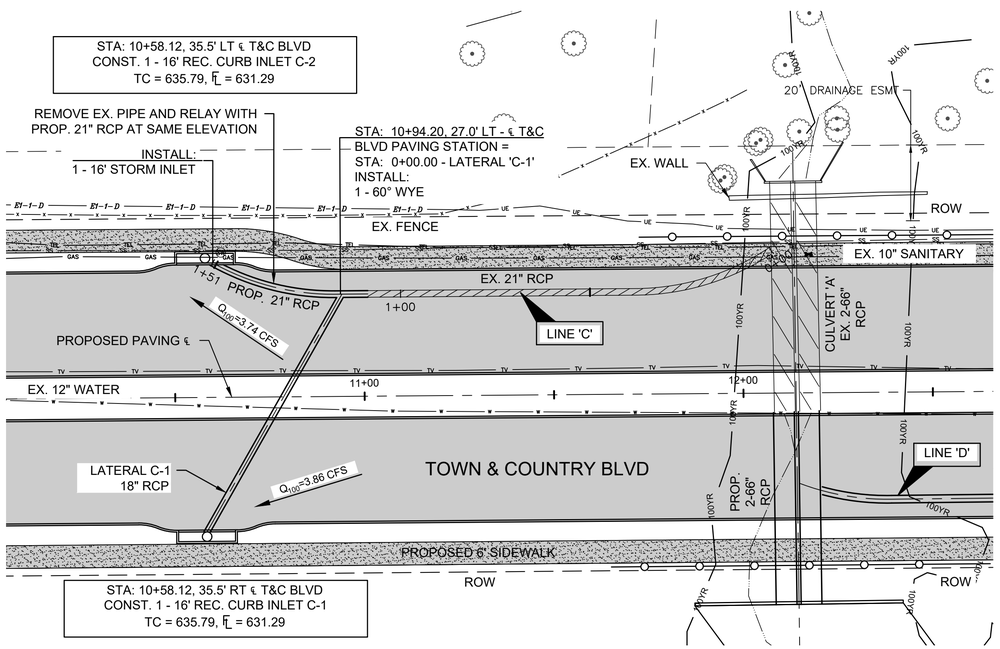
DESIGN BY: MEA	DRAWN BY: MEA
DATE: JAN 2020	JOB NUMBER: 1612-046-01

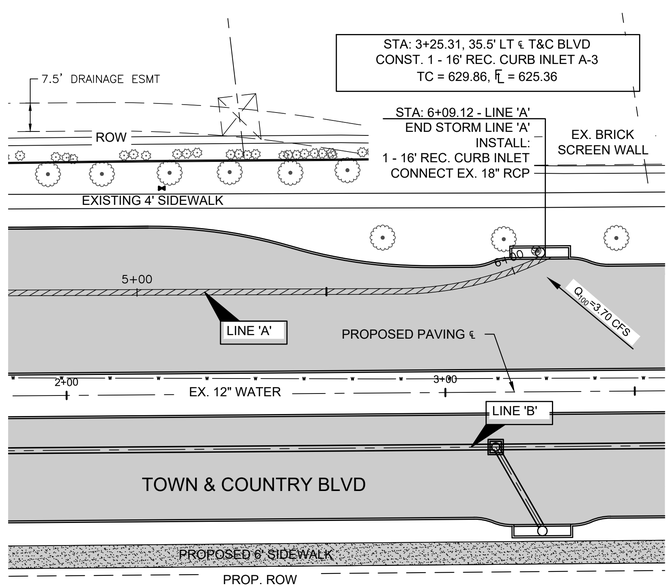
SHEET 45

Dwg Info: F:\Projects\2016\2046 Frisco - Town & Country\CAD\Drainage Calculations.dwg - Plotted: 1/24/2020

LINE 'C'



LINE 'A'



LEGEND

PROP. CENTERLINE	EX. STORM
R.O.W.	PROP. STORM
EASEMENT	EX. WATER
EX. GAS	PROP. WATER
EX. OVERHEAD ELECTRIC	EX. SANITARY
EX. FIBER	PROP. SANITARY

NOTE !!
EXISTING UTILITIES IN THE AREA. CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF ALL EXISTING UTILITIES WITH THE PROVIDER PRIOR TO START OF CONSTRUCTION AND SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY CONFLICTS DISCOVERED. CONTRACTOR IS RESPONSIBLE FOR COORDINATING UTILITY RELOCATION WHERE NECESSARY AND PROTECTING EXISTING UTILITIES (SHOWN OR NOT SHOWN). IF ANY EXISTING UTILITIES ARE DAMAGED, THE CONTRACTOR SHALL REPLACE THEM AT THEIR OWN EXPENSE.

811 Know what's below. Call before you dig.

20 10 0 20 40
SCALE : 1" = 20'

GENERAL NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR VERIFYING LOCATIONS OF ALL ADJACENT AND/OR CONFLICTING UTILITIES PRIOR TO CONSTRUCTION IN ORDER THAT ADJUSTMENTS CAN BE MADE TO PROVIDE ADEQUATE CLEARANCES IF REQUIRED. CONTRACTOR SHALL VERIFY THE DEPTH OF ALL UTILITIES PRIOR TO COMMENCING CONSTRUCTION.
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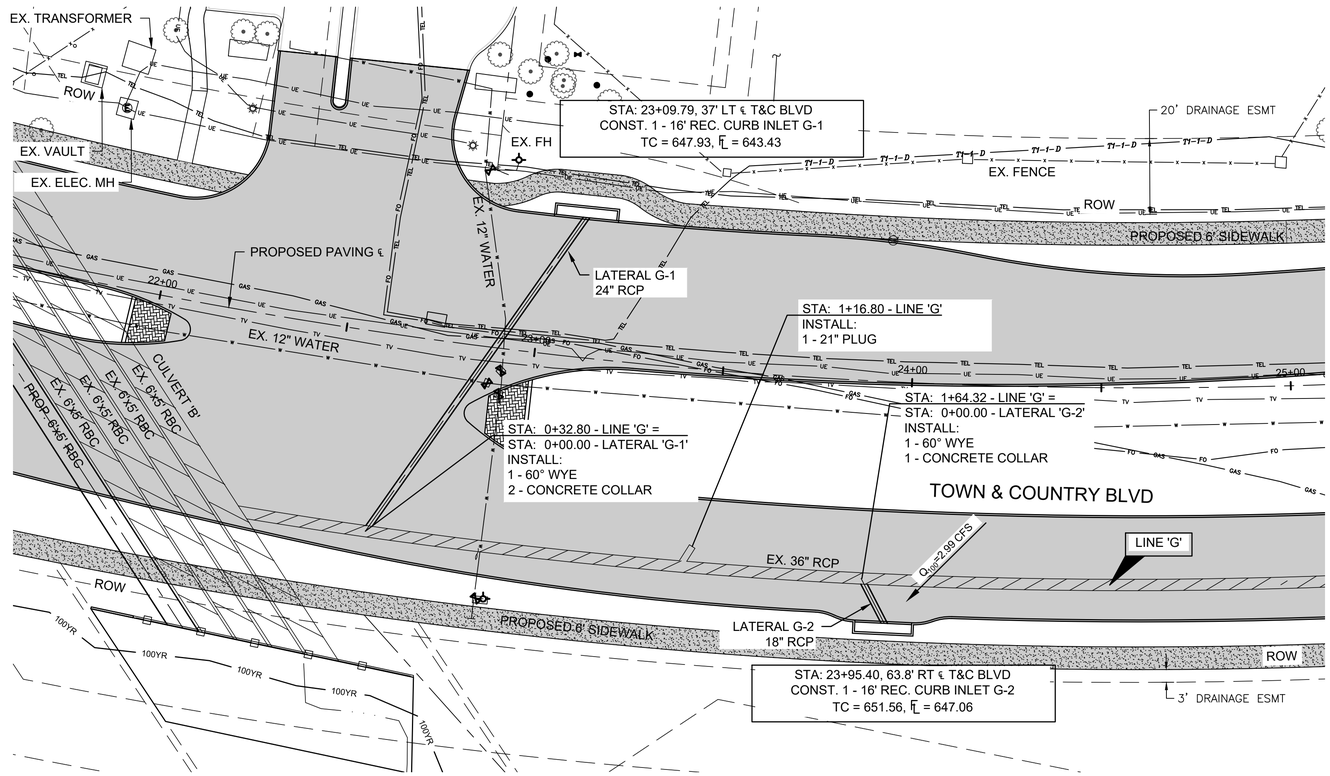
LINE 'G'



NO.	DATE	COMMENT

REVISIONS

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)

STORM LINE 'A' 'C' & 'G'

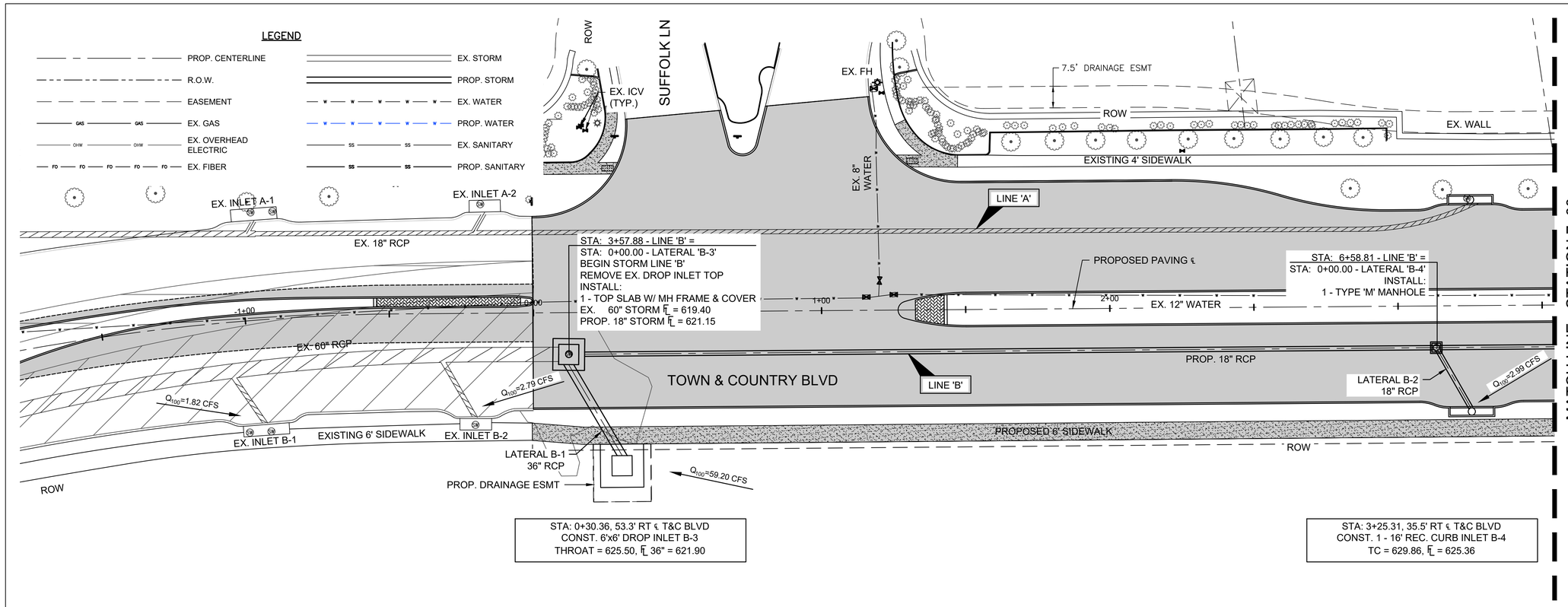
FRISCO

CobbFendley
TBPE Firm Registration No. 274
TBPLS Firm Registration No. 100467
2801 Network Boulevard, Suite 800
Frisco, Texas 75034
972.335.3214 | fax 972.335.3202 | www.cobbfendley.com

DESIGN BY: MEA	DRAWN BY: MEA
DATE: JAN 2020	JOB NUMBER: 1612-046-01

SHEET
46

Dwg Info: F:\Projects\2016\12046 Frisco - Town & Country\CAD\Storm Plan & Profile.dwg - Plotted: 1/24/2020



20 10 0 20 40
SCALE : 1" = 20'
VERT: 1" = 5'

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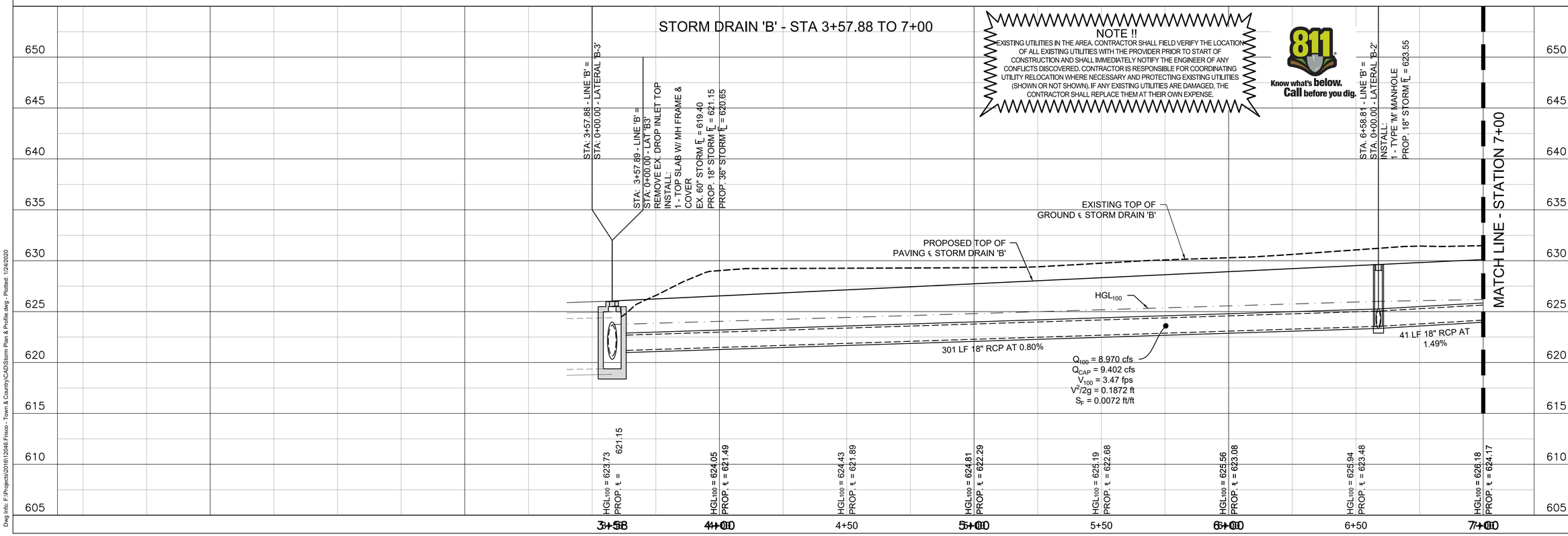

NO.	DATE	COMMENT

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)

STORM LINE 'B'

FRISCO

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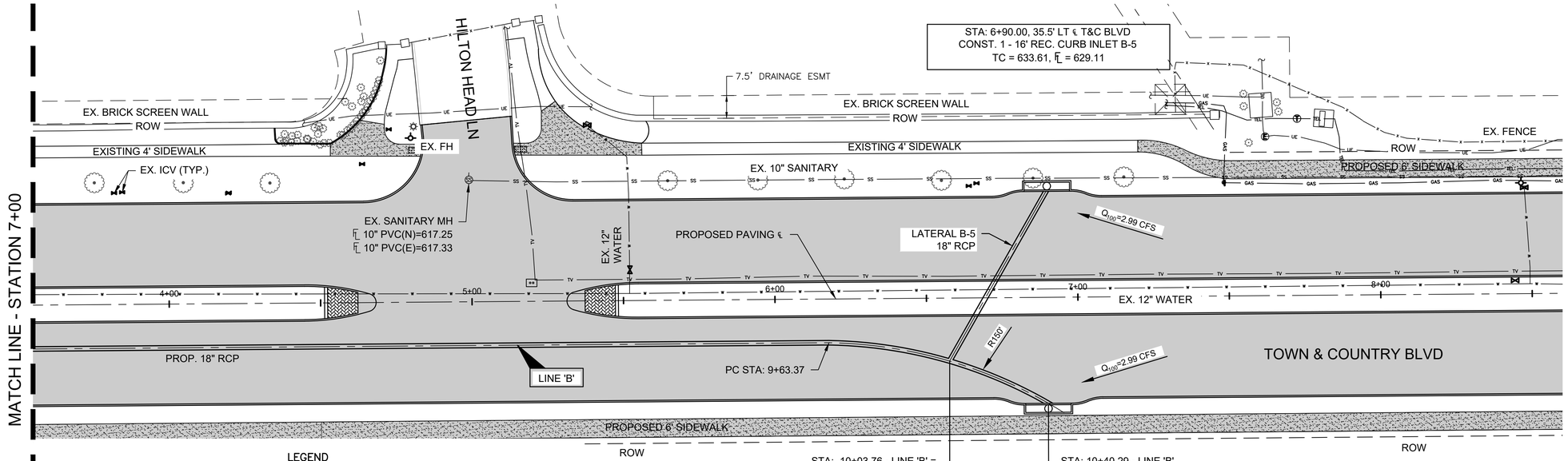
2801 Network Boulevard, Suite 800
Frisco, Texas 75034
972.335.3214 | fax 972.335.3202 | www.cobbfendley.com

DESIGN BY: MEA	DRAWN BY: MEA
DATE: JAN 2020	JOB NUMBER: 1612-046-01
SHEET 47	

Dwg Info: F:\Projects\2016\12046 Frisco - Town & Country\CAD\Storm Plan & Profile.dwg - Plotted: 1/24/2020



LEGEND

PROP. CENTERLINE	EX. STORM
R.O.W.	PROP. STORM
EASEMENT	EX. WATER
EX. GAS	PROP. WATER
EX. OVERHEAD ELECTRIC	EX. SANITARY
EX. FIBER	PROP. SANITARY

SCALE : 1" = 20'
VERT: 1" = 5'

GENERAL NOTES:

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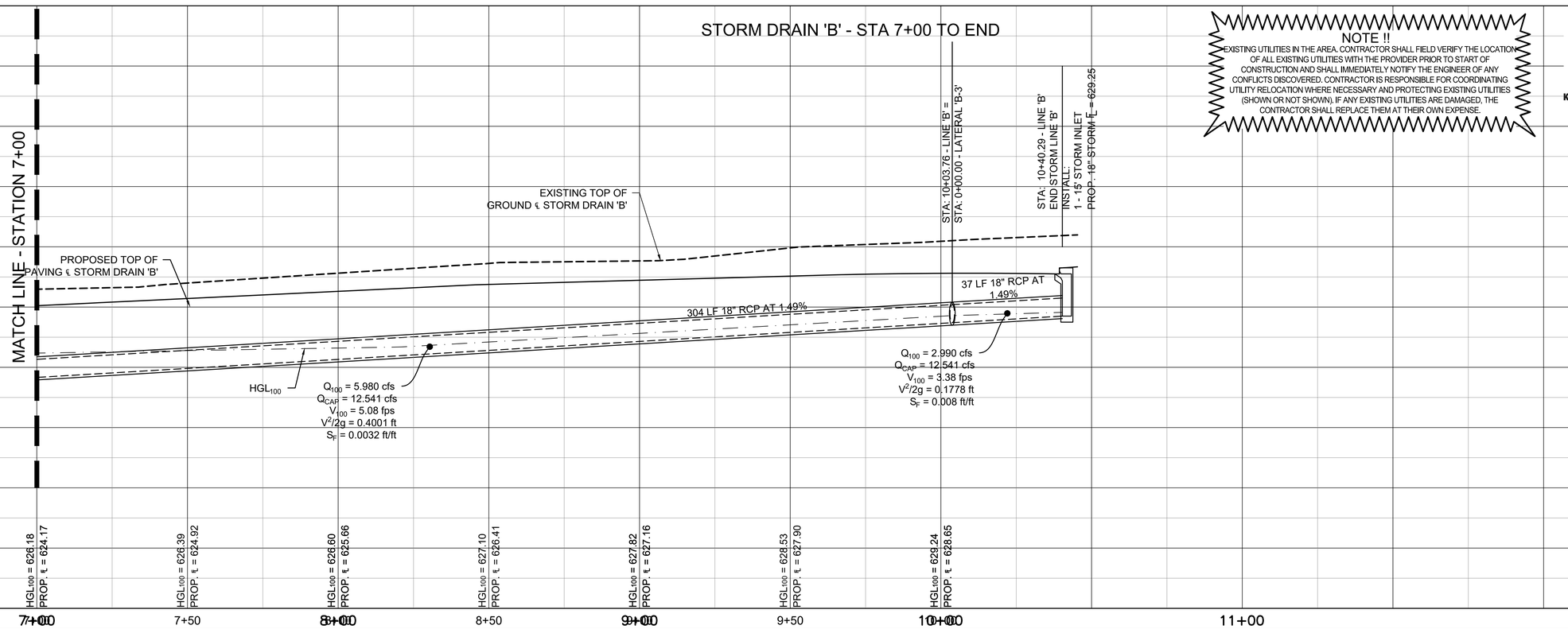

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)

STORM LINE 'B'

FRISCO

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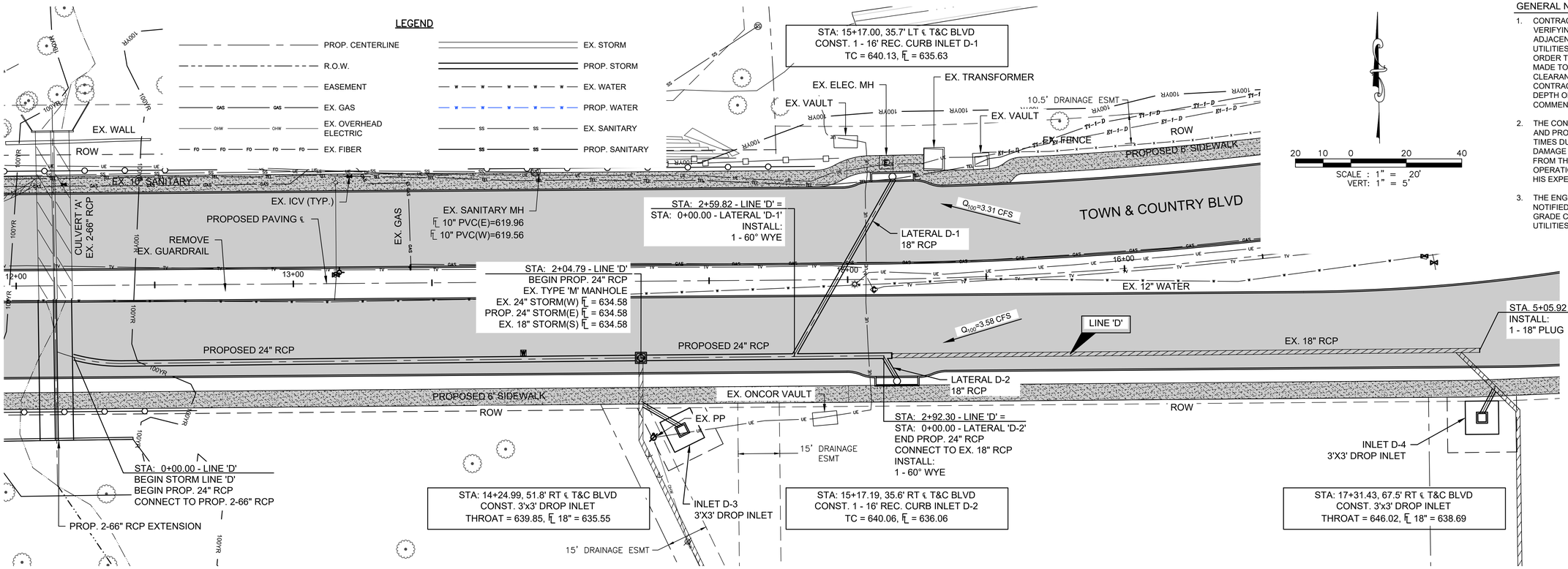
TBPLS Firm Registration No. 100467
2801 Network Boulevard, Suite 800
Frisco, Texas 75034
972.335.3214 | fax 972.335.3202 | www.cobbfendley.com

DESIGN BY: MEA	DRAWN BY: MEA
DATE: JAN 2020	JOB NUMBER: 1612-046-01

SHEET 48

Dwg Info: F:\Projects\2016\12046 Frisco - Town & Country\CAD\Storm Plan & Profile.dwg - Plotted: 1/24/2020



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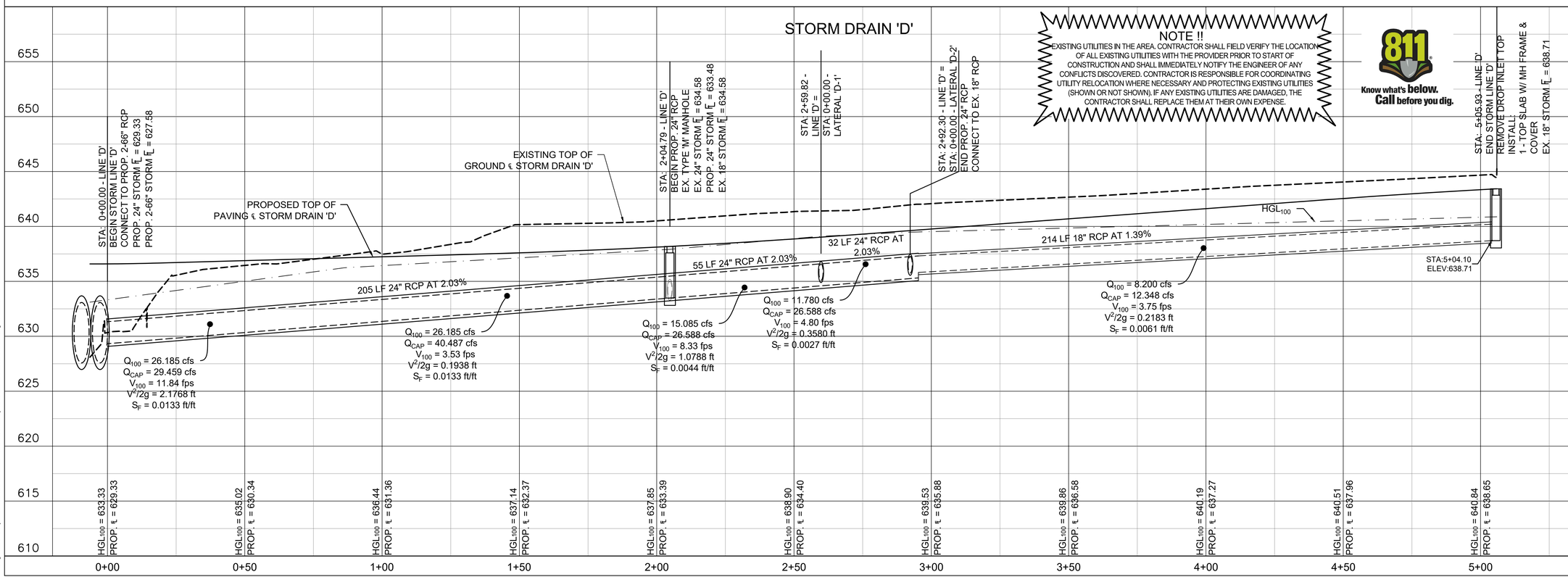

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)

STORM LINE 'D'

FRISCO

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TBPLS Firm Registration No. 100467
2801 Network Boulevard, Suite 800
Frisco, Texas 75034
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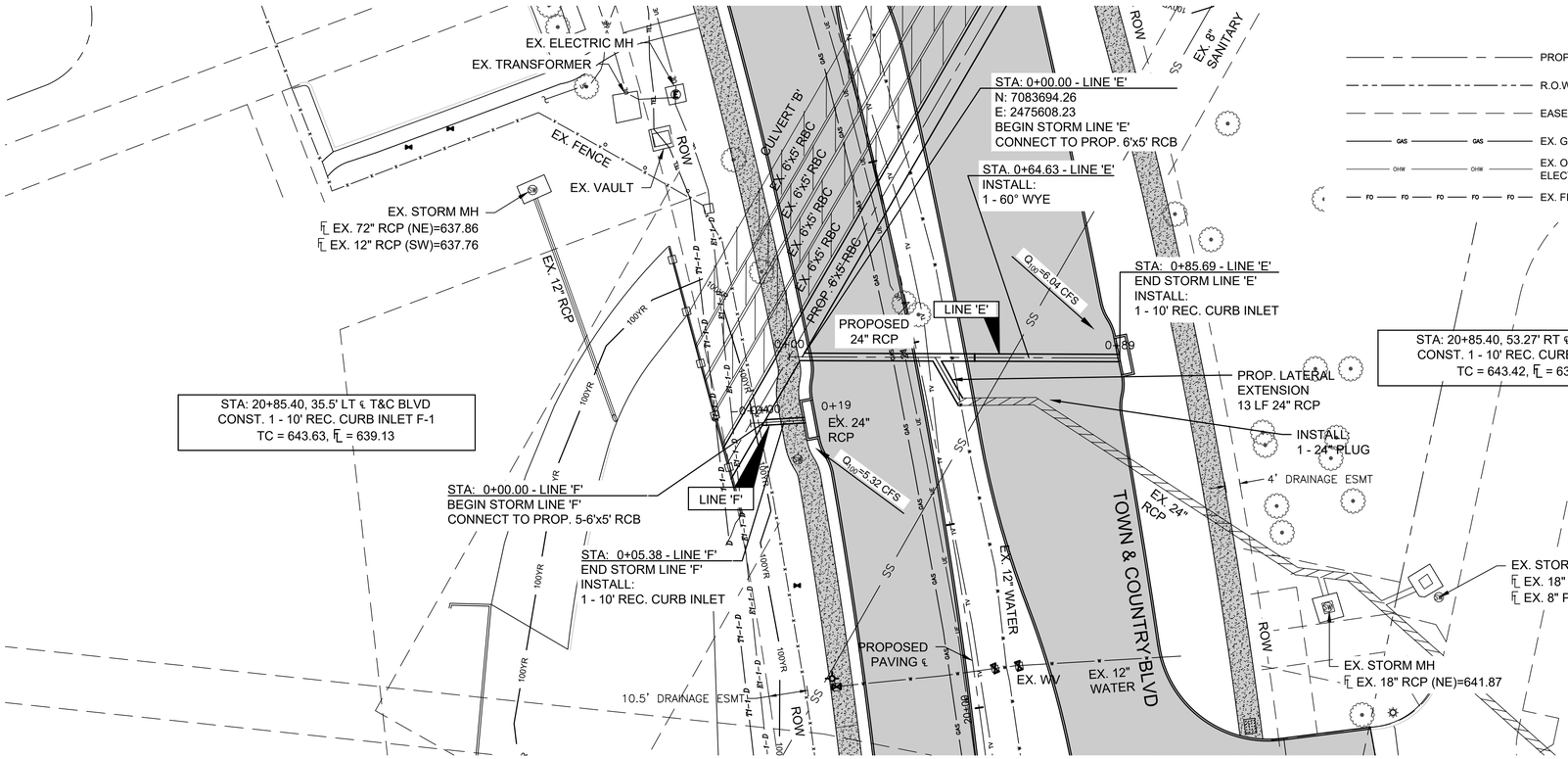
DESIGN BY: MEA	DRAWN BY: MEA
DATE: JAN 2020	JOB NUMBER: 1612-046-01

SHEET 49

Dwg Info: F:\Projects\2016\12046 Frisco - Town & Country\CAD\Storm Plan & Profile.dwg - Plotted: 1/24/2020



LEGEND

PROP. CENTERLINE	EX. STORM
R.O.W.	PROP. STORM
EASEMENT	EX. WATER
EX. GAS	PROP. WATER
EX. OVERHEAD ELECTRIC	EX. SANITARY
EX. FIBER	PROP. SANITARY

SCALE : 1" = 20'
VERT: 1" = 5'

GENERAL NOTES:

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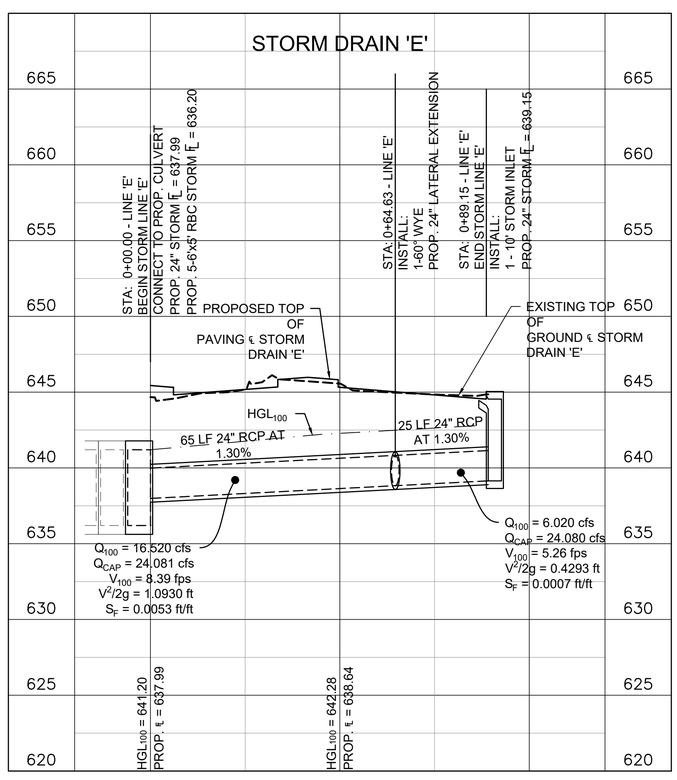

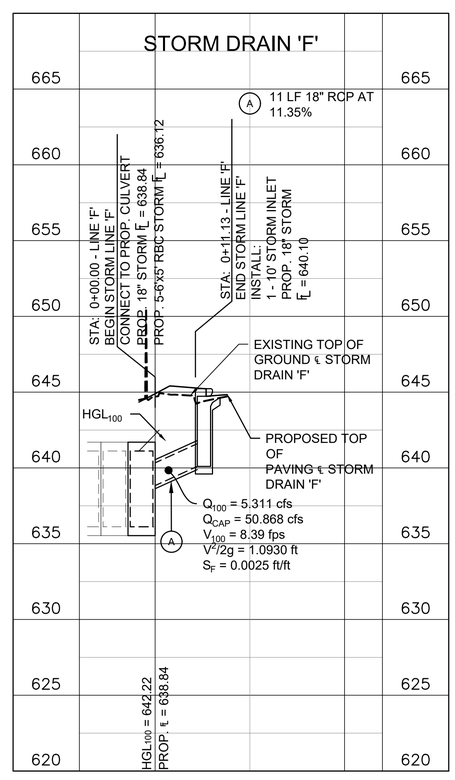

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NO.	DATE	COMMENT

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)

STORM LINE 'E' & 'F'

FRISCO

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TBPLS Firm Registration No. 100467
2801 Network Boulevard, Suite 800
Frisco, Texas 75034
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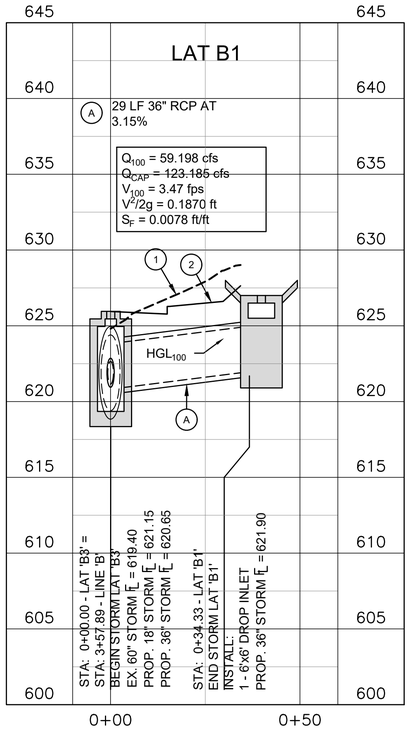
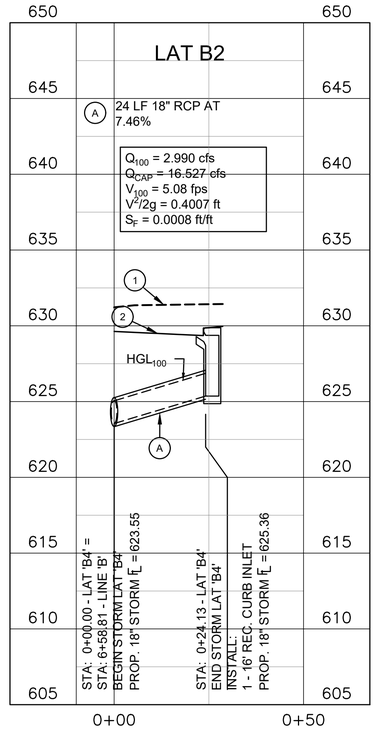
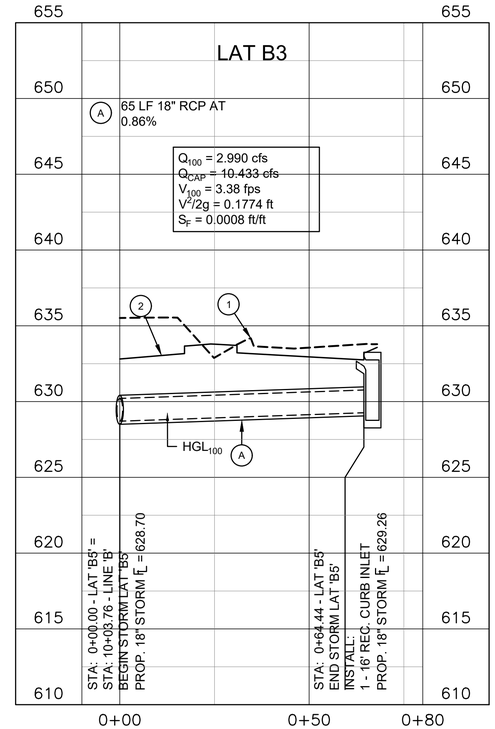
DESIGN BY: MEA	DRAWN BY: MEA
DATE: JAN 2020	JOB NUMBER: 1612-048-01

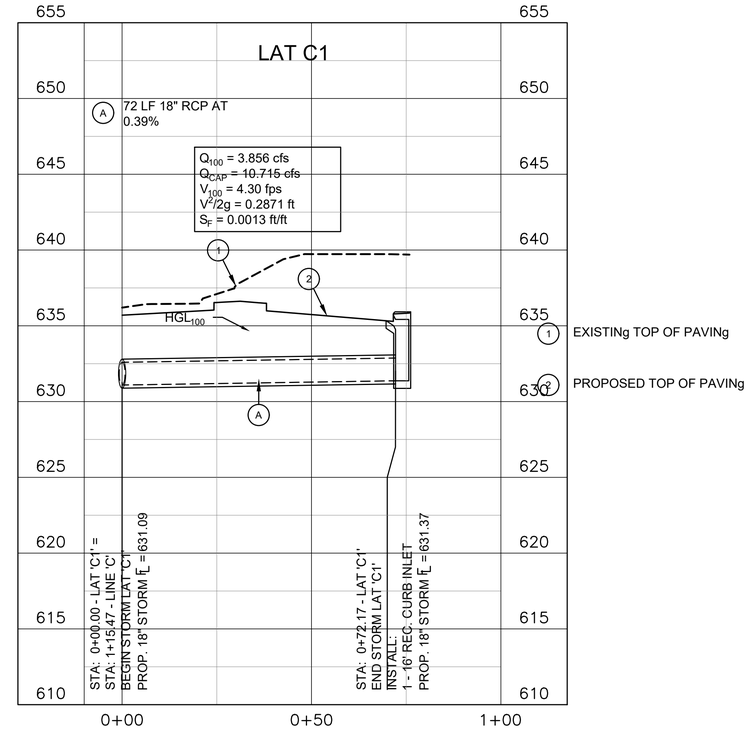
SHEET 50

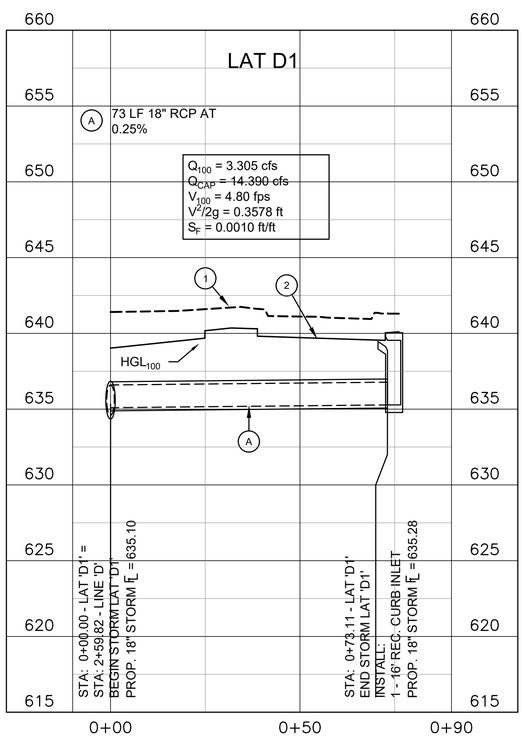
Dwg Info: F:\Projects\2016\12046.Frisco - Town & Country\CAD\Storm Plan & Profile.dwg - Plotted: 1/24/2020

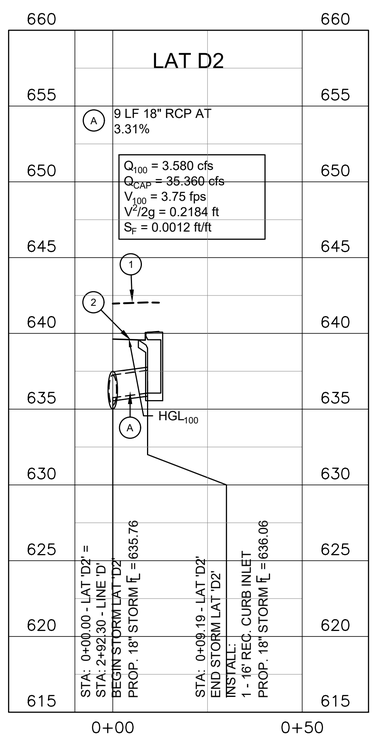


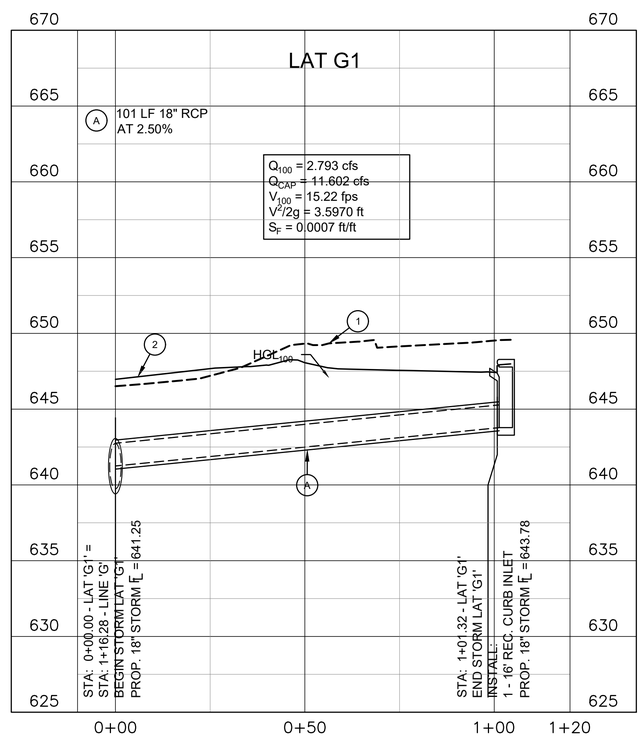


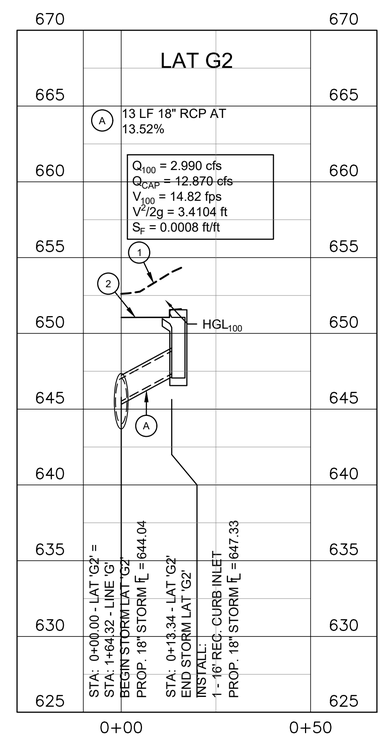












NO.	DATE	COMMENT

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)

STORM LATERAL PROFILES

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TBPLS Firm Registration No. 10046
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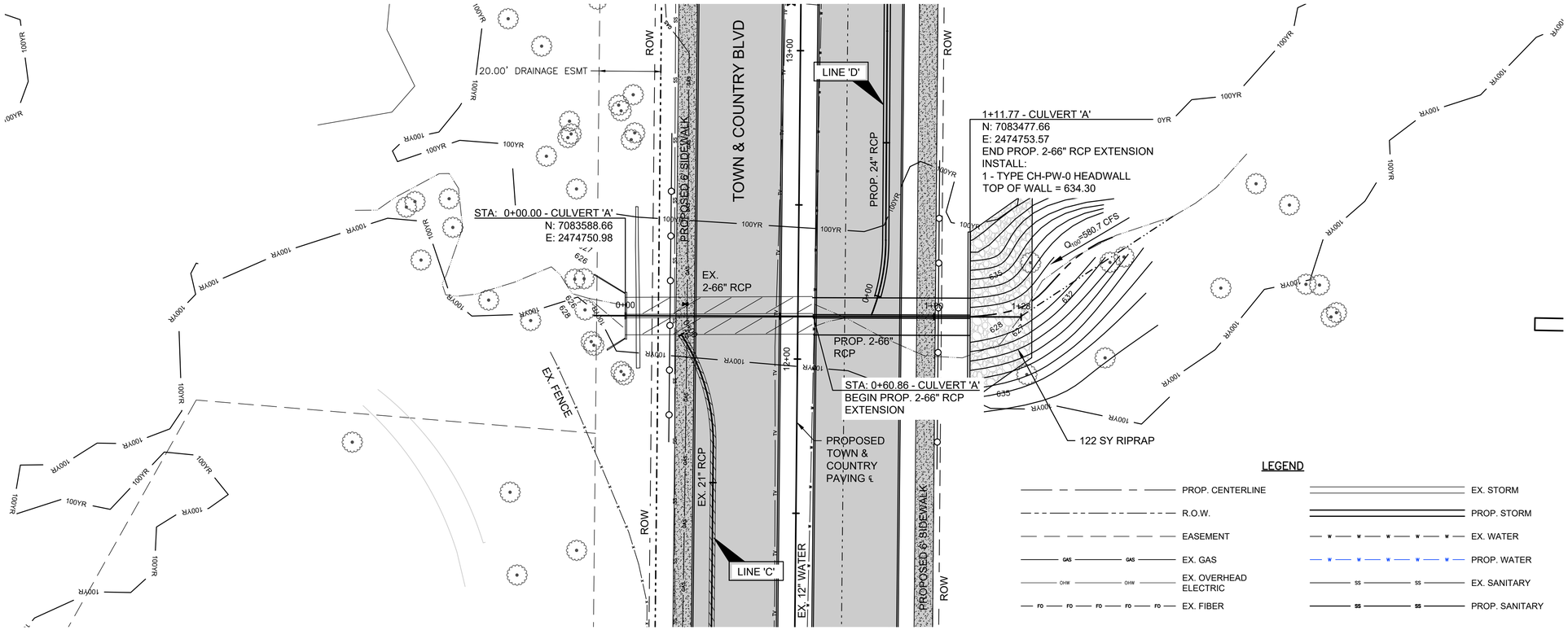
Frisco, Texas 75034
972.335.3214 | fax 972.335.3202 | www.cobbfendley.com

DESIGN BY: MEA	DRAWN BY: MEA
DATE: JAN 2020	JOB NUMBER: 1612-046-01

SHEET 51

Dwg Info: F:\Projects\2016\12046 Frisco - Town & Country\CAD\Storm Lateral Profiles.dwg - Plotted: 1/24/2020



20 10 0 20 40

SCALE : 1" = 20'
VERT: 1" = 5'

GENERAL NOTES:

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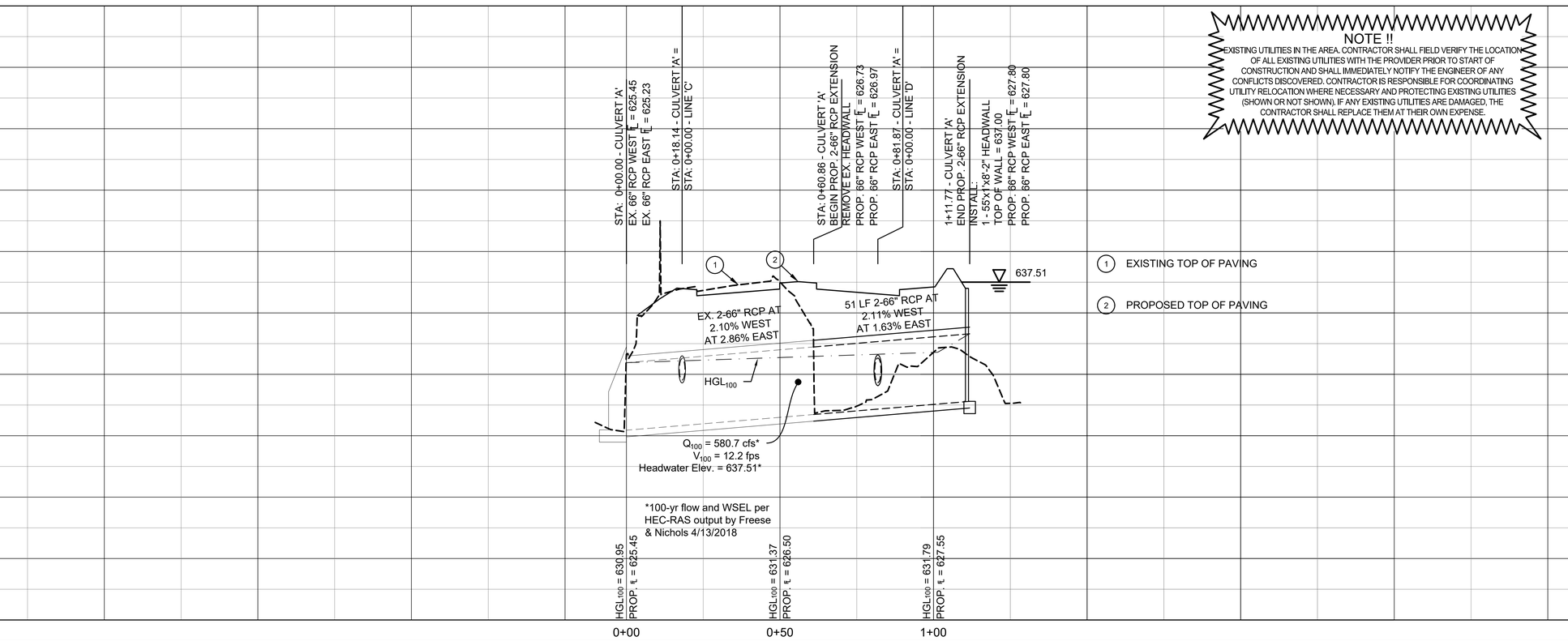
LEGEND

PROP. CENTERLINE	EX. STORM
R.O.W.	PROP. STORM
EASEMENT	EX. WATER
EX. GAS	PROP. WATER
EX. OVERHEAD ELECTRIC	EX. SANITARY
EX. FIBER	PROP. SANITARY



1 EXISTING TOP OF PAVING

2 PROPOSED TOP OF PAVING

NOTE !!
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NO.	DATE	COMMENT

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)

CULVERT 'A'

FRISCO

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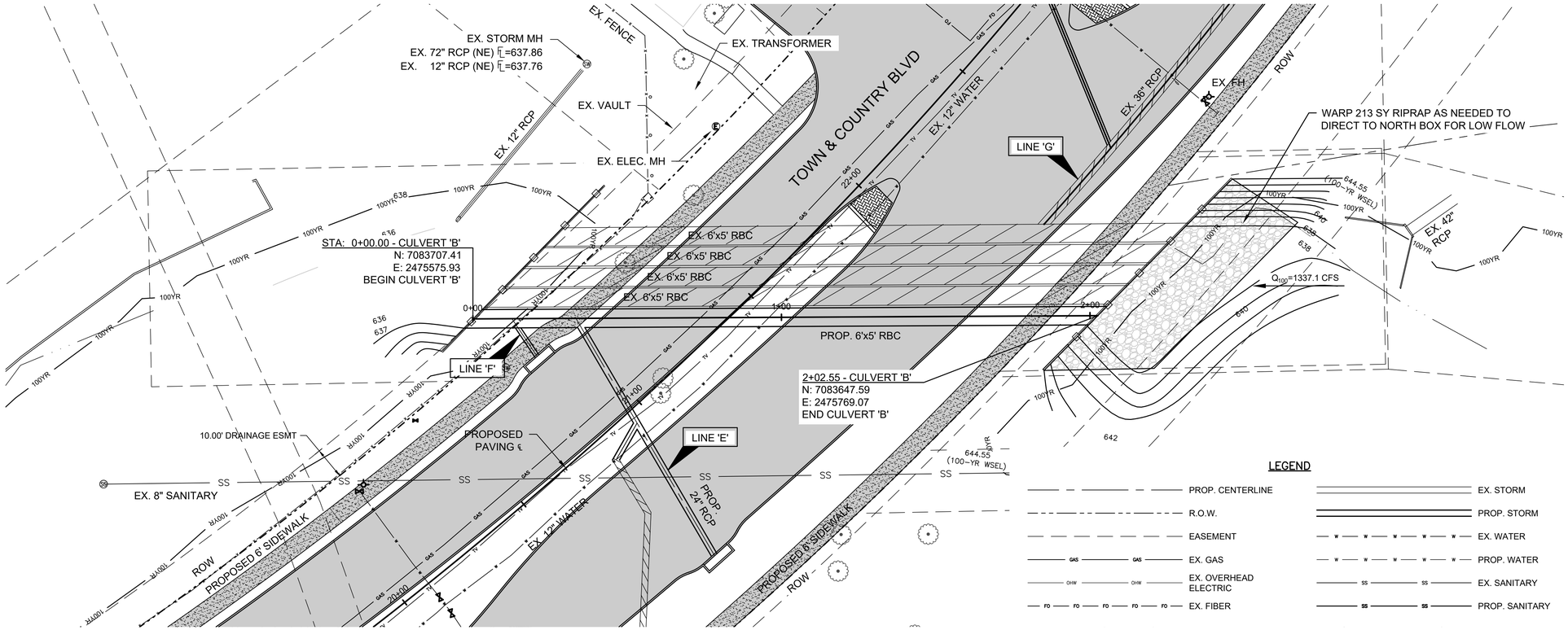
TBPLS Firm Registration No. 100467
2801 Network Boulevard, Suite 800
Frisco, Texas 75034
972.335.3214 | fax 972.335.3202 | www.cobbfendley.com

DESIGN BY: MEA	DRAWN BY: MEA
DATE: JAN 2020	JOB NUMBER: 1612-046-01

SHEET 52

Dwg Info: F:\Projects\2016\12046 Frisco - Town & Country\CAD\Culvert Plan & Profile.dwg - Plotted: 1/24/2020



20 10 0 20 40

SCALE : 1" = 20'
VERT: 1" = 5'

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LEGEND

PROP. CENTERLINE	EX. STORM
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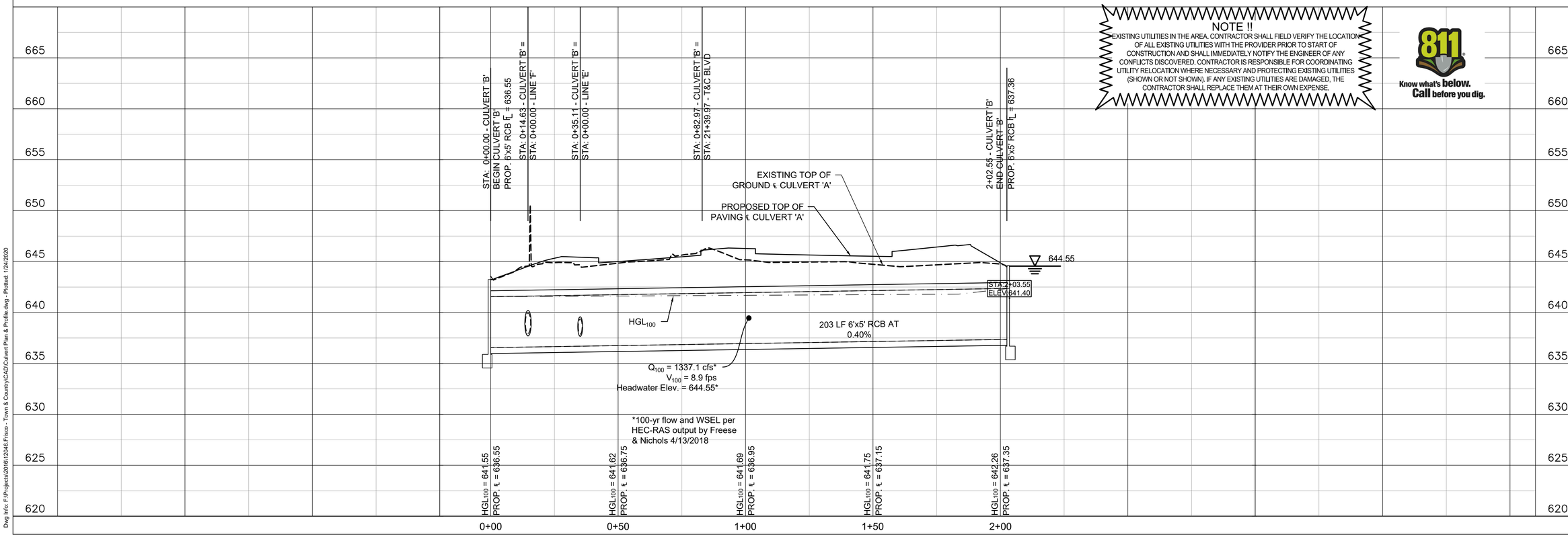

NO.	DATE	COMMENT

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)

CULVERT 'B'

FRISCO

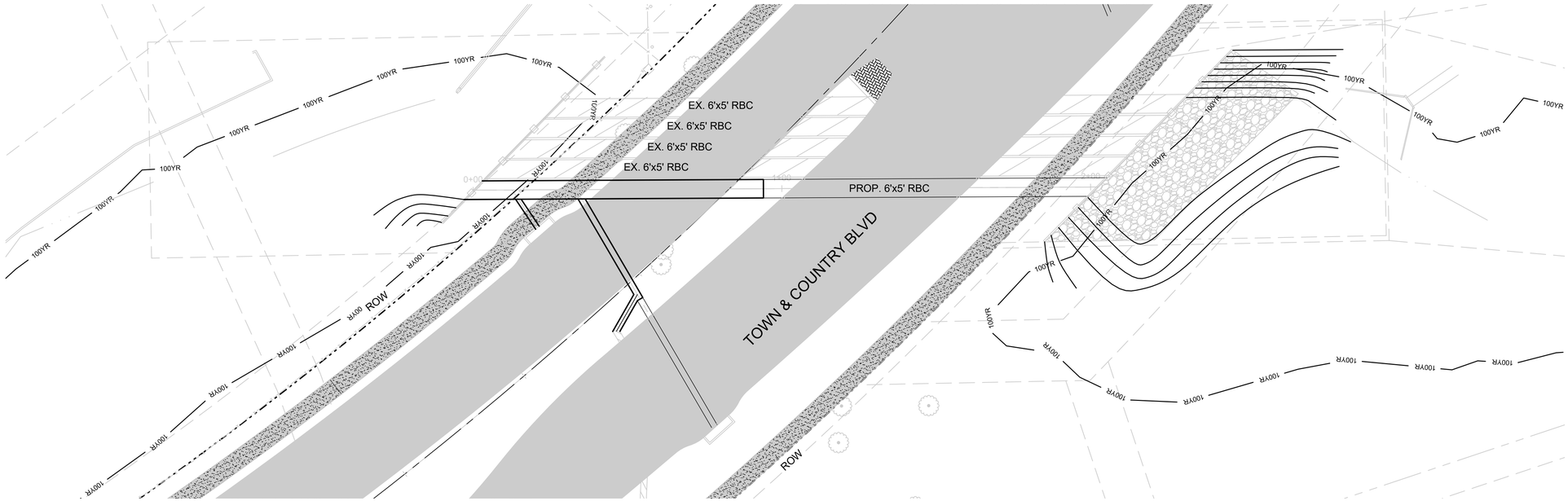
CobbFendley
TBPE Firm Registration No. 274
TBPLS Firm Registration No. 100467
2801 Network Boulevard, Suite 800
Frisco, Texas 75034
972.335.3214 | fax 972.335.3202 | www.cobbfendley.com

DESIGN BY: MEA	DRAWN BY: MEA
DATE: JAN 2020	JOB NUMBER: 1612-046-01

SHEET 53

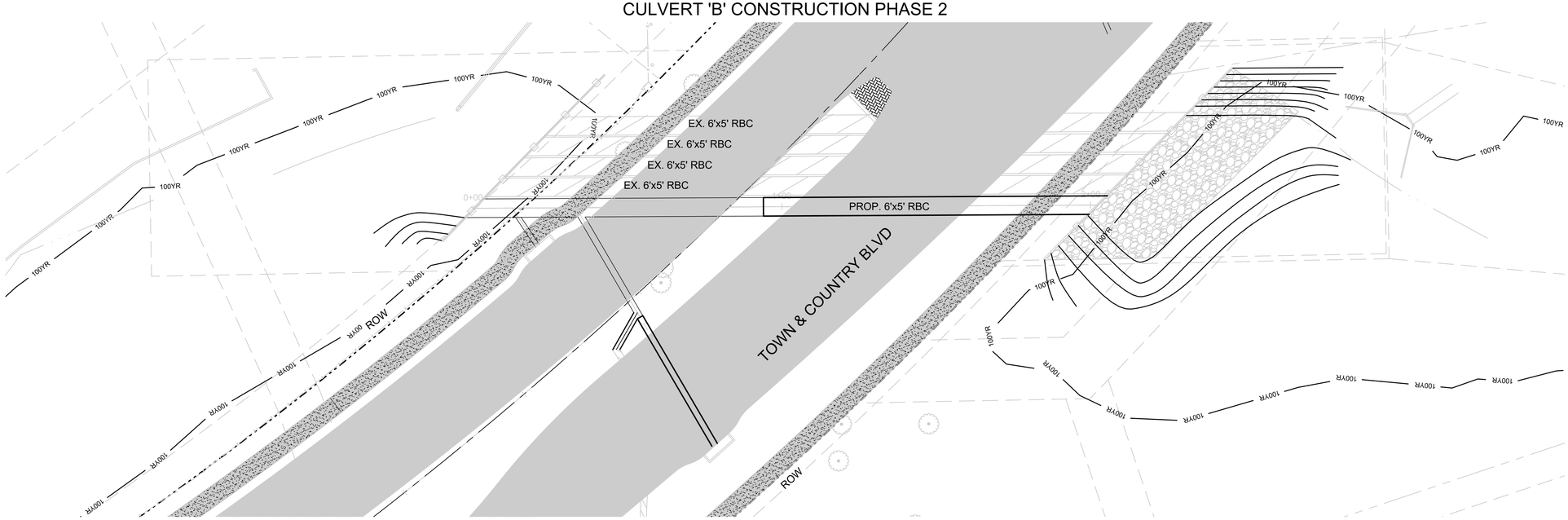
Dwg Info: F:\Projects\2016\12046 Frisco - Town & Country\CAD\Culvert Plan & Profile.dwg - Plotted: 1/24/2020

CULVERT 'B' CONSTRUCTION PHASE 1



20 10 0 20 40
SCALE : 1" = 20'

CULVERT 'B' CONSTRUCTION PHASE 2



NO.	DATE	COMMENT

REVISIONS

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PRELIMINARY
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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)

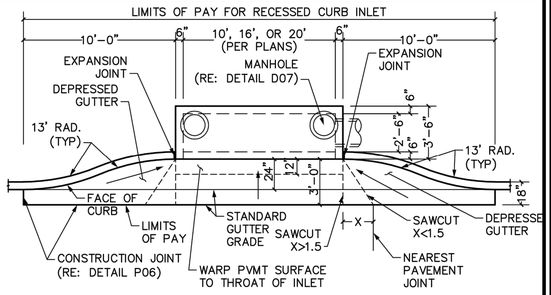
CULVERT 'B' CONSTRUCTION PHASING

CobbFendley
TBPE Firm Registration No. 274
TBPLS Firm Registration No. 100467
2801 Network Boulevard, Suite 800
Frisco, Texas 75034
972.335.3214 | fax 972.335.3202 | www.cobbfendley.com

DESIGN BY: MEA	DRAWN BY: MEA
DATE: JAN 2020	JOB NUMBER: 1612-046-01

SHEET 54

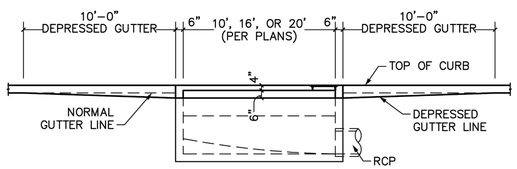
Dwg Info: F:\Projects\2016\2046 Frisco - Town & Country\CAD\Culvert Plan & Profile.dwg - Plotted: 1/24/2020



PLAN VIEW

NOTES:

1. TOP OF INLET TO SLOPE 2% TOWARDS STREET OR PER PLAN.
2. CENTER SUPPORT BEAM REQUIRED FOR 16' AND 20' STANDARD CURB INLETS.
3. ADDITIONAL REINFORCING STEEL TO BE PLACED AROUND MANHOLE OPENING.

