MEMORANDUM OF UNDERSTANDING
BETWEEN THE CITY OF BURLESON,
BURLESON 4A ECONOMIC DEVELOPMENT CORPORATION, AND
R.A. DEVELOPMENT, LTD.
FOR REIMBURSEMENT FOR ROAD IMPROVEMENTS AND
LIMITED AUTHORIZATION TO PROCEED

This Memorandum of Understanding ("MOU") is between the City of Burleson, a Texas municipal corporation located in the Counties of Johnson and Tarrant, State of Texas ("City"), by and through its City Manager; the Burleson 4A Economic Development Corporation, Texas economic development corporation ("Type A Corporation"), by and through its Board President; and R.A. Development, Ltd., a Texas limited liability partnership ("Developer"), by and through Bransom Management, LLC, its general partner. City and Developer may be referred to herein individually as a "party" or collectively as the "parties."

WHEREAS, the City and Developer and other parties entered into that certain Chapter 380 and Economic Development and Performance Agreement dated June 7, 2021 for the development of Chisholm Summit and Hooper Business Park (the "Agreement"), a copy of which is attached hereto and incorporated herein as Exhibit "A"; and

WHEREAS, the Agreement calls for the Developer to construct certain sewer improvements and roadway improvements; and

WHEREAS, the Agreement calls for the Developer to submit final design plans prepared by a licensed professional engineer for the certain sewer improvements and roadway improvements to the City Council of the City for approval prior to beginning construction; and

WHEREAS, the Developer is ready to construct the road improvements as defined in the Agreement, such improvements being more particularly described in the Final Design (defined below) (the "Road Improvements"); and

WHEREAS, the Developer retained professional engineers to design the Road Improvements, and a copy of the final design is attached hereto and incorporated herein as Exhibit "B" (the "Final Design"); and

WHEREAS, the Developer submitted to the City and Type A Corporation an estimated cost of construction for the Road Improvements, an outlay of such costs which includes a contingency is attached hereto and incorporated herein as Exhibit "C" (the "Estimated Construction Costs"); and

WHEREAS, the parties desire that the Road Improvements be constructed in accordance with the Agreement; and

WHEREAS, the parties believe that the construction of the Road Improvements in accordance with the Final Design and Estimated Construction Costs will further the purposes and findings set forth in the Agreement; and

WHEREAS, the Developer does not have the final design plans for the sewer improvements outside of Phase 1 as defined in the Agreement ("Final Sewer Design Plans"); and

WHEREAS, the parties agree that the full construction of the Road Improvements cannot and should not occur until the City Council of the City approves the Final Sewer Design Plans; and

WHEREAS, the parties believe that the construction of the Road Improvements will be expedited by setting forth certain construction work on the Road Improvements that may occur before the City Council of the City approves the Final Sewer Design Plans; and

WHEREAS, the Developer shall begin limited construction work on the Road Improvements under the Agreement, specifically certain grading and paving work on property owned by the Developer and the Type A Corporation, pursuant to this MOU; and

WHEREAS, the Developer shall undertake certain other work on the Hooper Business Park, a 106 acre tract of land owned by the Type A Corporation, specifically the removal of dirt from Hooper Business Park, in such quantities and from such areas of the tract of land as will be later identified by the City Engineer, for the construction of the Road Improvements, pursuant to this MOU; and

WHEREAS, the parties agree that the construction of the Road Improvements may be delayed if Developer does not produce Final Sewer Design Plans in a form acceptable and approved by the City Council by the time limited construction work is completed; and

WHEREAS, the Agreement calls for the Type A Corporation to reimburse Developer for the funds paid for the construction of Road Improvements; and

WHEREAS, the Type A Corporation desires to reimburse Developer for the funds paid for the removal of soil from the Hooper Business Park for use in the Road Improvements as part of the Road Improvements; and

WHEREAS, the Agreement stipulates that, prior to reimbursement, the City must be satisfied with the work completed and the evidence of an expenditure; and

WHEREAS, the parties desire to enter into this MOU to set forth parameters by which Developer may begin certain, specific construction work before the City Council of the City approves the Final Sewer Design Plans, specifically certain grading and paving work on the Road Improvements on property owned by the Developer and the Type A Corporation and the removal of dirt from Hooper Business Park for the construction of the Road Improvements, and by which the Developer may be reimbursed by the Type A Corporation for such construction costs;

NOW, THEREFORE, the parties agree as follows:

1. **Approval of Final Design and Estimated Construction Costs.** The City Council of the City of Burleson hereby approves the Final Design and Estimated Construction Costs in accordance with the Agreement.
2. **Reimbursement and Construction Work.** Subject to subsection 2(a) of this MOU below, the Agreement, and the MOU between the City and Developer dated October 18, 2021, regarding the road and sewer inspections, the Type A Corporation and City authorize the City Manager to reimburse the Developer for costs actually incurred in the construction of the Road Improvements and set forth in the Estimated Construction Costs. The reimbursement amount shall not exceed the Estimated Construction Costs. The reimbursement shall be paid in accordance with the Agreement.
    a. **Construction Work Prior to City Council Approval of Final Sewer Design Plans.** Until the City Council of the City of Burleson approves the Final Sewer Design Plans, the Type A Corporation shall not be obligated to reimburse Developer for any costs actually incurred in the construction of the Road Improvements, except for the following construction costs incurred in accordance with the terms set forth below:
        i. **Lakewood Drive Grading Construction Costs.** The Developer shall grade Lakewood Drive (and all requisite drainage improvements) as set forth in the Final Design across property owned by Developer and the Type A Corporation from FM 1902 to up to one hundred feet (100') before County Road 1016, as depicted in Exhibit "D" (the "Lakewood Grading").
        ii. **Lakewood Drive Paving Construction Costs**. The Developer shall pave the two southeast bound lanes of Lakewood Drive (and all requisite drainage improvements) as set forth in the Final Design across property owned by Developer and the Type A Corporation from FM 1902 to up to one hundred feet (100') before County Road 1016, as depicted in Exhibit "E" (the "Lakewood Paving"). Lakewood Drive's connection to FM 1902 shall not be completed until Developer receives a Texas Department of Transportation permit. Any water line or sewer line crossing under Lakewood Drive may be constructed as part of the paving activities, but all costs associated with the construction shall be the responsibility of Developer and Developer shall only use a licensed and bonded contractor for any water line or sewer line construction work.
        iii. **Hooper Business Park Soil Removal Construction Costs.** The Developer shall remove soil from the Hooper Business Park for the construction of the Road Improvements (the "Soil Removal"). Developer shall only remove soil from Hooper Business Park in such quantities and from such areas of the tract of land as may identified by the City Engineer in writing.

    Any construction costs incurred by the Developer in the construction of the Road Improvements prior to City Council approving the Final Sewer Design Plans, except the construction costs for construction work specified in Sections 2(a)(i), (ii) and (iii) of this MOU above, shall not be eligible for reimbursement for the Type A Corporation or the City, and Developer shall exclusively bear such costs.
    b. **Construction Work Not Completed Prior to City Council Approval of Final Sewer Design Plans.** If Developer does not produce Final Sewer Design Plans in a form acceptable and approved by the City Council by the time the Lakewood

Grading and Lakewood Paving is completed, Developer shall bear the cost without reimbursement of any demobilization and remobilization charges due to a third-party contractor.

3. **Term of MOU.** This MOU shall terminate when all of the Road Improvements as defined in the Agreement are completed and accepted by the City and the City has reimbursed Developer for all costs related to Road Improvements in accordance with the Agreement.

4. **Compliance with Applicable Law.** In completing any activity set forth in this MOU, the parties shall comply with all state and federal statutes, rules, regulations, as amended, and other political subdivisions and governmental entities, if any, and all applicable ordinances, rules, and regulations as amended by the City.

5. **No Waiver of City Requirements.** Nothing contained in this MOU shall be construed as the granting of any permit or permission required by any City ordinance or regulation, or the waiver of any requirement of any City ordinance or regulation.

6. **No Waiver of Governmental Immunity.** The City does not waive its sovereign immunity by entering into this MOU, and shall fully retain all immunities, limitations on damages, and defenses provided by law with respect to any action based on or occurring as a result of this MOU. This term shall survive any closing or termination of this MOU.

7. **Amendment.** This MOU may only be amended by the mutual written agreement of the parties.

8. **Not an Amendment to the Agreement.** The parties agree that this MOU is not an amendment to the Agreement.

DEVELOPER:

Signed on this _____ day of _____, 20___.

R.A. DEVELOPMENT, LTD.

By: Bransom Management, LLC, its General Partner

By: _____

Name: _____

Title: _____

CITY:

Signed on this _____ day of _____, 20___.

CITY OF BURLESON

By: _____

Name: _____

Title: _____

TYPE A CORPORATION:

Signed on this _____ day of _____, 20___.

BURLESON 4A ECONOMIC DEVELOPMENT CORPORATION

By: _____

Name: _____

Title: _____

EXHIBIT “A”

CHAPTER 380 AND ECONOMIC DEVELOPMENT AND PERFORMANCE AGREEMENT BETWEEN THE CITY OF BURLESON, THE BURLESON 4A ECONOMIC DEVELOPMENT CORPORATION, R.A. DEVELOPMENT, LTD., BURLESON DEVELOPMENT, INC., B & G SOUTH METRO, LP, ROCKY BRANSOM, ROCKY BRANSOM ET UX ANGELA, ROCKY AND ANGELA BRANSOM, ALTA BURL, LP, JANICE YVONNE JACKSON, AND THE JACKSON FAMILY TRUST FOR CHISHOLM SUMMIT

This Chapter 380 and Economic Development and Performance Agreement (the "Agreement") is entered into as of the 7th day of June, 2021 (the "Effective Date") by and between the City of Burleson, a Texas municipal corporation located in the Counties of Johnson and Tarrant, State of Texas ("City"), by and through its City Manager; the Burleson 4A Economic Development Corporation ("BEDC"), by and through its Board President; R.A. Development, Ltd., a Texas limited liability partnership ("Developer"), by and through Bransom Management, LLC, its general partner; Burleson Development, Inc., by and through its president/director; B & G South Metro, LP, by and through B.G.S.M Management Company, LLC, its general partner; Rocky Bransom, Rocky Bransom et ux Angela; Rocky and Angela Bransom, Alta Burl, LP by and through Eyesight Ventures, LLC, its general partner; Janice Yvonne Jackson; Jackson Family Trust by and through its authorized trustee (collectively, including Developer, the "Current Owners"). City, BEDC, Developer, and the Current Owners sometimes hereafter be referred to individually as a "Party" and collectively as the "Parties."

WHEREAS, on May 27, 1993, the City adopted Resolution No. 583 establishing an Economic Development Program (the "Program") pursuant to Chapter 380 of the Texas Local Government Code; and

WHEREAS, Developer desires to participate in the Program by entering into this Agreement; and

WHEREAS, the Developer, the Current Owners and/or their predecessor in title previously entered into development agreements for certain tracts on the Property under Chapter 43 and Section 212.172 of the Local Government Code; and

WHEREAS, the Parties intend that this Agreement shall supersede those agreements in all matters; and

WHEREAS, the Burleson City Council finds and determines that this Agreement will effectuate the purposes set forth in the Program, and that Developer's performance of its obligations herein will promote local economic development and stimulate business and commercial activity in the City; and

WHEREAS, the City is authorized by Article 52-a Texas Constitution, and Section 380 of the Texas Local Government Code to provide economic development grants to promote local economic development and to stimulate business and commercial activity in the City; and

WHEREAS, the BEDC has determined and found that the Reimbursements contemplated in this Agreement to be funded by the BEDC constitute a "Project" as defined by the Development Corporation Act, codified in Subtitle C-1 of Title 12 of the Texas Local Government Code, in Section 501.103, in that the expenditures are for infrastructure necessary to promote business development; and

WHEREAS, Developer has acquired, or has under contract, approximately 823 acres on the west side of the City, currently within the extraterritorial jurisdiction ("ETJ") of the City, depicted on **Exhibit A**, and intends to develop a master planned community on the Property to include, among other things, over 3,000 high end residential units, ten miles of interconnecting trail system, over 90 acres of dedicated parkland, commercial areas, and other amenities, to be known as Chisholm Summit; and

WHEREAS, Burleson Development Inc. owns the real property depicted on **Exhibit A-1**, a portion of the Property that comprises Chisholm Summit; and

WHEREAS, Alta Burl LP owns the real property depicted on **Exhibit A-2**, a portion of the Property that comprises Chisholm Summit; and

WHEREAS, Jackson Family Trust owns the real property depicted on **Exhibit A-3**, a portion of the Property that comprises Chisholm Summit; and

WHEREAS, Janice Yvonne Jackson owns the real property depicted on **Exhibit A-4**, a portion of the Property that comprises Chisholm Summit; and

WHEREAS, B&G South Metro LP owns the real property depicted on **Exhibit A-5**, a portion of the Property that comprises Chisholm Summit; and

WHEREAS, Rocky Bransom owns the real property depicted on **Exhibit A-6**, a portion of the Property that comprises Chisholm Summit; and

WHEREAS, Rocky and Angela Bransom own the real property depicted on **Exhibit A-7**, a portion of the Property that comprises Chisholm Summit; and

WHEREAS, R.A. Development, Ltd., owns the real property depicted on **Exhibit A-8**, a portion of the Property that comprises Chisholm Summit; and

WHEREAS, the Current Owners have contractually committed to convey their tracts on the Property to Developer so that Chisholm Summit may be developed as set forth herein; and

WHEREAS, the Current Owners consent to annexation of their property located in Chisholm Summit and agree to the imposition of the Development Standards on any property they own within Chisholm Summit under the terms set forth in this Agreement; and

WHEREAS, the City desires to facilitate a master planned community with elements such as connectivity, a mixture of home types and sizes, preservation of natural areas, a sense of place and community, walkability, and uniqueness; and

WHEREAS, the development plan presented by the Developer for Chisholm Summit meets those criteria and the City Council desires to facilitate its development by providing the incentives set forth herein; and

WHEREAS, the Developer desires to annex the Property into the City in phases as Chisholm Summit is platted; and

WHEREAS, planned development zoning will occur concurrently with annexation; and

WHEREAS, while the west side of Burleson encompasses over 1,600 mostly vacant acres ("Burleson West") with tremendous potential for residential and commercial development, there is currently a lack of east/west and north/south transportation corridors, connection to Chisholm Trail Parkway is difficult, emergency response is hindered due to a poor roadway network, and sewer access is limited, thereby hindering development potential; and

WHEREAS, the City desires to provide for public infrastructure and improvements to allow Chisholm Summit to develop and to concurrently facilitate quality commercial development by providing Burleson West access to Chisholm Trail Parkway and connectivity with the rest of the City and to provide adequate sewer facilities; and

WHEREAS, Public Improvements contemplated in this Agreement will allow the BEDC to develop and market a national/regional office park located on the northern edge of Chisholm Summit (the "Hooper Tract"), a 92 acre tract depicted on **Exhibit A-9**; and

WHEREAS, Developer intends to dedicate all right-of-way for public infrastructure required for Chisholm Summit at no charge under the terms set forth in this Agreement; and

WHEREAS, Developer intends to dedicate a three acre tract for a public safety facility to provide fire and police service for the west side and other municipal purposes; and

WHEREAS, a public improvement district ("PID") is required to create and finance capital park improvements and the maintenance of parks and trails in Chisholm Summit; and

WHEREAS, Section 212.172 of the Texas Local Government Code authorizes a city to enter into an agreement with an owner of property located in the ETJ to, among other things, provide for terms of annexation, provide for infrastructure, and specify the uses and development standards after annexation.

NOW THEREFORE, in consideration of the mutual obligations of the Parties set forth in this Agreement, and other consideration, the receipt and adequacy of which are acknowledged, the Parties agree as follows:

ARTICLE 1.
RECITALS AND EXHIBITS

1.1 **Recitals.** The recitals set forth in the foregoing "WHEREAS" clauses are true and correct, constitute representations and warranties of the Parties, constitute legislative findings of the governing bodies of the Parties, form the basis upon which the Parties have entered into this Agreement, and establish the intent of the Parties in entering into this Agreement. If it becomes necessary to interpret any provision of this Agreement, the intent of the Parties, as evidenced by the recitals, shall be taken into consideration and, to the maximum extend possible, given effect. The Parties have relied on the recitals as part of the consideration for entering into this Agreement and, but for the recitals, would not have entered into this Agreement.

1.2 **Exhibits.** The Exhibits to this Agreement, incorporated herein for all purposes, are as follows:

Exhibit A – Chisholm Summit Real Estate Location Map
Exhibit A-1 – Burleson Development Inc Parcel Location Map
Exhibit A-2 – Alta Burl LP Parcel Location Map
Exhibit A-3 – Jackson Family Trust Parcel Location Map
Exhibit A-4 – Janice Yvonne Jackson Parcel Location Map
Exhibit A-5 – B&G South Metro LP Parcel Location Map
Exhibit A-6 – Rocky Bransom Parcel Location Map
Exhibit A-7 – Rocky & Angela Bransom Parcel Location Map
Exhibit A-8 – RA Development Ltd Parcel Location Map
Exhibit A-9 – Hooper & Co Parcel Location Map
Exhibit B – Preliminary Concept Plan
Exhibit C – Development Standards
Exhibit D – Parks and Trails Plan
Exhibit E – Roadway Improvements
Exhibit F – Sewer Improvements
Exhibit G – Annexation Plan/Development Sections

ARTICLE 2.
AUTHORIZATION

The Burleson City Council finds and determines that this Agreement is authorized by Chapter 380 of the Texas Local Government Code, Chapters 501 and 504 of the Texas Local Government Code, and Section 212.172 of the Texas Local Government Code.

ARTICLE 3.
DEFINITIONS

"Agreement," "BEDC," "Burleson West," "City," "Current Owners," "Developer", "Effective Date," "ETJ," "Hooper Tract," "Parties," "Party," and "Program" shall have the meanings set forth in the recitals.

"Approved Plats" means all final plats for a portion of the Property approved from time to time by the City in accordance with this Agreement.

"Building Codes" means building plumbing, electrical, mechanical, and fire codes adopted by the City in effect as of the Effective Date for the eight-year period commencing on the Effective Date. Commencing on the eighth anniversary of the Effective Date, "Building Codes" means building, plumbing, electrical, mechanical, and fire codes and all amendments thereto in effect on the date of submittal of a permit application to the City pursuant to the Building Codes, except any amendments from which the Project is exempt pursuant to Chapter 245 of the Local Government Code.

"Certificate of Occupancy" means the document issued by the City certifying a building's compliance with applicable building codes and other laws, and indicating it to be in a condition suitable for occupation.

"Chisholm Summit" means a 823 acre equestrian themed master planned community on the Property developed in substantial conformance with the Development Standards set forth on **Exhibit C** and the Governing Regulations comprised of at least 3,000 high end residential units, over ten (10) miles of interconnected trails, 102 acres of dedicated parkland, an equestrian center, and other amenities as set forth and depicted on the Preliminary Concept Plan attached hereto as **Exhibit B**, to be constructed in phases as set forth herein.

"Construction Costs" means the costs of all hard construction, construction equipment charges, the costs of construction materials, design fees (including landscape and architectural design) contractor fees, and subject to approval by the City, surveying and engineering costs and fees attributable to the construction of the Public Improvements and the Private Improvements, as applicable. Construction Costs does not include any acquisition costs of the Property, marketing, or applicable City fees related to the development of the Public Improvements and/or the Private Improvements, as applicable.

"Development Sections" has the meaning set forth in Section 5.1(a) of this Agreement.

"Development Standards" means those detailed development requirements set forth in **Exhibit C** for the Private Improvements.

"Equestrian Center" means the existing equestrian center located as shown on **Exhibit B**.

"Event of Bankruptcy or Insolvency" means the dissolution or termination of the Developer's existence as a going business, insolvency, appointment of receiver for any part of the Developer's property and such appointment is not terminated within sixty (60) days after such appointment is initially made, any general assignment for the benefit of creditors, or the commencement of any proceeding under any bankruptcy or insolvency laws by or against the Developer and such proceeding is not dismissed within sixty (60) days after the filing thereof.

"Final Concept Plan" has the meaning set forth in Section 5.3 of this Agreement.

"Final Parks and Trails Plan" has the meaning set forth in Section 9.2 of this Agreement.

"Governing Regulations" has the meaning set forth in Section 5.2 of this Agreement.

"Impositions" means all taxes, assessments, use and occupancy taxes, charges, excises, license and permit fees, and other charges by public or governmental authority, general and special, ordinary and extraordinary, foreseen and unforeseen, which are or may be assessed, charged, levied, or imposed by any public or governmental authority on the Developer or any property or any business owned by the Developer within the City.

"Parkland Improvements" means the open spaces, connecting trails, ponds, pocket parks, playground areas, amphitheater, and other park amenities depicted and described on The Parks and Trails Plan and dedicated to the public, **Exhibit D**.

"Preliminary Concept Plan" means the Concept Plan attached as **Exhibit C**, or as amended in the future.

"Private Improvements" means the residential units, connecting trails, Equestrian Center, amenity centers, Private Infrastructure, and commercial development in Chisholm Summit.

"Private Infrastructure" means any improvements required to be maintained on private property by the HOA including, but not limited to, open spaces, Chisholm Summit amenity centers, screening walls, or parks not dedicated to the public.

"Project" means the development of Chisholm Summit under the terms set forth in this Agreement.

"Property" means the 823 acres comprising Chisholm Summit, depicted on **Exhibit A**.

"Public Improvements" means the Roadway Improvements, Sewer Improvements, and Parkland Improvements.

"Reimbursement" means the funds paid to Developer for Construction Costs for the Roadway Improvements by the BEDC and Sewer Improvements by the City.

"Roadway Improvements" means Lakewood Blvd., FM 1902 to a transition point approximately 1,500 feet south of CR 1020, and sidewalks, median and landscape improvements as depicted on **Exhibit E**, to be funded by the BEDC.

"Sewer Improvements" means the sewer lines and lift stations set forth on **Exhibit F** to be funded by the BEDC.

"Subdivision Regulations" means the Subdivision and Development Ordinance and Design Standards manual or other regulations adopted in their place, as of the date a preliminary plat application is filed with the City, including any dormancy regulations effective on the date a preliminary plat application is filed with the City. Should a preliminary plat "expire" in accordance with the applicable dormancy regulations, a new application must be filed and the Subdivision Regulations for purposes of the new application shall be the Subdivision and Development Ordinance and Design Standards manual, or other regulations adopted in their place, as of the date the new application is filed with the City, including any dormancy regulations effective as of the date the new application is filed with the City.

"Substantially Complete" with regard to the Public Improvements means the date upon which the City issues a Letter of Substantial Acceptance to the Developer for any element or portion of the Public Improvements which will allow issuance of building permits; and with regard to the Private Improvements, the date upon which the City issues a Certificate of Occupancy for a Private Improvement.

"Zoning Ordinance" means Ordinance No. B-582 on the Effective Date of the Ordinance as it may be amended.

ARTICLE 4.
TERM

The Term of this Agreement shall commence on the Effective Date and terminate twenty-five (25) years thereafter, unless terminated sooner as provided in Article 12.

ARTICLE 5.
DEVELOPMENT OF THE PROPERTY

5.1 **Private Improvements.**

(a) Construction of the Private Improvements shall be in full conformance with the Governing Regulations as defined in Section 5.2 below and will be completed in Development Sections A through H by the Developer as depicted on **Exhibit G**. Construction of Development Section A Private Improvement shall commence no later than January 1, 2022 and be Substantially Complete no later than December 31, 2022. Substantial Completion of all Development Sections of Chisholm Summit shall be no later than the term of the agreement.

5.2 **Development.** Development of the Property shall be governed by the following regulations (collectively, the "Governing Regulations"):

(i) the Preliminary Concept Plan, which Preliminary Concept Plan is considered to be a development plan as provided for in Section 212.172 of the Texas Local Government Code;

(ii) the Final Concept Plan approved as part of the planned development sections for each phase;

(iii) the Development Standards;

(iv) the Subdivision and Development Ordinance and Design Standards Manual;

(v) the Building Codes;

(vi) the Approved Plats; and

(vii) all state and federal statutes, rules, regulations, as amended, and other political subdivisions and governmental entities, if any, having jurisdiction over the Property and all applicable ordinances, rules, and regulations as amended by the city.

5.3 **Preliminary Concept Plan.**

(a) The Preliminary Concept Plan is attached to this Agreement as **Exhibit B**.

(b) Developer may revise the Preliminary Concept Plan, from time to time, subject to the following conditions:

(i) the revised Preliminary Concept Plan is approved in writing by Developer; and

(ii) the revised Preliminary Concept Plan is approved by the City Council; and

(iii) the revised Preliminary Concept Plan is in compliance with subsection (c) of this Section 5.3 of this Agreement.

(c) The Preliminary Concept Plan must at all times:

(i) Include no less than 90 acres of parkland;

(ii) Maintain lot mix within allowable percentage ranges referenced in the Development Standards; and

(iii) Maintain the roadway alignments.

(d) If the Preliminary Concept Plan is revised as provided by this section, the revisions shall be considered an amendment to this Agreement. Developer must revise the Preliminary Concept Plan and submit same to the City for approval. Upon approval of the amendment, the City shall cause the revised Preliminary Concept Plan to be attached to the official version of this Agreement on file in the City Secretary's office and shall file the revised Preliminary Concept Plan in the Johnson County Real Property Records.

5.4 **Development Standards Revisions.** The Development Standards may be revised by two methods:

(i) the City Council may relieve Developer from strict compliance with the Development Standards on a case-by-case basis when Developer demonstrates, to the reasonable satisfaction of the City Council, that the requested exception:

(1) is not contrary to the public interest;

(2) does not cause injury to adjacent property;

(3) does not materially adversely affect the quality of development; and

(4) is not inconsistent with the Preliminary Concept Plan or the Final Concept Plan; or

(ii) Developer and the City may amend this Agreement to revise the Development Standards.

5.5 **State and Federal Requirements.** Development of the Property shall be subject to ordinances that the City is required to adopt, from time to time, by state or federal law.

5.6 **Homeowner's Association Required.**

(a) Developer shall create a single Homeowner's Association for the Property that requires membership by all of the owners of a lot within the Property, and is adequately funded to carry out its responsibilities.

(b) The Homeowner's Association shall own and be responsible for the maintenance of the Private Infrastructure.

(c) The Homeowner's Association shall have covenants and bylaws, which must submitted to the City for its records. The Homeowner's Association shall require the payment of dues and assessments to maintain the Private Infrastructure. The Homeowner's Association covenants shall provide for assessments and liens for nonpayment of dues or assessments. The approved covenants of the Homeowner's Association must be recorded with the County Clerk for Johnson County, Texas.

ARTICLE 6.
FULL PURPOSE ANNEXATION

The Parties agree that the Property shall have been annexed into the City prior to the construction of the Private Improvements for each phase. This Agreement constitutes a request by the Developer and the Current Owners, as owners of the Property, for annexation into the City of Burleson and serves as the written agreement for municipal services required by Section 43.0672 of the Texas Local Government Code. The request for annexation may not be revoked so long as the City remains compliant with the terms of this Agreement, and the right of the City to annex shall not be abrogated by amendment to any law affecting or establishing the right of a city to annex. The Parties agree that the Property shall be annexed in Development Sections A through H as depicted on **Exhibit G** concurrent with or prior to zoning each phase, with Development Section A annexed no later than December 31, 2022 or the commencement of the Lakewood portion of the Roadway Improvements, whichever is sooner. The Development Sections shall be annexed no later than the dates listed for each section in the Annexation Schedule in **Exhibit G.**

ARTICLE 7.
ROADWAY IMPROVEMENTS

7.1 **In General.** The City, the BEDC, and the Developer will work together to construct and fund the Roadway Improvements. The Developer will design and construct the Roadway Improvements subject to oversight and plan approval by the City. Subject to Article 13, the BEDC shall issue debt to fund the construction. The Developer will dedicate all right-of-way for the Roadway Improvements within its authority to do so and based on the final alignment and construct them according the Governing Regulations.

7.2 **Design of Roadway Improvements.**

(a) **Construction Plans.** The Developer shall retain a professional engineer to design the Roadway Improvements. The Developer shall retain a professional engineer to design a conceptual design of the Roadway Improvements at a cost not to exceed Two Hundred Fifty Thousand and no/100s Dollars ($250,000.00). Construction Plans be shall be in conformance with all state and local ordinances and regulations and the Development Standards set forth in **Exhibit C**.

(b) **Council Approval.** The City Council must approve the final design, construction schedule, and construction costs for the Roadway Improvements.

(c) **Reimbursement for Design Costs.** The BEDC shall reimburse Developer for design costs according to completion of the following milestones, with payment to be made in the amount of the costs of the milestone within twenty (20) days after Developer notifies the City that the milestone is met, and provides proof of expenditure satisfactory to the City:

(i) Completion of survey;

(ii) 30%/Conceptual design;

(iii) 60% design;

(iv) 90% design; and

(v) 100%/Final design.

Ten percent (10%) retainage will be held from all payments and returned at the time plans are released for construction. For Developer to be reimbursed for design costs at 60% design, 90% design, and Final/100% design, City must approve the submitted design as set forth in Section 7.2(f) of this Agreement.

(d) **Not to Exceed.** Reimbursement shall not exceed the design cost approved by the City Council.

(e) **Ownership.** The City shall own all design plans.

(f) **Approval and Review of Design.** The Developer shall cause the professional engineer retained by Developer to design the Roadway Improvements in accordance with Section 7.2(a) of this Agreement to provide a detailed design and construction schedule to the City. The Roadway Improvements design shall meet the approval of the City in its entirety and in the stages of design as detailed below. The Developer shall cause the professional engineer to submit the design of the Roadway Improvements to the City for approval at the following stages of completion, and the City shall have the amount of time specified to determine whether it approves the submitted design:

(i) 30% of Completion of Design on Roadway Improvements (which shall include the conceptual design referenced in Section 7.2(a) of this Agreement) – City shall have fourteen (14) calendar days to review and determine approval.

(ii) 60% of Completion of Design on Roadway Improvements – City shall have thirty (30) calendar days to review and determine approval.

(iii) 90% of Completion of Design on Roadway Improvements – City shall have twenty-one (21) calendar days to review and determine approval.

(iv) Final Design/100% of Completion of Design on Roadway Improvements – City shall have seven (7) calendar days to review and determine approval.

If the design plans submitted for a stage specified above are not completed in such a manner and to such a degree and detail that is standard and customary in the industry for the stage specified, the City shall have the ability to extend the amount of time to review the design and/or deny approval. Further, if the Developer does not cause the professional engineer to adequately respond to City comments on the design plans, the City shall have the ability to extend the amount of time to review the design and/or deny approval.

7.3 **Dedication of Right-of-Way.**

(a) **Developer Dedication.** The Developer and the Current Owners agree to donate all required right-of-way located on or through the Property at no cost to the City.

(b) **City Dedication.** The City will donate right-of-way for roadway located in the Hooper tract, and acquire right-of-way for areas outside of the Property.

(c) **Roadway Improvements Conveyance.** All Roadway Improvements and right-of-way shall be conveyed to the City free and clear of all liens, assessments, and restrictions other than provided in this Agreement.

7.4 **Fees.** Roadway impact fees shall be assessed according to the Burleson Roadway Impact Fee Ordinance. All other fees associated with the construction of the Roadway Improvements shall be waived.

7.5 **Community Facility Contract (CFC).** The Developer shall enter into a community facility contract with the City and Contractor in accordance with Article 4 of the Subdivision and Development Ordinance.

7.6 **Roadway Improvement Construction Schedule.**

The construction of the Roadway Improvements shall be according to the following schedule:

(a) **Survey of All Phases.** By September 1, 2021, the Developer shall complete a survey of all phases of the Roadway Improvements, such phases being as follows: (i) Phase One – FM 1902 to Existing CR 1016, (ii) Phase Two – Two-Lane Section CR 1016 to CR 1020, and (iii) Phase Three – Two-Lane Section CR 1016 to CR 1020, and (iv) Phase Four - Median Improvements and Sidewalks.

(b) **Start of Construction.** Developer shall begin construction of Phase One of the Roadway Improvements by June 30, 2022.

(c) **End of Construction.** Developer shall complete construction of the Roadway Improvements, other than landscaping, by December 31, 2023. Developer shall complete the landscaping portion of the Roadway Improvements by March 31, 2024.

7.7 **Reimbursement for Construction Costs of Roadway Improvements.**

(a) **Opinion of Cost.** The final design for the Roadway Improvements shall include an opinion of probable Construction Costs for the Roadway Improvements.

(b) **City Council Approval.** The City Council must approve the final design and all Construction Costs for the Roadway Improvements. If the City Council has not approved any cost before it is incurred, obligated or spent, the BEDC is not obligated to reimburse the Developer for that expense.

(c) **Developer Reimbursement Schedule for Construction of Roadway.** The BEDC shall reimburse the Developer for approved Construction Costs based on the Developer's bi-monthly request, with payment to be made by the City in the amount of the cost of the request within twenty (20) days after the Developer notifies the City of the work completed and provides evidence of the expenditure satisfactory to the City. Each phase of the construction of the Roadway Improvements shall be treated as individual projects as it relates to payments.

Ten percent (10%) retainage will be held from all payments and returned at Substantial Completion of each phase of the roadway as specified in Section 7.6(a) of this Agreement.

ARTICLE 8.
SEWER IMPROVEMENTS

8.1 **In General.** The City and the Developer will work together to construct and fund the Sewer Improvements. The Developer will be solely responsible for onsite and offsite waterline extensions and improvements. The Developer will design and construct the Sewer Improvements to include a lift station(s) and force main(s), subject to oversight and plan approval by the City, provided that the City will design a portion of sewer from Panchasarp Farms to CR 914A as set forth in **Exhibit F**. The Developer will dedicate all right-of-way for the Sewer Improvements and construct them according to the Governing Regulations.

8.2 **Design of Sewer Improvements.**

(a) **Construction Plans.** The Developer shall retain a professional engineer to design the Sewer Improvements. The Developer shall retain a professional engineer to design a conceptual design of the Sewer Improvements at a cost not to exceed Two Hundred Fifty Thousand and no/100s Dollars ($250,000.00). Construction Plans be shall be in conformance with all state and local ordinances and regulations and the Development Standards set forth in **Exhibit C**.

(b) **Council Approval.** The City Council must approve the final design and construction costs for the Sewer Improvements.

(c) **Reimbursement for Design Costs.** The City shall reimburse Developer for design costs according to completion of the following milestones, with payment to be made in the amount of the costs of the milestone within twenty (20) days after Developer notifies the City that the milestone is met, and provides proof of expenditure satisfactory to the City:

(i) Completion of survey;

(ii) 30%/Conceptual design;

(iii) 60% design;

(iv) 90% design; and

(v) 100%/Final design.

Ten percent (10%) retainage will be held from all payments and returned at the time plans are released for construction. For Developer to be reimbursed for design costs at 60% design, 90% design, and Final/100% design, City must approve the submitted design as set forth in Section 8.2(f) of this Agreement.

(d) **Not to Exceed.** Reimbursement shall not exceed the design cost approved by the City Council.

(e) **Ownership.** The City shall own all design plans.

(f) **Approval and Review of Design.** The Developer shall cause the professional engineer retained by Developer to design the Sewer Improvements in accordance with Section 8.2(a) of this Agreement to provide a detailed design and construction schedule to the City. The Sewer Improvements design shall meet the approval of the City in its entirety and in the stages of design as detailed below. The Developer shall cause the professional engineer to submit the design of the Sewer Improvements to the City for approval at the following stages of completion, and the City shall have the amount of time specified to determine whether it approves the submitted design:

(i) 30% of Completion of Design of Sewer Improvements (which shall include the conceptual design referenced in Section 8.2(a) of this Agreement) – City shall have fourteen (14) calendar days to review and determine approval.

(ii) 60% of Completion of Design of Sewer Improvements – City shall have thirty (30) calendar days to review and determine approval.

(iii) 90% of Completion of Design of Sewer Improvements – City shall have twenty-one (21) calendar days to review and determine approval.

(iv) Final Design/100% of Completion of Sewer Improvements – City shall have seven (7) calendar days to review and determine approval.

If the design plans submitted for a stage specified above are not completed in such a manner and to such a degree and detail that is standard and customary in the industry for the stage specified, the City shall have the ability to extend the amount of time to review the design and/or deny approval. Further, if the Developer does not cause the professional engineer to adequately respond to City comments on the design plans, the City shall have the ability to extend the amount of time to review the design and/or deny approval.

(g) **Design of Phase One.** City has a detailed design of the Sewer Improvements for Phase One (Panchasarp Farms to County Road 914A) of the Sewer Improvements, as depicted on **Exhibit F**. Such detailed designs were designed by a professional engineer retained by the City. City shall allow Developer, and Developer shall use, the detailed design of the Sewer Improvements for Phase One to design the remainder of the Sewer Improvements.

8.3 **Dedication of Right-of-Way.**

(a) **Developer Dedication.** The Developer and the Current Owners agree to donate all required right-of-way located on or through the Property at no cost to the City. The City will acquire offsite easements.

(b) **Sewer Improvements Conveyance.** All Sewer Improvements and right-of-way shall be conveyed to the City free and clear of all liens, assessments, and restrictions other than provided in this Agreement.

8.4 **Fees.** Sewer impact fees shall be assessed upon the Developer according to the Burleson Sewer Impact Fee Ordinance, and the Developer shall pay the pass through Fort Worth impact fees pursuant to the Agreement for Wastewater Service between the City of Fort Worth, Texas, and the City of Burleson, Texas, dated May 8, 2018, or as may be amended. All other fees associated with the construction of the Sewer Improvements shall be waived.

8.5 **Community Facility Contract (CFC).** The Developer shall enter into a CFC with the City and Contractor in accordance with Article 4 of the Subdivision and Development Ordinance for each phase of the sewer construction.

8.6 **Sewer Improvement Construction Schedule.** The construction of the Sewer Improvements shall be according to the following schedule:

(a) **Survey of All Phases.** By September 1, 2021, the Developer shall complete a survey of all phases of the Sewer Improvements, such phases being as follows:

(i) Phase One – Panchasarp Farms to County Road 914A,

(ii) Phase Two – County Road 1016 to FM 1902, including the lift station near FM 1902 and the force main from the lift station to CR 1016, and

(iii) Phase Three – County Road 1020 to County Road 1016, including the force main from CR 1016 to CR 914A.

(b) **Start of Construction.** Developer shall begin construction of Phase One of the Sewer Improvements by June 30, 2022.

(c) **End of Construction.** Developer shall complete construction of the Sewer Improvements by December 31, 2023.

8.7 **Reimbursement for Construction Costs of Sewer Improvement.**

(a) **Opinion of Cost.** The final design for the Sewer Improvements shall include an opinion of probable Construction Costs for the Sewer Improvements.

(b) **City Council Approval.** The City Council must approve the final design and all Construction Costs for the Sewer Improvements if the City Council has not approved any cost before it is incurred, obligated or spent, the City is not obligated to reimburse the Developer for that expense.

(c) **Developer Reimbursement Schedule for Construction of Sewer Improvements.** The City shall reimburse the Developer for approved costs based on the Developer's bi-monthly request, with payment to be made in the amount of the cost of the request within twenty business (20) days after the Developer notifies the City of the work completed and provides evidence of the expenditure satisfactory to the City. Each phase of the construction of the Sewer Improvements shall be treated as individual projects as it relates to payments.

Ten percent (10%) retainage will be held from all payments and returned at Substantial Completion of each phase of the sewer as specified in Section 8.6(a) of this Agreement.

(d) **Competitive Bidding.** All contracts for construction of the Sewer Improvements shall be competitively bid according to state law.

8.8 **Future Lift Station.** The future lift station, depicted on **Exhibit F**, will not be constructed concurrently with the other Sewer Improvements, and will serve the entire basin, including only a portion of Chisholm Summit. Provided the future lift station is constructed prior to December 31, 2025 and provided funds are available, the City agrees to participate in the cost of the future lift station by contributing up to fifty percent (50%) of the total cost, based on a calculation of how much of the lift station's capacity is needed to serve Chisholm Summit. The City will pay for the pro rata cost allocated to areas outside of Chisholm Summit capped at fifty percent (50%) of the total cost of the future lift station. By way of example, if the cost of the future lift station is one million dollars and 40% of the capacity is attributable to Chisholm Summit, the City would pay $500,000. If 70% of the capacity is attributable to Chisholm Summit, the City will pay $300,000.

ARTICLE 9.
PARKLAND IMPROVEMENTS

9.1 **Dedication.** The Developer proposes to dedicate 102 acres of parkland according to the Preliminary Park and Trails Plan attached as **Exhibit D** to this Agreement. In no instance shall the parkland dedication be less than 90 acres. All parkland dedication shall be made at the time of final platting of each phase and shall be conveyed to the City free and clear of all liens, encumbrances, assessments, and restrictions other than as provided in this Agreement. All public parkland needs to be so indicated on the plat. Any areas that will be private common space need to be delineated clearly on the plat.

9.2 **Park and Trail Plan.** The Preliminary Park and Trails Plan is a conceptual rendering of locations of a community park, and equestrian center, trails, and thirteen (13) neighborhood parks. These locations are conceptual, but in no case shall fewer park locations, area dedicated, or miles of trails be provided. A detailed Final Parks and Trails Plan shall be included with each Approved Plat for each phase, subject to approval by the City Council. The Final Parks and Trails Plan shall be in full conformance with the Development Standards attached as **Exhibit C** and shall be subject to approval by the City Council. Although the Final Parks and Trails Plan is submitted in conjunction with the plat, approval by the City Council is not ministerial, and when approved shall be considered an amendment to this Agreement.

9.3 **Construction of Parkland Improvements.** The Developer shall construct the Parkland Improvements in full compliance with the Final Parks and Trails Plan. The Developer shall complete construction of the Parkland Improvements by final acceptance of the Roadway Improvements, and Sewer Improvements of each phase. Parkland Infrastructure fees shall be waived for parks constructed by the Developer.

9.3 **Maintenance of Parks and Trails.** The Public Improvement District created pursuant to Section 10 below will fund park maintenance.

ARTICLE 10.
PUBLIC IMPROVEMENT DISTRICT

10.1 **Creation.** Within 180 days after the Effective Date, the City and the Developer shall cooperate to establish a Public Improvement District (PID) pursuant to Chapter 272 of the Texas Local Government Code.

10.2 **Purpose.** The primary purpose of the PID will be to reimburse Developer for capital expenditures to construct parks and trails and to provide maintenance for Chisholm Summit parks and trails dedicated to the public.

ARTICLE 11.
DEDICATION FOR PUBLIC SAFETY

Developer agrees to dedicate at least three (3) acres on the Property to the City for a public safety facility to be constructed by the City, and for other municipal purposes. The Parties will mutually agree on the location of the dedicated land which shall be conveyed no later than thirty-six (36) months after the Effective Date of this Agreement.

ARTICLE 12.
DEFAULT AND REMEDIES

12.1 In the event: (i) the Developer or the Current Owners fail to comply with the terms of this Agreement; (ii) the Developer or the Current Owners have delinquent ad valorem or sales taxes owed to the City (provided that the Developer or the Current Owners retain the right to timely and properly protest and/or contest any such taxes); (iii) upon the

occurrence of any Event of Bankruptcy or Insolvency by the Developer or the Current Owners prior to substantially completion of the Public Improvements; or (iv) the Developer the Current Owners materially breach any of the material terms and conditions of this Agreement, then the Developer the Current Owners, after the expiration of the notice and cure periods described herein, shall be in default of this Agreement. In the event of such a default, City shall give the Developer or the Current Owners (and its assignees) written notice of such breach and/or default, and if the Developer or the Current Owners have not cured such breach or default within thirty (30) days after receipt of such notice, the City may terminate this Agreement by written notice to the Developer the Current Owners, and the City shall have no further obligation to the Developer the Current Owners.

12.2 If a default shall occur and continue, after thirty (30) days written notice to cure the default, the Party not in default shall have the right to exercise any and all rights available to such Party at law or in equity, including the right to seek equitable relief such as injunction or mandamus as to which the non-defaulting Party may be entitled.

12.3 No waiver or any breach of any term or condition of this Agreement shall be construed to waive any subsequent breach of the same or any other term or condition of this Agreement. Any waiver of any term or condition of this Agreement must be in writing and approved by the City Council of Burleson.

ARTICLE 13.
DEBT ISSUANCE

The BEDC commits to issue debt to fund the Roadway Improvements and the City may deem it appropriate to fund the Sewer Improvements with debt issuance. Their obligation to fund the Reimbursement is contingent upon required state approval of the issuance. In the event debt is not approved, the Developer or the City may terminate this Agreement.

ARTICLE 14.
REGULATIONS REGARDING BUILDING PRODUCTS, MATERIALS, OR METHODS

The parties hereto find that the area described herein constitutes an area of architectural importance and significance and the City Council of the City of Burleson, Texas, hereby designates it as an area of architectural importance and significance for purposes of Chapter 3000 of the Texas Government Code (the "Code"). In consideration for the mutual covenants and conditions contained herein and pursuant to Section 3000.002(d) of the Code, Developer voluntarily consents to the application of all City rules, charter provisions, ordinances, orders, building codes, and other regulations existing as of the Effective Date hereof that govern the use or installation of a building product or material in the construction, renovation, maintenance, or other alteration of a residential or commercial building on the Property regardless of whether a different building product or material is approved for use by a national model code published within the last three code cycles that applies to the construction, renovation, maintenance, or other alteration of the building. In addition, Developer voluntarily consents to the

application of the Regulations that establish a standard for a building product, material, or aesthetic method in construction, renovation, maintenance, or other alteration of a residential or commercial building, regardless of whether the standard is more stringent than a standard for the product, material, or aesthetic method under a national mode code published within the last three code cycles that applies to the construction, renovation, maintenance, or other alteration of the building. The parties agree that: 1) the City will not issue any permits for the Property in violation of this Article; 2) the covenants contained within this Article constitute a material term of this Agreement; 3) Developer's voluntary consent to the application of the Regulations to the Property, as described in this Article, constitutes a material inducement for the City to authorize the Incentives described herein; 4) the covenants contained herein shall run with the land and shall bind Developer and all successors and assigns; and 5) this Article shall survive termination or expiration of this Agreement.

ARTICLE 15.
AUTHORITY; COMPLIANCE WITH LAW

15.01 Developer hereby represents and warrants to the City that it has full lawful right, power and authority to execute and deliver and perform the terms and obligations of this Agreement and that the execution and delivery of this Agreement has been duly authorized by all necessary action by Developer and this Agreement constitutes the legal, valid and binding obligation of Developer, and is enforceable in accordance with its terms and provisions.

15.02 Notwithstanding any other provision of this Agreement, Developer shall comply with all federal, state, and local laws.

15.03 During the term of this Agreement, Developer agrees not to knowingly employ any undocumented workers at the Development, and if convicted of a violation under 8 U.S.C. Section 1324a(f), Developer shall repay the amount of the Incentives received by Developer as of the date of such violation within 120 business days after the date Developer is notified by the City of such violation, plus interest at the rate Burleson is paying on the most recent issuance of bonded indebtedness prior to Developer's violation of this Article.

15.04 Developer shall remain current on all ad valorem taxes owed by him to the City and other taxing jurisdictions subject to his right to protest under the Tax Code.

ARTICLE 16.
RIGHT OF OFFSET

Developer agrees that, subject to the provision of Notice by City and 90-day period following receipt of Notice in which Developer may respond or act, City may offset the amount of any compensation due to Developer for any calendar year under this Agreement against unpaid Impositions any amount which is: (i) lawfully due to City from

Developer, and (ii) not subject to challenge by Developer in a court of competent jurisdiction by Developer.

ARTICLE 17.
VENUE AND GOVERNING LAW

This Agreement is performable in Johnson County, Texas and venue of any action arising out of this Agreement shall be exclusively in Johnson County, Texas. This Agreement shall be governed and construed in accordance with the Charter, ordinances, and resolutions of the City of Burleson, applicable federal and state laws, violation of which shall constitute a default of this Agreement. To the extent permitted by law, the laws of the State of Texas shall apply without regard to applicable principles of conflicts of law, and the parties submit to the jurisdiction of the state and federal courts in Burleson, Johnson County, Texas.

ARTICLE 18.
FORCE MAJEURE

Performance of Developer's obligations under this Agreement shall be subject to extension due to delay by reason of events of force majeure, and Developer's obligations shall be abated during any period of force majeure. Force majeure shall include, without limitation, damage or destruction by fire or other casualty, condemnation, strike, lockout, civil disorder, war, issuance of any permit and/or legal authorization (including engineering approvals by any governmental entity), governmental approvals and permits, shortage or delay in shipment of materials or fuel occasioned by any event referenced herein, acts of God, unusually adverse weather or wet soil conditions or other causes beyond the parties' reasonable control, including but not limited to, any court or judgment resulting from any litigation affecting the Property or this Agreement.

ARTICLE 19.
GIFT TO PUBLIC SERVANT OR TO DEVELOPER REPRESENTATIVE

16.01 **No Benefit.** Each party hereto represents to the other that it has not offered, conferred, or agreed to confer and that it will not offer, confer or agree to confer in the future any benefit upon an employee or official of the other party. For purposes of this section, "benefit" means anything reasonably regarded as economic advantage, including benefit to any other person in whose welfare the beneficiary is interested, but does not include a contribution or expenditure made and reported in accordance with law.

16.02 **Right of Reimbursement.** Notwithstanding any other legal remedies, City may obtain reimbursement for any expenditure made to Developer as a result of the improper offer, agreement to confer, or conferring of a benefit to a City employee or official.

ARTICLE 20.
ASSIGNMENT

Developer may not assign any part of this Agreement without consent or approval by the City Council, except to End Users, which are defined as purchasers of the individual platted lots.

ARTICLE 21.
INDEMNIFICATION

DEVELOPER EXPRESSLY AGREES TO FULLY AND COMPLETELY DEFEND, INDEMNIFY, AND HOLD HARMLESS THE CITY, AND ITS OFFICERS, AND EMPLOYEES, AGAINST ANY AND ALL CLAIMS, LAWSUITS, LIABILITIES, JUDGMENTS, COSTS, AND EXPENSES FOR PERSONAL INJURY (INCLUDING DEATH), PROPERTY DAMAGE OR OTHER HARM, DAMAGES OR LIABILITY FOR WHICH RECOVERY OF DAMAGES IS SOUGHT, SUFFERED BY ANY PERSON OR PERSONS, THAT MAY ARISE OUT OF OR BE OCCASIONED BY ANY NEGLIGENT, GROSSLY NEGLIGENT, WRONGFUL, OR STRICTLY LIABLE ACT OR OMISSION OF Developer OR ITS AGENTS, EMPLOYEES, OR CONTRACTORS, ARISING OUT IN THE PERFORMANCE OF THIS CONTRACT. Nothing in this paragraph may be construed as waiving any governmental immunity available to the City under state law. This provision is solely for the benefit of Developer and the City and is not intended to create or grant any rights, contractual or otherwise, in or to any other person.

ARTICLE 22.
NO JOINT VENTURE

It is acknowledged and agreed by the Parties that the terms hereof are not intended to and shall not be deemed to create a partnership or joint venture among the parties. The City (including its past, present and future officers, elected officials, directors, employees and agents of the City) does not assume any responsibility to any third party in connection with Developer's construction of Chisholm Summit.

ARTICLE 23.
RECORDATION AND APPLICABILITY TO PROPERTY

Pursuant to the requirements of Section 212.172(c) of the Local Government Code, the Current Owners shall record this Agreement, and all amendments to this Agreement, in the real property records of Johnson County, Texas, and shall provide a file-marked copy of the recorded Agreement to the City within ten (10) days after its execution. This Agreement shall be binding upon the City, the BEDC, the Current Owners, any lender that has become an assignee, and any other assignee, and their respective successors and assigns. The Parties agree that this Agreement benefits and burdens the Property and touches and concerns the Property. The rights and obligations under this Agreement are intended to be covenants running with the Property. Notwithstanding the foregoing, this Agreement is not binding upon, and shall not constitute any encumbrance to title as to any End User except for land use and development regulations including building material requirements that apply to the lot in question.

ARTICLE 24.
CHANGES IN STATE OR FEDERAL LAWS

If any state or federal law changes so as to make it impossible for a Party to perform its obligations under this Agreement, the Parties will cooperate to amend this Agreement in such a manner that is most consistent with the original intent of this Agreement as legally possible.

ARTICLE 25.
ADDITIONAL DOCUMENTS AND ACTS

The Parties agree that at any time after execution of this Agreement, they will, upon request of the other Party, execute and/or exchange any other documents necessary to effectuate the terms of this Agreement and perform any further acts or things as the other Party may reasonably request to effectuate the terms of this Agreement. The City Council authorizes the City Manager or his designee to execute these documents.

ARTICLE 26.
INTERPRETATION

The Parties acknowledge that each Party and, if it so chooses, its counsel have reviewed and revised this Agreement and that the normal rule of construction to the effect that any ambiguities are to be resolved against the drafting party shall not be employed in the interpretation of this Agreement or any amendments or exhibits hereto. As used in this Agreement, the term "including" means "including without limitation" and the term "days" means calendar days, not business days. Wherever required by the context, the singular shall include the plural, and the plural shall include the singular. Each defined term herein may be used in its singular or plural form whether or not so defined.

ARTICLE 27.
AUTHORITY TO EXECUTE

The City and the BEDC warrant that this Agreement has been approved by the City Council and the BEDC in accordance with all applicable public meeting and public notice requirements (including, but not limited to, notices required by the Texas Open Meetings Act) and that the individual executing this Agreement on behalf of the City has been authorized to do so. The Current Owners warrant that the execution of this Agreement is duly authorized in conformity with the articles of incorporation, bylaws, partnership agreement or other applicable organizational documents of Developer and that the individual executing this Agreement on behalf of Developer has been authorized to do so. Each assignee or lender who becomes a Party to this Agreement represents and warrants that this Agreement has been approved by appropriate action of such assignee or lender and that the individual executing this Agreement on behalf of such assignee or lender has been authorized to do so.

ARTICLE 28.
TAKINGS IMPACT ASSESSMENT

Current Owners expressly and unconditionally waives and releases the City from any obligation to perform a takings impact assessment under the Texas Private Real Property Rights Preservation Act, Texas Government Code Chapter 2007, as it may apply to this Agreement or the Project.

ARTICLE 29.
DETERMINATION OF ROUGH PROPORTIONALITY

As additional consideration for the Reimbursement received by Developer under this Agreement, Developer hereby agrees to donate the land necessary to construct the Public Improvements to the City and Developer further agrees that such land is roughly proportional to the need for such land and Developer hereby waives any claim therefor that it may have. Developer further acknowledges and agrees that all prerequisites to such a determination of rough proportionality have been met, and that any costs incurred relative to said donation are related both in nature and extent to the impact of the Private Improvements. Owner waives and releases all claims against the City related to any and all rough proportionality and individual determination requirements mandated by Subchapter Z of Chapter 212, Texas Local Government Code, as well as other requirements of a nexus between development conditions and the projected impact of the Improvements.

ARTICLE 30.
PRIOR DEVELOPMENT AGREEMENTS

The following listed development agreements entered into under Chapter 43 and Section 212.172 of the Texas Local Government Code are hereby terminated and of no further effect and the Parties agree that the Property may be annexed in its entirety:

(a) Development Agreement between the City of Burleson, Alta Burle, LP, and Burleson Development, Inc. dated August 6, 2018, approved by the City Council of the City of Burleson by Resolution No. CSO#869-08-2018;

(b) Development Agreement between the City of Burleson and the Jackson Family Trust dated October 29, 2014, recorded under Instrument Number 2014-24200, Johnson County Real Property Records, Johnson County, Texas;

(c) Development Agreement between the City of Burleson and Burleson Development, Inc. dated May 31, 2016, recorded under Instrument Number 2016-18200, Johnson County Real Property Records, Johnson County, Texas;

(d) Development Agreement between the City of Burleson and Rocky Bransom et ux Angela, dated October 29, 2014, recorded under Instrument Number 2014-24241, Johnson County Real Property Records, Johnson County, Texas; and

(e) Development Agreement between the City of Burleson and Jerry Donahew, dated October 29, 2014, recorded under Instrument Number 2014-24176, Johnson County Real Property Records, Johnson County, Texas.

Further, the Parties agree if any portion of the Property is subject to a development agreement with the City not listed above, such development agreement is hereby terminated and of no further effect, but only to the extent such development agreement includes real property included in the Property. In the event a development agreement also includes real property that is not included in the Property, the development agreement shall continue in full force and effect over the real property not included in the Property, but shall be terminated as to the real property included in the Property.

ARTICLE 31.
MISCELLANEOUS MATTERS

31.01 **Time is of Essence.** Time is of the essence in this Agreement. The Parties hereto will make every reasonable effort to expedite the subject matters hereof and acknowledge that the successful performance of this Agreement requires their continued cooperation.

31.02 **Agreement Subject to Law.** This Agreement is made subject in accordance with the Burleson Home Rule Charter and ordinances of City, as amended, and all applicable state and federal laws.

31.04 **Counterparts Deemed Original.** This Agreement may be executed in any number of counterparts, each of which shall be deemed an original and constitute one and the same instrument.

31.05 **Captions.** The captions to the various clauses of this Agreement are for informational purposes only and shall not alter the substance of the terms and conditions of this Agreement.

31.06 **Complete Agreement.** This Agreement embodies the complete agreement of the parties hereto, superseding all oral or written previous and contemporary agreements between the parties and relating to matters in the Agreement, and except as otherwise provided herein cannot be modified without written agreement of the parties to be attached and made a part of this Agreement.

31.07 **No Waiver.** Nothing contained in this Agreement shall be construed as the granting of any permit or permission required by any City ordinance or regulation, or the waiver of any requirement of any City ordinance or regulation.

31.08 **Notice.** Any notice to be given or served hereunder or under any document or instrument executed pursuant hereto shall be in writing and shall be (i) delivered personally, with a receipt requested therefore; or (ii) sent by a nationally recognized overnight courier service; or (iii) delivered by United States certified mail, return receipt

requested, postage prepaid. All notices shall be addressed to the respective party at its address set forth below, and shall be effective (a) upon receipt or refusal if delivered personally; (b) one business day after depositing, with such an overnight courier service or (c) two business days after deposit in the United States mails, if mailed. Any party hereto may change its address for receipt of notices by service of a notice of such change in accordance with this subsection.

Developer: R.A. Development, Ltd.
236 E. Ellison St.
Burleson, TX 76028

City: City Manager
City of Burleson, Texas
141 West Renfro
Burleson, Texas 76028

With a copy to: Betsy Elam
Taylor, Olson, Adkins, Sralla & Elam, L.L.P.
6000 Western Place, Suite 200
Fort Worth, Texas 76107

BEDC: Burleson EDC President
141 West Renfro
Burleson, Texas 76028

With a copy to: Betsy Elam
Taylor, Olson, Adkins, Sralla & Elam, L.L.P.
6000 Western Place, Suite 200
Fort Worth, Texas 76107

CURRENT OWNERS:

Burleson Development, Inc.
236 E. Ellison St.
Burleson, TX 76028

B & G South Metro, LP
236 E. Ellison St.
Burleson, TX 76028

Rocky Bransom
236 E. Ellison St.
Burleson, TX 76028

Rocky Bransom et ux Angela

236 E. Ellison St.
Burleson, TX 76028

Rocky and Angela Bransom
236 E. Ellison St.
Burleson, TX 76028

Alta Burl, LP
3000 Altamesa Blvd, Ste. 300
Fort Worth, TX 76133

Janice Yvonne Jackson
1517 CR 914
Burleson, TX 76028

The Jackson Family Trust
1517 CR 914
Burleson, TX 76028

31.09 **Amendment.** This Agreement may only be amended by the mutual written agreement of the parties.

31.10 **Severability.** In the event any section, subsection, paragraph, subparagraph, sentence, phrase, or word herein is held invalid, illegal, or unenforceable, the balance of this Agreement shall stand, shall be enforceable, and shall be read as if the parties intended at all times to delete said invalid section, subsection, paragraph, subparagraph, sentence, phrase, or word. In the event there shall be substituted for such deleted provision a provision as similar in terms and in effect to such deleted provision as may be valid, legal and enforceable.

[Signature pages to follow]

EXECUTED on the respective dates of acknowledgement, to be effective as of the date first set forth above.

CITY OF BURLESON

By: _____
Bryan Langley, City Manager

Date: 6/9/21

STATE OF TEXAS
COUNTY OF JOHNSON

This instrument was acknowledged before me on June 9, 2021 by Bryan Langley, known personally by me to be the City Manager of the City of Burleson, on behalf of said City.

[Notary Seal]

_____
Notary Public, State of Texas

KAREN E. GOODMAN
Notary Public, State of Texas
Comm. Expires 08-24-2021
Notary ID 125391700

BURLESON 4A ECONOMIC DEVELOPMENT CORPORATION

By: _____

Name: Dan McClendon

Title: Board President

Date: June 9, 2021

STATE OF TEXAS
COUNTY OF Johnson / Tarrant

This instrument was acknowledged before me on 6/9, 2021 by Dan McClendon, known personally by me to be the Board President of THE Burleson 4A Economic Development Corporation, on behalf of said entity.

[Notary Seal]

_____ / JESSE ELIZONDO
Notary Public, State of Texas

JESSE ELIZONDO
Notary Public, State of Texas
Comm. Expires 09-19-2021
Notary ID 129548426

R.A. Development, Ltd.
a Texas limited partnership

By: Bransom Management, LLC
Its general partner

By: _____
Rocky Bransom, its Member

Date: 6-9-21

STATE OF TEXAS
COUNTY OF Johnson

This instrument was acknowledged before me on June 9, 2021 by Rocky Bransom, known personally by me to be a member of Bransom Management, LLC the general partner of R.A. Development, Ltd, on behalf of said entity.

[Notary Seal]

KAREN E. GOODMAN
Notary Public, State of Texas
Comm. Expires 08-24-2021
Notary ID 125391700

Karen E. Goodman
Notary Public, State of Texas

BURLESON DEVELOPMENT, INC.
a Texas corporation

By: _____
Rocky Bransom
its President and Director

Date: 6-9-21

STATE OF TEXAS
COUNTY OF Johnson

This instrument was acknowledged before me on June 9, 2021 by Rocky Bransom, known personally by me to be the president and director of Burleson Development, Inc., on behalf of said entity.

[Notary Seal]

_____
Notary Public, State of Texas

KAREN E. GOODMAN
Notary Public, State of Texas
Comm. Expires 08-24-2021
Notary ID 125391700

B & G South Metro, LP
a Texas limited partnership

By: B.G.S.M. Management Company, LLC
Its general partner

By: _____
Rocky Bransom, its Member

Date: 6-9-21

STATE OF TEXAS
COUNTY OF Johnson

This instrument was acknowledged before me on June 9, 2021 by Rocky Bransom, known personally by me to be a member of B.G.S.M. Management Company, LLC the general partner of B & G South Metro, LP, on behalf of said entity.

[Notary Seal]

KAREN E. GOODMAN
Notary Public, State of Texas
Comm. Expires 08-24-2021
Notary ID 125391700

Karen E. Goodman
Notary Public, State of Texas

ROCKY BRANSOM

By: _____
Rocky Bransom

Date: 6-9-21

STATE OF TEXAS
COUNTY OF Johnson

This instrument was acknowledged before me on June 9, 2021 by Rocky Bransom, known personally by me.

[Notary Seal]

KAREN E. GOODMAN
Notary Public, State of Texas
Comm. Expires 08-24-2021
Notary ID 125391700

_____
Notary Public, State of Texas

et ux ANGELA

By: _____
Angela Bransom

Date: 6-9-21

STATE OF TEXAS
COUNTY OF JOHNSON

This instrument was acknowledged before me on 6-9-21, 2021 by Angela Bransom, known personally by me.

[Notary Seal]

DEBBIE COGBURN
MY COMMISSION EXPIRES
04/07/2025
NOTARY ID: 538891-1

_____
Notary Public, State of Texas

ROCKY and ANGELA BRANSOM

By: _____
Rocky Bransom

Date: 6-9-21

STATE OF TEXAS
COUNTY OF Johnson

This instrument was acknowledged before me on June 9, 2021 by Rocky Bransom, known personally by me.

[Notary Seal]

KAREN E. GOODMAN
Notary Public, State of Texas
Comm. Expires 08-24-2021
Notary ID 125391700

Karen E. Goodman
Notary Public, State of Texas

By: _____
Angela Bransom

Date: 6-9-21

STATE OF TEXAS
COUNTY OF JOHNSON

This instrument was acknowledged before me on 6-9-21, 2021 by Angela Bransom, known personally by me.

[Notary Seal]

DEBBIE COGBURN
MY COMMISSION EXPIRES
04/07/2025
NOTARY ID: 538891-1

Notary Public, State of Texas

Alta Burl, LP
a Texas limited partnership

By: Eyesight Ventures, LLC
Its general partner

By: _____
David C. Shanks, its Manager

Date: 6/10/2021

STATE OF ~~TEXAS~~ ALASKA
COUNTY OF 3rd Judicial district

This instrument was acknowledged before me on June 10, 2021 by David C. Shanks, known personally by me to be the manager of Eyesight Ventures, LLC the general partner of Alta Burl, LP, on behalf of said entity.

[Notary Seal]

Sharon Long
NOTARY PUBLIC
STATE OF ALASKA
My Commission Expires March 18, 2025

_____
Notary Public, State of ~~Texas~~ ALASKA

JANICE YVONNE JACKSON

By: _____
Janice Yvonne Jackson

Date: 6-10-2021

STATE OF TEXAS
COUNTY OF Johnson

This instrument was acknowledged before me on 6-10, 2021 by Janice Yvonne Jackson, known personally by me.

[Notary Seal]
AMIE J NELSON
Notary Public, State of Texas
Comm. Expires 01-25-2023
Notary ID 1070640-8

_____
Notary Public, State of Texas

JACKSON FAMILY TRUST

By: _____ TTE
Janice Yvonne Jackson, a Trustee

Date: 6-10-2021

STATE OF TEXAS
COUNTY OF Johnson

This instrument was acknowledged before me on 6-10, 2021 by Janice Yvonne Jackson, known personally by me to be a trustee of the Jackson Family Trust.

[Notary Seal]

_____
Notary Public, State of Texas

Jan
AMIE J NELSON
Notary Public, State of Texas
Comm. Expires 01-25-2023
Notary ID 1070640-8

Exhibit A

Chisholm Summit Real Estate Location Map

EXHIBIT A
CHISHOLM SUMMIT LOCATION MAP

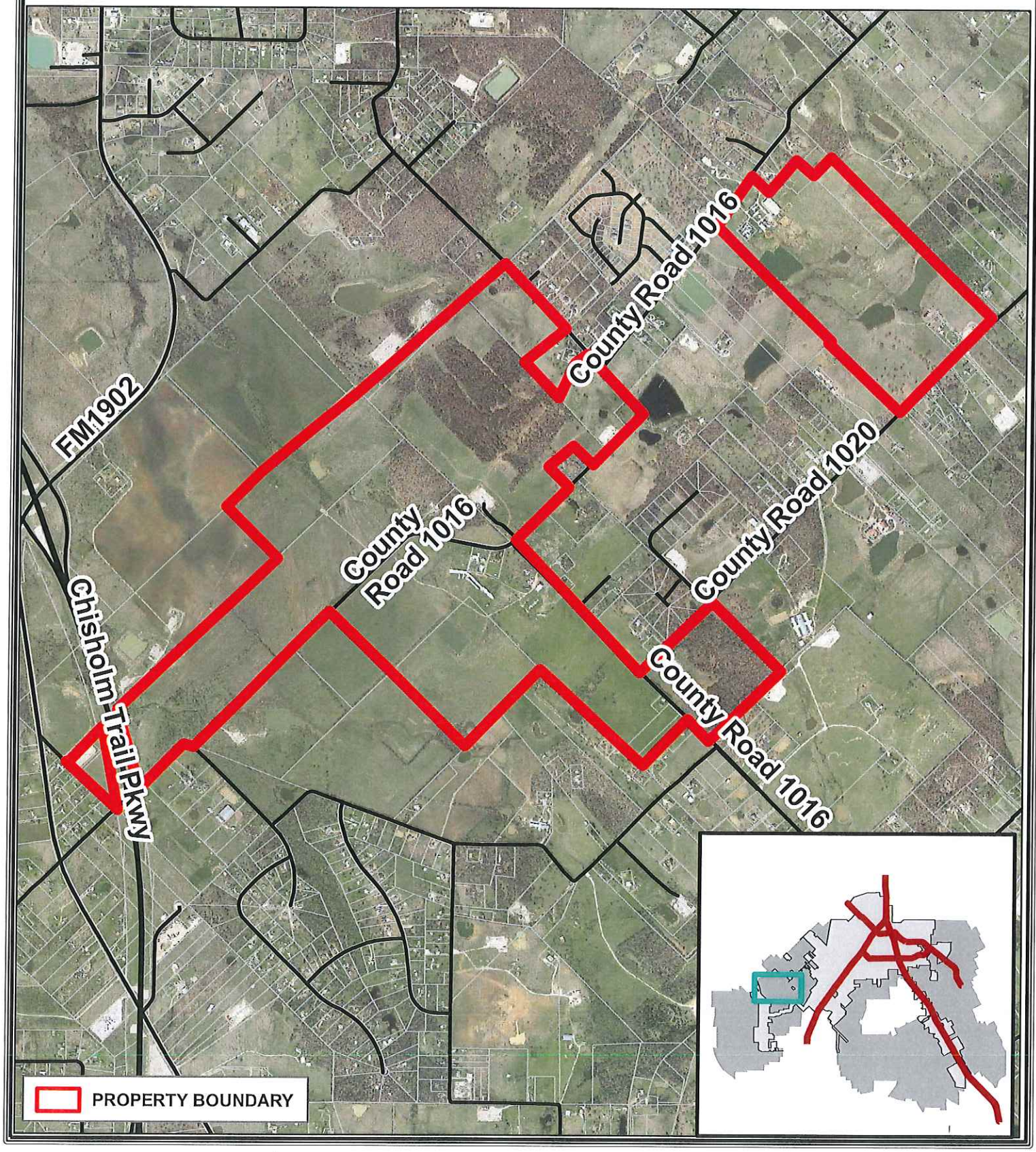


Exhibit A-1

Burleson Development Inc Parcel Location Map

EXHIBIT A - 1
BURLESON DEVELOPMENT INC. PARCEL
LOCATION MAP

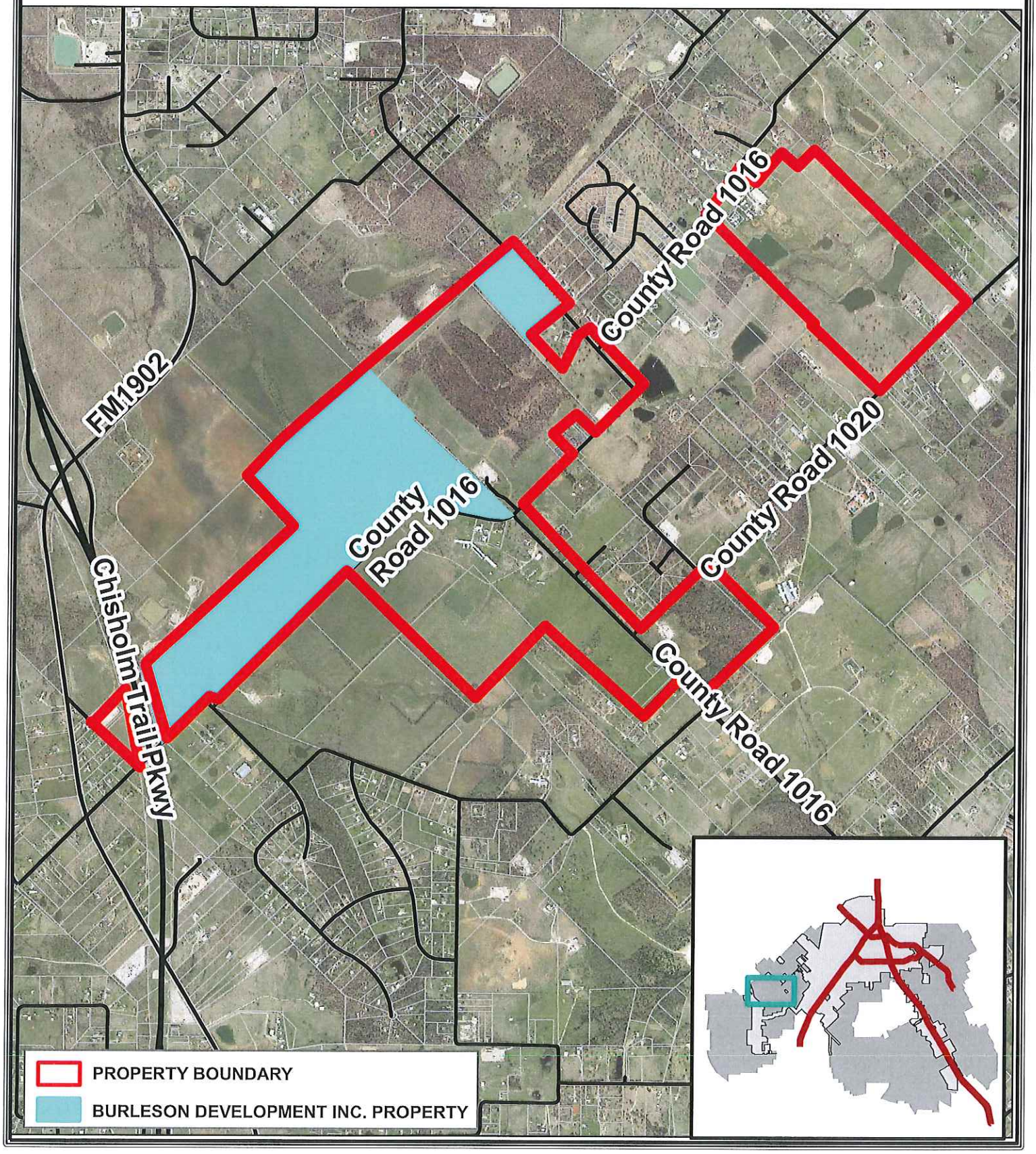


Exhibit A-2

Alta Burl LP Parcel Location Map

EXHIBIT A - 2
ALTA BURL LP PARCELS
LOCATION MAP

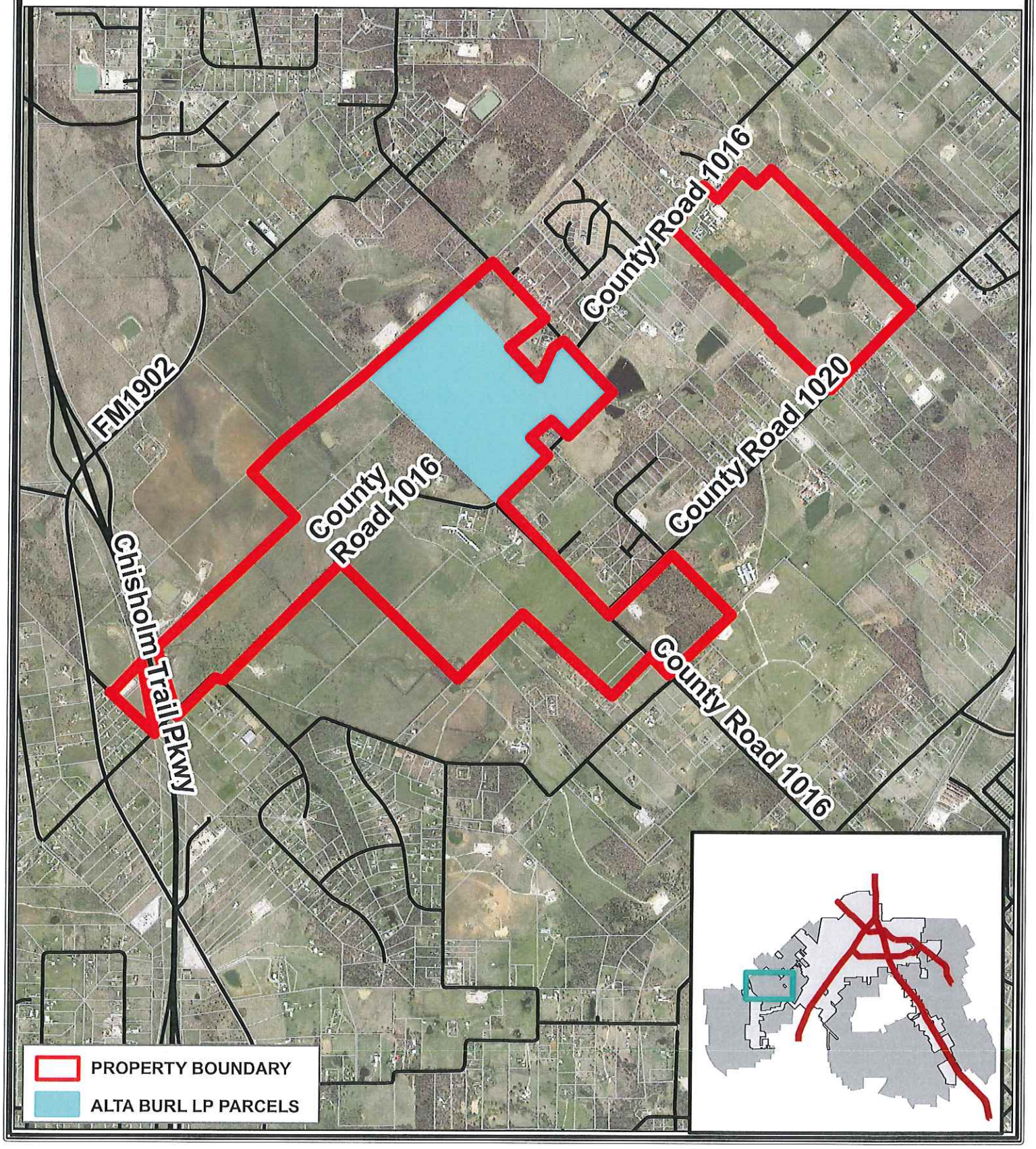


Exhibit A-3

Jackson Family Trust Parcel Location Map

EXHIBIT A - 3
JACKSON FAMILY TRUST PARCELS
LOCATION MAP

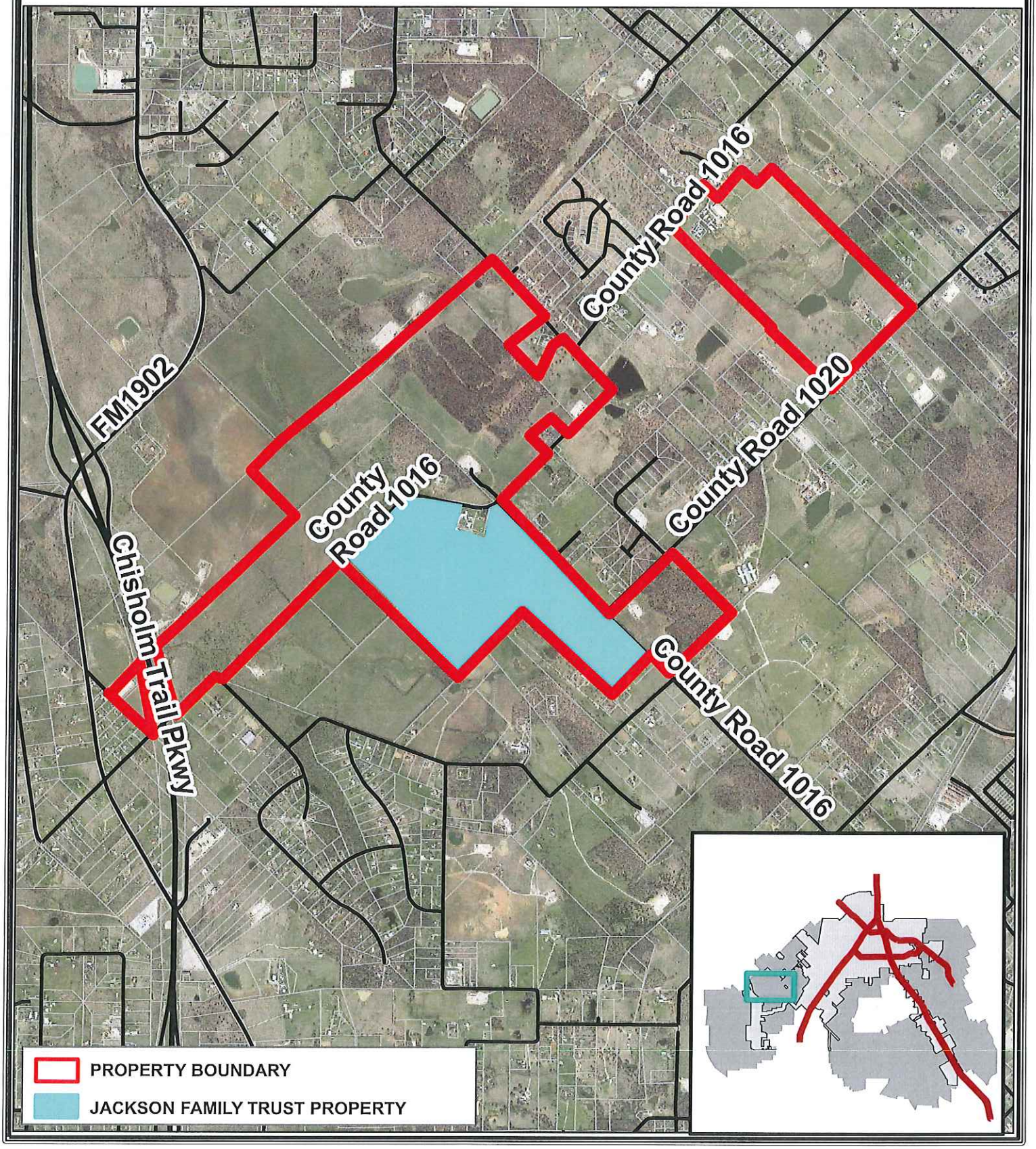


Exhibit A-4

Janice Yvonne Jackson Parcel Location Map

EXHIBIT A - 4
JANICE YVONNE JACKSON PARCELS
LOCATION MAP

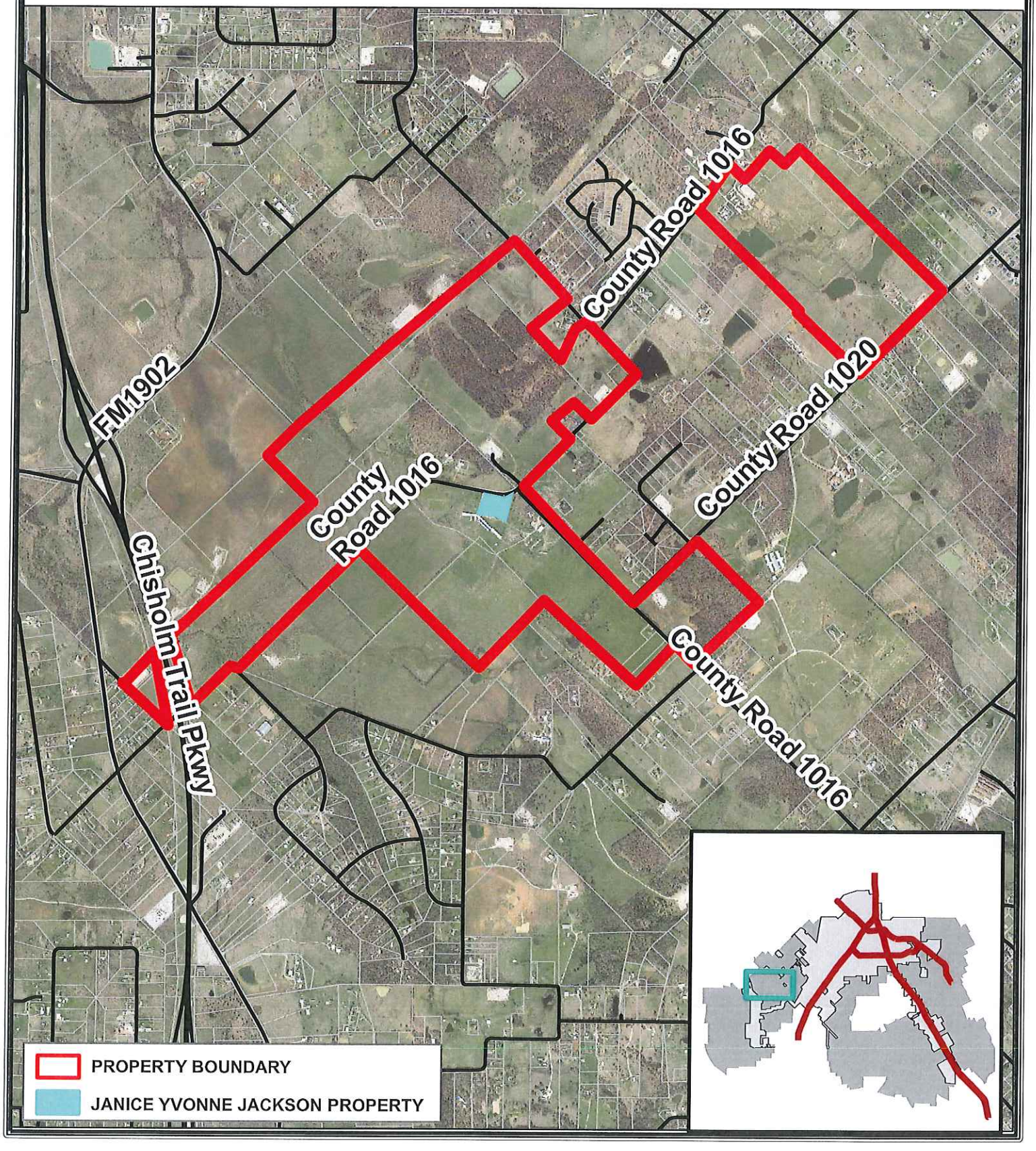


Exhibit A-5

B&G South Metro LP Parcel Location Map

EXHIBIT A - 5
B&G SOUTH METRO LP
LOCATION MAP

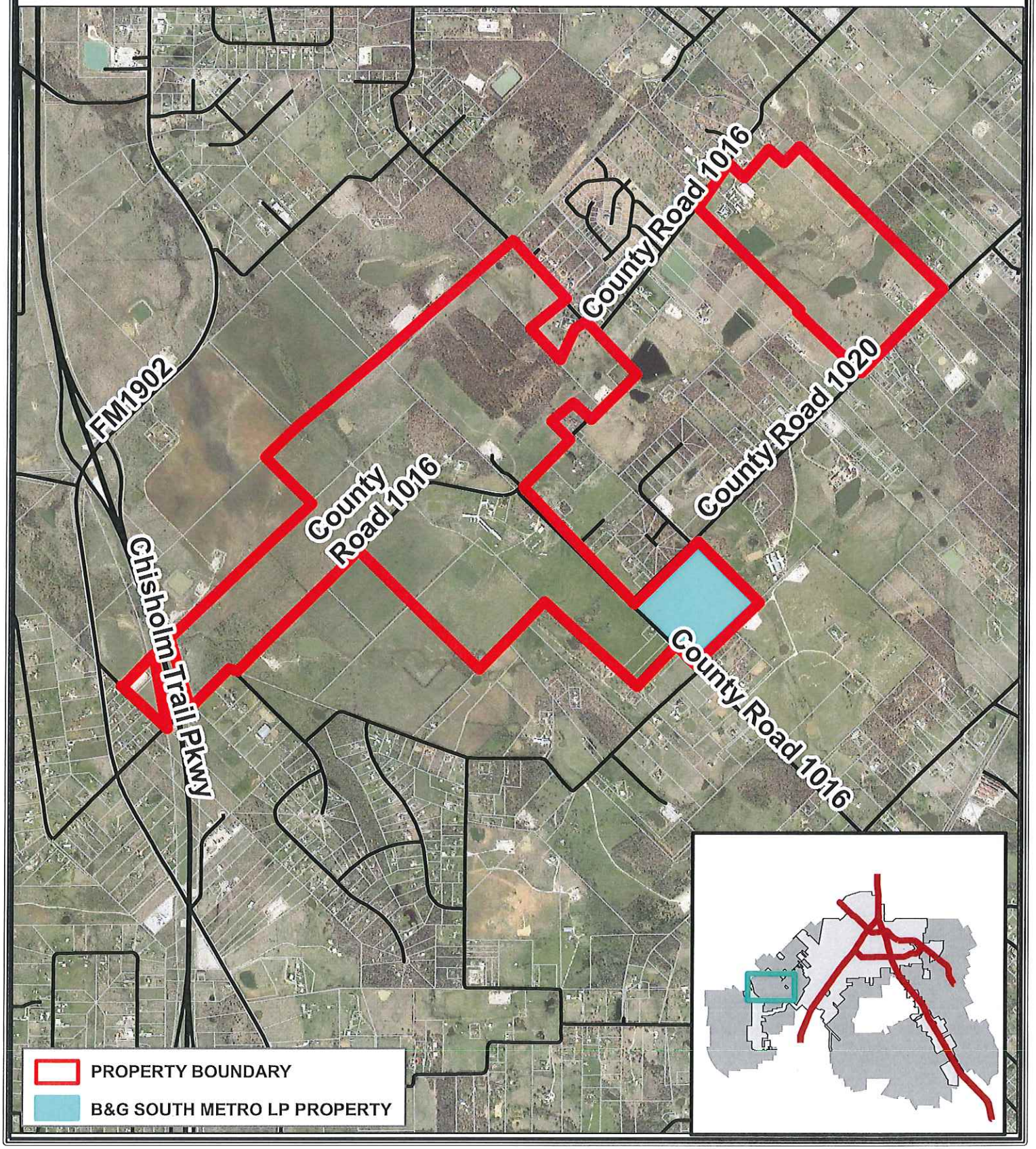


Exhibit A-6

Rocky Bransom Parcel Location Map

EXHIBIT A - 6
ROCKY BRANSOM PARCELS
LOCATION MAP

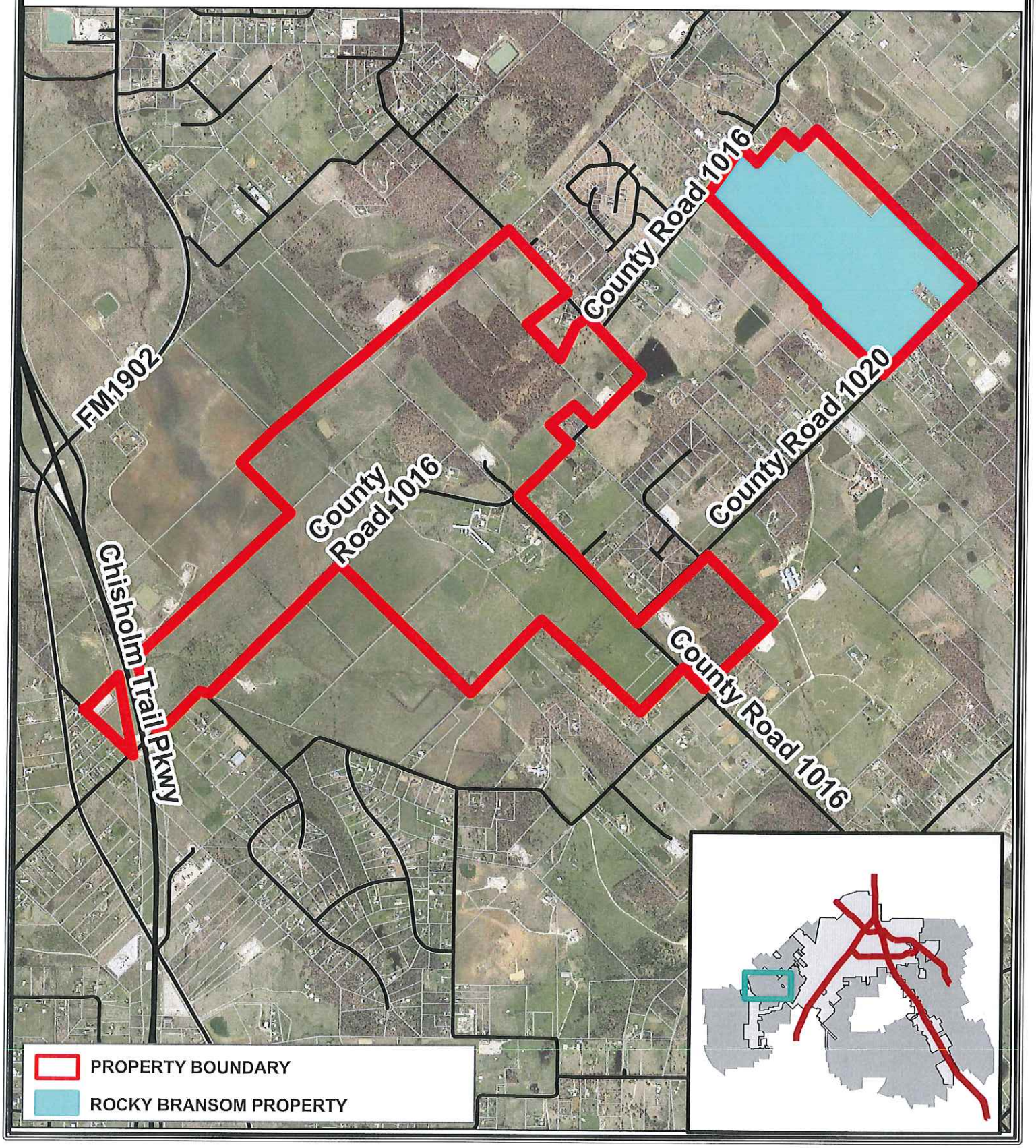


Exhibit A-7

Rocky & Angela Bransom Parcel Location Map

EXHIBIT A - 7
ROCKY AND ANGELA BRANSOM PARCELS
LOCATION MAP

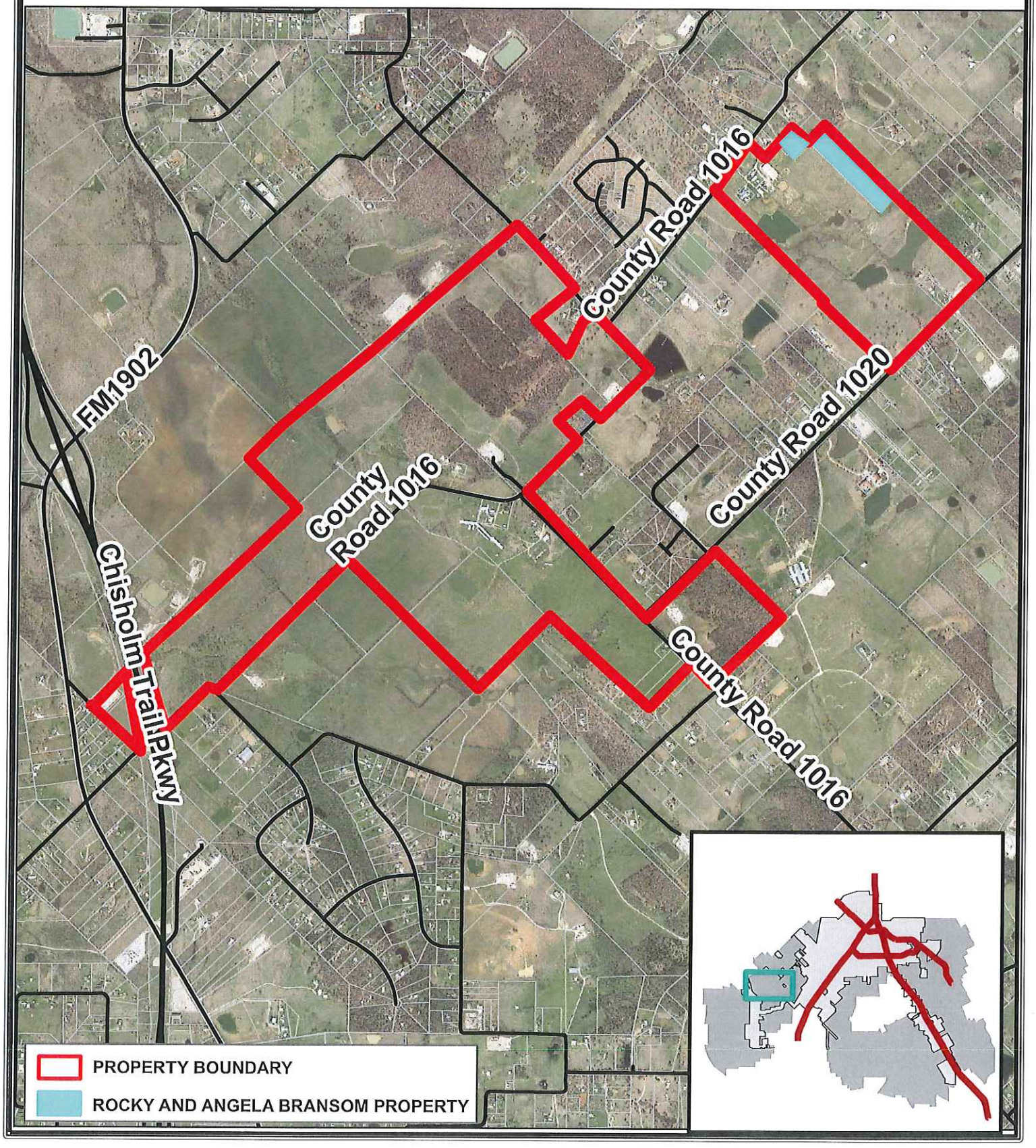


Exhibit A-8

RA Development Ltd Parcel Location Map

EXHIBIT A - 8
RA DEVELOPMENT LTD. PARCELS
LOCATION MAP

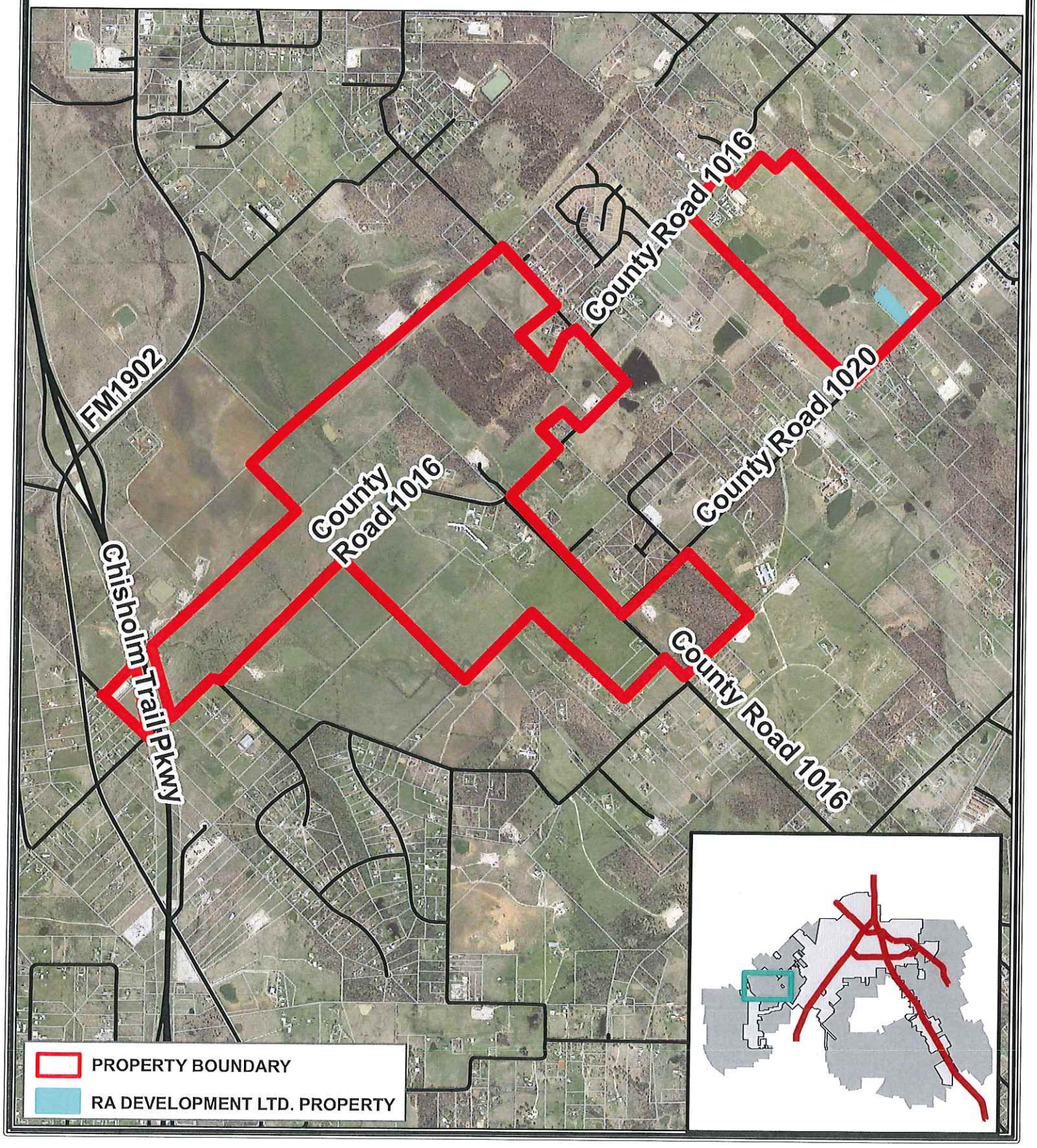


Exhibit A-9

Hooper & Co Parcel Location Map

EXHIBIT A - 9
HOOPER & CO PARCELS
(TO BE OWNED BY BEDC)
LOCATION MAP

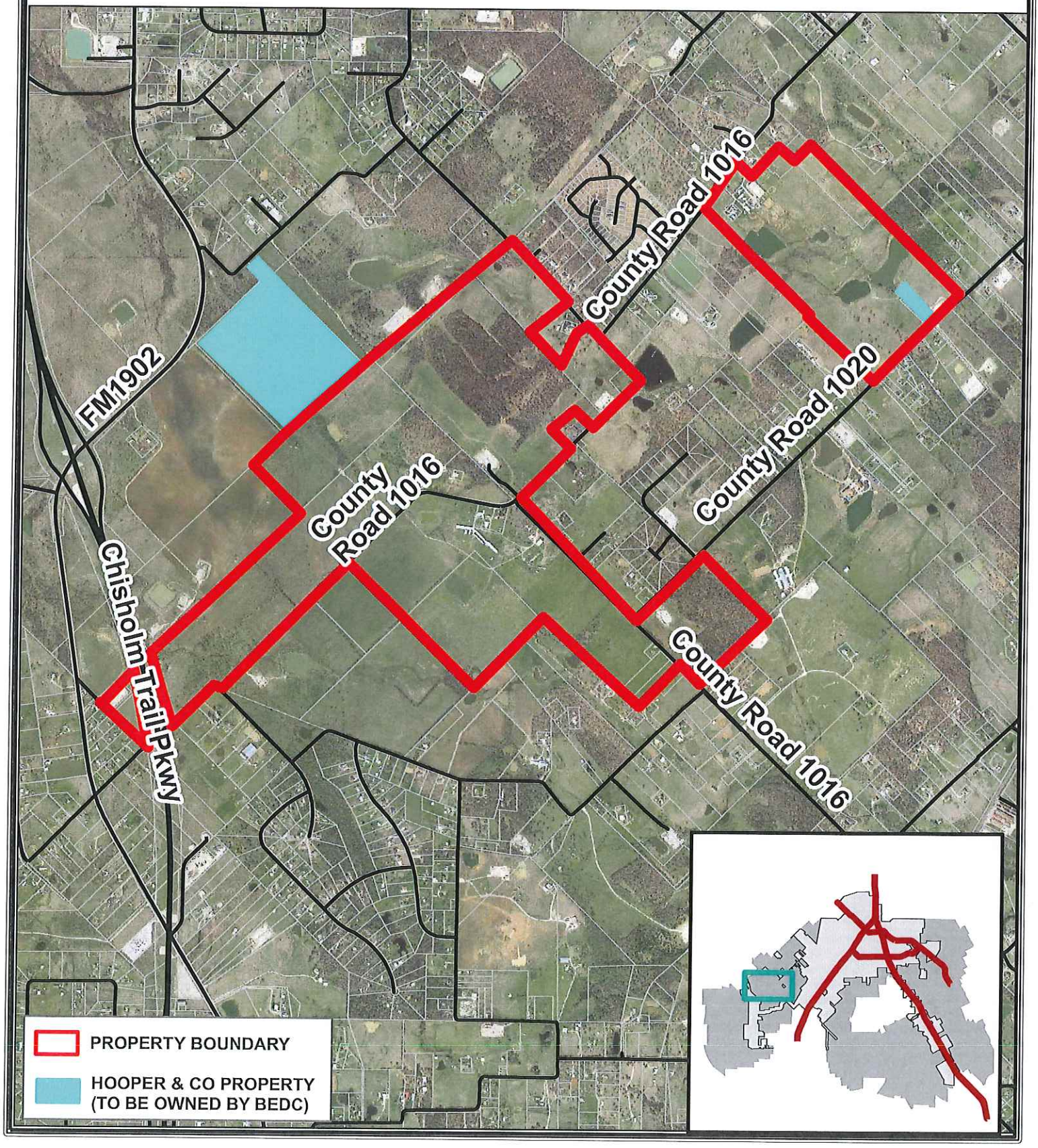
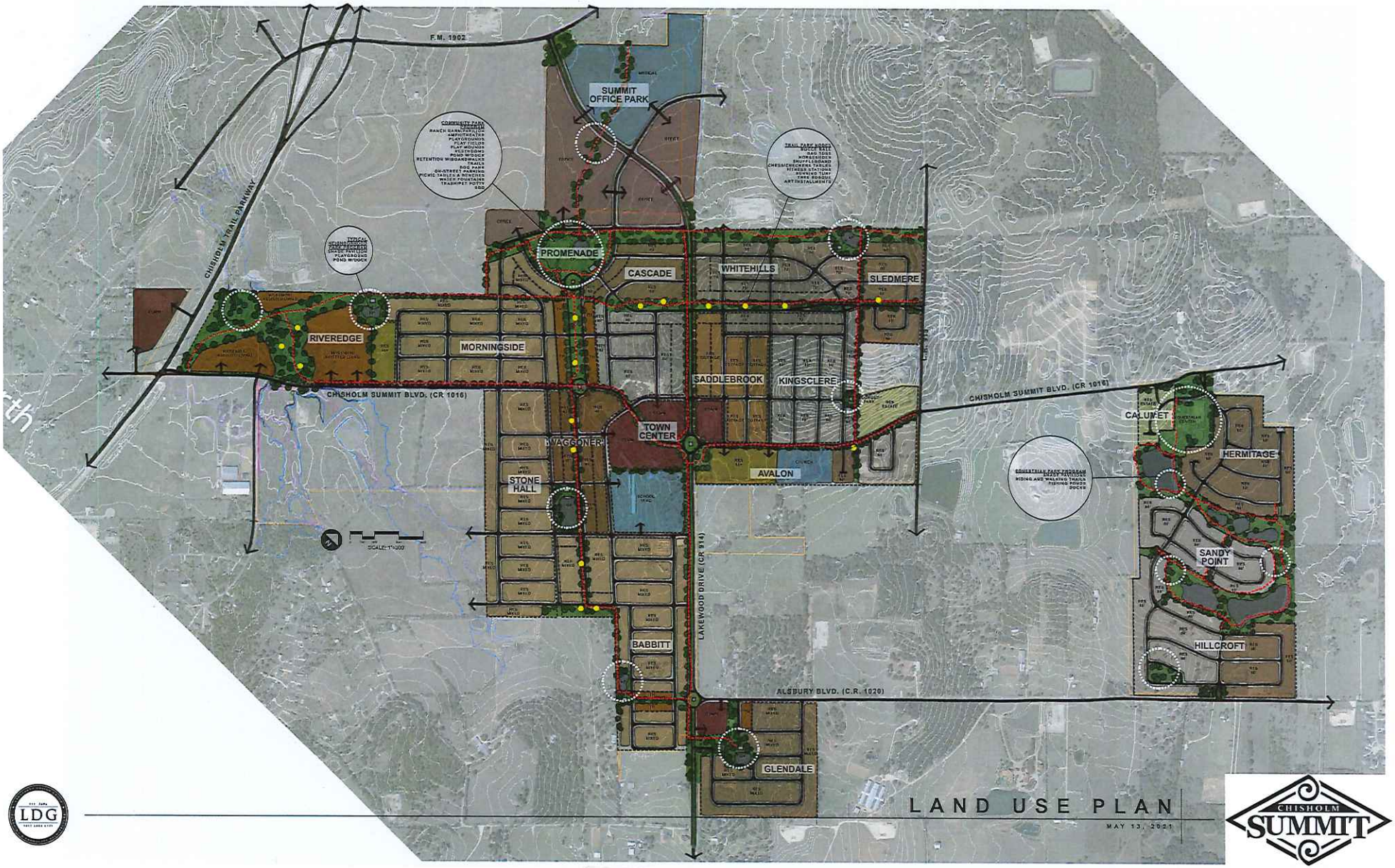


Exhibit B

Preliminary Concept Plan



LAND USE PLAN

MAY 13, 2021

Exhibit C

Development Standards

EXHIBIT C
DEVELOPMENT STANDARDS

SECTION 1: GENERAL

On July 6, 2020, the City adopted Guidelines and Criteria for City Participation or Incentives for Master Planned Communities. The Developer has submitted an application for Chisholm Summit in accordance with the Guidelines. The application was submitted in the form of a presentation and is included in this agreement as Attachment 1. The inclusion of the application provides additional visual context for the development and its themes and standards. The standards below are intended to reflect the standards included in the application and provide additional detail.

A Planned Development (PD) Zoning Ordinance will be developed for Chisholm Summit, subject to City Council approval. The standards below are intended to be the base of the PD Ordinance and will be enhanced and refined with the PD Ordinance.

Public parkland associated with the development will be constructed and maintained through a Public Improvement District (PID). Private common space and certain amenity centers (specifically the Community Building and Equestrian Center) will be maintained by a required Homeowners Association (HOA).

The terms and phrases used herein shall have the same definitions and meanings as provided in the Chapter 380 and Economic Development and Performance Agreement between the City of Burleson, the Burleson 4A Economic Development Corporation, R.A. Development, Ltd., Burleson Development, Inc., B & G South Metro, LP, Rocky Bransom, Rocky and Angela Bransom, Alta Burl, LP, Janice Yvonne Jackson, and the Jackson Family Trust (the "Agreement").

SECTION 2: ORDINANCE APPLICABILITY AND GOVERNING REGULATIONS

All City ordinances are applicable to this project unless otherwise specified in the Development Agreement or Planned Development Ordinance. This includes, but is not limited to, the Governing Regulations set forth in the Agreement, which are:

(i) the Preliminary Concept Plan, which Preliminary Concept Plan is considered to be a development plan as provided for in Section 212.172 of the Texas Local Government Code;
(ii) the Final Concept Plan approved as part of the planned development zoning for each phase;
(iii) the Development Standards;
(iv) the Subdivision and Development Ordinance and Design Standards Manual;
(v) the Building Codes;
(vi) the Approved Plats; and
(vii) all state and federal statutes, rules, regulations, as amended, and other political subdivisions and governmental entities, if any, having jurisdiction over the Property and all applicable ordinances, rules, and regulations as amended by the city.

All state and federal regulations will apply. Developer and City agree to consider application of updated City ordinances with updates to Planned Development Ordinances.

In the event a provision is not specified in this Agreement or the Planned Development Ordinance the City's ordinances apply. In the event of a conflict between this Agreement or the Planned Development Ordinance and the City's ordinances, this Agreement or the Planned Development Ordinance apply. In the event of a conflict between this Agreement and the Planned Development Ordinance, the Planned Development Ordinance will apply.

SECTION 3: PROCESS

1. The development will follow all standard City processes for platting, zoning, and plan review.

2. In addition to platting and zoning, the Developer will create phased development plans consistent with the Preliminary Concept Plan included on pages 7-8 of Attachment 1 and Exhibit B of the Agreement for staff, Planning and Zoning Commission and City Council review. The development plans will be comprised of multiple phases (known as "Development Sections") as depicted on Exhibit G of the Agreement and will be the basis for preliminary plats. The development plan for each Development Section is expected to communicate high-level items that can provide some context for upcoming zoning and plat requests. Each development plan must be approved by City Council prior to submission of the preliminary plat and shall include the following:

   (i) Land uses

   (ii) Unit Count/Lot Mix – both for the current development plan and cumulative of prior development plans

   (iii) Designated Open Space

   (iv) Park proximities

   (v) Landscape Plan

   (vi) Trail Plan

   (vii) Park acreage – both for the current development plan and cumulative of prior development plans.

3. The zoning of the development will be through a Planned Development Zoning District. The development standards included in this agreement will be the baseline for establishing the PD development standards.

SECTION 4: THEME

1. Chisholm Summit will have a cohesive theme through its building design, signage, colors, fonts, and general sense-of-place throughout the development.

2. The general components of the theme, including visual imagery and the conceptual color palette, shall conform to the pictorially representations in Attachment 1.

3. The general components of the theme can be described literally as:

   (i) "Western" focused around keyword concepts "rustic", "growth", "horses", "folk", "gateway", and "progress"

   (ii) "Active" focused around keyword concepts like "trails", "outdoors", "purpose", "movement", and "nature"

   (iii) "Family" focused around keyword concepts like "together", "community", "neighbors", "generational", and "care"

SECTION 5: LOT STANDARDS

1. This development is intended to provide a variety of lot and home sizes and types to serve a diverse community. The development plan included with this Agreement provides a general mix of lots and the Developer has provided percentages related to the differing residential uses. It is understood that the flexibility in the percentages is necessary since this development will occur over a period of years and market conditions and the needs of the community will change. The following table provides a summary of the densities in the current plan and allowable percentages ranges of various product types. These percentages are based on dwelling units and not land area.

Lot Type	Minimum Lot Frontage	Minimum Lot Size	Minimum Home Size	Planned Units	Planned Percentage	Allowable Percentage Range	Notes
Townhomes	25'	2500	1000	184	2.54%	0 – 5%	
40' Residential (Patio)	40'	4000	1200	389	8.61%	0 - 15%	These categories describe the predominant use of the mixed residential lot types. The total of these categories may not exceed 60%.
56' Residential (Cottage)	56'	6500	1400	361	12.96%	0 - 15%	
60' Residential (Traditional)	60'	7200	2000	881	35.06%	0 - 40%	
70' Residential (Traditional)	70'	8400	2200	154	7.13%	0 – 15%	

80' Residential (Traditional)	80'	9600	2500	415	22.02%	10% - Unlimited	
Estate	100'	12000	2800	42	2.78%	0% - Unlimited	
55+ Residential	50	5000	1100	112	3.08%	0 – 10%	
MF/Senior Residential	N/A	2000	n/a	527	5.82%	0 – 10%	Senior living components shall comprise at least 25% of this category.

2. Detailed lot standards (lot dimensions, setbacks, yard standards, height standards, etc.) will be identified through the Planned Development Ordinance.

3. Each development plan and preliminary plat will be submitted with a lot mix chart showing what is included in the current plan/phase and what the cumulative status of the lot mix is.

SECTION 6: ARCHITECTURAL STANDARDS

1. Masonry standards. All structures must meet the City's Masonry Construction Standards (Chapter 10, Article XVI) unless otherwise provided in the Planned Development Ordinance.

2. Unless otherwise provided in the Planned Development ordinance, the Developer shall follow the City's zoning ordinances to establish uses and design standards.

   (i) Traditional homes (60', 70' and 80' lots) are anticipated to follow zoning standards in effect at the time the Planned Development ordinance is considered.

   (ii) Other home types (patio, townhome, cottage, etc.) or those that do not match an existing zoning category to have exhibit outlining standards.

3. All single family detached dwellings shall utilize at least five (5) of the following design features to provide visual relief along the front of the residence and any side of the residence facing a street:

   (i) Carriage style garage door
   (ii) Garage door not facing the street
   (iii) Bay window, must project no more than 18" in the front or rear yard, and no more than 12" in the side yard.
   (iv) Eyebrow or arched front windows
   (v) Cast stone accents on the front elevation, minimum of 3% of front elevation

(vi) Covered front porches of a minimum of 50 square feet
(vii) Front porch railings of either wood or wrought iron
(viii) Front door with at least 20% area covered with decorative glass or wrought iron
(ix) Cupolas or turrets
(x) Dormers
(xi) Gable
(xii) Decorative attic or gables feature, minimum 2 square feet
(xiii) Two or more offsets in the front façade of at least 24" depth
(xiv) Metal roof accents
(xv) Recessed entry, an minimum of three (3') deep
(xvi) Variable roof pitch equal to or greater than 8:12
(xvii) Exterior shutters on at least 75% of the windows on the front façade
(xviii) Masonry arches
(xix) At least two types of masonry materials (stone, brick or stucco)

4. The Developer agrees to include all architectural standards established with the Planned Development into deed restrictions filed with the County with or prior to the filing of the final plat.

5. For homes on corner lots or where there is a direct line of sight to full side of home, additional architectural standards will be established.

6. The Planned Development Ordinance will establish anti-monotony standards.

7. The Developer agrees to establish an architectural review committee to assist with the review of all permits prior to submittal to the City.

SECTION 7: OPEN SPACE/PARKS

1. An overall plan with a description and distance of each open space and parks improvement is provided on pages 14-17 of Attachment 1 and Exhibit D of the Agreement.

2. A detailed park and trails plan will be required as part of the development plan for each Development Section. The exhibit shall show each home to be within 3,000 feet of a neighborhood or community park.

3. Per the City's Subdivision and Development Ordinance, parkland shall be dedicated at one acre per 100 residential units. This development proposes approximately 3,066 residential units which results in 30.66 acres of parkland dedication required. The Developer proposes to dedicate approximately 102 acres or parkland. Should the dedication proposed fall below 90 acres, the Agreement shall be amended.

4. The development plan will include parkland dedication amounts, which shall be a minimum cumulative rate of 1.5 times the City's current required dedication on a per phase basis (i.e. 200 residential units equals three acres of parkland dedication). Prior developed phases may be included in this cumulative count. Trails are included in the parkland dedication amount.

5. The City's parkland infrastructure fee shall be waived for this development due to construction of park improvements by the developer. The fees shall be considered through development of the PID Service and Assessment Plan (SAP).

6. All public parkland will be deeded to the City upon filing of the final plat for the developed phase and indicated as public parkland on the plats.

7. Neighborhood parks shall be given a specific focus while adhering to the overall theme and brand. Recommended focuses include but are not limited to park uses intended for young children, older adults, active lifestyle, passive space, inclusive of disabilities, etc.

8. Any areas that are proposed to be private common space need to be delineated clearly on the plats.

9. Where possible, stormwater management features (detention ponds, bioswales, etc.) shall be used as park amenities either by incorporating retention with an aeration fountain or as a dry playfield.

10. The Preliminary Concept Plan on pages 7-8 of Attachment 1 and Exhibit B of the Agreement shows conceptual locations of 13 planned park areas, which includes a Community Park and an Equestrian Center. These locations are conceptual, but in no case shall fewer park locations be provided. The City shall evaluate the placement and necessity of one of the planned park areas located and identified in Summit Office Park and may elect not to construct this park.

    (i) A concept plan for the Community Park on of page 14 of Attachment 1. The community park shall be a minimum of 10 acres. The Community Park shall generally conform to the Community Park concept on of page 14 of Attachment 1.

    (ii) A concept plan for the typical Neighborhood Park is included on page 15 of Attachment 1. Neighborhood Parks shall generally conform to the Neighborhood Park concept on of page 15 of Attachment 1.

    (iii) Parks shall generally be constructed in accordance with the following:

    - Community Park shall be constructed with the first phase of residential development and with a design that follows the description in these standards.

- Community Park shall include the Community Building that follows the description in these standards.

- At least one of the Neighborhood Parks will include a community pool of approximately 5,000 square feet. The neighborhood park with the pool will be easily accessible by pedestrians and vehicles. The specific pool size will be identified with the development plan for the section it is in. The pool amenity may be split between parks and may also include alternate water amenities/features.

- With each development plan, a summary of parkland dedication per phase and a cumulative total of prior parkland dedication must be provided

- The Preliminary Concept Plan shows a number of amenities. These are conceptual in nature. A more detailed description of the planned amenities shall be submitted with the development plan for that Development Section. A formal plan shall be submitted with the construction plans for the surrounding infrastructure in that phase. It is anticipated that the final plans will deviate from the concept plan, but the number and nature of the amenities will need to be comparable.

- The community park will also contain the Community Building. The Community Building will be private and will not be included in the PID funding unless an agreement is otherwise reached with the City for the access, operation, maintenance and/or funding of the facility. A separate lot for the amenity center shall be provided.

Park Amenities	**Community Park**	**Neighborhood Park**
Minimum acreage	10	3
Off Street Parking	R	O
Playground	R	R
Restroom	R	O
ADA Accessibility	R	R
Site Furnishings		
Benches	R	R
Picnic Tables	R	R
Trash Receptacles	R	R
Pet Waste Stations	R	R
Landscape Improvements	R	R
Signage	R	R

Drinking Fountains	R	R
Trails/Pathways	R	R
Shade over play features	R	R
Bike Racks	R	R
BBQ Pits	R	O
Lighting	R	R
Optional Amenities		
Primary		
Outdoor fitness equipment (min. 3 stations)	O	O
Sports Courts	O	O
Sports Fields	O	O
Ponds	O	O
Skate Park	O	O
Dog Park	O	O
Splash Pad	O	O
Fishing pier	O	O
Musical Play Features	O	O
Secondary		
Natural Area	O	O
Gardens	O	O
Public Access/Fencing	O	O
Shade Structures (other than over playground)	O	O
Shelters	O	O

R = Required | O = Optional

- Community parks shall have at least 5 of the primary optional amenities and 3 of the secondary optional amenities listed above.

- Neighborhood parks shall have at least 2 of the primary optional amenities and 2 of the secondary optional amenities listed above.

- Two of the neighborhood parks may have a reduction in the number of amenities in favor of high quality passive park space.

(iv) The Equestrian Center will be added to the development as an amenity for horse owners, enthusiasts and hobby riders. It is comprised of two separate buildings:

- Horse Facility - The existing horse facility is located at the eastern property shown on the Land Use Plan along County Road 1016. The facility is approximately 30,000 square feet, open-air and under-roof

and contains stalls and horse training equipment. The concept of the facility would be to make it available for private rental for those in Chisholm Summit interested in owning a horse. The HOA would manage the rentals as well as any community or public events to utilize the facility. Additional barns exist near the Facility that may be included in the programming as well.

- Visitor Center / Offices – The existing 3,000 square feet house southwest of the main facility may be converted to a facility for professional operations related to the Facility. The HOA would manage the building.

(v) The Equestrian Center and associated improvements are intended to be private and maintained by the HOA. The Developer will consider partnerships with the City for public events and programs.

SECTION 8: LANDSCAPING

1. A general landscaping plan will be required with the development plan for each Development Section, with call-outs and descriptions for specific landscape components throughout the Section. Care shall be taken to ensure adequate roadway and intersection sight visibility.

2. A detailed landscape plan will be required for the construction of each phase within the Development Section showing the landscape elements along the public roadways, parks and trails.

3. Street trees will be utilized primarily as an addition to the median rather than behind sidewalks. Major collectors and arterials will be required to have street trees, as well as those streets which function as minor collectors inside the development, connecting multiple neighborhood sections.

4. Landscaping will be required where ornamental metal fence is present adjacent to a major collector, minor arterial or major arterial. Landscaping along roadway-adjacent ornamental fencing shall be placed such that it provides opaque screening for the adjacent homes. This landscaping will be designed with the roadway plans for the adjacent roadway. Factors for consideration in design are housing type, location of parks, location of trails, location of street calming measures, specific theme in the neighborhood section, specific theme for neighborhood parks, etc.

5. All common landscaping shall be installed prior to final acceptance of the public infrastructure for each phase.

SECTION 9: ENHANCED WALLS AND FENCING

1. Fencing standards will vary based on the location of the property in the development and shall generally adhere to the following:

   (i) Properties with a rear yard adjacent to both Lakewood Drive (existing County Road 914 and its extension) and the existing east/west thoroughfare (existing County Road 1016 and its extension) will have a combination of ornamental metal fence and masonry screening wall of at least six (6) feet. The general mix of metal fence and masonry wall is between 40% and 60% for each. Screening will be provided with landscaping to follow the approval process described in the above section. Additionally, no residential lots shall have direct access to these roads. Fencing/screening shall be designed with the roadway plans for the adjacent roadway.

   (ii) Fencing will not be added in front of the Townhomes along the road leading to the Community Park.

   (iii) Where fencing is installed abutting open space areas, the fencing must be ornamental metal fence of at least six (6) feet.

   (iv) Care shall be taken to ensure adequate roadway and intersection sight visibility.

   (v) Where fencing is installed for the Community Building, the fencing must be ornamental metal fence of at least (6) feet.

   (vi) Fencing located on typical rear yards or between residential lots may be decorative metal or board-on-board with cap and shall meet the City's fencing and screening ordinance. The PD Ordinance for each development section will define specific fencing requirements.

   (vii) Any transitional fencing must meet City's fencing and screening ordinance.

   (viii) Undeveloped land fencing abutting major roadways will be pipe rail fence with linseed oil treatment similar to that shown near the Chisholm Summit Equestrian Center on page 31 of Attachment 1.

   (ix) Where additional fencing is installed for the Equestrian Center, the fencing may be pipe rail fence with linseed oil treatment.

2. Fencing exhibit must be provided with the Planned Development ordinance.

SECTION 10: BUFFERS

1. Buffers will be provided through adherence to the landscaping and fencing standards in the above sections.

SECTION 11: STREET LAYOUT

1. The Preliminary Concept Plan is intended to provide areas of general land use. Except for roadways shown on Exhibit E of the Agreement, the roadways shown in these areas are conceptual only.

2. Roadways shall meet the following general design guidelines:

   (i) Lakewood Blvd.
   - Minimum 4 lanes
   - minimum 120 foot ROW
   - Trail component
   - landscaped parkways and/or medians

   (ii) Final roadway sections shall be determined with either the development sections or the roadway plans, whichever comes first.

   (iii) All other roadways shall be designed in accordance with the city's updated Master Thoroughfare Plan to be adopted 2021.

3. Design shall incorporate methods to ensure that speeding and excessive cut through traffic is avoided. The following are examples of methods to be considered:

   (i) Integrated traffic calming methods, such as traffic circles, chicanes, bump outs with landscaping or other methods
   (ii) Neotraditional development with narrow streets, street trees, reduced front yard setbacks
   (iii) Cul de sacs
   (iv) Short block lengths
   (v) Curvilinear methods, if necessary

4. Alleys – This development proposes use of alleys to serve the townhomes and patio homes. Alley design must be carefully coordinated with the Fire Department for fire safety considerations and the Public Works Department for solid waste service considerations. Alleys shall be constructed per the design standards to be included in the Planned Development ordinance. A design for both one-way and two-way alleys should be shown to allow for the use of each where appropriate.

SECTION 12: TRAILS

1. Primary trail locations are shown on Exhibit D of the Agreement. The trail locations shall generally conform to the trail park location concept on Exhibit D. Primary trails shall be 10 feet wide and constructed to City standards. Trails will be lighted wherever possible. Additional benches and trash receptacles will be added

where a long distance exists between trail park nodes. Trail design may be modified based on mutually agreeable circumstances which may include but are not limited to pipeline location, tree preservation, accessibility, slope requirements, etc.

2. Secondary trails are not identified on the land use plan but may be established with individual phases. Secondary trails shall be a minimum of 5 feet wide and constructed to City standards

3. Equestrian trails will be specifically designed in the development plan for the Development Section including the equestrian center. Trails will be guided by a national standard such as the *Equestrian Design Guidebook* published by the U.S. Forest Service and the Federal Highway Administration. Trail type may vary based on the existing terrain and intended user experience. Trail design options may include:

   (i) 6-foot trail comprised of two 3-foot tread areas
   (ii) 4-foot trail comprised of two 2-foot tread areas
   (iii) Material of native soil with no road base plus wood chip in low drainage areas
   (iv) Material of native soil with mixed-in crushed rock aggregate where needed
   (v) Avoid hardened and smooth trail surfaces such as concrete, soil cement, asphalt, and non-permeable soil stabilizers.

4. Trail park nodes. Conceptual trail park nodes are shown on page 16 of Attachment 1. The trail park nodes shall generally conform to the trail park nodes concept on of page 16 of Attachment 1. These are conceptual and will be specifically identified with each phase. Each park node shall include a seating area or picnic area and shall have at least one of the following amenities.

   (i) Bocce Ball
   (ii) Bag Toss
   (iii) Horseshoes
   (iv) Shuffleboard
   (v) Chess/Checkers Tables
   (vi) Fitness Stations
   (vii) Art Installments
   (viii) Science/Engineering Installments

   A lighting plan for the trail park nodes will be established with the PD. Where reasonable, trail park nodes will also include a watering station.

5. Trails shall be coordinated with the most recent adopted bike and trail plan.

SECTION 13: LIGHTING

1. Lighting will be provided by United Cooperative Services, the electric provider that holds jurisdiction in this area.

2. Developer will require a lighting type that best matches the theme based on the available options provided by United Cooperative Services.

3. A lighting plan will be submitted with each phase and will include an example of the lighting type to ensure consistency with prior phases and adherence to the theme.

SECTION 14: SIGNS

1. Community signs will be utilized as a method of both wayfinding and branding throughout the development. Sign locations are shown throughout the conceptual plans included as exhibits to these standards. The sign design shall be included as part of the development plan for the first Development Section. Specific sign rules and regulations will be included in the Planned Development ordinance.

2. Entry signage for the main entry points in the Chisholm Summit development must generally match the theme as described in Section 4 and as illustrated in Attachment 1.

3. Wayfinding signage may be included throughout the community and used along the arterial roads, collector roads, and points of intersection to denote entries into individual neighborhoods.

4. All signs will be illuminated. Entry and wayfinding signage will resemble each other in such a way to identify both with the Chisholm Summit development.

SECTION 15: MULTI-FAMILY/SENIOR LIVING

1. Architectural features shall reflect the theme of the development.

2. The Multi-family portion shall meet the City's design standards for Multi-family. Article VIII of Appendix C (Urban Design Standards) at the time of this agreement adoption. Additional multi-family standards will be included with the Planned Development ordinance at the time of its adoption.

3. The area designated for Multifamily / Senior Living will be established with at least 25% focused on the "senior living" component, promoting a district in that serves the full life-cycle of a community.

4. The public trail in this area should be sufficiently connected to the buildings and with a design that is conducive to the senior population.

SECTION 16: COMMERCIAL ELEMENTS

The Preliminary Concept Plan envisions a centrally-located commercial node that would be a focal point for the Chisholm Summit community, connected in a way that allows for pedestrian and vehicular movement to and from the commercial and retail operations, and has a unique sense of place that complements the community.

1. Uses for the commercial area will be established with the Planned Development ordinance as this phase is developed. Generally, the uses will be Neighborhood Service to light General Retail, providing opportunities for shops and stores while limiting the uses found in a broader commercial category.

2. Architectural standards, signage, and any amenities will be aligned with the theme of the community. Branding of Chisholm Summit will be present throughout the commercial node.

3. Developer will evaluate a form-based code for inclusion in the Planned Development ordinance to place a focus on the building design.

SECTION 17: COMMUNITY BUILDING(S)

1. A main Community Building will be located in the Community Park. Refer to Exhibit D of the Agreement for additional information and a general depiction of the conceptual layout and design. This Community Building will include at a minimum:

   (i) Party rooms for HOA-member use
   (ii) Covered patio
   (iii) Fire pits
   (iv) Outdoor kitchen
   (v) Restrooms
   (vi) HOA office
   (vii) Pedestrian connections to Community Park amenities
   (viii) Dedicated parking for building use
   (ix) Strand light plaza

2. The building space will be privately-owned and maintained by the HOA.

3. A separate community building will be considered for a neighborhood park in the area shown on the Land Use Plan as Multifamily / Senior Living.

SECTION 18: NEIGHBORHOOD ACTIVITIES

1. Organized community activities shall be provided on a quarterly basis. The HOA will coordinate the activities, either under its own direction or through partnerships with local organizations like non-profit groups, volunteer organizations or community interest groups.

2. Community activities should enhance the living experience of the Chisholm Summit residents and be seen as a component of the active neighborhood atmosphere seen in master-planned communities.

3. Public amenities and park spaces should be utilized for activities like holiday light competitions, concerts, holiday parties, group horse rides, egg hunts, lawn game competitions, fun runs, etc.

4. Public activities should be actively promoted by the HOA or associated groups. A community website or social media accounts should be developed, maintained and regularly updated to establish community connections.

SECTION 19: ATTACHMENT DESCRIPTIONS

The Development Standards have been further illustrated through the use of attachments described and referenced in the above sections. The attachments to these development standards are as follows:

1. Master-Planned Community Presentation – Attachment 1

Exhibit C

Development Standards

Attachment 1

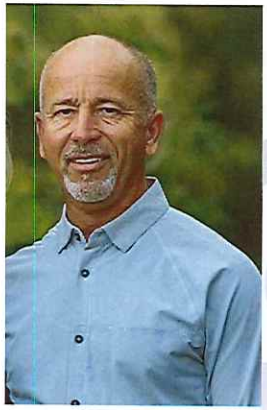
CHISHOLM SUMMIT

THE HEIGHT OF BURLESON LIVING

RA Development, Ltd.

February 22, 2021

BURLESON DEVELOPMENT, INC.



ROCKY BRANSOM

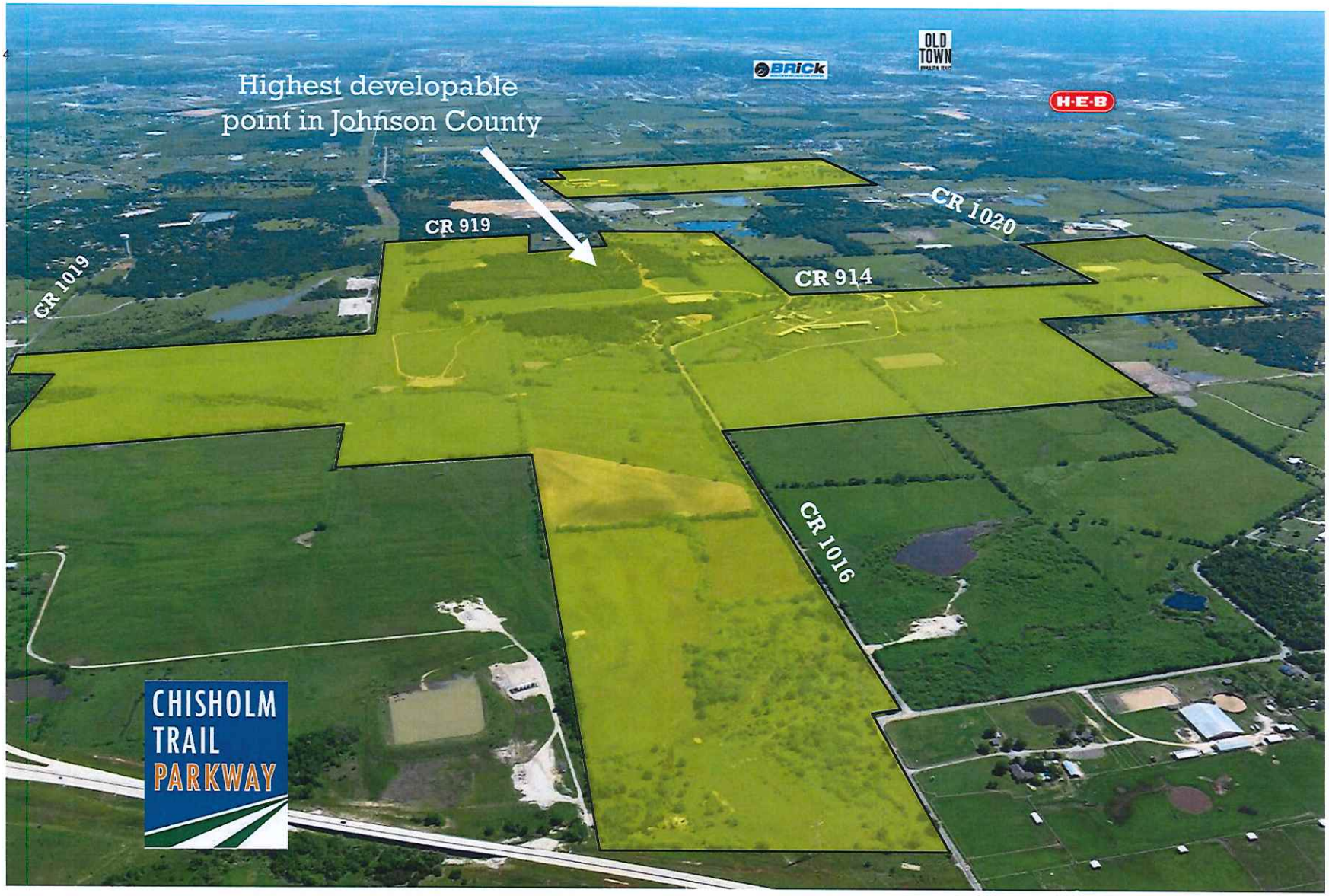
Mr. Bransom has delivered several thousand lots into the Burleson market over the last 30 years. His experience in real estate extends past property development to every trade throughout the process in home construction, utilities, excavation and paving. Rocky has been committed to positive growth in the Burleson area and considers his roots here to be something that drives the quality of the final product.

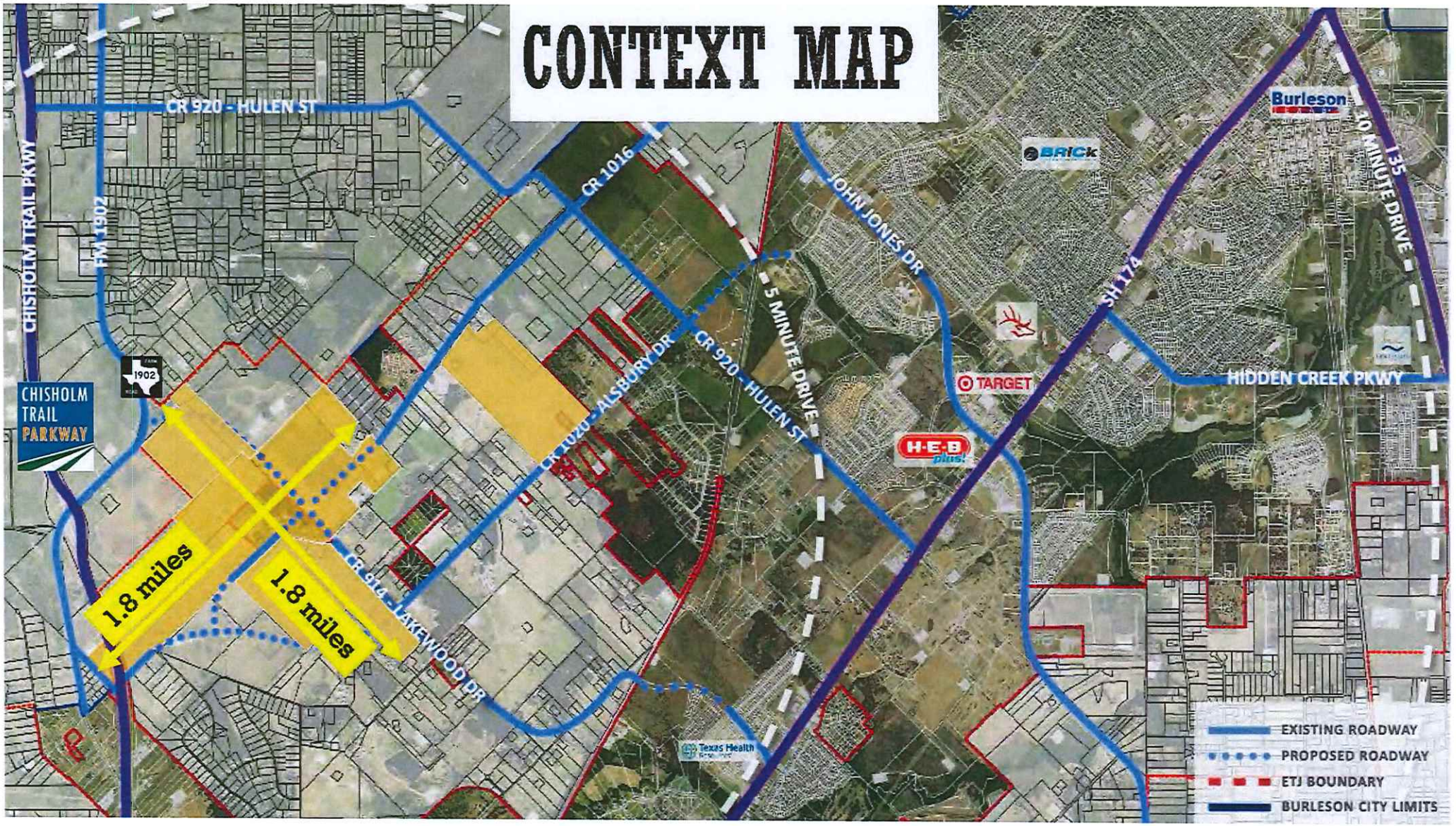
JUSTIN BOND

Mr. Bond has worked in land use development and construction for 15 years, from building schools to advocating for local natural gas development to promoting the growth of Burleson as a City director. Justin manages all development projects from design to construction for Rocky's companies. His family has proudly lived and worked in Burleson for nearly 60 years.

PROPERTY HISTORY

- 2005 – Annexations by City of Burleson to establish a western boundary at the Chisholm Trail Parkway (CTP)
- 2014 & 2016 – Development Agreements with CTP-area owners in Burleson extra-territorial jurisdiction to establish rules for future annexations
- 2016-2021 – Burleson Development, Inc. (Rocky Bransom) and affiliated partners coordinate acquisition of large parcels near the CTP
- 2018 – "Chisholm Summit", a residential community on the CTP, presented to the City for preliminary review but faced challenges related to sewer capacity
- 2019 – Wastewater Analysis for Chisholm Summit area conducted
- 2021 - Additional acquisitions and partnerships bring development of Chisholm Summit to approximately 915 acres


Highest developable
point in Johnson County
BRICK
OLD TOWN
H-E-B
CR 1020
CR 919
CR 914
CR 1019
CR 1016
CHISHOLM
TRAIL
PARKWAY


CONTEXT MAP
CR 920 - HULEN ST
CHISHOLM TRAIL PKWY
FM 1902
CR 1016
JOHN JONES DR
5 MINUTE DRIVE
CR 920 - HULEN ST
CR 1020 - ALSBURY DR
CR 914 - LAKEWOOD DR
SH 174
30 MINUTE DRIVE
I 35
HIDDEN CREEK PKWY
Burleson
BRICk
TARGET
H-E-B plus!
Texas Health
CHISHOLM TRAIL PARKWAY
1902
1.8 miles
1.8 miles
EXISTING ROADWAY
PROPOSED ROADWAY
ETJ BOUNDARY
BURLESON CITY LIMITS

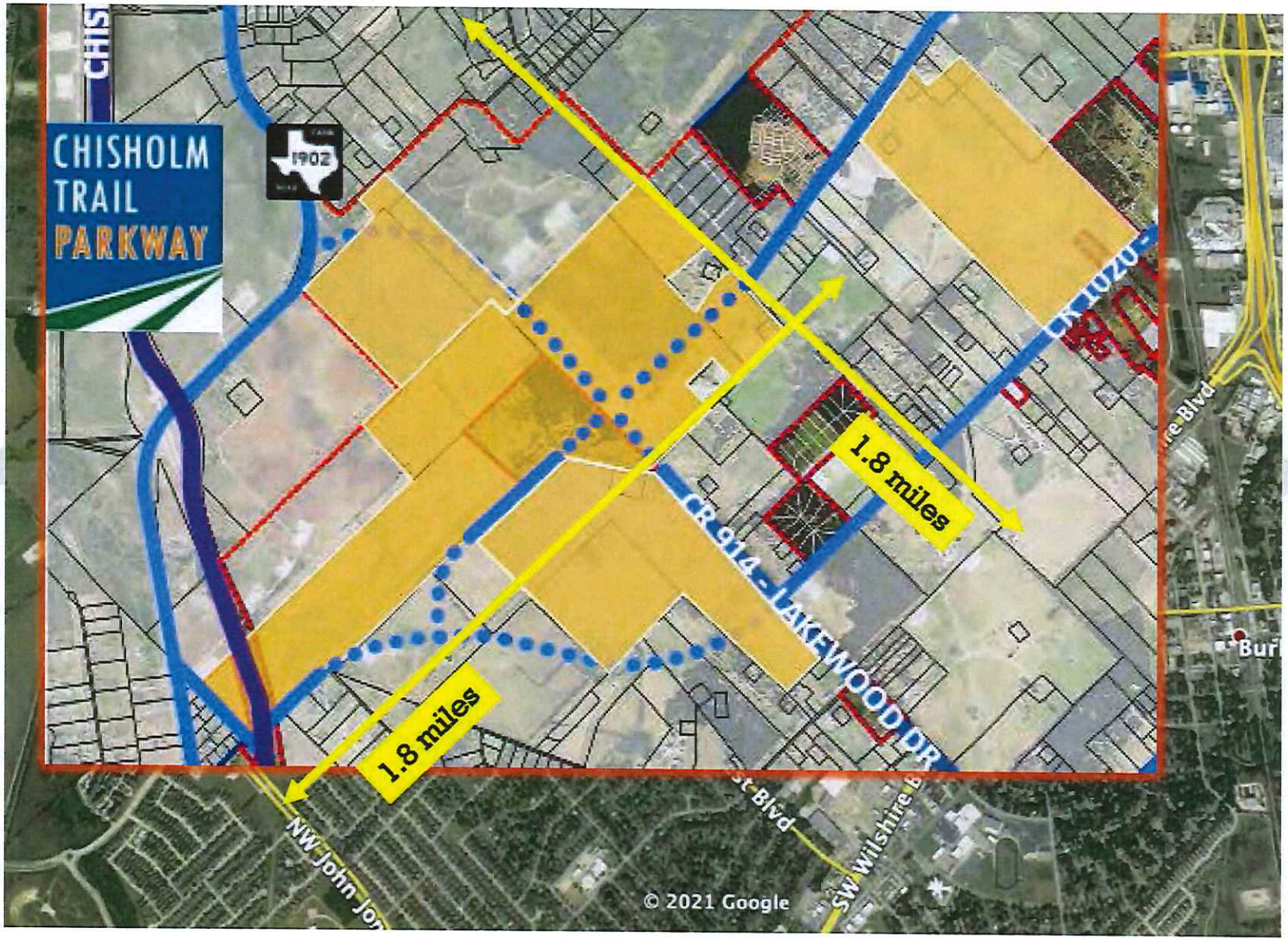

CHISHOLM TRAIL PARKWAY
1902
1.8 miles
1.8 miles
CR 914 - LAKEWOOD DR
CR 1020
NW John Jon
SW Wilshire B
© 2021 Google

EXHIBIT C
DEVELOPMENT STANDARDS

SECTION 1: GENERAL

On July 6, 2020, the City adopted Guidelines and Criteria for City Participation or Incentives for Master Planned Communities. The Developer has submitted an application for Chisholm Summit in accordance with the Guidelines. The application was submitted in the form of a presentation and is included in this agreement as Attachment 1. The inclusion of the application provides additional visual context for the development and its themes and standards. The standards below are intended to reflect the standards included in the application and provide additional detail.

A Planned Development (PD) Zoning Ordinance will be developed for Chisholm Summit, subject to City Council approval. The standards below are intended to be the base of the PD Ordinance and will be enhanced and refined with the PD Ordinance.

Public parkland associated with the development will be constructed and maintained through a Public Improvement District (PID). Private common space and certain amenity centers (specifically the Community Building and Equestrian Center) will be maintained by a required Homeowners Association (HOA).

The terms and phrases used herein shall have the same definitions and meanings as provided in the Chapter 380 and Economic Development and Performance Agreement between the City of Burleson, the Burleson 4A Economic Development Corporation, R.A. Development, Ltd., Burleson Development, Inc., B & G South Metro, LP, Rocky Bransom, Rocky and Angela Bransom, Alta Burl, LP, Janice Yvonne Jackson, and the Jackson Family Trust (the "Agreement").

SECTION 2: ORDINANCE APPLICABILITY AND GOVERNING REGULATIONS

All City ordinances are applicable to this project unless otherwise specified in the Development Agreement or Planned Development Ordinance. This includes, but is not limited to, the Governing Regulations set forth in the Agreement, which are:

(i) the Preliminary Concept Plan, which Preliminary Concept Plan is considered to be a development plan as provided for in Section 212.172 of the Texas Local Government Code;
(ii) the Final Concept Plan approved as part of the planned development zoning for each phase;
(iii) the Development Standards;
(iv) the Subdivision and Development Ordinance and Design Standards Manual;
(v) the Building Codes;
(vi) the Approved Plats; and
(vii) all state and federal statutes, rules, regulations, as amended, and other political subdivisions and governmental entities, if any, having jurisdiction over the Property and all applicable ordinances, rules, and regulations as amended by the city.

All state and federal regulations will apply. Developer and City agree to consider application of updated City ordinances with updates to Planned Development Ordinances.

In the event a provision is not specified in this Agreement or the Planned Development Ordinance the City's ordinances apply. In the event of a conflict between this Agreement or the Planned Development Ordinance and the City's ordinances, this Agreement or the Planned Development Ordinance apply. In the event of a conflict between this Agreement and the Planned Development Ordinance, the Planned Development Ordinance will apply.

SECTION 3: PROCESS

1. The development will follow all standard City processes for platting, zoning, and plan review.

2. In addition to platting and zoning, the Developer will create phased development plans consistent with the Preliminary Concept Plan included on pages 7-8 of Attachment 1 and Exhibit B of the Agreement for staff, Planning and Zoning Commission and City Council review. The development plans will be comprised of multiple phases (known as "Development Sections") as depicted on Exhibit G of the Agreement and will be the basis for preliminary plats. The development plan for each Development Section is expected to communicate high-level items that can provide some context for upcoming zoning and plat requests. Each development plan must be approved by City Council prior to submission of the preliminary plat and shall include the following:

   (i) Land uses

   (ii) Unit Count/Lot Mix – both for the current development plan and cumulative of prior development plans

   (iii) Designated Open Space

   (iv) Park proximities

   (v) Landscape Plan

   (vi) Trail Plan

   (vii) Park acreage – both for the current development plan and cumulative of prior development plans.

3. The zoning of the development will be through a Planned Development Zoning District. The development standards included in this agreement will be the baseline for establishing the PD development standards.

SECTION 4: THEME

1. Chisholm Summit will have a cohesive theme through its building design, signage, colors, fonts, and general sense-of-place throughout the development.

2. The general components of the theme, including visual imagery and the conceptual color palette, shall conform to the pictorially representations in Attachment 1.

3. The general components of the theme can be described literally as:

   (i) "Western" focused around keyword concepts "rustic", "growth", "horses", "folk", "gateway", and "progress"

   (ii) "Active" focused around keyword concepts like "trails", "outdoors", "purpose", "movement", and "nature"

   (iii) "Family" focused around keyword concepts like "together", "community", "neighbors", "generational", and "care"

SECTION 5: LOT STANDARDS

1. This development is intended to provide a variety of lot and home sizes and types to serve a diverse community. The development plan included with this Agreement provides a general mix of lots and the Developer has provided percentages related to the differing residential uses. It is understood that the flexibility in the percentages is necessary since this development will occur over a period of years and market conditions and the needs of the community will change. The following table provides a summary of the densities in the current plan and allowable percentages ranges of various product types. These percentages are based on dwelling units and not land area.

Lot Type	Minimum Lot Frontage	Minimum Lot Size	Minimum Home Size	Planned Units	Planned Percentage	Allowable Percentage Range	Notes
Townhomes	25'	2500	1000	184	2.54%	0 – 5%	
40' Residential (Patio)	40'	4000	1200	389	8.61%	0 - 15%	These categories describe the predominant use of the mixed residential lot types. The total of these categories may not exceed 60%.
56' Residential (Cottage)	56'	6500	1400	361	12.96%	0 - 15%	
60' Residential (Traditional)	60'	7200	2000	881	35.06%	0 - 40%	
70' Residential (Traditional)	70'	8400	2200	154	7.13%	0 – 15%	

80' Residential (Traditional)	80'	9600	2500	415	22.02%	10% - Unlimited	
Estate	100'	12000	2800	42	2.78%	0% - Unlimited	
55+ Residential	50	5000	1100	112	3.08%	0 – 10%	
MF/Senior Residential	N/A	2000	n/a	527	5.82%	0 – 10%	Senior living components shall comprise at least 25% of this category.

2. Detailed lot standards (lot dimensions, setbacks, yard standards, height standards, etc.) will be identified through the Planned Development Ordinance.

3. Each development plan and preliminary plat will be submitted with a lot mix chart showing what is included in the current plan/phase and what the cumulative status of the lot mix is.

SECTION 6: ARCHITECTURAL STANDARDS

1. Masonry standards. All structures must meet the City's Masonry Construction Standards (Chapter 10, Article XVI) unless otherwise provided in the Planned Development Ordinance.

2. Unless otherwise provided in the Planned Development ordinance, the Developer shall follow the City's zoning ordinances to establish uses and design standards.

(i) Traditional homes (60', 70' and 80' lots) are anticipated to follow zoning standards in effect at the time the Planned Development ordinance is considered.

(ii) Other home types (patio, townhome, cottage, etc.) or those that do not match an existing zoning category to have exhibit outlining standards.

3. All single family detached dwellings shall utilize at least five (5) of the following design features to provide visual relief along the front of the residence and any side of the residence facing a street:

(i) Carriage style garage door
(ii) Garage door not facing the street
(iii) Bay window, must project no more than 18" in the front or rear yard, and no more than 12" in the side yard.
(iv) Eyebrow or arched front windows
(v) Cast stone accents on the front elevation, minimum of 3% of front elevation

(vi) Covered front porches of a minimum of 50 square feet
(vii) Front porch railings of either wood or wrought iron
(viii) Front door with at least 20% area covered with decorative glass or wrought iron
(ix) Cupolas or turrets
(x) Dormers
(xi) Gable
(xii) Decorative attic or gables feature, minimum 2 square feet
(xiii) Two or more offsets in the front façade of at least 24" depth
(xiv) Metal roof accents
(xv) Recessed entry, an minimum of three (3') deep
(xvi) Variable roof pitch equal to or greater than 8:12
(xvii) Exterior shutters on at least 75% of the windows on the front façade
(xviii) Masonry arches
(xix) At least two types of masonry materials (stone, brick or stucco)

4. The Developer agrees to include all architectural standards established with the Planned Development into deed restrictions filed with the County with or prior to the filing of the final plat.

5. For homes on corner lots or where there is a direct line of sight to full side of home, additional architectural standards will be established.

6. The Planned Development Ordinance will establish anti-monotony standards.

7. The Developer agrees to establish an architectural review committee to assist with the review of all permits prior to submittal to the City.

SECTION 7: OPEN SPACE/PARKS

1. An overall plan with a description and distance of each open space and parks improvement is provided on pages 14-17 of Attachment 1 and Exhibit D of the Agreement.

2. A detailed park and trails plan will be required as part of the development plan for each Development Section. The exhibit shall show each home to be within 3,000 feet of a neighborhood or community park.

3. Per the City's Subdivision and Development Ordinance, parkland shall be dedicated at one acre per 100 residential units. This development proposes approximately 3,066 residential units which results in 30.66 acres of parkland dedication required. The Developer proposes to dedicate approximately 102 acres or parkland. Should the dedication proposed fall below 90 acres, the Agreement shall be amended.

4. The development plan will include parkland dedication amounts, which shall be a minimum cumulative rate of 1.5 times the City's current required dedication on a per phase basis (i.e. 200 residential units equals three acres of parkland dedication). Prior developed phases may be included in this cumulative count. Trails are included in the parkland dedication amount.

5. The City's parkland infrastructure fee shall be waived for this development due to construction of park improvements by the developer. The fees shall be considered through development of the PID Service and Assessment Plan (SAP).

6. All public parkland will be deeded to the City upon filing of the final plat for the developed phase and indicated as public parkland on the plats.

7. Neighborhood parks shall be given a specific focus while adhering to the overall theme and brand. Recommended focuses include but are not limited to park uses intended for young children, older adults, active lifestyle, passive space, inclusive of disabilities, etc.

8. Any areas that are proposed to be private common space need to be delineated clearly on the plats.

9. Where possible, stormwater management features (detention ponds, bioswales, etc.) shall be used as park amenities either by incorporating retention with an aeration fountain or as a dry playfield.

10. The Preliminary Concept Plan on pages 7-8 of Attachment 1 and Exhibit B of the Agreement shows conceptual locations of 13 planned park areas, which includes a Community Park and an Equestrian Center. These locations are conceptual, but in no case shall fewer park locations be provided. The City shall evaluate the placement and necessity of one of the planned park areas located and identified in Summit Office Park and may elect not to construct this park.

    (i) A concept plan for the Community Park on of page 14 of Attachment 1. The community park shall be a minimum of 10 acres. The Community Park shall generally conform to the Community Park concept on of page 14 of Attachment 1.

    (ii) A concept plan for the typical Neighborhood Park is included on page 15 of Attachment 1. Neighborhood Parks shall generally conform to the Neighborhood Park concept on of page 15 of Attachment 1.

    (iii) Parks shall generally be constructed in accordance with the following:

    - Community Park shall be constructed with the first phase of residential development and with a design that follows the description in these standards.

- Community Park shall include the Community Building that follows the description in these standards.

- At least one of the Neighborhood Parks will include a community pool of approximately 5,000 square feet. The neighborhood park with the pool will be easily accessible by pedestrians and vehicles. The specific pool size will be identified with the development plan for the section it is in. The pool amenity may be split between parks and may also include alternate water amenities/features.

- With each development plan, a summary of parkland dedication per phase and a cumulative total of prior parkland dedication must be provided

- The Preliminary Concept Plan shows a number of amenities. These are conceptual in nature. A more detailed description of the planned amenities shall be submitted with the development plan for that Development Section. A formal plan shall be submitted with the construction plans for the surrounding infrastructure in that phase. It is anticipated that the final plans will deviate from the concept plan, but the number and nature of the amenities will need to be comparable.

- The community park will also contain the Community Building. The Community Building will be private and will not be included in the PID funding unless an agreement is otherwise reached with the City for the access, operation, maintenance and/or funding of the facility. A separate lot for the amenity center shall be provided.

Park Amenities	**Community Park**	**Neighborhood Park**
Minimum acreage	10	3
Off Street Parking	R	O
Playground	R	R
Restroom	R	O
ADA Accessibility	R	R
Site Furnishings		
Benches	R	R
Picnic Tables	R	R
Trash Receptacles	R	R
Pet Waste Stations	R	R
Landscape Improvements	R	R
Signage	R	R

Drinking Fountains	R	R
Trails/Pathways	R	R
Shade over play features	R	R
Bike Racks	R	R
BBQ Pits	R	O
Lighting	R	R
Optional Amenities		
Primary		
Outdoor fitness equipment (min. 3 stations)	O	O
Sports Courts	O	O
Sports Fields	O	O
Ponds	O	O
Skate Park	O	O
Dog Park	O	O
Splash Pad	O	O
Fishing pier	O	O
Musical Play Features	O	O
Secondary		
Natural Area	O	O
Gardens	O	O
Public Access/Fencing	O	O
Shade Structures (other than over playground)	O	O
Shelters	O	O

R = Required | O = Optional

- Community parks shall have at least 5 of the primary optional amenities and 3 of the secondary optional amenities listed above.

- Neighborhood parks shall have at least 2 of the primary optional amenities and 2 of the secondary optional amenities listed above.

- Two of the neighborhood parks may have a reduction in the number of amenities in favor of high quality passive park space.

(iv) The Equestrian Center will be added to the development as an amenity for horse owners, enthusiasts and hobby riders. It is comprised of two separate buildings:

- Horse Facility - The existing horse facility is located at the eastern property shown on the Land Use Plan along County Road 1016. The facility is approximately 30,000 square feet, open-air and under-roof

and contains stalls and horse training equipment. The concept of the facility would be to make it available for private rental for those in Chisholm Summit interested in owning a horse. The HOA would manage the rentals as well as any community or public events to utilize the facility. Additional barns exist near the Facility that may be included in the programming as well.

- Visitor Center / Offices – The existing 3,000 square feet house southwest of the main facility may be converted to a facility for professional operations related to the Facility. The HOA would manage the building.

(v) The Equestrian Center and associated improvements are intended to be private and maintained by the HOA. The Developer will consider partnerships with the City for public events and programs.

SECTION 8: LANDSCAPING

1. A general landscaping plan will be required with the development plan for each Development Section, with call-outs and descriptions for specific landscape components throughout the Section. Care shall be taken to ensure adequate roadway and intersection sight visibility.

2. A detailed landscape plan will be required for the construction of each phase within the Development Section showing the landscape elements along the public roadways, parks and trails.

3. Street trees will be utilized primarily as an addition to the median rather than behind sidewalks. Major collectors and arterials will be required to have street trees, as well as those streets which function as minor collectors inside the development, connecting multiple neighborhood sections.

4. Landscaping will be required where ornamental metal fence is present adjacent to a major collector, minor arterial or major arterial. Landscaping along roadway-adjacent ornamental fencing shall be placed such that it provides opaque screening for the adjacent homes. This landscaping will be designed with the roadway plans for the adjacent roadway. Factors for consideration in design are housing type, location of parks, location of trails, location of street calming measures, specific theme in the neighborhood section, specific theme for neighborhood parks, etc.

5. All common landscaping shall be installed prior to final acceptance of the public infrastructure for each phase.

SECTION 9: ENHANCED WALLS AND FENCING

1. Fencing standards will vary based on the location of the property in the development and shall generally adhere to the following:

   (i) Properties with a rear yard adjacent to both Lakewood Drive (existing County Road 914 and its extension) and the existing east/west thoroughfare (existing County Road 1016 and its extension) will have a combination of ornamental metal fence and masonry screening wall of at least six (6) feet. The general mix of metal fence and masonry wall is between 40% and 60% for each. Screening will be provided with landscaping to follow the approval process described in the above section. Additionally, no residential lots shall have direct access to these roads. Fencing/screening shall be designed with the roadway plans for the adjacent roadway.

   (ii) Fencing will not be added in front of the Townhomes along the road leading to the Community Park.

   (iii) Where fencing is installed abutting open space areas, the fencing must be ornamental metal fence of at least six (6) feet.

   (iv) Care shall be taken to ensure adequate roadway and intersection sight visibility.

   (v) Where fencing is installed for the Community Building, the fencing must be ornamental metal fence of at least (6) feet.

   (vi) Fencing located on typical rear yards or between residential lots may be decorative metal or board-on-board with cap and shall meet the City's fencing and screening ordinance. The PD Ordinance for each development section will define specific fencing requirements.

   (vii) Any transitional fencing must meet City's fencing and screening ordinance.

   (viii) Undeveloped land fencing abutting major roadways will be pipe rail fence with linseed oil treatment similar to that shown near the Chisholm Summit Equestrian Center on page 31 of Attachment 1.

   (ix) Where additional fencing is installed for the Equestrian Center, the fencing may be pipe rail fence with linseed oil treatment.

2. Fencing exhibit must be provided with the Planned Development ordinance.

SECTION 10: BUFFERS

1. Buffers will be provided through adherence to the landscaping and fencing standards in the above sections.

SECTION 11: STREET LAYOUT

1. The Preliminary Concept Plan is intended to provide areas of general land use. Except for roadways shown on Exhibit E of the Agreement, the roadways shown in these areas are conceptual only.

2. Roadways shall meet the following general design guidelines:

   (i) Lakewood Blvd.
   - Minimum 4 lanes
   - minimum 120 foot ROW
   - Trail component
   - landscaped parkways and/or medians

   (ii) Final roadway sections shall be determined with either the development sections or the roadway plans, whichever comes first.

   (iii) All other roadways shall be designed in accordance with the city's updated Master Thoroughfare Plan to be adopted 2021.

3. Design shall incorporate methods to ensure that speeding and excessive cut through traffic is avoided. The following are examples of methods to be considered:

   (i) Integrated traffic calming methods, such as traffic circles, chicanes, bump outs with landscaping or other methods
   (ii) Neotraditional development with narrow streets, street trees, reduced front yard setbacks
   (iii) Cul de sacs
   (iv) Short block lengths
   (v) Curvilinear methods, if necessary

4. Alleys – This development proposes use of alleys to serve the townhomes and patio homes. Alley design must be carefully coordinated with the Fire Department for fire safety considerations and the Public Works Department for solid waste service considerations. Alleys shall be constructed per the design standards to be included in the Planned Development ordinance. A design for both one-way and two-way alleys should be shown to allow for the use of each where appropriate.

SECTION 12: TRAILS

1. Primary trail locations are shown on Exhibit D of the Agreement. The trail locations shall generally conform to the trail park location concept on Exhibit D. Primary trails shall be 10 feet wide and constructed to City standards. Trails will be lighted wherever possible. Additional benches and trash receptacles will be added

where a long distance exists between trail park nodes. Trail design may be modified based on mutually agreeable circumstances which may include but are not limited to pipeline location, tree preservation, accessibility, slope requirements, etc.

2. Secondary trails are not identified on the land use plan but may be established with individual phases. Secondary trails shall be a minimum of 5 feet wide and constructed to City standards

3. Equestrian trails will be specifically designed in the development plan for the Development Section including the equestrian center. Trails will be guided by a national standard such as the *Equestrian Design Guidebook* published by the U.S. Forest Service and the Federal Highway Administration. Trail type may vary based on the existing terrain and intended user experience. Trail design options may include:

   (i) 6-foot trail comprised of two 3-foot tread areas
   (ii) 4-foot trail comprised of two 2-foot tread areas
   (iii) Material of native soil with no road base plus wood chip in low drainage areas
   (iv) Material of native soil with mixed-in crushed rock aggregate where needed
   (v) Avoid hardened and smooth trail surfaces such as concrete, soil cement, asphalt, and non-permeable soil stabilizers.

4. Trail park nodes. Conceptual trail park nodes are shown on page 16 of Attachment 1. The trail park nodes shall generally conform to the trail park nodes concept on of page 16 of Attachment 1. These are conceptual and will be specifically identified with each phase. Each park node shall include a seating area or picnic area and shall have at least one of the following amenities.

   (i) Bocce Ball
   (ii) Bag Toss
   (iii) Horseshoes
   (iv) Shuffleboard
   (v) Chess/Checkers Tables
   (vi) Fitness Stations
   (vii) Art Installments
   (viii) Science/Engineering Installments

   A lighting plan for the trail park nodes will be established with the PD. Where reasonable, trail park nodes will also include a watering station.

5. Trails shall be coordinated with the most recent adopted bike and trail plan.

SECTION 13: LIGHTING

1. Lighting will be provided by United Cooperative Services, the electric provider that holds jurisdiction in this area.

2. Developer will require a lighting type that best matches the theme based on the available options provided by United Cooperative Services.

3. A lighting plan will be submitted with each phase and will include an example of the lighting type to ensure consistency with prior phases and adherence to the theme.

SECTION 14: SIGNS

1. Community signs will be utilized as a method of both wayfinding and branding throughout the development. Sign locations are shown throughout the conceptual plans included as exhibits to these standards. The sign design shall be included as part of the development plan for the first Development Section. Specific sign rules and regulations will be included in the Planned Development ordinance.

2. Entry signage for the main entry points in the Chisholm Summit development must generally match the theme as described in Section 4 and as illustrated in Attachment 1.

3. Wayfinding signage may be included throughout the community and used along the arterial roads, collector roads, and points of intersection to denote entries into individual neighborhoods.

4. All signs will be illuminated. Entry and wayfinding signage will resemble each other in such a way to identify both with the Chisholm Summit development.

SECTION 15: MULTI-FAMILY/SENIOR LIVING

1. Architectural features shall reflect the theme of the development.

2. The Multi-family portion shall meet the City's design standards for Multi-family. Article VIII of Appendix C (Urban Design Standards) at the time of this agreement adoption. Additional multi-family standards will be included with the Planned Development ordinance at the time of its adoption.

3. The area designated for Multifamily / Senior Living will be established with at least 25% focused on the "senior living" component, promoting a district in that serves the full life-cycle of a community.

4. The public trail in this area should be sufficiently connected to the buildings and with a design that is conducive to the senior population.

SECTION 16: COMMERCIAL ELEMENTS

The Preliminary Concept Plan envisions a centrally-located commercial node that would be a focal point for the Chisholm Summit community, connected in a way that allows for pedestrian and vehicular movement to and from the commercial and retail operations, and has a unique sense of place that complements the community.

1. Uses for the commercial area will be established with the Planned Development ordinance as this phase is developed. Generally, the uses will be Neighborhood Service to light General Retail, providing opportunities for shops and stores while limiting the uses found in a broader commercial category.

2. Architectural standards, signage, and any amenities will be aligned with the theme of the community. Branding of Chisholm Summit will be present throughout the commercial node.

3. Developer will evaluate a form-based code for inclusion in the Planned Development ordinance to place a focus on the building design.

SECTION 17: COMMUNITY BUILDING(S)

1. A main Community Building will be located in the Community Park. Refer to Exhibit D of the Agreement for additional information and a general depiction of the conceptual layout and design. This Community Building will include at a minimum:

   (i) Party rooms for HOA-member use
   (ii) Covered patio
   (iii) Fire pits
   (iv) Outdoor kitchen
   (v) Restrooms
   (vi) HOA office
   (vii) Pedestrian connections to Community Park amenities
   (viii) Dedicated parking for building use
   (ix) Strand light plaza

2. The building space will be privately-owned and maintained by the HOA.

3. A separate community building will be considered for a neighborhood park in the area shown on the Land Use Plan as Multifamily / Senior Living.

SECTION 18: NEIGHBORHOOD ACTIVITIES

1. Organized community activities shall be provided on a quarterly basis. The HOA will coordinate the activities, either under its own direction or through partnerships with local organizations like non-profit groups, volunteer organizations or community interest groups.

2. Community activities should enhance the living experience of the Chisholm Summit residents and be seen as a component of the active neighborhood atmosphere seen in master-planned communities.

3. Public amenities and park spaces should be utilized for activities like holiday light competitions, concerts, holiday parties, group horse rides, egg hunts, lawn game competitions, fun runs, etc.

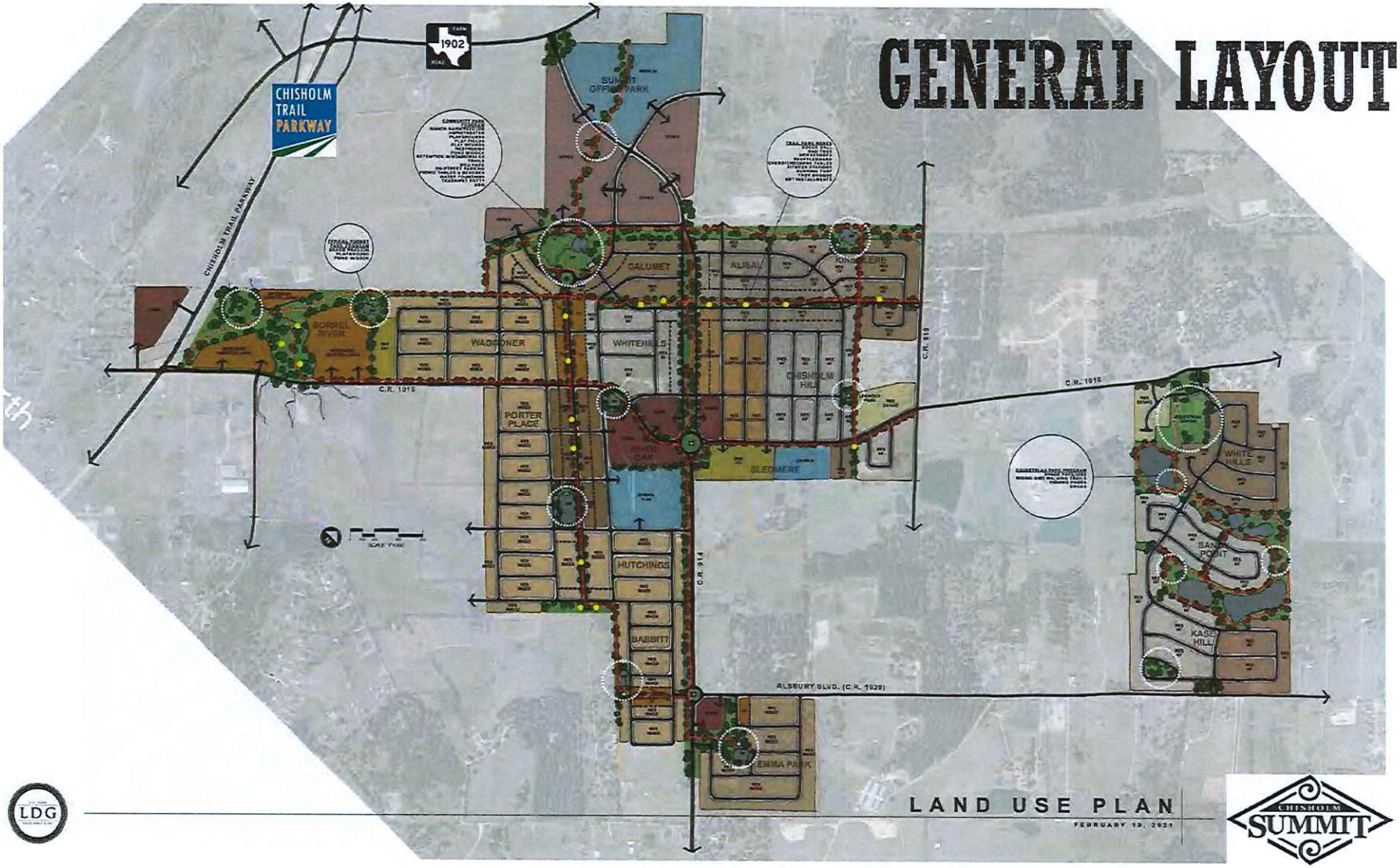
4. Public activities should be actively promoted by the HOA or associated groups. A community website or social media accounts should be developed, maintained and regularly updated to establish community connections.