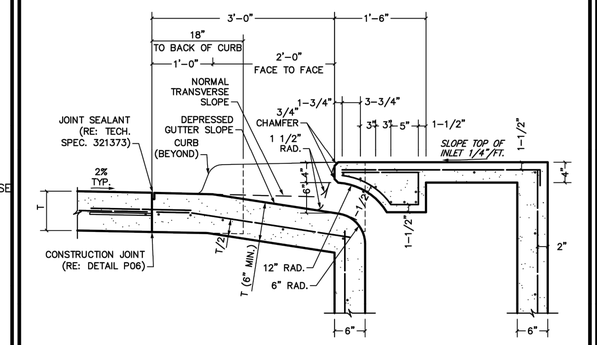


PROFILE

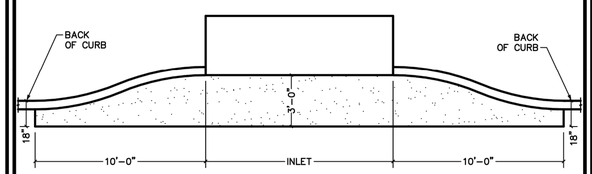
NOTE:

1. MANHOLE TO BE PLACED AT LOW END OF INLET. TWO MANHOLES ARE REQUIRED ON 16' AND 20' INLETS ONLY, ONE ON EACH END.
2. PIPE MAY BE PLACED IN ANY WALL, BUT SHALL NOT ENTER ANY CORNER OR BOTTOM.

STANDARD CONSTRUCTION DETAIL **RECESSED CURB INLET** **SHEET 1 OF 2**	SCALE: 1"=5' REVISED: JUN 2018	D04

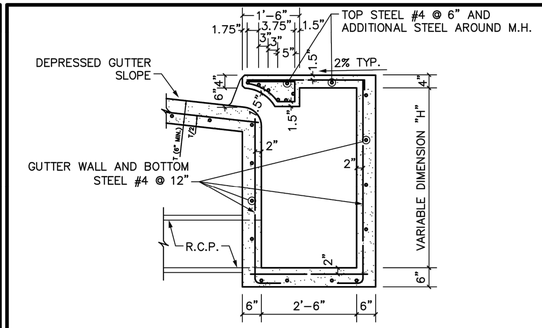


THROAT SECTION

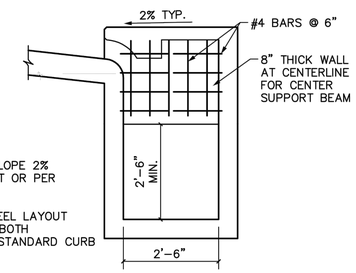


PAVEMENT BLOCKOUT

STANDARD CONSTRUCTION DETAIL **RECESSED CURB INLET** **SHEET 2 OF 2**	SCALE: NTS REVISED: JUN 2018	D05



INLET SECTION FOR RECESSED AND STANDARD INLETS



NOTES:

1. TOP OF INLET SLOPE 2% TOWARDS STREET OR PER PLAN.
2. REINFORCING STEEL LAYOUT APPLICABLE TO BOTH RECESSED AND STANDARD CURB INLETS.

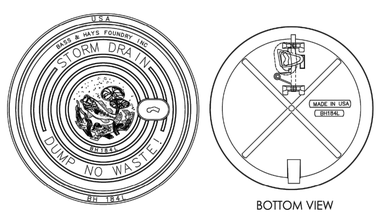
CENTER SUPPORT BEAM FOR 16' & 20' RECESSED AND STANDARD INLETS

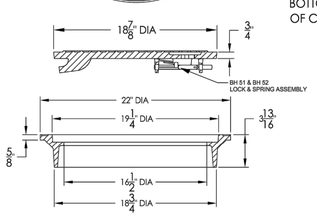
STANDARD CONSTRUCTION DETAIL **CENTER SUPPORT BEAM & INLET SECTION FOR RECESSED AND STANDARD INLETS**	SCALE: NTS REVISED: JUN 2018	D06

GENERAL NOTES:

1. ALL CONCRETE SHALL BE CLASS A.
2. ALL REINFORCING STEEL SHALL BE NEW BILLET STEEL CONFORMING TO ASTM A-615.
3. CHAMFER ALL EXPOSED CORNERS 3/4" EXCEPT WHERE OTHERWISE NOTED.
4. DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTERS OF BARS.
5. FIELD CUT AND BEND BARS AS NECESSARY TO ACCOMMODATE STORM SEWER PIPE.
6. ALL REINFORCING STEEL SHALL HAVE A MINIMUM COVER OF 2".
7. RECESSED CURB INLETS SHALL BE REQUIRED ON ALL A THROUGH D STREETS. STANDARD INLETS WILL BE PERMITTED ON E THROUGH G STREETS.
8. ROCK FOUNDATION SHALL BE USED DURING PREFABRICATED INLET BOX INSTALLATION. 6" FOR BACKFILL WITH FLOWABLE FILL TO FILL VOIDS OR COMPACT WITH SELECT SURPLUS EXCAVATION COMPACTED IN 8" LIFTS TO 95% STANDARD PROCTOR DENSITY.
9. STANDARD CURB INLET SIZES ARE 10', 15', OR 20'. NO OTHER SIZES WILL BE ALLOWED WITHOUT APPROVAL FROM DIRECTOR OF ENGINEERING SERVICES.

STANDARD CONSTRUCTION DETAIL **STORM SEWER MANHOLE GENERAL NOTES**	SCALE: 1"=1'-0" REVISED: JUNE 2017	D07



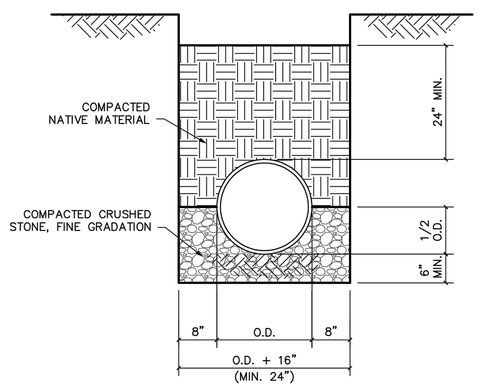


SECTION VIEW

NOTE:

1. MANHOLE COVER AND FRAME SHALL BE SELECTED FROM THE APPROVED MATERIALS LIST.

STANDARD CONSTRUCTION DETAIL **STORM SEWER MANHOLE LID DETAIL**	SCALE: N.T.S. REVISED: JUNE 2017	D07-A



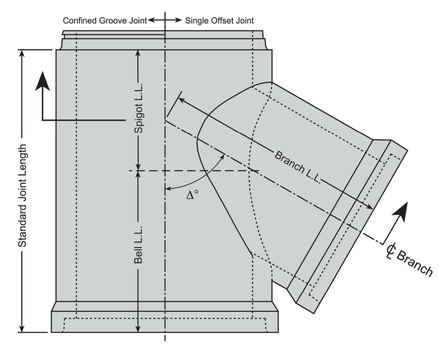
CLASS "B"

NOTES:

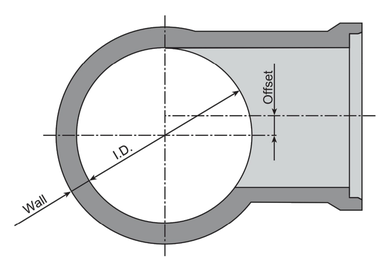
1. UTILIZE CLASS "B" EMBEDMENT FOR RCP STORM DRAIN INSTALLATIONS.
2. REFER TO TECHNICAL SPECIFICATION 330510 TRENCHING, BACKFILLING AND COMPACTION.
3. BEDDING DEPTH MEASURED FROM OUTSIDE THE PIPE BELL.
4. FINAL BACKFILL MOISTURE TREATED TO 3% ABOVE OPTIMUM AT 95% STANDARD PROCTOR FOR EAGLE FORD AND 0 ±4% FOR AUSTIN CHALK.

STANDARD CONSTRUCTION DETAIL **EMBEDMENT "B" (STORM)**	SCALE: 3/4"=1'-0" REVISED: MAR 2012	U02

Reinforced Concrete Pipe



Plan View



Approximate Section

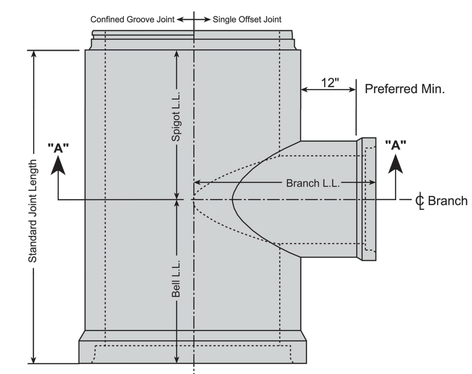
Note:
- Tops even shown; other configurations available as required.

-No Scale-
All dimensions subject to allowable specification tolerances.

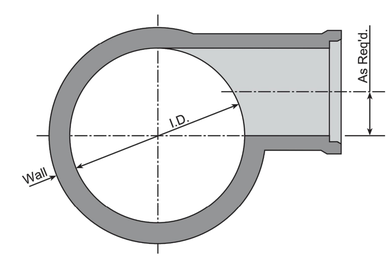
TITLE	PLANT	STATE	SECTION.PAGE	DATE
Confined Groove or Single Offset Joint Typical Eccentric Wye	Grand Prairie Houston	TX	3.9	Feb 2016

FORTERRA

Reinforced Concrete Pipe



Plan View



Section A-A

Note:
- Tops even shown; other configurations available as required.

-No Scale-
All dimensions subject to allowable specification tolerances.

TITLE	PLANT	STATE	SECTION.PAGE	DATE
Confined Groove or Single Offset Joint Typical Eccentric Tee	Grand Prairie Houston	TX	3.7	Feb 2016

FORTERRA

NO.	DATE	COMMENT

REVISIONS

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)

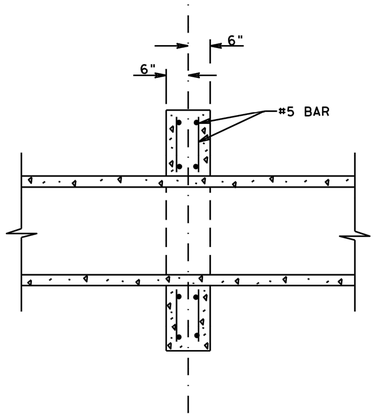
STORM DETAILS 1

CobbFendley
TBPE Firm Registration No. 274
TBPLS Firm Registration No. 100467
2801 Network Boulevard, Suite 800
Frisco, Texas 75034
972.335.3214 | fax 972.335.3202 | www.cobbfendley.com

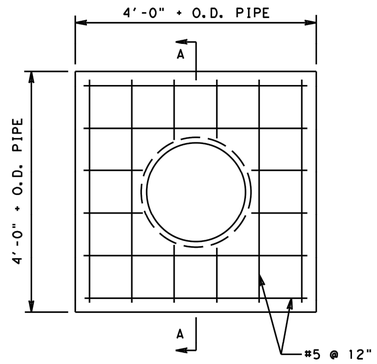
DESIGN BY:	DRAWN BY:
MEA	MEA
DATE:	JOB NUMBER:
JAN 2020	1612-046-01

SHEET 55

Dwg Info: F:\Projects\2016\12046 Frisco - Town & Country\CAD\Details - Storm.dwg - Plotted: 1/24/2020

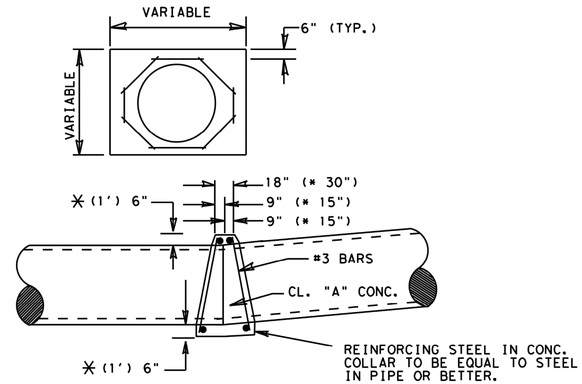


SECTION A-A



FRONT ELEVATION

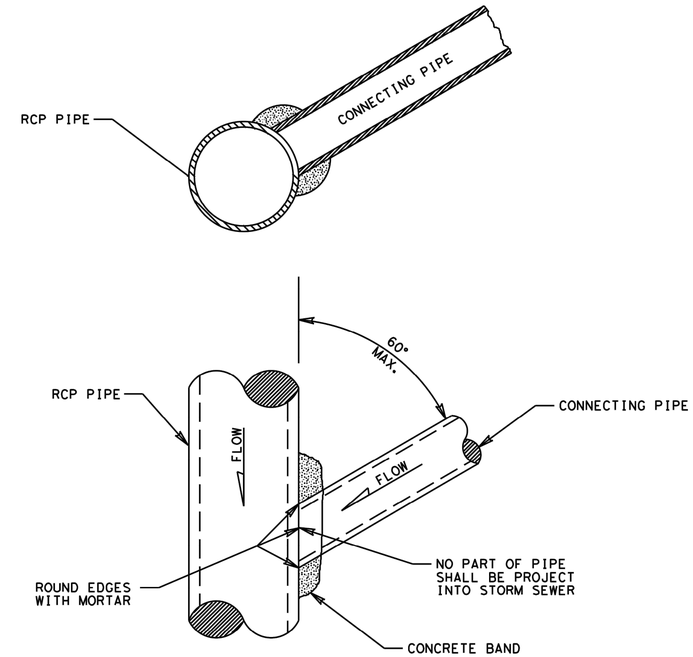
CONCRETE PIPE COLLAR



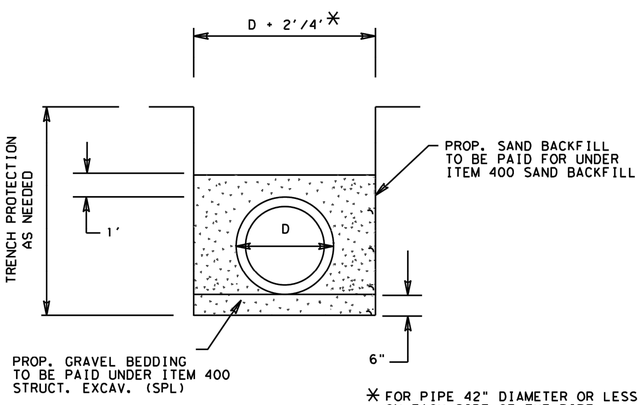
DETAIL FOR CONC. COLLARS DRAINAGE STRUCTURES AND PIPE SIPHONS (HORIZ. & VERT. BENDS)

NOTE: PROP. CONC. COLLAR WILL NOT BE PAID FOR DIRECTLY BUT WILL BE SUBSIDIARY TO THE BIDS ITEMS INVOLVED.

* FOR 42" DIAMETER AND LARGER PIPE



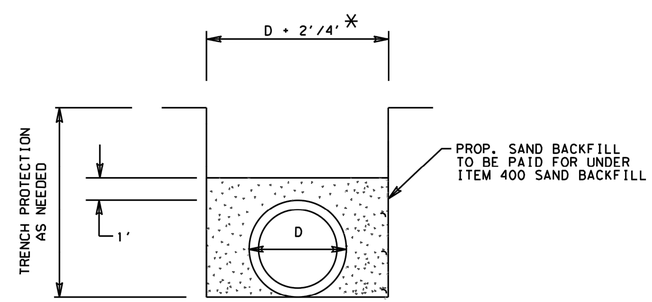
TYPICAL REINFORCED CONC. PIPE CONNECTION WITHOUT MANHOLE



* FOR PIPE 42" DIAMETER OR LESS PLACE 1'OF FILL ON EACH SIDE OF THE PIPE.
FOR PIPE LARGER THAN 42" DIAMETER PLACE 2' OF FILL ON EACH SIDE OF THE PIPE.

SPIRAL RIB CMP

TYPICAL BACKFILL DETAIL GRAVEL & SAND



* FOR PIPE 42" DIAMETER OR LESS PLACE 1'OF FILL ON EACH SIDE OF THE PIPE.
FOR PIPE LARGER THAN 42" DIAMETER PLACE 2' OF FILL ON EACH SIDE OF THE PIPE.

REINFORCED CONCRETE PIPE

TYPICAL BACKFILL DETAIL-SAND

© TxDOT 2014

PHARR DISTRICT STANDARD

TEXAS DEPARTMENT OF TRANSPORTATION

MISCELLANEOUS PIPE DETAILS

REV. 8/14

COLLAR.DGN

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		FILE NO.			SHEET NO.
6						
STATE	STATE DIST. NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
TEXAS	21					

NO.	DATE	COMMENT

REVISIONS

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)

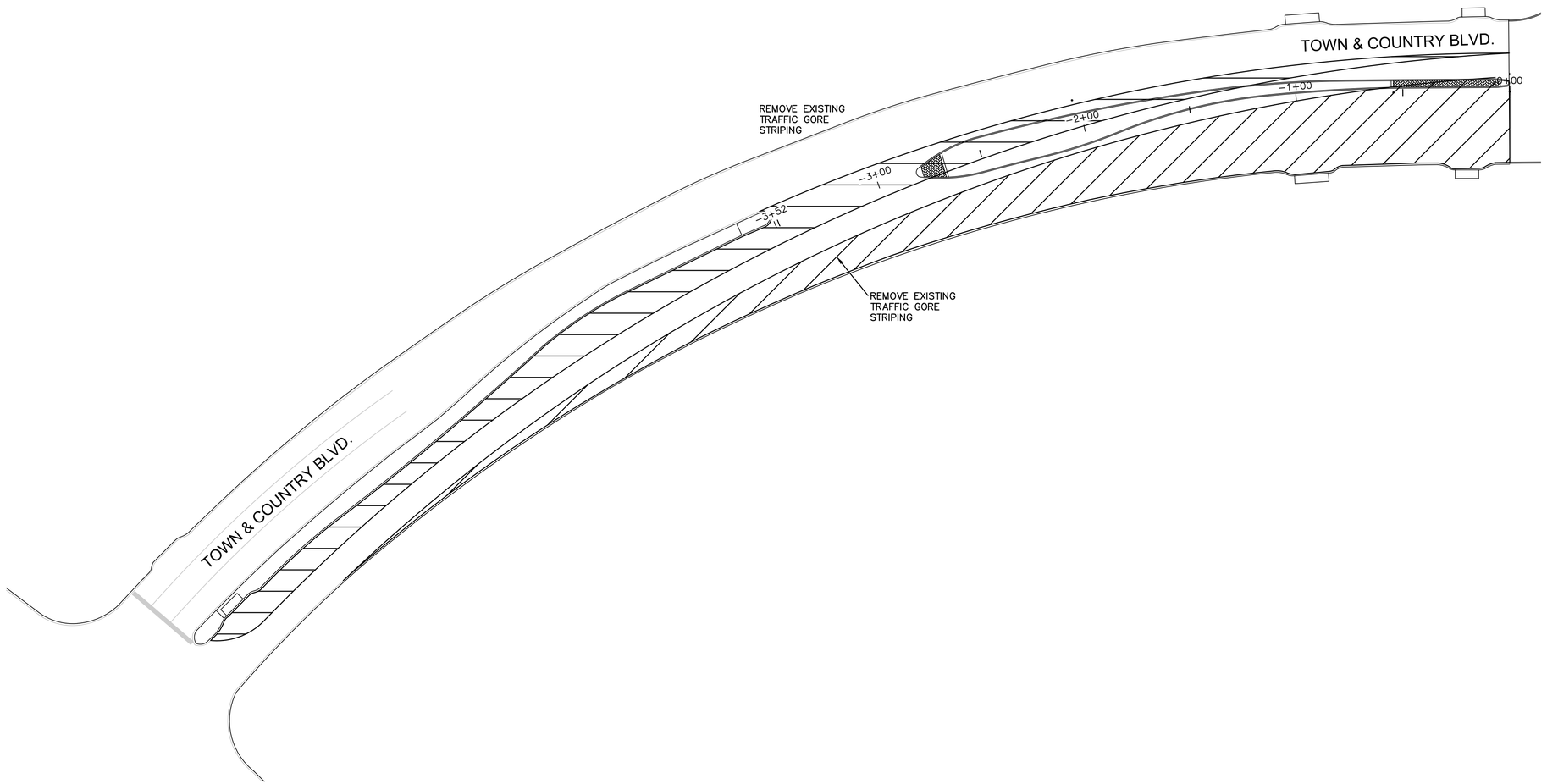
STORM DETAILS 2

CobbFendley
TBPE Firm Registration No. 274
TBPLS Firm Registration No. 100467
2801 Network Boulevard, Suite 800
Frisco, Texas 75034
972.335.3214 | fax 972.335.3202 | www.cobbfendley.com

DESIGN BY: MEA	DRAWN BY: MEA
DATE: JAN 2020	JOB NUMBER: 1612-046-01

SHEET 56

Dwg Info: F:\Projects\2016\12046 Frisco - Town & Country\CAD\Details - Storm.dwg - Plotted: 1/24/2020



30 15 0 30 60

SCALE : 1" = 30'

NO.	DATE	COMMENT

REVISIONS

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)

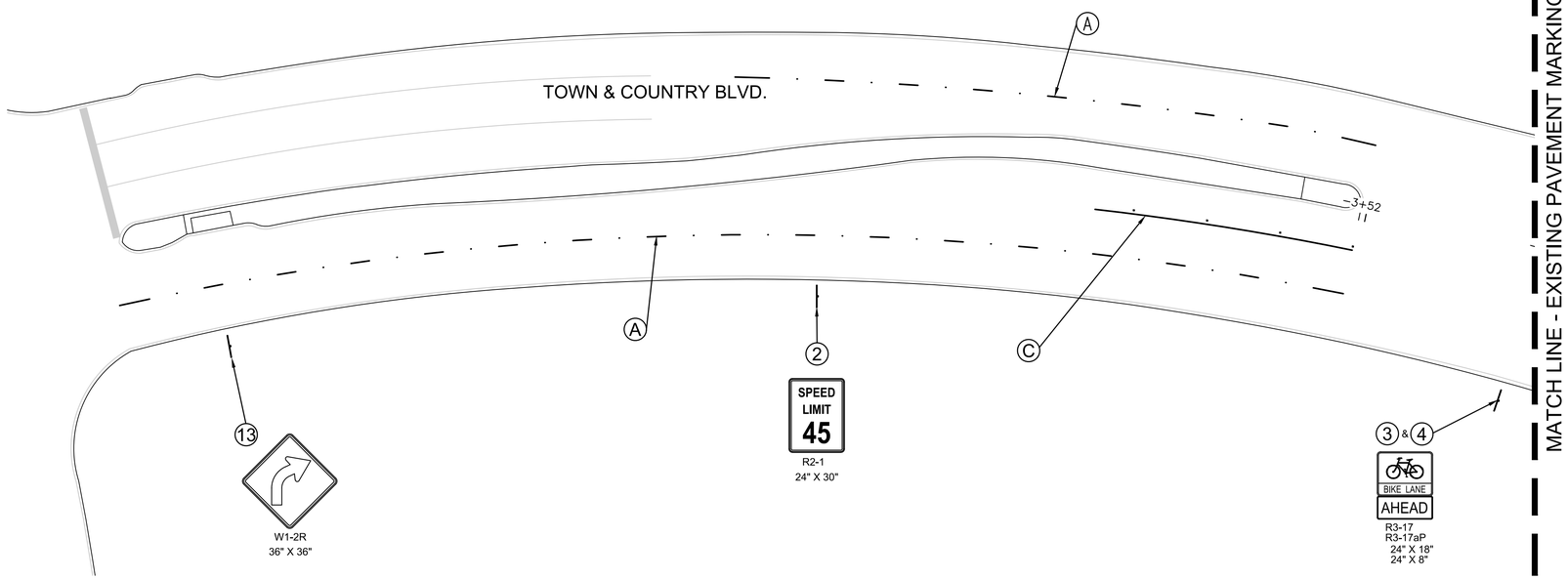
PAVEMENT MARKING REMOVAL

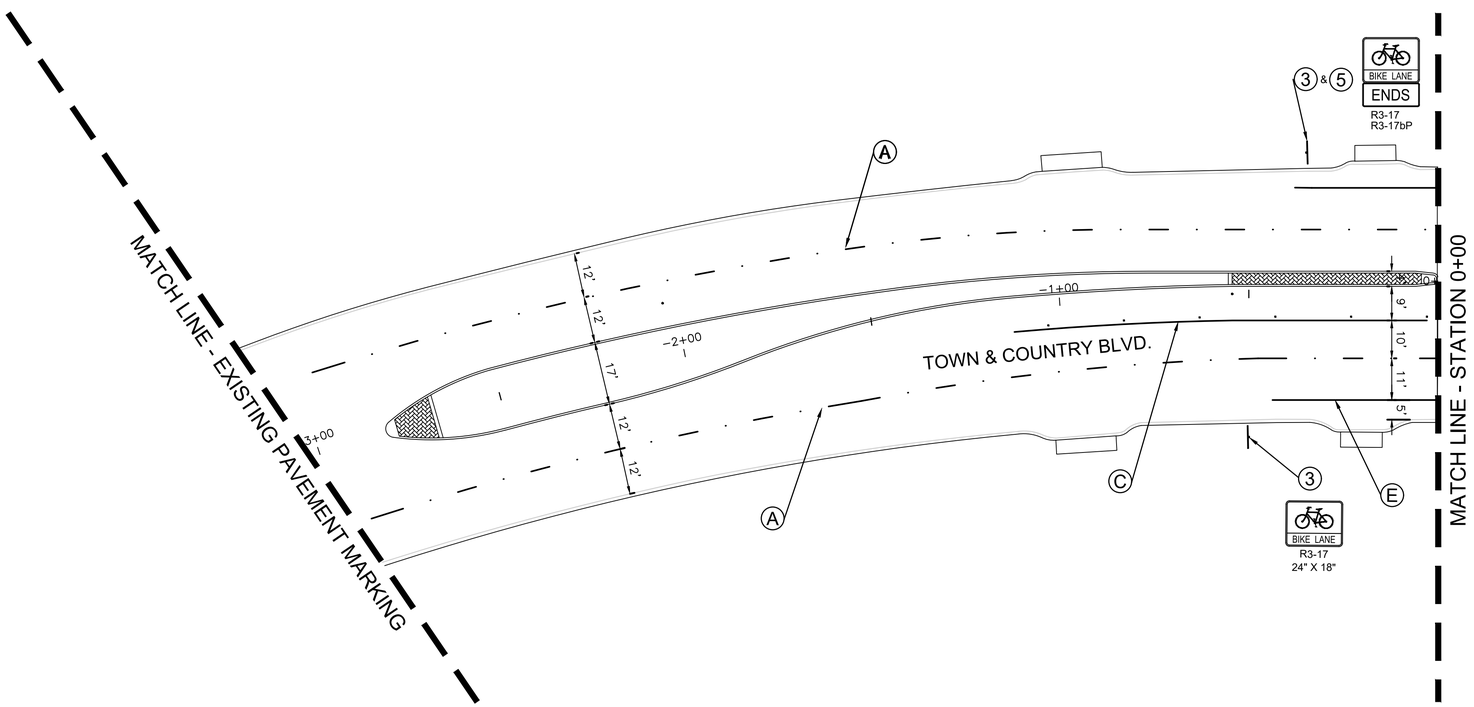
CobbFendley
TBPE Firm Registration No. 274
TBPLS Firm Registration No. 100467
2801 Network Boulevard, Suite 800
Frisco, Texas 75034
972.335.3214 | fax 972.335.3202 | www.cobbfendley.com

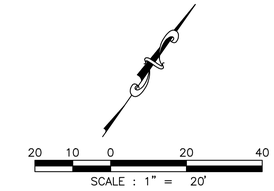
DESIGN BY:	DRAWN BY:
MEA	MEA
DATE:	JOB NUMBER:
JAN 2020	1612-046-01

SHEET
57

Dwg Info: F:\Projects\2016\12046 Frisco - Town & Country\CAD\Paving Marking.dwg - Plotted: 1/24/2020







LEGEND

1. CURVE (RIGHT)
2. SPEED LIMIT
3. BIKE LANE
4. AHEAD
5. ENDS
6. NO PARKING BIKE LANE
7. BICYCLE WRONG WAY
8. RIDE WITH TRAFFIC
9. NO LEFT TURN
10. ONE WAY
11. NO RIGHT TURN
12. CURVE (LEFT)
13. CURVE (RIGHT)
14. KEEP RIGHT
15. STOP SIGN

A. BROKEN WHITE MARKINGS
B. TRAFFIC GORE STRIPING
C. LEFT TURN BAY STRIPING
D. RIGHT TURN BAY STRIPING
E. 4" WHITE STRIPING (THERMO)

HELMETED BICYCLIST AND ARROW

24" WIDE WHITE STOP BAR (THERMO)

PROPOSED TRAFFIC SIGN

PAVEMENT MARKING & SIGNAGE NOTES

1. POLE AND STOP SIGN REPLACEMENT AT STREETS SHALL INCLUDE THE INSTALLATION OF A TOWN PROVIDED STREET BLADE.
2. ALL STREET SIGNS SHALL BE HIGH INTENSITY PRISMATIC (HIP) SHEETING.
3. DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.

NO.	DATE	COMMENT

REVISIONS

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)

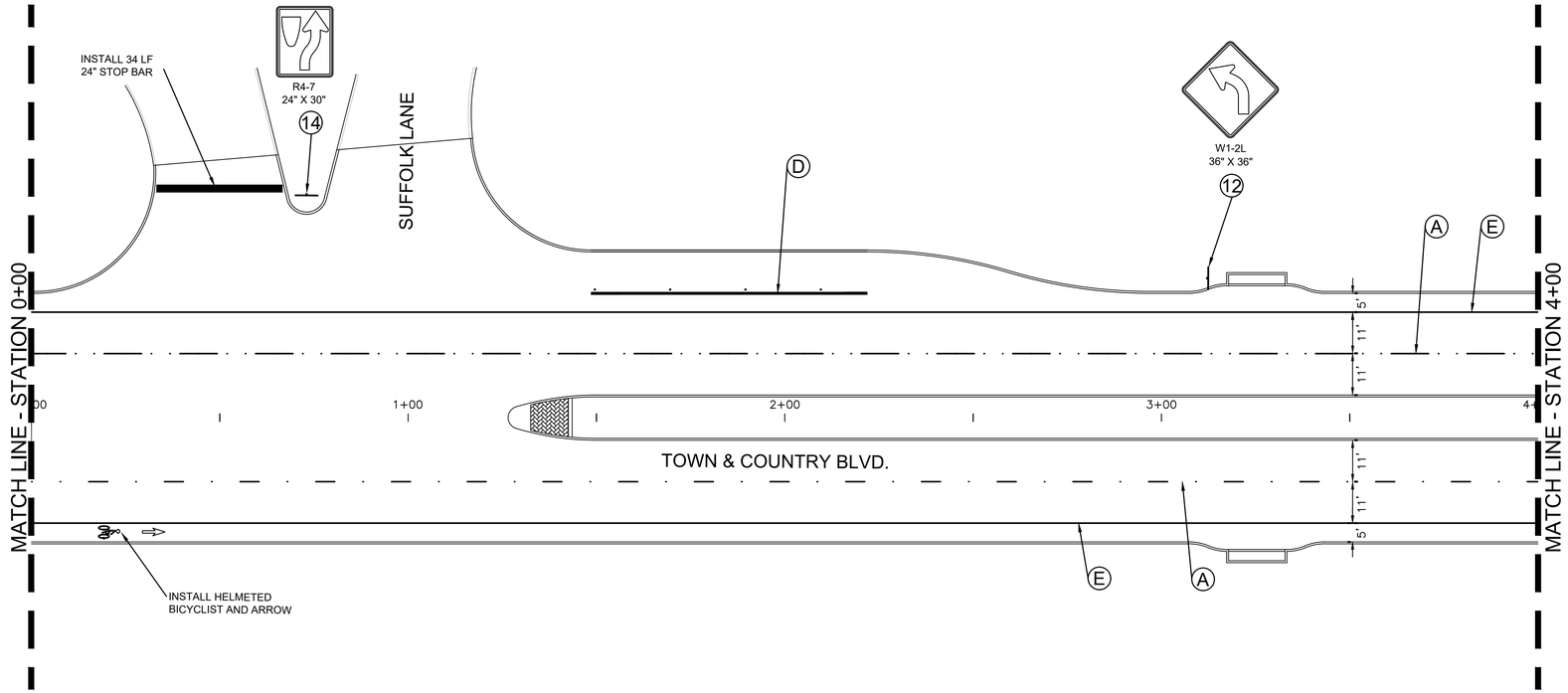
PAVEMENT MARKING & SIGNAGE EXISTING TO STATION 0+00

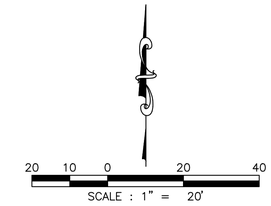
CobbFendley
TBPE Firm Registration No. 274
TBPLS Firm Registration No. 100467
2801 Network Boulevard, Suite 800
Frisco, Texas 75034
972.335.3214 | fax 972.335.3202 | www.cobbfendley.com

DESIGN BY: MEA	DRAWN BY: MEA
DATE: JAN 2020	JOB NUMBER: 1612-046-01

SHEET 58

Dwg Info: F:\Projects\2016\12046 Frisco - Town & Country\CAD\Paving Marking.dwg - Plotted: 1/24/2020





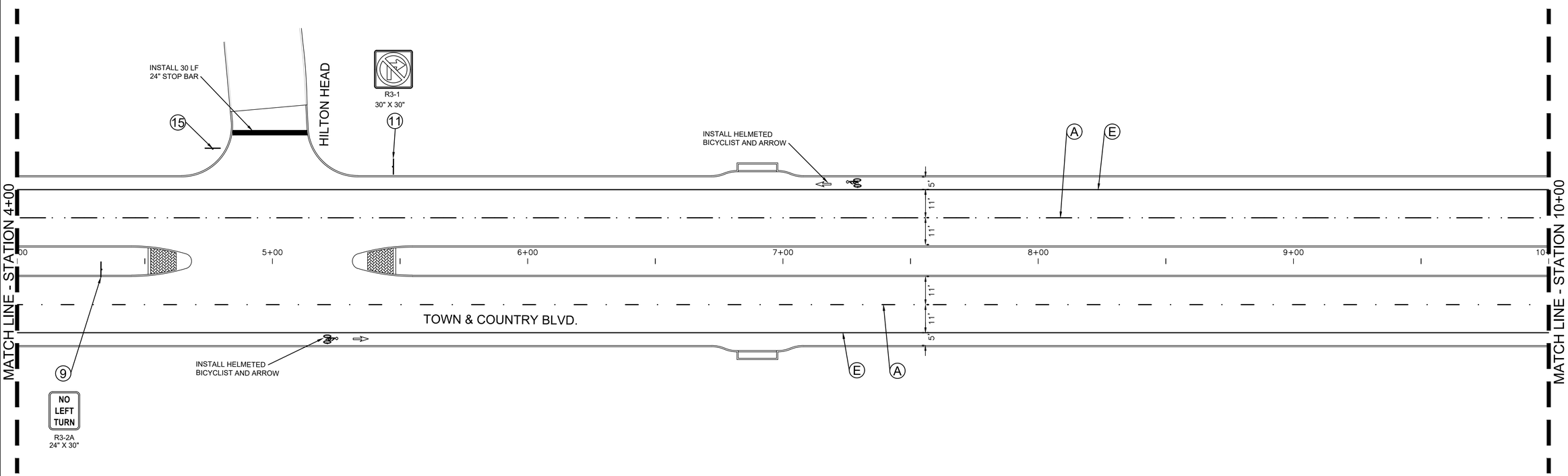
LEGEND

1	CURVE (RIGHT)	9	NO LEFT TURN
2	SPEED LIMIT	10	ONE WAY
3	BIKE LANE	11	NO RIGHT TURN
4	AHEAD	12	CURVE (LEFT)
5	ENDS	13	CURVE (RIGHT)
6	NO PARKING BIKE LANE	14	KEEP RIGHT
7	BICYCLE WRONG WAY	15	STOP SIGN
8	RIDE WITH TRAFFIC		

- A — BROKEN WHITE MARKINGS
- B — TRAFFIC GORE STRIPING
- C — LEFT TURN BAY STRIPING
- D — RIGHT TURN BAY STRIPING
- E — 4" WHITE STRIPING (THERMO)
- HELMETED BICYCLIST AND ARROW
- 24" WIDE WHITE STOP BAR (THERMO)
- PROPOSED TRAFFIC SIGN

PAVEMENT MARKING & SIGNAGE NOTES

1. POLE AND STOP SIGN REPLACEMENT AT STREETS SHALL INCLUDE THE INSTALLATION OF A TOWN PROVIDED STREET BLADE.
2. ALL STREET SIGNS SHALL BE HIGH INTENSITY PRISMATIC (HIP) SHEETING.
3. DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.



NO.	DATE	COMMENT

REVISIONS

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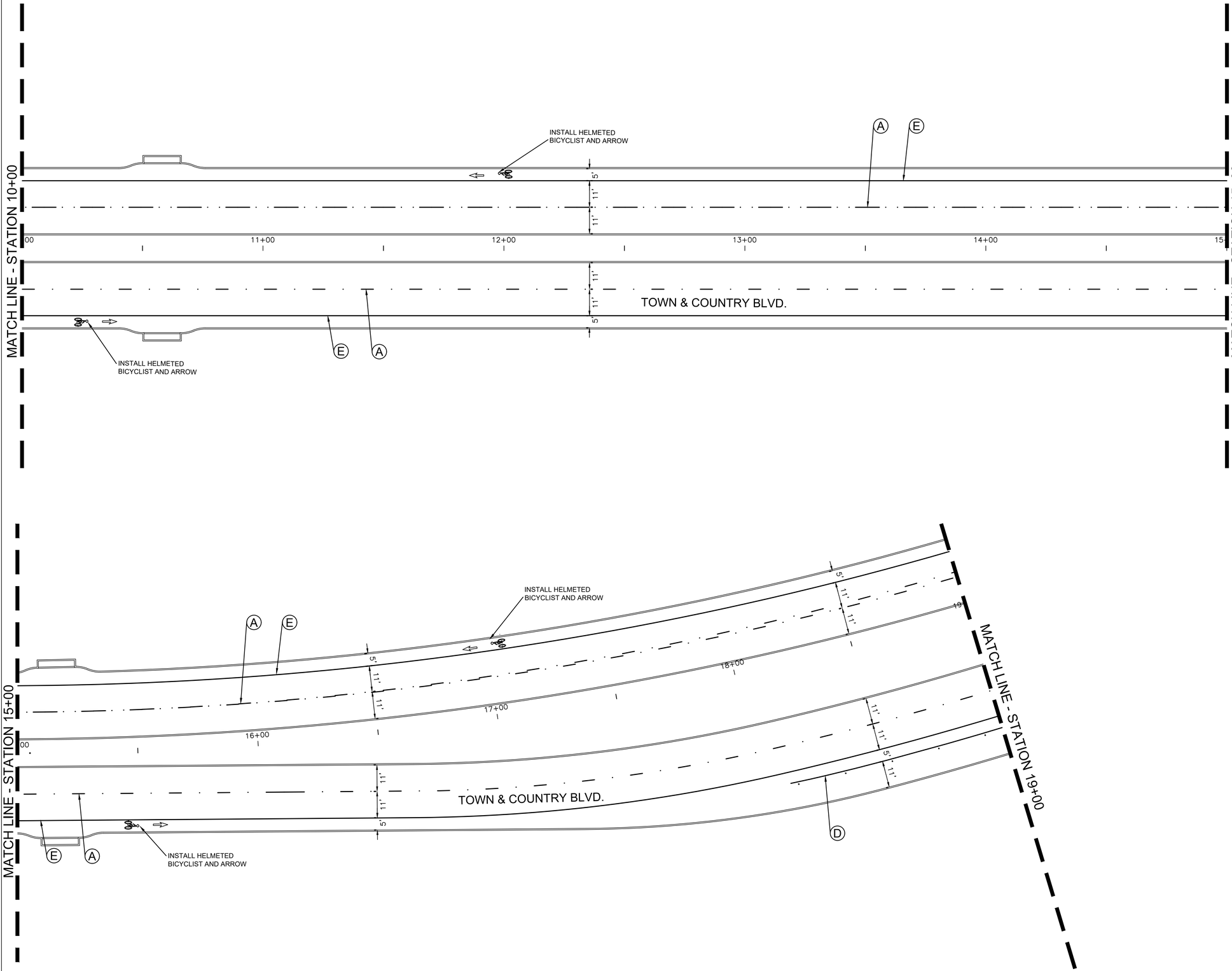
CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)
PAVEMENT MARKING & SIGNAGE
STATION 0+00 - 10+00

CobbFendley
TBPE Firm Registration No. 274
TBPLS Firm Registration No. 100467
2801 Network Boulevard, Suite 800
Frisco, Texas 75034
972.335.3214 | fax 972.335.3202 | www.cobbfendley.com

DESIGN BY:	DRAWN BY:
MEA	MEA
DATE: JAN 2020	JOB NUMBER: 1612-046-01

SHEET 59

Dwg Info: F:\Projects\2016\12046 Frisco - Town & Country\CAD\Paving Marking.dwg - Plotted: 1/24/2020



20 10 0 20 40

SCALE : 1" = 20'

LEGEND

1. CURVE (RIGHT)
2. SPEED LIMIT
3. BIKE LANE
4. AHEAD
5. ENDS
6. NO PARKING BIKE LANE
7. BICYCLE WRONG WAY
8. RIDE WITH TRAFFIC
9. NO LEFT TURN
10. ONE WAY
11. NO RIGHT TURN
12. CURVE (LEFT)
13. CURVE (RIGHT)
14. KEEP RIGHT
15. STOP SIGN

A BROKEN WHITE MARKINGS

B TRAFFIC GORE STRIPING

C LEFT TURN BAY STRIPING

D RIGHT TURN BAY STRIPING

E 4" WHITE STRIPING (THERMO)

HELMETED BICYCLIST AND ARROW

24" WIDE WHITE STOP BAR (THERMO)

PROPOSED TRAFFIC SIGN

PAVEMENT MARKING & SIGNAGE NOTES

1. POLE AND STOP SIGN REPLACEMENT AT STREETS SHALL INCLUDE THE INSTALLATION OF A TOWN PROVIDED STREET BLADE.
2. ALL STREET SIGNS SHALL BE HIGH INTENSITY PRISMATIC (HIP) SHEETING.
3. DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.

NO.	DATE	COMMENT

REVISIONS

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PRELIMINARY
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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)

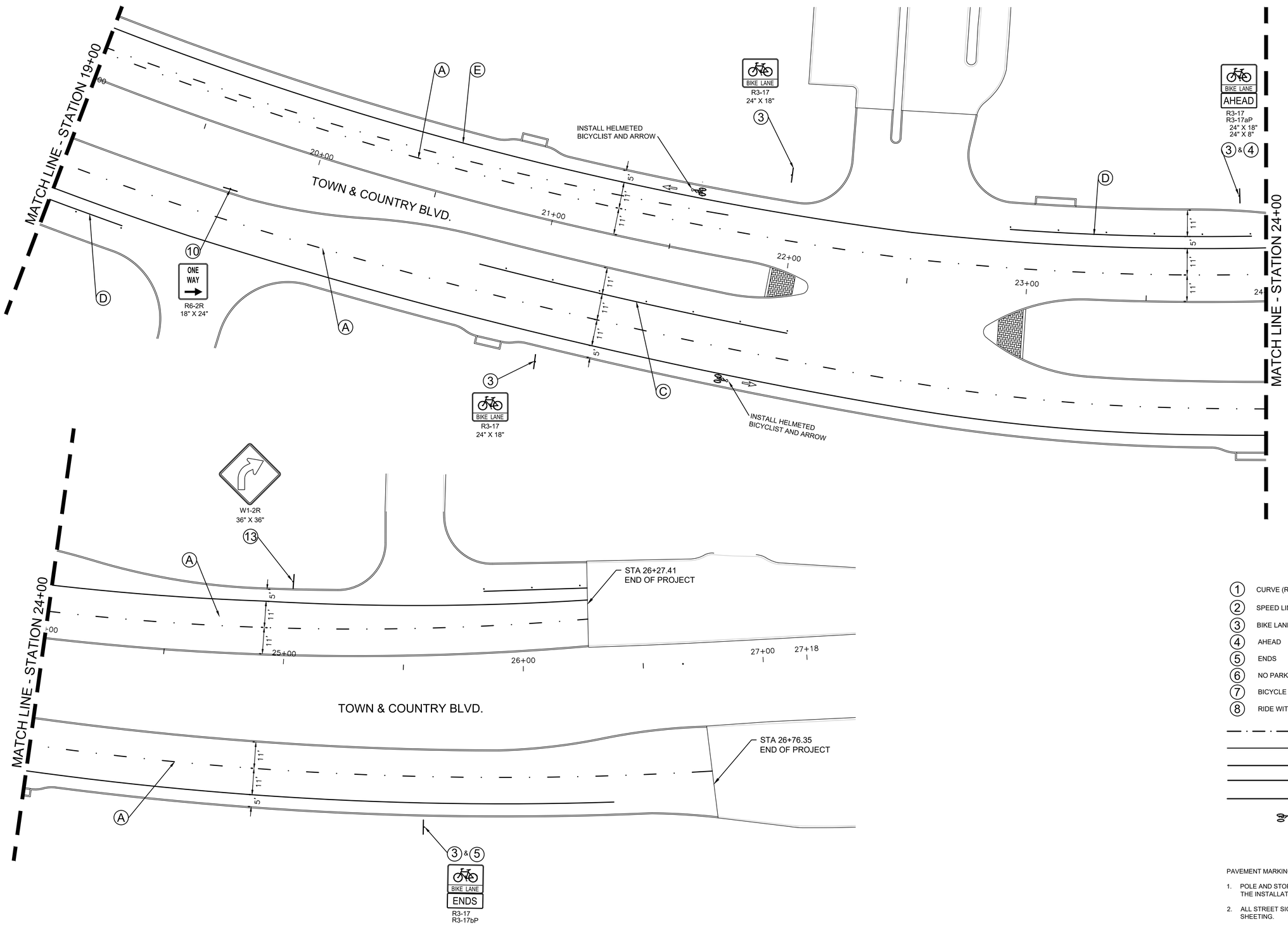
PAVEMENT MARKING & SIGNAGE
STATION 10+00 - 19+00

CobbFendley
TBPE Firm Registration No. 274
TBPLS Firm Registration No. 100467
2801 Network Boulevard, Suite 800
Frisco, Texas 75034
972.335.3214 | fax 972.335.3202 | www.cobbfendley.com

DESIGN BY: MEA	DRAWN BY: MEA
DATE: JAN 2020	JOB NUMBER: 1612-046-01

SHEET 60

Dwg Info: F:\Projects\2016\12046 Frisco - Town & Country\CAD\Paving Marking.dwg - Plotted: 1/24/2021



SCALE : 1" = 20'

LEGEND

1	CURVE (RIGHT)	9	NO LEFT TURN
2	SPEED LIMIT	10	ONE WAY
3	BIKE LANE	11	NO RIGHT TURN
4	AHEAD	12	CURVE (LEFT)
5	ENDS	13	CURVE (RIGHT)
6	NO PARKING BIKE LANE	14	KEEP RIGHT
7	BICYCLE WRONG WAY	15	STOP SIGN
8	RIDE WITH TRAFFIC		

- A — BROKEN WHITE MARKINGS
- B — TRAFFIC GORE STRIPING
- C — LEFT TURN BAY STRIPING
- D — RIGHT TURN BAY STRIPING
- E — 4" WHITE STRIPING (THERMO)
- HELMETED BICYCLIST AND ARROW
- 24" WIDE WHITE STOP BAR (THERMO)
- PROPOSED TRAFFIC SIGN

PAVEMENT MARKING & SIGNAGE NOTES

1. POLE AND STOP SIGN REPLACEMENT AT STREETS SHALL INCLUDE THE INSTALLATION OF A TOWN PROVIDED STREET BLADE.
2. ALL STREET SIGNS SHALL BE HIGH INTENSITY PRISMATIC (HIP) SHEETING.
3. DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.

NO.	DATE	COMMENT

REVISIONS

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)

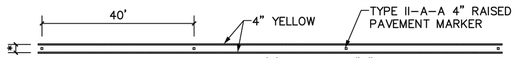
PAVEMENT MARKING & SIGNAGE
STATION 19+00 - END

CobbFendley
TBPE Firm Registration No. 274
TBPLS Firm Registration No. 10046
2801 Network Boulevard, Suite 800
Frisco, Texas 75034
972.335.3214 | fax 972.335.3202 | www.cobbfendley.com

DESIGN BY: MEA	DRAWN BY: MEA
DATE: JAN 2020	JOB NUMBER: 1612-046-01

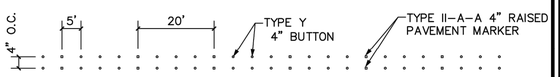
SHEET
61

Dwg Info: F:\Projects\2016\12046 Frisco - Town & Country\CAD\Paving Marking.dwg - Plotted: 1/24/2020

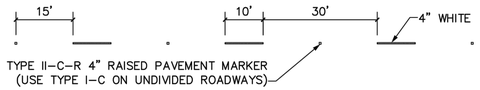


* RE: TxDOT PM(2)-12 DETAIL "B"

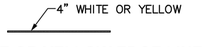
DOUBLE YELLOW LINE (PAVEMENT MARKINGS)



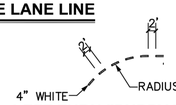
DOUBLE YELLOW LINE (BUTTONS, RAISED PAVEMENT MARKERS)



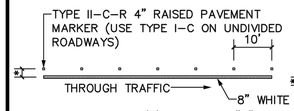
BROKEN WHITE LANE LINE



WHITE OR YELLOW EDGE LINE

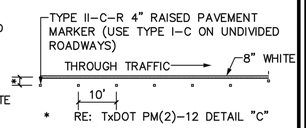


LEFT TURN "PUPPY TRACKS"



* RE: TxDOT PM(2)-12 DETAIL "C"

LEFT TURN BAY LINE



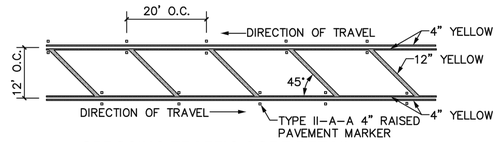
* RE: TxDOT PM(2)-12 DETAIL "C"

RIGHT TURN BAY LINE

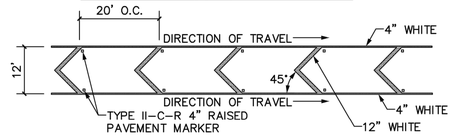
NOTES:

1. ALL STRIPING, ARROWS AND WORDS ON PAVEMENT SHALL BE THERMOPLASTIC UNLESS OTHERWISE NOTED IN PLANS.
2. REFER TO TECHNICAL SPECIFICATION 321723.

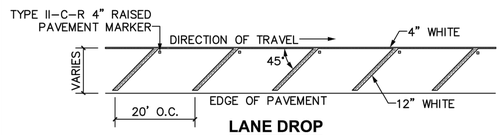
FRISCO PROGRESS IN MOTION | STANDARD CONSTRUCTION DETAIL | **PAVEMENT MARKINGS AND MARKERS SHEET 1 OF 2** | SCALE: 1"=20' | REVISED: JUNE 2017 | T01



OPPOSING TRAFFIC GORE DETAIL



NEUTRAL AREA CHANNELIZATION

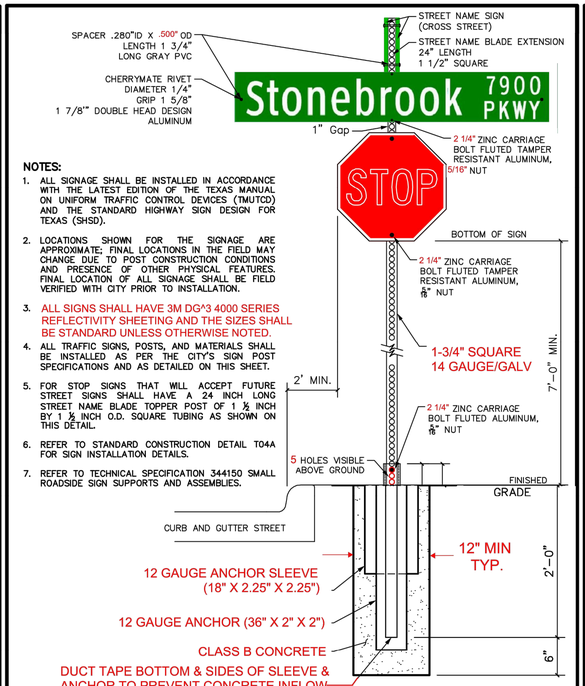


LANE DROP

NOTES:

1. REFER TO TxDOT PM(2)-12 DETAIL "A" FOR DIMENSION BETWEEN PAVEMENT MARKINGS AND MARKERS.
2. REFER TO TECHNICAL SPECIFICATION 321723.

FRISCO PROGRESS IN MOTION | STANDARD CONSTRUCTION DETAIL | **PAVEMENT MARKINGS AND MARKERS SHEET 2 OF 2** | SCALE: 1"=20' | REVISED: JUNE 2017 | T02



NOTES:

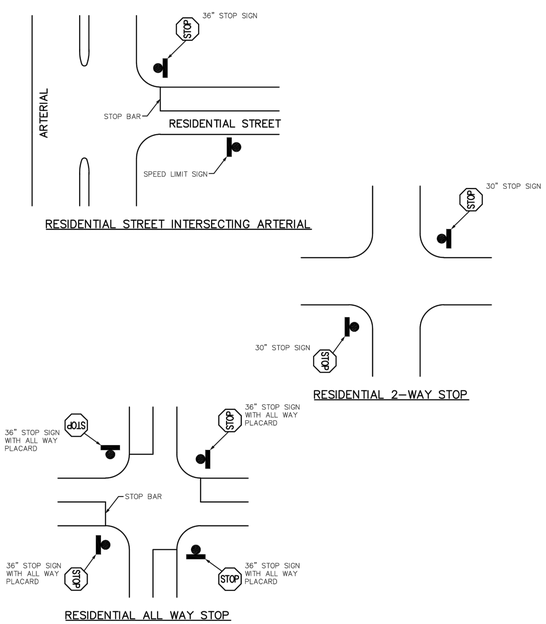
1. ALL SIGNAGE SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD) AND THE STANDARD HIGHWAY SIGN DESIGN FOR TEXAS (SHSD).
2. LOCATIONS SHOWN FOR THE SIGNAGE ARE APPROXIMATE; FINAL LOCATIONS IN THE FIELD MAY CHANGE DUE TO POST CONSTRUCTION CONDITIONS AND PRESENCE OF OTHER PHYSICAL FEATURES. FINAL LOCATION OF ALL SIGNAGE SHALL BE FIELD VERIFIED WITH CITY PRIOR TO INSTALLATION.
3. ALL SIGNS SHALL HAVE 3M DG^3 4000 SERIES REFLECTIVITY SHEETING AND THE SIZES SHALL BE STANDARD UNLESS OTHERWISE NOTED.
4. ALL TRAFFIC SIGNS, POSTS, AND MATERIALS SHALL BE INSTALLED AS PER THE CITY'S SIGN POST SPECIFICATIONS AND AS DETAILED ON THIS SHEET.
5. FOR STOP SIGNS THAT WILL ACCEPT FUTURE STREET SIGNS SHALL HAVE A 24 INCH LONG STREET NAME BLADE TOPPER POST OF 1 ½ INCH BY 1 ½ INCH O.D. SQUARE TUBING AS SHOWN ON THIS DETAIL.
6. REFER TO STANDARD CONSTRUCTION DETAIL T04A FOR SIGN INSTALLATION DETAILS.
7. REFER TO TECHNICAL SPECIFICATION 344150 SMALL ROADSIDE SIGN SUPPORTS AND ASSEMBLIES.

FRISCO PROGRESS IN MOTION | STANDARD CONSTRUCTION DETAIL | **SIGN POST AND MOUNTING DETAILS** | SCALE: N.T.S | REVISED: SEP 2019 | T04

INSTALLATION NOTES:

1. REMOVE PROTECTIVE COATING FROM ALL THE SIGNS PRIOR TO INSTALLATION.
2. INSTALL ALL STREET NAME SIGNS ON STREET NAME BLADE EXTENSION TOPPER POST USING PRE DRILLED HOLES ON SIGNS AND BOLTS AS SHOWN ON DETAIL T04.
3. ATTACH END OF STREET NAME SIGNS TOGETHER AS SHOWN ON THE DETAIL T04.
4. INSERT TOPPER POST ON TO THE SIGN POST AND ATTACH AS SHOWN ON THIS DETAIL. INSTALL ADDITIONAL SIGN (GENERALLY STOP SIGN) AS SHOWN ON DETAIL T04.
5. ENSURE A MINIMUM OF 7 FEET CLEARANCE BETWEEN FINISHED GROUND AND THE BOTTOM ON THE LOWEST SIGN.
6. ENSURE A MINIMUM OF 2 FEET OF HORIZONTAL CLEARANCE IS MAINTAINED BETWEEN CURB FACE AND CLOSEST SIGN EDGE.
7. ALL SIGNS SHALL BE INSTALLED WITH A CONCRETE BASE.
8. INSERT SIGN POST AND SIGN ASSEMBLY ON TO THE ANCHOR SLEEVE AND BASE ASSEMBLY. CONNECT BOTH ASSEMBLIES USING A FLUTED CARRIAGE BOLT AS SHOWN ON THE DETAIL T04.
9. INSTALL A STICKER AT THE BACK OF SIGN INDICATING MONTH AND THE YEAR OF THE INSTALLATION.
10. REFER TO CITY OF FRISCO SIGN POST SPECIFICATION FOR ADDITIONAL DETAILS.

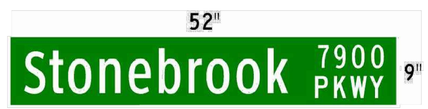
FRISCO PROGRESS IN MOTION | STANDARD CONSTRUCTION DETAIL | **SIGN INSTALLATION DETAILS** | SCALE: N.T.S. | REVISED: SEP 2019 | T04-A



NOTE:

1. SEE DETAIL T03 FOR EXACT PLACEMENT OF STOP SIGNS. STOP BARS SHALL BE INSTALLED IN LINE WITH THE STOP SIGN.

FRISCO PROGRESS IN MOTION | STANDARD CONSTRUCTION DETAIL | **STOP SIGNS AND STOP BARS** | SCALE: 1/2"=1' | REVISED: JUNE 2017 | T06



LOCATION:
- 9" FLAT BLADE SHALL BE USED AT ALL INTERSECTIONS.

BLADE REQUIREMENTS:
- 9" FLAT BLADE SHALL BE 0.08 INCH THICK ALUMINUM.
- MAX BLADE LENGTH SHALL BE 60".

LETTERING ALIGNMENT:
- STREET NAME SHALL BE LEFT JUSTIFIED.
- BLOCK NUMBERS SHALL BE LOCATED IN UPPER RIGHT HAND CORNER.
- ABBREVIATED STREET DESIGNATIONS SHALL BE LOCATED IN THE LOWER RIGHT HAND CORNER AND RIGHT JUSTIFIED.

LETTERING FOR 9" BLADES:
- FONT SHALL BE CLEAR VIEW 2W.
- LETTERS AND NUMBERS IN STREET NAME SHALL BE 6" TALL AND UPPER/LOWER CASE.
- LETTERS IN ABBREVIATED STREET DESIGNATIONS SHALL BE 3" TALL AND ALL UPPERCASE (I.E. LN, PKWY, DR, CT, ETC.)
- BLOCK NUMBERS SHALL BE 3" TALL.

SIGN SHEETING AND COLOR:
- SHEETING SHALL BE BLACK 3M, EC 1178
- BACKGROUND COLOR SHALL BE GREEN (3M, EC 1177) ON PUBLIC STREETS.
- BACKGROUND COLOR SHALL BE BLUE (3M, EC 1175) ON PUBLIC WAYS AND FIRE LANES.
- LEGEND SHALL BE WHITE (3M, DG^3 4090).

NO OUTLET STREETS:
- A STREET WITH A CUL-DE-SAC END WILL REQUIRE A YELLOW "NO OUTLET" (3M, DG^3 4081) LOGO TO BE INSTALLED ON THE END OF THE BLADE CLOSEST TO THE CUL-DE-SAC.
- LOGO SHOULD BE MINIMUM SIZE OF 9"X9"

BLOCK NUMBER:
- BLOCK NUMBERS ARE REQUIRED ON ALL STREET NAME BLADES, EVEN IF NO HOUSE/BUILDINGS FRONT ONTO THE STREET. (EXCEPTION: NAMED FIRE LANES DO NOT HAVE BLOCK NUMBERS.)

FRISCO PROGRESS IN MOTION | STANDARD CONSTRUCTION DETAIL | **STREET NAME BLADE** | SCALE: 1/2"=1' | REVISED: SEP 2019 | T08

NO.	DATE	COMMENT

REVISIONS

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)

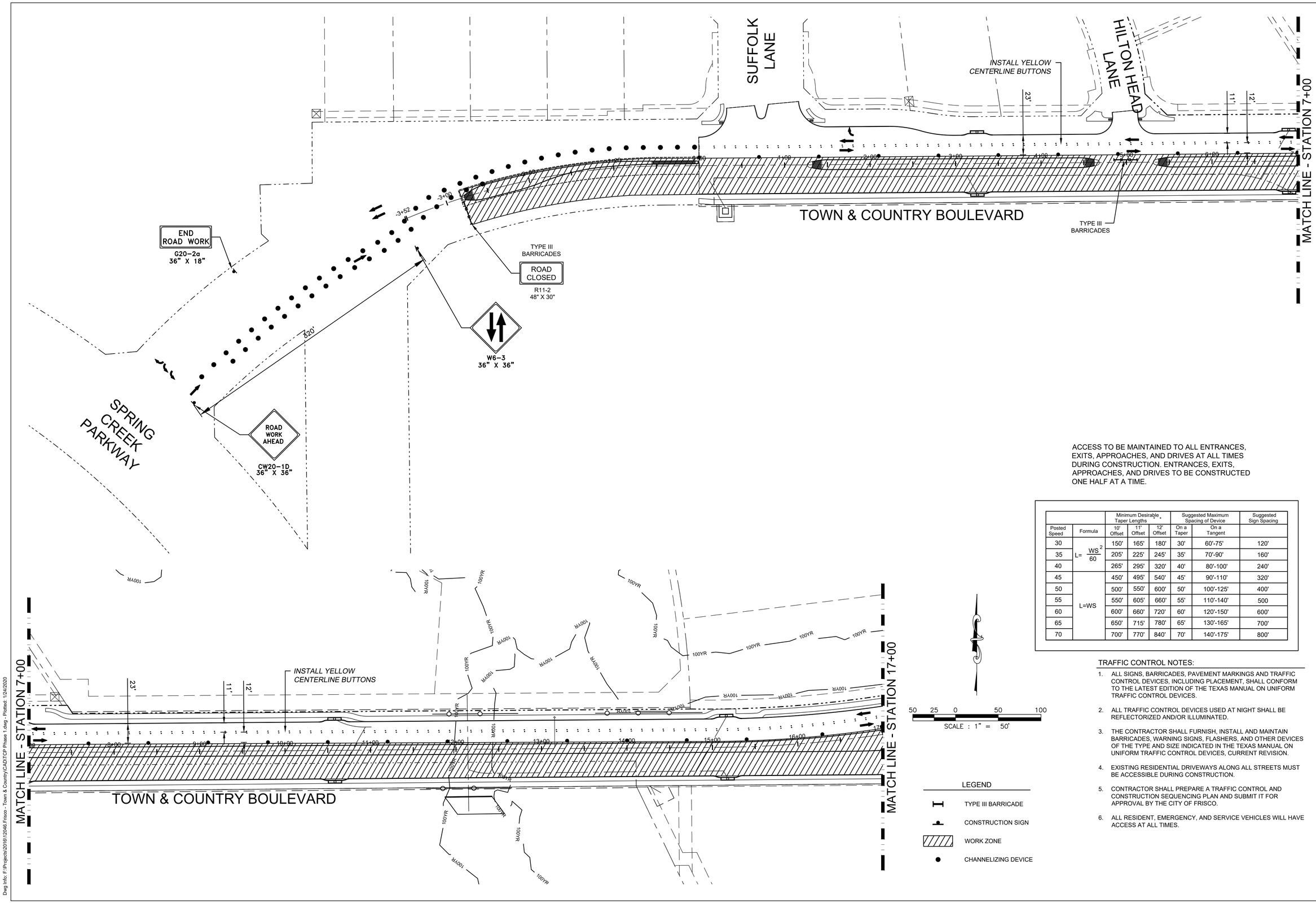
PAVEMENT MARKING DETAILS

CobbFendley
TBPE Firm Registration No. 274
TBPLS Firm Registration No. 100467
2801 Network Boulevard, Suite 800
Frisco, Texas 75034
972.335.3214 | fax 972.335.3202 | www.cobbfendley.com

DESIGN BY: MEA	DRAWN BY: MEA
DATE: JAN 2020	JOB NUMBER: 1612-046-01

SHEET 62

Dwg Info: F:\Projects\2016\12046 Frisco - Town & Country\CAD\Details - Pavement Markings.dwg - Plotted: 1/24/2020



ACCESS TO BE MAINTAINED TO ALL ENTRANCES, EXITS, APPROACHES, AND DRIVES AT ALL TIMES DURING CONSTRUCTION. ENTRANCES, EXITS, APPROACHES, AND DRIVES TO BE CONSTRUCTED ONE HALF AT A TIME.

		Minimum Desirable Taper Lengths *			Suggested Maximum Spacing of Device		Suggested Sign Spacing
Posted Speed	Formula	10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent	
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60'-75'	120'
35		205'	225'	245'	35'	70'-90'	160'
40		265'	295'	320'	40'	80'-100'	240'
45	L=WS	450'	495'	540'	45'	90'-110'	320'
50		500'	550'	600'	50'	100'-125'	400'
55		550'	605'	660'	55'	110'-140'	500
60		600'	660'	720'	60'	120'-150'	600'
65		650'	715'	780'	65'	130'-165'	700'
70		700'	770'	840'	70'	140'-175'	800'

LEGEND

- TYPE III BARRICADE
- CONSTRUCTION SIGN
- WORK ZONE
- CHANNELIZING DEVICE

TRAFFIC CONTROL NOTES:

1. ALL SIGNS, BARRICADES, PAVEMENT MARKINGS AND TRAFFIC CONTROL DEVICES, INCLUDING PLACEMENT, SHALL CONFORM TO THE LATEST EDITION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
2. ALL TRAFFIC CONTROL DEVICES USED AT NIGHT SHALL BE REFLECTORIZED AND/OR ILLUMINATED.
3. THE CONTRACTOR SHALL FURNISH, INSTALL AND MAINTAIN BARRICADES, WARNING SIGNS, FLASHERS, AND OTHER DEVICES OF THE TYPE AND SIZE INDICATED IN THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, CURRENT REVISION.
4. EXISTING RESIDENTIAL DRIVEWAYS ALONG ALL STREETS MUST BE ACCESSIBLE DURING CONSTRUCTION.
5. CONTRACTOR SHALL PREPARE A TRAFFIC CONTROL AND CONSTRUCTION SEQUENCING PLAN AND SUBMIT IT FOR APPROVAL BY THE CITY OF FRISCO.
6. ALL RESIDENT, EMERGENCY, AND SERVICE VEHICLES WILL HAVE ACCESS AT ALL TIMES.

NO.	DATE	COMMENT

REVISIONS

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)

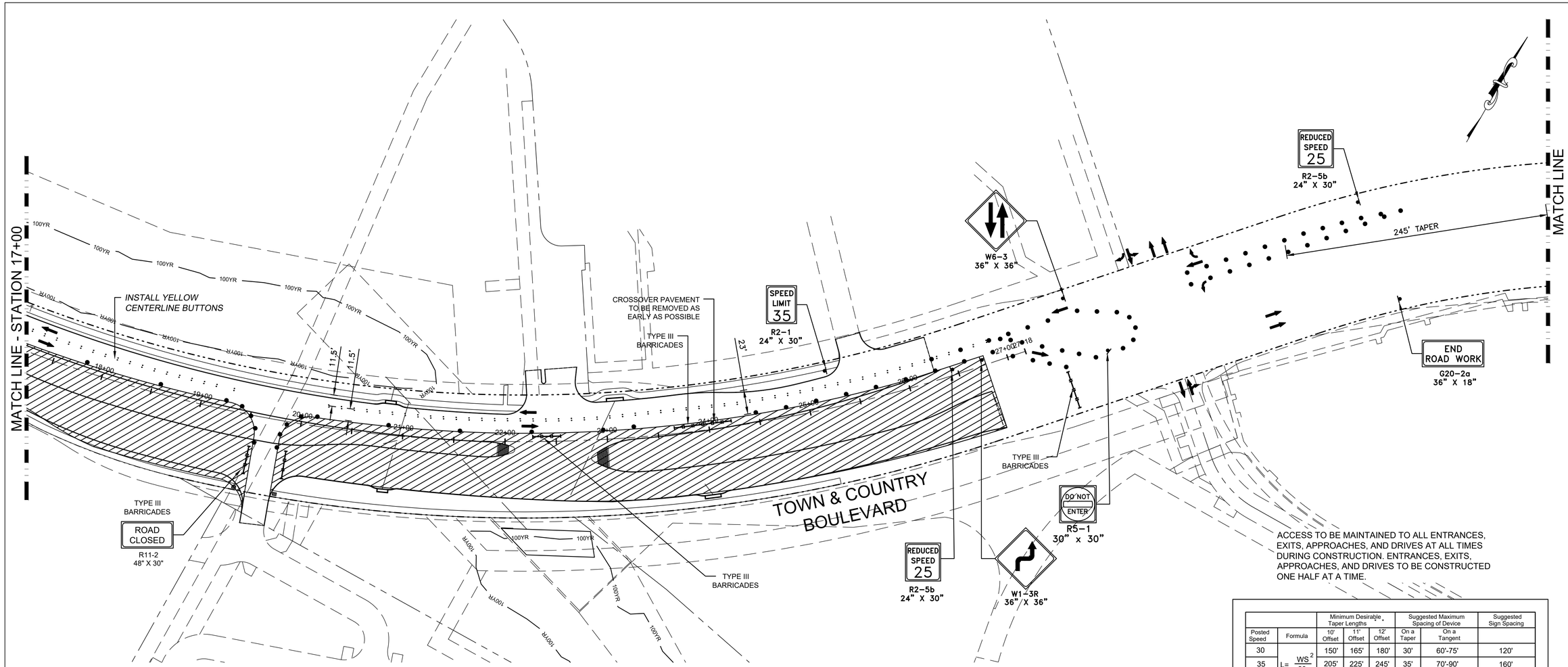
TCP PHASE 1

CobbFendley
TBPE Firm Registration No. 274
TBPLS Firm Registration No. 10046
2801 Network Boulevard, Suite 800
Frisco, Texas 75034
972.335.3214 | fax 972.335.3202 | www.cobbfendley.com

DESIGN BY: MEA	DRAWN BY: MEA
DATE: JAN 2020	JOB NUMBER: 1612-046-01

SHEET 63

Dwg Info: F:\Projects\2016\12046 Frisco - Town & Country\CAD\TCP Phase 1.dwg - Plotted: 1/24/2020



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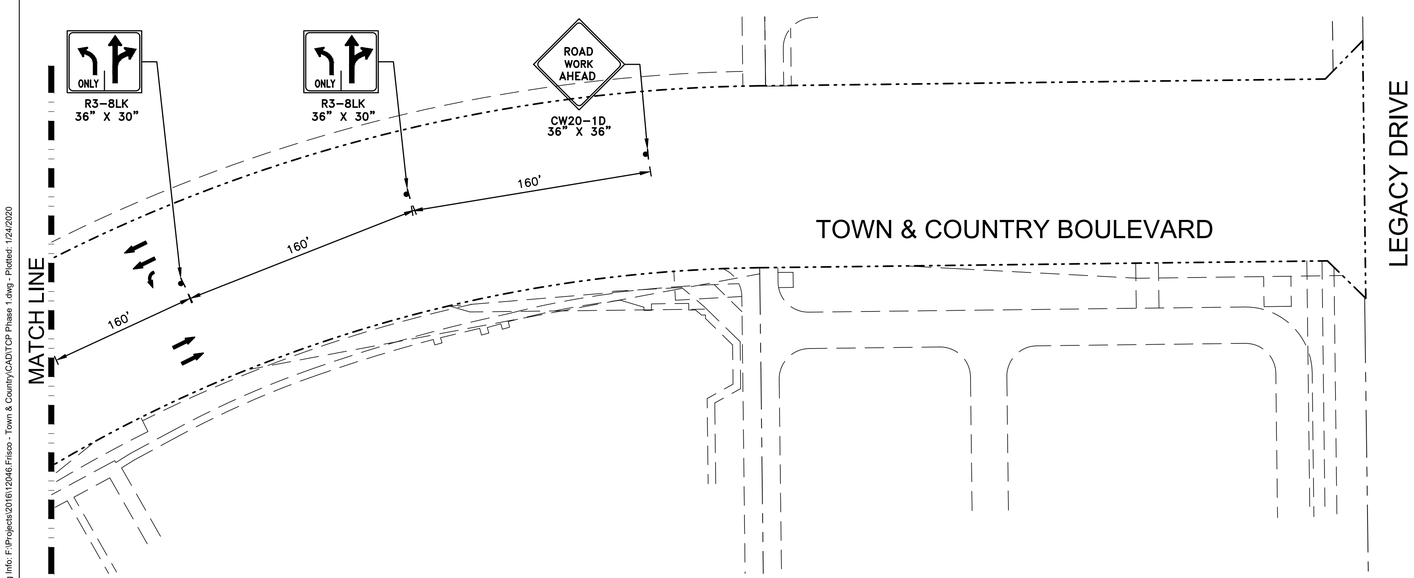

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40		265'	295'	320'	40'	80'-100'	240'
45	L=WS	450'	495'	540'	45'	90'-110'	320'
50		500'	550'	600'	50'	100'-125'	400'
55		550'	605'	660'	55'	110'-140'	500
60		600'	660'	720'	60'	120'-150'	600'
65		650'	715'	780'	65'	130'-165'	700'
70		700'	770'	840'	70'	140'-175'	800'

50 25 0 50 100

SCALE : 1" = 50'

LEGEND

- TYPE III BARRICADE
- CONSTRUCTION SIGN
- WORK ZONE
- CHANNELIZING DEVICE

TRAFFIC CONTROL NOTES:

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NO.	DATE	COMMENT

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)

TCP PHASE 1

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TBPE Firm Registration No. 274
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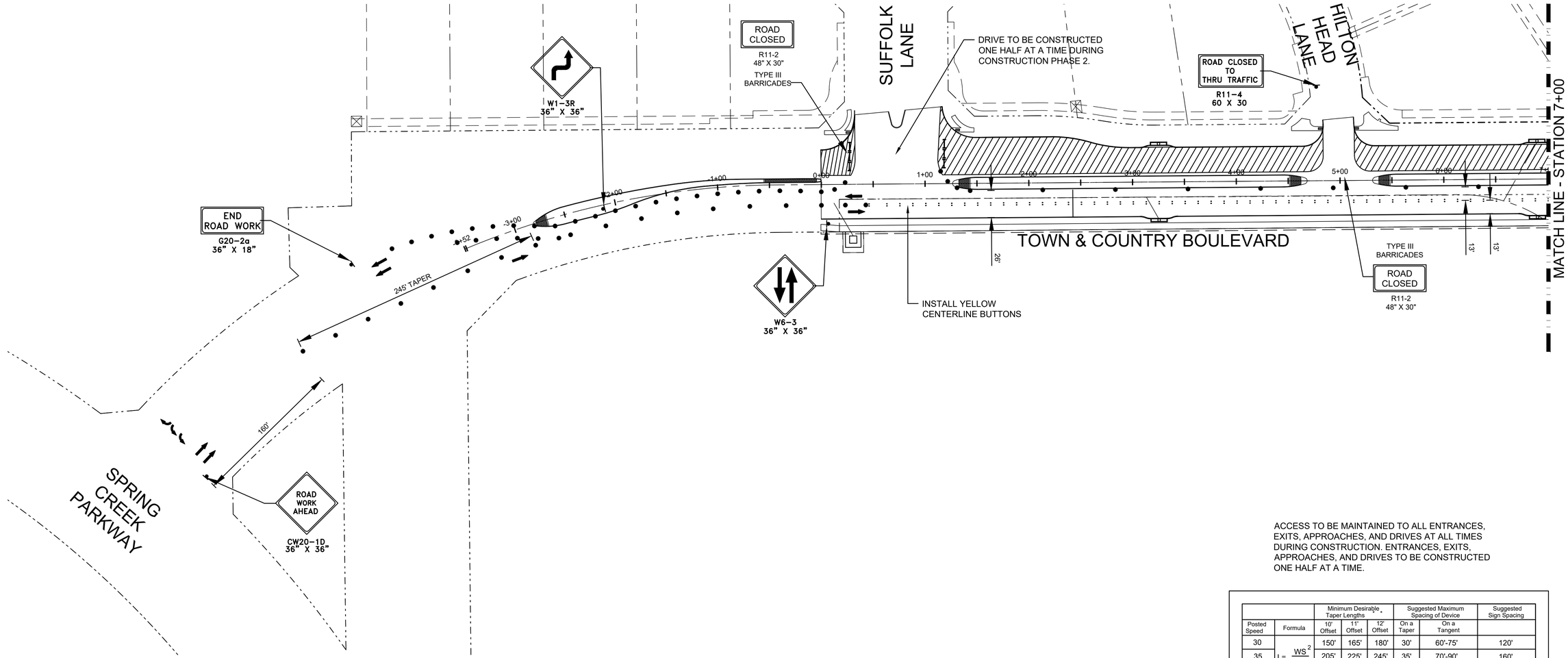
DESIGN BY: MEA	DRAWN BY: MEA
DATE: JAN 2020	JOB NUMBER: 1612-046-01

SHEET 64

Dwg Info: F:\Projects\2016\12046 Frisco - Town & Country\CAD\TCP Phase 1.dwg - Plotted: 1/24/2020



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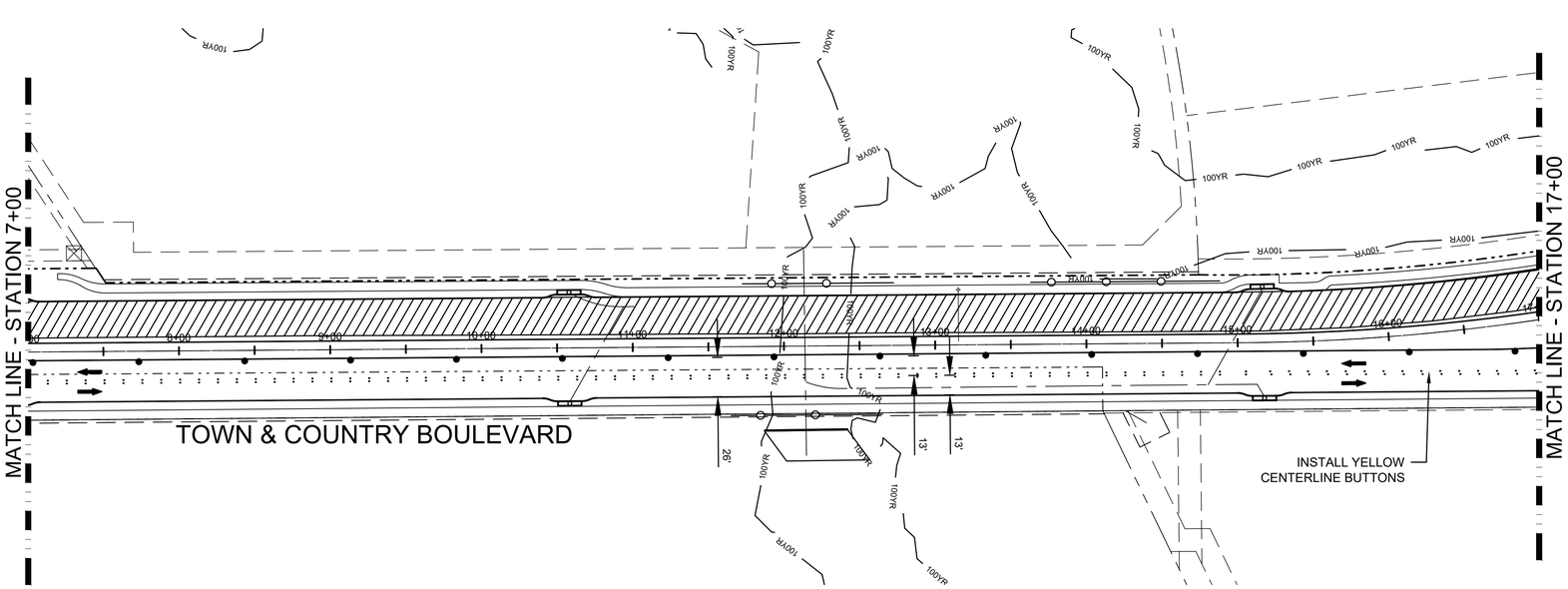
35		205'	225'	245'	35'	70'-90'	160'
40		265'	295'	320'	40'	80'-100'	240'
45	L=WS	450'	495'	540'	45'	90'-110'	320'
50		500'	550'	600'	50'	100'-125'	400'
55		550'	605'	660'	55'	110'-140'	500
60		600'	660'	720'	60'	120'-150'	600'
65		650'	715'	780'	65'	130'-165'	700'
70		700'	770'	840'	70'	140'-175'	800'



50 25 0 50 100

SCALE : 1" = 50'

LEGEND

- TYPE III BARRICADE
- CONSTRUCTION SIGN
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- CHANNELIZING DEVICE

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1. ALL SIGNS, BARRICADES, PAVEMENT MARKINGS AND TRAFFIC CONTROL DEVICES, INCLUDING PLACEMENT, SHALL CONFORM TO THE LATEST EDITION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
2. ALL TRAFFIC CONTROL DEVICES USED AT NIGHT SHALL BE REFLECTORIZED AND/OR ILLUMINATED.
3. THE CONTRACTOR SHALL FURNISH, INSTALL AND MAINTAIN BARRICADES, WARNING SIGNS, FLASHERS, AND OTHER DEVICES OF THE TYPE AND SIZE INDICATED IN THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, CURRENT REVISION.
4. EXISTING RESIDENTIAL DRIVEWAYS ALONG ALL STREETS MUST BE ACCESSIBLE DURING CONSTRUCTION.
5. CONTRACTOR SHALL PREPARE A TRAFFIC CONTROL AND CONSTRUCTION SEQUENCING PLAN AND SUBMIT IT FOR APPROVAL BY THE CITY OF FRISCO.
6. ALL RESIDENT, EMERGENCY, AND SERVICE VEHICLES WILL HAVE ACCESS AT ALL TIMES.

NO.	DATE	COMMENT

REVISIONS

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)

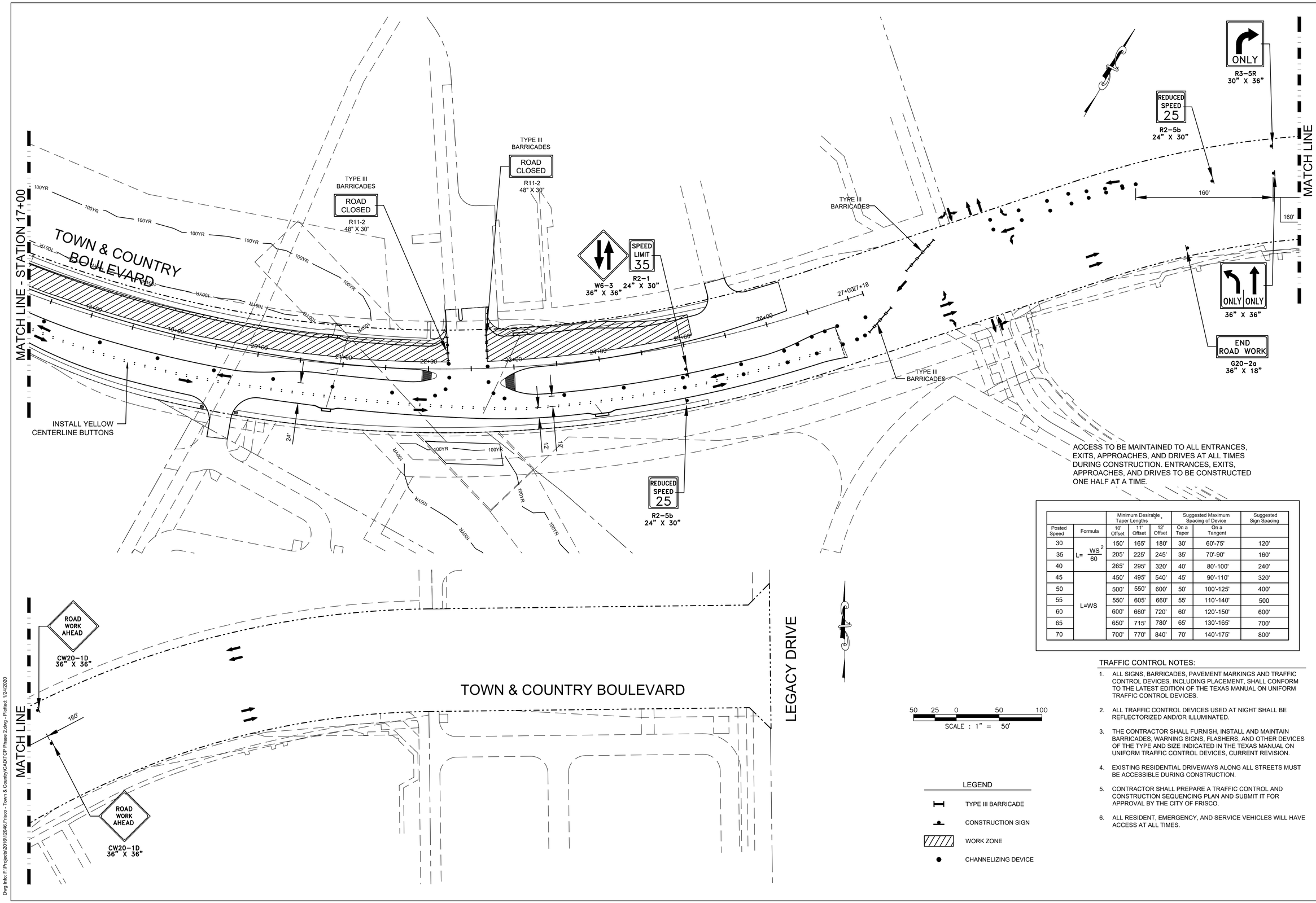
TCP PHASE 2

CobbFendley
TBPE Firm Registration No. 274
TBPLS Firm Registration No. 100467
2801 Network Boulevard, Suite 800
Frisco, Texas 75034
972.335.3214 | fax 972.335.3202 | www.cobbfendley.com

DESIGN BY: MEA	DRAWN BY: MEA
DATE: JAN 2020	JOB NUMBER: 1612-046-01

SHEET 65

Dwg Info: F:\Projects\2016\12046 Frisco - Town & Country\CAD\TCP Phase 2.dwg - Plotted: 1/24/2020



Posted Speed	Formula	Minimum Desirable Taper Lengths * 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Device On a Taper	On a Tangent	Suggested Sign Spacing
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'-75'	120'
35		205'	225'	245'	35'	70'-90'	160'
40		265'	295'	320'	40'	80'-100'	240'
45	L=WS	450'	495'	540'	45'	90'-110'	320'
50		500'	550'	600'	50'	100'-125'	400'
55		550'	605'	660'	55'	110'-140'	500
60		600'	660'	720'	60'	120'-150'	600'
65		650'	715'	780'	65'	130'-165'	700'
70		700'	770'	840'	70'	140'-175'	800'

LEGEND

- TYPE III BARRICADE
- CONSTRUCTION SIGN
- WORK ZONE
- CHANNELIZING DEVICE

TRAFFIC CONTROL NOTES:

1. ALL SIGNS, BARRICADES, PAVEMENT MARKINGS AND TRAFFIC CONTROL DEVICES, INCLUDING PLACEMENT, SHALL CONFORM TO THE LATEST EDITION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
2. ALL TRAFFIC CONTROL DEVICES USED AT NIGHT SHALL BE REFLECTORIZED AND/OR ILLUMINATED.
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NO.	DATE	COMMENT

REVISIONS

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)

TCP PHASE 2

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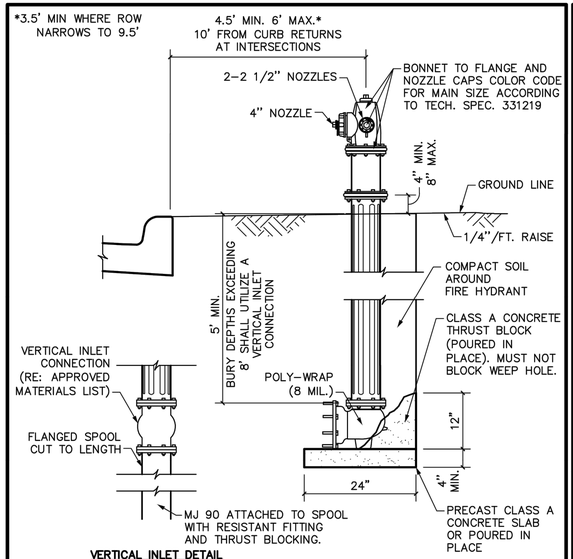
DESIGN BY: MEA	DRAWN BY: MEA
DATE: JAN 2020	JOB NUMBER: 1612-046-01

SHEET 66

Dwg Info: F:\Projects\2016\12046.Frisco - Town & Country\CAD\TCP Phase 2.dwg - Plotted: 1/24/2020

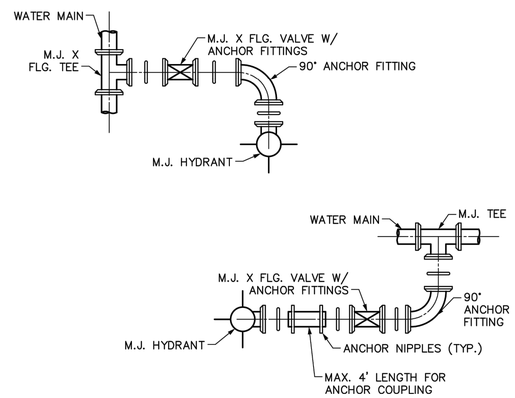


VERTICAL INLET DETAIL

NOTES:

1. A BLUE STEMSONITE (OR APPROVED OTHER) MODEL 88-SSA FIRE HYDRANT MARKER WILL BE INSTALLED OPPOSITE FIRE HYDRANTS JUST OFF CENTER TO THE SIDE OF THE STREET ADJACENT TO THE HYDRANT.
2. CONTRACTOR SHALL UTILIZE VERTICAL INLET CONNECTION WHEN BURY DEPTHS EXCEED EIGHT (8) FEET.
3. NO MORE THAN 1 EXTENSION IS ALLOWED PER ASSEMBLY AND IS LIMITED TO 3'.

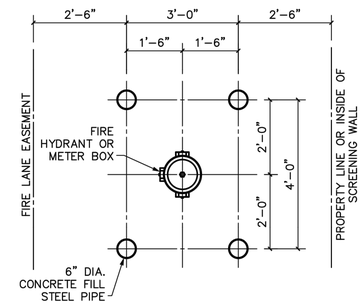
FRISCO PROGRESS IN MOTION	STANDARD CONSTRUCTION DETAIL **FIRE HYDRANT**	SCALE: 3/4"=1'-0" REVISED: SEP 2019 W12



NOTES:

1. ALL FIRE HYDRANTS MUST BE ANCHORED TO MAIN BY USE OF ANCHOR FITTINGS.
2. ANCHOR TEES ALLOWED.
3. REFER TO TECHNICAL SPECIFICATION 331219 FIRE HYDRANTS.

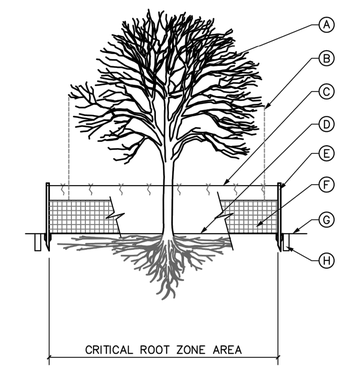
FRISCO PROGRESS IN MOTION	STANDARD CONSTRUCTION DETAILS **FIRE HYDRANT INSTALLATION**	SCALE: 1/8"=1'-0" REVISED: MAR 2012 W13



NOTES:

1. FOR USE WHERE CURBS ARE NOT POSSIBLE OR AS SPECIFIED BY THE CITY.
2. FIRE HYDRANTS SHALL BE 35' CLEAR OF ALL BUILDINGS.
3. GUARD POSTS SHALL BE 6 LINEAR FEET OF 6" DIAMETER STEEL PIPE (3' ABOVE & BELOW GROUND LEVEL). POST SHALL BE ENCASED IN 16" DIAMETER CONCRETE PIER TO A DEPTH OF 12" BELOW POST BOTTOM. REINFORCED CONCRETE PIER WITH 2 – #6 BARS (12" LONG) THROUGH POST INTO PIER. POST ABOVE GROUND LEVEL SHALL BE PAINTED SAFETY YELLOW.

FRISCO PROGRESS IN MOTION	STANDARD CONSTRUCTION DETAIL **PIPE BOLLARD**	SCALE: 1/2"=1'-0" REVISED: MAR 2012 W14



LEGEND:

- (A) EXISTING TREE(S) TO REMAIN
- (B) DRIP LINE OF EXISTING TREE (TYP.)
- (C) CONTINUOUS NYLON TIE STRING TIED TO STAKE TOPS W/ 2' TUNDRA WEIGHT ORANGE STREAMERS AT 3' O.C.
- (D) EXISTING GRADE TO REMAIN
- (E) 2"x2"x8' STEEL POST T-STAKES, 8' O.C. MIN., DRIVEN 2' INTO GROUND AT (OR OUTSIDE) TREE DRIP LINE
- (F) 4' MIN HEIGHT ORANGE PLASTIC FENCING INSTALLED PER CITY-APPROVED MANUFACTURER'S SPECIFICATIONS
- (G) EXISTING GRADE TO BE DISTURBED
- (H) ROOT PRUNING TRENCH 12" OUTSIDE FENCE

NOTES:

1. PERFORM ROOT PRUNING ON ALL EXISTING TREES TO REMAIN WHERE CONSTRUCTION ACTIVITY FALLS WITHIN DRIP LINE OF EXISTING TREES.
2. NO GRADING, PARKING, STORAGE OR ANY OTHER CONSTRUCTION ACTIVITY WITHIN FENCED AREA.
3. REFER TO TECHNICAL SPECIFICATION 329600.
4. TREE PRUNING BY CERTIFIED TREE TRIMMER OR ARBORIST.

FRISCO PROGRESS IN MOTION	STANDARD CONSTRUCTION DETAIL **TREE PROTECTION**	SCALE: N.T.S. REVISED: MAR 2012 L05

NO.	DATE	COMMENT

REVISIONS

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO APPROX. 1600 LF WEST OF LEGACY)

STANDARD DETAILS

FRISCO

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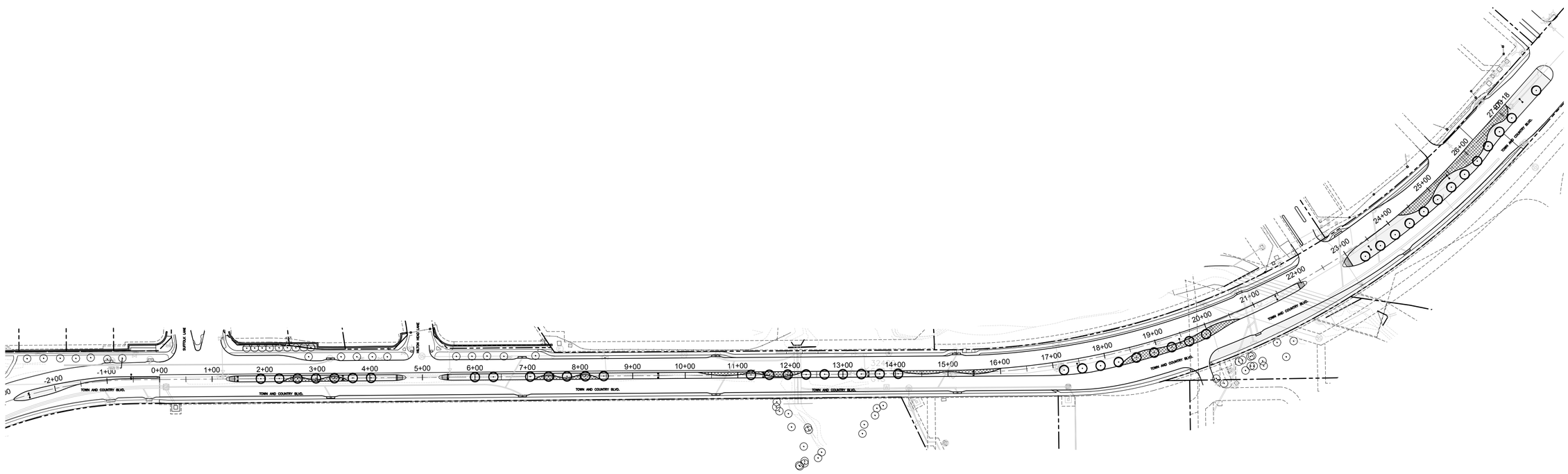
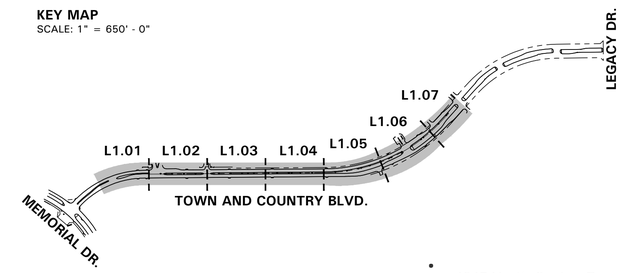
DESIGN BY: MEA	DRAWN BY: MEA
DATE: JAN 2020	JOB NUMBER: 1612-046-01

SHEET
67

Dwg Info: F:\Projects\2016\12046 Frisco - Town & County\CAD\Details - Standard.dwg - Plotted: 1/24/2020



KEY MAP
SCALE: 1" = 650' - 0"



N

SCALE: 1" = 100'-0"
0 50 100 200

BELLE FIRMA

4245 North Central Expy
Suite 501
Dallas, Texas 75205
214.865.7192 office

NO.	DATE	COMMENT
1	01.24.20	CITY COMMENTS

REVISIONS

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Kori Ann Haug
TX Registered Landscape Architect
#2246

CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO LEGACY)

OVERALL LANDSCAPE PLAN – STA 0+00 TO END

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TBPLS Firm Registration No. 100467
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Frisco, Texas 75034
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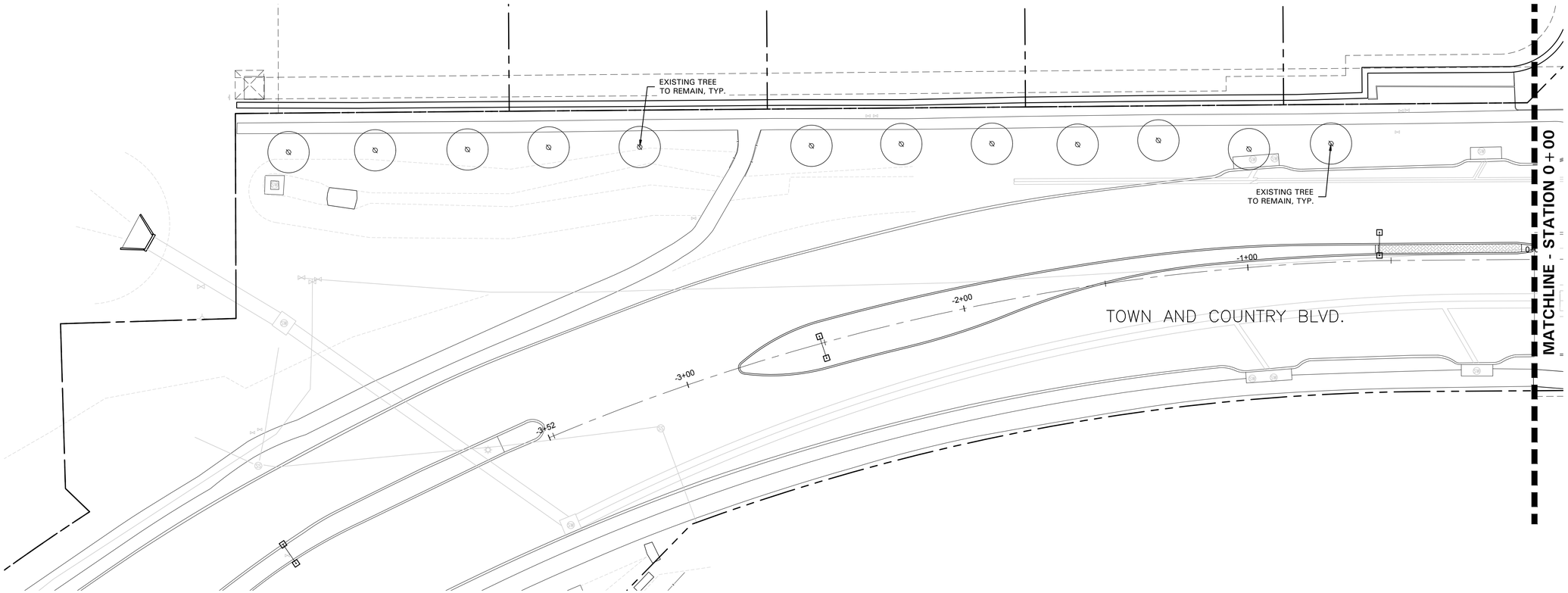
DESIGN BY: MGC	DRAWN BY: MGC
DATE: 05/09/17	JOB NUMBER:

SHEET
L0.00

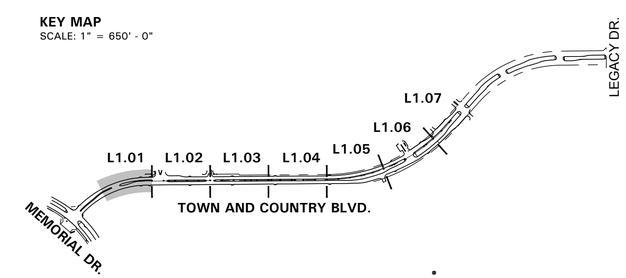
Dwg Info: G:\CloudStation\Projects\2016\16176 - Town and Country\CAD\SHEETS\16176_L000 Series - Overall Landscape.dwg - Plotted: 1/24/2020



EXISTING TREE LEGEND

- EXISTING TREE TO REMAIN
- EXISTING TREE TO BE REMOVED REFER TO NOTE 14, SHEET L1.07, TYP.
- TREE PROTECTION FENCING TO REMAIN DURING CONSTRUCTION REFER TO 01/L1.07

KEY MAP
SCALE: 1" = 650' - 0"



N

SCALE: 1" = 20'-0"
0 10 20 40

BELLE FIRMA
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#2246

CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO LEGACY)

TREE PRESERVATION PLAN – STA 0+00

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Frisco, Texas 75034
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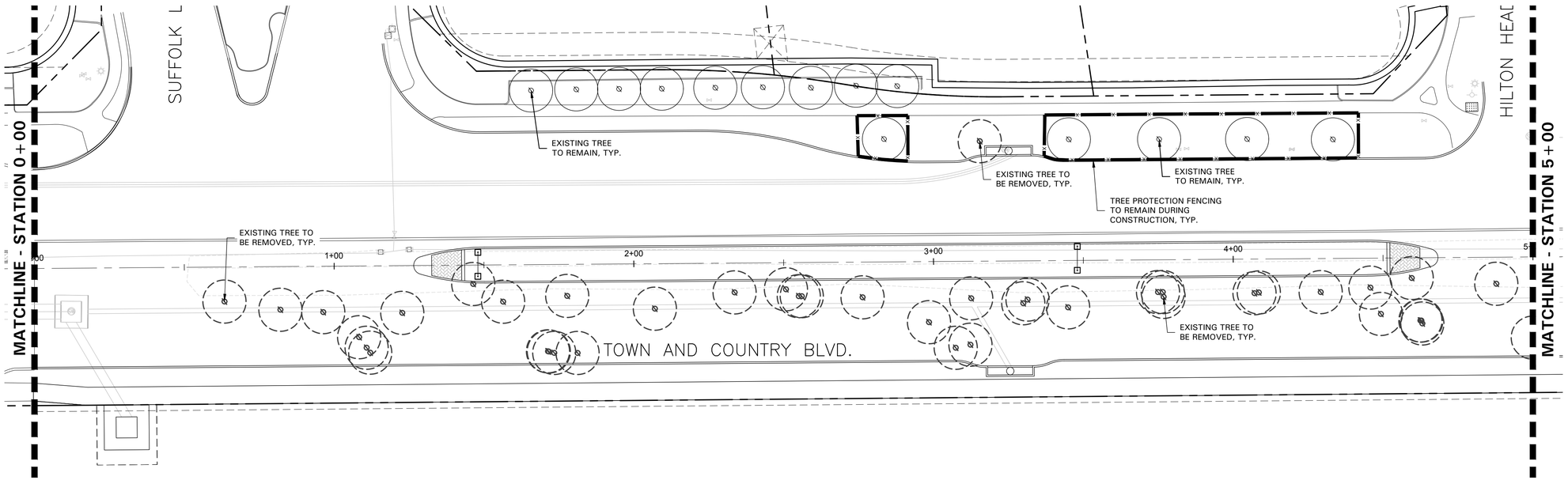
DESIGN BY: MGC	DRAWN BY: MGC
DATE: 05/09/17	JOB NUMBER:
SHEET L1.01	

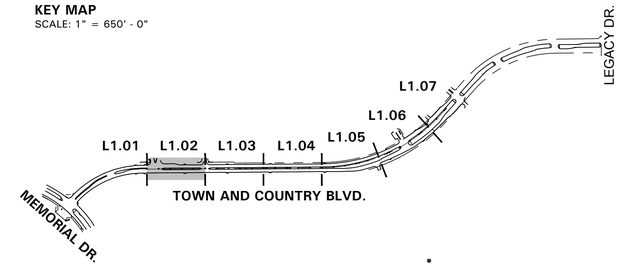
Dwg Info: C:\CloudStation\Projects\2016\16176 - Town and Country\CAD\SHEETS\16176_L100 Series - Tree Preservation.dwg - Plotted: 1/24/2020



EXISTING TREE LEGEND

- EXISTING TREE TO REMAIN
- EXISTING TREE TO BE REMOVED REFER TO NOTE 14, SHEET L1.07, TYP.
- TREE PROTECTION FENCING TO REMAIN DURING CONSTRUCTION REFER TO 01/L1.07

KEY MAP
SCALE: 1" = 650' - 0"



N

SCALE: 1" = 20'-0"
0 10 20 40

BELLE FIRMA

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#2246

CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO LEGACY)

TREE PRESERVATION PLAN – STA 0+00 TO 5+00

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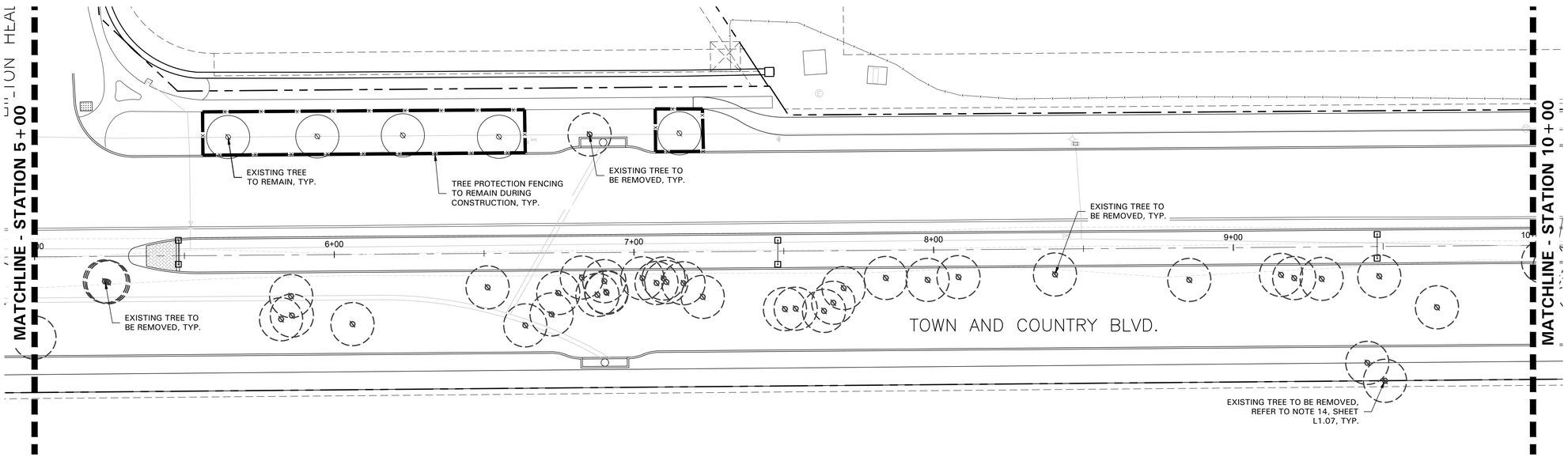
DESIGN BY: MGC	DRAWN BY: MGC
DATE: 05/09/17	JOB NUMBER:

SHEET
L1.02

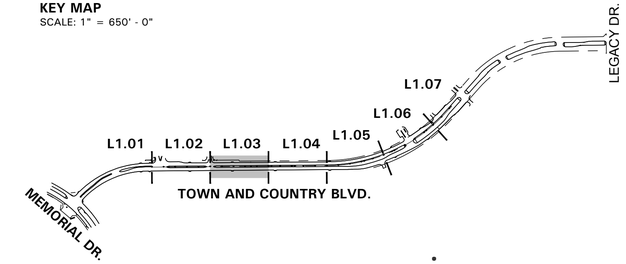
Dwg Info: C:\CloudStation\Projects\2016b\16176 - Town and Country\CAD\SHEETS\16176_L100 Series - Tree Preservation.dwg - Plotted: 1/24/2020



EXISTING TREE LEGEND

- EXISTING TREE TO REMAIN
- EXISTING TREE TO BE REMOVED REFER TO NOTE 14, SHEET L1.07, TYP.
- TREE PROTECTION FENCING TO REMAIN DURING CONSTRUCTION REFER TO 01/L1.07

KEY MAP
SCALE: 1" = 650' - 0"



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SCALE: 1" = 20'-0"
0 10 20 40

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO LEGACY)

TREE PRESERVATION PLAN – STA 5+00 TO 10+00

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DATE: 05/09/17	JOB NUMBER:

SHEET
L1.03

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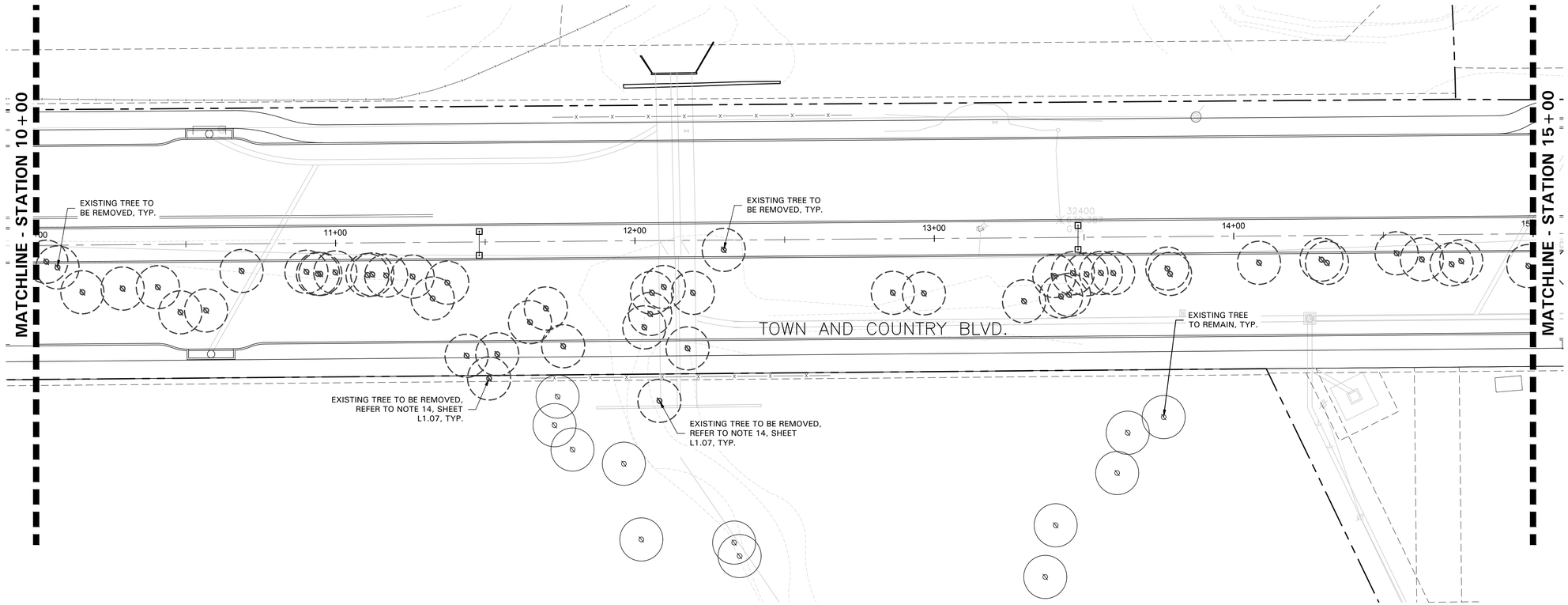
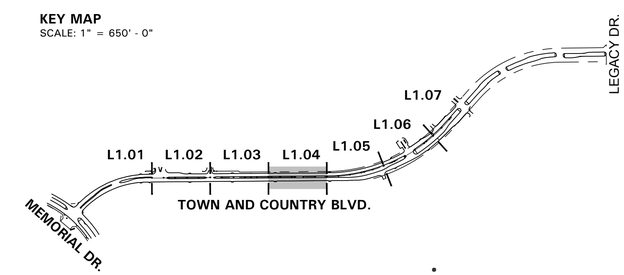


EXISTING TREE LEGEND

- EXISTING TREE TO REMAIN
- EXISTING TREE TO BE REMOVED REFER TO NOTE 14, SHEET L1.07, TYP.
- TREE PROTECTION FENCING TO REMAIN DURING CONSTRUCTION REFER TO 01/L1.07

KEY MAP
SCALE: 1" = 650' - 0"



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SCALE: 1" = 20'-0"
0 10 20 40

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TREE PRESERVATION PLAN – STA 10+00 TO 15+00

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DESIGN BY: MGC	DRAWN BY: MGC
DATE: 05/09/17	JOB NUMBER:

SHEET
L1.04

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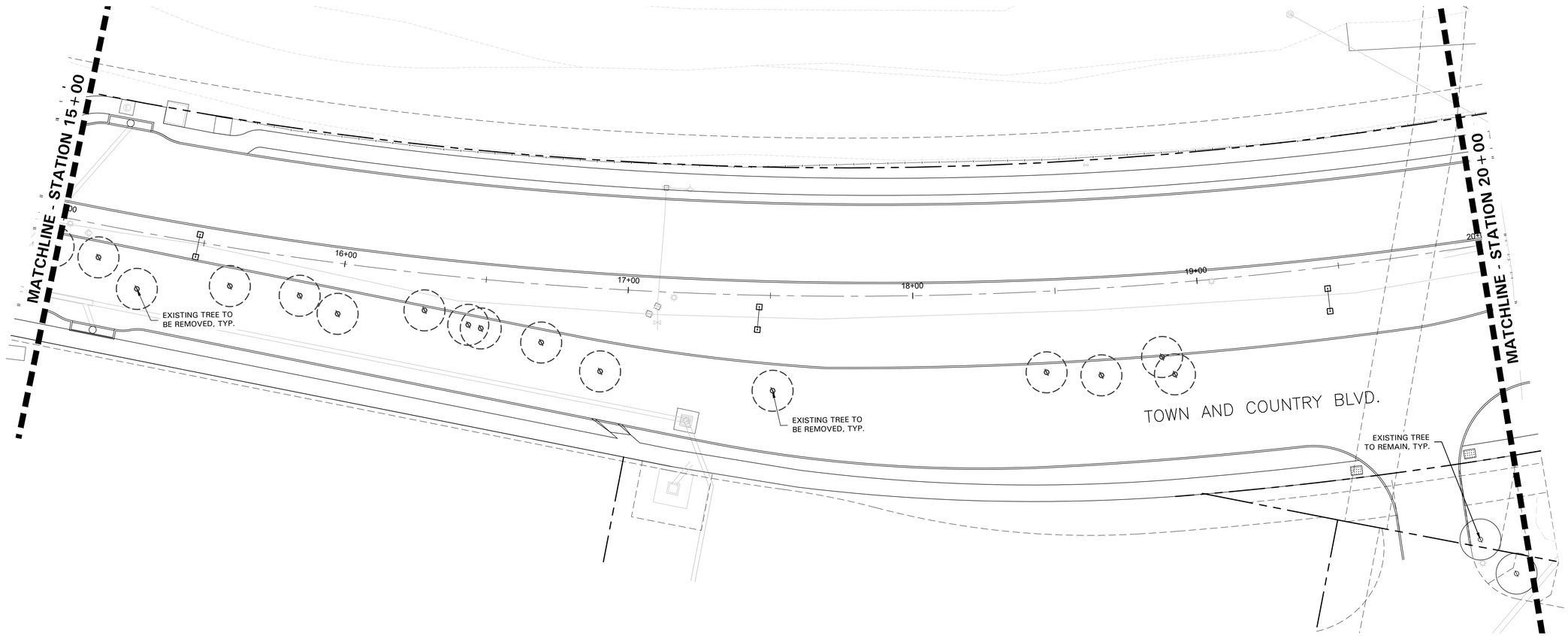
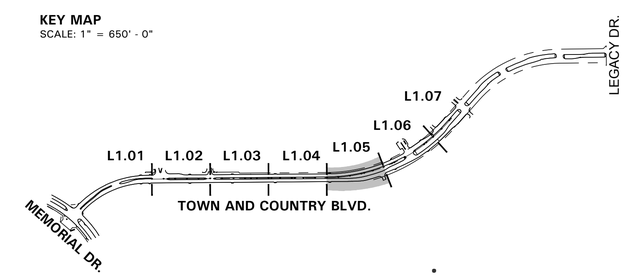


EXISTING TREE LEGEND

- EXISTING TREE TO REMAIN
- EXISTING TREE TO BE REMOVED REFER TO NOTE 14, SHEET L1.07, TYP.
- TREE PROTECTION FENCING TO REMAIN DURING CONSTRUCTION REFER TO 01/L1.07

KEY MAP
SCALE: 1" = 650' - 0"



N

SCALE: 1" = 20'-0"
0 10 20 40

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TREE PRESERVATION PLAN – STA 15+00 TO 20+00

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DATE: 05/09/17	JOB NUMBER:

SHEET
L1.05

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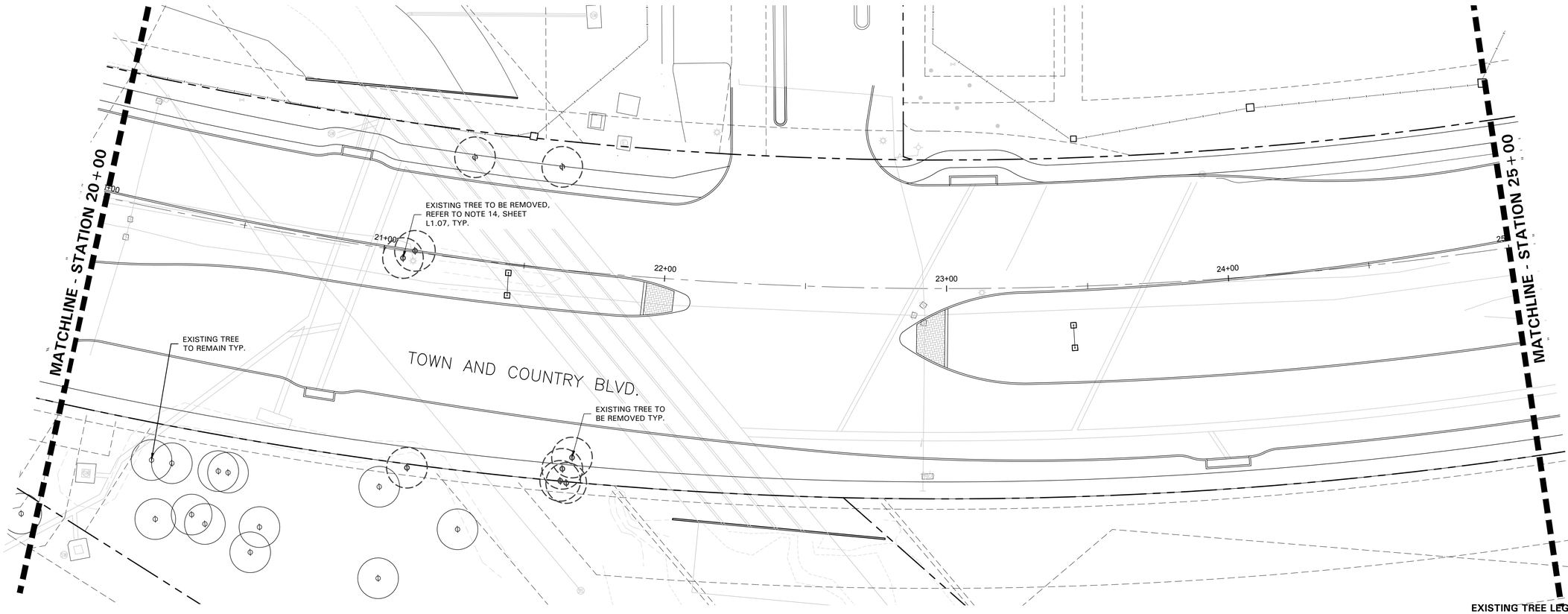
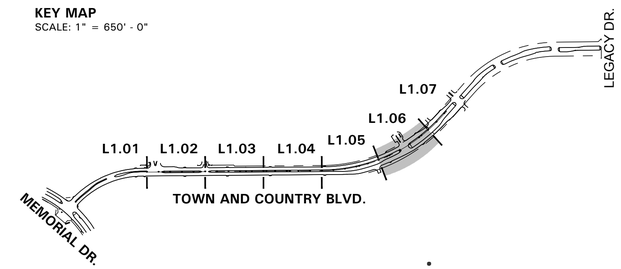


EXISTING TREE LEGEND

- EXISTING TREE TO REMAIN
- EXISTING TREE TO BE REMOVED REFER TO NOTE 14, SHEET L1.07, TYP.
- TREE PROTECTION FENCING TO REMAIN DURING CONSTRUCTION REFER TO 01/L1.07

KEY MAP
SCALE: 1" = 650' - 0"



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SCALE: 1" = 20'-0"
0 10 20 40

BELLE FIRMA

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO LEGACY)

TREE PRESERVATION PLAN – STA 20+00 TO 25+00

CobbFendley
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TBPLS Firm Registration No. 100467
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DATE: 05/09/17	JOB NUMBER:

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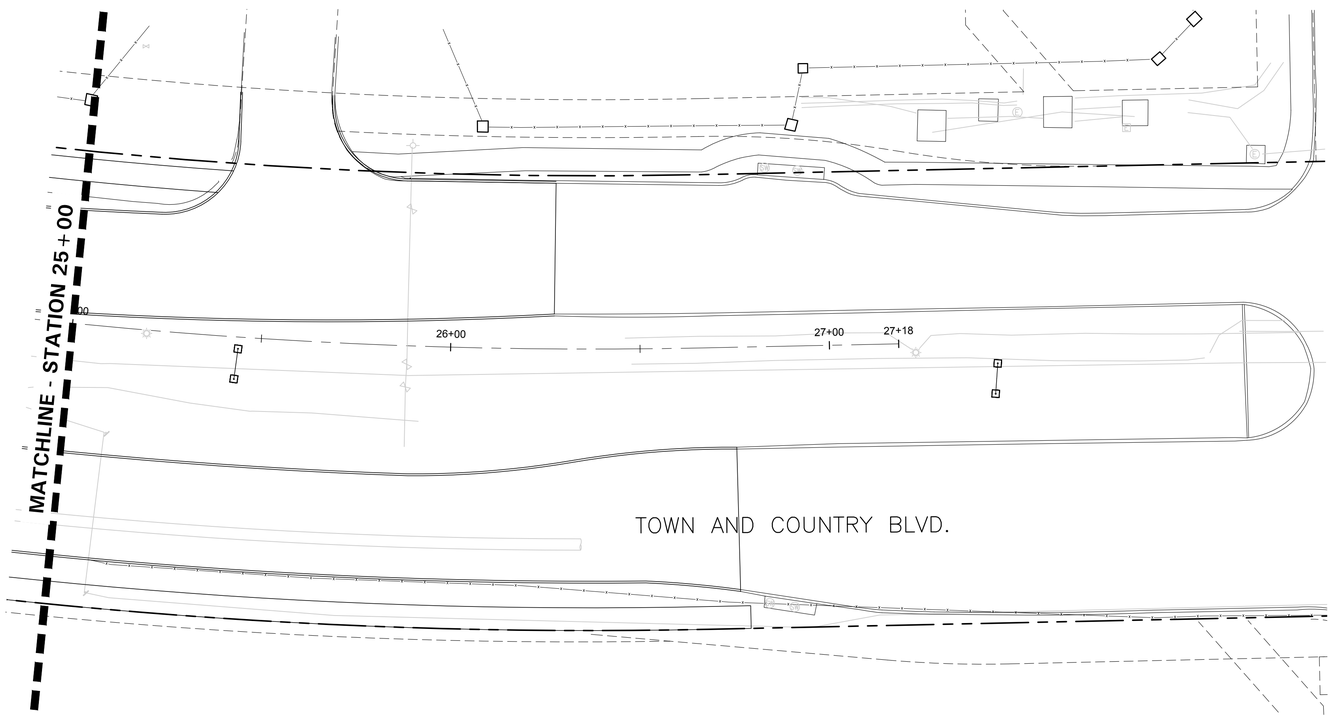
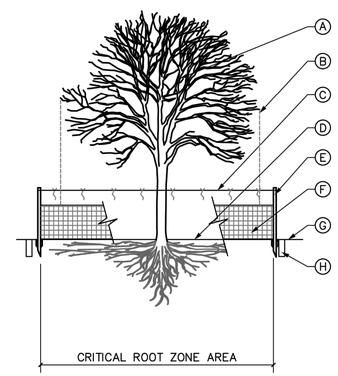
Dwg Info: C:\CloudStation\Projects\2016\16178 - Town and Country(CAD)\SHEETS\16178_L100 Series - Tree Preservation.dwg - Plotted: 1/24/2020





LEGEND:

- (A) EXISTING TREE(S) TO REMAIN
- (B) DRIP LINE OF EXISTING TREE (TYP.)
- (C) CONTINUOUS NYLON TIE STRING TIED TO STAKE TOPS W/ 2' TUNDRA WEIGHT ORANGE STREAMERS AT 3' O.C.
- (D) EXISTING GRADE TO REMAIN
- (E) 2"x2"x8' STEEL POST T–STAKES, 8' O.C. MIN., DRIVEN 2' INTO GROUND AT (OR OUTSIDE) TREE DRIP LINE
- (F) 4' MIN HEIGHT ORANGE PLASTIC FENCING INSTALLED PER CITY–APPROVED MANUFACTURER'S SPECIFICATIONS
- (G) EXISTING GRADE TO BE DISTURBED
- (H) ROOT PRUNING TRENCH 12" OUTSIDE FENCE

NOTES:

1. PERFORM ROOT PRUNING ON ALL EXISTING TREES TO REMAIN WHERE CONSTRUCTION ACTIVITY FALLS WITHIN DRIP LINE OF EXISTING TREES.
2. NO GRADING, PARKING, STORAGE OR ANY OTHER CONSTRUCTION ACTIVITY WITHIN FENCED AREA.
3. REFER TO TECHNICAL SPECIFICATION 329600.
4. TREE PRUNING BY CERTIFIED TREE TRIMMER OR ARBORIST.