SECTION 19: ATTACHMENT DESCRIPTIONS

The Development Standards have been further illustrated through the use of attachments described and referenced in the above sections. The attachments to these development standards are as follows:

1. Master-Planned Community Presentation – Attachment 1

GENERAL LAYOUT



LAND USE PLAN

FEBRUARY 19, 2021

LDG

CHISHOLM SUMMIT

BY THE NUMBERS

- Approx. 915 acres in Master-Planned Community
- 3066 Residential Units (projected)
  - 75% Single-family (ranging frontage 40' to 80')
  - 25% Townhome/Senior Living/Multifamily
- Over 10 miles interconnected Trail System
- 102 acres dedicated Park land
  - Community Park, Pocket Parks, Trail Parks
  - Equestrian Center
  - Passive & Natural Areas
- 28 acres – Commercial nodes
  - Neighborhood services at high-traffic corners
  - Central node - "Chisholm Square"
- 92 acres – Professional Office Park / Medical District

PROVIDERS

- Water – Johnson County SUD
- Sewer – City of Burleson
- Electric – United Cooperative
- School – Joshua ISD

CITY REQUIREMENTS FOR MASTER-PLANNED COMMUNITIES

- All Master-Planned Developments:
  - Enhanced Landscaping
  - Architectural Standards
  - Enhanced Walls and Fencing
  - Open Space over Minimum

+

- Larger Developments:
  - Connecting Trails
  - Lot Size Variety
  - Buffers
  - Amenity Centers
  - Themes & Sense of Place
  - Commercial Elements
  - Neighborhood Activities
  - Creative Additions

THEME & PLACEMAKING

WESTERN

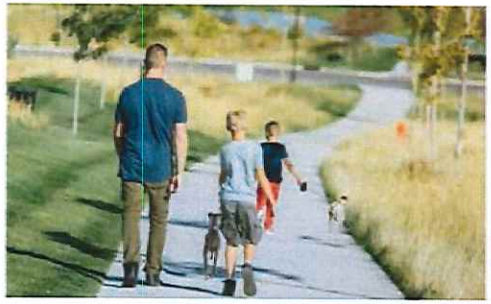
RUSTIC
GROWTH
HORSES
FOLK
GATEWAY
PROGRESS

ACTIVE

TRAILS
OUTDOORS
PURPOSE
MOVEMENT
NATURE

FAMILY

TOGETHER
COMMUNITY
NEIGHBORS
GENERATIONA
CARE



CHISHOLM SUMMIT

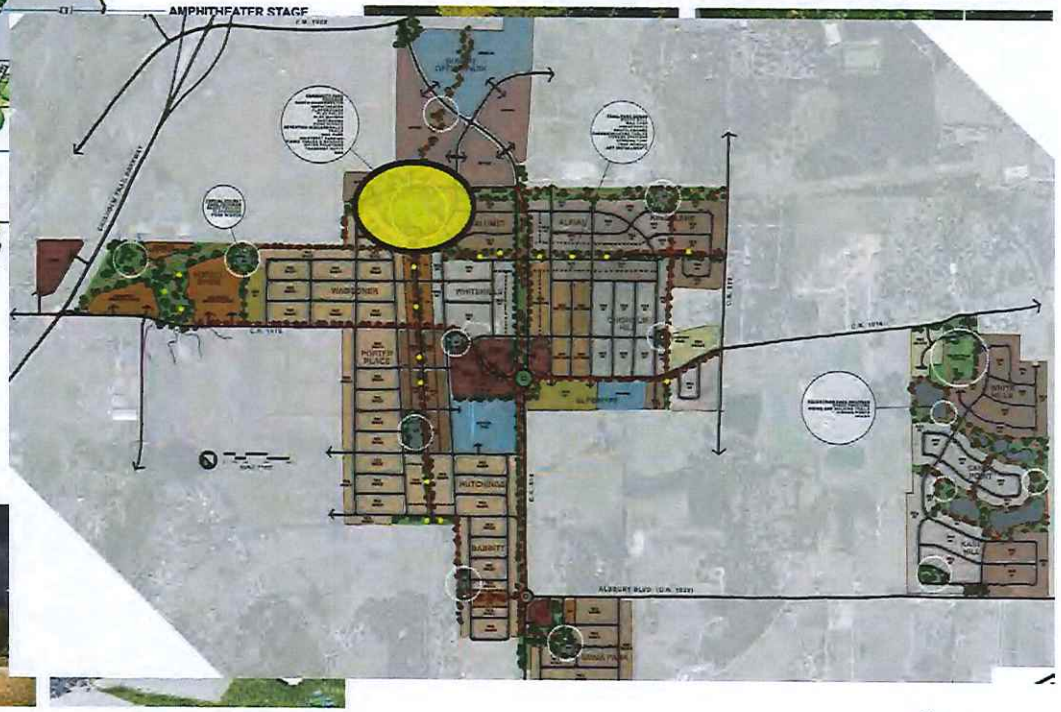
CS

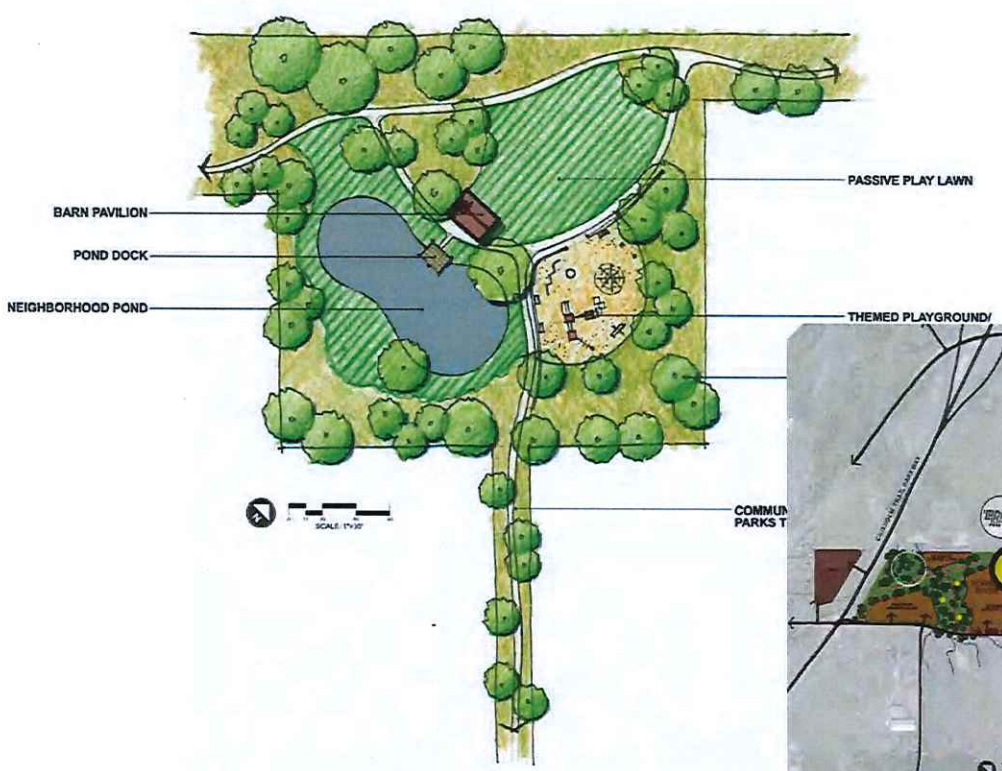
CHISHOLM SUMMIT

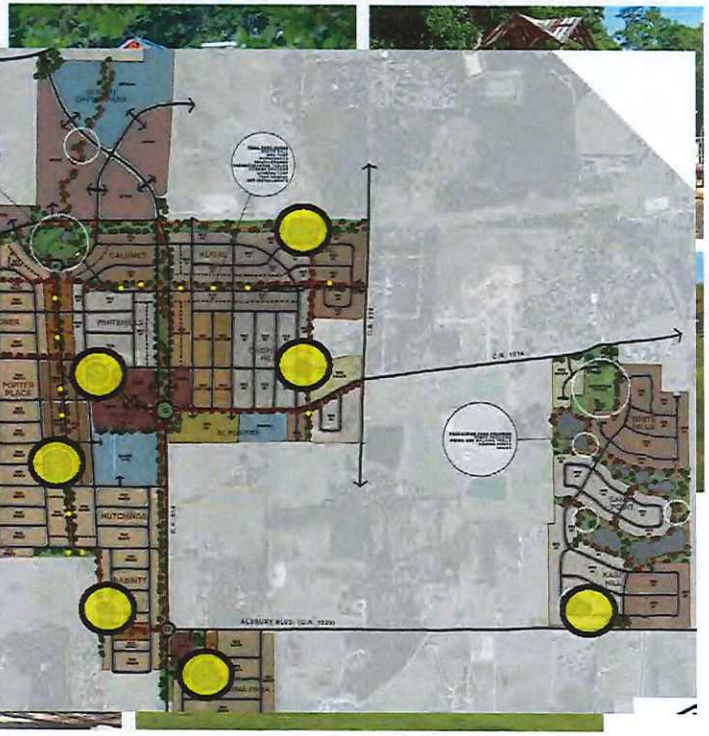
OPEN SPACE
AMENITY CENTERS
CONNECTING TRAILS
NEIGHBORHOOD ACTIVITIES

LARGE BARN PAVILION
POND DOCK
BOARDWALK OVER NATURALIZED AREA
ON STREET PARKING
PASSIVE PLAY LAWN WITH SHADE TREES
POND
LOOPED PATHWAYS
NATURALIZED RETENTION AREA
AMPHITHEATER STAGE
PLAYGROUNDS
SPLASH PAD
PERGOLA SEATING AREA
RESTROOMS & SPLASH PAD EQUIPMENT ROOM

PIONEER PARK

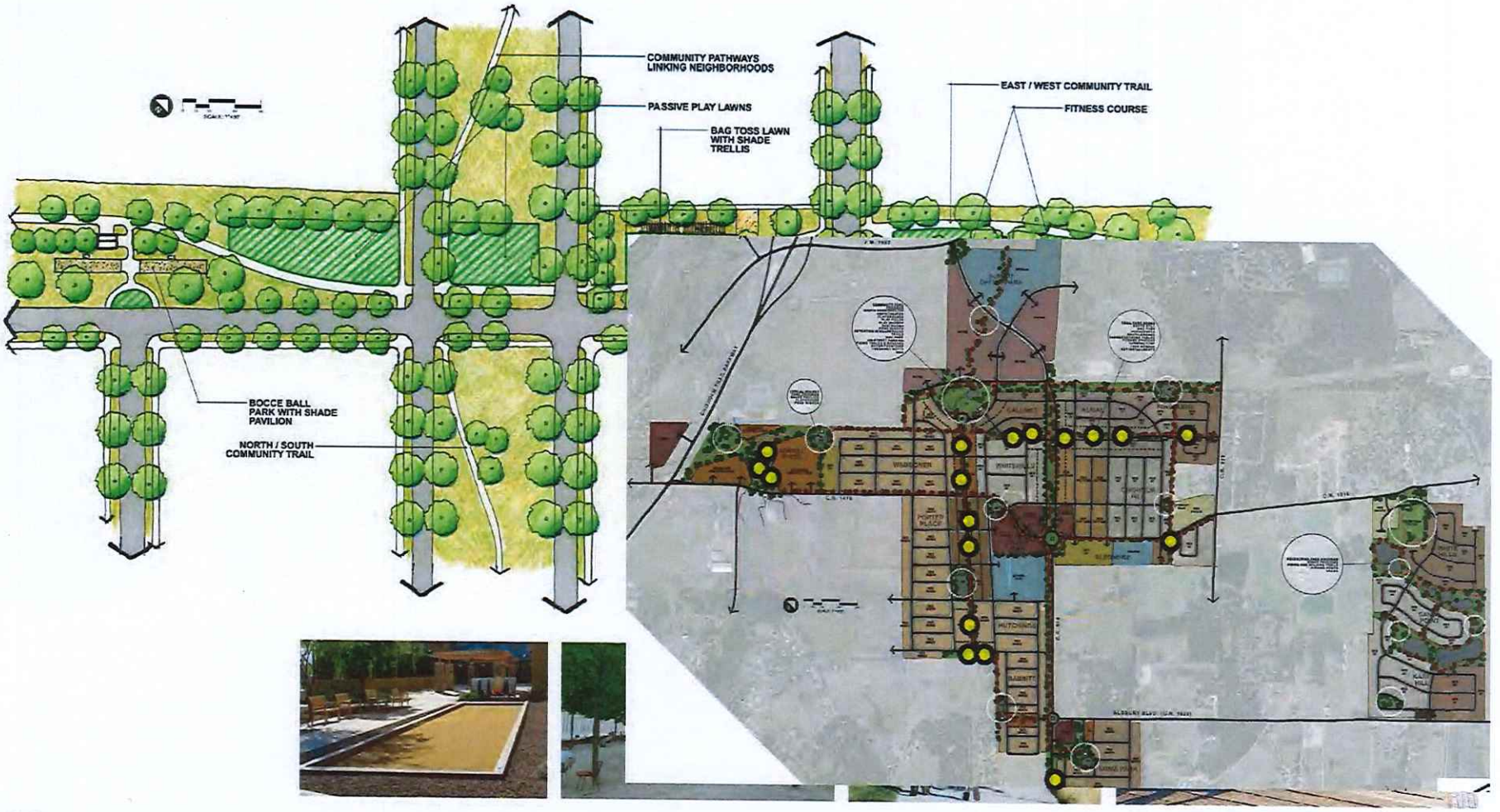






TYPICAL POCKET PARK PLAN

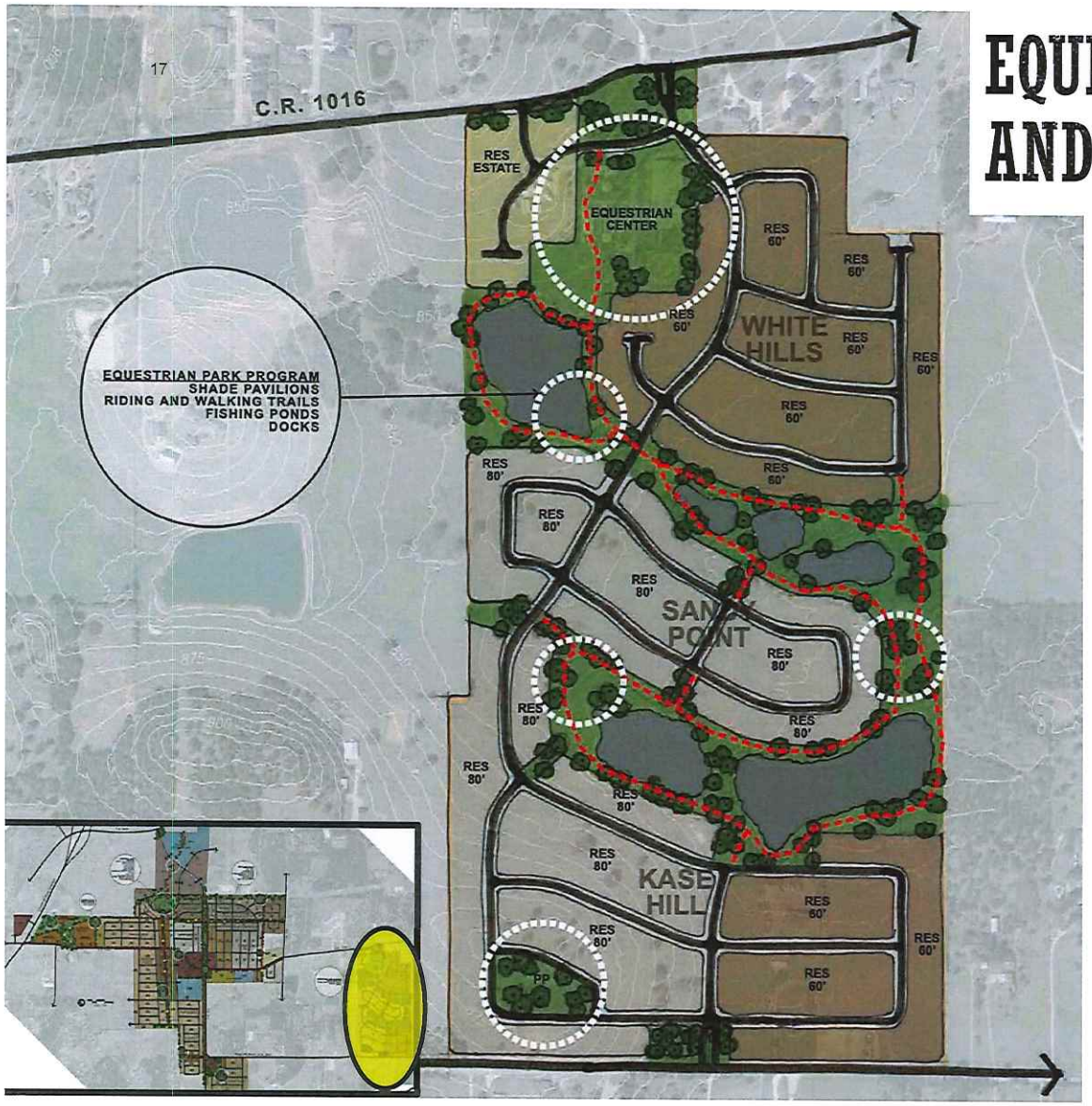
FEBRUARY 19, 2021



TYPICAL TRAIL PARK CORRIDOR

FEBRUARY 19, 2021

EQUESTRIAN CENTER AND TRAILS

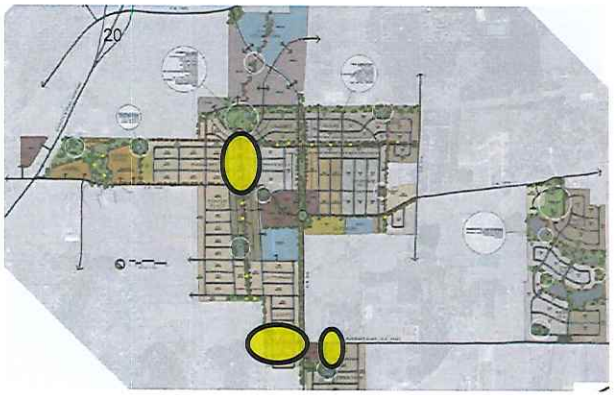


- Trails for horseback riding
- Over 45 acres with large peaceful ponds for fishing and relaxing
  - Full property shown here is approximately 160 acres
- Equestrian Center currently on property will remain as an amenity for Chisholm Summit residents
- Shade pavilions and pocket park

LOT SIZE VARIETY
BUFFERS
COMMERCIAL ELEMENTS

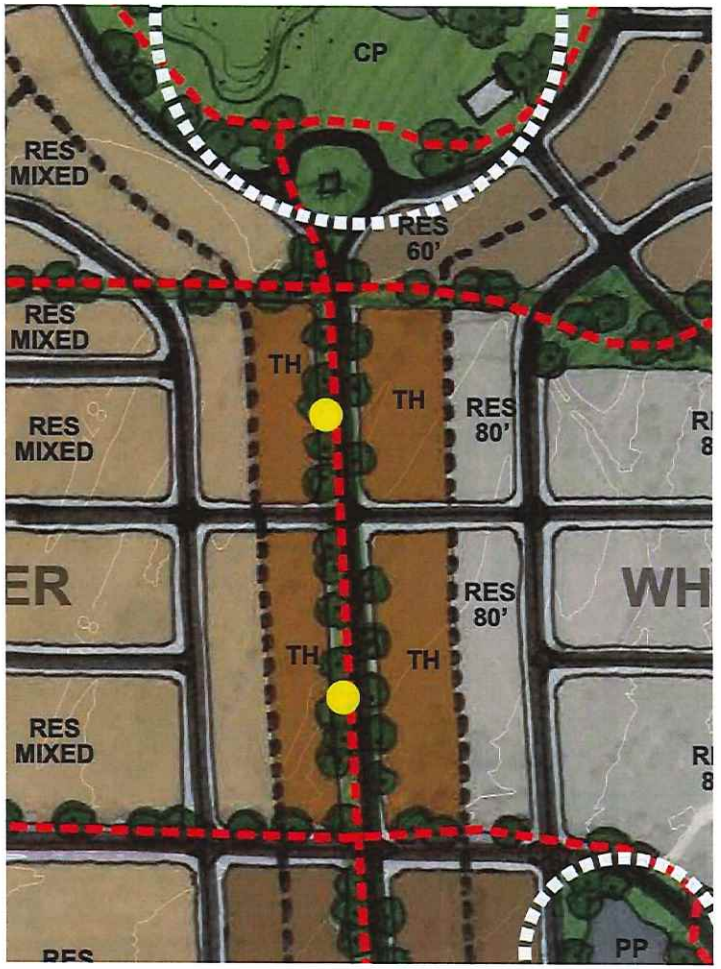
LOT SIZE VARIETY

- Chisholm Summit has a range of lots to meet any resident's age, family status, or income
- Single-family homes include:
  - Cottages with detached garages
  - Traditional one- and two-story homes
  - Patio homes with shared front yards and alley access
  - Lots with a little more elbow room and existing trees
  - Estate lots with a view of Burleson
- Higher-density areas include:
  - Age-55+ homes under 1300 sqft
  - Two-story townhomes on zero-lot lines
  - Multifamily housing with facility amenities
  - Senior care centers with nearby greenspace

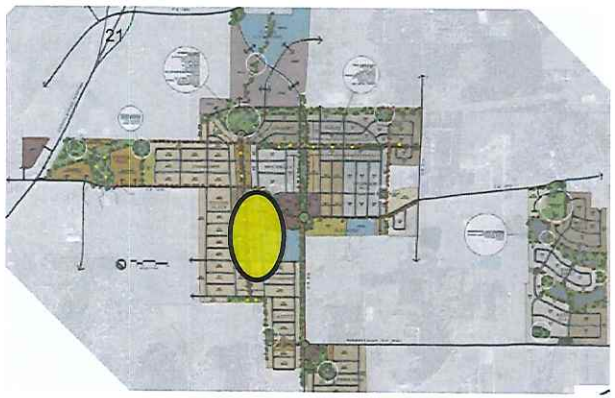


TOWNHOMES

CHISHOLM SUMMIT



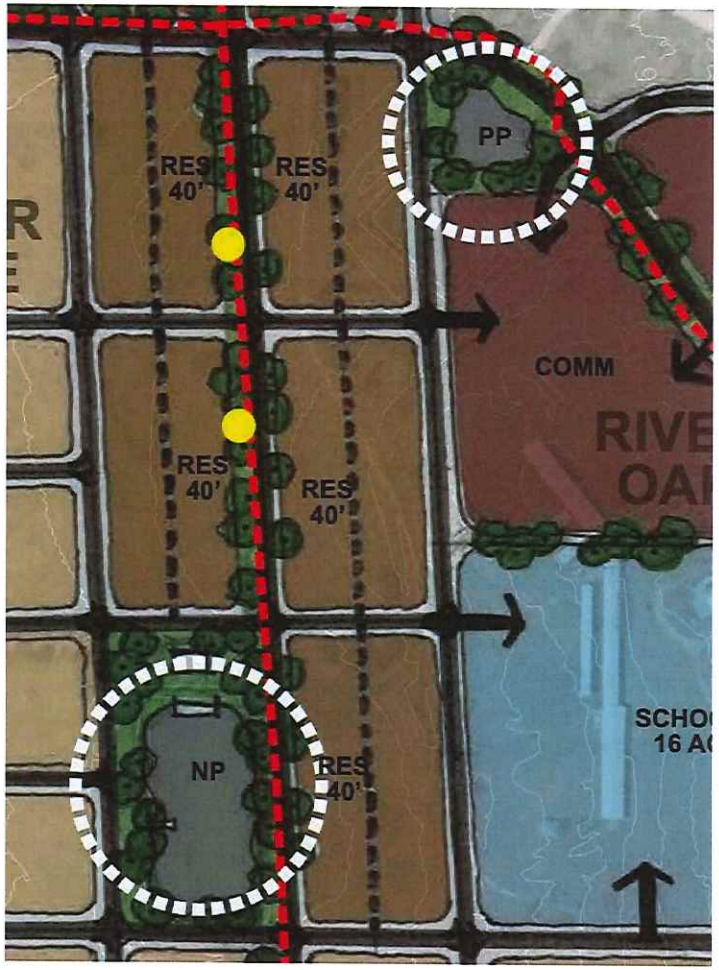
- Two-story townhomes
- Individual units for ownership
- Rear alley vehicular access
- Front lot line at street/sidewalk edge
- Adds scale to primary community corridor
- Located near public amenity areas
- Typical lot – 25' x 100'

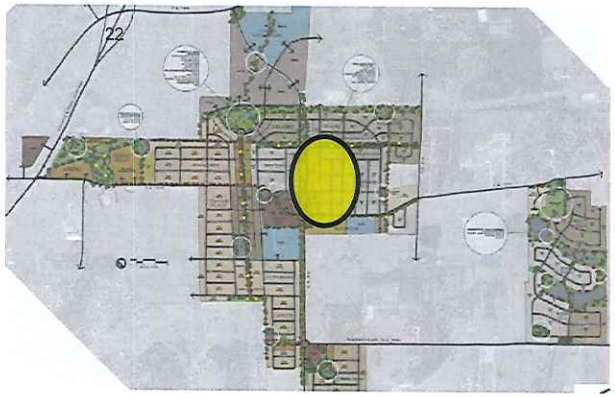


PATIO HOMES

CHISHOLM SUMMIT

- Also known as a "bungalow court" or pocket neighborhood
- Front yards are shared with a block of neighbors
- Garage accessed by alley
- Typical lot – 40' x 100'

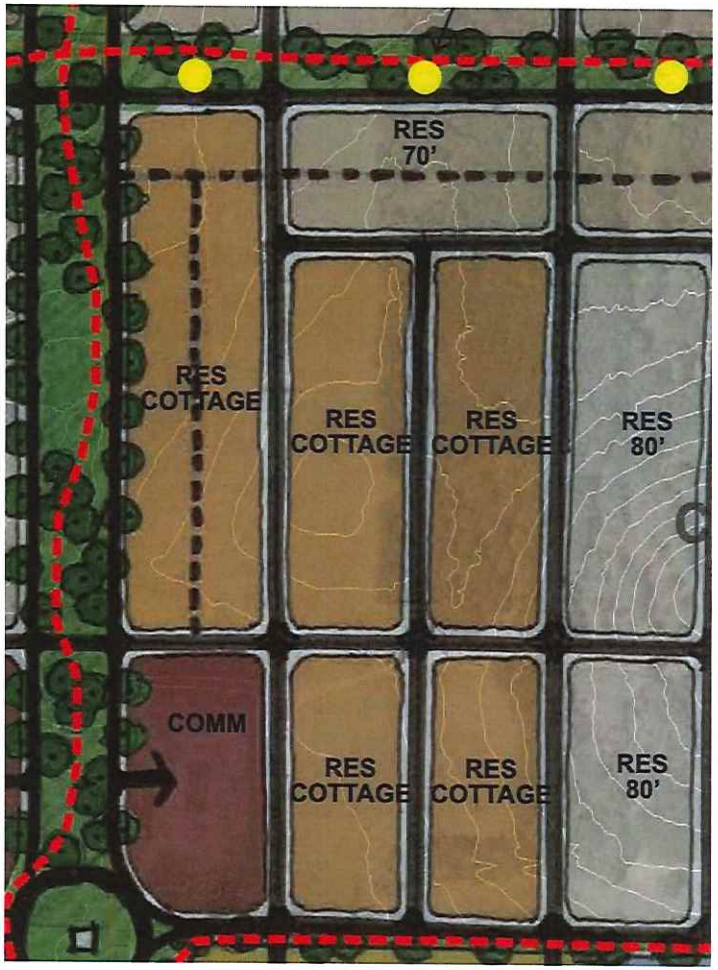


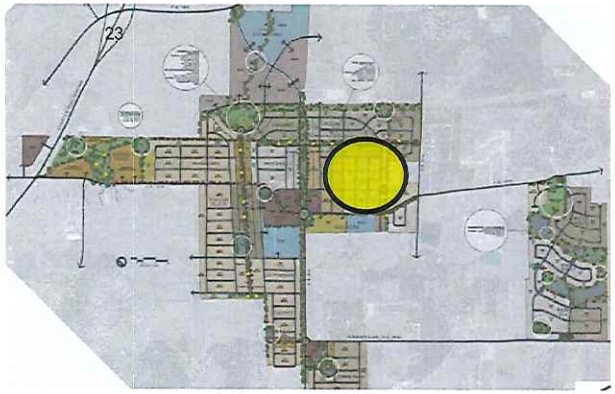


- Made popular in Heritage Village and Reverie
- Craftsman elevations provide great curb appeal
- Detached two-car garage
- Backyard large enough for party patio or pool
- Typical lot – 56' x 120'

COTTAGES (HERITAGE)

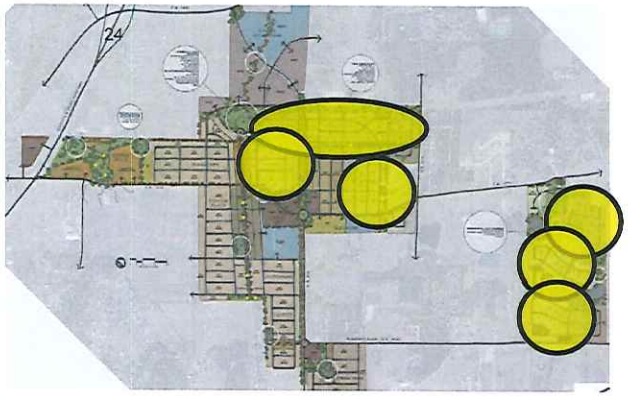
CHISHOLM SUMMIT





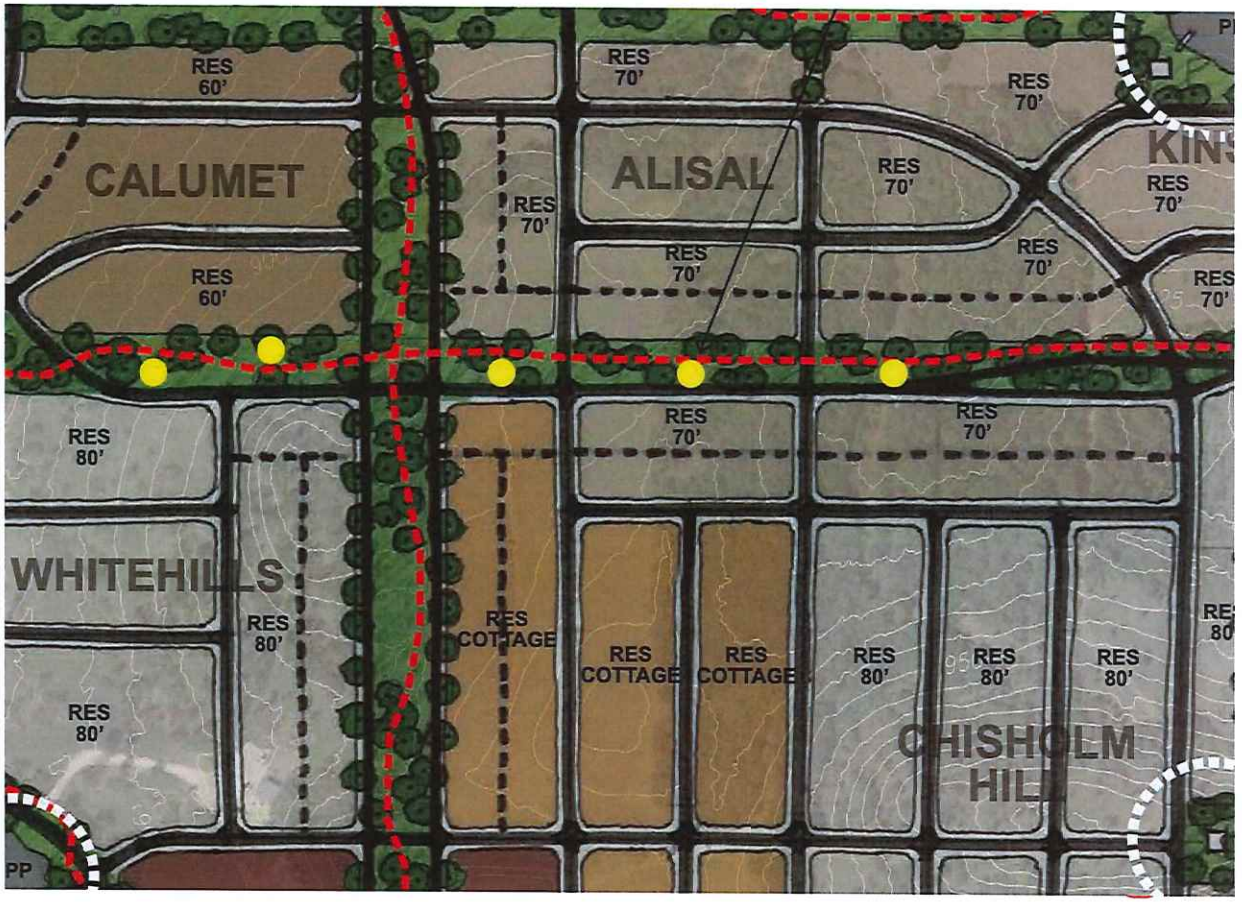
ESTATES ON THE SUMMIT

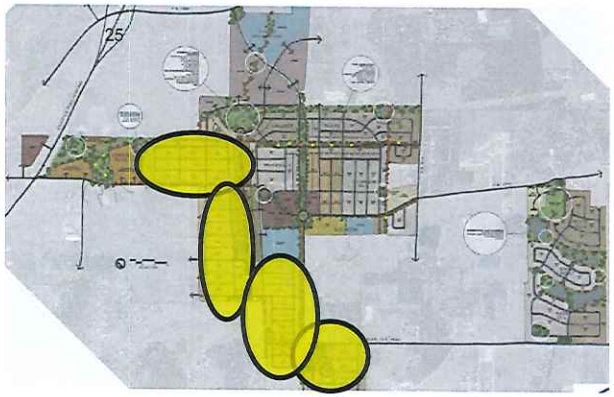
- Scenic overlook of all of Burleson
- Estate lots built with the grade of the hill
- Lookout Park accessible via trails to all CS residents
- Perfect for the executive or large family
- Typical lot – 80' x 140'



PLANNED SINGLE-FAMILY

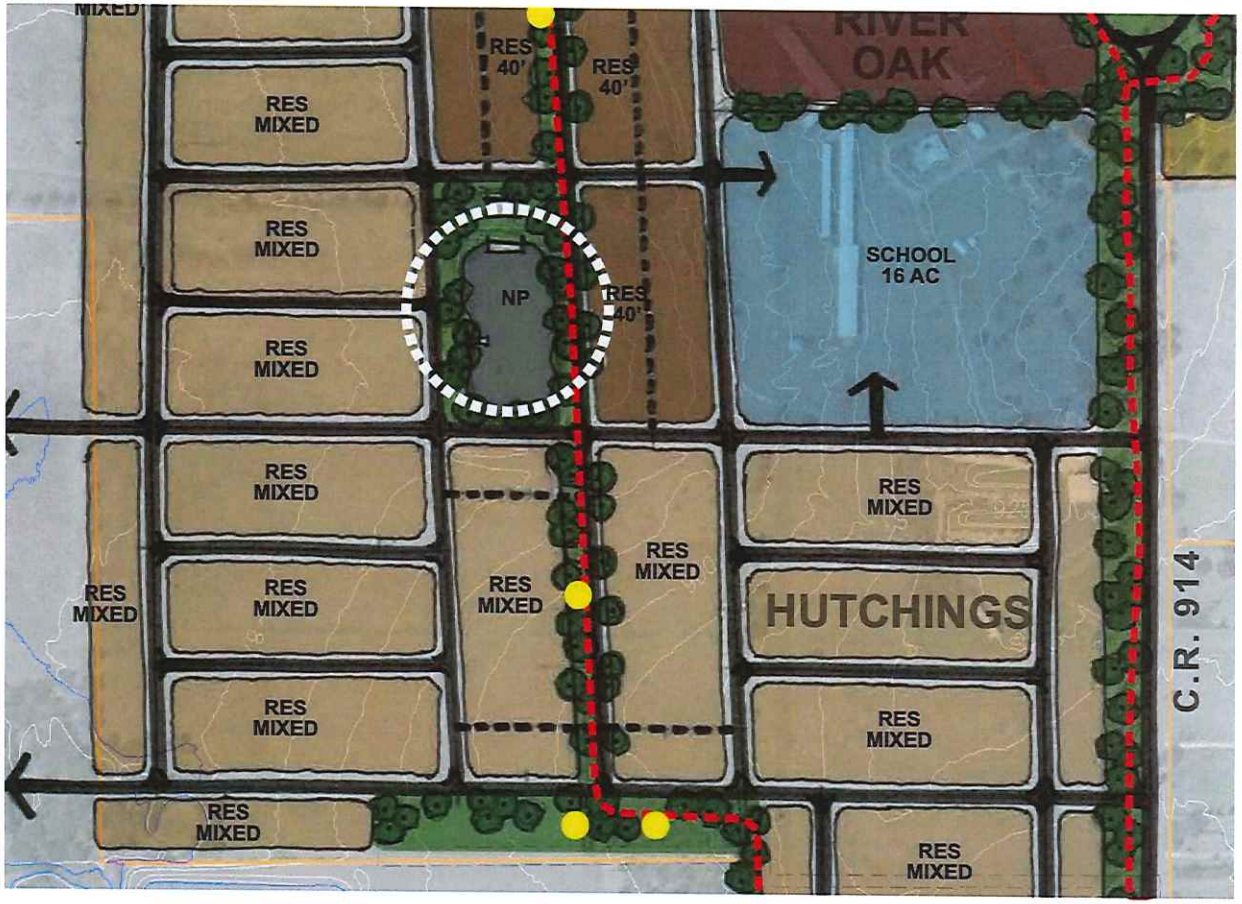
- Approx. 250 acres planned for clusters of specific lot type
- Traditional residential lots:
  - 60' x 120'
  - 70' x 130'
  - 80' x 140'
- Planned to specifically use the existing topography or complement overall land plan

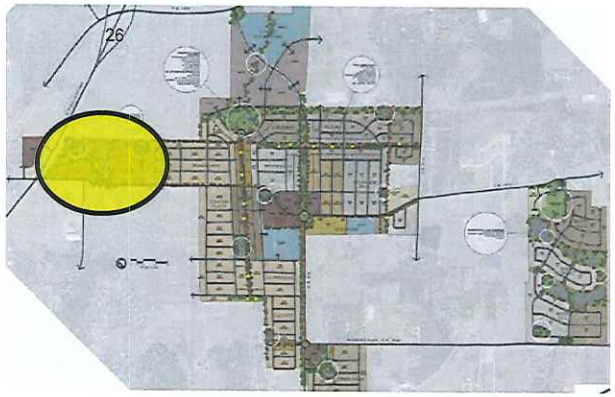




MIXED SINGLE-FAMILY

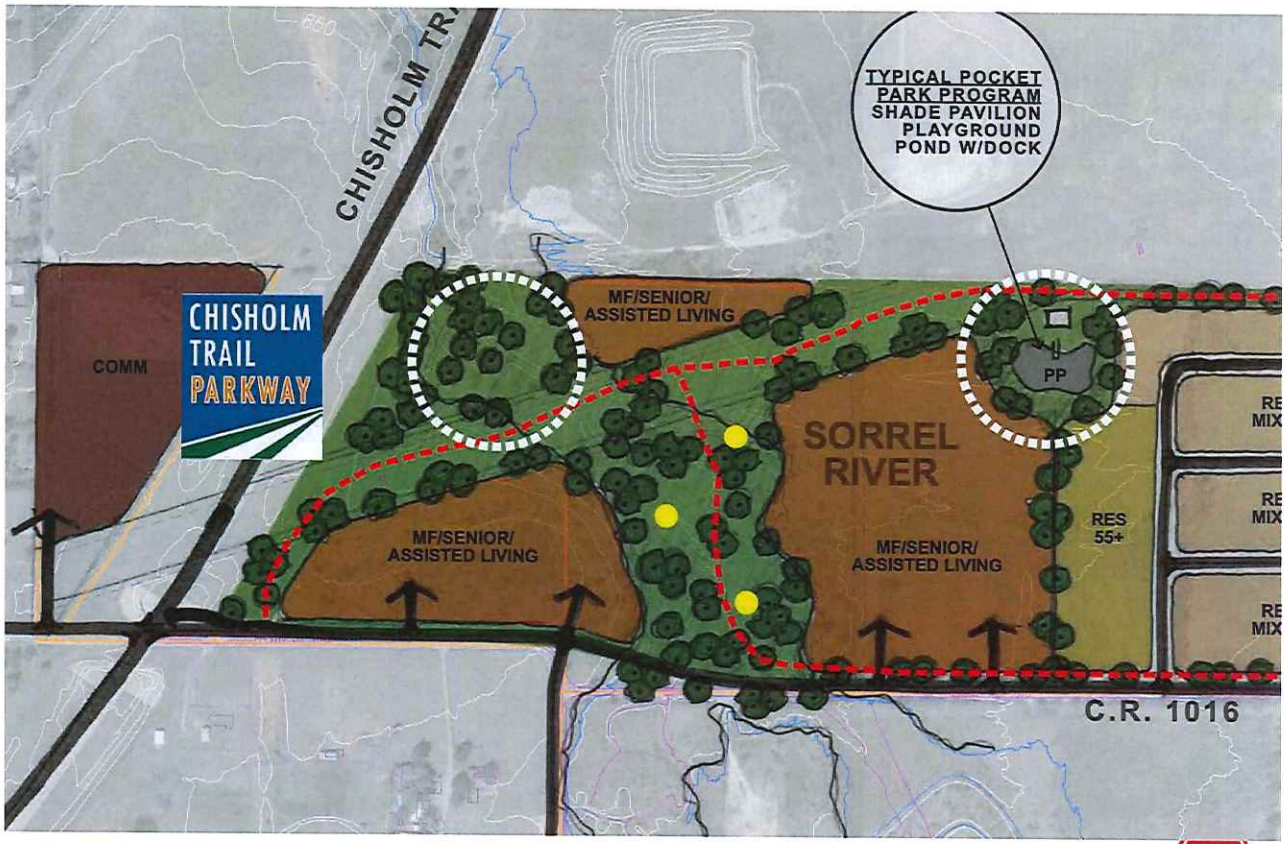
- Integrated mix of lot types to create variety and neighborhood character
- Pockets of single-family houses
- Lots will include:
  - 40' x 100'
  - 56' x 120'
  - 60' x 120'
- Each phase to be designed according to demand
- Approx. 150 acres shown as mixed

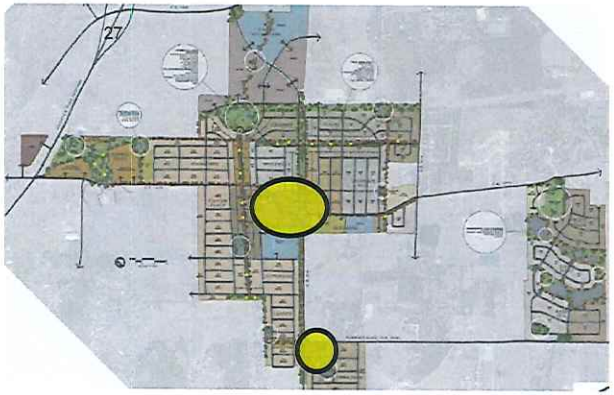




SENIOR CARE & MULTIFAMILY

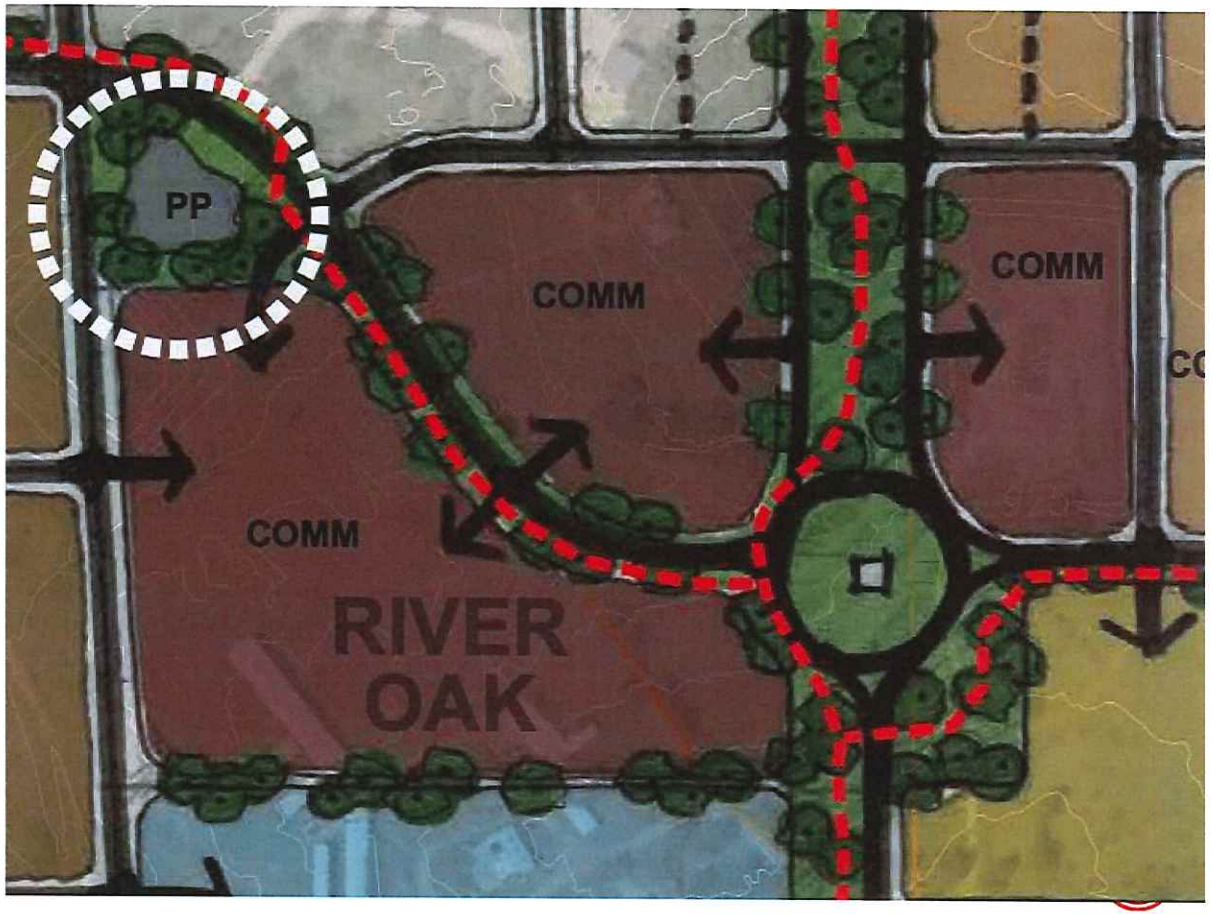
- Provides full life-cycle housing for community
- Envision a mixture of multistory high-density products
- Area shown is similar size to existing Arabella development near H-E-B
- Greenspace will have a pocket park and trail parks
- Buffered by block of age-55+ single-family units

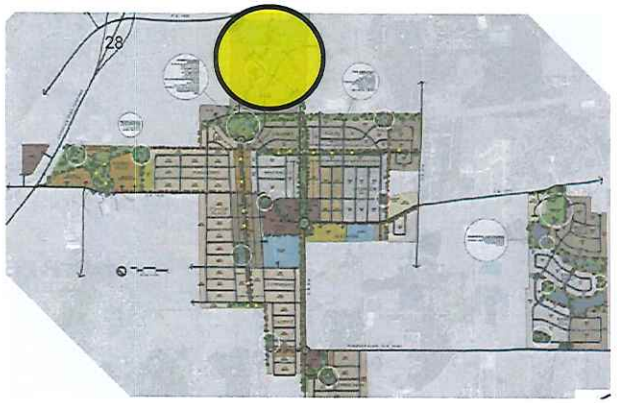




COMMERCIAL NODES

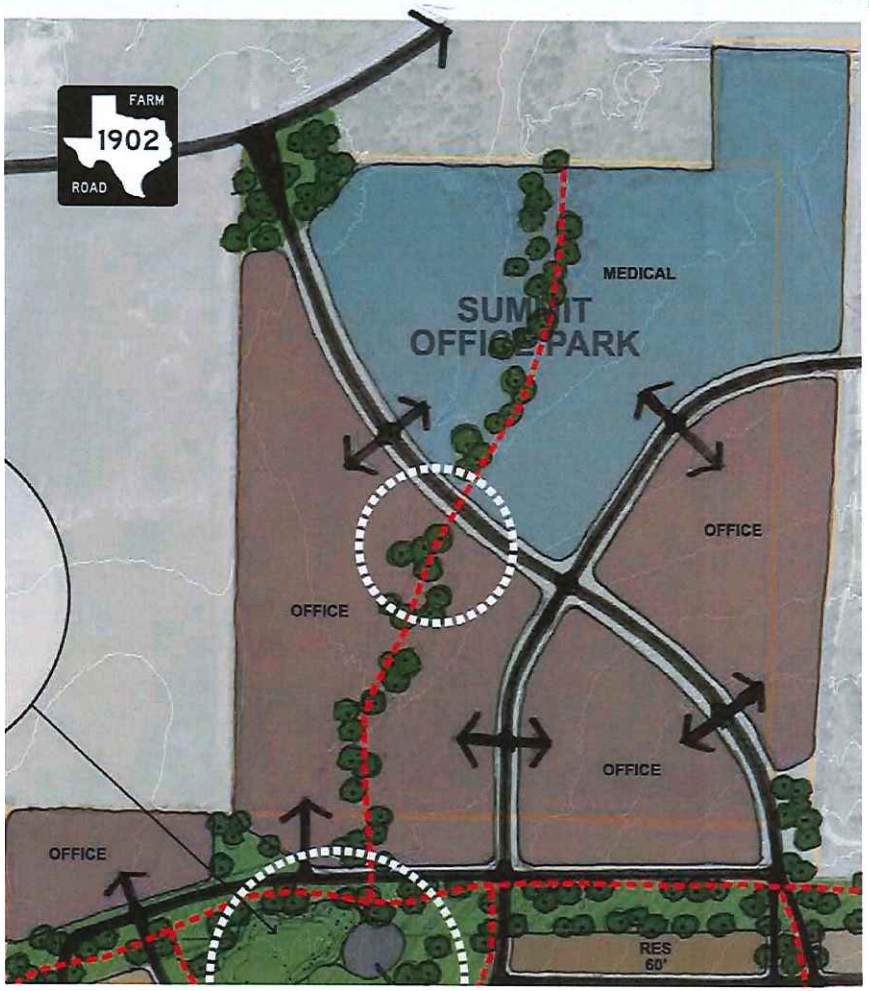
- Following rooftops, land is preserved for commercial and neighborhood services
- Community "downtown" node called Chisholm Square
  - Similar size to 9 square blocks of Old Town
- Commercial areas to be connected by trail system





SUMMIT OFFICE PARK

- Over 90 acres with convenient access to Chisholm Trail Parkway via FM 1902
- Professional office park with opportunity for medical
- Bisected by major boulevard
- Ideal live-work lifestyle for families in over 3000 units



ARCHITECTURAL STANDARDS
ENHANCED WALLS & FENCING
ENHANCED LANDSCAPING

STANDARDS

- Housing types proposed vary widely in style and form
- This is seen in other master-planned communities we have toured (Viridian, Windsong Ranch, etc.)
- Theme and brand in CS is established through parks, trails, signs and monuments rather than houses
- Developer is favorable to setting standards but recommends including this in the development agreement
  - Traditional homes to follow current zoning ordinance
  - Non-traditional home types (patio, townhome, cottage, etc.) to have exhibit outlining standards

WINDSONG RANCH HOUSING VARIETY

ENHANCEMENTS

ARBORLAWN AND CTP, FORT WORTH

- Undeveloped areas to be fenced with rust-colored railing
  - "CS" logo to be integrated throughout
  - Inside of railing used for neighborhood signage (i.e. Harvest)
- Developed areas to be fenced with wrought iron fencing and landscape buffers
  - In place of masonry wall requirement along arterials
  - Landscaping in common area maintained by community

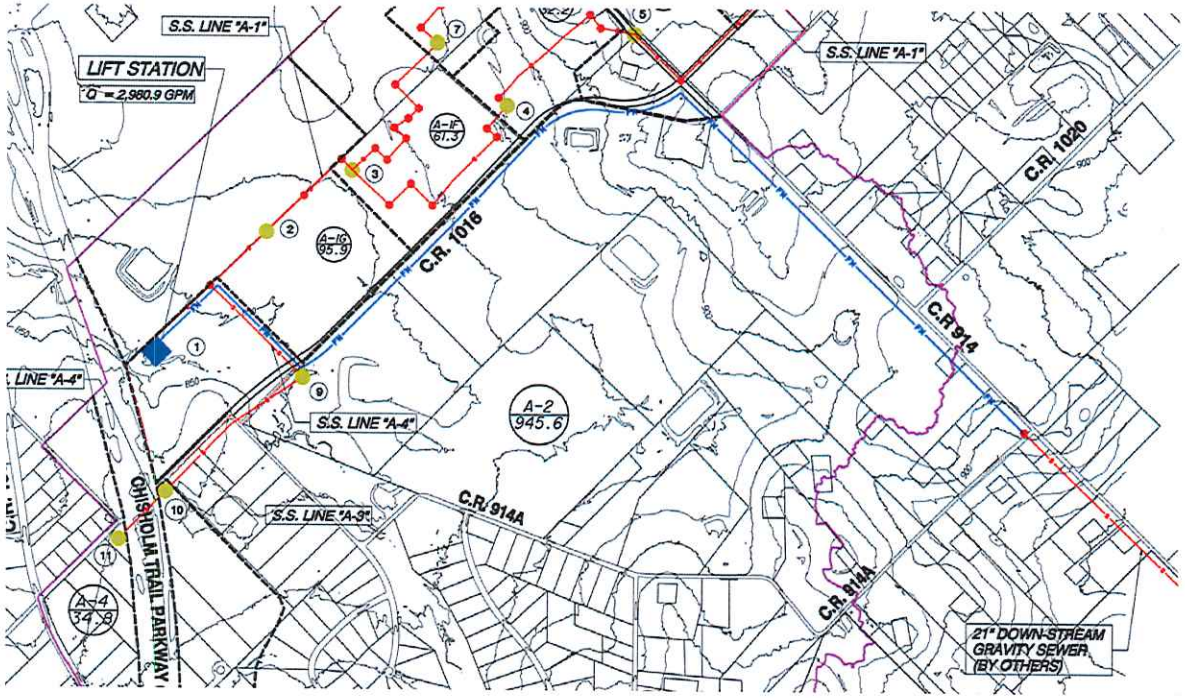
RAIL FENCE AT EQUESTRIAN FACILITY

PUBLIC INFRASTRUCTURE & PARTICIPATION

PUBLIC INFRASTRUCTURE

- Water – JCSUD completing evaluation of capacity to accommodate expanded land use plan
  - Elevated tower at CR 919 will serve this pressure plane
  - Expansion of 21" lines near CTP and 16" lines CR 919 anticipated
- Electric – United Coop indicates they have sufficient stations and will work closely as we identify phases of development
- Roads – Existing paving sections vary in sufficiency for development
  - CR 1016 will be realigned to avoid unsafe turns – and renamed
  - CR 914 should be tied with a major arterial of the City to carry traffic from FM 1902
- Sewer –
  - Trunk line built near CR 1020 was found to have insufficient capacity
  - Current plans would anticipate lift stations, a force main to the high point near CR 914A and CR 914
  - The sewer line planned from South Burleson down CR 914 will be critical for service

PARTICIPATION REQUESTED



- The "Burleson West" area encompasses over 1600 acres of future growth for the City
- Sewer expansion is necessary to take full advantage of the City's claim on the CTP
- Future growth for Burleson will depend on a sufficiently-funded sewer program
- Participation is requested to construct:
  - Downstream sewer lines
  - "Burleson West" lift stations and force main lines

PARTICIPATION REQUESTED

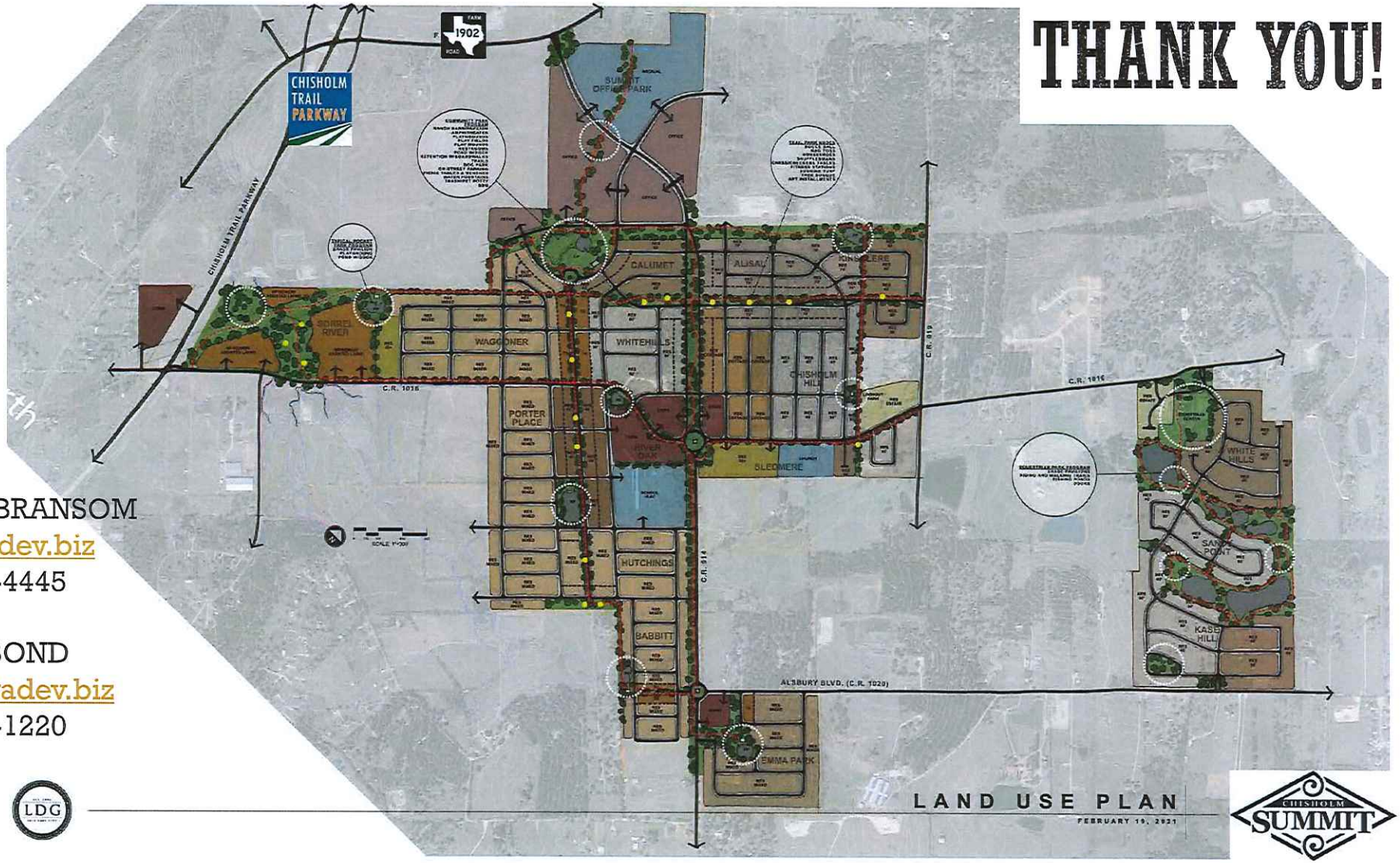
- Major park improvements will distinguish Burleson above its neighbors
- The scale of improvements as required for a master-plan community is over and above the standard subdivision
- Developer will seek a Public Improvement District to assist with the construction and maintenance/operation of the amenities, parks, trails, etc.

CLOSING

The development team is excited to be a part of the future growth of Burleson and appreciates the work of City staff to put together the best project possible.

We are grateful to continue working together toward all the necessary entitlements to see Chisholm Summit come to fruition.

THANK YOU!



ROCKY BRANSOM
rwb@radev.biz
817-480-4445

JUSTIN BOND
justin@radev.biz
817-880-1220

Exhibit D

Parks and Trails Plan

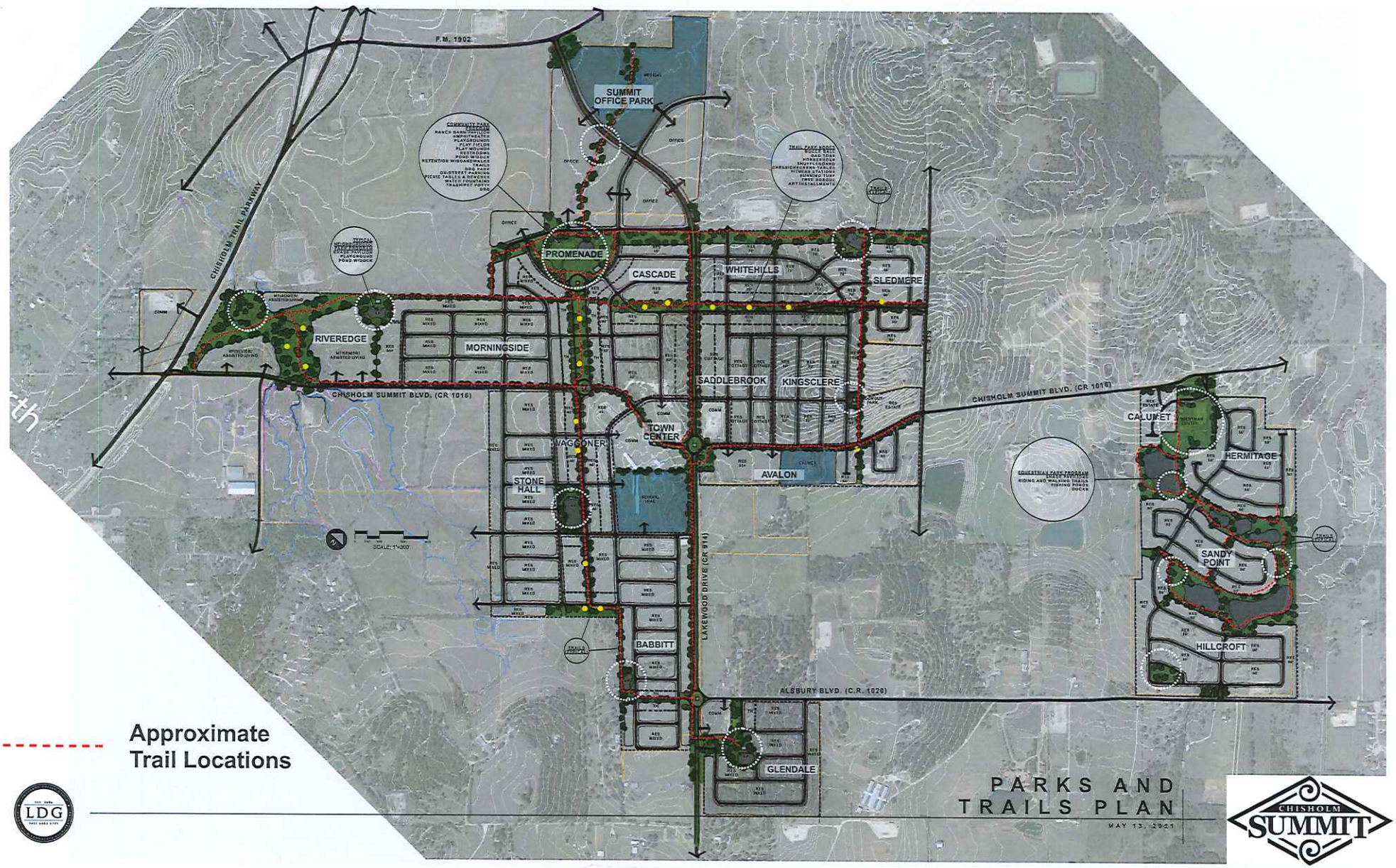

F.M. 1902
SUMMIT OFFICE PARK
CHISHOLM TRAIL PARKWAY
PROMENADE
CASCADE
WHITEHILLS
SLEDMERE
RIVEREDGE
MORNINGSIDE
SADDLEBROOK
KINGSCLERE
CHISHOLM SUMMIT BLVD. (CR 1016)
TOWN CENTER
WAGGONER
AVALON
CALUMET
HERMITAGE
STONE HALL
LAKEWOOD DRIVE (CR 914)
SANDY POINT
BABBITT
HILLCROFT
ALSBURY BLVD. (C.R. 1020)
GLENDALE
Approximate Trail Locations
PARKS AND TRAILS PLAN
MAY 13, 2021
LDG
CHISHOLM SUMMIT

Exhibit E

Roadway Improvements

EXHIBIT E
ROADWAY IMPROVEMENTS

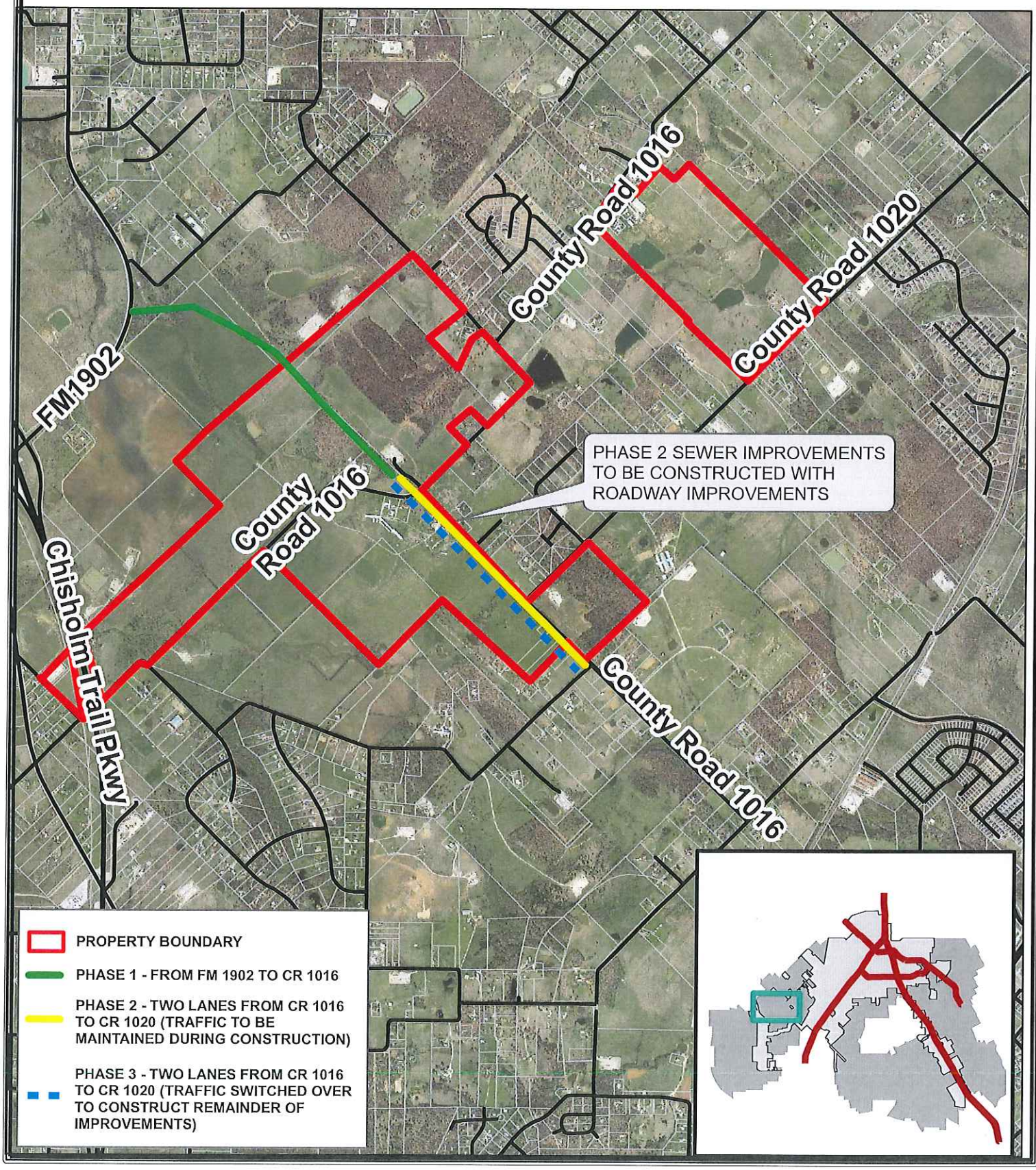


Exhibit F

Sewer Improvements

EXHIBIT F
SEWER IMPROVEMENTS

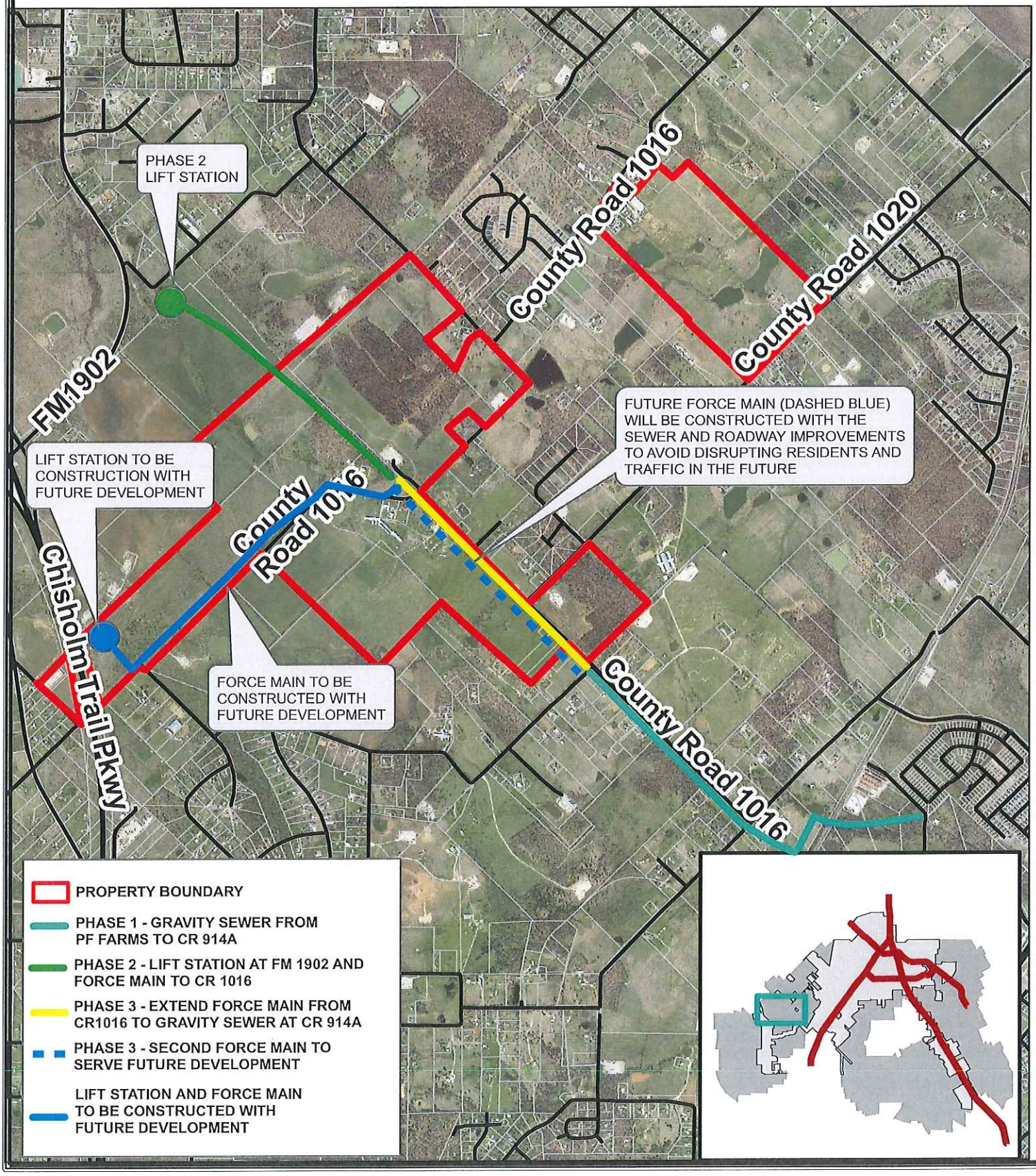
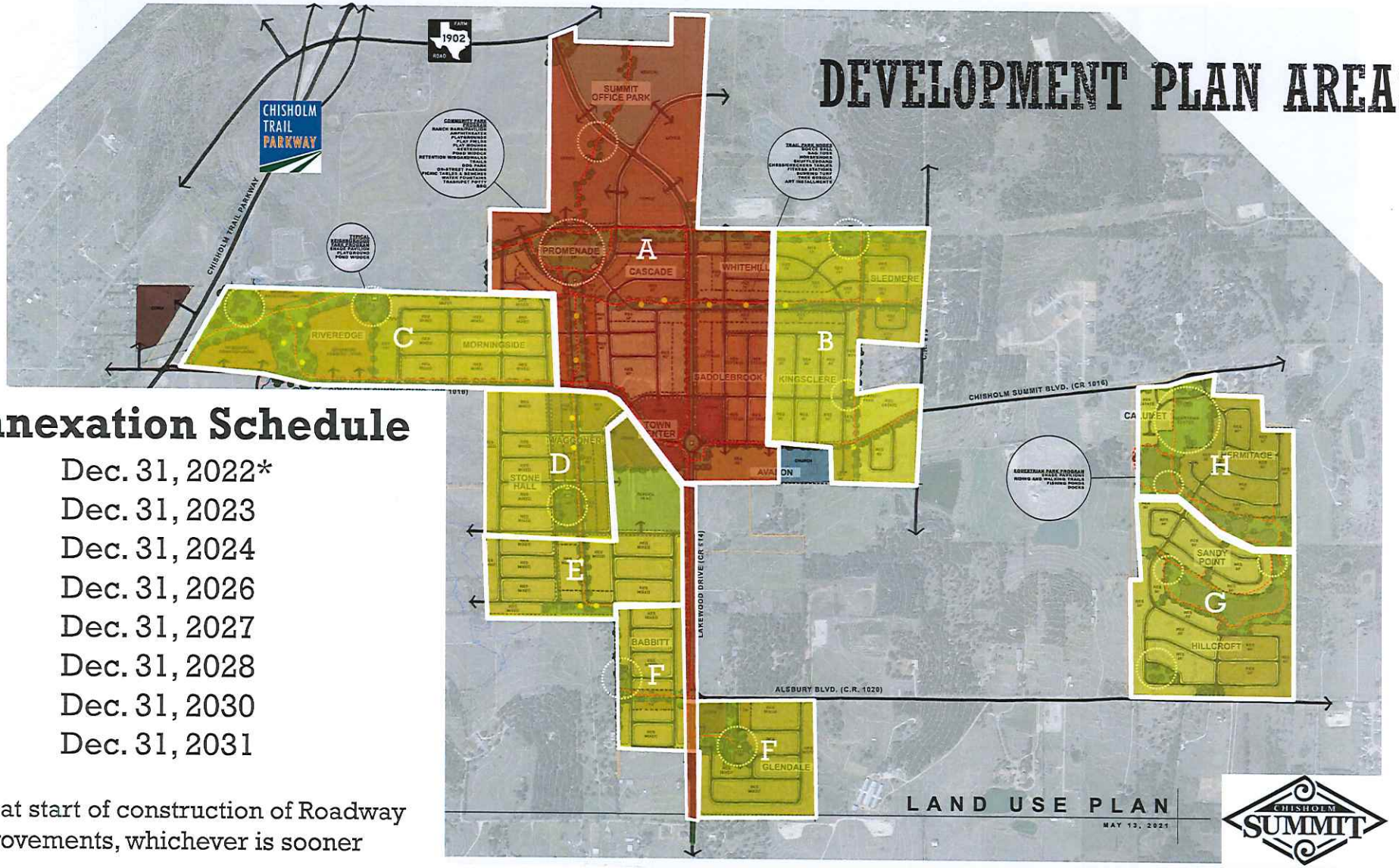


Exhibit G

Annexation Plan/Development Sections

DEVELOPMENT PLAN AREAS



Annexation Schedule

A – Dec. 31, 2022*
B – Dec. 31, 2023
C – Dec. 31, 2024
D – Dec. 31, 2026
E – Dec. 31, 2027
F – Dec. 31, 2028
G – Dec. 31, 2030
H – Dec. 31, 2031

*OR at start of construction of Roadway Improvements, whichever is sooner

EXHIBIT “B”

100% PAVING & DRAINAGE CONSTRUCTION PLANS FOR LAKEWOOD DRIVE FROM FM 1902 TO CR 1020

LOCATED IN

CITY OF BURLESON JOHNSON COUNTY, TEXAS

MAYOR
CHRIS FLETCHER

CITY MANAGER
BRYAN LANGLEY

DIRECTOR OF PUBLIC WORKS
ERIC OSCARSON

COUNCIL PLACE 1
VICTORIA JOHNSON

COUNCIL PLACE 2
RICK GREEN

COUNCIL PLACE 3
JIMMY STANFORD

COUNCIL PLACE 4
TAMARA PAYNE

COUNCIL PLACE 5 & MAYOR PRO TEM
DAN McCLENDON

COUNCIL PLACE 6
RONNIE JOHNSON

OWNED/DEVELOPED BY:

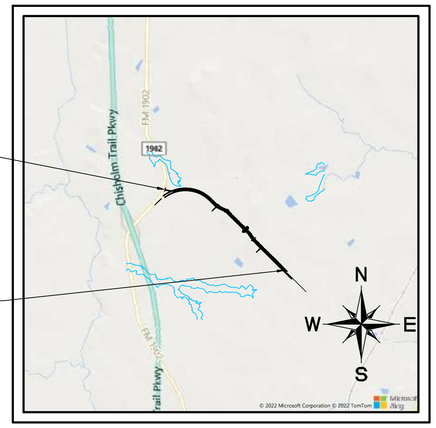
CHISHOLM SUMMIT

ENGINEER/SURVEYOR:

GOODWIN AND MARSHALL INC.
CIVIL ENGINEERS ~ PLANNERS ~ SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373

BEGIN PROJECT
AT FM 1902
Sta. 1+16.22

END PROJECT
AT COUNTY ROAD 1020
Sta. 87+83.27



VICINITY MAP
N.T.S

THE CITY OF BURLESON TEXAS

MAY, 2022

SHEET INDEX

PDF # / SHEET #	GENERAL
1 / COVER	COVER SHEET
2-4 / GN-01-03	GENERAL NOTES AND SHEET INDEX
5 / RW-1	ROW MAP - STA. 1+00.00 TO 51+00.00
6 / RW-2	ROW MAP - STA. 51+00.00 TO 196+92.17
7 / TYP-01	TYPICAL LAKEWOOD DRIVE SECTIONS
8-11 / DM-01-04	DEMOLITION PLANS
12 / TC-01	TRAFFIC CONTROL
13-15 / TC-02-04	TRAFFIC CONTROL DETAILS
PDF # / SHEET #	ROADWAY PLANS
16 / PV-00	PAVING INDEX
17 / PV-01	LAKEWOOD DRIVE - STA. 1+00.00 TO 9+00.00
18 / PV-02	LAKEWOOD DRIVE - STA. 9+00.00 TO 19+00.00
19 / PV-03	LAKEWOOD DRIVE - STA. 19+00.00 TO 27+00.00
20 / PV-04	LAKEWOOD DRIVE - STA. 27+00.00 TO 37+00.00
21 / PV-05	LAKEWOOD DRIVE - STA. 37+00.00 TO 44+00.00
22 / PV-06	LAKEWOOD DRIVE - STA. 44+00.00 TO 51+00.00
23 / PV-07	LAKEWOOD DRIVE - STA. 51+00.00 TO 60+00.00
24 / PV-08	LAKEWOOD DRIVE - STA. 60+00.00 TO 70+00.00
25 / PV-09	LAKEWOOD DRIVE - STA. 70+00.00 TO 80+00.00
26 / PV-10	LAKEWOOD DRIVE - STA. 80+00.00 TO 87+83.27
27 / PV-11	PEDESTRIAN UNDERPASS
28 / RA-01	ROUNDABOUT PAVING PLAN
29 / RA-02	ROUNDABOUT ALIGNMENT LAYOUT
30-32 / RA-03-05	ROUNDABOUT ALIGNMENT DATA
33-34 / RA-06-07	ROUNDABOUT PROFILES
35 / RA-08	ROUNDABOUT GRADING PLAN
36 / RA-09	ROUNDABOUT JOINT PLAN
37-41 / PD-01-05	PAVING DETAILS
PDF # / SHEET #	GRADING PLANS
42 / GR-01	LAKEWOOD DRIVE - STA. 1+00.00 TO 10+00.00
43 / GR-02	LAKEWOOD DRIVE - STA. 10+00.00 TO 20+00.00
44 / GR-03	LAKEWOOD DRIVE - STA. 20+00.00 TO 30+00.00
45 / GR-04	LAKEWOOD DRIVE - STA. 30+00.00 TO 41+00.00
46 / GR-05	LAKEWOOD DRIVE - STA. 41+00.00 TO 50+00.00
47 / GR-06	LAKEWOOD DRIVE - STA. 50+00.00 TO 60+00.00
48 / GR-07	LAKEWOOD DRIVE - STA. 60+00.00 TO 70+00.00
49 / GR-08	LAKEWOOD DRIVE - STA. 70+00.00 TO 80+00.00
50 / GR-09	LAKEWOOD DRIVE - STA. 80+00.00 TO COUNTY ROAD 914
PDF # / SHEET #	CROSS SECTIONS
51-67 / XS-01-17	CROSS SECTIONS - LAKEWOOD DRIVE
PDF # / SHEET #	DRAINAGE
68-69 / DA-01-02	EXISTING CONDITIONS DRAINAGE AREA MAP
70-71 / DA-03-04	ULTIMATE CONDITIONS DRAINAGE AREA MAP
72-73 / DA-05-06	INTERIM CONDITIONS DRAINAGE AREA MAP
74-85 / DA-07-18	DRAINAGE CRITERIA
86 / SD-01	STORM DRAIN CULVERT A
87 / SD-02	STORM DRAIN LINE A-1A
88 / SD-03	STORM DRAIN LINE A-1A
89 / SD-04	STORM DRAIN LINE A-1A
90 / SD-05	STORM DRAIN LINE A-1A
91 / SD-06	STORM DRAIN LINE A-10A, A-13A, & A-13B
92 / SD-07	STORM DRAIN LINE A-16A & A-17A
93 / SD-08	STORM DRAIN LINE A-18A & A-18B
94 / SD-09	STORM DRAIN LINE A-21A
95 / SD-10	STORM DRAIN LATERAL A-21B
96 / SD-11	STORM DRAIN LINE A-23A & LAT A-23B
97 / SD-12	STORM DRAIN LINE A-26A
98 / SD-13	STORM DRAIN LINE A-27A & A-27B
99 / SD-14	STORM DRAIN LINE B-15A & B-1A
100 / SD-15	STORM DRAIN LINE B-1A
101 / SD-16	STORM DRAIN LINE B-1A
102 / SD-17	STORM DRAIN LINE B-9A
103-109 / SD-18-24	STORM DRAIN LATERALS
110-115 / DD-01-06	DRAINAGE DETAILS

PDF # / SHEET #	UTILITY PLANS
116 / UT-01	UTILITY PLAN
117 / UT-02	UTILITY PLAN
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120 / WT-02	WATER LINE "W-1" - Sta. 11+00.00 to 21+00.00
121 / WT-03	WATER LINE "W-1" - Sta. 21+00.00 to 31+00.00
122 / WT-04	WATER LINE "W-1" - Sta. 31+00.00 to 41+00.00
123 / WT-05	WATER LINE "W-1" - Sta. 41+00.00 to 47+00.00
124 / WT-06	WATER LINE "W-1" - Sta. 47+00.00 to 51+48.65
125 / WT-07	WATER LINE "W-2" - Sta. 1+00.00 to 3+97.74 WATER LINE "W-3" - Sta. 1+00.00 to 4+27.51
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127 / WT-09	WATER LINE "W-5" - Sta. 100+00.00 to 101+30.00
128-130 / WD-01-03	WATER DETAILS
131 / SS-00	SEWER INDEX
132-133 / SS-01-02	SEWER LINE "S-1" - Sta. 1+00.00 to 9+00.00
134 / SS-03	SEWER LINE "S-1" - Sta. 9+00.00 to 19+00.00
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136 / SS-05	SEWER LINE "S-1" - Sta. 29+00.00 to 39+00.00
137 / SS-06	SEWER LINE "S-1" - Sta. 39+00.00 to 49+00.00
138 / SS-07	SEWER LINE "S-1" - Sta. 49+00.00 to 59+00.00
139 / SS-08	SEWER LINE "S-1" - Sta. 59+00.00 to 69+00.00
140 / SS-09	SEWER LINE "S-1" - Sta. 69+00.00 to 76+00.00
141-142 / SS-10-11	SEWER LINE "S-1" - Sta. 76+00.00 to 81+39.77
143 / SS-12	SEWER LINE "S-2" - Sta. 1+00.00 to 1+19.50 SEWER LINE "S-3" - Sta. 1+00.00 to 1+89.75 SEWER LINE "S-4" - Sta. 100+00.00 to 101+41.00
144 / SS-13	SEWER LINE "S-5" - Sta. 100+00.00 to 101+41.00 SEWER LINE "S-6" - Sta. 100+00.00 to 101+99.60
145 / SS-14	SEWER LINE "S-7" - Sta. 100+00.00 to 101+30.00
146-159 / N/A	LIFT STATION & FORCE MAIN PLANS
160-161 / SS-15-16	CITY OF BURLESON SEWER DETAILS
PDF # / SHEET #	PAVEMENT MARKING
162-166 / PM-01-05	PAVEMENT MARKING PLAN
167-169 PM-06-08	(PM) TYPICAL STANDARD PAVEMENT MARKINGS
170-171 / PM-09-10	(TSR) TYPICAL SIGN REQUIREMENTS
172-177 / PM-11-16	(SMD) SIGN MOUNTING DETAILS
PDF # / SHEET #	ENVIRONMENTAL PLANS
178 / EC-01	EROSION CONTROL PLAN
179 / EC-02	EROSION CONTROL PLAN
180 / EC-03	EROSION DETAILS
PDF # / SHEET #	STREET LIGHT PLANS
181-182 / SL-01-02	STREET LIGHT LAYOUT
183 / SL-03	STREET LIGHT DETAILS

NOTE:
100% SANITARY SEWER, WATER & STREET LIGHT PLANS TO BE PROVIDED AT A LATER DATE.

STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

E:\10745 - Bronsem Estates\Lakewood\Plans\SHEETS\600% Construction Plans\10745-LAKEWOOD-COVER.dwg
Wed Sep 28 2022 14:12

JOB NO. 10745

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CITY PROJ. # ____ FILE # _____

General Notes

1. ALL CONSTRUCTION SHALL ADHERE TO THE APPLICABLE PROVISIONS OF TEXAS DEPARTMENT OF TRANSPORTATION (TXDOT) FOR TECHNICAL SPECIFICATIONS AS REFERENCED ON THE BID PROPOSAL.
2. THE INFORMATION SHOWN ON THESE DRAWINGS CONCERNING TYPE AND LOCATION OF UNDERGROUND AND OTHER UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING HIS OWN DETERMINATIONS AS TO THE TYPE AND LOCATION OF ALL UNDERGROUND AND OTHER UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO. THE CONTRACTOR SHALL REPAIR ANY DAMAGES TO EXISTING UTILITIES IMMEDIATELY AT NO ADDITIONAL COST TO THE CITY.
3. THE CONTRACTOR SHALL MAINTAIN FIRE EMERGENCY VEHICLE ACCESS TO FIRE HYDRANTS THROUGHOUT THE DURATION OF THE PROJECT. INACTIVE FIRE HYDRANTS SHALL BE BAGGED.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING TRENCH SAFETY REQUIREMENTS IN ACCORDANCE WITH CITY STANDARDS, TEXAS STATE LAW, AND O.S.H.A. STANDARDS FOR ALL EXCAVATIONS.
5. CONTRACTOR SHALL CALL DIGTESS (TEXAS811) TO LOCATE EXISTING UTILITIES. VERIFY LOCATIONS OF FRANCHISE UTILITIES BEFORE BEGINNING EXCAVATION, IF NECESSARY, DIG TEST DITCHES TO DETERMINE ACTUAL FIELD CONDITIONS. THE CONTRACTOR SHALL NOTIFY A REPRESENTATIVE OF THE FRANCHISE UTILITIES NOT LESS THAN 72 HOURS BEFORE BEGINNING WORK WITHIN THE CITY'S R.O.W.'S/EASEMENTS OR NEAR THE FACILITIES.
6. CONTRACTOR SHALL NOTIFY THE PUBLIC WORKS DEPARTMENT 48 HOURS PRIOR TO INTERRUPTION OF WATER SERVICE. AFFECTED RESIDENTS AND BUSINESSES SHALL BE NOTIFIED AT LEAST 48 HOURS IN ADVANCE BY LETTER BY THE CONTRACTOR.
7. CONTRACTOR SHALL REFER TO STANDARD PLAN SHEETS AND SPECIFICATIONS FOR CONSTRUCTION OF ALL PAVING, CURB RAMPS, SIGN POST, PAVEMENT CONNECTIONS, PAVEMENT MARKINGS, AND BARRICADES.
8. CONTRACTOR SHALL PROVIDE TRAFFIC CONTROL PLAN, DEVELOPED BY A LICENSED ENGINEER, TO THE PROJECT INSPECTOR AND DESIGN ENGINEER FOR APPROVAL, 72 HOURS PRIOR TO IMPLEMENTING PLAN.
9. ALL DIMENSION CALLOUTS ARE TO BACK OF CURB, UNLESS NOTED OTHERWISE.
10. THE CONTRACTOR SHALL CONTACT THE CITY'S CHIEF INSPECTOR AT 817-917-8966 AT LEAST 48 HOURS PRIOR TO BEGINNING CONSTRUCTION.
11. PRIOR TO GRADING, THE CONTRACTOR MUST OBTAIN A GRADING PERMIT FROM THE CITY. THE GRADING PERMIT WILL REQUIRE 48 HOURS NOTICE TO THE CITY AND THAT ALL EROSION CONTROL MEASURES BE INSTALLED PRIOR TO ANY GRADING.
12. CONTRACTOR SHALL MAINTAIN ACCESS TO ALL LOCAL PROPERTIES DURING ALL PHASES OF CONSTRUCTION.

JOHNSON COUNTY SPECIAL UTILITY DISTRICT - WATER GENERAL NOTES

1. ALL MATERIALS AND CONSTRUCTION SHALL BE IN CONFORMANCE WITH THE JOHNSON COUNTY SPECIAL UTILITY DISTRICT (JCSUD).
2. CONTRACTOR SHALL LOCATE ALL EXISTING UTILITIES IN THE PROJECT AREA PRIOR TO CONSTRUCTION AND MAKE PROVISIONS FOR REMOVING AND/OR RELOCATING SAME AS REQUIRED FOR THE CONTINUITY OF THE PROJECT. ANY DAMAGE INCURRED BY THE CONTRACTOR TO THE EXISTING UTILITIES OR STRUCTURES SHALL BE REPAIRED BY THE CONTRACTOR AT HIS SOLE EXPENSE TO THE SATISFACTION OF THE UTILITY COMPANY AND OR THE OWNERS.
3. WATER SERVICES SHALL BE SDR-9 CTS POLYETHYLENE. THE SERVICES SHALL BE RATED TO 250 PSI AND CONFORM TO ASTM D2737, AWWA C901 AND NSF STANDARDS 14 AND 61. PIPE DIMENSIONS SHALL MEET COPPER TUBING SIZE (CTS) STANDARDS. ALL FITTINGS ARE TO BE COMPRESSION TYPE (FORD OR APPROVED EQUAL).
4. SERVICES SHALL INCLUDE THE METER BOX. THE METER WILL BE THE RESPONSIBILITY OF THE HOME BUILDER.
5. SERVICES SERVING METERS CROSSING PUBLIC STREETS SHALL BE ENCASED FROM BACK OF CURB TO BACK OF CURB IN 1.5" PVC (SCHEDULE 40) SLEEVE CENTERED IN THE RIGHT OF WAY.
6. WATER PIPE SHALL BE PVC CLASS 235, AWWA C-900 DR-18.
7. MECHANICAL JOINT VALVES AND FITTINGS AND ALL PIPE JOINTS LESS THAN 20 FEET FROM A VALVE OR FITTING SHALL BE EQUIPPED WITH JOINT RESTRAINT DEVICES. RESTRAINT DEVICES SHALL BE EBAA IRON, 2000 PV SERIES OR APPROVED EQUAL.
8. ALL STREETS SHALL BE CUT TO SUBGRADE PRIOR TO CONSTRUCTION.
9. WATER MAINS SHALL BE BURIED A STANDARD DEPTH OF 42" BELOW TOP OF GROUND OR ADJACENT TO CURB.
10. CONCRETE BLOCKING SHALL BE INSTALLED AT ALL BENDS, VALVES, OR FIRE HYDRANTS. DEAD-END LINES SHALL BE BLOCKED.
11. CONTRACTOR SHALL REPAIR ALL PAVING CUTS TO MATCH EXISTING PAVEMENT GRADE TO THE SECTION AS DETAILED ON THE PLANS.
12. CONTRACTOR SHALL COORDINATE HIS WORK WITH THE JCSUD MAIN OFFICE AT 817-760-5200 AND/OR THEIR DESIGNEE 48 HOURS PRIOR TO COMMENCING WORK. ALL PERMITS SHALL BE OBTAINED AS REQUIRED PRIOR TO BEGINNING CONSTRUCTION. CONTRACTOR SHALL PROVIDE BARRICADES AND FLAGMEN AS REQUIRED AND SHALL HAVE NO TRENCHES UNCOVERED WHEN PROJECT IS NOT ATTENDED.
13. ALL OSHA REQUIREMENTS SHALL BE CONFORMED TO BY THE CONTRACTOR IN THE PROSECUTION OF HIS WORK.
14. OWNER SHALL PROVIDE GEOTECHNICAL TESTING FOR THE PROJECT.
15. PAVING CONTRACTOR SHALL ADJUST MANHOLES AND VALVES TO THE FINISHED PAVING GRADE. THE UTILITY CONTRACTOR SHALL BE RESPONSIBLE TO CONSTRUCT THE FACILITIES TO BE ADJUSTED BY THE PAVING CONTRACTOR TO WITHIN +/-0.3' OF FINAL GRADE.
16. CARE SHALL BE EXERCISED BY THE UTILITY CONTRACTOR TO ASSURE THAT THE WATER VALVES, CLEANOUTS AND MANHOLES ARE CONSTRUCTED IN A LOCATION THAT WOULD PROVIDE FOR AND ALLOW THE PROPER AND ORDERLY CONSTRUCTION OF THE STREETS, CURBS, GUTTER AND SIDEWALK.
17. THE CONTRACTOR SHALL INSTALL STEEL CASING AROUND THE WATER LINE IF A WATER LINE PASSING UNDER STORM DRAIN HAS LESS THAN TWO FEET OF COVER.
18. BACKFILLING SHALL NOT BE DONE UNTIL LINES ARE INSPECTED AND APPROVED BY THE JCSUD CONSTRUCTION INSPECTOR.
19. FIRE HYDRANTS SHALL:
    - INCLUDE A MINIMUM 18 INCH ANCHOR COUPLING BETWEEN HYDRANT AND VALVE.
    - CONFORM TO J.C.S.U.D. SPECIFICATIONS AND DETAILS.
20. NO MAILBOXES SHALL BE ALLOWED WITHIN 3 FT OF FIRE HYDRANTS OR METER BOX.
21. ALL PIPES LAID WILL HAVE TRACER WIRE.

EROSION & SEDIMENTATION CONTROL NOTES

1. CONTRACTOR WILL BE RESPONSIBLE FOR COMPLYING WITH TCEQ'S TPDES PROGRAM FOR CONTROL OF SILT AND EROSION. CONTRACTOR SHALL PREPARE A STORMWATER POLLUTION PREVENTION PLAN (SWPPP). THE CONTRACTOR SHALL UPDATE THE SWPPP AS NECESSARY BASED ON FIELD CONDITIONS.
2. THE CONTRACTOR IS RESPONSIBLE FOR KEEPING STREETS AND SIDEWALKS ADJACENT TO THE PROJECT FREE OF MUD AND DEBRIS FROM CONSTRUCTION AT ALL TIMES.
3. SEDIMENT CONTROL DEVICES SHALL BE INSTALLED AS INDICATED ON THE PLANS PRIOR TO ANY EMBANKMENT, EXCAVATION, OR CONSTRUCTION ACTIVITY BEING DONE. WHEN THE PROJECT IS COMPLETE AND THE ENTIRE PROJECT SITE IS COMPLETELY STABILIZED, THE SEDIMENT CONTROL DEVICES AND ACCUMULATED SEDIMENT SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED MANNER. THE CONTRACTOR HAS THE ULTIMATE RESPONSIBILITY FOR THE EFFECTIVE CONTROL OF EROSION AND SEDIMENTATION.
4. THE CONTRACTOR SHALL SEED A COMPLETED EMBANKMENT AS SOON AS PRACTICABLE, BUT NO LATER THAN 14 DAYS AFTER SAID EMBANKMENT IS COMPLETE.
5. THE SITE SHALL BE REVIEWED WEEKLY AND AFTER ANY MAJOR STORM ADJUSTMENT/REPAIRS TO THE EROSION CONTROL DEVICES SHALL BE MADE AS DIRECTED BY THE CITY.
6. THE EROSION CONTROL PLANS PROVIDED IN THE PLAN SET DOES NOT RELIEVE THE CONTRACTOR FROM PROVIDING ADDITIONAL EROSION CONTROL MEASURES AS REQUIRED BY THE SWPPP OR AS REQUIRED BY FIELD CONDITIONS AND DIRECTED BY THE CITY.
7. CONTRACTOR SHALL SUPPLY 4" OF TOPSOIL MATERIAL, MEETING PROJECT SPECIFICATIONS, OVER ALL DISTURBED AREAS ON PROJECT.

GENERAL REQUIREMENTS FOR CROSSING ENLINK PIPELINES

1. **ALL PIPELINES, UTILITY LINES** and other underground facilities constructed across an EnLink pipeline must be installed with a minimum vertical separation of 24 inches between structures and said vertical separation shall be consistent for a minimum distance of twenty (20) feet on both sides of the pipeline. All facilities crossing an EnLink pipeline shall be made of, or encased in, steel pipe with threaded or welded joints the entire width of EnLink's right of way. Horizontal separations will be determined on a case-by-case basis. Electrical conduit and cables are excluded (please refer to paragraph 2). All work and cleanup will be conducted in a manner acceptable to EnLink's on-site representative.
2. **ALL UNDERGROUND ELECTRICAL CABLES** shall be installed with a minimum vertical separation of 24 inches between structures with all plans, work and cleanup conducted in a manner acceptable to EnLink's on-site representative. The electrical cable must be enclosed in conduit (steel or Schedule 80 PVC). It should be covered with **red** reinforced concrete with a minimum width of 6 inches on each side and above the conduit, for the entire width of EnLink's right of way.
3. **ALL UNDERGROUND FIBER OPTIC CABLES** shall be installed with a minimum vertical separation of 24 inches between structures with all plans, work and cleanup conducted in a manner acceptable to EnLink's on-site representative. Horizontal separations will be determined on a case-by-case basis. In addition, the fiber optic cable must be enclosed in conduit (steel or Schedule 80 PVC).
4. **ALL PROPOSED ROADS, STREETS, OR DRIVEWAYS** shall be constructed with a minimum cover of 48 inches, including the sub-grade, as measured from the top of the EnLink pipeline to the bottom of the pavement (road, street, or driveway). If an EnLink pipeline will require adjustment to accommodate a roadway, street or driveway crossing, the cost of any such lowering or relocation shall be borne by the party or parties requesting the adjustment. With each request involving roads, streets or driveways, EnLink will reserve the right to excavate to expose and inspect its pipeline(s) to determine the need for pipe replacement, full encasement, or heavy wall pip. The cost of this activity will be at the expense of the requesting party.
   PIPELINE MINIMUM COVER REQUIREMENTS:
   1) 48 inches from bottom of pavement under a road, street or driveway.
   2) 36 inches under all other surfaces within the right of way.
5. **ALL ROAD DITCH AND DRAINAGE CANAL/DITCH** crossings shall be constructed with a minimum cover, and measured from the lowest point in road bar ditch, to the top of pipe, as follows:
   1) Concrete lined - 12 inches
   2) Unlined - 36 inches

Any drainage canals shall be constructed with a minimum of 60 inches of cover below the ultimate flow line.

6. **ALL PAVING** (other than for road, driveway or street crossings e.g., parking lot) to be constructed over an EnLink pipeline shall (a) be reinforced, (b) not exceed 4 inches in thickness, (c) be sectioned in 10 foot by 15 foot panels (15' dimension shall be perpendicular to the pipeline) with appropriate expansion joints, (d) contain lifting rings, and (e) conform to the minimum cover requirements stipulated above.
7. **TEMPORARY (HAUL) ROAD** crossings shall be constructed with a minimum ground cover (as measured from the surface of the road to the top of the pipeline) of five (5) feet. A temporary earthen berm may be constructed to meet this requirement. Where it is necessary for heavy equipment to cross the pipeline, additional measures may be needed to effectively distribute the weight of such equipment, for example, installing additional cover, timber matting and/or a temporary bridge for passage over the pipeline.
8. **LAKES OR OTHER BODIES OF WATER** shall not be constructed over the pipeline or within the boundaries of the pipeline easement. Additionally, the surface cannot be developed or changed in a way that would cause rainwater or runoff to collect on the pipeline right-of-way.

WARNING !! BEFORE DIGGING:

THE CONTRACTOR SHALL CONTACT THE FOLLOWING AT LEAST 48 HOURS PRIOR TO EXCAVATING IN THIS AREA:

AT&T	(817) 338-5357
CHARTER COMMUNICATION CABLE T.V.	(817) 298-3625
TEXAS ONE CALL-FIBER OPTICS LOCATION	(800) 245-4545
TXU ELECTRIC	(817) 215-6688
ATMOS GAS	(817) 215-4704
JOHNSON COUNTY ELECTRIC COOP	(817) 558-9522
JOHNSON COUNTY SPECIAL UTILITY DISTRICT	(817) 760-5226
ACCESS MIDSTREAM	(817) 882-7061
JOHNSON COUNTY SUD	(817) 760-5226
WILLIAMS PIPELINE	(682) 730-4880
ENLINK MIDSTREAM	(214) 953-9500

THE CONTRACTOR SHALL MAKE ALL NECESSARY PROVISIONS FOR THE SUPPORT, PROTECTION, RELOCATION, AND TEMPORARY RELOCATION OF ALL UTILITIES, STRUCTURES AND UTILITY POLES BOTH ABOVE AND BELOW GROUND DURING CONSTRUCTION. THE CONTRACTOR IS LIABLE FOR ALL DAMAGES DONE AS A RESULT OF HIS OPERATIONS.
NO ADDITIONAL COMPENSATION WILL BE ALLOWED.

THE CONTRACTOR SHALL VERIFY THE LOCATION, ELEVATION, AND CONFIGURATION OF EXISTING UTILITY LINES PRIOR TO CONSTRUCTION.
NO ADDITIONAL COMPENSATION WILL BE ALLOWED.

9. **DIRECTIONAL DRILLING OR BORING** shall require additional damage prevention measures, whether installing a crossing or otherwise conducting such operations within twenty (20) feet of the pipeline. It is EnLink's option whether peepholes or sheet piling be installed to an elevation lower than the pipeline, before drilling/boring to help ensure its protection. EnLink requires continuous tracking of the drilling head as well as using a physical technique (such as probing) to ascertain the exact location of the head before it crosses the EnLink pipeline. EnLink may also require that the pipeline be exposed when near drill/bore entry or exit points.
10. If EnLink determines it is necessary to lower, encase or otherwise adjust an EnLink pipeline because of the landowner's (developer, etc.) construction activity, the landowner or developer shall reimburse EnLink for the cost of lowering, encasement or other adjustment.
11. Please notify Alison Huff of EnLink's Operations Department in Bridgeport, Texas at 713-739-3295, at least 48 hours prior to commencing any excavating or construction activity in the vicinity of any EnLink pipeline. Excavators are required by law to contact the appropriate One-Call Center for their state prior to commencing excavation or other such construction activity, which may impact an underground utility.
12. No excavating or other construction activity that could impact the pipeline (e.g., directional drilling, boring, sheet piling, setting trench boxes, etc.) shall be conducted within five (5) feet of any EnLink pipeline in the absence of an EnLink representative. Notice shall be given to EnLink at least forty-eight (48) hours prior to commencing each occurrence of construction activity within five (5) feet of any EnLink pipeline.
13. Any contractor, developer, etc., planning blasting operations within 500 feet of any EnLink Pipeline shall submit a blasting plan to EnLink for approval. This plan will include hole depth, diameter, spacing, burden, delay times, maximum charge weight per delay, sequence, explosive type and blast zone location relative to the EnLink pipeline. Under NO circumstances will blasting or seismic shot holes be allowed within one hundred (100) feet of any EnLink pipeline.
14. No signs, monuments, building, structures, manholes, shrubbery, or trees shall be located within an EnLink right of way and easement area so that the pipeline can be maintained without damaging these structures or being impeded by them.
15. No excavations shall be made on land adjacent to any EnLink pipeline which will in any way impair, withdraw lateral support, cause subsidence, create the accumulation of water, or cause damage to the EnLink pipeline or right of way.
16. No fence shall be placed across an EnLink right of way without written permission from EnLink. If fences are permitted, 14 foot gates must be installed on the right of way.
17. Side cutters shall be removed from the bucket of excavation equipment, and a bar shall be installed across the teeth during excavation in the vicinity of any EnLink Pipeline.
18. No paving is to be placed over any EnLink right of way without written permission from EnLink.
19. Any damage to existing EnLink Pipeline markers and/or signs, test leads, vent pipes, fences, gates and/or any other associated pipeline apparatus resulting from any construction operations shall be repaired to EnLink's satisfaction or replaced at the sole cost and expense by the damaging party with 15 days after the damage has occurred.
20. **All written requests should be supported with plans and forwarded to:**
    EnLink Midstream
    ATTN: Land Department
    480 South Courtney Road
    Calumet, OK 73014

LEGEND

	EXISTING	PROPOSED	FUTURE
Property Line			N/A
Building			
Building Column Line	N/A		N/A
Edge of Pavement			
Curb and Gutter			
Bollards	N/A	•	N/A
Contour and Elevation	637	640	N/A
Spot Elevation	(500.45)	500.45	N/A
Curb Inlet			
Storm Drain Line and Size	24" RCP	24" RCP	24" RCP
Storm Drain Manhole			
Storm Drain Sloping HDWL			
Storm Drain Type"B" HDWL			
Domestic Water and Size	W	W	W
Fire Water and Size	F	F	F
Water Valve			N/A
Post Indicator Valve		PIV	N/A
Fire Hydrant			N/A
Gas Line	G	G	N/A
San. Swr. Line and Size	S	S	N/A
Sanitary Sewer Manhole			N/A
Sanitary Sewer Cleanout			N/A
Overhead Electric	OHE	OHE	N/A
Underground Electric	UGE	UGE	N/A
Underground Telephone	UGT	UGT	N/A
Light Standard			N/A

ABBREVIATIONS:

BC	Back of Curb
BB	Back to Back of Curb
CONC	Concrete
CL	Center Line
DIP	Ductile Iron Pipe
DW or W	Domestic Water
E	Electric
Elev	Elevation
FF	Finished Floor
FH	Fire Hydrant
FW	Fire Water
F-F	Face to Face of Curb
FL	Flow Line
G	Gas
GM	Gas Meter
IRR	Irrigation
JT	Joint
LF	Linear Feet
MH	Manhole
NA	Not Applicable
PC	Point of Curvature
PI	Point of Intersection
PL	Property Line
PT	Point of Tangency
PIV	Post Indicator Valve
OHE	Overhead Electric
R	Radius
REINF	Reinforcing
RCP	Reinforced Concrete Pipe
ROW	Right of Way
SD	Storm Drain
SQ	Square
SS	Sanitary Sewer
STA	Station
T	Telephone
TC or T/C	Top of Curb
TP or T/P	Top of Pavement
TS or T/S	Top of Sidewalk
Typ	Typical
UGE	Underground Electric

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LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 10021700

STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	5/18/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	GN-01

GENERAL NOTES

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GENERAL REQUIREMENTS FOR CROSSING WILLIAMS PIPELINES

NOTIFICATION AND CONSTRUCTION SAFETY REQUIREMENTS

1. In order to prevent unnecessary delays, Williams encourages close communication with our representative throughout your entire project. A Williams representative should participate in all pre-construction meetings. In addition, Williams can conduct a safety/informational presentation to any interested parties, including contractors, local governmental maintenance crews, and developers.

2. "One Call" systems require 48 to 72 hours' notice prior to any excavation activities or equipment use on or in close proximity to Williams pipeline facilities. Dial 811 to be connected to your State One Call system. No equipment use or excavation will occur in the vicinity of Williams facilities until notification to "One Call" has been made. A Williams representative will be on site prior to and during any equipment use or excavation activities. Any crossings made without a Williams representative on site will be excavated at the excavator's expense to provide Williams an opportunity to inspect all affected pipeline facilities.

3. Excavations must be barricaded to protect Williams pipelines from exposure to vehicular traffic and to ensure public safety. Williams representatives must be provided safe access to all open excavations. Excavations must be properly sloped or shored in accordance with OSHA regulations.

4. Williams Pipeline Contact Information:
   Will Lee, Land Rep. SR.
   5601 East 1st Street Fort Worth, Texas 76103
   682-730-4880
   Willie.Lee@williams.com

PLAN DESIGN AND REVIEW REQUIREMENTS

1. Residential and/or commercial developments will be laid out such that the right of way is designated as "open" or "common" space. Maintaining an open right of way reduces public exposure and minimizes disruptions during pipeline maintenance and construction. Lot divisions will be established on either side of the right of way resulting in the actual right of way being "open" or "common" areas.

2. In most cases, Williams will require the submittal of two or more full size plan and profile drawings to the appropriate Williams office for prior review and written approval by Williams. All drawings must show, in detail, all of Williams facilities and other features that will allow Williams to determine the impact of the proposed construction or maintenance activity on its facilities. Encroachment plans will include a scope of work, description, and a location map depicting the project site area. Sufficient geographical references such as legal property lines, roads, and appropriate deed information for the properties involved will be provided.

3. In order to ensure that all proposed improvements are designed in accordance with Williams encroachment specifications, Williams requires a minimum of thirty business days lead-time to review proposed encroachments. Encroachments involving road crossings will require additional review time. Any proposed road which requires pipeline modifications or a dedicated right of way will require significant lead-time.

4. If there are any changes to approved plans, additional review by Williams and subsequent written authorization will be required.

5. In some cases, there is a significant delay between the review and approval of submitted plans and actual construction. In such cases, proposed encroachment related activities will be subject to Williams requirements in effect at the time the work actually takes place.

WILLIAMS EASEMENT, PERMITS AND AGREEMENTS

1. A Williams Encroachment/Foreign Line Crossing Permit Form or a letter of no objection may be required for any proposed construction within Williams right of way. This document prepared by Williams, will outline the responsibilities, conditions, and liabilities of each party. If required, this document must be executed by the encroaching party and in Williams possession prior to any work being performed on the right of way.

2. Williams will determine if a recorded encroachment agreement will be required for any proposed construction within Williams right of way. This agreement, prepared by Williams, will outline the responsibilities, conditions, and liabilities of each party. This agreement will be fully executed and in Williams possession prior to any work being performed on the right of way.

3. Williams will determine if a reimbursement agreement will be required for any construction within Williams right of way. This agreement, prepared by Williams, will outline the reimbursement procedure for necessary and appropriate preliminary engineering and actual field inspection work. This fully executed agreement, including a check made payable to the applicable Williams pipeline company for the estimated cost of Williams services, will be in Williams possession prior to any work being performed on the right of way.

WILLIAMS EASEMENT, PERMITS AND AGREEMENTS

1. A Williams Encroachment/Foreign Line Crossing Permit Form or a letter of no objection may be required for any proposed construction within Williams right of way. This document prepared by Williams, will outline the responsibilities, conditions, and liabilities of each party. If required, this document must be executed by the encroaching party and in Williams possession prior to any work being performed on the right of way.

2. Williams will determine if a recorded encroachment agreement will be required for any proposed construction within Williams right of way. This agreement, prepared by Williams, will outline the responsibilities, conditions, and liabilities of each party. This agreement will be fully executed and in Williams possession prior to any work being performed on the right of way.

3. Williams will determine if a reimbursement agreement will be required for any construction within Williams right of way. This agreement, prepared by Williams, will outline the reimbursement procedure for necessary and appropriate preliminary engineering and actual field inspection work. This fully executed agreement, including a check made payable to the applicable Williams pipeline company for the estimated cost of Williams services, will be in Williams possession prior to any work being performed on the right of way.

EXCAVATION AND BLASTING

1. Plans for excavation on the right of way require prior approval by Williams. No machine excavation will be performed within 24" of Williams pipelines or related facilities. Williams onsite representative may require hand digging at a distance greater than 24".

2. When a backhoe is used for excavation, the bucket teeth should be curled under each time the bucket is brought back into the ditch to reduce the chance of the teeth contacting the pipeline. Side cutters must be removed from all buckets. At the discretion of Williams onsite representative, a bar may have to be welded across the bucket teeth.

3. No mechanical excavation may be performed by reaching over any Williams facilities.

4. Prior to any plowing or ripping of soil on the right of way, particularly in association with agricultural activities, plans should be reviewed with your local Williams representative to ensure proper cover exists. No vibratory plows are permitted to be used on the Williams right of way.

5. A detailed blasting plan must be submitted for review and written authorization prior to any proposed blasting within 200' (1,500' for surface of Williams pipeline facilities and a Williams representative must be on site during all blasting. In order to provide for necessary and appropriate analysis by Williams, each licensed blasting contractor must also complete and submit a Williams Blasting Data Sheet. The blasting plan and data sheets must be submitted a minimum of ten business days prior to the proposed blasting. Specific requirements applicable to proposed blasting will be provided to the licensed blasting contractor.

GENERAL REQUIREMENTS

1. No above ground structures or appurtenances are to be located within the Williams right of way. The structures and appurtenances include, but are not limited to: utility poles, towers, foundations, guy wires, structures supporting aerial lines, satellite dishes, manholes, catch basins, utility pedestals, transformers, fire hydrants, utility sheds, decks, swimming pools with associated improvements, etc.

2. An authorized Williams representative must be on site prior to and during any surface-disturbing work or equipment crossings performed within the right of way. Williams representative will assist in determining the location of the pipeline, the right of way width, and existing cover over the pipeline and will remain on site to monitor all activities within the right of way.

3. No cut or fill on the Williams right of way is permitted without Williams written approval.

4. Williams, at its discretion, may request evidence of comprehensive general liability insurance coverage (up to $5,000,000 coverage) and other appropriate and usual insurance prior to any activity, maintenance, and/or construction on or near Williams right of way and facilities. In the event of significant excavation under or over Williams pipelines, Williams will require that the applicable Williams pipeline company be named as additional insured on the Certificate of Liability Insurance. The insurance limits, terms, and conditions that may be required will be dependent on the specific facilities potentially impacted and what would be usually and prudently obtained in similar industry situations.

5. All foreign lines will cross Williams right of way at an angle as near to 90 degrees as possible. In situations where there are multiple parallel Williams pipelines, the proposed foreign lines will either cross over or under all of Williams pipelines in the right of way. No horizontal or vertical bends are permitted within Williams right of way. Parallel occupancy of Williams right of way will not be permitted.

6. All foreign lines crossing Williams pipeline or related facilities will be installed with a minimum of 24" of clearance between the existing Williams facilities and the proposed foreign line. The foreign line will be installed at a uniform depth across the full width of the Williams right of way. Williams may require that all foreign lines be installed under its existing pipelines and related facilities.

7. Williams facilities are electrically protected against corrosion. Each metallic foreign line that enters or crosses Williams right of way must have a test lead installed. In addition, the utility contractor installing the metallic foreign line must excavate and expose one or more of Williams existing pipelines to provide for the installation of test leads by Williams employees. All necessary measures (coatings, electrical bonds, etc.) will be taken to ensure that the proposed pipe or utility is adequately protected from potential interference effects. Requests for cooperative testing will be directed to Williams Division Office, "Attn.: Supervisor, Asset Integrity."

8. Williams may require that foreign lines be identified with permanent aboveground markers where the lines enter and exit the Williams right of It is the line owner's responsibility to obtain any rights to install the markers, and to maintain the markers. A direct burial warning tape should be placed 12" to 18" above the foreign line and extend across the entire width of Williams right of way.

9. Foreign lines crossing Williams facilities will be installed in accordance with all applicable codes and requirements governing such installations.

10. Stockpiling brush, trash, or other debris on the right of way is prohibited, as it may conceal pipeline markers and hinder pipeline inspections or routine maintenance.

DISTURBANCE, MAINTENANCE AND VEGETATION

1. No trees are permitted on Williams right of way. Additionally, the canopy of any trees planted adjacent to the right of way must not extend into the right of way at maturity. Any branches extending into the right of way will be side cut by Williams at its discretion.

2. With prior approval from Williams, some types of low growing, shallow-rooted shrubs may be permitted on the right of way provided their maximum mature height will not exceed 5' and are not within 5' of the edge of the pipeline. Williams requires that the mature plantings will not prevent Williams representatives from seeing down the right of way during routine patrols or walking down the right of way directly over the pipelines as they perform required inspections. Under no circumstances will mechanical equipment be used in the planting of shrubs.

3. Williams reserves the right to cut and/or remove plantings as required in the operation, inspection, and maintenance of its pipeline facilities; further, Williams assumes no responsibility for any cost involved in the replacement of said cut and/or removed landscape plantings.

4. All sprinkler or irrigation systems will require review by a Williams representative. Sprinkler heads will not be permitted within 10' of any pipeline or related facility. All crossings of the Williams pipelines or related facilities with feeder lines will be hand dug.

EQUIPMENT CROSSING

1. To protect Williams pipelines from external loading, Williams must perform an engineering evaluation to determine the effects of any proposed equipment use. Mats, timber bridges, or other protective materials deemed necessary by Williams will be placed over Williams facilities for the duration of any loading. Protective materials will be purchased, placed, and removed at no cost to Williams. The right of way must be returned to its original condition.

2. Williams may require temporary markings to identify areas where equipment use is authorized.

3. No vibratory equipment is permitted within the limits of, or in close proximity to, the Williams right of way.

FENCES

1. A site specific inspection is required to determine whether the proposed fence posts must be kept a minimum of 4' or 5' from the edge of any Williams pipeline or related pipeline facility. A Williams representative must be on site to determine the location of the fence posts within the right of way and for the duration of the digging of the posts. Posts installed within the right of way must be hand dug. All proposed fence crossings over Williams pipelines will cross at an angle of 90°, or as near as reasonably practicable.
2. Williams will have the free right of ingress and egress. Williams may require that new fences have a 12' wide gate installed within the right of way at a location approved by Williams. The gate will be installed as to minimize vehicular and equipment travel over the existing Williams facilities.

NON-OCCUPANCY STRUCTURE

This section details encroachment details on sheds, barns, car ports, retaining walls, storage drums, garages, large debris, old cars, trailers, scrap metal, boulders, satellite dishes, manholes, fire hydrants, etc. Buildings or structures, whether occupied or not, may not be constructed within a Company easement. No above ground structures or appurtenances are to be located within the Company ROW. The structures and appurtenances include, but are not limited to: towers, satellite dishes, manholes, catch basins, utility pedestals, transformers, fire hydrants, utility sheds, playhouses, garages, patios, slabs/foundations, decks, swimming pools with associated improvements, or similar structures. Large debris such as old cars, trailers, scrap metal, boulders, etc., will not be permitted on the ROW. The ROW must be kept clear for maintenance and inspection.

LOGGING AND TIMBER OPERATIONS

1. Before any logging or timber operations can begin on Company ROW, obtain written approval from the company.

2. Additional requirements may include, but are not limited to, the installation of land ramps, plates, or temporary erosion controls.

3. Refer to Insurance requirement in #4 of the General Requirements above.

4. An authorized Company representative must be on site prior to and during any surface disturbing work or equipment crossing performed within the ROW.

5. The encroaching entity must meet with a Company representative at least three days prior to the completion of the project to discuss site restoration.

OCCUPANY STRUCTURE

This section includes buildings, houses, occupancy trailers/mobile homes, patios, decks, play grounds, play houses, swimming pools, workshops, or similar structures. Occupied aboveground structures are prohibited within Company ROW, in order to provide for adequate maintenance and operation of Company facilities.

OVERHEAD CROSSING UTILITY

1. Overhead line crossings will be installed with a minimum of 30' of vertical clearance above the Williams right of way to provide adequate equipment clearance. No poles or appurtenances will be located on the Williams right of way.

2. Overhead line crossings will not be installed within 50' (measured horizontally) of any gas vent (e.g. relief valve, blow down vent).

3. Overhead lines will cross Williams facilities at an angle as near to 90 degrees as possible.

4. In addition to these Williams minimum clearances, all local utility minimum clearances must be adhered to.

PARALLEL UTILITY

Parallel occupancy on an existing ROW is not allowed unless approved by the Manager, Operations. This includes trenched, trenchless (bored), and above ground installation of pipelines, cables, conduits, overhead utilities, or fences.

ROAD, RAIL, PAVED AND UNPAVED TRANSPORTATION

1. Williams must complete a preliminary engineering evaluation for all roads, streets, driveways, etc., proposed on Williams right of way. Any pipe casing, concrete slabs, or other protection required by Williams will be installed at no expense to Williams. Williams may require a pipeline inspection prior to construction.

2. The recommended minimum total cover over Williams existing pipelines is 66" at all driveways, highways, roads, streets, etc. The recommended minimum total cover over Williams existing pipelines in adjacent drainage ditches is 48".

3. Vibratory equipment is prohibited within the limits of the Williams right of way. Vibratory equipment is not permitted to be used for achieving applicable compaction requirements.

4. Driveways, highways, roads, streets, etc. crossing over Williams pipeline facilities will cross at an angle as near to 90 degrees as possible. All crossings must be over straight pipe and at locations free of any crossovers. Parallel occupancy of the right of way will not be permitted.

5. Williams will retain the right to cut all present and proposed driveways, highways, roads, streets, etc. and will have no responsibility for restoration, loss of use or access, or any other costs.

6. Access to the earth above each pipeline for leak detection (flame ionization) and cathodic protection surveys must be maintained.

SURFACE WATER

1. Williams may conduct preliminary engineering studies for any proposed drainage channels or ditches that will discharge toward or within the right of way. Drainage channels or ditches must be adequately protected from erosion and provide a minimum of 48" of cover over the pipelines. Altering (clearing, re-grading, or changing alignment of) an existing drainage channel or ditch requires written approval from Williams.

2. Impoundment of water on Williams right of way is not permitted. Soil erosion control measures will not be installed within the Williams right of way without prior written Williams approval.

STATEMENT REGARDING RIGHTS

1. Nothing contained herein will be construed to convey, waive, or subordinate any of Williams existing rights whatsoever.

2. Williams will be fully and completely compensated for any damages to its facilities resulting from the acts of third parties who are working in the vicinity of Williams facilities with or without Williams consent.

3. Williams will be indemnified from and against all claims, losses, demands, damages, causes of action, suits, and liability of every type and character, including all expenses of litigation, court costs, and attorney's fees, for injury to or death of any person, or for damage to any property, arising out of or in connection with third party work in the vicinity of Williams facilities.

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CRESTVIEW SUMMIT

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

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CIVIL ENGINEERS – PLANNERS – SURVEYORS
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(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 10021700

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	5/18/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	GN-02

GENERAL NOTES

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GENERAL REQUIREMENTS FOR CROSSING WILLIAMS PIPELINES

SUBSURFACE CROSSING UTILITY

1. Utilities crossing Williams facilities are required to be cased to protect the integrity of the utility and the safety of Williams and third-party excavators in the future.

2. All buried communications (other than single residential telephone and TV) crossing Williams facilities will be installed with encased, rigid, nonmetallic conduit the full width of Williams right of way. Per on site personnel, conditions may warrant (spanning issues, shoring) steel conduit across the width of the ROW when pipelines are exposed.

3. All buried electric cables (other than 24-volt DC power lines), including single residential service drops, crossing Williams facilities will be installed in encased, rigid, non-metallic conduit the full width of Williams right of way. Per on site personnel, conditions may warrant steel conduit across the width of the ROW when pipelines are exposed.

4. All buried single residential telephone, cable TV, and 24volt DC power will be encased in schedule 40 PVC casing for the full width of Williams right of way.

5. All fiber optic cable, including single drops, will be installed encased, rigid, non-metallic conduit the full width of Williams right of way. Per on site personnel, conditions may warrant steel conduit across the width of the ROW when pipelines are exposed.

6. All sanitary sewer and pressurized water lines will be installed with encased, rigid, non-metallic conduit the full width of Williams right of way. Per on site personnel, conditions may warrant (spanning issues, shoring) steel conduit across the width of the ROW when pipelines are exposed. Gravitational flow systems will be either: (1) ductile iron or steel pipe (adequately protected from Williams cathodic protection system), (2) plastic pipe installed in steel casing, or (3) concrete pipe for the full width of Williams right of way. No piping connections will be allowed within 5' of any Williams pipeline. All ductile iron utility crossings will include restrained joints for the full width of Williams right of way.

7. No septic tanks, liquid disposal systems, or hazardous waste disposal systems will be allowed on Williams right of way or within 25' of Williams facilities. This prohibition includes, but is not limited to, facilities that have the potential of discharging effluent from sewage disposal systems, the discharge of any hydrocarbon substance, the discharge or disposal of any regulated waste, or any other discharge that may prove damaging or corrosive to Williams facilities.

8. All plastic combustible material lines will be installed in steel casing for the full width of Williams right of way.

9. Williams may require that steel combustible material lines (adequately protected from Williams cathodic protection system) be installed under existing Williams pipeline facilities.

10. Williams existing pipeline facilities will be potholed to verify the horizontal and vertical location of all facilities prior to any proposed trenchless construction operation. Once all required potholes have been performed, both plan view and profile drawings showing both Williams existing facilities and the proposed trenchless crossing alignment and profile will be submitted to Williams. Plan and profile drawings are required for all proposed trenchless construction operations. If not completed, Williams may require a subsurface geotechnical investigation be completed prior to construction.
11. All proposed trenchless construction methods may include the installation of steel casing for the full width of Williams right of way.

12. Depending on the trenchless method chosen, distance between Williams facilities and the proposed crossing alignment and profile, and depth of cover, Williams may require inspection holes to be excavated to verify the depth of the bore as it approaches each pipeline. Inspection holes must be excavated to allow Williams on-site representative to visually see the boring head prior to the point where it travels beneath each pipeline.

13. If inspection holes are not performed, the contractor shall monitor the location with precise downhole survey instruments and verify it with surface location equipment (i.e. TruTracker, ParaTrack, or equivalent). The contractor must provide Williams the computer printout of the directional survey and TruTracker/ParaTrack (or equivalent) reports generated by the downhole survey tools daily. Report data shall be in a format suitable for independent calculation of the survey. Deviations between the recorded position and the plan and profile drawing shall be documented and immediately brought to the attention of Williams. Contractor shall notify Williams on-site representative of any drill profile failing to meet the specifications.

14. For a Williams asset that was installed by trenching methods, all trenchless construction shall have a minimum vertical separation of 5 feet from a Williams pipeline when crossing it perpendicular. For any trenchless construction not perpendicular to a Williams pipeline, there shall be a minimum three-dimensional separation of 10 feet. A Williams representative shall be on site to witness the bore staking, pilot hole sighting, observation hole, and any other activity associated with the drill or bore.

15. For a Williams asset that was installed by trenchless methods, all trenchless construction shall have a minimum vertical separation of 10 feet from a Williams pipeline when crossing it perpendicular. For any trenchless construction not perpendicular to a Williams pipeline, there shall be a minimum three-dimensional separation of 25 feet. A Williams representative shall be on site to witness the bore staking, pilot hole sighting, observation hole, and any other activity associated with the drill or bore.

16. An example scenario for three-dimensional separation would be 18 feet lateral separation and 18 feet vertical separation, which would result in approximately 25 feet separation. See Figure 1.

17. Contractor shall check for ground subsidence periodically along all attempted trenchless crossings and the final corridor within Williams right-ofway and notify Williams on-site representative immediately upon findings. Contractor shall fill any voids with a cement grout, compact subsoil within the Williams right-of-way, and restore the ground surface to original contours and conditions.

18. If for any reason the proposed trenchless method fails during construction or if any hole is abandoned during the process, contractor shall fill abandoned holes and/or subsurface voids within Williams right-of-way entirely with a cement grout.

19. Upon 15 days of completion, contractor shall furnish the alignment and profile as-built drawing with a description of the survey data used to determine the as-built location and a statement of accuracy used to create the drawing. The drawing shall be submitted in both AutoCAD and PDF format and contain all data points that are within the Williams right-of-way representing final alignment and profile, any abandoned holes, tools, strings of drill pipe, etc. overlaid on the plan and profile drawing.

20. Williams Pipeline Contact Information:
    Will Lee, Land Rep. SR.
    5601 East 1st Street Fort Worth, Texas 76103
    682-730-4880
    Willie.Lee@williams.com

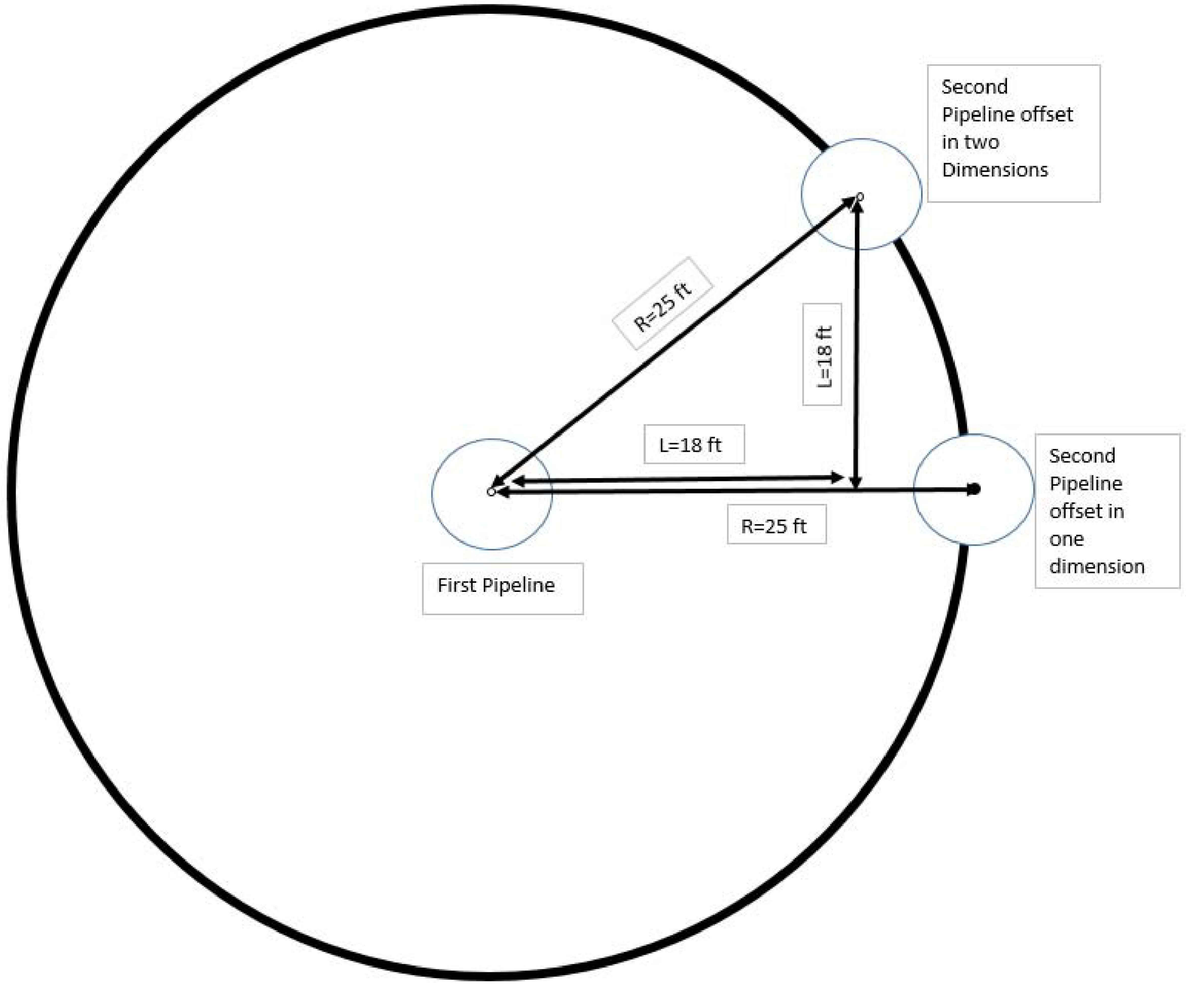

Figure 1: Three-Dimensional Separation Example

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CITY OF SUMMIT

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 -4373
TxEng Firm # F-2644 – TxSurv Firm # 100170-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	5/18/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE

SHEET **GN-03**

GENERAL NOTES

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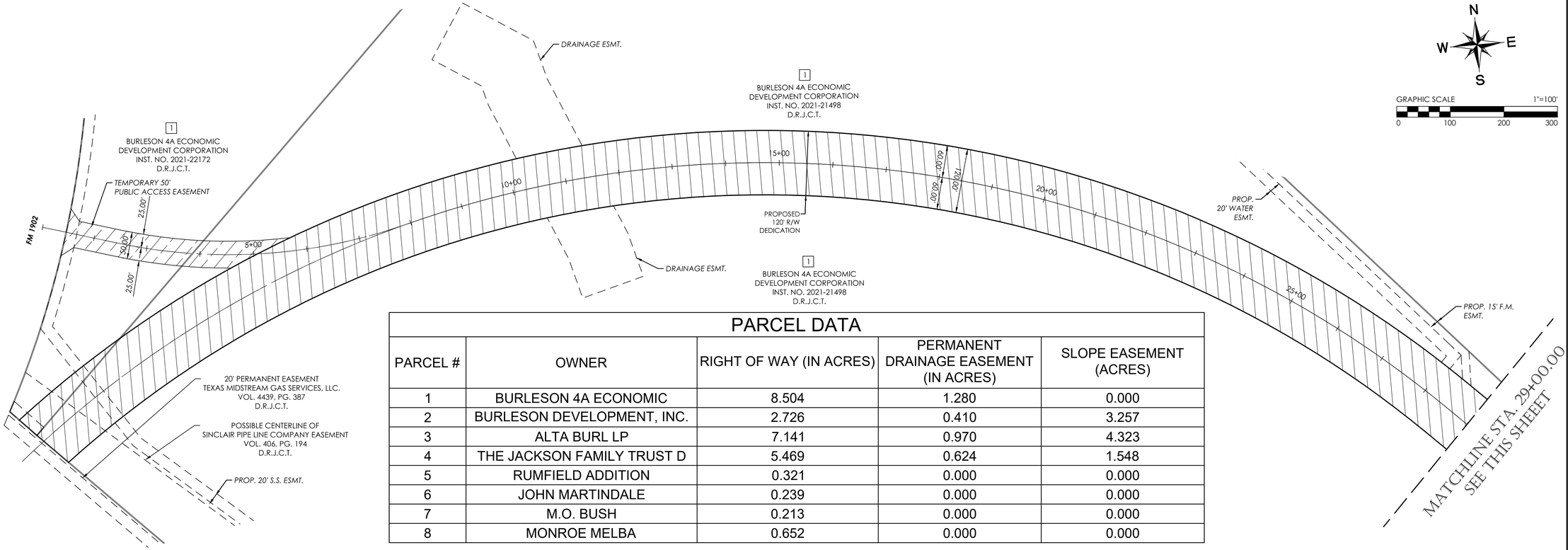
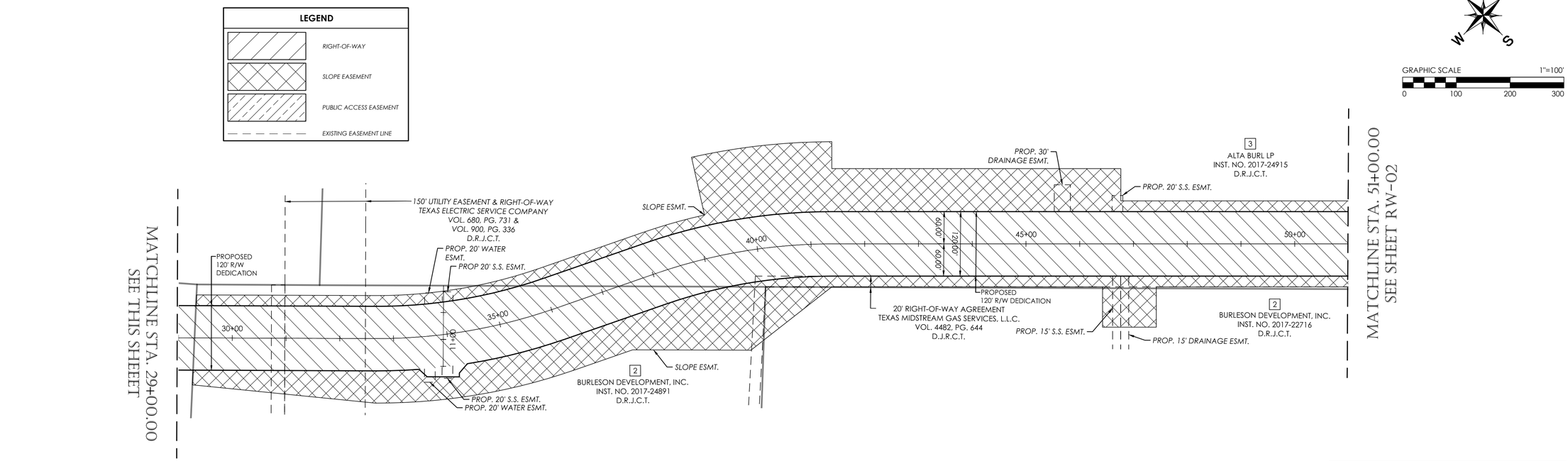


PARCEL DATA

PARCEL #	OWNER	RIGHT OF WAY (IN ACRES)	PERMANENT DRAINAGE EASEMENT (IN ACRES)	SLOPE EASEMENT (ACRES)
1	BURLESON 4A ECONOMIC	8.504	1.280	0.000
2	BURLESON DEVELOPMENT, INC.	2.726	0.410	3.257
3	ALTA BURL LP	7.141	0.970	4.323
4	THE JACKSON FAMILY TRUST D	5.469	0.624	1.548
5	RUMFIELD ADDITION	0.321	0.000	0.000
6	JOHN MARTINDALE	0.239	0.000	0.000
7	M.O. BUSH	0.213	0.000	0.000
8	MONROE MELBA	0.652	0.000	0.000



BENCH MARK ELEVATION : 852.36

CAPPED IRON ROD WITH CAP STAMPED "RDM" AT THE NORTHWEST CORNER OF THE INTERSECTION OF CR 1902 AND CR 1019, APPROXIMATELY 37 FEET NORTHWEST OF THE CENTERLINE OF CR 1019, APPROXIMATELY 45 FEET NORTHEAST OF THE CENTERLINE OF CR 1902, AND APPROXIMATELY 120 FEET SOUTHWEST OF A DRIVEWAY.

NO.	REVISION DATE
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CUSTOM BUILT SUMMIT HOMES

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN & MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 100170-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	7/27/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	RW-01

RIGHT OF WAY MAP

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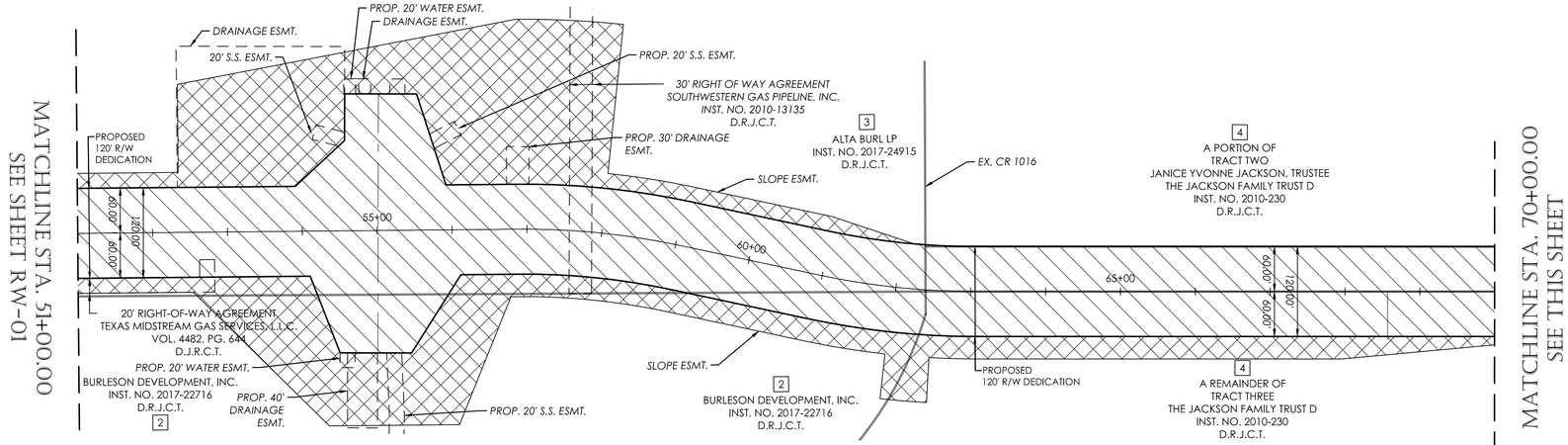
LEGEND

- RIGHT-OF-WAY
- SLOPE EASEMENT
- PUBLIC ACCESS EASEMENT
- EXISTING EASEMENT LINE



PARCEL DATA

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1	BURLESON 4A ECONOMIC	8.504	1.280	0.000
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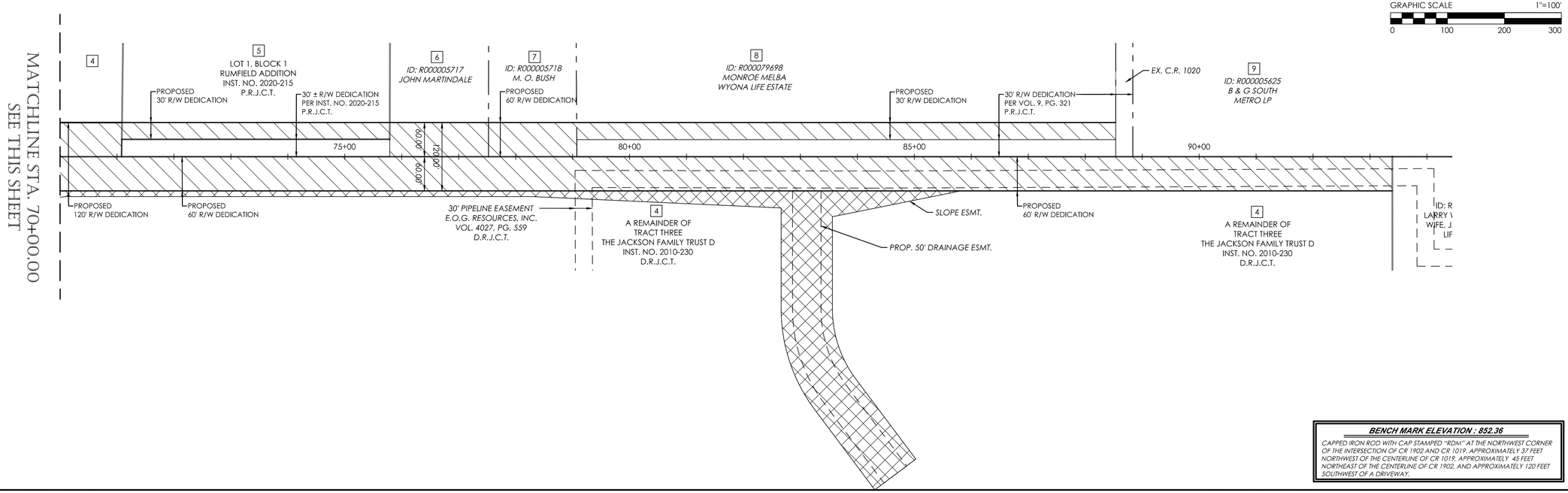
6	JOHN MARTINDALE	0.239	0.000	0.000
7	M.O. BUSH	0.213	0.000	0.000
8	MONROE MELBA	0.652	0.000	0.000

GRAPHIC SCALE 1"=100'
0 100 200 300



GRAPHIC SCALE 1"=100'
0 100 200 300

BENCH MARK ELEVATION : 852.36

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NO.	REVISION DATE

CUSTOM BY SUMMIT

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN & MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 100170-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	7/27/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	RW-02

RIGHT OF WAY MAP

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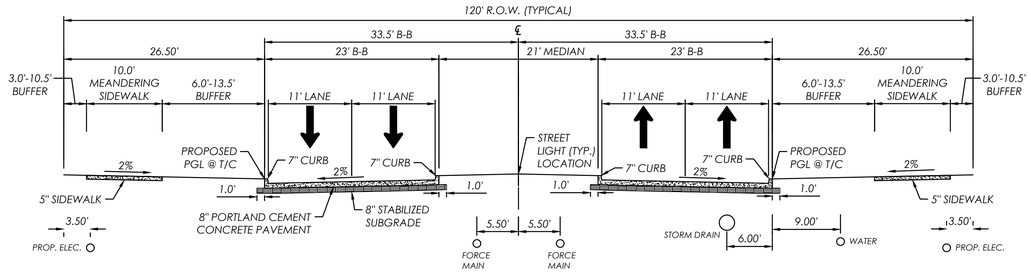
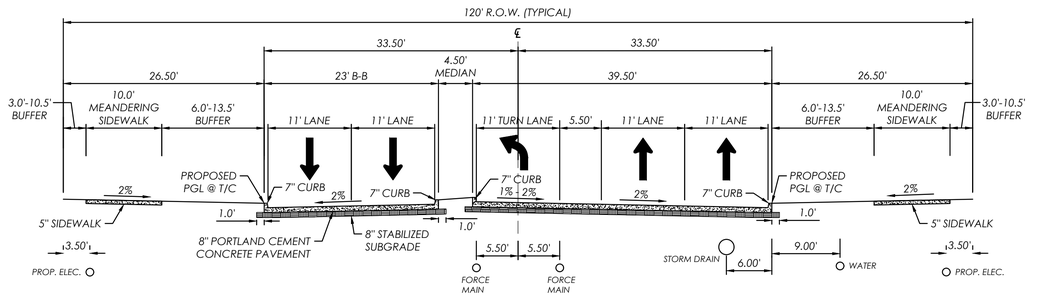


PROPOSED LAKEWOOD DRIVE 120' R.O.W. TYPICAL SECTION

STA. 12+44.00 TO 30+05.09, STA. 37+86.33 TO 51+26.06, STA. 58+21.01 TO 67+49.16, STA. 71+92.65 TO 84+80.88

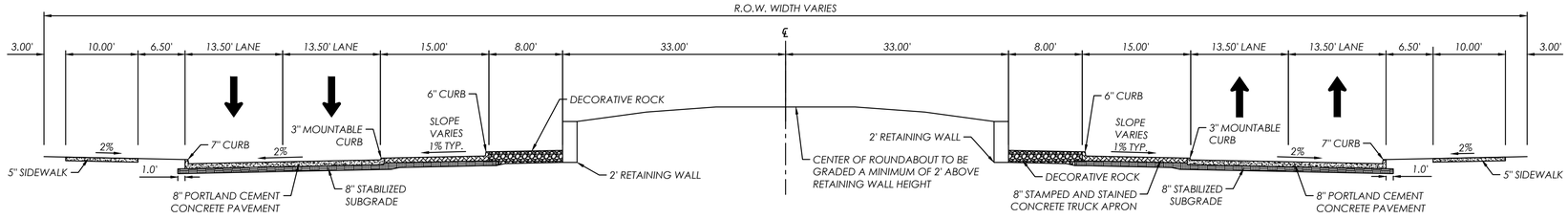
NTS



PROPOSED LAKEWOOD DRIVE 120' R.O.W. TURN LANE SECTION

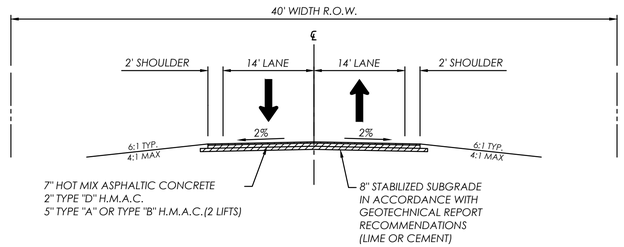
STA. 31+44.83 TO 33+44.83, STA. 34+47.10 TO 36+46.60, STA. 68+52.91 TO 70+52.91

NTS



PROPOSED LAKEWOOD DRIVE AND CHISHOLM SUMMIT ROAD ROUNDABOUT

NTS



PROPOSED LAKEWOOD DRIVE AND F.M. 1902 ASPHALT SECTION

STA. 1+16.22 TO 7+93.00

NTS

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LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 100177-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	2/12/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE

SHEET **TYP-01**

TYPICAL LAKEWOOD DRIVE SECTIONS

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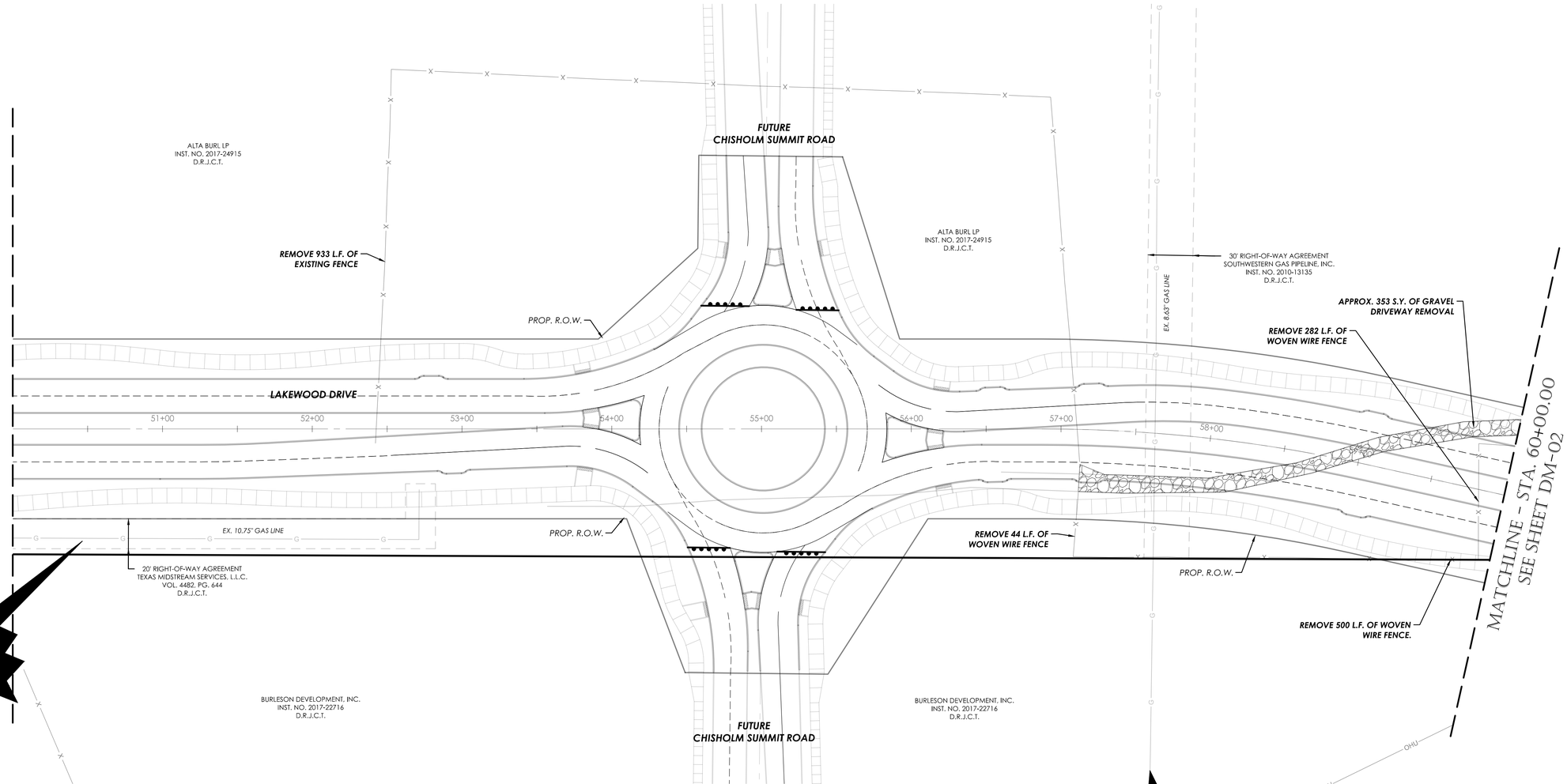
LEGEND

- C.R. 914 ASPHALT REMOVAL
- GRAVEL REMOVAL

GRAPHIC SCALE 1"=40'

0 40 80 120



CONTRACTOR NOTE

THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UTILITIES, WHETHER PRIVATE OR PUBLIC, PRIOR TO EXCAVATING. THE INFORMATION AND DATA SHOWN WITH RESPECT TO EXISTING UNDERGROUND FACILITIES AT OR CONTIGUOUS TO THE SITE IS APPROXIMATE AND BASED ON INFORMATION AND DATA FURNISHED BY THE OWNERS OF SUCH UNDERGROUND FACILITIES OR ON PHYSICAL APPURTENANCES OBSERVED IN THE FIELD. THE OWNER AND ENGINEER SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ANY SUCH INFORMATION OR DATA, AND THE CONTRACTOR SHALL HAVE FULL RESPONSIBILITY FOR REVIEWING AND CHECKING ALL SUCH INFORMATION AND DATA, FOR LOCATING ALL UNDERGROUND FACILITIES, FOR COORDINATION OF THE WORK WITH THE OWNERS OF SUCH UNDERGROUND FACILITIES DURING CONSTRUCTION, FOR THE SAFETY AND PROTECTION THEREOF, AND REPAIRING ANY DAMAGE THERETO RESULTING FROM THE WORK, THE COST OF ALL OF WHICH WILL BE CONSIDERED AS HAVING BEEN INCLUDED IN THE CONTRACT PRICE. CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY ANY AFFECTED UTILITY COMPANIES OR AGENCIES AT LEAST 48 HOURS PRIOR TO BEGINNING CONSTRUCTION.

BENCH MARK ELEVATION : 852.36

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NO.	REVISION DATE

CHISHOLM SUMMIT

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN MARSHALL INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2564 - TxSurv Firm # 100217-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	2/12/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	DM-01

DEMO PLAN

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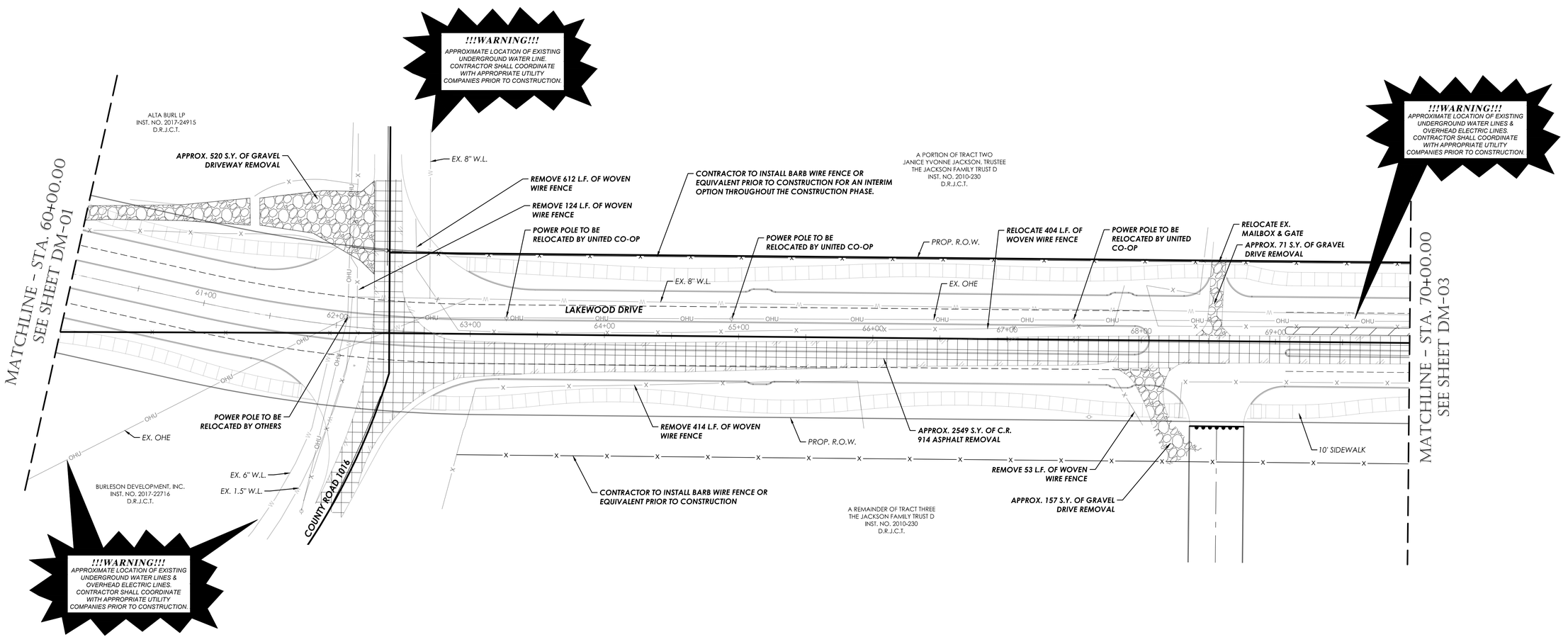
LEGEND

- C.R. 914 ASPHALT REMOVAL
- GRAVEL REMOVAL

GRAPHIC SCALE 1"=40'
0 40 80 120



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LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 100177-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	2/12/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	DM-02

DEMO PLAN

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LEGEND

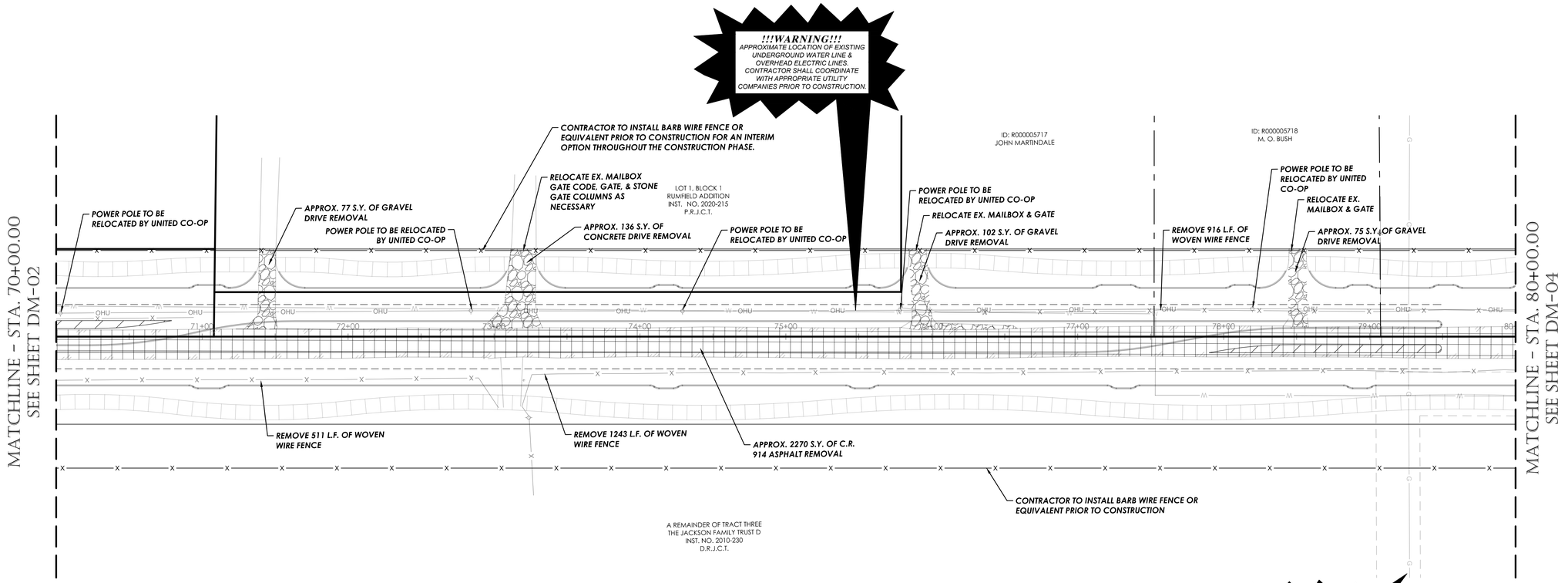
C.R. 914 ASPHALT REMOVAL

GRAVEL REMOVAL

GRAPHIC SCALE 1"=40'

0 40 80 120

NO.	REVISION DATE



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LAKEWOOD DRIVE

90% CONSTRUCTION PLANS

CITY OF BURLESON

JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 100177-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER

09/28/22

JOB NO. :	10745
DATE :	2/12/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE

SHEET **DM-03**

DEMO PLAN

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LEGEND

C.R. 914 ASPHALT REMOVAL

GRAVEL REMOVAL

GRAPHIC SCALE 1"=40'

0 40 80 120

NO.	REVISION DATE

MONROE MELBA WYONA
LIFE ESTATE

MATCHLINE – STA. 80+00.00
SEE SHEET DM-03

POWER POLE TO BE RELOCATED BY UNITED CO-OP

POWER POLE TO BE RELOCATED BY UNITED CO-OP

REMOVE 75 L.F. OF WOVEN WIRE FENCE

CONTRACTOR TO INSTALL BARB WIRE FENCE OR EQUIVALENT PRIOR TO CONSTRUCTION FOR AN INTERIM OPTION THROUGHOUT THE CONSTRUCTION PHASE.

POWER POLE TO BE RELOCATED BY UNITED CO-OP

!!!WARNING!!!
APPROXIMATE LOCATION OF EXISTING OVERHEAD ELECTRIC LINES. CONTRACTOR SHALL COORDINATE WITH APPROPRIATE UTILITY COMPANIES PRIOR TO CONSTRUCTION.

OHU

80+00 81+00 82+00 83+00 84+00 85+00 86+00 87+00 88+00 89+00 90+00 91+00

APPROX. 1789 S.Y. OF C.R. 914 ASPHALT REMOVAL

CONTRACTOR TO INSTALL BARB WIRE FENCE OR EQUIVALENT PRIOR TO CONSTRUCTION

REMOVE 1243 L.F. OF WOVEN WIRE FENCE

A REMAINDER OF TRACT THREE
THE JACKSON FAMILY TRUST D
INST. NO. 2010-230
D.R.J.C.T.

!!!WARNING!!!
APPROXIMATE LOCATION OF EXISTING UNDERGROUND WATER LINE. CONTRACTOR SHALL COORDINATE WITH APPROPRIATE UTILITY COMPANIES PRIOR TO CONSTRUCTION.

CONTRACTOR NOTE

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LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

SUMMIT CIVIL DIVISION

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329-4373
TxEng Firm # F-2644 – TxSurv Firm # 10001700

STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	2/12/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	DM-04

DEMO PLAN

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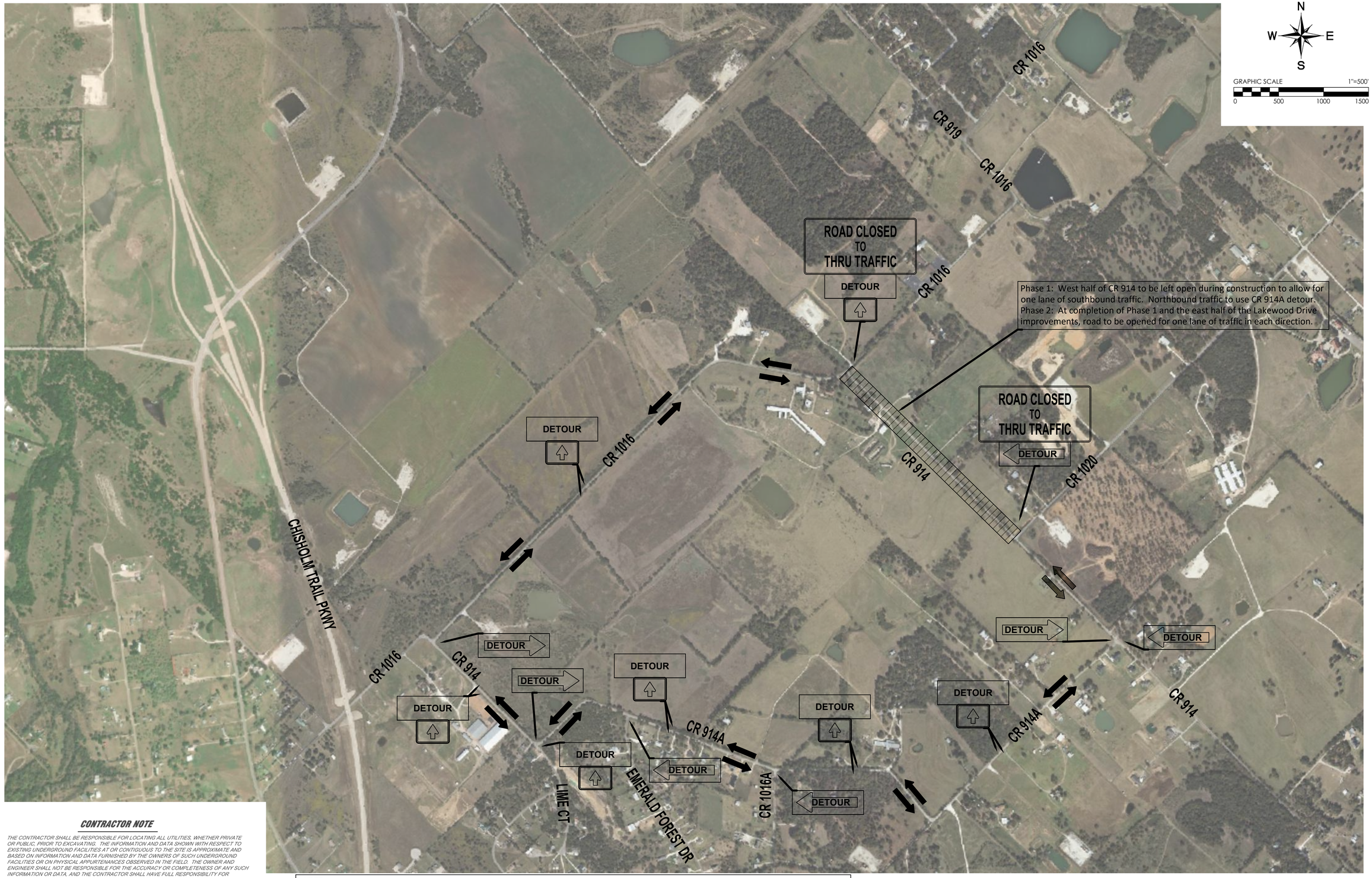

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NOTE:
1. ALL TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH THE LATEST VERSION OF THE TEXAS MUTCD.
2. CONTRACTOR SHALL INSTALL ADVANCED WARNING SIGNS IN ACCORDANCE WITH TXDOT BC STANDARDS.
3. CONSTRUCTION SIGNING AND PAVEMENT MARKINGS REQUIRED FOR CLOSURE AND CONSTRUCTION AT LAKEWOOD DRIVE AND SHALL BE PAID UNDER BARRICADES, SIGNS AND TRAFFIC HANDLING BID ITEM.

BENCH MARK ELEVATION : 852.36

CAPPED IRON ROD WITH CAP STAMPED "RDM" AT THE NORTHWEST CORNER OF THE INTERSECTION OF CR 1902 AND CR 1019. APPROXIMATELY 37 FEET NORTHWEST OF THE CENTERLINE OF CR 1019. APPROXIMATELY 45 FEET NORTHEAST OF THE CENTERLINE OF CR 1902. AND APPROXIMATELY 120 FEET SOUTHWEST OF A DRIVEWAY.

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SUMMIT CONSTRUCTION

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN MARSHALL
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09/28/22

JOB NO. :	10745
DATE :	8/4/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE

SHEET **TC-01**

TRAFFIC CONTROL

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BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

1. The Barricade and Construction Standard Sheets (BC sheets) are intended to show typical examples for placement of temporary traffic control devices, construction pavement markings, and typical work zone signs. The information contained in these sheets meet or exceed the requirements shown in the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
2. The development and design of the Traffic Control Plan (TCP) is the responsibility of the Engineer.
3. The Contractor may propose changes to the TCP that are signed and sealed by a licensed professional engineer for approval. The Engineer may develop, sign and seal Contractor proposed changes.
4. The Contractor is responsible for installing and maintaining the traffic control devices as shown in the plans. The Contractor may not move or change the approximate location of any device without the approval of the Engineer.
5. Geometric design of lane shifts and detours should, when possible, meet the applicable design criteria contained in "Guidelines for Geometric Design of Low-Volume Roads", American Association of State Highway and Transportation Officials' AASHTO "A Policy on Geometric Design of Highways and Streets," the TxDOT "Roadway Design Manual" or engineering judgement.
6. When projects abut, the Engineer(s) may omit the END ROAD WORK, TRAFFIC FINES DOUBLE, and other advance warning signs if the signing would be redundant and the work areas appear continuous to the motorists. If the adjacent project is completed first, the Contractor shall erect the necessary warning signs as shown on these sheets, the TCP sheets or as directed by the Engineer. The BEGIN ROAD WORK NEXT X MILES sign shall be revised to show appropriate work zone distance.
7. The Engineer may require duplicate warning signs on the median side of divided highways where median width will permit and traffic volumes justify the signing.
8. All signs shall be constructed in accordance with the details found in the "Standard Highway Sign Designs for Texas," latest edition. Sign details not shown in this manual shall be shown in the plans or the Engineer shall provide a detail to the Contractor before the sign is manufactured.
9. The temporary traffic control devices shown in the illustrations of the BC sheets are examples. As necessary, the Engineer will determine the most appropriate traffic control devices to be used.
10. Where highway construction or maintenance work is being undertaken, other than mobile operations as defined by the Texas Manual on Uniform Traffic Control Devices, that will affect traffic lanes, CSJ limit signs (see BC(2) for more details) shall be placed. The words WARNING, STAY ALERT, TALK ON TEXT LATER and the WORK ZONE TRAFFIC FINES DOUBLE sign with plaque shall be erected in advance of the CSJ limits. The BEGIN ROAD WORK NEXT X MILES, CONTRACTOR and END ROAD WORK signs shall be erected at or near the CSJ limits. For mobile operations, CSJ limit signs are not required.
11. Traffic control devices should be in place only while work is actually in progress or a definite need exists.
12. The Engineer has the final decision on the location of all traffic control devices.
13. Inactive equipment and work vehicles, including workers' private vehicles must be parked away from travel lanes. They should be as close to the right-of-way line as possible, or located behind a barrier or guardrail, or as approved by the Engineer.

WORKER SAFETY NOTES:

1. Workers on foot who are exposed to traffic or to construction equipment within the right-of-way shall wear high-visibility safety apparel meeting the requirements of ISEA "American National Standard for High-Visibility Apparel," or equivalent revisions, and labeled as ANSI 107-2004 standard performance for Class 2 or 3 risk exposure. Class 3 garments should be considered for high traffic volume work areas or night time work.
2. Except in emergency situations, flagger stations shall be illuminated when flagging is used at night.

COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES

1. Only pre-qualified products shall be used. The "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources.
2. Work zone traffic control devices shall be compliant with the Manual for Assessing Safety Hardware (MASH).

THE DOCUMENTS BELOW CAN BE FOUND ON-LINE AT http://www.txdot.gov
COMPLIANT WORK ZONE TRAFFIC CONTROL DEVICES LIST (CWZTCD)
DEPARTMENTAL MATERIAL SPECIFICATIONS (DMS)
MATERIAL PRODUCER LIST (MPL)
ROADWAY DESIGN MANUAL - SEE "MANUALS (ONLINE MANUALS)"
STANDARD HIGHWAY SIGN DESIGNS FOR TEXAS (SHSD)
TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD)
TRAFFIC ENGINEERING STANDARD SHEETS

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-21

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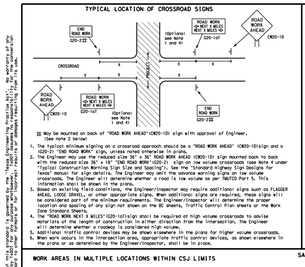
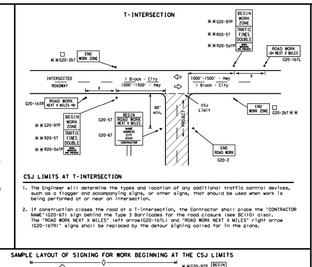
TYPICAL LOCATION OF CROSSROAD SIGNS



(1) May be mounted on back of "ROAD WORK AHEAD" (CW20-1D) sign with approval of Engineer. See note 2 below.

1. The typical minimum signing on a crossroad approach should be a "ROAD WORK AHEAD" (CW20-1D) sign and a "END ROAD WORK" (G20-2b) sign mounted back to back.
2. The Engineer may also use the optional size 30" x 30" ROAD WORK AHEAD (CW20-1D) sign mounted back to back with the reduced size 36" x 18" "END ROAD WORK (G20-2) sign on low volume crossroads (see Note 4 under "Typical Construction Warning Sign Size and Spacing"). See the "Standard Highway Sign Designs for Texas" manual for sign details. The Engineer may omit the advance warning signs on low volume crossroads (see Note 4 under "Typical Construction Warning Sign Size and Spacing") when a road is low volume as per TMUTCD Part 5. This information shall be shown in the plans.
3. Based on existing field conditions, the Engineer/inspector may require additional signs such as FLAGGER AHEAD, LOOSE GRAVEL, or other appropriate signs. When additional signs are required, these signs will be considered part of the minimum requirements. The Engineer/inspector will determine the proper placement of these signs and the placement of any sign not shown on the BC sheets, Traffic Control Plan sheets or the Work Zone Standard Sheets.
4. The "ROAD WORK NEXT X MILES" (G20-1bTL) sign shall be required at high volume crossroads to advise motorists of the length of construction in either direction from the intersection. The Engineer should be at least 5 times median post size, centered on the splice and of at least the same gauge material.

T-INTERSECTION



CSJ LIMITS AT T-INTERSECTION

1. The Engineer will determine the types and location of any additional traffic control devices, such as a flagger and accompanying signs, or other signs, that should be used when work is being performed on or near an intersection.
2. If construction closes the road at a T-intersection, the Contractor shall place the "CONTRACTOR NAME" (G20-6T) sign behind the Type 3 Barricades for the road closure (see BC(10)) also). The "ROAD WORK NEXT X MILES" left arrow (G20-1bTL) and "ROAD WORK NEXT X MILES" right arrow (G20-1bTR) signs shall be replaced by the detour signing called for in the plans.

TYPICAL CONSTRUCTION WARNING SIGN SIZE AND SPACING(1)(2)(3)

SIZE			SPACING	
Sign Number or Series	Conventional Road	Expressway/ Freeway	Posted Speed	Sign Spacing "A"
			MPH	Feet (500'=1)
CW20[4]	48" x 48"	48" x 48"	30	120
CW21			35	160
CW22			40	240
CW25			45	320
CW1, CW2, CW3, CW5, CW6, CW11, CW12	36" x 36"	48" x 48"	50	400
			55	500
			60	600
CW3, CW4, CW5, CW6, CW8-3, CW10, CW12	48" x 48"	48" x 48"	65	700
			70	800
			75	900
			80	1000
			*	*

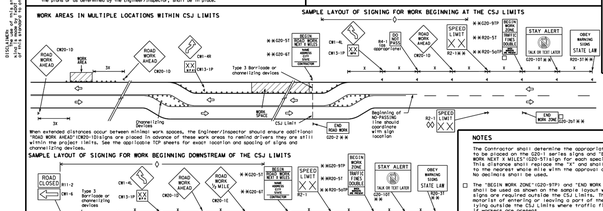
* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

△ Minimum distance from work area to first Advance Warning sign nearest the work area and/or distance between each additional sign.

GENERAL NOTES

1. Special or larger size signs may be used as necessary.
2. Distance between signs should be increased as required to have 1500 feet advance warning.
3. Distance between signs should be increased as required to have 1/2 mile or more advance warning.
4. 36" x 36" "ROAD WORK AHEAD" (CW20-1D) sign may be used on low volume crossroads on the discretion of the Engineer as per TMUTCD Part 5. See Note 2 under "Typical Location of Crossroad Signs".
5. Only diamond shaped warning sign sizes are indicated.
6. See sign size listing in "TMUTCD," Sign Appendix or the "Standard Highway Sign Designs for Texas" manual for complete list of available sign design sizes.

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS



NOTES

The Contractor shall determine the appropriate distance to be placed on the G20-1 series signs and "BEGIN ROAD WORK NEXT X MILES" (G20-1bT) sign for each project. This distance shall replace the "X" and shall be rounded to the nearest whole mile with the approval of the Engineer. No decimals shall be used.

□ The "BEGIN WORK ZONE" (G20-9TP) and "END WORK ZONE" (G20-2bT) shall be used as shown on the sample layout when advance signs are required outside the CSJ limits. They inform the motorist that they are entering or leaving the work zone, identifying outside the CSJ limits where traffic fines may double if workers are present.

◇ CSJ limit signing is required for highway construction and maintenance work, with the exception of mobile operations.

◊ Area for placement of "ROAD WORK AHEAD" (CW20-1D) sign, flagger or devices as called for on the Traffic Control Plan.

◊◊ Contractor will install a regulatory speed limit sign at the end of the work zone.

LEGEND

	Type 3 Barricade
D D D	Channelizing Devices
	Sign
X	See Typical Construction Warning Sign Size and Spacing on the TMUTCD for sign spacing requirements.

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-21

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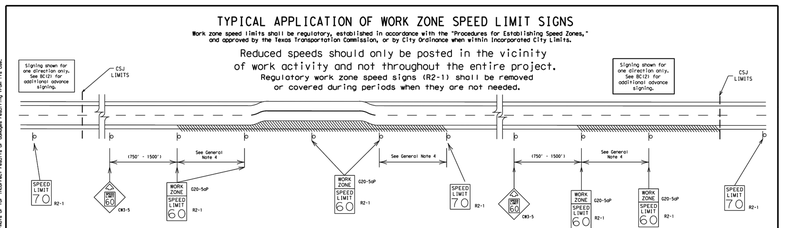
TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

Work zone speed limits shall be regulatory, established in accordance with the "Procedures for Establishing Speed Zones," and approved by the Texas Transportation Commission, or by City Ordinance when within incorporated City Limits.

Reduced speeds should only be posted in the vicinity of work activity and not throughout the entire project.
Regulatory work zone speed signs (R2-1) shall be removed or covered during periods when they are not needed.



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

This type of work zone speed limit should be included on the design of the traffic control plans when restricted geometrics with a lower design speed are present in the work zone and modification of the geometrics to a higher design speed is not feasible.

Long/intermediate term Work Zone Speed Limit signs, when approved as described above, should be posted and visible to the motorist when work activity is present. Work activity may also be defined as a change in the roadway that requires a reduced speed for motorists to safely negotiate the work area, including:
a) rough road or damaged pavement surface
b) substantial alteration of roadway geometrics (alversions)
c) construction detours
d) grade
e) width
f) other conditions readily apparent to the driver
As long as any of these conditions exist, the work zone speed limit signs should remain in place.

SHORT TERM WORK ZONE SPEED LIMITS

This type of work zone speed limit may be included on the design of the traffic control plans when workers or equipment are not behind concrete barrier, when work activity is within 10 feet of the traveled way or actually in the traveled way.

Short Term Work Zone Speed Limit signs should be posted and visible to the motorists only when work activity is present. When work activity is not present, signs shall be removed or covered.
(See Removing or Covering on BC(4)).

GENERAL NOTES

1. Regulatory work zone speed limits should be used only for sections of construction projects where speed control is of major importance.
2. Regulatory work zone speed limit signs shall be placed on supports at a 7 foot minimum mounting height.
3. Speed zone signs are illustrated for one direction of travel and are normally posted for each direction of travel.
4. Frequency of work zone speed limit signs should be
   40 mph and greater 0.2 to 2 miles
   35 mph and less 0.2 to 1 mile
5. Regulatory speed limit signs shall have black legend and border on a white reflective background (See "Reflective Sheeting" on BC(4)).
6. Fabrication, erection and maintenance of the"ADVANCE SPEED LIMIT" (CW3-5)sign, "WORK ZONE" (G20-5aP) plaque and the "SPEED LIMIT" (R2-1)signs shall not be paid for directly, but shall be considered subsidiary to Item 502.
7. Turning signs from view, laying signs over or down will not be allowed, unless as otherwise noted under "REMOVING OR COVERING" on BC(4).
8. Techniques that may help reduce traffic speeds include but are not limited to:
   A. Law enforcement.
   B. Flagger stationed next to sign.
   C. Portable changeable message sign (PCMS).
   D. Low-power (drone) radar transmitter.
   E. Speed monitor trailers or signs.
9. Speeds shown on details above are for illustration only. Work Zone Speed Limits should only be posted as approved for each project.
10. For more specific guidance concerning the type of work, work zone conditions and factors impacting allowable regulatory construction speed zone reduction see TxDOT Form 1204 in the TxDOT e-Form system.

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-21

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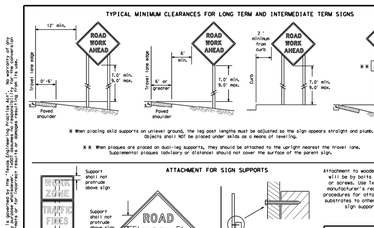
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



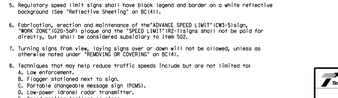
* When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

** When proposes are placed on dual-leg supports, they should be attached to the upright nearest the travel lane. Supplemental proposes (advisory or distance) should not cover the surface of the parent sign.

ATTACHMENT FOR SIGN SUPPORTS

STOP/SLOW PADDLES

1. STOP/SLOW paddles are the primary method to control traffic by flaggers. The STOP/SLOW paddle sign should be 24" x 24".
2. STOP/SLOW paddles shall be retroreflectorized when used at night.
3. STOP/SLOW paddles may be attached to a staff with a minimum length of 6' for use by a standing flagger.
4. Any lights incorporated into the STOP or SLOW paddle faces shall only be as specifically described in Section 6E.03 Hand Signaling Devices in the TMUTCD.



CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

1. The Contractor shall, during the course of traffic lane or regulations, coil permanent signs that may be potentially hazardous to traffic operations, show route designations, destinations, directions, distances, services, points of interest, and other geographical, recreational, specific service (COD), or cultural information. Drivers proceeding through a work zone need the same, or nearly the same, route guidance as normally traveling motorists through the construction.
2. When permanent regulatory or warning signs conflict with work zone conditions, remove or cover the permanent signs until the permanent sign message matches the roadway condition. For details for covering large guide signs see the TS-CD standards.
3. When existing permanent signs are moved and reinstalled due to construction activities, they shall be placed on new posts or bases.
4. If existing signs are to be reinstalled on their original supports, they shall be installed on breakaway bases as shown on the SMD Standard sheets. The signs shall meet the required mounting heights shown on the BC Sheets or the SMD Standards, this work should be paid for under the appropriate pay item for installing a permanent sign.
5. If permanent signs are to be removed and reinstalled using temporary supports, the Contractor shall use breakaway supports as shown on BC standard sheets, TLSS standard sheets or the OBTED list. The signs shall meet the required mounting heights shown on the BC, or the SMD standard sheets during construction. This work will be paid for under the appropriate pay item for removing and reinstalling signs.
6. Any sign or traffic control device that is struck or damaged by the Contractor or his/her construction equipment shall be replaced as soon as possible by the Contractor to ensure proper guidance for the motorists. This will be subsidiary to Item 502.

GENERAL NOTES FOR WORK ZONE SIGNS

1. Contractor shall install and maintain signs in a straight and plumb condition and/or as directed by the Engineer.
2. Wooden sign posts shall be painted white.
3. Wooden sign posts shall be used for supports.
4. All signs shall be installed in accordance with the plans or as directed by the Engineer. Signs shall be used to regulate, warn, and guide the traveling public safely through the work zone.
5. The Contractor shall not deviate from the sign details in the plans or in the "Standard Highway Sign Designs for Texas" (SHSD). The Engineer/inspector may require the Contractor to furnish other work zone signs than are shown in the TMUTCD but may have been omitted from the plans. Any variation in the plans shall be documented by written agreement between the Engineer and the Contractor's Responsible Person. All changes must be documented in writing before being implemented. This can include documenting the changes in the Inspector's TxDOT diary and having both the Inspector and Contractor initial and date the agreed upon change(s).
6. Supports for temporary signs shall meet the requirements of the "Compliant Work Zone Traffic Control Devices List" (CWZTCD) for small roadside signs. Supports for temporary large roadside signs shall meet the requirements detailed on the temporary Large Roadside Signs (TLRS) standard sheets. The Contractor shall install the sign support in accordance with the manufacturer's recommendations. If there is a question about the proper installation procedures, the Engineer shall request the Engineer's copy of the manufacturer's installation recommendations so the Engineer can verify the correct procedures are being followed.
7. The Contractor is responsible for installing signs on approved supports and replacing signs with damaged or cracked substrates and/or sign legend or non-reflective sheeting as directed by the Engineer/inspector.
8. Sign identification shall be on the back of the sign substrate. The minimum height of letters and/or company logos used for identification shall be 1 inch.
9. The Contractor shall replace damaged wood posts. New or damaged wood sign posts shall not be spliced.

DURATION OF WORK (as defined by the "Texas Manual on Uniform Traffic Control Devices" Part 6)

1. The types of sign supports, sign mounting height, the size of signs, and the type of sign substrates can vary based on the type of work being performed. The Engineer is responsible for selecting the appropriate size sign for the type of work being performed. The Engineer may refer to the "Standard Highway Sign Designs for Texas" manual for sign mounting height and substrate recommendations in regard to orderliness and duration of work requirements.
   a. Long-term stationary - work that occupies a location more than 3 days.
   b. Intermediate-term stationary - work that occupies a location more than one daylight period up to 3 days, or nighttime work lasting more than one hour.
   c. Short-term stationary - daytime work that occupies a location for more than 1 hour in a single daylight period.
   d. Short, duration - work that occupies a location up to 1 hour.
   e. Mobile - work that moves continuously or intermittently (stopping for up to approximately 15 minutes.)

SIGN SUBSTRATES

1. The Contractor shall ensure long/intermediate-term signs shall be at least 7 feet, but not more than 9 feet, above the paved surface, except as shown for supplemental plaques mounted below other signs.
2. The bottom of Short-term/Short duration signs shall be a minimum of 1 foot above the pavement surface but no more than 2 feet above the pavement surface.
3. Long-term/intermediate-term signs may be used in lieu of Short-term/Short duration signing.
4. Short-term/Short duration signs shall be removed or covered during daylight and shall be removed at the end of the workday or raised to appropriate long-term/intermediate sign height.
5. Regulatory signs shall be mounted at least 7 feet, but not more than 9 feet, above the paved surface regardless of work duration.

SIZE OF SIGNS

1. The Contractor shall furnish the sign sizes shown on BC (2) unless otherwise shown in the plans or as directed by the Engineer.

SIGN SUBSTRATES

1. The Contractor shall ensure the sign substrate is installed in accordance with the manufacturer's recommendations for the type of sign substrate being used. See the "Standard Highway Sign Designs for Texas" manual for sign substrate details and models of sign supports.
2. "Mesh" type substrates are NOT an approved sign substrate, regardless of the tightness of the weave.
3. All wooden individual sign panels fabricated from 2 or more pieces shall have one or more plywood cleat, 1/2" thick by 6" wide, fastened to the back of the sign and extending fully across the sign. The cleat shall be attached to the back of the sign using wood screws that do not penetrate the face of the sign panel. The screws shall be placed on both sides of the splice and spaced at 6" maximum. Other methods may be approved for splicing the sign face.

REFLECTIVE SHEETING

1. All signs shall be retroreflective and constructed of sheeting meeting the color and retroreflectivity requirements of DMS-8300 for rigid signs or DMS-8310 for roll-up signs. The web address for DMS specifications is shown on BC(1).
2. Orange sheeting meeting the requirements of DMS-8300 Type A, shall be used for signs with a white background.
3. White sheeting meeting the requirements of DMS-8300 Type A, shall be used for signs with an orange backgrounds.

SIGN LETTERS

1. All sign letters and numbers shall be clean, and open rounded type uppercase standard letters as approved by the Federal Highway Administration (FHWA) and as published in the "Standard Highway Sign Designs for Texas" manual. Signs, letters and numbers shall be of the size corresponding in accordance with Department Standards and Specifications.

REMOVING OR COVERING SIGNS

1. When signs are not required, be confusing or do not apply, the signs shall be removed or completely covered.
2. Long-term stationary or intermediate stationary signs installed on square metal tubing may be turned away from traffic 90 degrees when the sign message is not applicable. This technique may not be used for signs located in the median of divided highways or near intersections where the sign may be seen from approaching traffic.
3. Signs installed on wood posts may be turned or rotated at least or 90 degree angles to the roadway. These signs should be removed or completely covered when not required.
4. When signs are covered, the material used shall be opaque, such as heavy all black plastic, or other materials which will cover the sign completely and withstand normal weather conditions and resist deterioration under outdoorexposure conditions at night, without damaging the sign sheeting. Burlap shall not be used to cover signs.
5. Duct tape or other adhesive material shall NOT be affixed to a sign face.
6. Signs and overhead shuts shall be removed and holes backfilled upon completion of work.

SIGN SUPPORT WEIGHTS

1. Where sign supports require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand should be used.
2. Sandbags shall be placed to keep the sand from spilling and to maintain a constant weight.
3. Rock, concrete, iron, steel or other solid objects shall not be permitted for use as weights on sign supports.
4. Sandbags should weigh a minimum of 25 lbs and a maximum of 50 lbs.
5. Sandbags shall be made of a durable material that resists upon weatherour and will not allow sand to escape through the seams or the bag.
6. Rubber tailstands designed for channelizing devices should not be used for ballast on portable sign supports. Sign supports designed and manufactured for the purpose of supporting signs may be used for ballast.
7. Sandbags shall only be placed along or next to or over the base supports of the traffic control device and shall not be suspended above ground level or between the base supports. Sandbags shall not be allowed to be placed along the length of the skids to weigh down the sign support.
8. Sandbags shall NOT be placed under the skids and shall not be used to level sign supports placed on slopes.

FLAGS ON SIGNS

1. Flags may be used to draw attention to warning signs. When used, the flag shall be 16 inches square or larger and shall be orange or fluorescent red-orange in color. Flags shall not be allowed to cover any portion of the sign face.

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BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-21

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LAKEWOOD DRIVE

90% CONSTRUCTION PLANS

CITY OF BURLESON
JOHNSON COUNTY, TX

NO.	REVISION DATE

CHISHOLM SUMMIT

GOODWIN AND MARSHALL, INC.
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STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	2/14/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	TC-02

TRAFFIC CONTROL

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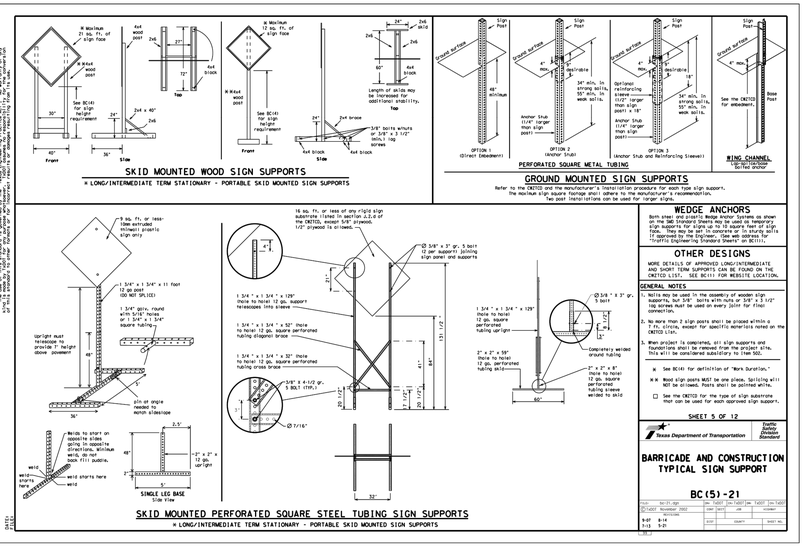

SKID MOUNTED WOOD SIGN SUPPORTS

* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS

PERFORATED SQUARE METAL TUBING

GROUND MOUNTED SIGN SUPPORTS

Refer to the CMTCD and the manufacturer's installation procedure for each type sign support. The maximum sign square footage shall adhere to the manufacturer's recommendation. Two post installations can be used for larger signs.

SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS

WEDGE ANCHORS

Both steel and plastic Wedge Anchor Systems as shown on the TMC Standard Sheets may be used as temporary sign supports for signs up to 10 ft square feet of sign area. Signs larger than 10 ft square feet may be used if so IT approved by the Engineer. (See web address for "Traffic Engineering Standard Sheets" on BC(11).

OTHER DESIGNS

MORE DETAILS OF APPROVED LONG/INTERMEDIATE AND SHORT TERM SUPPORTS CAN BE FOUND ON THE CMTCD LIST. SEE BC(1) FOR WEBSITE LOCATION.

GENERAL NOTES

1. Bolts may be used in the assembly of wooden sign supports, but 3/8" bolts with nuts or 5/8" x 1 1/2" lag screws must be used on every joint for final connection.
2. No more than 2 sign posts shall be placed within a 7 ft. circle, except for specific exemptions noted on the CMTCD list.
3. When project is completed, all sign supports and foundations shall be removed from the project site. This will be considered subsidiary to Item 502.

* See BC(4) for definition of "Work Duration."

** Wood sign posts MUST be one piece. Splicing will NOT be allowed. Posts shall be painted white.

□ See the CMTCD for the type of sign substrate that can be used for each approved sign support.

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Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-21

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WARNING LIGHTS

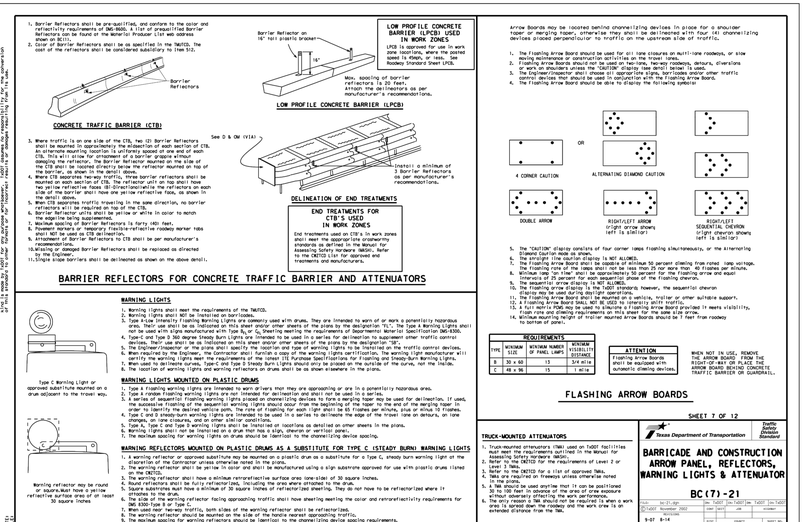
1. Warning lights shall meet the requirements of the TMUTCD.
2. Warning lights shall NOT be installed on barricades.
3. Type A flashing warning lights are intended to be used primarily used with drums. They are intended to warn of or warn a potentially hazardous condition from low mobility units located on the shoulder or other area of the plane by the designation "FL". The Type A Warning Lights shall not be used with signs manufactured with Type B, or C, Sheeting meeting the requirements of Departmental Material Specification DMS-8300.
4. Type-C and Type D 360 degree Steady Burn Lights are intended to be used in a series to define or delineate by supplement other traffic control devices. Their use shall be as indicated on this sheet and/or other sheets of the plans by the designation "SB".
5. Type A, Type C and Type D warning lights shall be installed at locations as detailed on other sheets in the plans.
6. When required by the Engineer, the Contractor shall furnish a copy of the warning lights certification. The warning light manufacturer will certify the warning lights meet the requirements of the latest ITE Purchase Specifications for Flashing and Steady-Burn Warning Lights.
7. When used to delineate curves, Type-C and Type D Steady Burn Lights should only be placed on the outside of the curve, not the inside.
8. The location of warning lights and warning reflectors on drums shall be as shown elsewhere in the plans.

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A rotating flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing devices to form a merging taper may be used for delineation. If used, the first light in the series shall be placed at the beginning of the merging taper and the last light at the end of the merging taper in order to identify the desired vehicle path. The rate of flashing for each light shall be 45 flashes per minute, plus or minus 10 flashes.
4. Type C and D steady-burn warning lights are intended to be used in a series to delineate the edge of the travel lane on detours, on lane closures, on lane closures, and on other similar conditions.
5. Type A, Type C and Type D warning lights shall be installed at locations as detailed on other sheets in the plans.
6. When used to delineate curves, Type-C and Type D Steady Burn Lights should only be placed on the outside of the curve, not the inside.
7. The maximum spacing for warning lights on drums should be identical to the channelizing device spacing.

WARNING REFLECTORS MOUNTED ON PLASTIC DRUMS AS A SUBSTITUTE FOR TYPE C STEADY BURN WARNING LIGHTS

1. A warning reflector or approved substitute may be mounted on a plastic drum as a substitute for a type C, steady burn warning light at the discretion of the Contractor unless otherwise noted in the plans.
2. The warning reflector shall be yellow in color and shall be manufactured using a sign substrate approved for use with plastic drums listed in the CMTCD.
3. The warning reflector shall have a minimum retroreflective surface area totaling of 30 square inches.
4. Round reflectors shall be fully reflectorized, including the area where attached to the drum.
5. Square substrates shall have a minimum of 30 square inches of reflectorized sheeting. They do not have to be reflectorized where it contacts the drum.
6. The color of the warning reflector facing approaching traffic shall have sheeting meeting the color and retroreflectivity requirements for DMS 8300-Type B or Type C.
7. When used near heavy traffic, both sides of the warning reflector shall be reflectorized.
8. When used to delineate curves, warning reflectors shall be placed on the outside of the curve, not the inside.
9. The maximum spacing for warning reflectors should be identical to the channelizing device spacing requirements.



BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS

Arrow Boards may be located behind channelizing devices in place for a shoulder taper or merging taper, otherwise they may shall be delineated with four (4) channelizing devices placed perpendicular to traffic on the upstream side of traffic.

1. The Flashing Arrow Board should be used for all lane closures on multi-lane roadways, or slow moving maintenance or construction activities on the travel lanes.
2. Flashing Arrow Boards should not be used on two-lane, two-way roadways, detours, diversions or on the shoulder unless the Engineer feels it is necessary.
3. The Engineer/Inspector shall choose all appropriate signs, barricades and/or other traffic control devices that should be used in conjunction with the Flashing Arrow Board.
4. The Flashing Arrow Board should be able to display the following symbols:

5. The "CAUTION" display consists of four corner lamps flashing simultaneously, or the alternating diamond Caution mode as shown.
6. The one-light line caution display is NOT ALLOWED.
7. The flashing arrow display shall have a minimum of 50 percent dimming from rated lamp voltage. The flashing rate of the lamps shall not be less than 25 nor more than 40 flashes per minute.
8. Minimum lamp "on time" shall be approximately 50 percent for the flashing arrow and equal "on time" and "off time" for the sequential phase of the flashing chevron.
9. The sequential arrow display is NOT ALLOWED.
10. The flashing arrow display is the TxDOT standard; however, the sequential chevron display may be used with approval of the Engineer.
11. The flashing arrow board shall be mounted on a vehicle, trailer or other suitable support.
12. A Flashing Arrow Board SHALL NOT BE USED to intensify shift traffic.
13. A full matrix PCMS may be used to simulate a Flashing Arrow Board provided it meets visibility, sign size and dimming requirements on this sheet for the same size arrow.
14. The minimum size and weight of trailer mounted Arrow Boards should be 7 feet from roadway to bottom of panel.

REQUIREMENTS				
TYPE	MINIMUM SIZE	MINIMUM NUMBER OF PANEL LAMPS	MINIMUM VISIBILITY DISTANCE	
B	30 x 60	13	1 mile	
C	48 x 96	15	1 mile	

ATTENTION

Flashing Arrow Boards shall be equipped with automatic dimming devices.

WHEN NOT IN USE, REMOVE THE ARROW BOARD FROM THE ROADWAY OR PLACE THE ASSEMBLY IN A NON-HAZARDOUS TRAFFIC BARRIER OR GUARDRAIL.

FLASHING ARROW BOARDS

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Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION ARROW PANEL, REFLECTORS, WARNING LIGHTS & ATTENUATOR

BC(7)-21

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TRUCK-MOUNTED ATTENUATORS

1. Truck-mounted attenuators (TMA) used on TxDOT facilities must meet the requirements outlined in the Manual for Assessing Safety Hardware (MASH).
2. Refer to the CMTCD for the requirements of Level 2 or Level 3 TMA.
3. Refer to the CMTCD for a list of approved TMAs.
4. TMAs are required on freeways unless otherwise noted in the plans.
5. The TMA shall be used anytime that it can be positioned 30 to 100 feet in advance of the area of core exposure without adversely affecting the work performance.
6. The TMA shall be placed 30 to 100 feet in advance of the work area to shield drum the roadway and the work area to an extended distance from the TMA.

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Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-21

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RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

(The Engineer may approve other messages not specifically covered here.)

WHEN NOT IN USE, REMOVE THE PCMS FROM THE RIGHT-OF-WAY OR PLACE THE PCMS BEHIND BARRIER OR GUARDRAIL WITH SIGN PANEL TURNED PARALLEL TO TRAFFIC

PORTABLE CHANGEABLE MESSAGE SIGNS

1. The Engineer/Inspector shall approve all messages used on portable changeable message signs (PCMS).
2. Messages on PCMS should contain no more than 8 words (about four to five abbreviated words per word), not including simple words such as "TO, "FOR," "AT," etc.
3. Messages should consist of a single phase, or two phases that alternate. Three-phase messages are not allowed. Each phase of the message should convey a single thought, and must be understood by itself.
4. Use the word "EXIT" to refer to an exit ramp on a freeway. I.e., "EXIT CLOSED." Do not use the term "RAMP."
5. Use standard highway route designations (I-35, US, SH, FM) along with the number when referring to a roadway.
6. When in use, the bottom of a one-phase PCMS message panel should be a minimum 9 feet above the roadway, when possible.
7. The message term "WEEKEND" should be used only if the work is to begin on Friday evening and/or continue into Monday morning.
8. Actual days and hours of work should be displayed on the PCMS if work is to begin on Friday evening and/or continue into Monday morning.
9. Use the "alternating" display mode on the PCMS when it is desirable for displaying a two phase message on a PCMS. Each phase may be displayed for either four seconds each or for three seconds each.
10. Do not "flash" messages or words included in a message. The message should be steady burn or continuous with a dissipate.
11. Use the "multi-page" display mode for two phase messages. I.e., keeping two lines of the message the same and changing the third line.
12. Do not use the word "Danger" in message.
13. Do not display the message "LANES SHIFT LEFT" or "LANES SHIFT RIGHT" on screens as motorists may not understand the message.
14. Do not display messages that scroll horizontally or vertically across the face of the sign.
15. The following table lists abbreviated words and two-word phrases that may be used on PCMS. Other words may be abbreviated, but should not be displayed together. Words or phrases not on this list should not be abbreviated, unless shown in the TMUTCD.
16. Character height should be at least 18 inches for trailer mounted units. They should be visible from at least 1,000 ft. and be read by motorists in time for them to react to the message at the posted speed limit in daylight. Truck mounted units must have a character height of 12 inches and must be legible from at least 400 feet.
17. If disabled, the PCMS should default to an illegible display that will not display any message and it will be used to alert drivers that the PCMS has malfunctioned. A pattern such as a series of horizontal solid bars is appropriate.

WORD OR PHRASE	ABBREVIATION	WORD OR PHRASE	ABBREVIATION
Access Road	ACCS RD	Major	MAJ
Alternate	ALT	Miles	MI
Avenue	AV	Minutes Per Hour	MPH
Be Advised	BE ADVISED	Minor	MNR
Bridge	BRDG	Monday	MON
Caution	CAUTION	Normal	NORM
Center	CNTR	Northbound	(SOUTH) N
Construction	CONST	Parking	PKG
Crash	CRASH	Pavement	PVMT
Crossing	XING	Right Lane	RT LN
Delayed	DELAYED	Right Turn	RT TURN
Detour	DETOUR	Service Road	SERV RD
Direction	DIR	Shoulder	SHLDR
Eastbound	(COUNTY) E	Slippery	SLIPP
Emergency	EMER	Southbound	(COUNTY) S
Entrance, Ramp	ENTR RDY	Speed	SPD
Express Lane	EXP LN	Street	ST
Expressway	EXPWY	Temporary	TEMP
Fahrenheit	(###) F	Thursday	THUR
Fog Ahead	FOG AHD	Tomorrow	TOMR
Freeway	FWY	Traffic	TRAF
Freeway Blocked	FWY BLKD	Tuesday	TUES
Friday	FRI	Turn Lane	LT TURN
Hazardous Driving Conditions	HAZ DRIVING	Wednesday	WED
Hour Delay, Hours Delay	HOUR(S)	Weight Limit	WT LIMIT
Information	INFO	Westbound	(COUNTY) W
Interstate	(I-##)	Will Not	WON'T
It Is	IT'S	Weekend	WKND
Junction	JCT		
Left	LFT
Left Lane	LFT LN
Lane Closed	LN CLOSED
Lower Level	LWR LEVEL
Maintenance	MAINT

Roadway designation = IH-number, US-number, SH-number, FM-number

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

FREEWAY CLOSED X MILE	FRONTAGE ROAD CLOSED	
ROAD CLOSED AT SH XXX	SHOULDER CLOSED XXX FT	
ROAD CLSD AT FM XXXX	RIGHT LN CLOSED XXX FT	
RIGHT X LANES CLOSED	RIGHT X LANES OPEN	
CENTER LANE CLOSED	DAYTIME LANE CLOSURES	
NIGHT LANE CLOSURES	I-XX SOUTH EXIT CLOSED	
VARIOUS LNS CLOSED	EXIT XXX CLOSED X MILE	
EXIT CLOSED	RIGHT LN TO BE CLOSED	
MALL DRIVEWAY CLOSED	X LANES CLOSED TUE - FRI	
XXXXXXXX BLVD CLOSED		

Other Condition List

ROADWORK XXX FT	ROAD REPAIRS XXXX FT
FLAGGER XXXX FT	LANE NARROWS XXXX FT
RIGHT LN NARROWS XXXX FT	TWO-WAY TRAFFIC XX MILE
MERGING TRAFFIC XXXX FT	CONST TRAFFIC XXX FT
LOOSE GRAVEL XXXX FT	UNEVEN LANES XXXX FT
DETOUR X MILE	ROUGH ROAD XXXX FT
ROADWORK PAST XX XXXX	ROADWORK XXX FT FRI-SUN
BUMP XXXX FT	US XXX EXIT X MILES
TRAFFIC SIGNAL XXXX FT	LANES SHIFT *

* LANES SHIFT in Phase 1 must be used with STAY IN LANE in Phase 2.

Phase 2: Possible Component Lists

Action to Take/Effect on Travel List	Location List	Warning List	** Advance Notice List
MERGE RIGHT	FORM X LINES RIGHT	SPEED LIMIT XX MPH	TUE-FRI XX AM- XX PM
DETOUR NEXT X EXITS	USE XXXX RD EXIT	MAXIMUM SPEED XX MPH	APR XX- XX X PM-X AM
USE EXIT XXX	USE EXIT I-XX NORTH	MINIMUM SPEED XX MPH	BEGINS MONDAY
STAY ON US XXX SOUTH	USE I-XX E TO I-XX N	ADVISORY SPEED XX MPH	BEGINS MAY XX
TRUCKS USE US XXX N	WATCH FOR TRUCKS	RIGHT LANE EXIT	MAY X-X XX PM - XX AM
WATCH FOR TRUCKS	EXPECT DELAYS	USE CAUTION	NEXT FRI-SUN
EXPECT DELAYS	PREPARE TO STOP	DRIVE SAFELY	XX AM TO XX PM
REDUCE SPEED XXX FT	END SHOULDER USE	DRIVE WITH CARE	NEXT TUE AUG XX
USE OTHER ROUTES	WATCH FOR WORKERS		TONIGHT XX PM- XX AM
STAY IN LANE *			

* LANES SHIFT in Phase 1 must be used with STAY IN LANE in Phase 2.

** See Application Guidelines Note 6.

APPLICATION GUIDELINES

1. Only 1 or 2 phases are to be used on a PCMS.
2. A 1st phase can be selected from the "Road/Lane/Ramp Closure List" and the "Other Condition List".
3. A 2nd phase can be selected from the "Action to Take/Effect on Travel List", Location, General Warning, or Advance Notice List.
4. A Location Phase is necessary only if a distance or location is not included in the first phase selected.
5. If two PCMS are used in sequence, they must be separated by at least two blank PCMS. If only one PCMS is used to display two phases, they should be understandable by themselves.
6. For advance notice, when the current date is within seven days of the first day that the condition described will be replaced with days of the week. Advance notification should typically be for no more than one week prior to the work.

WORDING ALTERNATIVES

1. The words RIGHT, LEFT and ALL can be interchanged as appropriate.
2. Abbreviations in the phrases "Road/Lane/Ramp Closure List" and the "Other Condition List" can be interchanged as appropriate.
3. EAST, WEST, NORTH and SOUTH (or abbreviations E, W, N and S) can be interchanged as appropriate.
4. Route designations (I-35, SH 130, etc.) may be switched as appropriate.
5. ROAD, HIGHWAY and FREEWAY can be interchanged as needed.
6. AHEAD may be used instead of distances if necessary.
7. FT and MI, MILE and MILES interchanged as appropriate.
8. AM and PM may be interchanged as appropriate between the two phases.
9. Distances or delays can be withheld from the message if a location phase is used.

PCMS SIGNS WITHIN THE R.O.W. SHALL BE BEHIND GUARDRAIL OR CONCRETE BARRIER OR SHALL HAVE A MINIMUM OF FOUR (4) PLASTIC DRUMS PLACED PERPENDICULAR TO TRAFFIC ON THE UPSTREAM SIDE OF THE PCMS, WHEN EXPOSED TO ONE DIRECTION OF TRAFFIC. WHEN EXPOSED TO TWO WAY TRAFFIC, THE FOUR DRUMS SHOULD BE PLACED WITH ONE DRUM AT EACH OF THE FOUR CORNERS OF THE UNIT.

FULL MATRIX PCMS SIGNS

1. When full Matrix PCMS signs are used, the character height and legibility/visibility requirements shall be maintained as listed in Note 15 under "PORTABLE CHANGEABLE MESSAGE SIGNS" above.
2. Refer to the CMTCD for the "Trigger Symbol" (CSO-T) are represented graphically on the full Matrix PCMS sign and, with the approval of the Engineer, it shall maintain the legibility/visibility requirement listed above.
3. When symbol signs are represented graphically on the full Matrix PCMS, they shall only supplement the use of the static sign represented, and shall not substitute for, or replace that sign.
4. A full matrix PCMS may be used to simulate a flashing arrow board provided it meets the visibility, flash rate and dimming requirements on BC(7), for the same size arrow.

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Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BC(6)-21

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STATE OF TEXAS — BRENT A. CALDWELL — 108515 — LICENSED PROFESSIONAL ENGINEER — 09/28/22

NO.	REVISION DATE

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS

CITY OF BURLESON

JOHNSON COUNTY, TX

JOB NO. :	10745
DATE :	2/14/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	TC-03

TRAFFIC CONTROL

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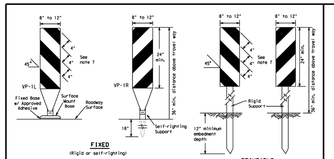
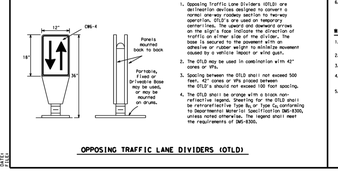
VERTICAL PANELS (VPs)

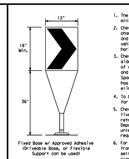


1. Vertical Panels (VPs) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations, but VP's with retroreflective sheeting are required and other areas such as lane transitions where positive daytime and nighttime delineation is required. The Engineer/Inspector shall refer to the Roadway Design Manual for additional requirements on the use VP's with flashers.
3. VP's should be mounted back to back if used at the edge of curb adjacent to two-way two lane roadways. Strikes on VP's mounted back to back from opposing traffic should always slope downward toward the travel lane.
4. VP's used on expressways and freeways or other high speed roadways shall have 36 square inches of retroreflective surface facing traffic.
5. Self-righting supports are available with portable bases. See "Compliant Work Zone Traffic Control Devices List" (CWTCD).
6. Sheeting for the VP's shall be retroreflective Type A or Type B conforming to Departmental Material Specification DMS-8300, unless noted otherwise.
7. Vertical panels with reflective material on the vertical panel 15 inches or greater, a panel only or 6 inches shall be used.

OPPOSING TRAFFIC LANE DIVIDERS (OTLD)



1. Opposing Traffic Lane Dividers (OTLD) are used to separate traffic flow in areas of normal one-way roadway operation to two-way operation. OTLD's are used on temporary centerlines. The upward and downward arrows on the sight face indicate the direction of travel for traffic on each side. The panel or base is secured to the pavement with an adhesive or rubber weight to minimize movement caused by a vehicle impact or wind gust.
2. The OTLD may be used in combination with 42" cones or VPs.
3. Spacing between the OTLD shall not exceed 500 feet. 42" cones or VPs placed between the OTLD's should not exceed 100 foot spacing.
4. The OTLD shall be shown as a Type III Barricade on the TCP. The OTLD shall be retroreflective Type B_W or Type C_W conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.



CHEVRONS

1. The chevron shall be a vertical rectangle with a minimum size of 12 by 18 inches.
2. Chevrons are intended to give notice of a sharp change of alignment with the direction of travel and are normally used in series. Their use for vehicle operators with regard to changes in horizontal alignment of the roadway.
3. Chevrons, when used, shall be erected on the outside of a sharp curve or turn, or on the far side of an intersection, with the apex of the sign and on right angles to approaching traffic. Spacing should be such that the motorist always has three signs, until the change in alignment eliminates its need.
4. To be effective, the chevron should be visible for at least 500 feet.
5. Chevrons may be used in advance with a black nonretroreflective legend. Sheeting for the chevron shall be retroreflective Type B_W or Type C_W conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.

LONGITUDINAL CHANNELIZING DEVICES (LCD)

1. LCDs are preformatted, lightweight, deformable devices that are highly visible, have good target value and can be connected together. They are not designed to cannibalize or redirect a vehicle on impact.
2. LCDs may be used instead of a line of cones or drums.
3. LCDs shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWTCD/LCD.
4. LCDs should not be used to provide positive protection for pedestrians, pedestrians or workers.
5. LCDs shall be supplemented with retroreflective delineation as required for temporary barriers on BC(1) when placed roughly parallel to the travel lanes.
6. LCDs used as barricades placed perpendicular to traffic should have at least one row of reflective sheeting that is visible to approaching traffic as required for Type III barricades on BC(10). Place reflective sheeting near the top of the LCD along the full length of the device.

WATER BALLASTED SYSTEMS USED AS BARRIERS

1. Water ballasted systems used as barriers shall not be used solely to channelize road users, but also to protect the work space per the appropriate Manual for Assessing Safety Hardware (MASH) crashworthiness assessed on temporary barriers and Test Level 3 (TL-3).
2. Water ballasted systems used to channelize vehicular traffic shall be supplemented with retroreflective delineation or channelizing devices to improve daytime/nighttime visibility. They may also be supplemented with pavement markings. Place reflective sheeting near the top of the unit along the full length of the device. Follow its application and installation requirements specific to the devices, and used only when shown on the CWTCD/LCD.
3. Water ballasted systems used as barriers should not be used for a merging taper except in low speed (less than 45 MPH) urban areas. When used on a taper in a low speed urban area, the taper shall be delineated and the taper should be designed to optimize road user operations considering the road design geometric conditions.
4. Water ballasted systems used as barriers shall be filled with water. Before use, they should be enhanced as per manufacturer recommendations or filled to a point outside the crash zone.

If used to channelize pedestrians, longitudinal channelizing devices or water ballasted systems must have a continuous detectable bottom for users of long canes and the top of the unit shall not be less than 32 inches in height.

HOLLOW OR WATER BALLASTED SYSTEMS USED AS LONGITUDINAL CHANNELIZING DEVICES OR BARRIERS

GENERAL NOTES

1. Work Zone channelizing devices illustrated on this sheet may be installed on a flat, tangent, level roadway section for clarity of the typical. On high speed roadways, the Engineer/Inspector shall ensure that spacing and placement is uniform and in accordance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
2. Channelizing devices shown on this sheet may have a driveable, fixed or self-righting base. The appropriate type of channelizing devices must be specified in the General Notes or other plan sheets.
3. Channelizing devices on self-righting supports should be used in work zone areas where channelizing devices are frequently impacted by errant vehicles or vehicles rerouted wind gusts making alignment of the channelizing devices difficult. Self-righting supports should be specified in the General Notes or other plans in the plans. These devices shall conform to the TMUTCD and the "Compliant Work Zone Traffic Control Devices List" (CWTCD).
4. Channelizing devices damaged by impacts, which distort and replace damaged, nonreflective, faded, or broken devices and bases as required by the Engineer/Inspector. The Contractor shall be required to maintain proper device spacing and alignment.
5. Portable bases shall be fabricated from virgin and/or recycled rubber. The bases shall be ballasted with sand or water.
6. Pavement surfaces shall be prepared in a manner that ensures proper bonding between the adhesives, the fixed mount bases and the pavement surface. Adhesives shall be prepared and applied according to the manufacturer's recommendations.
7. The installation and removal of channelizing devices shall not cause detrimental effects to the final pavement surfaces, including pavement surface discoloration or surface longevity. Driveable bases shall not be permitted on final pavement surfaces. The Engineer/Inspector shall approve all application and removal procedures of fixed bases.

Posted Speed	Formula	Minimum Desirable Taper Lengths ft			Suggested Maximum Spacing of Channelizing Devices	
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60'
35		205'	225'	245'	35'	70'
40		265'	295'	320'	40'	80'
45		450'	495'	540'	45'	90'
50		500'	550'	600'	50'	100'
55	$L = WS$	550'	605'	660'	55'	110'
60		600'	660'	720'	60'	120'
65		650'	715'	780'	65'	130'
70		700'	770'	840'	70'	140'
75		750'	825'	900'	75'	150'
80		800'	880'	960'	80'	160'

W=Taper lengths have been rounded off.
L=Length of Taper (ft.) W=Width of Offset (ft.)
S=Posted Speed (MPH)

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS.

SHEET 9 OF 12

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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8-14 5-21				

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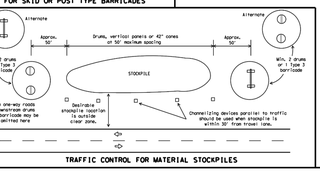
TYPE 3 BARRICADES

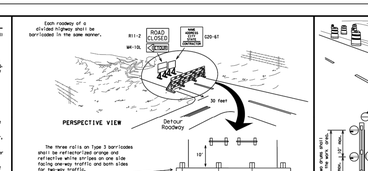
1. Refer to the Compliant Work Zone Traffic Control Devices List (CWTCD) for details of the Type 3 Barricades and a list of all materials used in the construction of Type 3 Barricades.
2. Type 3 Barricades shall be used on each end of construction projects closed to all traffic.
3. Barricades extending across a roadway should have stripes that slope downward in the direction of the shoulder on which traffic is required to pass. When both right and left turns are provided, the stripes should slope downward in both directions toward the center of roadway.
4. Where a ditch or other hazard is parallel to the roadway, stripes should slope downward to the left, for the left side of the roadway, stripes should slope downward to the right.
5. Type 3 Barricades should be used when only on the back of one barricade/rails. The maximum height of letters and/or capping caps used for identification shall be 6".
6. Barricades shall be placed parallel to traffic unless an adequate sight distance is provided.
7. Warning lights shall NOT be installed on barricades.
8. Where barricades require the use of weights to keep from running over, the use of sandbags with dry, cohesionless sand is recommended. The sandbags shall be placed on the lowest rail of the barricade. Each sandbag should weigh a minimum of 35 lbs and a maximum of 50 lbs. Sandbags shall be made of a durable material that tears upon vehicular impact. Rubber tires or tire liner tubes shall not be used for sandbags. Sandbags shall only be placed along or upon the base of the barricade. Sandbags shall be placed in a manner above ground level or hung with rope, wire, chains or other fasteners.
9. Sheeting for barricades shall be retroreflective Type A or Type B conforming to Departmental Material Specification DMS-8300 unless otherwise noted.

Barricades shall NOT be used as a sign support.

TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



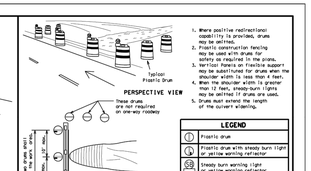
TRAFFIC CONTROL FOR MATERIAL STOCKPILES



The three rails on Type 3 barricades shall be retroreflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.

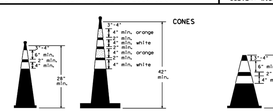
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



1. Where positive redirectional control is not provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical panels on flexible support may be used in place of the drums where the sheet width is less than 4 feet.
4. When the shoulder width is greater than 12 feet, steady-burn lights may be omitted if drums are used.
5. Drums must extend the length of the culvert sheeting.

CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



28" Cones shall have a minimum weight of 9 1/2 lbs.
42" 2-piece cones shall have a minimum weight of 30 lbs. including base.

1. Traffic cones and tubular markers shall be predominantly orange, and shall be used to mark hazards on roadways.
2. One-piece cones have the body and base of the cone molded in one consolidated unit. Two-piece cones have a cone shaped body and a separate rubber base, or ballast, that is added to keep the device upright and in place.
3. Two-piece cones may have a handle or loop extending up to 8" above the minimum height for the cone body. The loop shall be at least 4" wide.
4. Cones or tubular markers shall have white and orange reflective bands as shown above. The reflective bands shall have a smooth, sealed outer surface, and shall be a minimum 4" wide. Refer to Departmental Material Specification DMS-8300 Type A or Type B.
5. 28" cones and tubular markers are generally suitable for short duration and mobile maintenance work as defined on BC(4). These should not be used on high-speed, long-term highway work unless personnel is on-site to maintain them in an upright position.
6. 42" two-piece cones, vertical panels or drums are suitable for all work zone durations.
7. Cones or tubular markers used on each project should be of the same size and shape.

SHEET 10 OF 12

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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WORK ZONE PAVEMENT MARKINGS

GENERAL

1. The Contractor shall be responsible for maintaining work zone and existing pavement markings, in accordance with the standard specifications and special provisions, on all roadways open to traffic within the CSJ limits unless otherwise stated in the plans.
2. Color, patterns and dimensions shall be in conformance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
3. Additional supplemental pavement marking details may be found in the plans or specifications.
4. Pavement markings shall be installed in accordance with the TMUTCD and as shown on the plans.
5. When short term markings are required on the plans, short term markings shall conform with the TMUTCD, the plans and details as shown on the Standard Plan Sheet RS(STPM).
6. When standard pavement markings are not in place and the roadway is opened to traffic, DO NOT PASS signs shall be erected to mark the beginning of the sections where passing is prohibited and END DO NOT PASS signs at the beginning of sections where passing is permitted.
7. All work zone pavement markings shall be installed in accordance with Item 662, "Work Zone Pavement Markings."

RAISED PAVEMENT MARKERS

1. Raised pavement markers are to be placed according to the patterns on BC(12).
2. All raised pavement markers used for work zone markings shall meet the requirements of Item 672, "RAISED PAVEMENT MARKERS" and Departmental Material Specification DMS-4200 or DMS-4300.

PREFABRICATED PAVEMENT MARKINGS

1. Removable prefabricated pavement markings shall meet the requirements of DMS-8241.
2. Non-removable prefabricated pavement markings (hot) backi shall meet the requirements of DMS-8240.

MAINTAINING WORK ZONE PAVEMENT MARKINGS

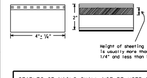
1. The Contractor will be responsible for maintaining work zone pavement markings within the work limits.
2. Work zone pavement markings shall be inspected in accordance with the frequency and reporting requirements of work zone traffic control device inspections as required by Form 599.
3. The markings should provide a visible reference for a minimum distance of 300 feet during normal daylight hours and 150 feet when illuminated by automobile low-beam headlights at night, unless sight distance is restricted by roadway geometrics.
4. Markings failing to meet mile criteria within the first 30 days after placement shall be replaced at the expense of the Contractor as per Specification Item 662.

REMOVAL OF PAVEMENT MARKINGS

1. Pavement markings that are no longer applicable, could create confusion or direct a motorist toward or into the closed portion of the roadway shall be removed or obliterated before the roadway is opened to traffic.
2. The above shall not apply to detours in place for less than three days, where flaggers and/or sufficient channelizing devices are used in lieu of markings to outline the detour route.
3. Pavement markings shall be removed to the fullest extent possible, so as not to leave a discernible marking. This shall be by any method approved by the Engineer that will not damage the surface.
4. The removal of pavement markings may require resurfacing or seal coating portions of the roadway as described in Item 672.
5. Subject to the approval of the Engineer, any method that proves to be successful on a particular type pavement may be used.
6. Grout blasting may be used but will not be required unless specifically shown in the plans.
7. Over-painting of the markings SHALL NOT BE permitted.
8. Removal of raised pavement markers shall be as directed by the Engineer.
9. Removal of existing pavement markings and markers will be paid for directly in accordance with Item 677, "ELIMINATING EXISTING PAVEMENT MARKINGS AND MARKERS," unless otherwise stated in the plans.

10. Black-out marking tape may be used to cover conflicting existing markings for periods less than two weeks when approved by the Engineer.

Temporary Flexible-Reflective Roadway Marker Tabs



STAPLES OR NAILS SHALL NOT BE USED TO SECURE TEMPORARY FLEXIBLE-REFLECTIVE ROADWAY MARKER TABS TO THE PAVEMENT SURFACE

1. Temporary flexible-reflective roadway marker tabs used as guideworks shall meet the requirements of DMS-8242.
2. Tabs destined on mill sheet are to be inspected and accepted by the Engineer or designated representative. Sampling and testing is not normally required, however at the option of the Engineer, either "A" or "B" below may be imposed to assure quality before placement on the roadway.
   A. Select five (5) or more tabs or random from each lot or shipment and test for compliance with Item 672, "Raised Pavement Markers" and Pavement Section to determine specification compliance.
   B. Select five (5) tabs and perform the following test. Affix five (5) tabs at 24 inch intervals on an asphaltic pavement in a straight line, using a medium size passenger vehicle or pickup, run over the markers with the front and rear tires at a speed of 35 to 40 miles per hour, four (4) times in each direction, to a total distance of 1/4 mile. None of the five surfaces shall be torn or displaced as a result of this test.
3. Small design variances may be noted between tab manufacturers.
4. See Standard Sheet RSSTPM for tab placement on new pavements. See Standard Sheet TCP(1-1) for tab placement on seal coat work.

RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

1. Raised pavement markers used as guidemarks shall be from the approved product list, and meet the requirements of DMS-4200.
2. All temporary construction raised pavement markers provided on a project shall be of the same manufacturer.
3. Adhesive for guidemarks shall be bituminous material hot applied or butyl-rubber pad for all surfaces, or thermoplastic for concrete surfaces.

Guidemarks shall be designated as:
YELLOW - two sided reflective surfaces with yellow body.
WHITE - one sided reflective surface with white body.

DEPARTMENTAL MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
TRAFFIC BUTTONS	DMS-4300
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240
REMOVABLE, REFLECTORIZED, PREFABRICATED PAVEMENT MARKINGS	DMS-8241
TEMPORARY FLEXIBLE, REFLECTIVE ROADWAY MARKER TABS	DMS-8242

A list of prequalified reflective raised pavement markers, non-reflective traffic buttons, roadway marker tabs and other pavement marking materials is found at the Material Producer List web address shown on BC(1).

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Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

BC(11)-21

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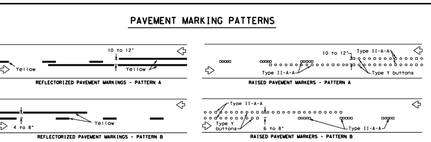
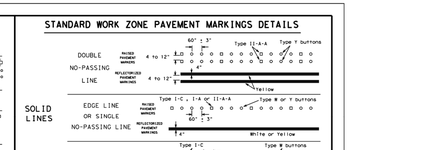
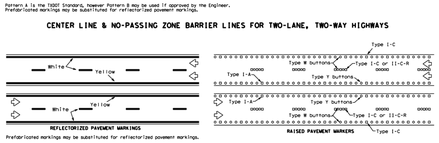
PAVEMENT MARKING PATTERNS

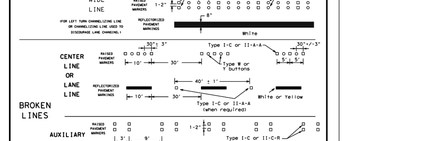




Pattern A is the TxDOT Standard, however Pattern B may be used if approved by the Engineer.
Prefabricated markings may be substituted for reflectorized pavement markings.

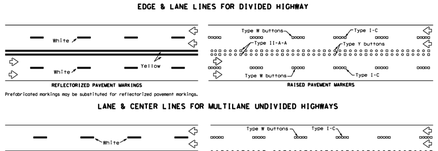
CENTER LINE & NO-PASSING ZONE BARRIER LINES FOR TWO-LANE, TWO-WAY HIGHWAYS

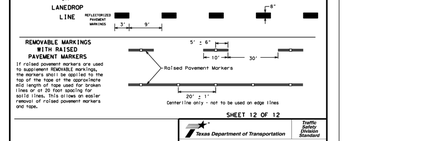




Prefabricated markings may be substituted for reflectorized pavement markings.

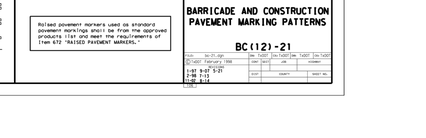
EDGE & LANE LINES FOR DIVIDED HIGHWAY





Prefabricated markings may be substituted for reflectorized pavement markings.

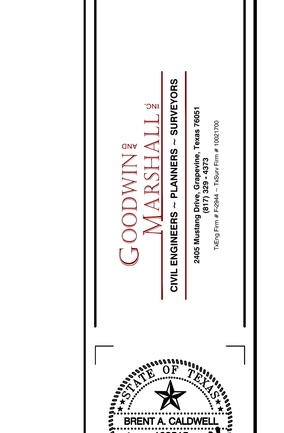
LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS



If raised pavement markers are used to supplement REMOVABLE markings, they shall be placed 2" to 4" from the top of the tape at the approximate mid-length of tape used for broken lines or at 20 foot spacing for solid lines. This allows an easier application of raised pavement markers and tape.

Raised pavement markers used as standard pavement markings shall be from the approved products list and meet the requirements of Item 672 "RAISED PAVEMENT MARKERS."

SHEET 12 OF 12

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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NO.	REVISION DATE

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS

CITY OF BURLESON

JOHNSON COUNTY, TX

GOODWIN MARSHALL INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329-4373
TxEng Firm # F-2844 – TxSurv Firm # 100177-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	2/14/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	TC-04

TRAFFIC CONTROL

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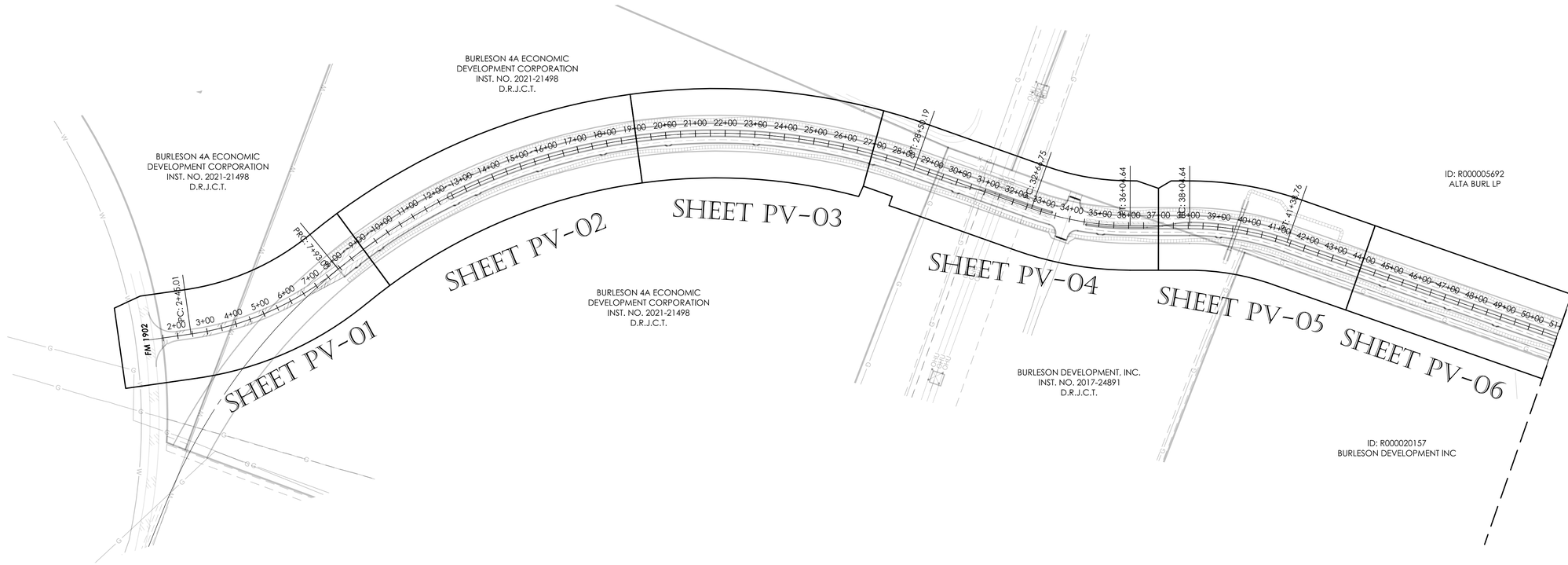
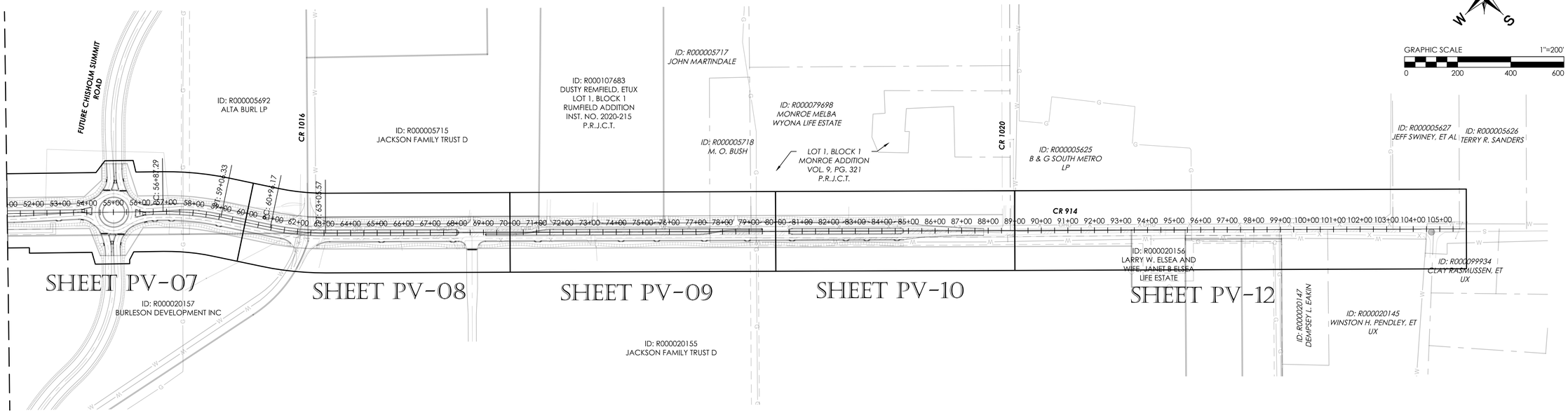
E:\10745 – Bransom Estates\Lakewood\Plans\SHEETS\60% Construction Plans\10745-LAKEWOOD-TC-DTL.dwg Tue Sep 27 2022 15:54





NO.	REVISION DATE

LAKEWOOD DRIVE

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2405 Mustang Drive, Grapevine, Texas 76051
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TxEng Firm # F-2644 – TxSurv Firm # 100170-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	2/18/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	PV-00

PAVING INDEX

BENCH MARK ELEVATION : 852.36

CAPPED IRON ROD WITH CAP STAMPED "RDM" AT THE NORTHWEST CORNER OF THE INTERSECTION OF CR 1902 AND CR 1019, APPROXIMATELY 37 FEET NORTHWEST OF THE CENTERLINE OF CR 1019, APPROXIMATELY 45 FEET NORTHEAST OF THE CENTERLINE OF CR 1902, AND APPROXIMATELY 120 FEET SOUTHWEST OF A DRIVEWAY.

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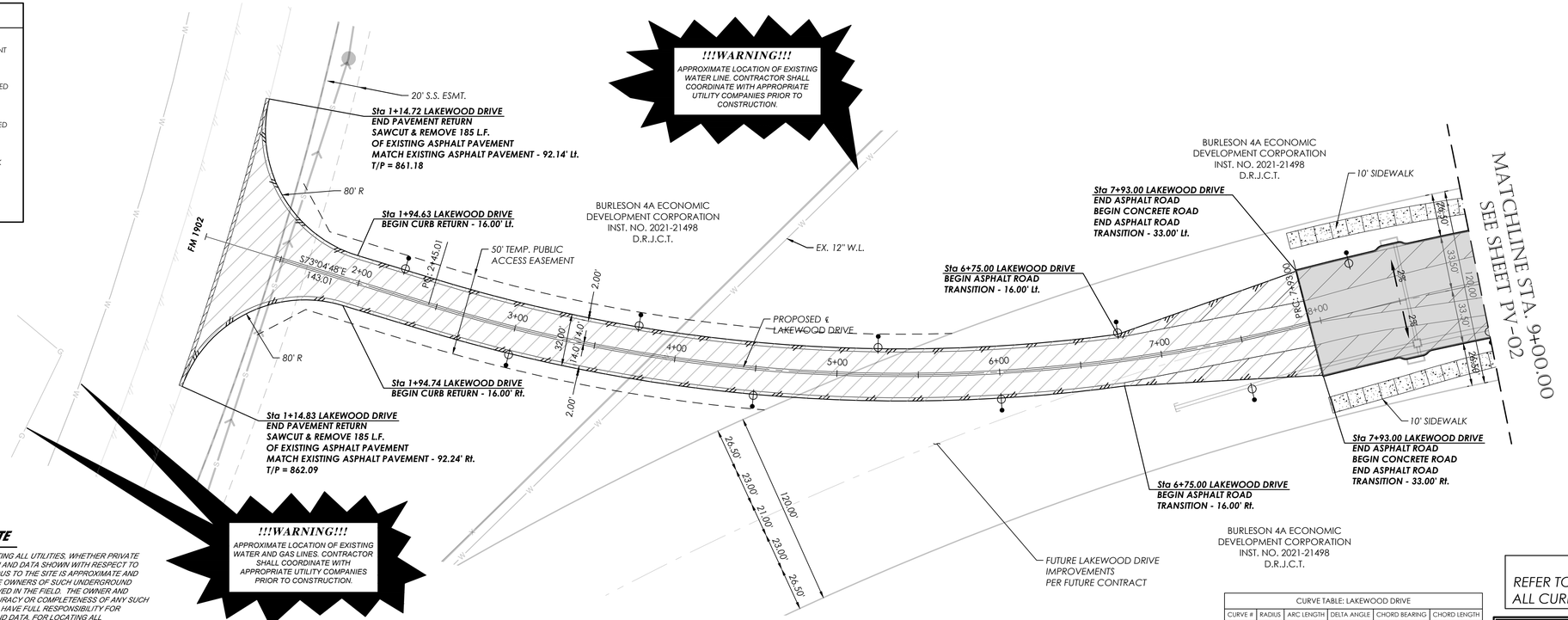
LEGEND

- 8" CONCRETE PAVEMENT
- 4" STAINED AND STAMPED CONCRETE
- 8" STAINED AND STAMPED CONCRETE
- 5" CONCRETE SIDEWALK
- 7" HMAC PAVEMENT



LAKEWOOD DRIVE

CONTRACTOR NOTE

THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UTILITIES, WHETHER PRIVATE OR PUBLIC, PRIOR TO EXCAVATING. THE INFORMATION AND DATA SHOWN WITH RESPECT TO EXISTING UNDERGROUND FACILITIES AT OR CONTIGUOUS TO THE SITE IS APPROXIMATE AND BASED ON INFORMATION AND DATA FURNISHED BY THE OWNERS OF SUCH UNDERGROUND FACILITIES OR ON PHYSICAL APPURTENANCES OBSERVED IN THE FIELD. THE OWNER AND ENGINEER SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ANY SUCH INFORMATION OR DATA, AND THE CONTRACTOR SHALL HAVE FULL RESPONSIBILITY FOR REVIEWING AND CHECKING ALL SUCH INFORMATION AND DATA, FOR LOCATING ALL UNDERGROUND FACILITIES, FOR COORDINATION OF THE WORK WITH THE OWNERS OF SUCH UNDERGROUND FACILITIES DURING CONSTRUCTION, FOR THE SAFETY AND PROTECTION THEREOF, AND REPAIRING ANY DAMAGE THERETO RESULTING FROM THE WORK, THE COST OF ALL OF WHICH WILL BE CONSIDERED AS HAVING BEEN INCLUDED IN THE CONTRACT PRICE. CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY ANY AFFECTED UTILITY COMPANIES OR AGENCIES AT LEAST 48 HOURS PRIOR TO BEGINNING CONSTRUCTION.

GRAPHIC SCALE 1"=40'
0 40 80 120

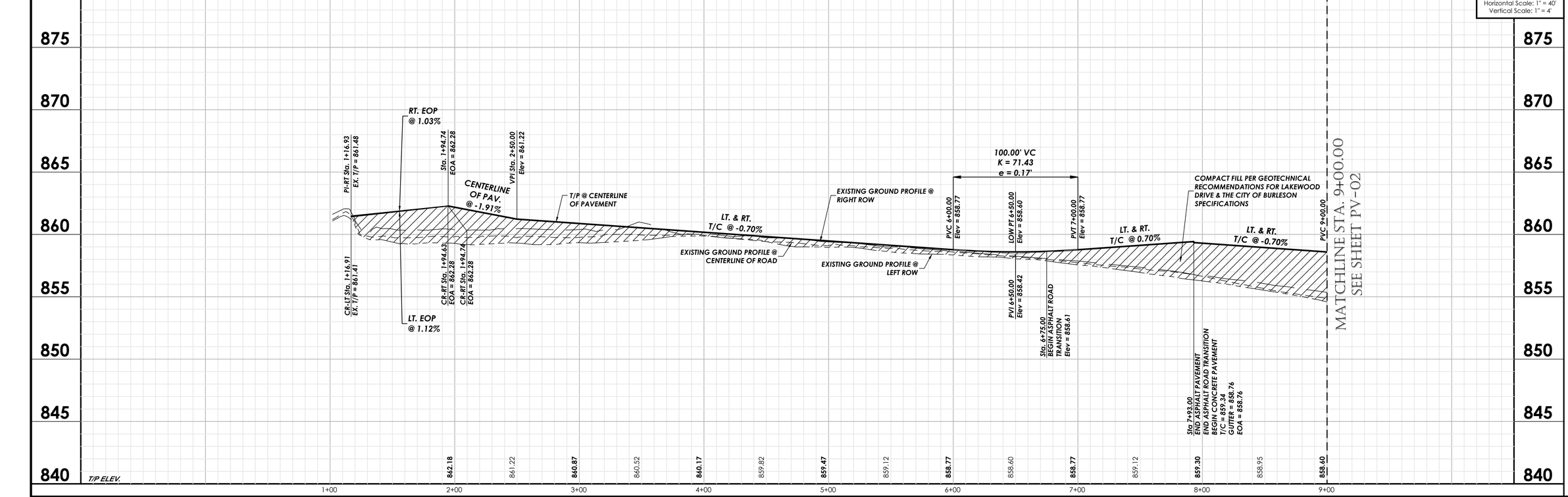
CURVE TABLE: LAKEWOOD DRIVE					
CURVE #	RADIUS	ARC LENGTH	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
C1	1000.00	547.99	031°23'50"	S88°46'43"E	541.15
C2	2000.00	2057.19	058°56'03"	S75°00'36"E	1967.70
C3	1000.00	337.89	019°21'35"	S55°13'22"E	336.28
C4	1000.00	334.12	019°08'37"	S55°19'51"E	332.57
C5	1000.00	219.04	012°32'59"	S39°29'03"E	218.60
C6	1000.00	209.40	011°59'53"	S39°12'29"E	209.02

NOTE:
REFER TO SD SHEETS SD-01 - SD-24 FOR ALL CURB INLET DESIGN INFORMATION

BENCH MARK ELEVATION : 852.36

CAPPED IRON ROD WITH CAP STAMPED "RDM" AT THE NORTHWEST CORNER OF THE INTERSECTION OF CR 1902 AND CR 1019, APPROXIMATELY 37 FEET NORTHWEST OF THE CENTERLINE OF CR 1019, APPROXIMATELY 45 FEET NORTHEAST OF THE CENTERLINE OF CR 1902, AND APPROXIMATELY 120 FEET SOUTHWEST OF A DRIVEWAY.

PROFILE SCALE
Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 4'



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CITY OF BURLESON
SUMMIT

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329-4373
TxEng Firm # F-2644 – TxSurv Firm # 100177-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	6/28/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	PV-01

PAVING PLAN

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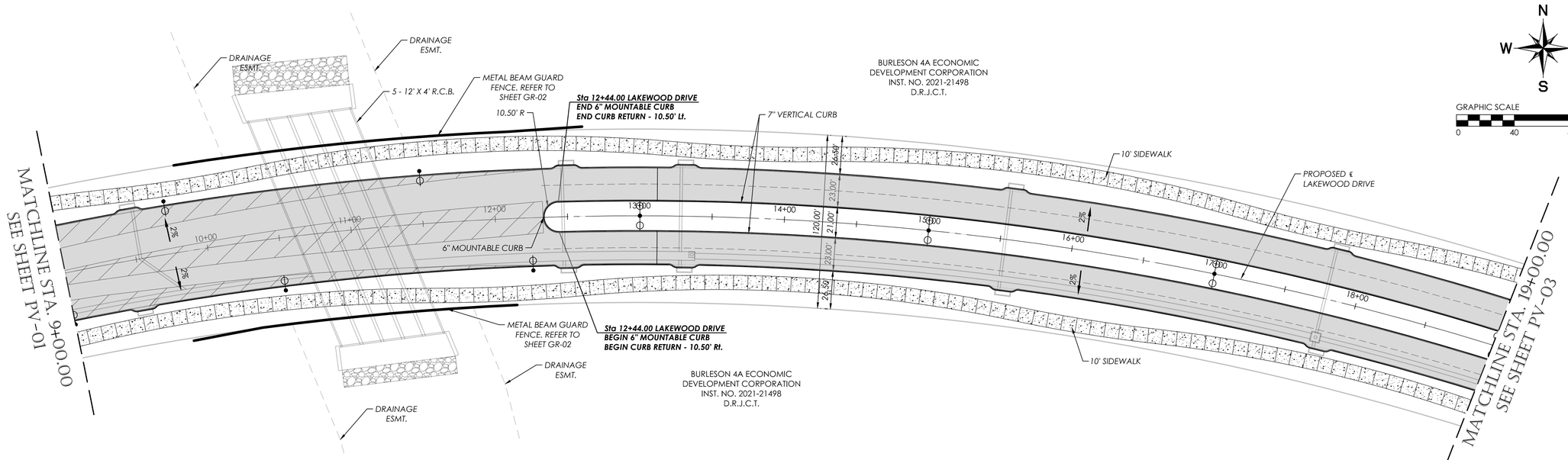

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GRAPHIC SCALE 1"=40'
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CONTRACTOR NOTE

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NOTE:
REFER TO SD SHEETS SD-01 - SD-24 FOR ALL CURB INLET DESIGN INFORMATION

LEGEND

8" CONCRETE PAVEMENT | 4" STAINED AND STAMPED CONCRETE | 8" STAINED AND STAMPED CONCRETE | 5" CONCRETE SIDEWALK | 7" HMAC PAVEMENT

LAKEWOOD DRIVE

CURVE TABLE: LAKEWOOD DRIVE

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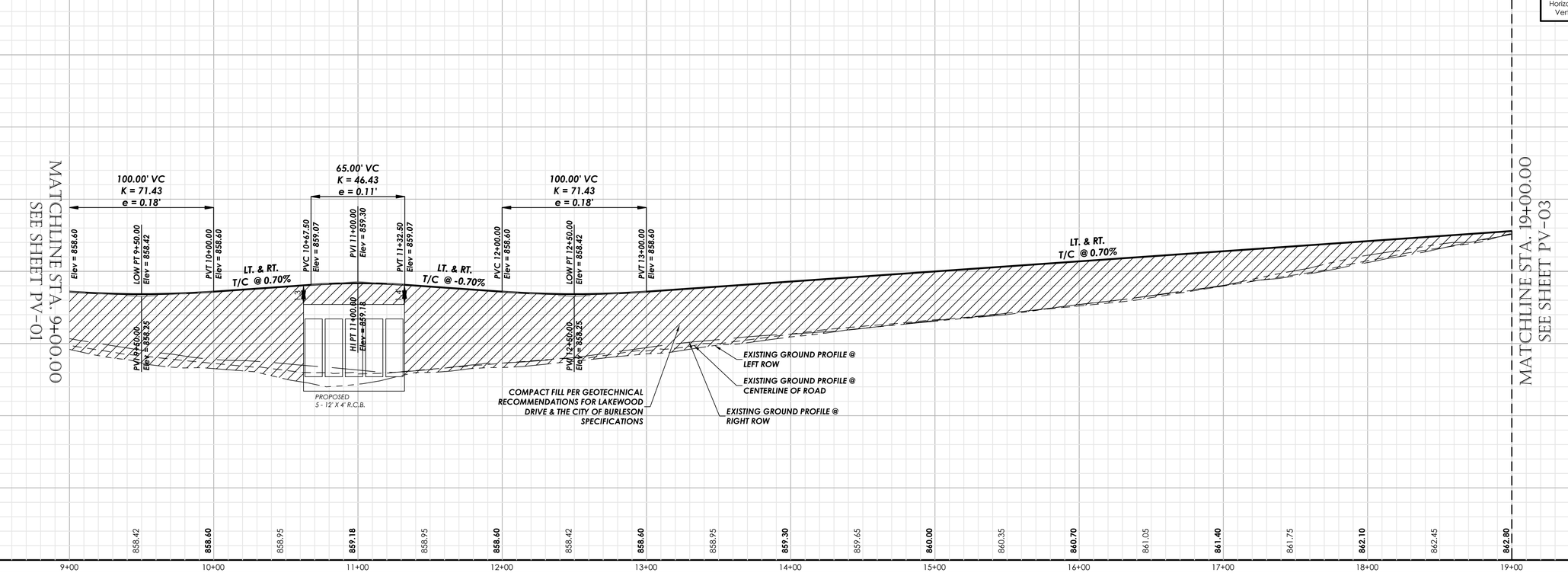
BENCH MARK ELEVATION : 852.36

CAPPED IRON ROD WITH CAP STAMPED "RDM" AT THE NORTHWEST CORNER OF THE INTERSECTION OF CR 1902 AND CR 1019, APPROXIMATELY 37 FEET NORTHWEST OF THE CENTERLINE OF CR 1019, APPROXIMATELY 45 FEET NORTHEAST OF THE CENTERLINE OF CR 1902, AND APPROXIMATELY 120 FEET SOUTHWEST OF A DRIVEWAY.

PROFILE SCALE
Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 4'



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CLEVELAND SUMMIT

LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 – 4373
TxEng Firm # F-2644 – TxSurv Firm # 100177-00

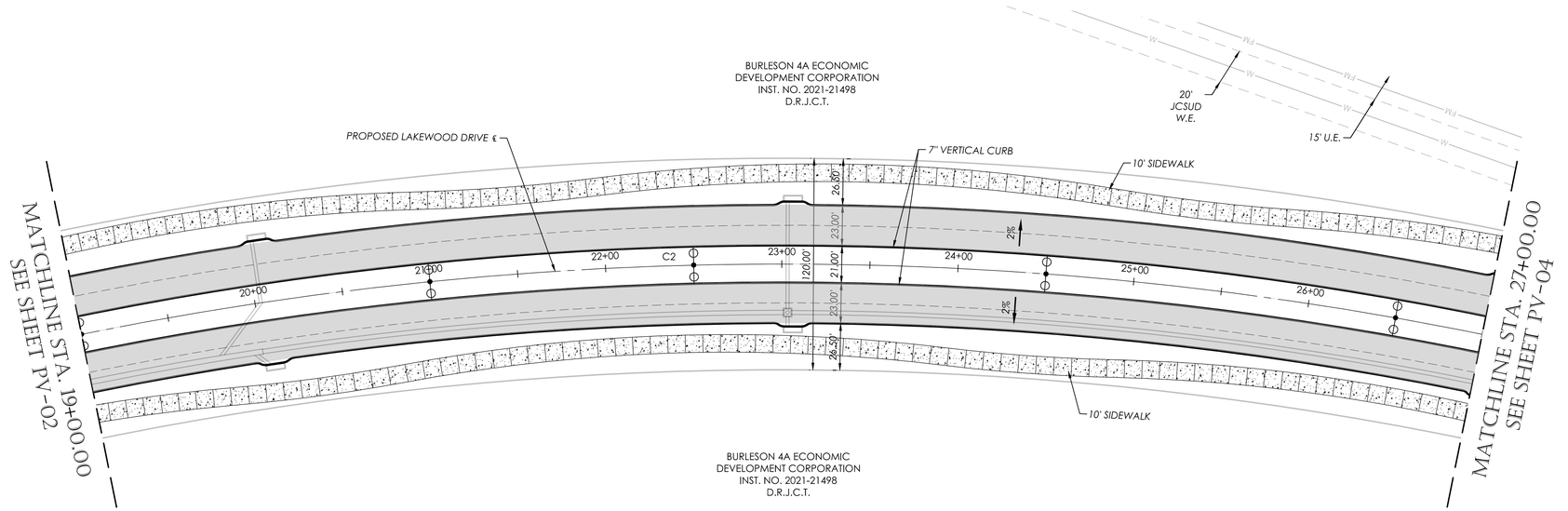
STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	6/28/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	PV-02

PAVING PLAN

LEGEND

- 8" CONCRETE PAVEMENT
- 4" STAINED AND STAMPED CONCRETE
- 8" STAINED AND STAMPED CONCRETE
- 5' CONCRETE SIDEWALK
- 7" HMAC PAVEMENT



GRAPHIC SCALE 1"=40'
0 40 80 120

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LAKEWOOD DRIVE

CURVE TABLE: LAKEWOOD DRIVE					
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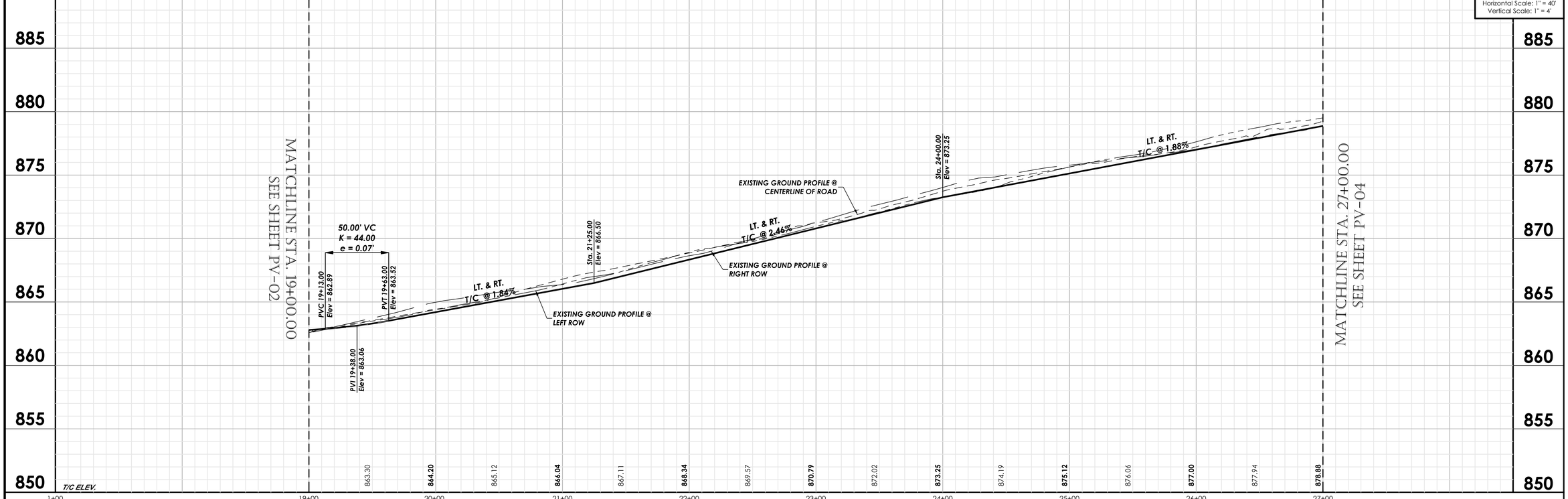
Vertical Scale: 1" = 4'



NO.	REVISION DATE

CIVILITUDE SUMMIT

LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329-4373
TxEng Firm # F-2644 – TxSurv Firm # 100177-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	8/5/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	PV-03
	PAVING PLAN

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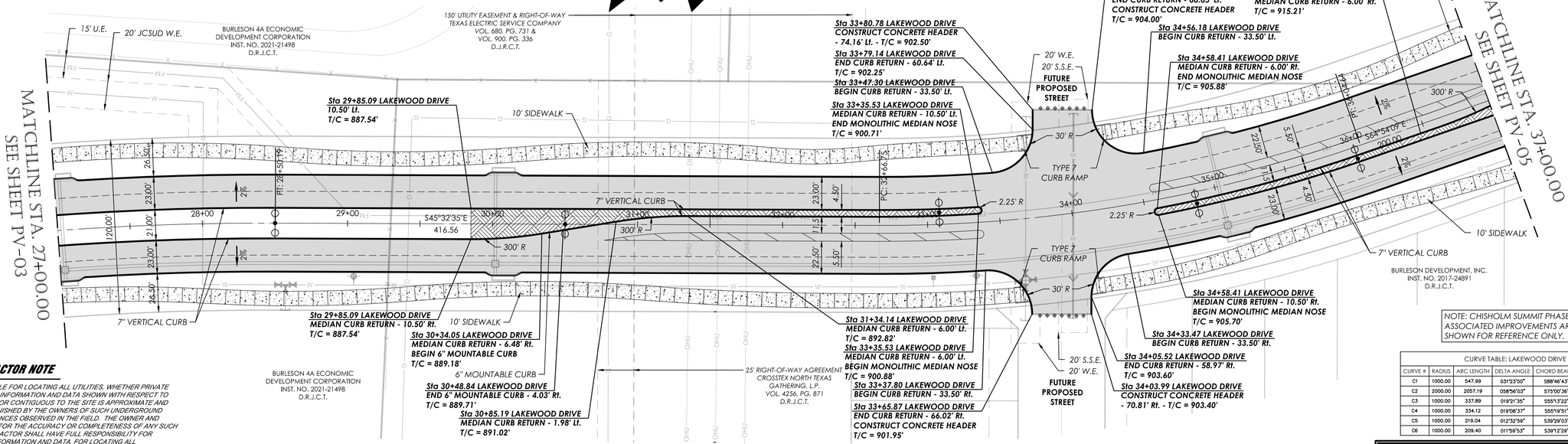
LEGEND

8" CONCRETE PAVEMENT	4" STAINED AND STAMPED CONCRETE	8" STAINED AND STAMPED CONCRETE	5' CONCRETE SIDEWALK	7" HMAC PAVEMENT	MONOLITHIC MEDIAN NOSE

!!!WARNING!!!
APPROXIMATE LOCATION OF GAS & OVERHEAD TRANSMISSION LINES. CONTRACTOR SHALL COORDINATE WITH APPROPRIATE UTILITY COMPANIES PRIOR TO CONSTRUCTION.

GRAPHIC SCALE 1"=40'
0 40 80 120



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LAKEWOOD DRIVE

NOTE: CHISHOLM SUMMIT PHASE 1 AND ASSOCIATED IMPROVEMENTS ARE SHOWN FOR REFERENCE ONLY.

NOTE: REFER TO SD SHEETS SD-01 - SD-24 FOR ALL CURB INLET DESIGN INFORMATION

CURVE TABLE: LAKEWOOD DRIVE

CURVE #	RADIUS	ARC LENGTH	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
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PROFILE SCALE
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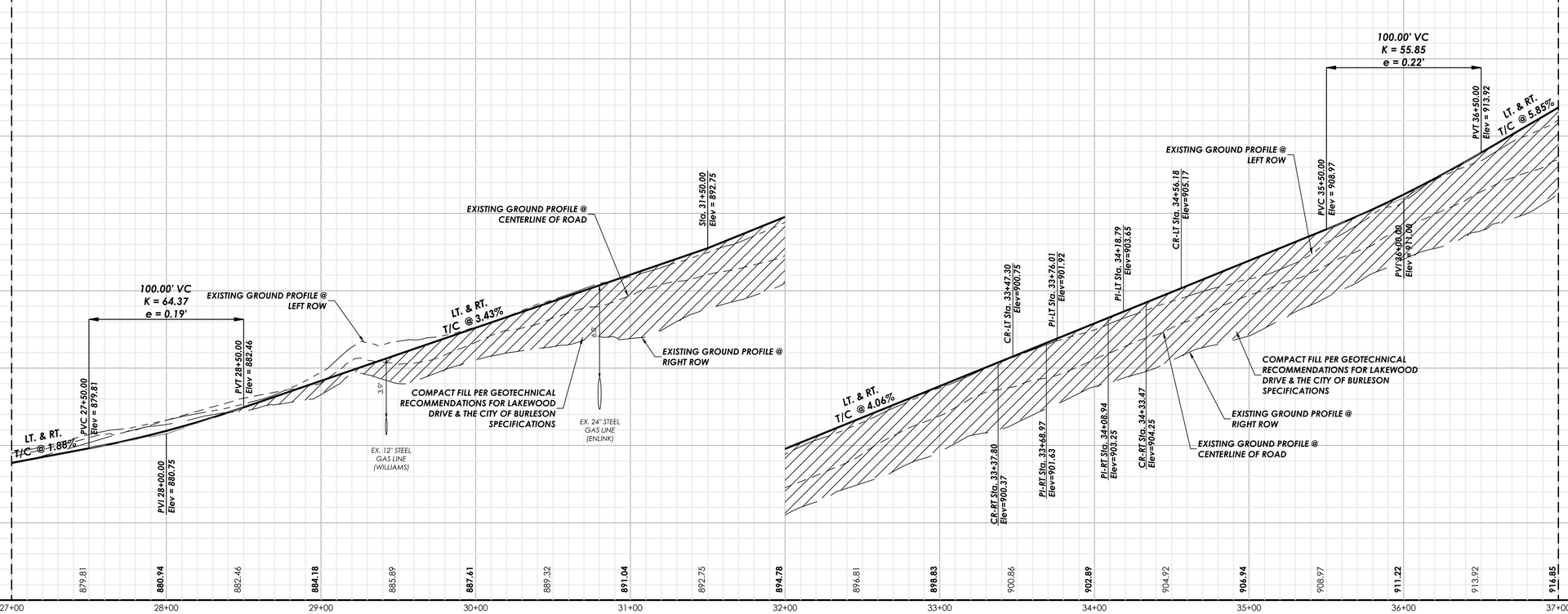
Vertical Scale: 1" = 4'



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CHISHOLM SUMMIT

LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329-4373
TxEng Firm # F-2644 – TxSur Firm # 100170

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	7/13/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	PV-04
	PAVING PLAN

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LEGEND

- 8" CONCRETE PAVEMENT
- 4" STAINED AND STAMPED CONCRETE
- 8" STAINED AND STAMPED CONCRETE
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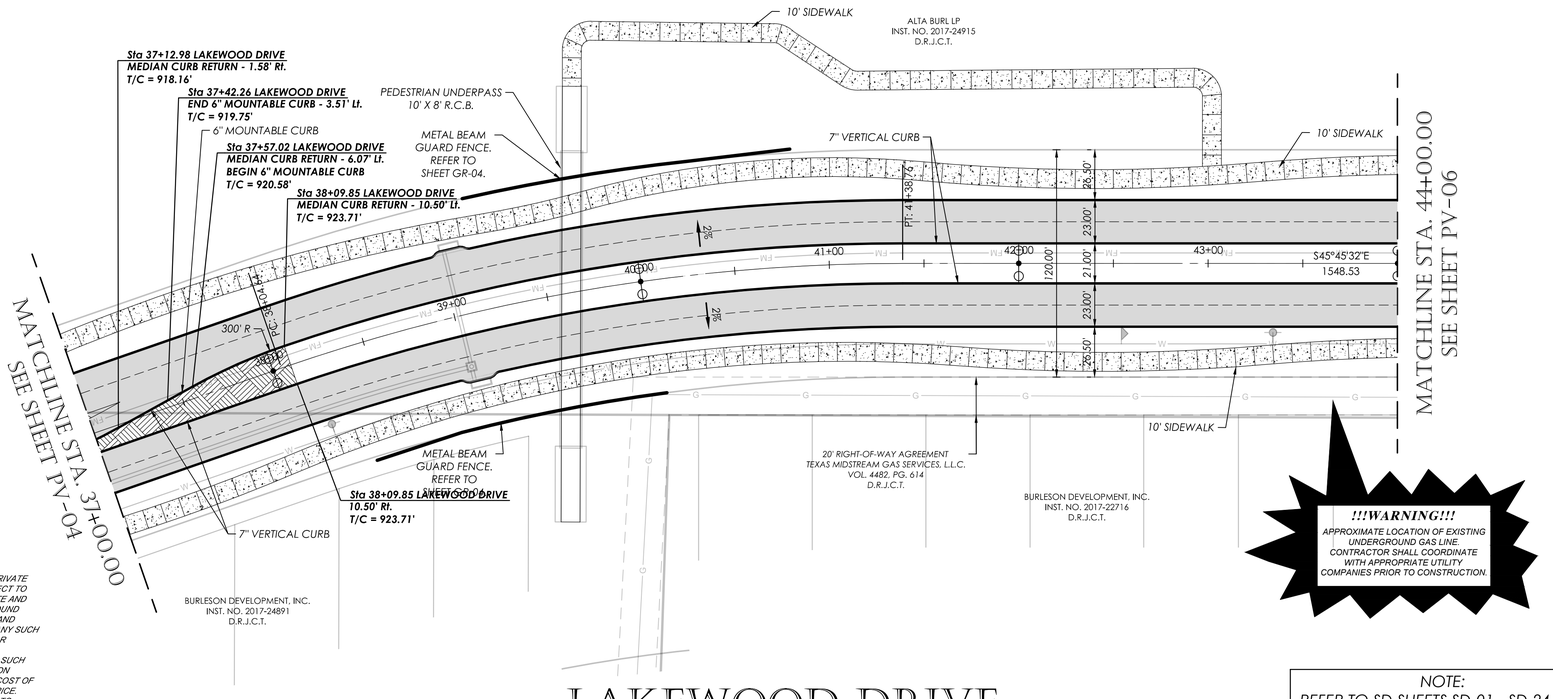

LAKEWOOD DRIVE

!!!WARNING!!!

APPROXIMATE LOCATION OF EXISTING UNDERGROUND GAS LINE. CONTRACTOR SHALL COORDINATE WITH APPROPRIATE UTILITY COMPANIES PRIOR TO CONSTRUCTION.

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PROFILE SCALE
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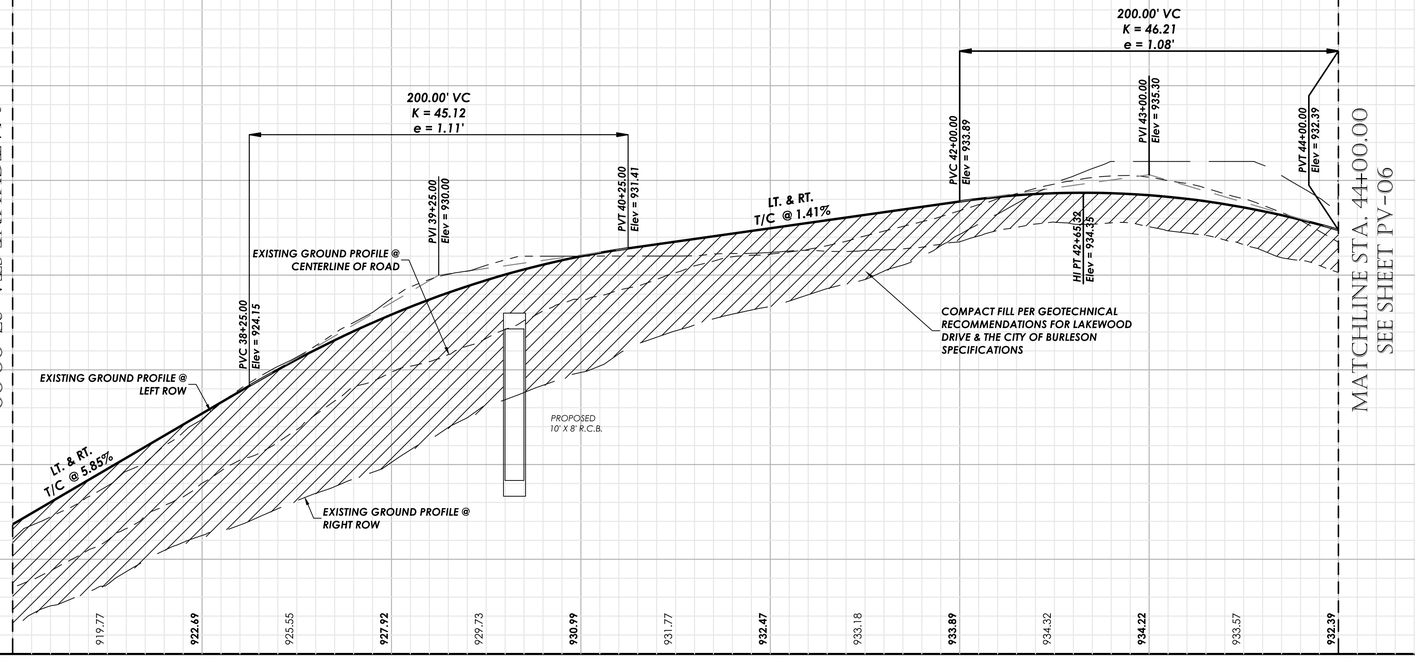

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GRAPHIC SCALE 1"=40'
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CHISHOLM SUMMIT

LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEngFirm # F-2644 – TxSurv Firm # 100170

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	7/13/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	PV-05
	PAVING PLAN

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LEGEND	
	8" CONCRETE PAVEMENT
	4" STAINED AND STAMPED CONCRETE
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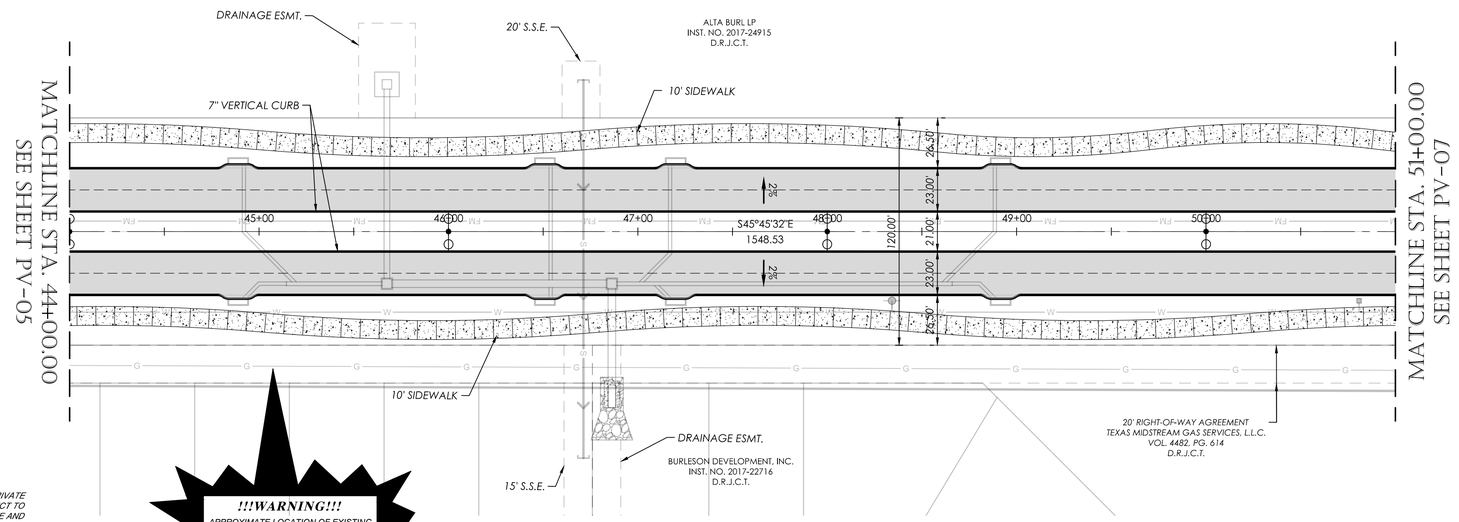
	5' CONCRETE SIDEWALK
	7" HMAC PAVEMENT



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LAKEWOOD DRIVE

NOTE:
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GRAPHIC SCALE 1"=40'
0 40 80 120

NOTE: CHISHOLM SUMMIT PHASE 1 AND ASSOCIATED IMPROVEMENTS ARE SHOWN FOR REFERENCE ONLY.

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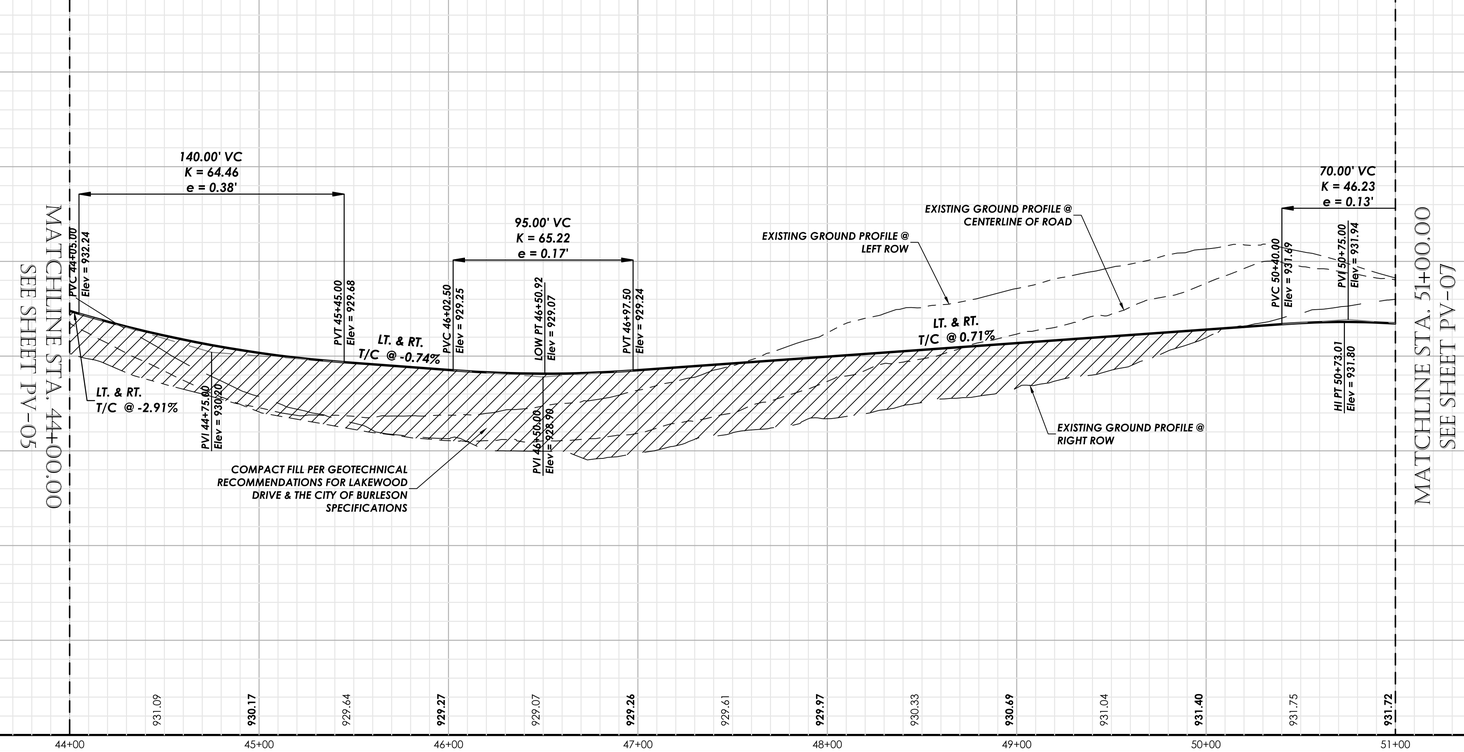

NO.	REVISION DATE

CHISHOLM SUMMIT

LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

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STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	7/13/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	PV-06
	PAVING PLAN

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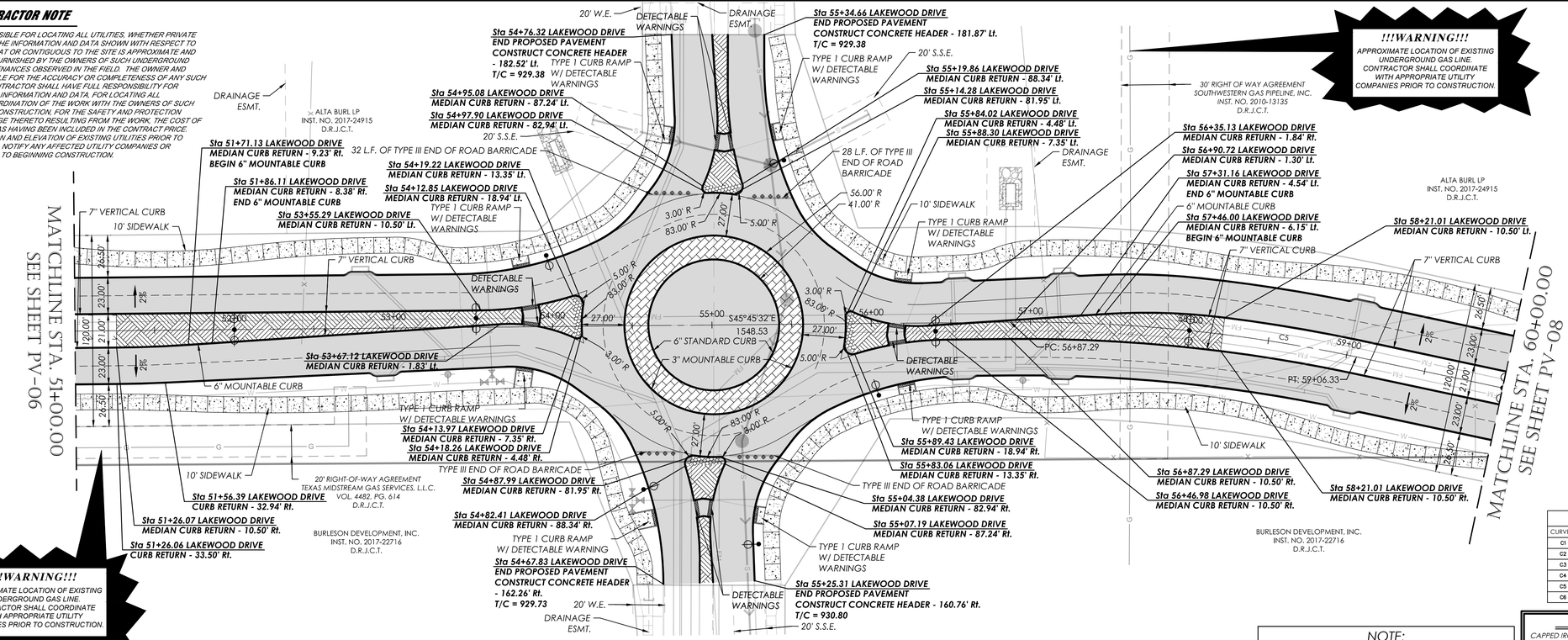
CONTRACTOR NOTE

THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UTILITIES, WHETHER PRIVATE OR PUBLIC, PRIOR TO EXCAVATING. THE INFORMATION AND DATA SHOWN WITH RESPECT TO EXISTING UNDERGROUND FACILITIES AT OR CONTIGUOUS TO THE SITE IS APPROXIMATE AND BASED ON INFORMATION AND DATA FURNISHED BY THE OWNERS OF SUCH UNDERGROUND FACILITIES OR ON PHYSICAL APPURTENANCES OBSERVED IN THE FIELD. THE OWNER AND ENGINEER SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ANY SUCH INFORMATION OR DATA, AND THE CONTRACTOR SHALL HAVE FULL RESPONSIBILITY FOR REVIEWING AND CHECKING ALL SUCH INFORMATION AND DATA, FOR LOCATING ALL UNDERGROUND FACILITIES, FOR COORDINATION OF THE WORK WITH THE OWNERS OF SUCH UNDERGROUND FACILITIES DURING CONSTRUCTION, FOR THE SAFETY AND PROTECTION THEREOF, AND REPAIRING ANY DAMAGE THERETO RESULTING FROM THE WORK. THE COST OF ALL OF WHICH WILL BE CONSIDERED AS HAVING BEEN INCLUDED IN THE CONTRACT PRICE. CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY ANY AFFECTED UTILITY COMPANIES OR AGENCIES AT LEAST 48 HOURS PRIOR TO BEGINNING CONSTRUCTION.



SEE LAKEWOOD DRIVE ROUNDABOUT SHEETS FOR DETAILED ROUNDABOUT GEOMETRY AND ELEVATIONS.

NOTE:
REFER TO SD SHEETS SD-01 - SD-24 FOR ALL CURB INLET DESIGN INFORMATION

CURVE TABLE: LAKEWOOD DRIVE					
CURVE #	RADIUS	ARC LENGTH	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
C1	1000.00	547.99	031°23'50"	S88°46'43"E	541.15
C2	2000.00	2057.19	058°56'03"	S75°00'36"E	1967.70
C3	1000.00	337.89	019°21'35"	S55°13'22"E	336.28
C4	1000.00	334.12	019°08'37"	S55°19'51"E	332.57
C5	1000.00	219.04	012°32'59"	S39°29'03"E	218.60
C6	1000.00	209.40	011°59'53"	S39°12'29"E	209.02

BENCH MARK ELEVATION : 852.36

CAPPED IRON ROD WITH CAP STAMPED "RDM" AT THE NORTHWEST CORNER OF THE INTERSECTION OF CR 1902 AND CR 1019, APPROXIMATELY 37 FEET NORTHWEST OF THE CENTERLINE OF CR 1019, APPROXIMATELY 45 FEET NORTHEAST OF THE CENTERLINE OF CR 1902, AND APPROXIMATELY 120 FEET SOUTHWEST OF A DRIVEWAY.

GRAPHIC SCALE 1"=40'
0 40 80 120

LEGEND

- 8" CONCRETE PAVEMENT
- 4" STAINED AND STAMPED CONCRETE
- 8" STAINED AND STAMPED CONCRETE
- 5" CONCRETE SIDEWALK
- 7" HMAC PAVEMENT
- INTERGRAL 11" COLORED CONCRETE
- MONOLITHIC MEDIAN NOSE

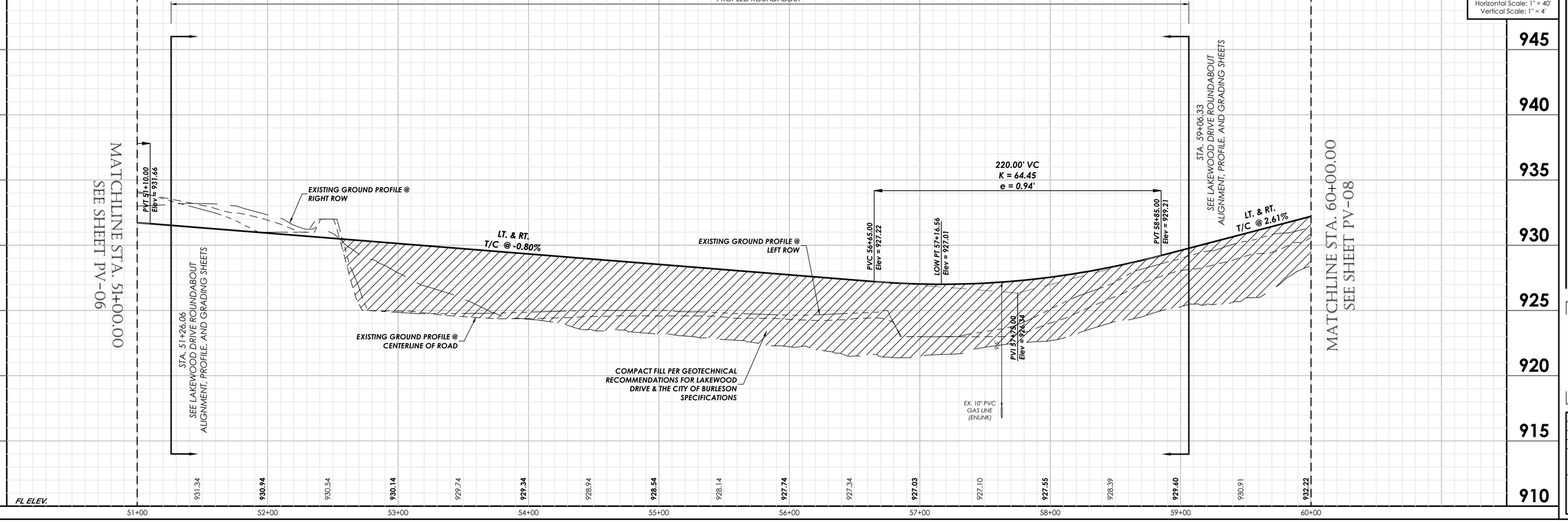
NO.	REVISION DATE
1	
2	
3	
4	
5	
6	
7	
8	

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS

CITY OF BURLESON
JOHNSON COUNTY, TX

PROFILE SCALE
Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 4'



GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 100217-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	8/1/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	PV-07
	PAVING PLAN

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LEGEND

8" CONCRETE PAVEMENT | 4" STAINED AND STAMPED CONCRETE | 8" STAINED AND STAMPED CONCRETE | 5" CONCRETE SIDEWALK | 7" HMAC PAVEMENT

CURVE TABLE: LAKEWOOD DRIVE					
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C5	1000.00	219.04	012°32'59"	S39°29'03"E	218.60
C6	1000.00	209.40	011°59'53"	S39°12'29"E	209.02

GRAPHIC SCALE 1"=40'
0 40 80 120

NO.	REVISION DATE

!!!WARNING!!! APPROXIMATE LOCATION OF EXISTING OVERHEAD ELECTRIC & WATER LINES. CONTRACTOR SHALL COORDINATE WITH APPROPRIATE UTILITY COMPANIES PRIOR TO CONSTRUCTION.

Sta 62+15.79 LAKEWOOD DRIVE
BEGIN SAWCUT & REMOVE 23 LF OF EX. ASHALT PAVEMENT
MATCH EX. ASPHALT PAVEMENT - 129.47' Lt. - T/P = 937.60'
Sta 62+16.97 LAKEWOOD DRIVE
END CURB RETURN - 118.67' Lt. - T/P = 937.45'

Sta 62+38.71 LAKEWOOD DRIVE
END CURB RETURN
END SAWCUT & REMOVE 23 LF OF EX. ASHALT PAVEMENT
MATCH EX. ASPHALT PAVEMENT - 131.14' Lt.
T/P = 937.83'

Sta 61+32.54 LAKEWOOD DRIVE
BEGIN CURB RETURN - 33.00' Lt.
CURB TO TAPER OUT PRIOR TO SIDEWALK
T/C = 935.68'
GUTTER = 935.10'

Sta 61+41.52 LAKEWOOD DRIVE
BEGIN CURB RETURN - 33.50' Rt.
END CONCRETE PAVEMENT
BEGIN ASPHALT PAVEMENT
CURB TO TAPER OUT PRIOR TO SIDEWALK
T/C = 935.93
GUTTER = 935.35'

Sta 62+03.13 LAKEWOOD DRIVE
END CURB RETURN- 120.23' Rt.
GUTTER = 932.23'

Sta 61+99.86 LAKEWOOD DRIVE
BEGIN SAWCUT & REMOVE 22 LF OF EX. ASPHALT PAVEMENT
MATCH EX. ASPHALT PAVEMENT - 133.61' Rt.
T/P = 931.89'

Sta 62+38.83 LAKEWOOD DRIVE
END CURB RETURN
END CURB - 88.49' Rt.
GUTTER = 934.10'

Sta 62+17.76 LAKEWOOD DRIVE
END SAWCUT & REMOVE 22 LF OF EX. ASPHALT PAVEMENT
MATCH EX. ASPHALT PAVEMENT - 141.92' Rt.
T/P = 932.21'

Sta 63+21.58 LAKEWOOD DRIVE
BEGIN CURB RETURN - 33.50' Rt.
END CONCRETE PAVEMENT
BEGIN ASPHALT PAVEMENT
CURB TO TAPER OUT PRIOR TO SIDEWALK
T/C = 938.18
GUTTER = 937.60

Sta 63+48.02 LAKEWOOD DRIVE
BEGIN CURB RETURN - 33.50' Lt.
CURB TO TAPER OUT PRIOR TO SIDEWALK
T/C = 937.98'
GUTTER = 937.40'

Sta 67+95.25 LAKEWOOD DRIVE
MEDIAN CURB RETURN - 10.50' Lt.
T/C = 932.26'

Sta 67+95.25 LAKEWOOD DRIVE
MEDIAN CURB RETURN - 10.50' Rt.
T/C = 932.26'

Sta 68+06.25 LAKEWOOD DRIVE
BEGIN CURB RETURN - 33.50' Rt.
CURB TO TAPER OUT PRIOR TO SIDEWALK
T/C = 931.58'

Sta 68+36.25 LAKEWOOD DRIVE
END CURB RETURN
CONSTRUCT CONCRETE HEADER 63.50' Rt.
T/C = 931.25'

Sta 68+52.16 LAKEWOOD DRIVE
CONNECT TO GRAVEL ROAD 60.00' Lt.
T/P = 930.27'
Sta 68+51.55 LAKEWOOD DRIVE
END CURB RETURN - 51.56' Lt.
T/P = 930.30'
Sta 68+31.60 LAKEWOOD DRIVE
BEGIN CURB RETURN - 33.50' Lt.
CURB TO TAPER OUT PRIOR TO SIDEWALK
T/C = 931.04'
GUTTER = 930.46'

Sta 68+62.61 LAKEWOOD DRIVE
CONNECT TO GRAVEL ROAD 60.00' Lt.
T/P = 929.82'
Sta 68+62.18 LAKEWOOD DRIVE
END CURB RETURN - 54.59' Lt.
T/P = 930.05'
Sta 68+82.11 LAKEWOOD DRIVE
BEGIN CURB RETURN - 33.50' Lt.
CURB TO TAPER OUT PRIOR TO SIDEWALK
T/P = 929.95'
GUTTER = 929.37'

Sta 69+10.00 LAKEWOOD DRIVE
MEDIAN CURB RETURN - 6.00' Rt.
T/C = 929.97'

Sta 69+10.00 LAKEWOOD DRIVE
MEDIAN CURB RETURN - 10.50' Rt.
T/C = 929.82'

Sta 69+07.25 LAKEWOOD DRIVE
BEGIN CURB RETURN - 33.50' Rt.
CURB TO TAPER OUT PRIOR TO SIDEWALK
T/C = 929.42'

Sta 68+77.25 LAKEWOOD DRIVE
END CURB RETURN
CONSTRUCT CONCRETE HEADER 63.50' Rt.
T/C = 931.25'

TYPE III END OF ROAD BARRICADE

FUTURE PROPOSED STREET

A PORTION OF TRACT TWO
JANICE YVONNE JACKSON, TRUSTEE
THE JACKSON FAMILY TRUST D
INST. NO. 2010-230
D.R.J.C.T.

A REMAINDER OF TRACT THREE
THE JACKSON FAMILY TRUST D
INST. NO. 2010-230
D.R.J.C.T.

BURLESON DEVELOPMENT, INC.
INST. NO. 2017-22716
D.R.J.C.T.

MATCHLINE STA. 60+00.00
SEE SHEET PV-07

MATCHLINE STA. 70+00.00
SEE SHEET PV-09

C.R.1016

TYPE 7 CURB RAMP | 75.50' R | 100.50' R | 70.50' R | 20' R | 30' R | 10.5' R | 10.45' | 2.25' R

10' SIDEWALK | 7" VERTICAL CURB | 6" MOUNTABLE CURB

PC: 60+96.17 | PT: 63+05.57 | S 45°12'26" E 3099.42' | MH: 62+00.87'

26.50' | 23.00' | 21.00' | 120.00'

LAKEWOOD DRIVE

BENCH MARK ELEVATION : 852.36
CAPPED IRON ROD WITH CAP STAMPED "RDM" AT THE NORTHWEST CORNER OF THE INTERSECTION OF CR 1902 AND CR 1019, APPROXIMATELY 37 FEET NORTHWEST OF THE CENTERLINE OF CR 1019, APPROXIMATELY 45 FEET NORTHEAST OF THE CENTERLINE OF CR 1902, AND APPROXIMATELY 120 FEET SOUTHWEST OF A DRIVEWAY.

NOTE:
REFER TO SD SHEETS SD-01 - SD-24 FOR ALL CURB INLET DESIGN INFORMATION

PROFILE SCALE
Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 4'

155.00' VC
K = 45.60
e = 0.66'

75.00' VC
K = 55.26
e = 0.13'

CR-LT Sta. 61+32.54 Elev=935.68
PVC 61+72.50 Elev = 936.72
PI-LT Sta. 62+25.27 Elev=937.80
PI-LT Sta. 62+47.31 Elev=938.07
PVI 62+50.00 Elev = 938.75
HI PT 62+91.65 Elev = 938.28
PVT 63+27.50 Elev = 938.14
CR-LT Sta. 63+48.02 Elev=937.98
PI-RT Sta. 62+26.61 Elev=937.82
PI-RT Sta. 62+63.26 Elev=938.19
CR-RT Sta. 63+21.58 Elev=938.18
CR-RT Sta. 61+41.52 Elev=935.91
PVC 65+62.50 Elev = 936.29
PVI 66+00.00 Elev = 936.00
PVT 66+37.50 Elev = 935.20
CR-LT Sta. 68+31.60 Elev=931.04
PI-LT Sta. 68+49.75 Elev=930.65
PI-LT Sta. 68+61.00 Elev=930.41
PI-RT Sta. 68+36.25 Elev=930.94
CR-LT Sta. 68+82.11 Elev=929.95
PI-RT Sta. 68+77.25 Elev=930.06
CR-RT Sta. 68+06.25 Elev=931.58
CR-RT Sta. 69+07.25 Elev=929.42

LT. & RT. T/C @ 2.61%
LT. & RT. T/C @ -0.79%
LT. & RT. T/C @ -2.14%

EXISTING GROUND PROFILE @ RIGHT ROW
EXISTING GROUND PROFILE @ CENTERLINE OF ROAD
EXISTING GROUND PROFILE @ LEFT ROW

EX. 8" W.L.
EX. 8" W.L.

COMPACT FILL PER GEOTECHNICAL RECOMMENDATIONS FOR LAKEWOOD DRIVE & THE CITY OF BURLESON SPECIFICATIONS

945 | 940 | 935 | 930 | 925 | 920 | 915 | 910

FL ELEV.
933.52 | 934.83 | 936.14 | 937.36 | 938.09 | 938.27 | 937.96 | 937.57 | 937.18 | 936.79 | 936.39 | 935.87 | 934.93 | 933.86 | 932.79 | 931.71 | 930.64 | 929.57 | 928.50 | 927.43

60+00 | 61+00 | 62+00 | 63+00 | 64+00 | 65+00 | 66+00 | 67+00 | 68+00 | 69+00 | 70+00

MATCHLINE STA. 60+00.00 SEE SHEET PV-07

MATCHLINE STA. 70+00.00 SEE SHEET PV-09

SUMMIT CIVIL GROUP

LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 10027700

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	8/1/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	PV-08

PAVING PLAN

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GRAPHIC SCALE 1"=40'
0 40 80 120

MATCHLINE STA. 70+00.00
SEE SHEET PV-08

A PORTION OF TRACT TWO
JANICE YVONNE JACKSON, TRUSTEE
THE JACKSON FAMILY TRUST D
INST. NO. 2010-230
D.R.J.C.T.

LOT 1, BLOCK 1
RUMFIELD ADDITION
INST. NO. 2020-215
P.R.J.C.T.

LOT 1, BLOCK 1
RUMFIELD ADDITION
INST. NO. 2020-215
P.R.J.C.T.

ID: R000005717
JOHN MARTINDALE

ID: R000005718
M. O. BUSH

MONRDE MELBA WYONA LIFE ESTATE
INST. NO. 2020-42082
& 42083
D.R.J.C.T.

MATCHLINE STA. 80+00.00
SEE SHEET PV-10

Sta 71+39.31 LAKEWOOD DRIVE
CONNECT TO GRAVEL ROAD
60.00' Lt.
T/P = 923.84'

Sta 71+39.20 LAKEWOOD DRIVE
END CURB RETURN - 55.50' Lt.
T/P = 924.10'

Sta 71+19.13 LAKEWOOD DRIVE
BEGIN CURB RETURN - 33.50' Lt.
T/C = 924.87'
GUTTER = 924.29'

Sta 71+50.55 LAKEWOOD DRIVE
CONNECT TO GRAVEL ROAD
60.00' Lt.
T/P = 923.74'

Sta 73+10.56 LAKEWOOD DRIVE
END CURB RETURN - 50.67' Lt.
T/P = 921.00'

Sta 71+50.29 LAKEWOOD DRIVE
END CURB RETURN - 53.82' Lt.
T/P = 923.85'

Sta 72+90.69 LAKEWOOD DRIVE
BEGIN CURB RETURN - 33.50' Lt.
T/C = 921.25'
GUTTER = 920.67'

Sta 71+70.28 LAKEWOOD DRIVE
BEGIN CURB RETURN - 33.50' Lt.
T/C = 923.65'
GUTTER = 923.07'

Sta 73+11.65 LAKEWOOD DRIVE
CONNECT TO GRAVEL ROAD
60.00' Lt.
T/P = 921.36'

Sta 73+28.83 LAKEWOOD DRIVE
CONNECT TO GRAVEL ROAD
60.00' Lt.
T/P = 920.92'

Sta 73+28.74 LAKEWOOD DRIVE
END CURB RETURN - 53.27' Lt.
T/P = 920.70'

Sta 73+48.74 LAKEWOOD DRIVE
BEGIN CURB RETURN - 33.50' Lt.
T/C = 919.53'
GUTTER = 918.95'

Sta 75+84.19 LAKEWOOD DRIVE
CONNECT TO GRAVEL ROAD
60.00' Lt.
T/P = 917.90'

Sta 75+84.27 LAKEWOOD DRIVE
END CURB RETURN - 53.22' Lt.
T/P = 917.80'

Sta 75+64.27 LAKEWOOD DRIVE
BEGIN CURB RETURN - 33.50' Lt.
T/C = 917.02'
GUTTER = 916.44'

Sta 75+96.19 LAKEWOOD DRIVE
CONNECT TO GRAVEL ROAD
60.00' Lt.
T/P = 917.73'

Sta 75+96.27 LAKEWOOD DRIVE
END CURB RETURN - 52.78' Lt.
T/P = 917.50'

Sta 76+16.27 LAKEWOOD DRIVE
BEGIN CURB RETURN - 33.50' Lt.
T/C = 916.34'
GUTTER = 915.76'

Sta 78+44.77 LAKEWOOD DRIVE
CONNECT TO GRAVEL ROAD
60.00' Lt.
T/P = 913.27'

Sta 78+44.59 LAKEWOOD DRIVE
END CURB RETURN - 52.50' Lt.
T/P = 913.05'

Sta 78+24.59 LAKEWOOD DRIVE
BEGIN CURB RETURN - 33.50' Lt.
T/C = 913.30'
GUTTER = 912.72'

Sta 78+56.78 LAKEWOOD DRIVE
CONNECT TO GRAVEL ROAD
60.00' Lt.
T/P = 913.20'

Sta 78+56.62 LAKEWOOD DRIVE
END CURB RETURN - 53.50' Lt.
T/P = 913.05'

Sta 78+76.61 LAKEWOOD DRIVE
BEGIN CURB RETURN - 33.50' Lt.
T/C = 912.84'
GUTTER = 912.26'

11.23' 17.18' 12.00' 12.00'

10' SIDEWALK

6" MOUNTABLE CURB

20' R

300' R

2.25' R

7" VERTICAL CURB

26.50' 28.00' 21.00' 23.00' 120.00'

S 45°12'26" E
3099.42'

Sta 70+99.27 LAKEWOOD DRIVE
MEDIAN CURB RETURN - 3.56' Lt.
BEGIN 6" MOUNTABLE CURB
T/C = 925.81'

Sta 70+87.27 LAKEWOOD DRIVE
MEDIAN CURB RETURN - 0.94' Lt.
END 6" MOUNTABLE CURB
T/C = 926.10'

Sta 70+23.13 LAKEWOOD DRIVE
MEDIAN CURB RETURN - 6.00' Rt.
T/C = 927.54'

Sta 71+63.41 LAKEWOOD DRIVE
MEDIAN CURB RETURN - 10.50' Lt.
T/C = 924.37'

Sta 77+01.73 LAKEWOOD DRIVE
MEDIAN CURB RETURN - 10.50' Rt.
T/C = 914.98'

Sta 77+55.83 LAKEWOOD DRIVE
MEDIAN CURB RETURN - 5.58' Rt.
T/C = 914.68'

Sta 77+70.58 LAKEWOOD DRIVE
MEDIAN CURB RETURN - 2.88' Rt.
T/C = 914.51'

Sta 77+92.17 LAKEWOOD DRIVE
MEDIAN CURB RETURN - 1.08' Lt.
T/C = 914.27'

Sta 79+46.75 LAKEWOOD DRIVE
MEDIAN CURB RETURN - 10.50' Lt.
T/C = 912.60'

Sta 79+46.75 LAKEWOOD DRIVE
MEDIAN CURB RETURN - 6.00' Lt.
T/C = 912.84'

Sta 78+46.27 LAKEWOOD DRIVE
MEDIAN CURB RETURN - 6.00' Lt.
T/C = 913.74'

!!!WARNING!!!
APPROXIMATE LOCATION OF EXISTING OVERHEAD ELECTRIC AND EXISTING WATER LINE. CONTRACTOR SHALL COORDINATE WITH APPROPRIATE UTILITY COMPANIES PRIOR TO CONSTRUCTION.

!!!WARNING!!!
APPROXIMATE LOCATION OF EXISTING GAS LINES. CONTRACTOR SHALL COORDINATE WITH APPROPRIATE UTILITY COMPANIES PRIOR TO CONSTRUCTION.

A REMAINDER OF
TRACT THREE
THE JACKSON FAMILY TRUST D
INST. NO. 2010-230
D.R.J.C.T.

30' PIPELINE EASEMENT
E.O.G. RESOURCES, INC.
VOL. 4027, PG. 559
D.R.J.C.T.

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LEGEND

8" CONCRETE PAVEMENT | 4" STAINED AND STAMPED CONCRETE | 8" STAINED AND STAMPED CONCRETE | 5" CONCRETE SIDEWALK | 7" HMAC PAVEMENT

NOTE:
REFER TO SD SHEETS SD-01 - SD-24 FOR ALL CURB INLET DESIGN INFORMATION

LAKEWOOD DRIVE

CURVE TABLE: LAKEWOOD DRIVE

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BENCH MARK ELEVATION : 852.36
CAPPED IRON ROD WITH CAP STAMPED "RDM" AT THE NORTHWEST CORNER OF THE INTERSECTION OF CR 1902 AND CR 1019, APPROXIMATELY 37 FEET NORTHWEST OF THE CENTERLINE OF CR 1019, APPROXIMATELY 45 FEET NORTHEAST OF THE CENTERLINE OF CR 1902, AND APPROXIMATELY 120 FEET SOUTHWEST OF A DRIVEWAY.

PROFILE SCALE
Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 4'

940 930 925 920 915 910 905 900

EXISTING GROUND PROFILE @ CENTERLINE OF ROAD
EXISTING GROUND PROFILE @ RIGHT ROW
EXISTING GROUND PROFILE @ LEFT ROW

75.00' VC
K = 125.00
e = 0.06'

PVC 71+12.50 Elev = 925.02
PVI 71+50.00 Elev = 924.21
PVT 71+87.50 Elev = 923.19

75.00' VC
K = 47.58
e = 0.15'

PVC 72+62.50 Elev = 921.13
PVI 73+00.00 Elev = 920.10
PVT 73+37.50 Elev = 919.66

75.00' VC
K = 195.65
e = 0.04'

PVC 75+64.27 Elev = 917.02
PVI 76+00.00 Elev = 916.60
PVT 76+37.50 Elev = 916.02

75.00' VC
K = 109.27
e = 0.06'

PVC 77+62.50 Elev = 914.08
PVI 78+00.00 Elev = 913.50
PVT 78+37.50 Elev = 913.18

LT. & RT. T/C @ -2.74%
LT. & RT. T/C @ -1.17%
LT. & RT. T/C @ -1.55%

CR-LT Sta. 71+19.13 Elev=924.87
PI-LT Sta. 71+38.16 Elev=924.44
PI-LT Sta. 71+49.96 Elev=924.16
CR-LT Sta. 71+70.28 Elev=923.65
CR-LT Sta. 72+90.69 Elev=920.44
PI-LT Sta. 73+08.04 Elev=920.10
PI-LT Sta. 73+28.97 Elev=919.77
CR-LT Sta. 73+48.74 Elev=919.53
CR-LT Sta. 75+64.27 Elev=917.02
PI-LT Sta. 75+83.99 Elev=916.77
PI-LT Sta. 75+96.99 Elev=916.60
CR-LT Sta. 76+16.27 Elev=916.34
CR-LT Sta. 78+24.59 Elev=913.30
PI-LT Sta. 78+43.62 Elev=913.12
PI-LT Sta. 78+56.62 Elev=913.01
CR-LT Sta. 78+76.61 Elev=912.84

COMPACT FILL PER GEOTECHNICAL RECOMMENDATIONS FOR LAKEWOOD DRIVE & THE CITY OF BURLESON SPECIFICATIONS

EX. 8" WATER LINE 4.3'

EX. 10" PVC GAS LINE (UPP OPERATING) 8.2'

FL ELEV.
926.36 925.29 924.16 922.84 921.47 920.25 919.52 918.93 918.35 917.77 917.18 916.56 915.82 915.05 914.28 913.56 913.07 912.64 912.20 911.77

70+00 71+00 72+00 73+00 74+00 75+00 76+00 77+00 78+00 79+00 80+00

MATCHLINE STA. 70+00.00
SEE SHEET PV-08

MATCHLINE STA. 80+00.00
SEE SHEET PV-10

NO.	REVISION DATE
1	
2	
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9	

SUMMIT CITY OF BURLESON

LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN MARSHALL INC
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 100170

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	8/1/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	PV-09

PAVING PLAN

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E:\10745 – Bransom Estates\Lakewood\Plans\SHEETS\60% Construction Plans\10745–LAKEWOOD–PAV PP–07 – 10.dwg Tue Sep 27 2022 16:08

NO.	REVISION DATE
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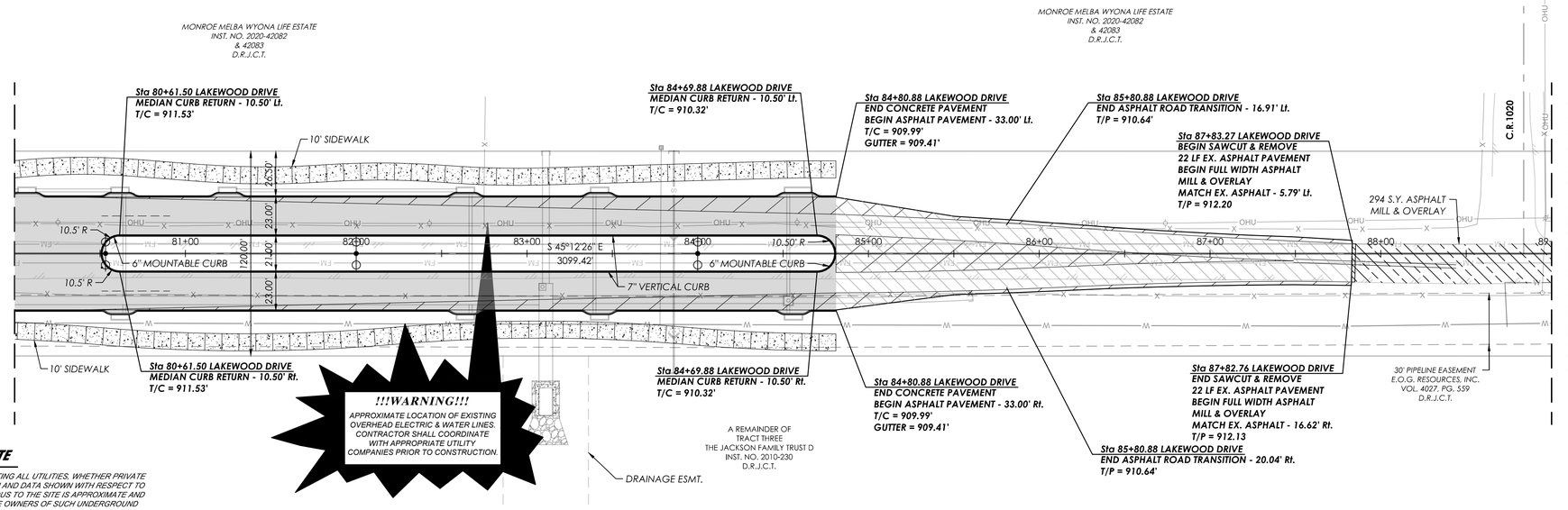
GRAPHIC SCALE 1"=40'
0 40 80 120



LEGEND

- 8" CONCRETE PAVEMENT
- 4" STAINED AND STAMPED CONCRETE
- 8" STAINED AND STAMPED CONCRETE
- 5" CONCRETE SIDEWALK
- 7" HMAC PAVEMENT
- ASPHALT MILL & OVERLAY

CURVE TABLE: LAKEWOOD DRIVE					
CURVE #	RADIUS	ARC LENGTH	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
C1	1000.00	547.99	031°23'50"	S88°46'43"E	541.15
C2	2000.00	2057.19	058°56'03"	S75°00'36"E	1967.70
C3	1000.00	337.89	019°21'35"	S55°13'22"E	336.28
C4	1000.00	334.12	019°08'37"	S55°19'51"E	332.57
C5	1000.00	219.04	012°32'59"	S39°29'03"E	218.60
C6	1000.00	209.40	011°59'53"	S39°12'29"E	209.02

CONTRACTOR NOTE

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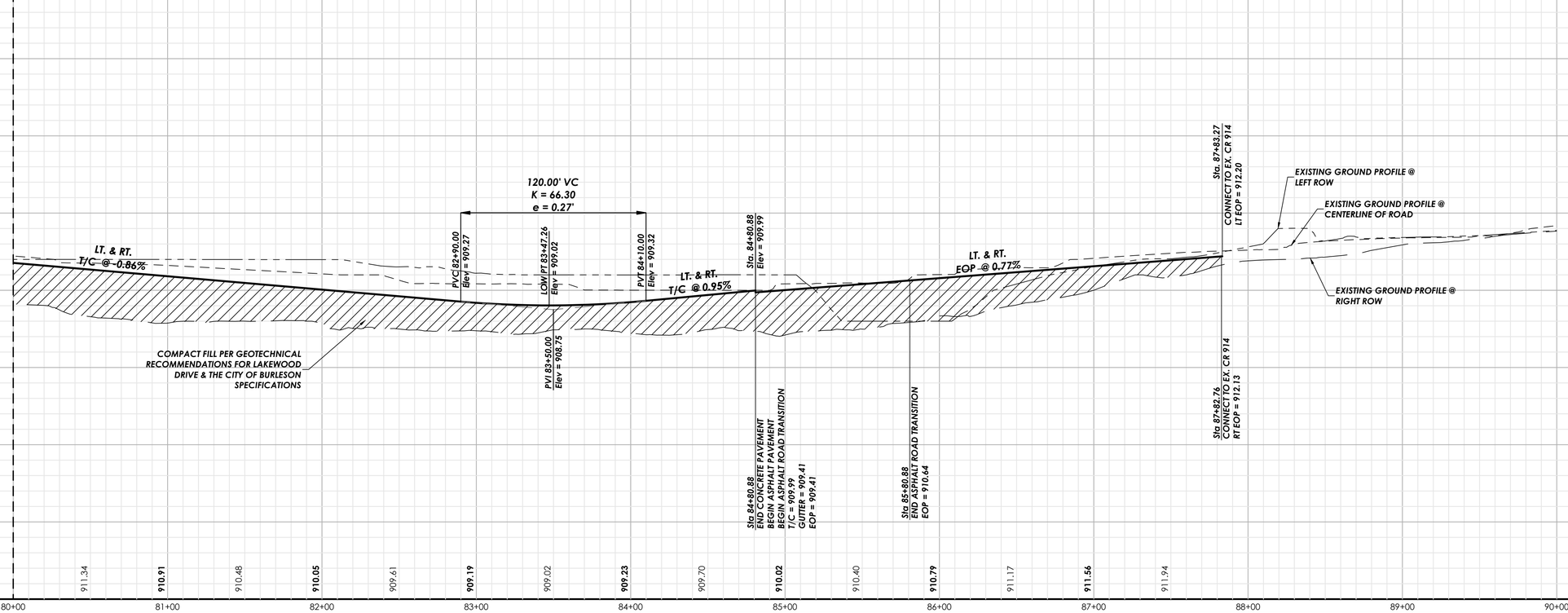
LAKEWOOD DRIVE

NOTE:
REFER TO SD SHEETS SD-01 - SD-24 FOR ALL CURB INLET DESIGN INFORMATION

BENCH MARK ELEVATION : 852.36

CAPPED IRON ROD WITH CAP STAMPED "RDM" AT THE NORTHWEST CORNER OF THE INTERSECTION OF CR 1902 AND CR 1019, APPROXIMATELY 37 FEET NORTHWEST OF THE CENTERLINE OF CR 1019, APPROXIMATELY 45 FEET NORTHEAST OF THE CENTERLINE OF CR 1902, AND APPROXIMATELY 120 FEET SOUTHWEST OF A DRIVEWAY.

PROFILE SCALE
Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 4'



LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 100177-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	8/1/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	PV-10
	PAVING PLAN

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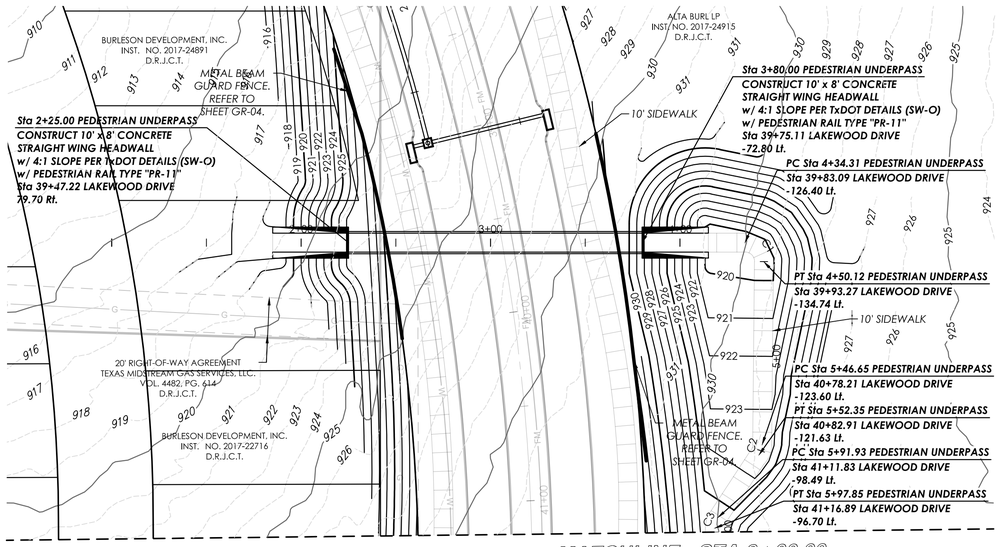

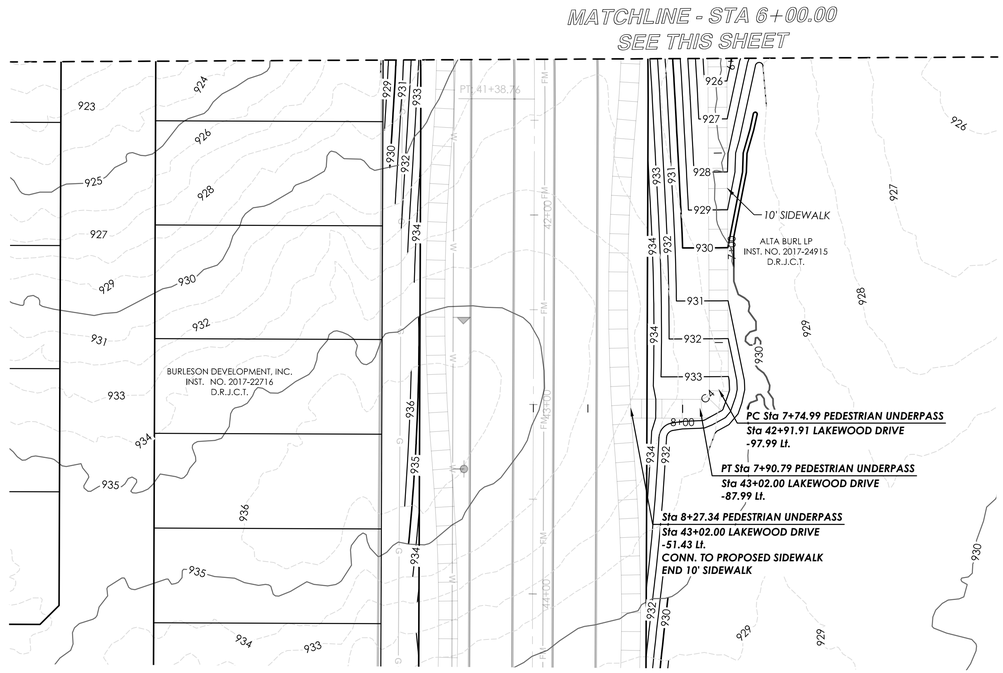

GRAPHIC SCALE 1"=40'
0 40 80 120

NOTE:
"Per IES standards, A horizontal illuminance of no less than 5 foot-candles and no greater than 10 foot-candles and a vertical illuminance of 0.5 foot-candles will be required for safety and pedestrian identification. A lighting layout will be designed by a professional electrical engineer and submitted to the City Parks Department for acceptance. After installation, lighting will be metered to, paid by, and maintained by the Chisholm Summit PID as a part of the neighborhood trail system. Prior to the opening of the tunnel, safety and lighting installation will be inspected and approved by the City Parks Department."

CONTRACTOR NOTE

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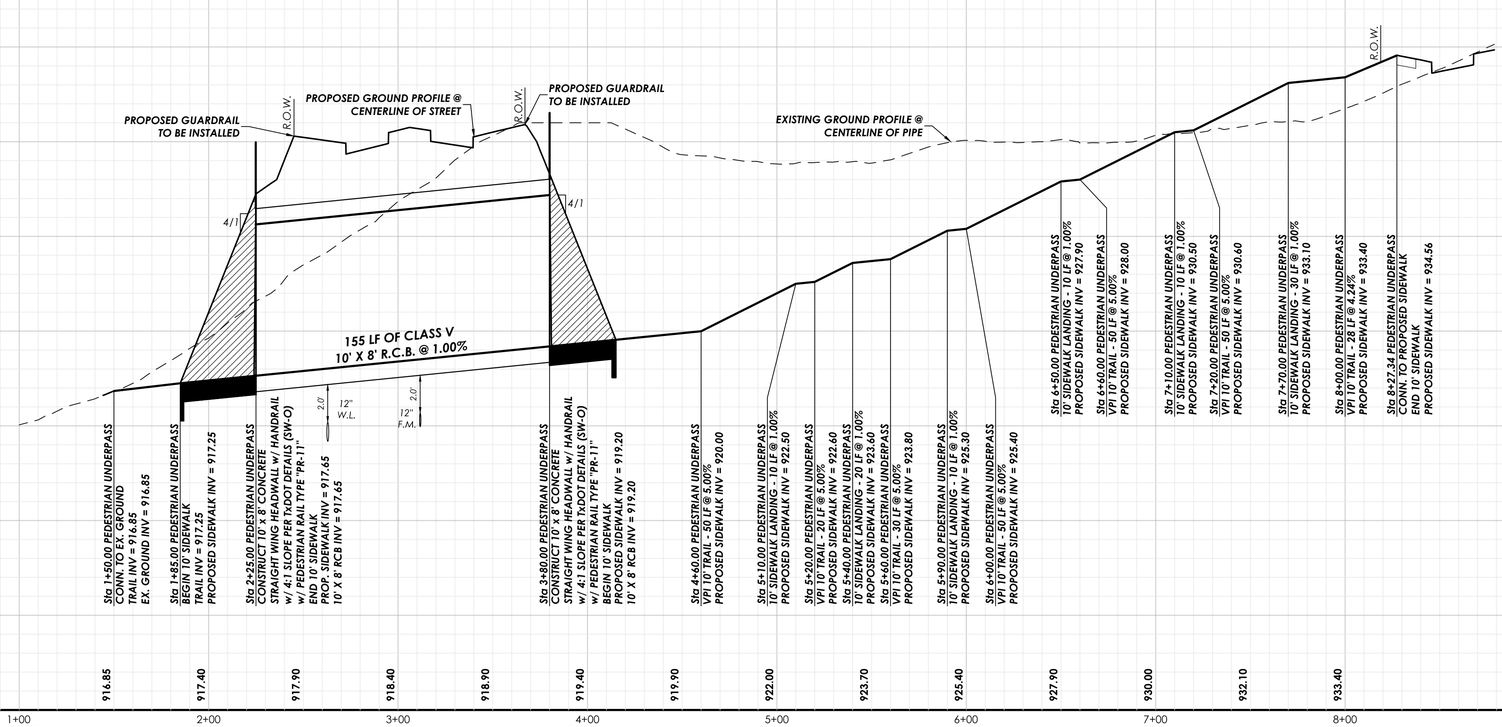
PEDESTRIAN UNDERPASS CURVE TABLE

CURVE #	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH	DELTA ANGLE
C1	15.81	10.00	N89°40'43"E	14.21	090°34'03"
C2	5.71	10.00	S28°41'22"E	5.63	032°41'46"
C3	5.92	10.00	S29°18'04"E	5.83	033°55'09"
C4	15.80	10.00	S1°00'35"E	14.20	090°30'06"

BENCH MARK ELEVATION : 852.36

CAPPED IRON ROD WITH CAP STAMPED "RDM" AT THE NORTHWEST CORNER OF THE INTERSECTION OF CR 1902 AND CR 1019, APPROXIMATELY 37 FEET NORTHWEST OF THE CENTERLINE OF CR 1019, APPROXIMATELY 45 FEET NORTHEAST OF THE CENTERLINE OF CR 1902, AND APPROXIMATELY 120 FEET SOUTHWEST OF A DRIVEWAY.



PROFILE SCALE
Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 4'

NO.	REVISION DATE

LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEngFirm # F-2644 – TxSurv Firm # 100177-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	5/15/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	PV-11
	PEDESTRIAN UNDERPASS

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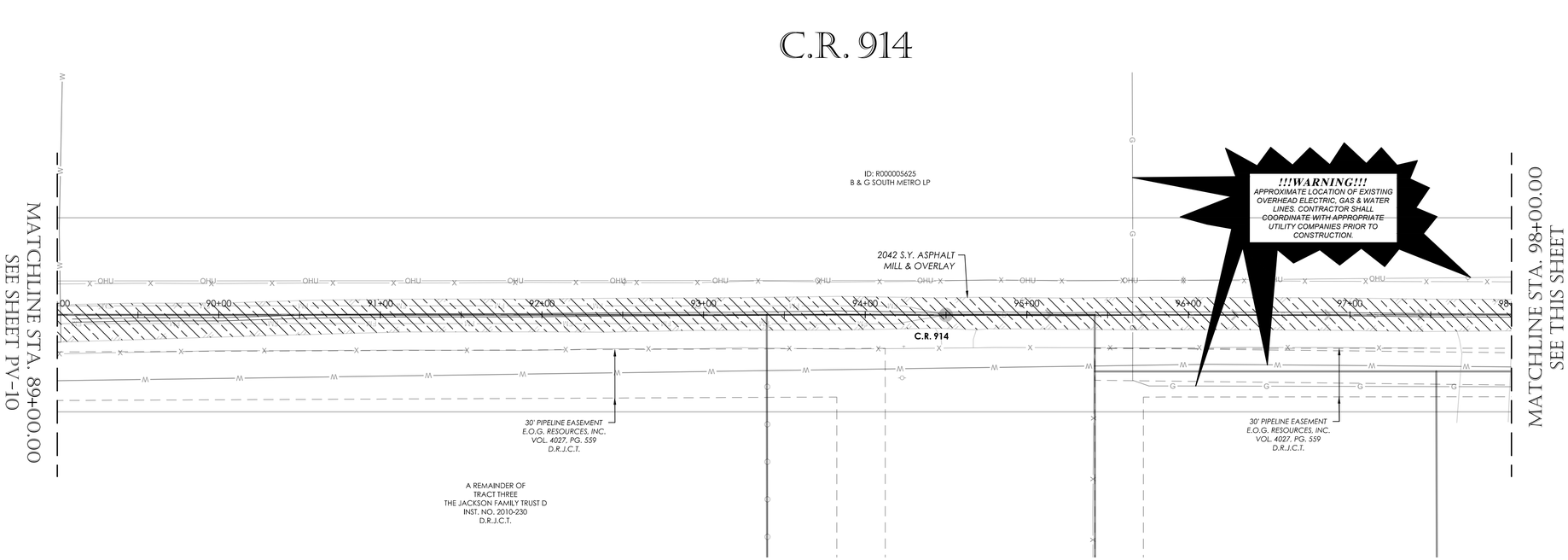

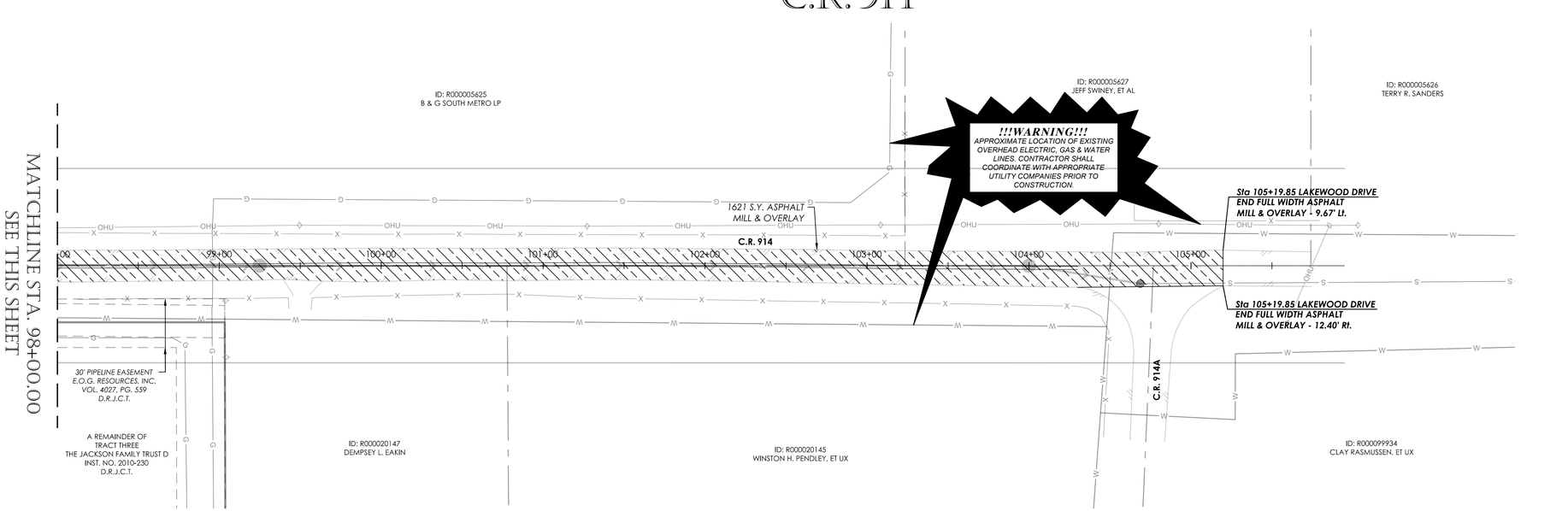

GRAPHIC SCALE 1"=40'
0 40 80 120

LEGEND

- 8" CONCRETE PAVEMENT
- 4" STAINED AND STAMPED CONCRETE
- 8" STAINED AND STAMPED CONCRETE
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CURVE TABLE: LAKEWOOD DRIVE

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NOTE:
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BENCH MARK ELEVATION : 852.36

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NO.	REVISION DATE

SUMMIT CIVIL GROUP

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN MARSHALL INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 - TxSurv Firm # 100170

STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	9/27/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	PV-12

PAVING PLAN

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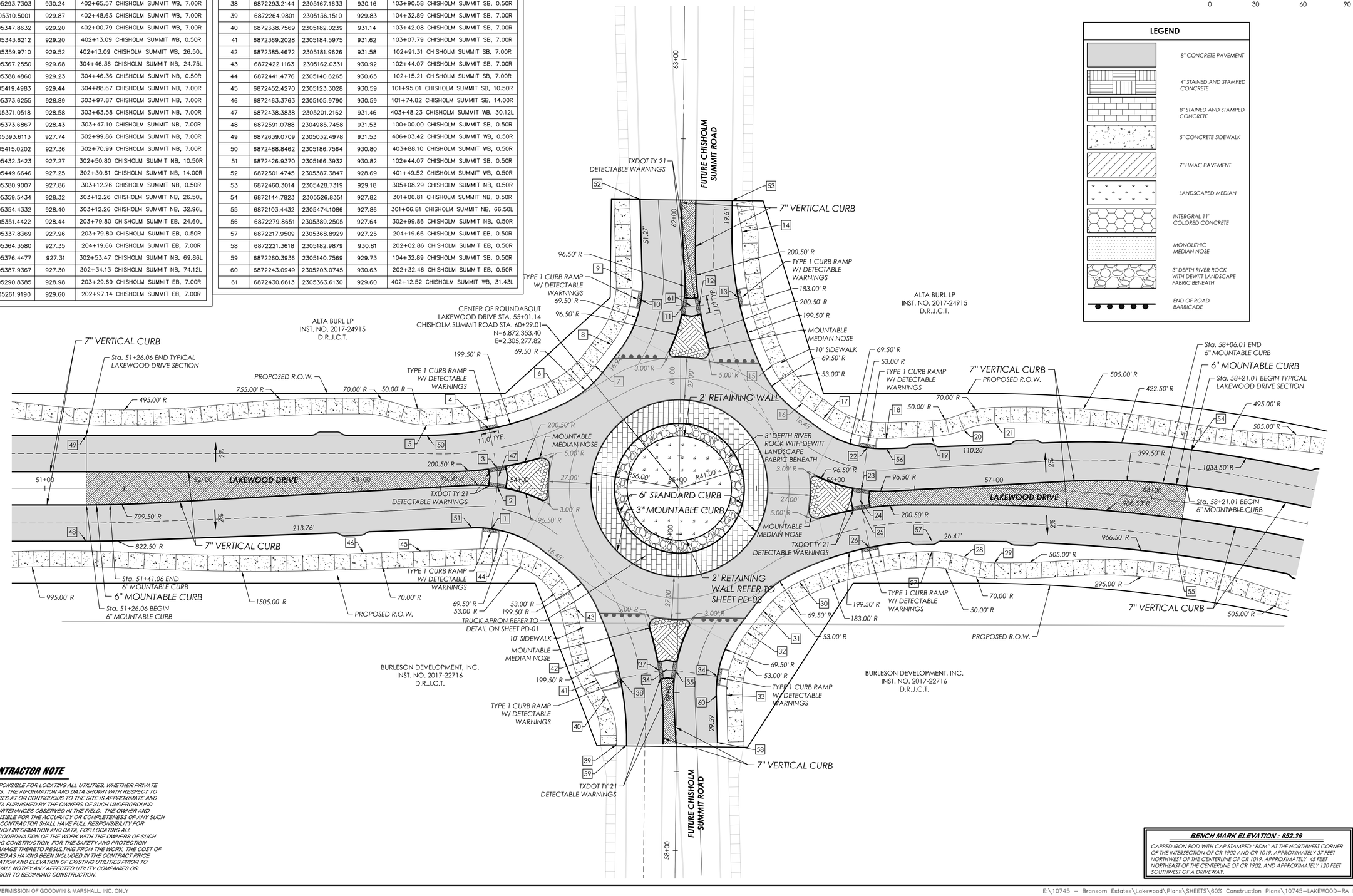
POINT TABLE				
POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	6872417.9127	2305174.7487	930.98	102+56.47 CHISHOLM SUMMIT SB, 0.50R
2	6872434.4313	2305196.1060	931.45	102+56.47 CHISHOLM SUMMIT SB, 26.50L
3	6872443.0213	2305204.2072	931.55	403+48.23 CHISHOLM SUMMIT WB, 24.60L
4	6872464.1159	2305217.8124	931.08	403+48.23 CHISHOLM SUMMIT WB, 0.50R
5	6872493.5029	2305191.2913	930.89	403+88.10 CHISHOLM SUMMIT WB, 7.00R
6	6872448.7080	2305264.8108	930.78	402+98.13 CHISHOLM SUMMIT WB, 7.00R
7	6872446.1051	2305293.7303	930.24	402+65.57 CHISHOLM SUMMIT WB, 7.00R
8	6872448.5159	2305310.5001	929.87	402+48.63 CHISHOLM SUMMIT WB, 7.00R
9	6872468.1810	2305347.8632	929.20	402+00.79 CHISHOLM SUMMIT WB, 7.00R
10	6872455.5661	2305343.6212	929.20	402+13.09 CHISHOLM SUMMIT WB, 0.50R
11	6872434.0792	2305359.9710	929.52	402+13.09 CHISHOLM SUMMIT WB, 26.50L
12	6872427.2434	2305367.2550	929.68	304+46.36 CHISHOLM SUMMIT NB, 24.75L
13	6872413.5827	2305388.4860	929.23	304+46.36 CHISHOLM SUMMIT NB, 0.50R
14	6872441.8170	2305419.4983	929.44	304+88.67 CHISHOLM SUMMIT NB, 7.00R
15	6872368.0402	2305373.6255	928.89	303+97.87 CHISHOLM SUMMIT NB, 7.00R
16	6872337.5943	2305371.0518	928.58	303+63.58 CHISHOLM SUMMIT NB, 7.00R
17	6872321.3298	2305373.6867	928.43	303+47.10 CHISHOLM SUMMIT NB, 7.00R
18	6872284.6852	2305393.6113	927.74	302+99.86 CHISHOLM SUMMIT NB, 7.00R
19	6872265.3165	2305415.0202	927.36	302+70.99 CHISHOLM SUMMIT NB, 7.00R
20	6872254.3649	2305432.3423	927.27	302+50.80 CHISHOLM SUMMIT NB, 10.50R
21	6872243.4132	2305449.6646	927.25	302+30.61 CHISHOLM SUMMIT NB, 14.00R
22	6872288.8844	2305380.9007	927.86	303+12.26 CHISHOLM SUMMIT NB, 0.50R
23	6872272.3657	2305359.5434	928.32	303+12.26 CHISHOLM SUMMIT NB, 26.50L
24	6872268.4133	2305354.4332	928.40	303+12.26 CHISHOLM SUMMIT NB, 32.96L
25	6872263.7758	2305351.4422	928.44	203+79.80 CHISHOLM SUMMIT EB, 24.60L
26	6872242.6811	2305337.8369	927.96	203+79.80 CHISHOLM SUMMIT EB, 0.50R
27	6872213.2942	2305364.3580	927.35	204+19.66 CHISHOLM SUMMIT EB, 7.00R
28	6872196.5653	2305376.4477	927.31	302+53.47 CHISHOLM SUMMIT NB, 69.86L
29	6872180.4296	2305387.9367	927.30	302+34.13 CHISHOLM SUMMIT NB, 74.12L
30	6872258.0891	2305290.8385	928.98	203+29.69 CHISHOLM SUMMIT EB, 7.00R
31	6872260.6920	2305261.9190	929.60	202+97.14 CHISHOLM SUMMIT EB, 7.00R

POINT TABLE				
POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
32	6872258.2812	2305245.1493	929.92	202+80.19 CHISHOLM SUMMIT EB, 7.00R
33	6872238.6830	2305207.8480	930.73	202+32.46 CHISHOLM SUMMIT EB, 7.00R
34	6872251.2310	2305212.0282	930.47	202+44.66 CHISHOLM SUMMIT EB, 0.50R
35	6872272.7179	2305195.6784	930.96	202+44.66 CHISHOLM SUMMIT EB, 26.50L
36	6872276.9284	2305192.4746	930.77	202+44.66 CHISHOLM SUMMIT EB, 31.79L
37	6872279.5620	2305188.3815	930.59	103+90.58 CHISHOLM SUMMIT SB, 24.73L
38	6872293.2144	2305167.1633	930.16	103+90.58 CHISHOLM SUMMIT SB, 0.50R
39	6872264.9801	2305136.1510	929.83	104+32.89 CHISHOLM SUMMIT SB, 7.00R
40	6872338.7569	2305182.0239	931.14	103+42.08 CHISHOLM SUMMIT SB, 7.00R
41	6872369.2028	2305184.5975	931.62	103+07.79 CHISHOLM SUMMIT SB, 7.00R
42	6872385.4672	2305181.9626	931.58	102+91.31 CHISHOLM SUMMIT SB, 7.00R
43	6872422.1163	2305162.0331	930.92	102+44.07 CHISHOLM SUMMIT SB, 7.00R
44	6872441.4776	2305140.6265	930.65	102+15.21 CHISHOLM SUMMIT SB, 7.00R
45	6872452.4270	2305123.3028	930.59	101+95.01 CHISHOLM SUMMIT SB, 10.50R
46	6872463.3763	2305105.9790	930.59	101+74.82 CHISHOLM SUMMIT SB, 14.00R
47	6872438.3838	2305201.2162	931.46	403+48.23 CHISHOLM SUMMIT WB, 30.12L
48	6872591.0788	2304985.7458	931.53	100+00.00 CHISHOLM SUMMIT SB, 0.50R
49	6872639.0709	2305032.4978	931.53	406+03.42 CHISHOLM SUMMIT WB, 0.50R
50	6872488.8462	2305186.7564	930.80	403+88.10 CHISHOLM SUMMIT WB, 0.50R
51	6872426.9370	2305166.3932	930.82	102+44.07 CHISHOLM SUMMIT SB, 0.50R
52	6872501.4745	2305387.3847	928.69	401+49.52 CHISHOLM SUMMIT WB, 0.50R
53	6872460.3014	2305428.7319	929.18	305+08.29 CHISHOLM SUMMIT NB, 0.50R
54	6872144.7823	2305526.8351	927.82	301+06.81 CHISHOLM SUMMIT NB, 0.50R
55	6872103.4432	2305474.1086	927.86	301+06.81 CHISHOLM SUMMIT NB, 66.50L
56	6872279.8651	2305389.2505	927.64	302+99.86 CHISHOLM SUMMIT NB, 0.50R
57	6872217.9509	2305368.8929	927.25	204+19.66 CHISHOLM SUMMIT EB, 0.50R
58	6872221.3618	2305182.9879	930.81	202+02.86 CHISHOLM SUMMIT EB, 0.50R
59	6872260.3936	2305140.7569	929.73	104+32.89 CHISHOLM SUMMIT SB, 0.50R
60	6872243.0949	2305203.0745	930.63	202+32.46 CHISHOLM SUMMIT EB, 0.50R
61	6872430.6613	2305363.6130	929.60	402+12.52 CHISHOLM SUMMIT WB, 31.43L



CONTRACTOR NOTE

THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UTILITIES, WHETHER PRIVATE OR PUBLIC, PRIOR TO EXCAVATING. THE INFORMATION AND DATA SHOWN WITH RESPECT TO EXISTING UNDERGROUND FACILITIES AT OR CONTIGUOUS TO THE SITE IS APPROXIMATE AND BASED ON INFORMATION AND DATA FURNISHED BY THE OWNERS OF SUCH UNDERGROUND FACILITIES OR ON PHYSICAL APPURTENANCES OBSERVED IN THE FIELD. THE OWNER AND ENGINEER SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ANY SUCH INFORMATION OR DATA, AND THE CONTRACTOR SHALL HAVE FULL RESPONSIBILITY FOR REVIEWING AND CHECKING ALL SUCH INFORMATION AND DATA, FOR LOCATING ALL UNDERGROUND FACILITIES, FOR COORDINATION OF THE WORK WITH THE OWNERS OF SUCH UNDERGROUND FACILITIES DURING CONSTRUCTION, FOR THE SAFETY AND PROTECTION THEREOF, AND REPAIRING ANY DAMAGE THERETO RESULTING FROM THE WORK, THE COST OF ALL OF WHICH WILL BE CONSIDERED AS HAVING BEEN INCLUDED IN THE CONTRACT PRICE. CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY ANY AFFECTED UTILITY COMPANIES OR AGENCIES AT LEAST 48 HOURS PRIOR TO BEGINNING CONSTRUCTION.