FRISCO PROGRESS IN MOTION	STANDARD CONSTRUCTION DETAIL **TREE PROTECTION**	SCALE: N.T.S. REVISED: MAR 2012 L05

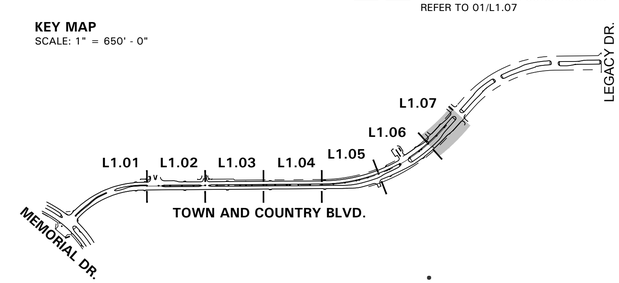
TREE PRESERVATION NOTES

1. EXISTING TREES TO REMAIN SHALL BE PROTECTED DURING CONSTRUCTION FROM TREE STRUCTURE DAMAGE AND COMPACTION OF SOIL UNDER AND AROUND DRIP LINE (CANOPY) OF TREE.
2. IF ANY ROOT STRUCTURE IS DAMAGED DURING ADJACENT EXCAVATION / CONSTRUCTION, NOTIFY OWNER'S AUTHORIZED REPRESENTATIVE IMMEDIATELY. IT IS RECOMMENDED THAT A LICENSED ARBORIST BE SECURED FOR THE TREATMENT OF ANY POSSIBLE TREE WOUNDS.
3. NO DISTURBANCE OF THE SOIL GREATER THAN 4" SHALL BE LOCATED CLOSER TO THE TREE TRUNK THAN 1/2 THE DISTANCE OF THE DRIP LINE TO THE TREE TRUNK. A MINIMUM OF 75% OF THE DRIP LINE AND ROOT ZONE SHALL BE PRESERVED AT NATURAL GRADE.
4. ANY FINE GRADING DONE WITHIN THE CRITICAL ROOT ZONES OF THE PROTECTED TREES MUST BE DONE WITH LIGHT MACHINERY SUCH AS A BOBCAT OR LIGHT TRACTOR. NO EARTH MOVING EQUIPMENT WITH TRACKS IS ALLOWED WITHIN THE CRITICAL ROOT ZONE OF THE TREES.
5. NO MATERIALS INTENDED FOR USE IN CONSTRUCTION OR WASTE MATERIALS ACCUMULATED DUE TO EXCAVATION OR DEMOLITION SHALL BE PLACED WITHIN THE LIMITS OF THE DRIP LINE OF ANY TREE.
6. NO EQUIPMENT MAY BE CLEANED OR TOXIC SOLUTIONS, OR OTHER LIQUID CHEMICALS, SHALL BE DEPOSITED WITHIN THE LIMITS OF THE DRIP LINE OF A TREE, INCLUDING BUT NOT LIMITED TO: PAINT, OIL, SOLVENTS, ASPHALT, CONCRETE, MORTAR, PRIMERS, ETC.
7. NO SIGNS, WIRES OR OTHER ATTACHMENTS, OTHER THAN THOSE OF A PROTECTIVE NATURE, SHALL BE ATTACHED TO ANY TREE.
8. NO VEHICULAR / CONSTRUCTION EQUIPMENT TRAFFIC OR PARKING IS ALLOWED WITHIN THE LIMITS OF THE DRIP LINE OF TREES.
9. BORING OF UTILITIES MAY BE PERMITTED UNDER PROTECTED TREES IN CERTAIN CIRCUMSTANCES. THE MINIMUM LENGTH OF THE BORE SHALL BE THE WIDTH OF THE TREE'S CANOPY AND SHALL BE A MINIMUM DEPTH OF FORTY-EIGHT (48") INCHES.
10. IRRIGATION TRENCHING WHICH MUST BE DONE WITHIN THE CRITICAL ROOT ZONE OF A TREE SHALL BE DUG BY HAND AND ENTER THE AREA IN A RADIAL MANNER.
11. ALL TREES TO BE REMOVED FROM THE SITE SHALL BE FLAGGED BY THE CONTRACTOR WITH BRIGHT RED VINYL TAPE (3" WIDTH) WRAPPED AROUND THE MAIN TRUNK AT A HEIGHT OF FOUR (4') FEET ABOVE GRADE. FLAGGING SHALL BE APPROVED BY OWNER'S AUTHORIZED REPRESENTATIVE PRIOR TO ANY TREE REMOVAL. CONTRACTOR SHALL CONTACT OWNER'S AUTHORIZED REPRESENTATIVE WITH 72 HOURS NOTICE TO SCHEDULE ON-SITE MEETING.
12. ALL TREES TO REMAIN, AS NOTED ON DRAWINGS, SHALL HAVE PROTECTIVE FENCING LOCATED AT THE TREE'S DRIP LINE. THE PROTECTIVE FENCING SHALL BE 4' MINIMUM HEIGHT ORANGE PLASTIC FENCING INSTALLED PER CITY-APPROVED MANUFACTURER'S SPECIFICATIONS. THE PROTECTIVE FENCING SHALL BE LOCATED AS INDICATED ON THE TREE PROTECTION DETAIL.
13. WHEN A LOW HANGING LIMB IS BROKEN DURING THE COURSE OF CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE OWNER'S AUTHORIZED REPRESENTATIVE IMMEDIATELY. UNDER NO CIRCUMSTANCE SHALL THE CONTRACTOR PRUNE ANY PORTION OF THE DAMAGED TREE WITHOUT THE PRIOR APPROVAL BY THE OWNER'S AUTHORIZED REPRESENTATIVE.
14. TREES SHALL BE REMOVED ONLY WHERE IN CONFLICT WITH PROPOSED WORK UNDER THIS CONTRACT. SUBSIDIARY TO GENERAL SITE PREPARATION BID ITEM.

EXISTING TREE LEGEND

- EXISTING TREE TO REMAIN
- EXISTING TREE TO BE REMOVED REFER TO NOTE 14, SHEET L1.07, TYP.
- TREE PROTECTION FENCING TO REMAIN DURING CONSTRUCTION REFER TO 01/L1.07

KEY MAP
SCALE: 1" = 650' - 0"



N

SCALE: 1" = 20'-0"
0 10 20 40

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CITY OF FRISCO, TEXAS
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(SPRING CREEK TO LEGACY)

TREE PRESERVATION PLAN – STA 25+00 TO END

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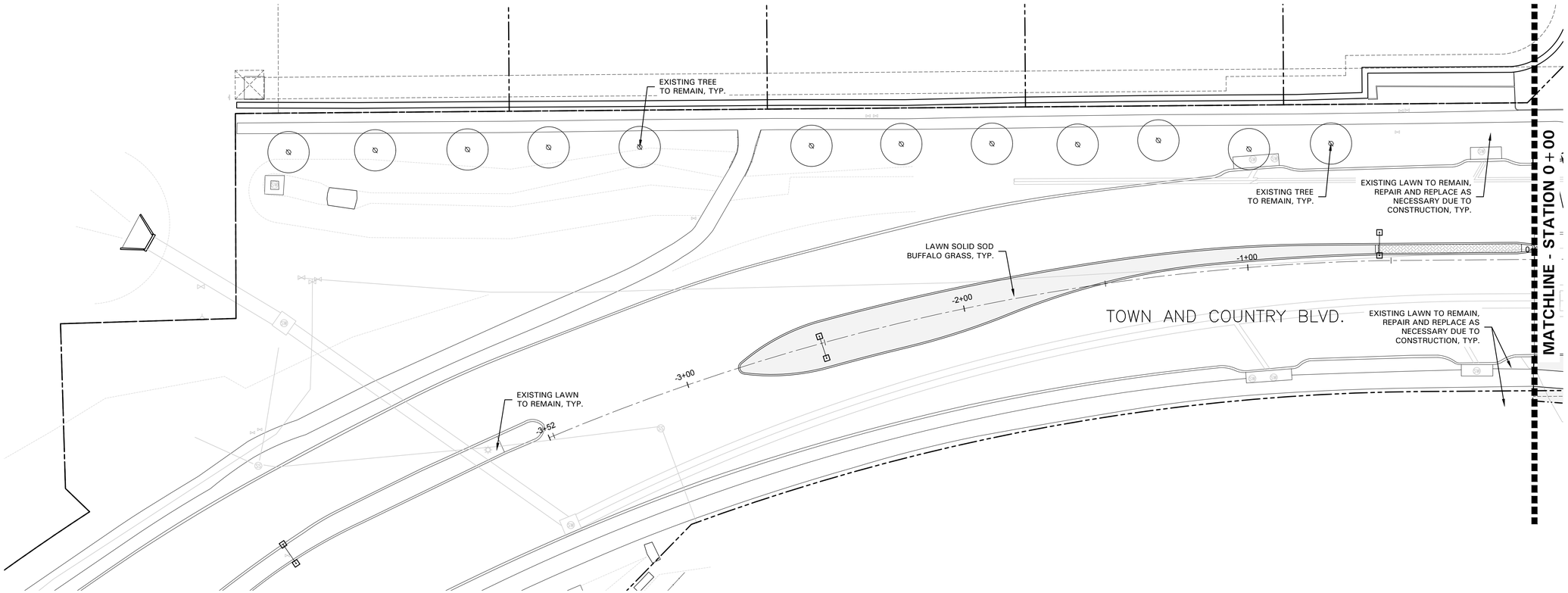
DATE: 05/09/17	JOB NUMBER:

SHEET
L1.07

Dwg Info: C:\CivilStation\Projects\2016\16176 - Town and Country\CAD\SHEETS\16176_L100 Series - Tree Preservation.dwg - Plotted: 1/24/2020

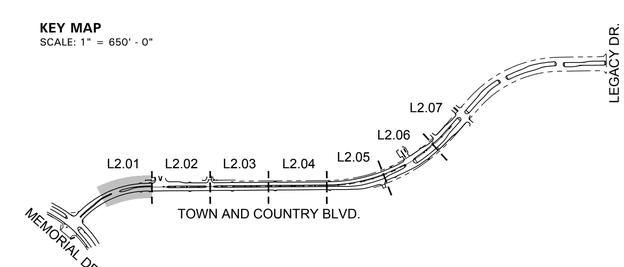


PLANT LEGEND

SYMBOL	COMMON NAME
CP	Chinese Pistache
MFG	Mexican Feathergrass
	Buffalo Grass '609'

REFER TO L2.07 FOR PLANT LIST

KEY MAP
SCALE: 1" = 650' - 0"



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LANDSCAPE PLAN – STA 0+00

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SHEET
L2.01

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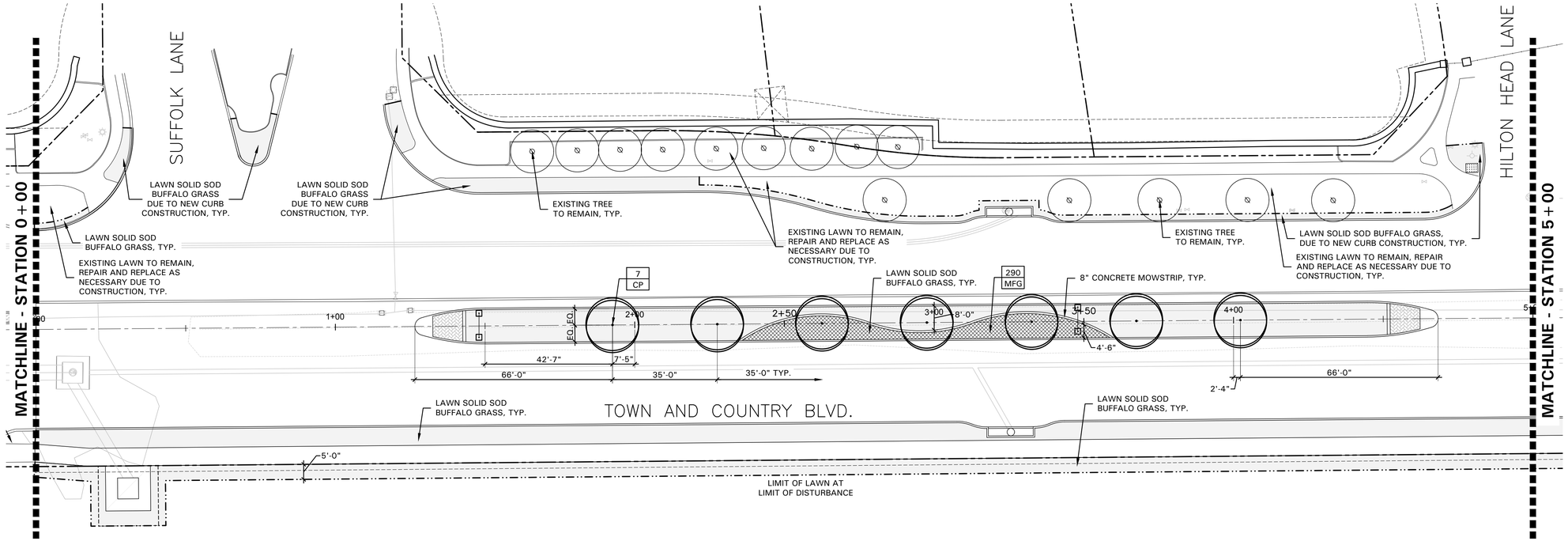
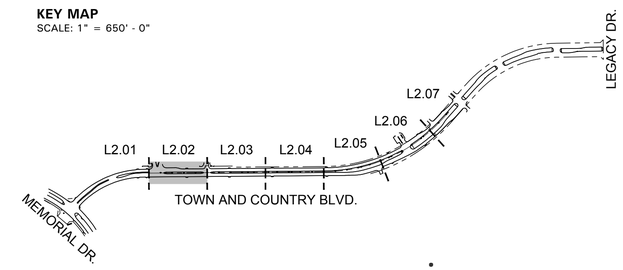


PLANT LEGEND

SYMBOL	COMMON NAME
CP	Chinese Pistache
MFG	Mexican Feathergrass Buffalo Grass '609'

REFER TO L2.07 FOR PLANT LIST

KEY MAP
SCALE: 1" = 650' - 0"



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0 10 20 40

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LANDSCAPE PLAN – STA 0+00 TO 5+00

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SHEET
L2.02

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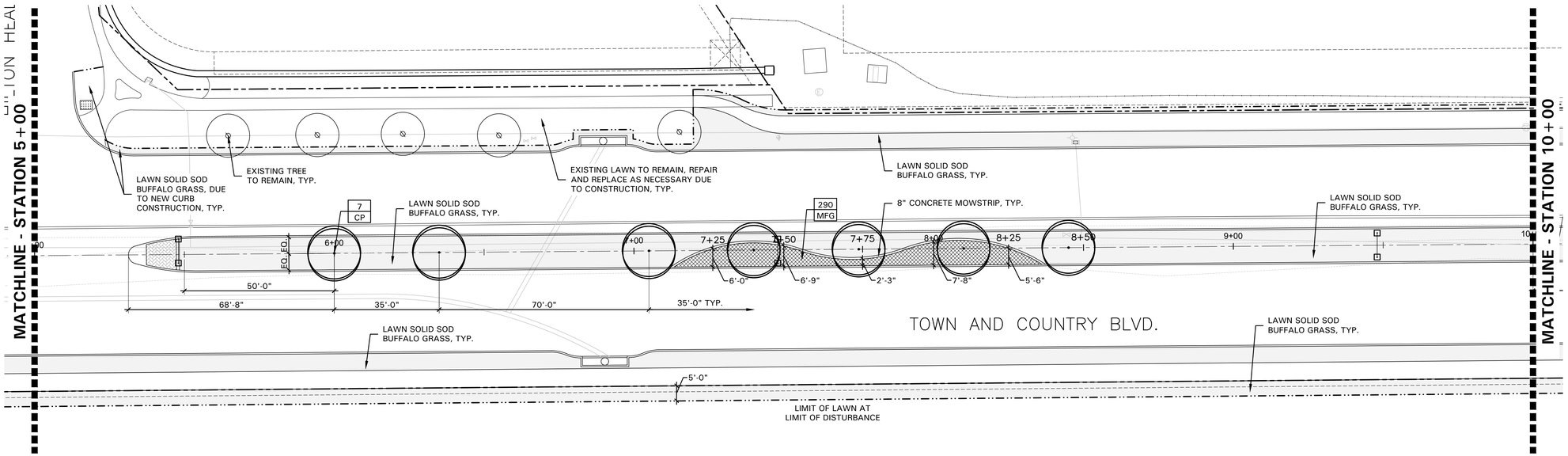
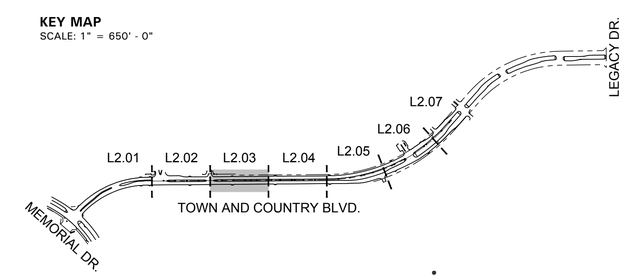


PLANT LEGEND

SYMBOL	COMMON NAME
CP	Chinese Pistache
MFG	Mexican Feathergrass Buffalo Grass '609'

REFER TO L2.07 FOR PLANT LIST

KEY MAP
SCALE: 1" = 650' - 0"



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0 10 20 40

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LANDSCAPE PLAN – STA 5+00 TO 10+00

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SHEET
L2.03

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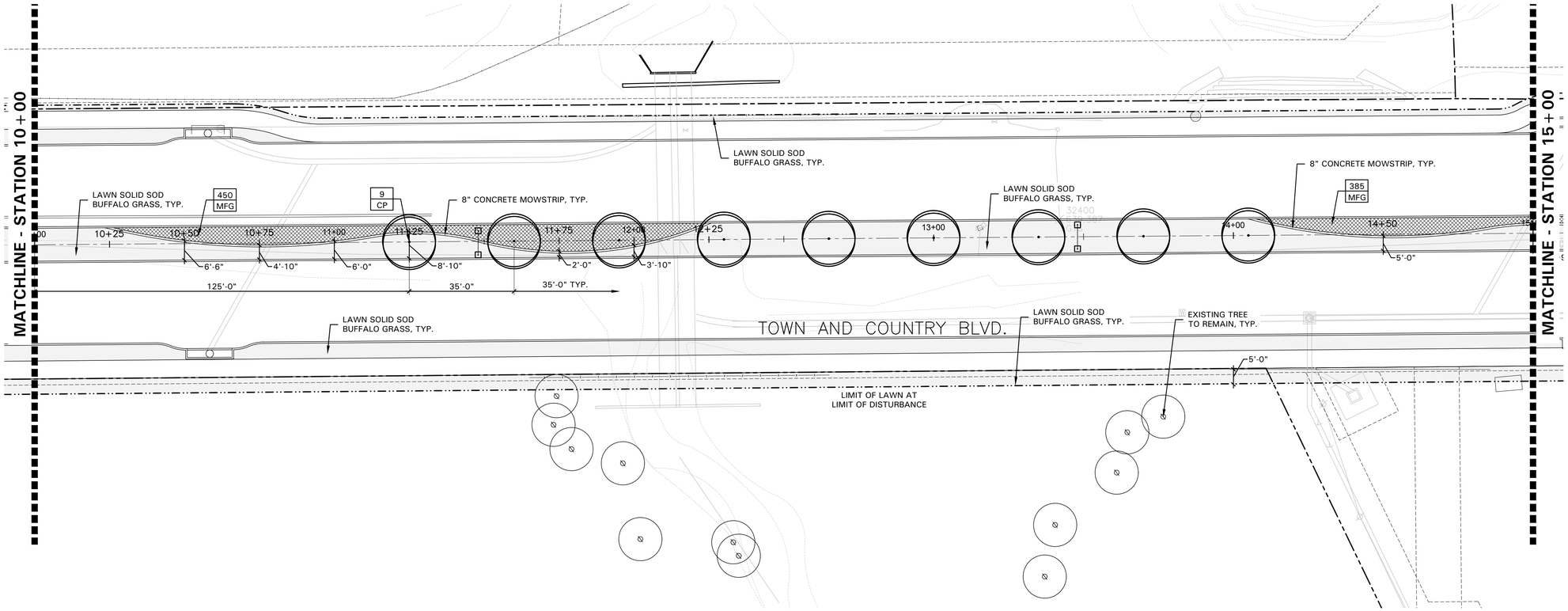
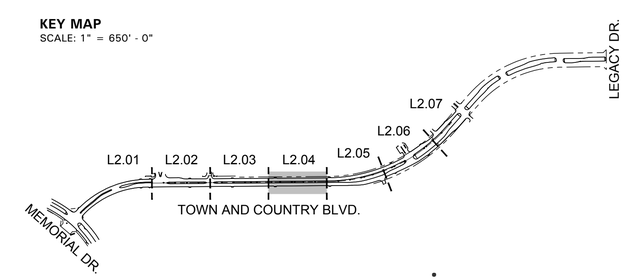


PLANT LEGEND

SYMBOL	COMMON NAME
CP	Chinese Pistache
MFG	Mexican Feathergrass
	Buffalo Grass '609'

REFER TO L2.07 FOR PLANT LIST

KEY MAP
SCALE: 1" = 650' - 0"



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LANDSCAPE PLAN – STA 10+00 TO 15+00

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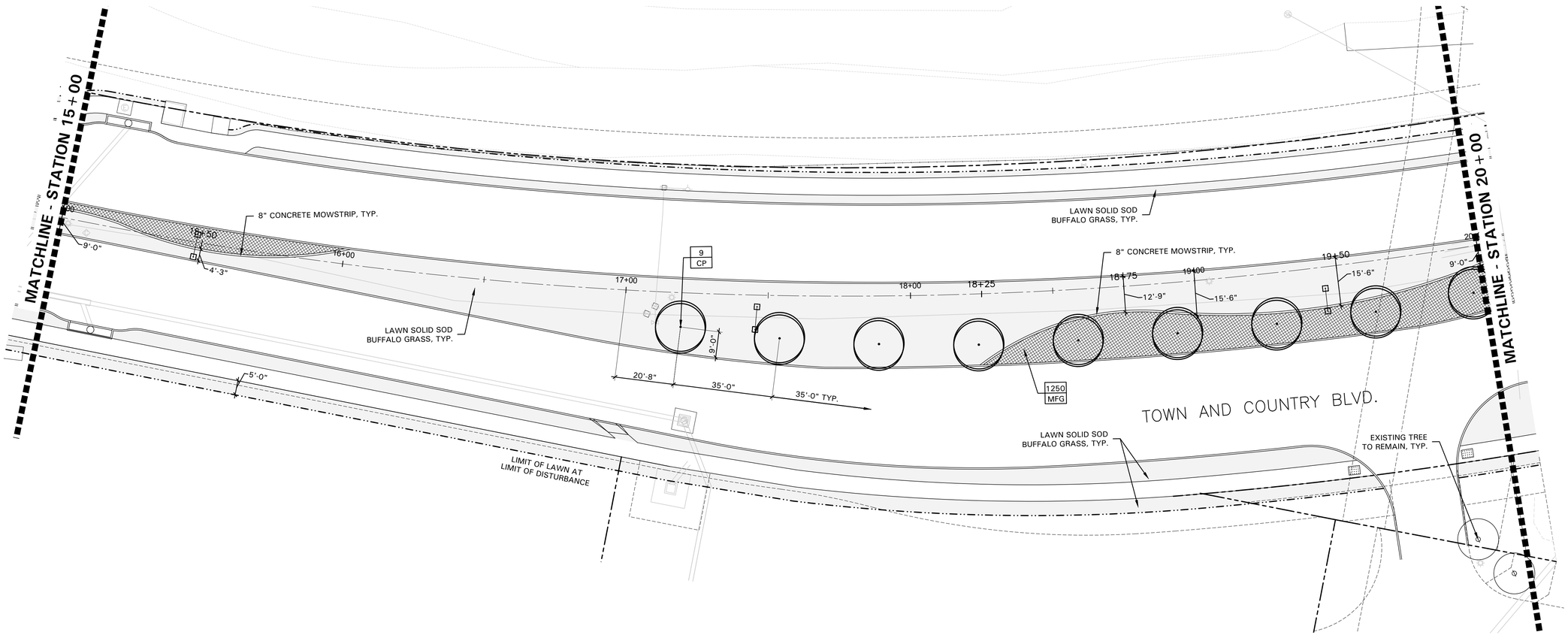

PLANT LEGEND

SYMBOL	COMMON NAME
CP	Chinese Pistache
MFG	Mexican Feathergrass Buffalo Grass '609'

REFER TO L2.07 FOR PLANT LIST

KEY MAP
SCALE: 1" = 650' - 0"

N

SCALE: 1" = 20'-0"
0 10 20 40

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LANDSCAPE PLAN – STA 15+00 TO 20+00

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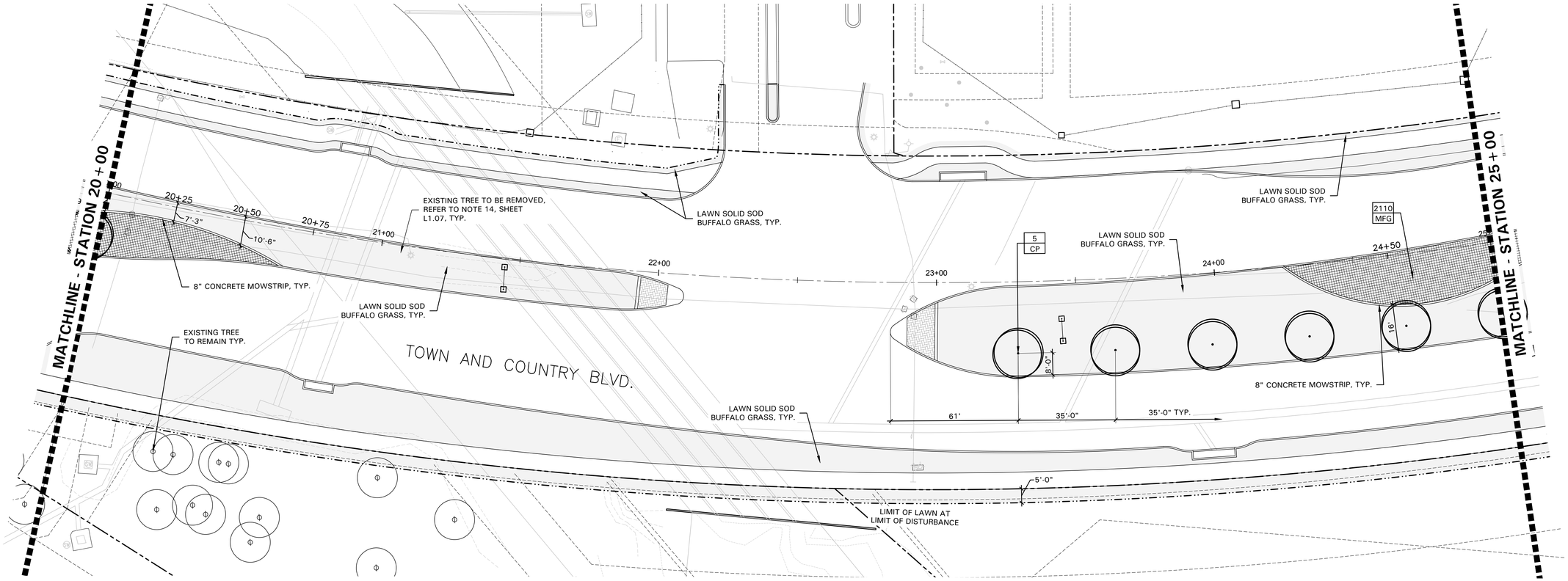

PLANT LEGEND

SYMBOL	COMMON NAME
CP	Chinese Pistache
MFG	Mexican Feathergrass Buffalo Grass '609'

REFER TO L2.07 FOR PLANT LIST

KEY MAP
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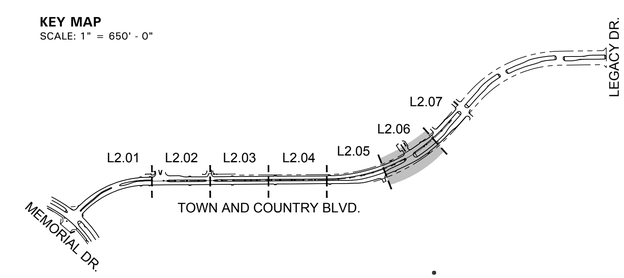

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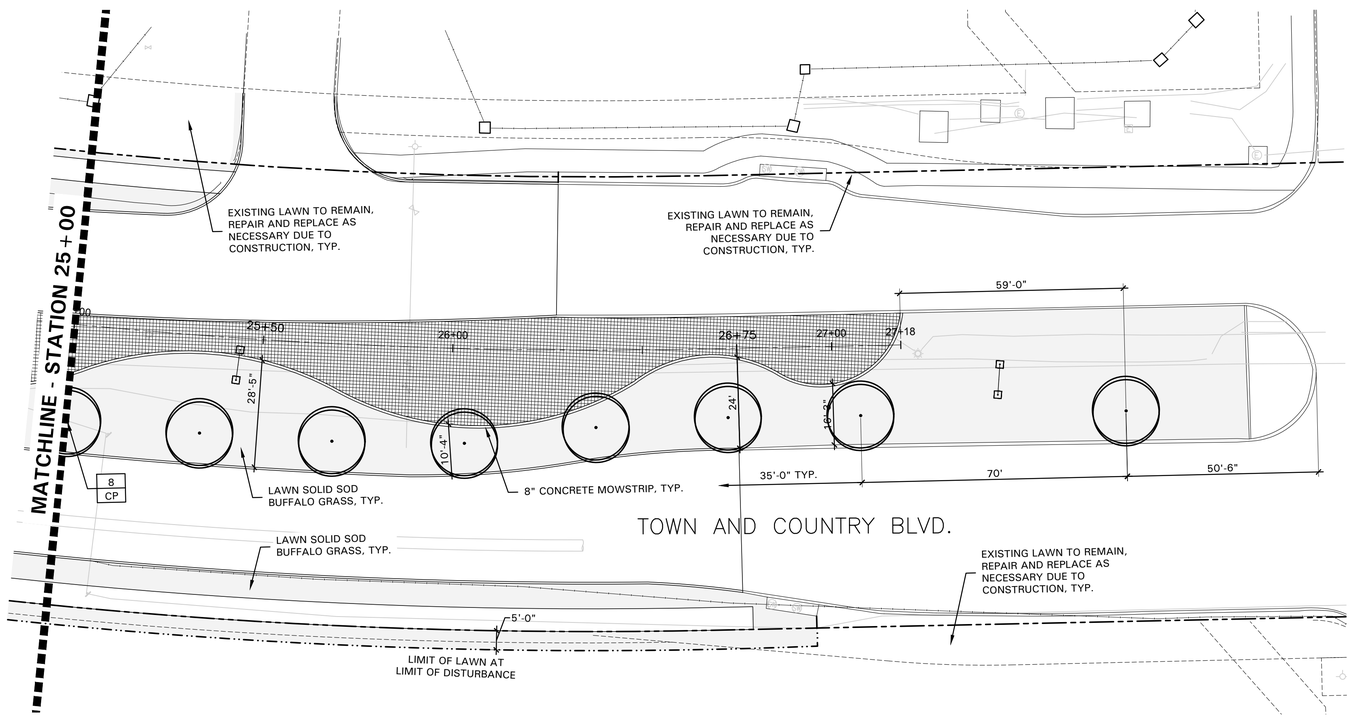
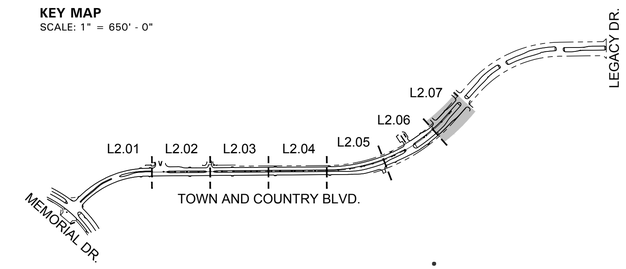


PLANT LIST

SYMBOL	BOTANICAL NAME	COMMON NAME	QTY.	SIZE	REMARKS
	TREES				
CP	*Pistacia chinensis*	Chinese Pistache	45	3" cal.	container grown, 12' ht., 4' spread, 4' branching ht., matching
	SHRUBS/GROUNDCOVER				
MFG	*Nassella tenuissima*	Mexican Feathergrass	4,775	1 gal.	container full, 18" o.c.
	Buchloe dactyloides '609'	Buffalo Grass '609'			solid sod, refer to notes

NOTE: ALL TREES SHALL HAVE CENTRAL LEADERS AND STRAIGHT TRUNKS AND BE MATCHING WITHIN VARIETIES.
PLANT LIST IS AN AID TO BIDDERS ONLY. CONTRACTOR SHALL VERIFY ALL QUANTITIES ON PLAN.
ALL HEIGHTS AND SPREADS ARE MINIMUMS. ALL PLANT MATERIAL SHALL MEET OR EXCEED REMARKS AS INDICATED.

KEY MAP
SCALE: 1" = 650' - 0"



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0 10 20 40

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO LEGACY)

LANDSCAPE PLAN – STA 25+00 TO END

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L2.07

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CITY OF FRISCO LAWN NOTES

1. AFTER ROUGH GRADING OF SOIL SURFACE, SOIL SHALL BE TILLED 3 TO 4 INCHES DEEP PRIOR TO FINAL GRADING. IF TOPSOIL IS TO BE ADDED TO A ROUGH GRADE, TILL 3 TO 4 INCHES DEEP, THEN ADD TOPSOIL FOR BETTER BINDING AND ELIMINATE LAYERING.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE FINISH GRADE IN ALL PLANTING AREAS, AND FOR PERFORMING ANY FINE GRADING AS MAY BE NECESSARY OR INCIDENTAL TO THE PLANTING OPERATIONS.
3. SPRAY EXISTING WEEDS WITH NON-SELECTIVE HERBICIDE PRIOR TO SOD INSTALLATION.
4. APPLY PRE-EMERGE (RONSTAR) PRIOR TO SOD INSTALLATION.
5. APPLY PRE-PLANT TURF FERTILIZER PRIOR TO SOD INSTALLATION.
6. THE OWNER'S REPRESENTATIVE RESERVES THE RIGHT TO INSPECT SOD FARM TO SELECT SOD TO BE HARVESTED.
7. INSPECTION OF TURFGRASS SOD BY THE OWNER'S REPRESENTATIVE MAY BE MADE AT THE GROWING SITE, BUT SUCH INSPECTION WILL NOT PRECLUDE REJECTION AFTER DELIVERY TO THE JOB SITE.
8. TURFGRASS SOD SHALL BE OF GOOD QUALITY, FREE OF WEEDS, DISEASE AND INSECTS, AND OF GOOD COLOR AND DENSITY.
9. TURF SHALL BE MACHINE-CUT AT A MINIMUM UNIFORM SOIL THICKNESS NECESSARY FOR PLANT VIABILITY DURING THE HARVEST-TRANSPORT-INSTALLATION CYCLE.
10. SOD SHALL BE INSTALLED WITHIN 24 HOURS OF HARVESTING.
11. NO MORE TURFGRASS SOD SHALL BE DELIVERED TO THE JOB SITE ON ANY DAY THAN CAN BE PLACED AND WATERED ON THAT DAY.
12. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR HAVING ADEQUATE WATER AVAILABLE AT THE SITE PRIOR TO AND DURING INSTALLATION OF THE TURFGRASS SOD.
13. REMOVE NETTING UNDER BIG ROLL SOD PRIOR TO INSTALLATION.
14. THE FIRST ROW OF TURFGRASS SOD SHALL BE LAID IN A STRAIGHT LINE, WITH SUBSEQUENT ROWS PLACED PARALLEL TO, AND TIGHTLY AGAINST, EACH OTHER.
15. STAGGER SOD ROLL ENDS SO THAT NO TWO ENDS ARE NEXT TO ANOTHER.
16. LATERAL JOINTS SHALL BE STAGGERED TO PROMOTE MORE UNIFORM GROWTH AND STRENGTH.
17. CARE SHALL BE EXERCISED TO ENSURE THAT THE TURF IS NOT STRETCHED OR OVERLAPPED, AND THAT ALL JOINTS ARE BUTTER TIGHT IN ORDER TO PREVENT VOIDS, WHICH WOULD CAUSE AIR-DRYING OF THE ROOTS.
18. ROLL SOD WITH HEAVY ROLLER IMMEDIATELY AFTER INSTALLATION TO ENSURE SOD-TO-SOIL CONTACT.
19. SOD SHALL THEN BE THOROUGHLY IRRIGATED TO A DEPTH SUFFICIENT THAT THE UNDERSIDE OF THE NEW TURFGRASS SOD PAD AND SOIL IMMEDIATELY BELOW THE TURFGRASS SOD ARE THOROUGHLY WET (USUALLY 1 INCH OF WATER IS NEEDED).
20. ANY TURFGRASS SOD SO REJECTED SHALL BE REMOVED FROM THE SITE IMMEDIATELY AND REPLACED WITH ACCEPTABLE TURFGRASS SOD.
21. CONTRACTOR SHALL PROVIDE OPTIMUM INSTALLATION TIME PERIOD FOR SOD. NO INSTALLATION ON FROZEN SOIL. NO HARVEST OF FROZEN SOD.
22. IF HYDROMULCHING OCCURS AFTER SEPTEMBER 1ST, WINTER RYEGRASS COVER SHALL BE PLANTED AT 4 LBS/1,000 SF TO RETAIN GRADING. THEN THE NEXT SPRING, THE RYE IS TO BE SPRAYED WITH NON-SELEVTIVE HERBICIDE AND SCALPED. ALL DEBRIS SHALL BE REMOVED. ANY ADDITIONAL GRADING TO REPAIR RUTS, EROSION, ETC. SHALL BE PERFORMED AT THAT TIME.

CITY OF FRISCO LANDSCAPE NOTES

INSPECTIONS

1. NO EXCAVATION SHALL OCCUR IN CITY R.O.W. WITHOUT A R.O.W. PERMIT—CONTACT PUBLIC WORKS DEPARTMENT.
2. THE CONTRACTOR SHALL MARK ALL WATER LINES, SEWER LINES, AND TREE LOCATIONS PRIOR TO CALLING FOR ROW PERMIT.
3. THE LANDSCAPE INSTALLATION SHALL COMPLY WITH APPROVED LANDSCAPE DRAWINGS PRIOR TO FINAL ACCEPTANCE BY THE CITY AND ISSUANCE OF A CERTIFICATE OF OCCUPANCY. CONTACT DEVELOPMENT SERVICES LANDSCAPE ARCHITECT FOR A LANDSCAPE INSPECTION.
4. WATER METERS, CLEANOUTS AND OTHER APPURTENANCES, SHALL BE ACCESSIBLE, ADJUSTED TO GRADE, CLEARLY MARKED WITH FLAGGING, AND COMPLIANT WITH PUBLIC WORKS DEPARTMENT STANDARDS PRIOR TO CALLING FOR LANDSCAPE AND FINAL R.O.W. INSPECTIONS.

LANDSCAPE STANDARDS:

1. PLANTINGS AND LANDSCAPE ELEMENTS SHALL COMPLY WITH ENGINEERING STANDARDS, PUBLIC R.O.W. VISIBILITY REQUIREMENTS.
2. UNLESS OTHERWISE SPECIFIED, TREES SHALL BE PLANTED NO LESS THAN 6' FROM CURBS, AND 4' FROM SIDEWALKS, UTILITY LINES, AND SCREENING WALLS. THE CITY HAS FINAL APPROVAL FOR ALL TREE PLACEMENTS.
3. A THREE FOOT RADIUS AROUND A FIRE HYDRANT SHALL REMAIN CLEAR OF PLANT MATERIALS PURSUANT TO THE FIRE CODE.
4. STREET TREES, WHERE REQUIRED, SHALL BE (10') MINIMUM FROM THE EDGE OF A STORM SEWER CURB INLET BOX AND THE EDGE OF THE ROOTBALL SHALL BE (4') MINIMUM FROM THE WATER METER.
5. ALL PLANTS SHALL BE GROWN AND HARVESTED IN ACCORDANCE WITH THE AMERICAN STANDARD FOR NURSERY STOCK (ANSI Z60.1-2004)
6. TREE PLANTING SHALL COMPLY WITH DETAILS HEREIN AND THE INTERNATIONAL SOCIETY OF ARBORICULTURE (ISA) STANDARDS.
7. TREE PITS SHALL BE TESTED FOR WATER PERCOLATION. IF WATER DOES NOT DRAIN OUT OF TREE PIT WITHIN 24-HOURS, THE TREE SHALL BE MOVED OR DRAINAGE SHALL BE PROVIDED.
8. NATIVE SITE TOPSOIL IS TO BE PROTECTED FROM EROSION OR STOCKPILED.
9. NATIVE SITE TOPSOIL SHALL BE LABORATORY TESTED BY AND ACCREDITED LABORATORY AND AMENDED PER SAID LABORATORY'S RECOMMENDATIONS.

MAINTENANCE STANDARDS

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ESTABLISHMENT, MAINTENANCE, AND VIGOR OF PLANT MATERIAL IN ACCORDANCE WITH THE DESIGN INTENT AND AS APPROPRIATE FOR THE SEASON OF THE YEAR.
2. DURING CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE AND REMOVAL OF GRASS AND WEEDS IN ALL CONSTRUCTION AREAS.
3. LANDSCAPE AND OPEN AREAS SHALL BE FREE OF TRASH, LITTER AND WEEDS.
4. ALL TREES AND SHRUBS SHALL BE MAINTAINED IN ACCORDANCE WITH THE ENGINEERING DESIGN STANDARDS – PUBLIC R.O.W. VISIBILITY REQUIREMENTS.
5. TREE MAINTENANCE SHALL BE IN ACCORDANCE WITH THE AMERICAN NATIONAL STANDARDS FOR TREE CARE OPERATIONS, ANSI A300 AND THE STANDARDS OF THE INTERNATIONAL SOCIETY OF ARBORICULTURE (ISA).
6. TREE STAKING MATERIALS, IF USED, SHALL BE REMOVED AFTER (1) GROWING SEASON AND NOT MORE THAN (1) YEAR AFTER INSTALLATION. STEEL TREE STAKES, WIRES, AND HOSES ARE PROHIBITED.

LANDSCAPE ARCHITECT / ARBORIST STATEMENT

"I, KORI HAUG, BEING A LANDSCAPE ARCHITECT OR ARBORIST ATTEST THAT THE IDENTIFICATION AND SIZE OF TREES IDENTIFIED ON THIS SURVEY ARE CORRECT AND THAT ALL PROTECTED TREES HAVE BEEN SHOWN."

LANDSCAPE NOTES

1. CONTRACTOR SHALL VERIFY ALL EXISTING AND PROPOSED SITE ELEMENTS AND NOTIFY LANDSCAPE ARCHITECT OF ANY DISCREPANCIES. SURVEY DATA OF EXISTING CONDITIONS WAS SUPPLIED BY OTHERS.
2. CONTRACTOR SHALL LOCATE ALL EXISTING UNDERGROUND UTILITIES AND NOTIFY LANDSCAPE ARCHITECT OF ANY CONFLICTS. CONTRACTOR SHALL EXERCISE CAUTION WHEN WORKING IN THE VICINITY OF UNDERGROUND UTILITIES.
3. CONTRACTOR SHALL PROVIDE A MINIMUM 2% SLOPE AWAY FROM ALL STRUCTURES.
4. CONTRACTOR SHALL FINE GRADE AREAS TO ACHIEVE FINAL CONTOURS AS INDICATED. LEAVE AREAS TO RECEIVE TOPSOIL 3" BELOW FINAL FINISHED GRADE IN PLANTING AREAS AND 1" BELOW FINAL FINISHED GRADE IN LAWN AREAS.
5. ALL PLANTING BEDS AND LAWN AREAS SHALL BE SEPARATED BY STEEL EDGING. NO STEEL EDGING SHALL BE INSTALLED ADJACENT TO BUILDINGS, WALKS, OR CURBS. CUT STEEL EDGING AT 45 DEGREE ANGLE WHERE IT INTERSECTS WALKS AND CURBS.
6. TOP OF MULCH SHALL BE 1/2" MINIMUM BELOW THE TOP OF WALKS AND CURBS.
7. ALL LAWN AREAS SHALL BE SOLID SOD BUFFALOGRASS, UNLESS OTHERWISE NOTED ON THE DRAWINGS.
8. ALL REQUIRED LANDSCAPE AREAS SHALL BE PROVIDED WITH AN AUTOMATIC UNDERGROUND IRRIGATION SYSTEM WITH RAIN AND FREEZE SENSORS AND EVAPOTRANSPIRATION (ET) WEATHER-BASED CONTROLLERS AND SAID IRRIGATION SYSTEM SHALL BE DESIGNED BY A QUALIFIED PROFESSIONAL AND INSTALLED BY A LICENSED IRRIGATOR.
9. CONTRACTOR SHALL PROVIDE BID PROPOSAL LISTING UNIT PRICES FOR ALL MATERIAL PROVIDED.
10. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL REQUIRED LANDSCAPE AND IRRIGATION PERMITS.

SOLID SOD NOTES

1. PLANT SOD BY HAND TO COVER INDICATED AREAS COMPLETELY. ENSURE EDGES OF SOD ARE TOUCHING. TOP DRESS JOINTS BY HAND WITH TOPSOIL TO FILL VOIDS.
2. ROLL GRASS AREAS TO ACHIEVE A SMOOTH, EVEN SURFACE, FREE FROM UNNATURAL UNDULATIONS.
3. WATER SOD THOROUGHLY AS SOD OPERATION PROGRESSES.

GENERAL LAWN NOTES

1. CONTRACTOR SHALL COORDINATE OPERATIONS AND AVAILABILITY OF EXISTING TOPSOIL WITH ON-SITE CONSTRUCTION MANAGER.
2. CONTRACTOR SHALL LEAVE LAWN AREAS 1" BELOW FINAL FINISHED GRADE PRIOR TO TOPSOIL INSTALLATION.
3. CONTRACTOR SHALL FINE GRADE AREAS TO ACHIEVE FINAL CONTOURS AS INDICATED ON CIVIL PLANS. ADJUST CONTOURS TO ACHIEVE POSITIVE DRAINAGE AWAY FROM BUILDINGS. PROVIDE UNIFORM ROUNDING AT TOP AND BOTTOM OF SLOPES AND OTHER BREAKS IN GRADE. CORRECT IRREGULARITIES AND AREAS WHERE WATER MAY STAND.
4. ALL LAWN AREAS SHALL BE FINE GRADED, IRRIGATION TRENCHES COMPLETELY SETTLED AND FINISH GRADE APPROVED BY THE OWNER'S CONSTRUCTION MANAGER OR LANDSCAPE ARCHITECT PRIOR TO LAWN INSTALLATION.
5. CONTRACTOR SHALL REMOVE ALL ROCKS 3/4" DIAMETER AND LARGER, DIRT CLODS, STICKS, CONCRETE SPOILS, ETC. PRIOR TO PLACING TOPSOIL AND LAWN INSTALLATION.
6. CONTRACTOR SHALL MAINTAIN ALL LAWN AREAS UNTIL FINAL ACCEPTANCE. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO: MOWING, WATERING, WEEDING, CULTIVATING, CLEANING AND REPLACING DEAD OR BARE AREAS TO KEEP PLANTS IN A VIGOROUS, HEALTHY CONDITION.
7. CONTRACTOR SHALL GUARANTEE ESTABLISHMENT OF ACCEPTABLE TURF AREA AND SHALL PROVIDE REPLACEMENT FROM LOCAL SUPPLY IF NECESSARY.

HYDROMULCH NOTES

(FOR DISTURBED AREAS, REFER TO CIVIL PLANS FOR LOCATIONS)

1. CONTRACTOR SHALL SCARIFY, RIP AND LOOSEN ALL AREAS TO BE HYDROMULCHED TO A MINIMUM DEPTH OF 4" PRIOR TO TOPSOIL AND HYDROMULCH INSTALLATION.
2. BERMUDAGRASS SEED SHALL BE EXTRA HULLED AND TREATED LAWN TYPE, SHALL BE DELIVERED TO THE SITE IN ITS ORIGINAL UNOPENED CONTAINER AND SHALL MEET STATE LAW REQUIREMENTS.
3. FIBER SHALL BE ONE HUNDRED PERCENT (100%) WOOD CELLULOSE FIBER, DELIVERED TO THE SITE IN ITS ORIGINAL UNOPENED CONTAINER AS MANUFACTURED BY 'CONWEB' OR EQUAL.
4. FIBER TACK SHALL BE DELIVERED TO THE SITE IN ITS ORIGINAL UNOPENED CONTAINER AND SHALL BE 'TERRO-TACK ONE', AS MANUFACTURED BY GROWERS, INC. OR EQUAL.
5. HYDROMULCH WITH BERMUDAGRASS SEED AT A RATE OF TWO (2) POUNDS PER ONE THOUSAND (1000) SQUARE FEET.
6. USE A 4'X8' BATTER BOARD AGAINST ALL BED AREAS.
7. ALL LAWN AREAS TO BE HYDROMULCHED SHALL HAVE ONE HUNDRED PERCENT (100%) COVERAGE PRIOR TO FINAL ACCEPTANCE.
8. CONTRACTOR SHALL INSTALL CURLEX II, AVAILABLE FROM AMERICAN EXCELSIOR COMPANY, IN ALL HYDROMULCHED AREAS.

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NO.	DATE	COMMENT
1	01.24.20	CITY COMMENTS

REVISIONS

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They were prepared by, or under the supervision of:
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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO LEGACY)

LANDSCAPE NOTES

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DATE: 05/09/17	JOB NUMBER:

SHEET
L2.08

Dwg Info: G:\CloudStation\Projects\2016\16176 - Town and Country\CAD\SHEETS\16176_L200 Series - Landscape.dwg - Plotted: 1/24/2020

SECTION 32 9300 - LANDSCAPE

PART 1 - GENERAL

1.1 REFERENCED DOCUMENTS

A. Refer to Landscape Plans, notes, details, bidding requirements, special provisions, and schedules for additional requirements.

1.2 DESCRIPTION OF WORK

A. Work included: Furnish all supervision, labor, materials, services, equipment and appliances required to complete the work covered in conjunction with the landscaping covered in these specifications and landscaping plans, including:

1. Planting (trees, shrubs and grasses)

2. Bed preparation and fertilization

3. Notification of sources

4. Water and maintenance until final acceptance

5. Guarantee

1.3 REFERENCE STANDARDS

A. American Standard for Nursery Stock published by American Association of Nurserymen: 14 April 2014, Edition; by American National Standards Institute, Inc. (Z60.1) – plant material

B. American Joint Committee on Horticultural Nomenclature: 1942 Edition of Standardized Plant Names.

C. Texas Association of Nurserymen, Grades and Standards

D. Hortis Third, 1976 - Cornell University

1.4 NOTIFICATION OF SOURCES AND SUBMITTALS

A. Samples: Provide representative quantities of sandy loam soil, mulch, bed mix material, gravel, crushed stone, steel edging and tree stakes. Samples shall be approved by Owner's Authorized Representative before use on the project.

1.5 JOB CONDITIONS

A. General Contractor to complete the following punch list: Prior to Landscape Contractor initiating any portion of landscape installation, General Contractor shall leave planting bed areas three (3") inches below final finish grade of sidewalks, drives and curbs as shown on the drawings. All lawn areas to receive solid sod shall be left one (1") inch below the final finish grade of sidewalks, drives and curbs. All construction debris shall be removed prior to Landscape Contractor beginning any work.

B. Storage of materials and equipment at the job site will be at the risk of the Landscape Contractor. The Owner cannot be held responsible for theft or damage.

1.6 MAINTENANCE AND GUARANTEE

A. Maintenance:

1. The Landscape Contractor shall be held responsible for the maintenance of all work from the time of planting until final acceptance by the Owner. No trees, shrubs, groundcover or grass will be accepted unless they show healthy growth and satisfactory foliage conditions.

2. Maintenance shall include watering of trees and plants, cultivation, weeding spraying, edging, pruning of trees, mowing of grass, cleaning up and all other work necessary of maintenance.

3. A written notice requesting final inspection and acceptance should be submitted to the Owner at least seven (7) days prior to completion. An on-site inspection by the Owner's Authorized Representative will be completed prior to written acceptance.

B. Guarantee:

1. Trees, shrubs and groundcover shall be guaranteed for a twelve (12) month period after final acceptance. The Contractor shall replace all dead materials as soon as weather permits and upon notification of the Owner. Plants, including trees, which have partially died so that shape, size, or symmetry have been damaged, shall be considered subject to replacement. In such cases, the opinion of the Owner shall be final.

a. Plants used for replacement shall be of the same size and kind as those originally planted and shall be planted as originally specified. All work, including materials, labor and equipment used in replacements, shall carry a twelve (12) month guarantee. Any damage, including ruts in lawn or bed areas, incurred as a result of making replacements shall be immediately repaired.

b. At the direction of the Owner, plants may be replaced at the start of the next year's planting season. In such cases, dead plants shall be removed from the premises immediately.

c. When plant replacements are made, plants, soil mix, fertilizer and mulch are to be utilized as originally specified and re-inspected for full compliance with the contract requirements. All replacements are to be included under "Work" of this section.

2. The Owner agrees that for the guarantee to be effective, he will water plants at least twice a week during dry periods and cultivate beds once a month after final acceptance.

3. The above guarantee shall not apply where plants die after acceptance because of injury from storms, hail, freeze, insects, diseases, injury by humans, machines or theft.

4. Acceptance for all landscape work shall be given after final inspection by the Owner provided the job is in a complete, undamaged condition and there is a stand of grass in all lawn areas. At that time, the Owner will assume maintenance on the accepted work.

C. Repairs: Any necessary repairs under the Guarantee must be made within ten (10) days after receiving notice, weather permitting. In the event the Landscape Contractor does not make repairs accordingly, the Owner, without further notice to Contractor, may provide materials and men to make such repairs at the expense to the Landscape Contractor.

1.7 QUALITY ASSURANCE

A. General: Comply with applicable federal, state, county and local regulations governing landscape materials and work.

B. Personnel: Employ only experienced personnel who are familiar with the required work. Provide full time supervision by a qualified foreman acceptable to Landscape Architect.

C. Selection of Plant Material:

1. Make contact with suppliers immediately upon obtaining notice of contract acceptance to select and book materials. Develop a program of maintenance (pruning and fertilization) which will ensure the purchased materials will meet and / or exceed project specifications.

2. Substitutions: Do not make plant material substitutions. If the specified landscape material is not obtainable, submit proof of non-availability to Landscape Architect, together with proposal for use of equivalent material. At the time bids are submitted, the Contractor is assumed to have located the materials necessary to complete the job as specified.