BENCH MARK ELEVATION : 852.36

CAPPED IRON ROD WITH CAP STAMPED "RDM" AT THE NORTHWEST CORNER OF THE INTERSECTION OF CR 1902 AND CR 1019, APPROXIMATELY 37 FEET NORTHWEST OF THE CENTERLINE OF CR 1019, APPROXIMATELY 45 FEET NORTHEAST OF THE CENTERLINE OF CR 1902, AND APPROXIMATELY 120 FEET SOUTHWEST OF A DRIVEWAY.

NO.	REVISION DATE
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LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 100170-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	7/6/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	RA-01

ROUNDABOUT PAVING PLAN

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NO.	REVISION DATE
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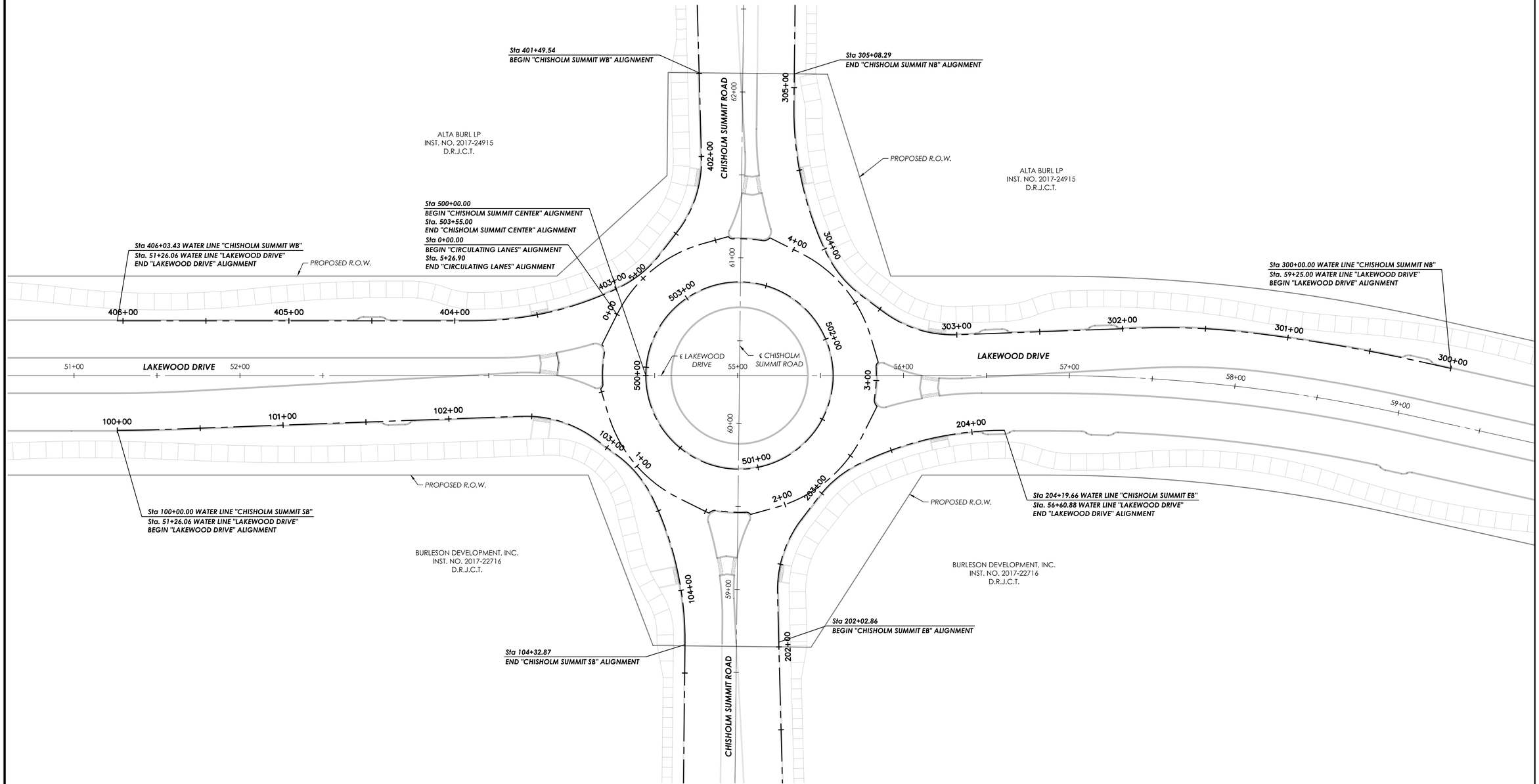
GRAPHIC SCALE 1"=30'
0 30 60 90

LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX



CONTRACTOR NOTE

THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UTILITIES, WHETHER PRIVATE OR PUBLIC, PRIOR TO EXCAVATING. THE INFORMATION AND DATA SHOWN WITH RESPECT TO EXISTING UNDERGROUND FACILITIES AT OR CONTIGUOUS TO THE SITE IS APPROXIMATE AND BASED ON INFORMATION AND DATA FURNISHED BY THE OWNERS OF SUCH UNDERGROUND FACILITIES OR ON PHYSICAL APPURTENANCES OBSERVED IN THE FIELD. THE OWNER AND ENGINEER SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ANY SUCH INFORMATION OR DATA. AND THE CONTRACTOR SHALL HAVE FULL RESPONSIBILITY FOR REVIEWING AND CHECKING ALL SUCH INFORMATION AND DATA, FOR LOCATING ALL UNDERGROUND FACILITIES. FOR COORDINATION OF THE WORK WITH THE OWNERS OF SUCH UNDERGROUND FACILITIES DURING CONSTRUCTION, FOR THE SAFETY AND PROTECTION THEREOF, AND REPAIRING ANY DAMAGE THERETO RESULTING FROM THE WORK, THE COST OF ALL OF WHICH WILL BE CONSIDERED AS HAVING BEEN INCLUDED IN THE CONTRACT PRICE. CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY ANY AFFECTED UTILITY COMPANIES OR AGENCIES AT LEAST 48 HOURS PRIOR TO BEGINNING CONSTRUCTION.

BENCH MARK ELEVATION : 852.36

CAPPED IRON ROD WITH CAP STAMPED "RDM" AT THE NORTHWEST CORNER OF THE INTERSECTION OF CR 1902 AND CR 1019. APPROXIMATELY 37 FEET NORTHWEST OF THE CENTERLINE OF CR 1019. APPROXIMATELY 45 FEET NORTHEAST OF THE CENTERLINE OF CR 1902. AND APPROXIMATELY 120 FEET SOUTHWEST OF A DRIVEWAY.

GOODWIN MARSHALL
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 - TxSurv Firm # 100170-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	2/10/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	RA-02

ROUNDABOUT ALIGNMENT PLAN

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****
File: E:\10745 - Bransom Estates\Lakewood\Plans\ED18\oRoundabout Grading.dwg
Report Date: 5/16/2022 7:35:45 AM
Alignment Name: CHISHOLM SUMMIT CENTER
Station Range: Start: 500+00.00, End: 503+55.00
Description:
****
Begin CHISHOLM SUMMIT CENTER
N 6,872,392.8173 E 2,305,237.3474 500+00.00
Curve (1)
BC N 6,872,392.8173 E 2,305,237.3474 500+00.00
CTR N 6,872,353.3968 E 2,305,277.8230
PI N 0.0000 E 0.0000
Direction Back S44° 14' 36.39"W
Radius 56.500'
Delta 360°00'00"(LT)
Length 355.000'
Tangent 0.000'
Chord Direction N44° 14' 36.41"E Distance 0.000'
Direction Ahead S44° 14' 36.42"W
EC N 6,872,392.8173 E 2,305,237.3474 503+55.00
Curve (1)
N 6,872,392.8173 E 2,305,237.3474 503+55.00
End CHISHOLM SUMMIT CENTER
****
Alignment Length: 355.000'
****
File: E:\10745 - Bransom Estates\Lakewood\Plans\ED18\oRoundabout Grading.dwg
Report Date: 5/16/2022 7:35:45 AM
Alignment Name: CHISHOLM SUMMIT EB
Station Range: Start: 200+00.00, End: 204+19.66
Description:
****
Begin CHISHOLM SUMMIT EB
N 6,872,083.6710 E 2,305,034.9914 200+00.00
Curve (1)
BC N 6,872,083.6710 E 2,305,034.9914 200+00.00
CTR N 6,872,531.3067 E 2,304,749.3634
PI N 6,872,088.5891 E 2,305,042.6990
Direction Back N57° 27' 31.74"E
Radius 531.000'
Delta 1°58'22"(LT)
Length 18.284'
Tangent 9.143'
Chord Direction N56° 28' 20.51"E Distance 18.283'
Direction Ahead N55° 29' 09.27"E
EC N 6,872,093.7697 E 2,305,050.2328 200+18.28
Curve (1)
Compound Curve
Curve (2)
BC N 6,872,093.7697 E 2,305,050.2328 200+18.28
CTR N 6,872,441.4921 E 2,304,811.1238
PI N 6,872,120.4642 E 2,305,089.0532
Direction Back N55° 29' 09.27"E
Radius 422.000'
Delta 12°44'26"(LT)
Length 93.837'
Tangent 47.113'
Chord Direction N49° 06' 56.44"E Distance 93.644'
Direction Ahead N42° 44' 43.60"E
EC N 6,872,155.0628 E 2,305,121.0307 201+12.12
Curve (2)
Line (3)
N42° 44' 43.60"E 120.335'
N 6,872,243.4342 E 2,305,202.7073 202+32.46
Line (3)
Curve (4)
BC N 6,872,243.4342 E 2,305,202.7073 202+32.46
CTR N 6,872,195.9223 E 2,305,254.1137
PI N 6,872,261.6756 E 2,305,219.5668
Direction Back N42° 44' 43.60"E
Radius 70.000'
Delta 39°04'27"(RT)
Length 47.738'
Tangent 24.839'
Chord Direction N62° 16' 56.87"E Distance 46.818'
Direction Ahead N81° 49' 10.13"E
EC N 6,872,265.2100 E 2,305,244.1532 202+80.19
Curve (4)
Line (5)
N81° 49' 10.13"E 16.942'
N 6,872,267.6207 E 2,305,260.9230 202+97.14
Line (5)
Curve (6)
BC N 6,872,267.6207 E 2,305,260.9230 202+97.14
CTR N 6,872,198.3330 E 2,305,270.8834
PI N 6,872,269.9796 E 2,305,277.3318
Direction Back N81° 49' 10.13"E
Radius 70.000'
Delta 26°38'49"(RT)
Length 32.555'
Tangent 16.578'
Chord Direction S84° 51' 25.51"E Distance 32.263'
Direction Ahead S71° 32' 01.15"E
EC N 6,872,264.7287 E 2,305,293.0558 203+29.69
Curve (6)
Compound Curve
Curve (7)
BC N 6,872,264.7287 E 2,305,293.0558 203+29.69
CTR N 6,872,075.0267 E 2,305,229.7062
PI N 6,872,250.2345 E 2,305,336.4591
Direction Back S71° 32' 01.15"E
Radius 200.000'
Delta 25°46'29"(RT)
Length 89.970'
Tangent 45.760'
Chord Direction S58° 38' 46.81"E Distance 89.214'
Direction Ahead S45° 45' 32.46"E
EC N 6,872,218.3091 E 2,305,369.2418 204+19.66
Curve (7)
N 6,872,218.3091 E 2,305,369.2418 204+19.66
End CHISHOLM SUMMIT EB

****
Alignment Length: 419.663'
****
File: E:\10745 - Bransom Estates\Lakewood\Plans\ED18\oRoundabout Grading.dwg
Report Date: 5/16/2022 7:35:45 AM
Alignment Name: CHISHOLM SUMMIT NB
Station Range: Start: 300+00.00, End: 306+57.74
Description:
****
Begin CHISHOLM SUMMIT NB
N 6,872,057.2584 E 2,305,588.0245 300+00.00
Line (1)
N33° 12' 33.06"W 18.674'
N 6,872,072.8828 E 2,305,577.7965 300+18.67
Line (1)
Curve (2)
BC N 6,872,072.8828 E 2,305,577.7965 300+18.67
CTR N 6,871,507.1115 E 2,304,713.5097
PI N 6,872,109.7743 E 2,305,553.6470
Direction Back N33° 12' 33.06"W
Radius 1,033.000'
Delta 4°53'18"(LT)
Length 88.132'
Tangent 44.093'
Chord Direction N35° 39' 11.99"W Distance 88.106'
Direction Ahead N38° 05' 50.92"W
EC N 6,872,144.4738 E 2,305,526.4416 301+06.81
Curve (2)
Compound Curve
Curve (3)
BC N 6,872,144.4738 E 2,305,526.4416 301+06.81
CTR N 6,871,507.1115 E 2,304,713.5097
PI N 6,872,151.6853 E 2,305,520.7875
Direction Back N38° 05' 50.92"W
Radius 1,033.000'
Delta 1°00'59"(LT)
Length 18.327'
Tangent 9.164'
Chord Direction N38° 36' 20.67"W Distance 18.327'
Direction Ahead N39° 06' 50.41"W
EC N 6,872,158.7955 E 2,305,515.0064 301+25.13
Curve (3)
Compound Curve
Curve (4)
BC N 6,872,158.7955 E 2,305,515.0064 301+25.13
CTR N 6,871,892.5703 E 2,305,187.5798
PI N 6,872,183.8465 E 2,305,494.6378
Direction Back N39° 06' 50.41"W
Radius 422.000'
Delta 8°45'01"(LT)
Length 64.448'
Tangent 32.287'
Chord Direction N43° 29' 20.77"W Distance 64.385'
Direction Ahead N47° 51' 51.14"W
EC N 6,872,205.5073 E 2,305,470.6954 301+89.58
Curve (4)
Line (5)
N47° 51' 51.14"W 110.282'
N 6,872,279.4943 E 2,305,388.9151 302+99.86
Line (5)
Non-Tangent Radial Bearing S42° 08' 03.03"W
Curve (6)
BC N 6,872,279.4943 E 2,305,388.9151 302+99.86
CTR N 6,872,331.4046 E 2,305,435.8759
PI N 6,872,295.9691 E 2,305,370.7039
Direction Back N47° 51' 56.97"W
Radius 70.000'
Delta 38°39'49"(RT)
Length 47.237'
Tangent 24.557'
Chord Direction N28° 32' 02.25"W Distance 46.345'
Direction Ahead N9° 12' 07.53"W
EC N 6,872,320.2104 E 2,305,366.7768 303+47.10
Curve (6)
Line (7)
N9° 12' 07.52"W 16.476'
N 6,872,336.4749 E 2,305,364.1419 303+63.58
Line (7)
Curve (8)
BC N 6,872,336.4749 E 2,305,364.1419 303+63.58
CTR N 6,872,347.6691 E 2,305,433.2411
PI N 6,872,353.7467 E 2,305,361.3439
Direction Back N9° 12' 07.52"W
Radius 70.000'
Delta 28°04'04"(RT)
Length 34.291'
Tangent 17.497'
Chord Direction N4° 49' 54.54"E Distance 33.949'
Direction Ahead N18° 51' 56.61"E
EC N 6,872,370.3037 E 2,305,367.0015 303+97.87
Curve (8)
Compound Curve
Curve (9)
BC N 6,872,370.3037 E 2,305,367.0015 303+97.87
CTR N 6,872,305.6334 E 2,305,556.2573
PI N 6,872,414.0203 E 2,305,381.9399
Direction Back N18° 51' 56.61"E
Radius 200.000'
Delta 26°00'49"(RT)
Length 90.804'
Tangent 46.198'
Chord Direction N31° 52' 20.90"E Distance 90.026'
Direction Ahead N44° 52' 45.19"E
EC N 6,872,446.7563 E 2,305,414.5382 304+88.67
Curve (9)
Line (10)
N44° 52' 45.19"E 54.614'
N 6,872,485.4555 E 2,305,453.0746 305+43.29
Line (10)
Line (11)
N44° 52' 45.19"E 114.455'
N 6,872,566.5578 E 2,305,533.8357 306+57.74
Line (11)
N 6,872,566.5578 E 2,305,533.8357 306+57.74
End CHISHOLM SUMMIT NB
****
Alignment Length: 657.741'
****
File: E:\10745 - Bransom Estates\Lakewood\Plans\ED18\oRoundabout Grading.dwg
Report Date: 5/16/2022 7:35:45 AM
Alignment Name: CHISHOLM SUMMIT SB
Station Range: Start: 100+00.00, End: 105+94.18
Description:
****
Begin CHISHOLM SUMMIT SB
N 6,872,591.4370 E 2,304,986.0946 100+00.00
Curve (1)
BC N 6,872,591.4370 E 2,304,986.0946 100+00.00
CTR N 6,873,180.3275 E 2,305,559.5857
PI N 6,872,580.8609 E 2,304,996.9547
Direction Back S45° 45' 32.46"E
Radius 822.000'
Delta 2°06'47"(LT)
Length 30.315'
Tangent 15.159'
Chord Direction S46° 48' 55.90"E Distance 30.313'
Direction Ahead S47° 52' 19.34"E
EC N 6,872,570.6923 E 2,305,008.1974 100+30.31
Curve (1)
Line (2)
S47° 52' 19.34"E 213.755'
N 6,872,427.3079 E 2,305,166.7286 102+44.07
Line (2)
Curve (3)
BC N 6,872,427.3079 E 2,305,166.7286 102+44.07
CTR N 6,872,375.3925 E 2,305,119.7734
PI N 6,872,410.8322 E 2,305,184.9447
Direction Back S47° 52' 19.34"E
Radius 70.000'
Delta 38°40'12"(RT)
Length 47.244'
Tangent 24.562'
Chord Direction S28° 32' 13.43"E Distance 46.353'
Direction Ahead S9° 12' 07.52"E
EC N 6,872,386.5867 E 2,305,188.8726 102+91.31
Curve (3)
Line (4)
S9° 12' 07.52"E 16.476'
N 6,872,370.3222 E 2,305,191.5074 103+07.79
Line (4)
Curve (5)
BC N 6,872,370.3222 E 2,305,191.5074 103+07.79
CTR N 6,872,359.1280 E 2,305,122.4083
PI N 6,872,353.0504 E 2,305,194.3055
Direction Back S9° 12' 07.52"E
Radius 70.000'
Delta 28°04'04"(RT)
Length 34.291'
Tangent 17.497'
Chord Direction S4° 49' 54.54"W Distance 33.949'
Direction Ahead S18° 51' 56.61"W
EC N 6,872,336.4934 E 2,305,188.6478 103+42.08
Curve (5)
Compound Curve

BENCH MARK ELEVATION : 852.36

CAPPED IRON ROD WITH CAP STAMPED "RDM" AT THE NORTHWEST CORNER OF THE INTERSECTION OF CR 1902 AND CR 1019, APPROXIMATELY 37 FEET NORTHWEST OF THE CENTERLINE OF CR 1019, APPROXIMATELY 45 FEET NORTHEAST OF THE CENTERLINE OF CR 1902, AND APPROXIMATELY 120 FEET SOUTHWEST OF A DRIVEWAY.

NO.	REVISION DATE
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LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEngFirm # F2644 – TxSurv Firm # 100270

STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	2/18/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	RA-03

ROUNDABOUT ALIGNMENT DATA

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Curve (6)
BC N 6,872,336.4934 E 2,305,188.6478 103+42.08
CTR N 6,872,401.1637 E 2,304,999.3920
PI N 6,872,292.7861 E 2,305,173.7127
Direction Back S18° 51' 56.61"W
Radius 200.000'
Delta 26°00'29"(RT)
Length 90.786'
Tangent 46.189'
Chord Direction S31° 52' 11.29"W Distance 90.008'
Direction Ahead S44° 52' 25.97"W
EC N 6,872,260.0540 E 2,305,141.1243 104+32.87
Curve (6)
Line (7)
Non-Tangent Radial Bearing S45° 07' 34.03"E
S44° 52' 45.19"W 84.224'
N 6,872,200.3734 E 2,305,081.6949 105+17.09
Line (7)
Curve (8)
BC N 6,872,200.3734 E 2,305,081.6949 105+17.09
CTR N 6,872,531.3067 E 2,304,749.3634
PI N 6,872,172.9984 E 2,305,054.4350
Direction Back S44° 52' 45.19"W
Radius 469.000'
Delta 9°25'05"(RT)
Length 77.092'
Tangent 38.633'
Chord Direction S49° 35' 17.52"W Distance 77.005'
Direction Ahead S54° 17' 49.86"W
EC N 6,872,150.4530 E 2,305,023.0630 105+94.18
Curve (8)
N 6,872,150.4530 E 2,305,023.0630 105+94.18
End CHISHOLM SUMMIT SB

****

Alignment Length: 594.183'

****

File: E:\10745 - Bransom Estates\Lakewood\Plans\ED18\oRoundabout Grading.dwg
Report Date: 5/16/2022 7:35:45 AM
Alignment Name: CHISHOLM SUMMIT WB
Station Range: Start: 400+00.00, End: 406+03.43
Description:

****

Begin CHISHOLM SUMMIT WB
N 6,872,610.3059 E 2,305,489.9027 400+00.00
Line (1)
S44° 52' 45.19"W 21.160'
N 6,872,595.3120 E 2,305,474.9719 400+21.16
Line (1)
Curve (2)
BC N 6,872,595.3120 E 2,305,474.9719 400+21.16
CTR N 6,872,297.5426 E 2,305,773.9993
PI N 6,872,589.5274 E 2,305,469.2116
Direction Back S44° 52' 45.19"W
Radius 422.000'
Delta 2°12'59"(LT)
Length 16.325'
Tangent 8.164'
Chord Direction S43° 46' 15.53"W Distance 16.324'
Direction Ahead S42° 39' 45.87"W
EC N 6,872,583.5243 E 2,305,463.6793 400+37.49
Curve (2)
Line (3)
S42° 39' 45.87"W 163.305'
N 6,872,463.4372 E 2,305,353.0107 402+00.79
Line (3)
Non-Tangent Radial Bearing S47° 20' 14.72"E
Curve (4)
BC N 6,872,463.4372 E 2,305,353.0107 402+00.79
CTR N 6,872,510.8748 E 2,305,301.5357
PI N 6,872,445.1296 E 2,305,336.1390
Direction Back S42° 39' 45.28"W
Radius 70.000'
Delta 39°09'25"(RT)
Length 47.839'
Tangent 24.896'
Chord Direction S62° 14' 27.70"W Distance 46.914'
Direction Ahead S81° 49' 10.13"W
EC N 6,872,441.5871 E 2,305,311.4961 402+48.63
Curve (4)
Line (5)
S81° 49' 10.13"W 16.942'
N 6,872,439.1763 E 2,305,294.7264 402+65.57
Line (5)
Curve (6)
BC N 6,872,439.1763 E 2,305,294.7264 402+65.57
CTR N 6,872,508.4641 E 2,305,284.7659
PI N 6,872,436.8175 E 2,305,278.3175
Direction Back S81° 49' 10.13"W
Radius 70.000'
Delta 26°38'49"(RT)
Length 32.555'
Tangent 16.578'
Chord Direction N84° 51' 25.51"W Distance 32.263'
Direction Ahead N71° 32' 01.15"W
EC N 6,872,442.0684 E 2,305,262.5936 402+98.13
Curve (6)
Compound Curve
Curve (7)
BC N 6,872,442.0684 E 2,305,262.5936 402+98.13
CTR N 6,872,631.7704 E 2,305,325.9431
PI N 6,872,456.5626 E 2,305,219.1902
Direction Back N71° 32' 01.15"W
Radius 200.000'
Delta 25°46'29"(RT)
Length 89.970'
Tangent 45.760'
Chord Direction N58° 38' 46.81"W Distance 89.214'
Direction Ahead N45° 45' 32.46"W
EC N 6,872,488.4880 E 2,305,186.4076 403+88.10
Curve (7)
Line (8)
N45° 45' 32.46"W 215.332'
N 6,872,638.7202 E 2,305,032.1413 406+03.43
Line (8)
N 6,872,638.7202 E 2,305,032.1413 406+03.43
End CHISHOLM SUMMIT WB

****

Alignment Length: 603.429'

****

File: E:\10745 - Bransom Estates\Lakewood\Plans\ED18\oRoundabout Grading.dwg
Report Date: 5/16/2022 7:35:45 AM
Alignment Name: CIRCULATING LANES
Station Range: Start: 0+00.00, End: 5+26.90
Description:

****

Begin CIRCULATING LANES
N 6,872,431.2965 E 2,305,250.6557 0+00.00
Line (1)
S70° 46' 21.09"W 20.390'
N 6,872,424.5816 E 2,305,231.4029 0+20.39
Line (1)
Curve (2)
BC N 6,872,424.5816 E 2,305,231.4029 0+20.39
CTR N 6,872,424.2047 E 2,305,226.4171
PI N 6,872,421.7985 E 2,305,231.6133
Direction Back S4° 19' 24.32"E
Radius 5.000'
Delta 58°20'33"(RT)
Length 5.091'
Tangent 2.791'
Chord Direction S24° 50' 52.30"W Distance 4.874'
Direction Ahead S54° 01' 08.92"W
EC N 6,872,420.1586 E 2,305,229.3547 0+25.48
Curve (2)
Reversing Curve
Non-Tangent Radial Bearing N35° 58' 51.08"W
Curve (3)
BC N 6,872,420.1586 E 2,305,229.3547 0+25.48
CTR N 6,872,353.3985 E 2,305,277.8247
PI N 6,872,414.4482 E 2,305,221.4894
Direction Back S54° 01' 08.92"W
Radius 82.500'
Delta 13°26'19"(LT)
Length 19.350'
Tangent 9.720'
Chord Direction S47° 17' 59.45"W Distance 19.306'
Direction Ahead S40° 34' 49.98"W
EC N 6,872,407.0661 E 2,305,215.1666 0+44.83
Curve (3)
Reversing Curve
Curve (4)
BC N 6,872,407.0661 E 2,305,215.1666 0+44.83
CTR N 6,872,409.0177 E 2,305,212.8881
PI N 6,872,405.7564 E 2,305,214.0448
Direction Back S40° 34' 49.98"W
Radius 3.000'
Delta 59°46'55"(RT)
Length 3.130'
Tangent 1.724'
Chord Direction S70° 28' 17.55"W Distance 2.990'
Direction Ahead N79° 38' 14.89"W
EC N 6,872,406.0666 E 2,305,212.3485 0+47.96
Curve (4)
Line (5)
Non-Tangent Radial Bearing S10° 21' 45.11"W
S27° 51' 42.91"W 15.963'
N 6,872,391.9543 E 2,305,204.8884 0+63.92
Line (5)
Curve (6)
BC N 6,872,391.9543 E 2,305,204.8884 0+63.92
CTR N 6,872,353.3985 E 2,305,277.8247
PI N 6,872,360.0670 E 2,305,188.0321
Direction Back S27° 51' 42.91"W
Radius 82.500'
Delta 47°13'45"(LT)
Length 68.005'
Tangent 36.068'
Chord Direction S4° 14' 50.28"W Distance 66.096'
Direction Ahead S19° 22' 02.35"E
EC N 6,872,326.0396 E 2,305,199.9932 1+31.93
Curve (6)
Line (7)
S19° 22' 02.35"E 20.390'
N 6,872,306.8032 E 2,305,206.7551 1+52.32
Line (7)
Non-Tangent Radial Bearing N4° 27' 47.75"W
Curve (8)
BC N 6,872,306.8032 E 2,305,206.7551 1+52.32
CTR N 6,872,301.8183 E 2,305,207.1442
PI N 6,872,307.0204 E 2,305,209.5377
Direction Back N85° 32' 12.25"E
Radius 5.000'
Delta 58°20'33"(RT)
Length 5.091'
Tangent 2.791'
Chord Direction S65° 17' 31.14"E Distance 4.874'
Direction Ahead S36° 07' 14.52"E
EC N 6,872,304.7658 E 2,305,211.1831 1+57.41
Curve (8)
Reversing Curve
Curve (9)
BC N 6,872,304.7658 E 2,305,211.1831 1+57.41
CTR N 6,872,353.3985 E 2,305,277.8247
PI N 6,872,297.5033 E 2,305,216.4830
Direction Back S36° 07' 14.52"E
Radius 82.500'
Delta 12°26'20"(LT)
Length 17.911'
Tangent 8.991'
Chord Direction S42° 20' 24.47"E Distance 17.876'
Direction Ahead S48° 33' 34.43"E
EC N 6,872,291.5529 E 2,305,223.2228 1+75.32
Curve (9)
Reversing Curve
Curve (10)
BC N 6,872,291.5529 E 2,305,223.2228 1+75.32
CTR N 6,872,289.3040 E 2,305,221.2373
PI N 6,872,290.4162 E 2,305,224.5103
Direction Back S48° 33' 34.43"E
Radius 3.000'
Delta 59°34'56"(RT)
Length 3.120'
Tangent 1.717'
Chord Direction S18° 46' 06.67"E Distance 2.981'
Direction Ahead S11° 01' 21.09"W
EC N 6,872,288.7304 E 2,305,224.1819 1+78.44
Curve (10)
Line (11)
Non-Tangent Radial Bearing S78° 58' 38.91"E
S61° 14' 32.40"E 15.914'
N 6,872,281.0739 E 2,305,238.1334 1+94.36
Line (11)
Curve (12)
BC N 6,872,281.0739 E 2,305,238.1334 1+94.36
CTR N 6,872,353.3985 E 2,305,277.8247
PI N 6,872,263.4084 E 2,305,270.3232
Direction Back S61° 14' 32.40"E
Radius 82.500'
Delta 47°59'07"(LT)
Length 69.094'
Tangent 36.719'
Chord Direction S85° 14' 05.66"E Distance 67.092'
Direction Ahead N70° 46' 21.09"E
EC N 6,872,275.5005 E 2,305,304.9935 2+63.45
Curve (12)
Line (13)
N70° 46' 21.09"E 20.390'
N 6,872,282.2154 E 2,305,324.2465 2+83.84
Line (13)
Non-Tangent Radial Bearing S85° 40' 35.68"W
Curve (14)
BC N 6,872,282.2154 E 2,305,324.2465 2+83.84
CTR N 6,872,282.5924 E 2,305,329.2322
PI N 6,872,284.9986 E 2,305,324.0360
Direction Back N4° 19' 24.32"W
Radius 5.000'
Delta 58°20'33"(RT)
Length 5.091'
Tangent 2.791'
Chord Direction N24° 50' 52.30"E Distance 4.874'
Direction Ahead N54° 01' 08.92"E
EC N 6,872,286.6384 E 2,305,326.2947 2+88.93
Curve (14)
Reversing Curve
Curve (15)
BC N 6,872,286.6384 E 2,305,326.2947 2+88.93
CTR N 6,872,353.3985 E 2,305,277.8247
PI N 6,872,292.3489 E 2,305,334.1600
Direction Back N54° 01' 08.92"E
Radius 82.500'
Delta 13°26'19"(LT)
Length 19.350'
Tangent 9.720'
Chord Direction N47° 17' 59.45"E Distance 19.306'
Direction Ahead N40° 34' 49.98"E
EC N 6,872,299.7309 E 2,305,340.4828 3+08.28
Curve (15)

BENCH MARK ELEVATION : 852.36

CAPPED IRON ROD WITH CAP STAMPED "RDM" AT THE NORTHWEST CORNER OF THE INTERSECTION OF CR 1902 AND CR 1019, APPROXIMATELY 37 FEET NORTHWEST OF THE CENTERLINE OF CR 1019, APPROXIMATELY 45 FEET NORTHEAST OF THE CENTERLINE OF CR 1902, AND APPROXIMATELY 120 FEET SOUTHWEST OF A DRIVEWAY.

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CHISHOLM SUMMIT

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 10007700

STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	2/18/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	RA-04

ROUNDABOUT ALIGNMENT DATA

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Reversing Curve
Curve (16)
BC N 6,872,299.7309 E 2,305,340.4828 3+08.28
CTR N 6,872,297.7794 E 2,305,342.7613
PI N 6,872,301.0406 E 2,305,341.6046
Direction Back N40° 34' 49.98"E
Radius 3.000'
Delta 59°46'55"(RT)
Length 3.130'
Tangent 1.724'
Chord Direction N70° 28' 17.55"E Distance 2.990'
Direction Ahead S79° 38' 14.89"E
EC N 6,872,300.7305 E 2,305,343.3009 3+11.41
Curve (16)
Line (17)
Non-Tangent Radial Bearing N10° 21' 45.11"E
N27° 51' 42.91"E 15.963'
N 6,872,314.8428 E 2,305,350.7610 3+27.37
Line (17)
Curve (18)
BC N 6,872,314.8428 E 2,305,350.7610 3+27.37
CTR N 6,872,353.3985 E 2,305,277.8247
PI N 6,872,346.7301 E 2,305,367.6173
Direction Back N27° 51' 42.91"E
Radius 82.500'
Delta 47°13'45"(LT)
Length 68.005'
Tangent 36.068'
Chord Direction N4° 14' 50.28"E Distance 66.096'
Direction Ahead N19° 22' 02.35"W
EC N 6,872,380.7574 E 2,305,355.6562 3+95.38
Curve (18)
Line (19)
N19° 22' 02.35"W 20.390'
N 6,872,399.9939 E 2,305,348.8943 4+15.77
Line (19)
Non-Tangent Radial Bearing S4° 27' 47.75"E
Curve (20)
BC N 6,872,399.9939 E 2,305,348.8943 4+15.77
CTR N 6,872,404.9788 E 2,305,348.5052
PI N 6,872,399.7767 E 2,305,346.1116
Direction Back S85° 32' 12.25"W
Radius 5.000'
Delta 58°20'33"(RT)
Length 5.091'
Tangent 2.791'
Chord Direction N65° 17' 31.14"W Distance 4.874'
Direction Ahead N36° 07' 14.52"W
EC N 6,872,402.0313 E 2,305,344.4663 4+20.86
Curve (20)
Reversing Curve
Curve (21)
BC N 6,872,402.0313 E 2,305,344.4663 4+20.86
CTR N 6,872,353.3985 E 2,305,277.8247
PI N 6,872,409.2938 E 2,305,339.1664
Direction Back N36° 07' 14.52"W
Radius 82.500'
Delta 12°26'20"(LT)
Length 17.911'
Tangent 8.991'
Chord Direction N42° 20' 24.47"W Distance 17.876'
Direction Ahead N48° 33' 34.43"W
EC N 6,872,415.2442 E 2,305,332.4266 4+38.77
Curve (21)
Reversing Curve
Curve (22)
BC N 6,872,415.2442 E 2,305,332.4266 4+38.77
CTR N 6,872,417.4931 E 2,305,334.4121
PI N 6,872,416.3809 E 2,305,331.1391
Direction Back N48° 33' 34.43"W
Radius 3.000'
Delta 59°34'56"(RT)
Length 3.120'
Tangent 1.717'
Chord Direction N18° 46' 06.67"W Distance 2.981'
Direction Ahead N11° 01' 21.09"E
EC N 6,872,418.0667 E 2,305,331.4674 4+41.89
Curve (22)
Line (23)
Non-Tangent Radial Bearing N78° 58' 38.91"W
N61° 14' 32.40"W 15.914'
N 6,872,425.7232 E 2,305,317.5159 4+57.81
Line (23)
Curve (24)
BC N 6,872,425.7232 E 2,305,317.5159 4+57.81
CTR N 6,872,353.3985 E 2,305,277.8247
PI N 6,872,443.3887 E 2,305,285.3262
Direction Back N61° 14' 32.40"W
Radius 82.500'
Delta 47°59'07"(LT)
Length 69.094'
Tangent 36.719'
Chord Direction N85° 14' 05.66"W Distance 67.092'
Direction Ahead S70° 46' 21.09"W
EC N 6,872,431.2966 E 2,305,250.6558 5+26.90
Curve (24)
N 6,872,431.2966 E 2,305,250.6558 5+26.90
End CIRCULATING LANES
****
Alignment Length: 526.900'
****

BENCH MARK ELEVATION : 852.36

CAPPED IRON ROD WITH CAP STAMPED "RDM" AT THE NORTHWEST CORNER OF THE INTERSECTION OF CR 1902 AND CR 1019, APPROXIMATELY 37 FEET NORTHWEST OF THE CENTERLINE OF CR 1019, APPROXIMATELY 45 FEET NORTHEAST OF THE CENTERLINE OF CR 1902, AND APPROXIMATELY 120 FEET SOUTHWEST OF A DRIVEWAY.

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LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329-4373
TxEng Firm # F-2644 – TxSur Firm # 100170

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER

09/28/22

JOB NO. :	10745
DATE :	2/18/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE

SHEET **RA-05**

ROUNDABOUT ALIGNMENT DATA

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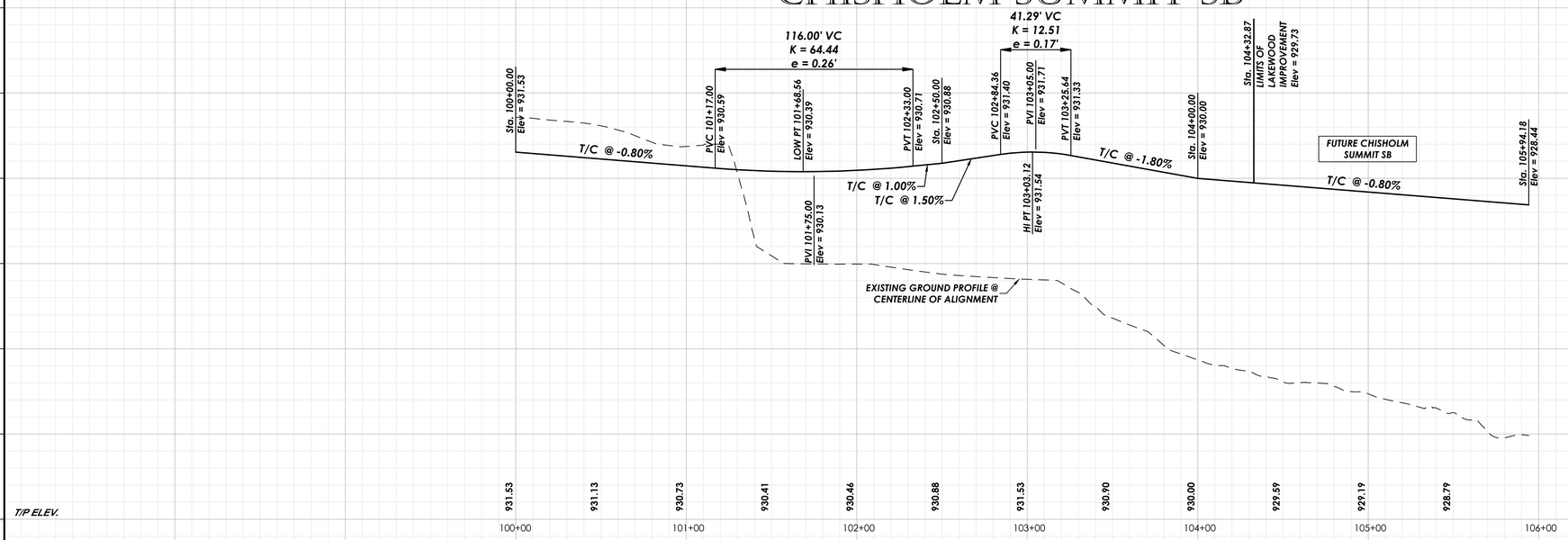
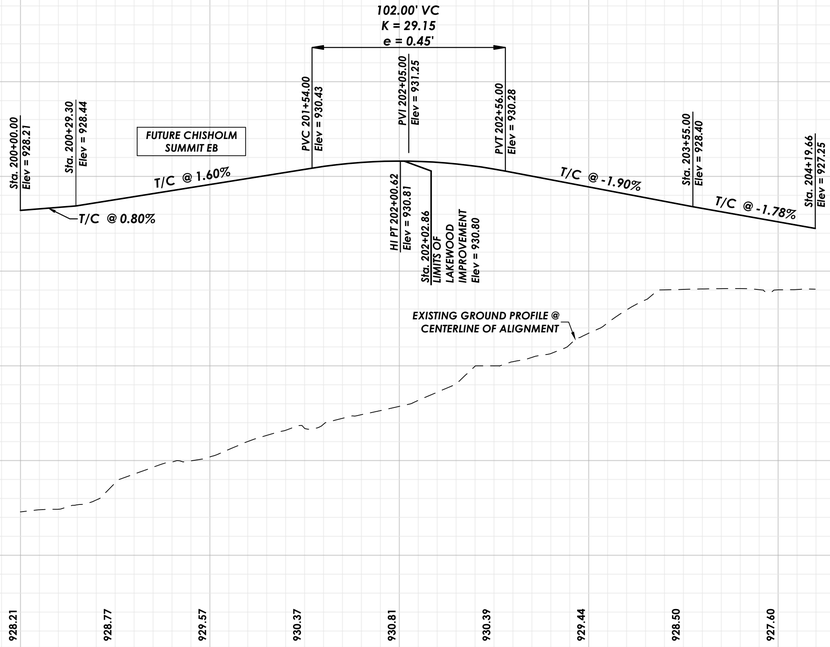
PROFILE SCALE
Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 4'

CHISHOLM SUMMIT SB



CHISHOLM SUMMIT EB



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LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 100170

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	2/14/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE

SHEET **RA-06**

ROUNDABOUT PROFILES

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PROFILE SCALE
Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 4'

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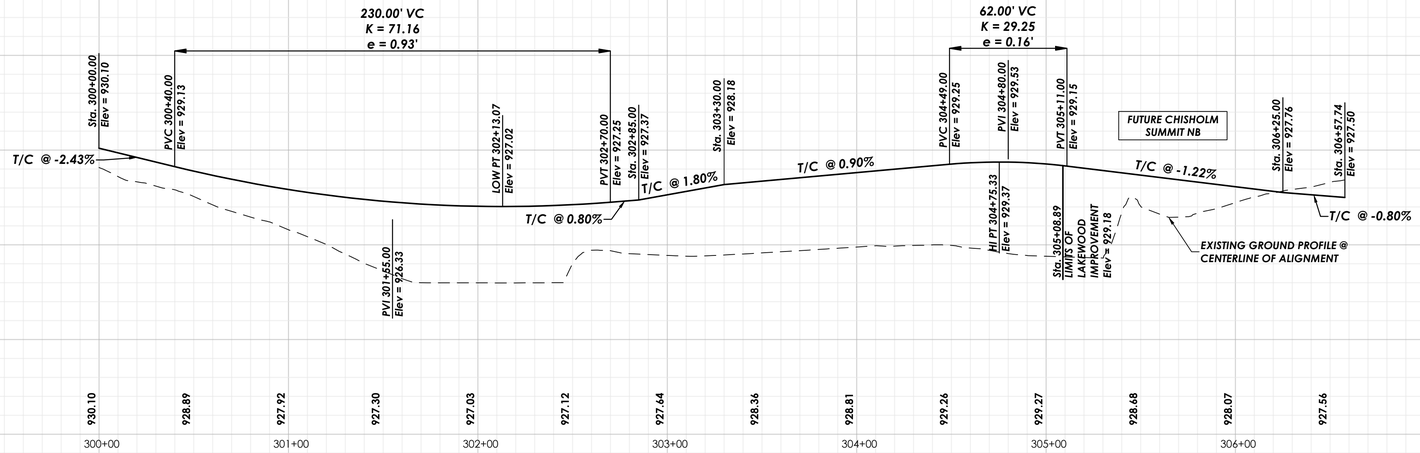
CHISHOLM SUMMIT NB



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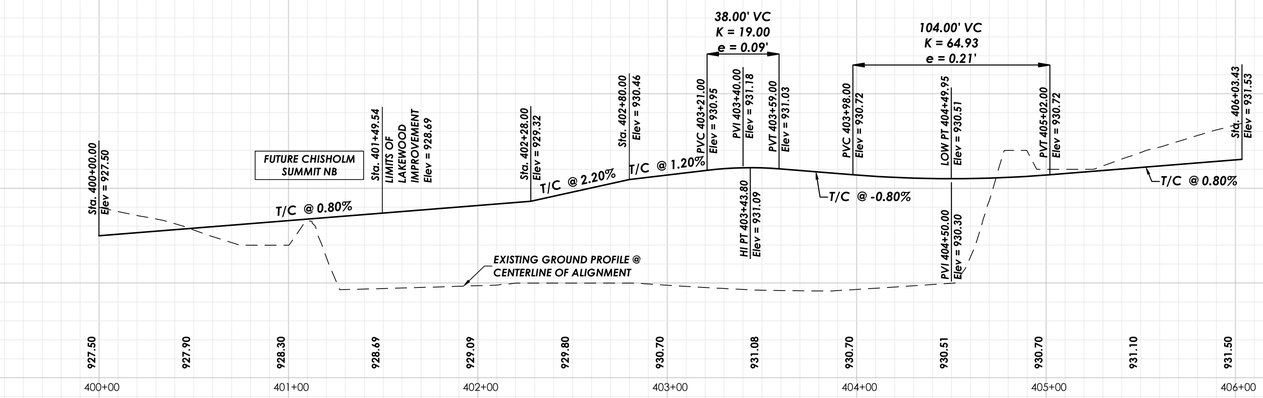
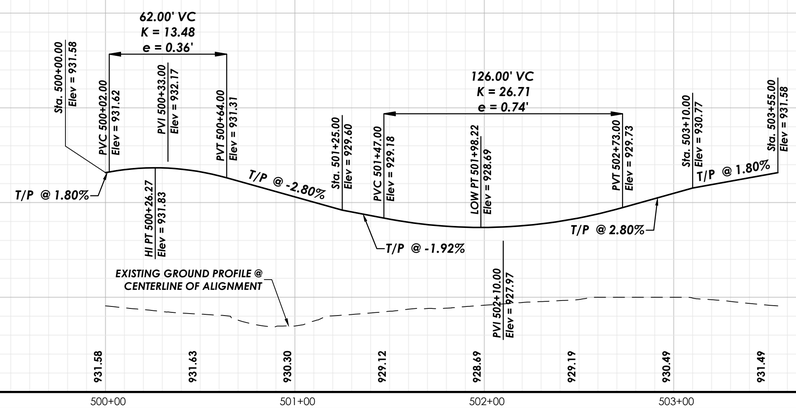


CHISHOLM SUMMIT CENTER



LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 100170

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	2/14/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	RA-07

ROUNDABOUT PROFILES

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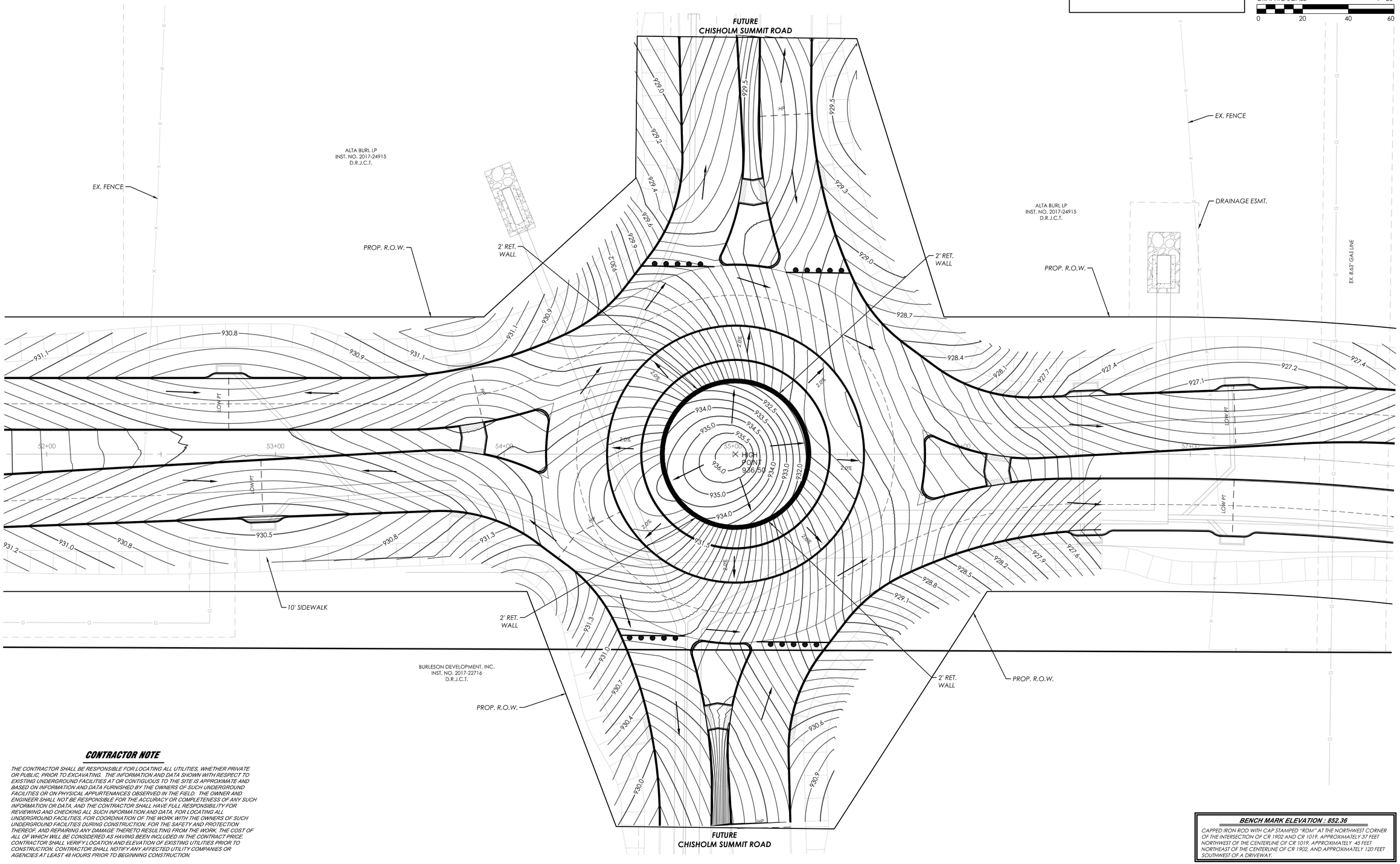

CONTRACTOR NOTE

THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UTILITIES, WHETHER PRIVATE OR PUBLIC, PRIOR TO EXCAVATING. THE INFORMATION AND DATA SHOWN WITH RESPECT TO EXISTING UNDERGROUND FACILITIES AT OR CONTIGUOUS TO THE SITE IS APPROXIMATE AND BASED ON INFORMATION AND DATA FURNISHED BY THE OWNERS OF SUCH UNDERGROUND FACILITIES OR ON PHYSICAL APPURTENANCES OBSERVED IN THE FIELD. THE OWNER AND ENGINEER SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ANY SUCH INFORMATION OR DATA, AND THE CONTRACTOR SHALL HAVE FULL RESPONSIBILITY FOR REVIEWING AND CHECKING ALL SUCH INFORMATION AND DATA, FOR LOCATING ALL UNDERGROUND FACILITIES, FOR COORDINATION OF THE WORK WITH THE OWNERS OF SUCH UNDERGROUND FACILITIES DURING CONSTRUCTION, FOR THE SAFETY AND PROTECTION THEREOF, AND REPAIRING ANY DAMAGE THERETO RESULTING FROM THE WORK, THE COST OF ALL OF WHICH WILL BE CONSIDERED AS HAVING BEEN INCLUDED IN THE CONTRACT PRICE. CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY ANY AFFECTED UTILITY COMPANIES OR AGENCIES AT LEAST 48 HOURS PRIOR TO BEGINNING CONSTRUCTION.

BENCH MARK ELEVATION : 852.36

CAPPED IRON ROD WITH CAP STAMPED "RDM" AT THE NORTHWEST CORNER OF THE INTERSECTION OF CR 1902 AND CR 1019, APPROXIMATELY 37 FEET NORTHWEST OF THE CENTERLINE OF CR 1019, APPROXIMATELY 45 FEET NORTHEAST OF THE CENTERLINE OF CR 1902, AND APPROXIMATELY 120 FEET SOUTHWEST OF A DRIVEWAY.

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LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 100177-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	5/3/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE

SHEET **RA-08**

ROUNDABOUT GRADING PLAN

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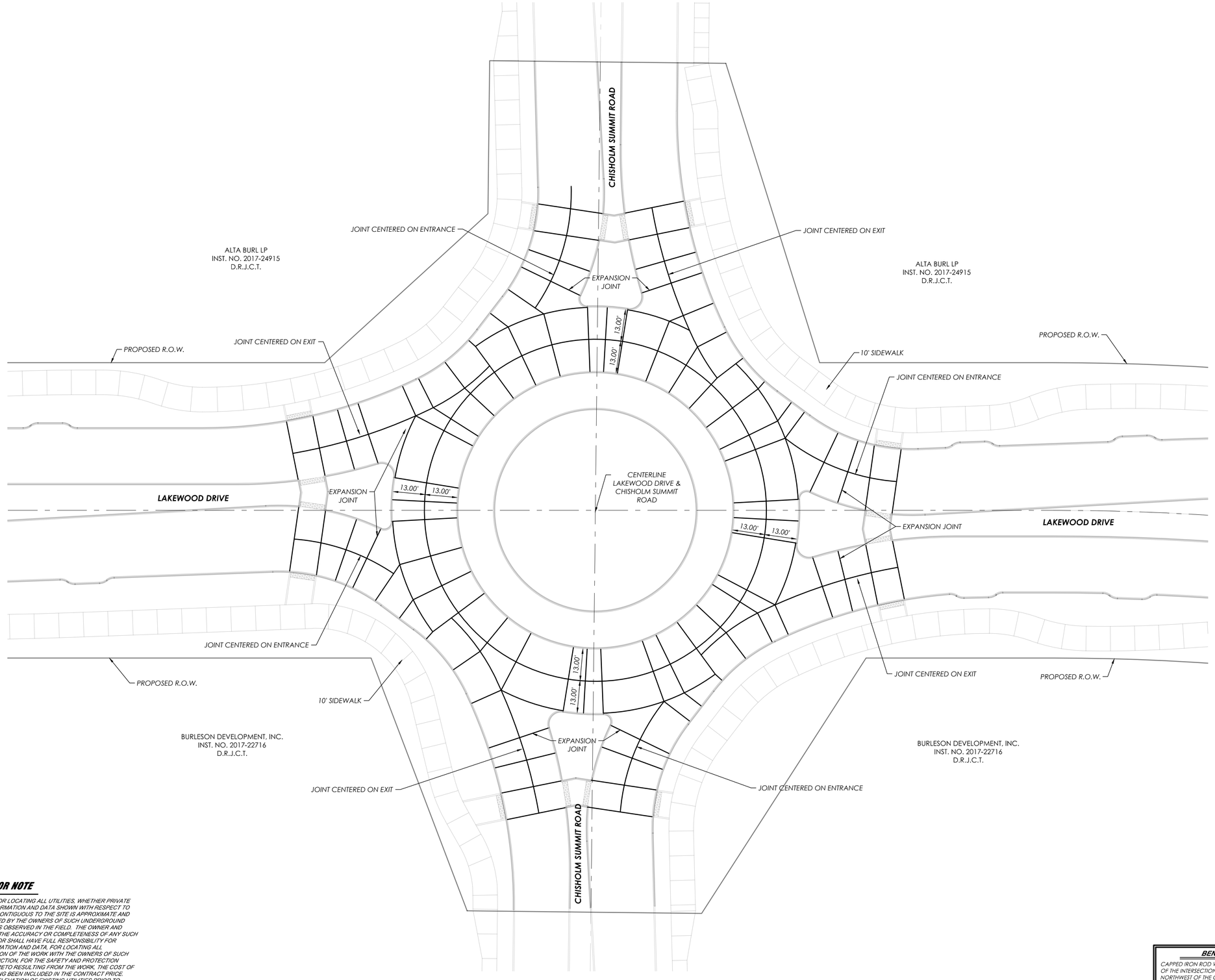

GRAPHIC SCALE 1"=20'

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LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329-4373
TxEng Firm # F-2644 – TxSurv Firm # 100170-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER

09/28/22

JOB NO.:	10745
DATE:	2/6/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW:	EWE
SHEET	RA-09

ROUNDABOUT JOINT PLAN

CONTRACTOR NOTE

THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UTILITIES, WHETHER PRIVATE OR PUBLIC, PRIOR TO EXCAVATING. THE INFORMATION AND DATA SHOWN WITH RESPECT TO EXISTING UNDERGROUND FACILITIES AT OR CONTIGUOUS TO THE SITE IS APPROXIMATE AND BASED ON INFORMATION AND DATA FURNISHED BY THE OWNERS OF SUCH UNDERGROUND FACILITIES OR ON PHYSICAL APPURTENANCES OBSERVED IN THE FIELD. THE OWNER AND ENGINEER SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ANY SUCH INFORMATION OR DATA, AND THE CONTRACTOR SHALL HAVE FULL RESPONSIBILITY FOR REVIEWING AND CHECKING ALL SUCH INFORMATION AND DATA, FOR LOCATING ALL UNDERGROUND FACILITIES, FOR COORDINATION OF THE WORK WITH THE OWNERS OF SUCH UNDERGROUND FACILITIES DURING CONSTRUCTION, FOR THE SAFETY AND PROTECTION THEREOF, AND REPAIRING ANY DAMAGE THERETO RESULTING FROM THE WORK, THE COST OF ALL OF WHICH WILL BE CONSIDERED AS HAVING BEEN INCLUDED IN THE CONTRACT PRICE. CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY ANY AFFECTED UTILITY COMPANIES OR AGENCIES AT LEAST 48 HOURS PRIOR TO BEGINNING CONSTRUCTION.

BENCH MARK ELEVATION : 852.36

CAPPED IRON ROD WITH CAP STAMPED "RDM" AT THE NORTHWEST CORNER OF THE INTERSECTION OF CR 1902 AND CR 1019, APPROXIMATELY 37 FEET NORTHWEST OF THE CENTERLINE OF CR 1019, APPROXIMATELY 45 FEET NORTHEAST OF THE CENTERLINE OF CR 1902, AND APPROXIMATELY 120 FEET SOUTHWEST OF A DRIVEWAY.

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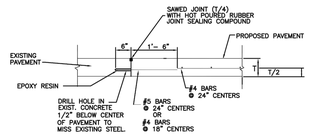
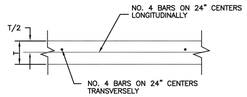
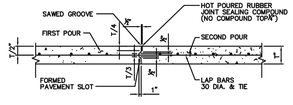


EPOXY TIE BAR

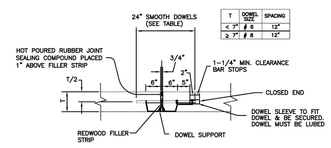


PAVEMENT REINFORCING



T = PAVEMENT THICKNESS
KEYWAY REQUIRED FOR T = 8" AND GREATER.

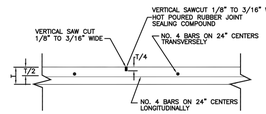
CONSTRUCTION JOINT



T	DOWEL SIZE	SPACING
< 7"	# 8	12"
≥ 7"	# 8	12"

NOTES:
1. PAVEMENT STEEL IS NOT SHOWN FOR CLARITY AND SHALL STOP 3 INCHES FROM JOINT.
2. EXPANSION JOINTS SHALL BE PLACED AT ALL POINTS OF CURVATURE, POINTS OF TANGENCY AND ALL INTERSECTION CURB RETURN POINTS. MAXIMUM SPACING SHALL BE 600 FEET.

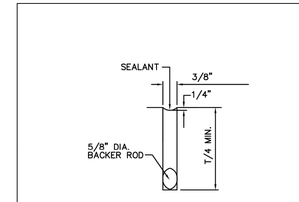
TRANSVERSE EXPANSION JOINT



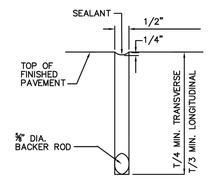
SAWED CONTRACTION JOINT

NOTE: TRANSVERSE JOINTS SHALL BE PLACED AT THE FOLLOWING INTERVALS:
6" THICKNESS = 12'
7" & 8" THICKNESS = 15'

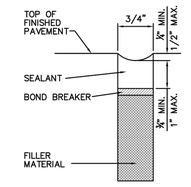
P–12a	CONCRETE PAVEMENT DETAILS (SHEET 1 OF 2)	
CITY OF BURLESON		
ORIGINAL	10/6/06	SWC
REVISION		
REVISION		
REVISION		



SAWED JOINT (DUMMY)

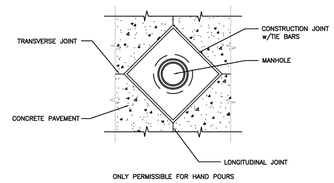


CONSTRUCTION JOINT



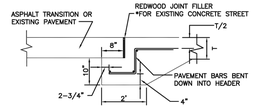
EXPANSION JOINT

JOINT SEALANT DETAILS



ONLY PERMISSIBLE FOR HAND POURS

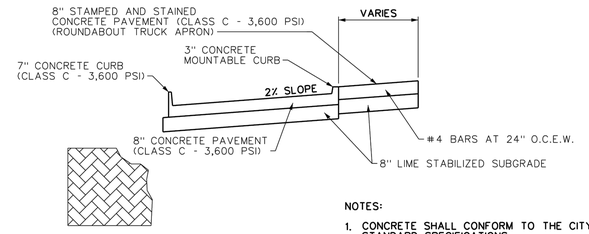
MANHOLE BOXOUT



NOTE: PAVEMENT & HEADER TO BE POURED MONOLITHICALLY

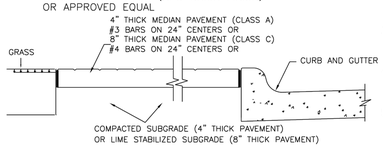
PAVEMENT HEADER

P–12b	CONCRETE PAVEMENT DETAILS (SHEET 2 OF 2)	
CITY OF BURLESON		
ORIGINAL	10/6/06	SWC
REVISION		
REVISION		
REVISION		



CONCRETE PAVER PATTERN

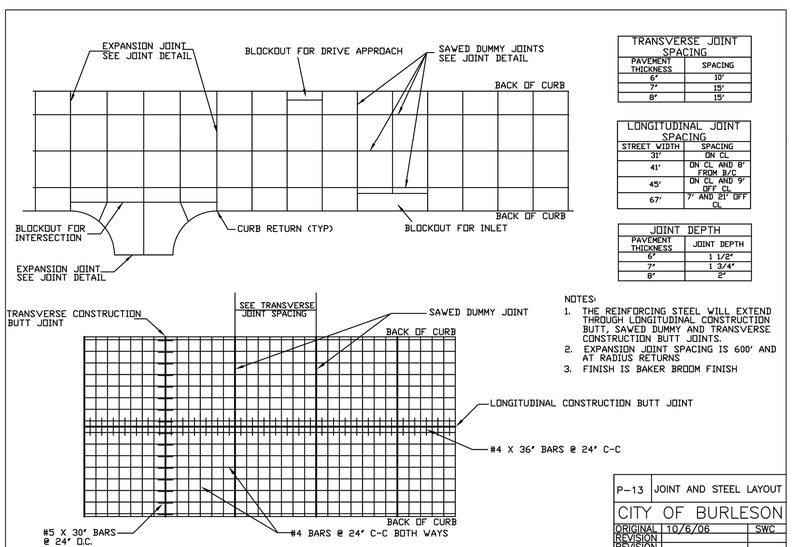
HERRINGBONE BRICK (NEW BRICK FINISH) OR APPROVED EQUAL



5 STAMPED AND STAINED CONCRETE PAVEMENT

NOT TO SCALE

NOTES:
1. CONCRETE SHALL CONFORM TO THE CITY OF BURLESC STANDARD SPECIFICATIONS.
2. MEDIAN PAVING SHALL BE FULL DEPTH COLOR STAMPED CONCRETE. COLOR SHALL BE RED CLAY (4D) OR APPROVED EQUAL.
3. ROUNDABOUT TRUCK APRON PAVING SHALL BE 8" THICK CONCRETE (CLASS C) (REF. PLAN SHEETS FOR LOCATION), REINFORCED WITH #4 BARS ON 24" CENTERS ON A 8" LIME STABILIZED SUBGRADE.
4. MEDIAN PAVING SHALL BE 4" THICK CONCRETE (CLASS A) (REF. PLAN SHEET FOR LOCATION), REINFORCED WITH #3 BARS AT 24" CENTERS ON A COMPACTED SUBGRADE.
5. 1/2" PREMOLDED ASPHALTIC FIBER EXPANSION JOINT MATERIAL ANY PLACE WHERE CONCRETE ABUTS CONCRETE.
6. COMPACT SUBGRADE TO 95% STANDARD PROCTOR DENSITY PER ASTM D698



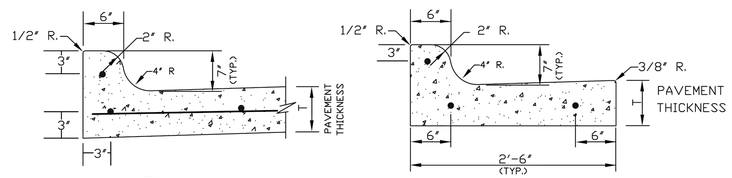
TRANSVERSE JOINT SPACING	
PAVEMENT THICKNESS	SPACING
6"	10'
7"	15'
8"	15'

LONGITUDINAL JOINT SPACING	
STREET WIDTH	SPACING
31'	ON CL
41'	ON CL AND 8' FROM B/C
45'	ON CL AND 9' OFF CL
67'	7' AND 21' OFF CL

JOINT DEPTH	
PAVEMENT THICKNESS	JOINT DEPTH
6"	1 1/2"
7"	1 3/4"
8"	2"

NOTES:
1. THE REINFORCING STEEL WILL EXTEND THROUGH LONGITUDINAL CONSTRUCTION BUTT, SAWED DUMMY AND TRANSVERSE CONSTRUCTION BUTT JOINTS.
2. EXPANSION JOINT SPACING IS 600' AND AT RADIUS RETURNS
3. FINISH IS BAKER BROOM FINISH

P–13	JOINT AND STEEL LAYOUT	
CITY OF BURLESON		
ORIGINAL	10/6/06	SWC
REVISION		
REVISION		
REVISION		



INTEGRAL CONCRETE CURB & GUTTER

SEPARATE CURB & GUTTER

NOTES:
1. REINFORCEMENT SHALL BE NO. 4 BARS.
2. CONCRETE SHALL BE 5 1/2 SACK – 3600 PSI.

P–14	CURB AND GUTTER	
CITY OF BURLESON		
ORIGINAL	10/6/06	SWC
REVISION		
REVISION		
REVISION		

NO.	REVISION DATE
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LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN & MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329-4373
TxEng Firm # F-2644 – TxSur Firm # 100217-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	2/14/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	PD-01

PAVING DETAILS

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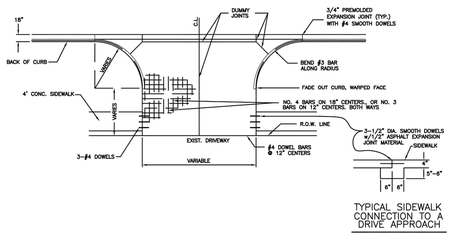


TYPICAL SIDEWALK CONNECTION TO A DRIVE APPROACH

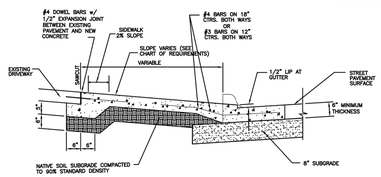
NOTES:

(1) FOR ANY APPROACH CONNECTING TO AN EXISTING STREET IT IS PREFERRED TO HORIZONTALLY SAW CUT THE CURB. THEN THE DRIVE MAY BE DOWELED INTO THE BACK OF THE GUTTER/SLAB. OTHERWISE, THE METHODS SHOWN IN THE ABOVE DETAILS SHALL BE USED.

(2) THE SLOPE OF THE DRIVE WHERE (SIDEWALKS CROSS SHALL BE A BE A MAXIMUM 2% : SIDEWALK SHALL BE CONNECTED TO DRIVE WITH #4 BARS ON 18" CENTERS.

(3) REMOVE ANY EXISTING SIDEWALK AT (NEAREST JOINT AND CONNECT REPLACED SECTION TO DRIVE WITH 3-#4 SMOOTH DOWELS WITH 1/2" PREMOLDED EXPANSION MATERIAL.

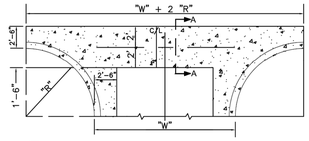
(4) ALL CONNECTIONS TO STATE RIGHT-OF-WAY SHALL USE TXDOT DETAILS.



REQUIREMENTS	STREET CLASS	RESIDENTIAL DRIVEWAY	COMMERCIAL DRIVEWAY
DRIVEWAY THROAT WIDTH	LOCAL	10' – 28'	24' – 36'
	MINOR COLL.	10' – 28'	24' – 36'
	MAJOR COLL.	12' – 28'	24' – 36'
	ARTERIAL	12' – 28'	30' – 36'
DRIVEWAY CURB RADIUS	LOCAL	2.5' – 10'	10' – 20'
	MINOR COLL.	2.5' – 10'	15' – 20'
	MAJOR COLL.	10' – 20'	15' – 30'
	ARTERIAL	15' – 30'	20' – 30'
MAXIMUM APPROACH GRADE	LOCAL AND MINOR COLL.	9%	6%
	ALL OTHERS	6%	3%
MINIMUM APPROACH LENGTH	LOCAL AND MINOR COLL.	6'	9'
	ALL OTHERS	9'	20'

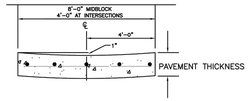
SEE DESIGN STANDARDS MANUAL FOR INDUSTRIAL DRIVEWAY REQUIREMENTS.

P-16	DRIVE APPROACH CONNECTION CONSTRUCTED WITH STREET	
CITY OF BURLESON		
ORIGINAL	10/6/06	SWC
REVISION		
REVISION		
REVISION		

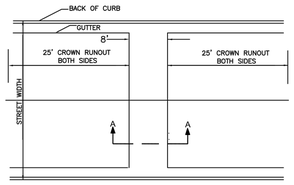


NOTE:
ALL CONCRETE FOR VALLEY GUTTER SHALL BE CLASS "A". REINFORCING STEEL SHALL BE NO. 4 BARS ON 12" CENTERS BOTH WAYS.

VALLEY GUTTER PLAN



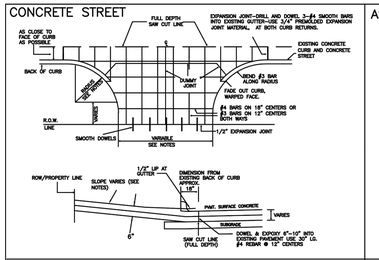
SECTION A–A



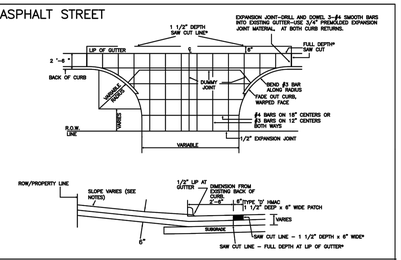
VALLEY GUTTER CROSSING AN ASPHALT STREET

P-25	VALLEY GUTTER	
CITY OF BURLESON		
ORIGINAL	10/6/06	SWC
REVISION		
REVISION		
REVISION		

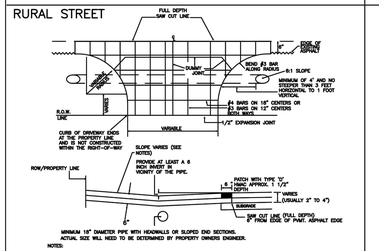
CONCRETE STREET



ASPHALT STREET



RURAL STREET



NOTES:

(1) FOR ANY APPROACH CONNECTING TO AN EXISTING STREET IT IS PREFERRED TO HORIZONTALLY SAW CUT THE CURB. THEN THE DRIVE SHALL BE DOWELED INTO THE BACK OF THE GUTTER/SLAB. OTHERWISE, THE METHODS SHOWN IN THE ABOVE DETAILS SHALL BE USED.

(2) THE SLOPE OF THE DRIVE WHERE (SIDEWALKS CROSS SHALL BE A BE A MAXIMUM 2% : SIDEWALK SHALL BE CONNECTED TO DRIVE WITH #4 BARS ON 18" CENTERS.

(3) REMOVE ANY EXISTING SIDEWALK AT (NEAREST JOINT AND CONNECT REPLACED SECTION TO DRIVE WITH 3-#4 SMOOTH DOWELS WITH 1/2" PREMOLDED EXPANSION MATERIAL.

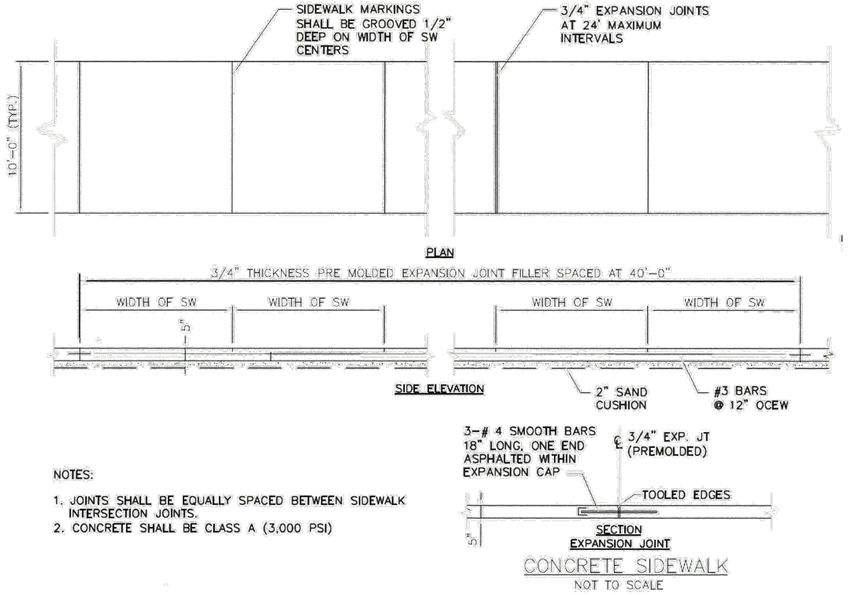
(4) ALL CONNECTIONS TO STATE RIGHT-OF-WAY SHALL USE TXDOT DETAILS.

(5) CONCRETE SHALL BE POURED WITHIN 72 HOURS OF CURB CUT.

REQUIREMENTS	STREET CLASS	RESIDENTIAL DRIVEWAY	COMMERCIAL DRIVEWAY
DRIVEWAY THROAT WIDTH	LOCAL	10' – 28'	24' – 36'
	MINOR COLL.	10' – 28'	24' – 36'
	MAJOR COLL.	12' – 28'	24' – 36'
	ARTERIAL	12' – 28'	30' – 36'
DRIVEWAY CURB RADIUS	LOCAL	2.5' – 10'	10' – 20'
	MINOR COLL.	2.5' – 10'	15' – 20'
	MAJOR COLL.	10' – 20'	15' – 30'
	ARTERIAL	15' – 30'	20' – 30'
MAXIMUM APPROACH GRADE	LOCAL AND MINOR COLL.	9%	6%
	ALL OTHERS	6%	3%
MINIMUM APPROACH LENGTH	LOCAL AND MINOR COLL.	6'	9'
	ALL OTHERS	9'	20'

SEE DESIGN STANDARDS MANUAL FOR INDUSTRIAL DRIVEWAY REQUIREMENTS.

P-17	DRIVE APPROACH CONNECTION EXISTING STREET	
CITY OF BURLESON		
ORIGINAL	10/6/06	SWC
REVISION		
REVISION		
REVISION		

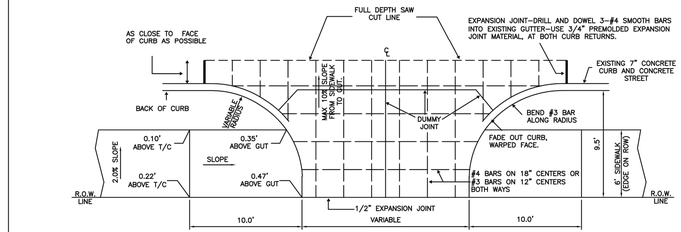


CONCRETE SIDEWALK

NOT TO SCALE

NOTES:

1. JOINTS SHALL BE EQUALLY SPACED BETWEEN SIDEWALK INTERSECTION JOINTS.
2. CONCRETE SHALL BE CLASS A (3,000 PSI)



P-18	DRIVE APPROACH WITH 6' SIDEWALK AT RIGHT-OF-WAY	
CITY OF BURLESON		
ORIGINAL	10/6/06	SWC
REVISION		
REVISION		
REVISION		

NO.	REVISION DATE
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LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329-4373
TxEng Firm # F-2644 – TxSurv Firm # 100177-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	2/14/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE

SHEET **PD-02**

PAVING DETAILS

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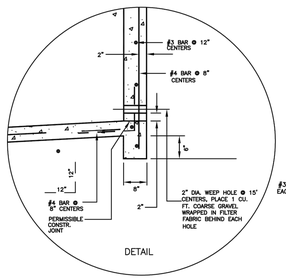
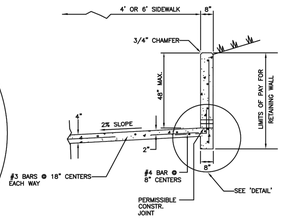
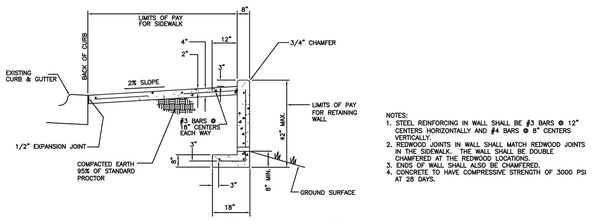


DETAIL



6' SIDEWALK WITH WALL

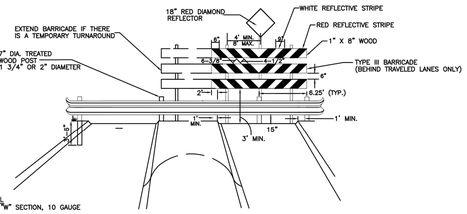
NOTES:
1. IN LOCATIONS WHERE WALL HEIGHT DOES NOT EXCEED 1', THE TOE WALL AND WEEP HOLES CAN BE OMITTED.
2. IN LOCATIONS WHERE WALL IS 36" TO 48" THE TOE WALL SHALL BE 1' DEPTH.
3. STEEL REINFORCING IN WALL SHALL BE #3 BARS @ 12" CENTERS HORIZONTALLY AND #4 BARS @ 8" CENTERS VERTICALLY.
4. REDWOOD JOINTS IN WALL SHALL MATCH REDWOOD JOINTS IN THE SIDEWALK. THE WALL SHALL BE DOUBLE CHAMFERED AT THE REDWOOD LOCATIONS.
5. ENDS OF WALL SHALL ALSO BE CHAMFERED.
6. CONCRETE TO HAVE COMPRESSIVE STRENGTH OF 3000 psi at 28 DAYS.
7. PRE-MOLDED MATERIAL WITH REMOVABLE CAP STRIP, SEAL WITH NON-SAG GRAY SILICONE SEALANT, TXDOT CLASS 4 PREQUALIFIED JOINT SEALER.



SIDEWALK WITH LOW WALL

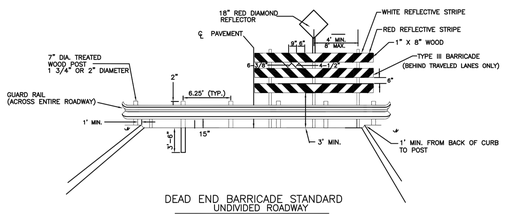
NOTES:
1. STEEL REINFORCING IN WALL SHALL BE #3 BARS @ 12" CENTERS HORIZONTALLY AND #4 BARS @ 8" CENTERS VERTICALLY.
2. REDWOOD JOINTS IN WALL SHALL MATCH REDWOOD JOINTS IN THE SIDEWALK. THE WALL SHALL BE DOUBLE CHAMFERED AT THE REDWOOD LOCATIONS.
3. ENDS OF WALL SHALL ALSO BE CHAMFERED.
4. CONCRETE TO HAVE COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS.

P-21	SIDEWALK WITH WALL
CITY OF BURLESON	
ORIGINAL 10/6/06	SWC
REVISION	
REVISION	
REVISION	



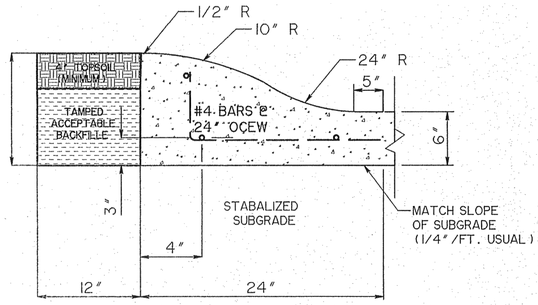
NOTES:
GUARD RAIL
STEEL "W" SECTION, 10 GAUGE
CONNECTIONS
5/8" DIA. BOLTS, APPROX. 9" LONG

DEAD END BARRICADE STANDARD DIVIDED ROADWAY



DEAD END BARRICADE STANDARD UNDIVIDED ROADWAY

P-24	DEADEND BARRICADE
CITY OF BURLESON	
ORIGINAL 10/6/06	SWC
REVISION	
REVISION	
REVISION	



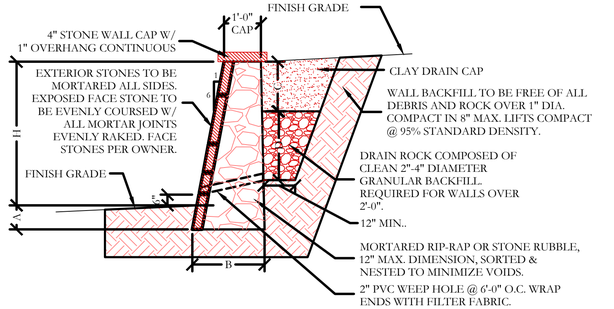
GENERAL NOTES:

1. 1/2" EXPANSION JOINTS WITH 5/8" DIA. SPACING x 2' SMOOTH DOWELS SHALL BE PLACED AT RADIUS POINTS AND AT 150' INTERVALS. THESE DOWELS SHALL BE GREASED AND WRAPPED ON ONE END WITH EXPANSION TUBES.
2. 1" DEEP CONSTRACTION JOINTS SHALL BE INSTALLED AT APPROXIMATELY 10' INTERVALS. THESE JOINTS SHALL PASS ACROSS THE ENTIRE CURB SECTION
3. FIX DOWELS WITH BAR SUPPORTS.
4. ALL CONCRETE SHALL BE CLASS 'A' MIN. COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS.

TYPICAL SECTION – MOUNTABLE MONOLITHIC CURB

NTS

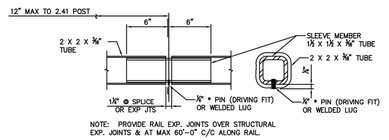
WALL DIMENSION SCHEDULE (BASED ON CLAY (CH) SOIL)			
HEIGHT (H)	1'	2'	
BASE DEPTH (A)	6"	6"	
BASE WIDTH (B)	14"	16"	
CAP DEPTH (C)	FULL	FULL	
GRAVEL DEPTH (D)	N/A	N/A	
BATTER	2"	4"	



1 VARIABLE HT. GRAVITY RETAINING WALL DETAIL
SECTION

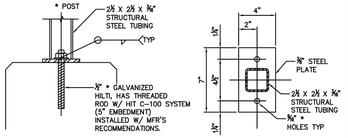
SCALE: N.T.S.

GENERAL NOTES:
1. NO STRUCTURAL SURCHARGE ANTICIPATED FOR STRUCTURES LOCATED DISTANCE EQUAL TO 1.5H FROM WALL.
2. TYPE S MORTAR REQUIRED.
3. CONTROL JOINTS AT 25' MAXIMUM SPACING.
4. INSTALL 2" PVC WEEP HOLES FOR ALL WALLS 2'-0" HEIGHT AND OVER @ 6'-0" O.C. SPACING.
5. MINIMUM 2% AND MAXIMUM 4:1 TOE SLOPE AT FINISH GRADE.
6. MAXIMUM RETAINING WALL HEIGHT SHALL BE 3'-0".

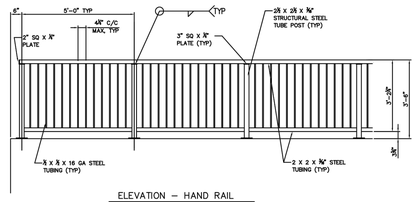


NOTE: PROVIDE RAIL EXP. JOINTS OVER STRUCTURAL EXP. JOINTS & AT MAX 60'-0" C/C ALONG RAIL.

HANDRAIL SPLICE DETAIL



HANDRAIL BASE PLATE DETAILS

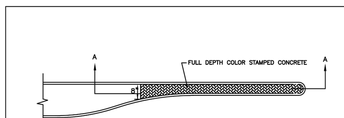


ELEVATION – HAND RAIL

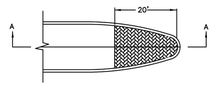
NOTES:

1. ALL STEEL COMPONENTS SHALL BE COATED IN TAN OR BLACK COLOR.
2. EXPOSED EDGES OF HANDRAIL AND HANDRAIL POSTS SHALL BE ROUNDED OR CHAMFERED TO APPROXIMATELY 1/8" BY GRINDING.
3. HANDRAIL POSTS SHALL BE PERPENDICULAR TO TOP OF CONCRETE. GROUT MAY BE USED UNDER BASE PLATES IF NECESSARY.

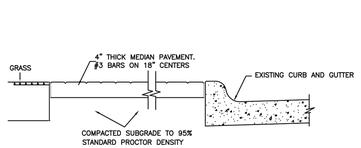
P-23	PIPE HANDRAIL
CITY OF BURLESON	
ORIGINAL 10/6/06	SWC
REVISION	
REVISION	
REVISION	



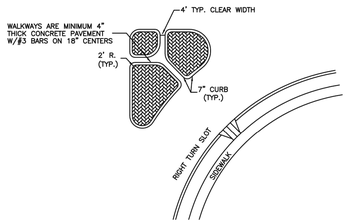
MEDIANS LESS THAN 8 FEET WIDE



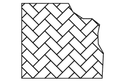
MEDIAN GREATER THAN 8 FEET WIDE



SECTION A-A



TYPICAL ISLAND AT INTERSECTION



CONCRETE PAVER PATTERN
HERRINGBONE BRICK (NEW BRICK FINISH) OR APPROVED EQUAL

GENERAL NOTES:
1. CONCRETE SHALL CONFORM TO THE CITY OF BURLESON STANDARD SPECIFICATIONS.
2. MEDIAN PAVING SHALL BE FULL DEPTH COLOR STAMPED CONCRETE. COLOR SHALL BE RED CLAY (40) OR APPROVED EQUAL.
3. MEDIAN PAVING SHALL BE 4" THICK CONCRETE, REINFORCED WITH #3 BARS ON 18" CENTERS ON A COMPACTED SUBGRADE.
4. 1/2" PREMOLDED ASPHALTIC FIBER EXPANSION JOINT MATERIAL ANY PLACE WHERE CONCRETE ABUTS CONCRETE.

P-26	MEDIAN/ISLAND PAVING
CITY OF BURLESON	
ORIGINAL 10/6/06	SWC
REVISION	
REVISION	
REVISION	

NO.	REVISION DATE

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS

CITY OF BURLESON

JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329-4373
TxEng Firm # F2644 – TxSurv Firm # 100217-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO.:	10745
DATE:	2/14/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW:	EWE

SHEET **PD-03**

PAVING DETAILS

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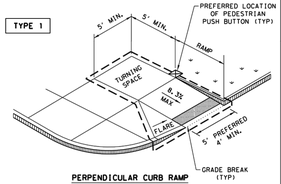
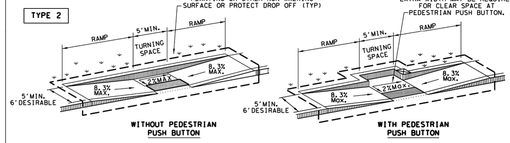
DATE:
FILE:

TYPE 1



PERPENDICULAR CURB RAMP

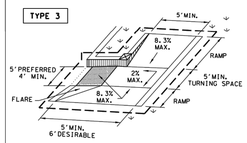
TYPE 2



WITHOUT PEDESTRIAN PUSH BUTTON

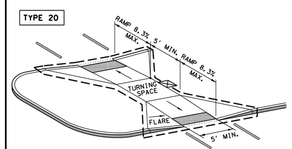
WITH PEDESTRIAN PUSH BUTTON

TYPE 3



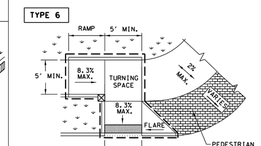
PARALLEL CURB RAMP

TYPE 20



CURB RAMPS AT MEDIAN ISLANDS

TYPE 6



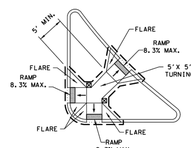
COMBINATION CURB RAMPS

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.

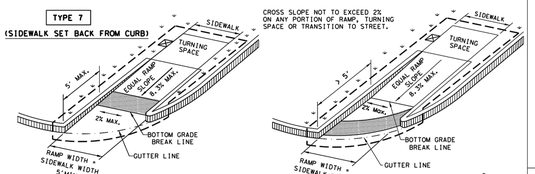
NOTE: CURB DETAILS ARE SHOWN ELSEWHERE IN THE PLANS.

TYPE 22

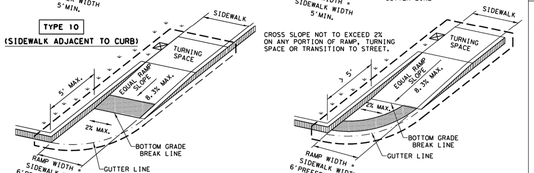


COMBINATION ISLAND RAMPS

TYPE 7 (SIDEWALK SET BACK FROM CURB)

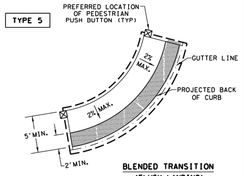


TYPE 10 (SIDEWALK ADJACENT TO CURB)

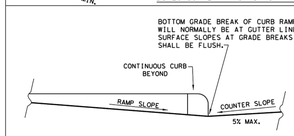


DIRECTIONAL RAMPS WITHIN RADIUS

TYPE 5



BLENDED TRANSITION (FLUSH LANDING)



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.

DETECTABLE WARNING SURFACE

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON IF APPLICABLE.

GUTTER LINE

GRADE BREAK

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	CK:	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB		HIGHWAY
REVISIONS					
9/21/2006	DIST	COUNTY			SHEET NO.

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FILE:

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 applicable 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 slope 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.

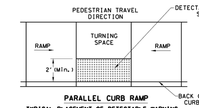
DETECTABLE WARNING PAVERS (IF USED)

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

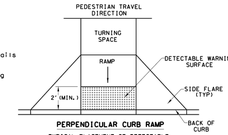
27. Provide clear ground space at operable parts, including pedestrian push buttons. Operable parts shall be placed within unobstructed reach range specified in PROWAG section R406.
28. Place traffic signal or illumination poles, ground boxes, controller boxes, signs, drainage facilities and other items 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.

DETECTABLE WARNING SURFACE DETAILS



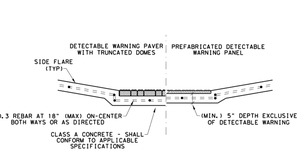
PARALLEL CURB RAMP

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

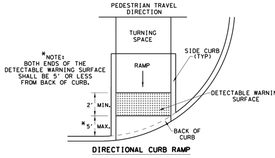


PERPENDICULAR CURB RAMP

TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.



SECTION VIEW DETAIL
CURB RAMP AT DETECTIBLE WARNINGS



*NOTE: BOTH ENDS OF THE DETECTABLE WARNING SURFACE SHALL BE 5' OR LESS FROM BACK OF CURB.

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	CK:	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB		HIGHWAY
REVISIONS					
9/21/2006	DIST	COUNTY			SHEET NO.

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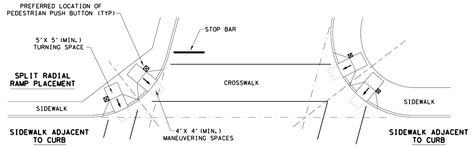
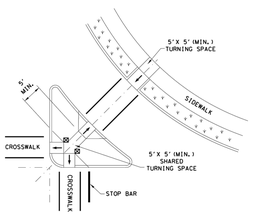
TYPICAL CROSSING LAYOUTS

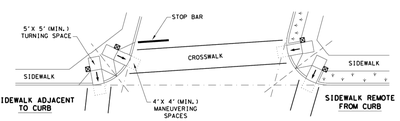
SEE SHEET 1 OF 4 FOR DETAILS AND DIMENSIONS



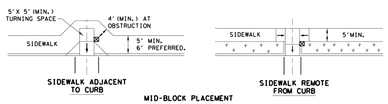
SKEWED INTERSECTION WITH "LARGE" RADIUS



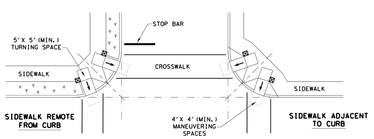
AT INTERSECTION W/FREE RIGHT TURN & ISLAND



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.

SHEET 4 OF 4

Texas Department of Transportation — Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: ped18	DN:TxDOT	CK:	DW: VP	CK: KM	CK: PK & JG
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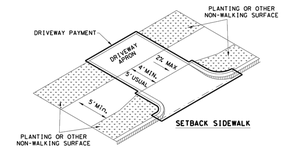
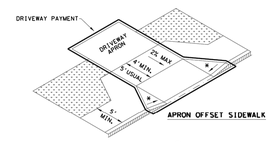
FILE:

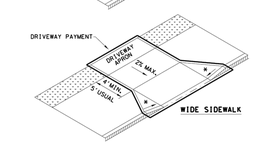
SIDEWALK TREATMENT AT DRIVEWAYS



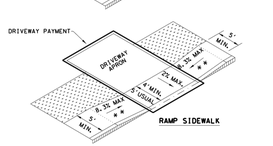
SETBACK SIDEWALK



APRON OFFSET SIDEWALK

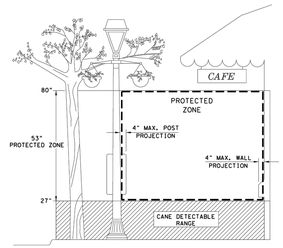


WIDE SIDEWALK



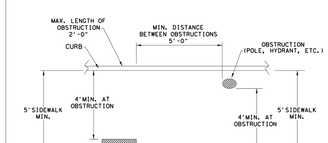
RAMP SIDEWALK

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.



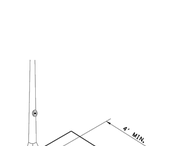
PROTECTED ZONE

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

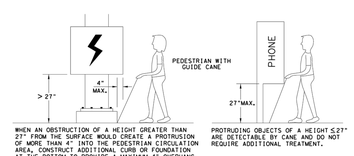


PLAN VIEW
PLACEMENT OF STREET FIXTURES

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



CLEAR SPACE ADJACENT TO PEDESTRIAN PUSH BUTTON



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	CK:	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB		HIGHWAY
REVISIONS					
9/21/2006	DIST	COUNTY			SHEET NO.

NO.	REVISION DATE

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN MARSHALL
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2564 – TxSurv Firm # 10007700

STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	2/14/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	PD-04

PAVING DETAILS

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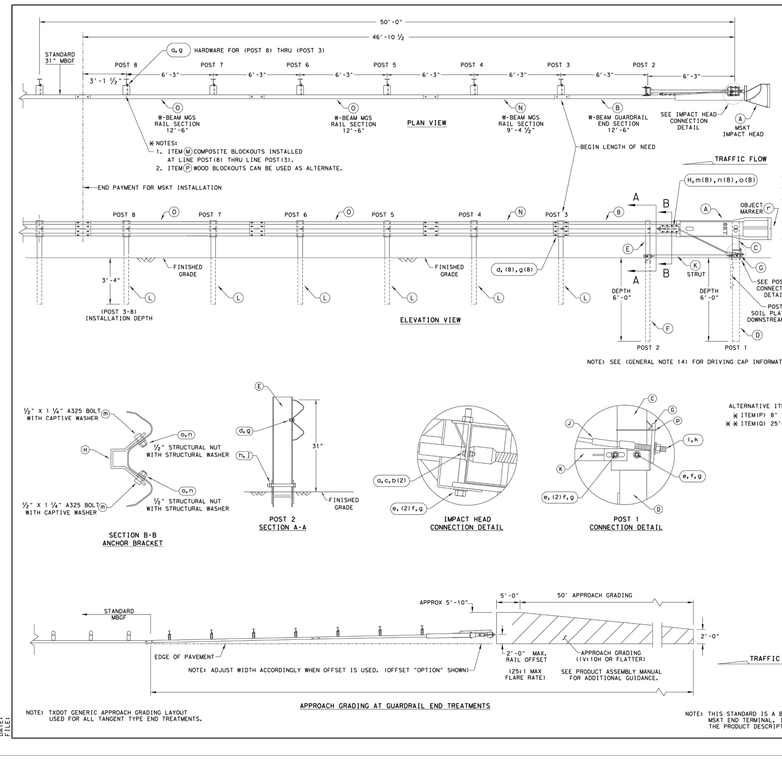


DISCLAIMER:
THE USE OF THIS STANDARD IS GOVERNED BY THE "TEXAS ENGINEERING PRACTICE ACT". NO WARRANTY OF ANY KIND IS MADE BY TXDOT FOR ANY PURPOSE WHATSOEVER. TXDOT ASSUMES NO RESPONSIBILITY FOR THE CONVERSION OF THIS STANDARD TO OTHER FORMATS OR FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.

DATE:
FILE:

GENERAL NOTES

1. FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: ROAD SYSTEMS, INC. (432)263-2435. 3616 OLD HOWARD COUNTY AIRPORT, BIG SPRING, TX 79720
2. FOR INSTALLATION, REPAIR AND MAINTENANCE REFER TO THE; MSKT END TERMINAL, PRODUCT DESCRIPTION ASSEMBLY MANUAL (PUBLICATION-0627177).
3. APPLY HIGH INTENSITY REFLECTIVE SHEETING; "OBJECT MARKER" ON THE FRONT FACE OF THE DEVICE PER MANUFACTURER'S RECOMMENDATIONS. OBJECT MARKER SHALL CONFORM TO THE STANDARDS REQUIRED IN TEXAS MOTCD.
4. FOR POST (LEAVE-OUT) INSTALLATION AND GUIDANCE SEE TXDOT'S LATEST ROADWAY MOW STRIP STANDARD.
5. HARDWARE (BOLTS, NUTS, & WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING." FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
6. SYSTEM SHOWN USING STEEL WIDE FLANGE POSTS WITH COMPOSITE BLOCKOUTS.
7. A COMPOSITE MATERIAL BLOCKOUT THAT MEETS THE REQUIREMENTS OF DMS-7210, MAY BE SUBSTITUTED FOR BLOCKOUTS OF SIMILAR DIMENSIONS. SEE CONSTRUCTION DIVISION MATERIAL PRODUCER LIST (MPL) FOR CERTIFIED PRODUCERS.
8. IF SOLID ROCK IS ENCOUNTERED IN THE AREA OF (POST 1) AND / OR (POST 2) CONTACT THE MANUFACTURER, & REFER TO THE LATEST ROADWAY MBGF STANDARD FOR INSTALLATION GUIDANCE.
9. POSTS SHALL NOT BE SET IN CONCRETE.
10. SYSTEM MUST BE ATTACHED TO STANDARD 31" MBGF.
11. UNDER NO CIRCUMSTANCES SHALL THE GUARDRAIL WITHIN THE MSKT SYSTEM BE CURVED.
12. A FLARE RATE OF UP TO 25:1 MAY BE USED TO PREVENT THE TERMINAL HEAD FROM ENCROACHING ON THE SHOULDER. THE FLARE MAY BE DECREASED OR ELIMINATED FOR SPECIFIC INSTALLATIONS, IF DIRECTED BY THE ENGINEER.
13. THE SYSTEM IS SHOWN WITH TWO 12'-6" MBGF PANELS, ONE 25'-0" MBGF PANEL IS ALSO ALLOWED IN THEIR PLACE.
14. A DRIVING CAP WITH A TIMBER OR PLASTIC INSERT SHALL BE USED WHEN DRIVING POSTS 3-8 TO PREVENT DAMAGE TO THE GALVANIZING ON TOP OF THE POST. SPECIAL DRIVING CAP TO BE USED ON LOWER POSTS 1 & 2 TO PREVENT DAMAGE TO THE WELDED PLATES.

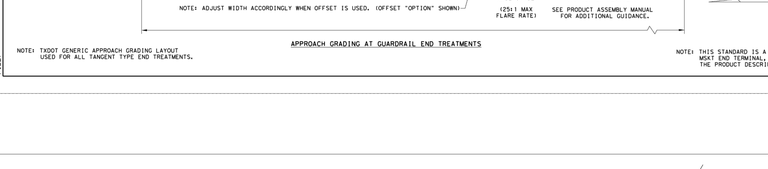
ITEM	QTY	MAIN SYSTEM COMPONENTS	ITEM NUMBERS
A	1	MSKT IMPACT HEAD	MS3000
B	1	W-BEAM GUARDRAIL END SECTION, 12 Ga.	SF1303
C	1	POST 1 - TOP (6" X 6" X 7/8" TUBE)	MTHP1A
D	1	POST 1 - BOTTOM (6' W6X15)	MTHP1B
E	1	POST 2 - ASSEMBLY TOP	UHP2A
F	1	POST 2 - ASSEMBLY BOTTOM (6' W6X9)	HP2B
G	1	BEARING PLATE	E750
H	1	CABLE ANCHOR BOX	S760
J	1	BCT CABLE ANCHOR ASSEMBLY	E770
K	1	GROUND STRUT	MS785
L	6	W6x9 OR W6x8.5 STEEL POST	P621
M	6	COMPOSITE BLOCKOUTS	CBSP-14
N	1	W-BEAM MGS RAIL SECTION (9'-4 ½")	G12025
O	2	W-BEAM MGS RAIL SECTION (12'-6")	G1203A
P	6	WOOD BLOCKOUT 6" X 8" X 14"	P675
Q	1	W-BEAM MGS RAIL SECTION (25'-0")	G1209
		SMALL HARDWARE	
a	2	⅝" x 1" HEX BOLT (GRD 5)	B5160104A
b	4	⅝" WASHER	W0516
c	2	⅝" HEX NUT	N0516
d	25	⅝" Dia. x 1 ¼" SPLICE BOLT (POST 2)	B580122
e	2	⅝" Dia. x 9" HEX BOLT (GRD A449)	B580904A
f	3	⅝" WASHER	W050
g	33	⅝" Dia. H.G.R NUT	N050
h	1	¾" Dia. x 8 ½" HEX BOLT (GRD A449)	B340854A
j	1	¾" Dia. HEX NUT	N030
k	2	1 ANCHOR CABLE HEX NUT	N100
l	2	1 ANCHOR CABLE WASHER	W100
m	8	½" x 1 ¼" 4325 BOLT WITH CAPTIVE WASHER	SB12A
n	8	½" STRUCTURAL NUTS	N012A
o	8	1 ¾" O.D. x ⅝" I.D. STRUCTURAL WASHERS	W012A
p	1	BEARING PLATE RETAINER TIE	CT-1005T
q	6	⅝" x 10" H.G.R. BOLT	B581002
r	1	OBJECT MARKER 18" X 18"	E3151

PIERCE ENGINEERING IS RESPONSIBLE FOR THIS SHEET.
TX FIRM NO. F-9186
940-937-8600

Texas Department of Transportation — Design Division Standard

SINGLE GUARDRAIL TERMINAL MSKT-MASH-TL-3 SGT(12S)31-18

FILE: sgt12s3118.dgn	DN:TxDOT	CK:KM	DW:VP	CK:CL
© TxDOT: APRIL 2018	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY		SHEET NO.

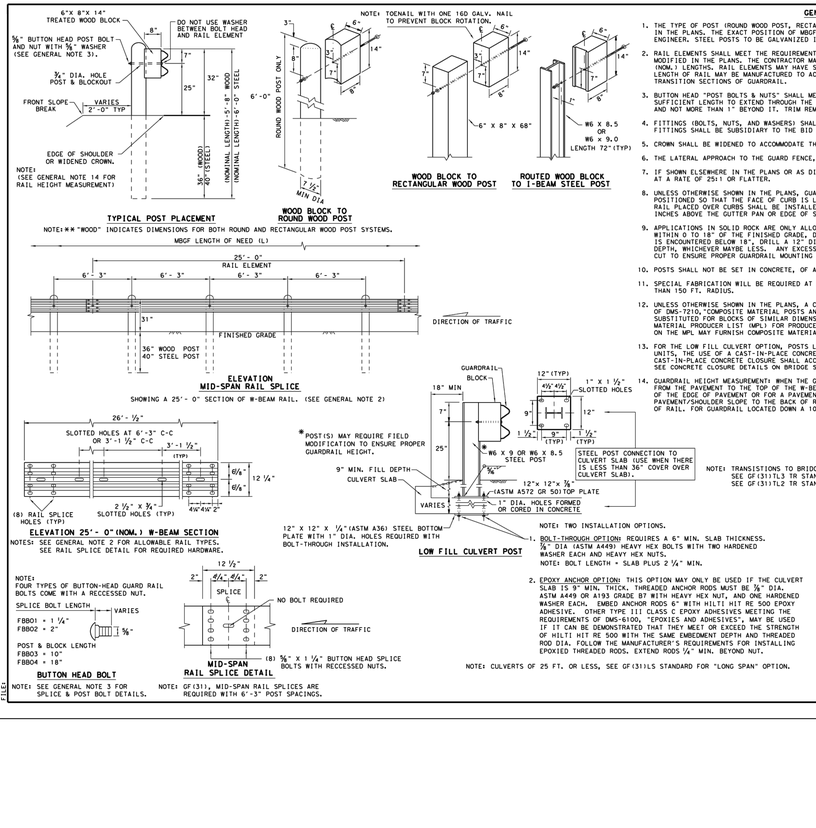


NOTE: ADJUST WIDTH ACCORDINGLY WHEN OFFSET IS USED. (OFFSET "OPTION" SHOWN)

APPROACH GRADING AT GUARDRAIL END TREATMENTS

NOTE: TXDOT GENERIC APPROACH GRADING LAYOUT USED FOR ALL TANGENT TYPE END TREATMENTS.

NOTE: THIS STANDARD IS A BASIC REPRESENTATION OF THE MSKT END TERMINAL, IT IS NOT INTENDED TO REPLACE THE PRODUCT DESCRIPTION ASSEMBLY MANUAL.



GENERAL NOTES

1. THE TYPE OF POST (ROUND WOOD POST, RECTANGULAR WOOD POST, OR STEEL POST) WILL BE AS SHOWN IN THE PLANS. THE EXACT POSITION OF MBGF SHALL BE SHOWN IN THE PLANS OR AS DIRECTED BY THE ENGINEER. STEEL POSTS TO BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING."
2. RAIL ELEMENTS SHALL MEET THE REQUIREMENTS OF ITEM 540,"METAL BEAM GUARD FENCE" EXCEPT AS MODIFIED IN THE PLANS. THE CONTRACTOR MAY FURNISH RAIL ELEMENTS OF 25'- 0", OR 12'- 6" (NOM.) LENGTHS. RAIL ELEMENTS MAY HAVE SLOTTED HOLES AT 3'-1 ½" C-C OR 6'-3" C-C. A SPECIAL LENGTH OF RAIL MAY BE MANUFACTURED TO ACCOMMODATE THE DOWNSTREAM ANCHOR TERMINAL (DAT) AND THE TRANSITION SECTIONS OF GUARDRAIL.
3. BUTTON HEAD "POST BOLTS & NUTS" SHALL MEET THE REQUIREMENTS OF (ASTM A307), AND SHALL BE OF SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND ⅝" WASHER (#WC16G) AND NOT MORE THAN 1" BEYOND IT. TRIM REMAINING BOLT LENGTH TO MEET REQUIRED LENGTH.
4. FITTINGS (BOLTS, NUTS, AND WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445,"GALVANIZING." FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
5. CROWN SHALL BE WIDENED TO ACCOMMODATE THE METAL BEAM GUARD FENCE.
6. THE LATERAL APPROACH TO THE GUARD FENCE, SHALL HAVE A MAXIMUM SLOPE OF 1V:10H.
7. IF SHOWN ELSEWHERE IN THE PLANS OR AS DIRECTED BY THE ENGINEER, THE GUARD FENCE MAY BE FLARED AT A RATE OF 25:1 OR FLATTER.
8. UNLESS OTHERWISE SHOWN IN THE PLANS, GUARD FENCE PLACED IN THE VICINITY OF CURBS SHALL BE POSITIONED SO THAT THE FACE OF CURB IS LOCATED DIRECTLY BELOW OR BEHIND THE FACE OF THE RAIL. RAIL PLACED OVER CURBS SHALL BE INSTALLED SO THAT THE POST BOLT IS LOCATED APPROXIMATELY 25 INCHES ABOVE THE CUTTER PAN OR EDGE OF SHOULDER.
9. APPLICATIONS IN SOLID ROCK ARE ONLY ALLOWED WITH STEEL POSTS. IF SOLID ROCK IS ENCOUNTERED WITHIN 0 TO 18" OF THE FINISHED GRADE, DRILL A 24" DIA. HOLE, 24" INTO THE ROCK. IF SOLID ROCK IS ENCOUNTERED BELOW 18", DRILL A 12" DIA. HOLE, 12" INTO THE ROCK OR TO THE STANDARD EMBEDMENT DEPTH, WHICHEVER MAYBE LESS. ANY EXCESS POST LENGTH, AFTER MEETING THESE DEPTHS, MAY BE FIELD CUT TO ENSURE PROPER GUARDRAIL MOUNTING HEIGHT. BACKFILL WITH COARSE AGGREGATE MATERIAL.
10. POSTS SHALL NOT BE SET IN CONCRETE, OF ANY DEPTH.
11. SPECIAL FABRICATION WILL BE REQUIRED AT INSTALLATION LOCATIONS HAVING A CURVATURE OF LESS THAN 150 FT. RADIUS.
12. UNLESS OTHERWISE SHOWN IN THE PLANS, A COMPOSITE MATERIAL BLOCK THAT MEETS THE REQUIREMENTS OF DMS-7210,"COMPOSITE MATERIAL POSTS AND BLOCKS FOR METAL BEAM GUARD FENCE" MAY BE SUBSTITUTED FOR BLOCKS OF SIMILAR DIMENSIONS. THE CONSTRUCTION DIVISION, TXDOT MAINTAINS A MATERIAL PRODUCER LIST (MPL) FOR PRODUCERS OF MATERIALS CONFORMING TO DMS-7210 ONLY PRODUCERS ON THE MPL MAY FURNISH COMPOSITE MATERIAL BLOCKS.
13. FOR THE LOW FILL CULVERT OPTION, POSTS LOCATED PARTIALLY OR WHOLLY BETWEEN PRECAST BOX CULVERT UNITS, THE USE OF A CAST-IN-PLACE CONCRETE CLOSURE BETWEEN BOXES IS REQUIRED. THE LENGTH OF THE CAST-IN-PLACE CONCRETE SHALL ACCOMMODATE THE PLACEMENT OF THE LOW FILL CULVERT OPTION. SEE CONCRETE CLOSURE DETAILS ON BRIDGE STANDARD SCP-MD.
14. GUARDRAIL HEIGHT MEASUREMENTS WHEN THE GUARDRAIL IS LOCATED ABOVE PAVEMENT, MEASURE THE HEIGHT FROM THE TOP OF THE W-BEAM RAIL. WHEN THE GUARDRAIL IS LOCATED UP TO 2 FT. OFF OF THE EDGE OF PAVEMENT OR FOR A PAVEMENT OVERLAY, USE A 10-FOOT STRAIGHTEDGE TO EXTEND THE PAVEMENT/SHOULDER SLOPE TO THE BACK OF RAIL. MEASURE FROM THE BOTTOM OF STRAIGHTEDGE TO THE TOP OF RAIL. FOR GUARDRAIL LOCATED DOWN A 10:1 SLOPE, MEASURE FROM THE NOMINAL TERRAIN.

Texas Department of Transportation — Design Division Standard

METAL BEAM GUARD FENCE TL-3 MASH COMPLIANT GF(31)-19

FILE: gf3119.dgn	DN:TxDOT	CK:KM	DW:VP	CK:CCL/AG
© TxDOT: NOVEMBER 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY		SHEET NO.

NO.	REVISION DATE
1	
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SUMMIT CONSULTING

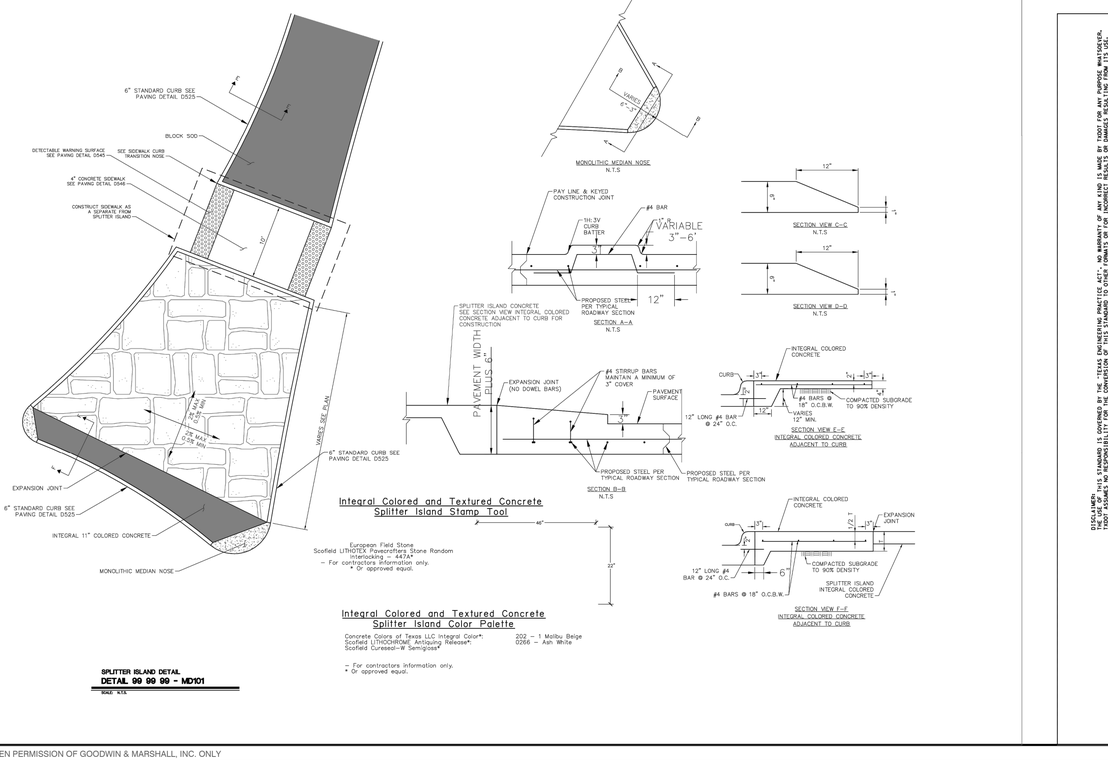
LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

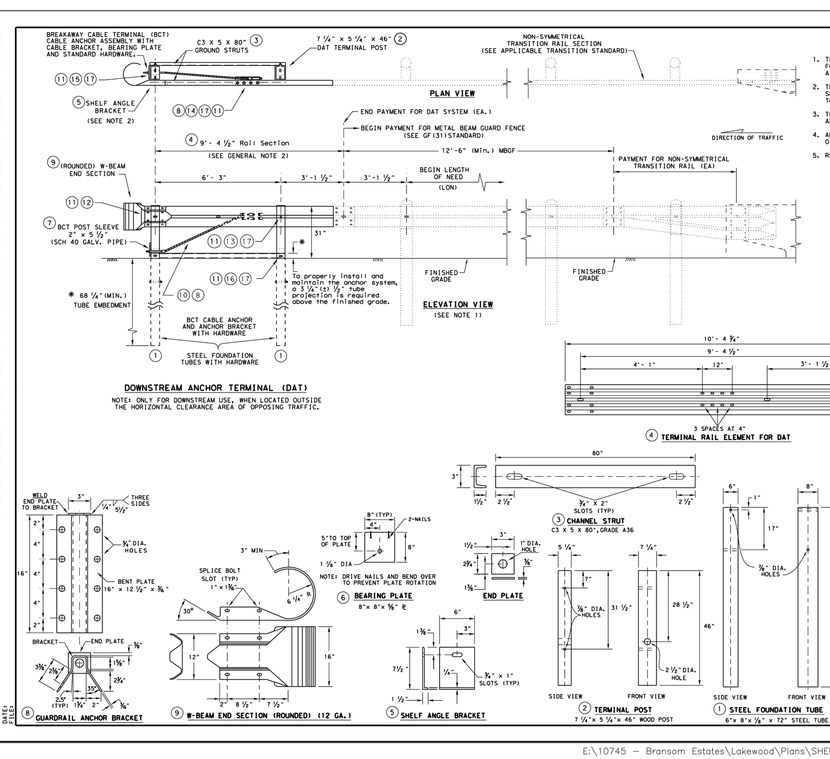
GOODWIN & MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 10007700

STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	2/14/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	PD-05

PAVING DETAILS





#	(DAT) PARTS LIST	QTY
(1)	STEEL FOUNDATION TUBE	2
(2)	DAT TERMINAL POST	2
(3)	CHANNEL STRUT	2
(4)	TERMINAL RAIL ELEMENT	1
(5)	SHELF ANGLE BRACKET	1
(6)	BCT BEARING PLATE	1
(7)	BCT POST SLEEVE	1
(8)	GUARDRAIL ANCHOR BRACKET	1
(9)	(ROUNDED)W-BEAM END SECTION	1
(10)	BCT CABLE ANCHOR	1
(11)	RECESSED NUT, GUARDRAIL	20
(12)	1 ¼" BUTTON HEAD BOLT	4
(13)	10" BUTTON HEAD BOLT	2
(14)	⅝" x 2" HEX HEAD BOLT	8
(15)	⅝" X 8" HEX HEAD BOLT	4
(16)	⅝" X 10" HEX HEAD BOLT	2
(17)	⅝" FLAT WASHER	18

MOW STRIP INSTALLATION

IF A MOW STRIP IS REQUIRED WITH THE DAT INSTALLATION THE LEAVE-OUT AREA AROUND THE STEEL FOUNDATION TUBES AND THE TWO CHANNEL STRUTS MAY BE OMITTED. THIS WILL REQUIRE A FULL POUR AT THE FOUNDATION TUBES.

Texas Department of Transportation — Design Division Standard

METAL BEAM GUARD FENCE (DOWNSTREAM ANCHOR TERMINAL) TL-3 MASH COMPLIANT GF(31)DAT-19

FILE: gf31dat19.dgn	DN:TxDOT	CK:KM	DW:VP	CK:CCL/AG
© TxDOT: NOVEMBER 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY		SHEET NO.

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DATE:
FILE:

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GRADING LEGEND

- EXISTING CONTOUR
- PROPOSED CONTOUR
- × 850.00 SPOT ELEVATION
- SLOPE LIMITS
- LIMITS OF BRUSH CLEARING
- FLOW ARROW
- MATCHLINE

N W E S

GRAPHIC SCALE 1"=40'
0 40 80 120

NO.	REVISION DATE
1	
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!!!WARNING!!!
APPROXIMATE LOCATION OF EXISTING UNDERGROUND WATER LINE. CONTRACTOR SHALL COORDINATE WITH APPROPRIATE UTILITY COMPANIES PRIOR TO CONSTRUCTION.

BURLESON 4A ECONOMIC DEVELOPMENT CORPORATION INST. NO. 2021-22172 D.R.J.C.T.

BURLESON 4A ECONOMIC DEVELOPMENT CORPORATION INST. NO. 2021-21498 D.R.J.C.T.

F.M. 1902

LIMITS OF BRUSH CLEARING

TEMPORARY ASPHALT ROAD

LAKEWOOD DRIVE

SLOPE LIMITS

EX. 12" W.L.

PROP. ℄ LAKEWOOD DRIVE

BEGIN CONCRETE CURB & GUTTER

10' SIDEWALK

MATCHLINE - STA. 10+00.00
SEE SHEET GR-02

FUTURE LAKEWOOD DRIVE

BURLESON 4A ECONOMIC DEVELOPMENT CORPORATION INST. NO. 2021-22172 D.R.J.C.T.

BURLESON 4A ECONOMIC DEVELOPMENT CORPORATION INST. NO. 2021-21498 D.R.J.C.T.

CONTRACTOR NOTE

THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UTILITIES, WHETHER PRIVATE OR PUBLIC, PRIOR TO EXCAVATING. THE INFORMATION AND DATA SHOWN WITH RESPECT TO EXISTING UNDERGROUND FACILITIES AT OR CONTIGUOUS TO THE SITE IS APPROXIMATE AND BASED ON INFORMATION AND DATA FURNISHED BY THE OWNERS OF SUCH UNDERGROUND FACILITIES OR ON PHYSICAL APPURTENANCES OBSERVED IN THE FIELD. THE OWNER AND ENGINEER SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ANY SUCH INFORMATION OR DATA, AND THE CONTRACTOR SHALL HAVE FULL RESPONSIBILITY FOR REVIEWING AND CHECKING ALL SUCH INFORMATION AND DATA, FOR LOCATING ALL UNDERGROUND FACILITIES, FOR COORDINATION OF THE WORK WITH THE OWNERS OF SUCH UNDERGROUND FACILITIES DURING CONSTRUCTION, FOR THE SAFETY AND PROTECTION THEREOF, AND REPAIRING ANY DAMAGE THERETO RESULTING FROM THE WORK, THE COST OF ALL OF WHICH WILL BE CONSIDERED AS HAVING BEEN INCLUDED IN THE CONTRACT PRICE. CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY ANY AFFECTED UTILITY COMPANIES OR AGENCIES AT LEAST 48 HOURS PRIOR TO BEGINNING CONSTRUCTION.

BENCH MARK ELEVATION : 852.36

CAPPED IRON ROD WITH CAP STAMPED "RDM" AT THE NORTHWEST CORNER OF THE INTERSECTION OF CR 1902 AND CR 1019, APPROXIMATELY 37 FEET NORTHWEST OF THE CENTERLINE OF CR 1019, APPROXIMATELY 45 FEET NORTHEAST OF THE CENTERLINE OF CR 1902, AND APPROXIMATELY 120 FEET SOUTHWEST OF A DRIVEWAY.

SUMMIT CIVIL DESIGN

LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN MARSHALL INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
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STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	5/12/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	GR-01

GRADING PLAN

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E:\10745 – Bransom Estates\Lakewood\Plans\SHEETS\60% Construction Plans\10745–LAKEWOOD–GR–01–02.dwg Wed Sep 28 2022 11:31

GRADING LEGEND

– – – – –	EXISTING CONTOUR
———	PROPOSED CONTOUR
× 850.00	SPOT ELEVATION
– – – – –	SLOPE LIMITS
– – – – –	LIMITS OF BRUSH CLEARING
——→	FLOW ARROW
— — —	MATCHLINE

N E S W

GRAPHIC SCALE 1"=40'

0 40 80 120

LIMITS OF BRUSH CLEARING

5 - 12' X 4' R.C.B.

284 L.F. METAL BEAM GUARD FENCE

SLOPE LIMITS

PROP. ℄ LAKEWOOD DRIVE

PROP. R.O.W.

10' SIDEWALK

LAKEWOOD DRIVE

BURLESON 4A ECONOMIC DEVELOPMENT CORPORATION INST. NO. 2021-21498 D.R.J.C.T.

MATCHLINE - STA. 10+00.00 SEE SHEET GR-01

MATCHLINE - STA. 20+00.00 SEE SHEET GR-03

225 L.F. METAL BEAM GUARD FENCE

SLOPE LIMITS

PROP. R.O.W.

10' SIDEWALK

BURLESON 4A ECONOMIC DEVELOPMENT CORPORATION INST. NO. 2021-21498 D.R.J.C.T.

CONTRACTOR NOTE

THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UTILITIES, WHETHER PRIVATE OR PUBLIC, PRIOR TO EXCAVATING. THE INFORMATION AND DATA SHOWN WITH RESPECT TO EXISTING UNDERGROUND FACILITIES AT OR CONTIGUOUS TO THE SITE IS APPROXIMATE AND BASED ON INFORMATION AND DATA FURNISHED BY THE OWNERS OF SUCH UNDERGROUND FACILITIES OR ON PHYSICAL APPURTENANCES OBSERVED IN THE FIELD. THE OWNER AND ENGINEER SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ANY SUCH INFORMATION OR DATA, AND THE CONTRACTOR SHALL HAVE FULL RESPONSIBILITY FOR REVIEWING AND CHECKING ALL SUCH INFORMATION AND DATA, FOR LOCATING ALL UNDERGROUND FACILITIES, FOR COORDINATION OF THE WORK WITH THE OWNERS OF SUCH UNDERGROUND FACILITIES DURING CONSTRUCTION, FOR THE SAFETY AND PROTECTION THEREOF, AND REPAIRING ANY DAMAGE THERETO RESULTING FROM THE WORK, THE COST OF ALL OF WHICH WILL BE CONSIDERED AS HAVING BEEN INCLUDED IN THE CONTRACT PRICE. CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY ANY AFFECTED UTILITY COMPANIES OR AGENCIES AT LEAST 48 HOURS PRIOR TO BEGINNING CONSTRUCTION.

BENCH MARK ELEVATION : 852.36

CAPPED IRON ROD WITH CAP STAMPED "RDM" AT THE NORTHWEST CORNER OF THE INTERSECTION OF CR 1902 AND CR 1019, APPROXIMATELY 37 FEET NORTHWEST OF THE CENTERLINE OF CR 1019, APPROXIMATELY 45 FEET NORTHEAST OF THE CENTERLINE OF CR 1902, AND APPROXIMATELY 120 FEET SOUTHWEST OF A DRIVEWAY.

NO.	REVISION DATE

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS

CITY OF BURLESON

JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.

CIVIL ENGINEERS – PLANNERS – SURVEYORS

2405 Mustang Drive, Grapevine, Texas 76051

(817) 329-4373

TxEng Firm # F-2644 – TxSurv Firm # 100177-00

STATE OF TEXAS

BRENT A. CALDWELL

108515

LICENSED PROFESSIONAL ENGINEER

09/28/22

JOB NO. :	10745
DATE :	5/12/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	GR-02

GRADING PLAN

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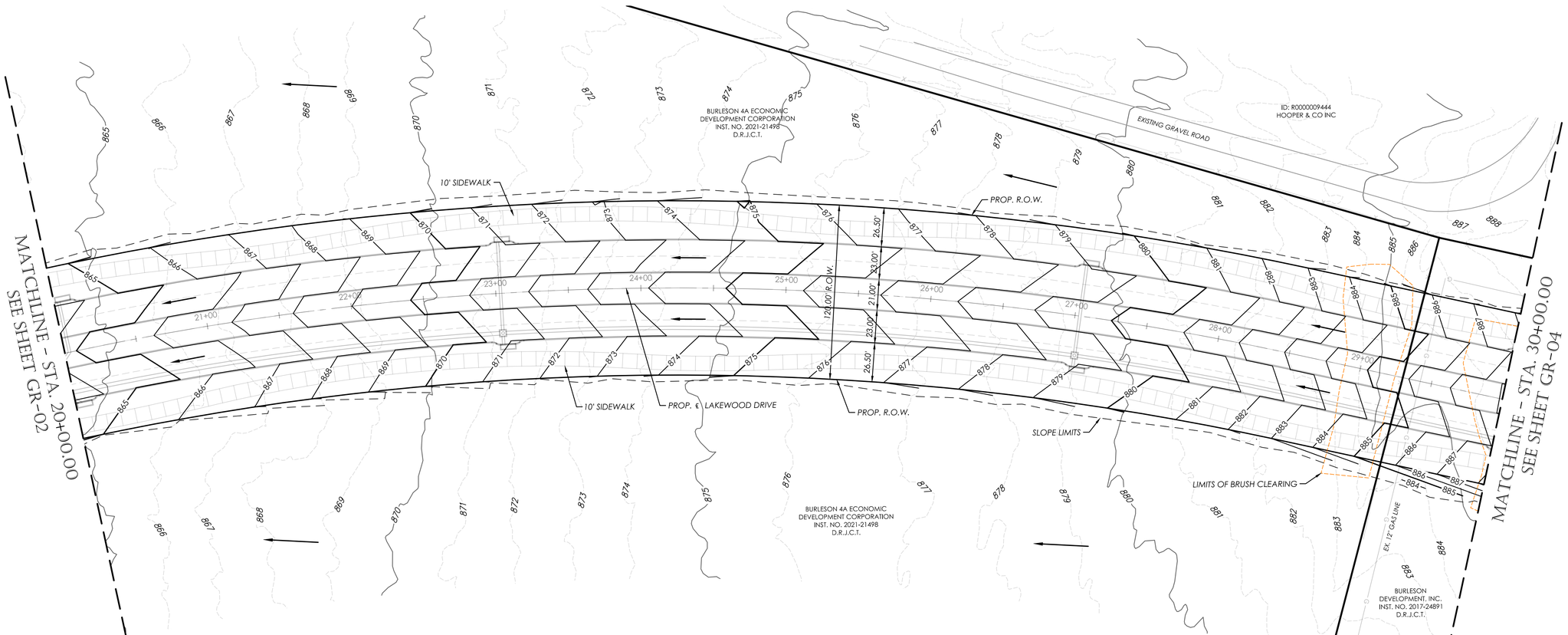
GRADING LEGEND

– – – – –	EXISTING CONTOUR
———	PROPOSED CONTOUR
× 850.00	SPOT ELEVATION
– – – – –	SLOPE LIMITS
– – – – –	LIMITS OF BRUSH CLEARING
——→	FLOW ARROW
— — — —	MATCHLINE

GRAPHIC SCALE 1"=40'

0 40 80 120



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!!!WARNING!!!

APPROXIMATE LOCATION OF EXISTING UNDERGROUND GAS LINE. CONTRACTOR SHALL COORDINATE WITH APPROPRIATE UTILITY COMPANIES PRIOR TO CONSTRUCTION.

BENCH MARK ELEVATION : 852.36

CAPPED IRON ROD WITH CAP STAMPED "RDM" AT THE NORTHWEST CORNER OF THE INTERSECTION OF CR 1902 AND CR 1019, APPROXIMATELY 37 FEET NORTHWEST OF THE CENTERLINE OF CR 1019, APPROXIMATELY 45 FEET NORTHEAST OF THE CENTERLINE OF CR 1902, AND APPROXIMATELY 120 FEET SOUTHWEST OF A DRIVEWAY.

NO.	REVISION DATE

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN MARSHALL
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 - TxSurv Firm # 100170

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	2/8/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	GR-03

GRADING PLAN

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GRADING LEGEND

- EXISTING CONTOUR
- PROPOSED CONTOUR
- × 850.00 SPOT ELEVATION
- SLOPE LIMITS
- LIMITS OF BRUSH CLEARING
- FLOW ARROW
- MATCHLINE

N E W S

GRAPHIC SCALE 1"=40'

0 40 80 120

NO.	REVISION DATE
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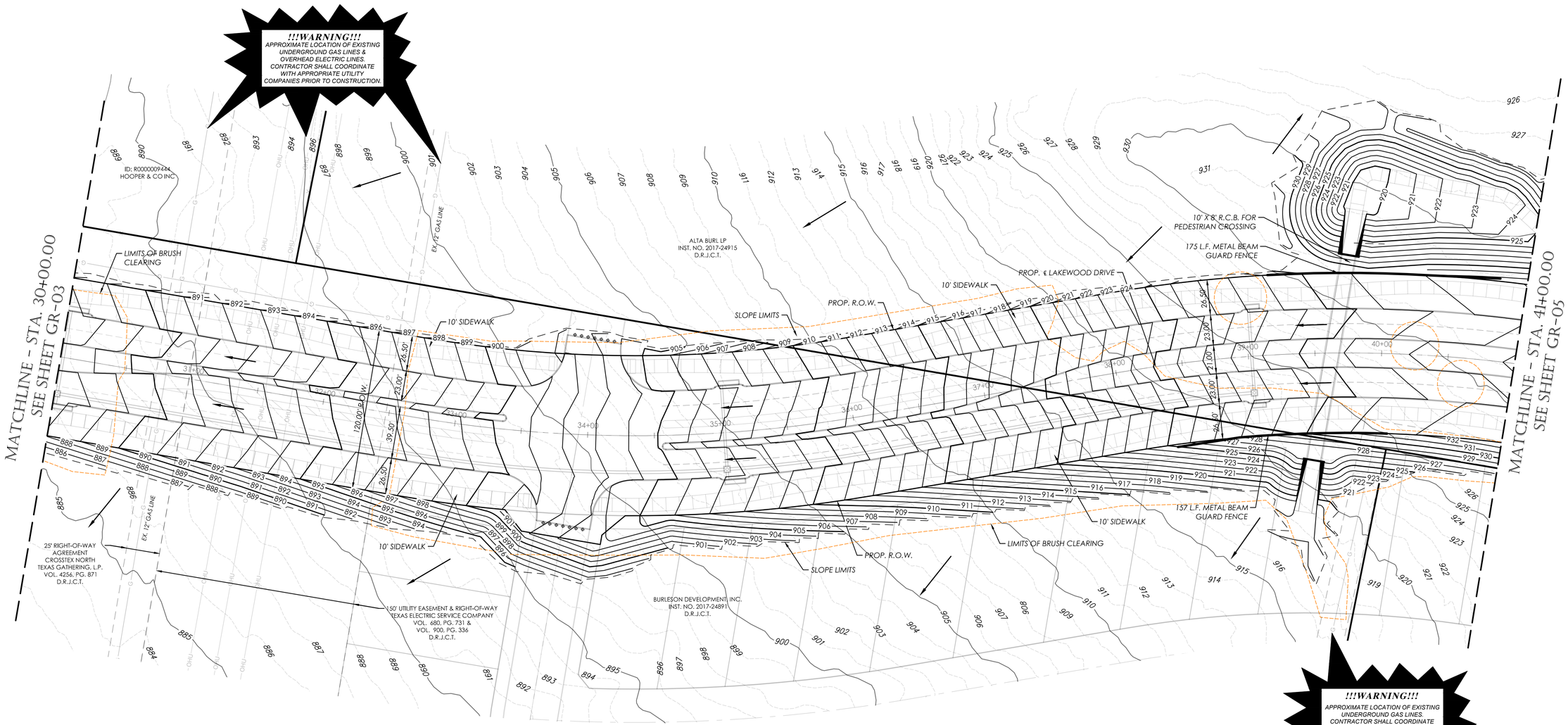
CHRISTOPHER SUMMITT

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS

CITY OF BURLESON

JOHNSON COUNTY, TX



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BENCH MARK ELEVATION : 852.36

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GOODWIN & MARSHALL, INC.

CIVIL ENGINEERS – PLANNERS – SURVEYORS

2405 Mustang Drive, Grapevine, Texas 76051

(817) 329 - 4373

TxEng Firm # F-2644 – TxSurv Firm # 100217-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	2/8/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	GR-04

GRADING PLAN

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GRADING LEGEND

- EXISTING CONTOUR
- PROPOSED CONTOUR
- × 850.00 SPOT ELEVATION
- SLOPE LIMITS
- LIMITS OF BRUSH CLEARING
- FLOW ARROW
- MATCHLINE

GRAPHIC SCALE 1"=40'
0 40 80 120

NO.	REVISION DATE
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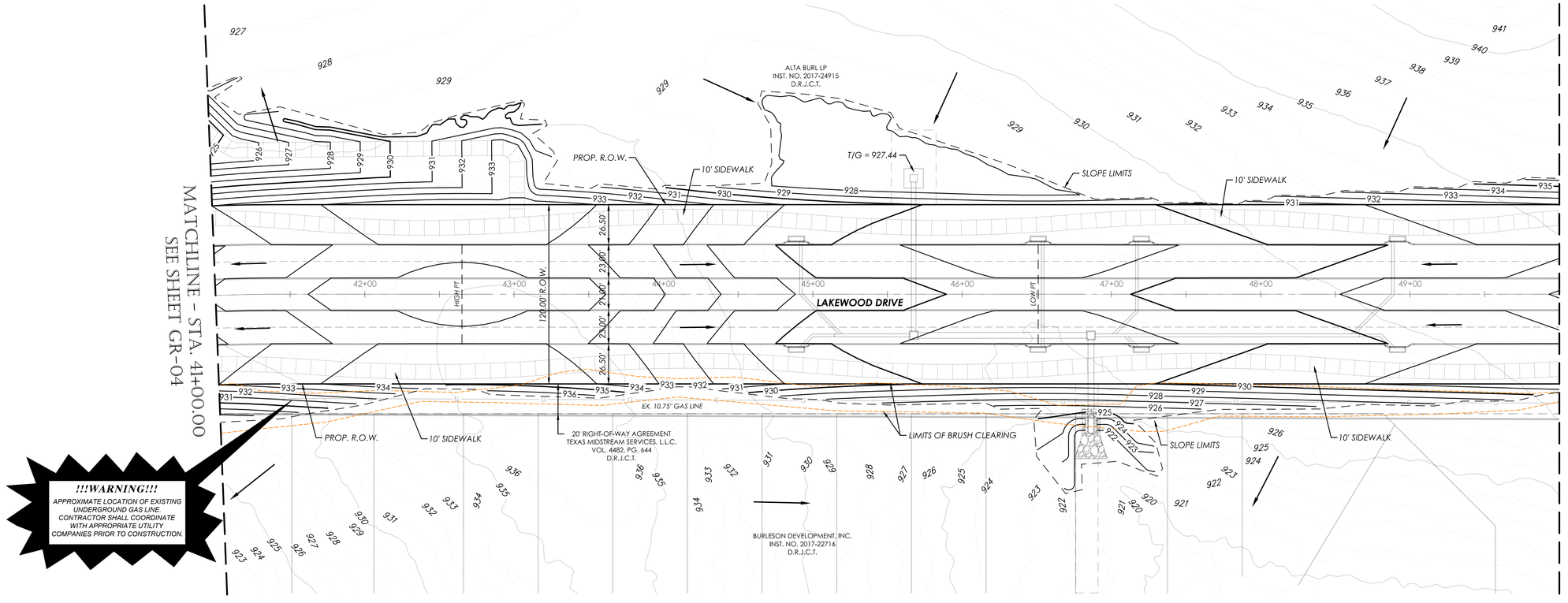

!!!WARNING!!!
APPROXIMATE LOCATION OF EXISTING UNDERGROUND GAS LINE. CONTRACTOR SHALL COORDINATE WITH APPROPRIATE UTILITY COMPANIES PRIOR TO CONSTRUCTION.

CONTRACTOR NOTE

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BENCH MARK ELEVATION : 852.36

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LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 100177-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	7/6/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	GR-05

GRADING PLAN

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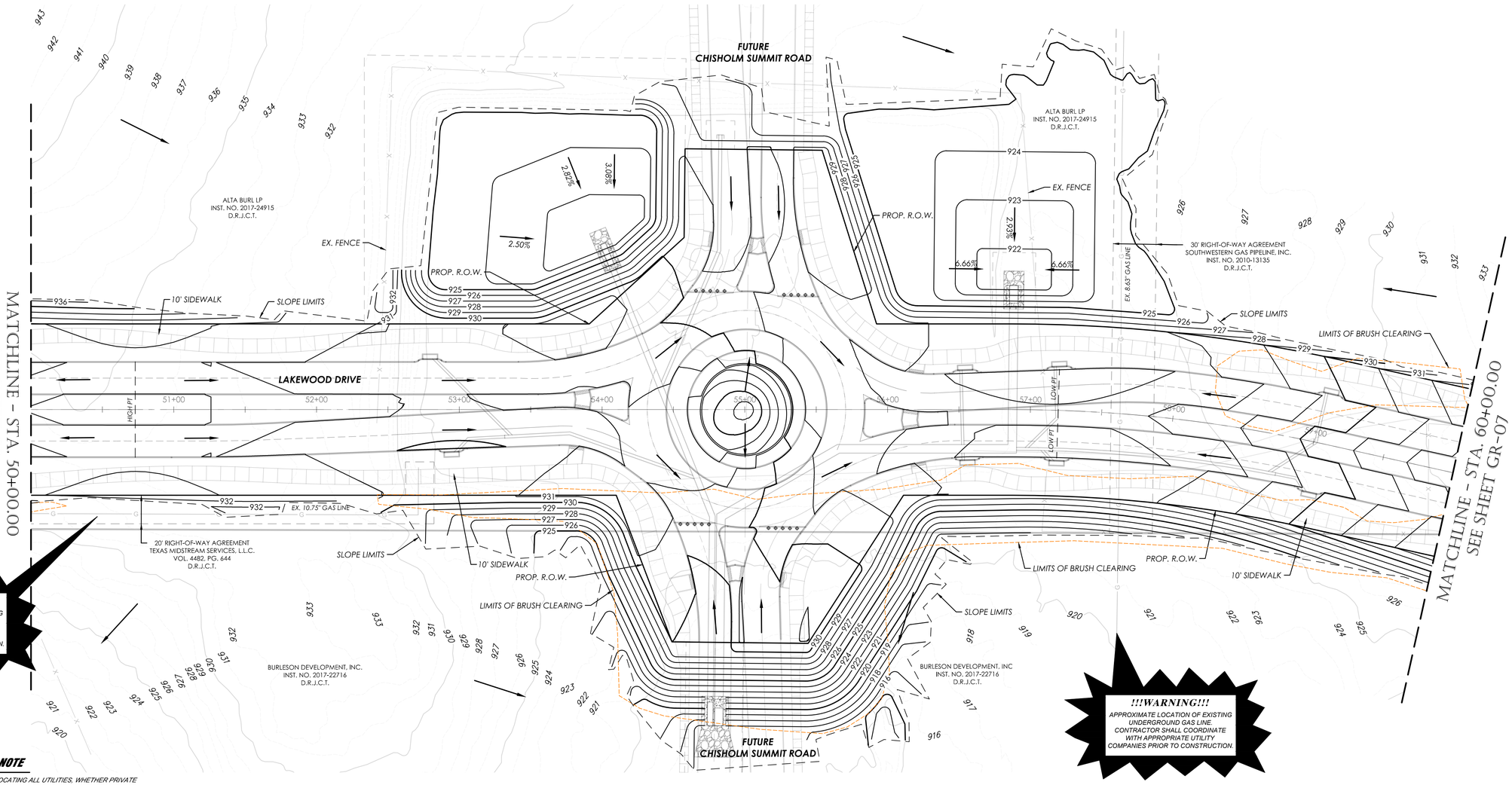
GRADING LEGEND

- EXISTING CONTOUR
- PROPOSED CONTOUR
- × 850.00 — SPOT ELEVATION
- SLOPE LIMITS
- LIMITS OF BRUSH CLEARING
- FLOW ARROW
- MATCHLINE



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GRAPHIC SCALE 1"=40'
0 40 80 120

NO.	REVISION DATE

LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2505 Mustang Drive, Grapevine, Texas 76051
(817) 329-4373
TxEng Firm # F-2644 – TxSurv Firm # 100170-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	7/6/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	GR-06

GRADING PLAN

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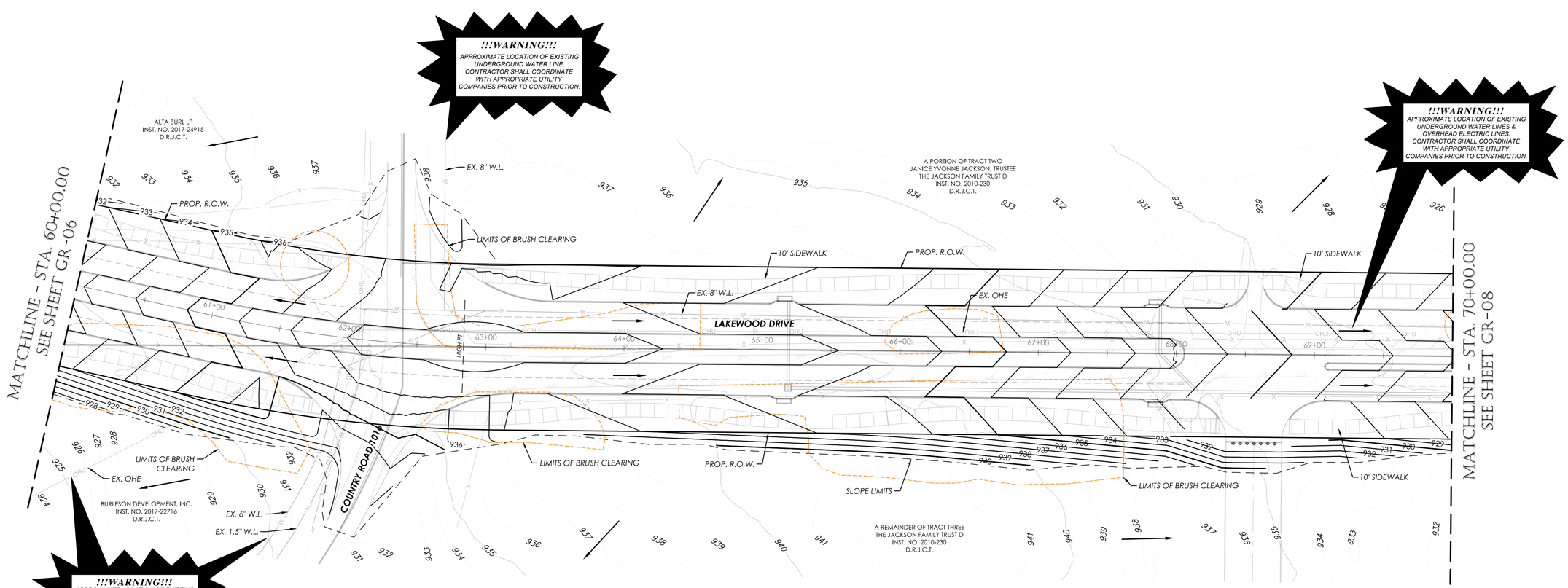
GRADING LEGEND

- EXISTING CONTOUR
- PROPOSED CONTOUR
- × 850.00 SPOT ELEVATION
- SLOPE LIMITS
- LIMITS OF BRUSH CLEARING
- FLOW ARROW
- MATCHLINE

GRAPHIC SCALE 1"=40'
0 40 80 120



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NO.	REVISION DATE

SUMMIT CONSULTING

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 100170-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	7/6/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	GR-07

GRADING PLAN

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NO.	REVISION DATE
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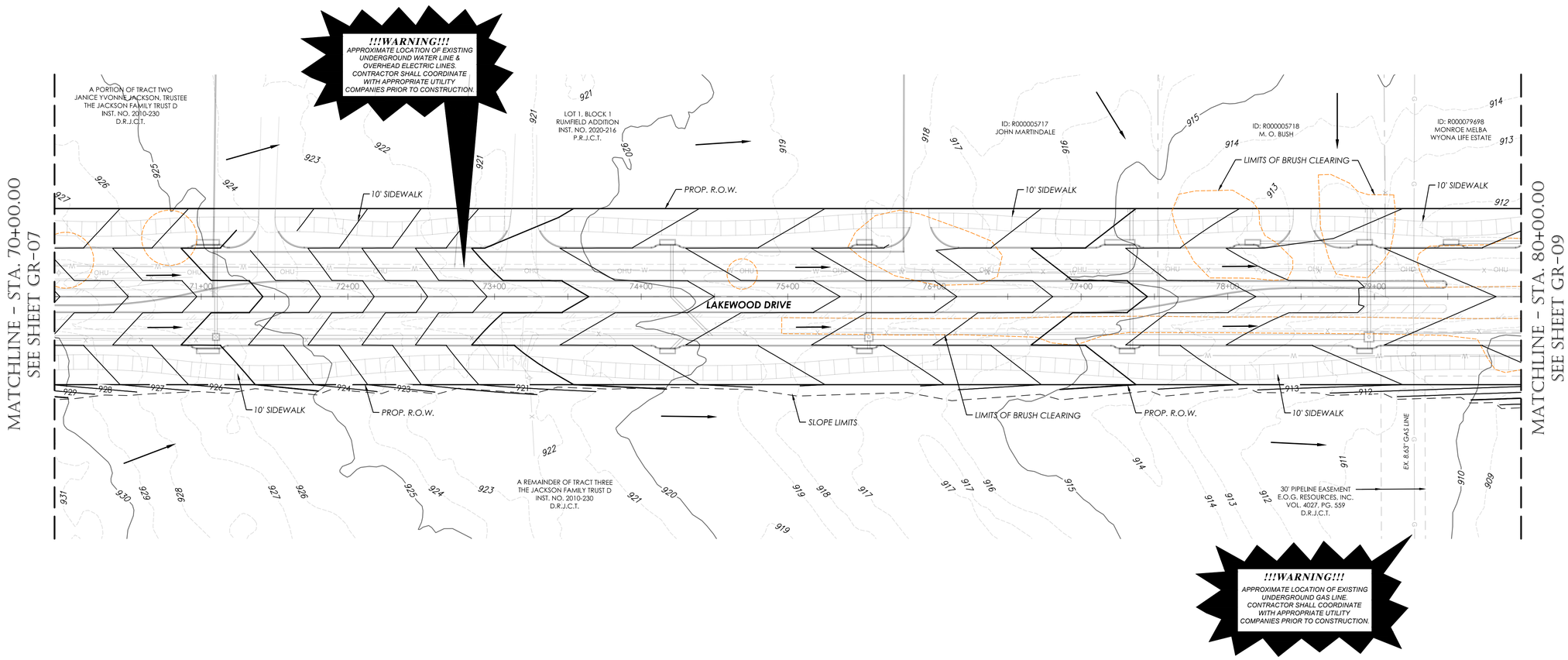
GRAPHIC SCALE 1"=40'

0 40 80 120

GRADING LEGEND

- EXISTING CONTOUR
- PROPOSED CONTOUR
- × 850.00 SPOT ELEVATION
- SLOPE LIMITS
- LIMITS OF BRUSH CLEARING
- FLOW ARROW
- MATCHLINE



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LAKEWOOD DRIVE

90% CONSTRUCTION PLANS

CITY OF BURLESON

JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEngFirm # F2644 – TxSurv Firm # 10001700

STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	5/12/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	GR-08

GRADING PLAN

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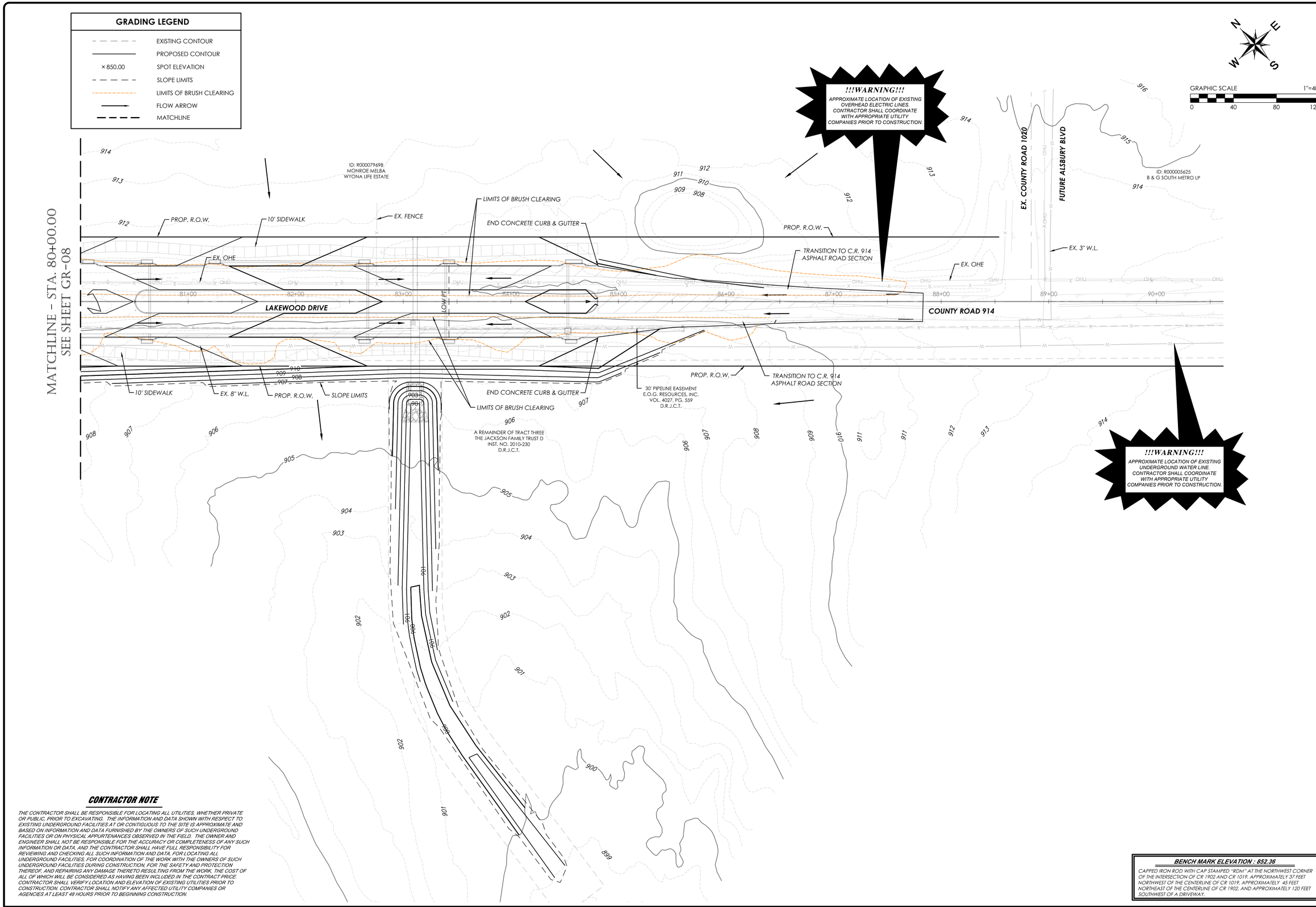

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NO.	REVISION DATE
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CHRISTIAN SUMMIT

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329-4373
TxEng Firm # F-2944 – TxSurv Firm # 10027700

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	5/12/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	GR-09

GRADING PLAN

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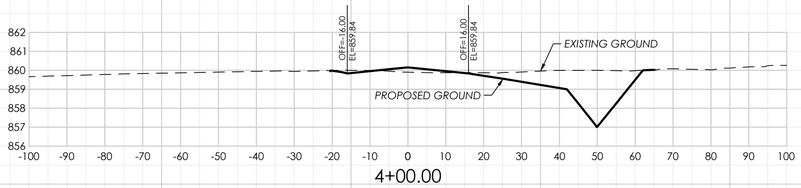
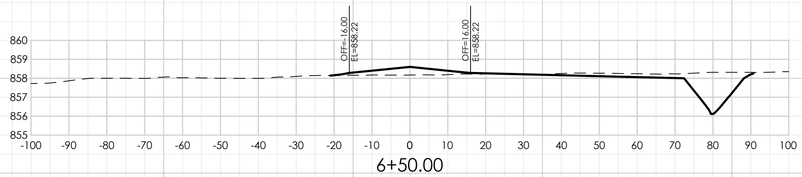
E:\10745 – Bransom Estates\Lakewood\Plans\SHEETS\60% Construction Plans\10745–LAKEWOOD–GR–08–09.dwg Wed Sep 28 2022 11:36

PROFILE SCALE
Horizontal Scale: 1" = 20'
Vertical Scale: 1" = 4'



4+00.00



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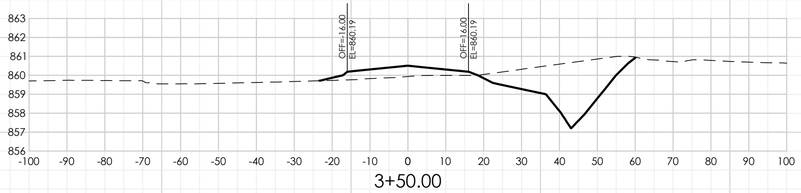

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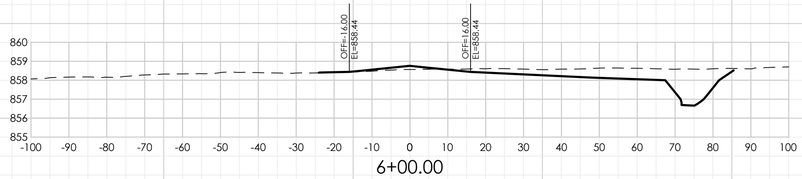

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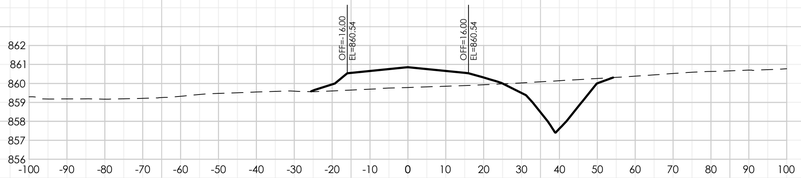

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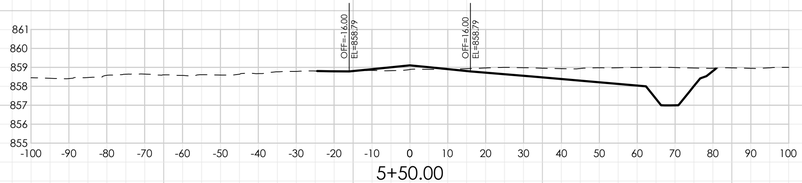

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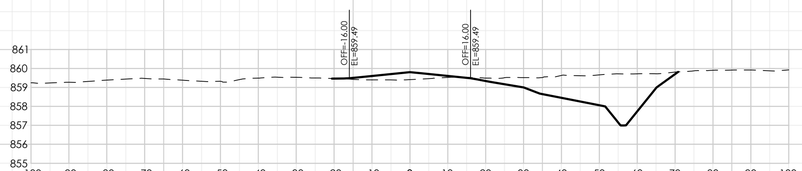

4+50.00

NO.	REVISION DATE
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LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 100170

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	2/16/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE

SHEET **XS-01**

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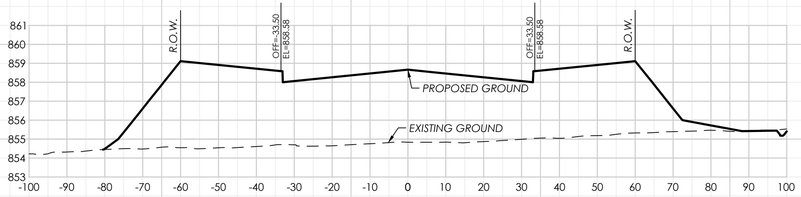

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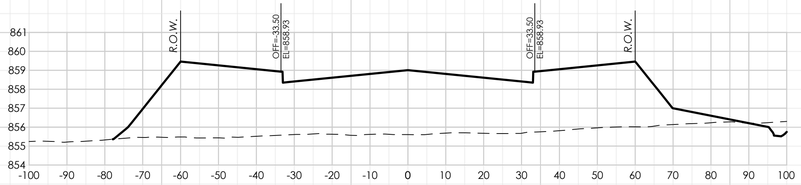

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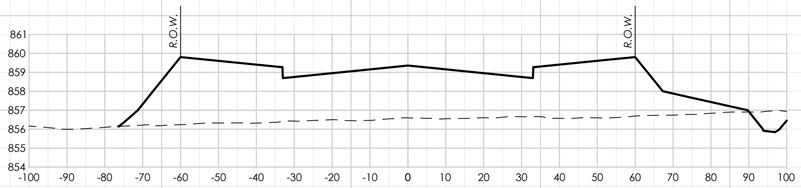

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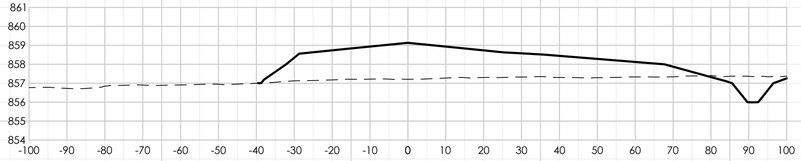
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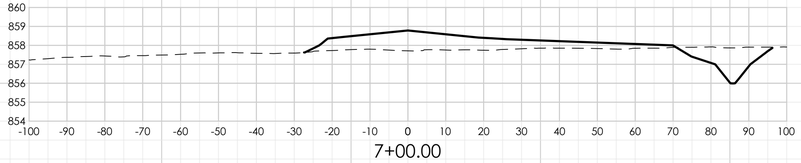
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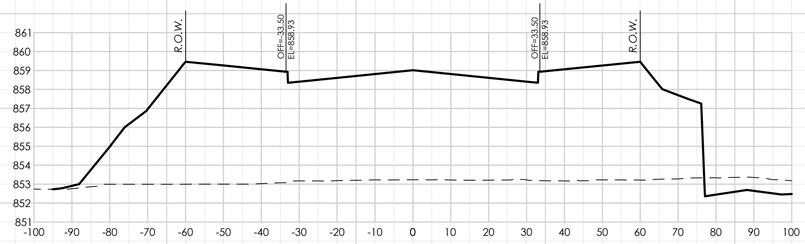

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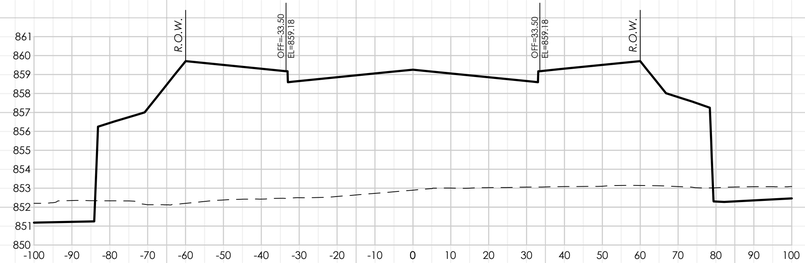

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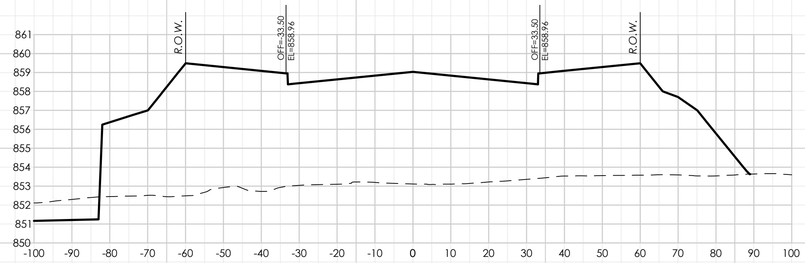

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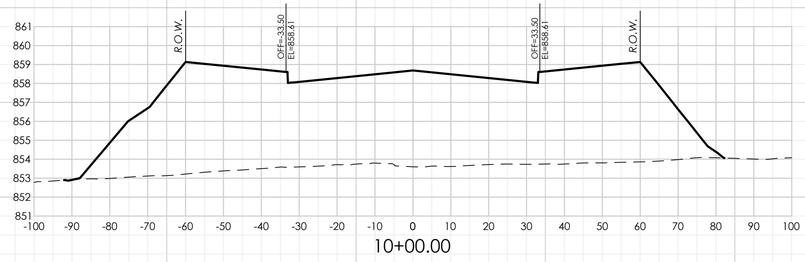

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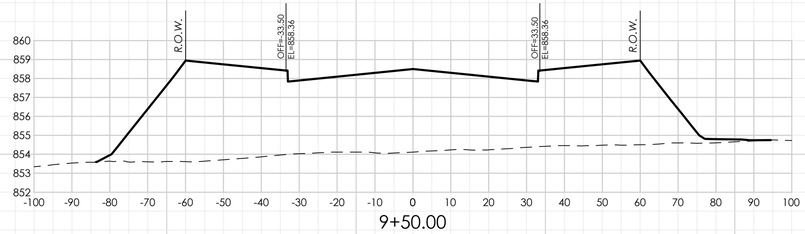

9+50.00

NO.	REVISION DATE
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LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN MARSHALL
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
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TxEng Firm # F-2644 – TxSurv Firm # 100170-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

JOB NO.:	10745
DATE:	2/16/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW:	EWE
SHEET	XS-02

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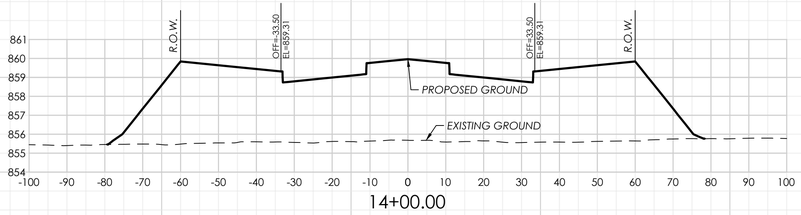

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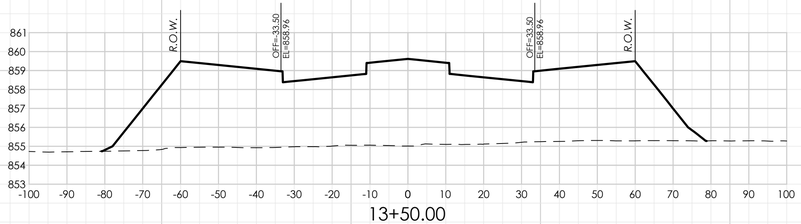

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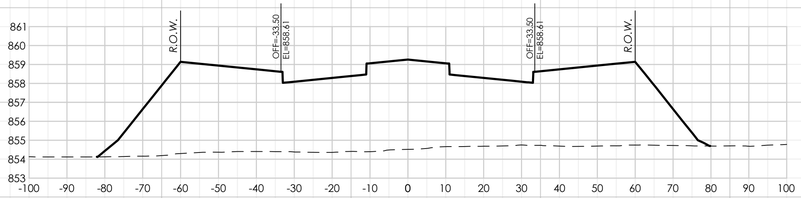

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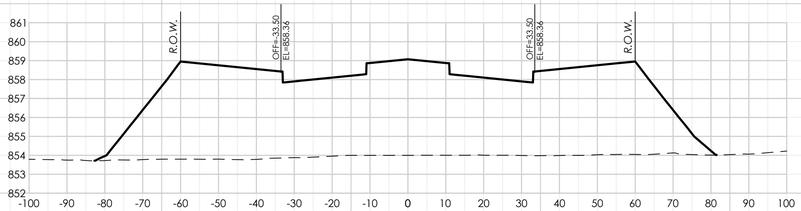

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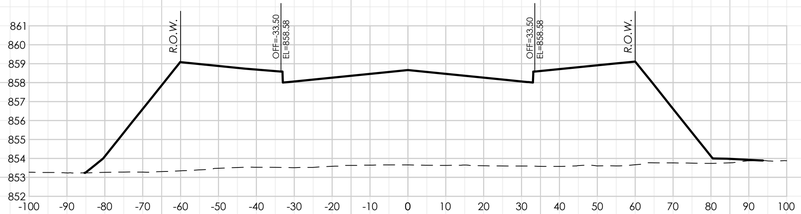

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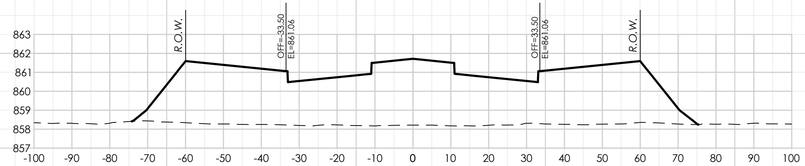

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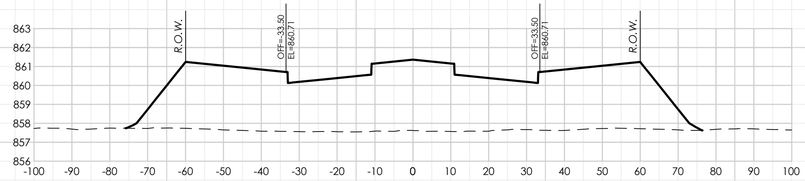

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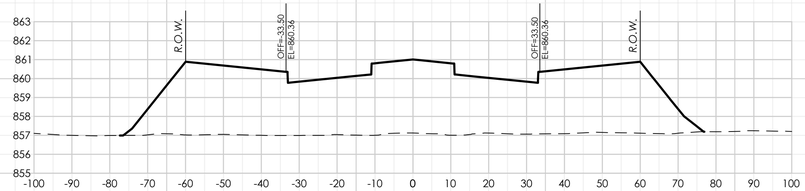

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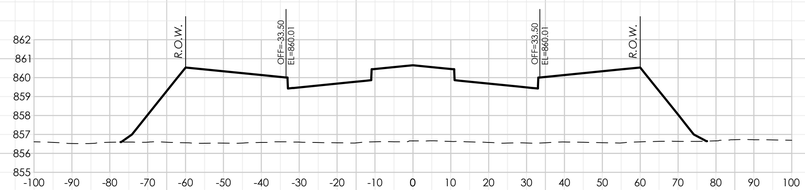

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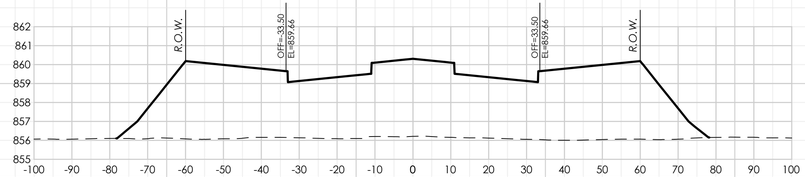

14+50.00

NO.	REVISION DATE
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LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 100170

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	2/16/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE

SHEET **XS-03**

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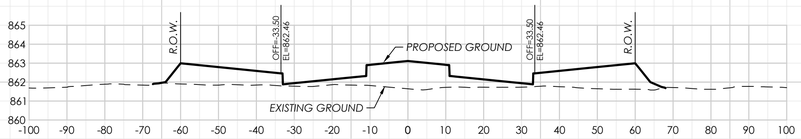

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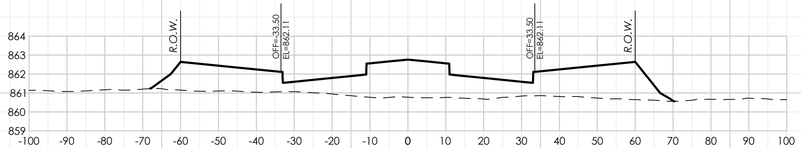

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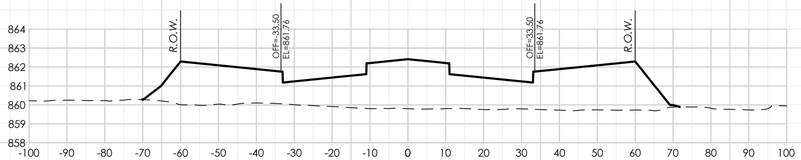

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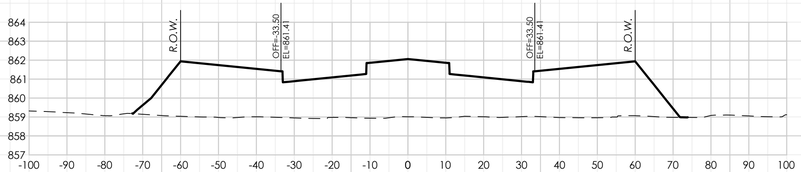

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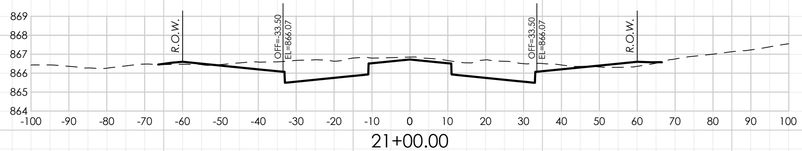

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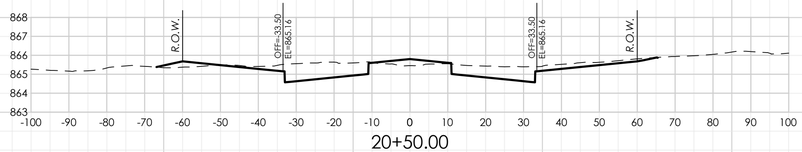

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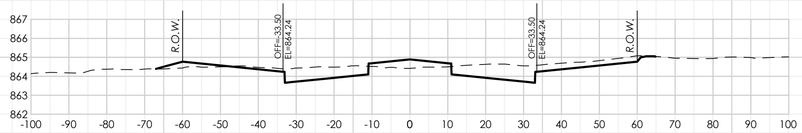

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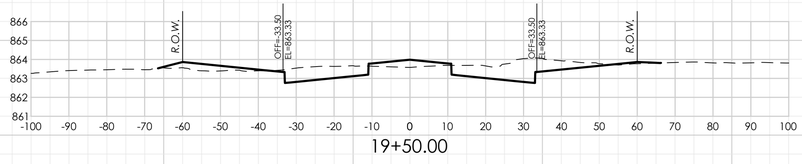

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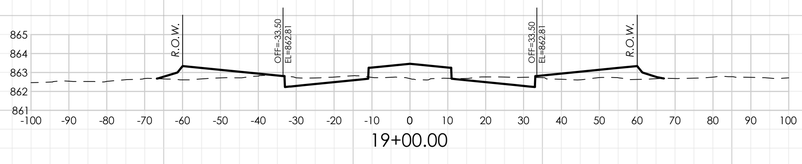

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LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN & MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329-4373
TxEng Firm # F-2644 – TxSurv Firm # 100570-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	2/16/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	XS-04

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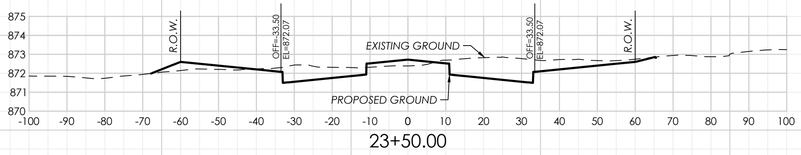

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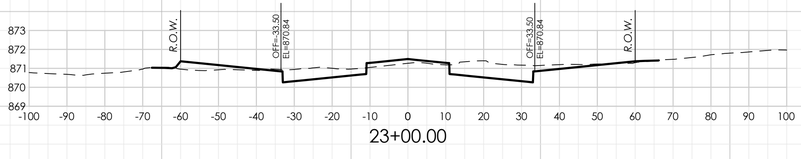

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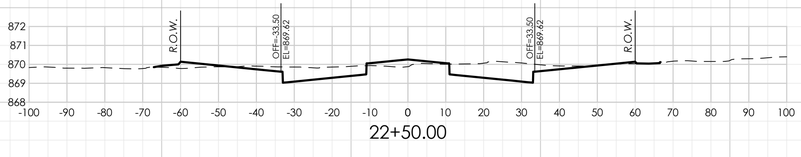

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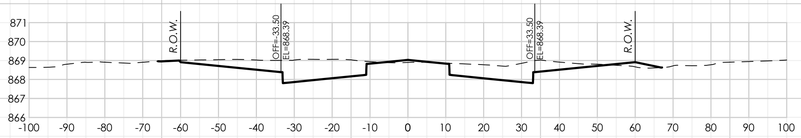

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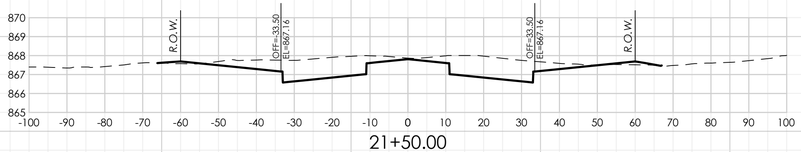

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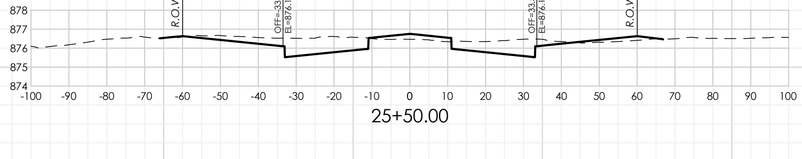

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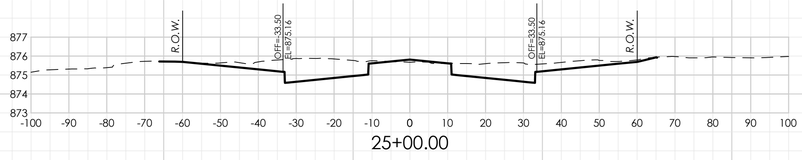

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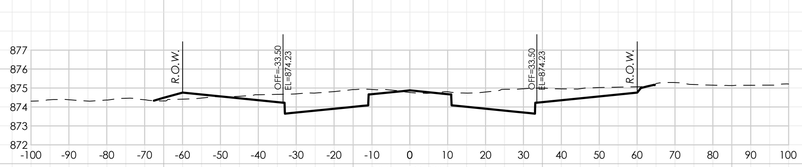

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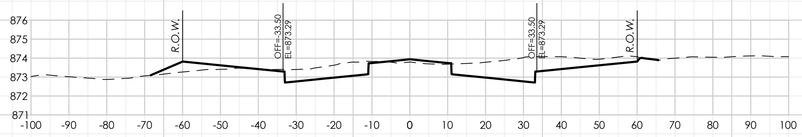

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LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
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JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
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STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	2/16/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE

SHEET **XS-05**

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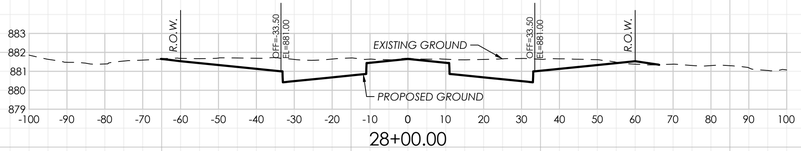
Horizontal Scale: 1" = 20'
Vertical Scale: 1" = 4'



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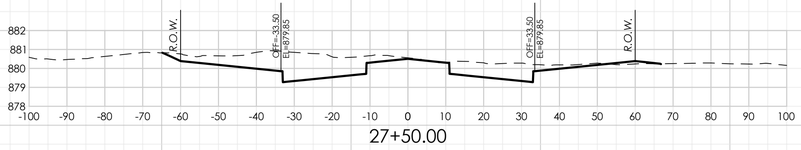

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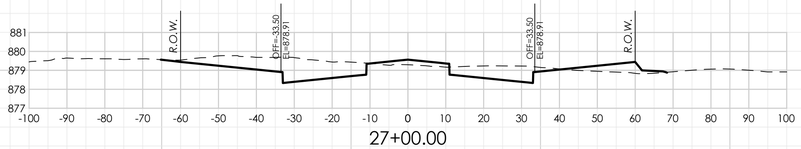

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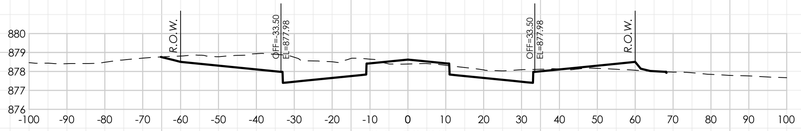

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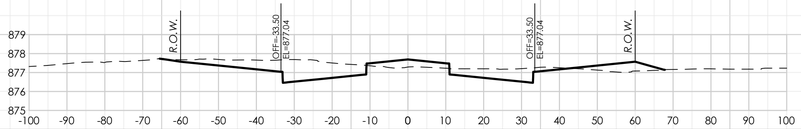

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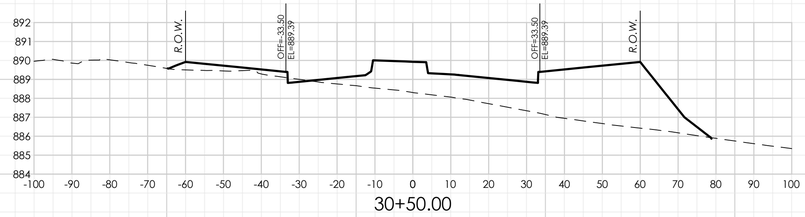

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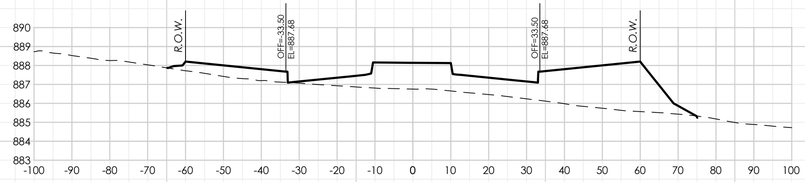

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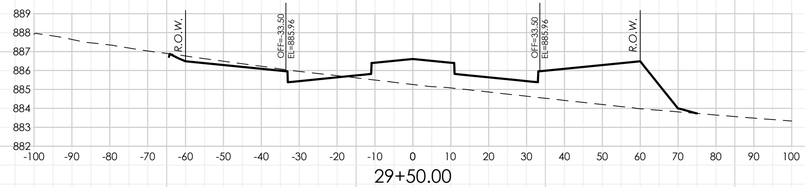

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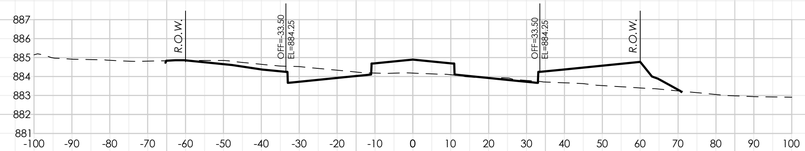

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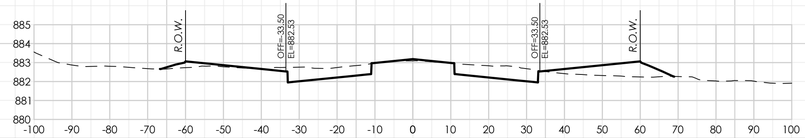

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NO.	REVISION DATE
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CITY OF SUMMIT
BURLESON, TEXAS

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 100170

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	2/16/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE

SHEET **XS-06**

CROSS SECTIONS

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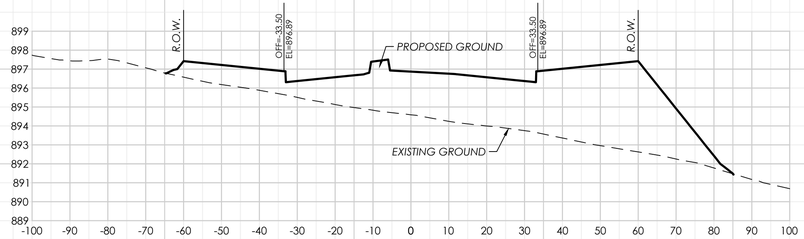

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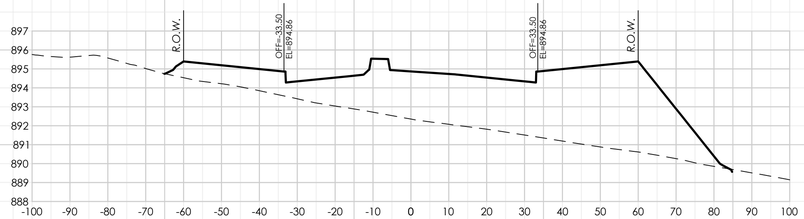

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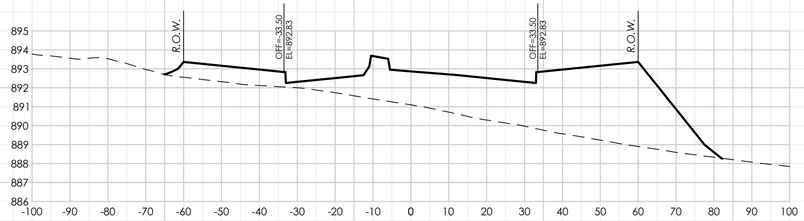

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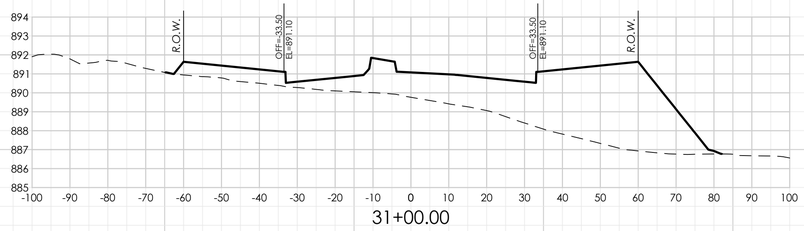

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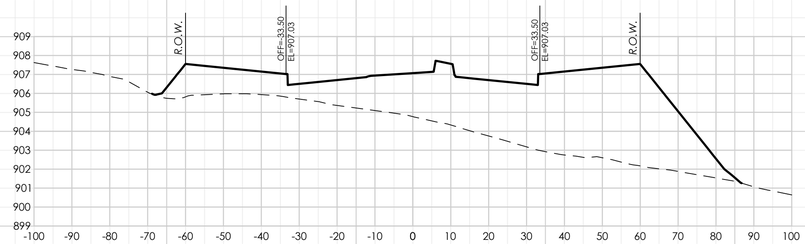

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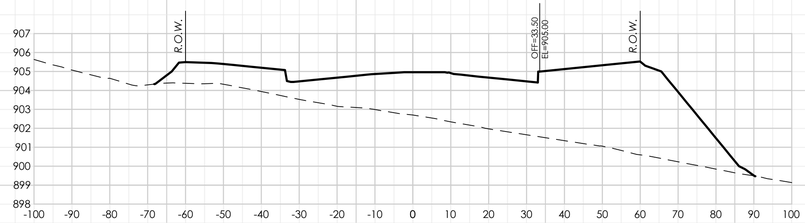

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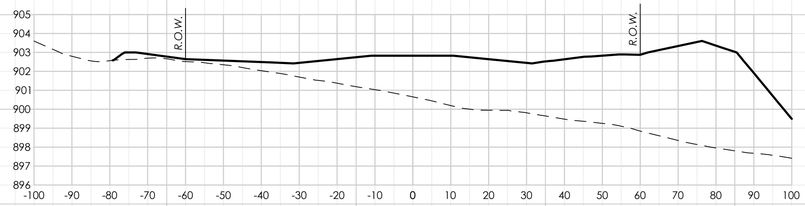

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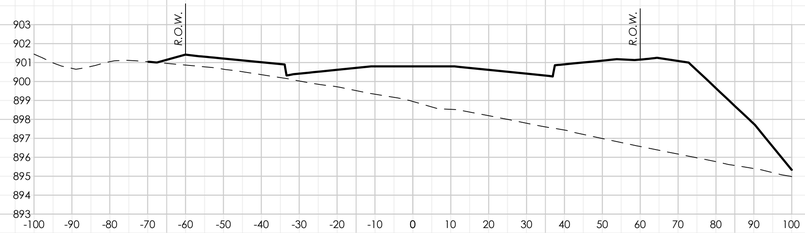

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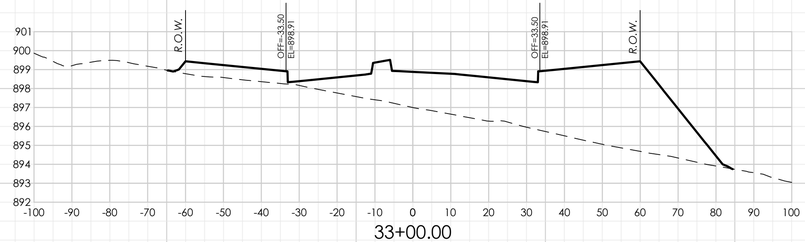

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LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN MARSHALL
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 -4373
TxEng Firm # F-2644 – TxSurv Firm # 10021700

STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	2/16/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	XS-07

CROSS SECTIONS

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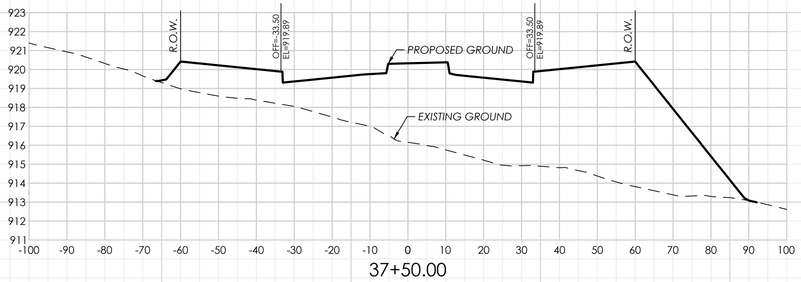

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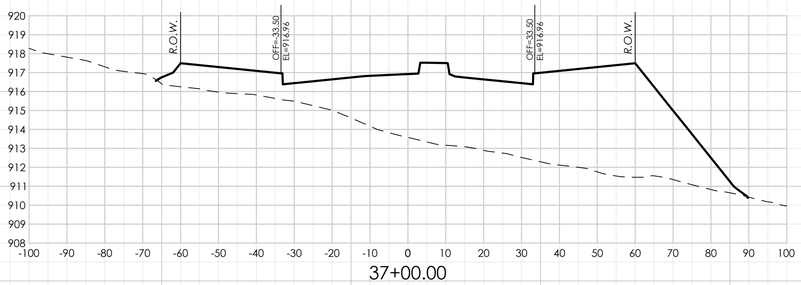

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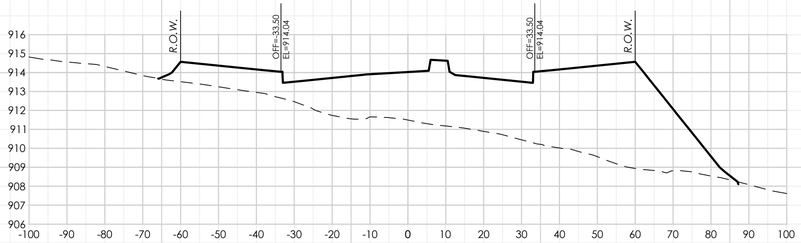

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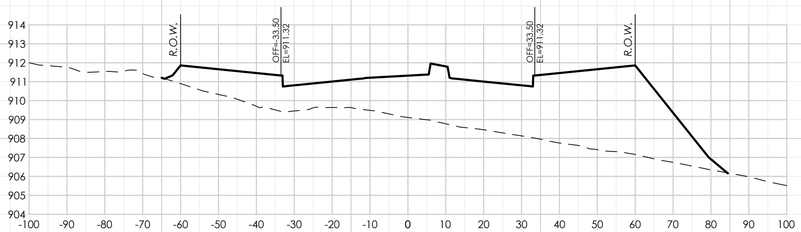

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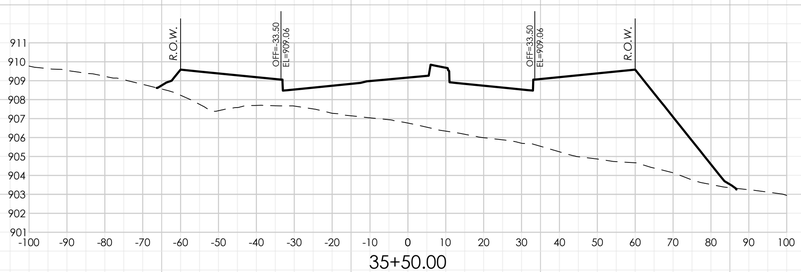

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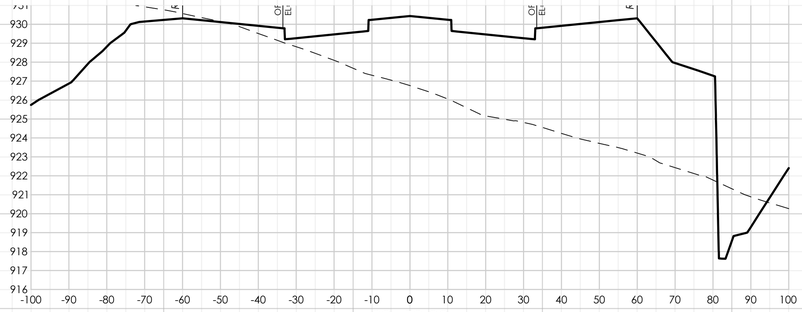

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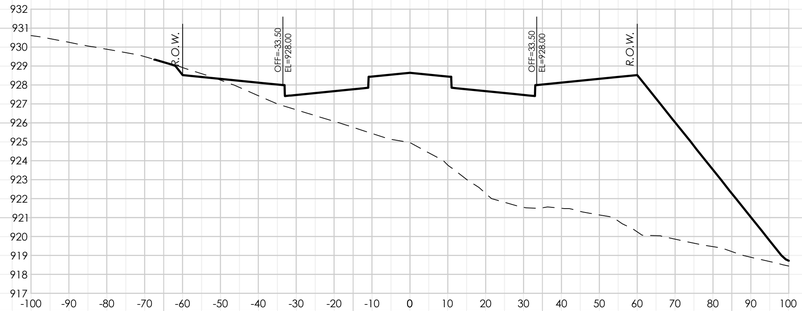

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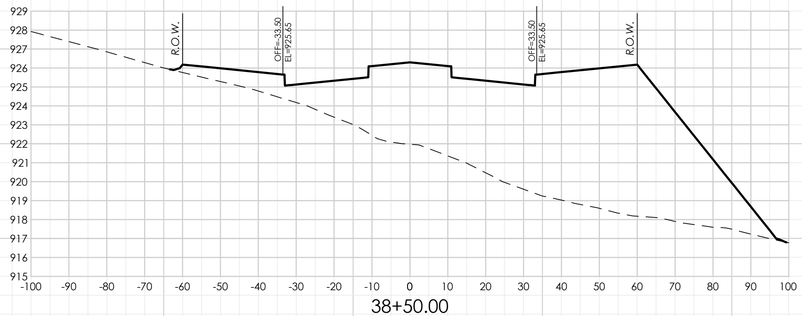

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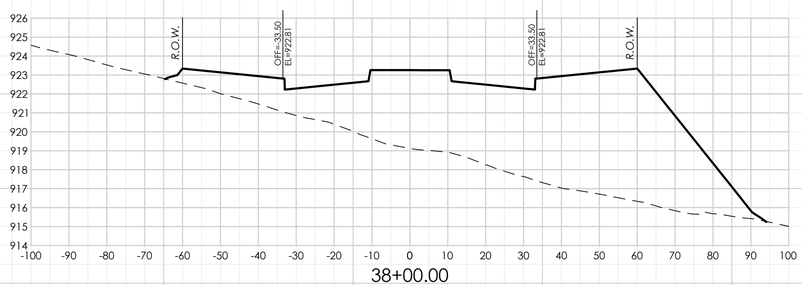

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PROFILE SCALE
Horizontal Scale: 1" = 20'
Vertical Scale: 1" = 4'

NO.	REVISION DATE
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LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN & MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSur Firm # 100170-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	2/16/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	XS-08

CROSS SECTIONS

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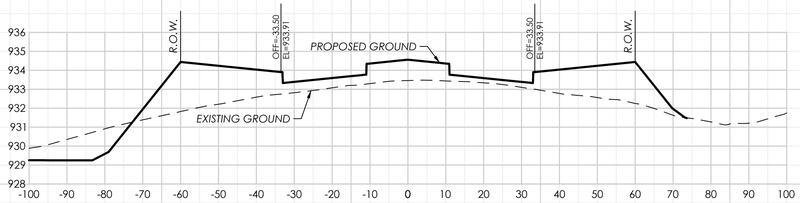

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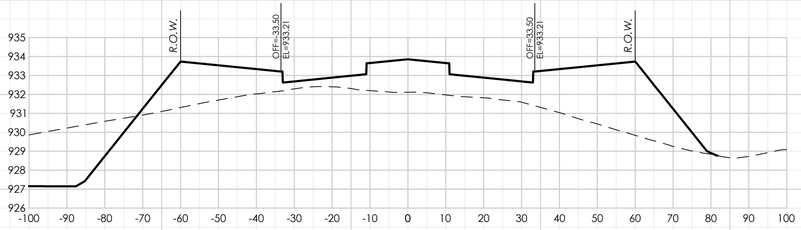

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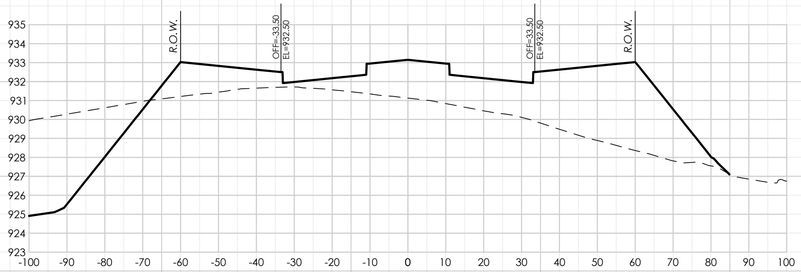

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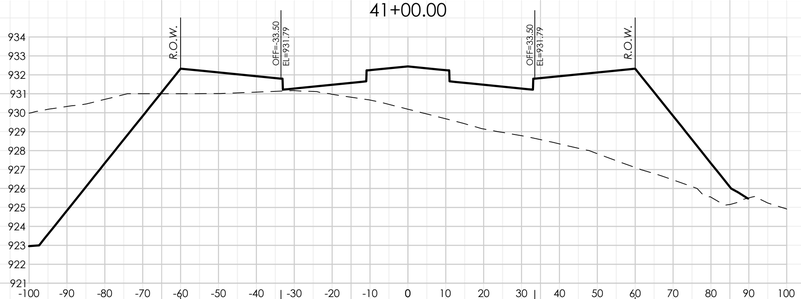

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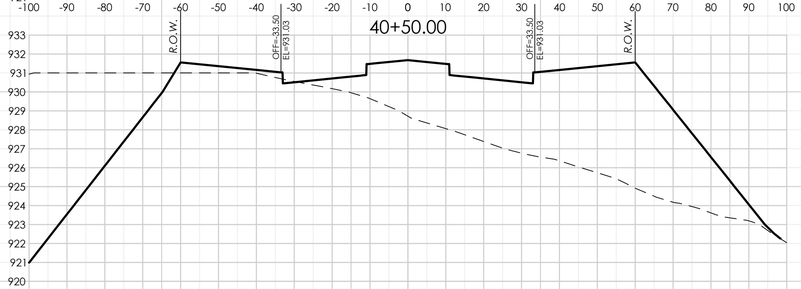

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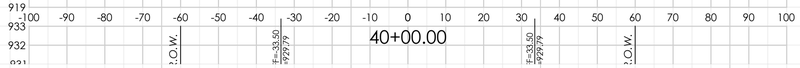

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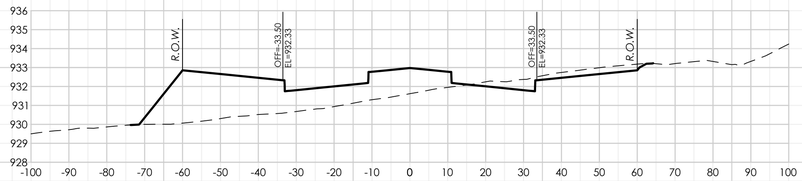

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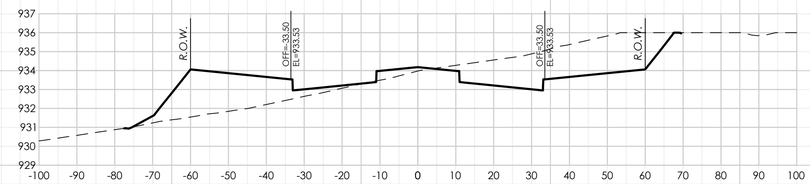

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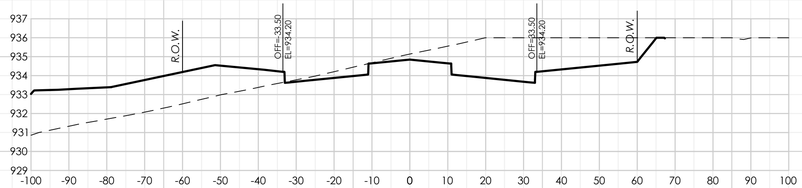

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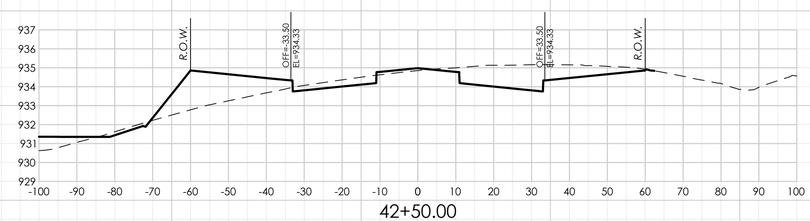

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LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL INC.
CIVIL ENGINEERS ~ PLANNERS ~ SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329-4373
TxEng Firm # F-2944 ~ TxSurv Firm # 10021700

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	2/16/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE

SHEET **XS-09**

CROSS SECTIONS

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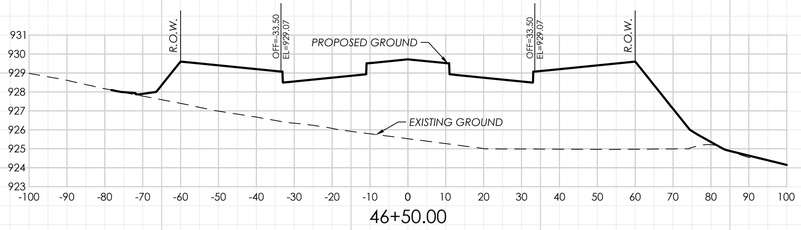

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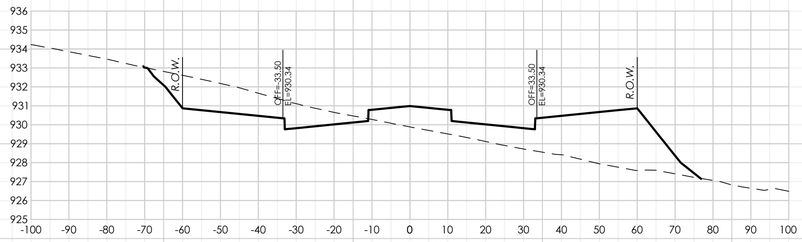

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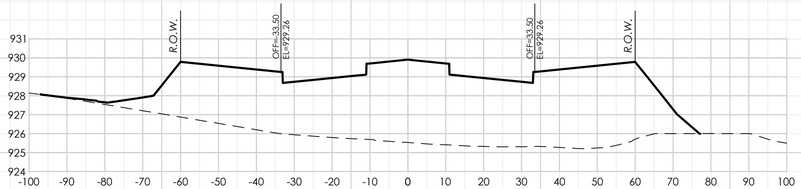

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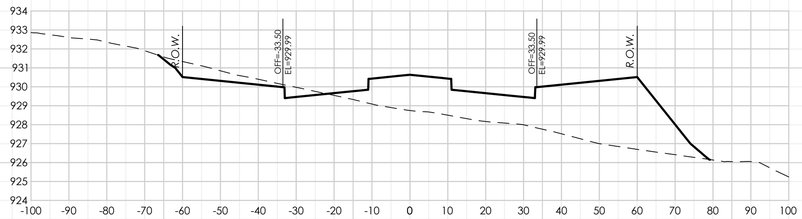

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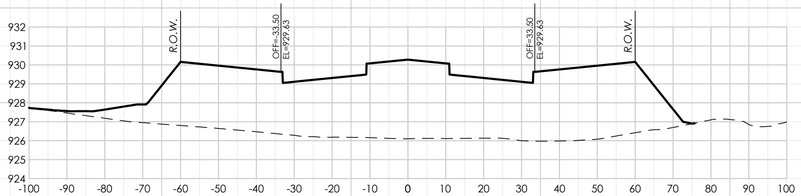

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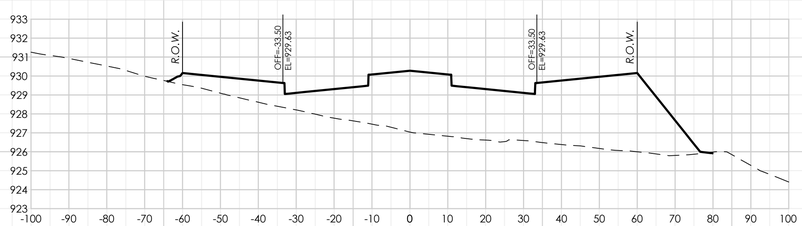

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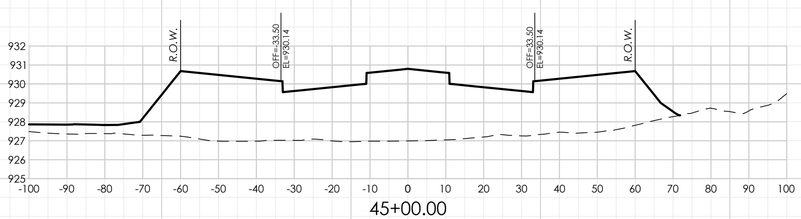

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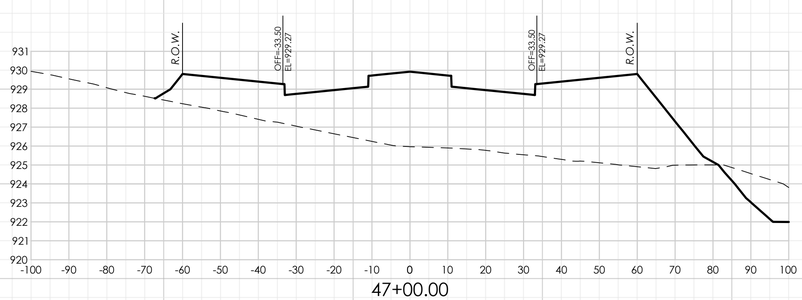

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LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN & MARSHALL INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 100170-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	2/16/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	XS-10

CROSS SECTIONS

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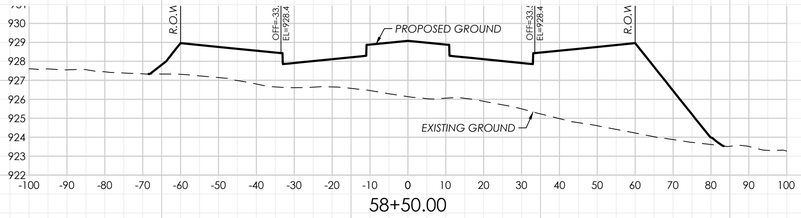

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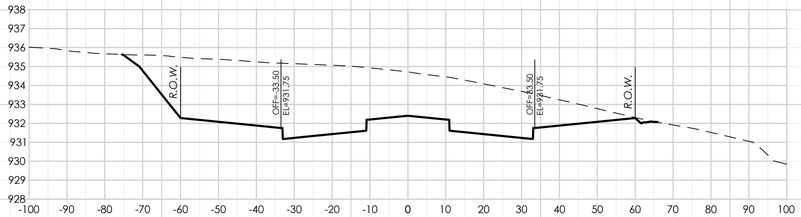

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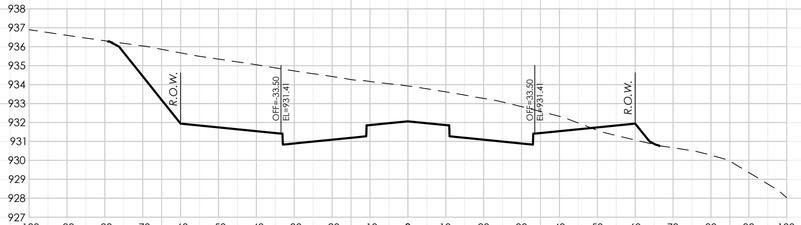

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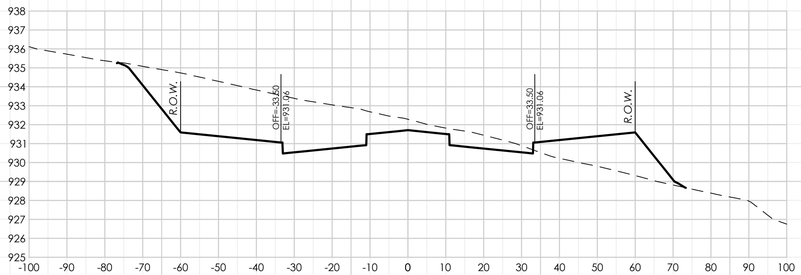

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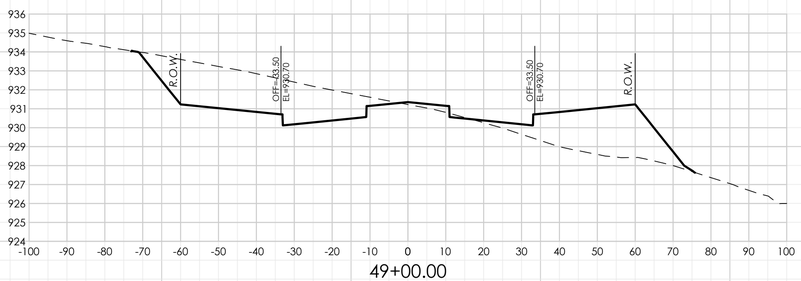

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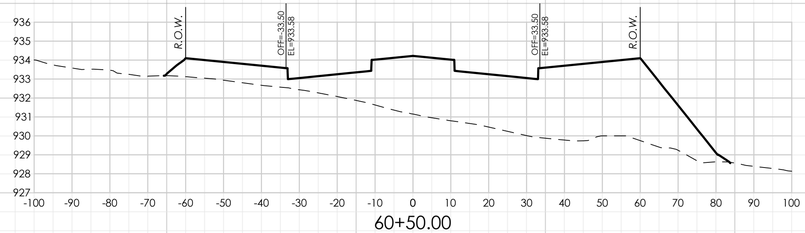

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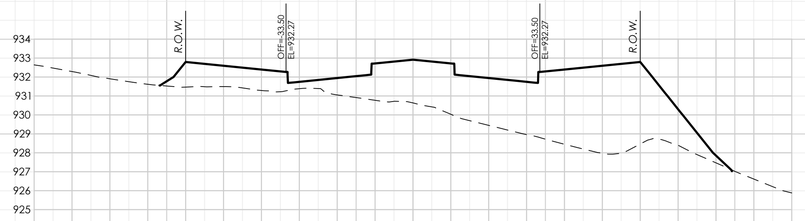

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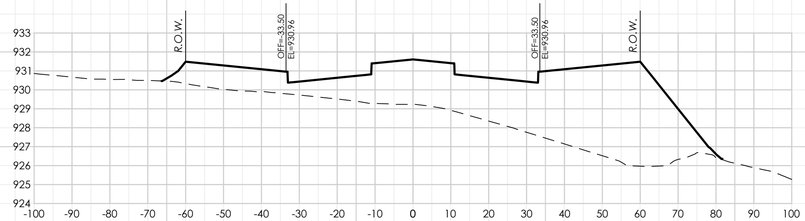

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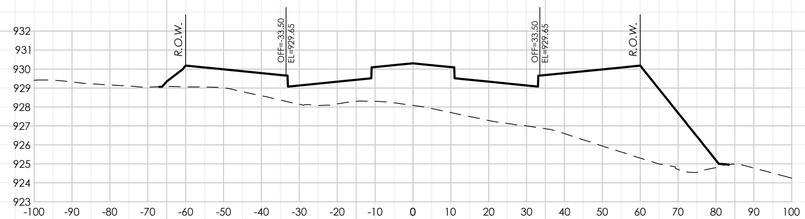

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NO.	REVISION DATE
1	
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LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
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GOODWIN & MARSHALL, INC.
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SHEET **XS-11**

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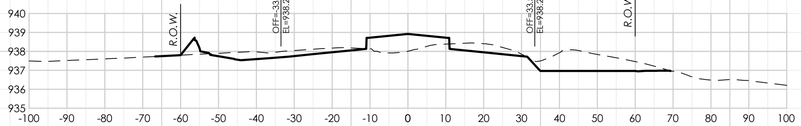

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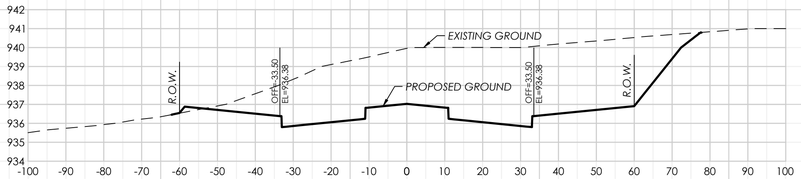

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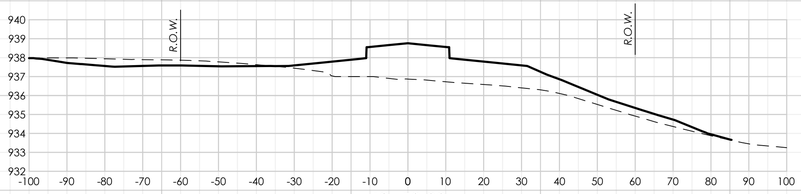

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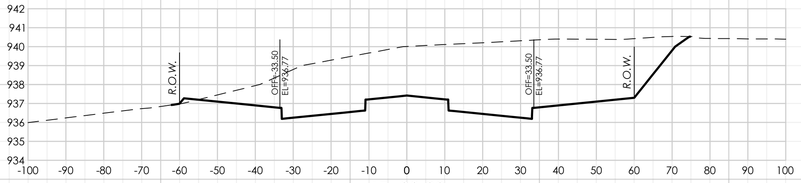

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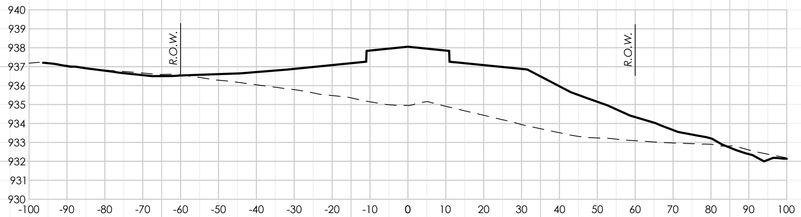

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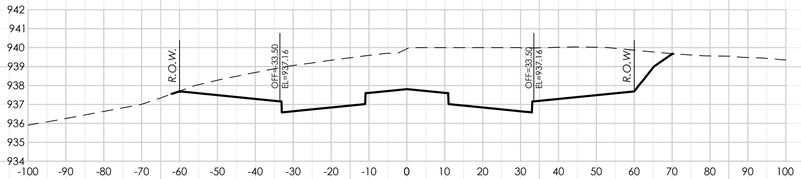

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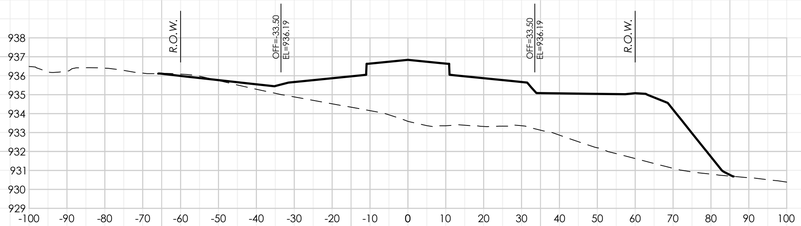

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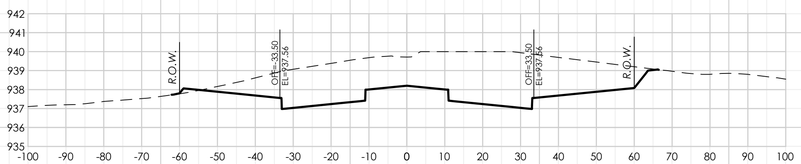

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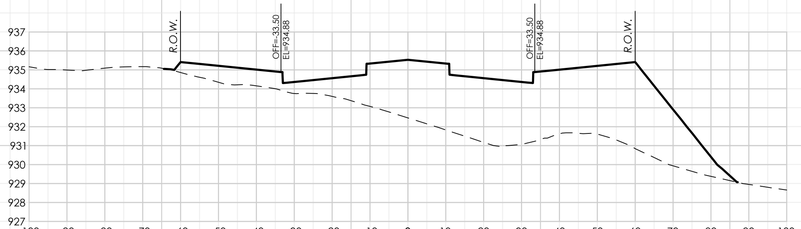

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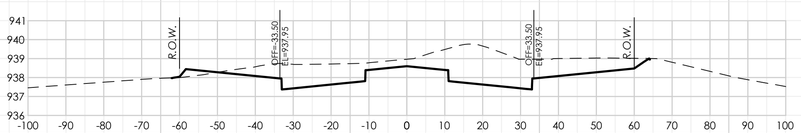

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PROFILE SCALE
Horizontal Scale: 1" = 20'
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LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
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TxEng Firm # F-2644 – TxSurv Firm # 100170

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
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REVIEW :	EWE

SHEET **XS-12**

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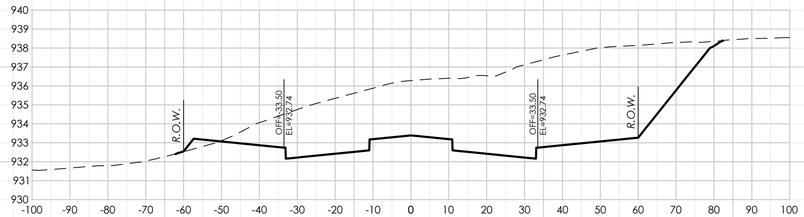

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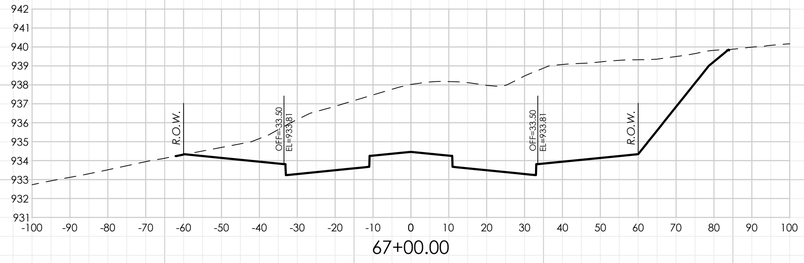

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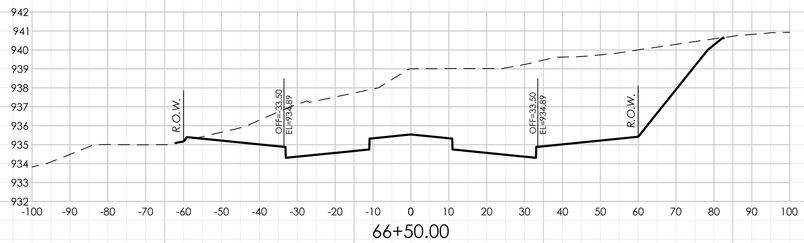

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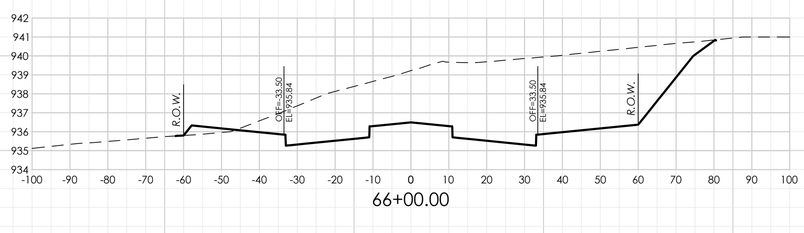

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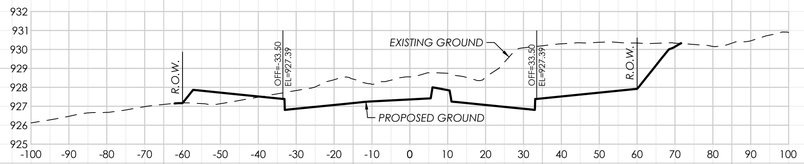

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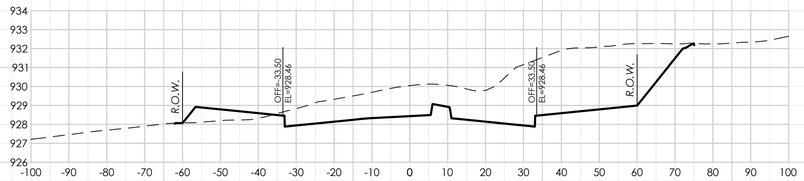

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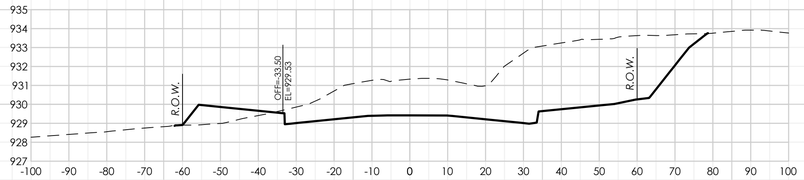

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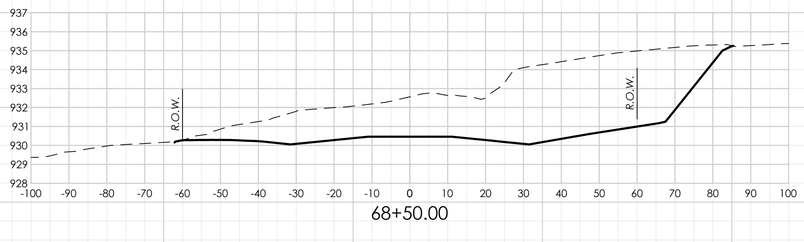

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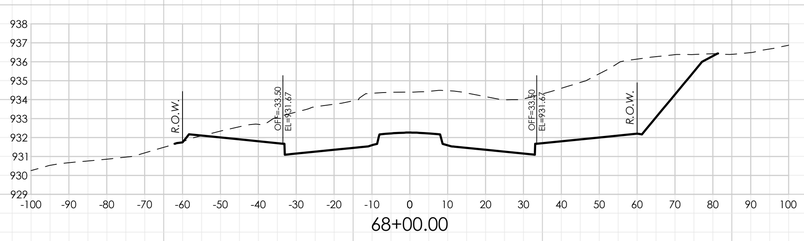

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NO.	REVISION DATE
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LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
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CIVIL ENGINEERS – PLANNERS – SURVEYORS
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TxEng Firm # F-2644 – TxSurv Firm # 100570-00

STATE OF TEXAS
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LICENSED PROFESSIONAL ENGINEER

09/28/22

JOB NO. :	10745
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REVIEW :	EWE
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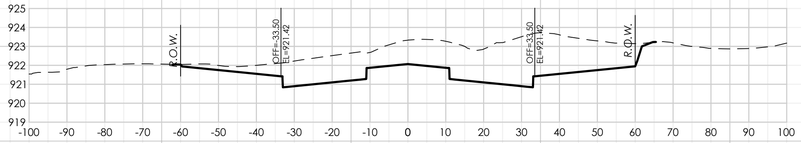

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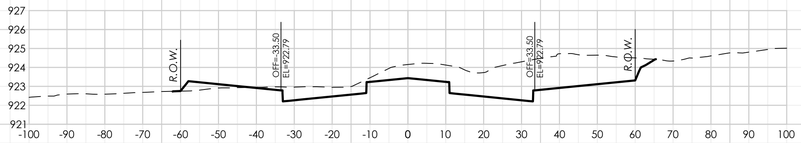

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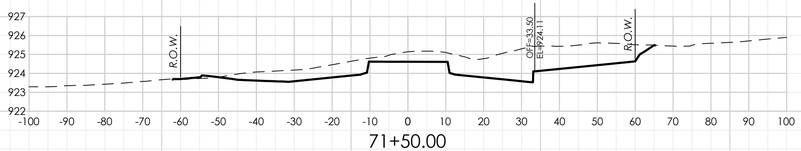

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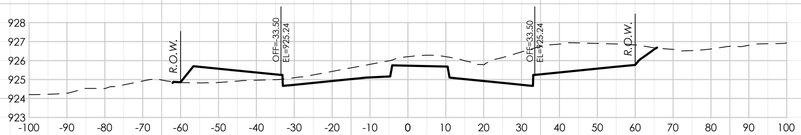

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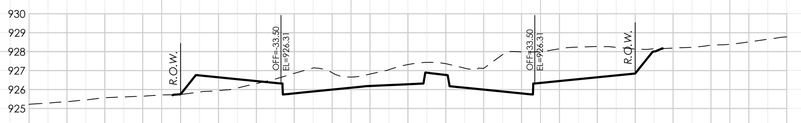

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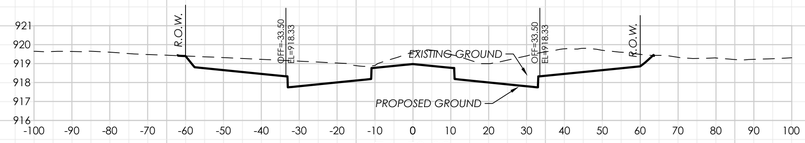

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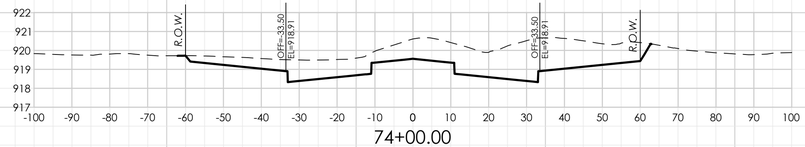

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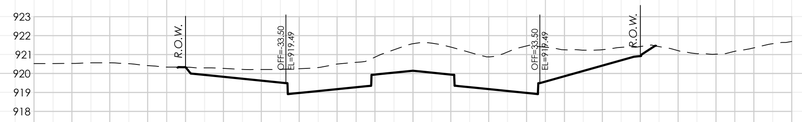

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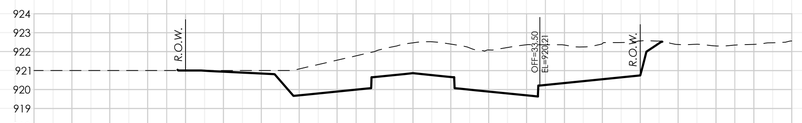

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SHEET **XS-14**

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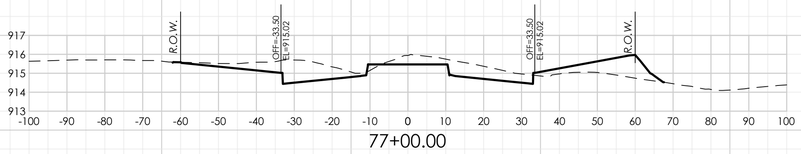

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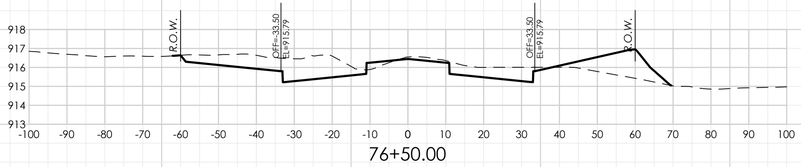

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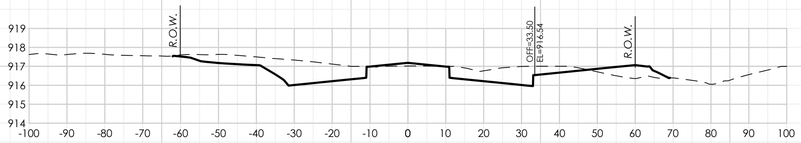

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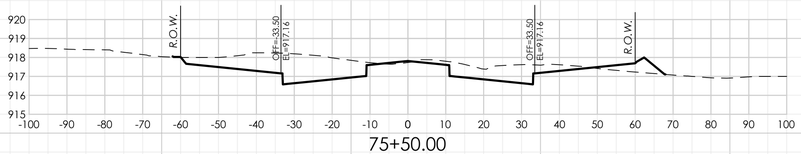

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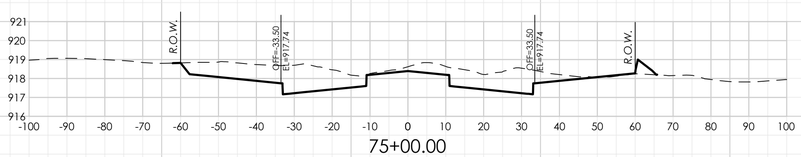

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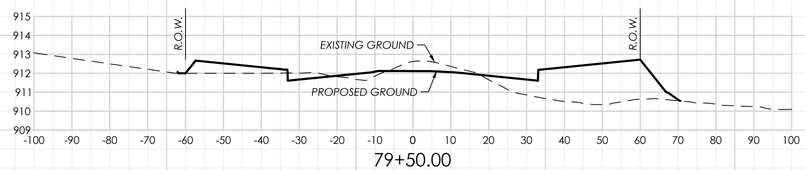

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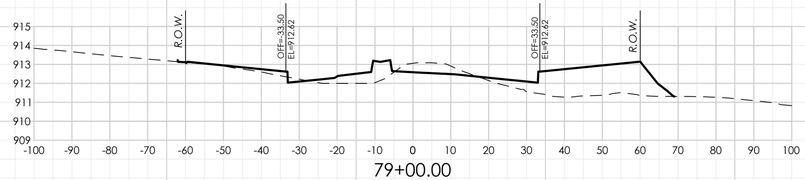

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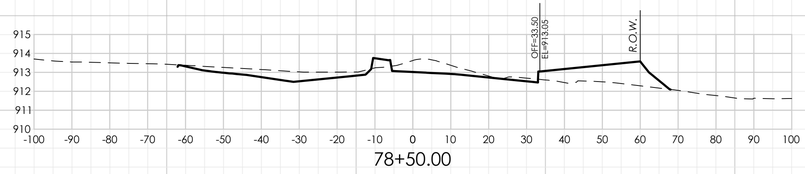

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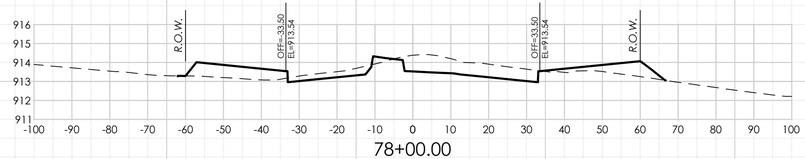

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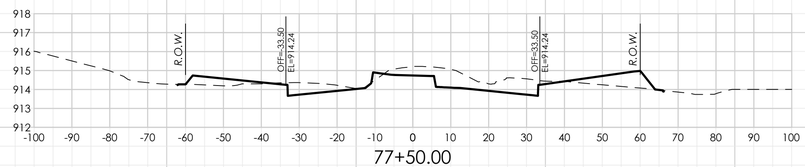

77+50.00

NO.	REVISION DATE
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SUMMIT CIVIL DESIGN

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN MARSHALL
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 100170

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	2/16/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE

SHEET **XS-15**

CROSS SECTIONS

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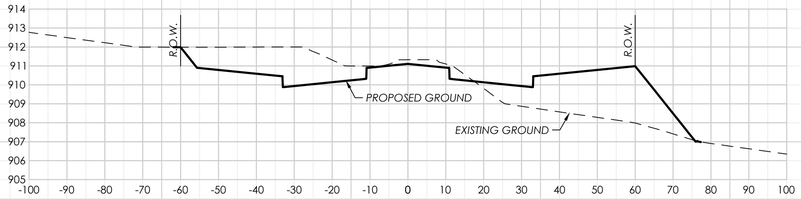
PROFILE SCALE
Horizontal Scale: 1" = 20'
Vertical Scale: 1" = 4'



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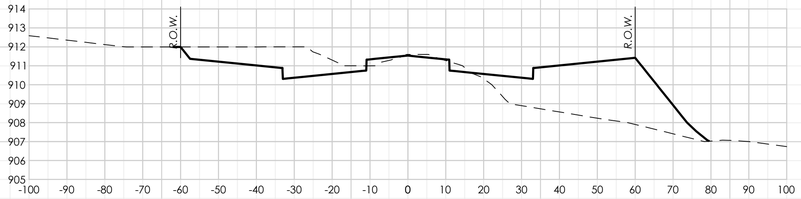

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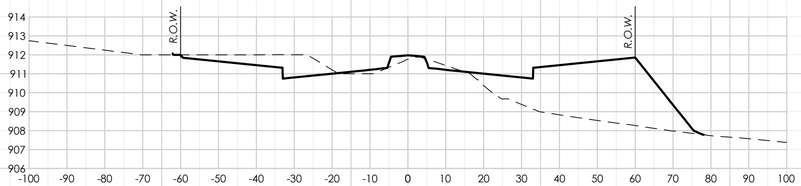

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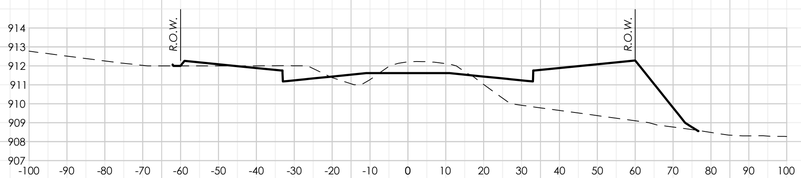

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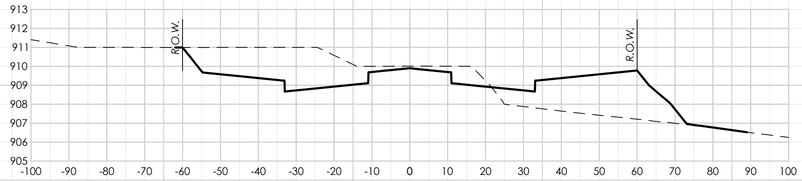

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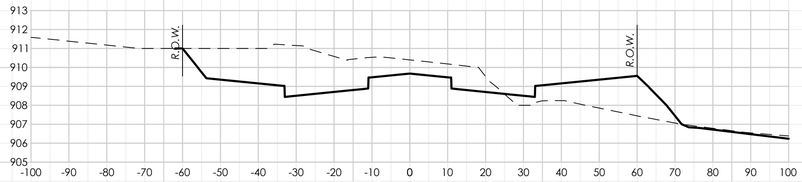

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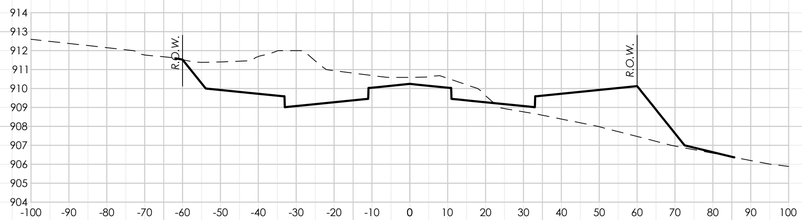
83+00.00



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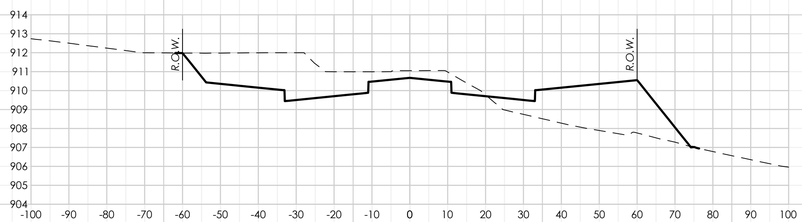

82+00.00

NO.	REVISION DATE
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LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN & MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329-4373
TxEng Firm # F-2644 - TxSur Firm # 100170

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	2/16/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	XS-16

CROSS SECTIONS

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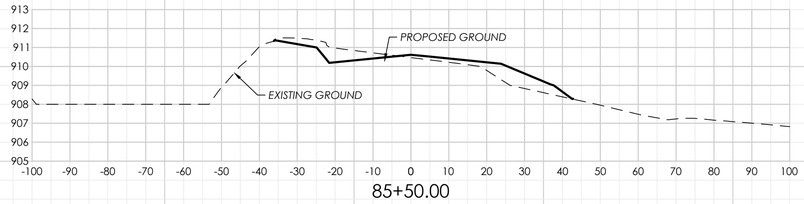
PROFILE SCALE
Horizontal Scale: 1" = 20'
Vertical Scale: 1" = 4'



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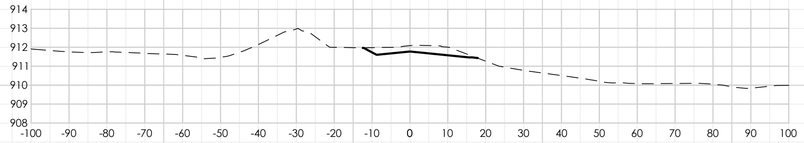

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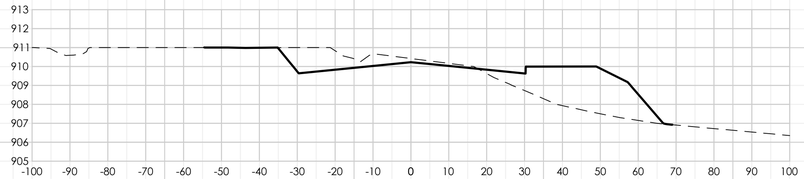

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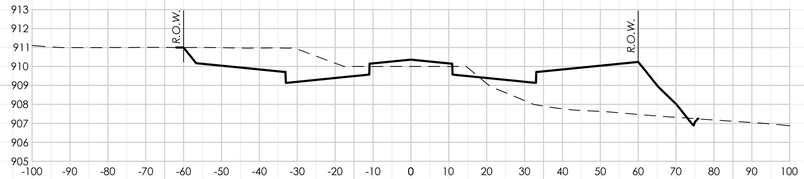

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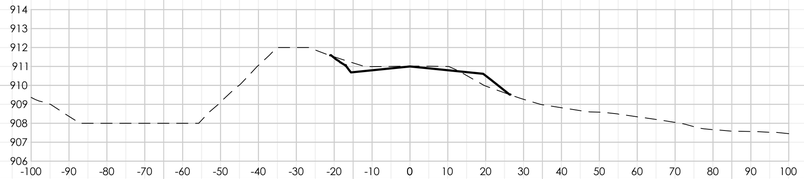

86+00.00

NO.	REVISION DATE
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LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEngFirm # F-2644 – TxSurvFirm # 100177-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER

09/28/22

JOB NO. :	10745
DATE :	2/16/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	XS-17

CROSS SECTIONS

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GRAPHIC SCALE 1"=150'

0 150 300 450

NOTE: ANY STORM DRAIN PIPE NOT LABELED IS ASSUMED TO BE 21" R.C.P.

NOTE: DRAINAGE CALCULATIONS ARE BASED ON THE CITY OF BURLESON DESIGN STANDARDS MANUAL DRAINAGE SECTION 4.6. C VALUES WERE DETERMINED USING THE PROVIDED C VALUES FOR THE DIFFERENT SOIL GROUPS. LAND USES FOR A FULLY DEVELOPED WATERSHED WERE FOUND IN THE IMAGINE BURLESON COMPREHENSIVE PLAN FROM 2020.

LEGEND

- C 5.4 — DRAINAGE AREA /ACREAGE
- DRAINAGE AREA DIVIDE
- FLOW ARROW (RUNOFF DIRECTION)
- E1 — DRAINAGE BASIN NAME
- J-E1 — COMBINATION POINT
- STORM DRAIN & INLET
- STORM DRAIN w/ HEADWALL
- FUTURE STORM DRAIN & INLET

ALTA BURL LP
INST. NO. 2017-24915
D.R.J.C.T.

150' UTILITY EASEMENT & RIGHT-OF-WAY
TEXAS ELECTRIC SERVICE COMPANY
VOL. 680 PG. 731 &
VOL. 900, P.G. 336
D.R.J.C.T.

BURLESON 4A ECONOMIC
DEVELOPMENT CORPORATION
INST. NO. 2021-21498
D.R.J.C.T.

BURLESON DEVELOPMENT, INC.
INST. NO. 2017-24891
D.R.J.C.T.

BURLESON DEVELOPMENT, INC.
INST. NO. 2017-22736
D.R.J.C.T.

20' RIGHT-OF-WAY AGREEMENT
TEXAS MIDSTREAM GAS SERVICES, L.L.C.
VOL. 4482, P.G. 244
D.R.J.C.T.

25' RIGHT-OF-WAY AGREEMENT
CROSSTEX NORTH TEXAS
GATHERING, L.P.
VOL. 4256, PG. 87
D.R.J.C.T.

FUTURE CHISHOLM SUMMIT DEVELOPMENT

DESIGN POINT 1

DESIGN POINT 3

BA2

BA3

BA4

BA4

POSSIBLE CENTERLINE OF
SINCLAIR PIPE LINE COMPANY EASEMENT
VOL. 404, PG. 194
D.R.J.C.T.

20' PERMANENT EASEMENT
TEXAS MIDSTREAM GAS SERVICES, LLC.
VOL. 4439, PG. 387
D.R.J.C.T.

MATCHLINE - SEE SHEET DA-02

Pre-Project Hydrologic Data

HYDROLOGIC ELEMENT	DRAINAGE AREA (MI2)	PEAK DISCHARGE (10-YR CFS)	PEAK DISCHARGE (100-CFS)
BA1	0.072	84.70	184.20
BA2	0.012	13.30	31.30
BA3	0.126	197.40	389.50
BA4	0.181	319.80	601.50
Junction BA4	0.391	388.40	913.30

NOTE: REFER TO PRELIMINARY FLOOD STUDY FOR DETAILED DRAINAGE COMULATIONS FOR EXISTING CONDITIONS DISCHARGES.

DESIGN POINT 5

	AREA	C	CA	TIME	I5	Q5	I100	Q100
EX-5	24.79	0.37	9.17	20.94	4.6	41.73	8.3	75.67
B-1 to B-16	29.44	1.00	29.44	15.52	5.4	159.49	9.5	278.98

BENCH MARK ELEVATION : 852.36

CAPPED IRON ROD WITH CAP STAMPED "RDM" AT THE NORTHWEST CORNER OF THE INTERSECTION OF CR 1902 AND CR 1019, APPROXIMATELY 37 FEET NORTHWEST OF THE CENTERLINE OF CR 1019, APPROXIMATELY 45 FEET NORTHEAST OF THE CENTERLINE OF CR 1902, AND APPROXIMATELY 120 FEET SOUTHWEST OF A DRIVEWAY.

NO.	REVISION DATE

CHISHOLM SUMMIT

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 100217-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	5/22/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	DA-01

EX CONDITIONS DRAINAGE MAP

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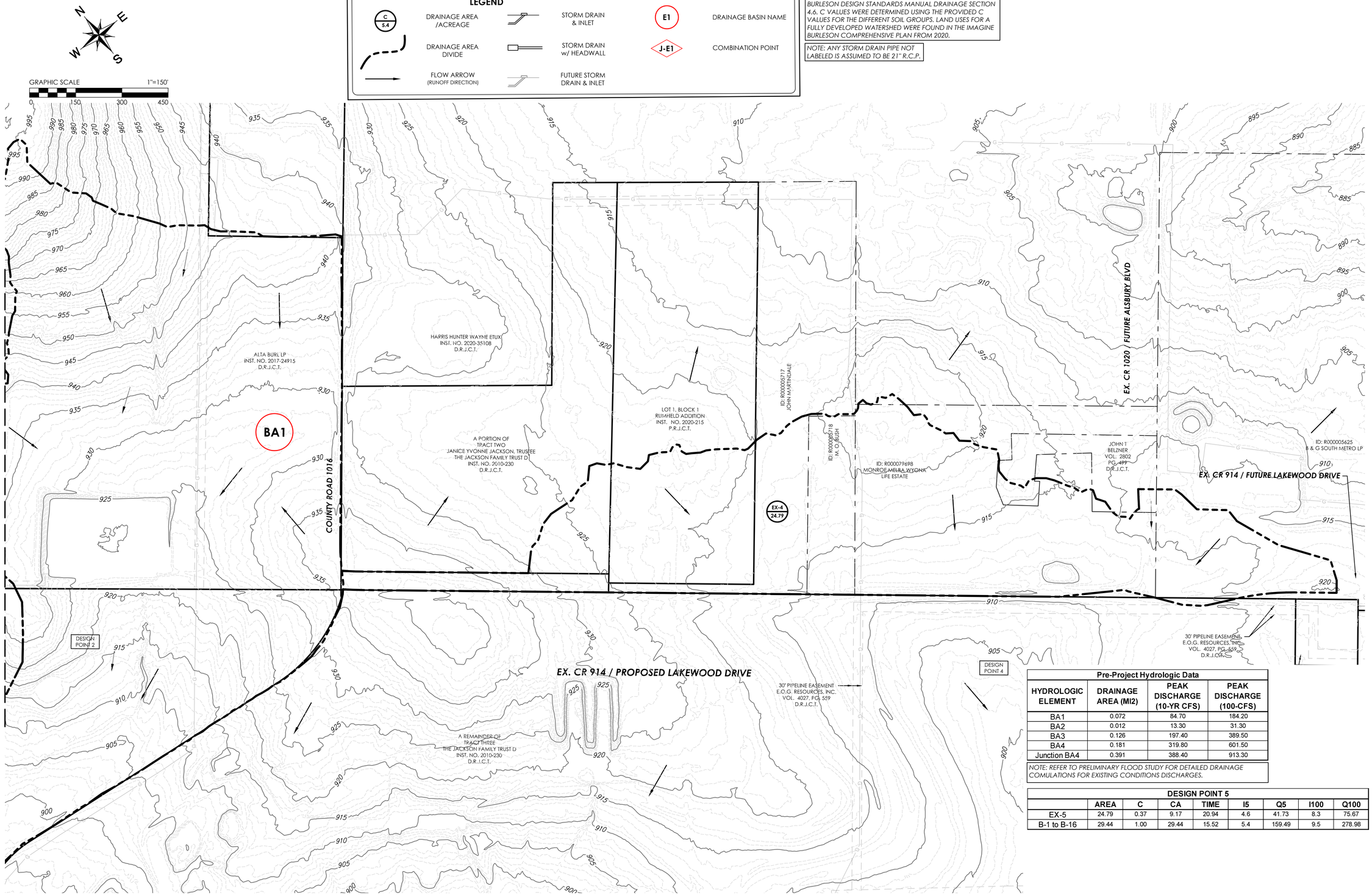

Pre-Project Hydrologic Data			
HYDROLOGIC ELEMENT	DRAINAGE AREA (MI2)	PEAK DISCHARGE (10-YR CFS)	PEAK DISCHARGE (100-CFS)
BA1	0.072	84.70	184.20
BA2	0.012	13.30	31.30
BA3	0.126	197.40	389.50
BA4	0.181	319.80	601.50
Junction BA4	0.391	388.40	913.30

NOTE: REFER TO PRELIMINARY FLOOD STUDY FOR DETAILED DRAINAGE COMULATIONS FOR EXISTING CONDITIONS DISCHARGES.

DESIGN POINT 5								
	AREA	C	CA	TIME	I5	Q5	I100	Q100
EX-5	24.79	0.37	9.17	20.94	4.6	41.73	8.3	75.67
B-1 to B-16	29.44	1.00	29.44	15.52	5.4	159.49	9.5	278.98

BENCH MARK ELEVATION : 852.36

CAPPED IRON ROD WITH CAP STAMPED "RDM" AT THE NORTHWEST CORNER OF THE INTERSECTION OF CR 1902 AND CR 1019, APPROXIMATELY 37 FEET NORTHWEST OF THE CENTERLINE OF CR 1019, APPROXIMATELY 45 FEET NORTHEAST OF THE CENTERLINE OF CR 1902, AND APPROXIMATELY 120 FEET SOUTHWEST OF A DRIVEWAY.

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LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN MARSHALL INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 100070-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	5/22/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	DA-02

EX CONDITIONS DRAINAGE MAP

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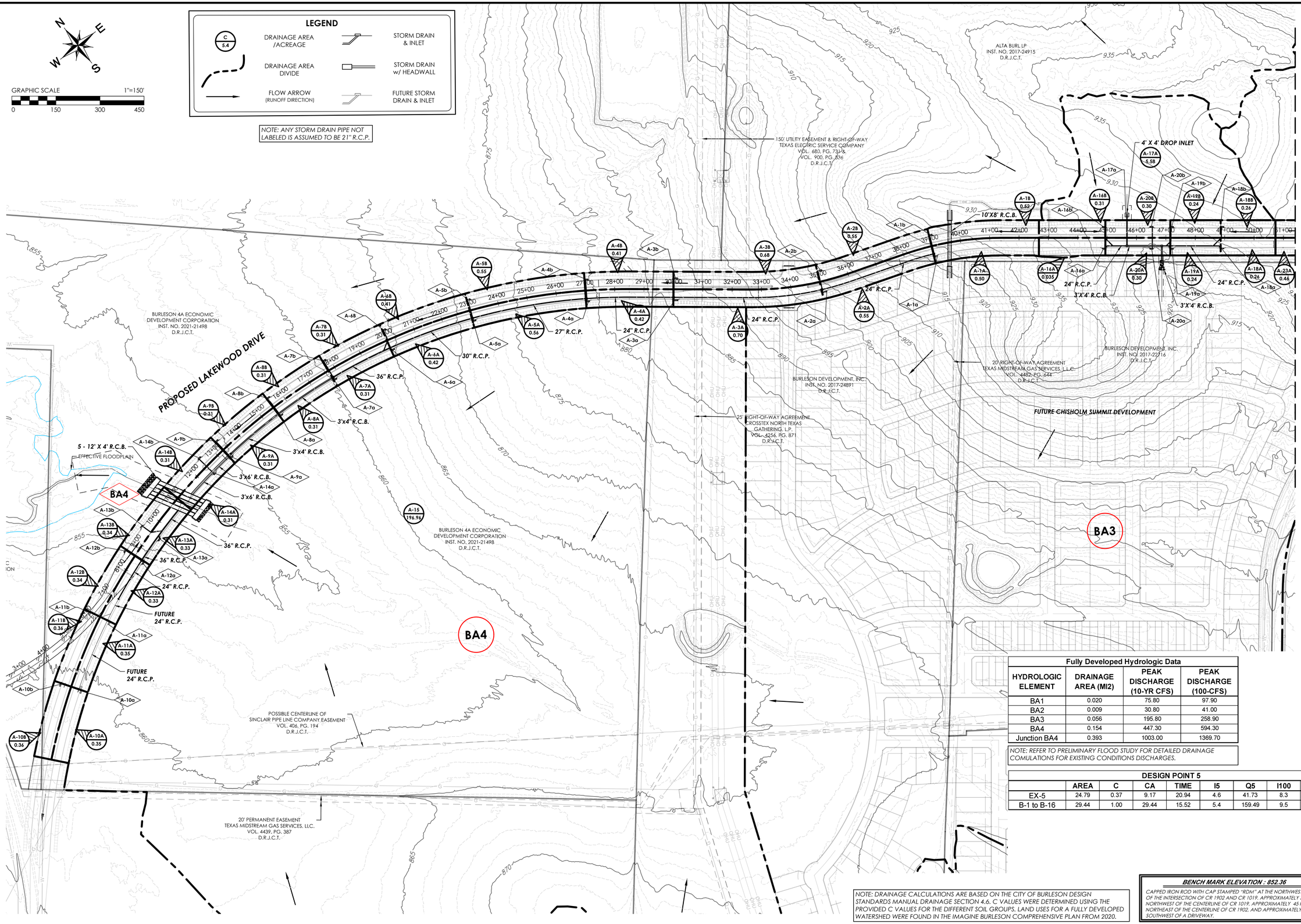

Fully Developed Hydrologic Data			
HYDROLOGIC ELEMENT	DRAINAGE AREA (MI2)	PEAK DISCHARGE (10-YR CFS)	PEAK DISCHARGE (100-CFS)
BA1	0.020	75.80	97.90
BA2	0.009	30.80	41.00
BA3	0.056	195.80	258.90
BA4	0.154	447.30	594.30
Junction BA4	0.393	1003.00	1369.70

NOTE: REFER TO PRELIMINARY FLOOD STUDY FOR DETAILED DRAINAGE COMULATIONS FOR EXISTING CONDITIONS DISCHARGES.

DESIGN POINT 5								
	AREA	C	CA	TIME	I5	Q5	I100	Q100
EX-5	24.79	0.37	9.17	20.94	4.6	41.73	8.3	75.67
B-1 to B-16	29.44	1.00	29.44	15.52	5.4	159.49	9.5	278.98

NOTE: DRAINAGE CALCULATIONS ARE BASED ON THE CITY OF BURLESON DESIGN STANDARDS MANUAL DRAINAGE SECTION 4.6. C VALUES WERE DETERMINED USING THE PROVIDED C VALUES FOR THE DIFFERENT SOIL GROUPS. LAND USES FOR A FULLY DEVELOPED WATERSHED WERE FOUND IN THE IMAGINE BURLESON COMPREHENSIVE PLAN FROM 2020.

BENCH MARK ELEVATION : 852.36

CAPPED IRON ROD WITH CAP STAMPED "RDM" AT THE NORTHWEST CORNER OF THE INTERSECTION OF CR 1902 AND CR 1019. APPROXIMATELY 57 FEET NORTHWEST OF THE CENTERLINE OF CR 1019. APPROXIMATELY 45 FEET NORTHEAST OF THE CENTERLINE OF CR 1902. AND APPROXIMATELY 120 FEET SOUTHWEST OF A DRIVEWAY.

NO.	REVISION DATE

CHISHOLM SUMMIT

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN MARSHALL INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F2644 - TxSurv Firm # 100170

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	5/22/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	DA-03

ULT CONDITIONS DRAINAGE MAP

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GRAPHIC SCALE 1"=150'
0 150 300 450

NOTE: ANY STORM DRAIN PIPE NOT LABELED IS ASSUMED TO BE 18" R.C.P.

LEGEND

- C / 5.4 — DRAINAGE AREA /ACREAGE
- DRAINAGE AREA DIVIDE
- FLOW ARROW (RUNOFF DIRECTION)
- STORM DRAIN & INLET
- STORM DRAIN w/ HEADWALL
- FUTURE STORM DRAIN & INLET

MATCHLINE - SEE SHEET DA-03

FUTURE CHISHOLM SUMMIT ROAD
COUNTY ROAD 1016
EX. CR 1020 / FUTURE ALSBURY BLVD
EX. CR 914 / FUTURE LAKEWOOD DRIVE
EX. CR 914 / PROPOSED LAKEWOOD DRIVE

ALTA BURL LP INST. NO. 2017-24915 D.R.J.C.T.
HARRIS HUNTER WAYNE ETUX INST. NO. 2020-95108 D.R.J.C.T.
A PORTION OF TRACT TWO JANICE YVONNE JACKSON, TRUSTEE THE JACKSON FAMILY TRUST D INST. NO. 2010-230 D.R.J.C.T.
LOT 1, BLOCK 1 RUMFIELD ADDITION INST. NO. 2020-215 P.R.J.C.T.
ID: R000005717 JOHN MARTINDALE
ID: R000005718 M. O. BUSH
ID: R000079698 MONROE MEIRA WYONA LIFE ESTATE
JOHN T BELZNER VOL. 2802 PG. 499 D.R.J.C.T.
ID: R000005625 B & G SOUTH METRO LP
A REMAINDER OF TRACT THREE THE JACKSON FAMILY TRUST D INST. NO. 2010-230 D.R.J.C.T.
30' PIPELINE EASEMENT E.O.G. RESOURCES, INC. VOL. 4027, PG. 559 D.R.J.C.T.
DESIGN POINT 5
30' PIPELINE EASEMENT E.O.G. RESOURCES, INC. VOL. 4027, PG. 559 D.R.J.C.T.
DAVID HUESTON ELSEA & SARAH JO SMITH INST. NO. 2019-30520 D.R.J.C.T.

BA3

A-21A 12.75 · A-21B 2.33 · A-23b 0.42 · A-23B 0.42 · A-23a 0.32 · A-23A 0.32 · A-25b · A-25B 0.43 · A-25a 0.32 · A-25A 0.32 · A-26A 14.39 · A-27b · A-27B 0.52 · A-27a · A-27A 0.53 · A-28b · A-28B 0.33 · A-28a 0.31 · A-28A 0.31

27" R.C.P. · 24" R.C.P. · 4'X4' R.C.B. · 6'X3' R.C.B.

B-1b · B-1B 0.32 · B-1a · B-1A 0.36 · B-2b · B-2B 0.38 · B-2a · B-2A 0.51 · B-3b · B-3B 0.44 · B-3a · B-3A 0.52 · B-4b · B-4B 0.42 · B-4a · B-4A 0.44 · B-5b · B-5B1 0.19 · B-5a · B-5A 0.19 · B-5C 0.23 · B-6a · B-6A 0.23 · B-6b · B-5D2 0.13 · B-5D3 0.13 · B-5d · B-5D1 0.23 · B-5d1 0.10 · B-5D2 1.90 · B-582 5.66 · B-682 1.84 · B-7b · B-7B1 0.08 · B-7B2 0.08 · B-7B3 0.08 · B-7a · B-7A 0.23 · B-8b · B-8B1 0.19 · B-8B2 0.09 · B-8a · B-8A 0.28 · B-15A 8.27 · B-16b · B-16B 0.23 · B-16a · B-16A 0.23 · B-14b · B-14B 0.27 · B-14a · B-14A 0.28 · B-13b · B-13B 0.32 · B-13a · B-13A 0.30 · B-12b · B-12B 0.34 · B-12a · B-12A 0.32 · B-11a · B-11A 0.28 · B-11b · B-11B 0.28 · B-9c · B-9C 2.00 · B-10B 0.27 · B-10b · B-10A 0.28 · B-9b · B-9B 0.33 · B-9a · B-9A 0.32

24" R.C.P. · 27" R.C.P. · 42" R.C.P. · 4'X5' R.C.B. · 42" R.C.P. · FUTURE 42" R.C.P. · FUTURE 36" R.C.P. · FUTURE 3'X3' DROP INLET · FUTURE 30" R.C.P. · FUTURE 21" R.C.P. · FUTURE 24" R.C.P.

Fully Developed Hydrologic Data

HYDROLOGIC ELEMENT	DRAINAGE AREA (MI2)	PEAK DISCHARGE (10-YR CFS)	PEAK DISCHARGE (100-CFS)
BA1	0.020	75.80	97.90
BA2	0.009	30.80	41.00
BA3	0.056	195.80	258.90
BA4	0.154	447.30	594.30
Junction BA4	0.393	1003.00	1369.70

NOTE: REFER TO PRELIMINARY FLOOD STUDY FOR DETAILED DRAINAGE COMULATIONS FOR EXISTING CONDITIONS DISCHARGES.

DESIGN POINT 5

	AREA	C	CA	TIME	I5	Q5	I100	Q100
EX-5	24.79	0.37	9.17	20.94	4.6	41.73	8.3	75.67
B-1 to B-16	29.44	1.00	29.44	15.52	5.4	159.49	9.5	278.98

BENCH MARK ELEVATION : 852.36

CAPPED IRON ROD WITH CAP STAMPED "RDM" AT THE NORTHWEST CORNER OF THE INTERSECTION OF CR 1902 AND CR 1019, APPROXIMATELY 37 FEET NORTHWEST OF THE CENTERLINE OF CR 1019, APPROXIMATELY 45 FEET NORTHEAST OF THE CENTERLINE OF CR 1902, AND APPROXIMATELY 120 FEET SOUTHWEST OF A DRIVEWAY.

NO.	REVISION DATE
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CHISHOLM SUMMIT

LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN MARSHALL INC
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 - TxSurv Firm # 100217-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	5/22/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	DA-04

ULT CONDITIONS DRAINAGE MAP

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GRAPHIC SCALE 1"=150'
0 150 300 450

LEGEND

C 5.4	DRAINAGE AREA /ACREAGE		STORM DRAIN & INLET
	DRAINAGE AREA DIVIDE		STORM DRAIN w/ HEADWALL
	FLOW ARROW (RUNOFF DIRECTION)		FUTURE STORM DRAIN & INLET

NOTE: ANY STORM DRAIN PIPE NOT LABELED IS ASSUMED TO BE 21" R.C.P.

PROPOSED LAKEWOOD DRIVE

BURLESON 4A ECONOMIC DEVELOPMENT CORPORATION INST. NO. 2021-21498 D.R.J.C.T.

ALTA BURL LP INST. NO. 2017-24915 D.R.J.C.T.

150' UTILITY EASEMENT & RIGHT-OF-WAY TEXAS ELECTRIC SERVICE COMPANY VOL. 680, PG. 731 & VOL. 900, PG. 836 D.R.J.C.T.

25' RIGHT-OF-WAY AGREEMENT CROSSTEX NORTH TEXAS GATHERING, L.P. VOL. 4256, PG. 871 D.R.J.C.T.

20' RIGHT-OF-WAY AGREEMENT TEXAS MIDSTREAM GAS SERVICES, L.L.C. VOL. 4482, PG. 244 D.R.J.C.T.

BURLESON DEVELOPMENT, INC. INST. NO. 2017-24891 D.R.J.C.T.

BURLESON DEVELOPMENT, INC. INST. NO. 2017-22716 D.R.J.C.T.

FUTURE CHISHOLM SUMMIT DEVELOPMENT

4' X 4' DROP INLET

10'X8' R.C.B.

24" R.C.P.

30" R.C.P.

36" R.C.P.

3'X4' R.C.B.

3'X'4' R.C.B.

3'x6' R.C.B.

5 - 12' X 4' R.C.B.

EFFECTIVE FLOODPLAIN

CULVERT A - SEE SHEET SD-01

S.D. LINE A-1A - SEE SHEETS SD-02-SD-05

S.D. LINE A-10A - SEE SHEET SD-06

S.D. LINE A-16A & A-18A - SEE SHEETS SD-07-SD-08

BA1 0.073 | BA2 0.012 | BA3 0.056 | BA4 0.154 | Junction BA4 0.382

POSSIBLE CENTERLINE OF SINCLAIR PIPE LINE COMPANY EASEMENT VOL. 406, PG. 194 D.R.J.C.T.

20' PERMANENT EASEMENT TEXAS MIDSTREAM GAS SERVICES, LLC. VOL. 4439, PG. 387 D.R.J.C.T.

MATCHLINE - SEE SHEET DA-06

Post Project Overall Hydrologic Data

HYDROLOGIC ELEMENT	DRAINAGE AREA (MI2)	PEAK DISCHARGE (10-YR CFS)	PEAK DISCHARGE (100-CFS)
BA1	0.073	117.70	228.80
BA2	0.012	20.30	39.10
BA3	0.056	158.00	258.90
BA4	0.154	276.10	520.50
Junction BA4	0.382	420.70	875.00

NOTE: REFER TO PRELIMINARY FLOOD STUDY FOR DETAILED DRAINAGE COMULATIONS FOR EXISTING CONDITIONS DISCHARGES.

DESIGN POINT 5

	AREA	C	CA	TIME	I5	Q5	I100	Q100
EX-5	24.79	0.37	9.17	20.94	4.6	41.73	8.3	75.67
B-1 to B-16	29.44	1.00	29.44	15.52	5.4	159.49	9.5	278.98

NOTE: DRAINAGE CALCULATIONS ARE BASED ON THE CITY OF BURLESON DESIGN STANDARDS MANUAL DRAINAGE SECTION 4.6. C VALUES WERE DETERMINED USING THE PROVIDED C VALUES FOR THE DIFFERENT SOIL GROUPS. LAND USES FOR A FULLY DEVELOPED WATERSHED WERE FOUND IN THE IMAGINE BURLESON COMPREHENSIVE PLAN FROM 2020.

BENCH MARK ELEVATION : 852.36

CAPPED IRON ROD WITH CAP STAMPED "RDM" AT THE NORTHWEST CORNER OF THE INTERSECTION OF CR 1902 AND CR 1019. APPROXIMATELY 37 FEET NORTHWEST OF THE CENTERLINE OF CR 1019. APPROXIMATELY 45 FEET NORTHEAST OF THE CENTERLINE OF CR 1902. AND APPROXIMATELY 120 FEET SOUTHWEST OF A DRIVEWAY.

NO.	REVISION DATE

CHISHOLM SUMMIT

LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN & MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 -4373
TxEng Firm # F2644 - TxSurv Firm # 100270

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	5/22/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	DA-05

INT CONDITIONS DRAINAGE MAP

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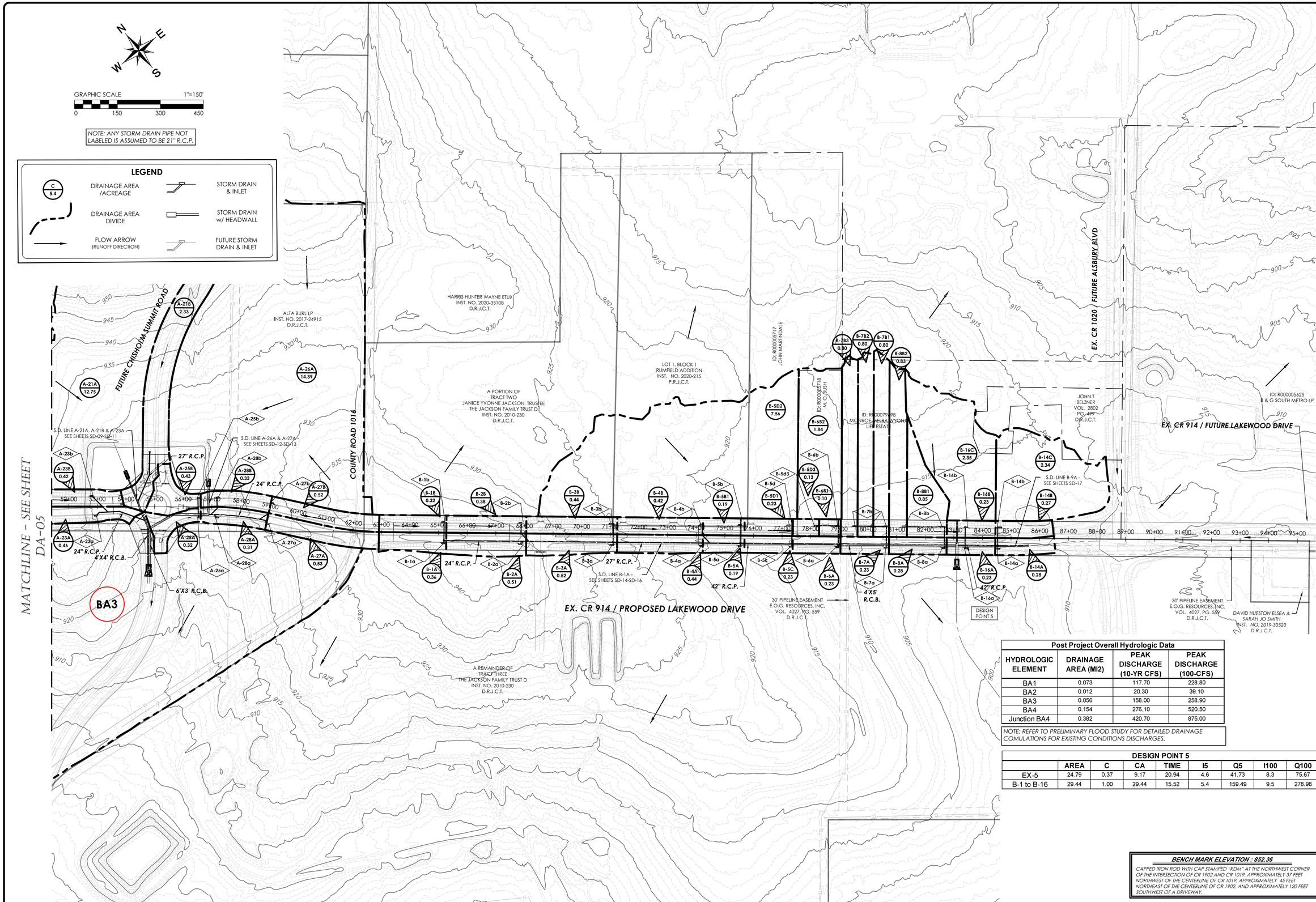

Post Project Overall Hydrologic Data			
HYDROLOGIC ELEMENT	DRAINAGE AREA (MI2)	PEAK DISCHARGE (10-YR CFS)	PEAK DISCHARGE (100-CFS)
BA1	0.073	117.70	228.80
BA2	0.012	20.30	39.10
BA3	0.056	158.00	258.90
BA4	0.154	276.10	520.50
Junction BA4	0.382	420.70	875.00

NOTE: REFER TO PRELIMINARY FLOOD STUDY FOR DETAILED DRAINAGE COMULATIONS FOR EXISTING CONDITIONS DISCHARGES.

DESIGN POINT 5								
	AREA	C	CA	TIME	I5	Q5	I100	Q100
EX-5	24.79	0.37	9.17	20.94	4.6	41.73	8.3	75.67
B-1 to B-16	29.44	1.00	29.44	15.52	5.4	159.49	9.5	278.98

BENCH MARK ELEVATION : 852.36

CAPPED IRON ROD WITH CAP STAMPED "RDM" AT THE NORTHWEST CORNER OF THE INTERSECTION OF CR 1902 AND CR 1019. APPROXIMATELY 37 FEET NORTHWEST OF THE CENTERLINE OF CR 1019, APPROXIMATELY 45 FEET NORTHEAST OF THE CENTERLINE OF CR 1902, AND APPROXIMATELY 120 FEET SOUTHWEST OF A DRIVEWAY.

NO.	REVISION DATE
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CHISHOLM SUMMIT

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL INC.
CIVIL ENGINEERS ~ PLANNERS ~ SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329-4373
TxEng Firm # F-2944 ~ TxSurv Firm # 10021700

STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	5/22/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE

SHEET **DA-06**

INT CONDITIONS DRAINAGE MAP

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E:\10745 – Bransom Estates\Lakewood\Plans\SHEETS\60% Construction Plans\10745-LAKEWOOD-DA.dwg Tue Sep 27 2022 16:34

HYDROLOGIC COMPUTATIONS (ULTIMATE DEVELOPED CONDITIONS)

	AREA	C	CA	TIME	I5	Q5	I100	Q100
A-1a	0.50	1.00	0.50	10	6.7	3.35	11.6	5.80
A-1b	0.52	1.00	0.52	10	6.7	3.48	11.6	6.03
A-2a	0.55	1.00	0.55	10	6.7	3.69	11.6	6.38
A-2b	0.55	1.00	0.55	10	6.7	3.69	11.6	6.38
A-3a	0.70	1.00	0.70	10	6.7	4.69	11.6	8.12
A-3b	0.68	1.00	0.68	10	6.7	4.56	11.6	7.89
A-4a	0.42	1.00	0.42	10	6.7	2.81	11.6	4.87
A-4b	0.41	1.00	0.41	10	6.7	2.75	11.6	4.76
A-5a	0.56	1.00	0.56	10	6.7	3.75	11.6	6.50
A-5b	0.55	1.00	0.55	10	6.7	3.69	11.6	6.38
A-6a	0.42	1.00	0.42	10	6.7	2.81	11.6	4.87
A-6b	0.41	1.00	0.41	10	6.7	2.75	11.6	4.76
A-7a	0.31	1.00	0.31	10	6.7	2.08	11.6	3.60
A-7b	0.31	1.00	0.31	10	6.7	2.08	11.6	3.60
A-8a	0.31	1.00	0.31	10	6.7	2.08	11.6	3.60
A-8b	0.31	1.00	0.31	10	6.7	2.08	11.6	3.60
A-9a	0.31	1.00	0.31	10	6.7	2.08	11.6	3.60
A-9b	0.31	1.00	0.31	10	6.7	2.08	11.6	3.60
A-10a	0.35	1.00	0.35	10	6.7	2.35	11.6	4.06
A-10b	0.36	1.00	0.36	10	6.7	2.41	11.6	4.18
A-11a	0.35	1.00	0.35	10	6.7	2.35	11.6	4.06
A-11b	0.36	1.00	0.36	10	6.7	2.41	11.6	4.18
A-12a	0.33	1.00	0.33	10	6.7	2.21	11.6	3.83
A-12b	0.34	1.00	0.34	10	6.7	2.28	11.6	3.94
A-13a	0.33	1.00	0.33	10	6.7	2.21	11.6	3.83
A-13b	0.34	1.00	0.34	10	6.7	2.28	11.6	3.94
A-14a	0.31	1.00	0.31	10	6.7	2.08	11.6	3.60
A-14b	0.31	1.00	0.31	10	6.7	2.08	11.6	3.60
A-16a	0.35	1.00	0.35	10	6.7	2.35	11.6	4.06
A-16b	0.31	1.00	0.31	10	6.7	2.08	11.6	3.60
A-17a	5.58	0.52	2.90	10	6.7	19.44	11.6	33.66
A-18a	0.26	1.00	0.26	10	6.7	1.74	11.6	3.02
A-18b	0.26	1.00	0.26	10	6.7	1.74	11.6	3.02
A-19a	0.24	1.00	0.24	10	6.7	1.61	11.6	2.78
A-19b	0.24	1.00	0.24	10	6.7	1.61	11.6	2.78
A-20a	0.30	1.00	0.30	10	6.7	2.01	11.6	3.48
A-20b	0.30	1.00	0.30	10	6.7	2.01	11.6	3.48
A-21a	12.75	0.59	7.52	10	6.7	50.40	11.6	87.26
A-21b	2.33	1.00	2.33	10	6.7	15.61	11.6	27.03
A-23a	0.46	1.00	0.46	10	6.7	3.08	11.6	5.34
A-23b	0.42	1.00	0.42	10	6.7	2.81	11.6	4.87
A-25a	0.32	1.00	0.32	10	6.7	2.14	11.6	3.71
A-25b	0.43	1.00	0.43	10	6.7	2.88	11.6	4.99
A-26a	14.39	0.62	8.92	10	6.7	59.78	11.6	103.49
A-27a	0.53	1.00	0.53	10	6.7	3.55	11.6	6.15
A-27b	0.52	1.00	0.52	10	6.7	3.48	11.6	6.03
A-28a	0.31	1.00	0.31	10	6.7	2.08	11.6	3.60
A-28b	0.33	1.00	0.33	10	6.7	2.21	11.6	3.83
B-1a	0.36	1.00	0.36	10	6.7	2.41	11.6	4.18
B-1b	0.32	1.00	0.32	10	6.7	2.14	11.6	3.71
B-2a	0.51	1.00	0.51	10	6.7	3.42	11.6	5.92
B-2b	0.38	1.00	0.38	10	6.7	2.55	11.6	4.41
B-3a	0.52	1.00	0.52	10	6.7	3.48	11.6	6.03
B-3b	0.44	1.00	0.44	10	6.7	2.95	11.6	5.10
B-4a	0.44	1.00	0.44	10	6.7	2.95	11.6	5.10
B-4b	0.42	1.00	0.42	10	6.7	2.81	11.6	4.87
B-5a	0.19	1.00	0.19	10	6.7	1.27	11.6	2.20
B-5b1	0.19	1.00	0.19	10	6.7	1.27	11.6	2.20
B-5b2	5.66	1.00	5.66	10	6.7	37.92	11.6	65.66
B-5c	0.23	1.00	0.23	10	6.7	1.54	11.6	2.67
B-5d1	0.23	1.00	0.23	10	6.7	1.54	11.6	2.67
B-5d2	1.90	1.00	1.90	10	6.7	12.73	11.6	22.04
B-5d3	0.13	1.00	0.13	10	6.7	0.87	11.6	1.51
B-6a	0.23	1.00	0.23	10	6.7	1.54	11.6	2.67
B-6b1	0.10	1.00	0.10	10	6.7	0.67	11.6	1.16
B-6b2	1.84	1.00	1.84	10	6.7	12.33	11.6	21.34
B-7a	0.23	1.00	0.23	10	6.7	1.54	11.6	2.67
B-7b1	0.08	1.00	0.08	10	6.7	0.54	11.6	0.93
B-7b2	0.08	1.00	0.08	10	6.7	0.54	11.6	0.93
B-7b3	0.08	1.00	0.08	10	6.7	0.54	11.6	0.93
B-8a	0.28	1.00	0.28	10	6.7	1.88	11.6	3.25
B-8b1	0.19	1.00	0.19	10	6.7	1.27	11.6	2.20
B-8b2	0.09	1.00	0.09	10	6.7	0.60	11.6	1.04
B-9a	0.32	1.00	0.32	10	6.7	2.14	11.6	3.71
B-9b	0.33	1.00	0.33	10	6.7	2.21	11.6	3.83
B-9c	2.00	1.00	2.00	10	6.7	13.40	11.6	23.20
B-10a	0.28	1.00	0.28	10	6.7	1.88	11.6	3.25
B-10b	0.27	1.00	0.27	10	6.7	1.81	11.6	3.13
B-11a	0.28	1.00	0.28	10	6.7	1.88	11.6	3.25
B-11b	0.28	1.00	0.28	10	6.7	1.88	11.6	3.25
B-12a	0.32	1.00	0.32	10	6.7	2.14	11.6	3.71
B-12b	0.34	1.00	0.34	10	6.7	2.28	11.6	3.94
B-13a	0.30	1.00	0.30	10	6.7	2.01	11.6	3.48
B-13b	0.32	1.00	0.32	10	6.7	2.14	11.6	3.71
B-14a	0.28	1.00	0.28	10	6.7	1.88	11.6	3.25
B-14b	0.27	1.00	0.27	10	6.7	1.81	11.6	3.13
B-15a	8.27	1.00	8.27	10	6.7	55.41	11.6	95.93
B-16a	0.23	1.00	0.23	10	6.7	1.54	11.6	2.67
B-16b	0.23	1.00	0.23	10	6.7	1.54	11.6	2.67

NOTE: A 10 MIN TC HAS BEEN USED FOR ALL PROPOSED LAKEWOOD DRAINAGE BASINS.

NOTE: A 10 MIN TC HAS BEEN USED FOR ALL OFFSITE DRAINAGE BASINS BASED ON FUTURE DEVELOPMENT AND LAND USE.

HYDROLOGIC COMPUTATIONS (INTERIM DEVELOPED CONDITIONS)

	AREA	C	CA	TIME	I5	Q5	I100	Q100
A-1a	0.50	1.00	0.50	10	6.7	3.35	11.6	5.80
A-1b	0.52	1.00	0.52	10	6.7	3.48	11.6	6.03
A-2a	0.55	1.00	0.55	10	6.7	3.69	11.6	6.38
A-2b	0.55	1.00	0.55	10	6.7	3.69	11.6	6.38
A-3a	0.70	1.00	0.70	10	6.7	4.69	11.6	8.12
A-3b	0.68	1.00	0.68	10	6.7	4.56	11.6	7.89
A-4a	0.42	1.00	0.42	10	6.7	2.81	11.6	4.87
A-4b	0.41	1.00	0.41	10	6.7	2.75	11.6	4.76
A-5a	0.56	1.00	0.56	10	6.7	3.75	11.6	6.50
A-5b	0.55	1.00	0.55	10	6.7	3.69	11.6	6.38
A-6a	0.42	1.00	0.42	10	6.7	2.81	11.6	4.87
A-6b	0.41	1.00	0.41	10	6.7	2.75	11.6	4.76
A-7a	0.31	1.00	0.31	10	6.7	2.08	11.6	3.60
A-7b	0.31	1.00	0.31	10	6.7	2.08	11.6	3.60
A-8a	0.31	1.00	0.31	10	6.7	2.08	11.6	3.60
A-8b	0.31	1.00	0.31	10	6.7	2.08	11.6	3.60
A-9a	0.31	1.00	0.31	10	6.7	2.08	11.6	3.60
A-9b	0.31	1.00	0.31	10	6.7	2.08	11.6	3.60
A-12a	0.33	1.00	0.33	10	6.7	2.21	11.6	3.83
A-12b	0.34	1.00	0.34	10	6.7	2.28	11.6	3.94
A-13a	0.33	1.00	0.33	10	6.7	2.21	11.6	3.83
A-13b	0.34	1.00	0.34	10	6.7	2.28	11.6	3.94
A-14a	0.31	1.00	0.31	10	6.7	2.08	11.6	3.60
A-14b	0.31	1.00	0.31	10	6.7	2.08	11.6	3.60
A-16a	0.35	1.00	0.35	10	6.7	2.35	11.6	4.06
A-16b	0.31	1.00	0.31	10	6.7	2.08	11.6	3.60
A-17a	5.58	0.52	2.90	10	6.7	19.44	11.6	33.66
A-18a	0.26	1.00	0.26	10	6.7	1.74	11.6	3.02
A-18b	0.26	1.00	0.26	10	6.7	1.74	11.6	3.02
A-19a	0.24	1.00	0.24	10	6.7	1.61	11.6	2.78
A-19b	0.24	1.00	0.24	10	6.7	1.61	11.6	2.78
A-20a	0.30	1.00	0.30	10	6.7	2.01	11.6	3.48
A-20b	0.30	1.00	0.30	10	6.7	2.01	11.6	3.48
A-21a	12.75	0.59	7.52	10	6.7	50.40	11.6	87.26
A-21b	2.33	1.00	2.33	10	6.7	15.61	11.6	27.03
A-22a	0.00	1.00	0.00	10	6.7	0.00	11.6	0.00
A-22b	0.00	1.00	0.00	10	6.7	0.00	11.6	0.00
A-23a	0.46	1.00	0.46	10	6.7	3.08	11.6	5.34
A-23b	0.42	1.00	0.42	10	6.7	2.81	11.6	4.87
A-24a	0.00	1.00	0.00	10	6.7	0.00	11.6	0.00
A-24b	0.00	1.00	0.00	10	6.7	0.00	11.6	0.00
A-25a	0.32	1.00	0.32	10	6.7	2.14	11.6	3.71
A-25b	0.43	1.00	0.43	10	6.7	2.88	11.6	4.99
A-26a	14.39	0.62	8.92	10	6.7	59.78	11.6	103.49
A-27a	0.53	1.00	0.53	10	6.7	3.55	11.6	6.15
A-27b	0.52	1.00	0.52	10	6.7	3.48	11.6	6.03
A-28a	0.31	1.00	0.31	10	6.7	2.08	11.6	3.60
A-28b	0.33	1.00	0.33	10	6.7	2.21	11.6	3.83
B-1a	0.36	1.00	0.36	10	6.7	2.41	11.6	4.18
B-1b	0.32	1.00	0.32	10	6.7	2.14	11.6	3.71
B-2a	0.51	1.00	0.51	10	6.7	3.42	11.6	5.92
B-2b	0.38	1.00	0.38	10	6.7	2.55	11.6	4.41
B-3a	0.52	1.00	0.52	10	6.7	3.48	11.6	6.03
B-3b	0.44	1.00	0.44	10	6.7	2.95	11.6	5.10
B-4a	0.44	1.00	0.44	10	6.7	2.95	11.6	5.10
B-4b	0.42	1.00	0.42	10	6.7	2.81	11.6	4.87
B-5a	0.19	1.00	0.19	10	6.7	1.27	11.6	2.20
B-5b1	0.19	1.00	0.19	10	6.7	1.27	11.6	2.20
B-5c	0.23	1.00	0.23	10	6.7	1.54	11.6	2.67
B-5d1	0.23	1.00	0.23	10	6.7	1.54	11.6	2.67
B-5d2	7.56	0.37	2.80	16.43	5.3	14.74	9.3	25.89
B-5d3	0.13	1.00	0.13	10	6.7	0.87	11.6	1.51
B-6a	0.23	1.00	0.23	10	6.7	1.54	11.6	2.67
B-6b1	0.10	1.00	0.10	10	6.7	0.67	11.6	1.16
B-6b2	1.84	0.37	0.68	12.26	6.2	4.19	10.7	7.28
B-7a	0.23	1.00	0.23	10	6.7	1.54	11.6	2.67
B-7b1	0.80	0.43	0.35	12.77	6.0	2.09	10.5	3.63
B-7b2	0.80	0.43	0.35	12.77	6.0	2.09	10.5	3.63
B-7b3	0.80	0.43	0.35	12.77	6.0	2.09	10.5	3.63
B-8a	0.28	1.00	0.28	10	6.7	1.88	11.6	3.25
B-8b1	0.85	0.51	0.43	12.77	6.0	2.62	10.5	4.56
B-8b2	0.83	0.44	0.36	12.77	6.0	2.20	10.5	3.82
B-14a	0.28	1.00	0.28	10	6.7	1.88	11.6	3.25
B-14b	0.27	1.00	0.27	10	6.7	1.81	11.6	3.13
B-14c	2.34	0.37	0.87	12.00	6.2	5.39	10.8	9.35
B-16a	0.23	1.00	0.23	10	6.7	1.54	11.6	2.67
B-16b	0.23	1.00	0.23	10	6.7	1.54	11.6	2.67
B-16c	2.35	0.37	0.87	15.05	5.5	4.78	9.6	8.34

NOTE: PURPOSE OF INTERIM CALCULATIONS IS TO ENSURE THAT LAKEWOOD DRIVE CURB INLETS HAVE ADEQUATE CAPACITY FOR OFF-SITE DRISCHARGES THAT DRAIN INTO ROW.

5 -Year & 100-Year Hydrologic and Street Capacity Calculations

Drainage Area ID	Area (Ac)	C	CA	Time	5-YEAR Intensity	100-YEAR Intensity	5-YEAR Flow Rate (Q) [cfs]	100-YEAR Flow Rate (Q) [cfs]	5-YEAR Carryover from Area Upstream [cfs]	100-YEAR Carryover from Area Upstream [cfs]	5-YEAR PEAK Flow Rate (Q) [cfs]	100-YEAR PEAK Flow Rate (Q) [cfs]	5-YEAR Carryover to Other [cfs]	100-YEAR Carryover to Other [cfs]	Conveyance Structure	Slope at Point [ft/ft]	5-Year Street Capacity	100-Year ROW Capacity
A-1a	0.50	1.00	0.50	10	6.70	11.60	3.35	5.80	0.00	0.00	3.35	5.80	0.19	1.21	1/2 Lakewood Drive - 23' B-B	0.0363	5.20	138.84
A-1b	0.52	1.00	0.52	10	6.70	11.60	3.48	6.03	0.00	0.00	3.48	6.03	0.23	1.33	1/2 Lakewood Drive - 23' B-B	0.0363	5.20	138.84
A-2a	0.55	1.00	0.55	10	6.70	11.60	3.69	6.38	0.19	1.21	3.87	7.59	0.00	0.74	1/2 Lakewood Drive - 23' B-B	0.0406	5.50	146.83
A-2b	0.55	1.00	0.55	10	6.70	11.60	3.69	6.38	0.23	1.33	3.91	7.71	0.00	0.78	1/2 Lakewood Drive - 23' B-B	0.0406	5.50	146.83
A-3a	0.70	1.00	0.70	10	6.70	11.60	4.69	8.12	0.00	0.74	4.69	8.86	0.00	1.01	1/2 Lakewood Drive - 23' B-B	0.0314	4.83	129.13
A-3b	0.68	1.00	0.68	10	6.70	11.60	4.56	7.89	0.00	0.78	4.56	8.67	0.00	0.93	1/2 Lakewood Drive - 23' B-B	0.0314	4.83	129.13
A-4a	0.42	1.00	0.42	10	6.70	11.60	2.81	4.87	0.00	1.01	2.81	5.88	0.00	0.82	1/2 Lakewood Drive - 23' B-B	0.0188	3.74	99.92
A-4b	0.41	1.00	0.41	10	6.70	11.60	2.75	4.76	0.00	0.93	2.75	5.69	0.00	0.74	1/2 Lakewood Drive - 23' B-B	0.0188	3.74	99.92
A-5a	0.56	1.00	0.56	10	6.70	11.60	3.75	6.50	0.00	0.82	3.75	7.32	0.18	1.73	1/2 Lakewood Drive - 23' B-B	0.0246	4.28	114.30
A-5b	0.55	1.00	0.55	10	6.70	11.60	3.69	6.38	0.00	0.74	3.69	7.12	0.16	1.62	1/2 Lakewood Drive - 23' B-B	0.0246	4.28	114.30
A-6a	0.42	1.00	0.42	10	6.70	11.60	2.81	4.87	0.18	1.73	2.99	6.60	0.00	1.14	1/2 Lakewood Drive - 23' B-B	0.0184	3.70	98.85
A-6b	0.41	1.00	0.41	10	6.70	11.60	2.75	4.76	0.16	1.62	2.91	6.38	0.00	1.03	1/2 Lakewood Drive - 23' B-B	0.0184	3.70	98.85
A-7a	0.31	1.00	0.31	10	6.70	11.60	2.08	3.60	0.00	1.14	2.08	4.73	0.00	0.03	1/2 Lakewood Drive - 23' B-B	0.0070	2.28	60.97
A-7b	0.31	1.00	0.31	10	6.70	11.60	2.08	3.60	0.00	1.03	2.08	4.63	0.00	0.02	1/2 Lakewood Drive - 23' B-B	0.0070	2.28	60.97
A-8a	0.31	1.00	0.31	10	6.70	11.60	2.08	3.60	0.00	0.03	2.08	3.63	0.00	0.00	1/2 Lakewood Drive - 23' B-B	0.0070	2.28	60.97
A-8b	0.31	1.00	0.31	10	6.70	11.60	2.08	3.60	0.00	0.02	2.08	3.62	0.00	0.00	1/2 Lakewood Drive - 23' B-B	0.0070	2.28	60.97
A-9a	0.31	1.00	0.31	10	6.70	11.60	2.08	3.60	0.00	0.00	2.08	3.60	0.00	0.00	1/2 Lakewood Drive - 23' B-B	0.0070	2.28	60.97
A-9b	0.31	1.00	0.31	10	6.70	11.60	2.08	3.60	0.00	0.00	2.08	3.60	0.00	0.00	1/2 Lakewood Drive - 23' B-B	0.0070	2.28	60.97
A-10a	0.35	1.00	0.35	10	6.70	11.60	2.35	4.06	0.00	0.00	2.35	4.06	0.00	0.00	1/2 Lakewood Drive - 23' B-B	0.0080	2.44	65.18
A-10b	0.36	1.00	0.36	10	6.70	11.60	2.41	4.18	0.00	0.00	2.41	4.18	0.00	0.00	1/2 Lakewood Drive - 23' B-B	0.0080	2.44	65.18
A-11a	0.35	1.00	0.35	10	6.70	11.60	2.35	4.06	0.00	0.00	2.35	4.06	0.00	0.00	1/2 Lakewood Drive - 23' B-B	0.0080	2.44	65.18
A-11b	0.36	1.00	0.36	10	6.70	11.60	2.41	4.18	0.00	0.00	2.41	4.18	0.00	0.00	1/2 Lakewood Drive - 23' B-B	0.0080	2.44	65.18
A-12a	0.33	1.00	0.33	10	6.70	11.60	2.21	3.83	0.00	0.00	2.21	3.83	0.00	0.00	1/2 Lakewood Drive - 23' B-B	0.0070	2.28	60.97
A-12b	0.34	1.00	0.34	10	6.70	11.60	2.28	3.94	0.00	0.00	2.28	3.95	0.00	0.00	1/2 Lakewood Drive - 23' B-B	0.0070	2.28	60.97
A-13a	0.33	1.00	0.33	10	6.70	11.60	2.21	3.83	0.00	0.00	2.21	3.83	0.00	0.00	1/2 Lakewood Drive - 23' B-B	0.0070	2.28	60.97
A-13b	0.34	1.00	0.34	10	6.70	11.60	2.28	3.94	0.00	0.00	2.28	3.94	0.00	0.00	1/2 Lakewood Drive - 23' B-B	0.0070	2.28	60.97
A-14a	0.31	1.00	0.31	10	6.70	11.60	2.08	3.60	0.00	0.00	2.08	3.60	0.00	0.00	1/2 Lakewood Drive - 23' B-B	0.0070	2.28	60.97
A-14b	0.31	1.00	0.31	10	6.70	11.60	2.08	3.60	0.00	0.00	2.08	3.60	0.00	0.00	1/2 Lakewood Drive - 23' B-B	0.0070	2.28	60.97
A-16a	0.35	1.00	0.35	10	6.70	11.60	2.35	4.06	0.00	0.00	2.35	4.06	0.00	0.00	1/2 Lakewood Drive - 23' B-B	0.0074	2.35	62.69
A-16b	0.31	1.00	0.31	10	6.70	11.60	2.08	3.60	0.00	0.00	2.08	3.60	0.00	0.00	1/2 Lakewood Drive - 23' B-B	0.0074	2.35	62.69
A-18a	0.26	1.00	0.26	10	6.70	11.60	1.74	3.02	0.00	0.00	1.74	3.02	0.00	0.00	1/2 Lakewood Drive - 23' B-B	0.0071	2.30	61.40
A-18b	0.26	1.00	0.26	10	6.70	11.60	1.74	3.02	0.00	0.00	1.74	3.02	0.00	0.00	1/2 Lakewood Drive - 23' B-B	0.0071	2.30	61.40
A-19a	0.24	1.00	0.24	10	6.70	11.60	1.61	2.78	0.00	0.00	1.61	2.78	0.00	0.00	1/2 Lakewood Drive - 23' B-B	0.0071	2.30	61.40
A-19b	0.24	1.00	0.24	10	6.70	11.60	1.61	2.78	0.00	0.00	1.61	2.78	0.00	0.00	1/2 Lakewood Drive - 23' B-B	0.0071	2.30	61.40
A-20a	0.30	1.00	0.30	10	6.70	11.60	2.01	3.48	0.00	0.00	2.01	3.48	0.00	0.00	1/2 Lakewood Drive - 23' B-B	0.0071	2.30	61.40
A-20b	0.30	1.00	0.30	10	6.70	11.60	2.01	3.48	0.00	0.00	2.01	3.48	0.00	0.00	1/2 Lakewood Drive - 23' B-B	0.0071	2.30	61.40
A-23a	0.46	1.00	0.46	10	6.70	11.60	3.08	5.34	0.00	0.00	3.08	5.34			1/2 Lakewood Drive - 23' B-B	0.0080	2.44	65.18
A-23b	0.42	1.00	0.42	10	6.70	11.60	2.81	4.87	0.00	0.00	2.81	4.87			1/2 Lakewood Drive - 23' B-B	0.0080	2.44	65.18
A-25a	0.32	1.00	0.32	10	6.70	11.60	2.14	3.71	0.00	0.00	2.14	3.71	0.00	0.00	1/2 Lakewood Drive - 23' B-B	0.0080	2.44	65.18
A-25b	0.43	1.00	0.43	10	6.70	11.60	2.88	4.99	0.00	0.00	2.88	4.99	0.00	0.11	1/2 Lakewood Drive - 23' B-B	0.0080	2.44	65.18
A-27a	0.53	1.00	0.53	10	6.70	11.60	3.55	6.15	0.00	0.00	3.55	6.15	0.13	1.14	1/2 Lakewood Drive - 23' B-B	0.0251	4.32	115.45
A-27b	0.52	1.00	0.52	10	6.70	11.60	3.48	6.03	0.00	0.00	3.48	6.03	0.12	1.08	1/2 Lakewood Drive - 23' B-B	0.0251	4.32	115.45
A-28a	0.31	1.00	0.31	10	6.70	11.60	2.08	3.60	0.13	1.14	2.21	4.73	0.00	0.00	1/2 Lakewood Drive - 23' B-B	0.0080	2.44	65.18
A-28b	0.33	1.00	0.33	10	6.70	11.60	2.21	3.83	0.12	1.19	2.33	5.02	0.00	0.00	1/2 Lakewood Drive - 23' B-B	0.0080	2.44	65.18
B-1a	0.36	1.00	0.36	10	6.70	11.60	2.41	4.18	0.00	0.00	2.41	4.18	0.00	0.00	1/2 Lakewood Drive - 23' B-B	0.0079	2.42	64.77
B-1b	0.32	1.00	0.32	10	6.70	11.60	2.14	3.71	0.00	0.00	2.14	3.71	0.00	0.00	1/2 Lakewood Drive - 23' B-B	0.0079	2.42	64.77
B-2a	0.51	1.00	0.51	10	6.70	11.60	3.42	5.92	0.00	0.00	3.42	5.92	0.07	0.92	1/2 Lakewood Drive - 23' B-B	0.0214	3.99	106.60
B-2b	0.38	1.00	0.38	10	6.70	11.60	2.55	4.41	0.00	0.00	2.55	4.41	0.00	0.33	1/2 Lakewood Drive - 23' B-B	0.0214	3.99	106.60
B-3a	0.52	1.00	0.52	10	6.70	11.60	3.48	6.03	0.07	0.92	3.55	6.96	0.00	0.16	1/2 Lakewood Drive - 23' B-B	0.0214	3

5-YR ON-GRADE INLET DESIGN COMPUTATIONS

Inlet No.	Drainage Area Area No.	Longitudinal Slope "S" (ft/ft)	Cross Slope of Pavement "Sx" (ft/ft)	Cross Slope of Gutter "S'x" (ft/ft)	Depth of Flow "Yo" (in)	Spread of Flow "T" (ft)	Equivalent Cross Slope "Se" (ft/ft)	Street Section (type)	Manning's Coefficient for pavement "n"	5-year Runoff (cfs)	5-year Carryover Flow (cfs)	5-year Total Gutter Q (cfs)	Length Required Lo L_T (ft)	Length Provided L "L" (ft)	L/L_T	Efficiency "E"	Inlet Capacity "Qi"	5-year Carryover Flow "q" (cfs)	Comments
A-1a	A-1a	0.0363	0.0200	0.3333	0.17	8.71	0.1875	Rooftop	0.015	3.35	0.00	3.35	12.51	10	0.799	0.945	3.16	0.19	
A-1b	A-1b	0.0363	0.0200	0.3333	0.18	8.84	0.1855	Rooftop	0.015	3.48	0.00	3.48	12.80	10	0.781	0.935	3.26	0.23	
A-2a	A-2a	0.0406	0.0200	0.3333	0.18	9.00	0.1831	Rooftop	0.015	3.69	0.19	3.87	13.94	15	1.076	1.000	3.87	0.00	
A-2b	A-2b	0.0406	0.0200	0.3333	0.18	9.04	0.1826	Rooftop	0.015	3.69	0.23	3.91	14.03	15	1.070	1.000	3.91	0.00	
A-3a	A-3a	0.0314	0.0200	0.3333	0.20	10.15	0.1679	Rooftop	0.015	4.69	0.00	4.69	14.74	15	1.018	1.000	4.69	0.00	
A-3b	A-3b	0.0314	0.0200	0.3333	0.20	10.04	0.1693	Rooftop	0.015	4.56	0.00	4.56	14.49	15	1.035	1.000	4.56	0.00	
A-4a	A-4a	0.0188	0.0200	0.3333	0.18	9.23	0.1799	Rooftop	0.015	2.81	0.00	2.81	9.78	10	1.022	1.000	2.81	0.00	
A-4b	A-4b	0.0188	0.0200	0.3333	0.18	9.15	0.1810	Rooftop	0.015	2.75	0.00	2.75	9.65	10	1.037	1.000	2.75	0.00	
A-5a	A-5a	0.0246	0.0200	0.3333	0.20	9.77	0.1726	Rooftop	0.015	3.75	0.00	3.75	12.27	10	0.815	0.952	3.57	0.18	
A-5b	A-5b	0.0246	0.0200	0.3333	0.19	9.71	0.1734	Rooftop	0.015	3.69	0.00	3.69	12.14	10	0.824	0.956	3.52	0.16	
A-6a	A-6a	0.0184	0.0200	0.3333	0.19	9.48	0.1764	Rooftop	0.015	2.81	0.18	2.99	10.09	10	0.991	1.000	2.99	0.00	
A-6b	A-6b	0.0184	0.0200	0.3333	0.19	9.38	0.1778	Rooftop	0.015	2.75	0.16	2.91	9.93	10	1.007	1.000	2.91	0.00	
A-7a	A-7a	0.0070	0.0200	0.3333	0.20	9.91	0.1709	Rooftop	0.015	2.08	0.00	2.08	6.60	10	1.514	1.000	2.08	0.00	
A-7b	A-7b	0.0070	0.0200	0.3333	0.20	9.91	0.1709	Rooftop	0.015	2.08	0.00	2.08	6.60	10	1.514	1.000	2.08	0.00	
A-8a	A-8a	0.0070	0.0200	0.3333	0.20	9.91	0.1709	Rooftop	0.015	2.08	0.00	2.08	6.60	10	1.514	1.000	2.08	0.00	
A-8b	A-8b	0.0070	0.0200	0.3333	0.20	9.91	0.1709	Rooftop	0.015	2.08	0.00	2.08	6.60	10	1.514	1.000	2.08	0.00	
A-9a	A-9a	0.0070	0.0200	0.3333	0.20	9.91	0.1709	Rooftop	0.015	2.08	0.00	2.08	6.60	10	1.514	1.000	2.08	0.00	
A-9b	A-9b	0.0070	0.0200	0.3333	0.20	9.91	0.1709	Rooftop	0.015	2.08	0.00	2.08	6.60	10	1.514	1.000	2.08	0.00	
A-10a	A-10a	0.0080	0.0200	0.3333	0.20	10.12	0.1684	Rooftop	0.015	2.35	0.00	2.35	7.30	10	1.370	1.000	2.35	0.00	
A-10b	A-10b	0.0080	0.0200	0.3333	0.20	10.22	0.1671	Rooftop	0.015	2.41	0.00	2.41	7.42	10	1.348	1.000	2.41	0.00	
A-11a	A-11a	0.0080	0.0200	0.3333	0.20	10.12	0.1684	Rooftop	0.015	2.35	0.00	2.35	7.30	10	1.370	1.000	2.35	0.00	
A-11b	A-11b	0.0080	0.0200	0.3333	0.20	10.22	0.1671	Rooftop	0.015	2.41	0.00	2.41	7.42	10	1.348	1.000	2.41	0.00	
A-12a	A-12a	0.0070	0.0200	0.3333	0.20	10.15	0.1680	Rooftop	0.015	2.21	0.00	2.21	6.85	10	1.460	1.000	2.21	0.00	
A-12b	A-12b	0.0070	0.0200	0.3333	0.21	10.26	0.1666	Rooftop	0.015	2.28	0.00	2.28	6.97	10	1.435	1.000	2.28	0.00	
A-16a	A-16a	0.0074	0.0200	0.3333	0.21	10.27	0.1666	Rooftop	0.015	2.35	0.00	2.35	7.17	10	1.394	1.000	2.35	0.00	
A-16b	A-16b	0.0074	0.0200	0.3333	0.20	9.81	0.1722	Rooftop	0.015	2.08	0.00	2.08	6.68	10	1.496	1.000	2.08	0.00	
A-18a	A-18a	0.0071	0.0200	0.3333	0.19	9.25	0.1795	Rooftop	0.015	1.74	0.00	1.74	5.98	10	1.673	1.000	1.74	0.00	
A-18b	A-18b	0.0071	0.0200	0.3333	0.19	9.25	0.1795	Rooftop	0.015	1.74	0.00	1.74	5.98	10	1.673	1.000	1.74	0.00	
A-19a	A-19a	0.0071	0.0200	0.3333	0.18	8.98	0.1834	Rooftop	0.015	1.61	0.00	1.61	5.71	10	1.752	1.000	1.61	0.00	
A-19b	A-19b	0.0071	0.0200	0.3333	0.18	8.98	0.1834	Rooftop	0.015	1.61	0.00	1.61	5.71	10	1.752	1.000	1.61	0.00	
A-25a	A-25a	0.0080	0.0200	0.3333	0.20	9.78	0.1725	Rooftop	0.015	2.14	0.00	2.14	6.93	10	1.444	1.000	2.14	0.00	
A-25b	A-25b	0.0080	0.0200	0.3333	0.22	10.93	0.1591	Rooftop	0.015	2.88	0.00	2.88	8.23	10	1.215	1.000	2.88	0.00	
A-27a	A-27a	0.0251	0.0200	0.3333	0.19	9.54	0.1757	Rooftop	0.015	3.55	0.00	3.55	11.93	10	0.838	0.962	3.42	0.13	
A-27b	A-27b	0.0251	0.0200	0.3333	0.19	9.47	0.1766	Rooftop	0.015	3.48	0.00	3.48	11.80	10	0.847	0.966	3.37	0.12	
B-1a	B-1a	0.0079	0.0200	0.3333	0.20	10.25	0.1668	Rooftop	0.015	2.41	0.00	2.41	7.40	10	1.352	1.000	2.41	0.00	
B-1b	B-1b	0.0079	0.0200	0.3333	0.20	9.81	0.1722	Rooftop	0.015	2.14	0.00	2.14	6.91	10	1.448	1.000	2.14	0.00	
B-2a	B-2a	0.0214	0.0200	0.3333	0.19	9.69	0.1737	Rooftop	0.015	3.42	0.00	3.42	11.27	10	0.887	0.980	3.35	0.07	
B-2b	B-2b	0.0214	0.0200	0.3333	0.17	8.68	0.1880	Rooftop	0.015	2.55	0.00	2.55	9.50	10	1.053	1.000	2.55	0.00	
B-3a	B-3a	0.0214	0.0200	0.3333	0.20	9.83	0.1719	Rooftop	0.015	3.48	0.07	3.55	11.52	15	1.302	1.000	3.55	0.00	
B-3b	B-3b	0.0214	0.0200	0.3333	0.18	9.17	0.1808	Rooftop	0.015	2.95	0.00	2.95	10.34	15	1.451	1.000	2.95	0.00	
B-4a	B-4a	0.0117	0.0200	0.3333	0.21	10.26	0.1666	Rooftop	0.015	2.95	0.00	2.95	9.06	10	1.104	1.000	2.95	0.00	
B-4b	B-4b	0.0117	0.0200	0.3333	0.20	10.09	0.1687	Rooftop	0.015	2.81	0.00	2.81	8.82	10	1.134	1.000	2.81	0.00	
B-5a	B-5a	0.0117	0.0200	0.3333	0.15	7.49	0.2081	Rooftop	0.015	1.27	0.00	1.27	5.57	10	1.795	1.000	1.27	0.00	
B-5b1	B-5b1	0.0117	0.0200	0.3333	0.15	7.49	0.2081	Rooftop	0.015	1.27	0.00	1.27	5.57	10	1.795	1.000	1.27	0.00	
B-5c	B-5c	0.0200	0.0200	0.3333	0.15	7.28	0.2122	Rooftop	0.015	1.54	0.00	1.54	7.01	10	1.427	1.000	1.54	0.00	
B-5d1	B-5d1	0.0200	0.0200	0.3333	0.35	17.62	0.1114	Rooftop	0.015	16.29	0.00	16.29	27.77	20	0.720	0.899	14.64	1.64	
B-5d3	B-5d3	0.0086	0.0200	0.3333	0.20	10.25	0.1668	Rooftop	0.015	0.87	1.64	2.52	7.72	10	1.295	1.000	2.52	0.00	
B-6a	B-6a	0.0086	0.0200	0.3333	0.17	8.53	0.1903	Rooftop	0.015	1.54	0.00	1.54	5.81	10	1.722	1.000	1.54	0.00	
B-6b1	B-6b1	0.0086	0.0200	0.3333	0.26	13.12	0.1390	Rooftop	0.015	4.86	0.00	4.86	11.36	10	0.880	0.978	4.76	0.11	
B-7a	B-7a	0.0086	0.0200	0.3333	0.17	8.53	0.1903	Rooftop	0.015	1.54	0.00	1.54	5.81	10	1.722	1.000	1.54	0.00	
B-7b1	B-7b1	0.0086	0.0200	0.3333	0.19	9.74	0.1730	Rooftop	0.015	2.09	0.11	2.20	7.14	10	1.401	1.000	2.20	0.00	
B-7b2	B-7b2	0.0086	0.0200	0.3333	0.19	9.74	0.1730	Rooftop	0.015	2.09	0.11	2.20	7.14	10	1.401	1.000	2.20	0.00	
B-7b3	B-7b3	0.0086	0.0200	0.3333	0.19	9.74	0.1730	Rooftop	0.015	2.09	0.11	2.20	7.14	10	1.401	1.000	2.20	0.00	
B-8a	B-8a	0.0086	0.0200	0.3333	0.18	9.18	0.1806	Rooftop	0.015	1.88	0.00	1.88	6.51	10	1.536	1.000	1.88	0.00	
B-8b1	B-8b1	0.0086	0.0200	0.3333	0.21	10.41	0.1649	Rooftop	0.015	2.62	0.00	2.62	7.91	10	1.264	1.000	2.62	0.00	
B-8b2	B-8b2	0.0086	0.0200	0.3333	0.19	9.74	0.1731	Rooftop	0.015	2.20	0.00	2.20	7.13	10	1.402	1.000	2.20	0.00	
B-9a	B-9a	0.0095	0.0200	0.3333	0.19	9.47	0.1766	Rooftop	0.015	2.14	0.00	2.14	7.19	10	1.391	1.000	2.14	0.00	
B-9b	B-9b	0.0095	0.0200	0.3333	0.19	9.58	0.1751	Rooftop	0.015	2.21	0.00	2.21	7.32	10	1.366	1.000	2.21	0.00	
B-10a	B-10a	0.0095	0.0200	0.3333	0.18	9.01	0.1830	Rooftop	0.015	1.88	0.00	1.88	6.65	10	1.503	1.000	1.88	0.00	
B-10b	B-10b	0.0095	0.0200	0.3333	0.18	8.89	0.1848	Rooftop	0.015	1.81	0.00	1.81	6.52	10	1.535	1.000	1.81	0.00	
B-11a	B-11a	0.0095	0.0200	0.3333	0.18	9.01	0.1830	Rooftop	0.015	1.88	0.00	1.88	6.65	10	1.503	1.000	1.88	0.00	
B-11b	B-11b	0.0095	0.0200	0.3333	0.18	9.01	0.1830	Rooftop	0.015	1.88	0.00	1.88	6.65	10	1.503	1.000	1.88	0.00	
B-12a	B-12a	0.0095	0.0200	0.3333	0.19	9.47	0.1766	Rooftop	0.015	2.14	0.00	2.14	7.19	10	1.391	1.000	2.14	0.00	
B-12b	B-12b	0.0095	0.0200	0.3333	0.19	9.69	0.1737	Rooftop	0.015	2.28	0.00	2.28	7.45	10	1.342	1.000	2.28	0.00	
B-13a	B-13a	0.0095	0.0200	0.3333	0.18	9.25	0.1796	Rooftop	0.015	2.01	0.00	2.01	6.93	10	1.444	1.000	2.01	0.00	
B-13b	B-13b	0.0095	0.0200	0.3333	0.19	9.47	0.1766	Rooftop	0.015	2.14	0.00	2.14	7.19	10	1.391	1.000	2.14	0.00	
B-14a	B-14a	0.0095	0.0200	0.3333	0.18	9.01	0.1830	Rooftop	0.015	1.88	0.00	1.88	6.65	10	1.503	1.000	1.88	0.00	
B-14b	B-14b	0.0095	0.0200	0.3333	0.30	14.92	0.1263	Rooftop	0.015	7.20	0.00	7.20	14.62	15	1.026	1.000	7.20	0.00	

NOTE: OFF-SITE FLOWS NOT BEING CONSIDERED BASED ON INLETS BEING LOCATED AT DISCHARGE POINT INTO LAKEWOOD ROW.

NO.	REVISION DATE
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CRESTVIEW SUMMIT

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN MARSHALL INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
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STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER

09/28/22

JOB NO. :	10745
DATE :	8/3/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE

SHEET **DA-08**

DRAINAGE CRITERIA

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100-YR ON-GRADE INLET DESIGN COMPUTATIONS

Inlet No.	Drainage Area Area No.	Longitudinal Slope "S" (ft/ft)	Cross Slope of Pavement "Sx" (ft/ft)	Cross Slope of Gutter "S'x" (ft/ft)	Depth of Flow "Yo" (in)	Spread of Flow "T" (ft)	Equivalent Cross Slope "Se" (ft/ft)	Street Section (type)	Manning's Coefficient for pavement "n"	100-year Runoff (cfs)	100-year Carryover Flow (cfs)	100-year Total Gutter Q (cfs)	Length Required Lo "L_T" (ft)	Length Provided L "L" (ft)	L/L_T	Efficiency "E"	Inlet Capacity "Qi"	100-year Carryover Flow "q" (cfs)	Comments
A-1a	A-1a	0.0363	0.0200	0.3333	0.21	10.70	0.1616	Rooftop	0.015	5.80	0.00	5.80	17.22	10	0.581	0.791	4.59	1.21	
A-1b	A-1b	0.0363	0.0200	0.3333	0.22	10.86	0.1599	Rooftop	0.015	6.03	0.00	6.03	17.62	10	0.568	0.779	4.70	1.33	
A-2a	A-2a	0.0406	0.0200	0.3333	0.23	11.59	0.1524	Rooftop	0.015	6.38	1.21	7.59	20.66	15	0.726	0.903	6.86	0.74	
A-2b	A-2b	0.0406	0.0200	0.3333	0.23	11.66	0.1517	Rooftop	0.015	6.38	1.33	7.71	20.85	15	0.719	0.898	6.93	0.78	
A-3a	A-3a	0.0314	0.0200	0.3333	0.26	12.89	0.1409	Rooftop	0.015	8.12	0.74	8.86	21.39	15	0.701	0.886	7.85	1.01	
A-3b	A-3b	0.0314	0.0200	0.3333	0.26	12.78	0.1417	Rooftop	0.015	7.89	0.78	8.67	21.12	15	0.710	0.892	7.74	0.93	
A-4a	A-4a	0.0188	0.0200	0.3333	0.24	12.17	0.1470	Rooftop	0.015	4.87	1.01	5.88	15.05	10	0.665	0.860	5.06	0.82	
A-4b	A-4b	0.0188	0.0200	0.3333	0.24	12.02	0.1484	Rooftop	0.015	4.76	0.93	5.69	14.76	10	0.678	0.870	4.95	0.74	
A-5a	A-5a	0.0246	0.0200	0.3333	0.25	12.56	0.1436	Rooftop	0.015	6.50	0.82	7.32	18.14	10	0.551	0.764	5.59	1.73	
A-5b	A-5b	0.0246	0.0200	0.3333	0.25	12.43	0.1447	Rooftop	0.015	6.38	0.74	7.12	17.85	10	0.560	0.772	5.50	1.62	
A-6a	A-6a	0.0184	0.0200	0.3333	0.26	12.76	0.1419	Rooftop	0.015	4.87	1.73	6.60	16.03	10	0.624	0.828	5.47	1.14	
A-6b	A-6b	0.0184	0.0200	0.3333	0.25	12.59	0.1433	Rooftop	0.015	4.76	1.62	6.38	15.71	10	0.636	0.838	5.35	1.03	
A-7a	A-7a	0.0070	0.0200	0.3333	0.27	13.50	0.1361	Rooftop	0.015	3.60	1.14	4.73	10.70	10	0.935	0.993	4.70	0.03	
A-7b	A-7b	0.0070	0.0200	0.3333	0.27	13.39	0.1369	Rooftop	0.015	3.60	1.03	4.63	10.56	10	0.947	0.995	4.60	0.02	
A-8a	A-8a	0.0070	0.0200	0.3333	0.24	12.22	0.1465	Rooftop	0.015	3.60	0.03	3.63	9.16	10	1.092	1.000	3.63	0.00	
A-8b	A-8b	0.0070	0.0200	0.3333	0.24	12.21	0.1466	Rooftop	0.015	3.60	0.02	3.62	9.14	10	1.094	1.000	3.62	0.00	
A-9a	A-9a	0.0070	0.0200	0.3333	0.24	12.18	0.1469	Rooftop	0.015	3.60	0.00	3.60	9.10	10	1.098	1.000	3.60	0.00	
A-9b	A-9b	0.0070	0.0200	0.3333	0.24	12.18	0.1469	Rooftop	0.015	3.60	0.00	3.60	9.10	10	1.098	1.000	3.60	0.00	
A-10a	A-10a	0.0080	0.0200	0.3333	0.25	12.43	0.1447	Rooftop	0.015	4.06	0.00	4.06	10.06	10	0.994	1.000	4.06	0.00	
A-10b	A-10b	0.0080	0.0200	0.3333	0.25	12.56	0.1436	Rooftop	0.015	4.18	0.00	4.18	10.23	10	0.977	0.999	4.17	0.00	
A-11a	A-11a	0.0080	0.0200	0.3333	0.25	12.43	0.1447	Rooftop	0.015	4.06	0.00	4.06	10.06	10	0.994	1.000	4.06	0.00	
A-11b	A-11b	0.0080	0.0200	0.3333	0.25	12.57	0.1435	Rooftop	0.015	4.18	0.00	4.18	10.24	10	0.977	0.999	4.18	0.00	
A-12a	A-12a	0.0070	0.0200	0.3333	0.25	12.47	0.1444	Rooftop	0.015	3.83	0.00	3.83	9.45	10	1.059	1.000	3.83	0.00	
A-12b	A-12b	0.0070	0.0200	0.3333	0.25	12.61	0.1431	Rooftop	0.015	3.94	0.00	3.95	9.62	10	1.040	1.000	3.95	0.00	
A-16a	A-16a	0.0074	0.0200	0.3333	0.25	12.61	0.1431	Rooftop	0.015	4.06	0.00	4.06	9.89	10	1.011	1.000	4.06	0.00	
A-16b	A-16b	0.0074	0.0200	0.3333	0.24	12.05	0.1481	Rooftop	0.015	3.60	0.00	3.60	9.21	10	1.085	1.000	3.60	0.00	
A-18a	A-18a	0.0071	0.0200	0.3333	0.23	11.37	0.1546	Rooftop	0.015	3.02	0.00	3.02	8.24	10	1.214	1.000	3.02	0.00	
A-18b	A-18b	0.0071	0.0200	0.3333	0.23	11.37	0.1546	Rooftop	0.015	3.02	0.00	3.02	8.24	10	1.214	1.000	3.02	0.00	
A-19a	A-19a	0.0071	0.0200	0.3333	0.22	11.03	0.1580	Rooftop	0.015	2.78	0.00	2.78	7.86	10	1.272	1.000	2.78	0.00	
A-19b	A-19b	0.0071	0.0200	0.3333	0.22	11.03	0.1580	Rooftop	0.015	2.78	0.00	2.78	7.86	10	1.272	1.000	2.78	0.00	
A-25a	A-25a	0.0080	0.0200	0.3333	0.24	12.02	0.1483	Rooftop	0.015	3.71	0.00	3.71	9.55	10	1.047	1.000	3.71	0.00	
A-25b	A-25b	0.0080	0.0200	0.3333	0.27	13.43	0.1366	Rooftop	0.015	4.99	0.00	4.99	11.36	10	0.881	0.978	4.88	0.11	
A-27a	A-27a	0.0251	0.0200	0.3333	0.23	11.72	0.1511	Rooftop	0.015	6.15	0.00	6.15	16.45	10	0.608	0.815	5.01	1.14	
A-27b	A-27b	0.0251	0.0200	0.3333	0.23	11.64	0.1519	Rooftop	0.015	6.03	0.00	6.03	16.26	10	0.615	0.821	4.95	1.08	
B-1a	B-1a	0.0079	0.0200	0.3333	0.25	12.59	0.1433	Rooftop	0.015	4.18	0.00	4.18	10.20	10	0.980	0.999	4.17	0.00	
B-1b	B-1b	0.0079	0.0200	0.3333	0.24	12.05	0.1481	Rooftop	0.015	3.71	0.00	3.71	9.52	10	1.050	1.000	3.71	0.00	
B-2a	B-2a	0.0214	0.0200	0.3333	0.24	11.90	0.1494	Rooftop	0.015	5.92	0.00	5.92	15.54	10	0.644	0.844	5.00	0.92	
B-2b	B-2b	0.0214	0.0200	0.3333	0.21	10.66	0.1621	Rooftop	0.015	4.41	0.00	4.41	13.07	10	0.765	0.926	4.08	0.33	
B-3a	B-3a	0.0214	0.0200	0.3333	0.25	12.65	0.1428	Rooftop	0.015	6.03	0.92	6.96	17.08	15	0.878	0.977	6.80	0.16	
B-3b	B-3b	0.0214	0.0200	0.3333	0.23	11.52	0.1530	Rooftop	0.015	5.10	0.33	5.43	14.77	15	1.016	1.000	5.43	0.00	
B-4a	B-4a	0.0117	0.0200	0.3333	0.26	12.76	0.1419	Rooftop	0.015	5.10	0.16	5.26	12.72	10	0.786	0.938	4.93	0.33	
B-4b	B-4b	0.0117	0.0200	0.3333	0.25	12.39	0.1450	Rooftop	0.015	4.87	0.00	4.87	12.16	10	0.822	0.955	4.65	0.22	
B-5a	B-5a	0.0117	0.0200	0.3333	0.19	9.70	0.1736	Rooftop	0.015	2.20	0.33	2.53	8.29	10	1.206	1.000	2.53	0.00	
B-5b1	B-5b1	0.0117	0.0200	0.3333	0.19	9.53	0.1757	Rooftop	0.015	2.20	0.22	2.42	8.08	10	1.238	1.000	2.42	0.00	
B-5c	B-5c	0.0200	0.0200	0.3333	0.18	8.94	0.1840	Rooftop	0.015	2.67	0.00	2.67	9.61	10	1.040	1.000	2.67	0.00	
B-5d1	B-5d1	0.0200	0.0200	0.3333	0.18	8.94	0.1840	Rooftop	0.015	2.67	0.00	2.67	9.61	20	2.080	1.000	2.67	0.00	
B-5d3	B-5d3	0.0086	0.0200	0.3333	0.17	8.46	0.1914	Rooftop	0.015	1.51	0.00	1.51	5.74	10	1.743	1.000	1.51	0.00	
B-6a	B-6a	0.0086	0.0200	0.3333	0.21	10.48	0.1641	Rooftop	0.015	2.67	0.00	2.67	7.99	10	1.251	1.000	2.67	0.00	
B-6b1	B-6b1	0.0086	0.0200	0.3333	0.15	7.67	0.2049	Rooftop	0.015	1.16	0.00	1.16	4.93	10	2.028	1.000	1.16	0.00	
B-7a	B-7a	0.0086	0.0200	0.3333	0.21	10.48	0.1641	Rooftop	0.015	2.67	0.00	2.67	7.99	10	1.251	1.000	2.67	0.00	
B-7b1	B-7b1	0.0086	0.0200	0.3333	0.14	7.05	0.2168	Rooftop	0.015	0.93	0.00	0.93	4.34	10	2.304	1.000	0.93	0.00	
B-7b2	B-7b2	0.0086	0.0200	0.3333	0.14	7.05	0.2168	Rooftop	0.015	0.93	0.00	0.93	4.34	10	2.304	1.000	0.93	0.00	
B-7b3	B-7b3	0.0086	0.0200	0.3333	0.14	7.05	0.2168	Rooftop	0.015	0.93	0.00	0.93	4.34	10	2.304	1.000	0.93	0.00	
B-8a	B-8a	0.0086	0.0200	0.3333	0.23	11.28	0.1555	Rooftop	0.015	3.25	0.00	3.25	8.97	10	1.115	1.000	3.25	0.00	
B-8b1	B-8b1	0.0086	0.0200	0.3333	0.20	9.75	0.1729	Rooftop	0.015	2.20	0.00	2.20	7.15	10	1.399	1.000	2.20	0.00	
B-8b2	B-8b2	0.0086	0.0200	0.3333	0.15	7.37	0.2105	Rooftop	0.015	1.04	0.00	1.04	4.64	10	2.154	1.000	1.04	0.00	
B-9a	B-9a	0.0095	0.0200	0.3333	0.23	11.64	0.1519	Rooftop	0.015	3.71	0.00	3.71	9.91	10	1.009	1.000	3.71	0.00	
B-9b	B-9b	0.0095	0.0200	0.3333	0.24	11.77	0.1506	Rooftop	0.015	3.83	0.00	3.83	10.09	10	0.991	1.000	3.83	0.00	
B-10a	B-10a	0.0095	0.0200	0.3333	0.22	11.07	0.1576	Rooftop	0.015	3.25	0.00	3.25	9.16	10	1.091	1.000	3.25	0.00	
B-10b	B-10b	0.0095	0.0200	0.3333	0.22	10.92	0.1592	Rooftop	0.015	3.13	0.00	3.13	8.97	10	1.115	1.000	3.13	0.00	
B-11a	B-11a	0.0095	0.0200	0.3333	0.22	11.07	0.1576	Rooftop	0.015	3.25	0.00	3.25	9.16	10	1.091	1.000	3.25	0.00	
B-11b	B-11b	0.0095	0.0200	0.3333	0.22	11.07	0.1576	Rooftop	0.015	3.25	0.00	3.25	9.16	10	1.091	1.000	3.25	0.00	
B-12a	B-12a	0.0095	0.0200	0.3333	0.23	11.64	0.1519	Rooftop	0.015	3.71	0.00	3.71	9.91	10	1.009	1.000	3.71	0.00	
B-12b	B-12b	0.0095	0.0200	0.3333	0.24	11.90	0.1494	Rooftop	0.015	3.94	0.00	3.94	10.27	10	0.974	0.999	3.94	0.01	
B-13a	B-13a	0.0095	0.0200	0.3333	0.23	11.36	0.1547	Rooftop	0.015	3.48	0.00	3.48	9.54	10	1.048	1.000	3.48	0.00	
B-13b	B-13b	0.0095	0.0200	0.3333	0.23	11.64	0.1519	Rooftop	0.015	3.71	0.01	3.72	9.92	10	1.008	1.000	3.72	0.00	
B-14a	B-14a	0.0095	0.0200	0.3333	0.22	11.07	0.1576	Rooftop	0.015	3.25	0.00	3.25	9.16	10	1.091	1.000	3.25	0.00	
B-14b	B-14b	0.0095	0.0200	0.3333	0.22	10.92	0.1592	Rooftop	0.015	3.13	0.00	3.13	8.97	15	1.672	1.000	3.13	0.00	

NO.	REVISION DATE
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CHISHOLM SUMMIT

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN MARSHALL
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STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	8/3/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE

SHEET **DA-09**

DRAINAGE CRITERIA

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SUMP INLET DESIGN CALCULATIONS

Inlet No.	Gutter Slope "So" (ft/ft)	Crown Slope of Pvmt. "Θo" (ft/ft)	Gutter Flow "Qo" (cfs)	Depth of Gutter Flow "Yo" (ft)	Depth of Depression "h" (ft)	Depth of Flow at Opening "Y" (ft)	=1.4h	Capacity of Inlet per Foot of Length Q/L See Note 1 (cfs/ft)	Length of Inlet Opening "L" or "P" (ft)	Capacity of Inlet "Q" (cfs)	Carryover into Over Flow (cfs)	Percent Q100 Captured by Inlet	Notes
A-13A	0.70%	2.00%	3.83	0.58	0.33	0.91	0.47	1.71	10	17.13	0.00	100.0	Includes 0.00 cfs of Carryover from A-9A & A-13A
A-13B	0.70%	2.00%	3.94	0.58	0.33	0.91	0.47	1.71	10	17.13	0.00	100.0	Includes 0.00 cfs of Carryover from A-9A & A-13A
A-14A	0.70%	2.00%	3.60	0.58	0.33	0.91	0.47	1.71	10	17.13	0.00	100.0	Includes 0.00 cfs of Carryover from A-9A & A-13A
A-14B	0.70%	2.00%	3.60	0.58	0.33	0.91	0.47	1.71	10	17.13	0.00	100.0	Includes 0.00 cfs of Carryover from A-9B & A-13B
A-17A	N/A	N/A	33.66	0.00	1.00	1.00	1.40	3.00	16	48.00	0.00	100.0	4' X 4' Drop Inlet. Has a 30% Clogging Factor.
A-20A	0.71%	2.00%	3.48	0.58	0.33	0.91	0.47	1.71	10	17.13	0.00	100.0	Includes 0.00 cfs of Carryover from A-16A & A-19A
A-20B	0.71%	2.00%	3.48	0.58	0.33	0.91	0.47	1.71	10	17.13	0.00	100.0	Includes 0.00 cfs of Carryover from A-16B & 19B
A-21A	N/A	N/A	87.26	0.00	1.00	1.00	1.40	3.00	32	96.00	0.00	100.0	Double 4' X 4' Drop Inlet. Has a 9% Clogging Factor.
A-23a	0.80%	2.00%	5.34	0.58	0.33	0.91	0.47	1.71	10	17.13	0.00	100.0	Includes 0.00 cfs of Carryover
A-23b	0.80%	2.00%	4.87	0.58	0.33	0.91	0.47	1.71	10	17.13	0.00	100.0	Includes 0.00 cfs of Carryover
A-28A	0.80%	2.00%	4.73	0.58	0.33	0.91	0.47	1.71	10	17.13	0.00	100.0	Includes 1.14 cfs of Carryover from A-25A & 27A
A-28B	0.80%	2.00%	5.02	0.58	0.33	0.91	0.47	1.71	10	17.13	0.00	100.0	Includes 1.19 cfs of Carryover from A-25B & 27B
B-9C	N/A	N/A	23.20	0.00	1.00	1.00	1.40	3.00	16	48.00	0.00	100.0	4' X 4' Drop Inlet.
B-16A	0.82%	2.00%	2.67	0.58	0.33	0.91	0.47	1.71	10	17.13	0.00	100.0	Includes 0.00 cfs of Carryover from B-8A & B-14A
B-16B	0.82%	2.00%	2.67	0.58	0.33	0.91	0.47	1.71	10	17.13	0.00	100.0	Includes 0.00 cfs of Carryover from B-8B1 & B-14B

S.D. Line "A-1a"

Junction No. From Design Point	Junction No. To	Distance Between Junctions (ft)	Drainage Area: Increment Area No.	Drainage Area: Increment Area Area (ac)	Drainage Area: Total Area (ac)	Coeff of Runoff "C"	Increm "CA"	Total "CA"	Time of Concentration: Inlet Time (min)	Time of Concentration: Flow Time in Sewer (min)	Time of Concentration: Total Time (min)	5-Year Intesity I (in./hr.)	Design Freq (yrs)	100-Year Intensity I (in./hr.)	Q5 Runoff Q (c.f.s.)	Q100 Runoff Q (c.f.s.)	Inlet Bypass (c.f.s.)	Total Flow In System Q (c.f.s.)	Conduit Size: Pipe Dia. (in.)	Conduit Size: Box Height (ft.)	Conduit Size: Box Width (ft.)	n	Slope of Friction Grad Sf (ft./ft.)	Hydraulic Gradient: Elevation Up Stream (m.s.l.)	Hydraulic Gradient: Down Stream (m.s.l.)	Head Loss at Change in Section: Inflow Velocity V1 (ft./sec.)	Outflow Velocity V2 (ft./sec.)	Velocity Head VH2 (ft.)	Velocity Head VH1 (ft.)	Loss Coef K constant	K x VH1 (ft.)	Head Loss Hj (ft.)	Elev H.G. at Design Point (m.s.l.)	Invert Elev From (ft.)	Invert Elev To (ft.)	T/C Elev (ft.)	HGL BELOW OR (ABOVE) GRADE	Notes
1	2	3	4	5	6	7	8	9	10	11	12	13		14	15	16	17	18	19	19a	19b	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
2885.70	2877.71	7.99	A-1a	0.50	0.50	1.00	0.50	0.50	10	0.00	10.00	6.70	100	11.60	3.35	5.80	1.21	4.59	21			0.013											924.02	922.50	928.02		Froude Number = 7.152
2877.71	2477.84	399.87	A-1b	0.52	1.02	1.00	0.52	1.02	10	0.07	10.07	6.68	100	11.57	6.82	11.80	1.33	9.26	24			0.013											922.50	901.00	927.55		Froude Number = 3.490
2477.84	2100.00	377.84	A-2a & A-2b	1.10	2.12	1.00	1.10	2.12	10	2.26	12.33	6.14	100	10.67	13.02	22.61	-1.03	21.09	24			0.013											901.00	886.00	906.59		Froude Number = 2.758
2100.00	1970.58	129.42	MANHOLE		2.12		0.00	2.12	10	0.94	12.33	6.14	100	10.67	13.02	22.61	0.00	21.09	24			0.013			883.62								878.75	876.25	891.64		Froude Number = 2.118
1970.58	1673.92	296.66	A-3a & A-3b	1.38	3.50	1.00	1.38	3.50	10	0.32	13.59	5.84	100	10.16	20.43	35.57	0.42	33.63	24			0.013	0.0221	882.01	875.46	6.71	10.71	1.78	0.70	0.25	0.18	1.60	883.62	876.25	872.00	887.21	3.59	
1673.92	1279.42	394.50	A-4a & A-4b	0.83	4.33	1.00	0.83	4.33	10	0.46	14.05	5.73	100	9.98	24.80	43.21	-0.38	41.64	27			0.013	0.0181	874.20	867.07	10.71	10.47	1.70	1.78	0.25	0.44	1.26	875.46	872.00	864.25	878.47	3.01	
1279.42	980.56	298.86	A-5a & A-5b	1.11	5.44	1.00	1.11	5.44	10	0.63	14.68	5.58	100	9.73	30.34	52.92	1.79	49.57	30			0.013	0.0146	865.91	861.54	10.47	10.10	1.58	1.70	0.25	0.43	1.16	867.07	864.25	857.75	870.41	3.34	
980.56	975.56	5.00	COLLAR		5.44		0.00	5.44	10	0.49	14.68	5.58	100	9.73	30.34	52.92	0.00	49.57	36			0.013	0.0055	860.94	860.91	10.10	7.01	0.76	1.58	0.10	0.16	0.61	861.54	857.75	857.70	863.74	2.20	
975.56	955.84	19.72	A-6a	0.42	5.86	1.00	0.42	5.86	10	0.01	15.19	5.47	100	9.56	32.06	55.99	-0.59	53.24	36			0.013	0.0064	860.60	860.48	7.01	7.53	0.88	0.76	0.75	0.57	0.31	860.91	857.70	857.49	863.64	2.73	
955.84	761.63	194.21	A-6b	0.41	6.27	1.00	0.41	6.27	10	0.04	15.23	5.46	100	9.54	34.25	59.85	-0.59	57.68	36			0.013	0.0075	860.10	858.65	7.53	8.16	1.03	0.88	0.75	0.66	0.37	860.48	857.49	855.50	863.28	2.80	
761.63	539.72	221.91	A-7a & A-7b	0.62	6.89	1.00	0.62	6.89	10	0.40	15.63	5.40	100	9.45	37.20	65.11	-2.11	65.05		3	4	0.013	0.0028	858.45	857.84	8.16	5.42	0.46	1.03	0.25	0.26	0.20	858.65	855.50	853.98	861.47	2.82	
539.72	327.81	211.91	A-8a & A-8b	0.62	7.51	1.00	0.62	7.51	10	0.68	16.31	5.29	100	9.29	39.73	69.74	-0.06	69.74		3	4	0.013	0.0032	857.43	856.76	5.42	5.81	0.52	0.46	0.25	0.11	0.41	857.84	853.98	852.50	859.90	2.06	
327.81	317.81	10.00	COLLAR		7.51		0.00	7.51	10	0.61	16.31	5.29	100	9.29	39.73	69.74	0.00	69.74		3	4	0.013	0.0032	856.66	856.63	5.81	5.81	0.52	0.52	0.10	0.05	0.10	856.76	852.50	852.47	858.40	1.64	
317.81	237.57	80.24	A-9a & A-9b	0.62	8.13	1.00	0.62	8.13	10	0.03	16.94	5.19	100	9.13	42.19	74.25	0.00	74.25		3	6	0.013	0.0013	856.49	856.39	5.81	4.13	0.26	0.52	0.25	0.13	0.13	856.63	852.47	852.27	858.32	1.69	
237.57	134.00	103.57	A-14a & A-14b	0.62	8.75	1.00	0.62	8.75	10	0.32	17.27	5.14	100	9.06	44.95	79.24	0.00	79.24		3	6	0.013	0.0015	856.15	856.00	4.13	4.40	0.30	0.26	0.25	0.07	0.23	856.39	852.27	852.00	857.89	1.50	
134.00																																	856.00					HGL STARTS AT CULVERT A CONN.

PARTIAL FLOW

S.D. Line "A-10a"

Junction No. From Design Point	Junction No. To	Distance Between Junctions (ft)	Drainage Area: Increment Area No.	Drainage Area: Increment Area Area (ac)	Drainage Area: Total Area (ac)	Coeff of Runoff "C"	Increm "CA"	Total "CA"	Time of Concentration: Inlet Time (min)	Time of Concentration: Flow Time in Sewer (min)	Time of Concentration: Total Time (min)	5-Year Intesity I (in./hr.)	Design Freq (yrs)	100-Year Intensity I (in./hr.)	Q5 Runoff Q (c.f.s.)	Q100 Runoff Q (c.f.s.)	Inlet Bypass (c.f.s.)	Total Flow In System Q (c.f.s.)	Conduit Size: Pipe Dia. (in.)	Conduit Size: Box Height (ft.)	Conduit Size: Box Width (ft.)	n	Slope of Friction Grad Sf (ft./ft.)	Hydraulic Gradient: Elevation Up Stream (m.s.l.)	Hydraulic Gradient: Down Stream (m.s.l.)	Head Loss at Change in Section: Inflow Velocity V1 (ft./sec.)	Outflow Velocity V2 (ft./sec.)	Velocity Head VH2 (ft.)	Velocity Head VH1 (ft.)	Loss Coef K constant	K x VH1 (ft.)	Head Loss Hj (ft.)	Elev H.G. at Design Point (m.s.l.)	Invert Elev From (ft.)	Invert Elev To (ft.)	T/C Elev (ft.)	HGL BELOW OR (ABOVE) GRADE	Notes
1	2	3	4	5	6	7	8	9	10	11	12	13		14	15	16	17	18	19	19a	19b	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
845.26	837.26	8.00	A-10a	0.35	0.35	1.00	0.35	0.35	10	0.00	10.00	6.70	100	11.60	2.35	4.06	0.00	4.06	21			0.013	0.0007	858.30	858.30	0.00	1.69	0.04	0.00	1.25	0.00	0.10	858.40			862.88	4.48	Future For Reference Only
837.26	575.27	261.99	A-10b	0.36	0.71	1.00	0.36	0.71	10	0.08	10.08	6.68	100	11.57	4.74	8.21	0.00	8.21	24			0.013	0.0013	858.20	857.85	1.69	2.61	0.11	0.04	0.25	0.01	0.10	858.30			862.37	4.07	Future For Reference Only
575.27	555.56	19.71	A-11a	0.35	1.06	1.00	0.35	1.06	10	1.67	11.75	6.28	100	10.90	6.66	11.55	0.00	11.55	24			0.013	0.0026	857.72	857.67	2.61	3.68	0.21	0.11	0.75	0.08	0.13	857.85			860.32	2.47	Future For Reference Only
555.56	346.11	209.45	A-11b	0.36	1.42	1.00	0.36	1.42	10	0.09	11.84	6.26	100	10.86	8.89	15.43	0.00	15.42	24			0.013	0.0046	857.45	856.48	3.68	4.91	0.37	0.21	0.75	0.16	0.22	857.67		853.00	860.17	2.50	Future For Reference Only
346.11	241.15	104.96	A-12a & A-12b	0.67	2.09	1.00	0.67	2.09	10	0.71	12.55	6.09	100	10.58	12.72	22.11	-0.01	22.11	36			0.013	0.0011	856.38	856.26	4.91	3.13	0.15	0.37	0.25	0.09	0.10	856.48	853.00	852.45	858.44	1.96	Future For Reference Only
241.15	221.44	19.71	A-13a	0.33	2.42	1.00	0.33	2.42	10	0.56	13.11	5.95	100	10.36	14.41	25.06	0.00	25.06	36			0.013	0.0014	856.16	856.14	3.13	3.55	0.20	0.15	0.75	0.11	0.10	856.26	852.45	852.34	857.90	1.64	
221.44	134.00	87.44	A-13b	0.34	2.76	1.00	0.34	2.76	10	0.09	13.20	5.93	100	10.32	16.37	28.48	0.00	28.48	36			0.013	0.0018	856.03	855.87	3.55	4.03	0.25	0.20	0.75	0.15	0.11	856.14	852.34	851.87	857.99	1.85	
134.00																																	855.87					HGL STARTS AT CULVERT A CONN.

S.D. Line "A-16a"

Junction No. From Design Point	Junction No. To	Distance Between Junctions (ft)	Drainage Area: Increment Area No.	Drainage Area: Increment Area Area (ac)	Drainage Area: Total Area (ac)	Coeff of Runoff "C"	Increm "CA"	Total "CA"	Time of Concentration: Inlet Time (min)	Time of Concentration: Flow Time in Sewer (min)	Time of Concentration: Total Time (min)	5-Year Intesity I (in./hr.)	Design Freq (yrs)	100-Year Intensity I (in./hr.)	Q5 Runoff Q (c.f.s.)	Q100 Runoff Q (c.f.s.)	Inlet Bypass (c.f.s.)	Total Flow In System Q (c.f.s.)	Conduit Size: Pipe Dia. (in.)	Conduit Size: Box Height (ft.)	Conduit Size: Box Width (ft.)	n	Slope of Friction Grad Sf (ft./ft.)	Hydraulic Gradient: Elevation Up Stream (m.s.l.)	Hydraulic Gradient: Down Stream (m.s.l.)	Head Loss at Change in Section: Inflow Velocity V1 (ft./sec.)	Outflow Velocity V2 (ft./sec.)	Velocity Head VH2 (ft.)	Velocity Head VH1 (ft.)	Loss Coef K constant	K x VH1 (ft.)	Head Loss Hj (ft.)	Elev H.G. at Design Point (m.s.l.)	Invert Elev From (ft.)	Invert Elev To (ft.)	T/C Elev (ft.)	HGL BELOW OR (ABOVE) GRADE	Notes
1	2	3	4	5	6	7	8	9	10	11	12	13		14	15	16	17	18	19	19a	19b	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
388.35	377.04	11.31	A-16a	0.35	0.35	1.00	0.35	0.35	10	0.00	10.00	6.70	100	11.60	2.35	4.06	0.00	4.06	21			0.013	0.0007	925.82	925.82	0.00	1.69	0.04	0.00	1.25	0.00	0.10	925.92	926.26	925.71	930.26	4.34	Froude Number = 3.219
377.04	362.54	14.50	45 BEND		0.35		0.00	0.35	10	0.11	10.00	6.70	100	11.60	2.35	4.06	0.00	4.06	21			0.013	0.0007	925.72	925.71	1.69	1.69	0.04	0.04	0.35	0.02	0.10	925.82	925.71	925.00	929.70	3.88	
362.54	357.54	5.00	COLLAR		0.35		0.00	0.35	10	0.14	10.00	6.70	100	11.60	2.35	4.06	0.00	4.06	24			0.013	0.0003	925.61	925.61	1.69	1.29	0.03	0.04	0.10	0.00	0.10	925.71	925.00	924.74	929.51	3.80	
357.54	309.51	48.03	A-16b	0.31	0.66	1.00	0.31	0.66	10	0.06	10.32	6.62	100	11.47	4.37	7.57	0.00	7.57	24			0.013	0.0011	925.51	925.45	1.29	2.41	0.09	0.03	0.75	0.02	0.10	925.61	924.74	922.41	929.45	3.84	
309.51	223.12	86.39	A-17a	5.58	6.24	0.52	2.90	3.56	10	0.33	10.65	6.54	100	11.34	23.31	40.39	0.00	40.39		3	4	0.015	0.0014	925.30	925.18	2.41	3.37	0.18	0.09	0.25	0.02	0.15	925.45	922.41	921.99	929.04	3.59	
223.12	190.78	32.34	A-20a & A-20b	0.60	6.84	1.00	0.60	4.16	10	0.43	11.08	6.44	100	11.17	26.80	46.48	0.00	46.48		3	4	0.015	0.0019	925.07	925.01	3.37	3.87	0.23	0.18	0.75	0.13	0.10	925.18	921.99	921.85	928.61	3.43	
190.78	125.27	65.51	S.D. LAT. A-18a	1.00	7.84	1.00	1.00	5.16	10	0.14	11.22	6.41	100	11.11	33.07	57.36	0.00	57.36		3	4	0.015	0.0029	924.72	924.53	3.87	4.78	0.35	0.23	0.25	0.06	0.30	925.01	921.85	921.53	928.70	3.69	
125.27																																	924.53					HGL STARTS AT TOP OF PIPE

NO.	REVISION DATE
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LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN & MARSHALL INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329-4373
TxEng Firm # F-2644 – TxSurv Firm # 10001700

STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	8/3/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE

SHEET **DA-10**

DRAINAGE CRITERIA

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S.D. Line. "A-18a" to S.D. Line "A-16a"

Junction No. From Design Point	Junction No. To	Distance Between Junctions ft.	Drainage Area Increment Area No.	Drainage Area Increment Area Area ac.	Drainage Area Total Area ac.	Coeff of Runoff "C"	Increm "CA"	Total "CA"	Time of Concentration Inlet Time min.	Time of Concentration Flow Time in Sewer min.	Time of Concentration Total Time min.	5-Year Intesity I in./hr.	Design Freq yrs.	100-Year Intensity I in./hr.	Q5 Runoff Q c.f.s.	Q100 Runoff Q c.f.s.	Inlet Bypass c.f.s.	Total Flow In System Q c.f.s.	Conduit Size Pipe Dia. in.	Conduit Size Box Height ft.	Conduit Size Box Width ft.	n	Slope of Friction Grad Sf ft./ft.	Hydraulic Gradient Elevation Up Stream m.s.l.	Hydraulic Gradient Elevation Down Stream m.s.l.	Head Loss at Change in Section: Inflow Velocity V1 ft./sec.	Outflow Velocity V2 ft./sec.	Velocity Head VH2 ft.	Velocity Head VH1 ft.	Loss Coef K constant	K x VH1 ft.	Head Loss Hj ft.	Elev H.G. at Design Point m.s.l.	Invert Elev From ft.	Invert Elev To ft.	T/C Elev ft.	HGL BELOW OR (ABOVE) GRADE	Notes
1	2	3	4	5	6	7	8	9	10	11	12	13		14	15	16	17	18	19	19a	19b	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
305.53	294.21	11.32	A-18a	0.26	0.26	1.00	0.26	0.26	10	0.00	10.00	6.70	100	11.60	1.74	3.02	0.00	3.02	21			0.013												926.59	926.11	930.59	4.81	Froude Number = 3.003
294.21	279.71	14.50	45 BEND		0.26		0.00	0.26	10	0.15	10.00	6.70	100	11.60	1.74	3.02	0.00	3.02	21			0.013												926.11	925.50	930.08	4.41	Froude Number = 3.003
279.71	274.71	5.00	COLLAR		0.26		0.00	0.26	10	0.19	10.00	6.70	100	11.60	1.74	3.02	0.00	3.02	24			0.013												925.50	925.40	929.97	4.40	Froude Number = 2.195
274.71	122.74	151.97	A-18b	0.26	0.52	1.00	0.26	0.52	10	0.09	10.43	6.60	100	11.43	3.43	5.94	0.00	5.94	24			0.013			925.26								925.40	922.26	929.94	4.47	Froude Number = 2.195
122.74	114.74	8.00	A-19a	0.24	0.76	1.00	0.24	0.76	10	1.34	11.77	6.28	100	10.89	4.77	8.28	0.00	8.28	24			0.013	0.0013	925.16	925.15	1.89	2.64	0.11	0.06	0.75	0.04	0.10	925.26	922.26	922.10	928.85	3.59	
114.74	100.00	14.74	A-19b	0.24	1.00	1.00	0.24	1.00	10	0.05	11.82	6.26	100	10.87	6.26	10.87	0.00	10.87	24			0.013	0.0023	925.05	925.01	2.64	3.46	0.19	0.11	0.75	0.08	0.11	925.15	922.10	921.85	928.80	3.65	
100.00																																	925.01					HGL STARTS AT LINE A-16A CONN.