3. Landscape Architect will provide a key identifying each tree location on site. Written verification will be required to document material selection, source and delivery schedules to site.

4. Measurements: Measure trees with branches and trunks or canes in their normal position. Do not prune to obtain required sizes. Take caliper measurements six inches above ground for trees up to and including 4" caliper size, and twelve inches above ground for larger sizes. Measure main body of all plant material of height and spread dimensions, do not measure from branch or root tip-to-tip.

5. Owner's Authorized Representative shall inspect all plant material with requirements for genus, species, cultivar / variety size and quality.

6. Owner's Authorized Representative retains the right to further inspect all plant material upon arrival to the site and during installation for size and condition of root balls and root systems, limbs, branching habit, insects, injuries and latent defects.

7. Owner's Authorized Representative may reject unsatisfactory or defective material at any time during the process work. Remove rejected materials immediately from the site and replace with acceptable material at no additional cost to the Owner. Plants damaged in transit or at job site shall be rejected.

1.8 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Preparation:

1. Balled and Burlapped (B&B) Plants: Dig and prepare shipment in a manner that will not damage roots, branches, shape and future development.

2. Container Grown Plants: Deliver plants in rigid container to hold ball shape and protect root mass.

B. Delivery:

1. Deliver packaged materials in sealed containers showing weight, analysis and name of manufacturer. Protect materials from deterioration during delivery and while stored on site.

2. Deliver only plant materials that can be planted in one day unless adequate storage and watering facilities are available on job site.

3. Protect root balls by heeling in with sawdust or other approved moisture retaining material if not planted within 24 hours of delivery.

4. Protect plants during delivery to prevent damage to root balls or desiccation of leaves. Keep plants moist at all times. Cover all materials during transport.

5. Notify Owner's Authorized Representative of delivery schedule 72 hours in advance job site.

6. Remove rejected plant material immediately from job site.

7. To avoid damage or stress, do not lift, move, adjust to plumb, or otherwise manipulate plants by trunk or stems.

PART 2 - PRODUCTS

2.1 PLANTS

A. General: Well-formed No. 1 grade or better nursery grown stock. Listed plant heights are from tops of root balls to nominal tops of plants. Plant spread refers to nominal outer width of the plant, not to the outer leaf tips. Plants will be individually approved by the Owner's Authorized Representative and his decision as to their acceptability shall be final.

B. Quantities: The drawings and specifications are complimentary. Anything called for on one and not the other is as binding as if shown and called for on both. The plant schedule is an aid to bidders only. Confirm all quantities on plan.

C. Quality and size: Plant materials shall conform to the size given on the plan, and shall be healthy, symmetrical, well-shaped, full branched and well rooted. The plants shall be free from injurious insects, diseases, injuries to the bark or roots, broken branches, objectionable disfigurements, insect eggs and larvae, and are to be of specimen quality.

D. Approval: All plants which are found unsuitable in growth, or are in any unhealthy, badly shaped or undersized condition will be rejected by the Owner's Authorized Representative either before or after planting and shall be removed at the expense of the Landscape Contractor and replaced with acceptable plant as specified at no additional cost to the Owner.

E. Trees shall be healthy, full-branched, well-shaped, and shall meet the minimum trunk and diameter requirements of the plant schedule. Balls shall be firm, neat, slightly tapered and well wrapped in burlap. Any tree loose in the ball or with a broken root ball at time of planting will be rejected. Balls shall be ten (10") inches in diameter for each one (1") inch of trunk diameter, measured six (6") inches above ball. (Nomenclature confirms to the customary nursery usage. For clarification, the term "multi-trunk" defines a plant having three (3) or more trunks of nearly equal diameter.)

F. Pruning: All pruning of trees and shrubs, as directed by the Landscape Architect prior to final acceptance, shall be executed by the Landscape Contractor at no additional cost to the Owner.

2.2 SOIL PREPARATION MATERIALS

A. Sandy Loam:

1. Friable, fertile, dark, loamy soil, free of clay lumps, subsoil, stones and other extraneous material and reasonably free of weeds and foreign grasses. Loam containing Dallasgrass or Nutgrass shall be rejected.

2. Physical properties as follows:
a. Clay – between 7-27 percent
b. Silt – between 15-25 percent
c. Sand – less than 52 percent

3. Organic matter shall be 2%-20% of total dry weight.

4. If requested, Landscape Contractor shall provide a certified soil analysis conducted by an approved soil testing laboratory verifying that sandy loam meets the above requirements.

B. Organic Material: Compost with a mixture of 80% vegetative matter and 20% animal waste. Ingredients should be a mix of course and fine textured material.

C. Premixed Bedding Soil as supplied by Vital Earth Resources, Gladewater, Texas; Professional Bedding Soil as supplied by Living Earth Technology, Dallas, Texas or Acid Gro Municipal Mix as supplied by Soil Building Systems, Dallas, Texas or approved equal.

D. Sharp Sand: Sharp sand must be free of seeds, soil particles and weeds.

E. Mulch: Double Shredded Hardwood Mulch, partially decomposed, dark brown. Living Earth Technologies or approved equal.

F. Organic Fertilizer: Fertilaid, Sustane, or Green Sense or equal as recommended for required applications. Fertilizer shall be delivered to the site in original unopened containers, each bearing the manufacturer's guaranteed statement of analysis.

G. Commercial Fertilizer: 10-20-10 or similar analysis. Nitrogen source to be a minimum 50% slow release organic Nitrogen (SCU or UF) with a minimum 8% sulfur and 4% iron, plus micronutrients.

H. Peat: Commercial sphagnum peat moss or partially decomposed shredded pine bark or other approved organic material.

2.3 MISCELLANEOUS MATERIALS

A. Steel Edging: All steel edging shall be 3/16" thick x 4" deep x 16' long with 6 stakes per section, painted black at the factory as manufactured by The J.D. Russell Company and under its trade name DURAEDGE Heavy Duty Steel.

B. Staking Material for Shade Trees: refer to details.

C. Gravel: Washed native pea gravel, graded 1 inch to 1-1/2 inch.

D. Filter Fabric: 'Mirafi Mirascape' by Mirafi Construction Products available at Lone Star Products, Inc., (469) 523-0444 or approved equal.

E. River Rock: 'Colorado' or native river rock, 2" - 4" dia.

F. Decomposed Granite: Base material shall consist of a natural material mix of granite aggregate not to exceed 1/8" diameter in size and shall be composed of various stages of decomposed earth base.

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NO.	DATE	COMMENT
1	01.24.20	CITY COMMENTS

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO LEGACY)

LANDSCAPE SPECIFICATIONS

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DATE: 05/09/17	JOB NUMBER:
SHEET L2.09	

Dwg Info: C:\CivilStation\Projects\2016\16176 - Town and Country\CAD\SHEETS\16176_L200 Series - Landscape.dwg - Plotted: 1/24/2020

PART 3 - EXECUTION

3.1 BED PREPARATION & FERTILIZATION

A. Landscape Contractor to inspect all existing conditions and report any deficiencies to the Owner.

B. All planting areas shall be conditioned as follows:

1. Prepare new planting beds by scraping away existing grass and weeds as necessary. Till existing soil to a depth of six (6") inches prior to placing compost and fertilizer. Apply fertilizer as per Manufacturer's recommendations. Add six (6") inches of compost and till into a depth of six (6") inches of the topsoil. Apply organic fertilizer such as Sustane or Green Sense at the rate of twenty (20) pounds per one thousand (1,000) square feet.

2. All planting areas shall receive a two (2") inch layer of specified mulch.

3. Backfill for tree pits shall be as follows: Use existing top soil on site (use imported topsoil as needed) free from large clumps, rocks, debris, caliche, subsoils, etc., placed in nine (9") inch layers and watered in thoroughly.

C. Grass Areas:

1. Blocks of sod should be laid joint to joint (staggered joints) after fertilizing the ground first. Roll grass areas to achieve a smooth, even surface. The joints between the blocks of sod should be filled with topsoil where they are evidently gaped open, then watered thoroughly.

3.2 INSTALLATION

A. Maintenance of plant materials shall begin immediately after each plant is delivered to the site and shall continue until all construction has been satisfactorily accomplished.

B. Plant materials shall be delivered to the site only after the beds are prepared and areas are ready for planting. All shipments of nursery materials shall be thoroughly protected from the drying winds during transit. All plants which cannot be planted at once, after delivery to the site, shall be well protected against the possibility of drying by wind and Balls of earth of B & B plants shall be kept covered with soil or other acceptable material. All plants remain the property of the Contractor until final acceptance.

C. Position the trees and shrubs in their intended location as per plan.

D. Notify the Owner's Authorized Representative for inspection and approval of all positioning of plant materials.

E. Excavate pits with vertical sides and horizontal bottom. Tree pits shall be large enough to permit handling and planting without injury to balls of earth or roots and shall be of such depth that,when planted and settled, the crown of the plant shall bear the same relationship to the finish grade as it did to soil surface in original place of growth.

F. Shrub and tree pits shall be no less than twenty-four (24") inches wider than the lateral dimension of the earth ball and six (6") inches deeper than it's vertical dimension. Remove and haul from site all rocks and stones over three-quarter (¾") inch in diameter. Plants should be thoroughly moist before removing containers.

G. Dig a wide, rough sided hole exactly the same depth as the height of the ball, especially at the surface of the ground. The sides of the hole should be rough and jagged, never slick or glazed.

H. Percolation Test: Fill the hole with water. If the water level does not percolate within 24 hours, the tree needs to move to another location or have drainage added. Install a PVC stand pipe per tree planting detail as approved by the Landscape Architect if the percolation test fails.

I. Backfill only with 5 parts existing soil or sandy loam and 1 part bed preparation. When the hole is dug in solid rock, topsoil from the same area should not be used. Carefully settle by watering to prevent air pockets. Remove the burlap from the top ⅓ of the ball, as well as all nylon, plastic string and wire. Container trees will usually be root bound, if so follow standard nursery practice of 'root scoring'.

J. Do not wrap trees.

K. Do not over prune.

L. Mulch the top of the ball. Do not plant grass all the way to the trunk of the tree. Leave the area above the top of the ball and mulch with at least two (2") inches of specified mulch.

M. All plant beds and trees to be mulched with a minimum settled thickness of two (2") inches over the entire bed or pit.

N. Obstruction below ground: In the event that rock, or underground construction work or obstructions are encountered in any plant pit excavation work to be done under this section, alternate locations may be selected by the Owner. Where locations cannot be changed, the obstructions shall be removed to a depth of not less than three (3') feet below grade and no less than six (6") inches below the bottom of ball when plant is properly set at the required grade. The work of this section shall include the removal from the site of such rock or underground obstructions encountered at the cost of the Landscape Contractor.

O. Trees and large shrubs shall be staked as site conditions require. Position stakes to secure trees against seasonal prevailing winds.

P. Pruning and Mulching: Pruning shall be directed by the Landscape Architect and shall be pruned in accordance with standard horticultural practice following Fine Pruning, Class I pruning standards provided by the National Arborist Association.

1. Dead wood, suckers, broken and badly bruised branches shall be removed. General tipping of the branches is not permitted. Do not cut terminal branches.

2. Pruning shall be done with clean, sharp tools.

3. Immediately after planting operations are completed, all tree pits shall be covered with a layer of organic material two (2") inches in depth. This limit of the organic material for trees shall be the diameter of the plant pit.

Q. Steel Curbing Installation:

1. Curbing shall be aligned as indicated on plans. Stake out limits of steel curbing and obtain Owners approval prior to installation.

2. All steel curbing shall be free of kinks and abrupt bends.

3. Top of curbing shall be ½" maximum height above final finished grade.

4. Stakes are to be installed on the planting bed side of the curbing, as opposed to the grass side.

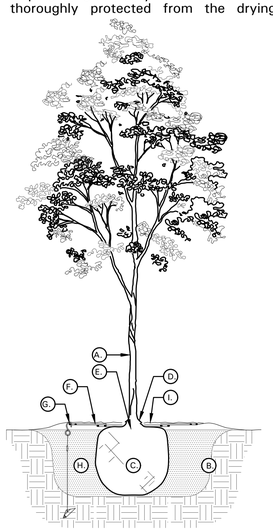
5. Do not install steel edging along sidewalks or curbs.

6. Cut steel edging at 45 degree angle where edging meets sidewalks or curbs.

3.3 CLEANUP AND ACCEPTANCE

A. Cleanup: During the work, the premises shall be kept neat and orderly at all times. Storage areas for all materials shall be so organized so that they, too, are neat and orderly. All trash and debris shall be removed from the site as work progresses. Keep paved areas clean by sweeping or hosing them at end of each work day.

END OF SECTION



TREE PLANTING DETAIL LEGEND AND NOTES

A. TREE: TREES SHALL CONFORM WITH LATEST AMERICAN STANDARD FOR NURSERY STOCK. www.anla.org

B. TREE PIT: WIDTH TO BE AT LEAST TWO (2) TIMES THE DIAMETER OF THE ROOT BALL CENTER TREE IN HOLE & REST ROOT BALL ON UNDISTURBED NATIVE SOIL.

C. ROOT BALL: REMOVE TOP ⅓ BURLAP AND ANY OTHER FOREIGN OBJECT; CONTAINER GROWN STOCK TO BE INSPECTED FOR GIRDLING ROOTS.

D. ROOT FLARE: ENSURE THAT ROOT FLARE IS EXPOSED, FREE FROM MULCH, AND AT LEAST TWO INCHES ABOVE GRADE. TREES SHALL BE REJECTED WHEN GIRDLING ROOTS ARE PRESENT & ROOT FLARE IS NOT APPARENT.

E. ROOTBALL ANCHOR RING: REFER TO MANUFACTURER'S GUIDELINES FOR SIZING. PLACE ROOTBALL ANCHOR RING ON BASE OF ROOTBALL. TRUNK SHOULD BE IN THE CENTER OF THE RING.

F. 'U' BRACKET.

G. "S"-HOOK: REFER TO MANUFACTURER'S GUIDELINES FOR SIZING. INSTALL NAIL STAKES WITH HAMMER OR MALLET FIRMLY INTO UNDISTURBED GROUND. DRIVE NAIL STAKES FLUSH WITH "U" BRACKET ADJACENT TO ROOTBALL (DO NOT DISTURB ROOTBALL).

H. BACKFILL: USE EXISTING NATIVE SOIL (no amendments) WATER THOROUGHLY TO ELIMINATE AIR POCKETS.

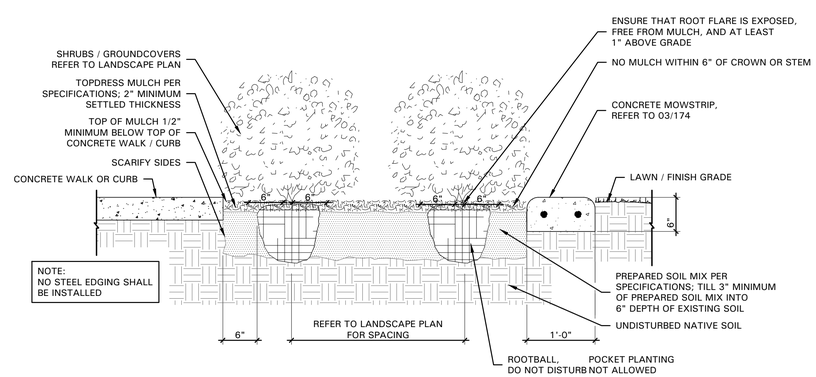
I. MULCH: DOUBLE SHREDDED HARDWOOD MULCH 2 INCH SETTLED THICKNESS, WITH 2" HT. WATERING RING; ENSURE THAT ROOT FLARE IS EXPOSED. BELOW GROUND STAKE SHOULD NOT BE VISIBLE.

J. TREE STAKES:
TREE STAKE SOLUTIONS 'SAFETY STAKE' BELOW GROUND MODEL AVAILABLE FROM:
Tree Stake Solutions
ATTN: Jeff Tuley
(903) 676-6143
jeff@treestakesolutions.com
www.treestakesolutions.com

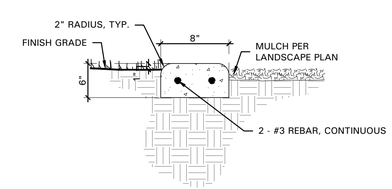
OR APPROVED EQUAL. TREES SHALL BE STAKED BELOW GROUND WHERE NECESSARY; ABOVE GROUND STAKING IS EXPRESSLY PROHIBITED.

K. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN A COPY OF THE MANUFACTURER'S SPECIFICATIONS PRIOR TO INSTALLATION OF TREE STAKES. CONTRACTOR SHALL ADHERE TO MANUFACTURER'S INSTALLATION GUIDELINES, SPECIFICATIONS, AND OTHER REQUIREMENTS FOR TREE STAKE INSTALLATION.

01 TREE PLANTING DETAIL
NOT TO SCALE



02 SHRUB / GROUNDCOVER W/ MOWSTRIP DETAIL
NOT TO SCALE



NOTES:
1. CLASS 'A' CONCRETE, LIGHT BROOM FINISH, 3000 PSI
2. SAWCUTS ⅛" TO 3/16" WIDE AND ONE-THIRD THE DEPTH OF ACTUAL THICKNESS AT 5' O.C. (MAXIMUM)
3. EXPANSION JOINTS AT 45' O.C.

03 CONCRETE MOWSTRIP DETAIL
NOT TO SCALE

BELLE FIRMA
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Kori Ann Haug
TX Registered Landscape Architect #2246

CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO LEGACY)

LANDSCAPE SPECIFICATIONS AND DETAILS

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TBPLS Firm Registration No. 10046
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DATE: 05/09/17	JOB NUMBER:

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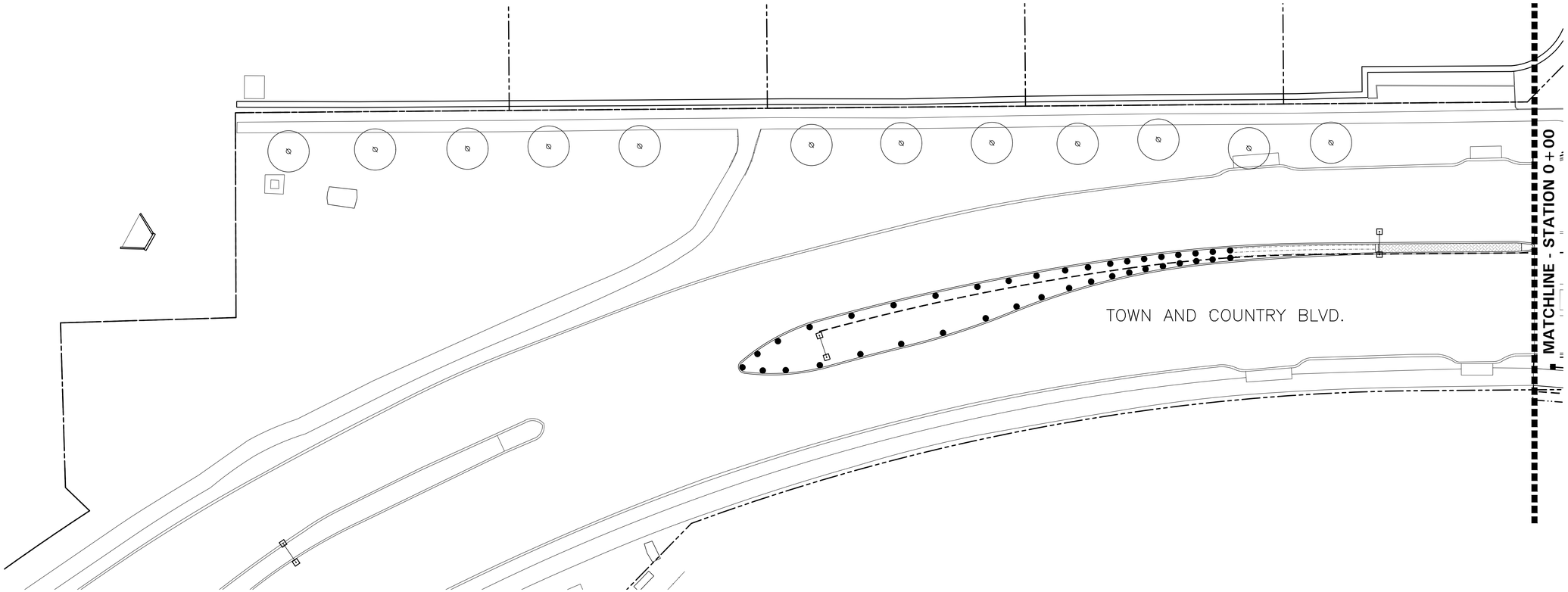
L2.10

Dwg Info: C:\CloudStation\Projects\2016\16176 - Town and Country\CAD\SHEETS\16176_L200 Series - Landscape.dwg - Plotted: 1/24/2020



KEY MAP
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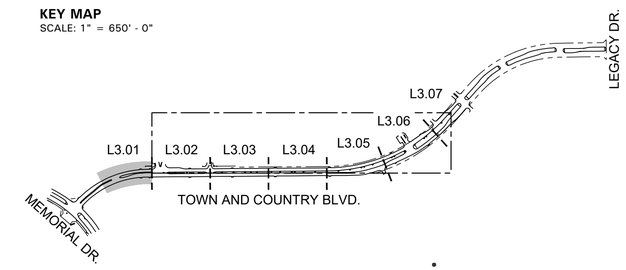

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SCALE: 1" = 20'-0"
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SETH HEIDMAN
IRRIGATION DESIGN & CONSULTING, LLC
6009 W. Parker Rd. #149-221, Plano, Texas 75093 Tel: 972-816-5141

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#5881

CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO LEGACY)

IRRIGATION PLAN – STA 0+00

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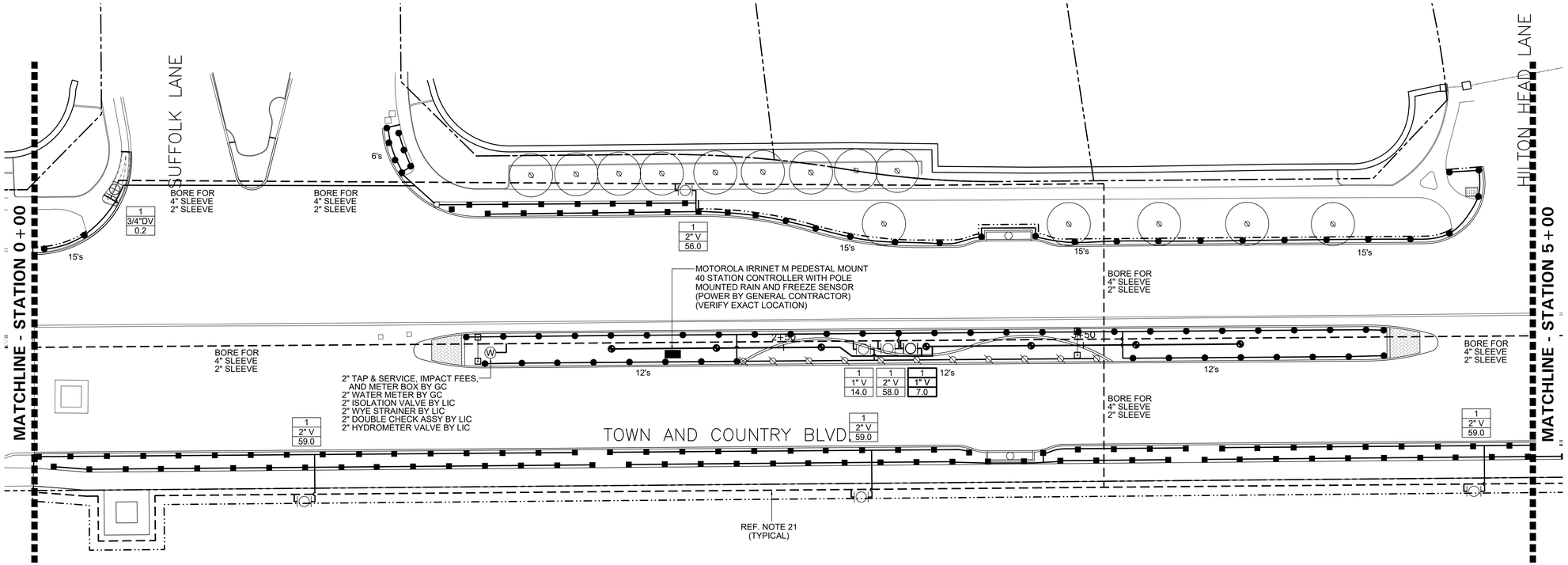

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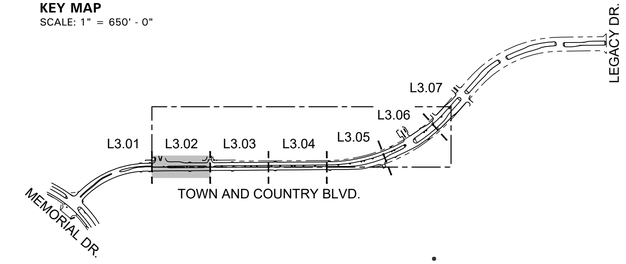

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CITY OF FRISCO, TEXAS
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IRRIGATION PLAN – STA 0+00 TO 5+00

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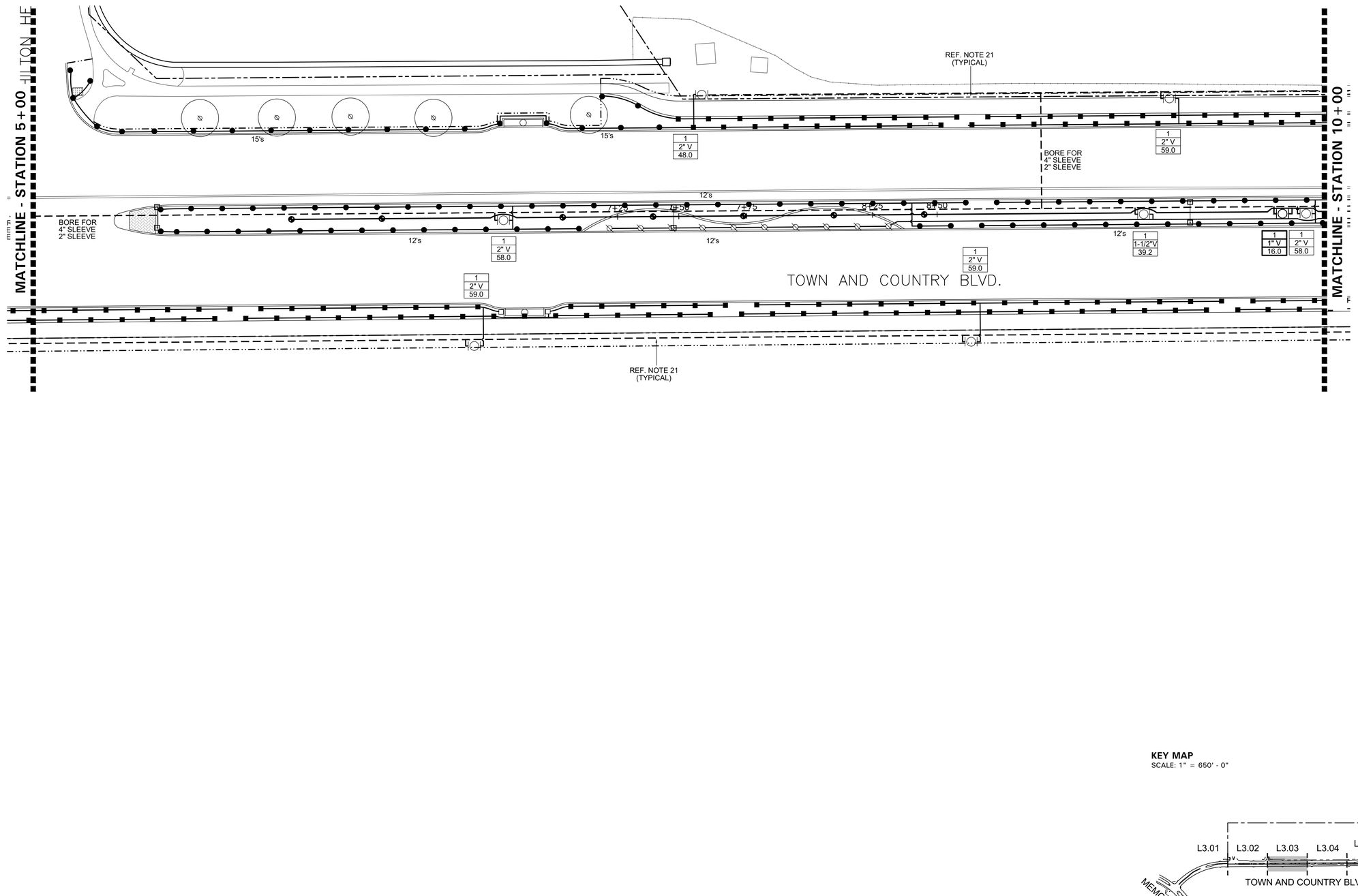

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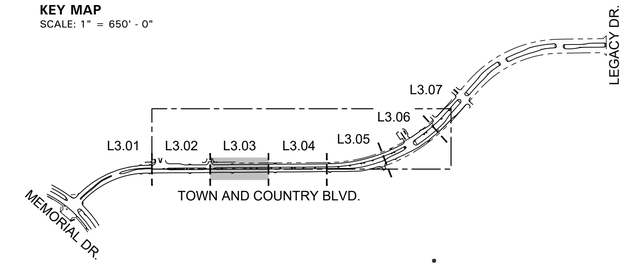

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IRRIGATION PLAN – STA 5+00 TO 10+00

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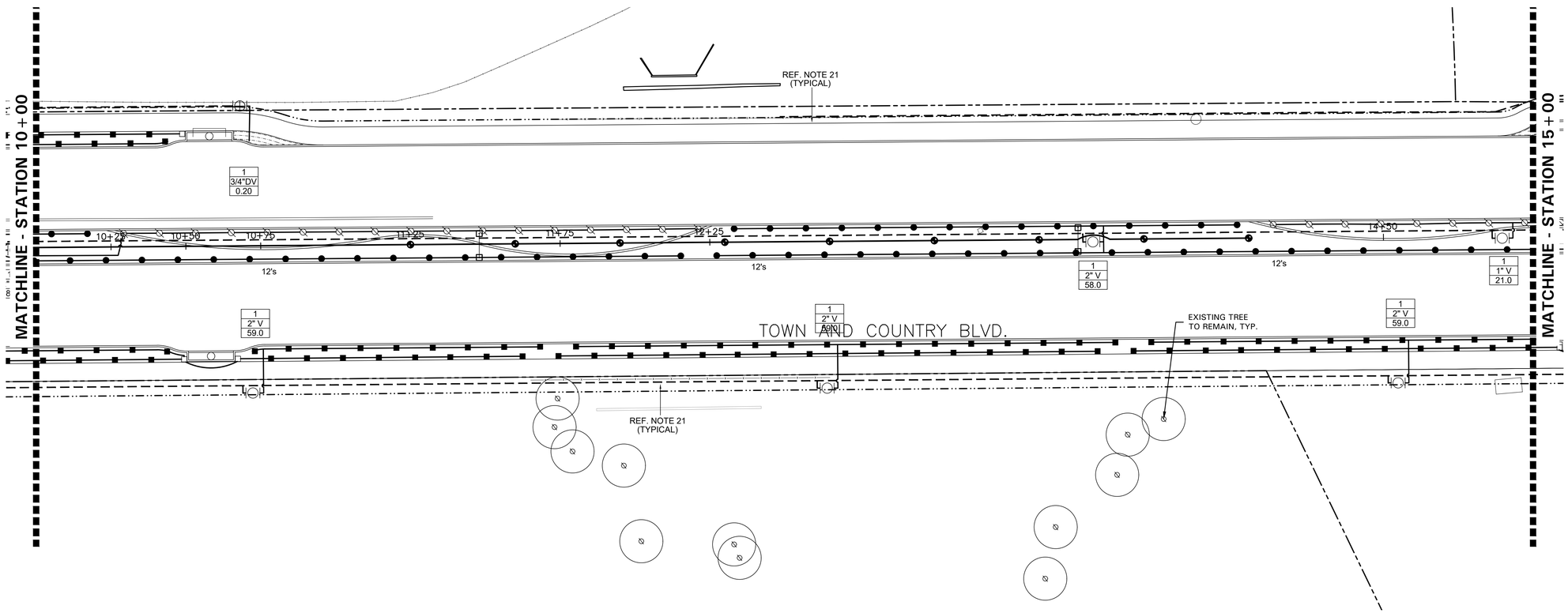

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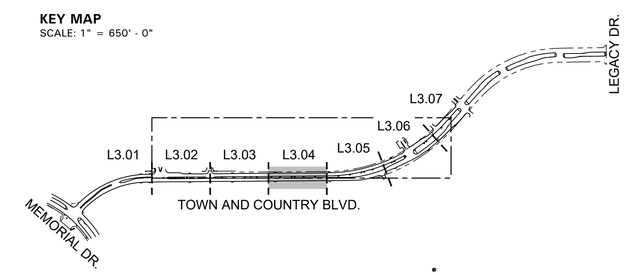

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CITY OF FRISCO, TEXAS
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IRRIGATION PLAN – STA 10+00 TO 15+00

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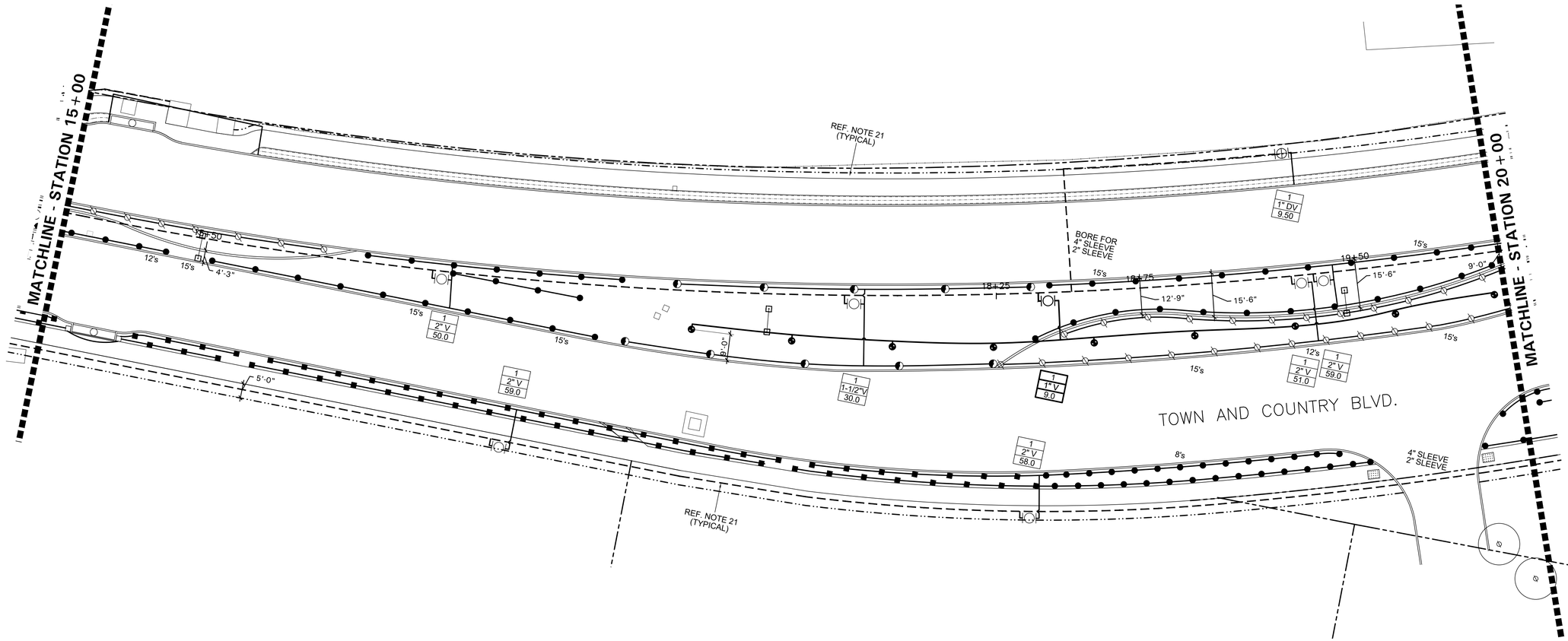

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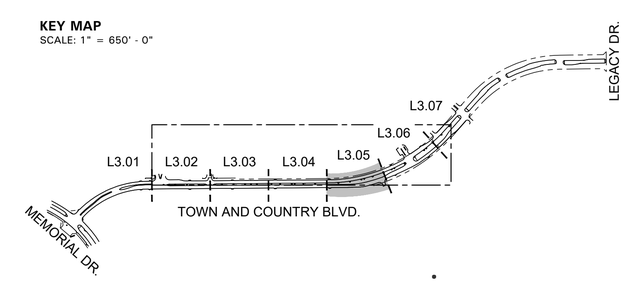

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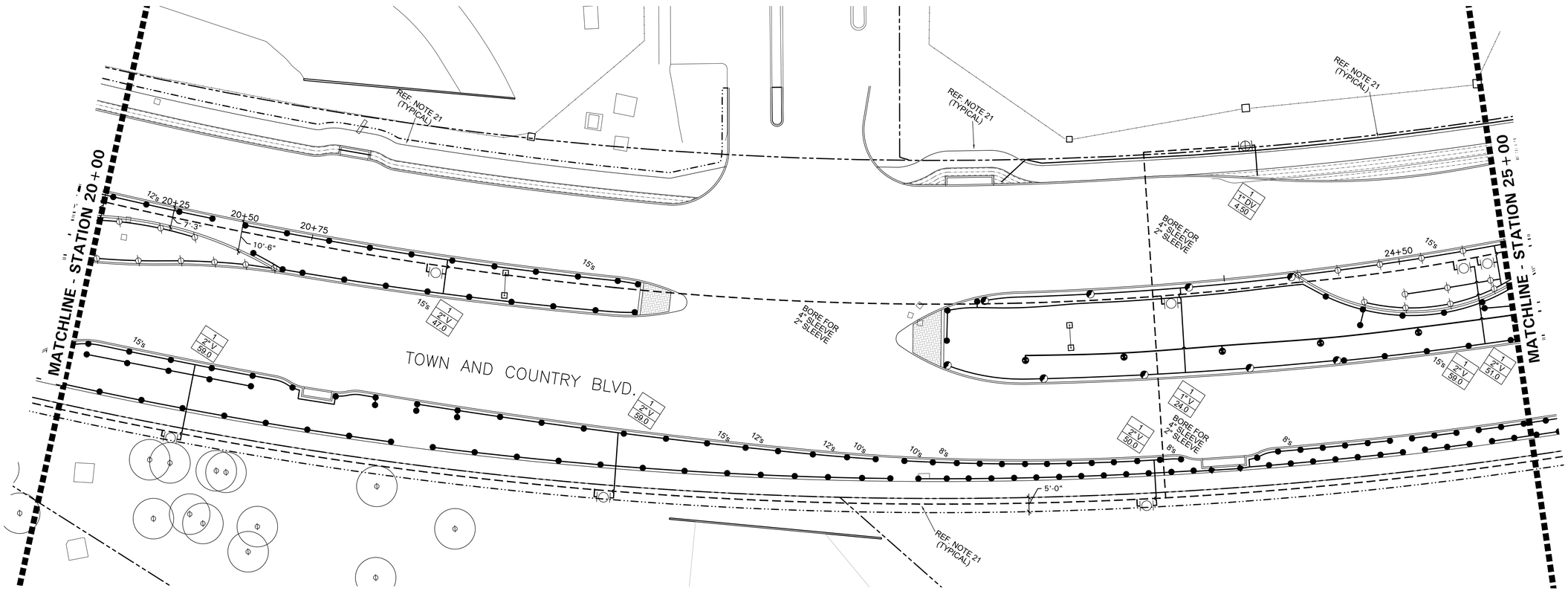

KEY MAP
SCALE: 1" = 650' - 0"

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IRRIGATION PLAN – STA 20+00 TO 25+00

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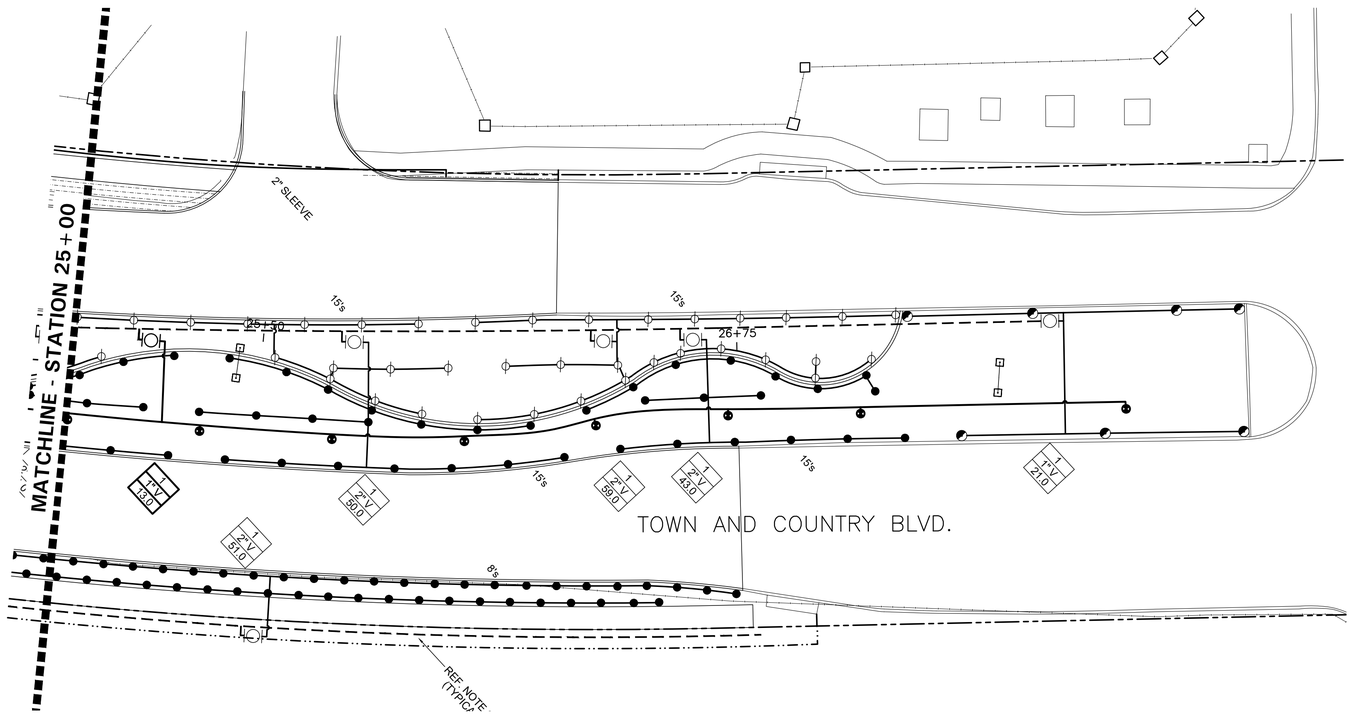


IRRIGATION LEGEND:

SYMBOL	DESCRIPTION	MANUFACTURER	MODEL NO,
●	NATIVE LAWN SPRAY HEAD	RAINBIRD (30 PSI)	1812 W/ MPR PLASTIC NOZZLES ON 1/2" GREEN CUTOFF NIPPLES
⊘	HIGH-POP SPRAY HEAD	RAINBIRD (30 PSI)	1812 W/ MPR PLASTIC NOZZLES ON 1/2" GREEN CUTOFF NIPPLES
⊕	BUBBLER HEAD	RAINBIRD (30 PSI)	#1402 NOZZLE ON SPX 1/2" SWING PIPE UNLESS OTHERWISE NOTED
◕	BUBBLER HEAD	RAINBIRD (30 PSI)	#1404 NOZZLE ON SPX 1/2" SWING PIPE UNLESS OTHERWISE NOTED
◑	ROTARY HEAD PART-CIRCLE	RAINBIRD (40 PSI)	5004 W/ #1.5 NOZZLE ON 3/4" GREE CUTOFF NIPPLE
▲	QUICK COUPLING VALVE	RAINBIRD	#33-DNP WITH LASCO BALL VALVE, PURPLE LID READS "RECLAIMED WATER, DO NOT DRINK" IN ENGLISH AND "NO TOME" IN SPANISH.
|O|	REMOTE CONTROL VALVE	RAINBIRD	PEB W/ BALL VALVE AND PRS-D PRESSURE REGULATOR, REFER TO PLANS FOR SIZE
●	GATE VALVE	NIBCO	#T-29, LINE SIZE
▬	CONTROLLER	MOTOROLA	IRRINET M PEDESTAL MOUNT SERIES W/ WIRELESS RAIN AND FREEZE SENSOR
— —	MAINLINE PIPING	REFER TO SPEC.	2-1/2" CLASS 200 PVC
———	LATERAL PIPING	REFER TO SPEC.	3/4" & LARGER - CLASS 200 PVC 1/2" - CLASS 315 PVC
|⊕|	REMOTE CONTROL DRIP VALVE	RAINBIRD	XCZ-100-PRB-COM CONTROL ZONE KIT VALVE, REFER TO PLAN FOR SIZE
———	DRIP HEADER PIPING	REFER TO SPEC.	1-INCH CLASS 200 PVC UNLESS NOTED OTHERWISE
▭	TURF SOD DRIPLINE TUBING	RAINBIRD	XFS-06-18 AT 18" O.C. WITH XF INSERT FITTINGS, TDS-050 GALVANIZED STAKES, QF HEADERS AND OPERATION INDICATOR
Ⓦ	WATER METER	REFER TO SPEC.	PER LOCAL BUILDING CODE
Ⓘ	ISOLATION VALVE	NIBCO	#T-29, REFER TO PLAN FOR SIZE
Ⓨ	WYE STRAINER	FEBCO	#650, REFER TO PLAN FOR SIZE
NN	BACKFLOW PREVENTER	FEBCO	#850BV, REFER TO PLAN FOR SIZE
Ⓗ	HYDROMETER	ARAD	IS-BM-20, REFER TO PLAN FOR LOCATION
▭	STATION NUMBER VALVE SIZE GPM (APPROX.)		

CITY OF FRISCO NOTES:

1. IRRIGATION MAINLINES, VALVES, AND CONTROL WIRES SHALL NOT BE LOCATED IN THE CITY OF FRISCO RIGHT-OF-WAY.
2. THIS SYSTEM DOES REQUIRE AN ET WEATHER STATION PER CITY REQUIREMENTS.
3. LOCATE VALVES A MINIMUM OF THREE FEET AWAY FROM ANY STORM SEWER, WATER, AND SANITARY SEWER LINES AND FIVE FEET AWAY FROM ANY FIRE HYDRANTS AND WATER VALVES.
4. ANYTIME HEADS ARE LOCATED IN SUCH A MANNER AS TO BE PARALLEL AND NEAR A PUBLIC WATER AND SANITARY SEWER LINE, THESE HEADS SHALL BE INSTALLED AS STUBBED LATERALS OR BULLHEADS. A MINIMUM OF FIVE FEET SEPARATION IS REQUIRED BETWEEN IRRIGATION MAINLINES AND LATERAL LINES THAT RUN PARALLEL TO PUBLIC WATER AND SANITARY SEWER LINES.
5. IRRIGATION SYSTEM SHALL BE DESIGNED AND INSTALLED TO MINIMIZE WATER RUNOFF OR OVERSPRAY ON ALL HARDSCAPE SURFACES.
5. ALL IRRIGATION POP-UP SPRAY HEADS LOCATED IN THE CITY OF FRISCO RIGHT-OF-WAY SHALL UTILIZE CUT OFF NIPPLES PER SPECIFICATIONS AND DETAILS AND ROTARY HEADS SHALL UTILIZE CUT OFF NIPPLES PER SPECIFICATIONS AND DETAILS.
6. NO REMOTE CONTROL VALVES, QUICK COUPLING VALVES, BACKFLOW PREVENTER, ETC. SHALL BE LOCATED CLOSER THAN TEN FEET FROM THE CURB AT STREET OR DRIVE INTERSECTIONS.
7. INSTALL ALL SPRAY HEADS AND ROTARY HEADS 4-INCHES FROM CURB PER THE CITY OF FRISCO.

FLOW CHART

SPRAY HEADS:

NOZZLE	RADIUS	GPM
18F	18'	6.5
18F	18'	4.5
18Q	18'	2.5
15F	15'	4.1
15E	15'	3.1
15C	15'	2.7
15H	15'	2.0
15B	15'	1.4
15Q	15'	1.0
12F	12'	2.9
12E	12'	2.2
12C	12'	1.9
12H	12'	1.4
12B	12'	1.0
12Q	12'	.7
10F	10'	1.7
10H	10'	.9
10B	10'	.6
10Q	10'	.4
8F	8'	1.7
8H	8'	.9
8B	8'	.6
8Q	8'	.4
6V	6'	.5

FLOW CHART

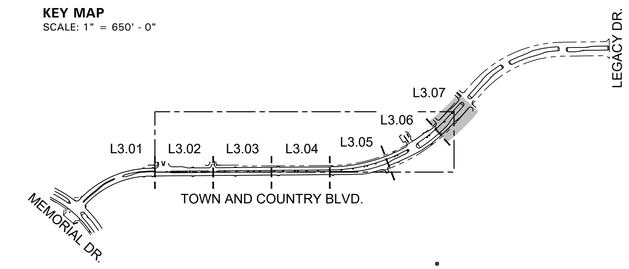
ROTARY HEADS:

30' PART-CIRCLE	1.5
30' FULL-CIRCLE	3.0

PIPE SIZE CHART

FLOW/GPM:	PIPE SIZE:
0 - 4.0	1/2"
4.1 - 9.5	3/4"
9.6 - 14.5	1"
14.6 - 27.0	1-1/4"
27.1 - 35.0	1-1/2"
35.1 - 55.0	2"
55.1 - 70.0	2-1/2"

KEY MAP
SCALE: 1" = 650' - 0"



N

SCALE: 1" = 20'-0"
0 10 20 40

SETH HEIDMAN
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6009 W. Parker Rd. #149-221, Plano, Texas 75093 Tel: 972-816-5141

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Seth A. Heidman
TX Registered Licensed Irrigator
#5881

CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO LEGACY)

IRRIGATION PLAN – STA 25+00 TO END

CobbFendley
TBPE Firm Registration No. 274
TBPLS Firm Registration No. 100467
2801 Network Boulevard, Suite 800
Frisco, Texas 75034
972.335.3214 | fax 972.335.3202 | www.cobbfendley.com

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DATE: 05/09/17	JOB NUMBER:

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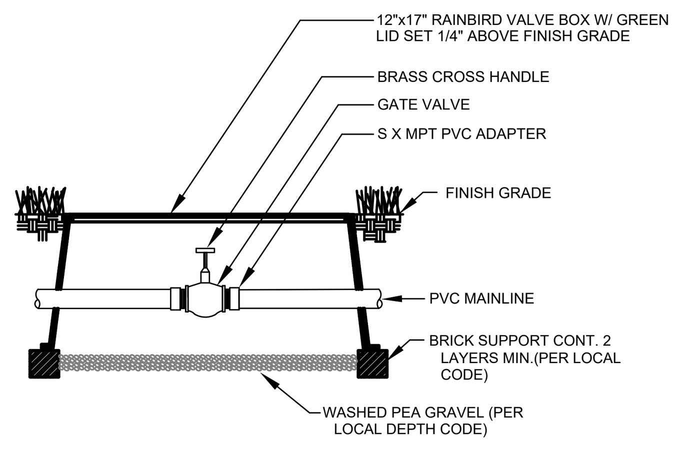

ISOLATION VALVE

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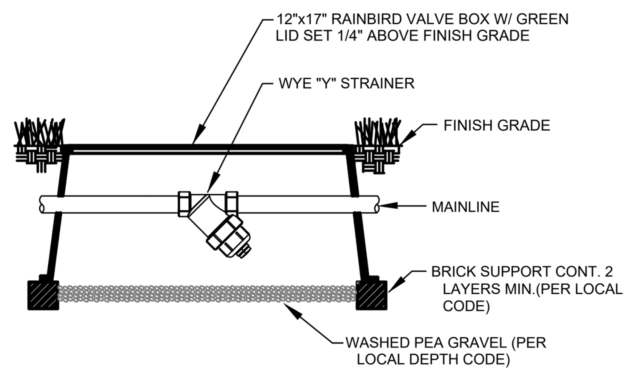

WYE "Y" STRAINER

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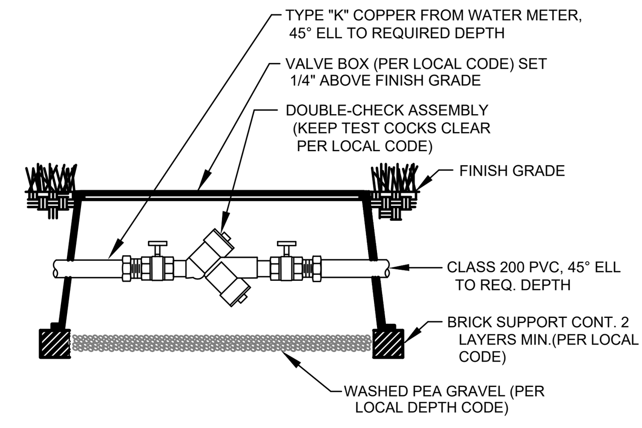

DOUBLE CHECK ASSEMBLY

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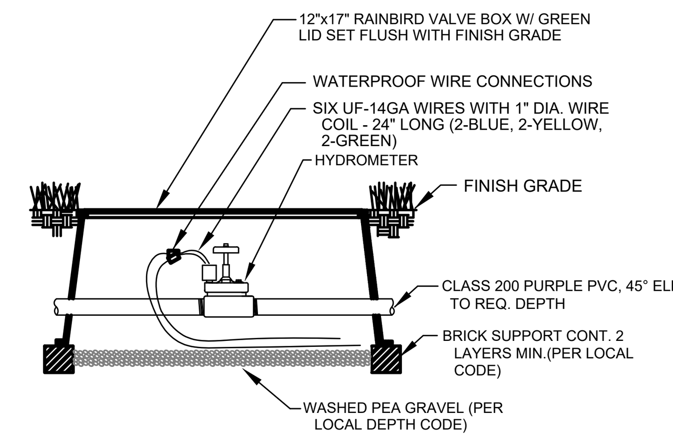

HYDROMETER VALVE

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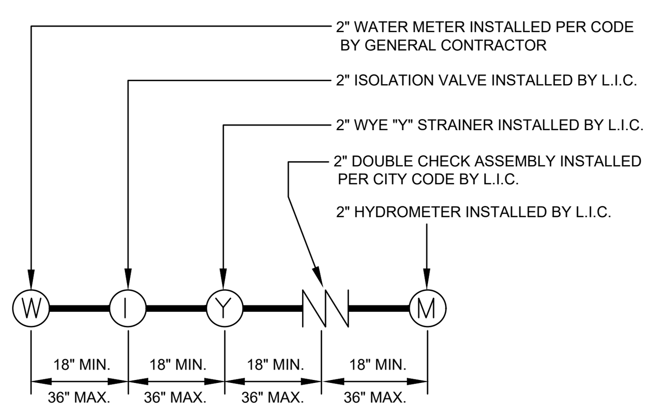

WATER SOURCE LAYOUT

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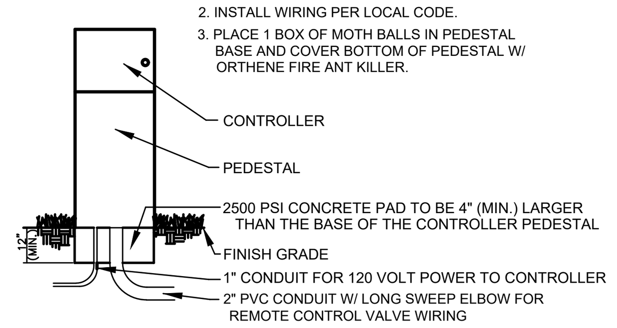
NOTES:
1. GROUND CONTROLLER PER MANUFACTURER'S SPECIFICATIONS. PROVIDE SURGE SUPPRESSION PROTECTION AS REQUIRED BY MANUFACTURER.
2. INSTALL WIRING PER LOCAL CODE.
3. PLACE 1 BOX OF MOTH BALLS IN PEDESTAL BASE AND COVER BOTTOM OF PEDESTAL W/ ORTHENE FIRE ANT KILLER.



CONTROLLER WITH PEDESTAL

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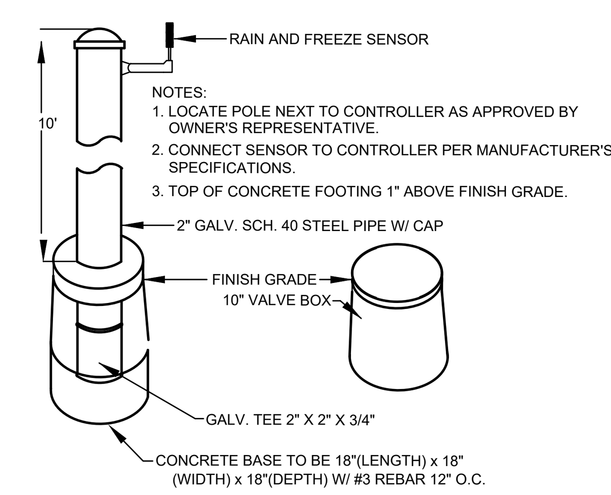
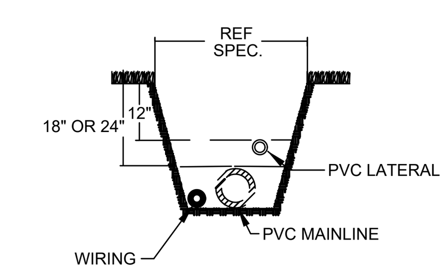


NOTES:
1. LOCATE POLE NEXT TO CONTROLLER AS APPROVED BY OWNER'S REPRESENTATIVE.
2. CONNECT SENSOR TO CONTROLLER PER MANUFACTURER'S SPECIFICATIONS.
3. TOP OF CONCRETE FOOTING 1" ABOVE FINISH GRADE.