PARTIAL FLOW

S.D. Line "A-21a"

Junction No. From Design Point	Junction No. To	Distance Between Junctions ft.	Drainage Area Increment Area No.	Drainage Area Increment Area Area ac.	Drainage Area Total Area ac.	Coeff of Runoff "C"	Increm "CA"	Total "CA"	Time of Concentration Inlet Time min.	Time of Concentration Flow Time in Sewer min.	Time of Concentration Total Time min.	5-Year Intesity I in./hr.	Design Freq yrs.	100-Year Intensity I in./hr.	Q5 Runoff Q c.f.s.	Q100 Runoff Q c.f.s.	Inlet Bypass c.f.s.	Total Flow In System Q c.f.s.	Conduit Size Pipe Dia. in.	Conduit Size Box Height ft.	Conduit Size Box Width ft.	n	Slope of Friction Grad Sf ft./ft.	Hydraulic Gradient Elevation Up Stream m.s.l.	Hydraulic Gradient Elevation Down Stream m.s.l.	Head Loss at Change in Section: Inflow Velocity V1 ft./sec.	Outflow Velocity V2 ft./sec.	Velocity Head VH2 ft.	Velocity Head VH1 ft.	Loss Coef K constant	K x VH1 ft.	Head Loss Hj ft.	Elev H.G. at Design Point m.s.l.	Invert Elev From ft.	Invert Elev To ft.	T/C Elev ft.	HGL BELOW OR (ABOVE) GRADE	Notes
1	2	3	4	5	6	7	8	9	10	11	12	13		14	15	16	17	18	19	19a	19b	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
450.12	341.63	108.49	A-21a	12.75	12.75	0.59	7.52	7.52	10	0.00	10.00	6.70	100	11.60	50.40	87.26	0.00	87.26		4	4	0.015	0.0030	924.64	924.31	0.00	5.45	0.46	0.00	1.25	0.00	0.46	925.10	922.05	920.78			
341.63	272.94	68.69	A-21b	2.33	15.08	1.00	2.33	9.85	10	0.33	10.33	6.62	100	11.47	65.23	112.98	0.00	112.98		4	4	0.015	0.0051	923.88	923.54	5.45	7.06	0.77	0.46	0.75	0.35	0.43	924.31	920.78	919.98	931.01	6.70	
272.94	244.11	28.83	A-23a	0.88	15.96	1.00	0.88	10.73	10	0.16	10.33	6.62	100	11.47	71.05	123.07	0.00	123.07		4	4	0.015	0.0060	923.20	923.02	7.06	7.69	0.92	0.77	0.75	0.58	0.34	923.54	919.98	919.64	931.24	7.70	
244.11	101.54	142.57	22.5 BEND		15.96		0.00	10.73	10	0.06	10.33	6.62	100	11.47	71.05	123.07	0.00	123.07		4	4	0.015	0.0060	922.84	921.98	7.69	7.69	0.92	0.92	0.20	0.18	0.18	923.02	919.64	917.98	930.56	7.54	
101.54																																	921.98					HGL STARTS AT TOP OF PIPE

S.D. Lat. "A-21b" to S.D. Line "A-21a"

Junction No. From Design Point	Junction No. To	Distance Between Junctions ft.	Drainage Area Increment Area No.	Drainage Area Increment Area Area ac.	Drainage Area Total Area ac.	Coeff of Runoff "C"	Increm "CA"	Total "CA"	Time of Concentration Inlet Time min.	Time of Concentration Flow Time in Sewer min.	Time of Concentration Total Time min.	5-Year Intesity I in./hr.	Design Freq yrs.	100-Year Intensity I in./hr.	Q5 Runoff Q c.f.s.	Q100 Runoff Q c.f.s.	Inlet Bypass c.f.s.	Total Flow In System Q c.f.s.	Conduit Size Pipe Dia. in.	Conduit Size Box Height ft.	Conduit Size Box Width ft.	n	Slope of Friction Grad Sf ft./ft.	Hydraulic Gradient Elevation Up Stream m.s.l.	Hydraulic Gradient Elevation Down Stream m.s.l.	Head Loss at Change in Section: Inflow Velocity V1 ft./sec.	Outflow Velocity V2 ft./sec.	Velocity Head VH2 ft.	Velocity Head VH1 ft.	Loss Coef K constant	K x VH1 ft.	Head Loss Hj ft.	Elev H.G. at Design Point m.s.l.	Invert Elev From ft.	Invert Elev To ft.	T/C Elev ft.	HGL BELOW OR (ABOVE) GRADE	Notes
1	2	3	4	5	6	7	8	9	10	11	12	13		14	15	16	17	18	19	19a	19b	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
285.35	204.42	80.93	A-21b	2.33	2.33	1.00	2.33	2.33	10	0.00	10.00	6.70	100	11.60	15.61	27.03	0.00	27.03	27			0.013	0.0076	925.97	925.36	0.00	6.80	0.72	0.00	1.25	0.00	0.72	926.69	922.25	921.99	928.25	1.56	
204.42	100.00	104.42	45 BEND		2.33		0.00	2.33	10	0.20	10.00	6.70	100	11.60	15.61	27.03	0.00	27.03	27			0.013	0.0076	925.11	924.31	6.80	6.80	0.72	0.72	0.35	0.25	0.25	925.36	921.99	921.66	928.81	3.45	
100.00																																	924.31					

S.D. Line "A-23a" to S.D. Line "A-21a"

Junction No. From Design Point	Junction No. To	Distance Between Junctions ft.	Drainage Area Increment Area No.	Drainage Area Increment Area Area ac.	Drainage Area Total Area ac.	Coeff of Runoff "C"	Increm "CA"	Total "CA"	Time of Concentration Inlet Time min.	Time of Concentration Flow Time in Sewer min.	Time of Concentration Total Time min.	5-Year Intesity I in./hr.	Design Freq yrs.	100-Year Intensity I in./hr.	Q5 Runoff Q c.f.s.	Q100 Runoff Q c.f.s.	Inlet Bypass c.f.s.	Total Flow In System Q c.f.s.	Conduit Size Pipe Dia. in.	Conduit Size Box Height ft.	Conduit Size Box Width ft.	n	Slope of Friction Grad Sf ft./ft.	Hydraulic Gradient Elevation Up Stream m.s.l.	Hydraulic Gradient Elevation Down Stream m.s.l.	Head Loss at Change in Section: Inflow Velocity V1 ft./sec.	Outflow Velocity V2 ft./sec.	Velocity Head VH2 ft.	Velocity Head VH1 ft.	Loss Coef K constant	K x VH1 ft.	Head Loss Hj ft.	Elev H.G. at Design Point m.s.l.	Invert Elev From ft.	Invert Elev To ft.	T/C Elev ft.	HGL BELOW OR (ABOVE) GRADE	Notes
1	2	3	4	5	6	7	8	9	10	11	12	13		14	15	16	17	18	19	19a	19b	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
278.54	265.80	12.74	A-23a	0.46	0.46	1.00	0.46	0.46	10	0.00	10.00	6.70	100	11.60	3.08	5.34	0.00	5.34	21			0.013												926.39	925.85	930.39	6.01	Froude Number = 3.029
265.80	240.21	25.59	45 BEND		0.46		0.00	0.46	10	0.10	10.00	6.70	100	11.60	3.08	5.34	0.00	5.34	21			0.013												925.85	924.75	930.03	5.77	Froude Number = 3.029
240.21	235.21	5.00	COLLAR		0.46		0.00	0.46	10	0.19	10.00	6.70	100	11.60	3.08	5.34	0.00	5.34	24			0.013												924.75	924.61	930.14	6.01	Froude Number = 2.465
235.21	194.61	40.60	A-23b	0.42	0.88	1.00	0.42	0.88	10	0.05	10.34	6.62	100	11.47	5.82	10.09	0.00	10.09	24			0.013			923.82								924.61	923.51	930.17	6.14	Froude Number = 2.465
194.61	100.00	94.61	22.5 BEND		0.88		0.00	0.88	10	0.21	10.34	6.62	100	11.47	5.82	10.09	0.00	10.09	24			0.013	0.0020	923.72	923.54	3.21	3.21	0.16	0.16	0.20	0.03	0.10	923.82	923.51	920.98	930.55	6.73	
100.00																																	923.54					HGL STARTS AT LINE A-21A CONN.

PARTIAL FLOW

S.D. Line "A-26a"

Junction No. From Design Point	Junction No. To	Distance Between Junctions ft.	Drainage Area Increment Area No.	Drainage Area Increment Area Area ac.	Drainage Area Total Area ac.	Coeff of Runoff "C"	Increm "CA"	Total "CA"	Time of Concentration Inlet Time min.	Time of Concentration Flow Time in Sewer min.	Time of Concentration Total Time min.	5-Year Intesity I in./hr.	Design Freq yrs.	100-Year Intensity I in./hr.	Q5 Runoff Q c.f.s.	Q100 Runoff Q c.f.s.	Inlet Bypass c.f.s.	Total Flow In System Q c.f.s.	Conduit Size Pipe Dia. in.	Conduit Size Box Height ft.	Conduit Size Box Width ft.	n	Slope of Friction Grad Sf ft./ft.	Hydraulic Gradient Elevation Up Stream m.s.l.	Hydraulic Gradient Elevation Down Stream m.s.l.	Head Loss at Change in Section: Inflow Velocity V1 ft./sec.	Outflow Velocity V2 ft./sec.	Velocity Head VH2 ft.	Velocity Head VH1 ft.	Loss Coef K constant	K x VH1 ft.	Head Loss Hj ft.	Elev H.G. at Design Point m.s.l.	Invert Elev From ft.	Invert Elev To ft.	T/C Elev ft.	HGL BELOW OR (ABOVE) GRADE	Notes
1	2	3	4	5	6	7	8	9	10	11	12	13		14	15	16	17	18	19	19a	19b	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
575.39	460.89	114.50	A-26a	14.39	14.39	0.62	8.92	8.92	10	0.00	10.00	6.70	100	11.60	59.78	103.49	0.00	103.49		3	6	0.015	0.0034	924.43	924.04	0.00	5.75	0.51	0.00	1.25	0.00	0.51	924.94	921.35	920.54			
460.89	426.33	34.56	A-27a	1.69	16.08	1.00	1.69	10.61	10	0.33	10.33	6.62	100	11.47	70.25	121.69	-0.11	121.80		3	6	0.015	0.0047	923.71	923.55	5.75	6.77	0.71	0.51	0.75	0.38	0.33	924.04	920.54	920.29	926.60	2.56	
426.33	339.17	87.16	A-25A & A-25B	0.75	16.83	1.00	0.75	11.36	10	0.09	10.42	6.60	100	11.43	74.99	129.90	0.11	129.90		3	6	0.015	0.0053	923.28	922.82	6.77	7.22	0.81	0.71	0.75	0.53	0.28	923.55	920.29	919.67	927.00	3.45	
339.17	244.18	94.99	30 BEND		16.83		0.00	11.36	10	0.20	10.42	6.60	100	11.43	74.99	129.90	0.00	129.90		3	6	0.015	0.0053	922.59	922.08	7.22	7.22	0.81	0.81	0.28	0.23	0.23	922.82	919.67	919.00	928.59	5.77	
244.18	101.56	142.62	60 BEND		16.83		0.00	11.36	10	0.22	10.42	6.60	100	11.43	74.99	129.90	0.00	129.90		3	6	0.015	0.0053	921.74	920.98	7.22	7.22	0.81	0.81	0.43	0.35	0.35	922.08	919.00	917.98	930.52	8.44	
101.56																																	920.98					

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LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN MARSHALL
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F2644 – TxSurv Firm # 100170?

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	8/3/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE

SHEET **DA-11**

DRAINAGE CRITERIA

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S.D. Line "A-27a" to S.D. Line "A-26a"

Junction No. From Design Point	Junction No. To	Distance Between Junctions	Drainage Area Increment Area No.	Drainage Area Increment Area Area ac.	Drainage Area Total Area ac.	Coeff of Runoff "C"	Increm "CA"	Total "CA"	Time of Concentration Inlet Time min.	Time of Concentration Flow Time in Sewer min.	Time of Concentration Total Time min.	5-Year Intesity I in./hr.	Design Freq yrs.	100-Year Intensity I in./hr.	Q5 Runoff Q c.f.s.	Q100 Runoff Q c.f.s.	Inlet Bypass c.f.s.	Total Flow In System Q c.f.s.	Conduit Size Pipe Dia. in.	Conduit Size Box Height ft.	Conduit Size Box Width ft.	n	Slope of Friction Grad Sf ft./ft.	Hydraulic Gradient Elevation Up Stream m.s.l.	Hydraulic Gradient Down Stream m.s.l.	Head Loss at Change in Section Inflow Velocity V1 ft./sec.	Outflow Velocity V2 ft./sec.	Velocity Head VH2 ft.	Velocity Head VH1 ft.	Loss Coef K constant	K x VH1 ft.	Head Loss Hj ft.	Elev H.G. at Design Point m.s.l.	Invert Elev From ft.	Invert Elev To ft.	T/C Elev ft.	HGL BELOW OR (ABOVE) GRADE	Notes
1	2	3	4	5	6	7	8	9	10	11	12	13		14	15	16	17	18	19	19a	19b	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
311.67	300.42	11.25	A-27a	0.53	0.53	1.00	0.53	0.53	10	0.00	10.00	6.70	100	11.60	3.55	6.15	1.14	5.01	21			0.013												929.59	924.59	929.59	4.16	Froude Number = 4.329
300.42	285.43	14.99	45 BEND		0.53		0.00	0.53	10	0.09	10.00	6.70	100	11.60	3.55	6.15	0.00	5.01	21			0.013			925.20									924.59	923.25	928.96	3.64	Froude Number = 4.329
285.43	280.43	5.00	COLLAR		0.53		0.00	0.53	10	0.12	10.00	6.70	100	11.60	3.55	6.15	0.00	5.01	24			0.013	0.0005	925.10	925.10	2.08	1.59	0.04	0.07	0.10	0.01	0.10	925.20	923.25	923.19	928.56	3.36	
280.43	120.36	160.07	A-27b	0.52	1.05	1.00	0.52	1.05	10	0.05	10.26	6.64	100	11.50	6.97	12.07	1.08	9.85	24			0.013	0.0019	924.98	924.68	1.59	3.13	0.15	0.04	0.75	0.03	0.12	925.10	923.19	921.25	928.43	3.33	
120.36	109.34	11.02	A-28a	0.31	1.36	1.00	0.31	1.36	10	0.85	11.11	6.43	100	11.15	8.75	15.17	-1.14	14.09	24			0.013	0.0039	924.48	924.44	3.13	4.48	0.31	0.15	0.75	0.11	0.20	924.68	921.25	921.12	926.53	1.85	
109.34	100.00	9.34	A-28b	0.33	1.69	1.00	0.33	1.69	10	0.04	11.15	6.42	100	11.14	10.85	18.82	-1.19	18.93	24			0.013	0.0070	924.11	924.04	4.48	6.03	0.56	0.31	0.75	0.23	0.33	924.44	921.12	921.04	926.56	2.12	
100.00																																	924.04					HGL STARTS AT LINE A-26A CONN.

PARTIAL FLOW

S.D. "A" Laterals

Junction No. From Design Point	Junction No. To	Distance Between Junctions	Drainage Area Increment Area No.	Drainage Area Increment Area Area ac.	Drainage Area Total Area ac.	Coeff of Runoff "C"	Increm "CA"	Total "CA"	Time of Concentration Inlet Time min.	Time of Concentration Flow Time in Sewer min.	Time of Concentration Total Time min.	5-Year Intesity I in./hr.	Design Freq yrs.	100-Year Intensity I in./hr.	Q5 Runoff Q c.f.s.	Q100 Runoff Q c.f.s.	Inlet Bypass c.f.s.	Total Flow In System Q c.f.s.	Conduit Size Pipe Dia. in.	Conduit Size Box Height ft.	Conduit Size Box Width ft.	n	Slope of Friction Grad Sf ft./ft.	Hydraulic Gradient Elevation Up Stream m.s.l.	Hydraulic Gradient Down Stream m.s.l.	Head Loss at Change in Section Inflow Velocity V1 ft./sec.	Outflow Velocity V2 ft./sec.	Velocity Head VH2 ft.	Velocity Head VH1 ft.	Loss Coef K constant	K x VH1 ft.	Head Loss Hj ft.	Elev H.G. at Design Point m.s.l.	Invert Elev From ft.	Invert Elev To ft.	T/C Elev ft.	HGL BELOW OR (ABOVE) GRADE	Notes
1	2	3	4	5	6	7	8	9	10	11	12	13		14	15	16	17	18	19	19a	19b	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
S.D. LAT "A-1b"																																						
163.00	100.00	63.00	A-1b	0.52	0.52	1.00	0.52	0.52	10	0.00	10.00	6.70	100	11.60	3.48	6.03	1.33	4.70	21			0.013												924.02	922.50	928.02	3.61	Froude Number = 2.313
100.00																																	924.25					HGL STARTS AT TOP OF PIPE
S.D. LAT "A-2a"																																						
108.00	100.00	8.00	A-2a	0.55	0.55	1.00	0.55	0.55	10	0.00	10.00	6.70	100	11.60	3.69	6.38	-0.48	6.86	21			0.013												903.06	901.00	907.06	4.17	Froude Number = 8.401
100.00																																	902.75					HGL STARTS AT LINE A-1A CONN.
S.D. LAT "A-2b"																																						
163.00	100.00	63.00	A-2b	0.55	0.55	1.00	0.55	0.55	10	0.00	10.00	6.70	100	11.60	3.69	6.38	-0.55	6.93	21			0.013												903.06	901.00	907.06	4.06	Froude Number = 2.685
100.00																																	902.75					HGL STARTS AT TOP OF PIPE
S.D. LAT "A-3a"																																						
108.00	100.00	8.00	A-3a	0.70	0.70	1.00	0.70	0.70	10	0.00	10.00	6.70	100	11.60	4.69	8.12	0.27	7.85	21			0.013	0.0025	883.64	883.62		3.26	0.17	0.00	1.25	0.00	0.17	883.80	881.68	876.25	887.68	3.88	
100.00																																	883.62					HGL STARTS AT TOP OF PIPE
S.D. LAT "A-3b"																																						
163.00	100.00	63.00	A-3b	0.68	0.68	1.00	0.68	0.68	10	0.00	10.00	6.70	100	11.60	4.56	7.89	0.15	7.74	21			0.013	0.0024	883.77	883.62		3.22	0.16	0.00	1.25	0.00	0.16	883.93	881.68	876.25	887.68	3.75	
100.00																																	883.62					HGL STARTS AT TOP OF PIPE
S.D. LAT "A-4a"																																						
108.00	100.00	8.00	A-4a	0.42	0.42	1.00	0.42	0.42	10	0.00	10.00	6.70	100	11.60	2.81	4.87	-0.18	5.06	21			0.013	0.0010	875.47	875.46		2.10	0.07	0.00	1.25	0.00	0.10	875.57	873.94	872.00	878.94	3.37	
100.00																																	875.46					HGL STARTS AT LINE A-1A CONN.
S.D. LAT "A-4b"																																						
163.00	100.00	63.00	A-4b	0.41	0.41	1.00	0.41	0.41	10	0.00	10.00	6.70	100	11.60	2.75	4.76	-0.19	4.95	21			0.013	0.0010	875.52	875.46		2.06	0.07	0.00	1.25	0.00	0.10	875.62	873.94	872.00	878.94	3.32	
100.00																																	875.46					HGL STARTS AT LINE A-1A CONN.
S.D. LAT "A-5a"																																						
108.00	100.00	8.00	A-5a	0.56	0.56	1.00	0.56	0.56	10	0.00	10.00	6.70	100	11.60	3.75	6.50	0.91	5.59	21			0.013	0.0012	867.08	867.07		2.32	0.08	0.00	1.25	0.00	0.10	867.18	865.88	864.25	870.88	3.70	
100.00																																	867.07					HGL STARTS AT TOP OF PIPE
S.D. LAT "A-5b"																																						
163.00	100.00	63.00	A-5b	0.55	0.55	1.00	0.55	0.55	10	0.00	10.00	6.70	100	11.60	3.69	6.38	0.88	5.50	21			0.013	0.0012	867.14	867.07		2.29	0.08	0.00	1.25	0.00	0.10	867.24	865.88	864.25	870.88	3.64	
100.00																																	867.07					HGL STARTS AT TOP OF PIPE
S.D. LAT "A-6a"																																						
111.29	100.00	11.29	A-6a	0.42	0.42	1.00	0.42	0.42	10	0.00	10.00	6.70	100	11.60	2.81	4.87	-0.59	5.47	21			0.013	0.0012	860.92	860.91		2.27	0.08	0.00	1.25	0.00	0.10	861.02	860.22	858.32	864.22	3.20	
100.00																																	860.91					HGL STARTS AT LINE A-1A CONN.
S.D. LAT "A-6b"																																						
174.67	139.17	35.50	A-6b	0.41	0.41	1.00	0.41	0.41	10	0.00	10.00	6.70	100	11.60	2.75	4.76	-0.59	5.35	21			0.013	0.0011	860.66	860.62	0.00	2.22	0.08	0.00	1.25	0.00	0.10	860.76	860.26	859.24	864.26	3.50	
139.17	100.00	39.17	45 BEND		0.41		0.00	0.41	10	0.27	10.00	6.70	100	11.60	2.75	4.76	0.00	5.35	21			0.013	0.0011	860.52	860.48	2.22	2.22	0.08	0.08	0.35	0.03	0.10	860.62	859.24	858.12	864.91	4.29	
100.00																																	860.48					HGL STARTS AT LINE A-1A CONN.
S.D. LAT "A-7a"																																						
108.00	100.00	8.00	A-7a	0.31	0.31	1.00	0.31	0.31	10	0.00	10.00	6.70	100	11.60	2.08	3.60	-1.10	4.70	21			0.013	0.0009	858.66	858.65		1.95	0.06	0.00	1.25	0.00	0.10	858.76	857.94	856.12	861.94	3.18	
100.00																																	858.65					HGL STARTS AT LINE A-1A CONN.
S.D. LAT "A-7b"																																						
163.00	100.00	63.00	A-7b	0.31	0.31	1.00	0.31	0.31	10	0.00	10.00	6.70	100	11.60	2.08	3.60	-1.01	4.60	21			0.013	0.0008	858.70	858.65		1.91	0.06	0.00	1.25	0.00	0.10	858.80	857.94	856.12	861.94	3.14	
100.00																																	858.65					HGL STARTS AT LINE A-1A CONN.
S.D. LAT "A-8a"																																						
108.00	100.00	8.00	A-8a	0.31	0.31	1.00	0.31	0.31	10	0.00	10.00	6.70	100	11.60	2.08	3.60	-0.03	3.63	21			0.013	0.0005	857.85	857.84		1.51	0.04	0.00	1.25	0.00	0.10	857.95	856.37	854.63	860.37	2.42	
100.00																																	857.84					HGL STARTS AT LINE A-1A CONN.
S.D. LAT "A-8b"																																						
163.00	100.00	63.00	A-8b	0.31	0.31	1.00	0.31	0.31	10	0.00	10.00	6.70	100	11.60	2.08	3.60	-0.02	3.62	21			0.013	0.0005	857.87	857.84	0.00	1.50	0.04	0.00	1.25	0.00	0.10	857.97	856.37	854.63	860.37	2.40	
100.00																																	857.84					HGL STARTS AT LINE A-1A CONN.
S.D. LAT "A-9a"																																						
108.00	100.00	8.00	A-9a	0.31	0.31	1.00	0.31	0.31	10	0.00	10.00	6.70	100	11.60	2.08	3.60	0.00	3.60	21			0.013	0.0005	856.63	856.63		1.50	0.03	0.00	1.25	0.00	0.10	856.73	854.79	853.12	858.79	2.06	
100.00																																	856.63					HGL STARTS AT LINE A-1A CONN.
S.D. LAT "A-9b"																																						
163.00	100.00	63.00	A-9b	0.31	0.31	1.00	0.31	0.31	10	0.00	10.00	6.70	100	11.60	2.08	3.60	0.00	3.60	21			0.013	0.0005	856.66	856.63		1.50	0.03	0.00	1.25	0.00	0.10	856.76	854.79	853.12	858.79	2.03	
100.00																																	856.63					HGL STARTS AT LINE A-1A CONN.
S.D. LAT "A-12a"																																						
108.00	100.00	8.00	A-12a	0.33	0.33	1.00	0.33	0.33	10	0.00	10.00	6.70	100	11.60	2.21	3.83	0.00	3.83	21			0.013	0.0006	856.48	856.48		1.59	0.04	0.00	1.25	0.00	0.10	856.58	854.91	853.00	858.91	2.33	
100.00																																	856.48					HGL STARTS AT LINE A-10A CONN.
S.D. LAT "A-12b"																																						
163.00	100.00	63.00	A-12b	0.34	0.34	1.00	0.34	0.34	10	0.00	10.00	6.70	100	11.60	2.28	3.94	0.00	3.95	21			0.013	0.0006	856.52	856.48		1.64	0.04	0.00	1.25	0.00	0.10	856.62	854.91	853.00	858.91	2.29	
100.00																																	856.48					HGL STARTS AT LINE A-10A CONN.
S.D. LAT "A-13a"																																						
111.39	100.00	11.39	A-13a	0.33	0.33	1.00	0.33	0.33	10	0.00	10.00	6.70	100	11.60	2.21	3.83	0.00	3.83	21			0.013	0.0006	856.27	856.26		1.59	0.04	0.00	1.25	0.00	0.10	856.37	854.36	853.07	858.36	1.99	
100.00																																	856.26					HGL STARTS AT LINE A-10A CONN.
S.D. LAT "A-13b"																																						
174.67	139.17	35.50	A-13b	0.34	0.34	1.00	0.34	0.34	10	0.00	10.00	6.70	100	11.60	2.28	3.94	0.00	3.94	21			0.013	0.0006	856.28	856.26	0.00	1.64	0.04	0.00	1.25	0.00	0.10	856.38	854.36	853.70	858.36	1.98	
139.17	100.00	39.17	45 BEND		0.34		0.00	0.34	10	0.36	10.00	6.70	100	11.60	2.28	3.94	0.00	3.94	21			0.013	0.0006	856.16	856.14	1.64	1.64	0.04	0.04	0.35	0.01	0.10	856.26	853.70	852.97	858.44	2.18	
100.00																																	856.14					HGL STARTS AT LINE A-10A CONN.
S.D. LAT "A-14a"																																						
108.00	100.00	8.00	A-14a	0.31	0.31	1.00	0.31	0.31	10	0.00	10.00	6.70	100	11.60	2.08	3.60	0.00	3.60	21			0.013	0.0005	856.39	856.39		1.50	0.03	0.00	1.25	0.00	0.10	856.49	854.36	852.91	858.36	1.87	
100.00																																	856.39					HGL STARTS AT LINE A-1A CONN.
S.D. LAT "A-14b"																																						
163.00	100.00	63.00	A-14b	0.31	0.31	1.00	0.31	0.31	10	0.00	10.00	6.70	100	11.60	2.08	3.60	0.00	3.60	21			0.013	0.0005	856.42	856.39		1.50	0.03	0.00	1.25	0.00	0.10	856.52	854.36	852.91	858.36	1.84	
100.00																																	856.39					HGL STARTS AT LINE A-1A CONN.

PARTIAL FLOW

PARTIAL FLOW

PARTIAL FLOW

NO.	REVISION DATE
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CITY OF SUMMIT

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN MARSHALL INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 100177-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	8/3/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE

SHEET **DA-12**

DRAINAGE CRITERIA

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S.D. LAT "A-16b"																																	
174.39	138.89	35.50	A-16b	0.31	0.31	1.00	0.31	0.31	10	0.00	10.00	6.70	100	11.60	2.08	3.60	0.00	3.60	21			0.013										926.29	925.61	930.39	3.58	Froude Number = 2.060
138.89	100.00	38.89	45 BEND		0.31		0.00	0.31	10	0.40	10.00	6.70	100	11.60	2.08	3.60	0.00	3.60	21			0.013	0.0005	926.59	926.57	1.50	1.50	0.03	0.03	0.35	0.01	0.10	926.69	925.61	924.87	930.94	4.25	
100.00																																926.57				HGL STARTS AT TOP OF PIPE
S.D. LAT "A-17a"																																	
203.76	100.00	103.76	A-17a	5.58	5.58	0.52	2.90	2.90	10	0.00	10.00	6.70	100	11.60	19.44	33.66	0.00	33.66	36			0.013	0.0025	925.72	925.45		4.76	0.35	0.00	1.25	0.00	0.35	926.07	922.68	922.41	927.92	1.85	
100.00																																925.45				HGL STARTS AT LINE A-16A CONN.
S.D. LAT "A-18b"																																	
174.39	138.89	35.50	A-18b	0.26	0.26	1.00	0.26	0.26	10	0.00	10.00	6.70	100	11.60	1.74	3.02	0.00	3.02	21			0.013	0.0004	927.40	927.38	0.00	1.25	0.02	0.00	1.25	0.00	0.10	927.50	926.60	926.09	930.60	3.10	
138.89	100.00	38.89	45 BEND		0.26		0.00	0.26	10	0.47	10.00	6.70	100	11.60	1.74	3.02	0.00	3.02	21			0.013	0.0004	927.28	927.27	1.25	1.25	0.02	0.02	0.35	0.01	0.10	927.38	926.09	925.53	931.25	3.87	
100.00																																927.27				HGL STARTS AT TOP OF PIPE
S.D. LAT "A-19a"																																	
111.31	100.00	11.31	A-19a	0.24	0.24	1.00	0.24	0.24	10	0.00	10.00	6.70	100	11.60	1.61	2.78	0.00	2.78	21			0.013										925.37	922.39	929.37	4.00	Froude Number = 7.252
100.00																																925.26				HGL STARTS AT LINE A-18A CONN.
S.D. LAT "A-19b"																																	
169.63	122.63	47.00	A-19b	0.24	0.24	1.00	0.24	0.24	10	0.00	10.00	6.70	100	11.60	1.61	2.78	0.00	2.78	21			0.013										925.38	923.25	929.38	4.01	Froude Number = 3.130
122.63	100.00	22.63	45 BEND		0.24		0.00	0.24	10	0.68	10.00	6.70	100	11.60	1.61	2.78	0.00	2.78	21			0.013	0.0003	925.16	925.15	1.16	1.16	0.02	0.02	0.35	0.01	0.10	925.26	923.25	922.22	929.23	3.97	
100.00																																925.15				HGL STARTS AT LINE A-18A CONN.
S.D. LAT "A-20a"																																	
108.00	100.00	8.00	A-20a	0.30	0.30	1.00	0.30	0.30	10	0.00	10.00	6.70	100	11.60	2.01	3.48	0.00	3.48	21			0.013	0.0005	925.18	925.18		1.45	0.03	0.00	1.25	0.00	0.10	925.28	924.08	922.62	929.08	3.80	
100.00																																925.18				HGL STARTS AT LINE A-16A CONN.
S.D. LAT "A-20b"																																	
163.00	100.00	63.00	A-20b	0.30	0.30	1.00	0.30	0.30	10	0.00	10.00	6.70	100	11.60	2.01	3.48	0.00	3.48	21			0.013	0.0005	925.21	925.18		1.45	0.03	0.00	1.25	0.00	0.10	925.31	924.08	922.62	929.08	3.77	
100.00																																925.18				HGL STARTS AT LINE A-16A CONN.
S.D. LAT "A-23b"																																	
164.66	135.07	29.59	A-23b	0.42	0.42	1.00	0.42	0.42	10	0.00	10.00	6.70	100	11.60	2.81	4.87	0.00	4.87	21			0.013										926.51	924.74	930.51	3.89	Froude Number = 2.225
135.07																																926.49				
S.D. LAT "A-25a"																																	
108.14	100.00	8.14	A-25a	0.32	0.32	1.00	0.32	0.32	10	0.00	10.00	6.70	100	11.60	2.14	3.71	0.00	3.71	21			0.013	0.0005	923.56	923.55		1.54	0.04	0.00	1.25	0.00	0.10	923.66	922.39	920.92	927.39	3.73	
100.00																																923.55				HGL STARTS AT LINE A-26A CONN.
S.D. LAT "A-25b"																																	
155.28	100.00	55.28	A-25b	0.43	0.43	1.00	0.43	0.43	10	0.00	10.00	6.70	100	11.60	2.88	4.99	0.11	4.88	21			0.013	0.0009	923.61	923.55		2.03	0.06	0.00	1.25	0.00	0.10	923.71	922.34	920.92	927.34	3.63	
100.00																																923.55				HGL STARTS AT LINE A-26A CONN.
S.D. LAT "A-27b"																																	
175.05	139.56	35.49	A-27b	0.52	0.52	1.00	0.52	0.52	10	0.00	10.00	6.70	100	11.60	3.48	6.03	1.08	4.95	21			0.013										925.65	924.55	929.65	4.27	Froude Number = 2.584
139.56	100.00	39.56	45 BEND		0.52		0.00	0.52	10	0.29	10.00	6.70	100	11.60	3.48	6.03	0.00	4.95	21			0.013	0.0010	925.14	925.10	2.06	2.06	0.07	0.07	0.35	0.02	0.10	925.24	924.55	923.32	930.30	5.06	
100.00																																925.10				HGL STARTS AT LINE A-27A CONN.
S.D. LAT "A-28a"																																	
111.24	100.00	11.24	A-28a	0.31	0.31	1.00	0.31	0.31	10	0.00	10.00	6.70	100	11.60	2.08	3.60	-1.14	4.73	21			0.013	0.0009	924.69	924.68		1.97	0.06	0.00	1.25	0.00	0.10	924.79	923.00	921.17	927.03	2.24	
100.00																																924.68				HGL STARTS AT LINE A-27A CONN.
S.D. LAT "A-28b"																																	
167.01	130.87	36.14	A-28b	0.33	0.33	1.00	0.33	0.33	10	0.00	10.00	6.70	100	11.60	2.21	3.83	-1.19	5.02	21			0.013	0.0010	924.60	924.57	0.00	2.09	0.07	0.00	1.25	0.00	0.10	924.70	923.02	922.06	927.05	2.35	
130.87	100.00	30.87	45 BEND		0.33		0.00	0.33	10	0.29	10.00	6.70	100	11.60	2.21	3.83	0.00	5.02	21			0.013	0.0010	924.47	924.44	2.09	2.09	0.07	0.07	0.35	0.02	0.10	924.57	922.06	921.24	927.54	2.97	
100.00																																924.44				HGL STARTS AT LINE A-27A CONN.

PARTIAL FLOW

PARTIAL FLOW

PARTIAL FLOW

PARTIAL FLOW

PARTIAL FLOW

NO.	REVISION DATE
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CITY OF SUMMIT

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.

CIVIL ENGINEERS – PLANNERS – SURVEYORS

2405 Mustang Drive, Grapevine, Texas 76051

(817) 329 - 4373

TxEng Firm # F-2644 – TxSurv Firm # 100170

STATE OF TEXAS

BRENT A. CALDWELL

108515

LICENSED PROFESSIONAL ENGINEER

09/28/22

JOB NO. :	10745
DATE :	8/3/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE

SHEET **DA-13**

DRAINAGE CRITERIA

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S.D. Line "B-1a"

Junction No. From Design Point	Junction No. To	Distance Between Junctions ft.	Drainage Area Increment Area No.	Drainage Area Increment Area Area ac.	Drainage Area Total Area ac.	Coeff of Runoff "C"	Increm "CA"	Total "CA"	Time of Concentration Inlet Time min.	Time of Concentration Flow Time in Sewer min.	Time of Concentration Total Time min.	100-Year Intensity I in./hr.	Q100 Runoff Q c.f.s.	Inlet Bypass c.f.s.	Total Flow In System Q c.f.s.	Conduit Size Pipe Dia. in.	Conduit Size Box Height ft.	Conduit Size Box Width ft.	n	Slope of Friction Grad Sf ft./ft.	Hydraulic Gradient Elevation Up Stream m.s.l.	Hydraulic Gradient Down Stream m.s.l.	Head Loss at Change in Section Inflow Velocity V1 ft./sec.	Outflow Velocity V2 ft./sec.	Velocity Head VH2 ft.	Velocity Head VH1 ft.	Loss Coef K constant	K x VH1 ft.	Head Loss Hj ft.	Elev H.G. at Design Point m.s.l.	Invert Elev From ft.	Invert Elev To ft.	T/C Elev ft.	HGL BELOW OR (ABOVE) GRADE	Notes
1	2	3	4	5	6	7	8	9	10	11	12	14	16	17	18	19	19a	19b	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
1900.02	1892.02	8.00	B-1a	0.36	0.36	1.00	0.36	0.36	10	0.00	10.00	11.60	4.18	0.00	4.17	21			0.013												932.64	931.50	936.64		Froude Number = 6.201
1892.02	1614.83	277.19	B-1b	0.32	0.68	1.00	0.32	0.68	10	0.08	10.08	11.57	7.87	0.00	7.86	24			0.013												931.50	925.52	936.17		Froude Number = 2.203
1614.83	1595.36	19.47	B-2a	0.51	1.19	1.00	0.51	1.19	10	1.85	11.92	10.83	12.89	0.92	11.96	24			0.013												925.52	925.10	931.32		Froude Number = 2.124
1595.36	1300.97	294.39	B-2b	0.38	1.57	1.00	0.38	1.57	10	0.09	12.01	10.80	16.95	0.33	15.70	24			0.013												925.10	918.75	930.91		Froude Number = 2.124
1300.97	982.09	318.88	B-3a & B-3b	0.96	2.53	1.00	0.96	2.53	10	0.98	12.99	10.40	26.32	-1.09	26.17	27			0.013			916.85								918.75	912.82	924.60		Froude Number = 1.932
982.09	962.59	19.50	B-4a	0.44	2.97	1.00	0.44	2.97	10	0.81	13.80	10.08	29.94	0.17	29.61	27			0.013	0.0091	916.49	916.31	6.58	7.45	0.86	0.67	0.75	0.50	0.36	916.85	912.82	912.45	918.20	1.35	
962.59	855.82	106.77	B-4b	0.42	3.39	1.00	0.42	3.39	10	0.04	13.84	10.06	34.12	0.22	33.57	27			0.013	0.0117	915.85	914.60	7.45	8.44	1.11	0.86	0.75	0.65	0.46	916.31	912.45	910.50	917.90	1.59	
855.82	676.74	179.08	B-5a & B-5b1&2	6.04	9.43	1.00	6.04	9.43	10	0.21	14.05	9.98	94.11	-0.55	94.11	42			0.013	0.0087	913.39	911.82	8.44	9.78	1.49	1.11	0.25	0.28	1.21	914.60	910.50	906.68	916.65	2.05	
676.74	514.81	161.93	B-5c & B-5d1&2	2.36	11.79	1.00	2.36	11.79	10	0.31	14.36	9.86	116.22	0.00	116.22	42			0.013	0.0133	910.67	908.51	9.78	12.08	2.27	1.49	0.75	1.11	1.15	911.82	906.68	903.25	914.05	2.23	
514.81	346.80	168.01	B-6a, B-6b1&2 & B-5d3	2.30	14.09	1.00	2.30	14.09	10	0.22	14.58	9.77	137.63	0.00	137.63		4	5	0.015	0.0042	908.34	907.64	12.08	6.88	0.74	2.27	0.25	0.57	0.17	908.51	903.25	902.52	912.20	3.69	
346.80	144.07	202.73	B-7a & B-7b1&2&3	0.47	14.56	1.00	0.47	14.56	10	0.41	14.99	9.61	139.85	0.00	139.85		4	5	0.015	0.0043	907.43	906.55	6.88	6.99	0.76	0.74	0.75	0.55	0.21	907.64	902.52	901.61	910.75	3.11	
144.07	100.00	44.07	B-8a & B-8b1&2	0.56	15.12	1.00	0.56	15.12	10	0.48	15.47	9.49	143.45	0.00	143.45		4	5	0.015	0.0046	906.32	906.12	6.99	7.17	0.80	0.76	0.75	0.57	0.23	906.55	901.61	901.44	909.00	2.45	
100.00																														906.12					HGL STARTS AT LINE B-15A CONN.

PARTIAL FLOW

S.D. Line. "B-9a" to S.D. Line "B-1a"

Junction No. From Design Point	Junction No. To	Distance Between Junctions ft.	Drainage Area Increment Area No.	Drainage Area Increment Area Area ac.	Drainage Area Total Area ac.	Coeff of Runoff "C"	Increm "CA"	Total "CA"	Time of Concentration Inlet Time min.	Time of Concentration Flow Time in Sewer min.	Time of Concentration Total Time min.	100-Year Intensity I in./hr.	Q100 Runoff Q c.f.s.	Inlet Bypass c.f.s.	Total Flow In System Q c.f.s.	Conduit Size Pipe Dia. in.	Conduit Size Box Height ft.	Conduit Size Box Width ft.	n	Slope of Friction Grad Sf ft./ft.	Hydraulic Gradient Elevation Up Stream m.s.l.	Hydraulic Gradient Down Stream m.s.l.	Head Loss at Change in Section Inflow Velocity V1 ft./sec.	Outflow Velocity V2 ft./sec.	Velocity Head VH2 ft.	Velocity Head VH1 ft.	Loss Coef K constant	K x VH1 ft.	Head Loss Hj ft.	Elev H.G. at Design Point m.s.l.	Invert Elev From ft.	Invert Elev To ft.	T/C Elev ft.	HGL BELOW OR (ABOVE) GRADE	Notes
1	2	3	4	5	6	7	8	9	10	11	12	14	16	17	18	19	19a	19b	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
974.34	958.08	16.26	B-9a	0.32	0.32	1.00	0.32	0.32	10	0.00	10.00	11.60	3.71	0.00	3.71	21			0.013	0.0005	910.63	910.62	0.00	1.54	0.04	0.00	1.25	0.00	0.10	910.73			915.02	4.29	Future For Reference Only
958.08	951.58	6.50	45 BEND		0.32		0.00	0.32	10	0.18	10.18	11.53	3.69	0.00	3.69	21			0.013	0.0005	910.52	910.52	1.54	1.53	0.04	0.04	0.35	0.01	0.10	910.62			914.69	4.07	Future For Reference Only
951.58	946.58	5.00	COLLAR		0.32		0.00	0.32	10	0.07	10.18	11.53	3.69	0.00	3.69	24			0.013	0.0003	910.42	910.42	1.53	1.17	0.02	0.04	0.10	0.00	0.10	910.52			914.97	4.45	Future For Reference Only
946.58	757.29	189.29	B-9b	0.33	0.65	1.00	0.33	0.65	10	0.07	10.32	11.47	7.46	0.00	7.46	24			0.013	0.0011	910.32	910.11	1.17	2.37	0.09	0.02	0.75	0.02	0.10	910.42			914.96	4.54	Future For Reference Only
757.29	752.29	5.00	COLLAR		0.65		0.00	0.65	10	1.33	10.32	11.47	7.46	0.00	7.46	36			0.013	0.0001	910.01	910.01	2.37	1.05	0.02	0.09	0.10	0.01	0.10	910.11			913.19	3.08	Future For Reference Only
752.29	743.79	8.50	S.D. LAT. B-9c	2.27	2.92	1.00	2.27	2.92	10	0.08	11.73	10.91	31.86	0.00	31.86	36			0.013	0.0023	909.71	909.69	1.05	4.51	0.32	0.02	0.75	0.01	0.30	910.01			913.19	3.18	Future For Reference Only
743.79	704.77	39.02	B-10a	0.28	3.20	1.00	0.28	3.20	10	0.03	11.76	10.90	34.87	0.00	34.87	36			0.013	0.0027	909.55	909.44	4.51	4.93	0.38	0.32	0.75	0.24	0.14	909.69			913.18	3.49	Future For Reference Only
704.77	638.62	66.15	45 BEND		3.20		0.00	3.20	10	0.13	11.76	10.90	34.87	0.00	34.87	36			0.013	0.0027	909.31	909.13	4.93	4.93	0.38	0.38	0.35	0.13	0.13	909.44			912.93	3.49	Future For Reference Only
638.62	626.63	11.99	B-12a	0.32	3.52	1.00	0.32	3.52	10	0.22	12.11	10.76	37.86	0.00	37.86	36			0.013	0.0032	908.97	908.93	4.93	5.36	0.45	0.38	0.75	0.28	0.16	909.13			912.32	3.19	Future For Reference Only
626.63	600.33	26.30	45 BEND		3.52		0.00	3.52	10	0.04	12.11	10.76	37.86	0.00	37.86	36			0.013	0.0032	908.77	908.69	5.36	5.36	0.45	0.45	0.35	0.16	0.16	908.93			912.39	3.46	Future For Reference Only
600.33	440.79	159.54	S.D. LAT. B-11a	0.90	4.42	1.00	0.90	4.42	10	0.08	12.23	10.71	47.33	0.01	47.32	42			0.013	0.0022	908.42	908.07	5.36	4.92	0.38	0.45	0.25	0.11	0.26	908.69			912.90	4.21	Future For Reference Only
440.79	419.78	21.01	B-13a	0.30	4.72	1.00	0.30	4.72	10	0.54	12.77	10.49	49.52	0.00	49.51	42			0.013	0.0024	907.94	907.89	4.92	5.15	0.41	0.38	0.75	0.28	0.13	908.07			911.16	3.09	Future For Reference Only
419.78	241.97	177.81	B-13b	0.32	5.04	1.00	0.32	5.04	10	0.07	12.84	10.46	52.74	-0.01	52.74	42			0.013	0.0027	907.73	907.24	5.15	5.48	0.47	0.41	0.75	0.31	0.16	907.89		901.75	911.05	3.16	
241.97	128.47	113.50	B-14a & B-14b	0.55	5.59	1.00	0.55	5.59	10	0.54	13.38	10.25	57.29	0.00	57.29	42			0.013	0.0032	906.81	906.44	5.48	5.95	0.55	0.47	0.25	0.12	0.43	907.24	901.75	901.31	909.26	2.02	
128.47	100.00	28.47	B-16a & B-16b	0.46	6.05	1.00	0.46	6.05	10	0.32	13.70	10.12	61.23	0.00	61.23	42			0.013	0.0037	906.23	906.12	5.95	6.36	0.63	0.55	0.75	0.41	0.22	906.44	901.31	901.22	908.54	2.10	
100.00																														906.12					HGL STARTS AT LINE B-15A CONN.

S.D. LINE "B-15a"

Junction No. From Design Point	Junction No. To	Distance Between Junctions ft.	Drainage Area Increment Area No.	Drainage Area Increment Area Area ac.	Drainage Area Total Area ac.	Coeff of Runoff "C"	Increm "CA"	Total "CA"	Time of Concentration Inlet Time min.	Time of Concentration Flow Time in Sewer min.	Time of Concentration Total Time min.	100-Year Intensity I in./hr.	Q100 Runoff Q c.f.s.	Inlet Bypass c.f.s.	Total Flow In System Q c.f.s.	Conduit Size Pipe Dia. in.	Conduit Size Box Height ft.	Conduit Size Box Width ft.	n	Slope of Friction Grad Sf ft./ft.	Hydraulic Gradient Elevation Up Stream m.s.l.	Hydraulic Gradient Down Stream m.s.l.	Head Loss at Change in Section Inflow Velocity V1 ft./sec.	Outflow Velocity V2 ft./sec.	Velocity Head VH2 ft.	Velocity Head VH1 ft.	Loss Coef K constant	K x VH1 ft.	Head Loss Hj ft.	Elev H.G. at Design Point m.s.l.	Invert Elev From ft.	Invert Elev To ft.	T/C Elev ft.	HGL BELOW OR (ABOVE) GRADE	Notes
1	2	3	4	5	6	7	8	9	10	11	12	14	16	17	18	19	19a	19b	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
763.91	676.41	87.50	B-15a	8.27	8.27	1.00	8.27	8.27	10	0.00	10.00	11.60	95.93	0.00	95.93		4	4	0.015	0.0037	906.44	906.12	0.00	6.00	0.56	0.00	1.25	0.00	0.56	907.00	902.00	901.44	908.64	1.64	
676.41	609.00	67.41	B-1 to B-16	21.17	29.44	1.00	21.17	29.44	10	0.24	15.47	9.49	279.30	0.00	279.30		4	8	0.015	0.0053	905.36	905.00	6.00	8.73	1.18	0.56	0.75	0.42	0.76	906.12	901.44	901.00	908.64	2.52	
609.00																														905.00					HGL STARTS AT TOP OF PIPE

NO.	REVISION DATE
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LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 100170-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	8/3/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	DA-14

DRAINAGE CRITERIA

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S.D. "B" Laterals

Junction No. From Design Point	Junction No. To	Distance Between Junctions ft.	Drainage Area: Increment Area No.	Drainage Area: Increment Area Area ac.	Drainage Area: Total Area ac.	Coeff of Runoff "C"	Increm "CA"	Total "CA"	Time of Concentration: Inlet Time min.	Time of Concentration: Flow Time in Sewer min.	Time of Concentration: Total Time min.	100-Year Intensity I in./hr.	Q100 Runoff Q c.f.s.	Inlet Bypass c.f.s.	Total Flow In System Q c.f.s.	Conduit Size: Pipe Dia. in.	Conduit Size: Box Height ft.	Conduit Size: Box Width ft.	n	Slope of Friction Grad Sf ft./ft.	Hydraulic Gradient: Elevation Up Stream m.s.l.	Hydraulic Gradient: Down Stream m.s.l.	Head Loss at Change in Section: Inflow Velocity V1 ft./sec.	Outflow Velocity V2 ft./sec.	Velocity Head VH2 ft.	Velocity Head VH1 ft.	Loss Coef K constant	K x VH1 ft.	Head Loss Hj ft.	Elev H.G. at Design Point m.s.l.	Invert Elev From ft.	Invert Elev To ft.	T/C Elev ft.	HGL BELOW OR (ABOVE) GRADE	Notes
1	2	3	4	5	6	7	8	9	10	11	12	14	16	17	18	19	19a	19b	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
S.D. LAT "B-1b"																																			
163.00	100.00	63.00	B-1b	0.32	0.32	1.00	0.32	0.32	10	0.00	10.00	11.60	3.71	0.00	3.71	21			0.013	0.0005	933.28	933.25		1.54	0.04	0.00	1.25	0.00	0.10	933.38			936.64	3.26	
100.00																														933.25					HGL STARTS AT TOP OF PIPE
S.D. LAT "B-2a"																																			
111.31	100.00	11.31	B-2a	0.51	0.51	1.00	0.51	0.51	10	0.00	10.00	11.60	5.92	0.92	5.00	21			0.013			927.75									927.91	926.00	931.91	4.05	Froude Number = 5.906
100.00																														927.75					HGL STARTS AT TOP OF PIPE
S.D. LAT "B-2b"																																			
174.39	138.89	35.50	B-2b	0.38	0.38	1.00	0.38	0.38	10	0.00	10.00	11.60	4.41	0.33	4.08	21			0.013			927.48									927.97	926.66	931.97	4.37	Froude Number = 2.577
138.89	100.00	38.89	45 BEND		0.38		0.00	0.38	10	0.35	10.00	11.60	4.41	0.00	4.08	21			0.013	0.0007	927.38	927.35	1.70	1.70	0.04	0.04	0.35	0.02	0.10	927.48	926.66	925.23	932.61	5.13	
100.00																														927.35					HGL STARTS AT TOP OF PIPE
S.D. LAT "B-3a"																																			
108.00	100.00	8.00	B-3a	0.52	0.52	1.00	0.52	0.52	10	0.00	10.00	11.60	6.03	-0.77	6.80	21			0.013			921.25									921.06	918.75	925.06	3.67	Froude Number = 8.897
100.00																														921.25					HGL STARTS AT TOP OF PIPE
S.D. LAT "B-3b"																																			
163.00	100.00	63.00	B-3b	0.44	0.44	1.00	0.44	0.44	10	0.00	10.00	11.60	5.10	-0.33	5.43	21			0.013			921.25									921.06	918.75	925.06	3.64	Froude Number = 2.853
100.00																														921.25					HGL STARTS AT TOP OF PIPE
S.D. LAT "B-4a"																																			
111.31	100.00	11.31	B-4a	0.44	0.44	1.00	0.44	0.44	10	0.00	10.00	11.60	5.10	0.17	4.93	21			0.013	0.0010	916.86	916.85		2.05	0.07	0.00	1.25	0.00	0.10	916.96	914.66	913.07	918.66	1.70	
100.00																														916.85					HGL STARTS AT TOP OF PIPE
S.D. LAT "B-4b"																																			
174.39	138.89	35.50	B-4b	0.42	0.42	1.00	0.42	0.42	10	0.00	10.00	11.60	4.87	0.22	4.65	21			0.013	0.0009	916.48	916.45	0.00	1.94	0.06	0.00	1.25	0.00	0.10	916.58	914.69	913.74	918.69	2.11	
138.89	100.00	38.89	45 BEND		0.42		0.00	0.42	10	0.31	10.00	11.60	4.87	0.00	4.65	21			0.013	0.0009	916.35	916.31	1.94	1.94	0.06	0.06	0.35	0.02	0.10	916.45	913.74	912.70	919.34	2.89	
100.00																														916.31					HGL STARTS AT TOP OF PIPE
S.D. LAT "B-5a"																																			
108.00	100.00	8.00	B-5a	0.19	0.19	1.00	0.19	0.19	10	0.00	10.00	11.60	2.20	-0.33	2.53	21			0.013	0.0003	914.60	914.60		1.05	0.02	0.00	1.25	0.00	0.10	914.70	912.12	910.50	917.12	2.42	
100.00																														914.60					HGL STARTS AT TOP OF PIPE
S.D. LAT "B-5b"																																			
187.50	163.00	24.50	B-5b2	5.66	5.66	1.00	5.66	5.66	10	0.00	10.00	11.60	65.66	0.00	65.66	42			0.013	0.0043	915.09	914.98	0.00	6.82	0.72	0.00	1.25	0.00	0.72	915.81	911.20	911.12	918.00	2.19	
163.00	100.00	63.00	B-5b1	0.19	5.85	1.00	0.19	5.85	10	0.06	10.06	11.58	67.72	-0.22	67.94	42			0.013	0.0046	914.88	914.60	6.82	7.06	0.77	0.72	1.25	0.90	0.10	914.98	911.12	910.50	917.16	2.18	
100.00																														914.60					HGL STARTS AT TOP OF PIPE
S.D. LAT "B-5c"																																			
108.00	100.00	8.00	B-5c	0.23	0.23	1.00	0.23	0.23	10	0.00	10.00	11.60	2.67	0.00	2.67	21			0.013	0.0003	911.82	911.82		1.11	0.02	0.00	1.25	0.00	0.10	911.92	909.52	907.56	914.52	2.60	
100.00																														911.82					HGL STARTS AT LINE B-1A CONN.
S.D. LAT "B-5d3"																																			
177.78	100.00	77.78	B-5d3	0.13	0.13	1.00	0.13	0.13	10	0.00	10.00	11.60	1.51	0.00	1.51	21			0.013			908.99									909.37	906.67	913.37	4.28	Froude Number = 2.841
100.00																														908.99					HGL STARTS AT LINE B-1A CONN.
S.D. LAT "B-5d"																																			
187.50	163.00	24.50	B-5d2	1.90	1.90	1.00	1.90	1.90	10	0.00	10.00	11.60	22.04	0.00	22.04	27			0.013	0.0051	912.77	912.65	0.00	5.54	0.48	0.00	1.25	0.00	0.48	913.25	909.63	909.52	914.72	1.47	
163.00	100.00	63.00	B-5d1	0.23	2.13	1.00	0.23	2.13	10	0.07	10.07	11.57	24.65	0.00	24.65	27			0.013	0.0063	912.22	911.82	5.54	6.20	0.60	0.48	0.35	0.17	0.43	912.65	909.52	907.43	914.52	1.87	
100.00																														911.82					HGL STARTS AT TOP OF PIPE
S.D. LAT "B-6a"																																			
108.00	100.00	8.00	B-6a	0.23	0.23	1.00	0.23	0.23	10	0.00	10.00	11.60	2.67	0.00	2.67	21			0.013	0.0003	908.51	908.51		1.11	0.02	0.00	1.25	0.00	0.10	908.61	906.67	904.38	912.67	4.06	
100.00																														908.51					HGL STARTS AT LINE B-1A CONN.
S.D. LAT "B-6b"																																			
187.50	163.00	24.50	B-6b2	1.84	1.84	1.00	1.84	1.84	10	0.00	10.00	11.60	21.34	0.00	21.34	27			0.013	0.0047	909.10	908.99	0.00	5.37	0.45	0.00	1.25	0.00	0.45	909.55	906.75	906.67	912.99	3.44	
163.00	100.00	63.00	B-6b1 & B-5D3	0.23	2.07	1.00	0.23	2.07	10	0.08	10.08	11.57	23.95	0.00	23.95	27			0.013	0.0060	908.89	908.51	5.37	6.02	0.56	0.45	1.25	0.56	0.10	908.99	906.67	904.12	912.67	3.68	
100.00																														908.51					HGL STARTS AT LINE B-1A CONN.
S.D. LAT "B-7a"																																			
108.00	100.00	8.00	B-7a	0.23	0.23	1.00	0.23	0.23	10	0.00	10.00	11.60	2.67	0.00	2.67	21			0.013	0.0003	907.64	907.64		1.11	0.02	0.00	1.25	0.00	0.10	907.74	905.22	903.64	911.22	3.48	
100.00																														907.64					HGL STARTS AT LINE B-1A CONN.
S.D. LAT "B-7b"																																			
271.52	218.52	53.00	B-7b3	0.08	0.08	1.00	0.08	0.08	10	0.00	10.00	11.60	0.93	0.00	0.93	21			0.013			907.86									908.16	906.74	912.16	4.20	Froude Number = 2.459
218.52	163.00	55.52	B-7b2	0.08	0.16	1.00	0.08	0.16	10	2.29	12.29	10.68	1.71	0.00	1.71	21			0.013	0.0001	907.76	907.75	0.39	0.71	0.01	0.00	1.25	0.00	0.10	907.86	906.74	905.22	911.75	3.89	
163.00	100.00	63.00	B-7b1	0.08	0.24	1.00	0.08	0.24	10	1.30	13.59	10.16	2.44	0.00	2.44	21			0.013	0.0002	907.65	907.64	0.71	1.01	0.02	0.01	1.25	0.01	0.10	907.75	905.22	903.64	911.22	3.47	
100.00																														907.64					
S.D. LAT "B-8a"																																			
108.00	100.00	8.00	B-8a	0.28	0.28	1.00	0.28	0.28	10	0.00	10.00	11.60	3.25	0.00	3.25	21			0.013	0.0004	906.55	906.55		1.35	0.03	0.00	1.25	0.00	0.10	906.65	904.47	902.74	909.47	2.82	
100.00																														906.55					HGL STARTS AT LINE B-1A CONN.
S.D. LAT "B-8b"																																			
305.74	163.00	142.74	B-8b2	0.09	0.09	1.00	0.09	0.09	10	0.00	10.00	11.60	1.04	0.00	1.04	21			0.013			906.67									906.77	906.67	904.47	910.67	3.90	Froude Number = 1.804
163.00	100.00	63.00	B-8b1	0.19	0.28	1.00	0.19	0.28	10	5.48	15.48	9.48	2.66	0.00	2.66	21			0.013	0.0003	906.57	906.55	0.43	1.10	0.02	0.00	1.25	0.00	0.10	906.67	904.47	902.74	909.47	2.80	
100.00																														906.55					HGL STARTS AT LINE B-1A CONN.
S.D. LAT "B-14a"																																			
108.00	100.00	8.00	B-14a	0.28	0.28	1.00	0.28	0.28	10	0.00	10.00	11.60	3.25	0.00	3.25	21			0.013	0.0004	907.25	907.24		1.35	0.03	0.00	1.25	0.00	0.10	907.35	904.73	902.62	909.73	2.38	
100.00																														907.24					HGL STARTS AT LINE B-9A CONN.
S.D. LAT "B-14b"																																			
163.00	100.00	63.00	B-14b	0.27	0.27	1.00	0.27	0.27	10	0.00	10.00	11.60	3.13	0.00	3.13	21			0.013	0.0004	907.27	907.24	0.00	1.30	0.03	0.00	1.25	0.00	0.10	907.37	904.73	902.62	909.73	2.36	
100.00																														907.24					HGL STARTS AT LINE B-9A CONN.
S.D. LAT "B-16a"																																			
108.00	100.00	8.00	B-16a	0.23	0.23	1.00	0.23	0.23	10	0.00	10.00	11.60	2.67	0.00	2.67	21			0.013	0.0003	906.44	906.44		1.11	0.02	0.00	1.25	0.00	0.10	906.54	904.01	902.19	909.01	2.47	
100.00																														906.44					HGL STARTS AT LINE B-9A CONN.
S.D. LAT "B-16b"																																			
163.00	100.00	63.00	B-16b	0.23	0.23	1.00	0.23	0.23	10	0.00	10.00	11.60	2.67	0.00	2.67	21			0.013	0.0003	906.46	906.44	0.00	1.11	0.02	0.00	1.25	0.00	0.10	906.56	904.01	902.19	909.01	2.45	
100.00																														906.44					HGL STARTS AT LINE B-9A CONN.

PARTIAL FLOW

NO.	REVISION DATE
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CHRISTOPHER SUMMIT

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 100217-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	8/3/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	DA-15

DRAINAGE CRITERIA

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Table 1 - Summary of Culvert Flows at Crossing: Culvert A

Headwater Elevation (ft)	Total Discharge (cfs)	Culvert A Discharge (cfs)	Roadway Discharge (cfs)	Iterations
852.25	0.00	0.00	0.00	1
853.18	136.97	136.97	0.00	1
853.73	273.94	273.94	0.00	1
854.19	410.91	410.91	0.00	1
854.58	547.88	547.88	0.00	1
854.95	684.85	684.85	0.00	1
855.29	821.82	821.82	0.00	1
855.61	958.79	958.79	0.00	1
855.93	1095.76	1095.76	0.00	1
856.24	1232.73	1232.73	0.00	1
856.55	1369.70	1369.70	0.00	1
859.65	2478.03	2478.03	0.00	Overtopping

Table 2 - Culvert Summary Table: Culvert A

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
0.00	0.00	852.25	0.000	0.000	0-NF	0.000	0.000	0.000	0.000	0.000	0.000
136.97	136.97	853.18	0.930	0.0*	1-JS1t	0.424	0.545	0.736	0.736	3.100	2.418
273.94	273.94	853.73	1.477	0.150	1-S2n	0.652	0.865	0.675	1.111	6.762	3.143
410.91	410.91	854.19	1.935	0.499	1-S2n	0.842	1.134	0.874	1.412	7.835	3.652
547.88	547.88	854.58	2.333	0.828	1-S2n	1.011	1.373	1.054	1.673	8.666	4.057
684.85	684.85	854.95	2.697	1.149	1-S2n	1.166	1.593	1.221	1.908	9.346	4.398
821.82	821.82	855.29	3.037	1.471	1-S2n	1.312	1.799	1.389	2.123	9.861	4.694
958.79	958.79	855.61	3.362	1.796	1-S2n	1.451	1.994	1.540	2.323	10.380	4.956
1095.76	1095.76	855.93	3.678	2.129	1-S2n	1.583	2.180	1.686	2.510	10.830	5.194
1232.73	1232.73	856.24	3.990	2.471	1-S2n	1.711	2.358	1.834	2.688	11.202	5.411
1369.70	1369.70	856.55	4.305	2.824	5-S2n	1.834	2.529	1.973	2.857	11.571	5.612

Water Surface Profile Plot for Culvert: Culvert A

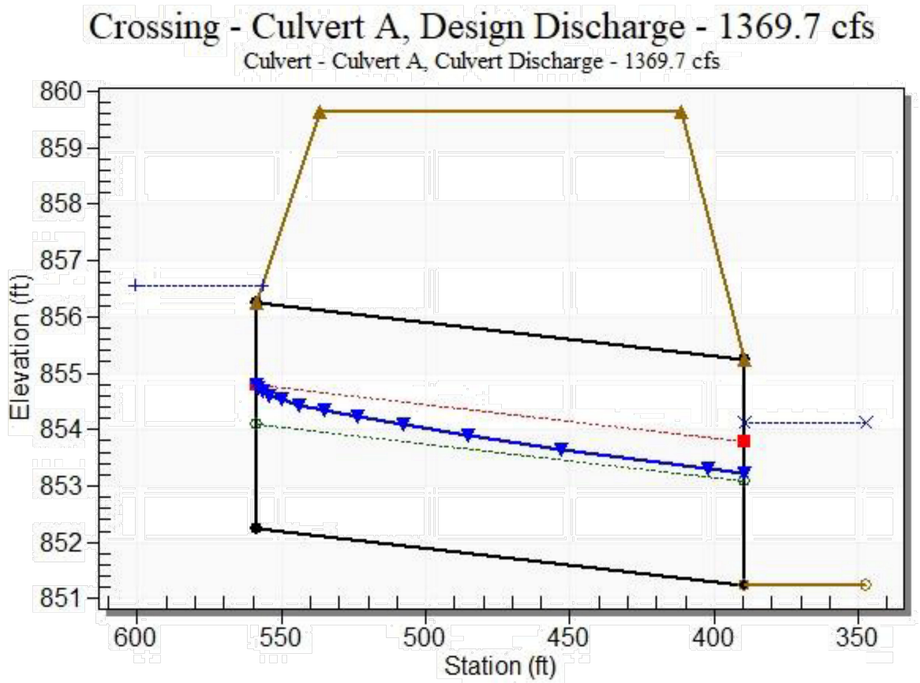

Table 3 - Downstream Channel Rating Curve (Crossing: Culvert A)

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
0.00	851.25	0.00	0.00	0.00	0.00
136.97	851.99	0.74	2.42	0.20	0.51
273.94	852.36	1.11	3.14	0.30	0.54
410.91	852.66	1.41	3.65	0.38	0.56
547.88	852.92	1.67	4.06	0.45	0.58
684.85	853.16	1.91	4.40	0.51	0.59
821.82	853.37	2.12	4.69	0.57	0.60
958.79	853.57	2.32	4.96	0.62	0.60
1095.76	853.76	2.51	5.19	0.67	0.61
1232.73	853.94	2.69	5.41	0.72	0.62
1369.70	854.11	2.86	5.61	0.77	0.62

NO.	REVISION DATE
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LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN & MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 100170

STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	8/3/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	DA-16

DRAINAGE CRITERIA

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Table 1 - Summary of Culvert Flows at Crossing: S.D. LINE A-21A

Headwater Elevation (ft)	Total Discharge (cfs)	S.D. LINE A-21A Discharge (cfs)	Roadway Discharge (cfs)	Iterations
922.05	0.00	0.00	0.00	1
923.17	12.20	12.20	0.00	1
923.83	24.41	24.41	0.00	1
924.38	36.61	36.61	0.00	1
924.86	48.82	48.82	0.00	1
925.30	61.02	61.02	0.00	1
925.72	73.22	73.22	0.00	1
926.14	85.43	85.43	0.00	1
926.56	97.63	97.63	0.00	1
927.01	109.84	109.84	0.00	1
927.48	122.04	122.04	0.00	1
929.40	164.47	164.47	0.00	Overtopping

Table 2 - Culvert Summary Table: S.D. LINE A-21A

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
0.00	0.00	922.05	0.000	0.000	0-NF	0.000	0.000	0.000	0.000	0.000	0.000
12.20	12.20	923.17	1.122	0.0*	1-S2n	0.435	0.661	0.435	0.301	7.014	2.004
24.41	24.41	923.83	1.781	0.0*	1-S2n	0.687	1.050	0.687	0.454	8.878	2.584
36.61	36.61	924.38	2.325	0.0*	1-S2n	0.905	1.375	0.905	0.575	10.109	2.988
48.82	48.82	924.86	2.806	0.0*	1-S2n	1.106	1.666	1.156	0.680	10.555	3.304
61.02	61.02	925.30	3.249	0.0*	1-S2n	1.295	1.933	1.295	0.774	11.781	3.569
73.22	73.22	925.72	3.673	0.0*	1-S2n	1.477	2.183	1.477	0.860	12.398	3.797
85.43	85.43	926.14	4.090	0.0*	5-S2n	1.653	2.420	1.653	0.939	12.924	3.998
97.63	97.63	926.56	4.515	0.293	5-S2n	1.824	2.645	1.824	1.013	13.382	4.180
109.84	109.84	927.01	4.957	0.966	5-S2n	1.992	2.861	1.992	1.083	13.785	4.345
122.04	122.04	927.48	5.425	2.150	5-S2n	2.157	3.069	2.238	1.150	13.632	4.496

Water Surface Profile Plot for Culvert: S.D. LINE A-21A

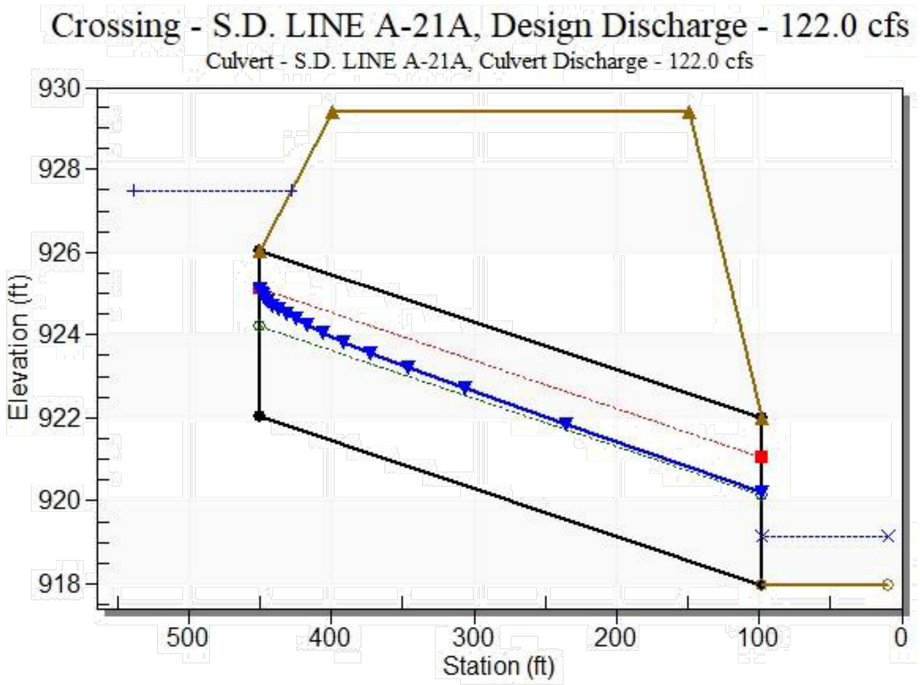

Table 3 - Downstream Channel Rating Curve (Crossing: S.D. LINE A-21A)

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
0.00	917.98	0.00	0.00	0.00	0.00
12.20	918.28	0.30	2.00	0.19	0.66
24.41	918.43	0.45	2.58	0.28	0.70
36.61	918.56	0.58	2.99	0.36	0.73
48.82	918.66	0.68	3.30	0.42	0.75
61.02	918.75	0.77	3.57	0.48	0.76
73.22	918.84	0.86	3.80	0.54	0.78
85.43	918.92	0.94	4.00	0.59	0.78
97.63	918.99	1.01	4.18	0.63	0.79
109.84	919.06	1.08	4.34	0.68	0.80
122.04	919.13	1.15	4.50	0.72	0.81

NO.	REVISION DATE
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CUSTOM BY SUMMIT

LAKEWOOD DRIVE
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STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	8/3/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	DA-17

DRAINAGE CRITERIA

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Table 1 - Summary of Culvert Flows at Crossing: S.D. LINE A-26A

Headwater Elevation (ft)	Total Discharge (cfs)	S.D. LINE A-26A Discharge (cfs)	Roadway Discharge (cfs)	Iterations
921.35	0.00	0.00	0.00	1
922.25	13.11	13.11	0.00	1
922.78	26.23	26.23	0.00	1
923.22	39.34	39.34	0.00	1
923.60	52.46	52.46	0.00	1
923.96	65.57	65.57	0.00	1
924.30	78.68	78.68	0.00	1
924.65	91.80	91.80	0.00	1
925.01	104.91	104.91	0.00	1
925.40	118.03	118.03	0.00	1
925.81	131.14	131.14	0.00	1
927.25	169.51	169.51	0.00	Overtopping

Table 2 - Culvert Summary Table: S.D. LINE A-26A

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
0.00	0.00	921.35	0.000	0.000	0-NF	0.000	0.000	0.000	0.000	0.000	0.000
13.11	13.11	922.25	0.903	0.0*	1-S2n	0.401	0.529	0.401	0.315	5.448	2.058
26.23	26.23	922.78	1.433	0.0*	1-S2n	0.625	0.840	0.625	0.473	6.995	2.652
39.34	39.34	923.22	1.866	0.0*	1-S2n	0.814	1.101	0.814	0.600	8.058	3.065
52.46	52.46	923.60	2.250	0.0*	1-S2n	0.985	1.334	0.985	0.709	8.878	3.388
65.57	65.57	923.96	2.608	0.0*	1-S2n	1.144	1.548	1.144	0.807	9.552	3.657
78.68	78.68	924.30	2.955	0.0*	1-S2n	1.295	1.748	1.295	0.896	10.126	3.890
91.80	91.80	924.65	3.303	0.0*	5-S2n	1.440	1.937	1.440	0.978	10.626	4.095
104.91	104.91	925.01	3.665	0.591	5-S2n	1.580	2.118	1.580	1.056	11.068	4.280
118.03	118.03	925.40	4.049	1.609	5-S2n	1.716	2.291	1.787	1.128	11.006	4.448
131.14	131.14	925.81	4.463	2.239	5-S2n	1.849	2.457	1.849	1.198	11.823	4.602

Water Surface Profile Plot for Culvert: S.D. LINE A-26A

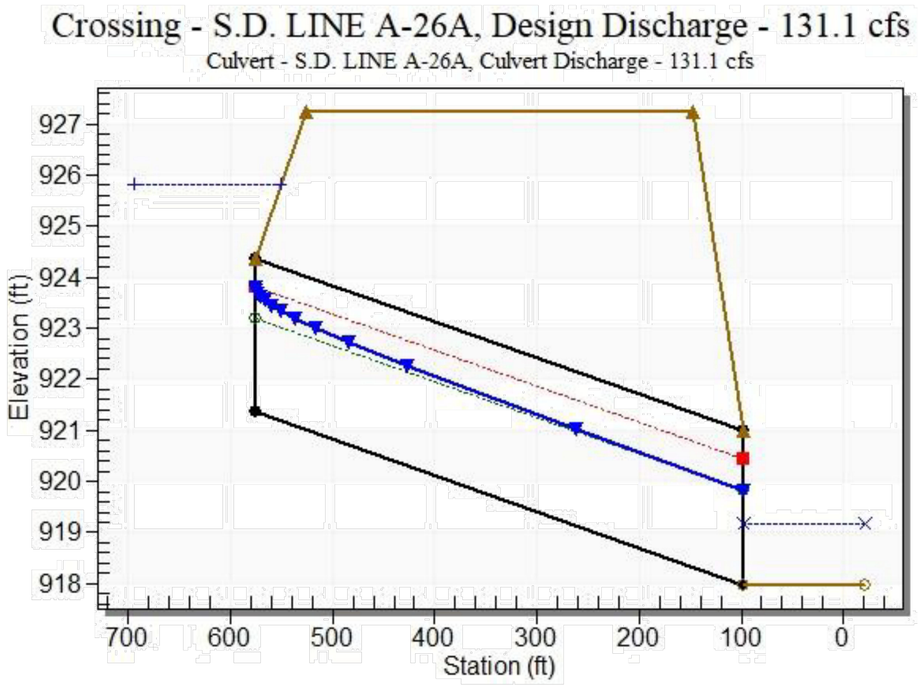

Table 3 - Downstream Channel Rating Curve (Crossing: S.D. LINE A-26A)

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
0.00	917.98	0.00	0.00	0.00	0.00
13.11	918.29	0.31	2.06	0.20	0.67
26.23	918.45	0.47	2.65	0.30	0.71
39.34	918.58	0.60	3.06	0.37	0.74
52.46	918.69	0.71	3.39	0.44	0.75
65.57	918.79	0.81	3.66	0.50	0.77
78.68	918.88	0.90	3.89	0.56	0.78
91.80	918.96	0.98	4.10	0.61	0.79
104.91	919.04	1.06	4.28	0.66	0.80
118.03	919.11	1.13	4.45	0.70	0.81
131.14	919.18	1.20	4.60	0.75	0.81

NO.	REVISION DATE
1	
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LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN & MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 100170

STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	8/3/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	DA-18

DRAINAGE CRITERIA

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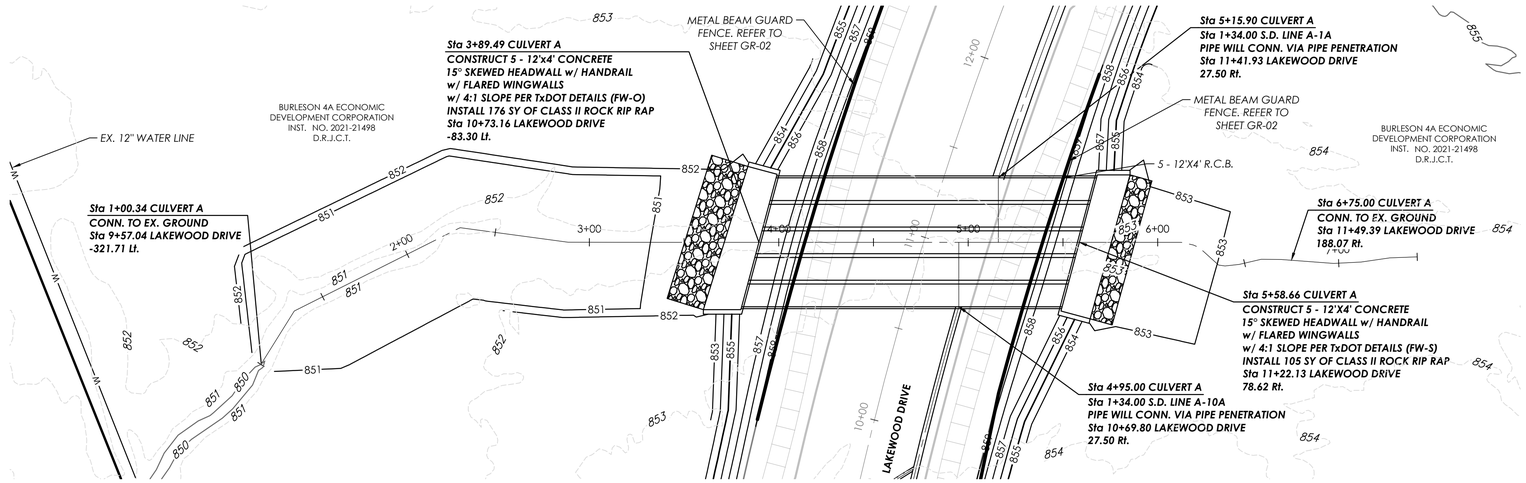

CULVERT A

CONTRACTOR NOTE

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GRAPHIC SCALE 1"=40'
0 40 80 120

S.D. CULVERT "A" GREGORY METHOD MIMIMUM RIP-RAP CALCULATIONS

$D50(Minimum) = \sqrt{V}/[1.8\sqrt{(2g(W_s - W)/W)}]$

Where:
$g = 32.2\ ft/s^2$
W_s = Unit weight of stone = 150lb/ft
W_w = Unit weight of water = 62.4lb/ft

$D50(Minimum) = \sqrt{V}/17.1149$
$V = 11.46\ ft/s$
$D50(Minimum) = 0.82' = 9.82"$

Riprap Apron Dimensions

PROP D50 =	**10.00** inches
Length =	**20** ft
Depth =	**24** inches

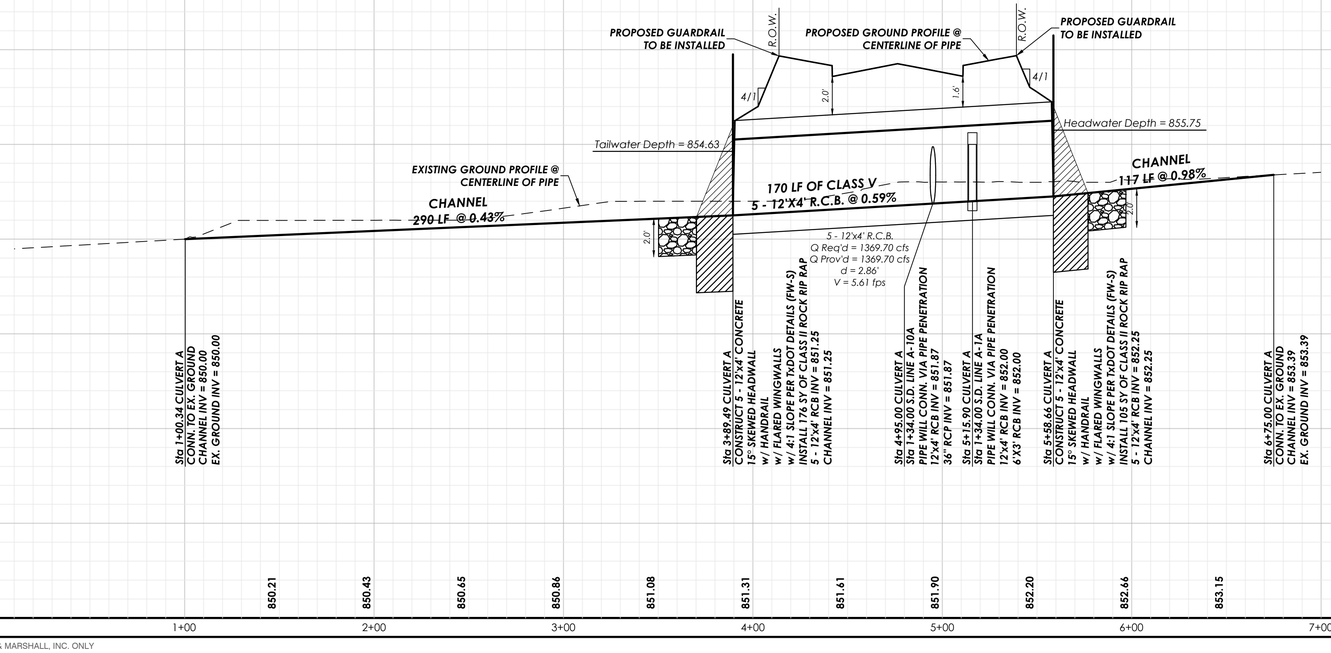
Table 10.1 from HEC-14

Class	D50 (in)	Apron Length (ft)	Apron Depth (in)
6	22	8 * D	2 * D50
5	20	7 * D	2 * D51
4	14	6 * D	2.2 * D52
3	10	5 * D	2.4 * D53
2	6	4 * D	3.3 * D54
1	5	4 * D	3.5 * D55

BENCH MARK ELEVATION : 852.36

CAPPED IRON ROD WITH CAP STAMPED "RDM" AT THE NORTHWEST CORNER OF THE INTERSECTION OF CR 1902 AND CR 1019, APPROXIMATELY 37 FEET NORTHWEST OF THE CENTERLINE OF CR 1019, APPROXIMATELY 45 FEET NORTHEAST OF THE CENTERLINE OF CR 1902, AND APPROXIMATELY 120 FEET SOUTHWEST OF A DRIVEWAY.

PROFILE SCALE
Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 4'



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CITY OF BURLESON
SUMMIT

LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329-4373
TxEng Firm # F-2644 – TxSurv Firm # 100170

STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	5/9/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	SD-01

CULVERT A

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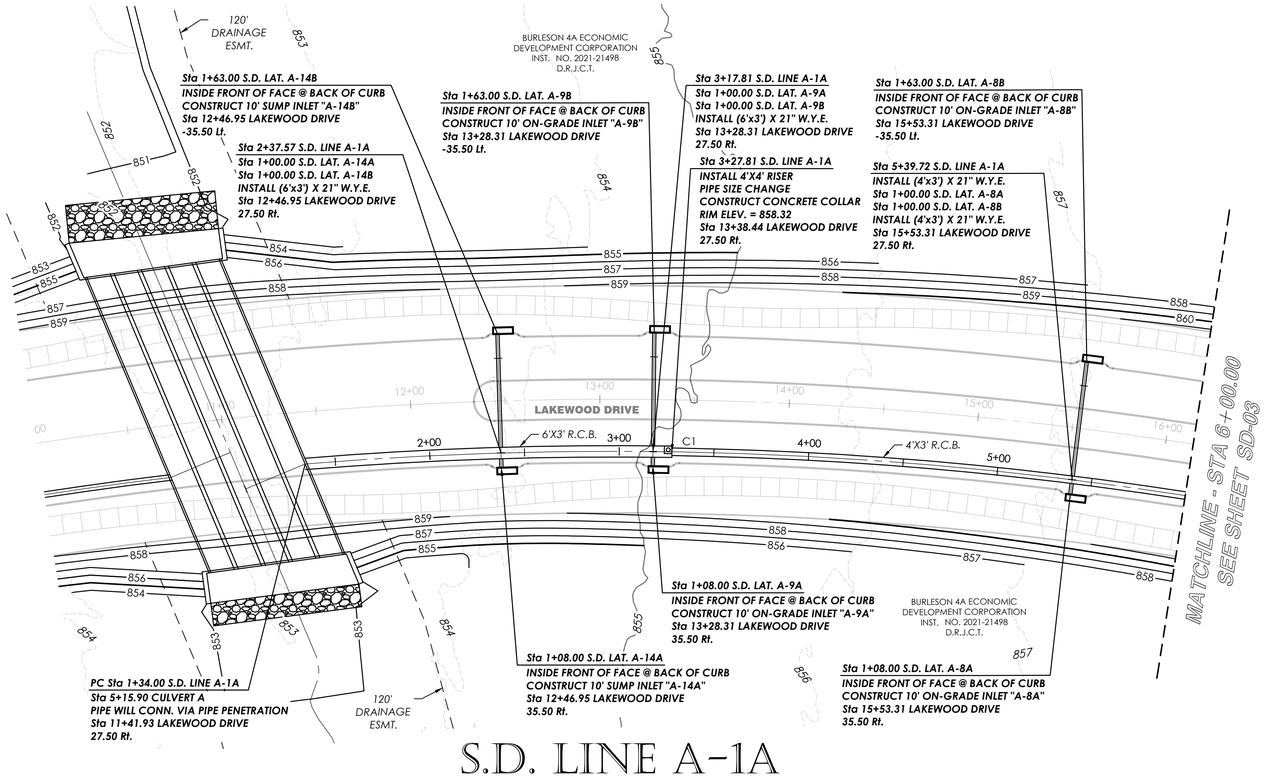

S.D. LINE A-1A

S.D. LINE "A-1A" CURVE TABLE					
CURVE #	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH	DELTA ANGLE
C1	1684.77	1972.50	S70°00'43"E	1634.02	048°56'17"
C2	347.18	1027.50	S55°13'22"E	345.53	019°21'35"
C3	95.20	972.50	S62°05'54"E	95.16	005°36'31"

BENCH MARK ELEVATION : 852.36

CAPPED IRON ROD WITH CAP STAMPED "RDM" AT THE NORTHWEST CORNER OF THE INTERSECTION OF CR 1902 AND CR 1019, APPROXIMATELY 37 FEET NORTHWEST OF THE CENTERLINE OF CR 1019, APPROXIMATELY 45 FEET NORTHEAST OF THE CENTERLINE OF CR 1902, AND APPROXIMATELY 120 FEET SOUTHWEST OF A DRIVEWAY.

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PROFILE SCALE
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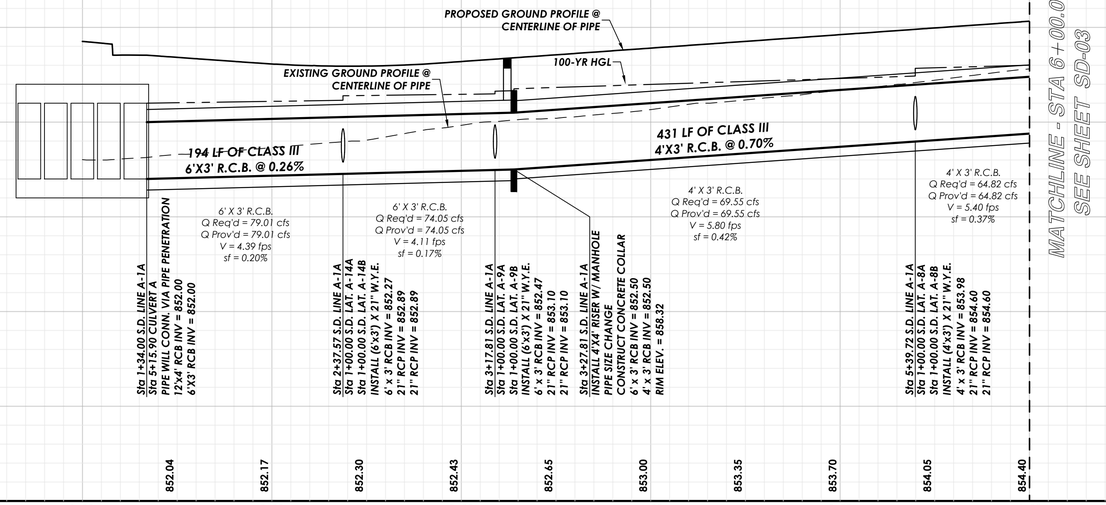

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GRAPHIC SCALE 1"=40'
0 40 80 120

LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 100177-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	2/15/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	SD-02
	SD LINE A-1A

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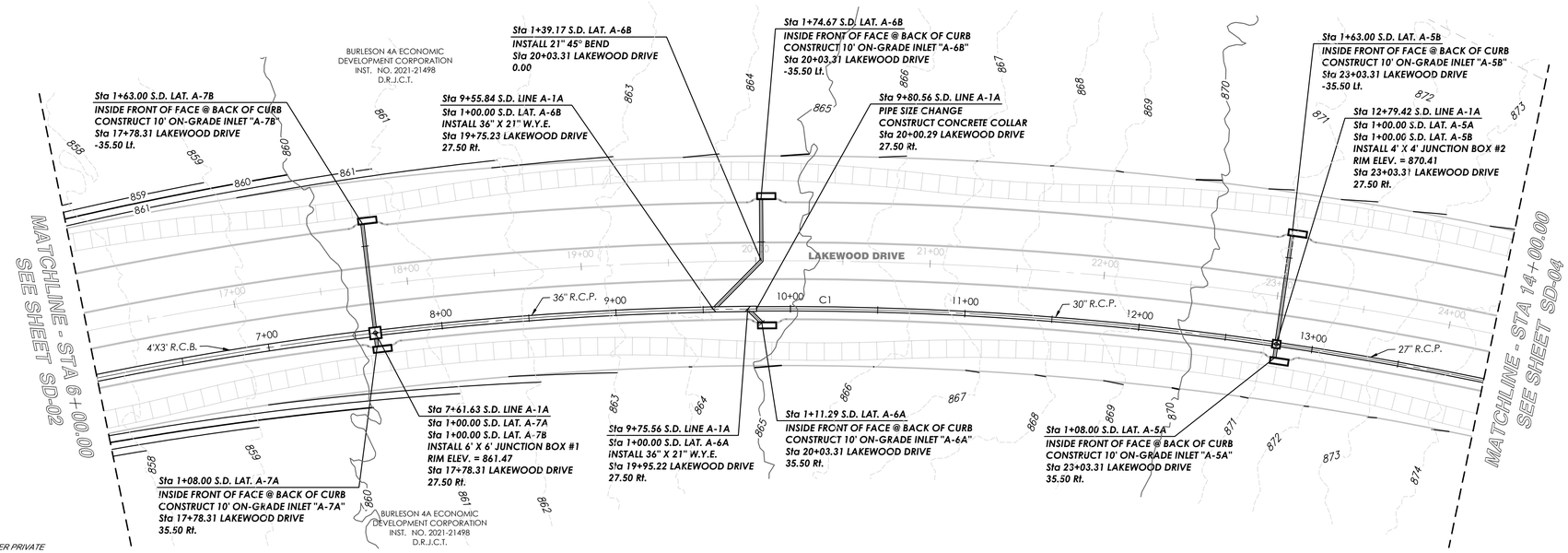

S.D. LINE A-1A

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S.D. LINE "A-1A" CURVE TABLE					
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C1	1684.77	1972.50	S70°00'43"E	1634.02	048°56'17"
C2	347.18	1027.50	S55°13'22"E	345.53	019°21'35"
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CAPPED IRON ROD WITH CAP STAMPED "RDM" AT THE NORTHWEST CORNER OF THE INTERSECTION OF CR 1902 AND CR 1019, APPROXIMATELY 37 FEET NORTHWEST OF THE CENTERLINE OF CR 1019, APPROXIMATELY 45 FEET NORTHEAST OF THE CENTERLINE OF CR 1902, AND APPROXIMATELY 120 FEET SOUTHWEST OF A DRIVEWAY.

PROFILE SCALE
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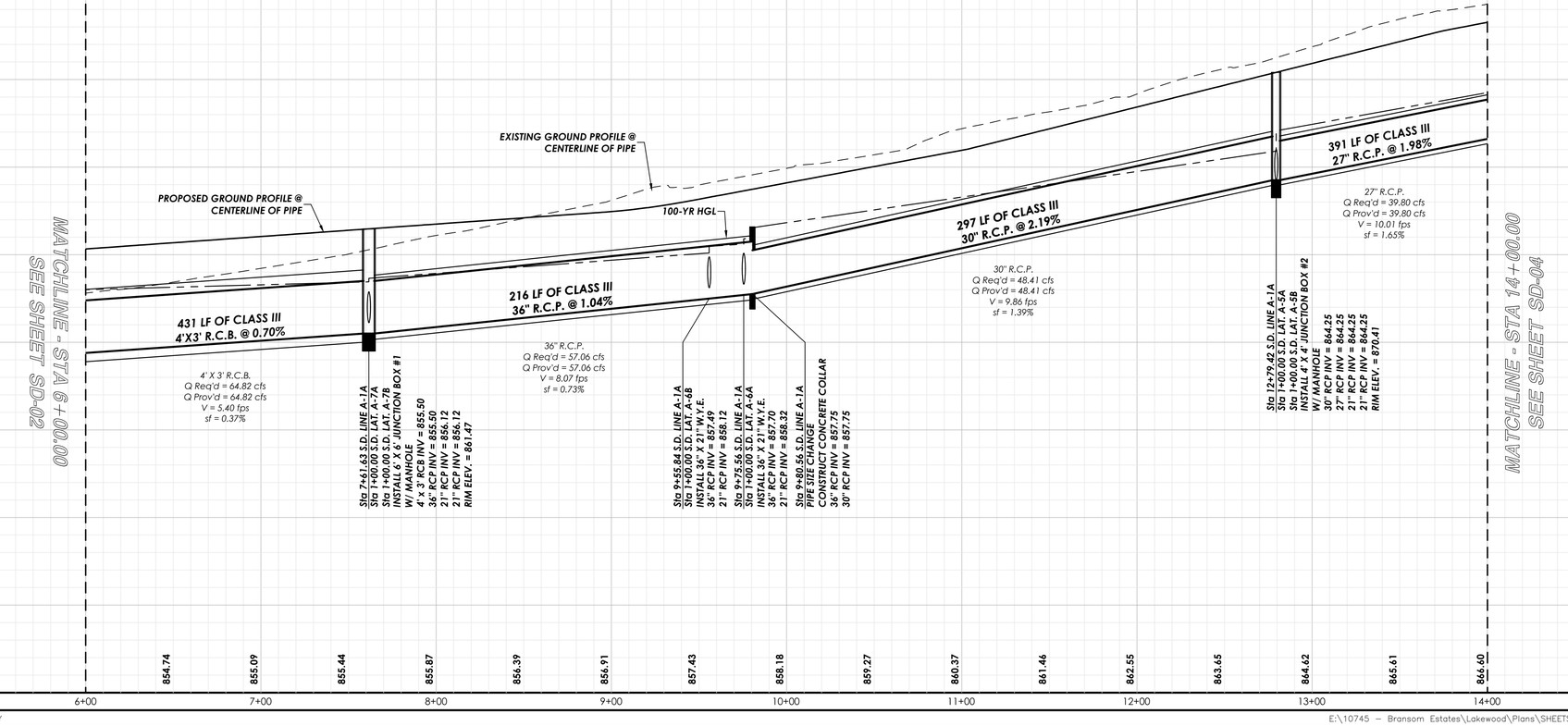
Vertical Scale: 1" = 4'



NO.	REVISION DATE

GRAPHIC SCALE 1"=40'
0 40 80 120

LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2864 – TxSurv Firm # 10027700

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	2/15/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	SD-03

SD LINE A-1A

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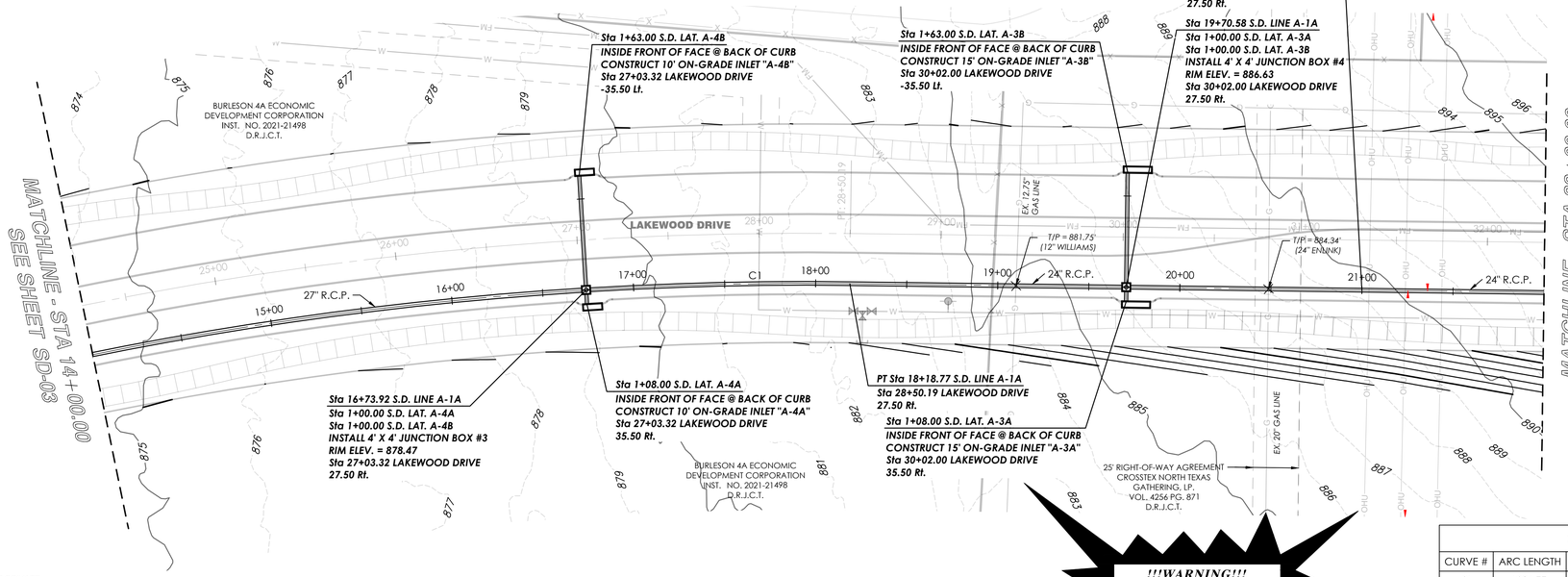

GRAPHIC SCALE 1"=40'
0 40 80 120

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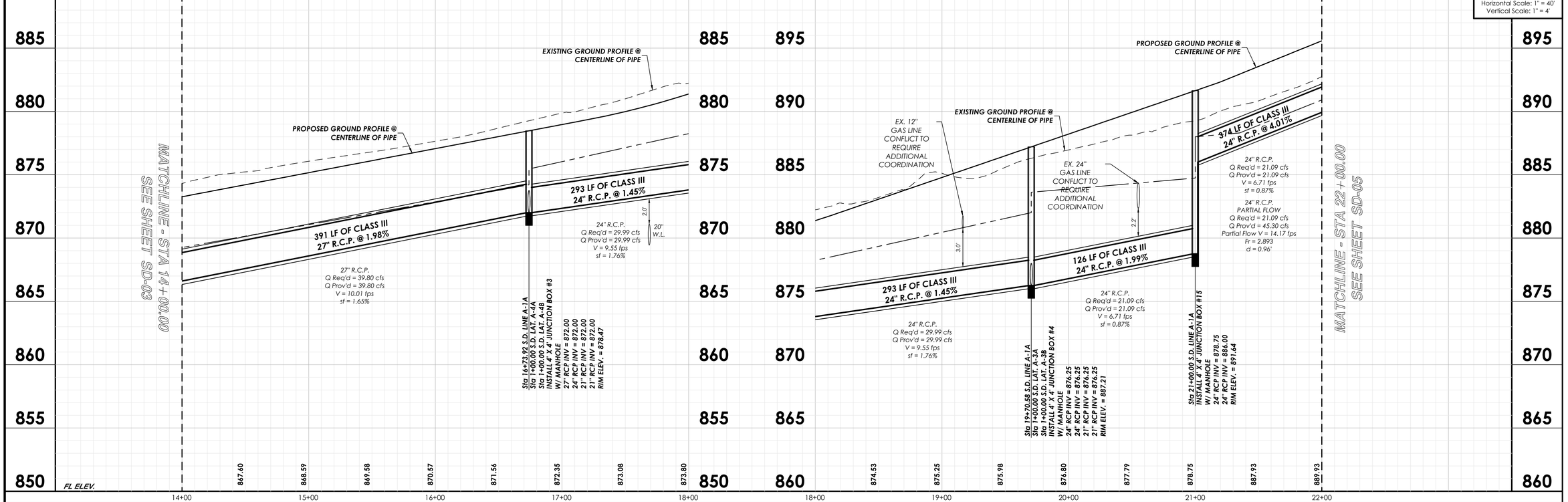
S.D. LINE A-1A

PROFILE SCALE
Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 4'



NO.	REVISION DATE

CITY OF SUMMIT

LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 100177-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	7/6/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	SD-04
	SD LINE A-1A

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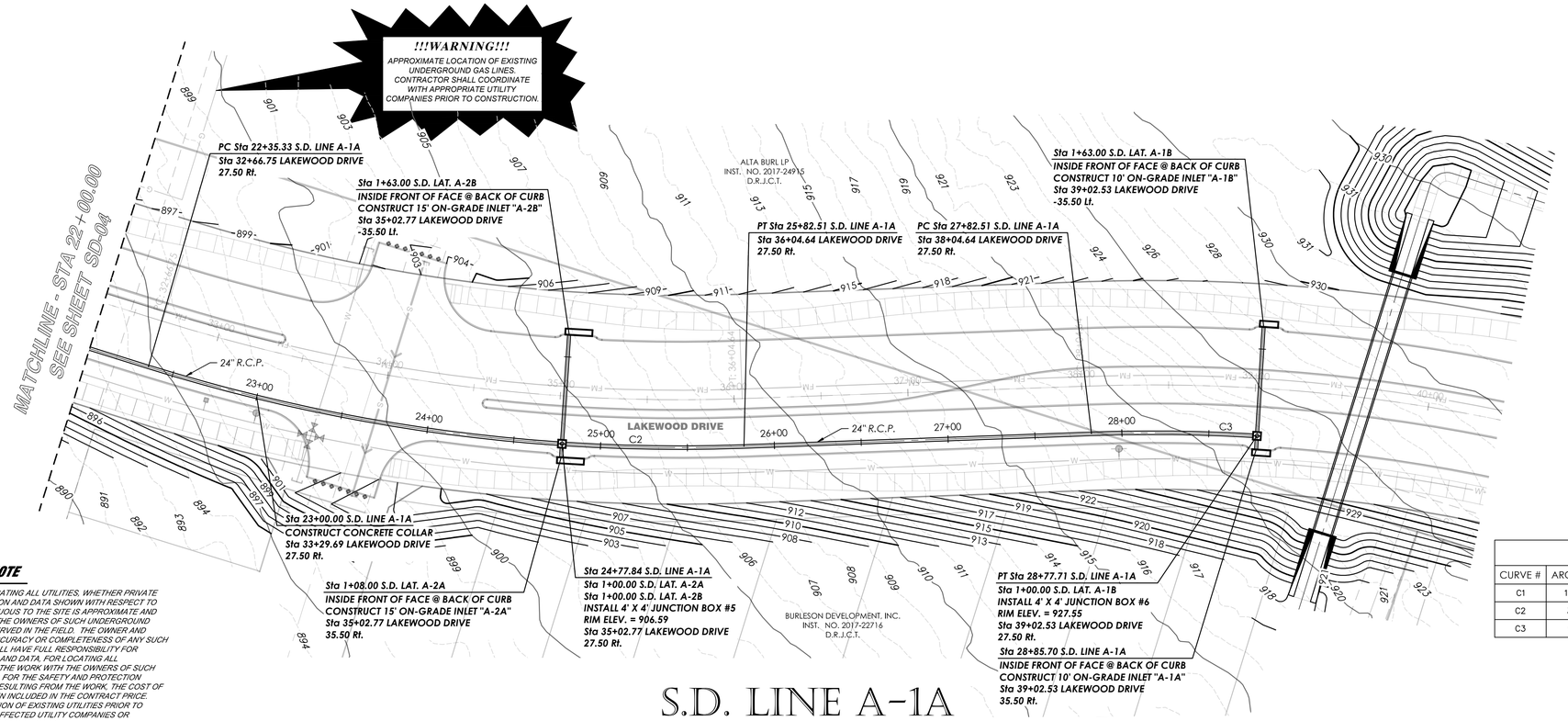

S.D. LINE A-1A

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GRAPHIC SCALE 1"=40'
0 40 80 120

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CURVE #	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH	DELTA ANGLE
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PROFILE SCALE
Horizontal Scale: 1" = 40'
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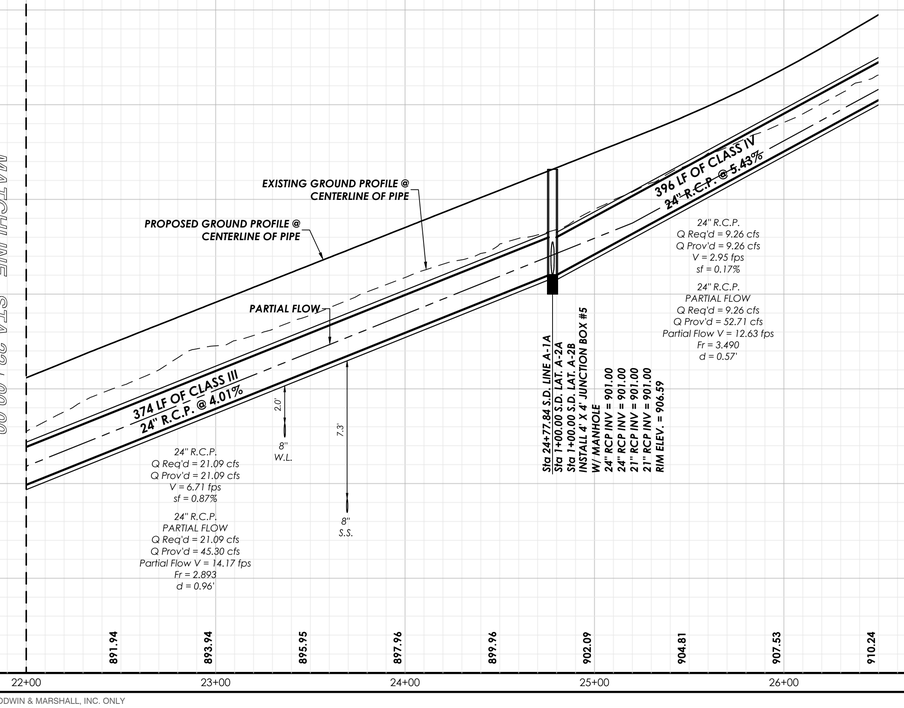

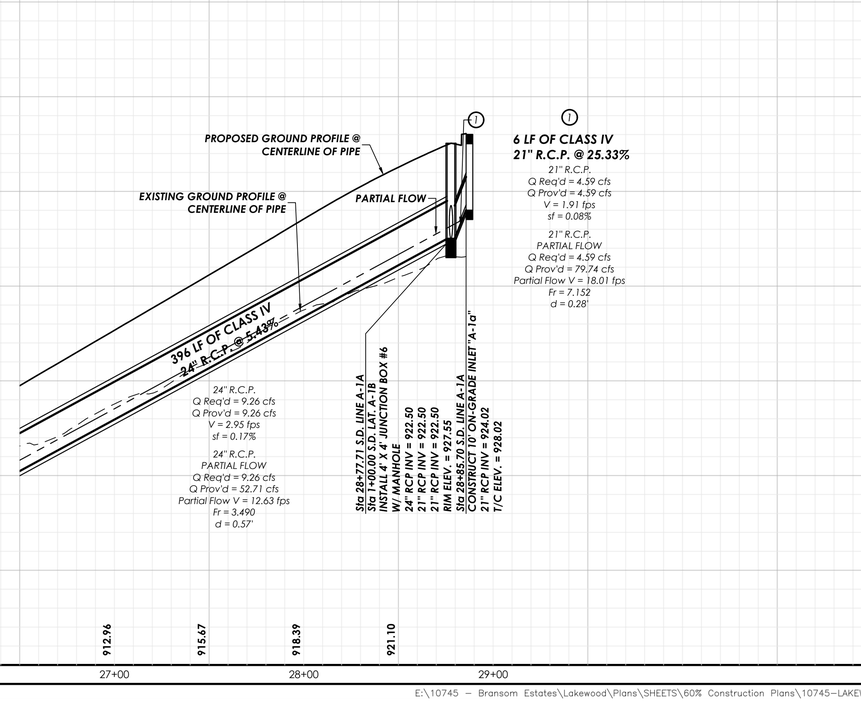

NO.	REVISION DATE
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LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN MARSHALL INC
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
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STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	5/10/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	SD-05

SD LINE A-1A

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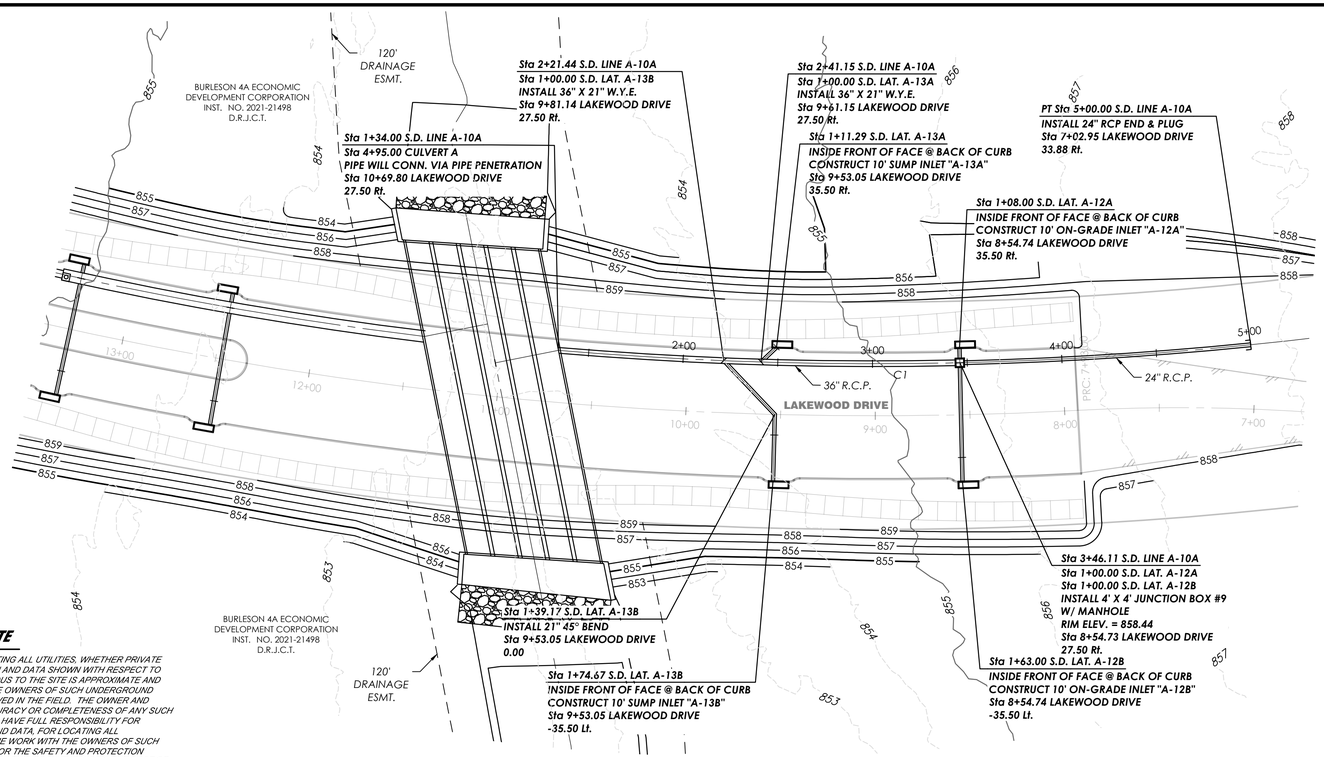

S.D. LINE A-10A S.D. LINE A-13A S.D. LINE A-13B

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S.D. LINE "A-10A"CURVE TABLE					
CURVE #	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH	DELTA ANGLE
C1	366.00	1972.50	S78°08'12"W	365.48	010°37'53"

BENCH MARK ELEVATION : 852.36

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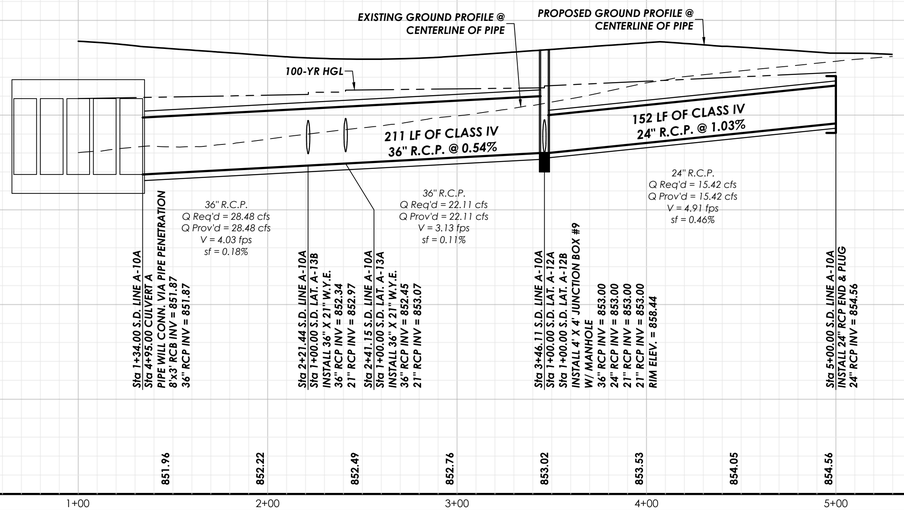
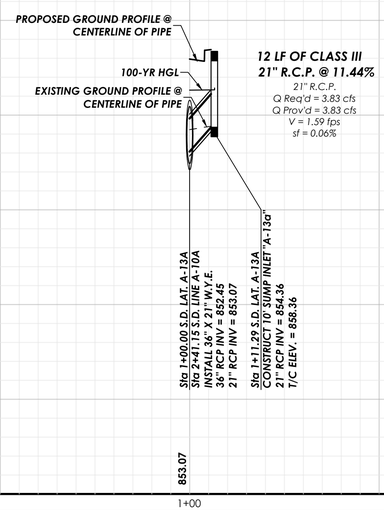
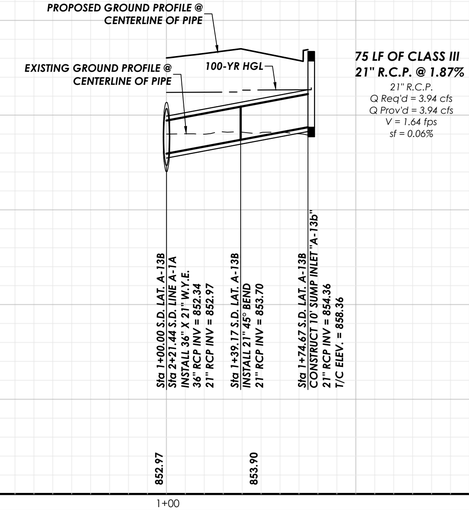
GRAPHIC SCALE 1"=40'
0 40 80 120

NO.	REVISION DATE

PROFILE SCALE
Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 4'







LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329-4373
TxEng Firm # F-2644 – TxSurv Firm # 100170

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	5/10/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE

SHEET **SD-06**

SD LINE A-10A, A-13A, & A-13B

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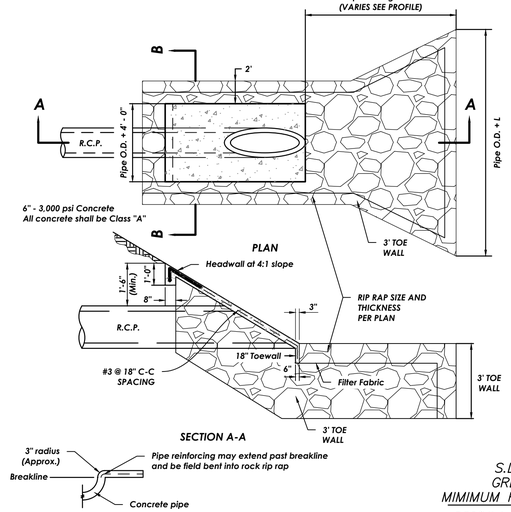


SLOPED END SECTION

S.D. LINE "A-16A"
GREGORY METHOD
MIMIMUM RIP-RAP CALCULATIONS

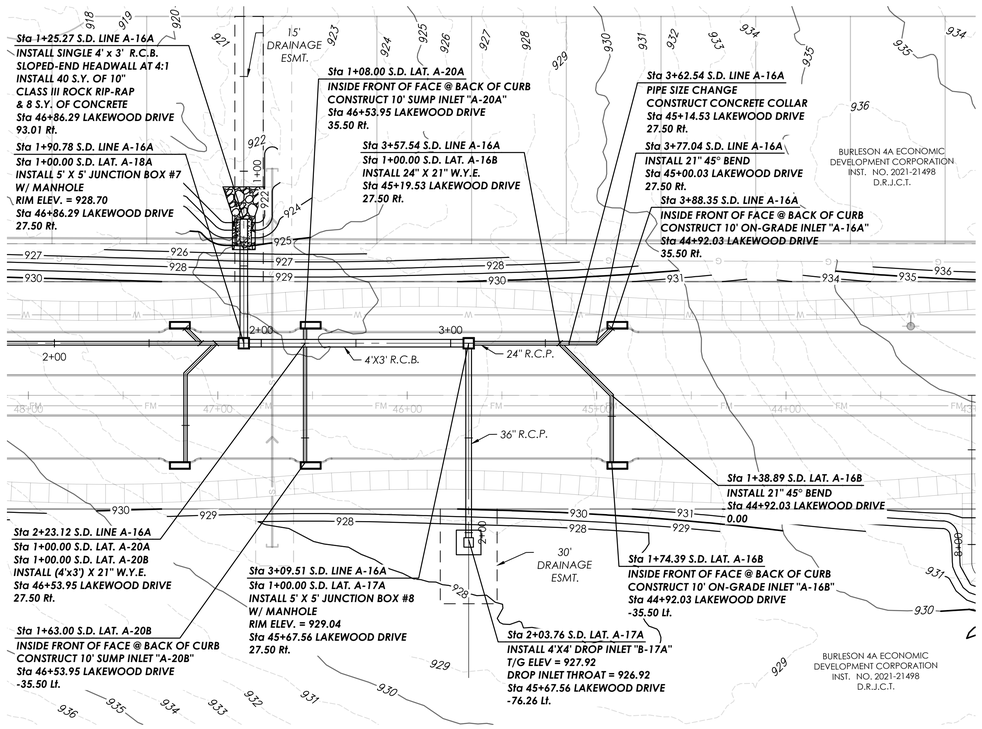
$D50(Minimum) = \sqrt{V}/[1.8\sqrt{(2g(W_s - W)/W)}]$

Where:
$g = 32.2\ ft/s^2$
W_s = Unit weight of stone = 150lb/ft
W_w = Unit weight of water = 62.4lb/ft

$D50(Minimum) = \sqrt{V}/17.1149$
$V = 4.78\ ft/s$
$D50(Minimum) = 0.53' = 6.34"$

CONTRACTOR NOTE

THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UTILITIES, WHETHER PRIVATE OR PUBLIC, PRIOR TO EXCAVATING. THE INFORMATION AND DATA SHOWN WITH RESPECT TO EXISTING UNDERGROUND FACILITIES AT OR CONTIGUOUS TO THE SITE IS APPROXIMATE AND BASED ON INFORMATION AND DATA FURNISHED BY THE OWNERS OF SUCH UNDERGROUND FACILITIES OR ON PHYSICAL APPURTENANCES OBSERVED IN THE FIELD. THE OWNER AND ENGINEER SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ANY SUCH INFORMATION OR DATA, AND THE CONTRACTOR SHALL HAVE FULL RESPONSIBILITY FOR REVIEWING AND CHECKING ALL SUCH INFORMATION AND DATA, FOR LOCATING ALL UNDERGROUND FACILITIES, FOR COORDINATION OF THE WORK WITH THE OWNERS OF SUCH UNDERGROUND FACILITIES DURING CONSTRUCTION, FOR THE SAFETY AND PROTECTION THEREOF, AND REPAIRING ANY DAMAGE THERETO RESULTING FROM THE WORK, THE COST OF ALL OF WHICH WILL BE CONSIDERED AS HAVING BEEN INCLUDED IN THE CONTRACT PRICE. CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY ANY AFFECTED UTILITY COMPANIES OR AGENCIES AT LEAST 48 HOURS PRIOR TO BEGINNING CONSTRUCTION.



S.D. LINE A-16A

S.D. LAT. A-17A

GRAPHIC SCALE 1"=40'
0 40 80 120

NO.	REVISION DATE
1	
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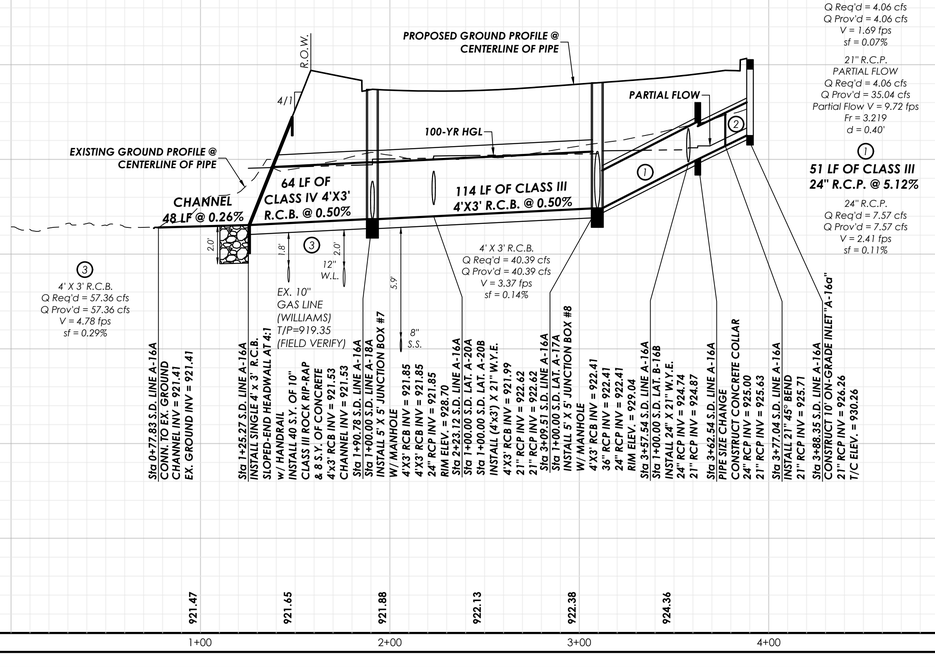
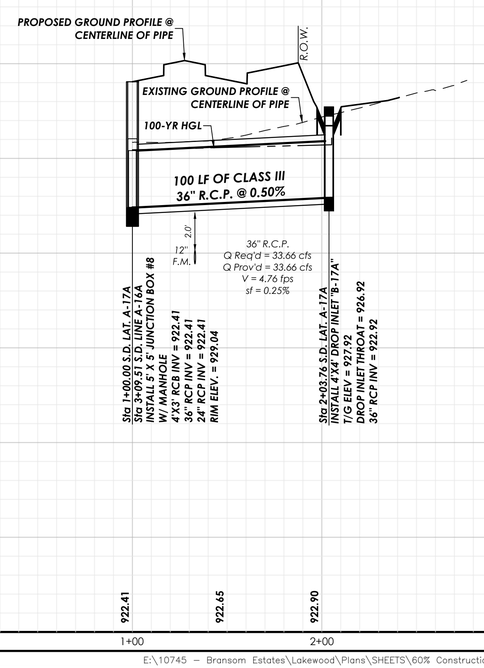
BENCH MARK ELEVATION : 852.36

CAPPED IRON ROD WITH CAP STAMPED "RDM" AT THE NORTHWEST CORNER OF THE INTERSECTION OF CR 1902 AND CR 1019, APPROXIMATELY 37 FEET NORTHWEST OF THE CENTERLINE OF CR 1019, APPROXIMATELY 45 FEET NORTHEAST OF THE CENTERLINE OF CR 1902, AND APPROXIMATELY 120 FEET SOUTHWEST OF A DRIVEWAY.

PROFILE SCALE
Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 4'





GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329-4373
TxEng Firm # F-2644 – TxSurv Firm # 100177-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

JOB NO. :	10745
DATE :	5/10/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	SD-07

SD LINE A-16A & SD LAT A-17A

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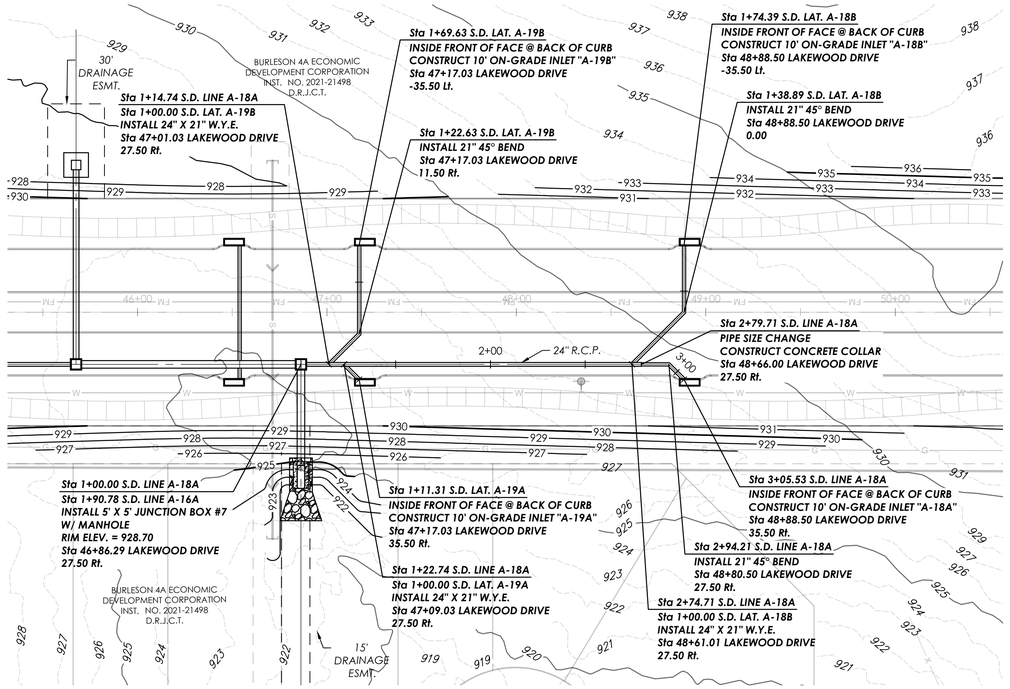

S.D. LINE A-18A

S.D. LAT. A-18B

CONTRACTOR NOTE

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BENCH MARK ELEVATION : 852.36

CAPPED IRON ROD WITH CAP STAMPED "RDM" AT THE NORTHWEST CORNER OF THE INTERSECTION OF CR 1902 AND CR 1019, APPROXIMATELY 37 FEET NORTHWEST OF THE CENTERLINE OF CR 1019, APPROXIMATELY 45 FEET NORTHEAST OF THE CENTERLINE OF CR 1902, AND APPROXIMATELY 120 FEET SOUTHWEST OF A DRIVEWAY.

GRAPHIC SCALE 1"=40'
0 40 80 120

NO.	REVISION DATE
1	
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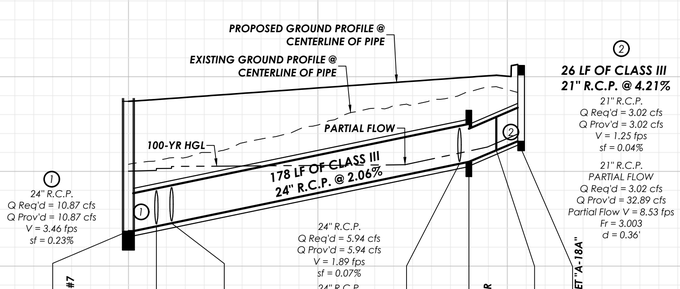
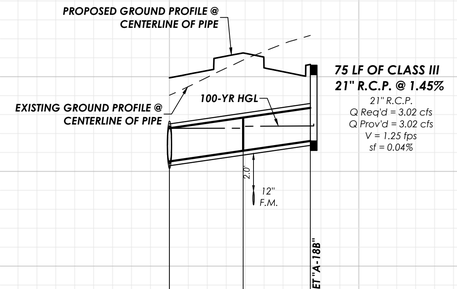
PROFILE SCALE
Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 4'





LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329-4373
TxEng Firm # F-2644 – TxSurv Firm # 100170

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	5/10/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	SD-08

SD LINE A-18A & SD LAT A-18B

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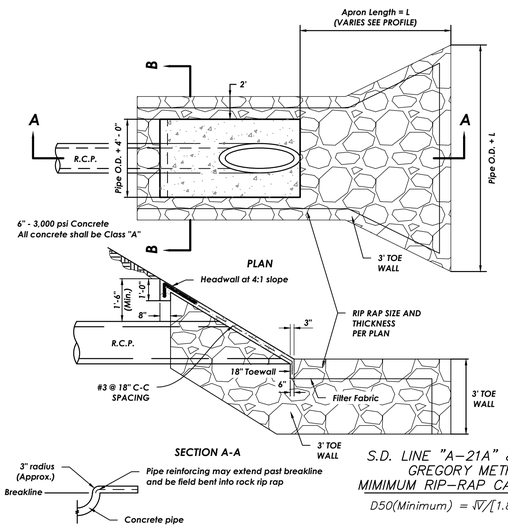

SLOPED END SECTION

CONTRACTOR NOTE

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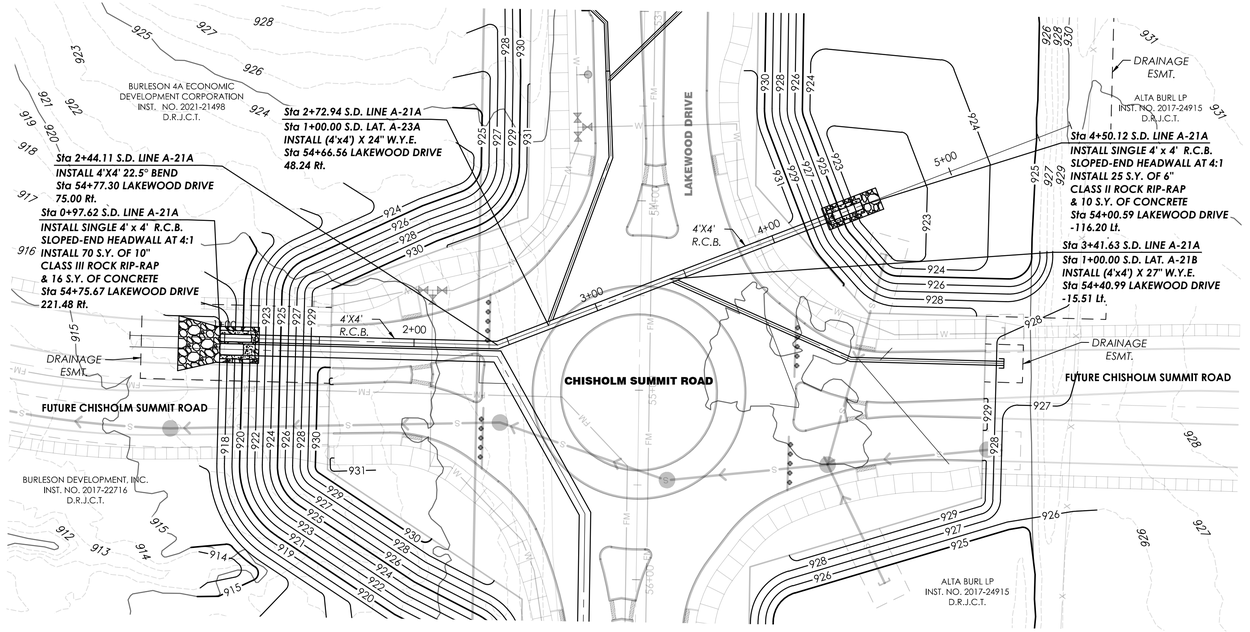
S.D. LINE "A-21A" & "A-26A" GREGORY METHOD MIMIMUM RIP-RAP CALCULATIONS

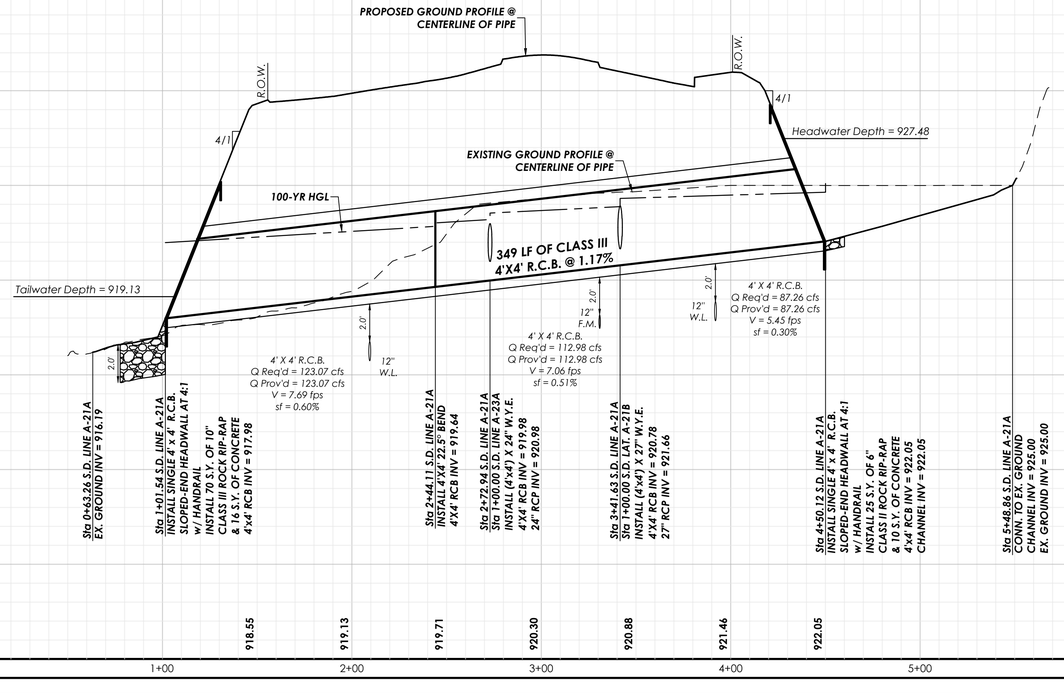
$D50(Minimum) = V/[1.8\sqrt{(2g(W_s - W)/W)}]$

$g = 32.2\ ft/s^2$
W = Unit weight of stone = 150lb/ft
W = Unit weight of water = 62.4lb/ft

$D50(Minimum) = V/17.1149$
$V = 7.60\ ft/s$
$D50(Minimum) = 0.67' = 8"$



S.D. LINE A-21A



BENCH MARK ELEVATION : 852.36

CAPPED IRON ROD WITH CAP STAMPED "RDM" AT THE NORTHWEST CORNER OF THE INTERSECTION OF CR 1902 AND CR 1019, APPROXIMATELY 37 FEET NORTHWEST OF THE CENTERLINE OF CR 1019, APPROXIMATELY 45 FEET NORTHEAST OF THE CENTERLINE OF CR 1902, AND APPROXIMATELY 120 FEET SOUTHWEST OF A DRIVEWAY.

PROFILE SCALE
Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 4'

GRAPHIC SCALE 1"=40'
0 40 80 120

NO.	REVISION DATE

CHISHOLM SUMMIT

LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN MARSHALL INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 100170

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	2/16/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	SD-09

SD LINE A-21A

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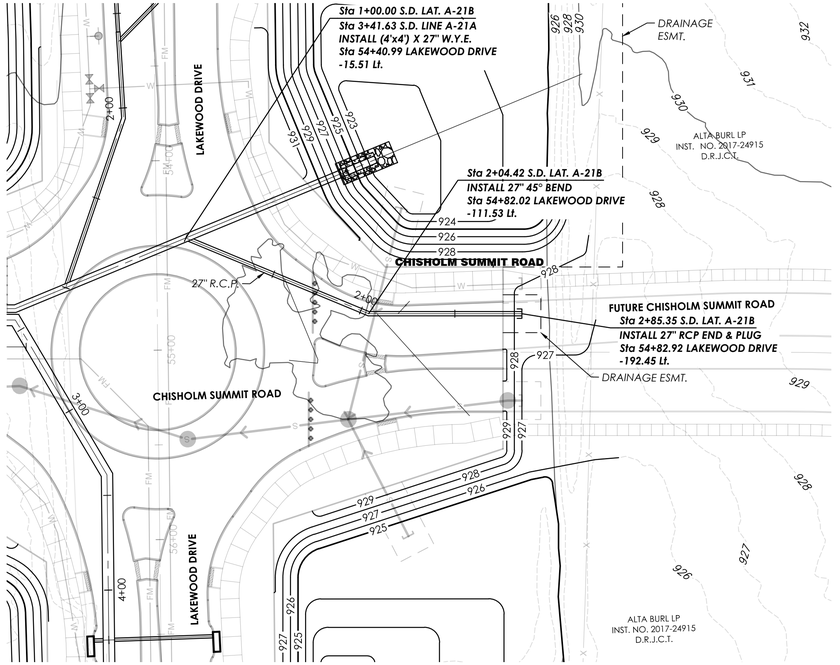
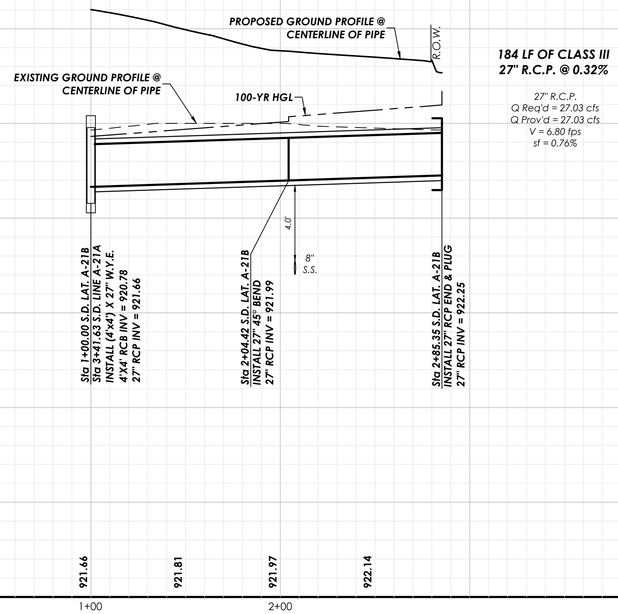


S.D. LAT. A-21B



184 LF OF CLASS III
27" R.C.P. @ 0.32%

27" R.C.P.
Q Req'd = 27.03 cfs
Q Prov'd = 27.03 cfs
V = 6.80 fps
sf = 0.76%

BENCH MARK ELEVATION : 852.36

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GRAPHIC SCALE 1"=40'
0 40 80 120

PROFILE SCALE
Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 4'

NO.	REVISION DATE

CHISHOLM SUMMIT

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN MARSHALL INC
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
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STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	2/18/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	SD-10

SD LAT A-21B, A-22A, A-22B, & A-24B

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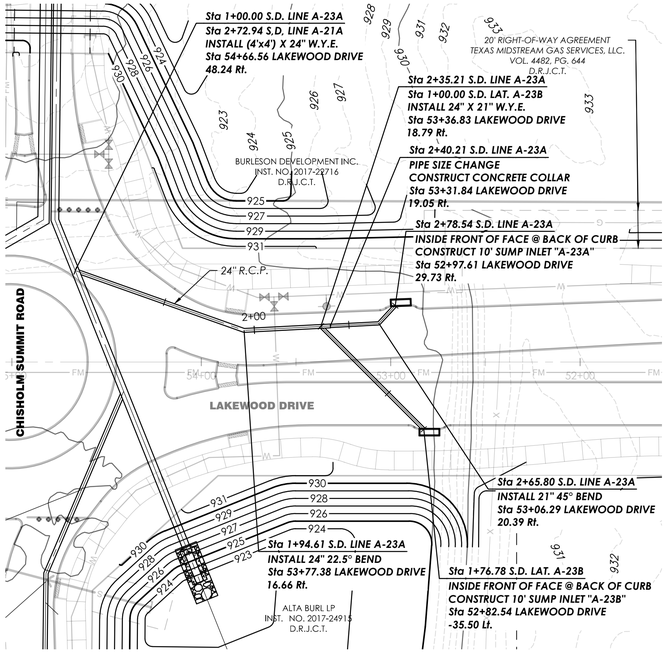

GRAPHIC SCALE 1"=40'
0 40 80 120

S.D. LINE A-23A

S.D. LAT. A-23B

CONTRACTOR NOTE

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BENCH MARK ELEVATION : 852.36

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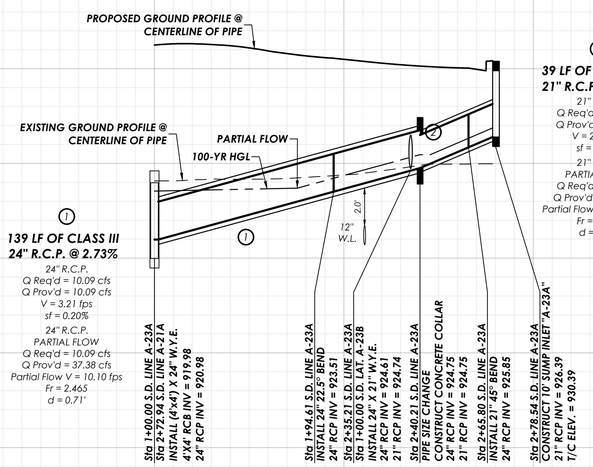
PROFILE SCALE
Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 4'



NO.	REVISION DATE
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LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
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(817) 329 - 4373
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STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	2/16/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	SD-11

SD LINE A-23A & SD LAT A-23B

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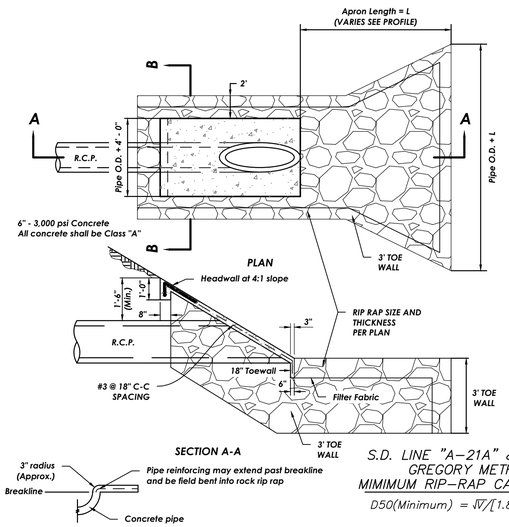

SLOPED END SECTION

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S.D. LINE "A-21A" & "A-26A" GREGORY METHOD MIMIMUM RIP-RAP CALCULATIONS

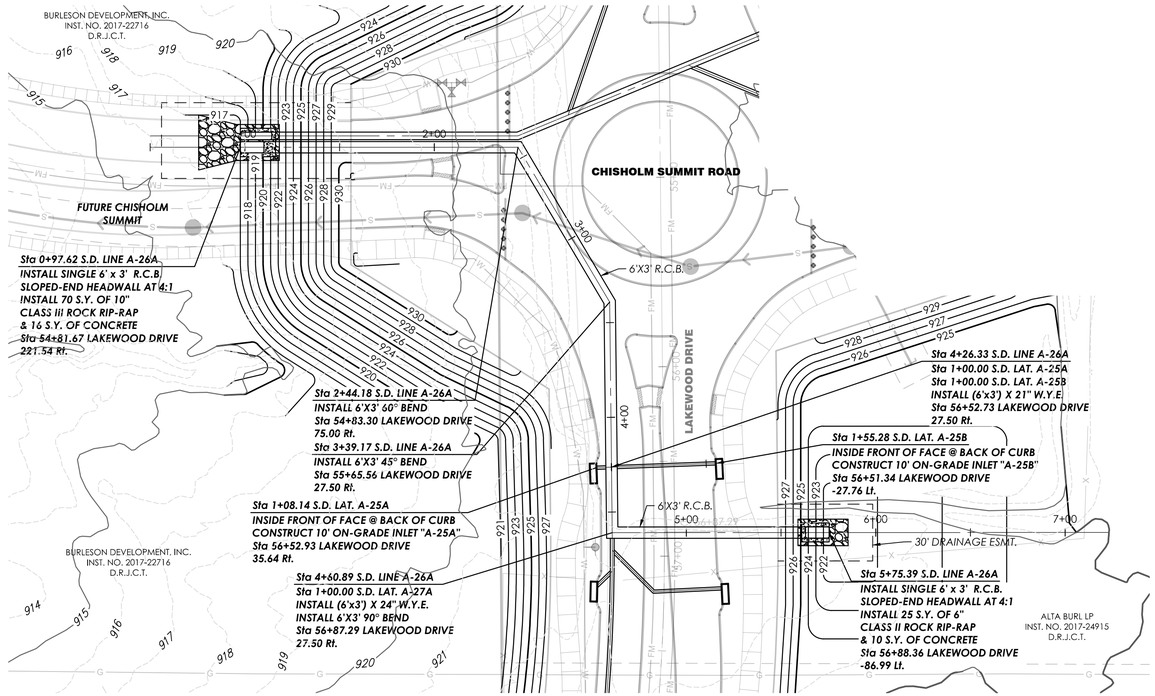
$$D50(Minimum) = \sqrt{V}/[1.8\sqrt{(2g(W_s - W)/W)}]$$

g = 32.2 ft/s²
W = Unit weight of stone = 150lb/ft
W = Unit weight of water = 62.4lb/ft

$$D50(Minimum) = \sqrt{V}/17.1149$$

V = 7.60 ft/s

$$D50(Minimum) = 0.67' = 8"$$



S.D. LINE A-26A

GRAPHIC SCALE 1"=40'

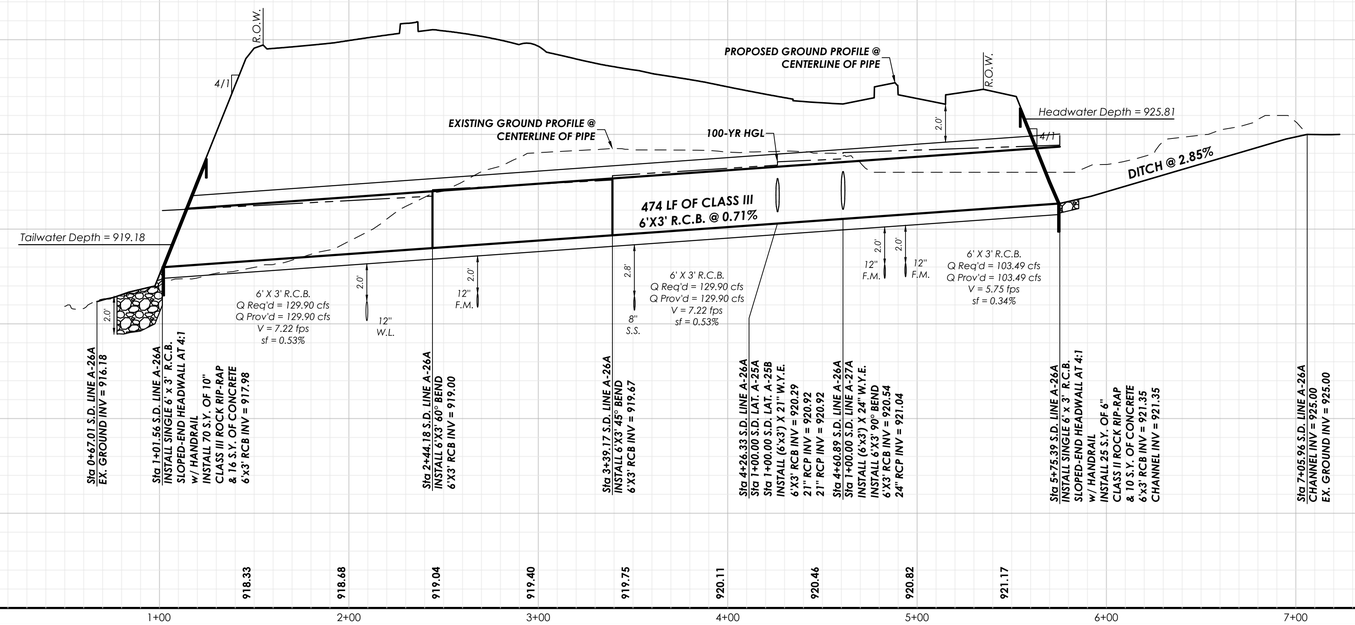
0 40 80 120

NO.	REVISION DATE

BENCH MARK ELEVATION : 852.36

CAPPED IRON ROD WITH CAP STAMPED "RDM" AT THE NORTHWEST CORNER OF THE INTERSECTION OF CR 1902 AND CR 1019, APPROXIMATELY 37 FEET NORTHWEST OF THE CENTERLINE OF CR 1019, APPROXIMATELY 45 FEET NORTHEAST OF THE CENTERLINE OF CR 1902, AND APPROXIMATELY 120 FEET SOUTHWEST OF A DRIVEWAY.

PROFILE SCALE
Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 4'



LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN MARSHALL INC
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329-4373
TxEng Firm # F-2644 – TxSurv Firm # 100170

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	2/14/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	SD-12

SD LINE A-26A

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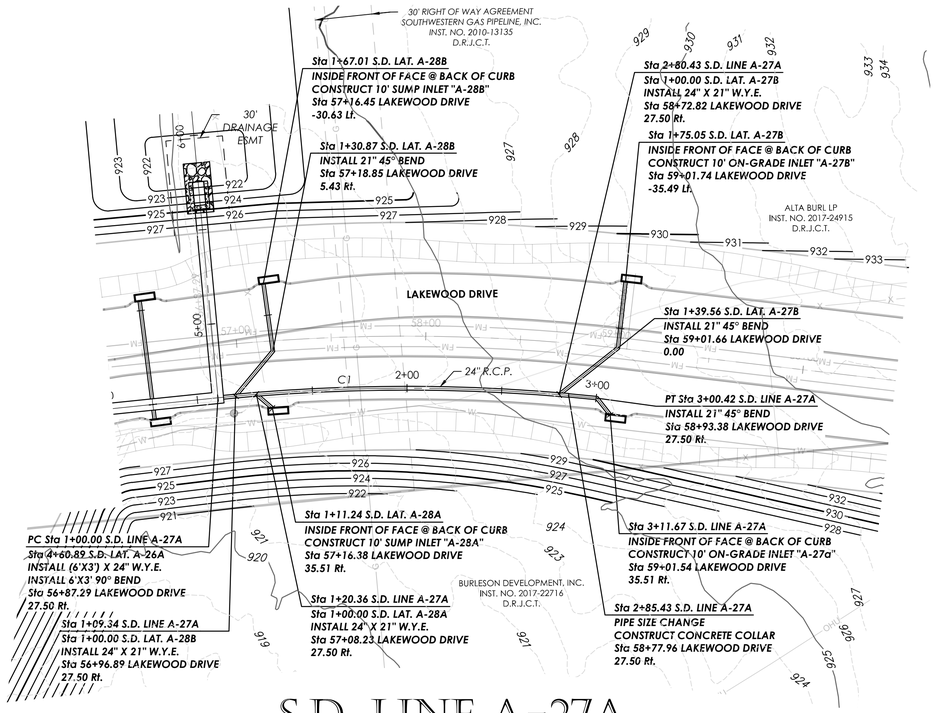

S.D. LINE A-27A

S.D. LINE A-27B

GRAPHIC SCALE 1"=40'

0 40 80 120

NO.	REVISION DATE
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S.D. LINE "A-27A" CURVE TABLE					
CURVE #	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH	DELTA ANGLE
C1	200.42	972.50	S39°51'18"E	200.07	011°48'29"

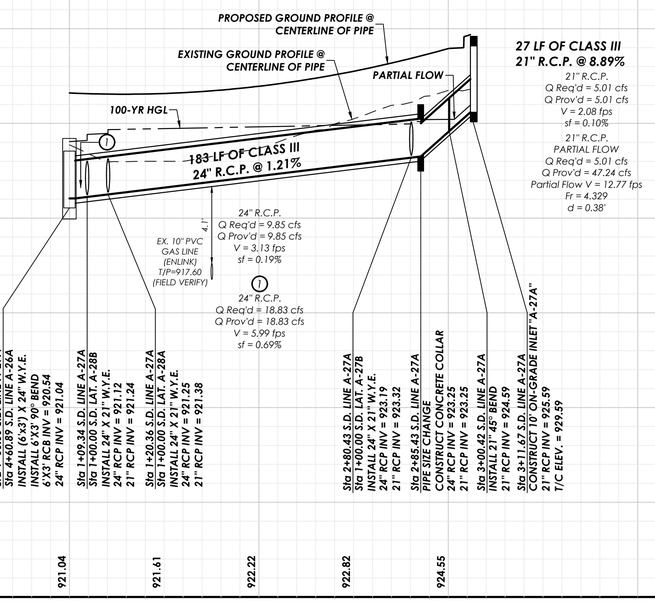
BENCH MARK ELEVATION : 852.36

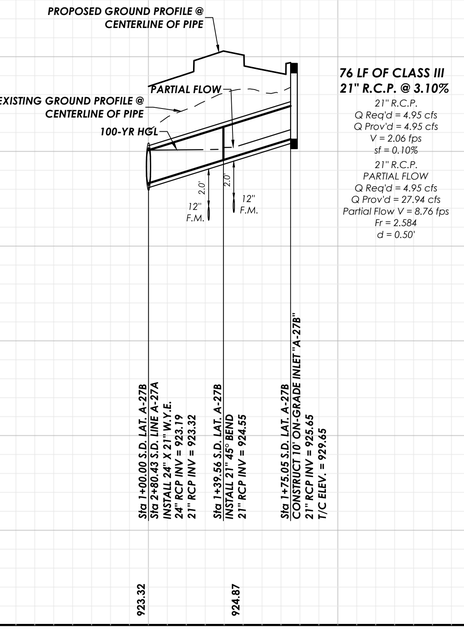
CAPPED IRON ROD WITH CAP STAMPED "RDM" AT THE NORTHWEST CORNER OF THE INTERSECTION OF CR 1902 AND CR 1019, APPROXIMATELY 37 FEET NORTHWEST OF THE CENTERLINE OF CR 1019, APPROXIMATELY 45 FEET NORTHEAST OF THE CENTERLINE OF CR 1902, AND APPROXIMATELY 120 FEET SOUTHWEST OF A DRIVEWAY.

CONTRACTOR NOTE

THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UTILITIES, WHETHER PRIVATE OR PUBLIC, PRIOR TO EXCAVATING. THE INFORMATION AND DATA SHOWN WITH RESPECT TO EXISTING UNDERGROUND FACILITIES AT OR CONTIGUOUS TO THE SITE IS APPROXIMATE AND BASED ON INFORMATION AND DATA FURNISHED BY THE OWNERS OF SUCH UNDERGROUND FACILITIES OR ON PHYSICAL APPURTENANCES OBSERVED IN THE FIELD. THE OWNER AND ENGINEER SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ANY SUCH INFORMATION OR DATA, AND THE CONTRACTOR SHALL HAVE FULL RESPONSIBILITY FOR REVIEWING AND CHECKING ALL SUCH INFORMATION AND DATA, FOR LOCATING ALL UNDERGROUND FACILITIES, FOR COORDINATION OF THE WORK WITH THE OWNERS OF SUCH UNDERGROUND FACILITIES DURING CONSTRUCTION, FOR THE SAFETY AND PROTECTION THEREOF, AND REPAIRING ANY DAMAGE THERETO RESULTING FROM THE WORK, THE COST OF ALL OF WHICH WILL BE CONSIDERED AS HAVING BEEN INCLUDED IN THE CONTRACT PRICE. CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY ANY AFFECTED UTILITY COMPANIES OR AGENCIES AT LEAST 48 HOURS PRIOR TO BEGINNING CONSTRUCTION.

PROFILE SCALE
Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 4'





LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN MARSHALL INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329-4373
TxEng Firm # F-2644 – TxSurv Firm # 100177-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	2/14/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	SD-13

SD LINE A-27A & SD LINE A-27B

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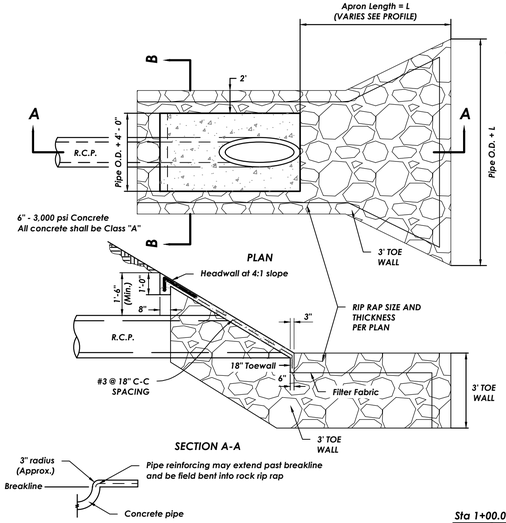

SLOPED END SECTION

CONTRACTOR NOTE

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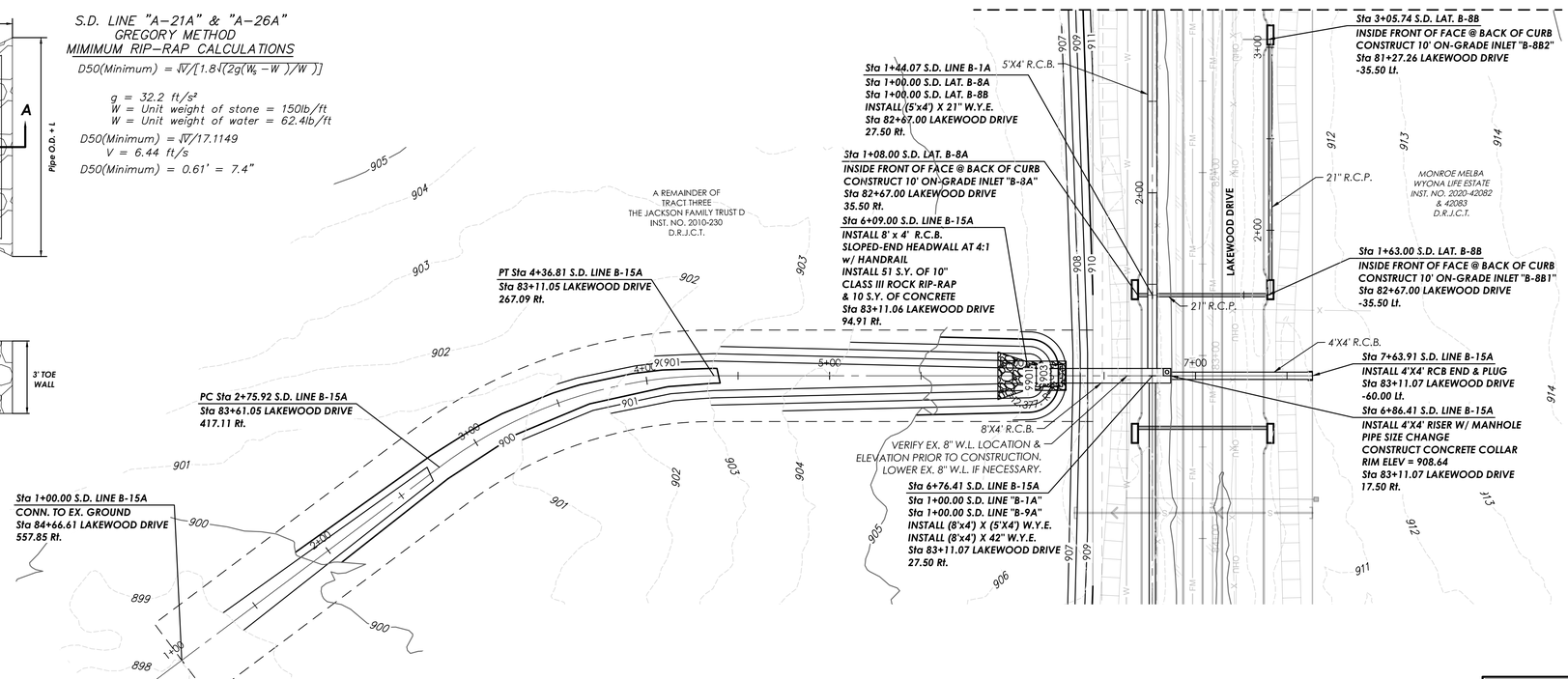
S.D. LINE "A-21A" & "A-26A" GREGORY METHOD MIMIMUM RIP-RAP CALCULATIONS

$D50(Minimum) = \sqrt{V}/[1.8\sqrt{(2g(W_s - W)/W)}]$

$g = 32.2\ ft/s^2$
W = Unit weight of stone = 150lb/ft
W = Unit weight of water = 62.4lb/ft

$D50(Minimum) = \sqrt{V}/17.1149$
$V = 6.44\ ft/s$
$D50(Minimum) = 0.61' = 7.4"$

MATCHLINE - STA 6+00.00 SEE SHEET SD-15



S.D. LINE B-15A

NO.	REVISION DATE
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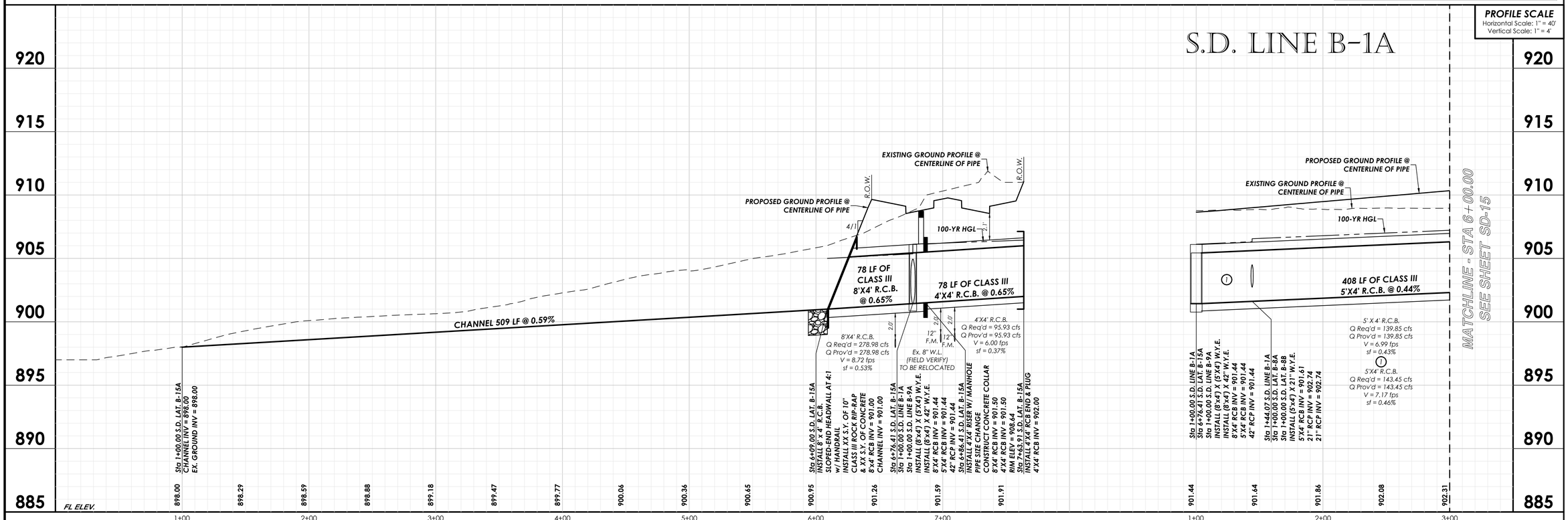
BENCH MARK ELEVATION : 852.36

CAPPED IRON ROD WITH CAP STAMPED "RDM" AT THE NORTHWEST CORNER OF THE INTERSECTION OF CR 1902 AND CR 1019, APPROXIMATELY 37 FEET NORTHWEST OF THE CENTERLINE OF CR 1019, APPROXIMATELY 45 FEET NORTHEAST OF THE CENTERLINE OF CR 1902, AND APPROXIMATELY 120 FEET SOUTHWEST OF A DRIVEWAY.

PROFILE SCALE
Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 4'

S.D. LINE B-1A



LAKEWOOD DRIVE

90% CONSTRUCTION PLANS

CITY OF BURLESON

JOHNSON COUNTY, TX

GOODWIN & MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 100170-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	2/10/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	SD-14

SD LINE B-1A

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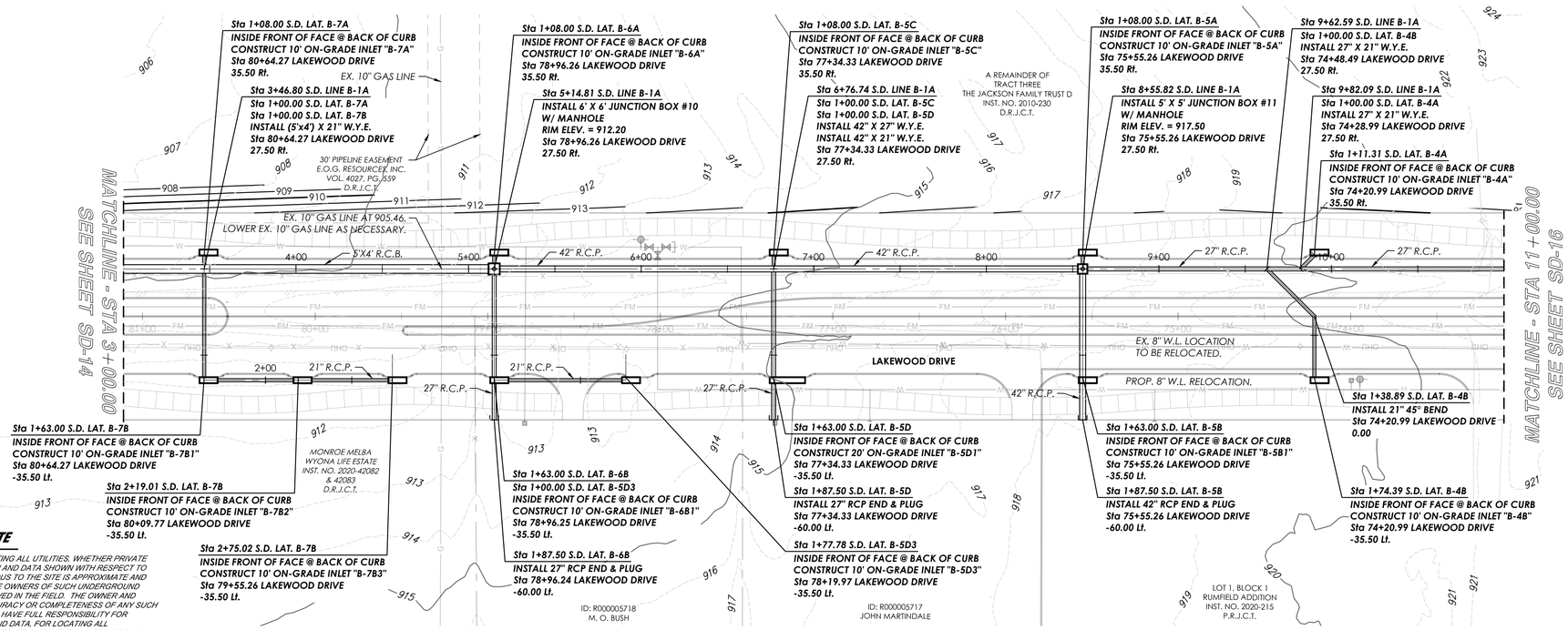

GRAPHIC SCALE 1"=40'
0 40 80 120

S.D. LINE B-1A

CONTRACTOR NOTE

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BENCH MARK ELEVATION : 852.36

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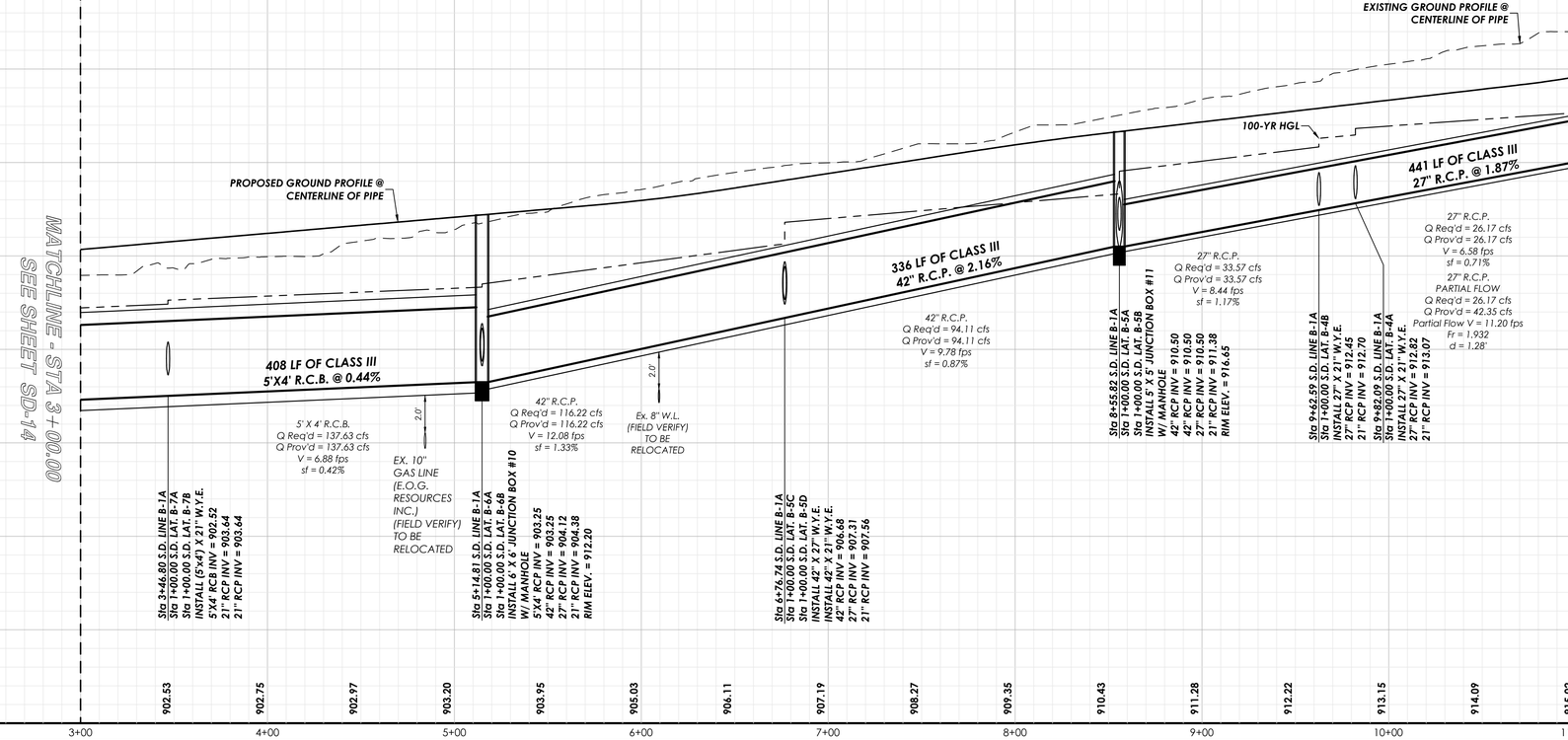

NO.	REVISION DATE
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LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN MARSHALL INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329-4373
TxEng Firm # F-2644 – TxSurv Firm # 100170

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	2/14/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	SD-15

SD LINE B-1A

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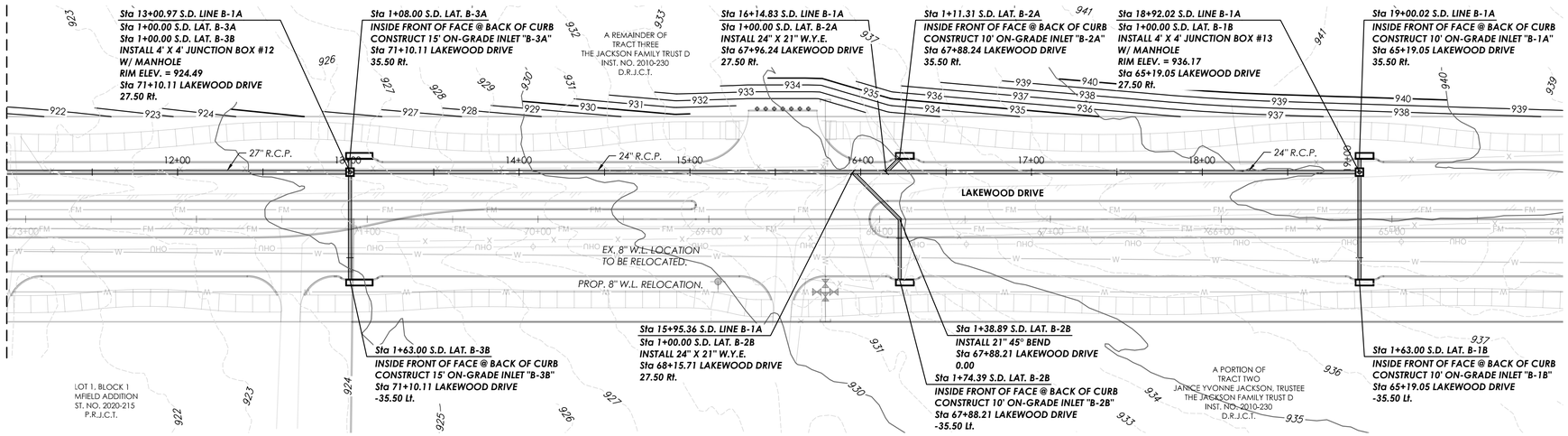
GRAPHIC SCALE 1"=40'

0 40 80 120



S.D. LINE B-1A

CONTRACTOR NOTE

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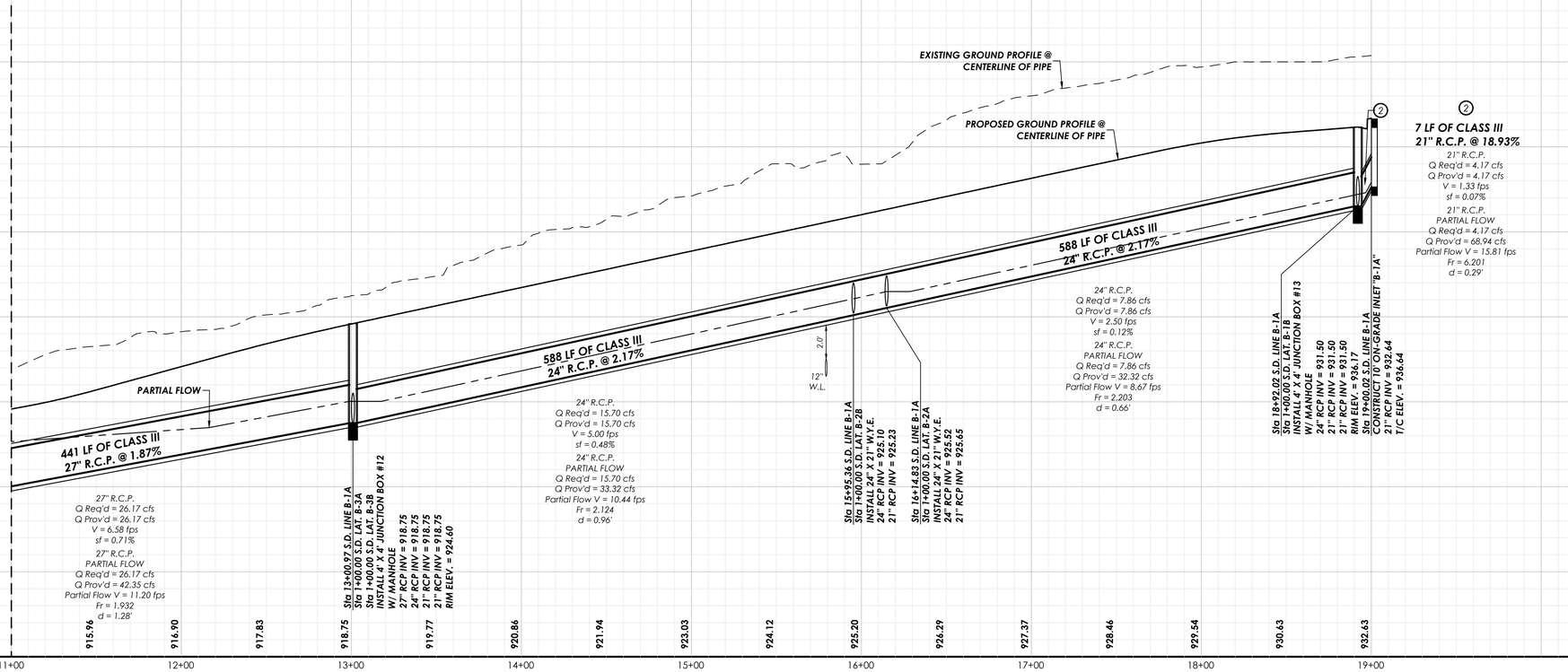
PROFILE SCALE
Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 4'



NO.	REVISION DATE
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LAKEWOOD DRIVE

90% CONSTRUCTION PLANS

CITY OF BURLESON

JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329-4373
TxEng Firm # F-2644 – TxSurv Firm # 100177-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	5/11/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	SD-16

SD LINE B-1A

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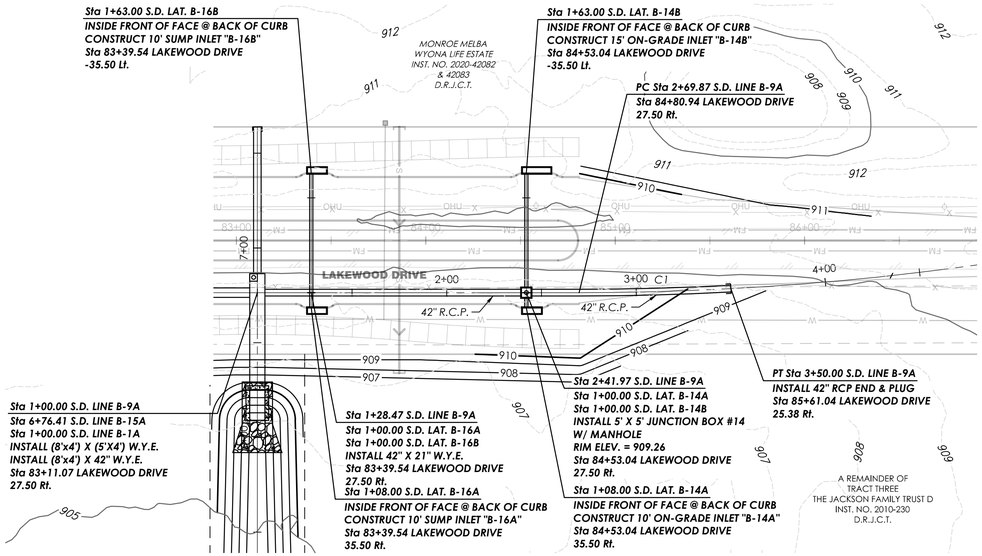

S.D. LINE B-9A

CONTRACTOR NOTE

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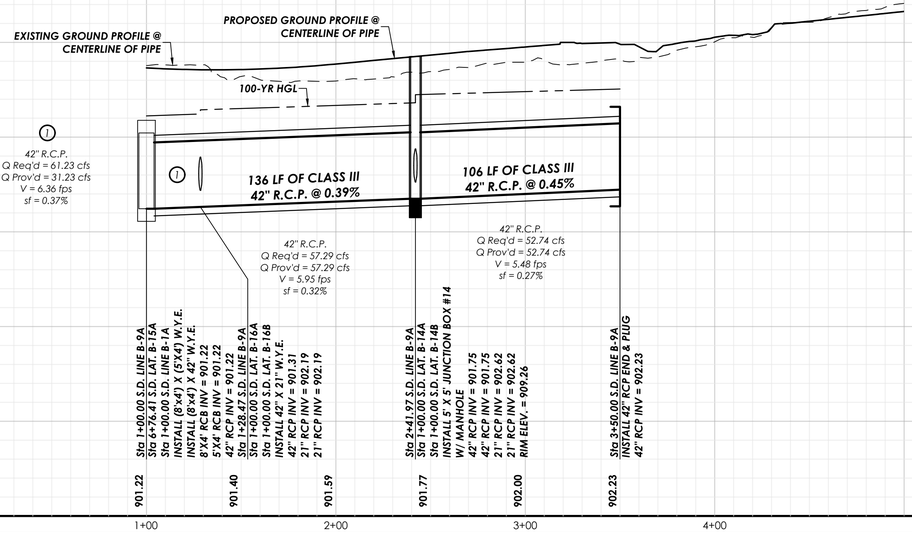
GRAPHIC SCALE 1"=40'
0 40 80 120

S.D. LINE "B-9A" CURVE TABLE					
CURVE #	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH	DELTA ANGLE
C1	80.13	1517.00	S46°43'22"E	80.12	003°01'36"

BENCH MARK ELEVATION : 852.36

CAPPED IRON ROD WITH CAP STAMPED "RDM" AT THE NORTHWEST CORNER OF THE INTERSECTION OF CR 1902 AND CR 1019, APPROXIMATELY 37 FEET NORTHWEST OF THE CENTERLINE OF CR 1019, APPROXIMATELY 45 FEET NORTHEAST OF THE CENTERLINE OF CR 1902, AND APPROXIMATELY 120 FEET SOUTHWEST OF A DRIVEWAY.



PROFILE SCALE
Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 4'

NO.	REVISION DATE

LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
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TxEng Firm # F-2644 – TxSurv Firm # 100170

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	2/16/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	SD-17

SD LINE B-9A

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PROFILE SCALE
Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 4'

NO.	REVISION DATE
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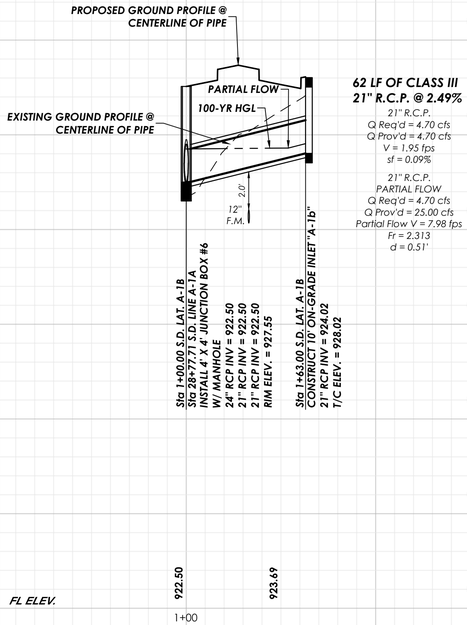
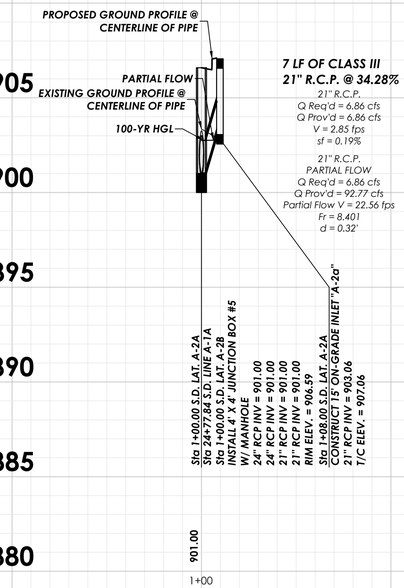
S.D. LAT. A-1B



62 LF OF CLASS III
21" R.C.P. @ 2.49%
21" R.C.P.
Q Req'd = 4.70 cfs
Q Prov'd = 4.70 cfs
V = 1.95 fps
sf = 0.09%

21" R.C.P.
PARTIAL FLOW
Q Req'd = 4.70 cfs
Q Prov'd = 25.00 cfs
Partial Flow V = 7.98 fps
Fr = 2.313
d = 0.51'

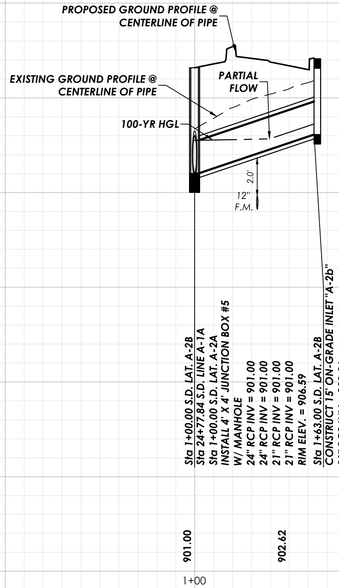
S.D. LAT. A-2A



7 LF OF CLASS III
21" R.C.P. @ 34.28%
21" R.C.P.
Q Req'd = 6.86 cfs
Q Prov'd = 6.86 cfs
V = 2.85 fps
sf = 0.19%

21" R.C.P.
PARTIAL FLOW
Q Req'd = 6.86 cfs
Q Prov'd = 92.77 cfs
Partial Flow V = 22.56 fps
Fr = 8.401
d = 0.32'

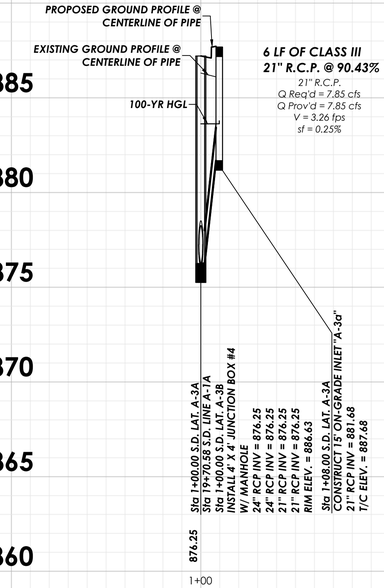
S.D. LAT. A-2B



61 LF OF CLASS III
21" R.C.P. @ 3.37%
21" R.C.P.
Q Req'd = 6.93 cfs
Q Prov'd = 6.93 cfs
V = 2.88 fps
sf = 0.19%

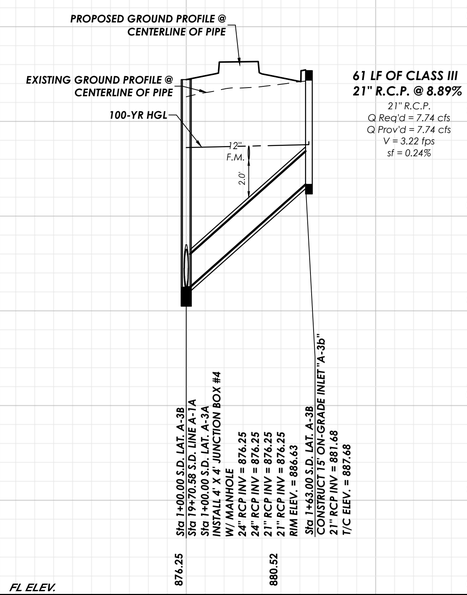
21" R.C.P.
PARTIAL FLOW
Q Req'd = 6.93 cfs
Q Prov'd = 29.09 cfs
Partial Flow V = 9.92 fps
Fr = 2.685
d = 0.58'

S.D. LAT. A-3A



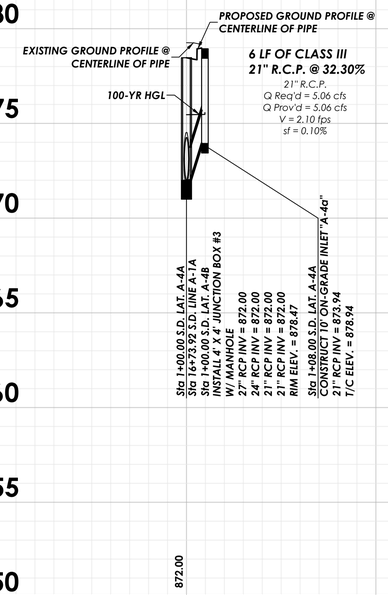
6 LF OF CLASS III
21" R.C.P. @ 90.43%
21" R.C.P.
Q Req'd = 7.85 cfs
Q Prov'd = 7.85 cfs
V = 3.26 fps
sf = 0.25%

S.D. LAT. A-3B



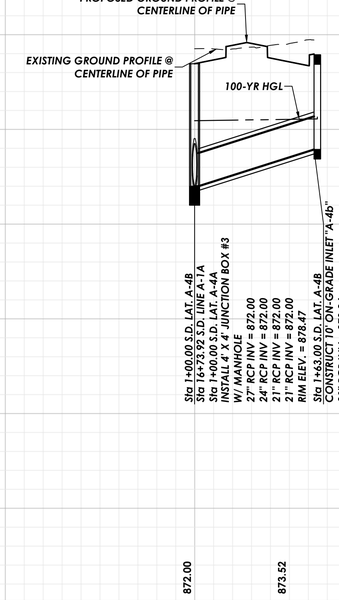
61 LF OF CLASS III
21" R.C.P. @ 8.89%
21" R.C.P.
Q Req'd = 7.74 cfs
Q Prov'd = 7.74 cfs
V = 3.22 fps
sf = 0.24%

S.D. LAT. A-4A



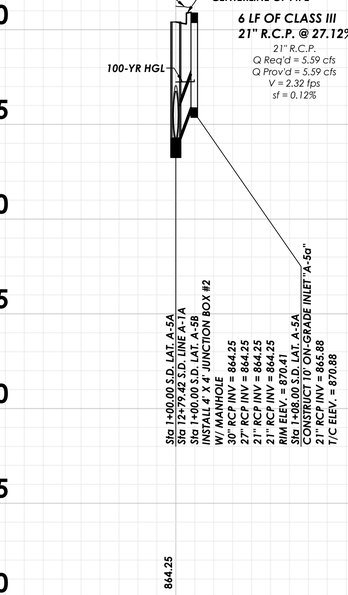
6 LF OF CLASS III
21" R.C.P. @ 32.30%
21" R.C.P.
Q Req'd = 5.06 cfs
Q Prov'd = 5.06 cfs
V = 2.10 fps
sf = 0.10%

S.D. LAT. A-4B



62 LF OF CLASS III
21" R.C.P. @ 3.18%
21" R.C.P.
Q Req'd = 4.95 cfs
Q Prov'd = 4.95 cfs
V = 2.06 fps
sf = 0.10%

S.D. LAT. A-5A



6 LF OF CLASS III
21" R.C.P. @ 27.12%
21" R.C.P.
Q Req'd = 5.59 cfs
Q Prov'd = 5.59 cfs
V = 2.32 fps
sf = 0.12%

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329-4373
TxEng Firm # F-2644 – TxSurv Firm # 100177-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	2/16/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	SD-18
	SD LATERALS

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PROFILE SCALE
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Vertical Scale: 1" = 4'

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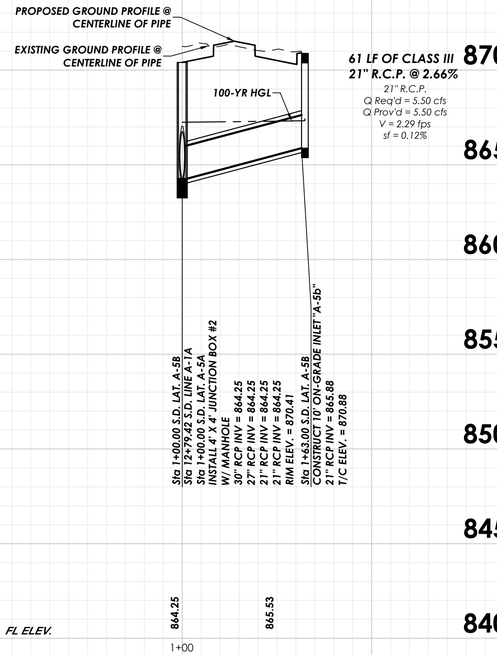
S.D. LAT. A-5B



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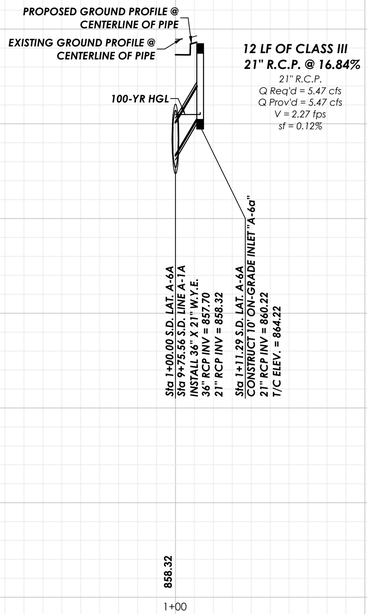
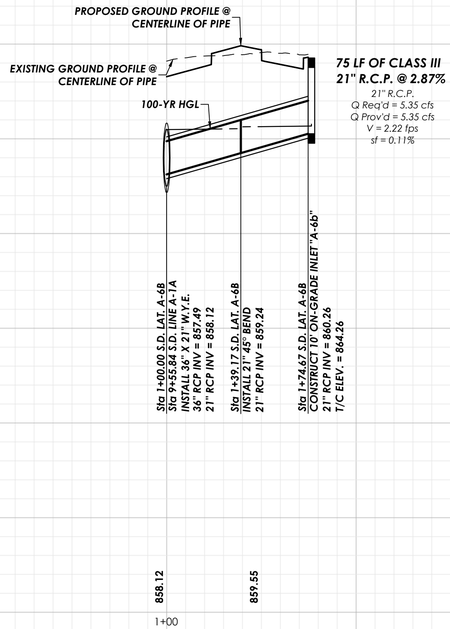


S.D. LAT. A-6B



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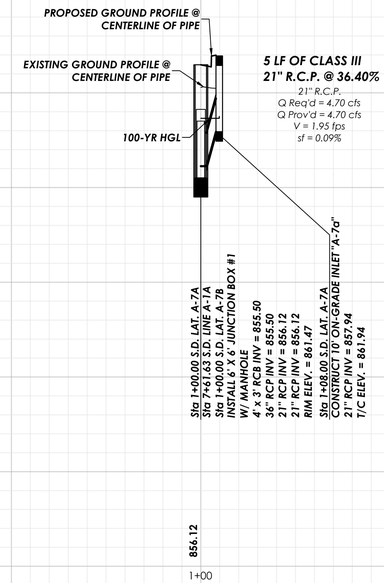

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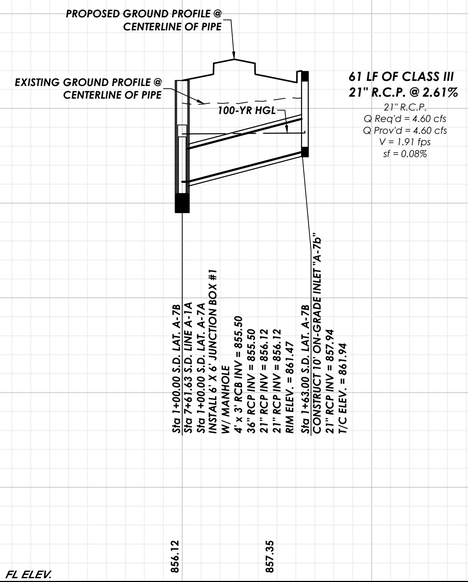
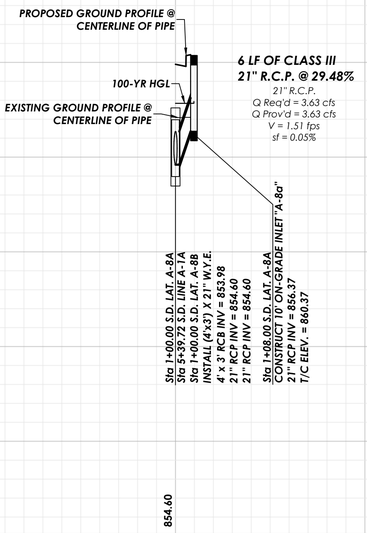


S.D. LAT. A-8A



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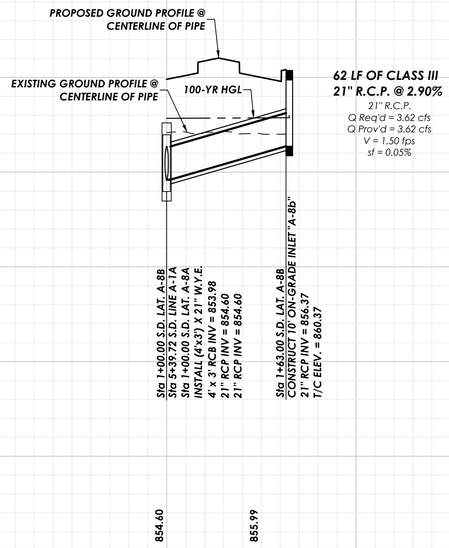
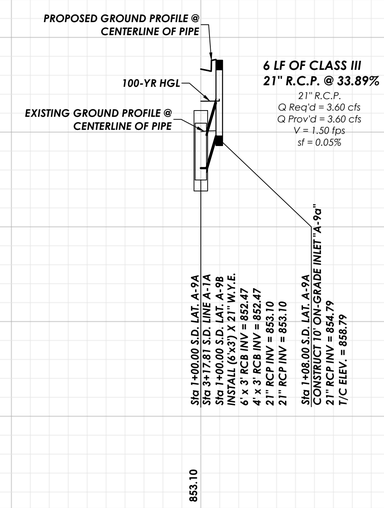


S.D. LAT. A-9A



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E:\10745 – Bransom Estates\Lakewood\Plans\SHEETS\60% Construction Plans\10745-LAKEWOOD-SD LATS.dwg Tue Sep 27 2022 17:12

CUSTOM BUILT SUMMIT HOMES

LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329-4373
TxEng Firm # F-2644 – TxSurv Firm # 100177-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	2/16/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE

SHEET
SD-19
SD LATERALS

PROFILE SCALE
Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 4'

NO.	REVISION DATE
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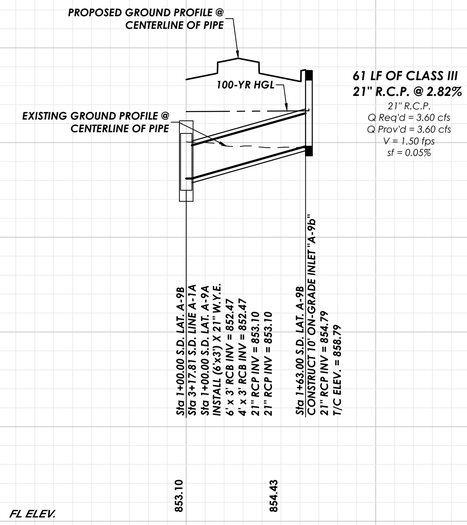
S.D. LAT. A-9B



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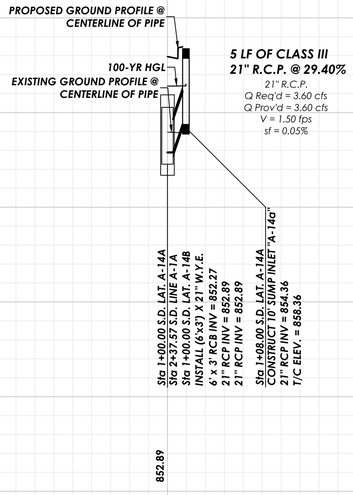

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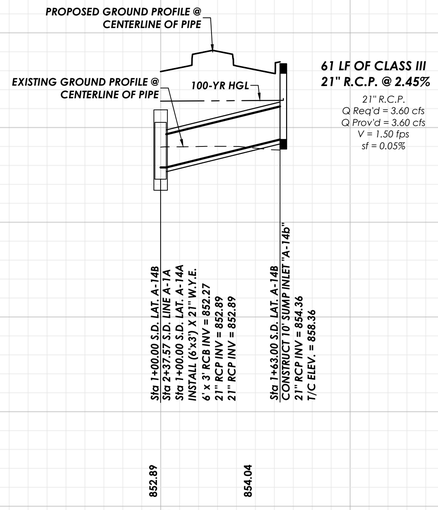

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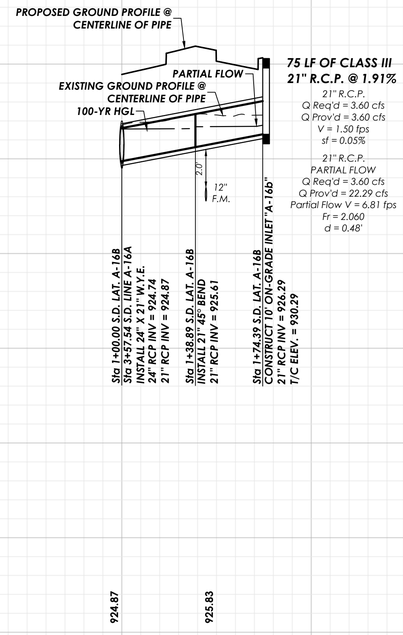

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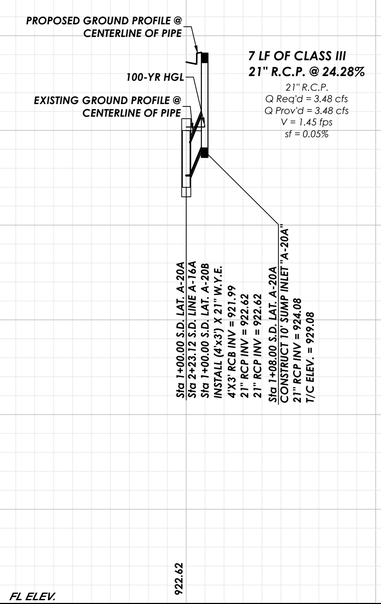
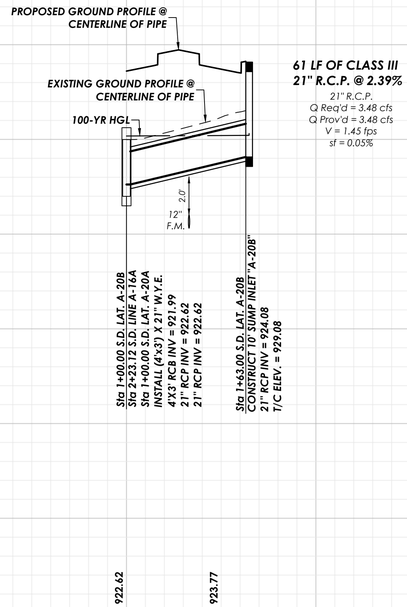


S.D. LAT. A-20B



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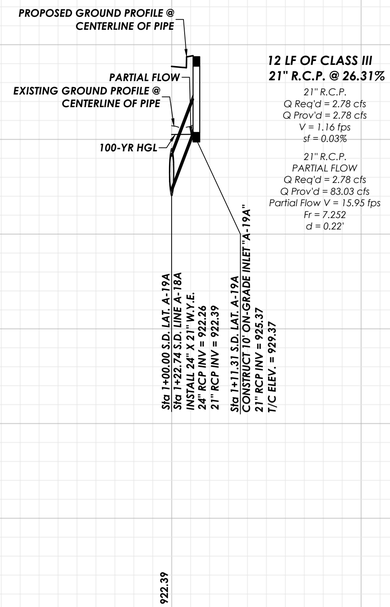

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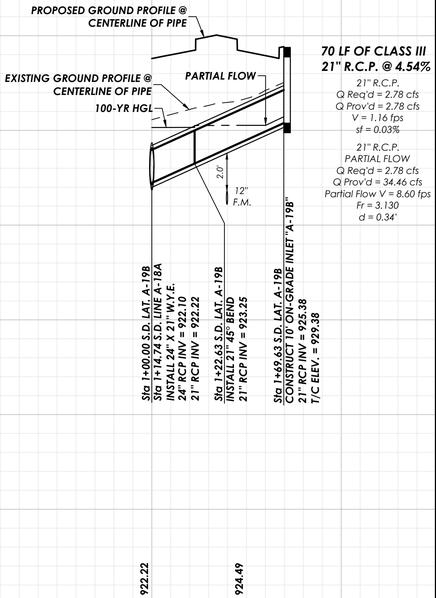

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN MARSHALL
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 100170

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	2/16/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE

SHEET **SD-20**

SD LATERALS

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PROFILE SCALE
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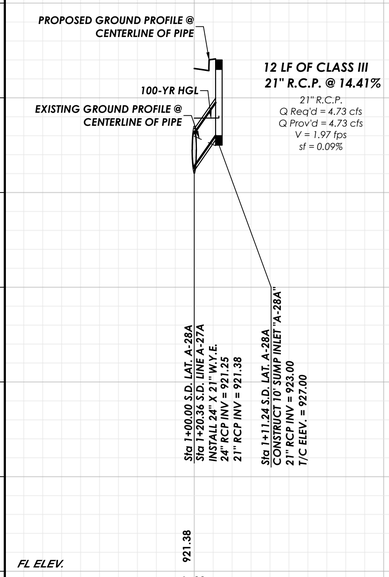
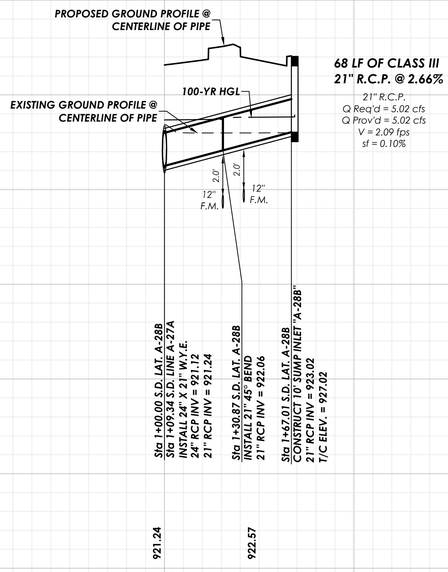
S.D. LAT. A-28A



S.D. LAT. A-28B



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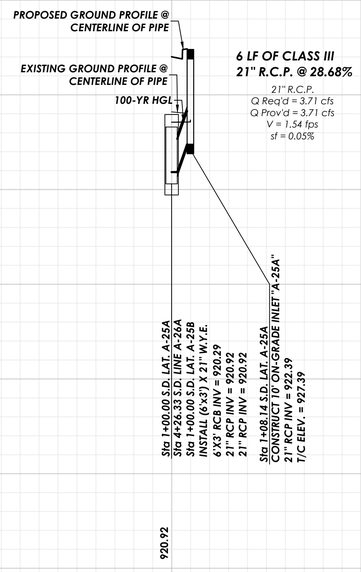

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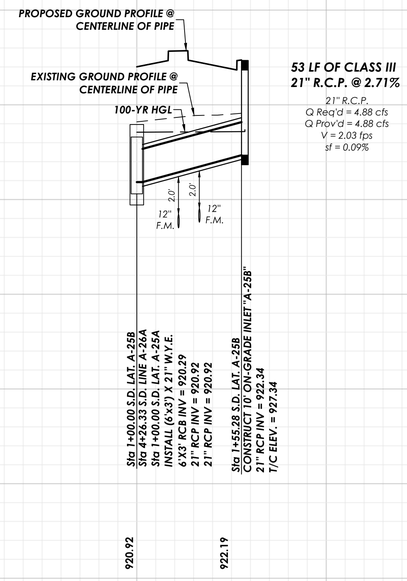

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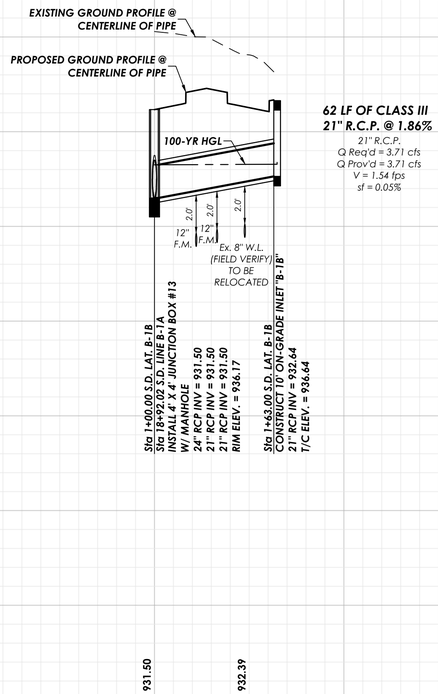

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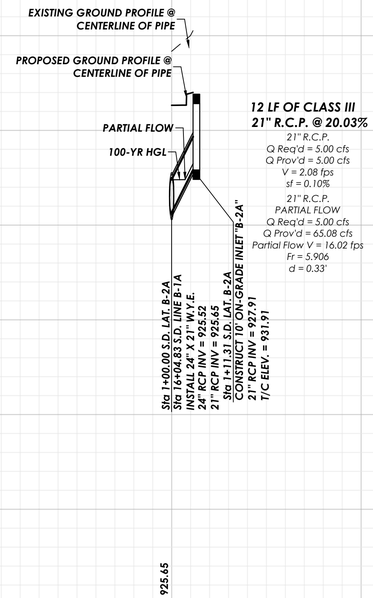

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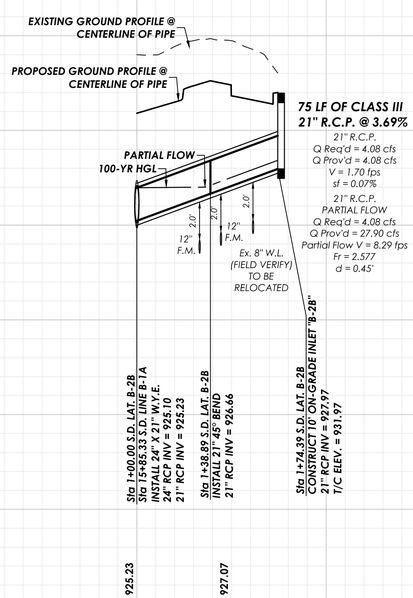

CIVIL ENGINEERING SUMMIT

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329-4373
TxEng Firm # F-2644 – TxSurv Firm # 100177-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	2/16/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE

SHEET **SD-21**

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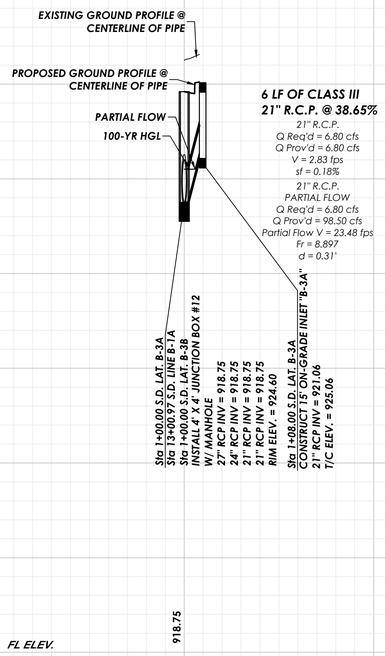
S.D. LAT. B-3A



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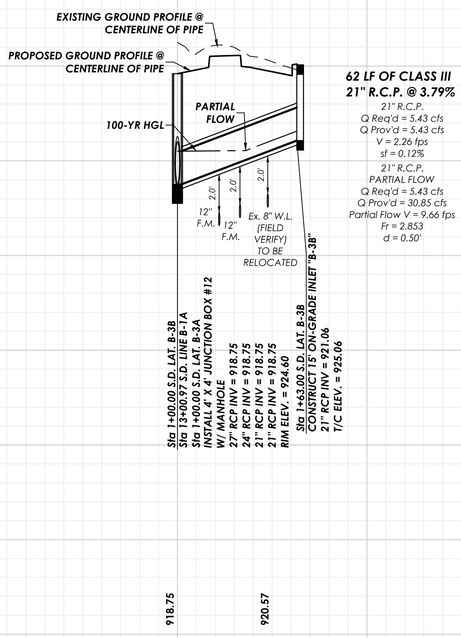

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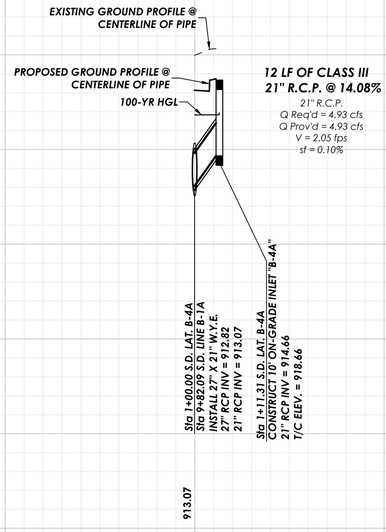

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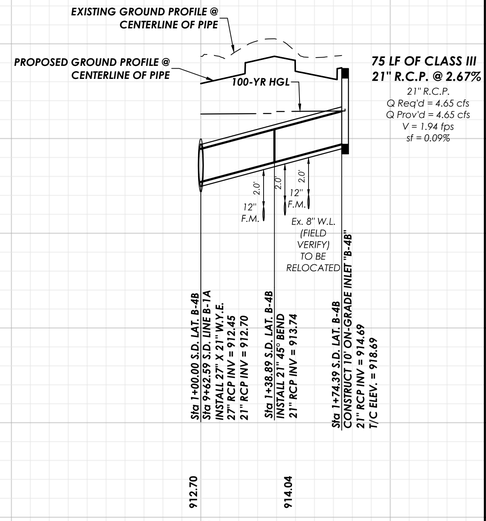

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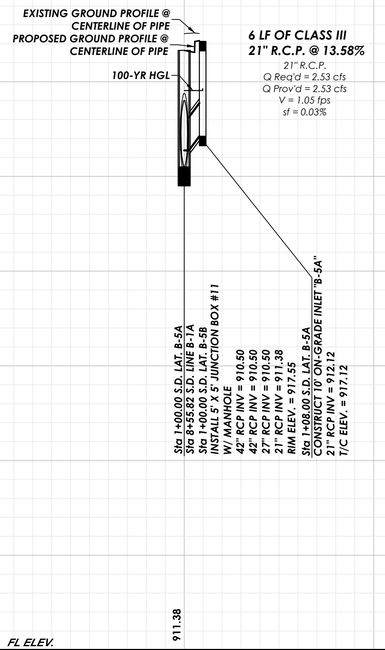

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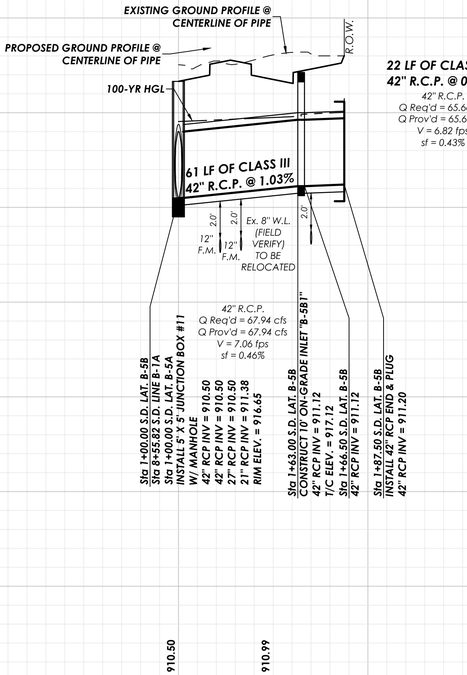

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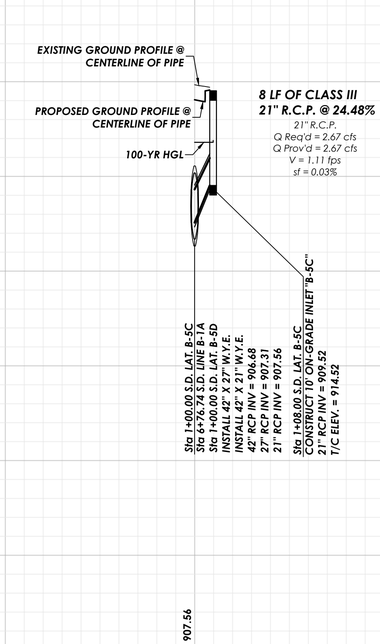

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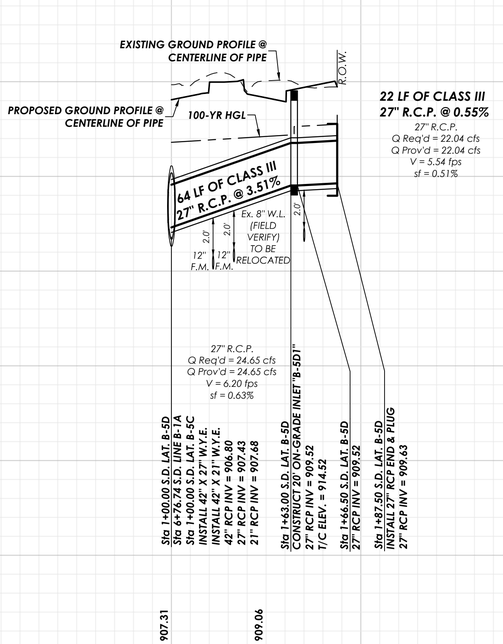

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS

CITY OF BURLESON

JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
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(817) 329-4373
TxEng Firm # F-2644 – TxSurv Firm # 100177-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	2/16/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE

SHEET **SD-22**

SD LATERALS

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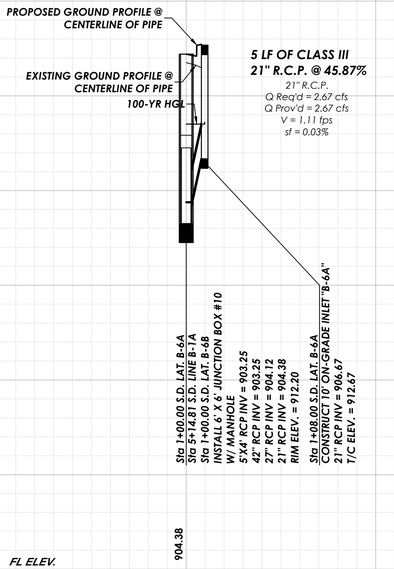
S.D. LAT. B-6A



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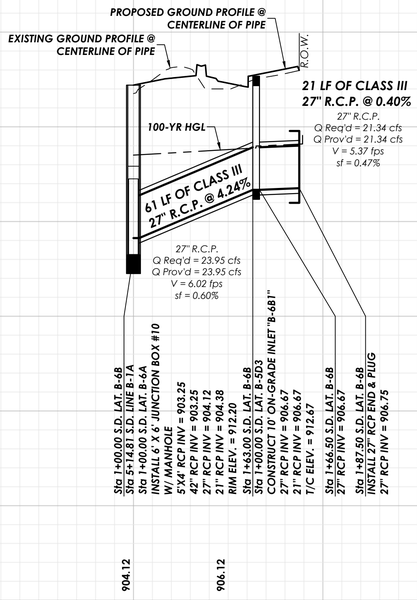

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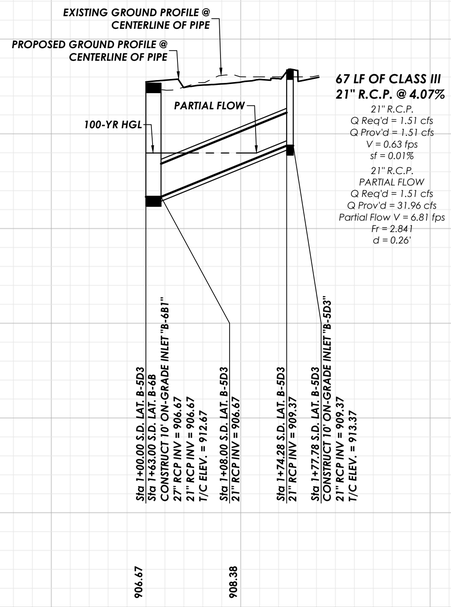

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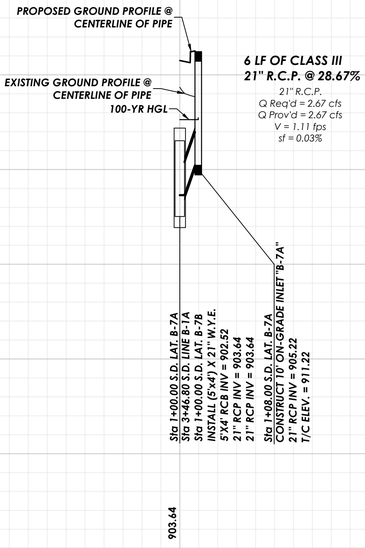

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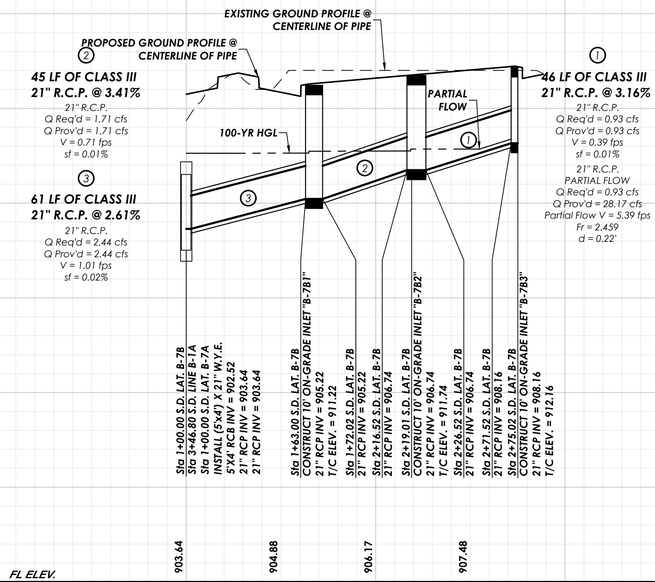

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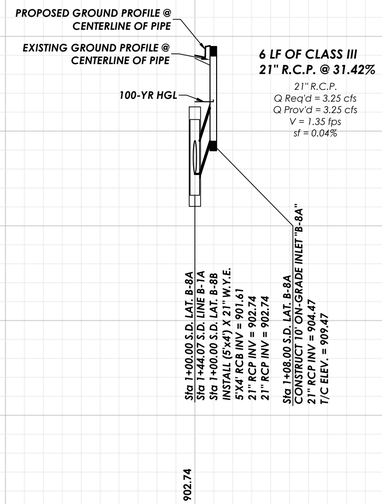
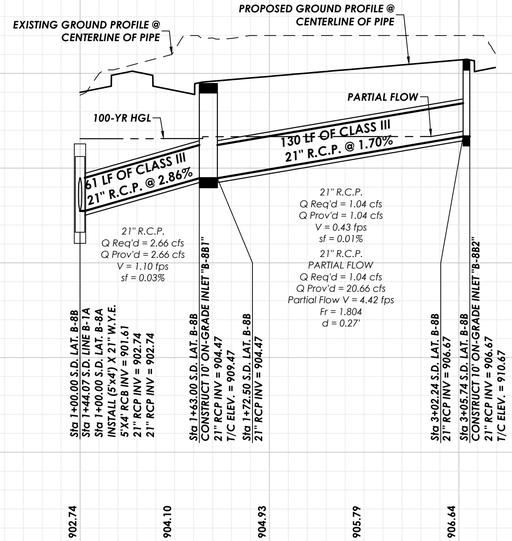


S.D. LAT. B-8B



GOODWIN AND MARSHALL, INC.
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TxEng Firm # F-2644 – TxSurv Firm # 100177-00

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09/28/22

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS

CITY OF BURLESON
JOHNSON COUNTY, TX

JOB NO. :	10745
DATE :	2/16/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE

SHEET **SD-23**

SD LATERALS

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E:\10745 – Bransom Estates\Lakewood\Plans\SHEETS\60% Construction Plans\10745–LAKEWOOD–SD LATS.dwg Tue Sep 27 2022 17:15

PROFILE SCALE
Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 4'

NO.	REVISION DATE
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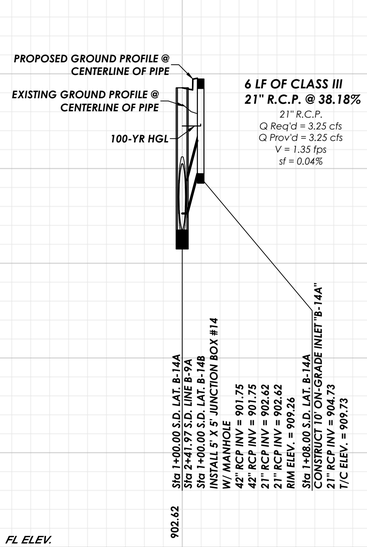
S.D. LAT. B-14A



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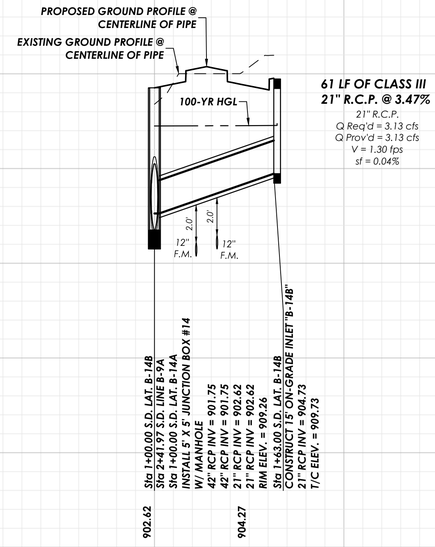

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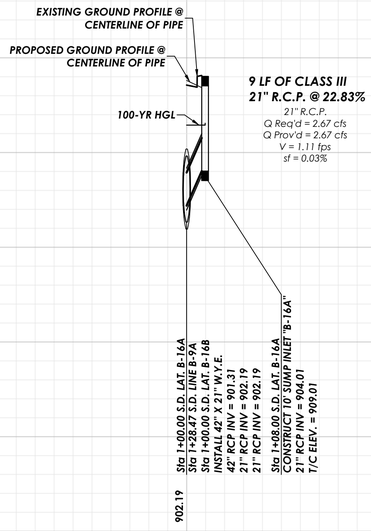

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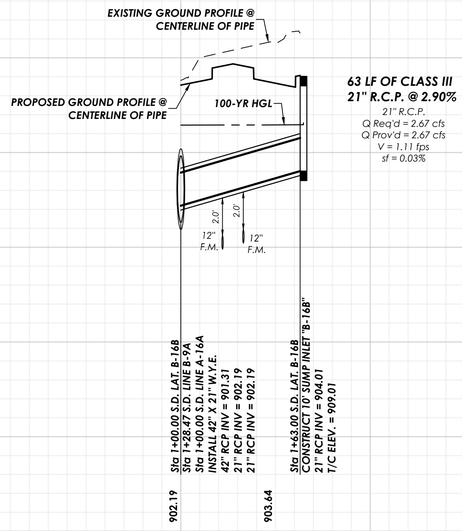

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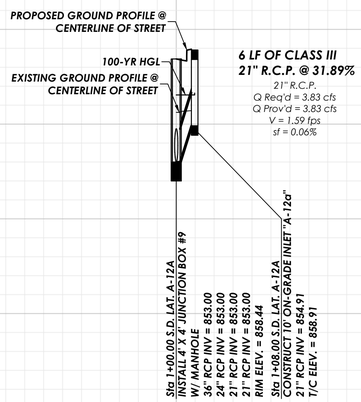
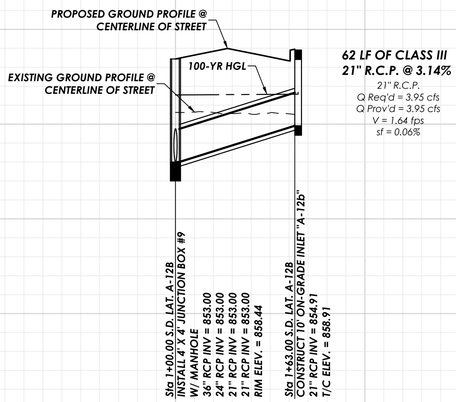


S.D. LAT. A-12B



LAKEWOOD DRIVE

90% CONSTRUCTION PLANS

CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN MARSHALL INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEngFirm # F-2644 – TxSurvFirm # 100170

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
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SHEET **SD-24**

SD LATERALS

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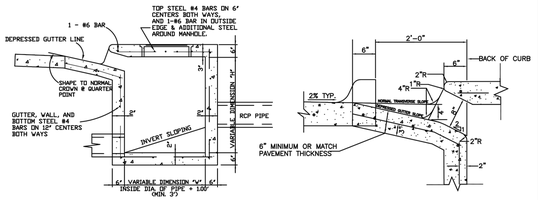


SECTION A–A
CURB INLET
CROSS SECTION

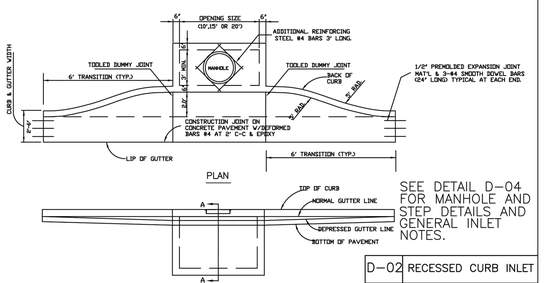
THROAT DETAIL FOR RECESSED INLETS
ON CONCRETE STREETS

CENTER BEAM FOR
FOR INLETS LARGER THAN 10'

SECTION B–B

NOTES:

1. ALL INLETS LARGER THAN 10' WILL REQUIRE A CENTER SUPPORT BEAM.
2. ALL OPEN BACK INLETS WILL REQUIRE A CENTER BEAM, REGARDLESS OF INLET TYPE OR SIZE.



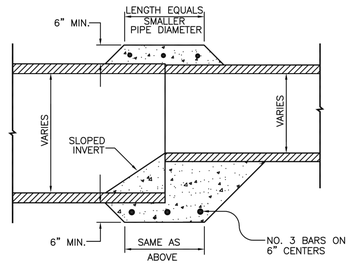
PLAN

ELEVATION

CURB INLET RECESSED
10', 15' OR 20' OPENING

SEE DETAIL D–04 FOR MANHOLE AND STEP DETAILS AND GENERAL INLET NOTES.

D–02	RECESSED CURB INLET	
CITY OF BURLESON		
ORIGINAL	10/6/06	SWC
REVISION		
REVISION		
REVISION		

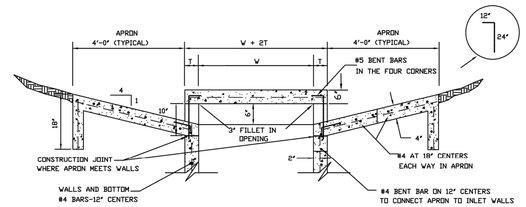


PIPE COLLAR DETAIL

NOTES

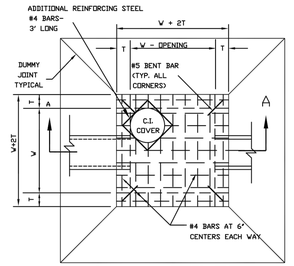
1. THIS PROCEDURE/DETAIL WILL ONLY BE USED WHEN A PREFAB REDUCTION IS NOT POSSIBLE.
2. CONCRETE FOR COLLAR WILL NOT BE PAID FOR DIRECTLY, BUT WILL BE CONSIDERED SUBSIDIARY TO THE VARIOUS OTHER BIDS.
3. CONCRETE SHALL BE 5 SACK 3000 PSI.

D–08	PIPE COLLAR	
CITY OF BURLESON		
ORIGINAL	10/6/06	SWC
REVISION		
REVISION		
REVISION		



SECTION "A"

INLET SIZE	T	W
4' SQUARE	7"	4'-0"
5' SQUARE	8"	5'-0"
6' SQUARE	9"	6'-0"



PLAN OF TOP SLAB

SEE DETAIL D–04 FOR MANHOLE COVER AND STEP DETAILS AND GENERAL NOTES.

D–03	DROP INLET	
CITY OF BURLESON		
ORIGINAL	10/6/06	SWC
REVISION		
REVISION		
REVISION		

NO.	REVISION DATE
1	
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CHRISTIAN SUMMIT

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN & MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
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(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 10007700

STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	5/16/22
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SHEET	DD-01

DRAINAGE DETAILS

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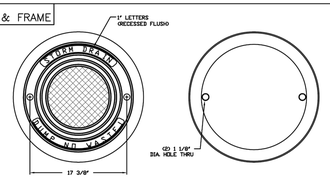
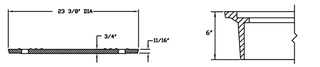
MANHOLE COVER & FRAME





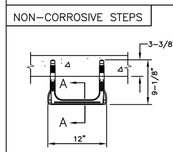
COVER SECTION

SECTION THROUGH RING

COVER WILL BE BASS AND HAYES NO. 103 (OR APPROVED EQUAL)

COVER WILL BE NON-LOCKING TYPE. SPOT WELD INLET COVER TO RING IN AT LEAST 4 LOCATIONS TO PREVENT THEFT.

NON-CORROSIVE STEPS



1/2" GRADE 60 STEEL REINFORCEMENT

SECTION A-A

NOTES:

1. STEPS SHALL CONFORM TO ASTM C478-88a.
2. M.A. IND. INC. NUMBER "PSI-PF" STEPS OR AMERICAN STEP CO., INC. NUMBER ML-10 OR APPROVED EQUAL TO BE INSTALLED PER MANUFACTURERS DIRECTION.
3. STEPS ARE REQUIRED FOR ALL INLETS 4' AND DEEPER.
4. STEPS SHALL BE PLACED 12" ON CENTERS VERTICALLY AND STAGGERED 12" ON CENTERS HORIZONTALLY.
5. THE TOP STEP SHALL BE NO GREATER THAN 1' BELOW THE INSIDE OF THE TOP OF THE INLET, AND THE BOTTOM STEP SHALL BE NO HIGHER THAN 2' FROM THE FLOOR.
6. STEPS SHALL BE PLACED ON A WALL WHICH WILL NOT CONFLICT WITH THE PIPE(S) AND SHALL BE EASILY ACCESSIBLE FROM THE MANHOLE OPENING.

GENERAL INLET NOTES

1. REINFORCING STEEL SHALL BE #4 BARS ON 12" CENTERS BOTH WAYS FOR GUTTER, BOTTOM SLAB, ENDS, FRONT AND BACK WALLS, AND #4 BARS ON 6" CENTERS BOTH WAYS FOR TOP SLAB. AN ADDITIONAL #6 BAR SHALL BE PLACED IN THE FRONT EDGE OF THE TOP SLAB IN THE CURB INLETS AND ADDITIONAL REINFORCING STEEL SHALL BE PLACED AROUND MANHOLES AS SHOWN.
2. ALL REINFORCING STEEL SHALL BE GRADE 60.
3. ALL CONCRETE SHALL BE CLASS "A". 4. ALL EXPOSED CORNERS SHALL BE CHAMFERED
4. ALL EXPOSED CORNERS SHALL BE CHAMFERED 3/4".
5. ALL REINFORCING STEEL SHALL HAVE A MINIMUM COVER OF 2".
6. ALL BACKFILLING SHALL BE PERFORMED BY MECHANICAL TAMPING TO 95% STANDARD PROCTOR DENSITY.
7. IF MODIFYING AN INLET, i.e. CREATING AN OPEN BACK INLET, THE TOP SHALL BE REMOVED AND RECONSTRUCTED.
8. LOCATION OF MANHOLE OPENING ON CURB INLETS TO BE AT OUTFALL END.
9. ALL 15' AND 20' INLETS WILL REQUIRE TWO MANHOLES ONLY IF THE INSIDE HEIGHT (UNDER THE CENTER BEAM) IS LESS THAN FOUR FEET.
10. LIGHT BROOM FINISH ON ALL SURFACES.
11. ALL DROP INLETS SHALL HAVE ONE OPENING ON EACH SIDE UNLESS OTHERWISE SHOWN ON PLANS.

D-04	MANHOLE COVER AND STEPS AND GENERAL INLET NOTES (APPLICABLE TO ALL INLET DETAILS)

CITY OF BURLESON

ORIGINAL	10/6/06	SWC
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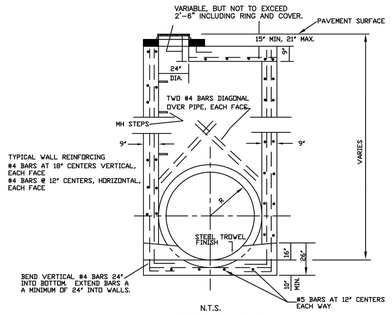
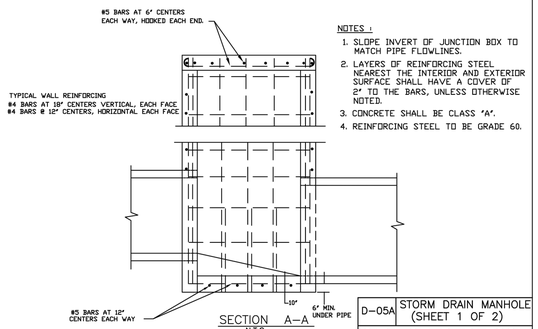


SECTION B-B

JUNCTION BOX MAY BE RECTANGULAR BUT NOT LESS THAN 4 FEET IN SHORT DIRECTION.

STORMWATER JUNCTION BOX 4', 5' OR 6' WIDTHS



SECTION A-A
N.T.S.

NOTES :

1. SLOPE INVERT OF JUNCTION BOX TO MATCH PIPE FLOWLINES.
2. LAYERS OF REINFORCING STEEL NEAREST THE INTERIOR AND EXTERIOR SURFACE SHALL HAVE A COVER OF 2" TO THE BARS, UNLESS OTHERWISE NOTED.
3. CONCRETE SHALL BE CLASS "A".
4. REINFORCING STEEL TO BE GRADE 60.

D-05A	STORM DRAIN MANHOLE (SHEET 1 OF 2)

CITY OF BURLESON

ORIGINAL	10/6/06	SWC
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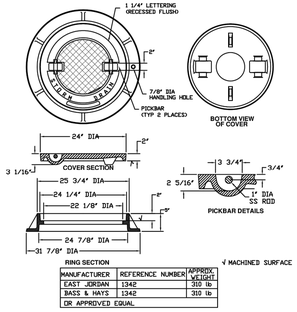
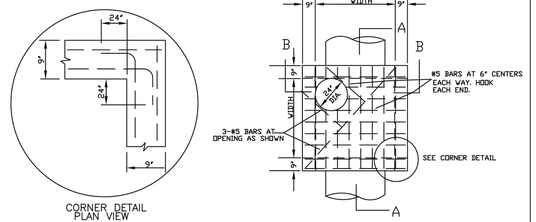


MANUFACTURER	REFERENCE NUMBER	APPROX. WEIGHT
EAST JORDAN	1342	310 lb
BASS & HAYS	1342	310 lb
OR APPROVED EQUAL		

LOGO MANHOLE COVER & FRAME



SONOTUBE SHALL BE USED FOR FORMING NECK ADJUSTMENT. POUR CONCRETE AROUND TUBE 9' WIDE. CONNECT TO TOP SLAB WITH 12" x 12" #4 BARS AT 12" CENTERS AROUND OPENING. ONE #4 BAR AROUND OPENING.

D-05B	STORM DRAIN MANHOLE (SHEET 2 OF 2)

CITY OF BURLESON

ORIGINAL	10/6/06	SWC
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REVISION		
REVISION		

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LAKEWOOD DRIVE

90% CONSTRUCTION PLANS

CITY OF BURLESON

JOHNSON COUNTY, TX

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CIVIL ENGINEERS – PLANNERS – SURVEYORS
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(817) 329-4373
TxEng Firm # F-2644 – TxSurv Firm # 10001700

STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

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SHEET **DD-02**

DRAINAGE DETAILS

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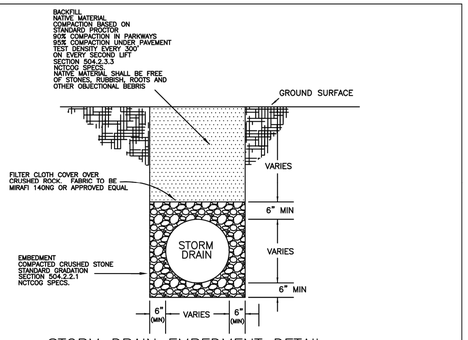
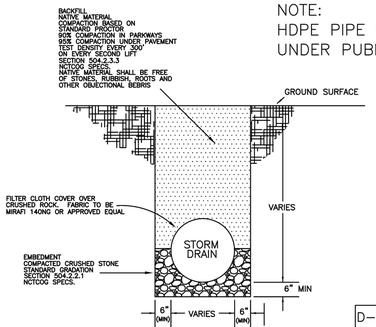


STORM DRAIN EMBEDMENT DETAIL
RCP UNDER PAVEMENT AND HDPE PIPE

NOTE:
HDPE PIPE IS NOT ALLOWED
UNDER PUBLIC PAVEMENT.



STORM DRAIN EMBEDMENT DETAIL
RCP IN PARKWAY OR UNPAVED EASEMENT

D-06	STORM DRAIN EMBEDMENT	
CITY OF BURLESON		
ORIGINAL	10/6/06	SWC
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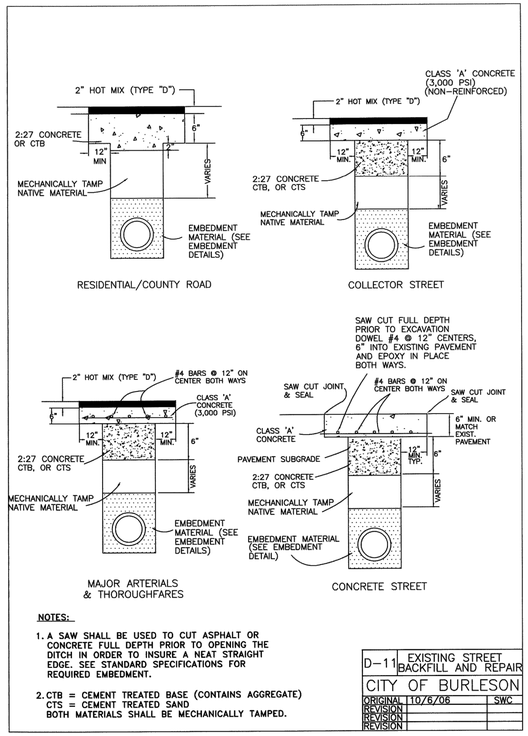
REVISION		



NOTES:

1. A SAW SHALL BE USED TO CUT ASPHALT OR CONCRETE FULL DEPTH PRIOR TO OPENING THE DITCH IN ORDER TO INSURE A NEAT STRAIGHT EDGE. SEE STANDARD SPECIFICATIONS FOR REQUIRED EMBEDMENT.
2. CTB = CEMENT TREATED BASE (CONTAINS AGGREGATE)
   CTS = CEMENT TREATED SAND
   BOTH MATERIALS SHALL BE MECHANICALLY TAMPED.

D-11	EXISTING STREET BACKFILL AND REPAIR	
CITY OF BURLESON		
ORIGINAL	10/6/06	SWC
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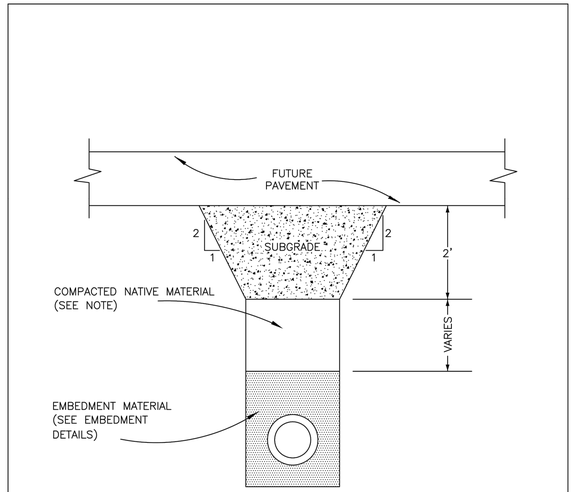
REVISION		



NOTE:
FOR LINES BEING LAID PRIOR TO NEW STREET CONSTRUCTION, WHICH WILL LIE BENEATH PAVEMENT OR CURB AND GUTTER, BACKFILL ABOVE PIPE EMBEDMENT SHALL CONSIST OF NATIVE MATERIAL, COMPACTED IN MAX. 6" TO 9" LIFTS (COMPACTED THICKNESS) TO 95% STANDARD PROCTOR DENSITY AT OPTIMUM MOISTURE CONTENT ±2%.

D-12	STREET BACKFILL PRIOR TO STREET CONSTRUCTION	
CITY OF BURLESON		
ORIGINAL	10/6/06	SWC
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REVISION		

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LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

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STATE OF TEXAS
BRENT A. CALDWELL
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LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
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DRAINAGE DETAILS

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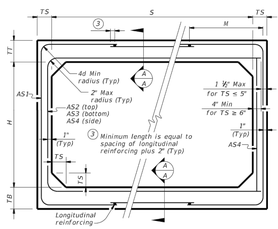
DATE:
FILE:

BOX DATA

SECTION DIMENSIONS					Fill Height	M (Min)	REINFORCING (sq. in. / ft.) (2)							(1) Lift Weight
S (ft.)	H (ft.)	TT (in.)	TB (in.)	TS (in.)	(ft.)	(in.)	AS1	AS2	AS3	AS4	AS5	AS7	AS8	(tons)
4	2	7.5	6	5	< 2	-	0.18	0.27	0.15	0.12	0.18	0.18	0.14	4.5
4	2	5	5	5	2 < 3	38	0.18	0.19	0.17	0.12	-	-	-	3.6
4	2	5	5	5	3 - 5	38	0.13	0.13	0.13	0.12	-	-	-	3.6
4	2	5	5	5	10	38	0.12	0.12	0.12	0.12	-	-	-	3.6
4	2	5	5	5	15	38	0.14	0.16	0.16	0.12	-	-	-	3.6
4	2	5	5	5	20	38	0.18	0.20	0.21	0.12	-	-	-	3.6
4	2	5	5	5	25	38	0.23	0.25	0.25	0.12	-	-	-	3.6
4	2	5	5	5	30	38	0.28	0.30	0.30	0.12	-	-	-	3.6
4	3	7.5	6	5	< 2	-	0.18	0.31	0.18	0.12	0.18	0.18	0.14	5.0
4	3	5	5	5	2 < 3	38	0.15	0.23	0.20	0.12	-	-	-	4.1
4	3	5	5	5	3 - 5	38	0.12	0.16	0.16	0.12	-	-	-	4.1
4	3	5	5	5	10	38	0.12	0.14	0.14	0.12	-	-	-	4.1
4	3	5	5	5	15	38	0.12	0.18	0.18	0.12	-	-	-	4.1
4	3	5	5	5	20	38	0.14	0.23	0.24	0.12	-	-	-	4.1
4	3	5	5	5	25	38	0.17	0.29	0.29	0.12	-	-	-	4.1
4	3	5	5	5	30	38	0.21	0.35	0.35	0.12	-	-	-	4.1
4	4	7.5	6	5	< 2	-	0.18	0.33	0.20	0.12	0.18	0.18	0.14	5.5
4	4	5	5	5	2 < 3	38	0.12	0.26	0.23	0.12	-	-	-	4.6
4	4	5	5	5	3 - 5	38	0.12	0.18	0.18	0.12	-	-	-	4.6
4	4	5	5	5	10	38	0.12	0.15	0.15	0.12	-	-	-	4.6
4	4	5	5	5	15	38	0.12	0.19	0.20	0.12	-	-	-	4.6
4	4	5	5	5	20	38	0.12	0.25	0.25	0.12	-	-	-	4.6
4	4	5	5	5	25	38	0.14	0.31	0.31	0.12	-	-	-	4.6
4	4	5	5	5	30	38	0.17	0.37	0.37	0.12	-	-	-	4.6

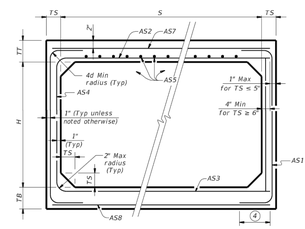
(1) For box length = 8'-0"

(2) AS1 thru AS4, AS7 and AS8 are minimum required areas of reinforcement per linear foot of box length. AS5 is minimum required area of reinforcement per linear foot of box width.



CORNER OPTION "A" CORNER OPTION "B"

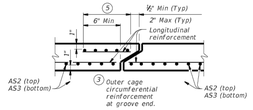
FILL HEIGHT 2 FT AND GREATER



CORNER OPTION "A" CORNER OPTION "B"

FILL HEIGHT LESS THAN 2 FT

(4) Length is equal to spacing of longitudinal reinforcing plus 2". (10" Min) (Typ)



SECTION A-A

(Showing top and bottom slab joint reinforcement.)

MATERIAL NOTES:
Provide 0.03 sq. in./ft. minimum longitudinal reinforcement at each face in slabs and walls. This minimum requirement may be met by the transverse wires when wire mesh reinforcement is used.
Provide Class H concrete (f'c = 5,000 psi).

GENERAL NOTES:
Designs shown conform to ASTM C1577. Refer to ASTM C1577 for information or details not shown.
See Box Culverts Precast Miscellaneous Details (SCP-MD) standard sheet for details and notes not shown.
In lieu of furnishing the designs shown on this sheet, the contractor may furnish an alternate design that is equal to or exceeds the box design for the design fill height in the table. Submit shop plans for alternate designs in accordance with Item "Precast Concrete Structural Members (Fabrication)".

HL93 LOADING

Texas Department of Transportation — Bridge Division Standard

SINGLE BOX CULVERTS PRECAST 4'-0" SPAN

SCP-4

FILE:	scp04ats-20.dgn	dw: TxDOT	ck: TxDOT	dw: TxDOT	ck: TxDOT
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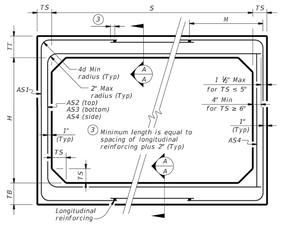
REVISIONS		DIST	COUNTY		SHEET NO.

BOX DATA

SECTION DIMENSIONS					Fill Height	M (Min)	REINFORCING (sq. in. / ft.) (2)							(1) Lift Weight
S (ft.)	H (ft.)	TT (in.)	TB (in.)	TS (in.)	(ft.)	(in.)	AS1	AS2	AS3	AS4	AS5	AS7	AS8	(tons)
6	2	8	7	7	< 2	-	0.23	0.27	0.19	0.17	0.19	0.19	0.17	7.2
6	2	7	7	7	2 < 3	43	0.25	0.21	0.17	0.17	-	-	-	6.8
6	2	7	7	7	3 - 5	43	0.20	0.17	0.17	0.17	-	-	-	6.8
6	2	7	7	7	10	39	0.20	0.17	0.17	0.17	-	-	-	6.8
6	2	7	7	7	15	39	0.26	0.20	0.20	0.17	-	-	-	6.8
6	2	7	7	7	20	39	0.34	0.26	0.26	0.17	-	-	-	6.8
6	2	7	7	7	25	39	0.43	0.32	0.32	0.17	-	-	-	6.8
6	2	7	7	7	30	39	0.52	0.38	0.39	0.17	-	-	-	6.8
6	3	8	7	7	< 2	-	0.20	0.31	0.22	0.17	0.19	0.19	0.17	7.9
6	3	7	7	7	2 < 3	43	0.21	0.24	0.19	0.17	-	-	-	7.5
6	3	7	7	7	3 - 5	39	0.17	0.18	0.17	0.17	-	-	-	7.5
6	3	7	7	7	10	39	0.17	0.18	0.19	0.17	-	-	-	7.5
6	3	7	7	7	15	38	0.22	0.24	0.24	0.17	-	-	-	7.5
6	3	7	7	7	20	38	0.28	0.31	0.31	0.17	-	-	-	7.5
6	3	7	7	7	25	38	0.35	0.38	0.39	0.17	-	-	-	7.5
6	3	7	7	7	30	38	0.42	0.46	0.46	0.17	-	-	-	7.5
6	4	8	7	7	< 2	-	0.19	0.34	0.25	0.17	0.19	0.19	0.17	8.6
6	4	7	7	7	2 < 3	43	0.19	0.27	0.21	0.17	-	-	-	8.2
6	4	7	7	7	3 - 5	39	0.17	0.21	0.19	0.17	-	-	-	8.2
6	4	7	7	7	10	39	0.17	0.20	0.21	0.17	-	-	-	8.2
6	4	7	7	7	15	38	0.18	0.27	0.27	0.17	-	-	-	8.2
6	4	7	7	7	20	38	0.24	0.34	0.35	0.17	-	-	-	8.2
6	4	7	7	7	25	38	0.29	0.43	0.42	0.17	-	-	-	8.2
6	4	7	7	7	30	38	0.35	0.51	0.52	0.17	-	-	-	8.2
6	5	8	7	7	< 2	-	0.19	0.37	0.28	0.17	0.19	0.19	0.17	9.3
6	5	7	7	7	2 < 3	43	0.17	0.30	0.24	0.17	-	-	-	8.9
6	5	7	7	7	3 - 5	43	0.17	0.23	0.21	0.17	-	-	-	8.9
6	5	7	7	7	10	39	0.17	0.22	0.23	0.17	-	-	-	8.9
6	5	7	7	7	15	38	0.17	0.28	0.29	0.17	-	-	-	8.9
6	5	7	7	7	20	38	0.20	0.37	0.38	0.17	-	-	-	8.9
6	5	7	7	7	25	38	0.25	0.45	0.46	0.17	-	-	-	8.9
6	5	7	7	7	30	38	0.30	0.54	0.55	0.17	-	-	-	8.9
6	6	8	7	7	< 2	-	0.19	0.38	0.30	0.17	0.19	0.19	0.17	10
6	6	7	7	7	2 < 3	52	0.17	0.32	0.26	0.17	-	-	-	9.6
6	6	7	7	7	3 - 5	52	0.17	0.24	0.22	0.17	-	-	-	9.6
6	6	7	7	7	10	43	0.17	0.23	0.24	0.17	-	-	-	9.6
6	6	7	7	7	15	39	0.17	0.29	0.31	0.17	-	-	-	9.6
6	6	7	7	7	20	39	0.18	0.38	0.39	0.17	-	-	-	9.6
6	6	7	7	7	25	38	0.23	0.46	0.48	0.17	-	-	-	9.6
6	6	7	7	7	30	38	0.27	0.55	0.57	0.17	-	-	-	9.6

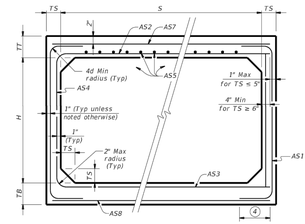
(1) For box length = 8'-0"

(2) AS1 thru AS4, AS7 and AS8 are minimum required areas of reinforcement per linear foot of box length. AS5 is minimum required area of reinforcement per linear foot of box width.



CORNER OPTION "A" CORNER OPTION "B"

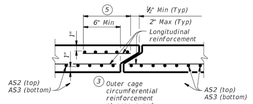
FILL HEIGHT 2 FT AND GREATER



CORNER OPTION "A" CORNER OPTION "B"

FILL HEIGHT LESS THAN 2 FT

(4) Length is equal to spacing of longitudinal reinforcing plus 2". (10" Min) (Typ)



SECTION A-A

(Showing top and bottom slab joint reinforcement.)

MATERIAL NOTES:
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HL93 LOADING

Texas Department of Transportation — Bridge Division Standard

SINGLE BOX CULVERTS PRECAST 6'-0" SPAN

SCP-6

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PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	5/16/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	DD-04

DRAINAGE DETAILS

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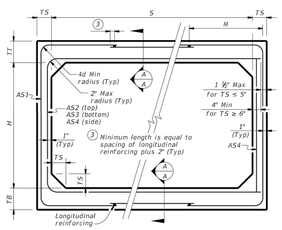
BOX DATA

SECTION DIMENSIONS					Fill Height	M (Min)	REINFORCING (sq. in. / ft.) (2)							(1) Lift Weight
S (ft.)	H (ft.)	TT (in.)	TB (in.)	TS (in.)	(ft.)	(in.)	AS1	AS2	AS3	AS4	AS5	AS7	AS8	(tons)
8	3	8	8	8	< 2	-	0.31	0.35	0.25	0.19	0.19	0.19	0.19	10.4
8	3	8	8	8	2 < 3	55	0.35	0.29	0.28	0.19	-	-	-	10.4
8	3	8	8	8	3 – 5	50	0.28	0.23	0.24	0.19	-	-	-	10.4
8	3	8	8	8	10	45	0.29	0.25	0.26	0.19	-	-	-	10.4
8	3	8	8	8	15	45	0.39	0.33	0.34	0.19	-	-	-	10.4
8	3	8	8	8	20	45	0.51	0.43	0.44	0.19	-	-	-	10.4
8	3	8	8	8	25	45	0.63	0.53	0.54	0.19	-	-	-	10.4
8	4	8	8	8	< 2	-	0.27	0.38	0.29	0.19	0.19	0.19	0.19	11.2
8	4	8	8	8	2 < 3	50	0.31	0.34	0.32	0.19	-	-	-	11.2
8	4	8	8	8	3 – 5	50	0.25	0.27	0.27	0.19	-	-	-	11.2
8	4	8	8	8	10	45	0.26	0.28	0.29	0.19	-	-	-	11.2
8	4	8	8	8	15	41	0.34	0.37	0.38	0.19	-	-	-	11.2
8	4	8	8	8	20	41	0.44	0.48	0.49	0.19	-	-	-	11.2
8	5	8	8	8	< 2	-	0.24	0.40	0.32	0.19	0.19	0.19	0.19	12.0
8	5	8	8	8	2 < 3	50	0.28	0.37	0.35	0.19	-	-	-	12.0
8	5	8	8	8	3 – 5	45	0.23	0.29	0.30	0.19	-	-	-	12.0
8	5	8	8	8	10	45	0.23	0.31	0.32	0.19	-	-	-	12.0
8	5	8	8	8	15	41	0.30	0.41	0.42	0.19	-	-	-	12.0
8	5	8	8	8	20	41	0.39	0.52	0.54	0.19	-	-	-	12.0
8	6	8	8	8	< 2	-	0.22	0.42	0.35	0.19	0.19	0.19	0.19	12.8
8	6	8	8	8	2 < 3	50	0.25	0.40	0.38	0.19	-	-	-	12.8
8	6	8	8	8	3 – 5	50	0.21	0.32	0.33	0.19	-	-	-	12.8
8	6	8	8	8	10	45	0.22	0.33	0.34	0.19	-	-	-	12.8
8	6	8	8	8	15	41	0.28	0.43	0.45	0.19	-	-	-	12.8
8	6	8	8	8	20	41	0.36	0.55	0.57	0.19	-	-	-	12.8
8	7	8	8	8	< 2	-	0.20	0.44	0.37	0.19	0.19	0.19	0.19	13.6
8	7	8	8	8	2 < 3	55	0.23	0.43	0.41	0.19	-	-	-	13.6
8	7	8	8	8	3 – 5	55	0.19	0.34	0.35	0.19	-	-	-	13.6
8	7	8	8	8	10	50	0.20	0.34	0.36	0.19	-	-	-	13.6
8	7	8	8	8	15	41	0.26	0.45	0.47	0.19	-	-	-	13.6
8	7	8	8	8	20	41	0.33	0.57	0.60	0.19	-	-	-	13.6
8	8	8	8	8	< 2	-	0.20	0.45	0.40	0.19	0.19	0.19	0.19	14.4
8	8	8	8	8	2 < 3	65	0.21	0.45	0.44	0.19	-	-	-	14.4
8	8	8	8	8	3 – 5	65	0.19	0.36	0.38	0.19	-	-	-	14.4
8	8	8	8	8	10	55	0.19	0.35	0.38	0.19	-	-	-	14.4
8	8	8	8	8	15	45	0.24	0.46	0.49	0.19	-	-	-	14.4
8	8	8	8	8	20	45	0.31	0.59	0.62	0.19	-	-	-	14.4

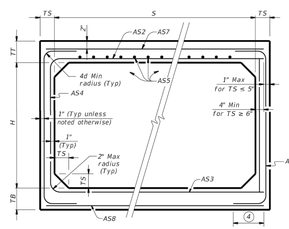
(1) For box length = 8'-0"

(2) AS1 thru AS4, AS7 and AS8 are minimum required areas of reinforcement per linear foot of box length. AS5 is minimum required area of reinforcement per linear foot of box width.



CORNER OPTION "A" CORNER OPTION "B"

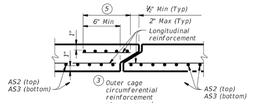
FILL HEIGHT 2 FT AND GREATER



CORNER OPTION "A" CORNER OPTION "B"

FILL HEIGHT LESS THAN 2 FT

(4) Length is equal to spacing of longitudinal reinforcing plus 2". (10" Min) (Typ).



SECTION A-A

(Showing top and bottom slab joint reinforcement.)

MATERIAL NOTES:
Provide 0.03 sq. in./ft. minimum longitudinal reinforcement at each face in slabs and walls. This minimum requirement may be met by the transverse wires when wire mesh reinforcement is used.
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HL93 LOADING

Texas Department of Transportation — Bridge Division Standard

SINGLE BOX CULVERTS PRECAST

8'-0" SPAN

SCP-8

FILE:	sc08dts-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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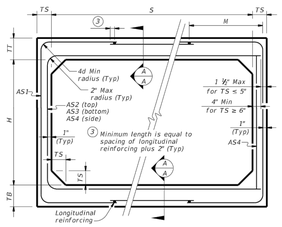
REVISIONS		DIST	COUNTY		SHEET NO.

BOX DATA

SECTION DIMENSIONS					Fill Height	M (Min)	REINFORCING (sq. in. / ft.) (2)							(1) Lift Weight
S (ft.)	H (ft.)	TT (in.)	TB (in.)	TS (in.)	(ft.)	(in.)	AS1	AS2	AS3	AS4	AS5	AS7	AS8	(tons)
5	2	8	7	6	< 2	-	0.19	0.27	0.18	0.14	0.19	0.19	0.17	6.0
5	2	6	6	6	2 < 3	44	0.22	0.20	0.16	0.14	-	-	-	5.1
5	2	6	6	6	3 – 5	44	0.16	0.14	0.14	0.14	-	-	-	5.1
5	2	6	6	6	10	36	0.15	0.14	0.14	0.14	-	-	-	5.1
5	2	6	6	6	15	36	0.20	0.18	0.18	0.14	-	-	-	5.1
5	2	6	6	6	20	36	0.26	0.23	0.24	0.14	-	-	-	5.1
5	2	6	6	6	25	36	0.33	0.29	0.29	0.14	-	-	-	5.1
5	2	6	6	6	30	36	0.39	0.34	0.35	0.14	-	-	-	5.1
5	3	8	7	6	< 2	-	0.19	0.31	0.21	0.14	0.19	0.19	0.17	6.6
5	3	6	6	6	2 < 3	45	0.18	0.24	0.19	0.14	-	-	-	5.7
5	3	6	6	6	3 – 5	36	0.14	0.17	0.16	0.14	-	-	-	5.7
5	3	6	6	6	10	36	0.14	0.16	0.17	0.14	-	-	-	5.7
5	3	6	6	6	15	35	0.16	0.21	0.22	0.14	-	-	-	5.7
5	3	6	6	6	20	35	0.21	0.27	0.28	0.14	-	-	-	5.7
5	3	6	6	6	25	35	0.26	0.34	0.34	0.14	-	-	-	5.7
5	3	6	6	6	30	35	0.31	0.41	0.41	0.14	-	-	-	5.7
5	4	8	7	6	< 2	-	0.19	0.33	0.24	0.14	0.19	0.19	0.17	7.2
5	4	6	6	6	2 < 3	45	0.16	0.27	0.22	0.14	-	-	-	6.3
5	4	6	6	6	3 – 5	45	0.14	0.19	0.18	0.14	-	-	-	6.3
5	4	6	6	6	10	36	0.14	0.18	0.18	0.14	-	-	-	6.3
5	4	6	6	6	15	35	0.14	0.23	0.24	0.14	-	-	-	6.3
5	4	6	6	6	20	35	0.17	0.30	0.31	0.14	-	-	-	6.3
5	4	6	6	6	25	35	0.21	0.37	0.38	0.14	-	-	-	6.3
5	4	6	6	6	30	35	0.25	0.44	0.45	0.14	-	-	-	6.3
5	5	8	7	6	< 2	-	0.19	0.35	0.26	0.14	0.19	0.19	0.17	7.8
5	5	6	6	6	2 < 3	45	0.14	0.29	0.24	0.14	-	-	-	6.9
5	5	6	6	6	3 – 5	45	0.14	0.21	0.20	0.14	-	-	-	6.9
5	5	6	6	6	10	45	0.14	0.19	0.20	0.14	-	-	-	6.9
5	5	6	6	6	15	36	0.14	0.24	0.25	0.14	-	-	-	6.9
5	5	6	6	6	20	35	0.15	0.31	0.32	0.14	-	-	-	6.9
5	5	6	6	6	25	35	0.18	0.38	0.39	0.14	-	-	-	6.9
5	5	6	6	6	30	35	0.21	0.46	0.47	0.14	-	-	-	6.9

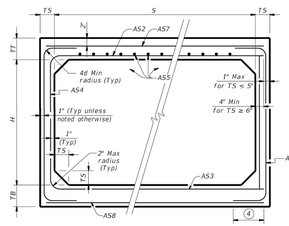
(1) For box length = 8'-0"

(2) AS1 thru AS4, AS7 and AS8 are minimum required areas of reinforcement per linear foot of box length. AS5 is minimum required area of reinforcement per linear foot of box width.



CORNER OPTION "A" CORNER OPTION "B"

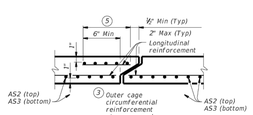
FILL HEIGHT 2 FT AND GREATER



CORNER OPTION "A" CORNER OPTION "B"

FILL HEIGHT LESS THAN 2 FT

(4) Length is equal to spacing of longitudinal reinforcing plus 2". (10" Min) (Typ).



SECTION A-A

(Showing top and bottom slab joint reinforcement.)

MATERIAL NOTES:
Provide 0.03 sq. in./ft. minimum longitudinal reinforcement at each face in slabs and walls. This minimum requirement may be met by the transverse wires when wire mesh reinforcement is used.
Provide Class H concrete (f'c = 5,000 psi).

GENERAL NOTES:
Designs shown conform to ASTM C1577. Refer to ASTM C1577 for information or details not shown.
See Box Culverts Precast Miscellaneous Details (SCP-MD) standard sheet for details and notes not shown.
In lieu of furnishing the designs shown on this sheet, the contractor may furnish an alternate design that is equal to or exceeds the box design for the design fill height in the table. Submit shop plans for alternate designs in accordance with Item "Precast Concrete Structural Members (Fabrication)".

HL93 LOADING

Texas Department of Transportation — Bridge Division Standard

SINGLE BOX CULVERTS PRECAST

5'-0" SPAN

SCP-5

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LAKEWOOD DRIVE

90% CONSTRUCTION PLANS

CITY OF BURLESON

JOHNSON COUNTY, TX

GOODWIN MARSHALL INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 10007700

STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	5/16/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	DD-05

DRAINAGE DETAILS

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TABLE OF DIMENSIONS AND REINFORCING STEEL
(Wings for one structure end)

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

TABLE OF WINGWALL REINFORCING
(2–wings)

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

TABLE OF ESTIMATED CULVERT TOEWALL QUANTITIES

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

WING DIMENSION FORMULAS:
(All values are in feet.)

$Hw = H + T + C - 0.250'$
$Lw = (Hw - 0.333'(SL)$

For cast–in–place culverts:
$Ltw = (N)(S) + (N + 1)(U)$

For precast culverts:
$Ltw = (N)(2U + S) + (N - 1)(0.5')$

Total wingwall Area (two wings – SF) = (Hw + 0.333') (Lw + A)

Hw = Height of wingwall
SL:1 = Side slope ratio (horizontal:1 vertical)
Lw = Length of wingwall
Ltw = Culvert toewall length
N = Number of culvert spans

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

① Extend Bars P 3'-0" minimum into bottom slab of box culvert.

② Adjust as necessary to maintain 1 1#2" clear cover and 4" minimum between bars.

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

④ Recommended values of side slope are: 2:1, 3:1, 4:1, and 6:1.

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

⑥ At Contractor's option, culvert toewall may be ended flush with wingwall toewall. Adjust reinforcing as needed.

⑦ 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0, refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Box Culvert Rail Mounting Details (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.

⑧ For vehicle safety, the following requirements must be met:
- For structures without bridge rail, construct curbs no more than 3" above finished grade.
- For structures with bridge rail, construct curbs flush with finished grade.

Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

MATERIAL NOTES:
Provide Class C concrete ($f'c$=3,600 psi).
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.
In riprap concrete, synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing unless noted otherwise.

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
When structure is founded on solid rock, depth of toewalls for culverts and wingwalls may be reduced or eliminated as directed by the Engineer.
See Box Culvert Supplement (BCS) standard sheet for additional dimensions and information.
The quantities for concrete and reinforcing steel resulting from the formulas given on this sheet are for Contractor's information only.

Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing dimensions are out–to–out of bars.

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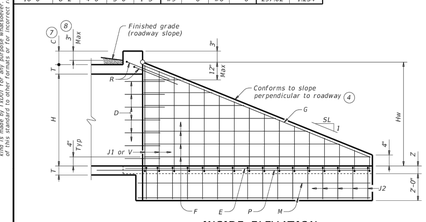
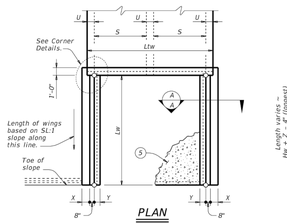


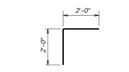
INSIDE ELEVATION

(Showing reinforcing. Culvert and culvert toewall reinforcing not shown for clarity.)



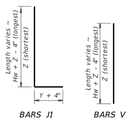
PLAN

(Showing dimensions.)

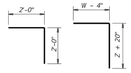


BARS R

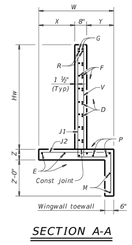
BARS D



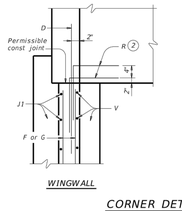
BARS J1 BARS V



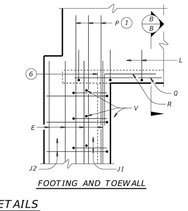
BARS L BARS J2



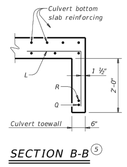
SECTION A-A



WINGWALL



FOOTING AND TOEWALL



SECTION B-B ⑤

CORNER DETAILS

Texas Department of Transportation — Bridge Division Standard

CONCRETE WINGWALLS WITH STRAIGHT WINGS FOR 0° SKEW BOX CULVERTS

SW-O

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TABLE OF DIMENSIONS AND REINFORCING STEEL
(Wings for one structure end)

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

TABLE OF WINGWALL REINFORCING
(2–wings)

Bar	Size	No.	Spa
DL	#5	~	1'-0"
DS	#5	~	1'-0"
E	#4	~	1'-0"
F	#4	~	1'-0"
G	#6	4	~
M	#4	4	~
P	#4	~	1'-0"
RS	#5	3	~
RL	#5	3	~
V	#4	~	1'-0"

TABLE OF ESTIMATED CULVERT TOEWALL QUANTITIES

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

WING DIMENSION FORMULAS:
(All values are in feet.)

$Hw = H + T + C - 0.250'$
$A = (Hw - 0.333'(SL)$
$B = (A)\ [\text{tangent } (\theta + 15°)]$
$Lw = (A) \div [\text{cosine } (\theta + 15°)]$

For cast–in–place culverts:
$Ltw = [(N)(S) + (N + 1)(U)] \div \text{cosine } \theta$

For precast culverts:
$Ltw = [(N)(2U + S) + (N - 1)(0.5')] \div \text{cosine } \theta$

Total wingwall area (two wings ~ SF) = 0.5 (Hw + 0.333') (Lw + A)

Hw = Height of wingwall
SL:1 = Side slope ratio (horizontal:1 vertical)
A = Length of short wingwalls
Lw = Length of long wingwall
Ltw = Culvert toewall length
N = Number of culvert spans
θ = Culvert skew

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

① Extend Bars P 3'-0" minimum into bottom slab of box culvert.

② Adjust as necessary to maintain 1 1#2" clear cover and 4" minimum between bars.

③ Quantities shown are based on an average wing height for two wings (one structure end). To determine total quantities for two wings, multiply the tabulated values by 0.5 x (A + Lw).

④ Recommended values of side slope are: 2:1, 3:1, 4:1, and 6:1.

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

⑥ At Contractor's option, culvert toewall may be ended flush with wingwall toewall. Adjust reinforcing as needed.

⑦ Applicable values of skew are: 15°, 30°, and 45°.

⑧ Typical wingwall angle for all skews.

⑨ 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0, refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Box Culvert Rail Mounting Details (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.

⑩ For vehicle safety, the following requirements must be met:
- For structures without bridge rail, construct curbs no more than 3" above finished grade.
- For structures with bridge rail, construct curbs flush with finished grade.

Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

MATERIAL NOTES:
Provide Class C concrete ($f'c$=3,600 psi).
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.
In riprap concrete, synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
When structure is founded on solid rock, depth of toewalls for culverts and wingwalls may be reduced or eliminated as directed by the Engineer.
See Box Culvert Supplement (BCS) standard sheet for additional dimensions and information.
The quantities for concrete and reinforcing steel resulting from the formulas given on this sheet are for Contractor's information only.

Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing dimensions are out–to–out of bars.

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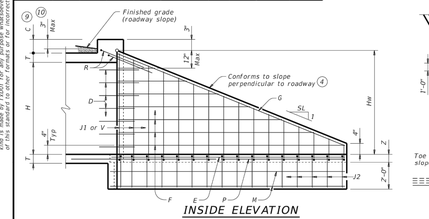
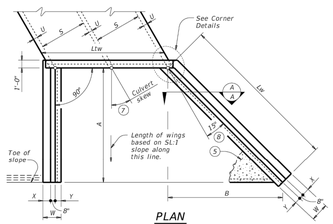


INSIDE ELEVATION

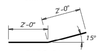
(Showing reinforcing. Culvert and culvert toewall reinforcing not shown for clarity.)



PLAN

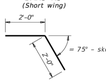
(Showing dimensions and 30° skew.)

BARS DS (Short wing)

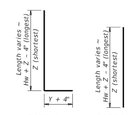


BARS DL (Long wing)

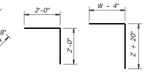
BARS RS (Short wing)



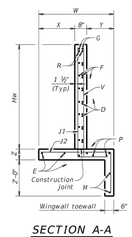
BARS RL (Long wing)



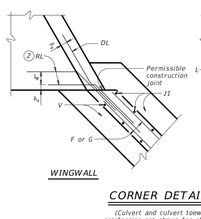
BARS J1 BARS V



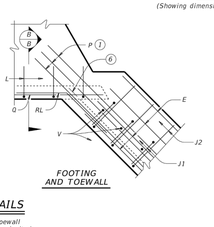
BARS L BARS J2



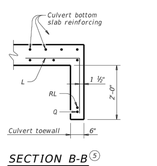
SECTION A-A



WINGWALL



FOOTING AND TOEWALL



SECTION B-B ⑤

CORNER DETAILS

(Culvert and culvert toewall reinforcing not shown for clarity.)

Texas Department of Transportation — Bridge Division Standard

CONCRETE WINGWALLS WITH FLARED WINGS FOR SKEWED BOX CULVERTS

FW-S

FILE:	fw-date-20.dgn	DN: GAF	CK: CAT	DW: TxDOT	CK: TxDOT
©TxDOT	February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS		DIST	COUNTY		SHEET NO.

NO.	REVISION DATE
1	
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LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN MARSHALL INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 100677-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	5/16/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE

SHEET DD-06

DRAINAGE DETAILS

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E:\10745 – Bransom Estates\Lakewood\Plans\SHEETS\60% Construction Plans\10745–LAKEWOOD–STORM–DTL.dwg Tue Sep 27 2022 17:17

UTILITY LEGEND

S	PROPOSED SANITARY SEWER & MANHOLE
FM	PROPOSED FORCE MAIN
W	PROPOSED WATER LINE
S	EXISTING SANITARY SEWER & MANHOLE
W	EXISTING WATER LINE
G	EXISTING GAS LINE
OHU	EXISTING OVERHEAD UTILITY

N E S W

GRAPHIC SCALE 1"=200'

0 200 400 600

EX. 12" W.L.

24" W.L. (CONSTRUCTED BY OTHERS)

ID: R0000009444
HOOPER & CO INC

150' UTILITY EASEMENT & RIGHT-OF-WAY
TEXAS ELECTRIC SERVICE COMPANY
VOL. 680, PG. 291 S.
VOL. 900, PG. 336
D.R.J.C.T.

ALTA BURL LP
INST. NO. 2017-24915
D.R.J.C.T.

FUTURE CHISHOLM SUMMIT ROAD

20" W.L.

12" F.M.

PROP. LIFT STATION
(PER SEPARATE SET
OF PLANS)

BURLESON 4A ECONOMIC
DEVELOPMENT CORPORATION
INST. NO. 2021-21498
D.R.J.C.T.

PROPOSED LAKEWOOD DRIVE

12" W.L.

8" W.L.

10" S.S.

25' RIGHT-OF-WAY AGREEMENT
TEXAS MIDSTREAM GAS SERVICES, L.L.C.
VOL. 4862, PG. 844
D.R.J.C.T.

8" S.S.

12" W.L.

12" W.L.

12" W.L.

12" F.M.

BURLESON DEVELOPMENT, INC.
INST. NO. 2017-22716
D.R.J.C.T.

8" S.S.

BURLESON DEVELOPMENT, INC.
INST. NO. 2017-22716
D.R.J.C.T.

EX. 6" W.L.

BURLESON DEVELOPMENT, INC.
INST. NO. 2017-24891
D.R.J.C.T.

FUTURE CHISHOLM SUMMIT DEVELOPMENT

25' RIGHT-OF-WAY AGREEMENT
CROSSTEX NORTH TEXAS
GATHERING, L.P.
VOL. 4256, PG. 871
D.R.J.C.T.

A REMAINDER OF
TRACT THREE
THE JACKSON FAMILY TRUST D
INST. NO. 2016-230
D.R.J.C.T.

18" S.S.

BURLESON 4A ECONOMIC
DEVELOPMENT CORPORATION
INST. NO. 2021-22172
D.R.J.C.T.

BURLESON 4A ECONOMIC
DEVELOPMENT CORPORATION
INST. NO. 2021-21498
D.R.J.C.T.

F.M. 1902

EX. 6" W.L.

POSSIBLE CENTERLINE OF
SINCLAIR PIPE LINE COMPANY EASEMENT
VOL. 406, PG. 194
D.R.J.C.T.

18" S.S.

15" S.S.

10" S.S.

8" S.S.

20' PERMANENT EASEMENT
TEXAS MIDSTREAM GAS SERVICES, LLC.
VOL. 4439, PG. 387
D.R.J.C.T.

MATCHLINE - SEE SHEET UT-02

NO.	REVISION DATE
1	
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SUMMIT

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN MARSHALL INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329-4373
TxEng Firm # F-2644 - TxSur Firm # 100217-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED
PROFESSIONAL
ENGINEER

09/28/22

JOB NO. :	10745
DATE :	2/22/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	UT-01

UTILITY LAYOUT

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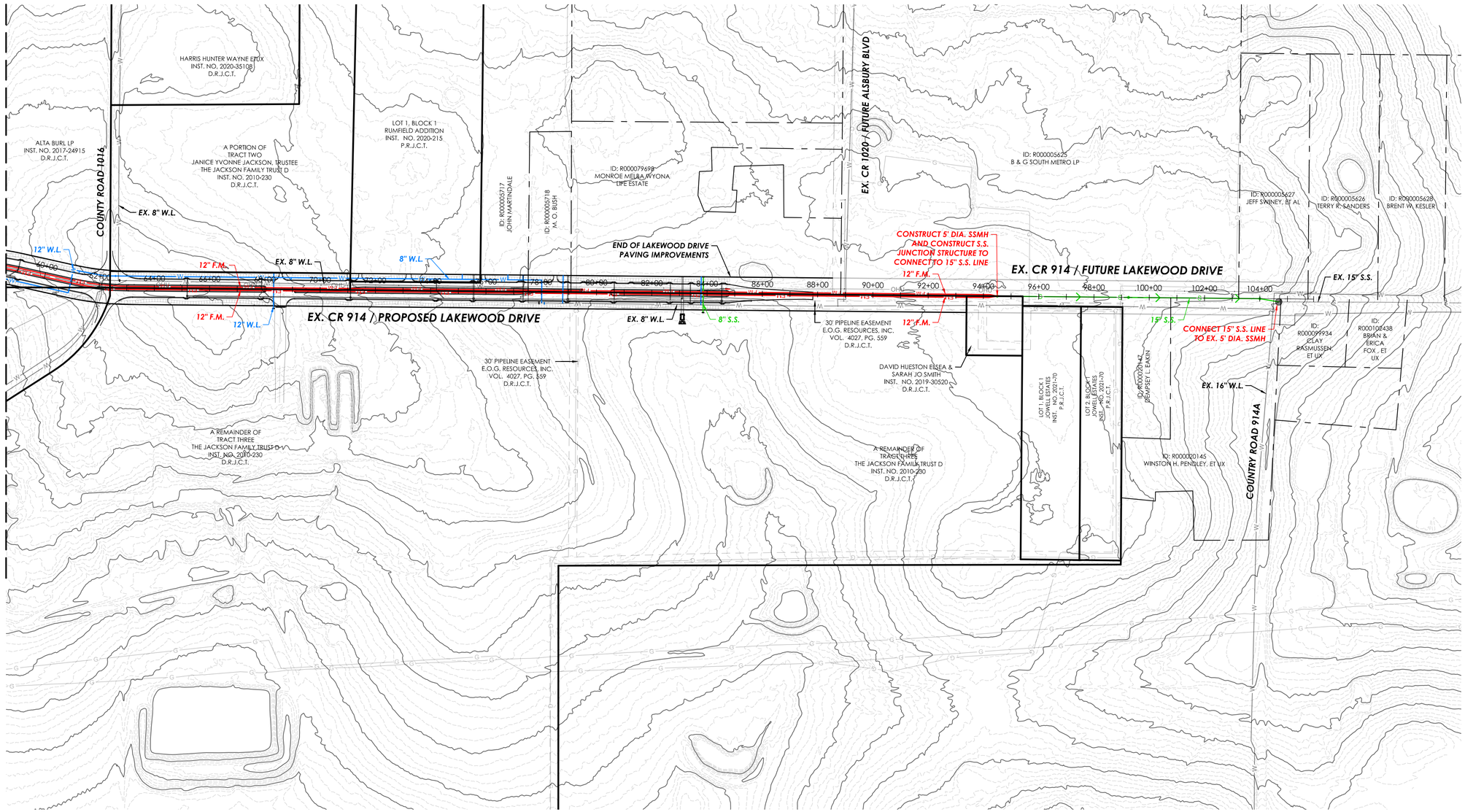
UTILITY LEGEND	
S	PROPOSED SANITARY SEWER & MANHOLE
FM	PROPOSED FORCE MAIN
W	PROPOSED WATER LINE
S	EXISTING SANITARY SEWER & MANHOLE
W	EXISTING WATER LINE
G	EXISTING GAS LINE
OHU	EXISTING OVERHEAD UTILITY

NOTE: THE PROPOSED 15" S.S. CONNECTS TO THE GRAVITY SEWER TO BE CONSTRUCTED AT THE INTERSECTION OF CR 914 & CR 914A THAT IS A PART OF THE WILLOW CREEK BASIN 15" SANITARY SEWER PLANS BY PAPE DAWSON.

GRAPHIC SCALE 1"=200'
0 200 400 600



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LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL INC.
CIVIL ENGINEERS ~ PLANNERS ~ SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329-4373
TxEng Firm # F-2944 ~ TxSurv Firm # 10027700

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	2/22/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE

SHEET **UT-02**

UTILITY LAYOUT

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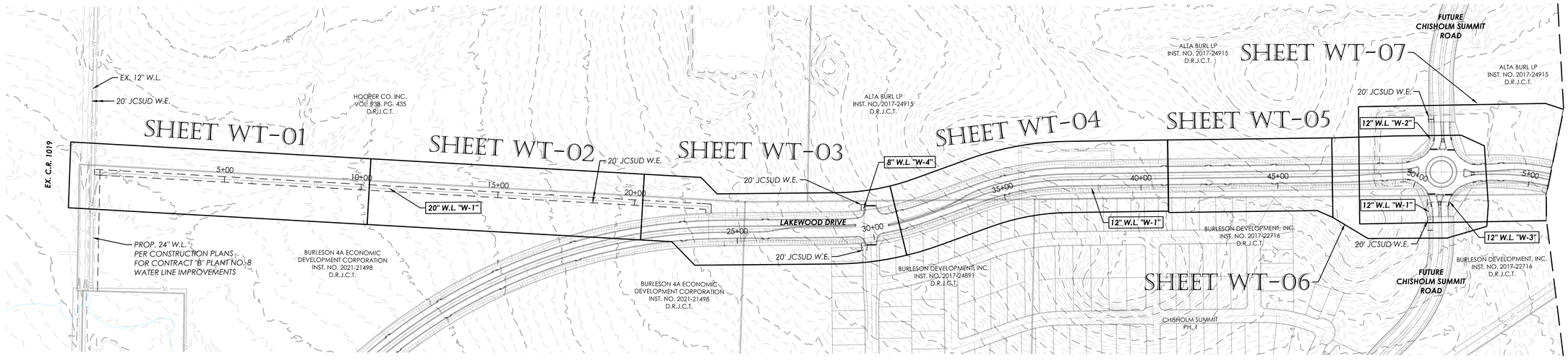

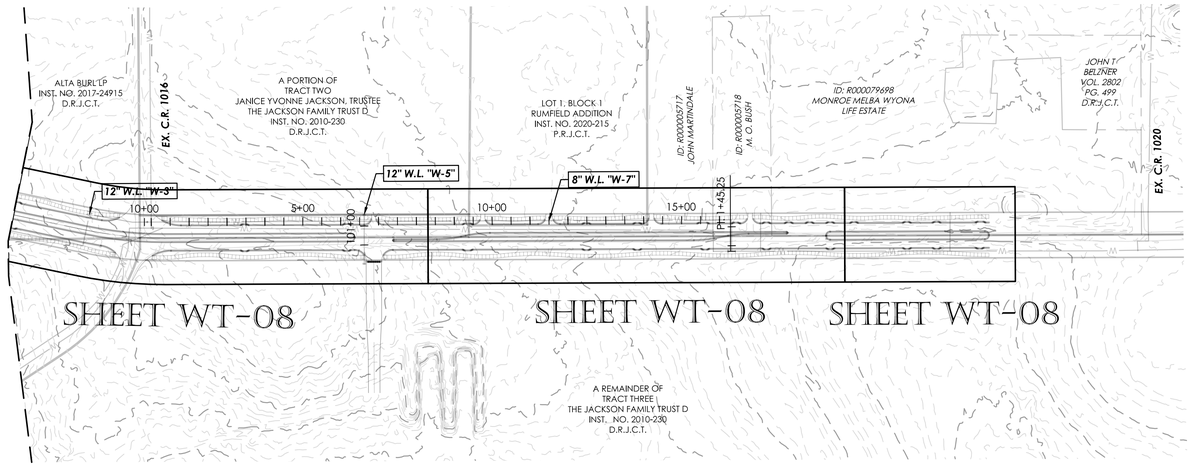

CONTRACTOR NOTE

THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UTILITIES, WHETHER PRIVATE OR PUBLIC, PRIOR TO EXCAVATING. THE INFORMATION AND DATA SHOWN WITH RESPECT TO EXISTING UNDERGROUND FACILITIES AT OR CONTIGUOUS TO THE SITE IS APPROXIMATE AND BASED ON INFORMATION AND DATA FURNISHED BY THE OWNERS OF SUCH UNDERGROUND FACILITIES OR ON PHYSICAL APPURTENANCES OBSERVED IN THE FIELD. THE OWNER AND ENGINEER SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ANY SUCH INFORMATION OR DATA, AND THE CONTRACTOR SHALL HAVE FULL RESPONSIBILITY FOR REVIEWING AND CHECKING ALL SUCH INFORMATION AND DATA, FOR LOCATING ALL UNDERGROUND FACILITIES, FOR COORDINATION OF THE WORK WITH THE OWNERS OF SUCH UNDERGROUND FACILITIES DURING CONSTRUCTION, FOR THE SAFETY AND PROTECTION THEREOF, AND REPAIRING ANY DAMAGE THERETO RESULTING FROM THE WORK, THE COST OF ALL OF WHICH WILL BE CONSIDERED AS HAVING BEEN INCLUDED IN THE CONTRACT PRICE. CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY ANY AFFECTED UTILITY COMPANIES OR AGENCIES AT LEAST 48 HOURS PRIOR TO BEGINNING CONSTRUCTION.

BENCH MARK ELEVATION : 852.36

CAPPED IRON ROD WITH CAP STAMPED "RDM" AT THE NORTHWEST CORNER OF THE INTERSECTION OF CR 1902 AND CR 1019, APPROXIMATELY 37 FEET NORTHWEST OF THE CENTERLINE OF CR 1019, APPROXIMATELY 45 FEET NORTHEAST OF THE CENTERLINE OF CR 1902, AND APPROXIMATELY 120 FEET SOUTHWEST OF A DRIVEWAY.

GRAPHIC SCALE 1"=200'
0 200 400 600

NO.	REVISION DATE

CHISHOLM SUMMIT

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F2644 – TxSurv Firm # 100170

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	5/6/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	WT-00

WATER INDEX

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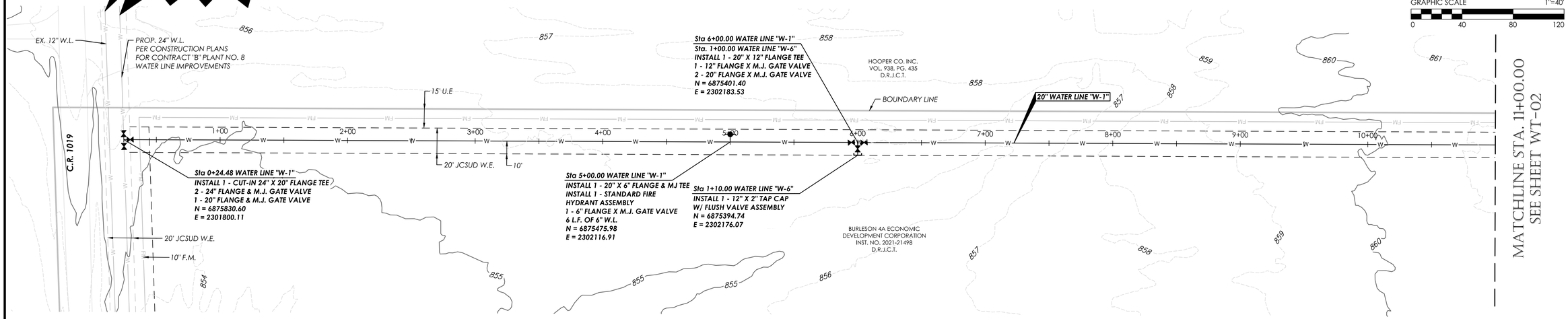
!!!WARNING!!!

APPROXIMATE LOCATION OF EXISTING UNDERGROUND WATER LINES. CONTRACTOR SHALL COORDINATE WITH APPROPRIATE UTILITY COMPANIES PRIOR TO CONSTRUCTION.



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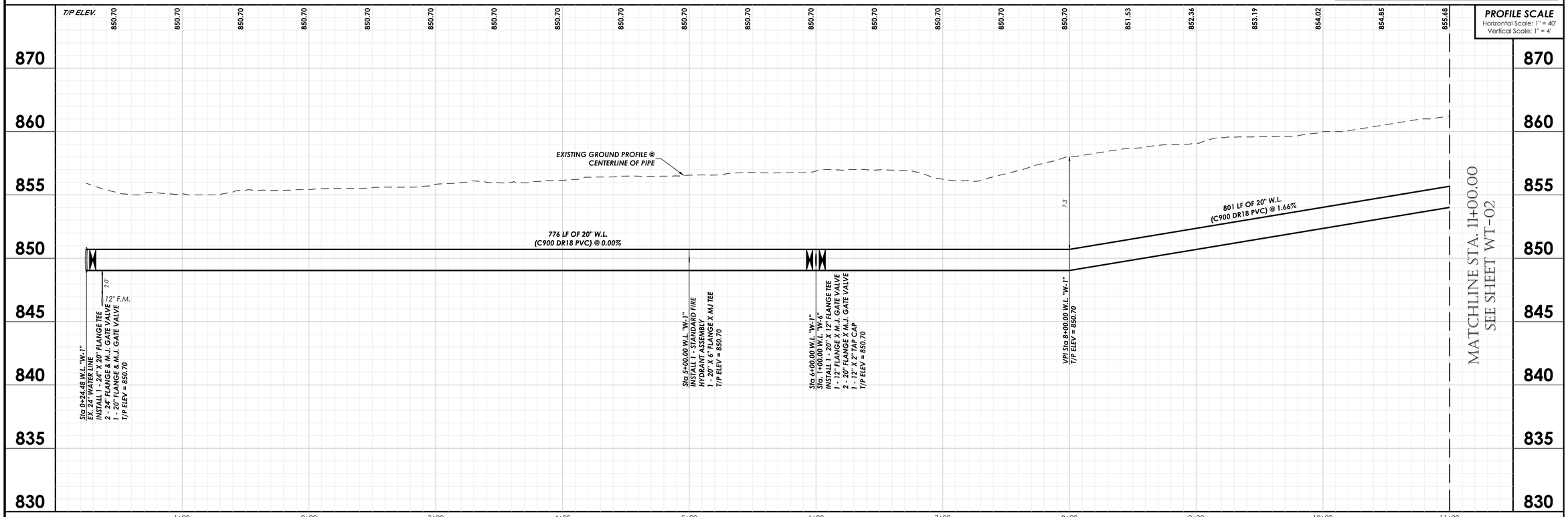
WATER LINE "W-1"

JCSUD WATER NOTES:

1. CONTRACTOR TO ENSURE A MINIMUM OF 2' OF SEPARATION BETWEEN PROPOSED WATER LINE AND ALL EXISTING OR PROPOSED CROSSING UTILITIES.
2. CONTRACTOR TO ENSURE A MINIMUM COVER OF 42" IS PROVIDED OVER THE TOP OF ALL SECTIONS OF THE PROPOSED WATER LINE.
3. IT IS THE RESPONSIBILITY OF THE DEVELOPER AND CONTRACTOR TO COMMUNICATE WITH ALL PROPERTY OWNERS WHO ARE IMPACTED BY THE CONSTRUCTION OF THE PROPOSED UTILITIES.
4. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REACH OUT TO 811 (ONE CALL) FOR EXISTING UTILITY LOCATES PRIOR TO THE START OF CONSTRUCTION.
5. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY JOHNSON SPECIAL UTILITY DISTRICT 48 HOURS PRIOR TO THE START OF CONSTRUCTION.

BENCH MARK ELEVATION : 852.36

CAPPED IRON ROD WITH CAP STAMPED "RDM" AT THE NORTHWEST CORNER OF THE INTERSECTION OF CR 1902 AND CR 1019, APPROXIMATELY 37 FEET NORTHWEST OF THE CENTERLINE OF CR 1019, APPROXIMATELY 45 FEET NORTHEAST OF THE CENTERLINE OF CR 1902, AND APPROXIMATELY 120 FEET SOUTHWEST OF A DRIVEWAY.



PROFILE SCALE
Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 4'

NO.	REVISION DATE
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GRAPHIC SCALE 1"=40'
0 40 80 120

CUSTOM BUILT SUMMIT HOMES

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN MARSHALL INC
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329-4373
TxEng Firm # F-2644 – TxSurv Firm # 100170?

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	7/13/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	WT-01

WATER LINE "W-1" STA. 1+00.00 TO 11+00.00

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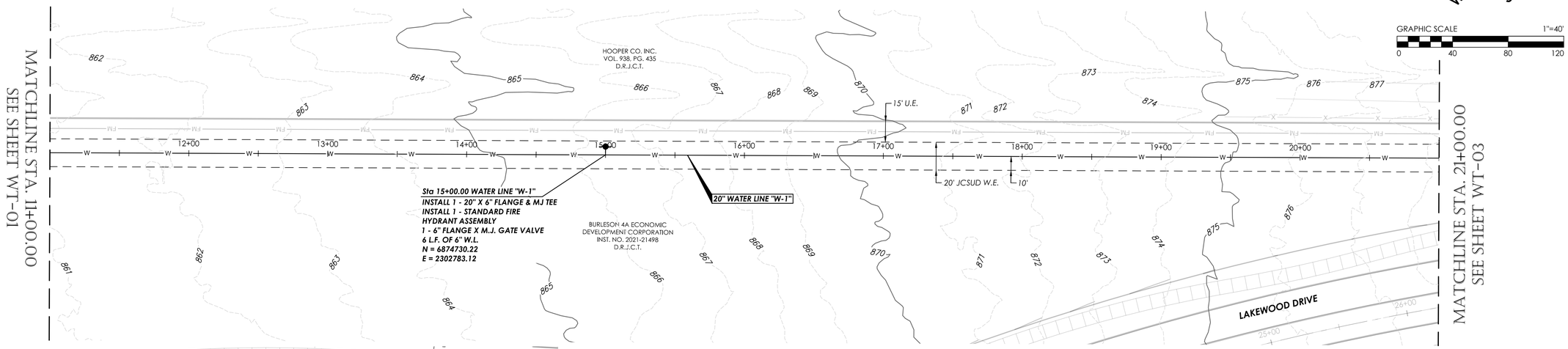

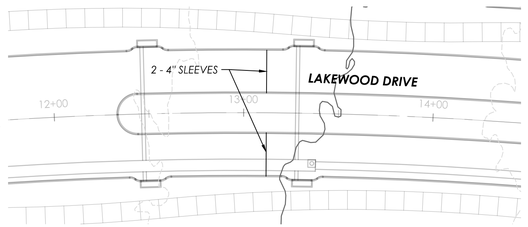

WATER LINE "W-1"

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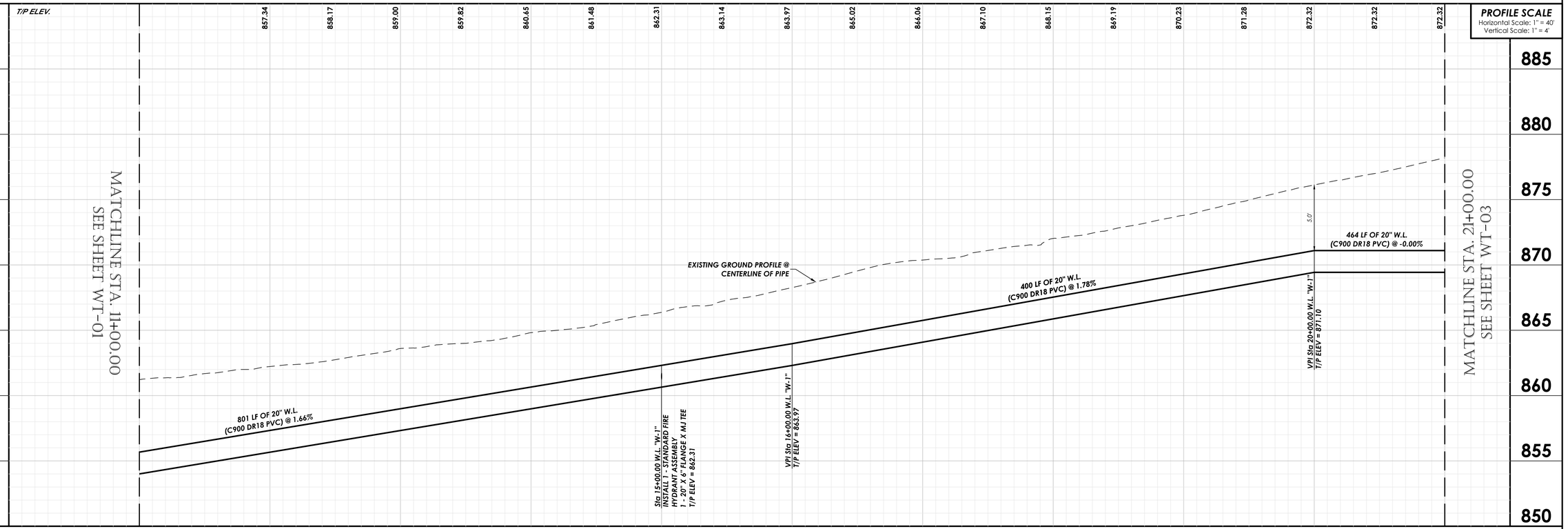
BENCH MARK ELEVATION : 852.36

CAPPED IRON ROD WITH CAP STAMPED "RDM" AT THE NORTHWEST CORNER OF THE INTERSECTION OF CR 1902 AND CR 1019, APPROXIMATELY 37 FEET NORTHWEST OF THE CENTERLINE OF CR 1019, APPROXIMATELY 45 FEET NORTHEAST OF THE CENTERLINE OF CR 1902, AND APPROXIMATELY 120 FEET SOUTHWEST OF A DRIVEWAY.



PROFILE SCALE
Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 4'

NO.	REVISION DATE

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEngFirm # F-2644 – TxSurvFirm # 100177-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	7/13/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE

SHEET **WT-02**

WATER LINE "W-1"
STA. 11+00.00
TO 21+00.00

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CURVE TABLE					
CURVE #	ARC LENGTH	RADIUS	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
C1	352.25	1042.50	19°21'35"	S55°13'22"E	350.58
C2	319.92	957.50	19°08'37"	S55°19'51"E	318.43
C3	30.67	831.50	2°06'47"	S46°48'56"E	30.66

!!!WARNING!!!
APPROXIMATE LOCATION OF EXISTING UNDERGROUND GAS LINES & OVERHEAD ELECTRIC LINES. CONTRACTOR SHALL COORDINATE WITH APPROPRIATE UTILITY COMPANIES PRIOR TO CONSTRUCTION.

GRAPHIC SCALE 1"=40'
0 40 80 120

MATCHLINE STA. 21+00.00 SEE SHEET WT-02

HOOPER CO. INC. VOL. 938, PG. 435 D.R.J.C.T.

Sta 22+70.19 WATER LINE "W-1"
INSTALL 1 - 20" 90° BEND
N = 6874155.84
E = 2303296.24

20' JCSUD W.E.

Sta 22+90.90 WATER LINE "W-1"
BEGIN ENCASEMENT
N = 6874141.06
E = 2303281.74

20" WATER LINE "W-1"

EX. 20' GAS LINE (ENLINK)

PROPOSED LAKEWOOD DRIVE

EX. 12.75" GAS LINE (WILLIAMS)

ALTA BURL LP INST. NO. 2017-24915 D.R.J.C.T.

DEFLECT 2' UNDER STORM DRAIN

Sta 101+40.60 WATER LINE "W-1"
INSTALL 1 - 8" X 2" TAP CAP W/ FLUSH VALVE ASSEMBLY
N = 6873752.93
E = 2303695.76

8" WATER LINE "W-4"

MATCHLINE STA. 31+00.00 SEE SHEET WT-04

LAKEWOOD DRIVE

10" F.M.

2 - 4" SLEEVES

24" R.C.P.

12" WATER LINE "W-1"

Sta 23+95.90 WATER LINE "W-1"
INSTALL 1 - 20" 90° BEND
END ENCASEMENT
N = 6874066.12
E = 2303208.20

Sta 24+53.03 WATER LINE "W-1"
Sta. 1+00.00 WATER LINE "W-10"
INSTALL 1 - 20" X 12" FLANGE TEE
2 - 20" FLANGE X M.J. GATE VALVE
1 - 12" FLANGE X M.J. GATE VALVE
1 - 20" X 12" REDUCER
N = 6874026.10
E = 2303248.98

Sta 25+00.00 WATER LINE "W-1"
INSTALL 1 - 12" X 6" FLANGE & MJ TEE
INSTALL 1 - STANDARD FIRE HYDRANT ASSEMBLY
1 - 6" FLANGE X M.J. GATE VALVE
6 L.F. OF 6" W.L.
N = 6873993.20
E = 2303282.50

Sta 1+17.50 WATER LINE "W-10"
INSTALL 17.5 L.F. OF 12" W.L.
1 - 12" X 2" TAP CAP
W/ FLUSH VALVE ASSEMBLY
N = 6874013.61
E = 2303236.72

Sta 29+00.00 WATER LINE "W-1"
INSTALL 1 - 2" IRR. WATER METER
MAXIMUM IRRIGATION DEMAND OF 75 GPM.
N = 6873713.54
E = 2303568.48

Sta 29+30.00 WATER LINE "W-1"
INSTALL 1 - 12" X 6" FLANGE & MJ TEE
INSTALL 1 - STANDARD FIRE HYDRANT ASSEMBLY
1 - 6" FLANGE X M.J. GATE VALVE
6 L.F. OF 6" W.L.
N = 6873693.64
E = 2303590.93

Sta 29+63.54 WATER LINE "W-1"
Sta. 100+27.58 WATER LINE "W-4"
INSTALL 1 - 12" X 8" FLANGE CROSS
2 - 12" FLANGE X M.J. GATE VALVE
2 - 8" FLANGE X M.J. GATE VALVE
N = 6873672.17
E = 2303616.68

Sta 100+00.00 WATER LINE "W-4"
INSTALL 1 - 8" X 2" TAP CAP W/ FLUSH VALVE ASSEMBLY
N = 6873652.46
E = 2303597.39

20' JCSUD W.E.

BURLESON DEVELOPMENT, INC. INST. NO. 2017-24891 D.R.J.C.T.

25' RIGHT-OF-WAY AGREEMENT CROSSTEX NORTH TEXAS GATHERING, L.P. VOL. 4256, PG. 871 D.R.J.C.T.

150' UTILITY EASEMENT & RIGHT-OF-WAY TEXAS ELECTRIC SERVICE COMPANY VOL. 680, PG. 731 & VOL. 900, PG. 336 D.R.J.C.T.

BURLESON 4A ECONOMIC DEVELOPMENT CORPORATION INST. NO. 2021-21498 D.R.J.C.T.

BENCH MARK ELEVATION : 852.36
CAPPED IRON ROD WITH CAP STAMPED "RDM" AT THE NORTHWEST CORNER OF THE INTERSECTION OF CR 1902 AND CR 1019, APPROXIMATELY 37 FEET NORTHWEST OF THE CENTERLINE OF CR 1019, APPROXIMATELY 45 FEET NORTHEAST OF THE CENTERLINE OF CR 1902, AND APPROXIMATELY 120 FEET SOUTHWEST OF A DRIVEWAY.

JCSUD WATER NOTES:
1. CONTRACTOR TO ENSURE A MINIMUM OF 2' OF SEPARATION BETWEEN PROPOSED WATER LINE AND ALL EXISTING OR PROPOSED CROSSING UTILITIES.
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4. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REACH OUT TO 811 (ONE CALL) FOR EXISTING UTILITY LOCATES PRIOR TO THE START OF CONSTRUCTION.
5. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY JOHNSON SPECIAL UTILITY DISTRICT 48 HOURS PRIOR TO THE START OF CONSTRUCTION.

CONTRACTOR NOTE

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WATER LINE "W-1"

T/P ELEV.

MATCHLINE STA. 21+00.00 SEE SHEET WT-02

MATCHLINE STA. 31+00.00 SEE SHEETWT-04

EXISTING GROUND PROFILE @ CENTERLINE OF PIPE

PROPOSED GROUND PROFILE @ CENTERLINE OF PIPE

EX. 24" GAS LINE (ENLINK) T/P=884.34

EX. 12" GAS LINE (WILLIAMS) T/P=881.75

① 20 LF OF 12" W.L. (C900 DR18 PVC) @ 0.00%

② 7 LF OF 12" W.L. (C900 DR18 PVC) @ 100.00%

20 L.F. OF 24" SDR 35

193 LF OF 12" W.L. (C900 DR18 PVC) @ 4.97%

508 LF OF 12" W.L. (C900 DR18 PVC) @ 3.89%

464 LF OF 20" W.L. (C900 DR18 PVC) @ -0.00%

105 L.F. OF 30" PS46 PVC

24" R.C.P.

20 L.F. OF 24" SDR 35

VPI Sta 26+65.76 W.L. "W-1" T/P ELEV = 880.34

VPI Sta 26+85.76 W.L. "W-1" INSTALL 1 - 12" 45° VERTICAL BEND T/P ELEV = 880.34

VPI Sta 26+92.04 W.L. "W-1" INSTALL 1 - 12" 45° VERTICAL BEND T/P ELEV = 886.63

Sta 22+70.18 W.L. "W-1" INSTALL 1 - 20" 90° BEND T/P ELEV = 871.10

Sta 22+90.88 W.L. "W-1" BEGIN ENCASEMENT T/P ELEV = 871.10

Sta 23+95.88 W.L. "W-1" INSTALL 1 - 20" 90° BEND END ENCASEMENT T/P ELEV = 871.10

Sta 24+53.01 W.L. "W-1" Sta. 1+00.00 W.L. "W-10" INSTALL 1 - 20" X 12" FLANGE TEE 2 - 20" FLANGE X M.J. GATE VALVE 1 - 12" FLANGE X M.J. GATE VALVE 1 - 20" X 12" REDUCER T/P ELEV = 871.10

VPI Sta 24+73.23 W.L. "W-1" T/P ELEV = 870.77

Sta 25+00.00 W.L. "W-1" INSTALL 1 - STANDARD FIRE HYDRANT ASSEMBLY 1 - 12" X 6" FLANGE X MJ TEE T/P ELEV = 872.10

Sta 29+30.00 W.L. "W-1" INSTALL 1 - STANDARD FIRE HYDRANT ASSEMBLY 1 - 12" X 6" FLANGE X MJ TEE T/P ELEV = 895.89

Sta 29+63.54 W.L. "W-1" INSTALL 1 - 12" X 8" FLANGE CROSS 2 - 12" FLANGE X M.J. GATE VALVE 2 - 8" FLANGE X M.J. GATE VALVE T/P ELEV = 897.20

10" S.S.

PROFILE SCALE
Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 4'

NO.	REVISION DATE

LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN MARSHALL
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329-4373
TxEng Firm # F-2644 – TxSurv Firm # 100177-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	7/13/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	WT-03

WATER LINE "W-1" STA. 21+00.00 TO 31+00.00

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E:\10745 – Bransom Estates\Lakewood\Plans\SHEETS\60% Construction Plans\10745–LAKEWOOD–WATER–P&P 01–04.dwg Tue Sep 27 2022 17:24

GRAPHIC SCALE 1"=40'
0 40 80 120

JCSUD WATER NOTES:

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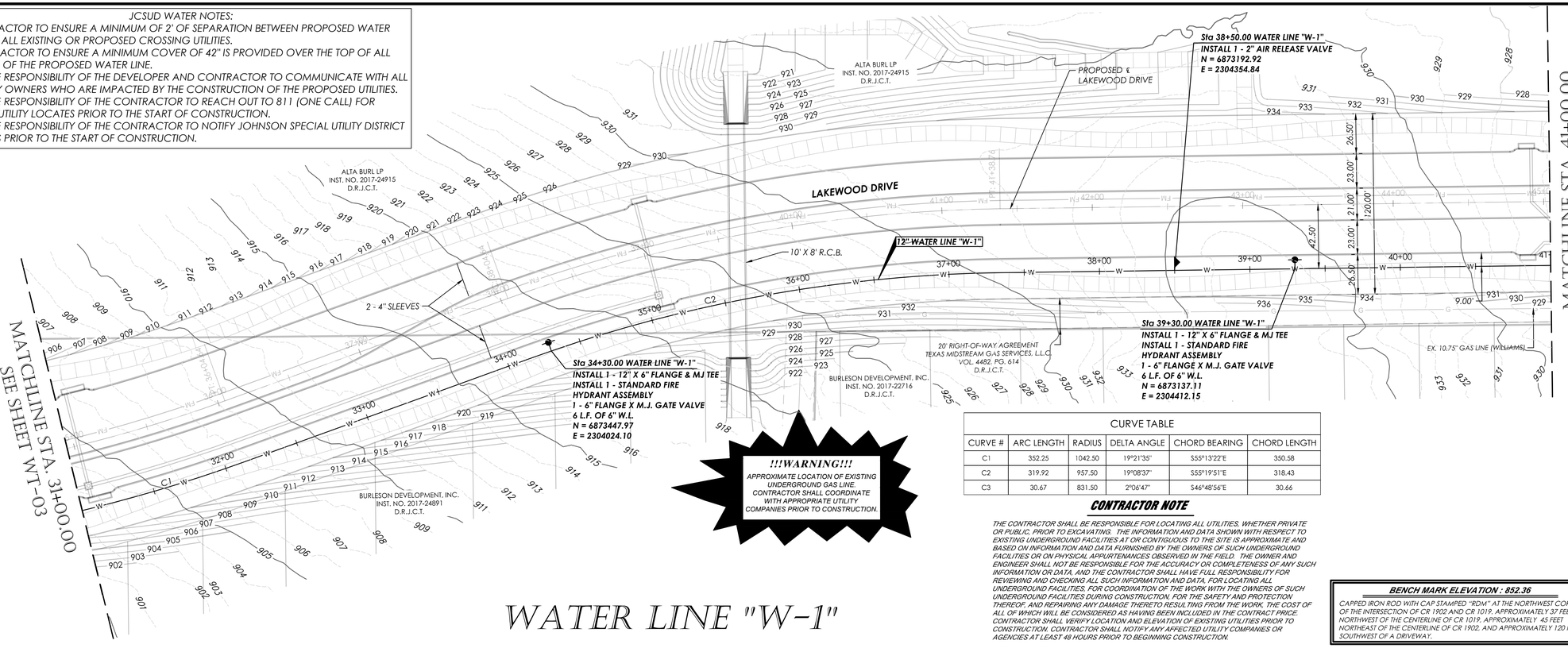

CURVE TABLE					
CURVE #	ARC LENGTH	RADIUS	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
C1	352.25	1042.50	19°21'35"	S55°13'22"E	350.58
C2	319.92	957.50	19°08'37"	S55°19'51"E	318.43
C3	30.67	831.50	2°06'47"	S46°48'56"E	30.66

!!!WARNING!!!
APPROXIMATE LOCATION OF EXISTING UNDERGROUND GAS LINE. CONTRACTOR SHALL COORDINATE WITH APPROPRIATE UTILITY COMPANIES PRIOR TO CONSTRUCTION.

CONTRACTOR NOTE

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BENCH MARK ELEVATION : 852.36

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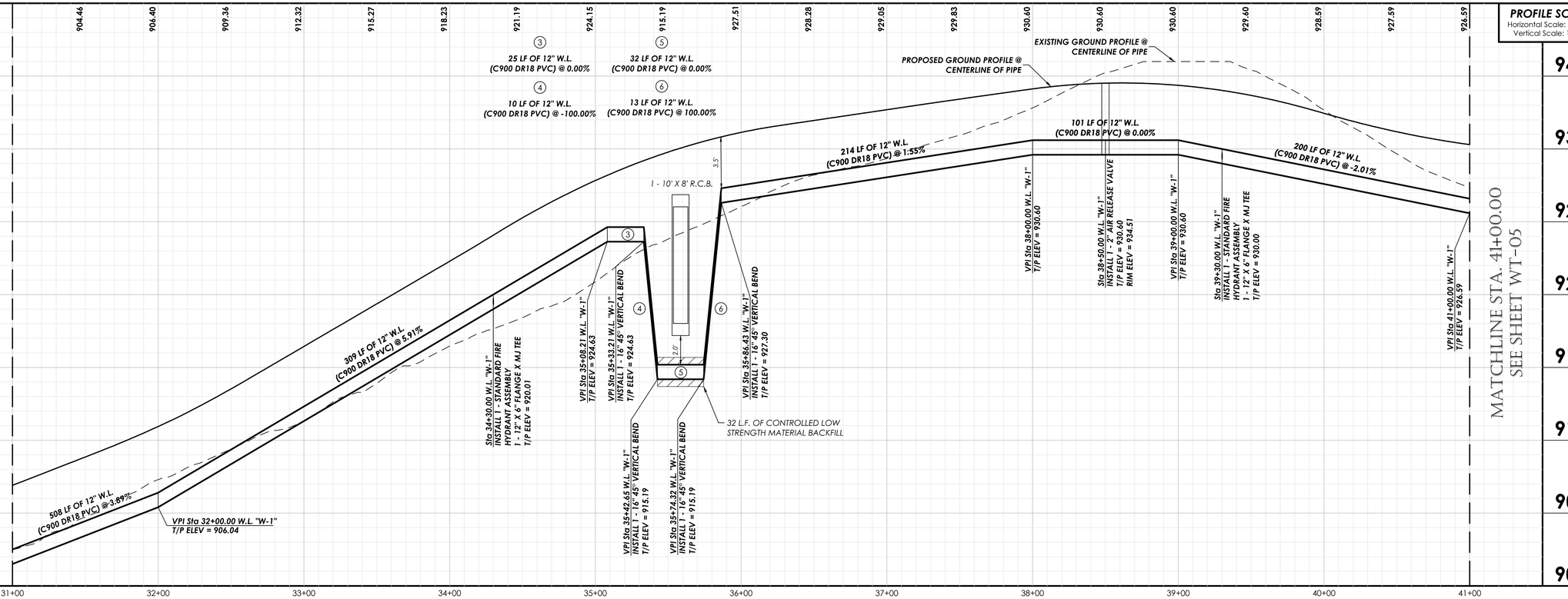
WATER LINE "W-1"



NO.	REVISION DATE

LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN MARSHALL
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329-4373
TxEng Firm # F-2644 – TxSurv Firm # 100170-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	7/13/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	WT-04

WATER LINE "W-1" STA. 31+00.00 TO 41+00.00

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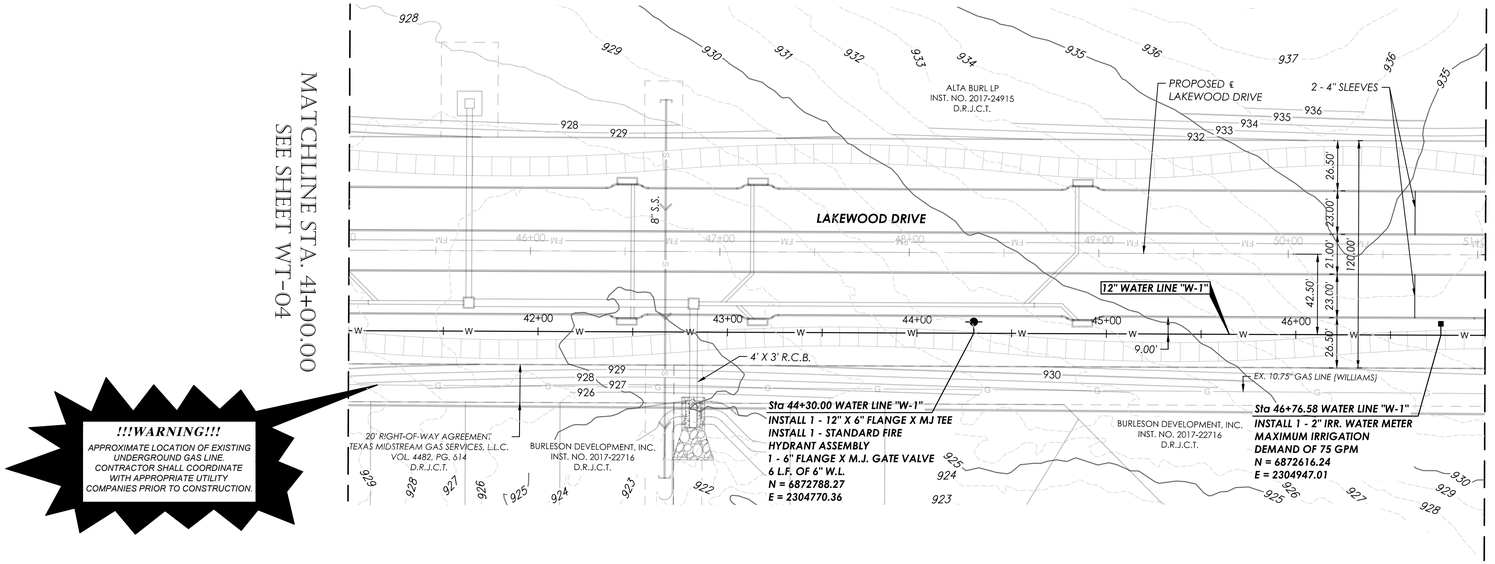

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WATER LINE "W-1"

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BENCH MARK ELEVATION : 852.36
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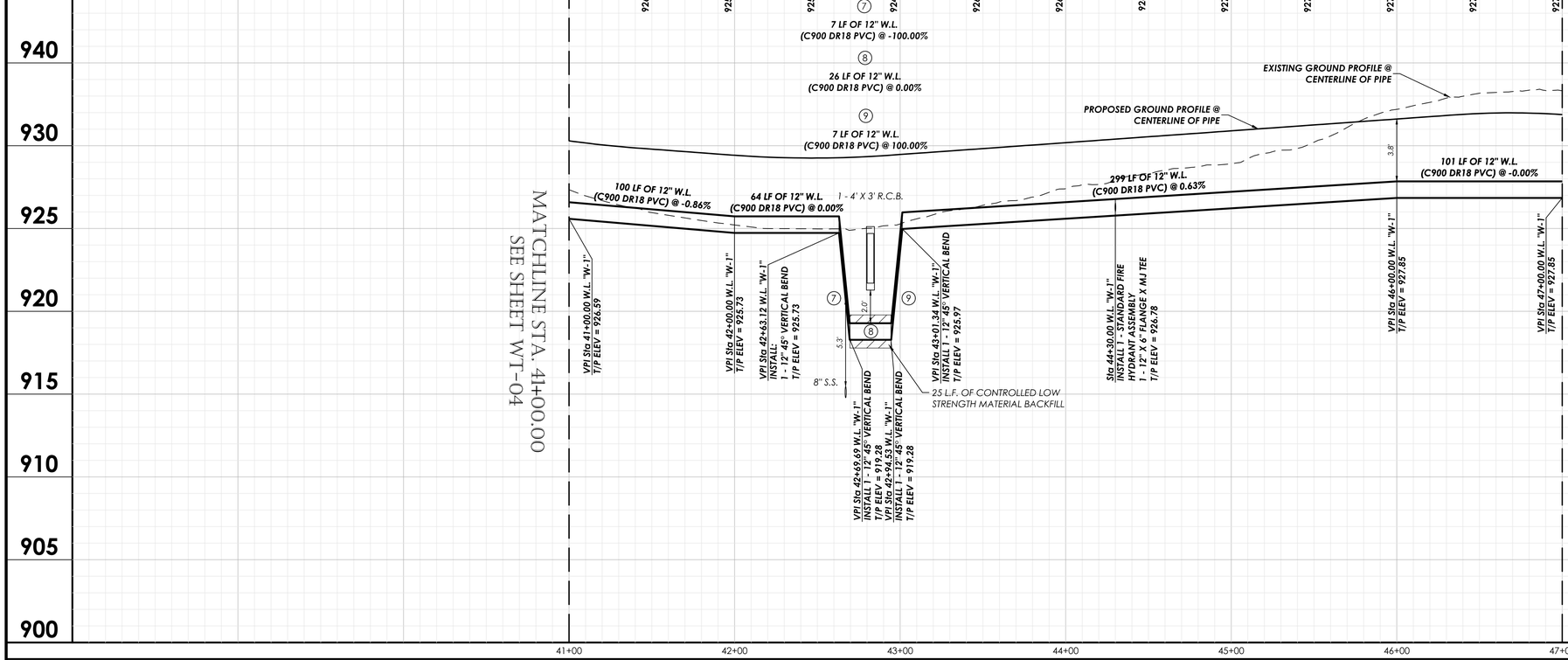

PROFILE SCALE
Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 4'

NO.	REVISION DATE
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GRAPHIC SCALE 1"=40'
0 40 80 120

LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN MARSHALL
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329-4373
TxEng Firm # F-2644 – TxSurv Firm # 100170

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	7/13/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	WT-05

WATER LINE "W-1"
STA. 41+00.00
TO 47+00.00

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CURVE TABLE

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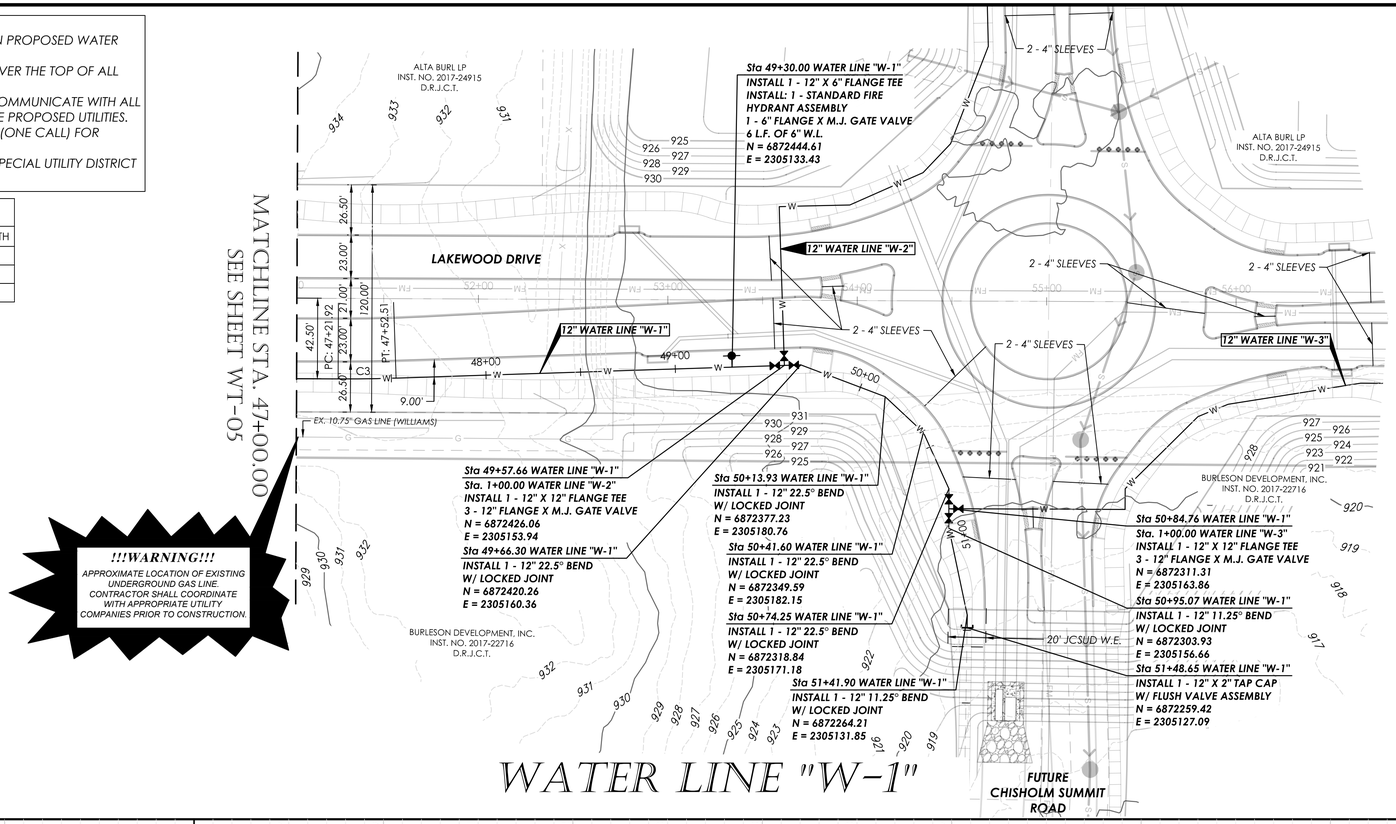

SEE SHEET WT-07 FOR WATER LINES "W-2" & "W-3" DESIGN INFORMATION

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PROFILE SCALE
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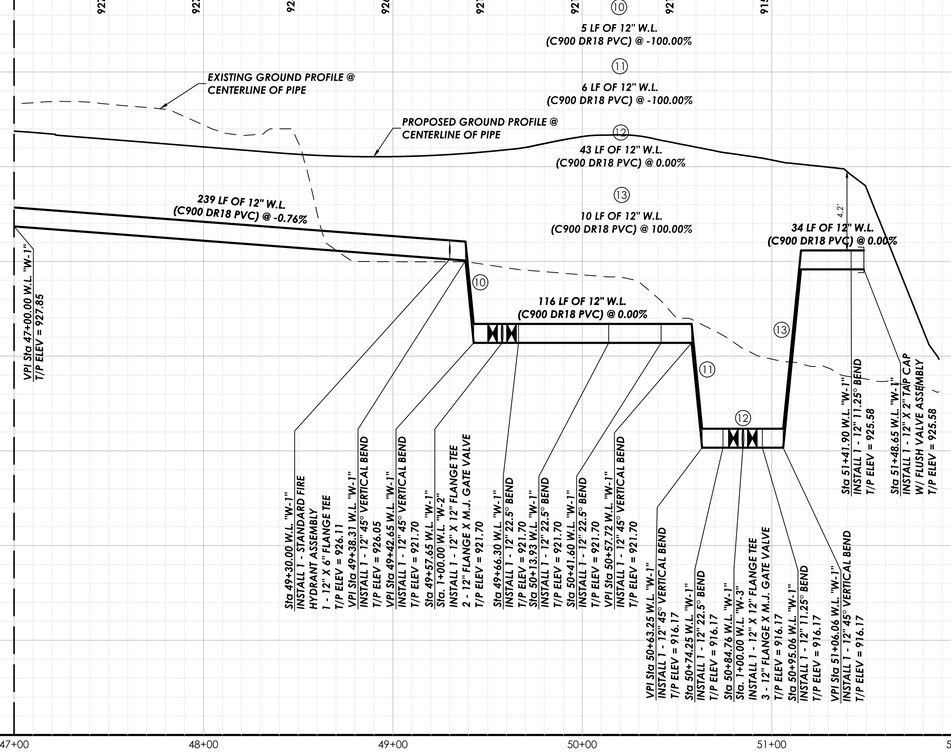
Vertical Scale: 1" = 4'



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LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN MARSHALL INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329-4373
TxEng Firm # F-2644 – TxSurv Firm # 100170

STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	7/13/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	WT-06

WATER LINE "W-1"
STA. 47+00.00
TO 51+49.64

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GRAPHIC SCALE 1"=40'
0 40 80 120

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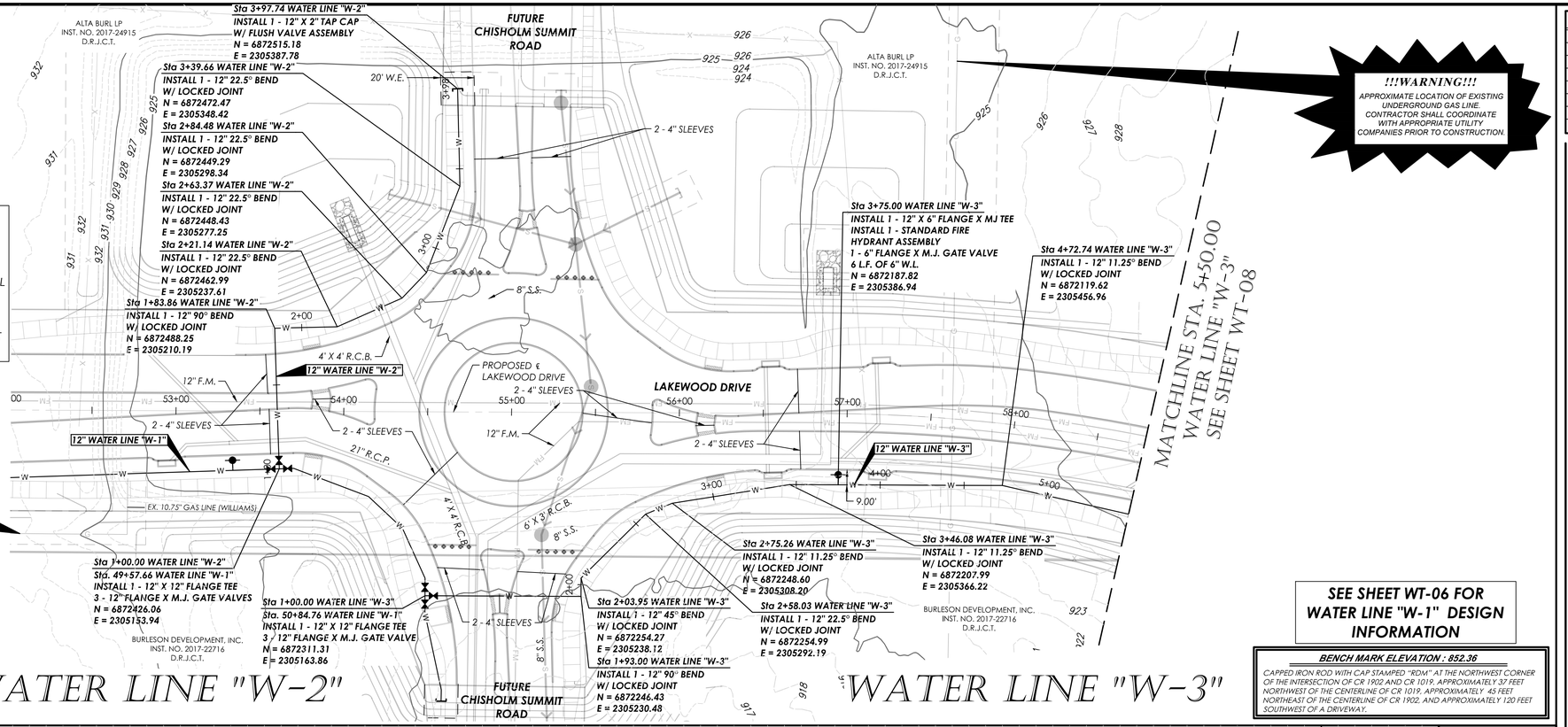
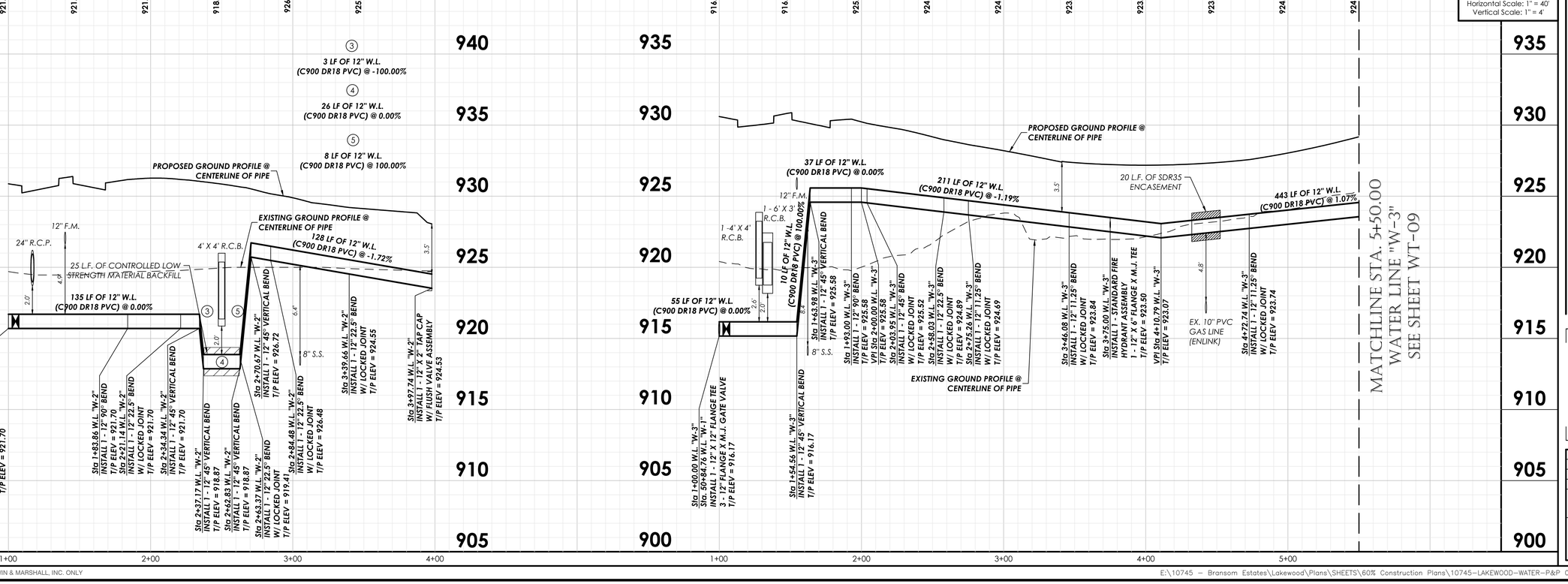


SEE SHEET WT-06 FOR WATER LINE "W-1" DESIGN INFORMATION

BENCH MARK ELEVATION : 852.36
CAPPED IRON ROD WITH CAP STAMPED "RDM" AT THE NORTHWEST CORNER OF THE INTERSECTION OF CR 1902 AND CR 1019, APPROXIMATELY 37 FEET NORTHWEST OF THE CENTERLINE OF CR 1019, APPROXIMATELY 45 FEET NORTHEAST OF THE CENTERLINE OF CR 1902, AND APPROXIMATELY 120 FEET SOUTHWEST OF A DRIVEWAY.



PROFILE SCALE
Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 4'

NO.	REVISION DATE
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LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
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JOHNSON COUNTY, TX

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TxEng Firm # F-2644 – TxSur Firm # 100170

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	9/26/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	WT-07

WATER LINE "W-2" & "W-3"

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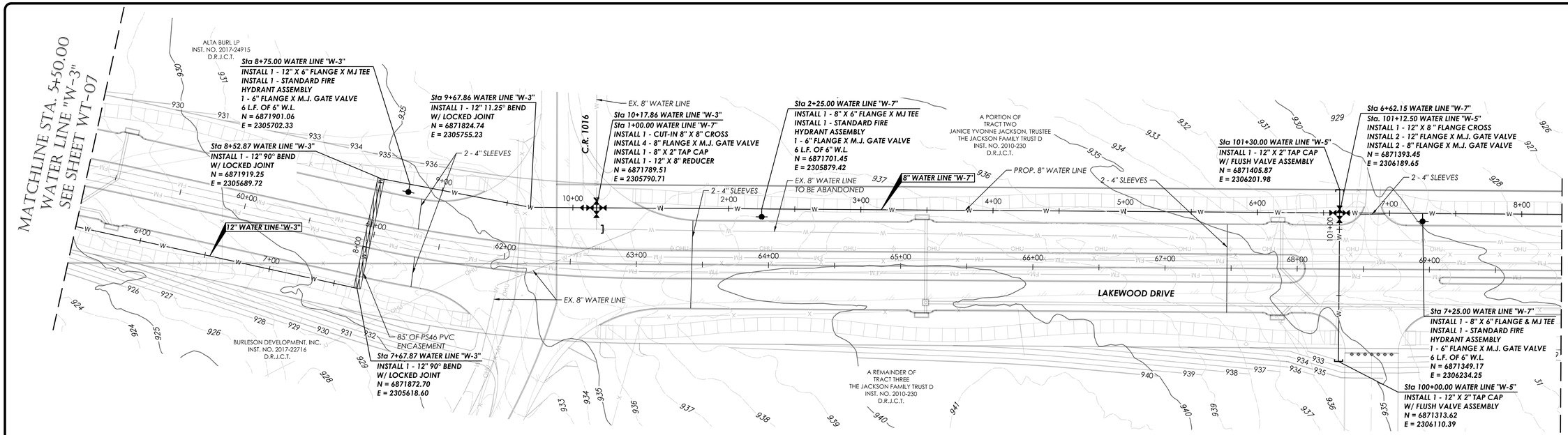
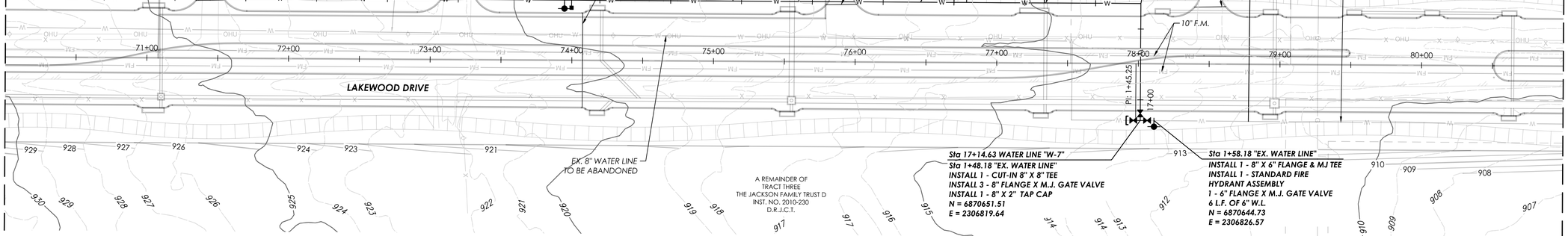
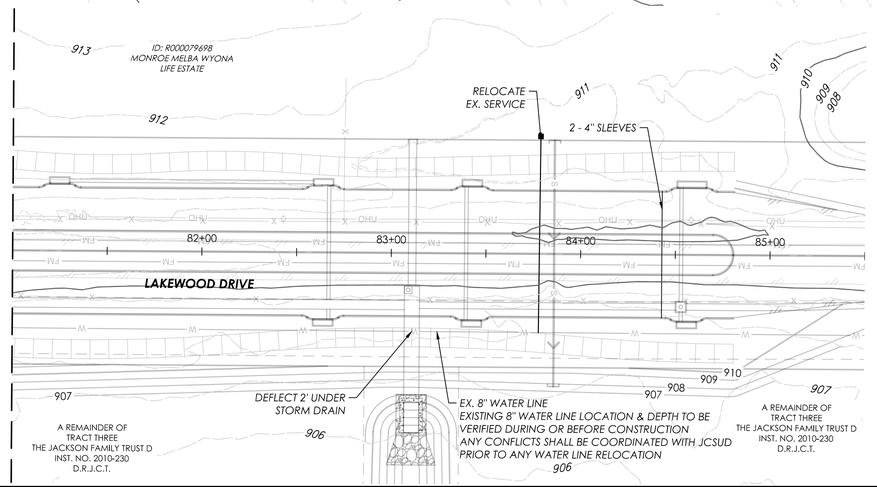




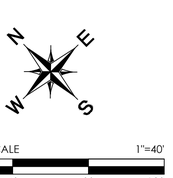


JCSUD WATER NOTES:

1. CONTRACTOR TO ENSURE A MINIMUM OF 2' OF SEPARATION BETWEEN PROPOSED WATER LINE AND ALL EXISTING OR PROPOSED CROSSING UTILITIES.
2. CONTRACTOR TO ENSURE A MINIMUM COVER OF 42" IS PROVIDED OVER THE TOP OF ALL SECTIONS OF THE PROPOSED WATER LINE.
3. IT IS THE RESPONSIBILITY OF THE DEVELOPER AND CONTRACTOR TO COMMUNICATE WITH ALL PROPERTY OWNERS WHO ARE IMPACTED BY THE CONSTRUCTION OF THE PROPOSED UTILITIES.
4. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REACH OUT TO 811 (ONE CALL) FOR EXISTING UTILITY LOCATES PRIOR TO THE START OF CONSTRUCTION.
5. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY JOHNSON SPECIAL UTILITY DISTRICT 48 HOURS PRIOR TO THE START OF CONSTRUCTION.