SENSOR POLE

NOT TO SCALE ©SHIDC

MAINLINE, LATERAL, AND WIRING



1. TAPE & BUNDLE WIRING AT 10'-0" INTERVALS.

TRENCHING DETAIL

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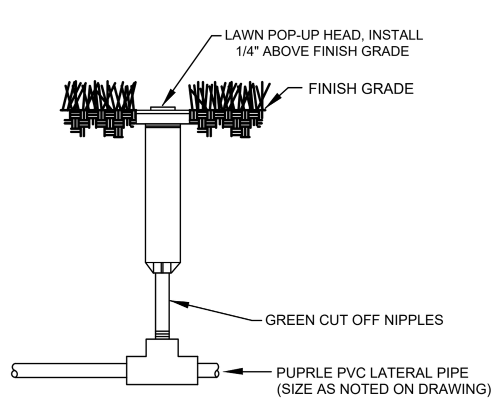

LAWN SPRAY HEAD

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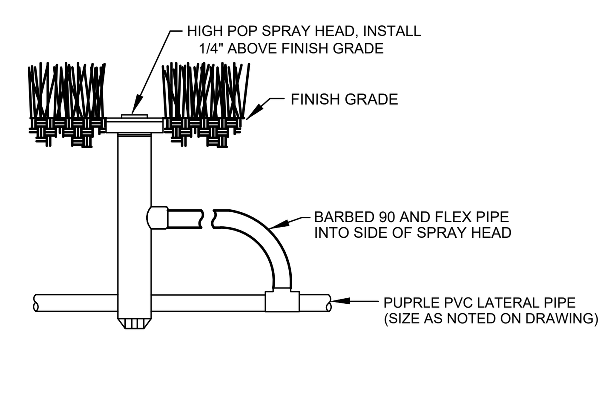

HIGH-POP SPRAY HEAD

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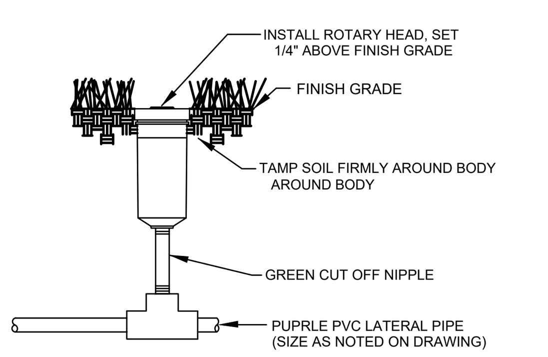

ROTARY HEAD

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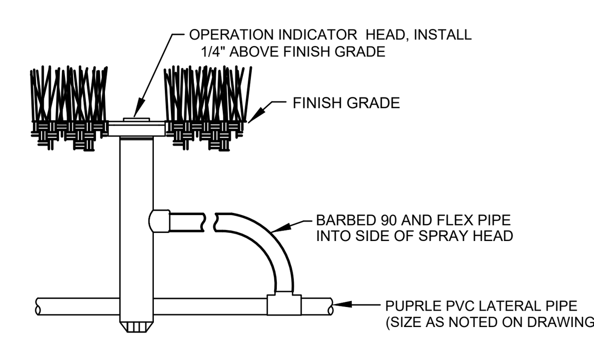

DRIP INDICATOR HEAD

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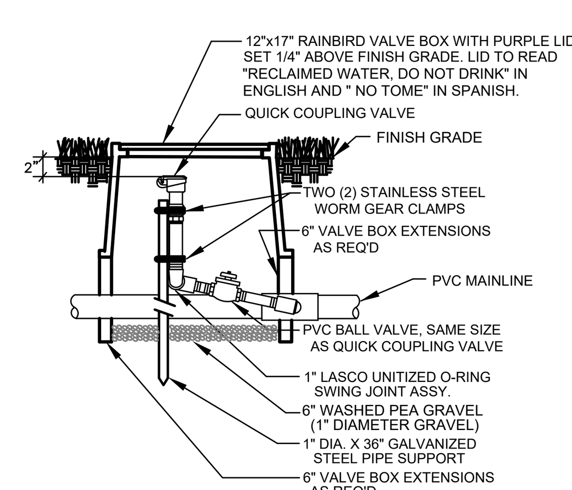

QUICK COUPLING VALVE W/ BALL VALVE

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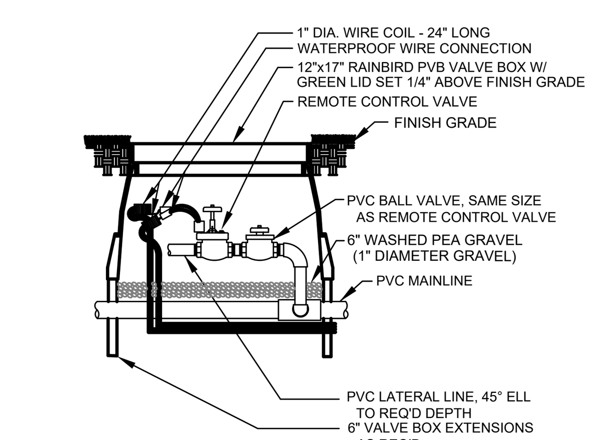

REMOTE CONTROL VALVE W/ BALL VALVE

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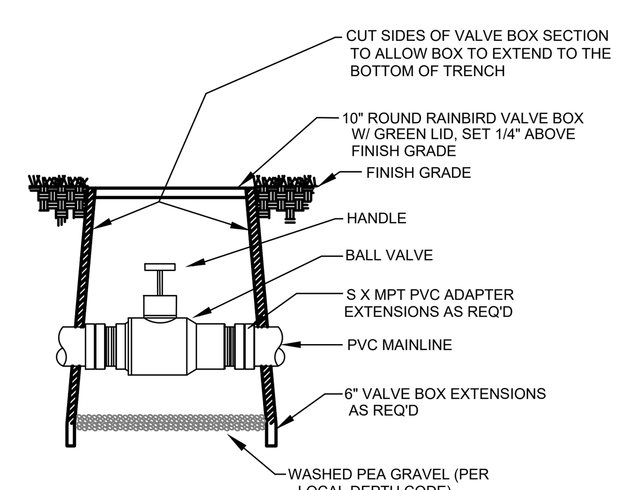

BALL VALVE

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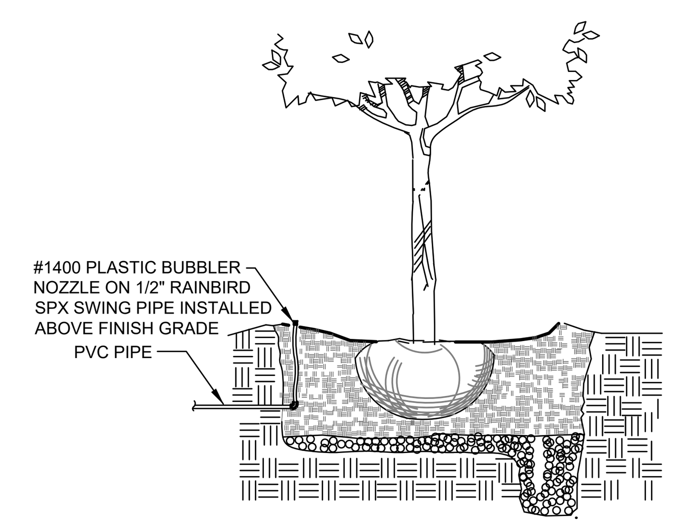

TREE BUBBLER

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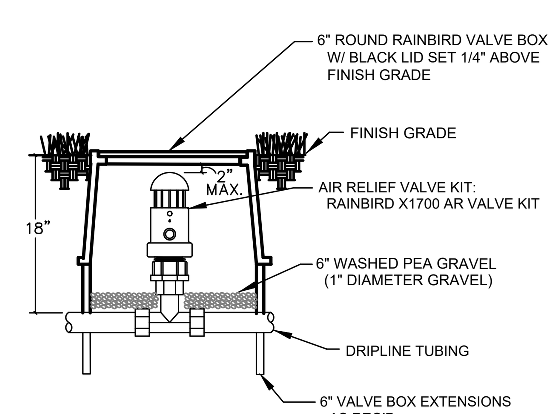
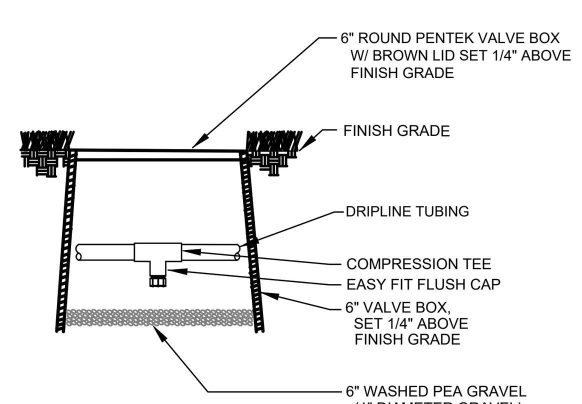


AIR RELIEF VALVE

NOT TO SCALE ©SHIDC



DRIP FLUSH VALVE

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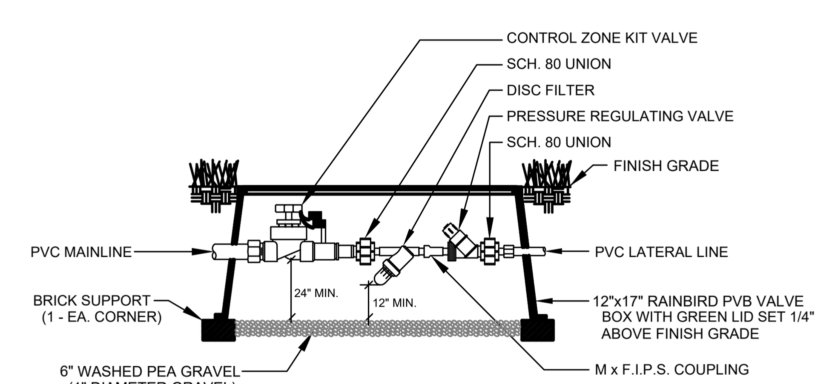

REMOTE CONTROL DRIP ZONE KIT

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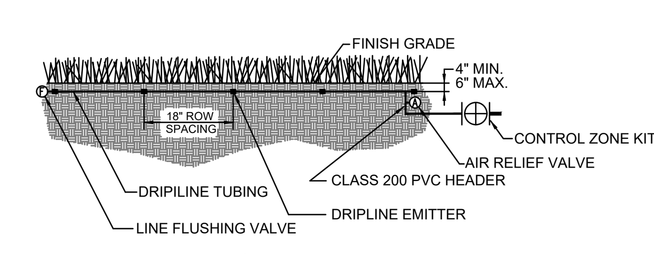

TYPICAL SUBSURFACE DRIPLINE LAYOUT

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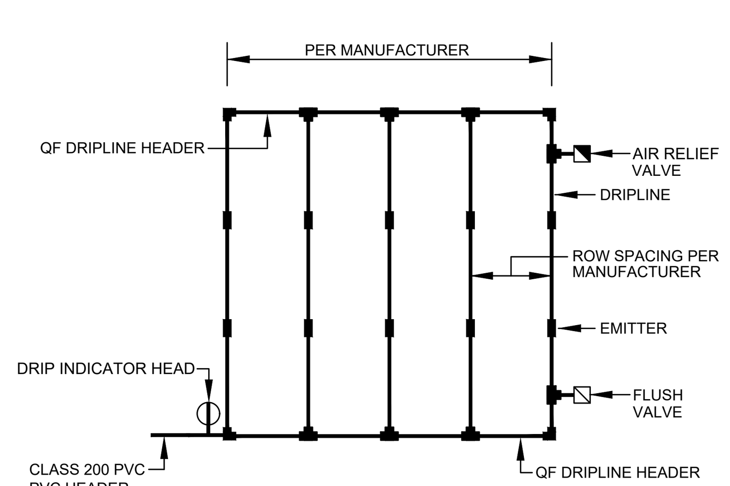

TYPICAL DRIPLINE LAYOUT

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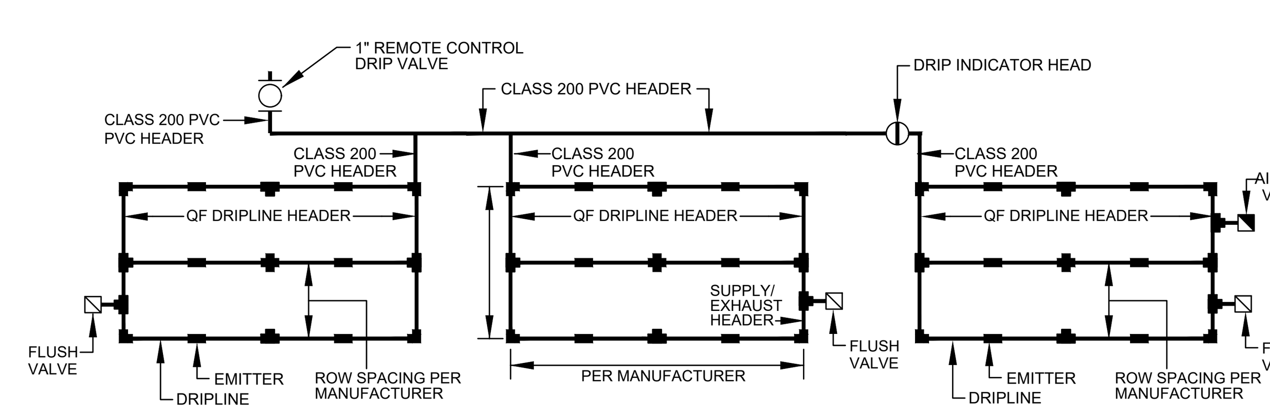

TYPICAL DRIPLINE LAYOUT

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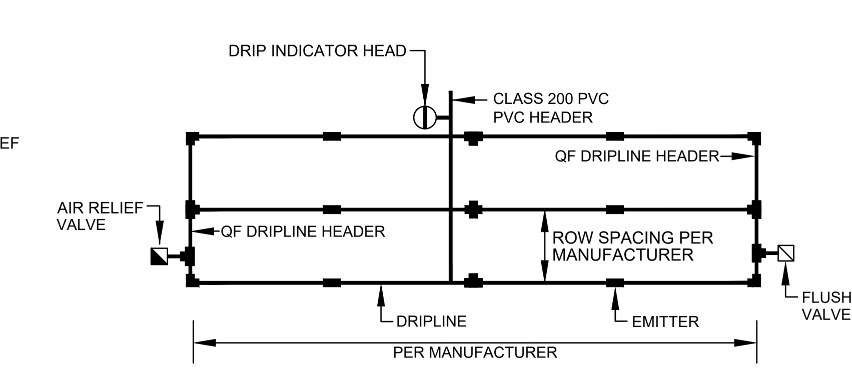

TYPICAL DRIPLINE LAYOUT

NOT TO SCALE ©SHIDC

NOTES:

1. ALL 24 VOLT LEAD AND COMMON VALVE WIRING SHALL BE A MINIMUM OF UF-14 GA. SINGLE CONDUCTOR. REFER TO MANUFACTURER'S RECOMMENDATIONS FOR PROPER WIRE SIZE. COMMON WIRE TO BE WHITE AND LEAD WIRES TO BE RED. WIRE SPLICES SHALL BE 3M-DBY PERMANENT AND WATERPROOF PER THE SPECIFICATIONS.

2. COORDINATE INSTALLATION OF IRRIGATION SYSTEM WITH LANDSCAPE CONTRACTOR TO ENSURE ALL PLANT MATERIAL WILL BE WATERED IN ACCORDANCE WITH THE INTENT OF THE PLANS AND SPECIFICATIONS.

3. PIPING AND VALVES IN PAVING SHOWN FOR CLARITY, INSTALL IN ADJACENT PLANTING BED OR LAWN AREA.

4. LATERAL PIPING SHALL HAVE A MINIMUM OF 12" OF COVER. MAINLINE AND PIPING UNDER PAVING SHALL HAVE A MINIMUM OF 18" OF COVER. ALL FITTINGS TO BE SCHEDULE 40 PVC. USE WELD-ON #705 SOLVENT AND #P-68 PRIMER FOR PVC CONNECTIONS PER THE SPECIFICATIONS.

5. SIZE PIPING PER MANUFACTURER'S RECOMMENDATIONS OF NOT EXCEEDING 5 FPS. REFERENCE CHART.

6. CONNECT LAWN, HIGH-POP, AND DRIP INDICATOR HEADS TO LATERAL PIPING WITH RAINBIRD 1/2" SPX SWING PIPE. CONNECT ROTARY HEADS TO LATERAL PIPE WITH LASCO #T722 SERIES"UNITIZED", O-RING SWING JOINTS .

7. INSTALL QUICK COUPLING VALVES IN TWELVE BY SEVENTEEN (12"x17") INCH RAINBIRD PVB VALVE BOX. CONNECT COUPLERS TO MAINLINE PIPE WITH LASCO #T722-212 "UNITIZED", O-RING SWING JOINT. SUPPLY OWNER WITH ONE (1) COUPLER KEY WITH SWIVEL HOSE BIBB EACH. VALVES TO BE INSTALLED SO THAT TOP OF QUICK COUPLER IS 2" BELOW BOTTOM OF VALVE BOX TOP. PURPLE LID READS "NON-POTABLE, NOT SAFE FOR DRINKING" IN ENGLISH AND SPANISH. INSTALL EVERY 150'-0" ON CENTER ALONG ENTIRE LENGTH OF MAINLINE.

8. PERFORM ELECTRICAL WORK IN ACCORDANCE WITH LOCAL BUILDING CODE. POWER (120V) SHALL BE LOCATED IN A JUNCTION BOX AND HARDWIRED WITHIN FIVE (5') FEET OF CONTROLLER LOCATION BY GENERAL CONTRACTOR.

9. INSTALL REMOTE CONTROL VALVES AND WIRE SPLICES IN TEN (10") INCH ROUND RAINBIRD PVB VALVE BOXES.

10. INSTALL SLEEVES UNDER ALL HARDSCAPE SURFACES SUCH AS ROADS, DRIVES, WALKS, ETC. WHETHER SHOWN OR NOT. SLEEVES SHALL BE CLASS 200 PVC, SIZED AS NOTED ON PLANS AND INSTALLED BY IRRIGATION CONTRACTOR.

11. ADJUST NOZZLES FOR SITUATIONS THAT REQUIRE LESS THAN 90° DEGREE RADIUS SPRAY. NO OVERSPRAY ALLOWED ON ANY HARDSCAPE SURFACES.

12. DESIGN PRESSURE IS 65.0 PSI. STATIC PRESSURE IS 75 PSI. TEN DAYS PRIOR TO START OF CONSTRUCTION, VERIFY STATIC PRESSURE. IF STATIC PRESSURE IS LESS THAN STATED DO NOT START WORK UNTIL NOTIFIED TO PROCEED BY OWNER.

13. MINIMUM DISTANCE BETWEEN MAIN LINE AND LATERAL LINE FITTINGS (EXCEPT FOR REDUCER BUSHINGS) TO BE EIGHTEEN (18") INCHES AND MINIMUM HORIZONTAL DISTANCE OF TWENTY-FOUR (24") INCHES BETWEEN ANY VALVES THAT ARE INSTALLED SIDE BY SIDE.

14. INSTALL REMOTE CONTROL DRIP ZONE KITS IN TWELVE BY SEVENTEEN (12"x17") INCH RAINBIRD PVB VALVE BOX.

15. INSTALL DRIPLINE MINIMUM OF 2" AND A MAXIMUM OF 4" FROM HARDSCAPE SURFACES. STAKE DRIPLINE AND RECEIVE APPROVAL FROM OWNER'S REPRESENTATIVE BEFORE INSTALLATION. DO NOT EXCEED MANUFACTURER'S RECOMMENDATIONS OF 5'-0" PER SECOND IN DRIPLINE.

16. PROVIDE AND INSTALL DISTRIBUTION TUBING, STAKES, EMITTERS, TRANSFER FITTINGS, DIFFUSER BUG CAP, QF DRIPLINE HEADERS, CONTROL ZONE KITS, ETC. NECESSARY FOR PROPER INSTALLATION OF THE DRIP SYSTEM. ALL PVC HEADER PIPING TO BE CLASS 200 PVC SOLVENT WELD PIPE. INSERT XF BARBED INSERT FITTINGS PER MANUFACTURER'S RECOMMENDATIONS. INSTALL RAINBIRD OPERATION INDICATOR FOR EACH DRIP ZONE.

17. AIR RELIEF VALVE TO BE RAINBIRD AR VALVE KIT INSTALLED IN A SIX-INCH (6") RAINBIRD PVB ROUND VALVE BOX WITH 6" OF GRAVEL SUMP. FLUSH VALVES TO BE AUTOMATIC FLUSH VALVE INSTALLED IN A SIX-INCH (6") RAINBIRD PVB ROUND VALVE BOX WITH 6" OF GRAVEL SUMP.

18. ALL XFS CV DRIPLINE AND DISTRIBUTION TUBING TO BE INSTALLED BELOW FINISH GRADE APPROXIMATELY 4" TO 6" PER MANUFACTURER'S RECOMMENDATIONS. ALL DRIPLINE TO BE INSTALLED MIN. OF 14" AND MAX. OF 20" ROW SPACING UNLESS INSTRUCTED OTHERWISE. VERIFY THE EXACT EMITTER FLOW, EMITTER SPACING, AND ROW SPACING WITH MANUFACTURER PRIOR TO INSTALLING TO PROVIDE PROPER PRECIPITATION RATE BASED ON PLANT MATERIAL AND SOIL TYPE. TUBING TO BE STAKED WITH RAINBIRD 12 GA. GALVANIZED TIE DOWNS. INSTALL STAKES EVERY 3'-0" ALONG ENTIRE LENGTH OF TUBING AND A MINIMUM OF 24" FROM ANY FITTINGS.

19. INCLUDE THE FOLLOWING ALLOWANCES FOR PROVIDING AND INSTALLING AIR RELIEF VALVES AND FLUSH VALVES FOR THE DRIP SYSTEM. EXACT QUANTITY AND LOCATION OF THESE DEVICES WILL BE DETERMINED AT THE TIME OF INSTALLATION. IN GENERAL, ALL AIR RELIEF VALVES WILL BE INSTALLED AT THE HIGH POINTS AND FLUSH VALVES WILL BE INSTALLED AT THE LOW POINTS OF EXHAUST HEADER. ALLOW FOR APPROXIMATELY ONE (1) AIR RELIEF VALVE AND APPROXIMATELY ONE (1) FLUSH VALVE FOR EACH DRIP ZONE KIT.

20. PROVIDE ALL LABOR AND MATERIAL NECESSARY TO HAND DIG WITHIN ALL EXISTING TREE ROOT ZONES. CONTRACTOR MUST STAKE DITCHES AND RECEIVE APPROVAL FROM LANDSCAPE ARCHITECT PRIOR TO ANY TRENCHING OR DIGGING.

21. PROVIDE TEMPORARY IRRIGATION TO ALL DISTURBED AREAS THAT DO NOT HAVE PERMANENT IRRIGATION. PROVIDE ALL MATERIAL AND LABOR NECESSARY TO INSTALL AND OPERATE THE TEMPORARY SYSTEM. TEMPORARY SYSTEM TO BE LEFT IN PLACE UNTIL PLANT MATERIAL IS ESTABLISHED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS. SHOULD IT BECOME NECESSARY TO REMOVE AND REPLACE THE TEMPORARY SYSTEM FOR MOWING AND MAINTENANCE OPERATIONS, THE LANDSCAPE IRRIGATION CONTRACTOR SHALL CONSIDER THIS PART OF HIS SCOPE OF WORK. EXACT METHOD OF PROVIDING AND OPERATING THE TEMPORARY SYSTEM WILL BE THE LANDSCAPE IRRIGATION CONTRACTOR'S RESPONSIBILITY. OPERATION OF THE TEMPORARY SYSTEM MUST BE COORDINATED WITH THE PERMANENT SYSTEM TO INSURE PROPER HYDRAULIC OPERATION OF BOTH SYSTEMS. CONTRACTOR IS RESPONSIBLE TO REFERENCE THE LANDSCAPE PLANS FOR THE SCOPE OF THIS WORK.

22. PROVIDE ALL LABOR AND MATERIAL NECESSARY TO INSTALL THE MOTOROLA IRRINET M PEDESTAL MOUNT CONTROLLER AND THE ARAD HYDROMETER PER THE MANUFACTURER'S RECOMMENDATIONS. WIRING FOR THE HYDROMETER TO INCLUDE TWO YELLOW, TWO BLUE, AND TWO ORANGE. FOR ANY QUESTIONS REGARDING THIS WORK, CONTACT STEVE PITTSINGER WITH INTERSPEC AT 940-440-9757.

23. ALL LANDSCAPE NEEDS TO BE ESTABLISHED AND MAINTAINED BY A TEMPORARY IRRIGATION CONTROLLER PROVIDED AND MONITORED BY THE CONTRACTOR UNTIL FINAL ACCEPTANCE. VALVE WIRES CAN BE TRANSFERRED OVER TO THE MOTOROLA CONTROLLER AFTER FINAL ACCEPTANCE BY THE CITY.

24. ALL STATE OF TEXAS LAWS/RULES AND ALL LOCAL CODES/ORDINANCES ARE MADE PART OF THESE PLANS AND SPECIFICATIONS WHETHER SHOWN OR NOT. THESE LAWS AND ORDINANCES WILL SUPERCEDE THE PLANS, DETAILS, AND/OR SPECIFICATIONS FOR THIS PROJECT. CONTRACTOR IS CAUTIONED THAT HE IS TO INCLUDE ANY AND ALL COST NECESSARY TO MEET OR EXCEED THE LAWS OF THE STATE OF TEXAS OR LOCAL CODES CONCERNING LANDSCAPE IRRIGATION.

25. A LICENSED IRRIGATOR OR LICENSED IRRIGATION TECHNICIAN SHALL BE ON-SITE AT ALL TIMES WHILE THE LANDSCAPE IRRIGATION SYSTEM IS BEING INSTALLED PER CITY OF FRISCO REQUIREMENTS.

SETH HEIDMAN
IRRIGATION DESIGN & CONSULTING, LLC
6009 W. Parker Rd. #149-221, Plano, Texas 75093 Tel: 972-816-5141

BELLE FIRMA
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214.865.7192 office

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They were prepared by, or under the supervision of:
Seth A. Heidman
TX Registered Licensed Irrigator
#5881

CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO LEGACY)

IRRIGATION SPECIFICATIONS AND DETAILS

CobbFendley
TBPE Firm Registration No. 274
TBPLS Firm Registration No. 100467
2801 Network Boulevard, Suite 800
Frisco, Texas 75034
972.335.3214 | fax 972.335.3202 | www.cobbfendley.com

DESIGN BY: SAH	DRAWN BY: SAH
DATE: 05/09/17	JOB NUMBER:

SHEET
L3.08

SYMBOL	DESCRIPTION
A 3 b	INCANDESCENT, COMPACT FLUORESCENT OR H.I.D. TYPE LIGHTING FIXTURE "A" – FIXTURE TYPE "b" – CONTROLLED BY SWITCH "b" "3" – CIRCUIT NUMBER
b A LA–X	FLUORESCENT TYPE LIGHTING FIXTURE, NOTATIONS SAME AS ABOVE
A OR 3 A	INDICATES LIGHT FIXTURES WHICH ARE UNSWITCHED
A 3 b	WALL OUTLET AND INCANDESCENT, COMPACT FLUORESCENT OR H.I.D. TYPE LIGHTING FIXTURE, NOTATIONS SAME AS ABOVE
A 3 b	POLE MOUNTED LIGHTING FIXTURE, NOTATIONS SAME AS ABOVE
A	EMERGENCY LIGHTING BATTERY UNIT WITH TWO LAMP HEADS "A" – FIXTURE TYPE
A	REMOTE EMERGENCY ADJUSTABLE WALL LIGHTING FIXTURE WITH TWO LAMP HEADS "A" – FIXTURE TYPE
X	CEILING MOUNTED EXIT SIGN "X" – FIXTURE TYPE
X	WALL OUTLET EXIT SIGN, ARROW INDICATES DIRECTION OF EGRESS "X" – FIXTURE TYPE
	CONDUIT, EXPOSED/SURFACE MOUNTED
	CONDUIT OR DUCTBANK, CONCEALED
	CONDUIT, EXPOSED/SURFACE MOUNTED, TURNING UP
	CONDUIT, EXPOSED/SURFACE MOUNTED, TURNING DOWN
	CONDUIT STUBBED OUT AND CAPPED
2(3"C, 3#3/0 & 1#2 GRD)	DENOTES A QUANTITY OF TWO (2) 3–INCH CONDUITS EACH CONTAINING THREE (3) NO. 3/0 AWG CONDUCTORS AND ONE (1) NO. 2 AWG GROUND CONDUCTOR.
2–2/C#16TS	DENOTES A QUANTITY OF TWO (2) INSTRUMENT CABLES. EACH CABLE TO CONSIST OF TWO NO. 16 AWG CONDUCTORS TWISTED TOGETHER AND COVERED WITH A METALLIC SHIELD AND AN OVERALL PROTECTIVE JACKET. REFER TO THE SPECIFICATIONS FOR THE EXACT CABLE TO BE PROVIDED.
3–4"C	THREE 4–INCH CONDUITS
	FLEXIBLE METAL CONDUIT "WHIP" (2#12, 1#12G, 3/4" C. UNLESS OTHERWISE NOTED) FOR RECESSED LIGHTING FIXTURES AND LIQUID TIGHT MOTOR CONNECTIONS
LP1–1,3	HOMERUN, CIRCUITS 1 AND 3 RUN TO PANEL LP–1
$b	SINGLE POLE SWITCH "b" INDICATES SWITCH LEG SHALL CONTROL LIGHT FIXTURES WITH "b" DESIGNATION
$ x a	MULTI POLE SWITCH "x" INDICATES NUMBER OF POLE "a" INDICATES SWITCH SHALL CONTROL LIGHT FIXTURES WITH "a" DESIGNATION
$M	MANUAL MOTOR STARTER /DISCONNECT
$P	SINGLE POLE SWITCH AND PILOT LIGHT
TYPE A	INDICATES ALL LIGHTING FIXTURES WITHIN THE ROOM OR AREA IN WHICH THIS NOTATION APPEARS SHALL BE TYPE "A" UNLESS OTHERWISE NOTED. SEE LIGHTING FIXTURE SCHEDULE FOR TYPES.
	VACUUM FAULT INTERRUPTER
	PUSH BUTTON STATION, REFER TO ELECTRICAL SCHEMATIC FOR NUMBER OF DEVICES.
L*–** OR L*–**	LIGHTING PANELBOARD (TYPICAL 120V/240V OR 120V/208V)
H*–** OR H*–**	DISTRIBUTION PANELBOARD (TYPICAL 277V/480V)

SYMBOL	DESCRIPTION
✳ 4	DUPLEX RECEPTACLE, 20A, 120V, 2P, 3W ✳ C – MOUNTED ABOVE COUNTERTOP GF – GROUND FAULT INTERRUPTER TYPE WP – WEATHERPROOF T – TRANSIENT VOLTAGE SURGE SUPPRESSER 4 – CIRCUIT NUMBER
	60A, 480V, 3P, 4W WELDING RECEPTACLE
P	PULL BOX
TC	TERMINAL CABINET
M	MOTOR
DAMP	INDICATES THAT ALL ELECTRICAL EQUIPMENT AND MATERIALS INSTALLED WITHIN THE ROOM OR AREA IN WHICH THIS NOTATION APPEARS SHALL BE OF NEMA 12 CONSTRUCTION UNLESS OTHERWISE NOTED.
WET	INDICATES THAT ALL ELECTRICAL EQUIPMENT AND MATERIALS INSTALLED WITHIN THE ROOM OR AREA IN WHICH THIS NOTATION APPEARS SHALL BE OF NEMA 4 CONSTRUCTION UNLESS OTHERWISE NOTED.
CORROSIVE	INDICATES THAT ALL ELECTRICAL EQUIPMENT AND MATERIALS INSTALLED WITHIN THE ROOM OR AREA IN WHICH THIS NOTATION APPEARS SHALL BE OF NEMA 4X CONSTRUCTION UNLESS OTHERWISE NOTED.
CLASS 1, DIV. 1, GROUP D	INDICATES THAT ALL ELECTRICAL EQUIPMENT AND MATERIALS INSTALLED WITHIN THE ROOM OR AREA IN WHICH THIS NOTATION APPEARS SHALL CONFORM TO N.E.C REQUIREMENTS FOR THE HAZARDOUS AREA CLASSIFICATION SHOWN.

ONE LINE OR CONTROL DIAGRAM	PLAN	DESCRIPTION
(E.O.) FRAME / TRIP	CB	LOW VOLTAGE CIRCUIT BREAKER, 3 POLE UNLESS OTHERWISE NOTED. LSIG IF NOTED
✳		COMBINATION MOTOR CIRCUIT PROTECTOR AND MAGNETIC MOTOR STARTER, FULL VOLTAGE NON–REVERSING UNLESS OTHERWISE NOTED: ✳ FVR– FULL VOLTAGE REVERSING RVNR– REDUCED VOLTAGE NON–REVERSING 2S1W– TWO SPEED, ONE WINDING 2S2W– TWO SPEED, TWO WINDING
✳		NON–FUSIBLE DISCONNECT SWITCH, 600 VOLT, 3 POLE ✳ AMPERE RATING NOTED IF OTHER THAN 30A
✳ ✱	F	FUSIBLE DISCONNECT SWITCH, 600 VOLT, 3 POLE, AMPERE RATING AND FUSE SIZE AS NOTED ✳ AMPERE RATING NOTED IF OTHER THAN 30A ✱ FUSE RATING EXAMPLE 15
MIS	I	MOTOR ISOLATION SWITCH, HORSEPOWER RATED
	—	DRAWOUT TYPE EQUIPMENT OR DEVICE
480V Δ – 120/208Y 30 KVA K–*	T	TRANSFORMER, RATINGS AND CONNECTIONS AS NOTED. UNLESS OTHERWISE NOTED ON THE SINGLE LINE DIAGRAMS ALL DRY TYPE TRANSFORMERS SERVING ADMINISTRATIVE AND LABORATORY SPACES SHALL HAVE A K FACTOR OF 13. ALL OTHER DRY TYPE TRANSFORMERS SHALL HAVE A K–4 RATING. ISOLATION TRANSFORMERS SHALL HAVE A K–20 RATING
✳ A:5	—	CURRENT TRANSFORMER ✳ QUANTITY A = PRIMARY AMPERES
✳ PV–5V	—	POTENTIAL TRANSFORMER ✳ QUANTITY PV = PRIMARY VOLTAGE SV = SECONDARY VOLTAGE
100A ATS–1 N S	—	TRANSFER SWITCH AUTOMATIC TRANSFER SWITCH (EG ATS–1) MANUAL TRANSFER SWITCH (EG MTS–1) "N" INDICATES NORMAL SOURCE "S" INDICATES STANDBY SOURCE 100A INDICATES CONTINUOUS CURRENT RATING
5	M	MOV WITHOUT INTEGRATED DISCONNECT
5	M	MOV WITH INTEGRATED DISCONNECT
✳	✳	VARIABLE SPEED DRIVE CONTROLLER ✳ DC = DC DRIVE CONTROLLER SCR= SILICON CONTROLLED RECTIFIER VFD = VARIABLE FREQUENCY DRIVE
5KW	E	UNIT HEATER – ELECTRIC HEATING COIL AND FAN
5	M	MOTOR, NUMERAL INDICATES HORSEPOWER
	—	REMOTE DEVICES
✳	—	SPECIAL CAPACITOR ✳ SC – SURGE CAPACITOR PF – POWER FACTOR CORRECTION CAPACITOR INCLUDING INDUCTIVE LINK AS NEEDED

ONE LINE OR CONTROL DIAGRAM	PLAN	DESCRIPTION
	—	PUSH BUTTON, MOMENTARY CONTACT, SPRING RETURN, NORMALLY CLOSED
	—	PUSH BUTTON, MOMENTARY CONTACT, SPRING RETURN, NORMALLY OPEN
	ES	EMERGENCY STOP PUSH BUTTON WITH RED MUSHROOM HEAD OPERATOR (MAINTAINED CONTACT)
STOP START	PBL	START–STOP PUSH BUTTON CONTROL STATION (MOMENTARY CONTACT) "L" DENOTES LOCKOUT TYPE
STOP START	PBM	START–STOP PUSH BUTTON CONTROL STATION, MAINTAINED CONTACT WITH LOCKOUT DEVICE ON STOP
OFF ON	S/S	OFF/ON SELECTOR SWITCH
A B C✳ (XOO) (OOX)	✳	3 POSITION SELECTOR SWITCH, MAINTAINED CONTACT O–OPEN X–CLOSED (see table below) ✳ NAMEPLATE (A/B/C) HOA – HAND/OFF/AUTO HOR – HAND/OFF/REMOTE LOR – LOCAL/OFF/REMOTE RSL – RAISE/STOP/LOWER TOA – TEST/OFF/AUTO NOTE: 2 POSITION MULTI–CONTACT SWITCH FOLLOWS SAME CONVENTION
M #	—	MOTOR STARTER COIL, NUMBER AS INDICATED
CR #	—	CONTROL RELAY COIL, NUMBER AS INDICATED
	—	PILOT LIGHT, COLOR AS NOTED ✳ R – RED G – GREEN B – BLUE W – WHITE A – AMBER
PTT	—	PILOT LIGHT, PUSH–TO–TEST TYPE, COLOR AS NOTED ABOVE. (PUSH–TO–TEST SHALL BE REQUIRED AT ALL PILOT LIGHT LOCATIONS, INCLUDING MFR SUPPLIED PANELS)
TD	—	TIME DELAY RELAY RANGE AS NOTED SETPOINT AS NOTED TDD–TIME DELAY AFTER DE–ENERGIZATION–OFF DELAY TDE–TIME DELAY AFTER ENERGIZATION–ON DELAY NOTC–NORMALLY OPEN, TIMED CLOSING WHEN ENERGIZED NCTO–NORMALLY CLOSED, TIMED OPENING WHEN ENERGIZED NOTO–NORMALLY OPEN, TIMED OPENING WHEN DE–ENERGIZED NCTC–NORMALLY CLOSED, TIMED CLOSING WHEN DE–ENERGIZED
	✳ – ##	FIELD INSTRUMENT, TAG NO. AS INDICATED ✳ – INDICATES INSTRUMENT TYPE DEFINED ON LOOP SHEETS ## – INDICATES LOOP NO.
	LS OR	LIQUID LEVEL (FLOAT) SWITCH NORMALLY OPEN, CLOSES ON RISING LEVEL NORMALLY CLOSED, OPENS ON RISING LEVEL
	PS OR	PRESSURE OR VACUUM SWITCH NORMALLY OPEN, CLOSES ON RISING PRESSURE NORMALLY OPEN, CLOSES ON DROPPING PRESSURE NORMALLY CLOSED, OPENS ON RISING PRESSURE NORMALLY CLOSED, OPENS ON DROPPING PRESSURE
	TS OR T	TEMPERATURE SWITCH OR THERMOSTAT NORMALLY OPEN, CLOSES ON RISING TEMPERATURE NORMALLY OPEN, CLOSES ON DROPPING TEMP. NORMALLY CLOSED, OPENS ON RISING TEMPERATURE NORMALLY CLOSED, OPENS ON DROPPING TEMP.
	FS OR	FLOW SWITCH (AIR, WATER, ETC.) NORMALLY OPEN, CLOSES ON INCREASED FLOW NORMALLY CLOSED, OPENS ON INCREASED FLOW

POSITION	TOP CONTACT	MIDDLE CONTACT	BOTTOM CONTACT
A	X	O	O
B	O	O	O
C	O	O	X

ONE LINE OR CONTROL DIAGRAM	PLAN	DESCRIPTION
	ZS OR	POSITION (LIMIT) SWITCH NORMALLY OPEN NORMALLY OPEN – HELD CLOSED NORMALLY CLOSED NORMALLY CLOSED – HELD OPEN
	TQ OR	TORQUE SWITCH NORMALLY CLOSED, OPENS ON HIGH TORQUE
	—	CONDUCTORS OR CONDUITS CROSSING PATHS BUT NOT CONNECTED
	—	CONDUCTORS ELECTRICALLY CONNECTED
	—	INDICATES LIMITS OF EQUIPMENT OR WIRING ENCLOSURE
LA	—	LIGHTNING ARRESTER
		GROUND OR GROUND ROD GROUND ROD WELL
30A	—	FUSE, AMPERE RATING AS NOTED
	HTR	STRIP HEATER OR HEATING ELEMENT
	—	INDUCTOR
	—	CONTACT, NORMALLY OPEN (NO)
	—	CONTACT, NORMALLY CLOSED (NC)
	—	OVERLOAD RELAY HEATER
K	—	KEY INTERLOCK
TB	—	TERMINAL OR TEST BLOCK
RTD	—	RESISTANCE TEMPERATURE DETECTOR
VE	—	VIBRATION DETECTOR
DM	—	DAMPER MOTOR
ETM OR	—	ELAPSED TIME METER
MOV	MOV	MOTOR OPERATED VALVE
	X	EXPLOSION PROOF CONDUIT SEALING FITTING

ABBREVIATIONS

AC	ALTERNATING CURRENT
AFD	ADJUSTABLE FREQUENCY DRIVE
AFF	ABOVE FINISHED FLOOR
AG	ABOVE GRADE
ALUM	ALUMINUM
AMP/A	AMPERE
ATS	AUTOMATIC TRANSFER SWITCH
AUTO	AUTOMATIC
AUX	AUXILIARY
AWG	AMERICAN WIRE GAUGE
C	CONDUIT
CB	CIRCUIT BREAKER
CKT	CIRCUIT
CLF	CURRENT LIMITING FUSE
CP	CONTROL PANEL
CPT	CONTROL POWER TRANSFORMER
CR	CONTROL RELAY
CS	CONTROL SWITCH
CT	CURRENT TRANSFORMER
CU	COPPER
DC	DIRECT CURRENT
DI	DOOR INTERLOCK
DN	DOWN
DWG	DRAWING
EHH	ELECTRICAL HAND HOLE
EC	EMPTY CONDUIT
	CONTINUED ABOVE RIGHT

	CONTINUED BELOW LEFT
ELEC	ELECTRICAL
ELEV	ELEVATION
EM	EMERGENCY
EMH	ELECTRICAL MAN HOLE
EO	ELECTRICALLY OPERATED
FBO	FURNISHED BY OTHERS
FO	FIBER OPTIC
FRP	FIBERGLASS REINFORCED POLYESTER
FU	FUSE
GCP	GENERATOR CONTROL PANEL
GEN	GENERATOR
G, GRD	GROUND
GFI	GROUND FAULT INTERRUPTER
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GO	GATE OPERATOR
GRS	GALVANIZED RIGID STEEL
HH	HANDHOLE
HT	HEIGHT
HTP	HEAT TRACE PANEL
HZ	HERTZ
IMH	INSTRUMENT MAN HOLE
INST	INSTRUMENT
LA	LIGHTNING ARRESTER
LC	LIGHTNING CONTACTOR
LCP	LOCAL CONTROL PANEL
	CONTINUED ABOVE RIGHT

	CONTINUED BELOW LEFT
	LIGHTS
LP	LIGHTING PANEL
LSIG	LONG TIME/SHORT TIME INSTANTANEOUS GROUND FAULT FEATURE INCLUDED
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MFR	MANUFACTURER
MH	MANHOLE
MLO	MAIN LUGS ONLY
MPZ	MINI POWER ZONE
MTG	MOUNTING
MTD	MOUNTED
MTS	MANUAL TRANSFER SWITCH
NC	NORMALLY CLOSED
NO	NORMALLY OPEN OR NUMBER
NTS	NOT TO SCALE
OL	OVERLOAD
OLX	OVERLOAD CONTROL RELAY
PB	PUSH BUTTON
PCC	PUMP CONTROL CONSOLE
PPR	PHASE PROTECTIVE RELAY
PFR	PHASE FAILURE RELAY
PH	PHASE
PR	PAIR
PT	POTENTIAL TRANSFORMER
PTT	PUSH TO TEST TYPE
PVC	POLYVINYL CHLORIDE
QTY	QUANTITY
RCP	RELAY CONTROL PANEL
RECP	RECEPTACLES
SC	SURGE CAPACITOR
SCH	SCHEMATIC
SCCR	SHORT CIRCUIT CURRENT RATING
SEC	SECONDS OR SECONDARY
SH	SHIELDED OR SHEET
SHT	SHEET
SN	SOLID NEUTRAL
SPD	SURGE PROTECTIVE DEVICE
SS	STAINLESS STEEL
ST	STARTER
SV	SOLENOID VALVE
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
TC	TERMINATION CABINET
TEL	TELEPHONE
TO	TIME DELAY ON OPENING
TS	TEMPERATURE SWITCH
TVSS	TRANSIENT VOLT. SURGE SUPP.
TSW	TWISTED SHIELDED WIRE
TYP	TYPICAL
UG	UNDERGROUND
	VOLTS
VFD	VARIABLE FREQUENCY DRIVE
VO	VALVE OPERATOR
W	WIRE
WP	WEATHERPROOF
XP	EXPLOSION PROOF
XFMR	TRANSFORMER

LEGEND:

MC#–8: MCC–# / BREAKER #

PLD–101: PROGRAMMABLE LOGIC CONTROLLER – D / CONDUIT #

GENERAL NOTE

THIS IS A STANDARD LEGEND. SOME SYMBOLS MAY NOT APPEAR ON THE DRAWINGS.

NO.	DATE	COMMENT

REVISIONS

THIS DOCUMENT IS RELEASED FOR THE PURPOSE OF INTERIM REVIEW UNDER THE AUTHORITY OF PUNEET GUPTA, P.E. NO 115692 ON JANUARY 2020. IT IS NOT TO BE USED FOR CONSTRUCTION

CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO LEGACY)

ELECTRICAL LEGENDS AND SYMBOLS

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DESIGN BY: MA	DRAWN BY: MAC
DATE: JANUARY 2020	JOB NUMBER: 1614–005–01

SHEET EG1

Dwg Info: Z:\669_Frisco Town and Country Boulevard\5 Drawings\Electrical\Working\669_EG-1.dwg - Plotted: 1/24/2020

GENERAL NOTES FOR ALL ELECTRICAL WORK

1. The location of all conduits, junction boxes, ground boxes, and electrical services is diagrammatic and may be shifted to accommodate field conditions.

2. Provide new and unused materials. Ensure that all materials and installations comply with the applicable articles of the National Electrical Code (NEC), TxDOT standards and specifications, National Electrical Manufacturers Association (NEMA), and are listed by Underwriters Laboratories (UL) or a Nationally Recognized Testing Lab (NRTL). NRTLs such as Canadian Standard Association (CSA), Intertek Testing Services NA Inc., or FM Approvals LLC can be considered equivalent to UL. Where reference is made to NEMA listed devices, International Electrotechnical Commission (IEC) listed devices will not be considered an acceptable equal to a NEMA listed device. Acceptable devices may have both a NEMA and IEC listing. Faulty fabrication or poor workmanship in any material, equipment, or installation is justification for rejection. Replace or reinstall rejected material or equipment at no additional cost to the Department.

3. Miscellaneous nuts, bolts and hardware, except for high strength bolts, may be stainless steel when plans specify galvanized, provided the bolt size is ½ in. or less in diameter.

4. Provide the following test equipment as required by the Engineer to confirm compliance with the contract and the NEC: voltmeter, ammeter, megohm meter (1000 volt DC), ground resistance tester, torque wrenches, and torque screwdrivers. Ensure all equipment has been properly calibrated within the last year. Provide calibration certification to the Engineer upon request. Operate test equipment during inspection as requested by the Engineer.

5. Install grounding as shown on the plans and in accordance with the NEC. Ensure all metallic conduits; metal poles; luminaires; and metal enclosures are bonded to the equipment grounding conductor. Provide stranded bare copper or green insulated grounding conductors. Ground rods, connectors, and bonding jumpers are subsidiary to the various bid items.

6. When required by the Engineer, notify the Department in writing of materials from the Material Producers List (MPL) intended for use on each project. Prequalified materials are listed on the MPL on TxDOT's website under "Roadway Illumination and Electrical Supplies." No substitutions will be allowed for materials on this list.

CONDUIT

A. MATERIALS

1. Provide conduit, junction boxes, fittings, and hardware as per TxDOT Departmental Material Specification (DMS) 11030 "Conduit" and Item 618 "Conduit" of TxDOT's "Standard Specifications For Construction And Maintenance Of Highways, Streets, And Bridges," latest edition. Provide conduits listed under Item 618 on the MPL under "Roadway Illumination and Electrical Supplies." Provide conduit types according to the descriptive code or as shown on the plans. Do not substitute other types of conduits for those shown. Provide liquidtight flexible metal conduit (LFMC) when flexible conduit is called for on galvanized steel rigid metallic conduit (RMC) systems. Provide liquidtight flexible nonmetallic conduit (LFNC) when flexible conduit is called for on polyvinyl chloride (PVC) systems.

2. Provide galvanized steel RMC for all exposed conduits, unless otherwise shown on the plans. Properly bond all metal conduits.

3. Unless otherwise shown on the plans, provide junction boxes with a minimum size as shown in the following table, which applies to the greatest number of conductors entering the box through one conduit with no more than four conduits per box. When a mixture of conductor sizes is present, count the conductors as if all are of the larger size. For situations not applicable to the table, size junction boxes in accordance with NEC.

AWG	3 CONDUCTORS	5 CONDUCTORS	7 CONDUCTORS
#1	10" x 10" x 4"	12" x 12" x 4"	16" x 16" x 4"
#2	8" x 8" x 4"	10" x 10" x 4"	12" x 12" x 4"
#4	8" x 8" x 4"	10" x 10" x 4"	10" x 10" x 4"
#6	8" x 8" x 4"	8" x 8" x 4"	10" x 10" x 4"
#8	8" x 8" x 4"	8" x 8" x 4"	8" x 8" x 4"

4. Junction boxes with an internal volume of less than 100 cu. in. and supported by entering raceways must have threaded entries or hubs identified for the intended purpose and supported by connection of two or more rigid metal conduits. Secure conduit within 3 ft. of the enclosure or within 18 in. of the enclosure if all conduit entries are on the same side. Mechanically secure all junction boxes with an internal volume greater than 100 cu. inches.

5. Provide hot dipped galvanized cast iron or sand cast aluminum outlet boxes for junction boxes containing only 10 AWG or 12 AWG conductors. Do not use die cast aluminum boxes. Size outlet boxes according to the NEC.

6. Do not use intermediate metal conduit (IMC) or electrical metallic tubing (EMT) unless specifically required by the plan sheets. When EMT is called for, provide junction boxes made from galvanized steel sheeting, listed and approved for outdoor use, unless otherwise noted on the plans. Size all galvanized steel junction boxes in accordance with the NEC. Provide junction boxes for IMC conduit systems that meet the same requirements for junction boxes used with RMC systems.

7. Provide PVC junction boxes intended for outdoor use on PVC conduit systems, unless otherwise noted on the plans.

8. Provide PVC elbows in PVC conduit systems, unless otherwise shown on the plans. Use only a flat, high tensile strength polyester fiber pull tape for pulling conductors through the PVC conduit system. When galvanized steel RMC elbows are specifically called for in the plans and any portion of the RMC elbow is buried less than 18 in., ground the RMC elbow by means of a grounding bushing on a rigid metal extension. Grounding of the rigid metal elbow is not required if the entire RMC elbow is encased in a minimum of 2 in. of concrete. PVC extensions are allowed on these concrete encased rigid metal elbows. RMC or PVC elbows are subsidiary to various bid items.

9. When required, provide High-Density Polyethylene (HDPE) conduit with factory installed internal conductors according to Item 622 "Duct Cable." At the Contractor's request and with approval by the Engineer, substitute HDPE conduit with no conductors for bored schedule 40 or schedule 80 PVC conduit bid under Item 618. Ensure bored HDPE substituted for PVC is schedule 40 and of the same size PVC called for in the plans. Ensure the substituted HDPE meets the requirements of Item 622, except that the conduit is supplied without factory-installed conductors. Make the transition of the HDPE conduit to PVC (or RMC elbow when required) at the bore pit. Provide conduit of the size and schedule as shown on the plans. Do not extend substituted conduit into ground boxes or foundations. Provide PVC or galvanized steel RMC elbows as called for at all ground boxes and foundations.

10. Use two-hole straps when supporting 2 in. and larger conduits. On electrical service poles, properly sized stainless steel or hot dipped galvanized one-hole standoff straps are allowed on the service riser conduit.

B. CONSTRUCTION METHODS

1. Provide and install expansion joint conduit fittings on all structure-mounted conduits at the structure's expansion joints to allow for movement of the conduit. In addition, provide and install expansion joint fittings on all continuous runs of galvanized steel RMC conduit externally exposed on structures such as bridges at maximum intervals of 150 ft. When requested by the project Engineer, supply manufacturer's specification sheet for expansion joint conduit fittings. Repair or replace expansion joint fittings that do not allow for movement at no additional cost to the Department. Provide the method of determining the amount of expansion to the Engineer upon request. Do not use LFMC or LFNC as a substitute for the required expansion conduit fittings.

2. Space all conduit supports at maximum intervals of 5 ft. Install conduit spacers when attaching metal conduit to surface of concrete structures. See "Conduit Mounting Options" on ED(2). Install conduit support within 3 ft. of all enclosures and conduit terminations.

3. Do not attach conduit supports directly to pre-stressed concrete beams except as shown specifically in the plans or as approved by the Engineer.

4. Unless otherwise shown on the plans, jack or bore conduit placed beneath existing roadways, driveways, sidewalks, or after the base or surfacing operation has begun. Backfill and compact the bore pits below the conduit per Item 476 "Jacking, Boring, or Tunneling Pipe or Box" prior to installing conduit or duct cable to prevent bending of the connections.

5. When placing conduit in the sub-grade of new roadways, backfill all trenches with excavated material unless otherwise noted on the plans. When placing conduit in the sub-base of new roadways, backfill all trenches with cement-stabilized base as per requirements of Items 110 "Excavation", 400 "Excavation and Backfill for Structures", 401 "Flowable Backfill", 402 "Trench Excavation Protection", and 403 "Temporary Special Shoring."

6. Provide and place warning tape approximately 10 in. above all trenched conduit as per Item 618.

7. During construction, temporarily cap or plug open ends of all conduit and raceways immediately after installation to prevent entry of dirt, debris and animals. Temporary caps constructed of durable duct tape are allowed. Tightly fix the tape to the conduit opening. Clean out the conduit and prove it clear in accordance with Item 618 prior to installing any conductors.

8. Ensure conduit entry into the top of any enclosure is waterproof by installing conduit sealing hubs or using boxes with threaded bosses. This includes surface mounted safety switches, meter cans, service enclosures, auxiliary enclosures and junction boxes. Grounding bushings on water tight sealing hubs are not required.

9. Fit the ends of all PVC conduit terminations with bushings or bell end fittings. Provide and install a grounding type bushing on all metal conduit terminations.

10. Install a bonding jumper from each grounding bushing to the nearest ground rod, grounding lug, or equipment grounding conductor. Ensure all bonding jumpers are the same size as the equipment grounding conductor. Bonding of conduit used as a casing under roadways for duct cable is not required, if the duct extends the full length through the casing.

11. At all electrical services, install a 6 AWG solid copper grounding electrode conductor.

12. Place conduits entering ground boxes so that the conduit openings are between 3 in. and 6 in. from the bottom of the box. See the ground box detail on sheet ED(4).

13. Seal ends of all conduits with duct seal, expandable foam, or by other methods approved by the Engineer. Seal conduit immediately after completion of conductor installation and pull tests. Do not use duct tape as a permanent conduit sealant. Do not use silicone caulk as a conduit sealant.

14. File smooth the cut ends of all mounting strut and conduit. Before installing, paint the field cut ends of all mounting strut and RMC (threaded or non-threaded) with zinc rich paint (94% or more zinc content) to alleviate overspray. Use zinc rich paint to touch up galvanized material as allowed under Item 445 "Galvanizing." Do not paint non-galvanized material with a zinc rich paint as an alternative for materials required to be galvanized.

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DATE: $DATE$ $TIME$
FILE: $DOCUMENT NAME

Dwg Info: Z:\669_Frisco Town and Country Boulevard\5 Drawings\Electrical\!Working\669_EG-2.dwg - Plotted: 1/24/2020

Texas Department of Transportation | Traffic Operations Division Standard

ELECTRICAL DETAILS
CONDUITS & NOTES

ED(1)-14

FILE: ed1-14.dgn	DN:	CK:	DW:	CK:
©TxDOT October 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	C	S	J	HWY
	DIST	COUNTY		SHEET NO.
	DST	CTY		AA

71A

NO.	DATE	COMMENT

REVISIONS

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO LEGACY)

ELECTRICAL
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DESIGN BY: MA	DRAWN BY: MAC
DATE: JANUARY 2020	JOB NUMBER: 1614-005-01

SHEET
EG2

ELECTRICAL CONDUCTORS

A. MATERIAL INFORMATION

1. Provide Type XHHW insulated conductors in accordance with Departmental Material Specification (DMS)11040 "Conductors" and Item 620 "Electrical Conductors." Provide conductors as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies" Item 620. Color code insulated conductors in conformance with the NEC. Identify grounded (neutral) conductors with white insulation. Identify grounding conductors (ground wires) with green insulation or bare conductors. Identify ungrounded (hot) conductors with any color insulation except green, white, or gray. Keep color scheme consistent throughout the wiring system. Identify conductors 6 American Wire Gauge (AWG) and smaller by continuous color jacket. Identify electrical conductors 4 AWG and larger by continuous color jacket or by colored tape. When identifying conductors with colored tape, mark at least 6 in. of the conductor's insulation with half laps of tape.

2. Provide a solid copper 6 AWG grounding electrode conductor to bond the electrical service equipment to the concrete encased grounding electrode or the ground rod at the service location. Connect the grounding electrode conductor to the ground rod with a UL listed connector in accordance with DMS 11040. Connect the grounding electrode conductor to the concrete encased grounding electrode as shown in the plans.

3. Where two or more circuits are present in one conduit or enclosure, permanently identify the conductors of each branch circuit by attaching a non−metallic tag around both circuit conductors at each accessible location. Provide tags with two straps, large enough to indicate circuit number, letter, or other identification as shown in the plans. Print circuit identification on the tag with a permanent marker.

4. Use listed compression or screw type pressure connectors, terminal blocks, or split bolt connectors for splicing as specified in DMS 11040. Use hot melt adhesive tape to fill the gap and seal the ends of heat shrink tubing. Provide UL listed gel−filled insulating splice covers. Splicing materials, insulating materials, breakaway disconnects, splice covers, and fuse holders are subsidiary to various bid items.

B. CONSTRUCTION METHODS

1. Use only a flat, high tensile strength polyester fiber pull tape for pulling conductors through the conduit system. After installing conductors in conduit, perform conductor pull test. If a conductor cannot be freely pulled, make any needed alterations or repairs at no additional cost to the department. Perform insulation resistance tests in accordance with Item 620. Coordinate with the Engineer to witness the tests.

2. Leave 2 ft. minimum, 3 ft. maximum length for each conductor up to the splice in ground boxes. Leave 3 ft. minimum, 4 ft. maximum length of conductor in ground boxes when pulled through with no splice. Leave 1 ft. minimum, 1.5 ft. maximum length of conductor at enclosures, weatherheads and pole bases.

3. Make splices only in junction boxes, ground boxes, pole bases, or electrical enclosures and use only listed compression or screw type pressure connectors, terminal blocks, or split bolt connectors. Insulate splices with heavy wall heat shrink tubing or gel−filled insulating splice covers to provide a watertight splice. Overlap conductor insulation with heat shrink tubing a minimum of 2 in. past both sides of the splice. Where heat shrink tubing may not shrink sufficiently to provide a watertight seal around the individual conductors, prior to heating the tubing, increase the diameter of the conductor insulation using hot melt adhesive tape to provide a watertight seal between the individual conductors and the heat shrink tubing. Ensure the tape extends past the heat shrink tubing. Use hot melt adhesive tape to fill the gap and seal the ends of heat shrink tubing. Heat shrink tubing that appears to have been burned, or overheated, is considered defective and must be replaced.

4. Size and install gel−filled insulating splice covers according to manufacturer's specifications when used in place of heat shrink tubing.

5. Wire nuts with factory applied waterproof sealant may be used for 8 AWG or smaller conductors in above ground junction boxes, but not in pole bases or ground boxes. Install wire nuts in an upright position to prevent the accumulation of water.

6. Support conductors in illumination poles with a J−hook at the top of the pole.

7. When terminating conductors, remove the insulation and jacketing material without nicking the individual strands of the conductor. Conductors with nicked individual conductor strands or removed strands will be considered damaged.

8. Replace conductors and cables that are damaged beyond repair or that fail an insulation resistance test at no additional cost to the department.

9. Do not repair damaged conductors with duct tape, electrical tape, or wire nuts. Use only approved splicing methods.

10. Do not terminate more than one conductor under a single connector, unless the connector is rated for multiple conductors. Do not exceed the pressure connector's listing for maximum number and size of conductors allowed.

11. Install breakaway connectors on conductors bid under Item 620 whenever those conductors pass through a breakaway support device. Follow manufacturer's instructions when terminating conductors to breakaway connectors. Properly torque threaded connections. Proper terminations are critical to the safe operation of breakaway devices. Trim waterproofing boots on breakaway connectors to fit snugly around the conductor to ensure waterproof connection. Only one conductor may enter a single opening in a boot. Provide waterproof boots with the correct number of openings. Leave unused openings factory sealed. Use prequalified breakaway connectors as shown on the MPL.

12. Provide and install a separate stranded equipment grounding conductor (EGC) in all conduits that contain circuit wiring of 50 volts or more. Unless shown elsewhere, size the EGC to be the same size as the largest current carrying conductor contained in the conduit. Ensure all EGCs are bonded together at every accessible location. For traffic signal installations, provide a minimum size 8 AWG EGC. The EGC is paid for under Item 620.

C. TEMPORARY WIRING

1. Install temporary conductors and electrical equipment in accordance with the NEC article "Temporary Installations" and Department standard sheets.

2. Provide a ground fault circuit interrupter (GFCI) for power outlets for portable electrical equipment, power tools, ice machines, ice storage bins and refrigerators located outdoors at grade. GFCI may be any one of the following: molded cord and plug set, receptacle, or circuit breaker type.

3. Use listed wire nuts with factory applied sealant for temporary wiring where approved.

4. Enclose conductor splices within a listed enclosure or ground box, or ensure the splices are more than 10 ft. above grade vertically and more than 5 ft. horizontally from any metal structure. Where installing temporary conductors in areas subject to vehicle traffic or mobile construction equipment, ensure the vertical clearance to ground is at least 18 ft. when measured at the lowest point. Ground messenger wires that support power conductors in conformance with the NEC.

5. Protect and when necessary repair any existing electrical conduits uncovered during the construction process in a timely manner and in conformance with the NEC.

GROUND RODS & GROUNDING ELECTRODES

A. MATERIAL INFORMATION

1. Provide and install a grounding electrode at electrical services. Provide ground rods according to DMS 11040 and the plans. Larger diameter or longer length rods may be called for in some specific locations, see the individual plans sheets. Concrete encased grounding electrodes may be called for in specific locations including electrical service, see individual plan sheets.

B. CONSTRUCTION METHODS

1. Furnish auxiliary ground rods for lightning protection and install in soil, concrete, or both, as called for in the plans. For ground rods installed in concrete, ensure the connection of the conductor to the ground rod is readily accessible for inspection or repairs. For ground rods installed in soil, ensure that the upper end is between 2 to 4 in. below finished grade.

2. Do not place ground rods in the same drilled hole as a timber pole.

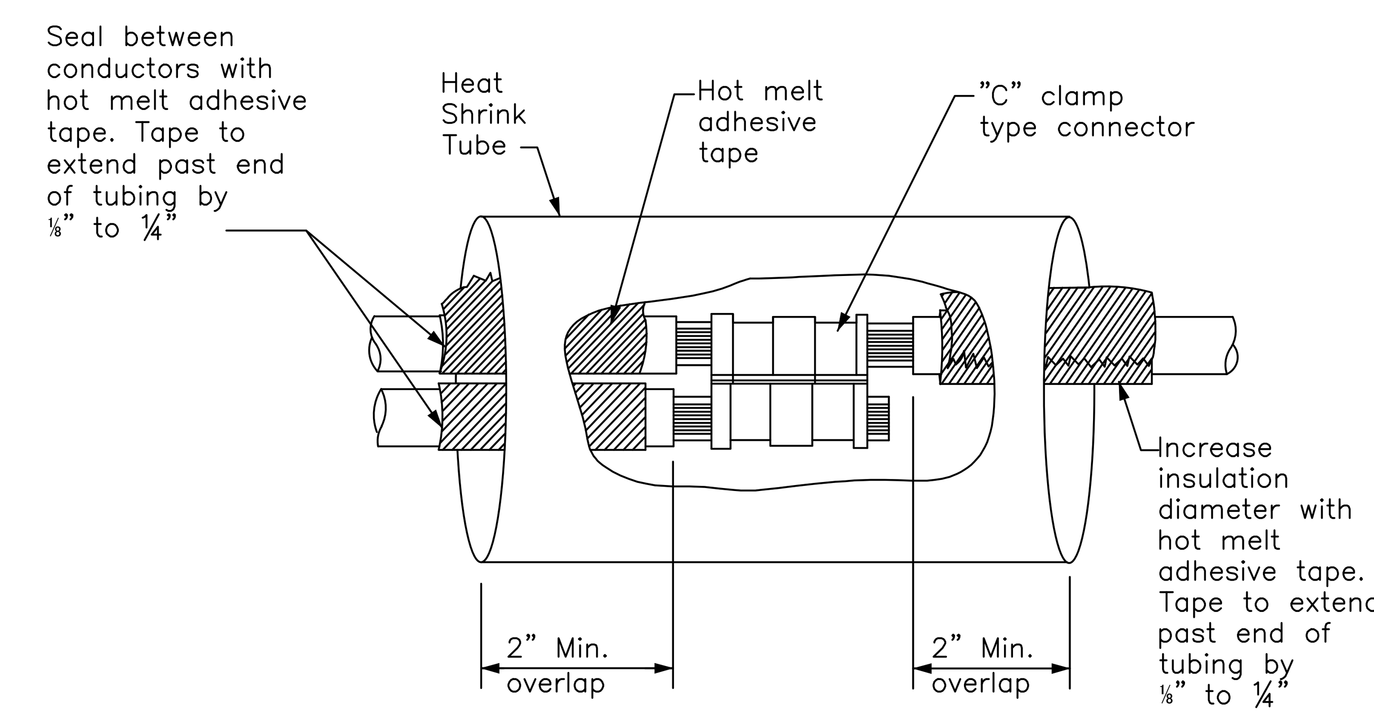
3. Install ground rods so the imprinted part number is at the upper end of the rod.

4. Remove all non−conductive coatings such as concrete splatter from the rod at the clamp location.

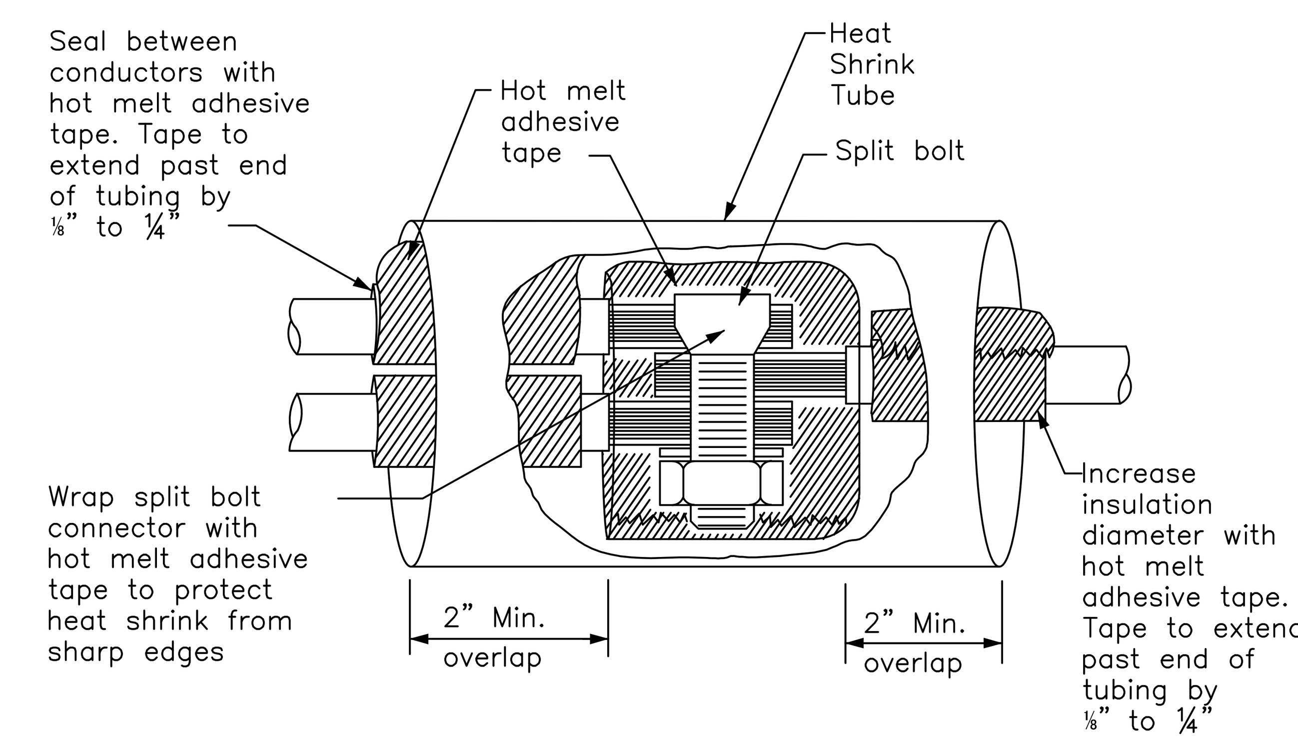
5. Route all conductors as short and straight as possible for connection to lightning protection ground rods. When a bend is required, ensure a minimum radius bend of four inches for these conductors.

6. Unless otherwise called for in the plans, protect grounding electrode conductors with non−metallic conduit. When protecting grounding electrode conductors with metal conduit, provide and install a grounding type bushing and properly sized bonding jumper on each end of the metal conduit.

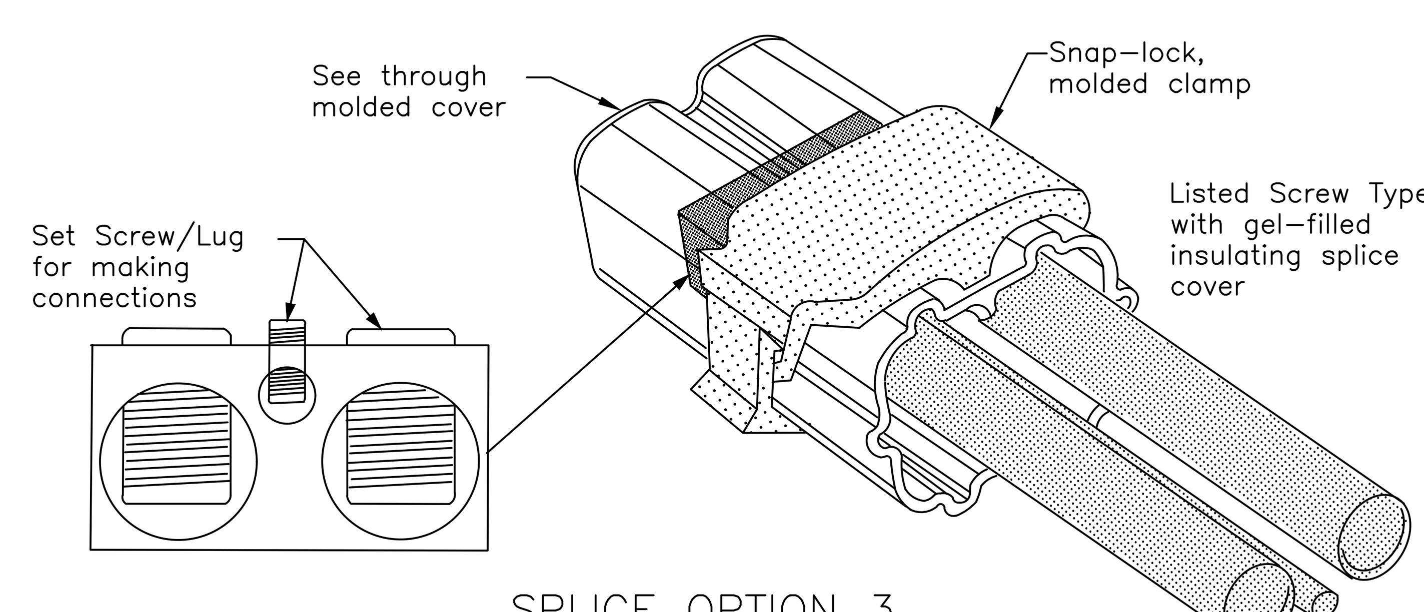
7. Written authorization is required before installing a ground rod in a horizontal trench for rocky soil or a solid rock bottom.



SPLICE OPTION 1
Compression Type



SPLICE OPTION 2
Split Bolt Type



SPLICE OPTION 3
Listed Screw Type

Texas Department of Transportation | Traffic Operations Division Standard

ELECTRICAL DETAILS
CONDUCTORS

ED(3)−14

FILE: ed3−14.dgn	DN: _TxDOT_	CK: TxDOT	DW: _TxDOT_	CK: TxDOT
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REVISIONS	DIST	COUNTY	SHEET NO.	

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO LEGACY)
ELECTRICAL
STANDARD DETAILS − I

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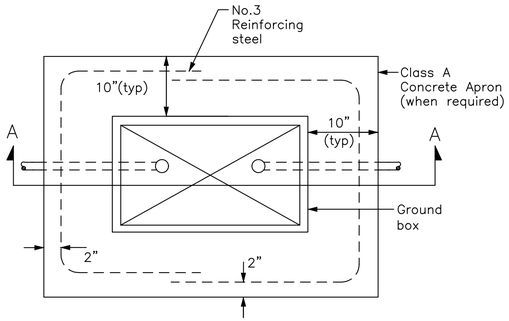
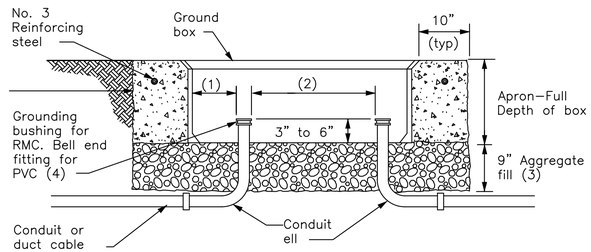
DESIGN BY: MA	DRAWN BY: MAC
DATE: JANUARY 2020	JOB NUMBER: 1614−005−01
SHEET EG3	



PLAN VIEW



SECTION A – A

APRON FOR GROUND BOX

(1) Uniformly space ends of conduits within the ground box. Position ends of conduits so that ground box walls do not interfere with the installation of grounding bushings or bell end fittings.

(2) Maintain sufficient space between conduits to allow for proper installation of bushing.

(3) Place aggregate under the box, not in the box. Aggregate should not encroach on the interior volume of the box.

(4) Install a grounding bushing on the upper end of all RMC terminating in a ground box. Ground RMC elbows when any part of the elbow is less than 18 in. below the bottom of the ground box. Install a PVC bushing or bell end fitting on the upper end of all PVC conduits terminating in a ground box.

GROUND BOXES

A. MATERIALS

1. Provide polymer concrete ground boxes measuring 16x30x24 in. (WxLxD) or smaller in accordance with Departmental Material Specification (DMS) 11070 "Ground Boxes" and Item 624 "Ground Boxes."

2. Provide Type A, B, C, D, and E ground boxes as shown in the plans, and as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies," Item 624.

3. Ensure ground box cover is correctly labeled in accordance with DMS 11070.

4. Provide larger ground boxes in accordance with Item 624 and as shown in the plans.

B. CONSTRUCTION METHODS

1. Remove all gravel and dirt from conduit. Cap all conduits prior to placing aggregate and setting ground box. Provide Grade 3 or 4 coarse aggregate as shown on Table 2 of Item 302 "Aggregates for Surface Treatments." Ensure aggregate bed is in place and at least 9 inches deep, prior to setting the ground box. Install ground box on top of aggregate.

2. Cast ground box aprons in place. Reinforcing steel may be field bent. Ensure the depth of concrete for the apron extends from finished grade to the top of the aggregate bed under the box. Ground box aprons, including concrete and reinforcing steel, are subsidiary to ground boxes when called for by descriptive code.

3. Keep bolt holes in the box clear of dirt. Bolt covers down when not working in ground boxes.

4. Install all conduits and ells in a neat and workmanlike manner. Uniformly space conduits so grounding bushings and bell end fittings can easily be installed.

5. Temporarily seal all conduits in the ground box until conductors are installed.

6. Permanently seal conduits immediately after the completion of conductor installation and pull tests. Permanently seal the ends of all conduits with duct seal, expandable foam, or other method as approved. Do not use duct tape as a permanent conduit sealant. Do not use silicone caulk as a sealant.

7. When a ground rod is present in a ground box, bond all equipment grounding conductors together and to the ground rod with listed connectors.

8. When a type B or D ground box is stacked to meet volume requirements, it is allowable to cut an appropriately sized hole for conduit entry in the side wall at least 18 inches below grade.

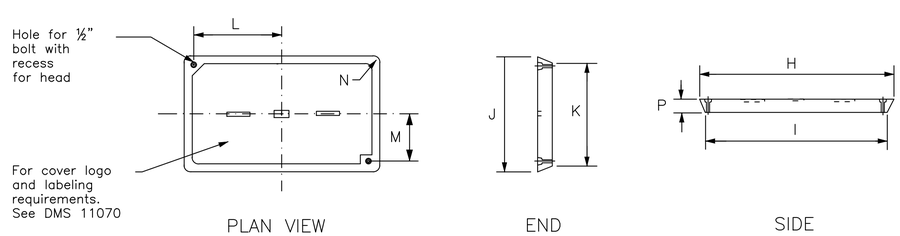
9. If an existing ground box in the contract has a metal cover, bond the cover to the equipment grounding conductor with a 3 ft. long stranded bonding jumper the same size as the grounding conductor. The bonding jumper is subsidiary to various bid items. Verify existing ground boxes with metal covers are shown on the plans, with notes fully describing the work required.

10. If other ground boxes with metal covers are within the project limits but are not part of the contract, the Engineer may direct the Contractor to bond the metal covers, identifying the specific boxes in writing. This work will be paid for separately.

11. Bond metal ground box covers to the grounding conductor with a tank ground type lug.

GROUND BOX DIMENSIONS	
TYPE	OUTSIDE DIMENSIONS (INCHES) (Width x Length X Depth)
A	12 X 23 X 11
B	12 X 23 X 22
C	16 X 29 X 11
D	16 X 29 X 22
E	12 X 23 X 17

GROUND BOX COVER DIMENSIONS								
TYPE	DIMENSIONS (INCHES)							
	H	I	J	K	L	M	N	P
A, B & E	23 ¼	23	13 ?	13 ½	9 ?	5 ?	1 ?	2
C & D	30 ½	30 ¼	17 ½	17 ¼	13 ¼	6 ?	1 ?	2



PLAN VIEW END SIDE

GROUND BOX COVER

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS
GROUND BOXES

ED(4)–14

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	DIST	COUNTY		SHEET NO.
	DST	CTY		AA

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO LEGACY)

ELECTRICAL
STANDARD DETAILS – II

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DRAWN BY: MAC
DATE: JANUARY 2020
JOB NUMBER: 1614–005–01
SHEET EG4

ELECTRICAL SERVICES NOTES

1.Provide new materials. Ensure installation and materials comply with the applicable provisions of the National Electrical Code (NEC) and National Electrical Manufacturers Association (NEMA) standards. Ensure material is Underwriters Laboratories (UL) listed. Provide and install electrical service conduits, conductors, disconnects, contactors, circuit breaker panels, and branch circuit breakers as shown on the Electrical Service Data chart in the plans. Faulty fabrication or poor workmanship in material, equipment, or installation is justification for rejection. Where manufacturers provide warranties and guarantees as a customary trade practice, furnish these to the State.

2.Provide electrical services in accordance with Electrical Details standard sheets, Departmental Material Specification (DMS) 11080 "Electrical Services,"DMS 11081 "Electrical Services—Type A," DMS 11082 "Electrical Services—Type C," DMS 11083 "Electrical Services—Type D," DMS 11084 "Electrical Services—Type T," DMS 11085 "Electrical Services—Pedestal (PS)", and Item 628 "Electrical Services" of the Standard Specifications. Provide electrical service types A, C, and D, as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies," Item 628. Provide other service types as detailed on the plans.

3.Provide all work, materials, services, and any incidentals needed to install a complete electrical service as specified in the plans.

4.Coordinate with the Engineer and the utility provider for metering and compliance with utility requirements. Primary line extensions, connection charges, meter charges, and other charges by the utility company to provide power to the location are paid for in accordance with Item 628. Get approval for the costs associated with these charges prior to engaging the utility company to do the work. Consult with the utility provider to determine costs and requirements, and coordinate the work as approved.

5.The enclosure manufacturer will provide Master Lock Type 2 with brass tumblers keyed #2195 for all custom electrical enclosures. Installing Contractor is to provide Master Lock #2195 Type 2 with brass tumblers for "off the shelf" enclosures. Master Lock #2195 keys and locks become property of the State. Unless otherwise approved, do not energize electrical service equipment until locks are installed.

6.Enclosures with external disconnects that de—energize all equipment inside the enclosure do not need a dead front trim. Protect incoming line terminations from incidental contact as required by the NEC.

7.When galvanized is specified for nuts, screws, bolts or miscellaneous hardware, stainless steel may be used.

8.Provide wiring and electrical components rated for 75°C. Provide red, black, and white colored XHHW service entrance conductors of minimum size 6 American Wire Gauge (AWG). Identify size 6 AWG conductors by continuous color jacket. Identify electrical conductors sized 4 AWG and larger by continuous color jacket or by colored tape. Mark at least 6 inches of the conductor's insulation with half laps of colored tape, when identifying conductors. Ensure each service entrance conductor exits through a separately bushed non—metallic opening in the weatherhead. The lengths of the conductors outside the weatherhead are to be 12 inches minimum, 18 inches maximum, or as required by utility.

9.All electrical service conduit and conductors attached to the electrical service including the riser or the elbow below ground are subsidiary to the electrical service. For an underground utility feed, all service conduit and conductors after the elbow, including service conduit and conductors for the utility pole riser when furnished by the Contractor, will be paid for separately.

10.Provide rigid metal conduit (RMC) for all conduits on service, except for the ½ in. PVC conduit containing the electrical service grounding electrode conductor. Size the service entrance conduit as shown in the plans. Ensure conduit for branch circuit entry to enclosure is the same size as that shown on the layout sheets for branch circuit conduit. Extend all rigid metal conduits a minimum of 6 inches underground and then couple to the type and schedule of the conduit shown on the layout for that particular branch circuit. Install a grounding bushing on the RMC where it terminates in the service enclosure.

11.Use of liquidtight flexible metal conduit (LFMC) is allowed between the meter and service enclosure when they are mounted 90 to 180 degrees to each other. Size the LFMC the same size as service entrance conduit. LFMC must not exceed 3 feet in length. Strap LFMC within 1 foot of each end. LFMC less than 12 inches in length need not be strapped. Each end of LFMC must have a grounding bushing or be terminated with a grounding fitting. The LFMC must contain a grounded (neutral) conductor. Ensure any bend in LFMC never exceeds 180 degrees. A pull test is required on all installed conductors, with at least six inches of free conductor movement demonstrated to the satisfaction of the Engineer.

12.Ensure all mounting hardware and installation details of services conform to utility company specifications.

13.For all electrical service enclosures listed under Item 628 on the MPL, the UL 508 enclosure manufacturers will prepare and submit a schematic drawing unique to each service. Before shipment to the job site, place the applicable laminated schematic drawings and the laminated plan sheet showing the electrical service data chart used to build the enclosure in the enclosure's data pocket. The installing contractor will copy and laminate the actual project plan sheets detailing all equipment and branch circuits supplied by that service. The laminated plan sheets are to be placed in the service enclosure's document pocket. Reduce 11 in. x 17 in. plan sheets to 8 ½ in. x 11 in. before laminating. If the installation differs from the plan sheets, the installing contractor is to redline plan sheets before laminating.

14.When providing an "Off The Shelf" Type D or Type T service, provide laminated plan sheets detailing equipment and branch circuits supplied by that service. Reduce 11 in. x 17 in. plan sheets to 8 ½ in. x 11 in before laminating. Deliver these drawings before completion of the work to the Engineer, instead of placing in enclosure that has no door pocket.

15.Do not install conduit in the back wall of a service enclosure where it would penetrate the equipment mounting panel inside the enclosure. Provide grounding bushings on all metal conduits, and terminate bonding jumpers to grounding bus. Grounding bushings are not required when the end of the metal conduit is fitted with a conduit sealing hub or threaded boss, such as a meter base hub.

SERVICE ASSEMBLY ENCLOSURE

1.Provide threaded hub for all conduit entries into the top of enclosure.

2.Type galvanized steel (GS) enclosures may be used for Type C panelboards and for Type D and T services that do not use an enclosure mounted photocell or lighting contactor. Provide GS enclosures in accordance with DMS 11080, 11082, 11083, and 11084.

3.Provide aluminum (AL) and stainless steel (SS) enclosures for Types A, C, and D in accordance with DMS 11080, 11081, 11082, 11083, and 11084. Do not paint stainless steel.

4.Provide pedestal service (PS) enclosures in accordance with ED(9) and DMS 11080 and 11085. Do not provide GS pedestal services. If GS is shown in the PS descriptive code, provide an AL enclosure.

MAIN DISCONNECT & BRANCH CIRCUIT BREAKERS

1.Field drill flange—mounted remote operator handle if needed, to ensure handle is lockable in both the "On" and "Off" positions.

2.When the utility company provides a transformer larger than 50 KVA, verify that the available fault current is less than the circuit breaker's ampere interrupting capacity (AIC) rating and provide documentation from the electric utility provider to the Engineer.

PHOTOELECTRIC CONTROL

1.Provide photocell as listed on the MPL. Move, adjust, or shield the photocell from stray or ambient night time light to ensure proper operation. Mount photocell facing north when practical. Mount top of pole photocells as shown on Top Mounted Photocell Detail.

* ELECTRICAL SERVICE DATA

Elec. Service ID	Plan Sheet Number	Electrical Service Description	Service Conduit ** Size	Service Conductors No./Size	Safety Switch Amps	Main Ckt. Bkr. Pole/Amps	Two—Pole Contractor Amps	Panelbd/ Loadcenter Amp Rating	Branch Circuit ID	Branch Ckt. Bkr. Pole/Amps	Branch Circuit Amps	KVA Load
SB 183	289	ELC SRV TY A 240/480 100(SS)AL(E)SF(U)	2"	3/#2	100	2P/100	100	N/A	Lighting NB	2P/40	26	28.1
									Lighting SB	2P/40	25	
									Underpass	1P/20	15	
NB Access	30	ELC SRV TY D 120/240 060(NS)SS(E)TS(O)	1 ¼"	3/#6	N/A	2P/60		100	Sig. Controller	1P/30	23	5.3
							30		Luminaires	2P/20	9	
									CCTV	1P/20	3	
2nd & Main	58	ELC SRV TY T 120/240 000(NS)GS(N)SP(O)	1 ¼"	3/#6	N/A	N/A	N/A	70	Flashing Beacon 1	1P/20	4	1.0
									Flashing Beacon 2	1P/20	4	

* Example only, not for construction. All new electrical services must have electrical service data chart specific to that service as shown in the plans.

** Verify service conduit size with utility. Size may change due to utility meter requirements. Ensure conduit size meets the National ELectrical Code.

EXPLANATION OF ELECTRICAL SERVICE DESCRIPTIVE CODE

ELEC SERV TY X XXX/XXX XXX (XX) XX (X) XX (X) __

Schematic Type

Service Voltage V / V

Disconnect Amp Rating
000 indicates main lug only/
Typically Type T

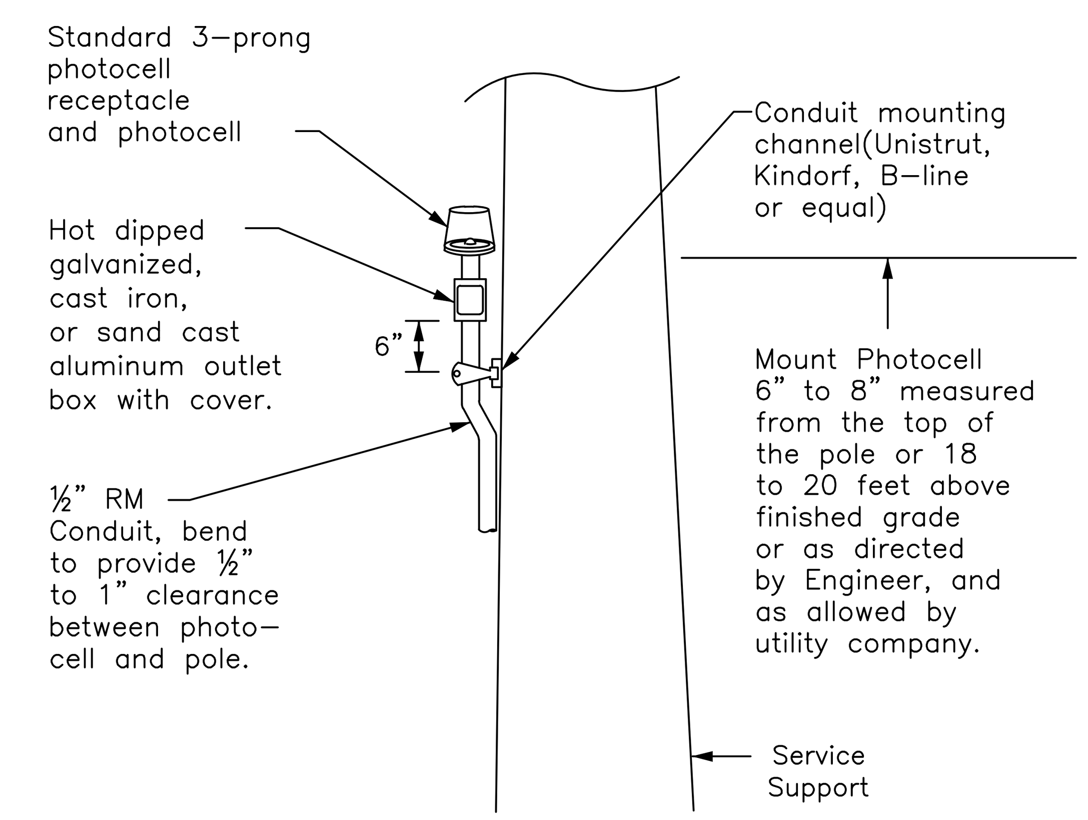
(SS)= Safety Switch Ahead of Meter—Check with Utility
(NS)= No safety Switch Ahead of Meter—Check with Utility

Enclosure Type
GS= Galvanized steel("off the shelf")
SS= Stainless steel(Custom Enclosure)See MPL
AL= Aluminum (Custom Enclosure)See MPL

Photocell Mounting Location
(E)= Inside Service/Enclosure Mounted
(T)= Top of pole
(L)= Luminaire mounted
(N)= None/No Photocell or Lighting Contactor Required

Service Support Type
GC= Granite concrete
OC= Other concrete
TP= Timber pole
SP= Steel pole
SF= Steel frame
OT= Pole by others or paid for separately
EX= Existing pole
TS= Service on traffic signal pole
PS= Pedestal Service

O= Overhead Service Feed from Utility
U= Underground Service Feed from Utility



TOP MOUNTED PHOTOCELL

Install conduit strap maximum 3 feet from box. 5 foot maximum spacing between straps supporting conduit.

Texas Department of Transportation — Traffic Operations Division Standard

ELECTRICAL DETAILS SERVICE NOTES & DATA

ED(5)—14

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO LEGACY)

ELECTRICAL
STANDARD DETAILS — III

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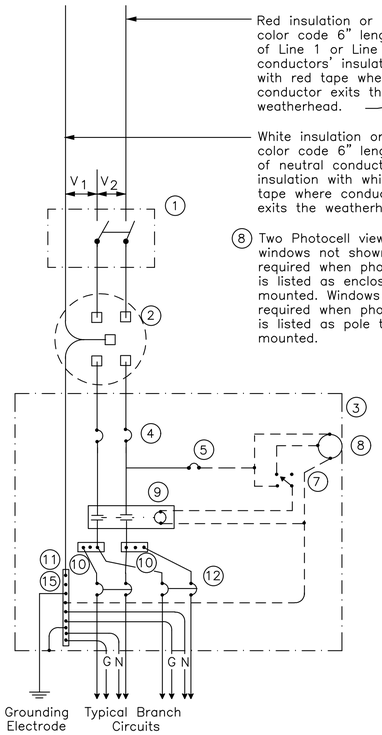
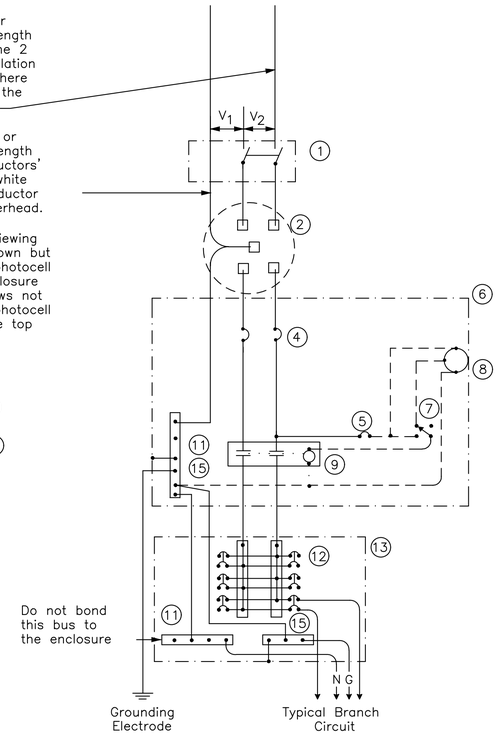
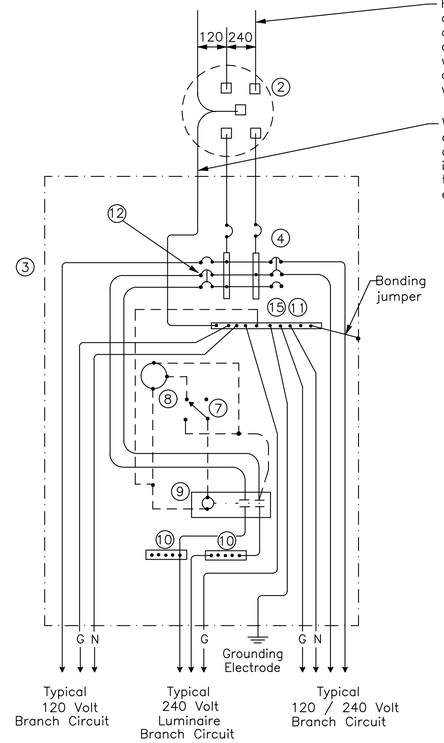
JOB NUMBER: 1614—005—01
SHEET EG5



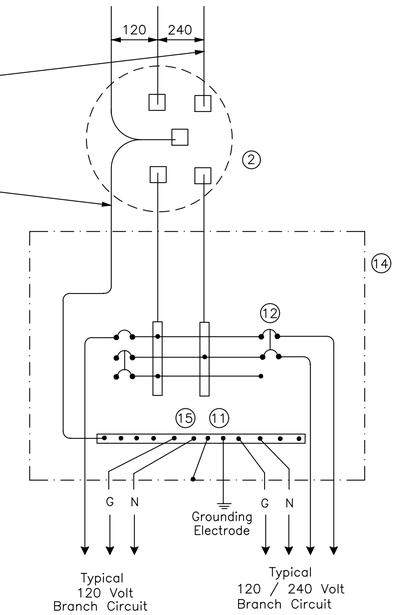
SCHEMATIC TYPE A
THREE WIRE



SCHEMATIC TYPE C
THREE WIRE



SCHEMATIC TYPE D – CUSTOM
120/240 VOLTS – THREE WIRE



SCHEMATIC TYPE T

120/240 VOLTS – THREE WIRE

Galvanized steel–"Buy Off The Shelf" only. When required install photocell top of the pole or on luminaire only, no lighting contractor will be installed.

WIRING LEGEND	
————	Power Wiring
– – – –	Control Wiring
—N—	Neutral Conductor
—G—	Equipment grounding conductor–always required

SCHEMATIC LEGEND	
1	Safety Switch (when required)
2	Meter (when required–verify with electric utility provider)
3	Service Assembly Enclosure
4	Main Disconnect Breaker (See Electrical Service Data)
5	Circuit Breaker, 15 Amp (Control Circuit)
6	Auxiliary Enclosure
7	Control Station ("H–O–A" Switch)
8	Photo Electric Control (enclosure–mounted shown)
9	Lighting Contactor
10	Power Distribution Terminal Blocks
11	Neutral Bus
12	Branch Circuit Breaker (See Electrical Service Data)
13	Separate Circuit Breaker Panelboard
14	Load Center
15	Ground Bus

Texas Department of Transportation — Traffic Operations Division Standard

ELECTRICAL DETAILS
SERVICE ENCLOSURE
AND NOTES

ED(6)–14

FILE: ed6–14.dgn	DN: _TxDOT_	CK: TxDOT	DW: _TxDOT_	CK: TxDOT
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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO LEGACY)

ELECTRICAL
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DRAWN BY: MAC
DATE: JANUARY 2020
JOB NUMBER: 1614–005–01
SHEET EG6

PEDESTAL SERVICE NOTES

1. Manufacture pedestal electrical services in accordance with Departmental Material Specifications (DMS)11080 "Electrical Services", 11085 "Electrical Services–Pedestal (PS)" and Item 628 "Electrical Services. "Provide pedestal electrical services as listed on the Material Producers list (MPL) on the Department's web site under "Roadway Illumination and Electrical Supplies," Item 628. Ensure all mounting hardware and installation details of services meet utility company specifications. Contact the local utility company for approval of pedestal details prior to installing the electrical pedestal service. Submit any changes required by the utility company prior to manufacturing the pedestal enclosure.

2. When a meter socket is required, provide a socket with a minimum 100 amp rating that complies with local utility requirements.

3. Provide Class A or C concrete for pedestal service foundations in accordance with Item 420, "Concrete Substructures," except that concrete will not be paid for directly but is considered subsidiary to Item 628.

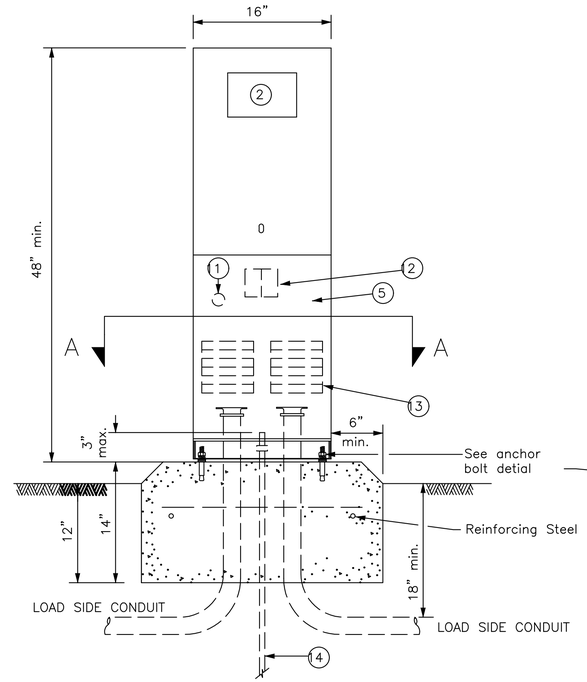
4. Provide #4 reinforcing steel for foundations in accordance with Item 440, "Reinforcement for Concrete."

5. Install ½ in. X 2 □ in. minimum length concrete single expansion type anchors for mounting pedestal enclosure to foundation. Anchor location to match mounting holes in each corner of enclosure. Secure each of the four corners of the pedestal enclosure to the anchors in the foundation with a ½ in. galvanized or stainless steel machine thread bolt, a properly sized locknut and a flat washer.

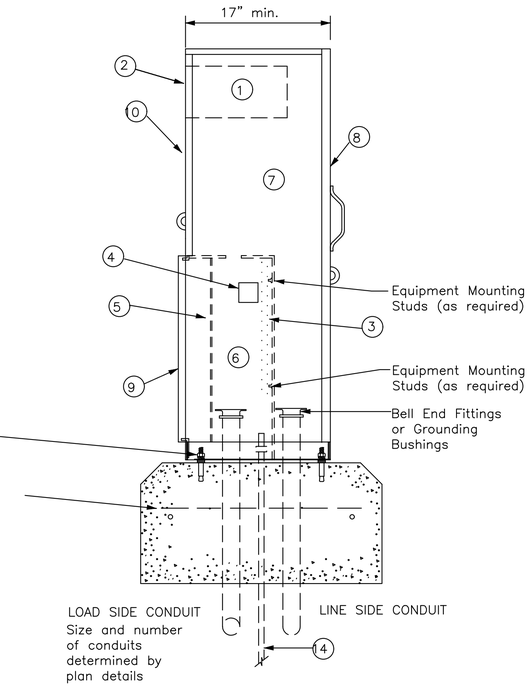
6. Finish top of concrete foundation in a neat and workmanlike manner. If leveling washers are used, ensure no more than ⅛ in. gap at any corner. Do not exceed a maximum dip or rise in the foundation of ⅛ in. per foot. When properly installed, ensure the top of the service enclosure is level front to back and side to side within ¼ in. Repair rocking or movement of the service enclosure at no additional cost to the department.

7. Do not use liquidtight flexible metal conduit (LFMC) on pedestal type services.

8. Ensure all elbows in the foundation are sized as per utility provider's conduit requirements for underground conduit and feeders. PVC extensions may be installed provided the ends of the rigid metal conduits are more than 2 in. below the top of the concrete foundation. Where extension conduits are metal, grounding bushings must be installed with a bonding jumper properly terminated.

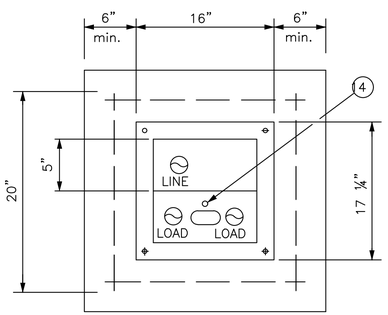


FRONT VIEW

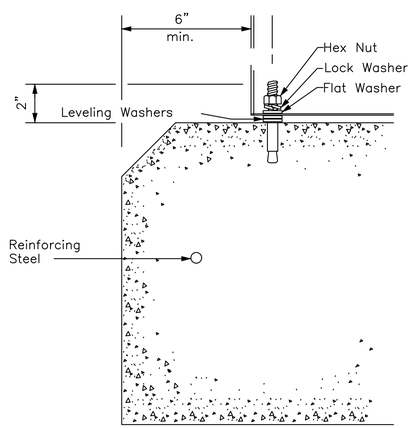


SIDE VIEW

TYPE C shown, TYPE A similar except that TYPE A shall have individual circuit breakers (CB) mounted on an equipment mounting panel. CB Handles shall protrude through hinged deadfront trim.



SECTION A–A



ANCHOR BOLT DETAIL

LEGEND	
1	Meter Socket, (when required)
2	Meter Socket Window, (when required)
3	Equipment Mounting Panel
4	Photo Electric Control Window, (When required)
5	Hinged Deadfront Trim
6	Load Side Conduit Trim
7	Line Side Conduit Area
8	Utility Access Door, with handle
9	Pedestal Door
10	Hinged Meter Access
11	Control Station (H–O–A Switch)
12	Main Disconnect
13	Branch Circuit Breakers
14	Copper Clad Ground Rod – 5/8" X 10'

Texas Department of Transportation — Traffic Operations Division Standard

ELECTRICAL DETAILS
ELECTRICAL SERVICE SUPPORT
PEDESTAL SERVICE TYPE PS

ED(9)–14

FILE: ed9–14.dgn	DN: _TxDOT_	CK: TxDOT	DW: _TxDOT_	CK: TxDOT
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ELECTRICAL STANDARD DETAILS – V

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DRAWN BY: MAC
DATE: JANUARY 2020
JOB NUMBER: 1614–005–01
SHEET: EG7

DUCT CABLE & HDPE CONDUIT NOTES

1. Provide duct cable in accordance with Departmental Material Specification (DMS) 11060 "Duct Cable" and Item 622 "Duct Cable." Provide duct cable as listed on the Material Producer List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies" Item 622.

2. Provide High–Density Polyethylene (HDPE) conduit in accordance with DMS 11060 and Item 618, "Conduit." Provide HDPE as listed on the MPL on the Department web site under "Roadway Illumination and Electrical Supplies," Item 618.

3. Supply duct cable with a minimum 2 in. diameter, unless otherwise shown in the plans. Provide duct cable and HDPE conduit as shown by descriptive code or on the plans. Bend duct cable and HDPE conduit as recommended by the manufacturer, with a minimum bending radius of 26 in. for 2 in. duct. Follow manufacturers' recommendations when handling duct cable and HDPE conduit reels and during installation of duct cable and HDPE conduit.

4. Do not splice conductors within duct cable or HDPE conduit. Couple duct cable and HDPE entering a ground box or foundation to a PVC elbow. When galvanized steel RMC elbows are called for in the plans and any portion of the RMC elbow is buried less than 18" from possible contact, ground the RMC elbow.

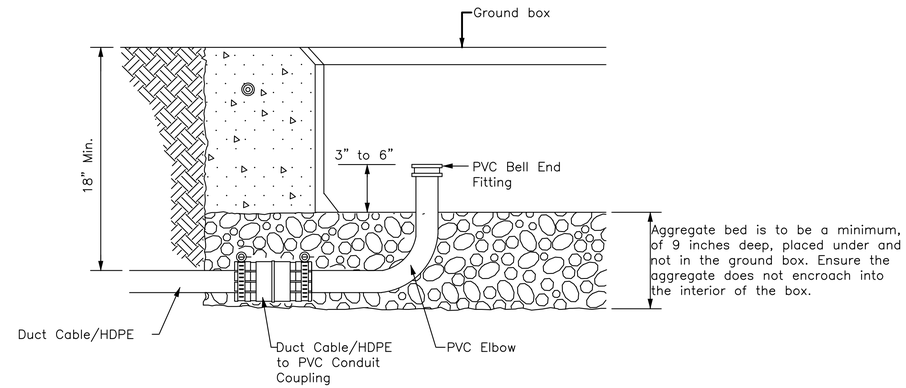
5. Furnish and install duct cable with factory installed conductors, sized as shown in the plans and as required by the National Electrical Code (NEC). The NEC contains specific requirements for duct cable in Article, "Nonmetallic Underground Conduit with Conductors: Type NUCC."

6. When conduit casing is called for in the plans, extend duct cable or HDPE conduit through the conduit casing in one continuous length without connection to the casing.

7. Seal the ends of duct cable or HDPE conduit with duct seal, expandable foam, or other approved method after completing the pull tests required by Item 622.

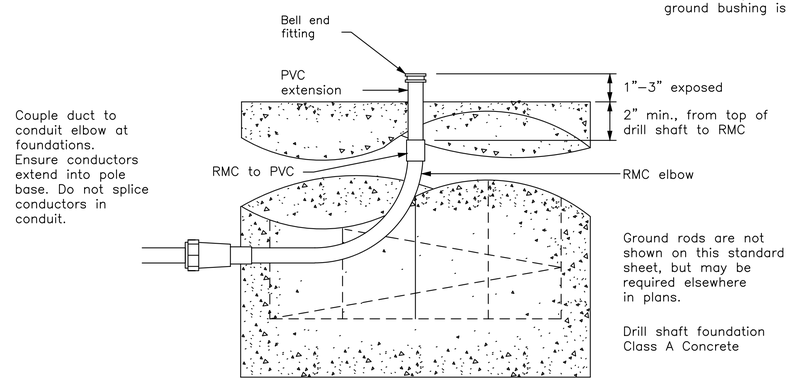
8. Provide minimum cover of 24 in. under roadways, 18 in. in other locations, or as shown on the plans.

9. Furnish and install listed fittings to couple duct cable or HDPE conduit to other types of conduit. Duct cable and HDPE conduit may be field–threaded and spliced with PVC or RMC threaded couplings; connected with listed tie–wrap fittings; connected using listed coupling made of HDPE with stainless steel external banding clamps and locking rings; connected with approved electrofusion conduit couplings; or connected using an approved chemical fusion method using an epoxy or adhesive specifically designed for HDPE couplings and connectors all installed in accordance with their manufacturer's instructions. Do not use PVC glue on HDPE. Do not use water pipe fittings, or connect conduit with heat shrink tubing.

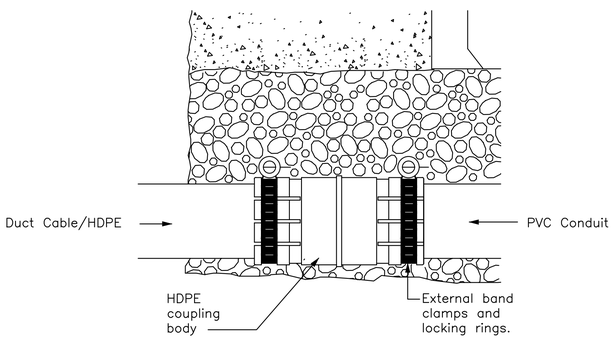


DUCT CABLE/HDPE AT GROUND BOX

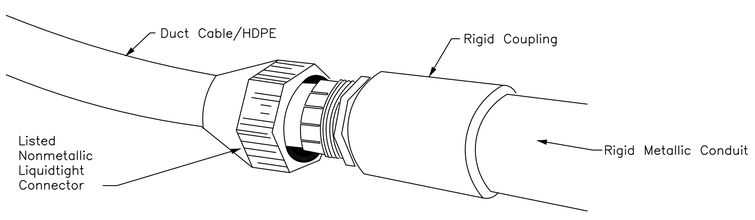
When the upper end of an RMC Ell does not enter the ground box,it may be extended with a SCH–40 PVC conduit nipple and bell end, provided there is a minimum of 18" of cover over all parts of the elbow. If not, a rigid extension and ground bushing is required.



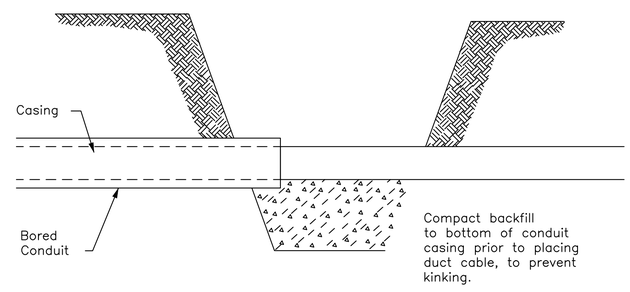
DUCT CABLE / HDPE AT FOUNDATION



DUCT CABLE/HDPE TO PVC



DUCT CABLE/HDPE TO RMC



BORE PIT DETAIL

Texas Department of Transportation — Traffic Operations Division Standard

ELECTRICAL DETAILS
DUCT CABLE/
HDPE CONDUIT

ED(11)–14

FILE: ed11–14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO LEGACY)

ELECTRICAL
STANDARD DETAILS – VI

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DRAWN BY: MAC
DATE: JANUARY 2020
JOB NUMBER: 1614–005–01
SHEET EG8

ROADWAY ILLUMINATION ASSEMBLY NOTES

1. Details apply to roadway lighting installations bid or referenced under Item 610, "Roadway Illumination Assemblies." Provide, furnish, and install all other materials not shown on the plans which may be necessary for complete and proper construction. Where manufacturers provide warranties or guarantees as a customary trade practice, furnish to the State such warranties or guarantees.

2. The locations of poles and fixtures may be shifted by the Engineer to accommodate local conditions. Install or remove poles and luminaires located near overhead electrical lines using established industry and utility safety practices and in accordance with laws governing such work. Consult with the appropriate utility company prior to beginning such work.

3. Provide new and unused materials. Ensure that all materials and installations comply with the applicable articles of the National Electrical Code (NEC),TxDOT standards and specifications, National Electrical Manufacturers Association (NEMA),and are listed by Underwriters Laboratories (UL) or a Nationally Recognized Testing Lab (NRTL). NRTLs such as Canadian Standard Association, Intertek Testing Services NA Inc., or FM Approvals LLC can be considered equivalent to UL. Faulty fabrication or poor workmanship in any material, equipment, or installation is justification for rejection.

4. Provide Roadway Illumination Light Fixtures as per TxDOT Departmental Material Specification (DMS) 11010, Item 610, and as shown on the Material Producers List (MPL) for Roadway Illumination and Electrical Supplies.

5. Fabricate steel roadway illumination poles in accordance with Roadway Illumination Poles (RIP) standards and Item 610. Poles fabricated according to RIP standards do not require shop drawing submittals.

   a. Alternate designs to RIP standards or the use of aluminum to fabricate poles will require the submission of shop drawings electronically. For instructions on submitting shop drawings electronically see "Guide to Electronic Shop Drawing Submittal" on the TxDOT web site.

   b. Limitations on use of the RIP standard: The RIP standard details were developed for installations in locations where the 3-second gust basic maximum wind speed is 110 mph, and where the elevation of the base of the pole is less than (i.e. not more than) 25' above the elevation of the surrounding terrain, in accordance with the "AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals," 4th Edition (2001) (AASHTO Design Specifications). For poles to be installed in regions where the maximum basic wind speed exceeds 110 mph or to be mounted more than 25' above the surrounding terrain, provide poles meeting the following requirements:

      i. Submittals. Following the electronic shop drawing submittal process (see Guide to Electronic Shop Drawing Submittal on the TxDOT web site), submit to the Engineer for approval fabrication drawings and calculations for the poles, sealed by a Texas licensed professional engineer (P.E.).

      ii. Luminaire Structural Support Requirements. Provide light poles, arms, and anchor bolt assemblies with a 25 year design life to safely resist dead loads, ice loads and the required basic wind speeds at the location of installation in accordance with the 6th edition (2013) of the AASHTO Design Specifications. For transformer base poles, include transformer base and connecting hardware in calculations and shop drawing submittals. Structurally test all transformer bases to resist the theoretical plastic moment capacity of the pole. Submit certification of the plastic moment load test and FHWA breakaway requirement test of the model of base being furnished with the shop drawings. Show breakaway base model number, manufacturer's name, and logo on shop drawings. Include on manufacturer's shop drawings the ASTM designations for all materials to be used.

6. For both transformer and shoe-base type illumination poles, provide and install double-pole breakaway fuse holders as specified by DMS-11040. Breakaway fuse holders are listed on the MPL for Roadway Illumination and Electrical Supplies under Items 610 & 620. Provide 10 amp time delay fuses for breakaway connectors in light poles, or inside the light fixture for underpass luminaires. In each pole, connect luminaires to the breakaway connector with continuous stranded 12 AWG copper conductors as listed on the MPL. Bond all equipment grounding conductors together and to the ground lug in the transformer base or hand hole.

7. Tighten anchor bolts for shoe base, concrete traffic barrier base, and bridge mount roadway illumination poles, in accordance with Item 449.

8. Install T-Base with following procedure:

   a. Anchor Bolt Tightening.

      i. Coat the threads of the anchor bolts with electrically conductive lubricant.

      ii. Place the T-base over the anchor bolts. Foundation must be level and flat. The maximum permissible gap under any one corner of the t-base is 1/8" before nuts are tightened.

      iii. Coat the bearing surfaces of the nuts and washers with electrically conductive lubricant. Install (1) 1/2" hold down washer, (1) lock washer, and (1) nut on each anchor bolt. Turn the nuts onto the bolts so that each is hand-tight against the washer.

      iv. Using a torque wrench, tighten each nut to 150 ft-lb. Uniform contact is required between the foundation and the T-base in the corner regions of the T-base, and all corner gaps must be closed after applying torque. If a gap still exists after torquing to 150 ft-lbs, continue torquing each bolt incrementally until gap is closed or maximum allowable torque of 250 ft. pound is reached, whichever comes first. If 250 ft-lbs is not enough to close the gap the foundation must be leveled. Gaps along the straight sides of the T-bases and the foundation are permissible. Ensure that no high point of contact occurs between the straight sides of the T-base and the foundation.

      v. Check top of T-base for level. If not level then foundation must be leveled.

   b. Top Bolt Procedure

      i. Erect pole over T-base with crane. Coat bolts, nuts, washers, and lock washers with electrically conductive lubricant.

      ii. Install bolts and 1/2" connecting washers from the inside of the T-base, thread up through the pole base. Install flat washers, lock washers and nuts snug tight according to Item 447, "Structural Bolting."

      iii. Tighten each nut to 150 ft-lb. using a torque wrench.

   c. Level and Plumb

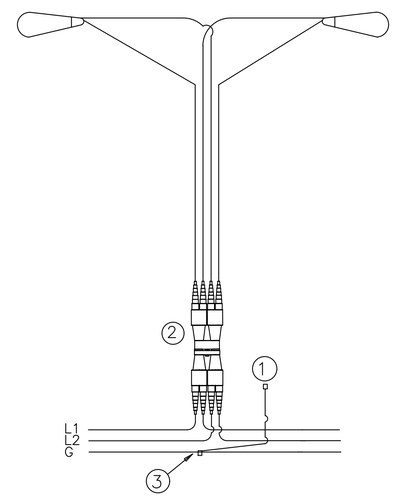
      i. Ensure pole is plumb and mast arm is perpendicular to the roadway according to plans to within 5 degrees.

9. Construct luminaire pole foundations in accordance with Item 416, "Drilled Shaft Foundations," and TxDOT standard sheet RID(2).

10. Provide and install underpass luminaires in accordance with Item 610, DMS-11010, and TxDOT standard sheet RID(3). Typical luminaire size for underpass luminaires is 150W HPS or 150W EQ LED.

11. Mount luminaires on arms level as shown by the luminaire level indicator.

12. Orient luminaires perpendicular to the roadway intended to be lit unless otherwise shown on the plans.



L1,L2 = Hot Conductors
G = Grounding Conductor

TYPICAL WIRING DIAGRAM

LUMINAIRES SERVED AT 480V ON 240/480 VOLT SERVICE OR LUMINAIRES SERVED AT 240V FOR 120/240 VOLT SERVICE.

NOTES:

1. Use 1/2 in.-13 UNC threaded, copper or tin-plated copper, pole bonding connector, sized appropriately for conductors, bonded to T-base, or use ground lug in handhole as available.

2. Use pre-qualified two-pole breakaway connectors for all luminaire pole installations. For luminaires fed by a circuit with a neutral conductor, use double pole breakaway connectors with the neutral side unfused and marked white.

3. Split Bolt or other connector.

Texas Department of Transportation | Traffic Operations Division Standard

ROADWAY ILLUMINATION DETAILS

RID(1)-17

FILE: rid1-17.dgn	DN:	CK:	DW:	CK:
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ELECTRICAL
STANDARD DETAILS - VII

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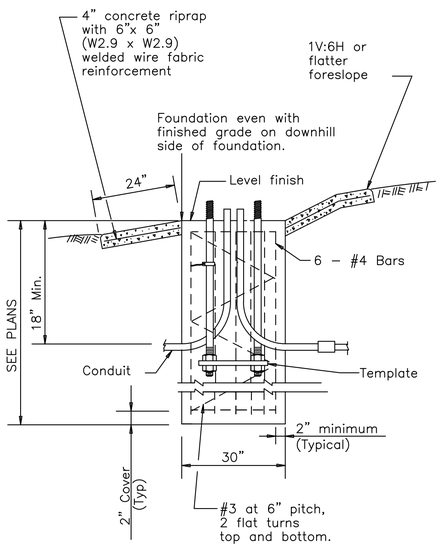
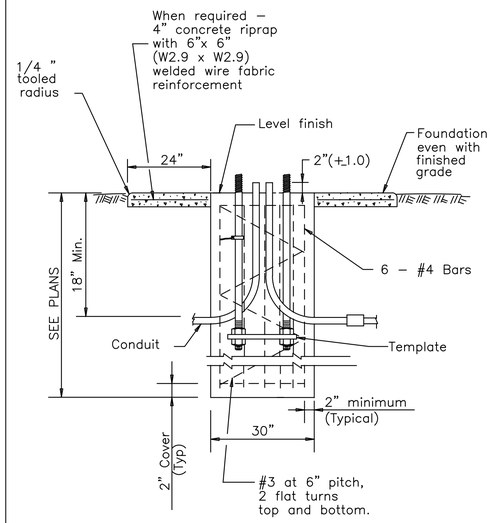
JOB NUMBER: 1614-005-01
SHEET: EG9



SECTION A–A

SHOWING SLOPED GRADE



SECTION A–A

SHOWING CONSTANT GRADE

TABLE 1

ANCHOR BOLTS

POLE MOUNTING HEIGHT	BOLT CIRCLE		ANCHOR BOLT SIZE
	Shoe Base	T-Base	
<40 ft.	13 in.	14 in.	1in.x 30in.
40-50 ft.	15 in.	17 1/4 in.	1 1/4in. x 30in.

TABLE 2

RECOMMENDED FOUNDATION LENGTHS (See note 1)

MOUNTING HEIGHT	TEXAS CONE PENETROMETER N Blows/ft		
	10	15	40
≤20 ft.	6'	6'	6'
>20 ft. to 30 ft.	8'	6'	6'
>30 ft. to 40 ft.	8'	8'	6'
>40 ft. to 50 ft.	10'	8'	6'

TABLE 3

PAY QUANTITY OF RIPRAP PER FOUNDATION (Install only when shown on the plans)

Foundation Diameter	RIPRAP DIAMETER	RIPRAP (CONC) (CL B)
30 in.	78 in.	0.35 CY

GENERAL NOTES:

1. "Recommended Foundation Lengths" table is for information purposes only. Foundation lengths shall be as shown on the plans, or as directed by the Engineer. Foundations will be paid for under Item 416, "Drilled Shaft Foundations," unless otherwise shown on the plans.
2. Erect roadway illumination assembly poles plumb and true. Form and level the top 6" of the foundation so the pole will be plumb. Use leveling nuts to plumb shoe base poles. Do not use shims or leveling nuts under transformer bases. Do not grout between baseplate and the foundation.
3. Ensure Class 2A and 2B fit for anchor bolts and nuts. Tap and chase nuts after galvanizing. Anchor bolt body with rolled threads need not be full size.
4. Use appropriate class of concrete as specified in Items 416 and 432. Concrete for riprap may be upgraded to Class C at no extra cost to the Department.
5. Place riprap around the foundation when called for elsewhere in the plans. Riprap will be paid for under Item 432.
6. Locate breakaway roadway illumination assemblies as shown in the placement table, unless otherwise dimensioned on the plans. Protect non–breakaway illumination assemblies from vehicular impact (i.e. 2.5 ft. behind guard rail or mounted on traffic barrier), or located outside the clear zone, except that 2.5 ft. from curb face is minimum desired for light poles on city streets, 45 mph or less. See Roadway Design Manual for further information.
7. Use 4 hold down and 4 connecting washers on transformer base poles as recommended by the manufacturer and supplied with base.
8. Install a minimum of 2 conduits in each foundation. See lighting layout sheets for locations of foundations with more than 2 conduits. Cap unused conduits in foundations on both ends.
9. Conduit location in foundations is critical for breakaway devices. Place conduits 2 in. apart on centerline as shown.
10. Bond anchor bolt to rebar cage with #6 bare stranded copper conductor. Use listed mechanical connectors rated for embedment in concrete. The bonded steel in the foundation creates a concrete encased grounding electrode which replaces the ground rod.
11. Use riprap on T–base foundations that are located on sloped grades.

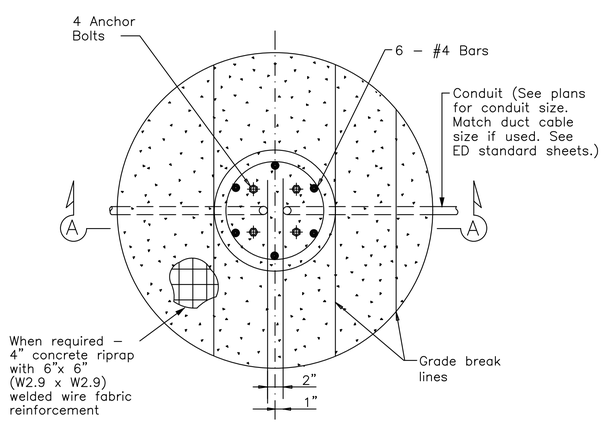
TABLE 4

BREAKAWAY POLE PLACEMENT (See note 6)

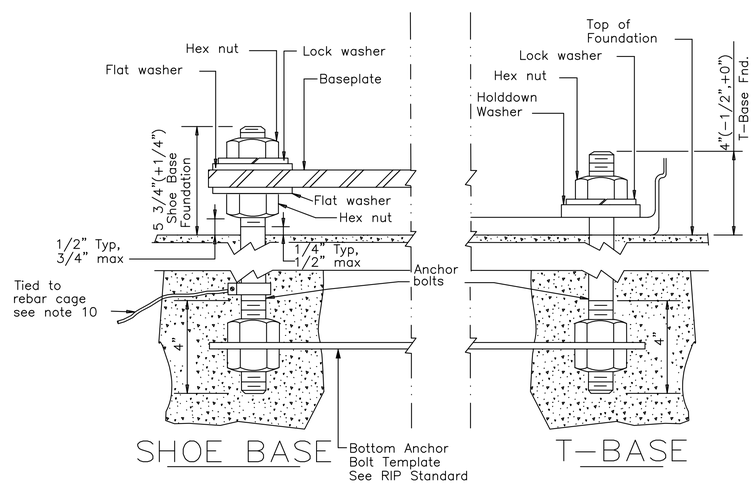
ROADWAY FUNCTIONAL CLASSIFICATION	** POLE OFFSET (DISTANCE TO FACE OF TRANSFORMER BASE)
Freeway Mainlanes (roadway with full control of access)	15 ft. (minimum and typical) from lane edge
All curbed, 45 mph or less design speed	2.5 ft. minimum (15 ft. desirable) from curb face
All others	10 ft. minimum (15 ft. desirable) from lane edge

* or as close to ROW line as is practical

** provide 2/5 of the luminaire mounting height behind the pole for "falling area" to prevent encroachment on the other travel lanes. See design guidelines.



FOUNDATION DETAIL



SHOE BASE

T–BASE

ANCHOR BOLT DETAIL

Texas Department of Transportation

Traffic Operations Division Standard

ROADWAY ILLUMINATION DETAILS (RDWY ILLUM FOUNDATIONS)

RID(2)–17

FILE: rid2–17.dgn	DN:	CK:	DW:	CK:
© TxDOT January 2007	CONT	SECT	JOB	HIGHWAY
REVISIONS 1–11 7–17	C	S.	J	HWY
	DIST	COUNTY		SHEET NO.
	DST	CTY		AA

72B

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ELECTRICAL
STANDARD DETAILS – VIII

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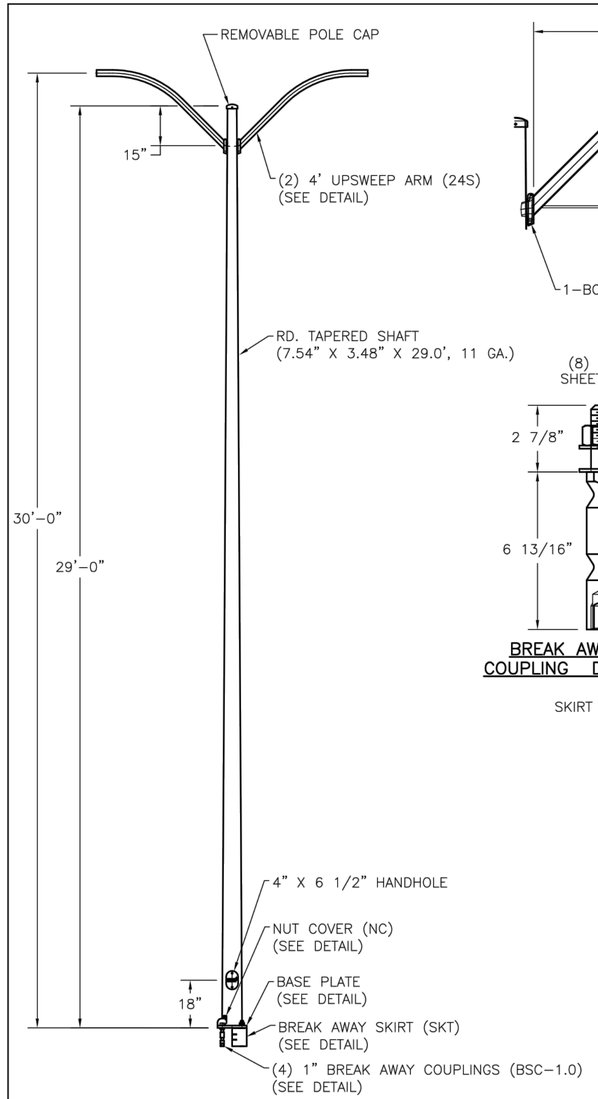
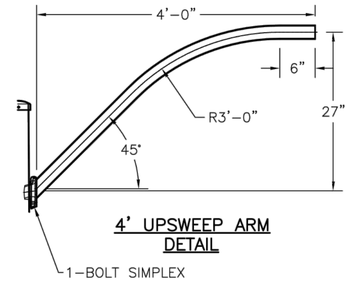
SHEET EG10





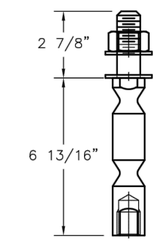
4' UPSWEEP ARM DETAIL

MATERIAL SPECIFICATIONS:

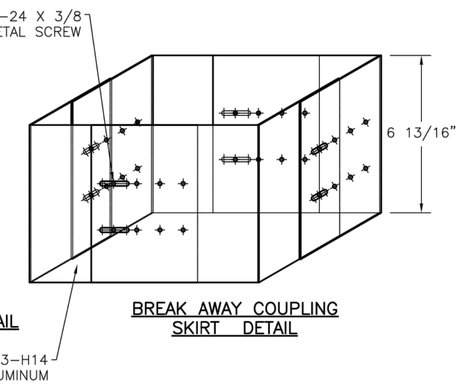
POLE SHAFT: COMM. GRADE STEEL, 55 K.S.I. MIN YIELD.
HANDHOLE: ASTM A36, 36 K.S.I. MIN YIELD.
BASE PLATE: ASTM A36, 36 K.S.I. MIN YIELD.
BREAK AWAY COUPLING: 43 K.S.I. MIN YIELD.

ENTIRE STANDARD TO HAVE A THERMOSET POLYESTER POWDER COATING IN ACCORDANCE WITH KW INDUSTRIES COATING STANDARDS.

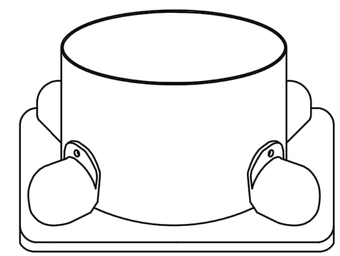
FINISH COLOR TO BE BLACK. (BLK)



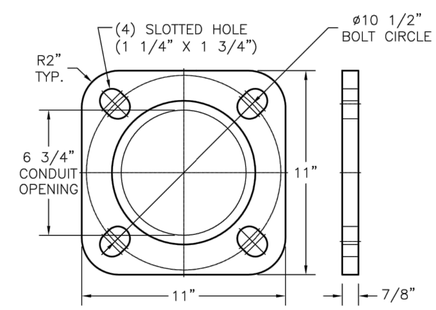
BREAK AWAY COUPLING DETAIL



BREAK AWAY COUPLING SKIRT DETAIL



NUT COVER DETAIL



BASE PLATE DETAIL

REV:	DESCRIPTION:	BY:	DATE:

Union Metal Corporation

CITY OF FRISCO
RTSU30-7.5-11-BLK-24S-BSC-1.0-SKT-NC

DRAWN BY:	DATE:	DRAWING NO.:	REV:
MI	7/7/2017	UMC1707071400	
APPROVED BY:	DATE:		

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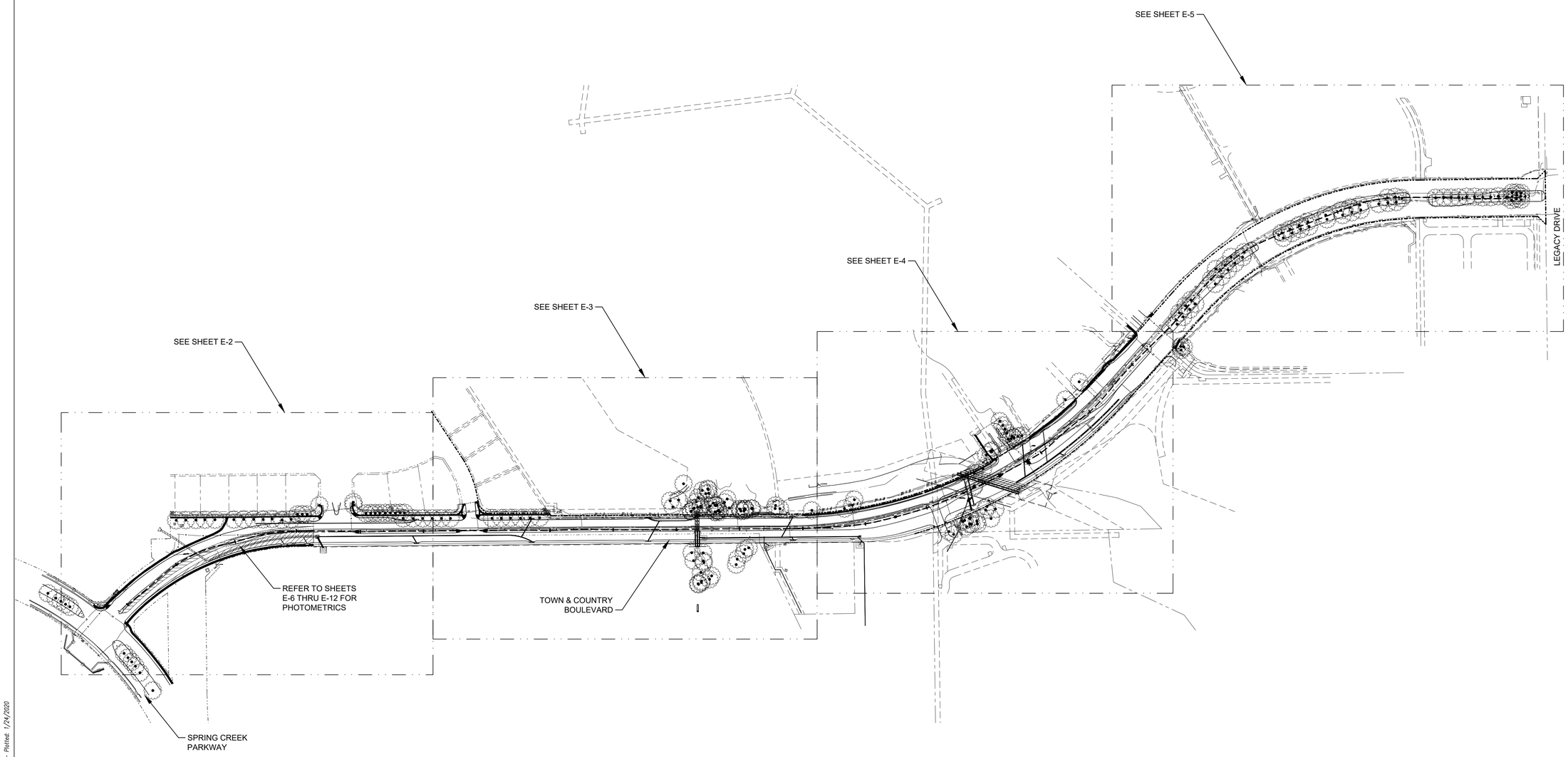

OVERALL SITE
PLAN
1" = 2000'

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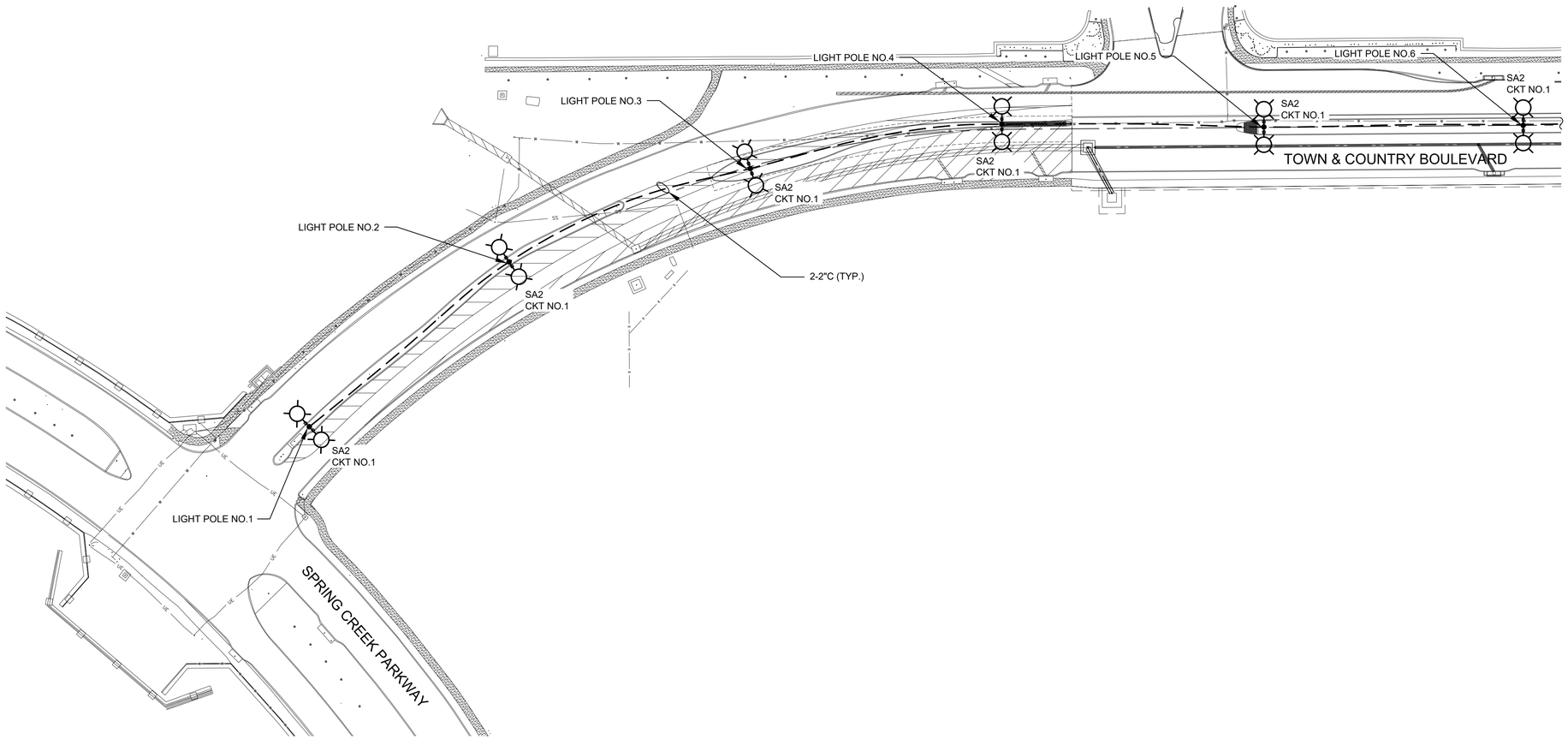

PARTIAL SITE - I

PLAN

1" = 50'

LIGHT FIXTURE SCHEDULE							
TYPE	DESCRIPTION	MANUFACTURER/CATALOG NO.	INPUTS WATTS		LAMP TYPE	MOUNTING HEIGHT	COMMENTS
			VOLTS	WATTS			
SA2	DUAL LED ROADWAY LIGHTS ON A 30 FOOT POLE MADE WITH 11 GAUGE STEEL SHAFT INCORPORATING HANDHOLES THE POLE HAS 2 BRACKET ARMS, EACH 4 FEET IN LENGTH WITH A 2 3/8" O.D. AND A 21" UPSWEEP. EACH FIXTURE HAS A LENS WITH A TYPE 2 MEDIUM DISTRIBUTION THAT ACHIEVES FULL CUT-OFF. EACH FIXTURE HAS AN OUTPUT OF 12757 LUMENS AND A BUILT IN FIELD ADJUSTABLE WATTAGE SWITCH (FAWS) FOR DESIRED LIGHT LEVEL.	LIGHTING FIXTURES: PHILIPS LUMEC: RFM108W48LED4K-G2-R2M-BK-HVU-DMG-RCD-PH9-SP2 FAWS 3 POLE: UNION METAL CORP: RTSU30-7.5-11-BLK-24S-BSC-1.0-SKT-NC	480	(2)E 106W	LED	30' ABOVE GRADE	THIS FIELD ADJUSTABLE WATTAGE SWITCH SHALL BE ADJUSTED TO NO.3 POSITION TO PROVIDE THE LIGHT LEVELS SHOWN ON THE PHOTOMETRICS

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E-2

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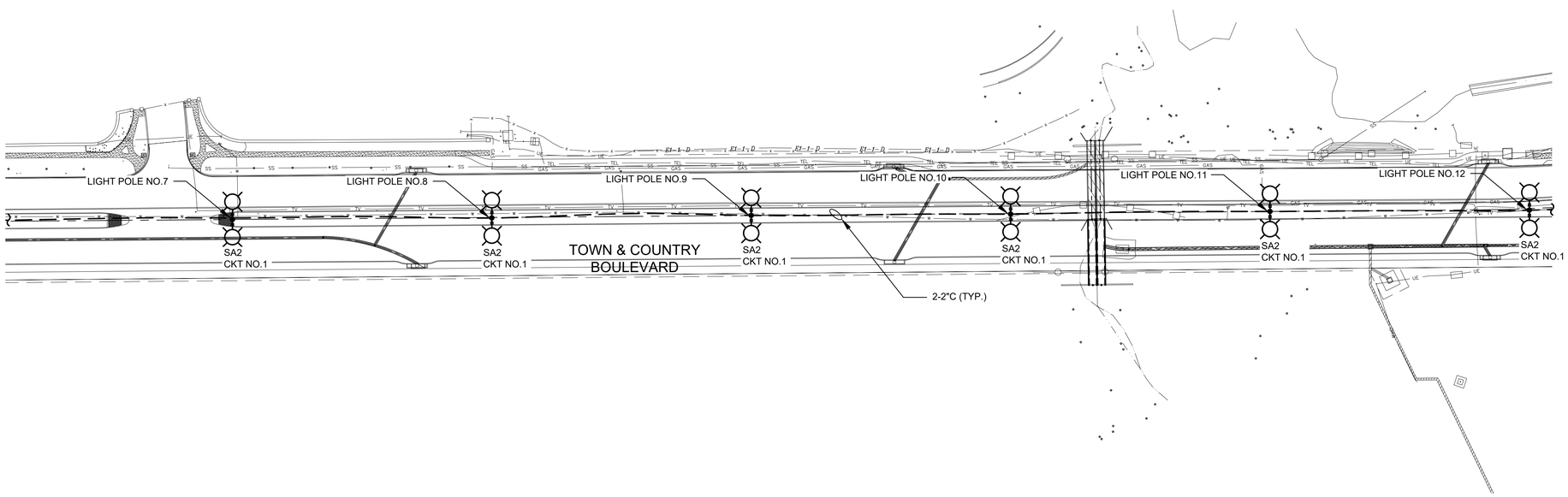

PARTIAL SITE - II

PLAN

1" = 50'

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SHEET E-3

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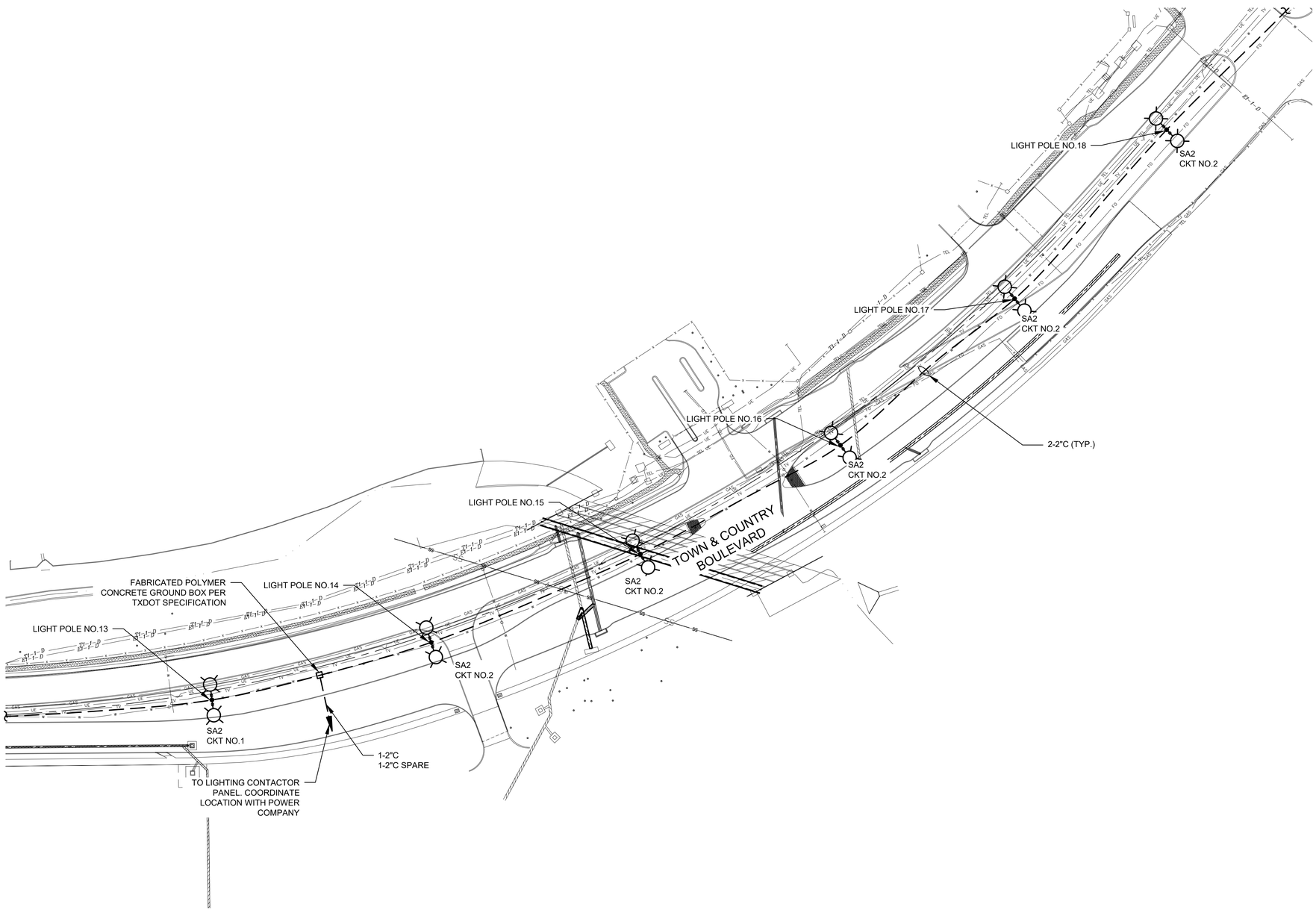

PARTIAL SITE - III

PLAN

1" = 50'

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SHEET
E-4

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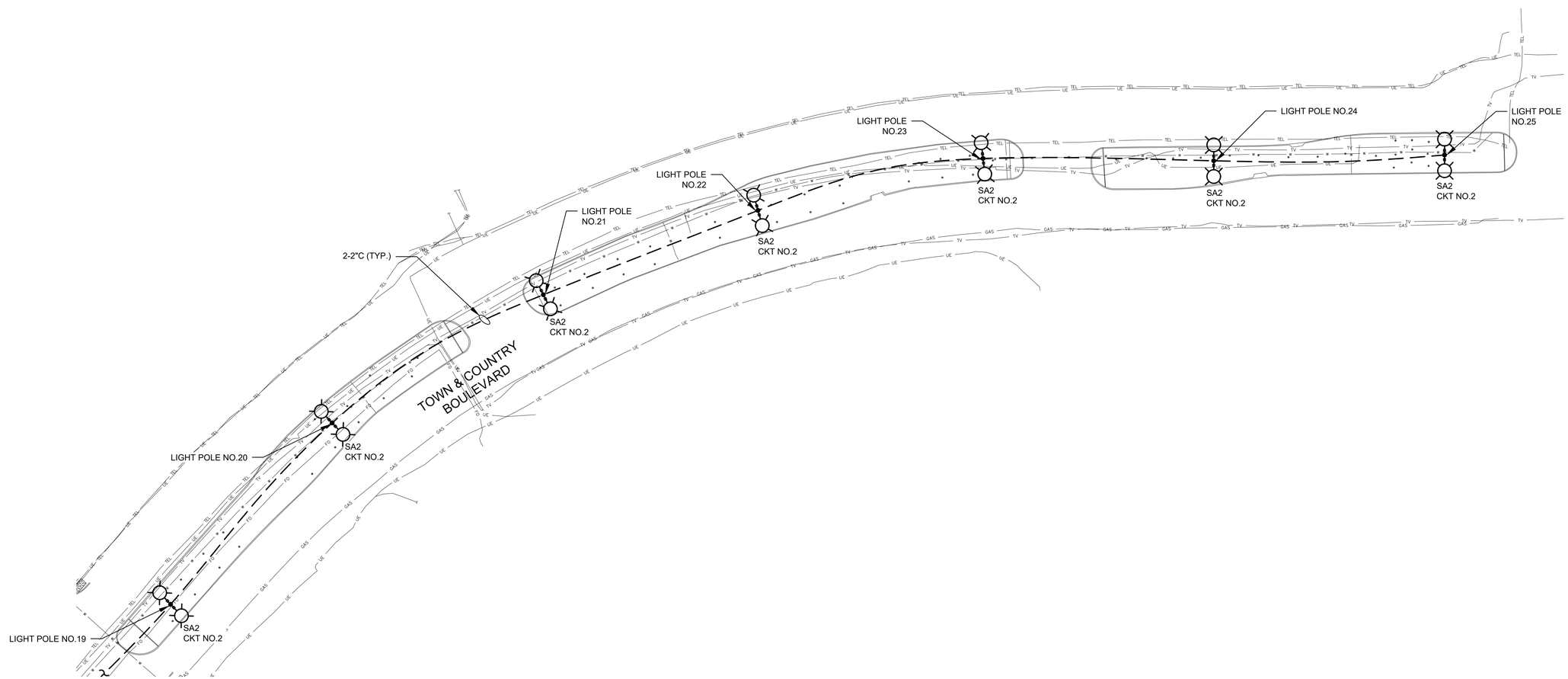

PARTIAL SITE - IV

PLAN

1" = 50'

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E–5

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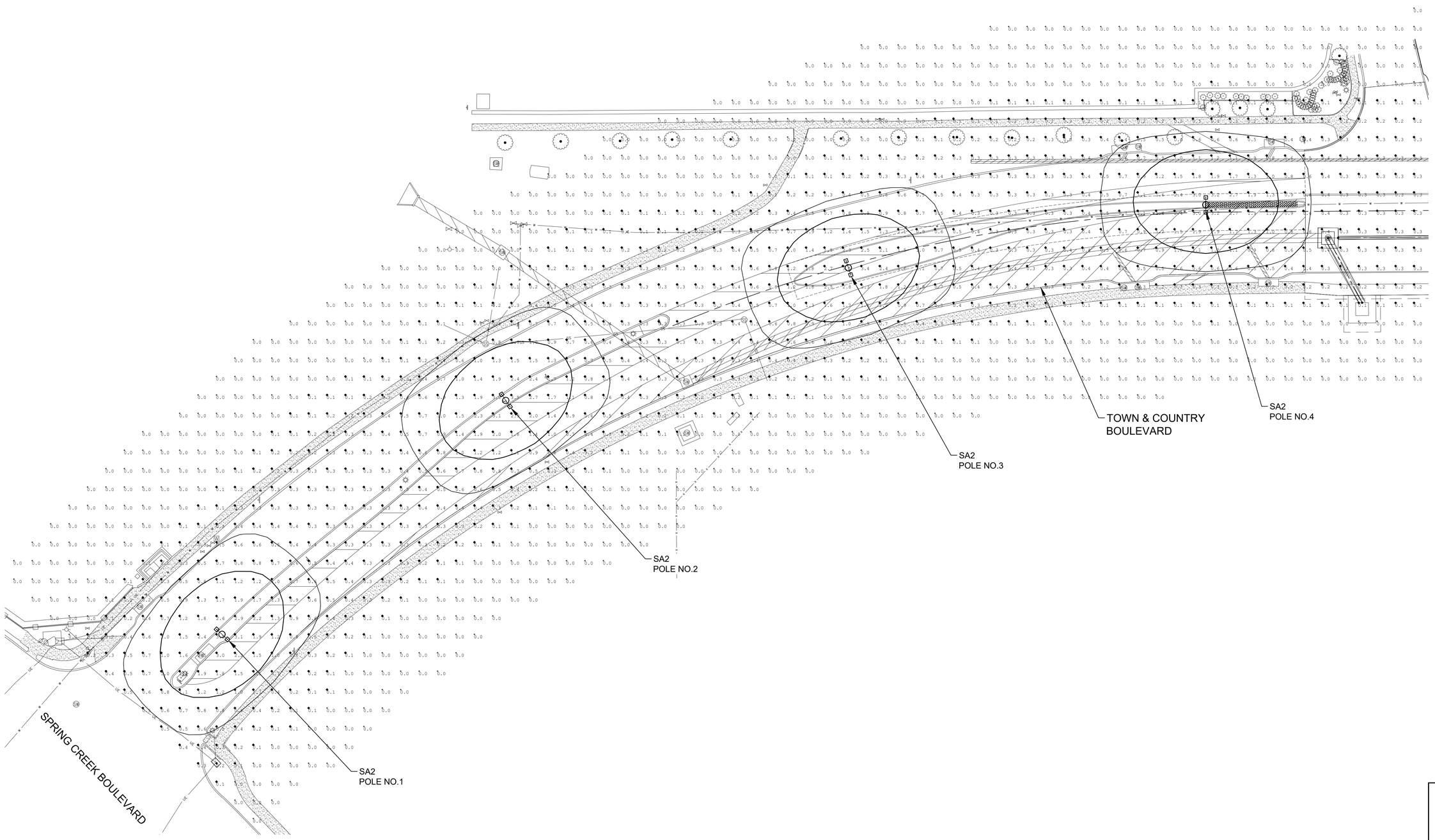

PARTIAL SITE – I
PLAN
NTS

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E–6

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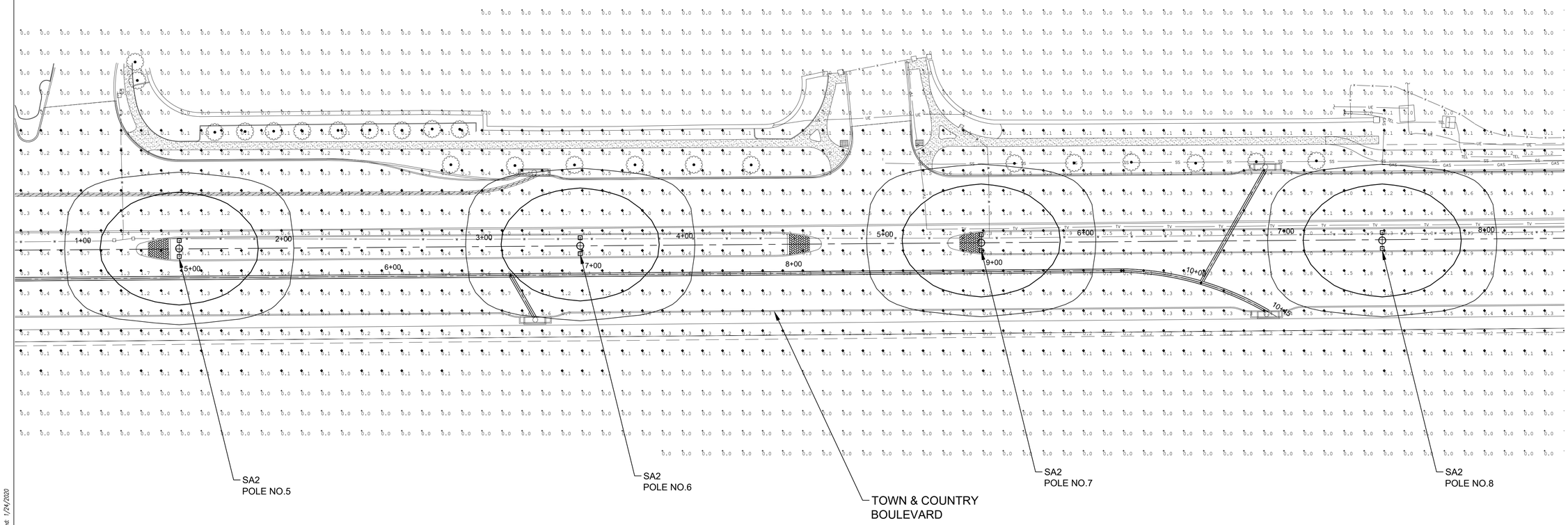

PARTIAL SITE – II

PLAN

NTS

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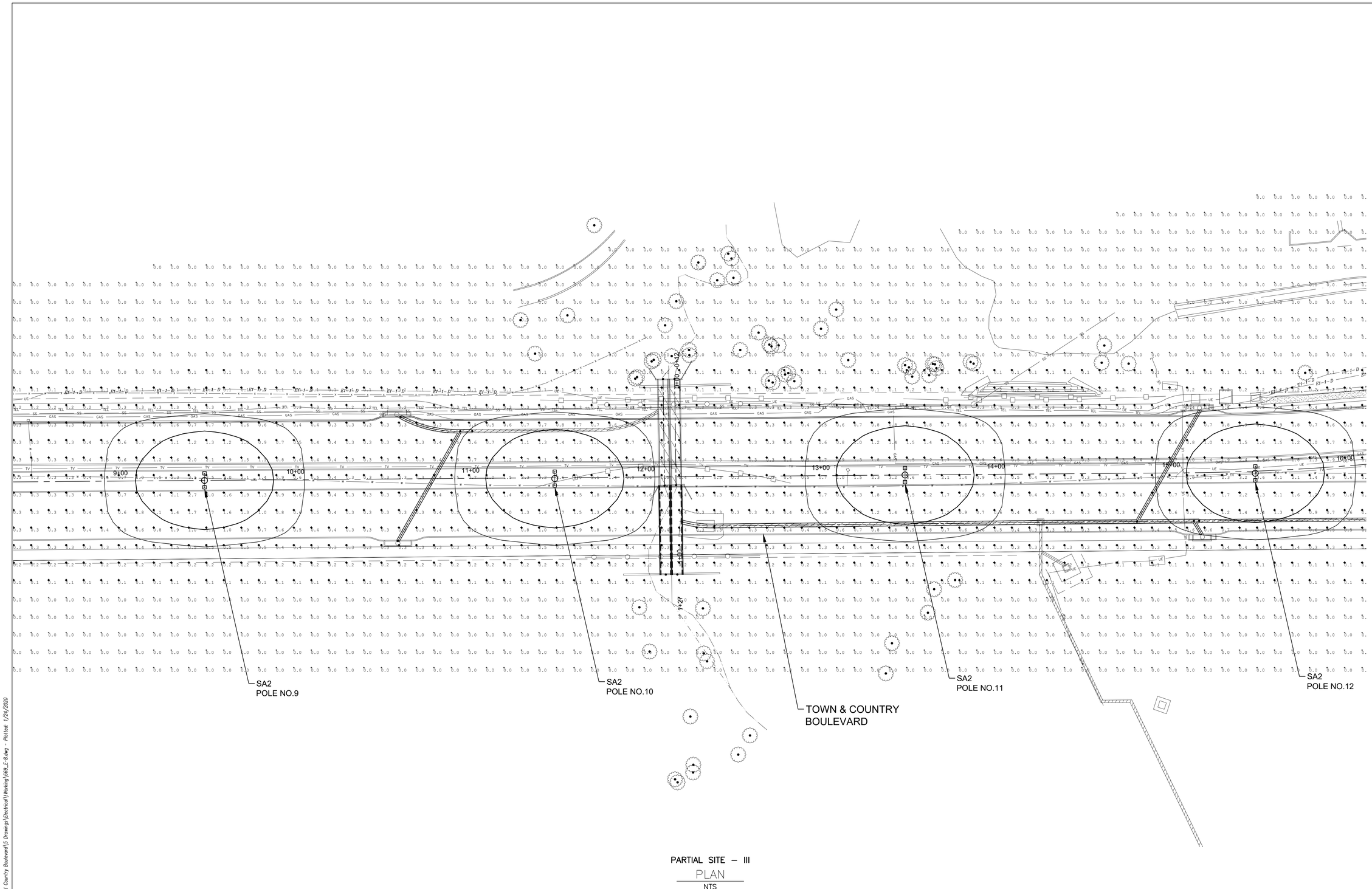
SHEET

E-7



PARTIAL SITE – III

PLAN

NTS

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PHOTOMETRIC
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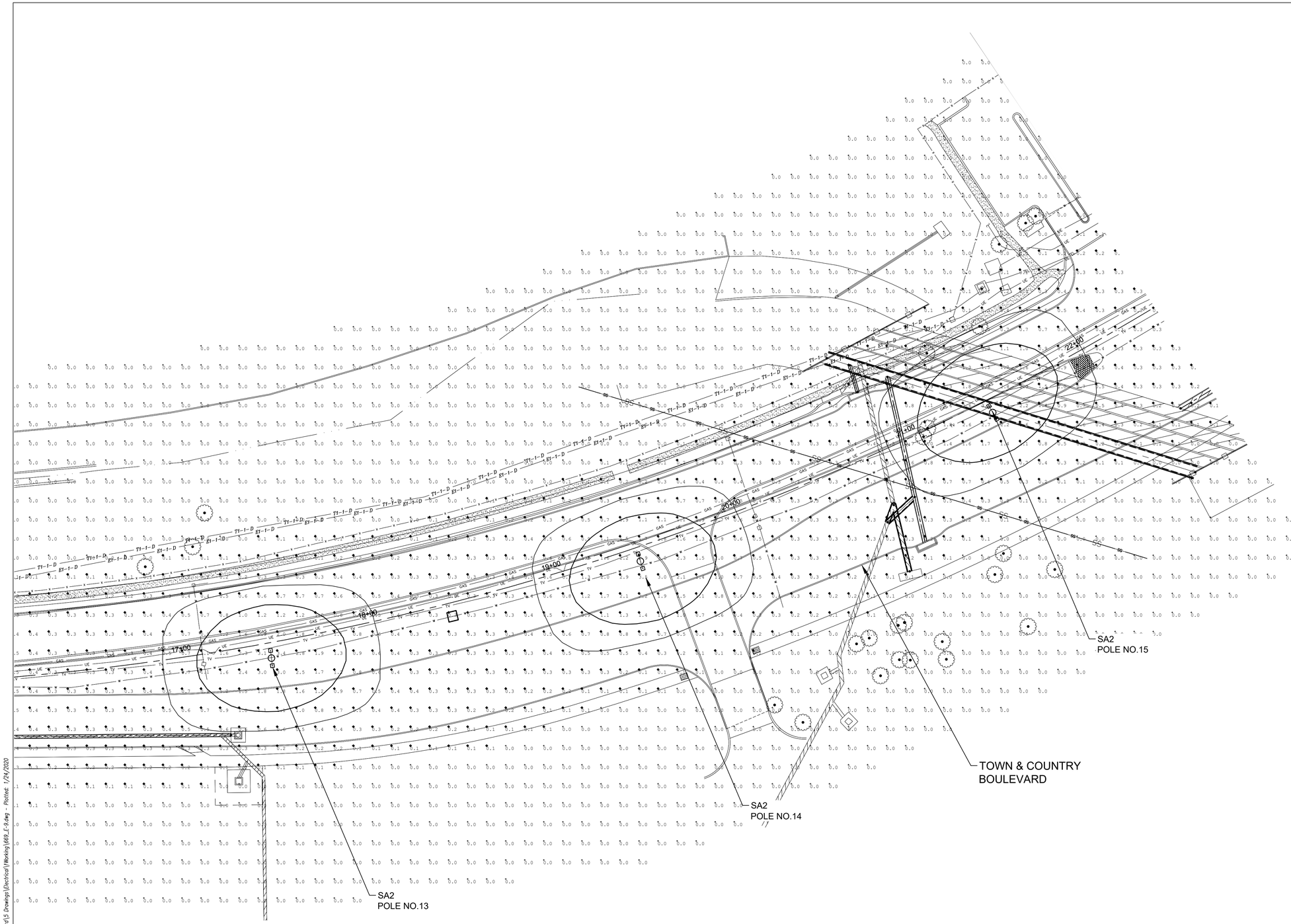
SHEET

E-8



PARTIAL SITE – IV

PLAN

NTS

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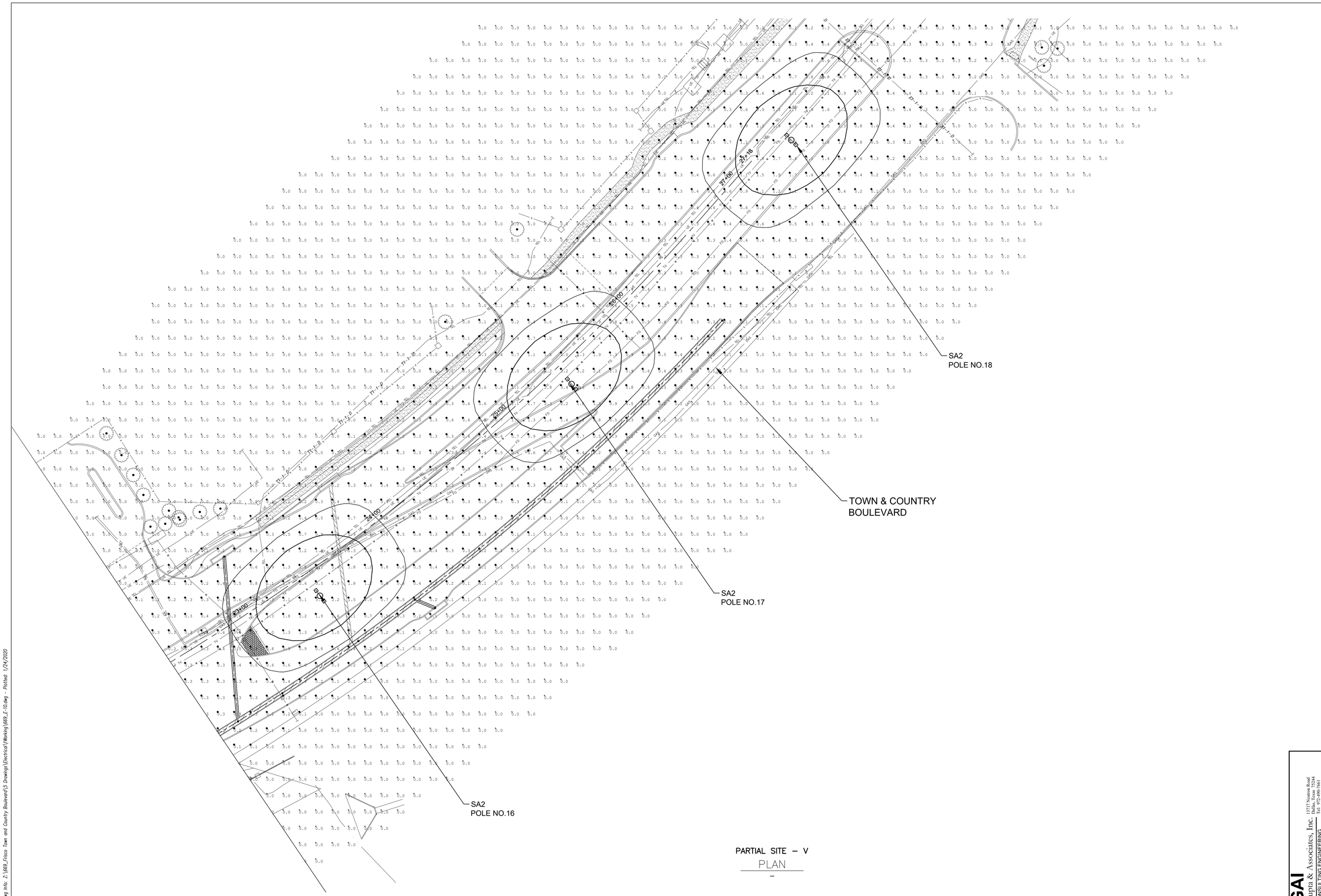
SHEET E-9



PARTIAL SITE – V

PLAN

–

NO.	DATE	COMMENT

REVISIONS

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO LEGACY)

PHOTOMETRIC
PARTIAL SITE – V PLAN

FRISCO

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972.335.3214 | fax 972.335.3202 | www.cobbfendley.com

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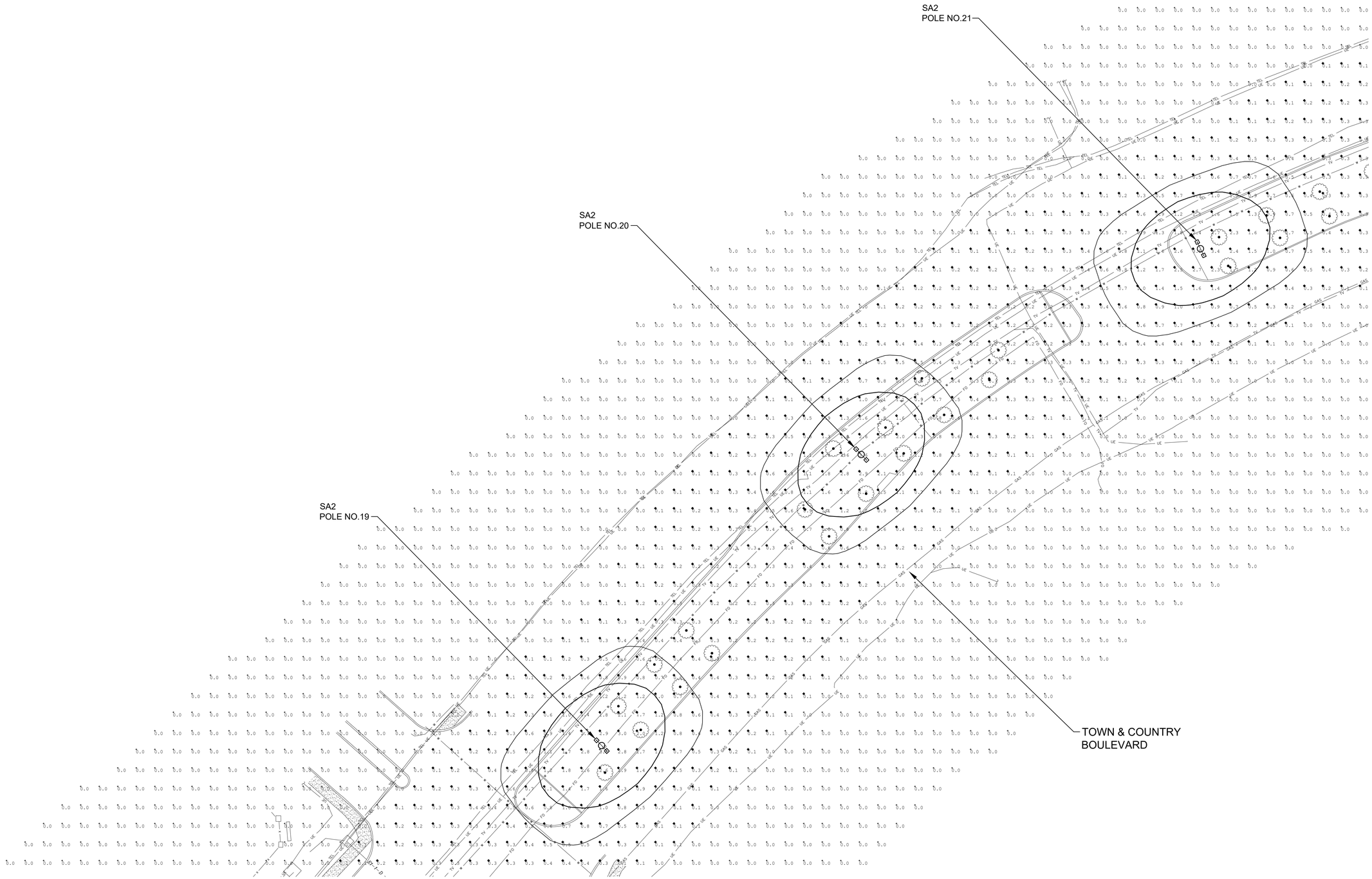
SHEET
E–10

Dwg Info: Z:\669_Frisco Town and Country Boulevard\5 Drawings\Electrical\Working\669_E-10.dwg - Plotted: 1/24/2020



PARTIAL SITE – VI

PLAN

NTS

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TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO LEGACY)

PHOTOMETRIC
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SHEET

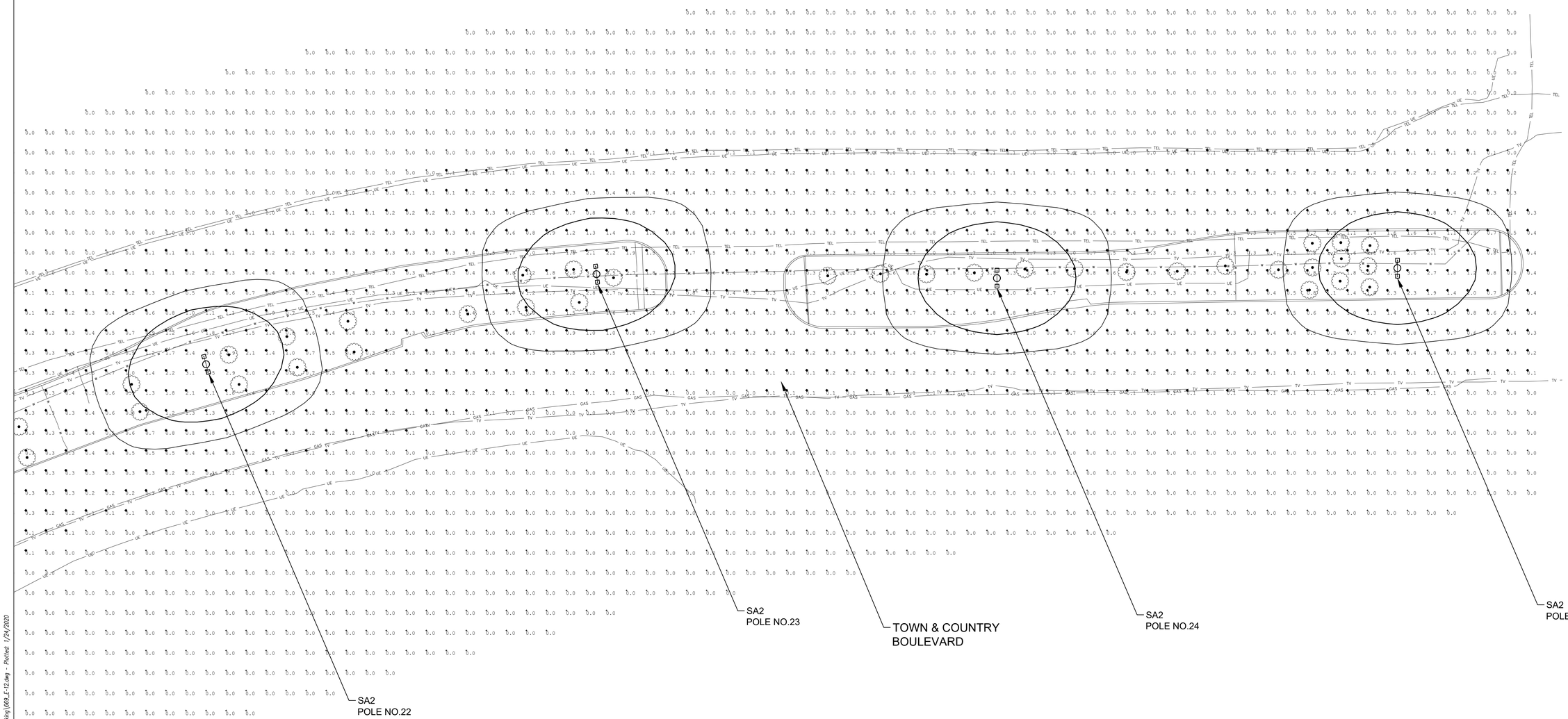
E-11

Dwg Info: Z:\669_Frisco Town and Country Boulevard\5 Drawings\Electrical\Working\669_E-11.dwg - Plotted: 1/24/2020

Luminaire Schedule							
Symbol	Qty	Label	LLF	Description	Lum. Watts	Lumens/Lamp	Lum. Lumens
	25	SA2	0.920	Lumec - RFM108W48LED4K-G2-R2M-BK-HVU-DMG-RCD-PH9-SP2 FAWS 3	106	N.A.	12757

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
CalcPts_1	Illuminance	Fc	0.25	3.6	0.0	N.A.	N.A.

NOTES
1. Calc at grade level
2. Mounted 30' AFG with a 4' arm 200' on center



PARTIAL SITE – VII
PLAN
NTS

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO LEGACY)

PHOTOMETRIC
PARTIAL SITE – VII PLAN

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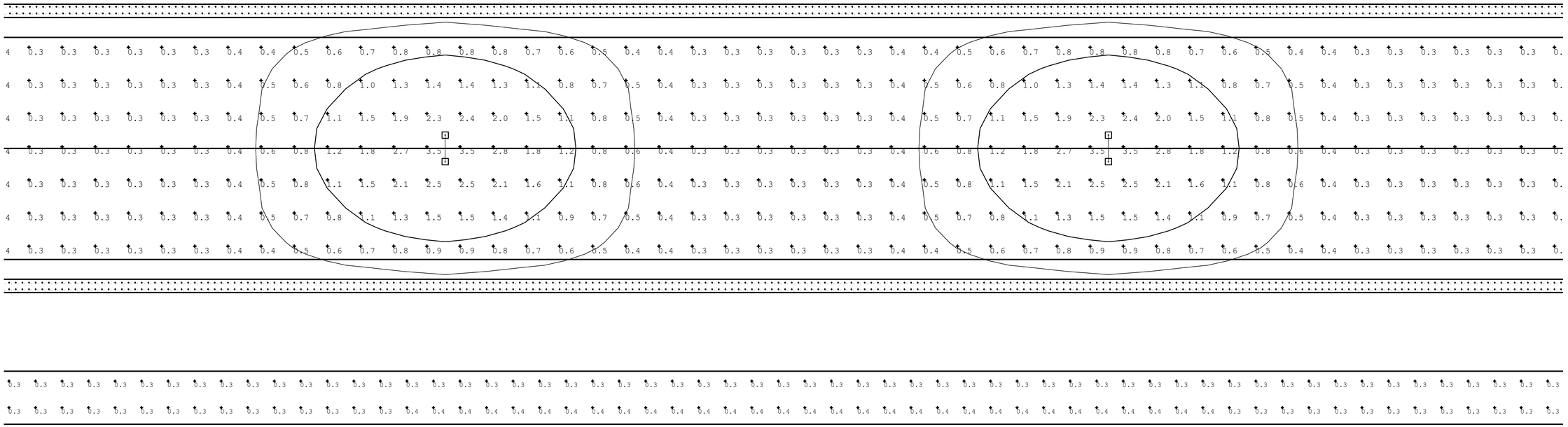
SHEET
E-12



Luminaire Schedule							
Symbol	Qty	Label	LLF	Description	Lum. Watts	Lumens/Lamp	Lum. Lumens
	4	SA2	0.920	Lumec - RFM108W48LED4K-G2-R2M-BK-HVU-DMG-RCD-PH9-SP2 FAWS 3	106	N.A.	12757

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
Sidewalk Plan North	Illuminance	Fc	0.29	0.4	0.1	2.90	4.00
Sidewalk Plan South	Illuminance	Fc	0.29	0.4	0.1	2.90	4.00
Street	Illuminance	Fc	0.83	3.5	0.3	2.77	11.67

NOTES
1. Calc at grade level
2. Mounted on a 30' pole
   200' on center

NO.	DATE	COMMENT

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO LEGACY)

ELECTRICAL SPACING STUDY

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SHEET
E-13

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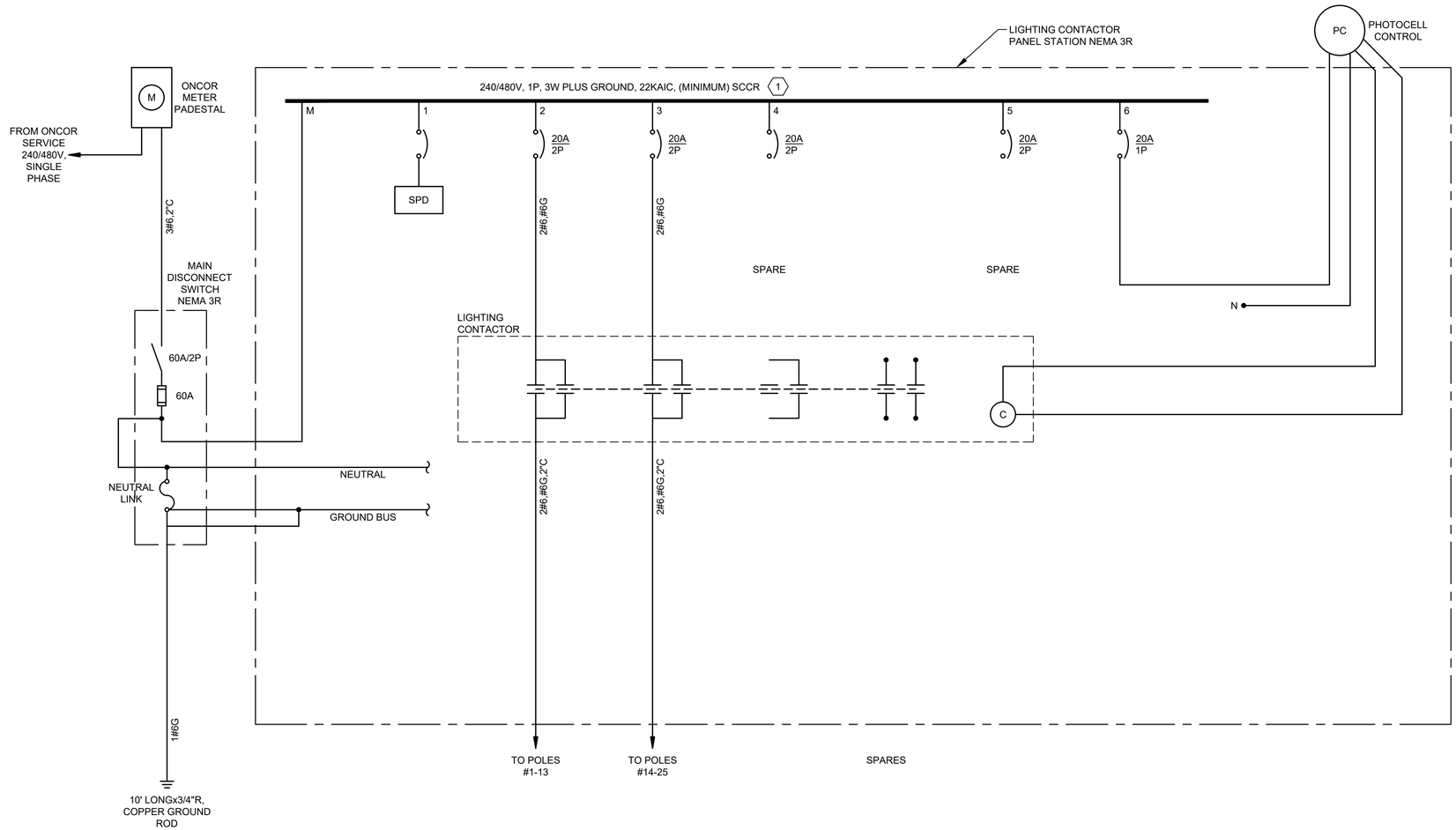

LIGHTING CONTACTOR STATION
ONE-LINE
DIAGRAM
2

NOTES BY SYMBOL "#":

1. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE AVAILABLE FAULT CURRENT WITH THE POWER COMPANY. THE LIGHTING CONTACTOR PANEL SCCR SHALL BE EQUAL OR HIGHER THAN AVAILABLE FAULT CURRENT.
2. THE LOCATION OF THE CONTACTOR PANEL SHALL BE COORDINATED WITH THE POWER COMPANY.

REVISIONS			
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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO LEGACY)
ELECTRICAL
LIGHT CONTROL STATION
ONE-LINE DIAGRAM

FRISCO

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SHEET
E-14

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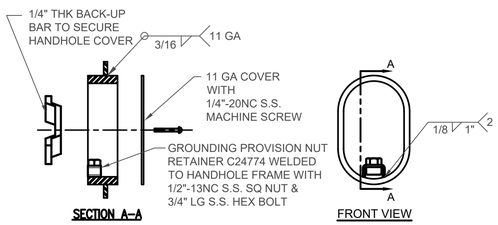
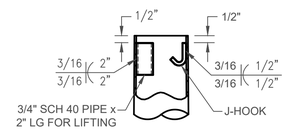
QTY	UMC DESIGN NUMBER	LUMINAIRE ARM DATA			POLE TUBE SIZE	POLE BASE CONNECTION DATA (in)					
		SPAN	MTG HEIGHT	ORIENTATION		B.C.	S	F	P	T	ANCHOR BOLT SIZE
3	203–B126–Y1	4'–0"	30'–0"	90° & 270°	11E–7.54x3.48x29'–0"	10 1/2	11	7 7/16	4 1/4	1	1 x 36 x 4

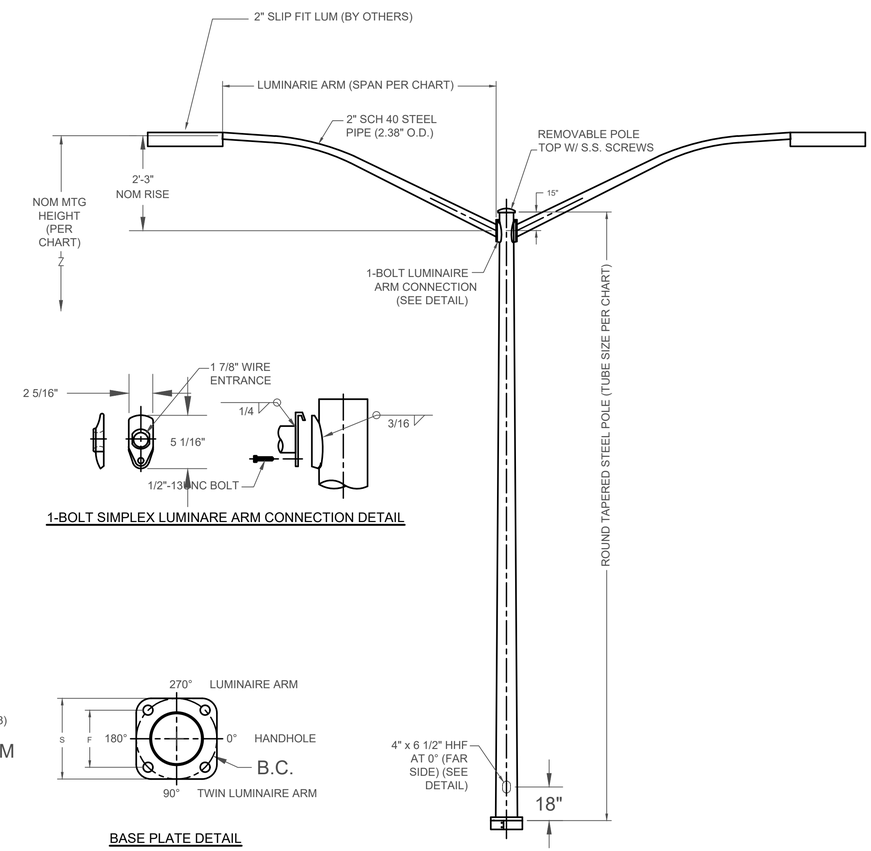
11 GA = 0.120" WALL THICKNESS
E = ROUND TAPERED STEEL TUBE @ 0.14 in/ft
TAPER



4"x6 1/2" HANDHOLE FRAME DETAIL

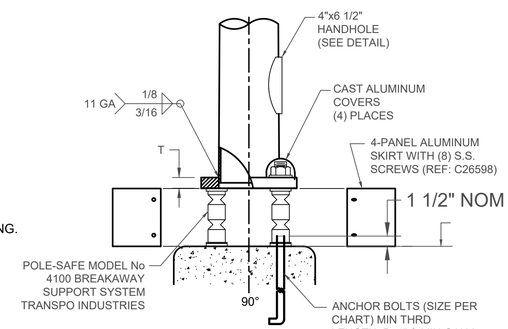


TOP OF POLE DETAIL
ORIENTATION OF PIPE & J-HOOK AS REQUIRED



1-BOLT SIMPLEX LUMINARE ARM CONNECTION DETAIL

BASE PLATE DETAIL



BASE CONNECTION DETAIL

DESIGN CRITERIA:

1. CONFIRM ALL DIMENSIONS & ORIENTATIONS BEFORE RELEASING ORDER FOR MANUFACTURING.

MATERIAL SPECIFICATIONS	
TAPERED TUBE	ASTM A595 GR A
BASE & ARM PLATES	ASTM A36
POLE SIMPLEX PLATES	ASTM A576
HANDHOLE FRAME	ASTM A529 GR 50 or ASTM A572 GR 50 or ASTM A709 GR 50
HANDHOLE COVER	ASTM A1011 OR A36
ANCHOR BOLTS	ASTM F1554 GR 55
ANCHOR BOLT NUTS	ASTM A563 GR A
FLAT WASHERS	ASTM F436
BOLT/NUT COVERS	ASTM B26 (319F or 356F)
ARM CONNECTION BOLTS	ASTM A325
POLE TOP	ASTM B26 (319F) or A1011
PIPE	ASTM A500 GR B or A53 GR B
S.S. HARDWARE	AISI–300 SERIES (18–8)
STRUCTURE FINISH	POWDER COAT BLACK
HARDWARE FINISH	H.D. GALV TO ASTM A153

NO.	DATE	COMMENT

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CITY OF FRISCO, TEXAS
TOWN & COUNTRY BOULEVARD
(SPRING CREEK TO LEGACY)
ELECTRICAL
ROUND TAPERED STEEL
STREET LIGHTING POLES

FRISCO

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SHEET
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