CONTRACTOR NOTE

THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UTILITIES, WHETHER PRIVATE OR PUBLIC, PRIOR TO EXCAVATING. THE INFORMATION AND DATA SHOWN WITH RESPECT TO EXISTING UNDERGROUND FACILITIES AT OR CONTIGUOUS TO THE SITE IS APPROXIMATE AND BASED ON INFORMATION AND DATA FURNISHED BY THE OWNERS OF SUCH UNDERGROUND FACILITIES OR ON PHYSICAL APPURTENANCES OBSERVED IN THE FIELD. THE OWNER AND ENGINEER SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ANY SUCH INFORMATION OR DATA. AND THE CONTRACTOR SHALL HAVE FULL RESPONSIBILITY FOR REVIEWING AND CHECKING ALL SUCH INFORMATION AND DATA, FOR LOCATING ALL UNDERGROUND FACILITIES, FOR COORDINATION OF THE WORK WITH THE OWNERS OF SUCH UNDERGROUND FACILITIES DURING CONSTRUCTION, FOR THE SAFETY AND PROTECTION THEREOF, AND REPAIRING ANY DAMAGE THERETO RESULTING FROM THE WORK, THE COST OF ALL OF WHICH WILL BE CONSIDERED AS HAVING BEEN INCLUDED IN THE CONTRACT PRICE. CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY ANY AFFECTED UTILITY COMPANIES OR AGENCIES AT LEAST 48 HOURS PRIOR TO BEGINNING CONSTRUCTION.



BENCH MARK ELEVATION : 852.36

CAPPED IRON ROD WITH CAP STAMPED "RDM" AT THE NORTHWEST CORNER OF THE INTERSECTION OF CR 1902 AND CR 1019. APPROXIMATELY 37 FEET NORTHWEST OF THE CENTERLINE OF CR 1019. APPROXIMATELY 45 FEET NORTHEAST OF THE CENTERLINE OF CR 1902, AND APPROXIMATELY 120 FEET SOUTHWEST OF A DRIVEWAY.

NO.	REVISION DATE
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SUMMIT CIVIL DISTRICT

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 100517-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	9/26/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	WT-08

WATER LAYOUT

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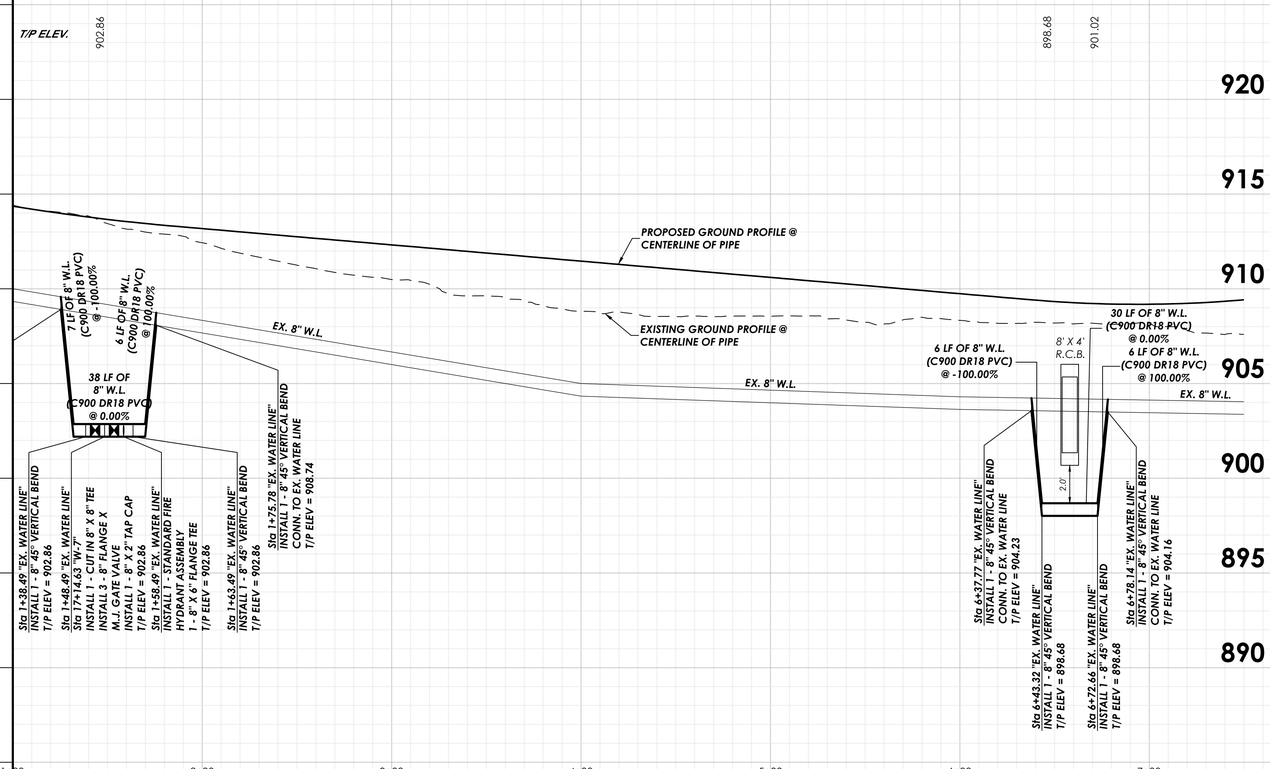
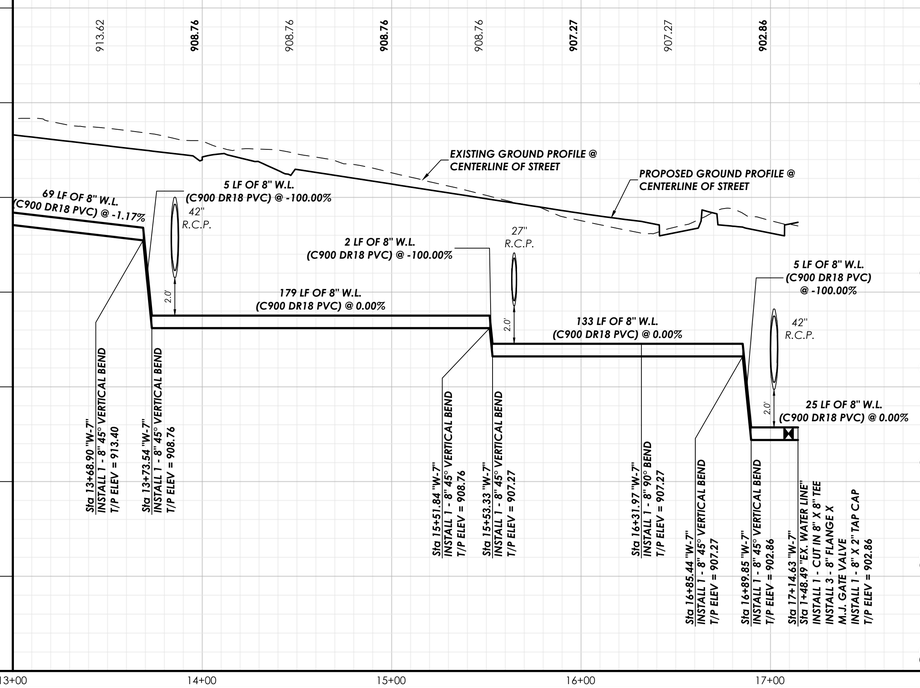
"EX. WATER LINE"

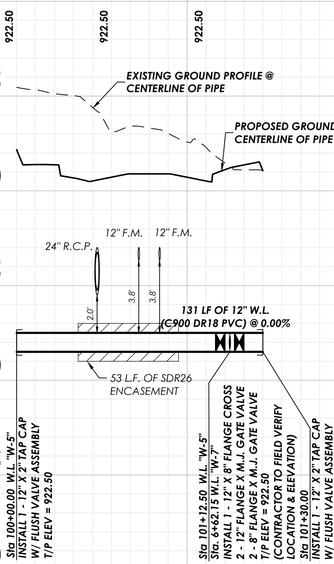


WATER LINE "W-7"

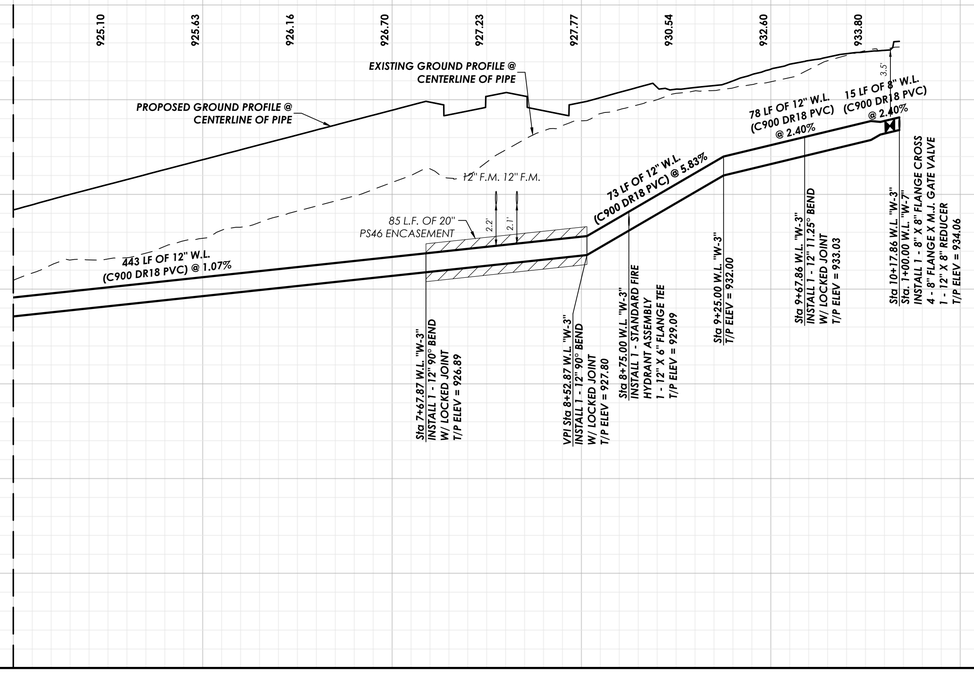


MATCHLINE STA. 5+50.00
WATER LINE "W-3"
SEE SHEET WT-07

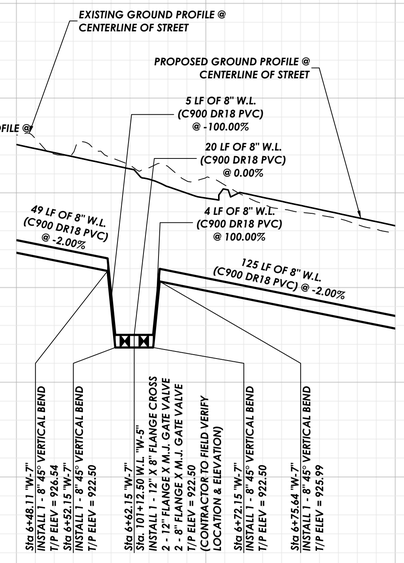
WATER LINE "W-5"



WATER LINE "W-3"



WATER LINE "W-5"



PROFILE SCALE
Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 4'

NO.	REVISION DATE
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CLEVELAND SUMMIT

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS

CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN & MARSHALL INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 - TxSurv Firm # 100170-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	9/26/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	WT-09

WATER LINE "W-5"

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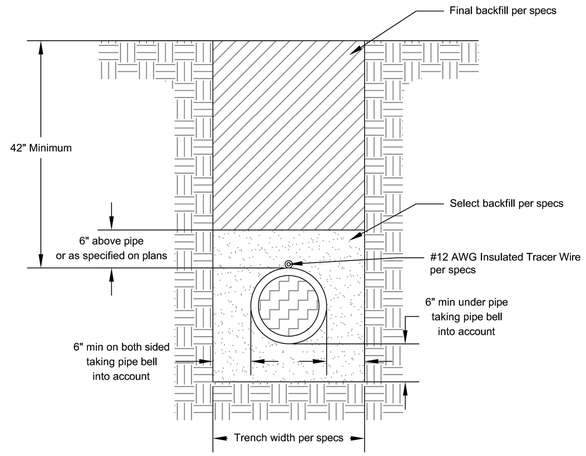
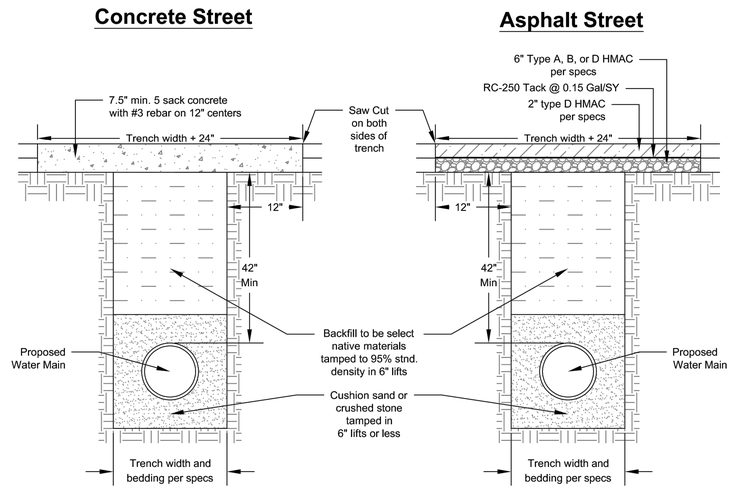
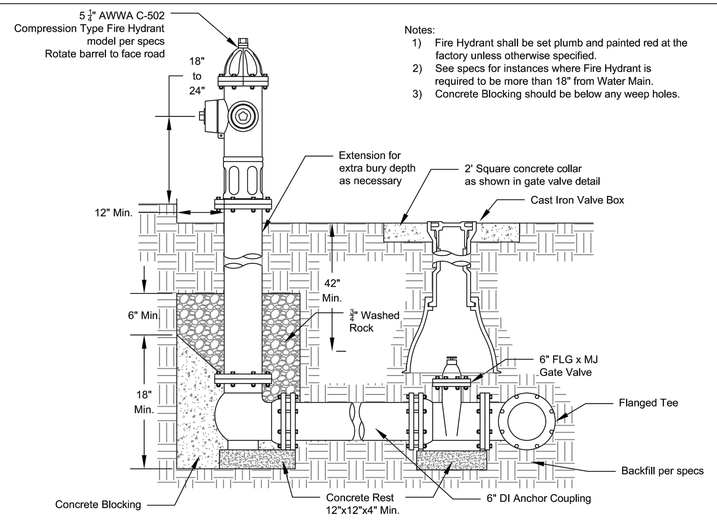


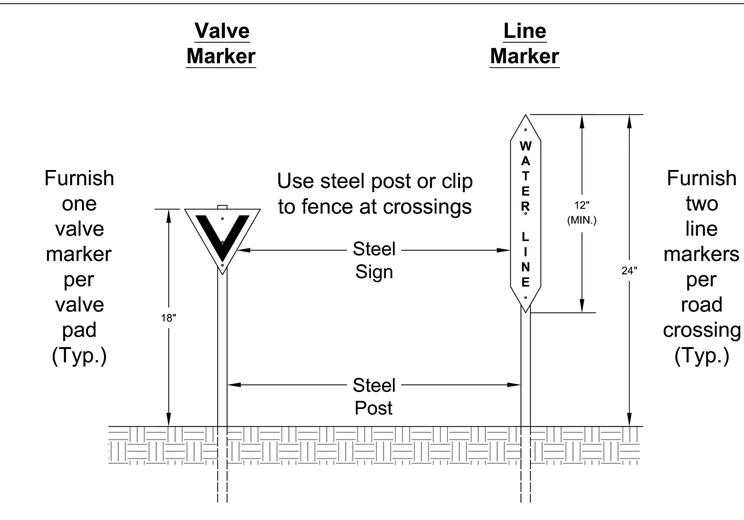
JCSUD JOHNSON COUNTY SPECIAL UTILITY DISTRICT	Trench and Backfill	
Standard Detail	Not To Scale	TR-100



JCSUD JOHNSON COUNTY SPECIAL UTILITY DISTRICT	Backfill and Pavement Repair	
Standard Detail	Not To Scale	TR-101



JCSUD JOHNSON COUNTY SPECIAL UTILITY DISTRICT	Standard Fire Hydrant	
Standard Detail	Not To Scale	FH-100



JCSUD JOHNSON COUNTY SPECIAL UTILITY DISTRICT	Markers	
Standard Detail	Not To Scale	TR-200

NO.	REVISION DATE
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CRESTVIEW SUMMIT

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 100177-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	7/8/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	**WD-01**

WATER DETAILS

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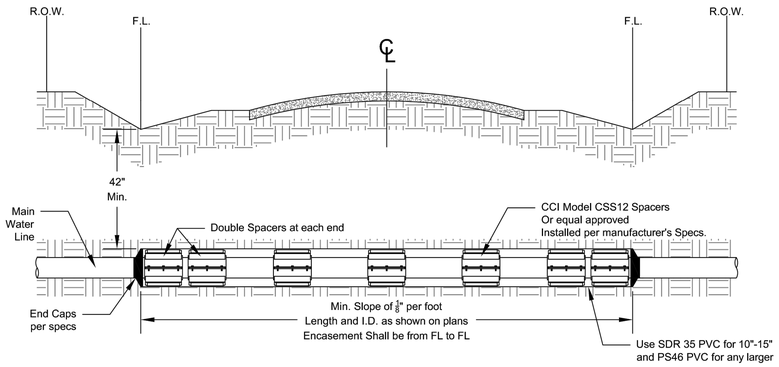
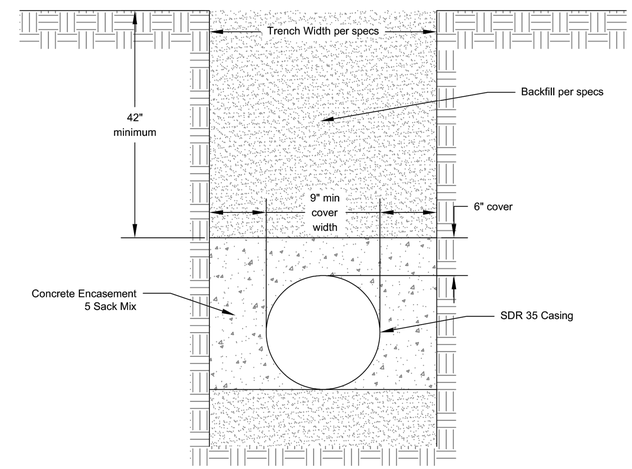


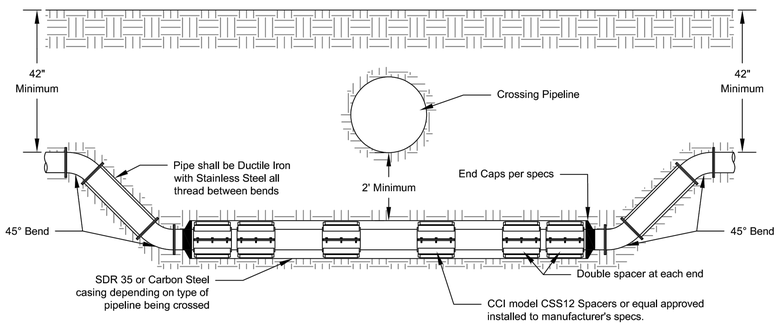
JCSUD JOHNSON COUNTY SPECIAL UTILITY DISTRICT

County Road Crossing		
Standard Detail	Not To Scale	TR-202



JCSUD JOHNSON COUNTY SPECIAL UTILITY DISTRICT

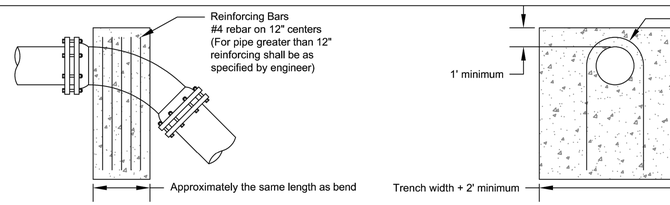
Concrete Encasement		
Standard Detail	Not To Scale	TR-102



Notes:
1) Fittings and Joints should be equipped with joint restrains.
2) Table 2-06 in the specifications will be used to determine the casing diameter.

JCSUD JOHNSON COUNTY SPECIAL UTILITY DISTRICT

Pipeline Crossing		
Standard Detail	Not To Scale	TR-203



I.D.	11.25°		22.5°		30°		45°		67.5°		90°	
	Thrust (Tons)	Vol (C.Y.)	Thrust (Tons)	Vol (C.Y.)	Thrust (Tons)	Vol (C.Y.)	Thrust (Tons)	Vol (C.Y.)	Thrust (Tons)	Vol (C.Y.)	Thrust (Tons)	Vol (C.Y.)
4, 6, 8	1	0.5	2	1	2.5	1.3	3.6	1.8	4.6	2.3	5	2.5
10, 12	2.2	1.1	4.3	2.2	5.7	2.8	8	4	10.5	5.2	11.3	5.7
16, 18	5	2.5	9.7	4.9	12.7	6.4	18	9	23.5	11.8	25.5	12.7
20	6.1	3.1	12	6	15.7	7.9	22.2	11.1	29.2	14.5	31.4	15.7
24	8.2	4.4	17.3	8.7	22.6	11.3	32	16	41.8	20.9	45.2	22.6
30	10.5	5.2	20.3	10.1	26.5	13.3	37.5	18.8	49	24.5	53.1	26.5
36	14.9	7.5	29.2	14.6	38.2	19.1	54	27	70.5	35.3	76.4	28.2
42	20.3	10.1	39.8	19.9	52	26	73.5	36.7	96	48	104	52
48	26.5	13.2	51.9	26	67.9	33.9	96	48	126	62.7	136	67.9
54	33.5	16.8	65.7	32.9	85.9	42.9	122	60.7	159	79.4	172	85.9
60	41.4	20.7	81.2	40.6	106	53	150	75	196	98	212	106
66	50.1	25	98.2	49.1	128	64.2	182	90.7	237	119	257	128
72	59.6	29.8	117	58.4	153	76.3	216	108	282	141	305	153
78	69.9	35	137	68.6	179	90	254	127	331	166	358	179
84	81.1	40.5	159	79.5	208	104	294	147	384	192	416	208
90	93.1	46.5	183	91.3	239	119	337	169	441	221	477	239
96	106	53	208	104	272	136	384	192	502	251	543	272

JCSUD JOHNSON COUNTY SPECIAL UTILITY DISTRICT

Vertical Thrust Block		
Standard Detail	Not To Scale	TB-200

NO.	REVISION DATE
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CUSTOM SUMMIT HOMES

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 100170

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	7/8/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	**WD-02**

WATER DETAILS

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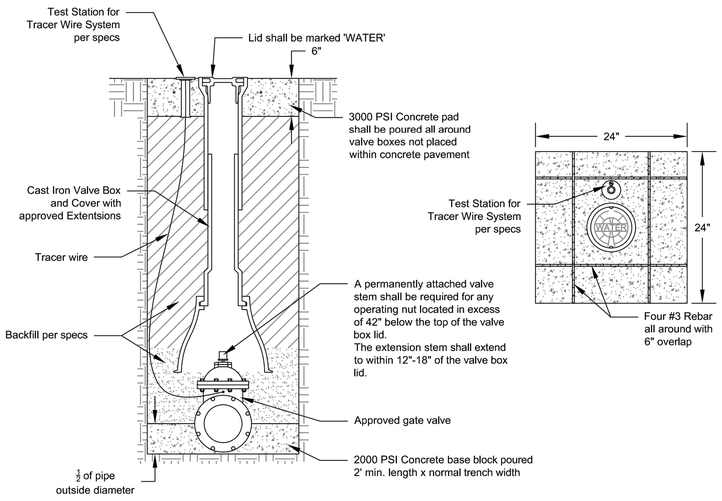
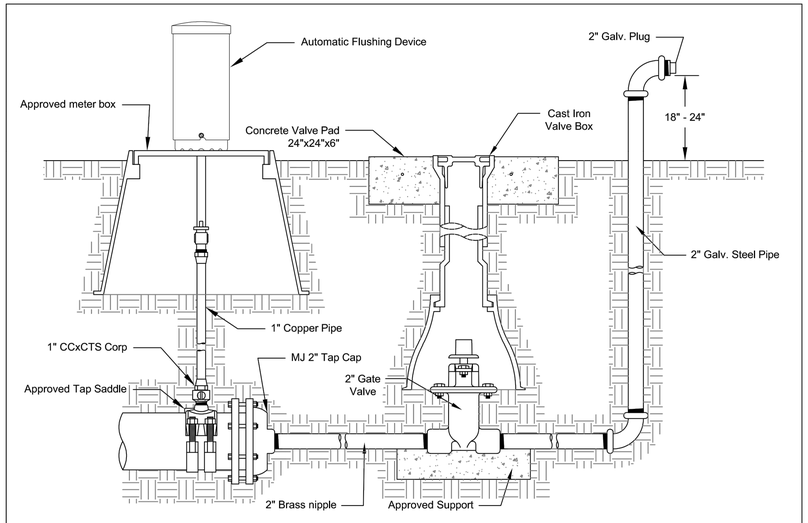


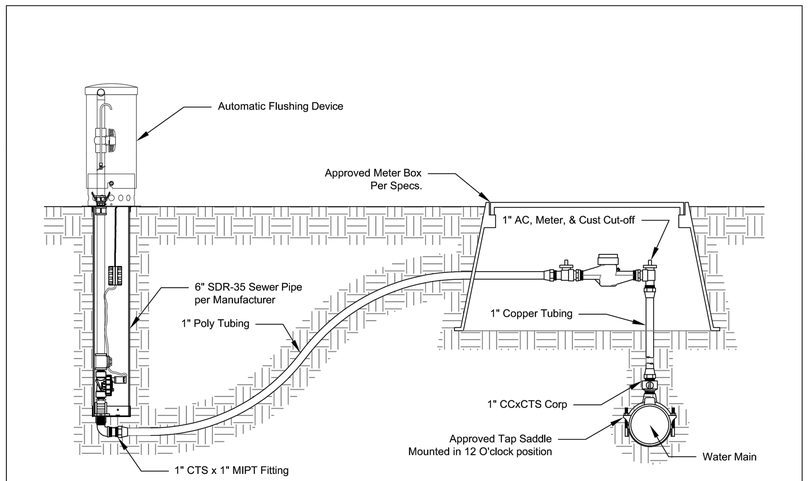
JCSUD JOHNSON COUNTY SPECIAL UTILITY DISTRICT

Gate Valve		
Standard Detail	Not To Scale	VL-100



JCSUD JOHNSON COUNTY SPECIAL UTILITY DISTRICT

Automatic Flush Valve Assembly		
Standard Detail	Not To Scale	VL-200



JCSUD JOHNSON COUNTY SPECIAL UTILITY DISTRICT

Automatic Flush Valve Side Profile		
Standard Detail	Not To Scale	VL-201

NO.	REVISION DATE
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CUSTOM SUMMIT HOMES

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

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CIVIL ENGINEERS – PLANNERS – SURVEYORS
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(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 100170

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	7/8/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	**WD-03**

WATER DETAILS

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NO.	REVISION DATE
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GRAPHIC SCALE 1"=200'
0 200 400 600

SHEET SS-01
SHEET SS-02
SHEET SS-03
SHEET SS-04
SHEET SS-05
SHEET SS-06
SHEET SS-07
SHEET SS-08
SHEET SS-09
SHEET SS-10
SHEET SS-13
SHEET SS-14

COUNTY ROAD 1019
F.M. HIGHWAY NO. 1902
LAKEWOOD DRIVE
EX. C.R. 1020

PROP. LIFT STATION
(TO BE DESIGNED UNDER SEPARATE COVER)
PROP. FORCE MAIN
(TO BE DESIGNED UNDER SEPARATE COVER)

FUTURE
CHISHOLM SUMMIT
ROAD

FUTURE
CHISHOLM SUMMIT
PH. 1

FUTURE
CHISHOLM SUMMIT
PH. 1

HOOPER CO. INC.
VOL. 938, PG. 435
D.R.J.C.T.

ALTA BURL LP
INST. NO. 2017-24915
D.R.J.C.T.

ALTA BURL LP
INST. NO. 2017-24915
D.R.J.C.T.

BURLESON 4A ECONOMIC
DEVELOPMENT CORPORATION
INST. NO. 2021-21498
D.R.J.C.T.

BURLESON 4A ECONOMIC
DEVELOPMENT CORPORATION
INST. NO. 2021-21498
D.R.J.C.T.

BURLESON DEVELOPMENT, INC.
INST. NO. 2017-24891
D.R.J.C.T.

BURLESON DEVELOPMENT, INC.
INST. NO. 2017-22716
D.R.J.C.T.

RAYFORD M. SHELTON, JR.
& MARY SHEBA GRAVES
VOL. 4588, PG. 977
D.R.J.C.T.

A REMAINDER OF
TRACT THREE
THE JACKSON FAMILY TRUST D
INST. NO. 2010-230
D.R.J.C.T.

A REMAINDER OF
TRACT THREE
THE JACKSON FAMILY TRUST D
INST. NO. 2010-230
D.R.J.C.T.

LOT 1, BLOCK 1
RUMFIELD ADDITION
INST. NO. 2020-215
P.R.J.C.T.

ID: R000079698
MONROE MELBA WYONA
LIFE ESTATE

JOHN T
BELZNER
VOL. 2802
PG. 499
D.R.J.C.T.

ID: R000005625
B & G SOUTH METRO LP

ID: R000005717
JOHN MARTINDALE

ID: R000005718
M. C. BUSBY

18" S.S "S-1"
15" S.S "S-1"
10" S.S "S-1"
8" S.S "S-1"
8" S.S "S-2"
8" S.S "S-3"
8" S.S "S-4"
10" S.S "S-5"
8" S.S "S-6"
8" S.S "S-7"

0+00 5+00 10+00 15+00 20+00 25+00 30+00 35+00 40+00 45+00 50+00 55+00 60+00 65+00 70+00 75+00 80+00 101+00

P.I. 1+45.25

CONTRACTOR NOTE

THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UTILITIES, WHETHER PRIVATE OR PUBLIC, PRIOR TO EXCAVATING. THE INFORMATION AND DATA SHOWN WITH RESPECT TO EXISTING UNDERGROUND FACILITIES AT OR CONTIGUOUS TO THE SITE IS APPROXIMATE AND BASED ON INFORMATION AND DATA FURNISHED BY THE OWNERS OF SUCH UNDERGROUND FACILITIES OR ON PHYSICAL APPURTENANCES OBSERVED IN THE FIELD. THE OWNER AND ENGINEER SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ANY SUCH INFORMATION OR DATA, AND THE CONTRACTOR SHALL HAVE FULL RESPONSIBILITY FOR REVIEWING AND CHECKING ALL SUCH INFORMATION AND DATA, FOR LOCATING ALL UNDERGROUND FACILITIES, FOR COORDINATION OF THE WORK WITH THE OWNERS OF SUCH UNDERGROUND FACILITIES DURING CONSTRUCTION, FOR THE SAFETY AND PROTECTION THEREOF, AND REPAIRING ANY DAMAGE THERETO RESULTING FROM THE WORK, THE COST OF ALL OF WHICH WILL BE CONSIDERED AS HAVING BEEN INCLUDED IN THE CONTRACT PRICE. CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY ANY AFFECTED UTILITY COMPANIES OR AGENCIES AT LEAST 48 HOURS PRIOR TO BEGINNING CONSTRUCTION.

BENCH MARK ELEVATION : 852.36

CAPPED IRON ROD WITH CAP STAMPED "RDM" AT THE NORTHWEST CORNER OF THE INTERSECTION OF CR 1902 AND CR 1019, APPROXIMATELY 57 FEET NORTHWEST OF THE CENTERLINE OF CR 1019, APPROXIMATELY 45 FEET NORTHEAST OF THE CENTERLINE OF CR 1902, AND APPROXIMATELY 120 FEET SOUTHWEST OF A DRIVEWAY.

LAKEWOOD DRIVE
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STATE OF TEXAS
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09/28/22

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REVIEW :	EWE
SHEET	SS-00

SEWER INDEX

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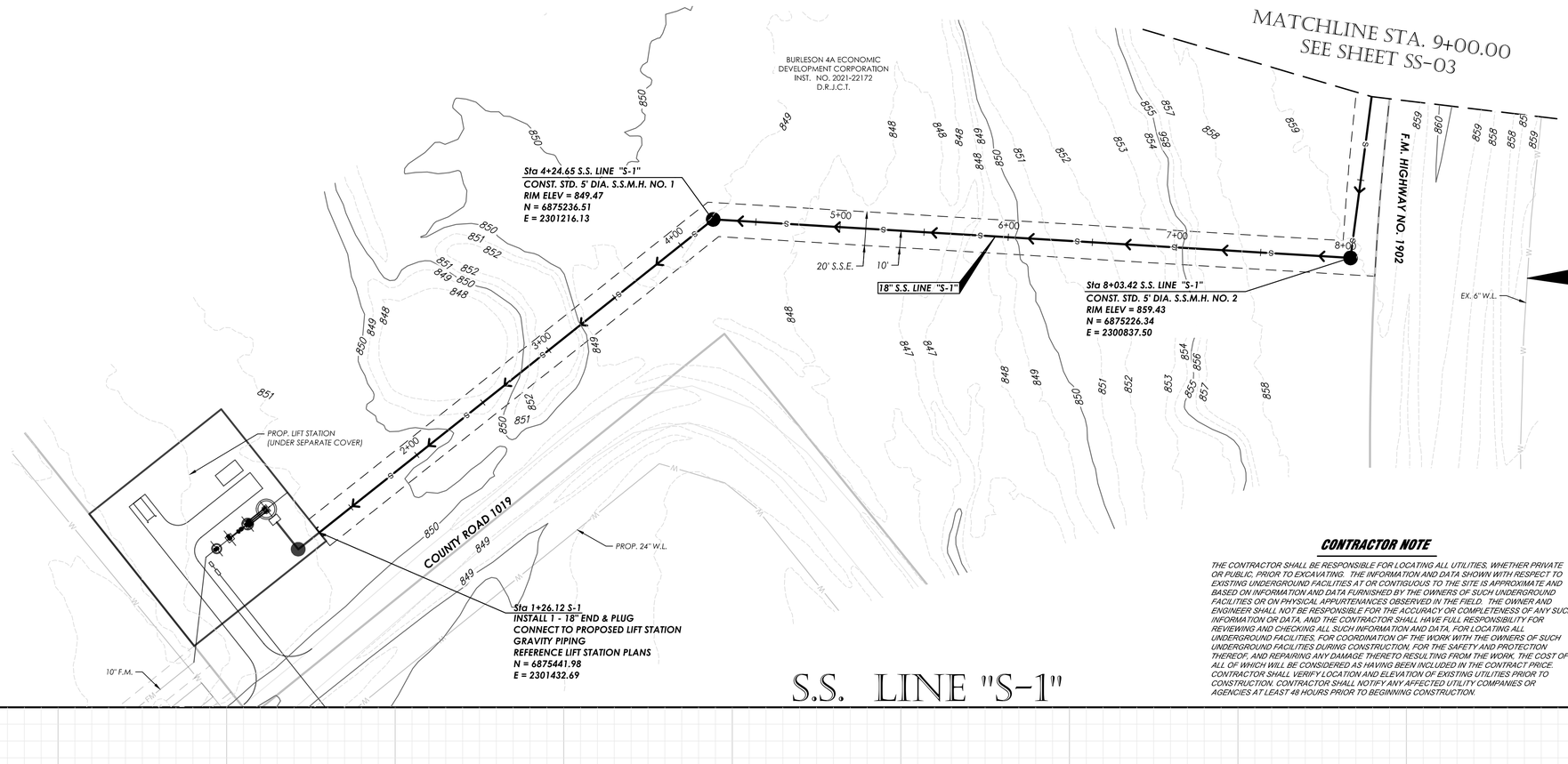

GRAPHIC SCALE 1"=40'
0 40 80 120

!!!WARNING!!!
APPROXIMATE LOCATION OF EXISTING UNDERGROUND WATER LINE. CONTRACTOR SHALL COORDINATE WITH APPROPRIATE UTILITY COMPANIES PRIOR TO CONSTRUCTION.

CONTRACTOR NOTE

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BENCH MARK ELEVATION : 852.36

CAPPED IRON ROD WITH CAP STAMPED "RDM" AT THE NORTHWEST CORNER OF THE INTERSECTION OF CR 1902 AND CR 1019, APPROXIMATELY 37 FEET NORTHWEST OF THE CENTERLINE OF CR 1019, APPROXIMATELY 45 FEET NORTHEAST OF THE CENTERLINE OF CR 1902, AND APPROXIMATELY 120 FEET SOUTHWEST OF A DRIVEWAY.

PROFILE SCALE
Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 4'

SEE SHEET SS-02

NO.	REVISION DATE

LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 100170

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	5/21/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	SS-01

S.S. LINE "S-1"

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PROFILE SCALE
Horizontal Scale: 1" = 40'
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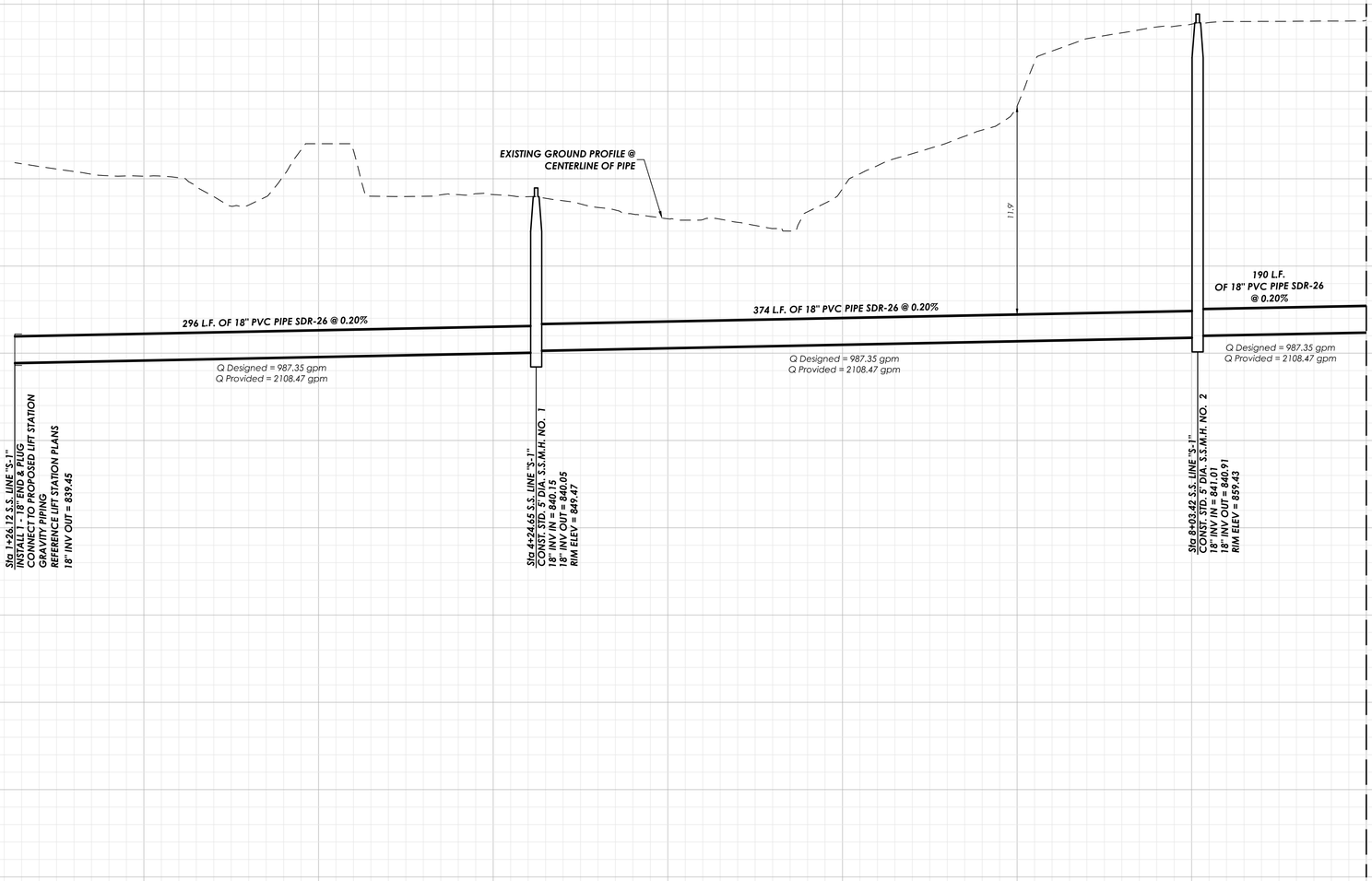
S.S. LINE "S-1"



NO.	REVISION DATE
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SUMMIT CONSTRUCTION

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN & MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329-4373
TxEngFirm # F2644 – TxSurvFirm # 100177-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
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REVIEW :	EWE

SHEET **SS-02**

S.S. LINE "S-1"

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GRAPHIC SCALE 1"=40'
0 40 80 120

MATCHLINE STA. 9+00.00
SEE SHEET SS-02

MATCHLINE STA. 19+00.00
SEE SHEET SS-04

BURLESON 4A ECONOMIC DEVELOPMENT CORPORATION
INST. NO. 2021-22172
D.R.J.C.T.

Sta 9+98.70 S.S. LINE "S-1"
CONST. STD. 5' DIA. S.S.M.H. NO. 3
RIM ELEV = 860.21
N = 6875031.24
E = 2300829.06

18" S.S. LINE "S-1"

Sta 13+00.68 S.S. LINE "S-1"
CONST. STD. 5' DIA. S.S.M.H. NO. 4
RIM ELEV = 859.50
N = 6874732.85
E = 2300782.65

20' S.S.E.

Sta 16+12.41 S.S. LINE "S-1"
CONST. STD. 5' DIA. S.S.M.H. NO. 5
RIM ELEV = 862.27
N = 6874436.41
E = 2300686.18

Sta 18+83.73 S.S. LINE "S-1"
CONST. STD. 5' DIA. S.S.M.H. NO. 6
RIM ELEV = 861.68
N = 6874209.79
E = 2300835.38

T/P = 856.21
(18" DCP OPERATING)

LAKEWOOD DRIVE

FUTURE LAKEWOOD DRIVE

F.M. HIGHWAY NO. 1902

EX. 12" W.L.
POSSIBLE CENTERLINE OF SINCLAIR PIPE LINE COMPANY EASEMENT
VOL. 406, PG. 194
D.R.J.C.T.

20' PERMANENT EASEMENT
TEXAS MIDSTREAM GAS SERVICES, LLC.
VOL. 4556, PG. 988
D.R.J.C.T.

EX. 6" GAS LINE
(ENLINK)

EX. 6" W.L.

EX. 18" LIQUID TRANSMISSION
(DCP OPERATING)

EX. 24" GAS LINE
(WILLIAMS)

!!!WARNING!!!
APPROXIMATE LOCATION OF EXISTING UNDERGROUND WATER LINE. CONTRACTOR SHALL COORDINATE WITH APPROPRIATE UTILITY COMPANIES PRIOR TO CONSTRUCTION.

!!!WARNING!!!
APPROXIMATE LOCATION OF EXISTING UNDERGROUND WATER AND GAS LINES. CONTRACTOR SHALL COORDINATE WITH APPROPRIATE UTILITY COMPANIES PRIOR TO CONSTRUCTION.

CONTRACTOR NOTE

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S.S. LINE "S-1"

PROFILE SCALE
Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 4'

PROPOSED GROUND PROFILE @ CENTERLINE OF PIPE

EXISTING GROUND PROFILE @ CENTERLINE OF PIPE

EX. 12" W.L.
T/P=855.52
(FIELD VERIFY)

16.9'

9.8'

190 L.F. OF 18" PVC PIPE SDR-26 @ 0.20%
Q Designed = 987.35 gpm
Q Provided = 2108.47 gpm

297 L.F. OF 18" PVC PIPE SDR-26 @ 0.20%
Q Designed = 987.35 gpm
Q Provided = 2108.47 gpm

307 L.F. OF 18" PVC PIPE SDR-26 @ 0.20%
Q Designed = 987.35 gpm
Q Provided = 2108.47 gpm

266 L.F. OF 18" PVC PIPE SDR-26 @ 0.20%
Q Designed = 987.35 gpm
Q Provided = 2108.47 gpm

CONSTRUCT 20 L.F. OF 18" SDR-26 PVC PIPE BY BORE WITHIN 30" STEEL CASING PIPE

Sta 9+98.70 S.S. LINE "S-1"
CONST. STD. 5' DIA. S.S.M.H. NO. 3
18" INV IN = 841.49
18" INV OUT = 841.39
RIM ELEV = 860.21

Sta 13+00.68 S.S. LINE "S-1"
CONST. STD. 5' DIA. S.S.M.H. NO. 4
18" INV IN = 842.19
18" INV OUT = 842.09
RIM ELEV = 859.50

Sta 16+12.41 S.S. LINE "S-1"
CONST. STD. 5' DIA. S.S.M.H. NO. 5
18" INV IN = 842.71
18" INV OUT = 842.81
RIM ELEV = 862.27

Sta 18+83.73 S.S. LINE "S-1"
CONST. STD. 5' DIA. S.S.M.H. NO. 6
18" INV IN = 843.56
18" INV OUT = 843.46
RIM ELEV = 861.68

FL ELEV.

NO.	REVISION DATE

LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 10057700

STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	5/21/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	SS-03

S.S. LINE "S-1"

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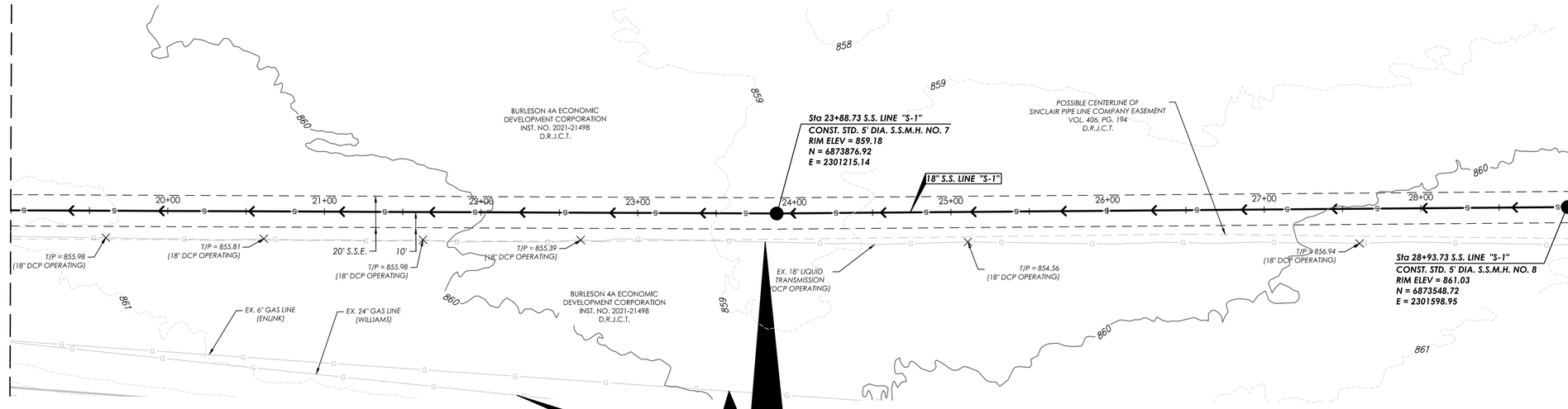

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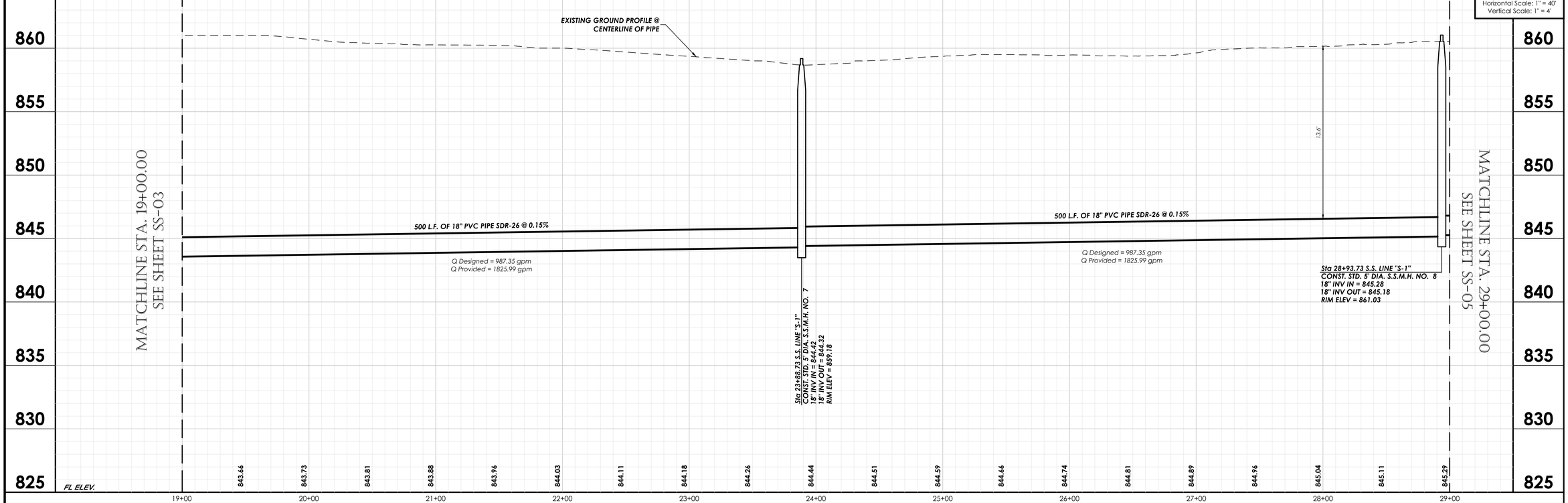

NO.	REVISION DATE
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CITY OF SUMMIT

LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

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STATE OF TEXAS
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LICENSED PROFESSIONAL ENGINEER
09/28/22

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REVIEW :	EWE
SHEET	SS-04

S.S. LINE "S-1"

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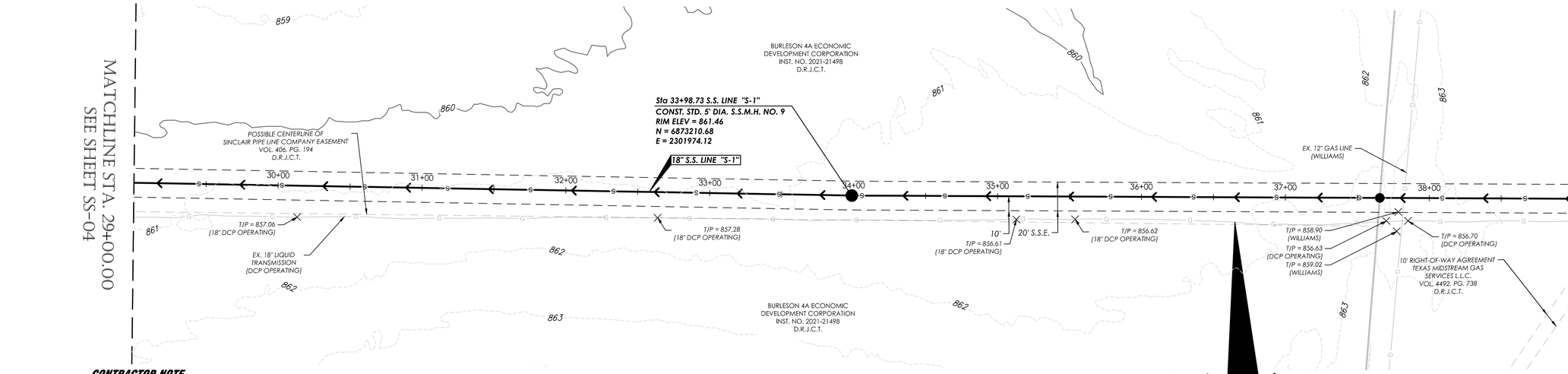

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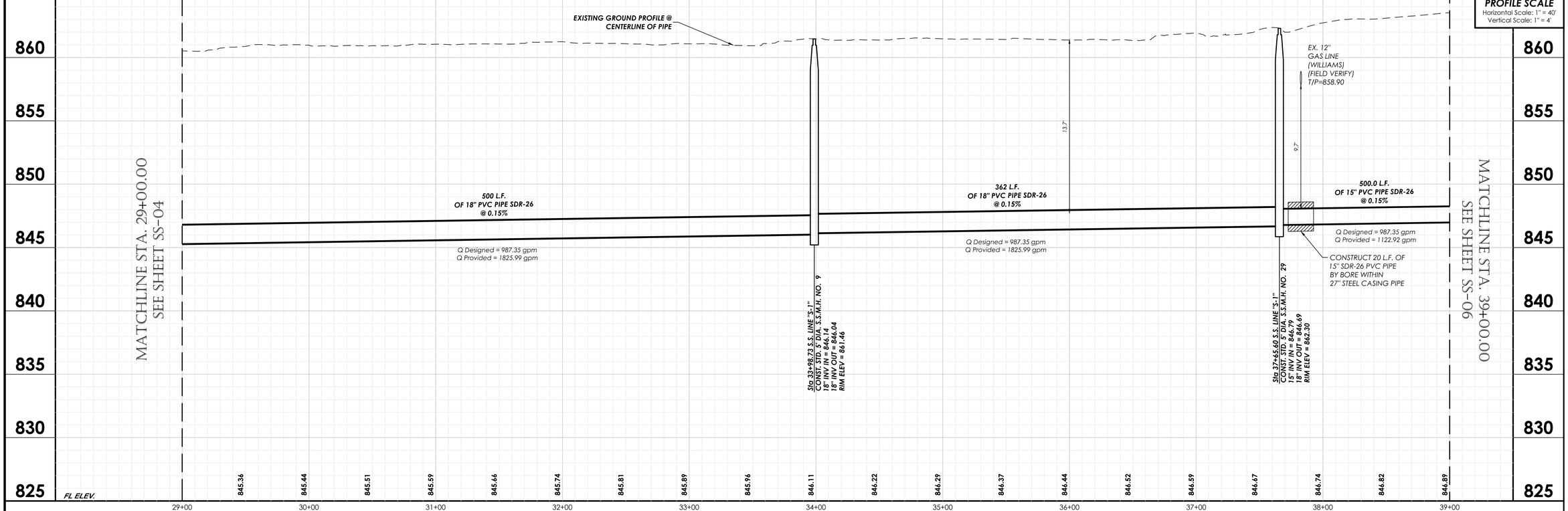

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SUMMIT CIVIL DISTRICT

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN GNJ MARSHALL PC
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEngFirm # F-2644 – TxSurv Firm # 100177-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	5/21/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	SS-05

S.S. LINE "S-1"

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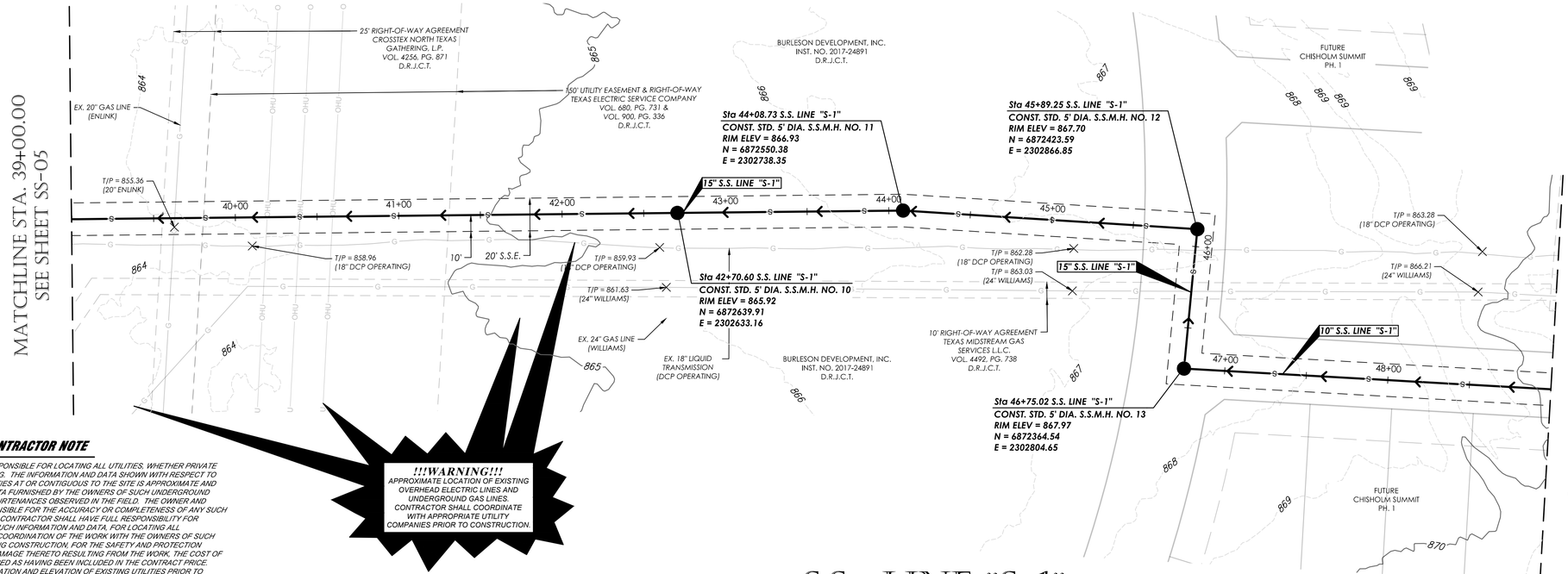

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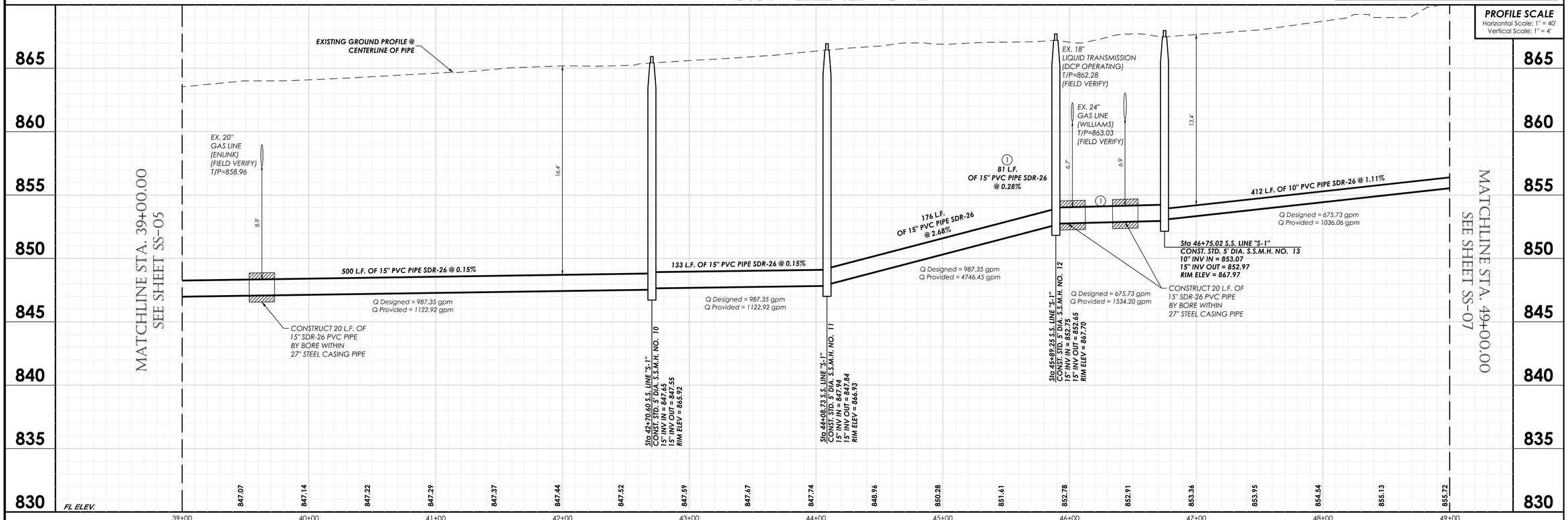

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

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CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
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STATE OF TEXAS
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09/28/22

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REVIEW :	EWE
SHEET	SS-06

S.S. LINE "S-1"

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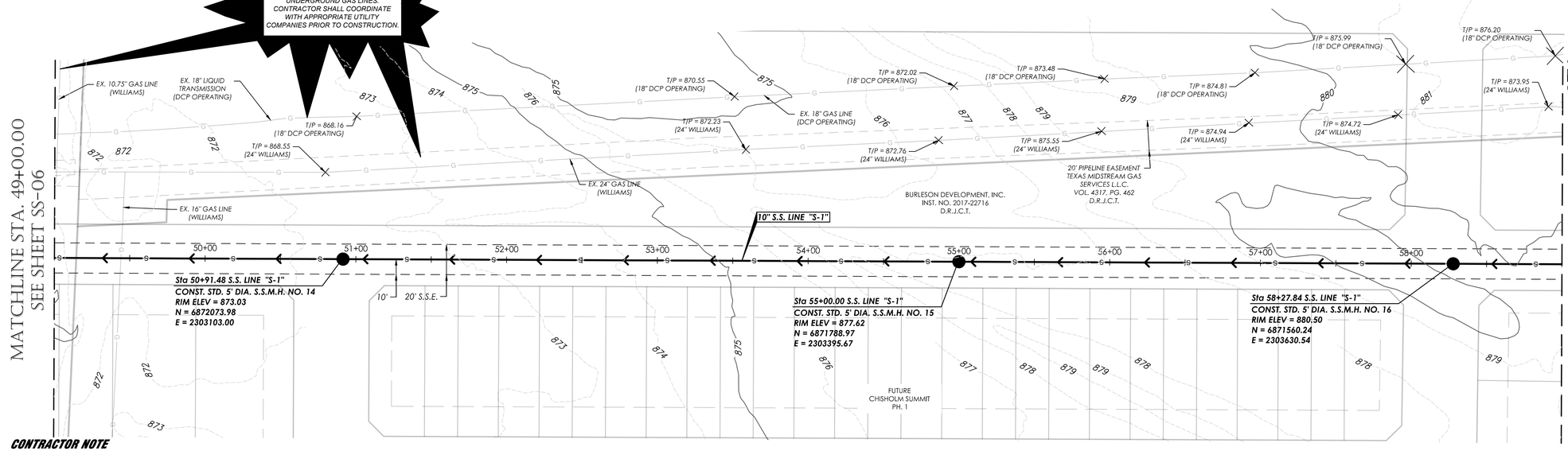

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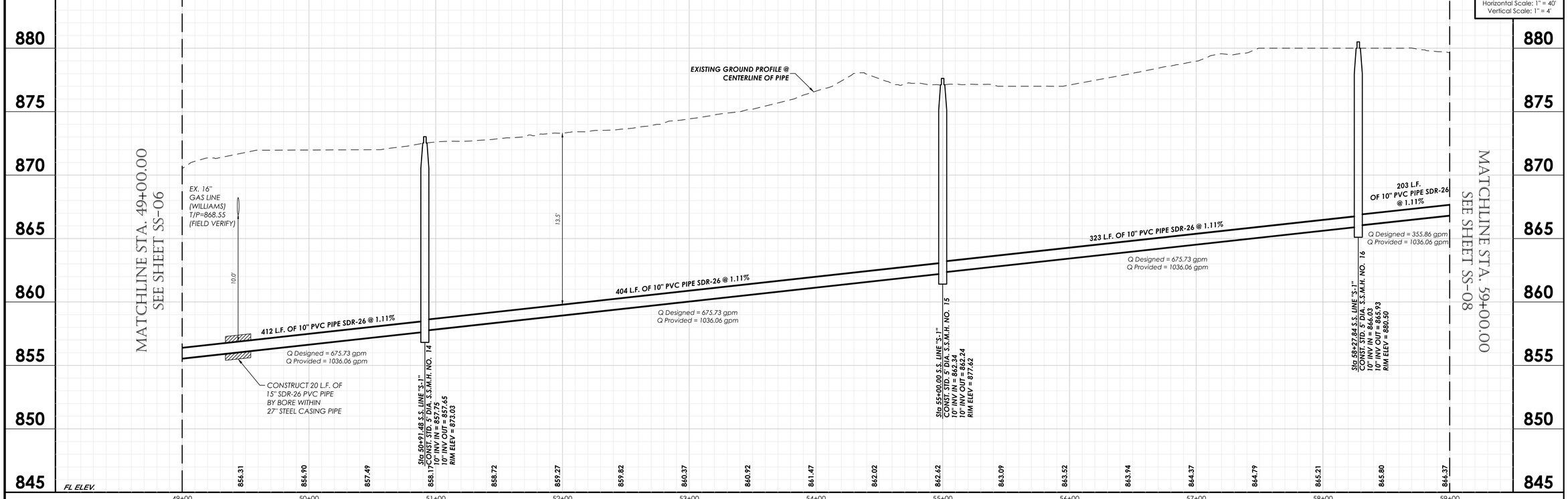

NO.	REVISION DATE
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LAKEWOOD DRIVE
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CITY OF BURLESON
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GOODWIN AND MARSHALL, INC.
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STATE OF TEXAS
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DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	SS-07

S.S. LINE "S-1"

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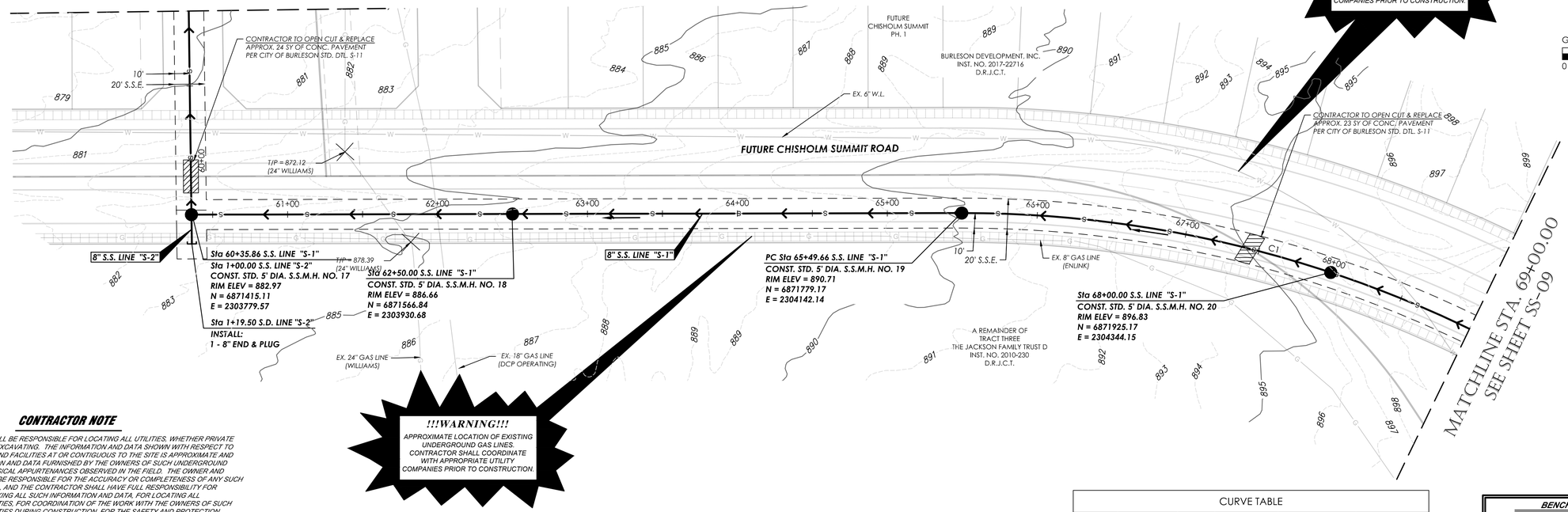
MATCHLINE STA. 59+00.00
SEE SHEET SS-07



GRAPHIC SCALE 1"=40'
0 40 80 120

CONTRACTOR NOTE

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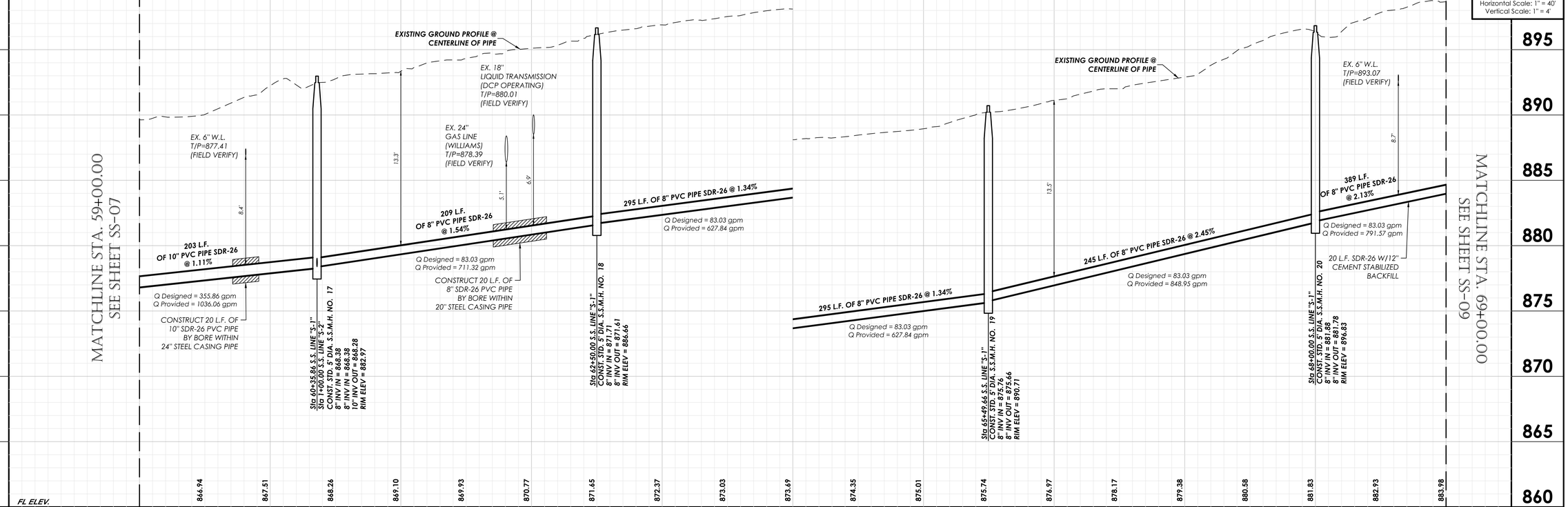
CURVE TABLE					
CURVE #	ARC LENGTH	RADIUS	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
C1	644.69	774.50	47°41'35"	N68°43'52"E	626.24
C2	437.48	525.50	47°41'54"	N68°43'42"E	424.95

BENCH MARK ELEVATION : 852.36
CAPPED IRON ROD WITH CAP STAMPED "RDM" AT THE NORTHWEST CORNER OF THE INTERSECTION OF CR 1902 AND CR 1019, APPROXIMATELY 37 FEET NORTHWEST OF THE CENTERLINE OF CR 1019, APPROXIMATELY 45 FEET NORTHEAST OF THE CENTERLINE OF CR 1902, AND APPROXIMATELY 120 FEET SOUTHWEST OF A DRIVEWAY.

S.S. LINE "S-1"

PROFILE SCALE
Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 4'



LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

NO.	REVISION DATE

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329-4373
TxEng Firm # F-2644 – TxSurv Firm # 100177-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	7/28/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	SS-08

S.S. LINE "S-1"

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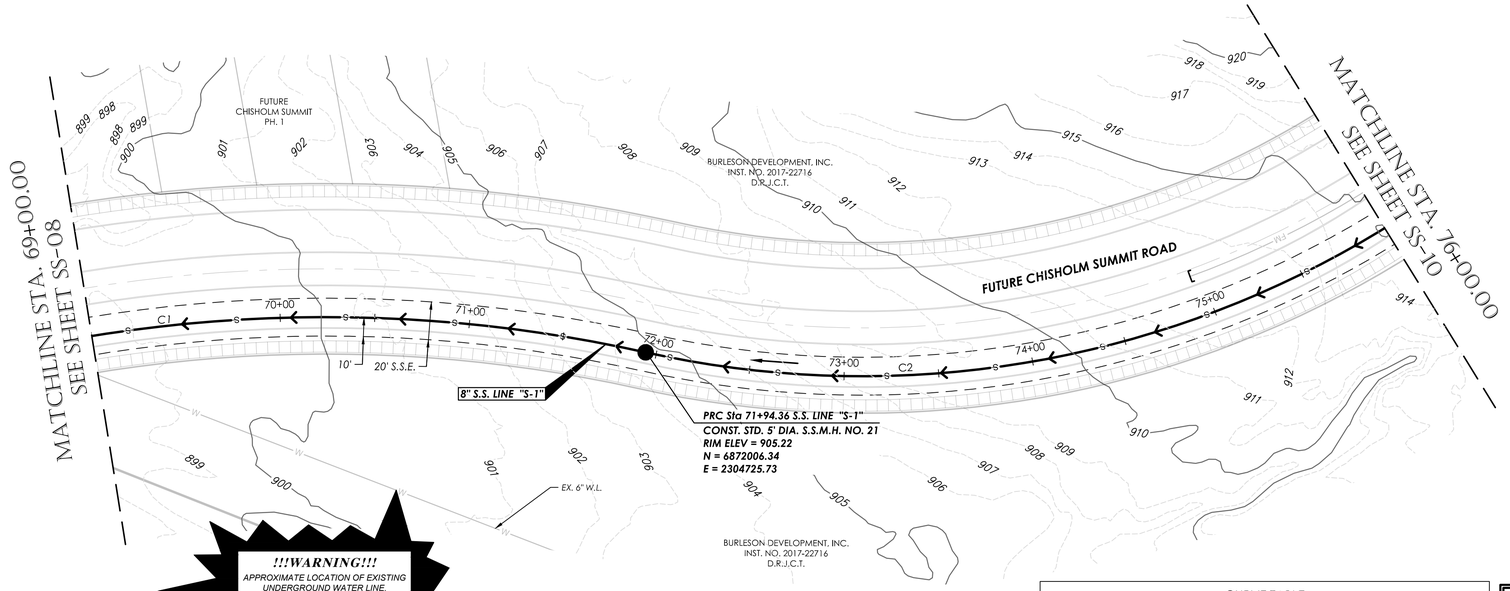

S.S. LINE "S-1"

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!!!WARNING!!!
APPROXIMATE LOCATION OF EXISTING UNDERGROUND WATER LINE. CONTRACTOR SHALL COORDINATE WITH APPROPRIATE UTILITY COMPANIES PRIOR TO CONSTRUCTION.

CURVE TABLE					
CURVE #	ARC LENGTH	RADIUS	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
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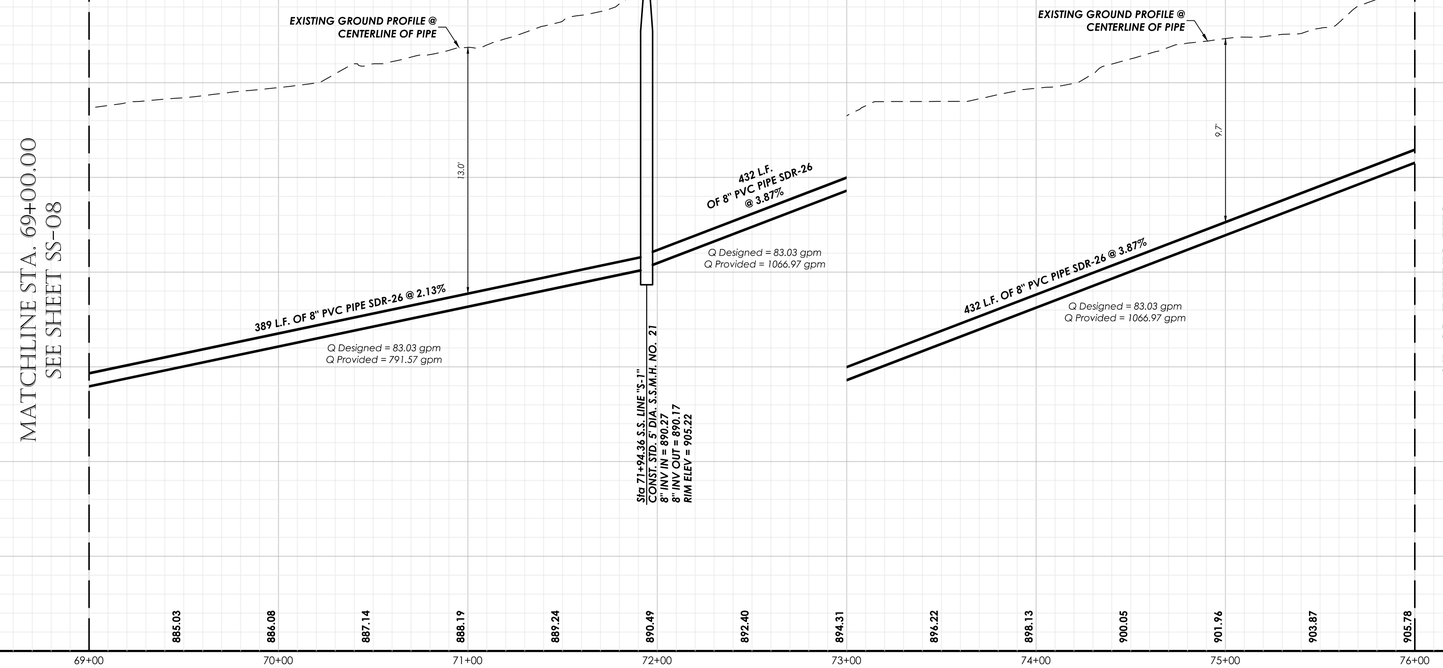

PROFILE SCALE
Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 4'

GRAPHIC SCALE 1"=40'
0 40 80 120

NO.	REVISION DATE

LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN MARSHALL INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 100170

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	7/28/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	SS-09
	S.S. LINE "S-1"

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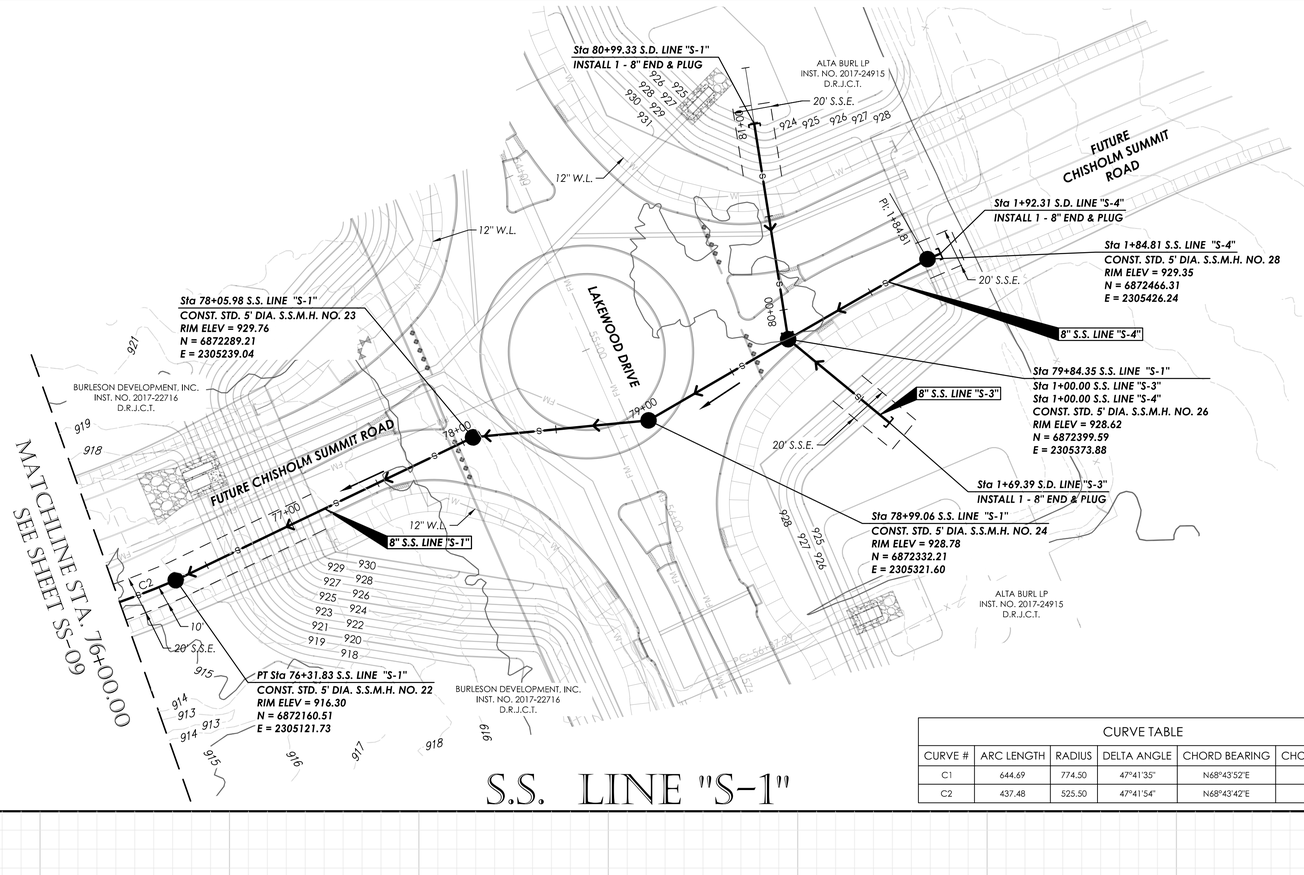
E:\10745 – Bransom Estates\Lakewood\Plans\SHEETS\60% Construction Plans\10745-LAKEWOOD-SS-06-09.dwg Wed Sep 28 2022 12:19



CURVE TABLE					
CURVE #	ARC LENGTH	RADIUS	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
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CONTRACTOR NOTE

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PROFILE SCALE
Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 4'

SEE SHEET SS-11

NO.	REVISION DATE
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GRAPHIC SCALE 1"=40'
0 40 80 120

LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 100170

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	5/21/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	SS-10
	S.S. LINE "S-1"

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PROFILE SCALE
Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 4'

NO.	REVISION DATE
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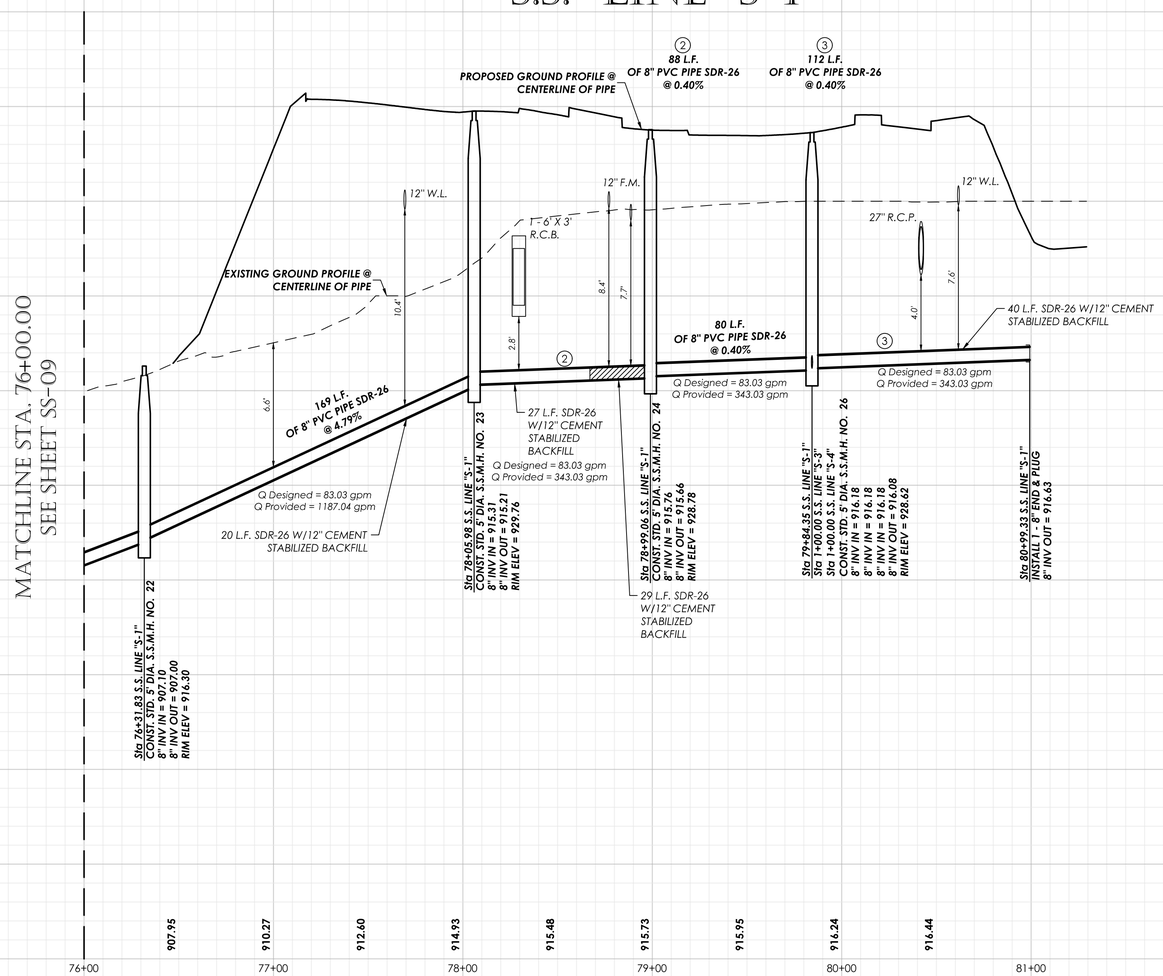
S.S. LINE "S-1"



LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN & MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329-4373
TxEng Firm # F-2644 – TxSurv Firm # 100570-00

STATE OF TEXAS
BRENT A. CALDWELL
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LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	5/21/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	SS-11

S.S. LINE "S-1"

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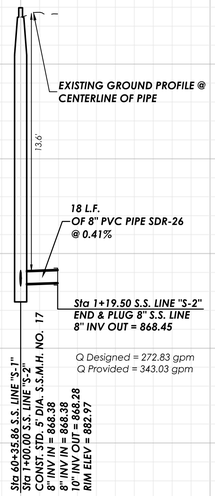
PROFILE SCALE
Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 4'

S.S. LINE "S-2"



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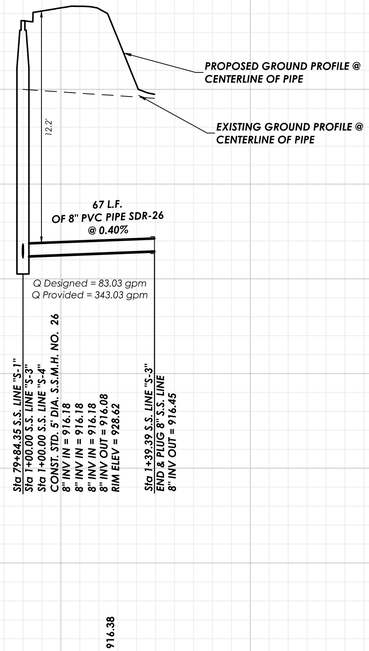
FL ELEV.

1+00 2+00

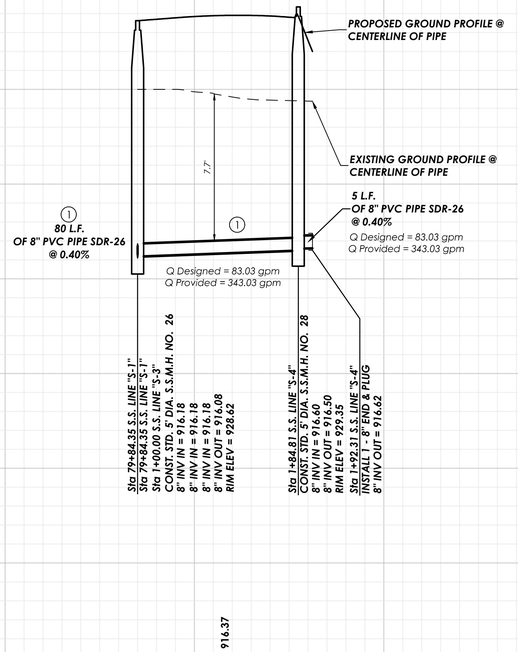
S.S. LINE "S-3"



930 925 920 915 910 905 900 895

1+00 2+00

S.S. LINE "S-4"



930 925 920 915 910 905 900 895

1+00 2+00

NO.	REVISION DATE
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SUMMIT CONSTRUCTION

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
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09/28/22

JOB NO. :	10745
DATE :	5/21/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE

SHEET **SS-12**

S.S. LINE "S-2", "S-3", & "S-4"

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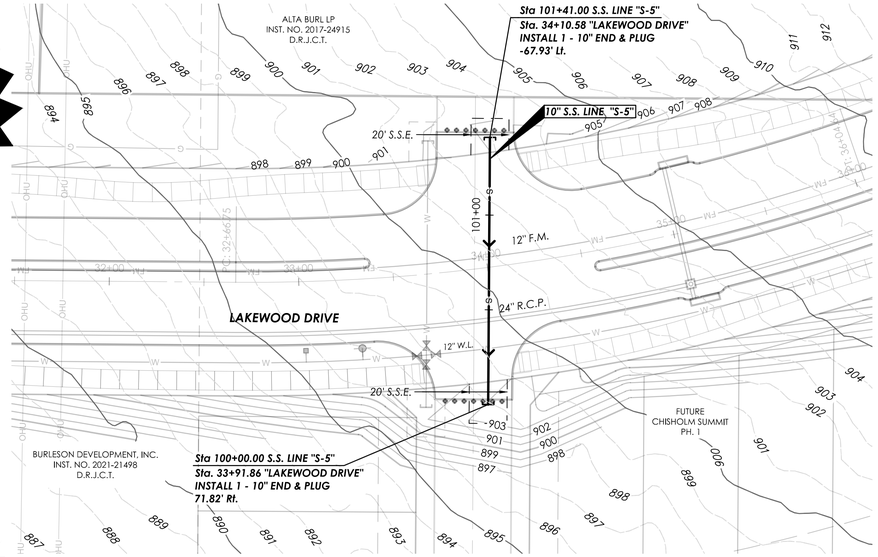
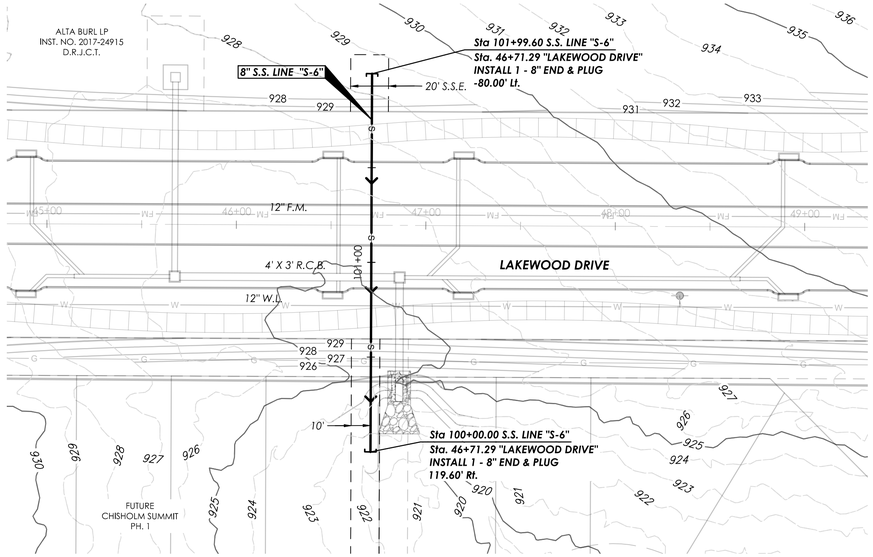
E:\10745 – Bransom Estates\Lakewood\Plans\SHEETS\60% Construction Plans\10745-LAKEWOOD-SS-10-14.dwg Wed Sep 28 2022 12:22

!!!WARNING!!!
APPROXIMATE LOCATION OF EXISTING UNDERGROUND GAS LINE. CONTRACTOR SHALL COORDINATE WITH APPROPRIATE UTILITY COMPANIES PRIOR TO CONSTRUCTION.





GRAPHIC SCALE 1"=40'
0 40 80 120

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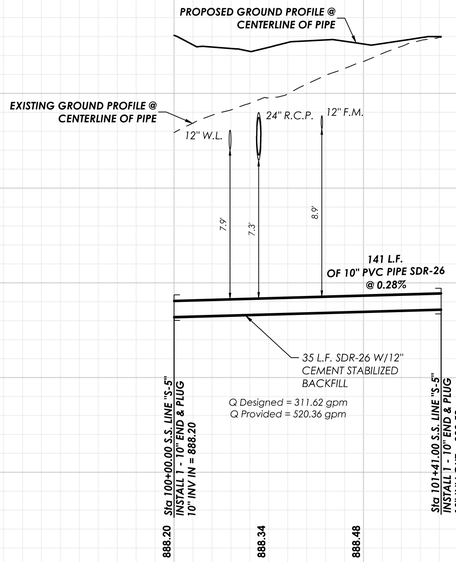
S.S. LINE "S-5"



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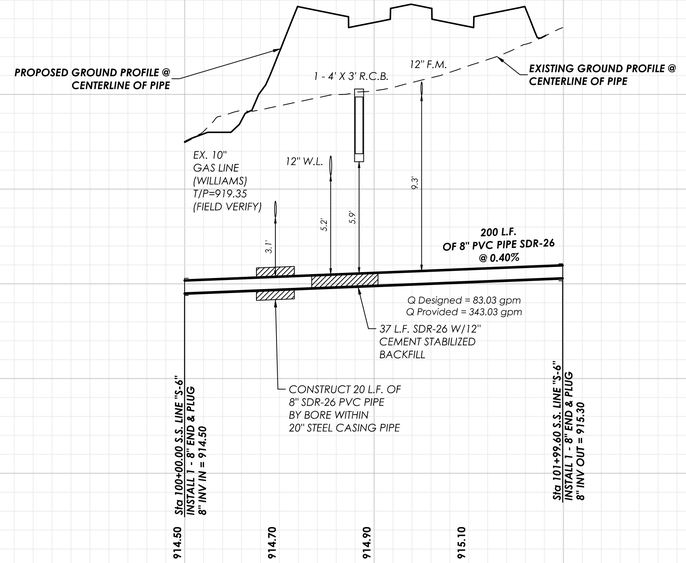

PROFILE SCALE
Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 4'

LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
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STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	5/21/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	SS-13

S.S. LINE "S-5" & "S-6"

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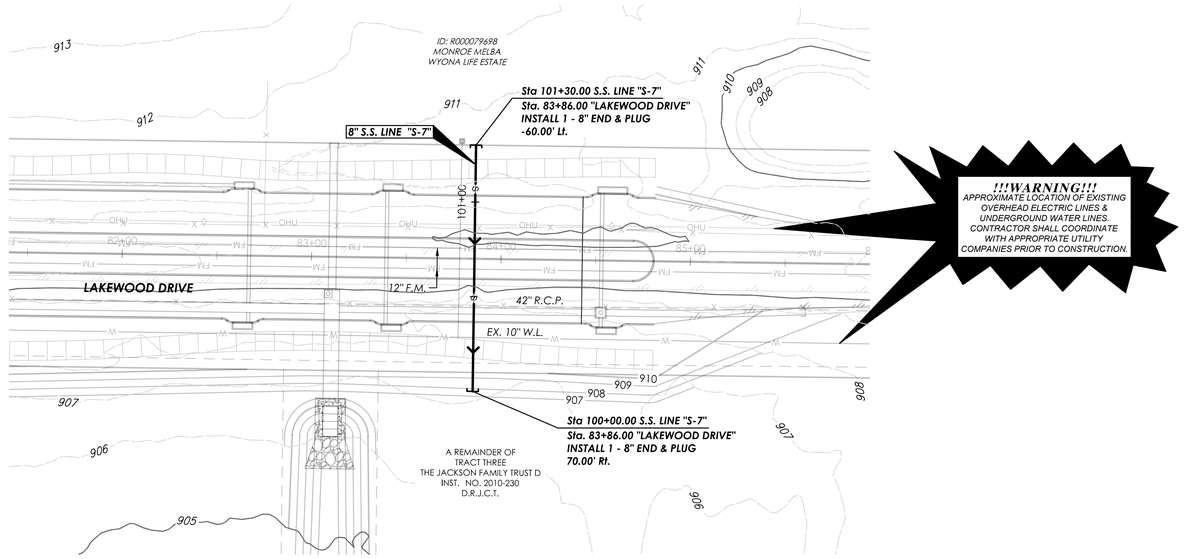

S.S. LINE "S-7"

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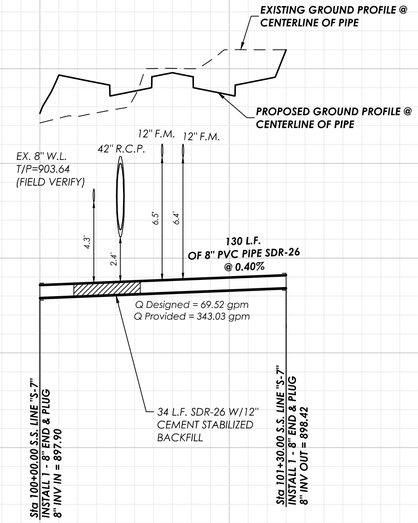
GRAPHIC SCALE 1"=40'
0 40 80 120

NO.	REVISION DATE

PROFILE SCALE
Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 4'



LAKEWOOD DRIVE
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CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
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STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	5/21/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	SS-14

S.S. LINE "S-7"

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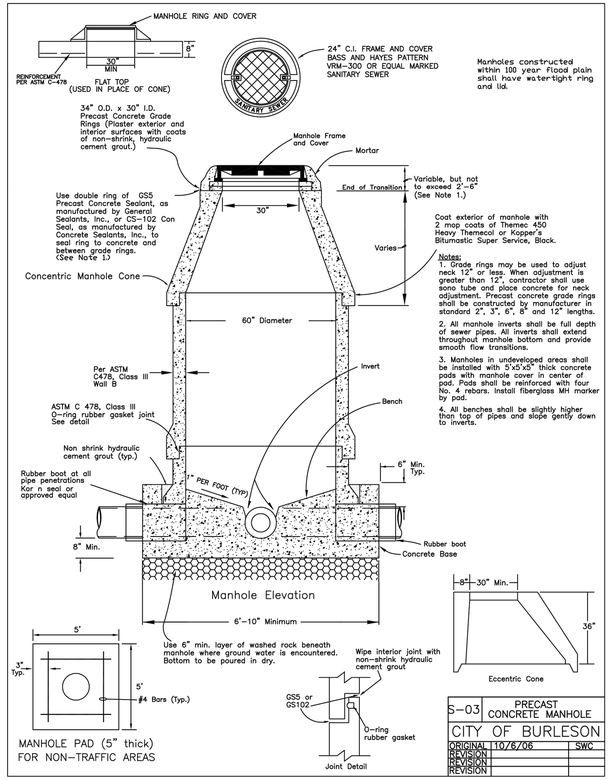
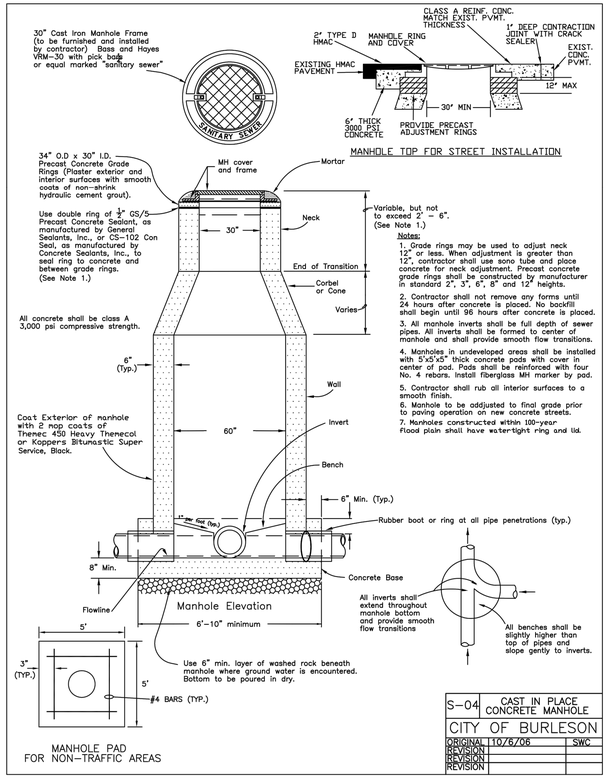
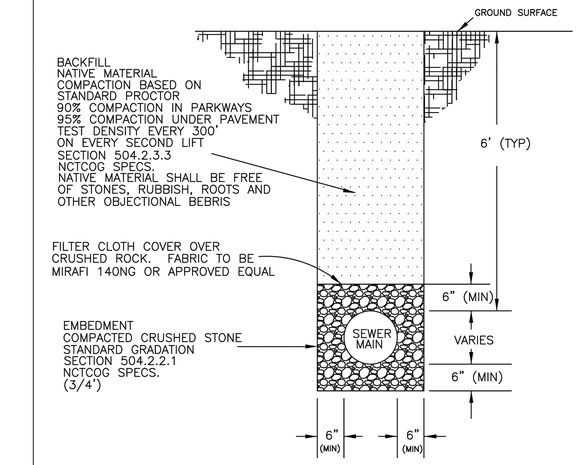


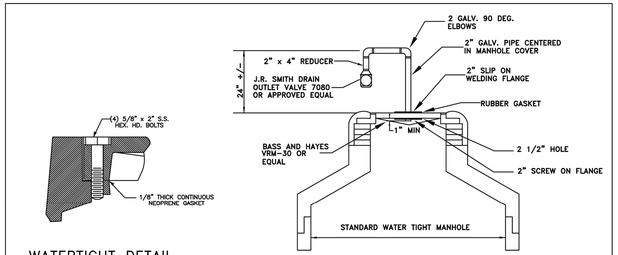
S-03	PRECAST CONCRETE MANHOLE	
CITY OF BURLESON		
ORIGINAL	10/6/06	SWC
REVISION		
REVISION		
REVISION		



S-04	CAST IN PLACE CONCRETE MANHOLE	
CITY OF BURLESON		
ORIGINAL	10/6/06	SWC
REVISION		
REVISION		
REVISION		



S-05	SANITARY SEWER EMBEDMENT	
CITY OF BURLESON		
ORIGINAL	10/6/06	SWC
REVISION		
REVISION		
REVISION		



S-06	WATERTIGHT MANHOLE FRAME AND COVER	
CITY OF BURLESON		
ORIGINAL	10/6/06	SWC
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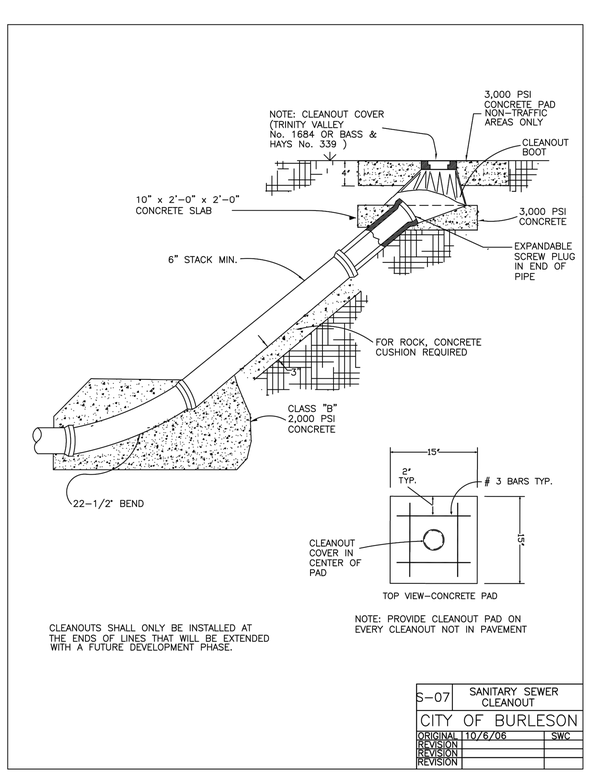
REVISION		



S-07	SANITARY SEWER CLEANOUT	
CITY OF BURLESON		
ORIGINAL	10/6/06	SWC
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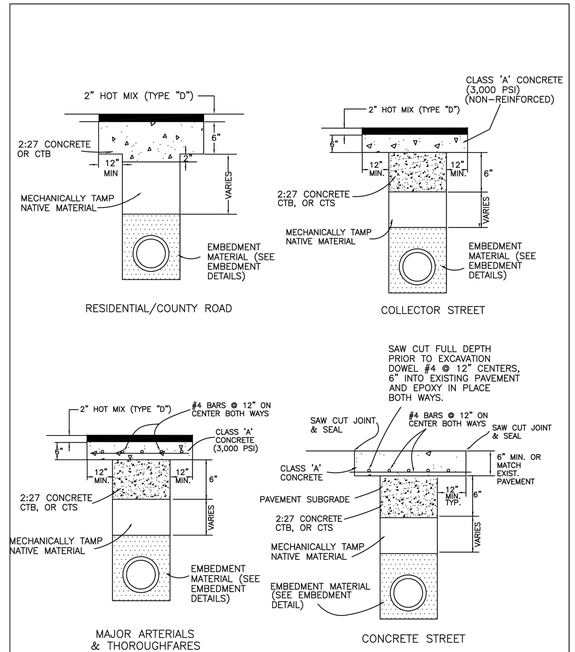

NOTES:

1. A SAW SHALL BE USED TO CUT ASPHALT OR CONCRETE FULL DEPTH PRIOR TO OPENING THE DITCH IN ORDER TO INSURE A NEAT STRAIGHT EDGE. SEE STANDARD SPECIFICATIONS FOR REQUIRED EMBEDMENT.
2. CTB = CEMENT TREATED BASE (CONTAINS AGGREGATE)
   CTS = CEMENT TREATED SAND
   BOTH MATERIALS SHALL BE MECHANICALLY TAMPED.

S-11	EXISTING STREET BACKFILL AND REPAIR	
CITY OF BURLESON		
ORIGINAL	10/6/06	SWC
REVISION		
REVISION		
REVISION		

NO.	REVISION DATE
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LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN & MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 10007700

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	5/23/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	SS-15

SEWER DETAILS

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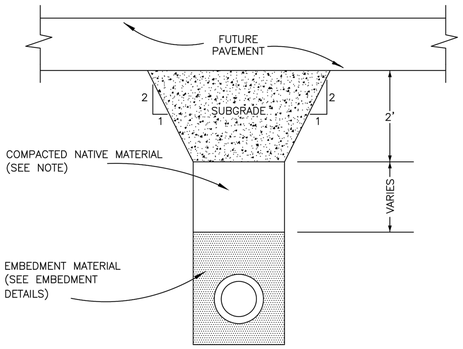

NOTE:

FOR LINES BEING LAID PRIOR TO NEW STREET CONSTRUCTION, WHICH WILL LIE BENEATH PAVEMENT OR CURB AND GUTTER, BACKFILL ABOVE PIPE EMBEDMENT SHALL CONSIST OF NATIVE MATERIAL, COMPACTED IN MAX. 6" TO 9" LIFTS (COMPACTED THICKNESS) TO 95% STANDARD PROCTOR DENSITY AT OPTIMUM MOISTURE CONTENT ±2%.

S-12	STREET BACKFILL PRIOR TO STREET CONSTRUCTION	
CITY OF BURLESON		
ORIGINAL	10/6/06	SWC
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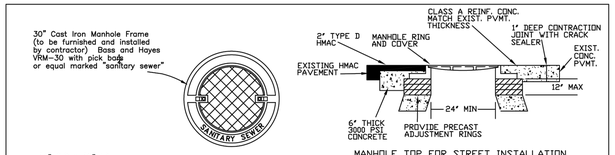
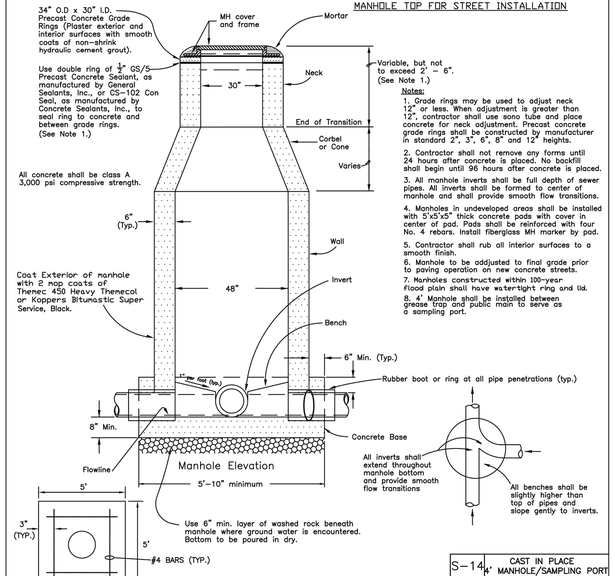


MANHOLE TOP FOR STREET INSTALLATION



MANHOLE PAD
FOR NON-TRAFFIC AREAS

S-14	CAST IN PLACE 4' MANHOLE/SAMPLING PORT	
CITY OF BURLESON		
ORIGINAL	10/6/06	SWC
REVISION		
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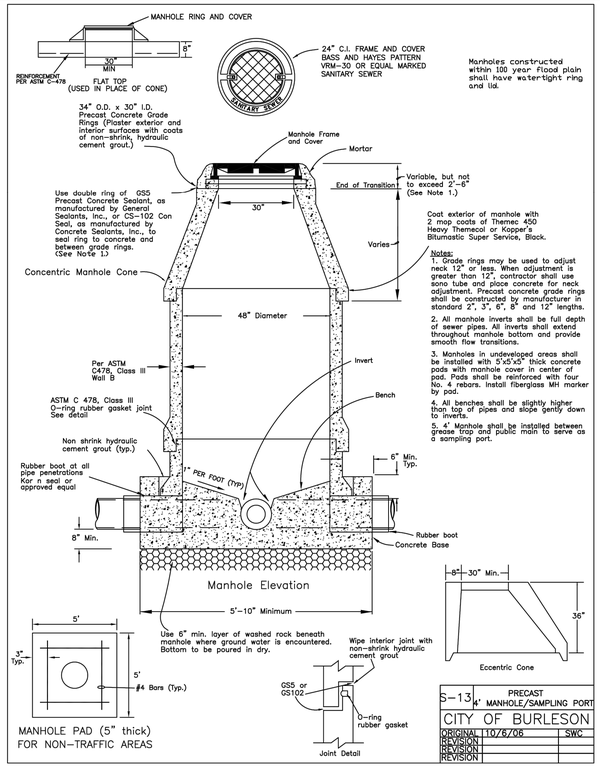
REVISION		



S-13	PRECAST 4' MANHOLE/SAMPLING PORT	
CITY OF BURLESON		
ORIGINAL	10/6/08	SWC
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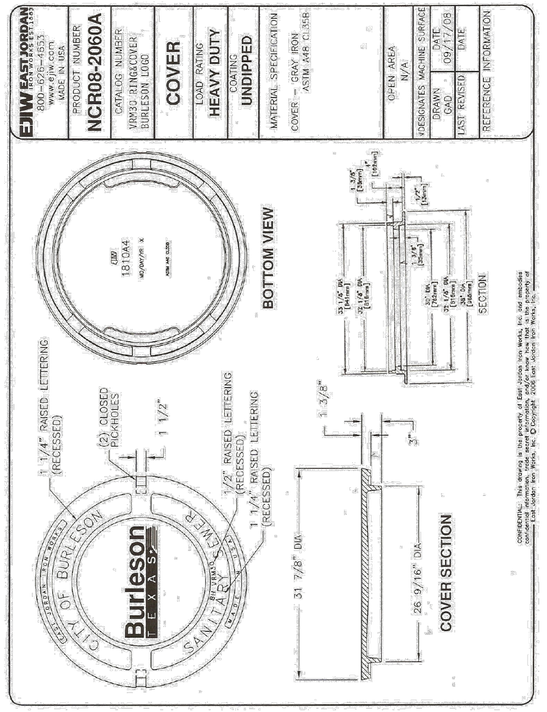
REVISION		



S-15 MANHOLE RING AND COVER

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LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329-4373
TxEng Firm # F-2644 – TxSurv Firm # 100170-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	5/23/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE

SHEET **SS-16**

SEWER DETAILS

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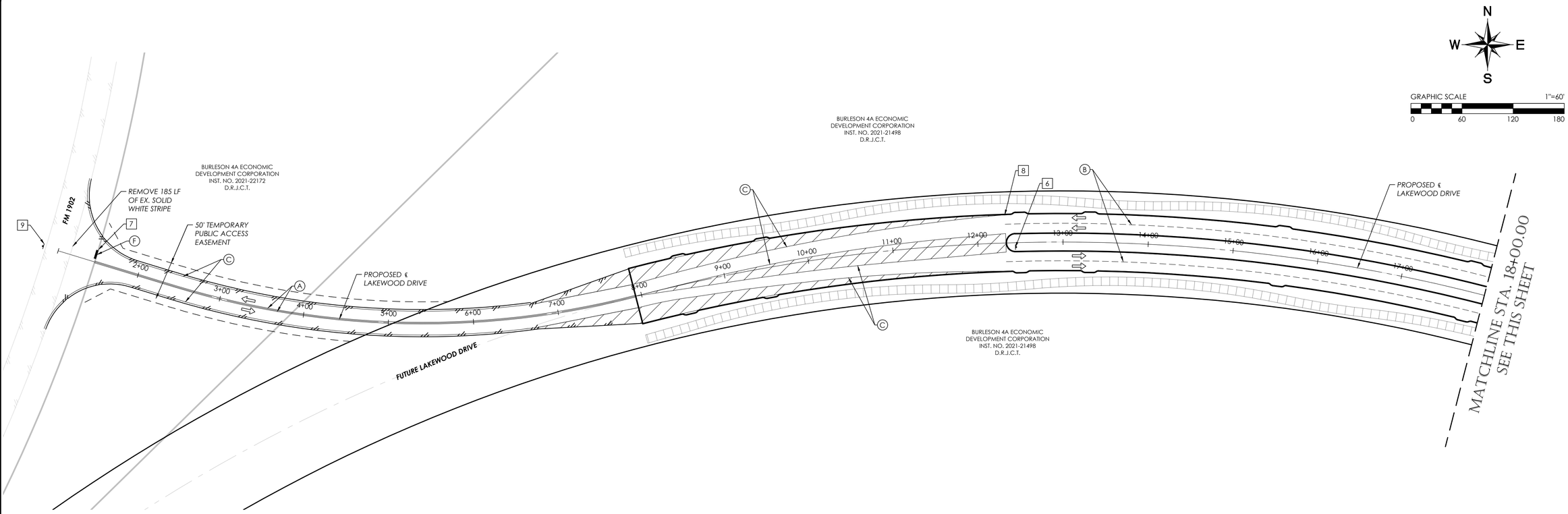

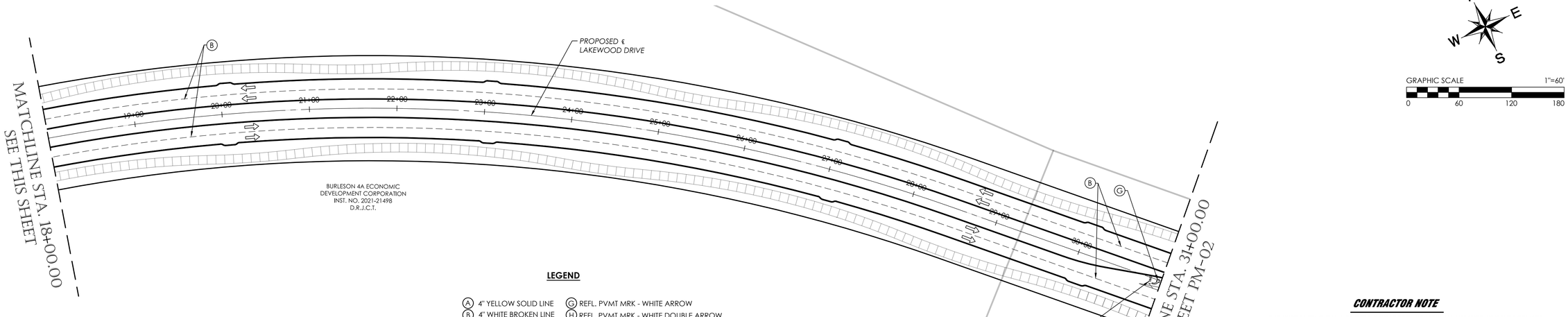

LEGEND

- (A) 4" YELLOW SOLID LINE
- (B) 4" WHITE BROKEN LINE
- (C) 4" WHITE SOLID LINE
- (D) 8" WHITE SOLID LINE
- (E) 12" WHITE SOLID LINE
- (F) 24" WHITE SOLID LINE
- (G) REFL. PVMT MRK - WHITE ARROW
- (H) REFL. PVMT MRK - WHITE DOUBLE ARROW
- (I) REFL. PVMT MRK - WHITE WORD
- (J) REFL. PVMT MRK - 18" WHITE YIELD TRIANGLE
- TRAFFIC SIGN POST
- TRAVEL DIRECTION

1 YIELD — R1-2 36"x36"x36"

2 W11-2 36"x36" — W16-7pL 24"x12"

3 W2-6 30"x30" — ROUNDABOUT W16-17p 24"x12" — 15 M.P.H. W13-1 18"x18"

4 SPEED LIMIT 40 — R2-1 24"x30"

5 R6-4a 48"x24"

6 R4-8 24"x30"

7 STOP — R1-1 36"X36"

8 LANE ENDS MERGE LEFT — W9-2L 30"X30"

9 W1-7 96"x36"

CONTRACTOR NOTE

THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UTILITIES, WHETHER PRIVATE OR PUBLIC, PRIOR TO EXCAVATING. THE INFORMATION AND DATA SHOWN WITH RESPECT TO EXISTING UNDERGROUND FACILITIES AT OR CONTIGUOUS TO THE SITE IS APPROXIMATE AND BASED ON INFORMATION AND DATA FURNISHED BY THE OWNERS OF SUCH UNDERGROUND FACILITIES OR ON PHYSICAL APPURTENANCES OBSERVED IN THE FIELD. THE OWNER AND ENGINEER SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ANY SUCH INFORMATION OR DATA, AND THE CONTRACTOR SHALL HAVE FULL RESPONSIBILITY FOR REVIEWING AND CHECKING ALL SUCH INFORMATION AND DATA, FOR LOCATING ALL UNDERGROUND FACILITIES, FOR COORDINATION OF THE WORK WITH THE OWNERS OF SUCH UNDERGROUND FACILITIES DURING CONSTRUCTION, FOR THE SAFETY AND PROTECTION THEREOF, AND REPAIRING ANY DAMAGE THERETO RESULTING FROM THE WORK, THE COST OF ALL OF WHICH WILL BE CONSIDERED AS HAVING BEEN INCLUDED IN THE CONTRACT PRICE. CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY ANY AFFECTED UTILITY COMPANIES OR AGENCIES AT LEAST 48 HOURS PRIOR TO BEGINNING CONSTRUCTION.

BENCH MARK ELEVATION : 852.36

CAPPED IRON ROD WITH CAP STAMPED "RON" AT THE NORTHWEST CORNER OF THE INTERSECTION OF CR 1902 AND CR 1019, APPROXIMATELY 37 FEET NORTHWEST OF THE CENTERLINE OF CR 1019, APPROXIMATELY 45 FEET NORTHEAST OF THE CENTERLINE OF CR 1902, AND APPROXIMATELY 120 FEET SOUTHWEST OF A DRIVEWAY.

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CRESTVIEW SUMMIT

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 10027700

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO.:	10745
DATE:	8/29/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW:	EWE

PM-01

SIGNAGE & STRIPING

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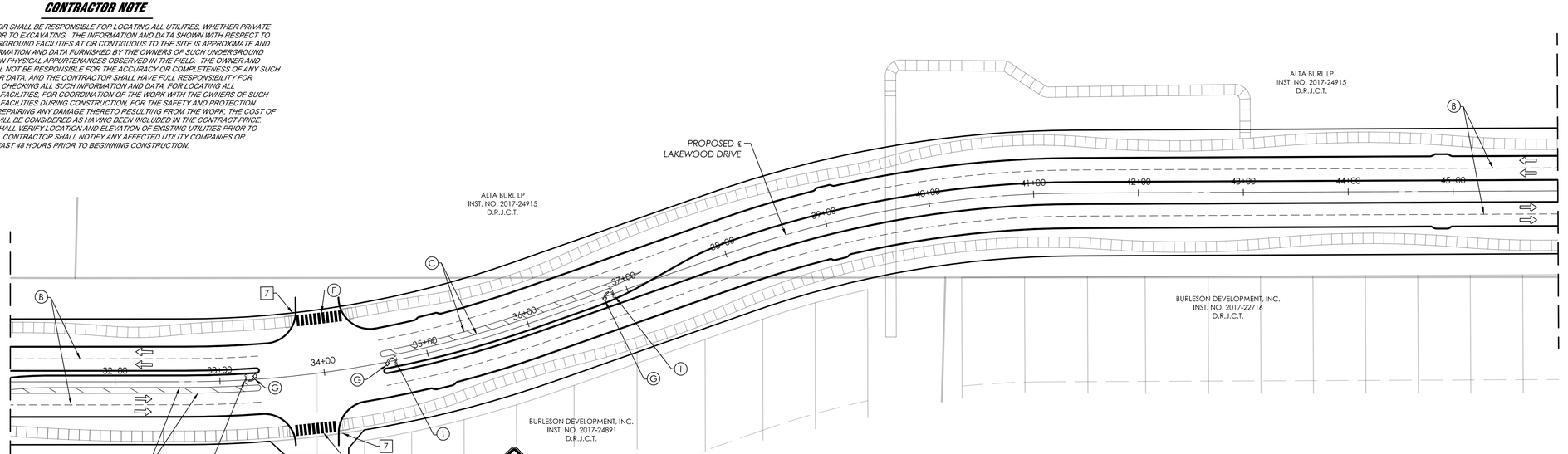


GRAPHIC SCALE 1"=60'
0 60 120 180

1 YIELD R1-2 36"x36"x36"

2 W11-2 36"x36" W16-7pL 24"x12"

3 W2-6 30"x30" ROUNDABOUT W16-17p 24"x12" 15 M.P.H. W13-1 18"x18"

4 SPEED LIMIT 40 R2-1 24"x30"

5 R6-4a 48"x24"

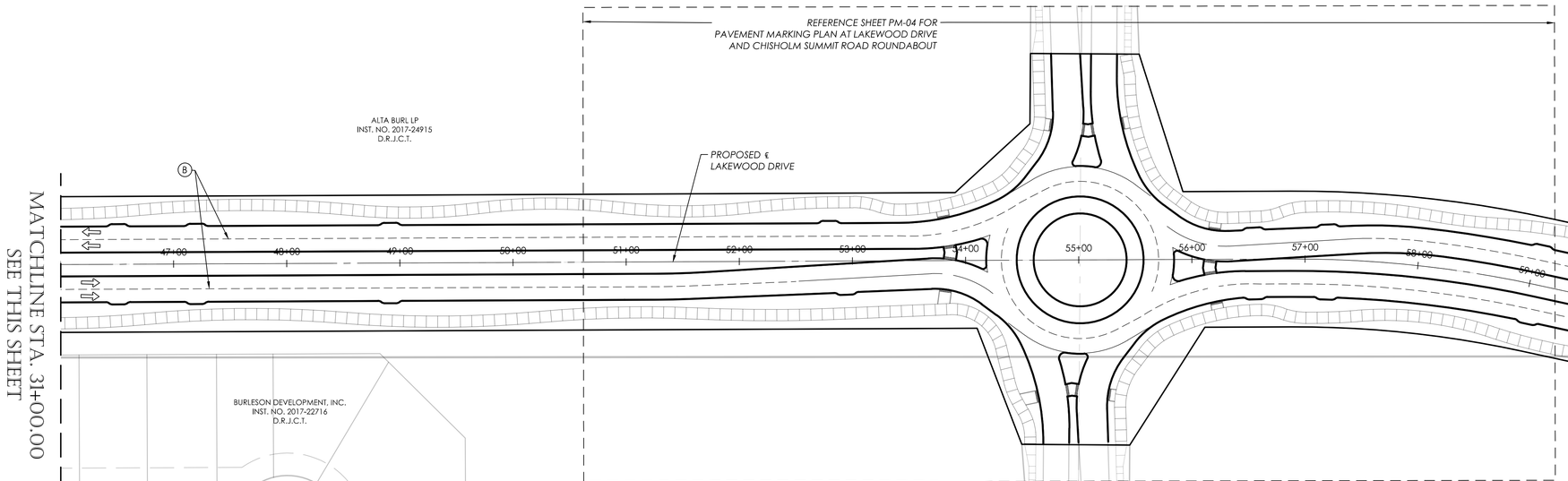
6 R4-8 24"x30"

7 STOP R1-1 36"X36"

8 LANE ENDS MERGE LEFT W9-2L 30"X30"

LEGEND

- (A) 4" YELLOW SOLID LINE
- (B) 4" WHITE BROKEN LINE
- (C) 4" WHITE SOLID LINE
- (D) 8" WHITE SOLID LINE
- (E) 12" WHITE SOLID LINE
- (F) 24" WHITE SOLID LINE
- (G) REFL. PVMT MRK - WHITE ARROW
- (H) REFL. PVMT MRK - WHITE DOUBLE ARROW
- (I) REFL. PVMT MRK - WHITE WORD
- (J) REFL. PVMT MRK - 18" WHITE YIELD TRIANGLE
- TRAFFIC SIGN POST
- TRAVEL DIRECTION



GRAPHIC SCALE 1"=60'
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BENCH MARK ELEVATION : 852.36

CAPPED IRON ROD WITH CAP STAMPED "RDM" AT THE NORTHWEST CORNER OF THE INTERSECTION OF CR 1902 AND CR 1019, APPROXIMATELY 37 FEET NORTHWEST OF THE CENTERLINE OF CR 1019, APPROXIMATELY 45 FEET NORTHEAST OF THE CENTERLINE OF CR 1902, AND APPROXIMATELY 120 FEET SOUTHWEST OF A DRIVEWAY.

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CHISHOLM SUMMIT

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN MARSHALL
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 100170

STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	8/29/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE

PM-02

SIGNAGE & STRIPAGE

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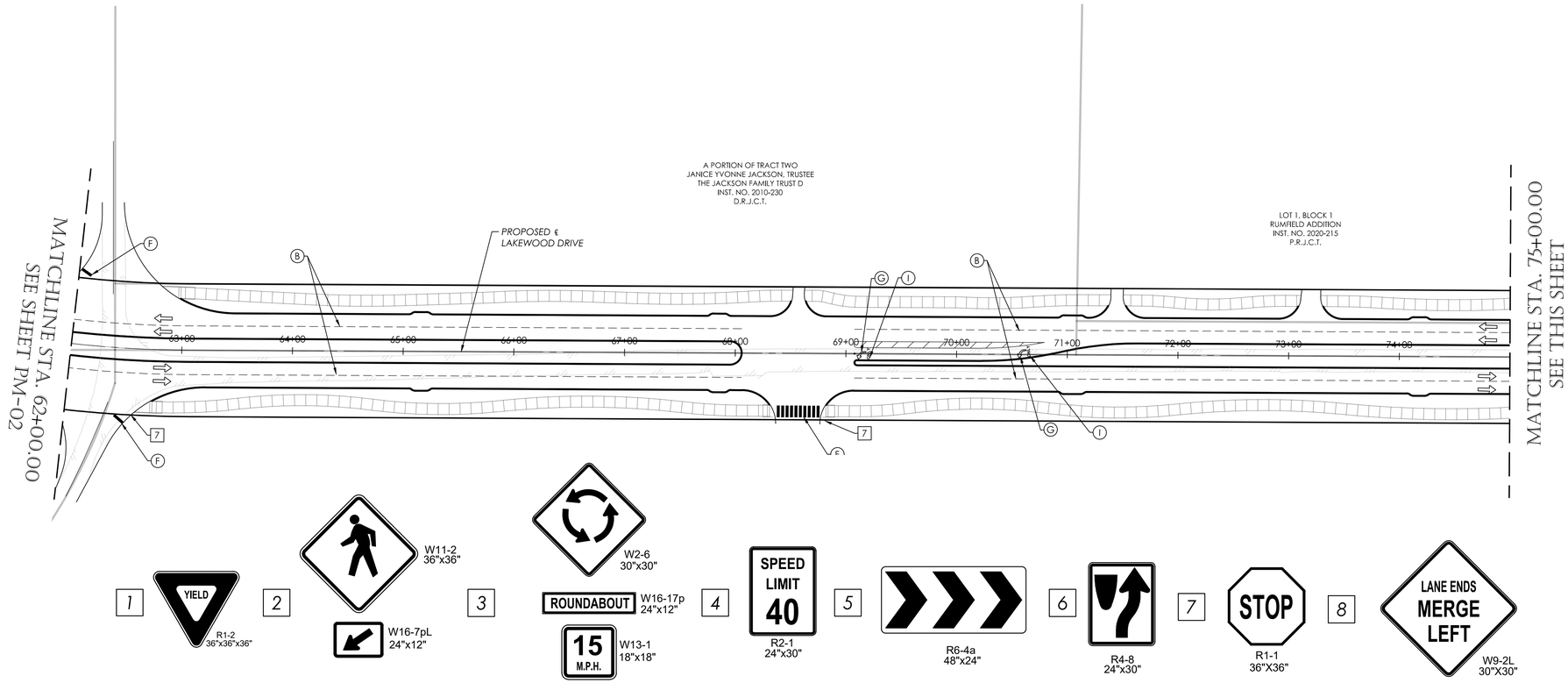

LEGEND

- (A) 4" YELLOW SOLID LINE
- (B) 4" WHITE BROKEN LINE
- (C) 4" WHITE SOLID LINE
- (D) 8" WHITE SOLID LINE
- (E) 12" WHITE SOLID LINE
- (F) 24" WHITE SOLID LINE
- (G) REFL. PVMT MRK - WHITE ARROW
- (H) REFL. PVMT MRK - WHITE DOUBLE ARROW
- (I) REFL. PVMT MRK - WHITE WORD
- (J) REFL. PVMT MRK - 18" WHITE YIELD TRIANGLE
- TRAFFIC SIGN POST
- TRAVEL DIRECTION

GRAPHIC SCALE 1"=60'
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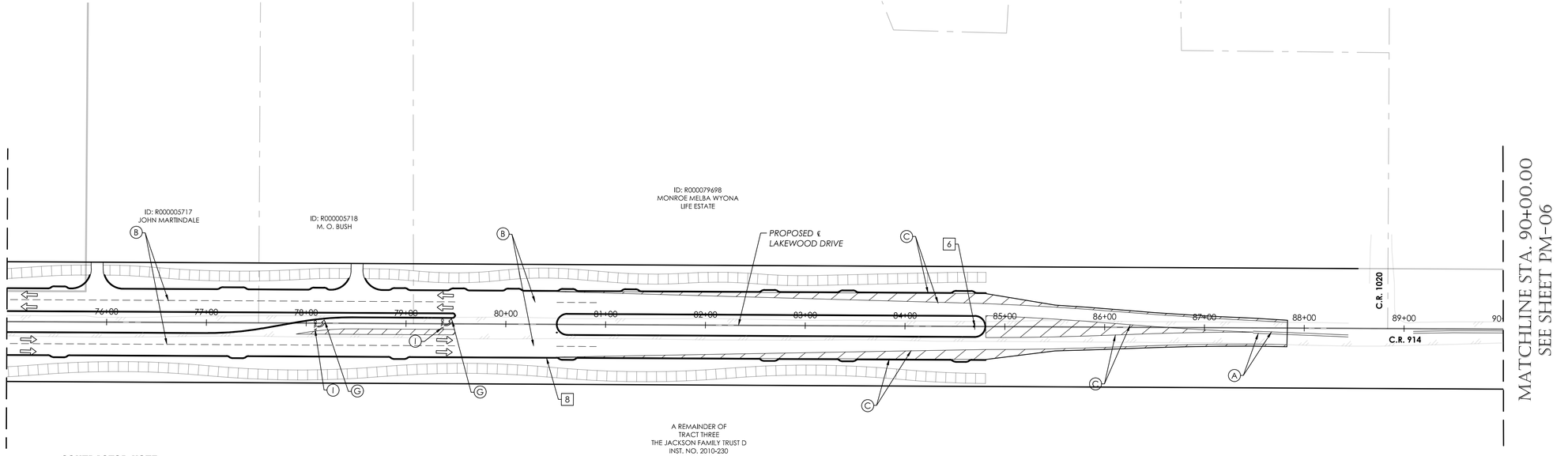

GRAPHIC SCALE 1"=60'
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BENCH MARK ELEVATION : 852.36

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LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN & MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 10007700

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	8/29/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE

PM-03

SIGNAGE & STRIPAGE

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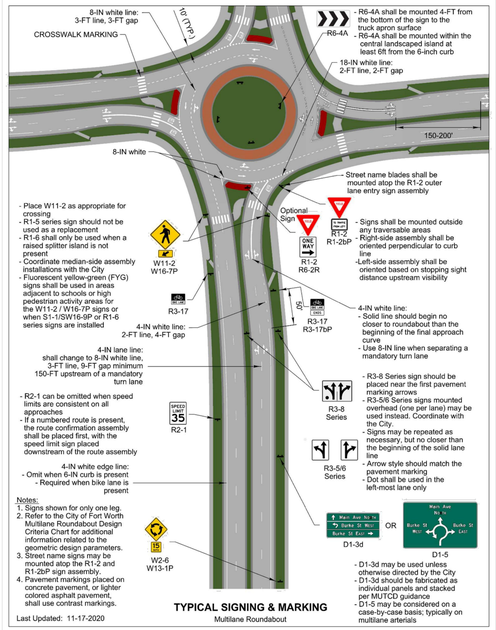
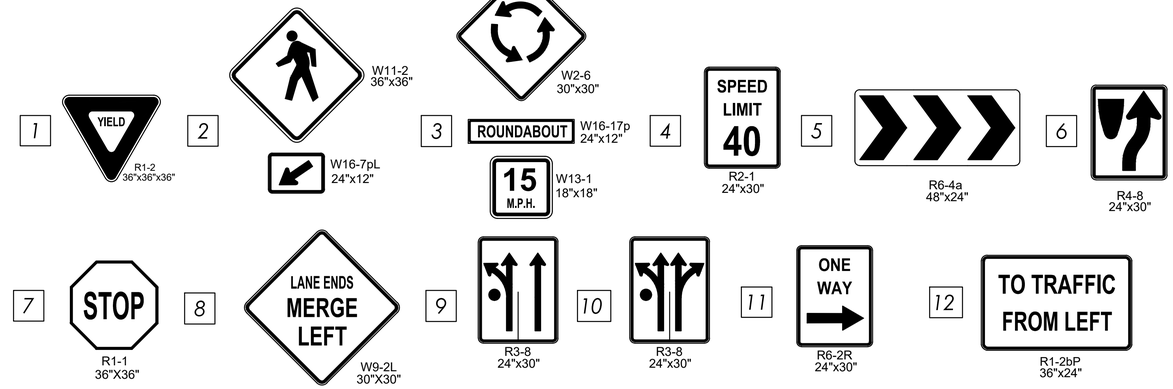
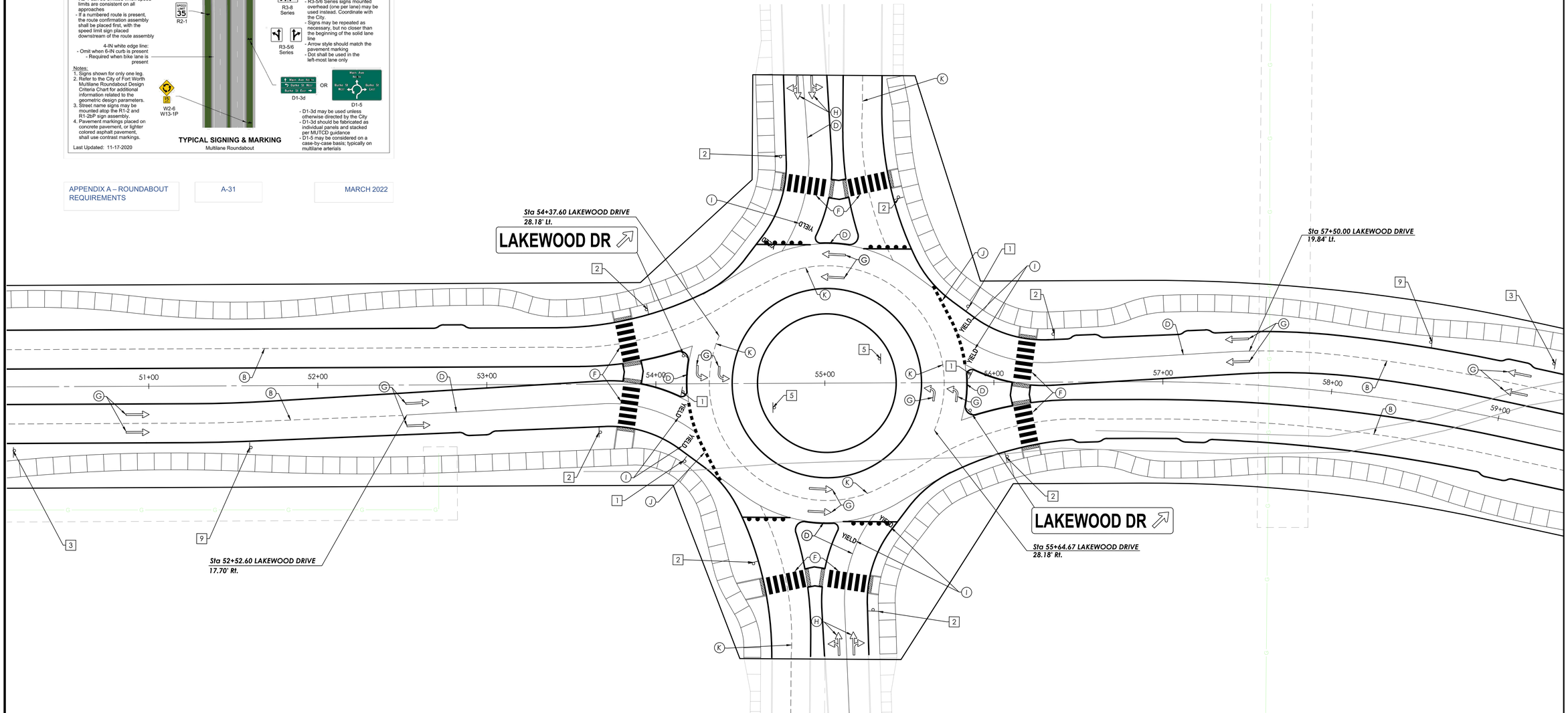
A.14 Typical Signing and Pavement Marking Exhibit – Multilane Roundabout





LEGEND

- (A) 4" YELLOW SOLID LINE
- (B) 4" WHITE BROKEN LINE
- (C) 4" WHITE SOLID LINE
- (D) 8" WHITE SOLID LINE
- (E) 12" WHITE SOLID LINE
- (F) 2' x 10' WHITE SOLID LINE
- (G) REFL. PVMT MRK - WHITE ARROW
- (H) REFL. PVMT MRK - WHITE DOUBLE ARROW
- (I) REFL. PVMT MRK - WHITE WORD
- (J) REFL. PVMT MRK - 18" WHITE YIELD LINE: 2-FT LINE, 2-FT GAP
- (K) 8" WHITE BROKEN LINE: 3-FT LINE, 2-FT GAP
- TRAFFIC SIGN POST
- TRAVEL DIRECTION



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LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
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JOHNSON COUNTY, TX

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2405 Mustang Drive, Grapevine, Texas 76051
(817) 329-4373
TxEng Firm # F-2364 – TxSurv Firm # 10051700

STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

	10745
	7/28/22
DSGN/DRFT:	BAC/KJJ&LKP
	EWE

PM-04

INTERIM SIGNAGE & STRIPAGE

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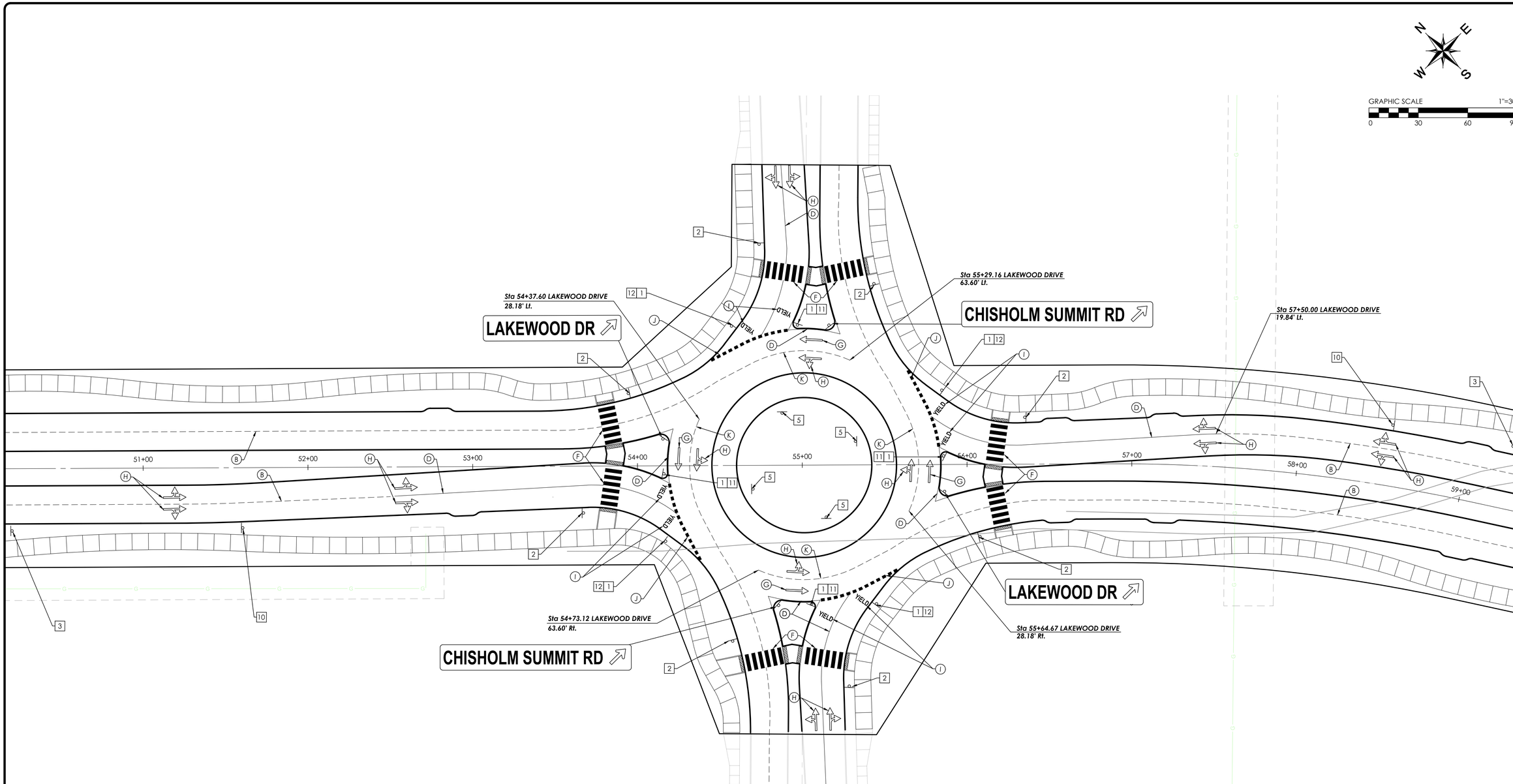

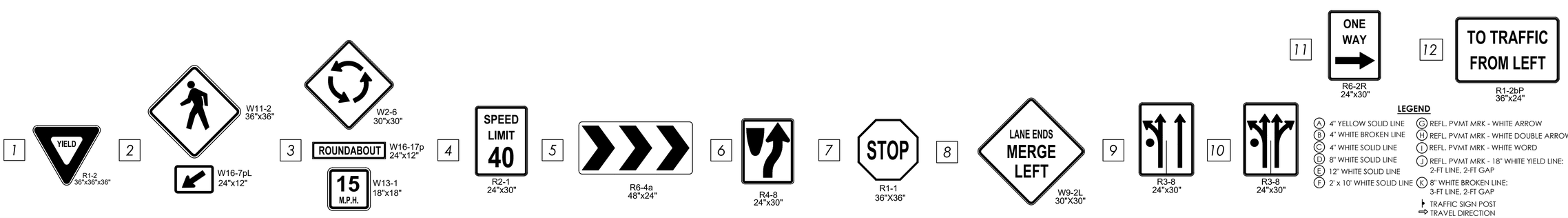

LEGEND

- (A) 4" YELLOW SOLID LINE
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- (C) 4" WHITE SOLID LINE
- (D) 8" WHITE SOLID LINE
- (E) 12" WHITE SOLID LINE
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- TRAFFIC SIGN POST
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CHISHOLM SUMMIT

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN & MARSHALL INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329-4373
TxEng Firm # F-2944 – TxSurv Firm # 10021700

STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

	10745
	7/28/22
DSGN/DRFT:	BAC/KJJ&LKP
	EWE

PM-05

ULTIMATE SIGNAGE & STRIPAGE

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E:\10745 – Bransom Estates\Lakewood\Plans\SHEETS\60% Construction Plans\10745–LAKEWOOD–PM–04.dwg Tue Sep 27 2022 17:53

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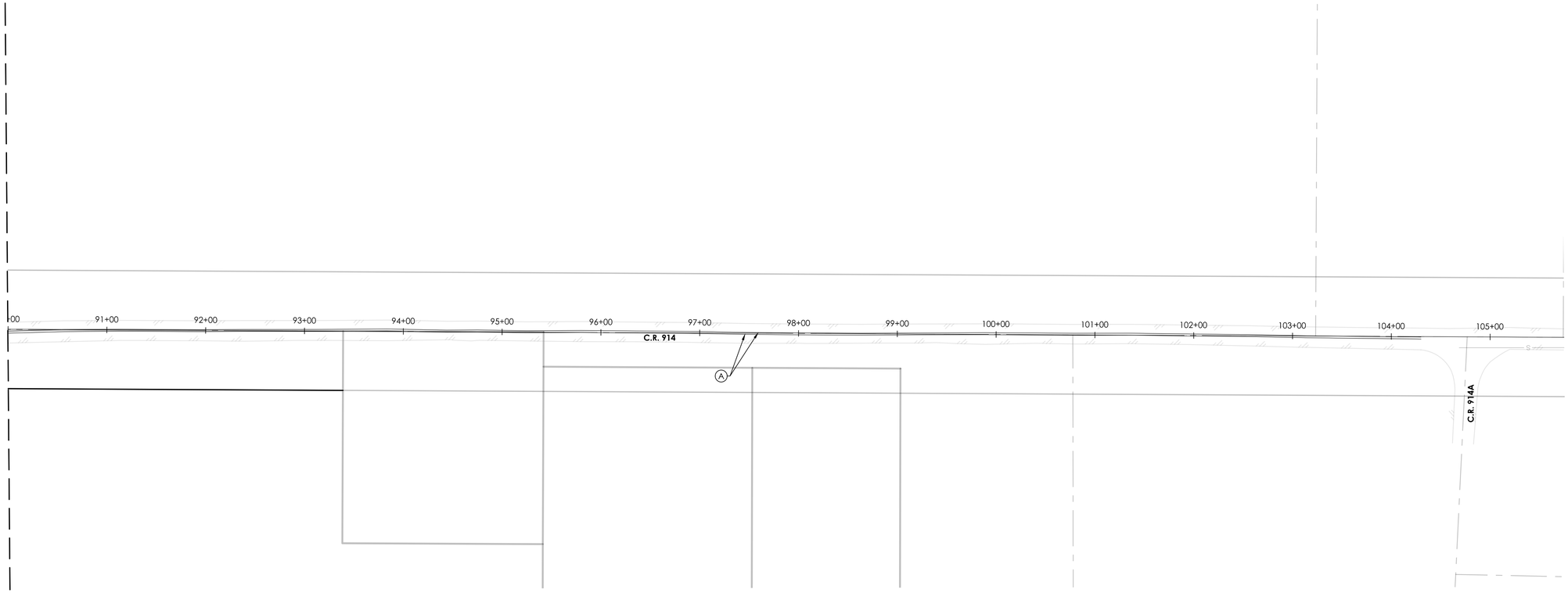
GRAPHIC SCALE 1"=60'

0 60 120 180



1 YIELD R1-2 36"x36"x36"

2 W11-2 36"x36"
W16-7pL 24"x12"

3 W2-6 30"x30"
ROUNDABOUT W16-17p 24"x12"
15 M.P.H. W13-1 18"x18"

4 SPEED LIMIT 40 R2-1 24"x30"

5 R6-4a 48"x24"

6 R4-8 24"x30"

7 STOP R1-1 36"X36"

8 LANE ENDS MERGE LEFT W9-2L 30"X30"

LEGEND

- (A) 4" YELLOW SOLID LINE
- (B) 4" WHITE BROKEN LINE
- (C) 4" WHITE SOLID LINE
- (D) 8" WHITE SOLID LINE
- (E) 12" WHITE SOLID LINE
- (F) 24" WHITE SOLID LINE
- (G) REFL. PVMT MRK - WHITE ARROW
- (H) REFL. PVMT MRK - WHITE DOUBLE ARROW
- (I) REFL. PVMT MRK - WHITE WORD
- (J) REFL. PVMT MRK - 18" WHITE YIELD TRIANGLE
- TRAFFIC SIGN POST
- TRAVEL DIRECTION

CONTRACTOR NOTE

THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UTILITIES, WHETHER PRIVATE OR PUBLIC, PRIOR TO EXCAVATING. THE INFORMATION AND DATA SHOWN WITH RESPECT TO EXISTING UNDERGROUND FACILITIES AT OR CONTIGUOUS TO THE SITE IS APPROXIMATE AND BASED ON INFORMATION AND DATA FURNISHED BY THE OWNERS OF SUCH UNDERGROUND FACILITIES OR ON PHYSICAL APPURTENANCES OBSERVED IN THE FIELD. THE OWNER AND ENGINEER SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ANY SUCH INFORMATION OR DATA, AND THE CONTRACTOR SHALL HAVE FULL RESPONSIBILITY FOR REVIEWING AND CHECKING ALL SUCH INFORMATION AND DATA, FOR LOCATING ALL UNDERGROUND FACILITIES, FOR COORDINATION OF THE WORK WITH THE OWNERS OF SUCH UNDERGROUND FACILITIES DURING CONSTRUCTION, FOR THE SAFETY AND PROTECTION THEREOF, AND REPAIRING ANY DAMAGE THERETO RESULTING FROM THE WORK, THE COST OF ALL OF WHICH WILL BE CONSIDERED AS HAVING BEEN INCLUDED IN THE CONTRACT PRICE. CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY ANY AFFECTED UTILITY COMPANIES OR AGENCIES AT LEAST 48 HOURS PRIOR TO BEGINNING CONSTRUCTION.

BENCH MARK ELEVATION : 852.36

CAPPED IRON ROD WITH CAP STAMPED "RDM" AT THE NORTHWEST CORNER OF THE INTERSECTION OF CR 1902 AND CR 1019, APPROXIMATELY 37 FEET NORTHWEST OF THE CENTERLINE OF CR 1019, APPROXIMATELY 45 FEET NORTHEAST OF THE CENTERLINE OF CR 1902, AND APPROXIMATELY 120 FEET SOUTHWEST OF A DRIVEWAY.

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 100177-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	8/29/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	PM-06

SIGNAGE & STRIPAGE

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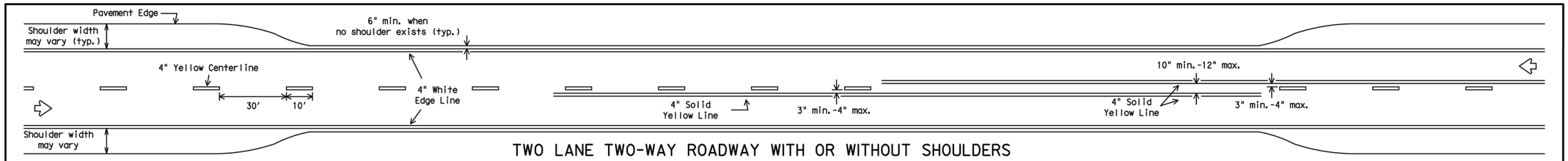
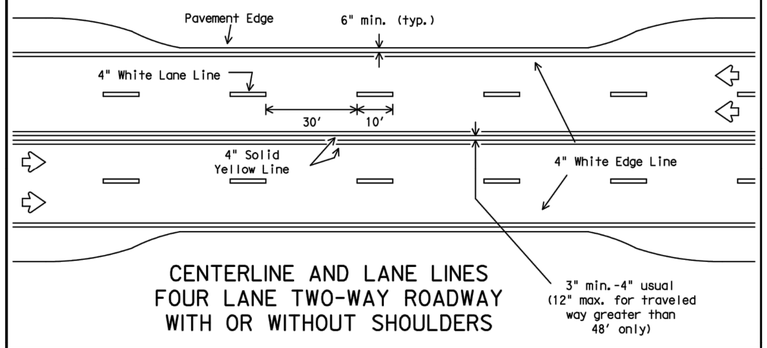
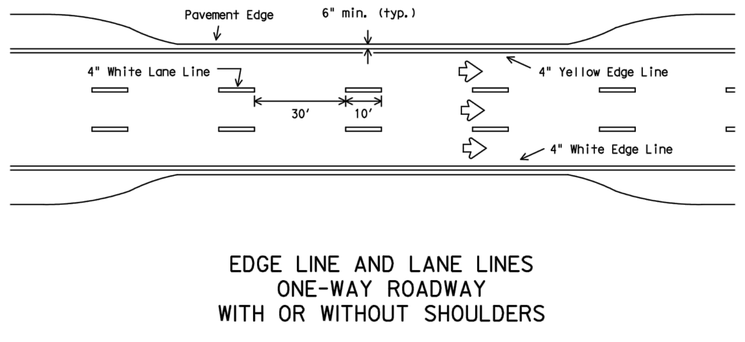


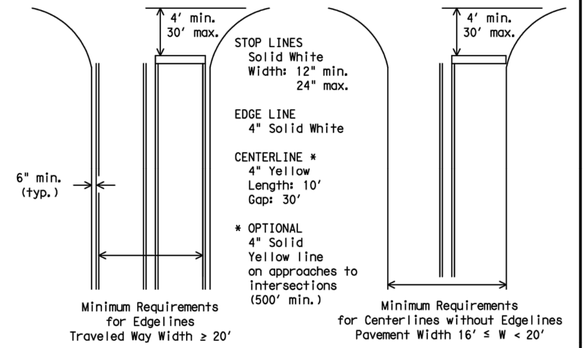
TWO LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS



CENTERLINE AND LANE LINES FOUR LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS

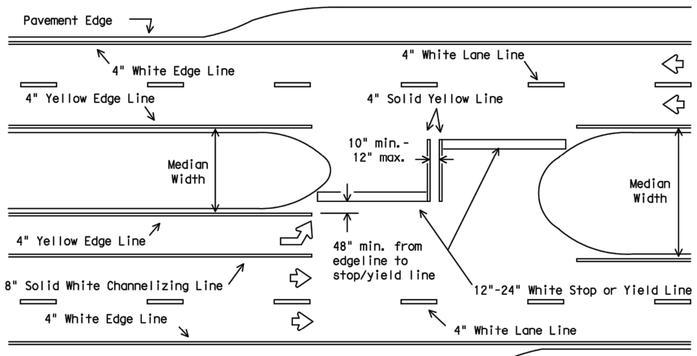


EDGE LINE AND LANE LINES ONE-WAY ROADWAY WITH OR WITHOUT SHOULDERS



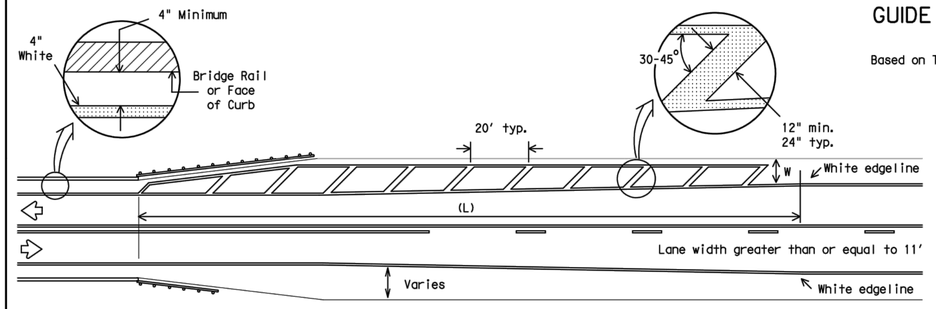
GUIDE FOR PLACEMENT OF STOP LINES, EDGE LINE & CENTERLINE

Based on Traveled Way and Pavement Widths for Undivided Highways



All medians shall be field measured to determine the location of necessary striping. Stop/Yield bars and centerlines shall be placed when the median width is greater than 30 ft. The median width is defined as the area between two roadways of a divided highway measured from edge of traveled way to edge of traveled way. The median excludes turn lanes. The median width might be different between intersections, interchanges and of opposite approaches of the same intersection. The narrow median width will be the controlling width to determine if markings are required.

FOUR LANE DIVIDED ROADWAY INTERSECTIONS



NOTES:

1. No-passing zone on bridge approach is optional but if used, it shall be a minimum 500 feet long.
2. For crosshatching length (L) see Table 1.
3. The width of the offset (W) and the required crosshatching width is the full shoulder width in advance of the bridge.
4. The crosshatching is not required if delineators or barrier reflectors are used along the structure.
5. For guard fence details, refer elsewhere in the plans.

ROADWAYS WITH REDUCED SHOULDER WIDTHS ACROSS BRIDGE OR CULVERT

TABLE 1 - TYPICAL LENGTH (L)

Posted Speed *	Formula
≤ 40	$L = \frac{WS^2}{60}$
≥ 45	L=WS

* 85th Percentile Speed may be used on roads where traffic speeds normally exceed the posted speed limit. Crosshatching length should be rounded up to nearest 5 foot increment.

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

EXAMPLES:

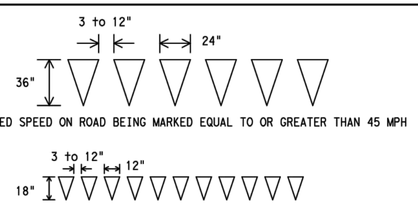
An 8 foot shoulder in advance of a bridge reduces to 4 feet on a 70 MPH roadway. The length of the cross-hatching should be:
$L = 8 \times 70 = 560$ ft.
A 4 foot shoulder in advance of a bridge reduces to 2 feet on a 40 MPH roadway. The length of the cross-hatching should be:
$L = 4(40)^2 / 60 = 106.67$ ft. rounded to 110 ft.

GENERAL NOTES

1. Edgeline striping shall be as shown in the plans or as directed by the Engineer. The edgeline should typically be placed a minimum of 6 inches from the edge of pavement. This distance may vary due to pavement raveling or other conditions. Edgelines are not required in curb and gutter sections of roadways.
2. The traveled way includes only that portion of the roadway used for vehicular travel and not the parking lanes, sidewalks, berms and shoulders. The traveled ways shall be measured from the inside of edgeline to inside of edgeline of a two lane roadway.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



YIELD LINES

Texas Department of Transportation
Traffic Operations Division

TYPICAL STANDARD PAVEMENT MARKINGS

PM(1)-12

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8-95 2-12	CONT	SECT	JOB		HIGHWAY	
5-00						
8-00	DIST		COUNTY		SHEET NO.	
3-03						
22A						

NO.	REVISION DATE

CUSTOM SUMMIT HOMES

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

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STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO.:	10745
DATE:	2/15/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW:	EWE
SHEET	PM-06

STRIPE & SIGN DETAILS

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E:\10745 – Bransom Estates\Lakewood\Plans\SHEETS\60% Construction Plans\10745–LAKEWOOD–SIGN & STRIPE–DTL.dwg Tue Sep 27 2022 17:54

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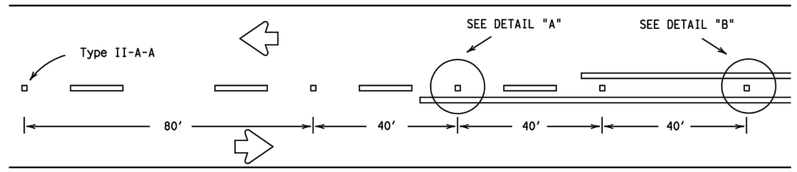
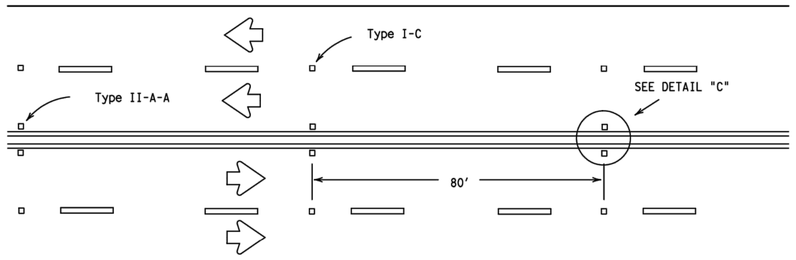
REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE

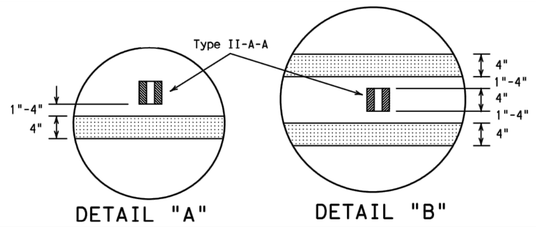


CENTERLINE FOR ALL TWO LANE ROADWAYS



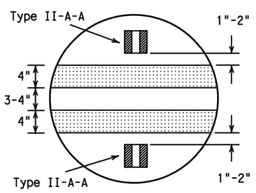
CENTERLINE & LANE LINES
FOR FOUR LANE TWO-WAY HIGHWAYS

Raised pavement marker Type I-C, clear face toward normal traffic, shall be placed on 80-foot centers.

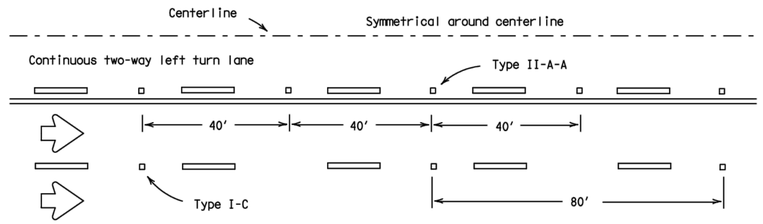


DETAIL "A"

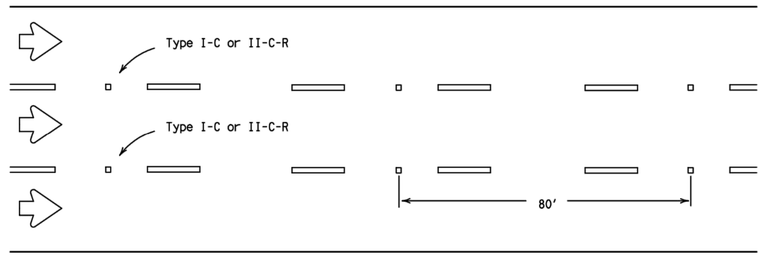
DETAIL "B"



DETAIL "C"

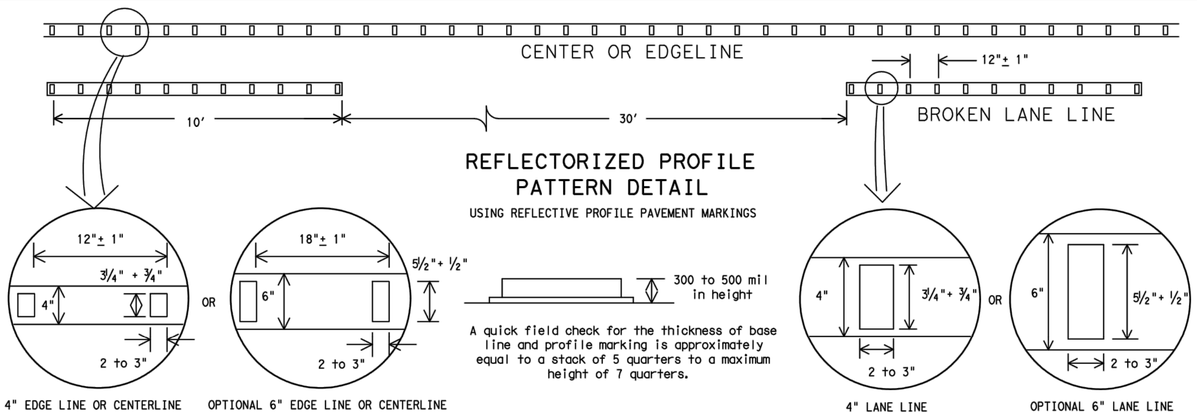


CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE



LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)

Raised pavement markers Type II-C-R shall have clear face toward normal traffic and red face toward wrong-way traffic.



4" EDGE LINE OR CENTERLINE

OPTIONAL 6" EDGE LINE OR CENTERLINE

4" LANE LINE

OPTIONAL 6" LANE LINE

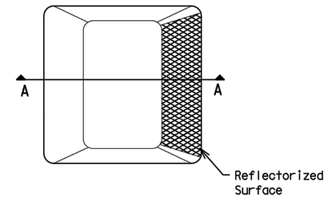
NOTE:
Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

GENERAL NOTES

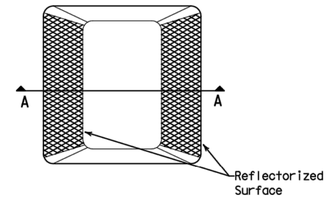
1. All raised pavement markers placed in broken lines shall be placed in line with and midway between the stripes.
2. On concrete pavements the raised pavement markers should be placed to one side of the longitudinal joints.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

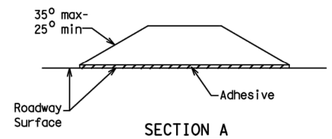
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



Type I (Top View)



Type II (Top View)



SECTION A

RAISED PAVEMENT MARKERS

Texas Department of Transportation
Traffic Operations Division

POSITION GUIDANCE USING RAISED MARKERS
REFLECTORIZED PROFILE MARKINGS
PM(2)-12

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CONT	SECT	JOB	HIGHWAY
DIST	COUNTY		SHEET NO.

REVISIONS
4-92 2-10
5-00 2-12
8-00
2-08

22B

NO.	REVISION DATE
1	
2	
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4	
5	
6	
7	
8	

CITY OF SUMMIT

LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
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STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
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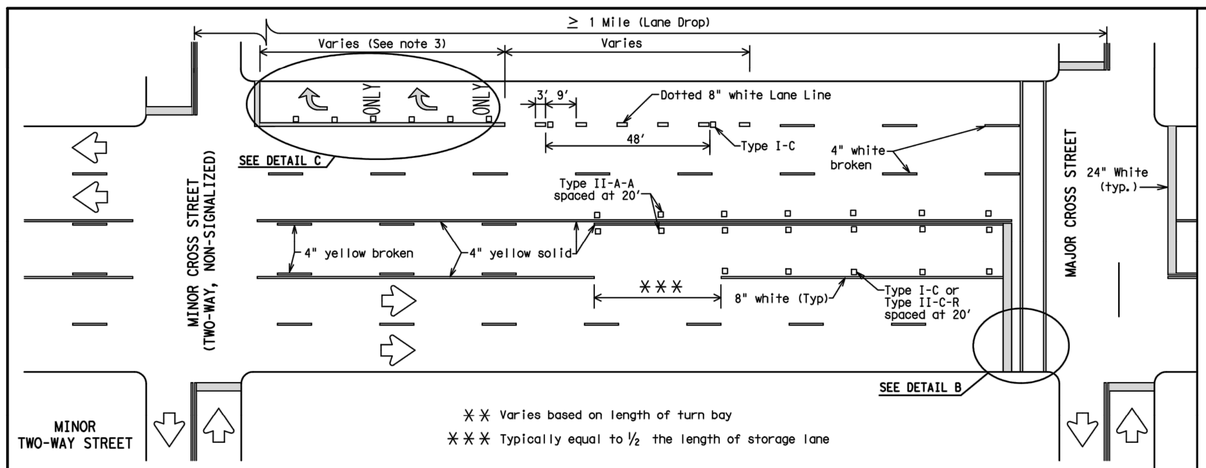
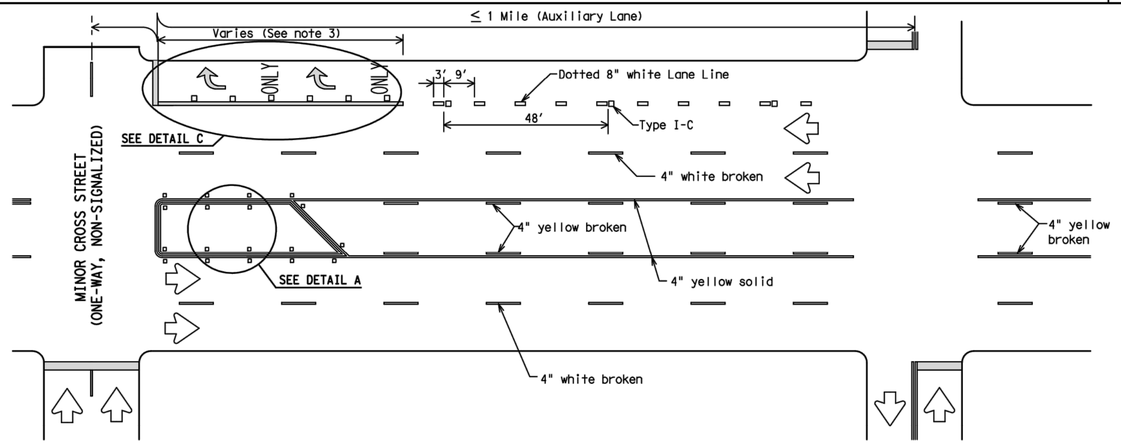
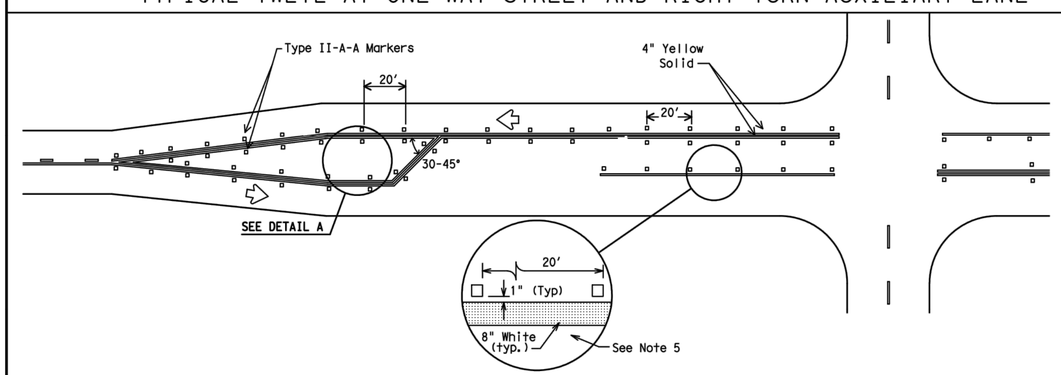


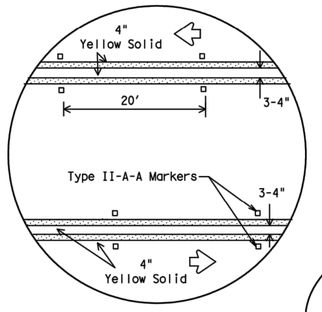
TYPICAL TWLTL AT TWO-WAY CROSS STREET AND RIGHT TURN LANE DROP



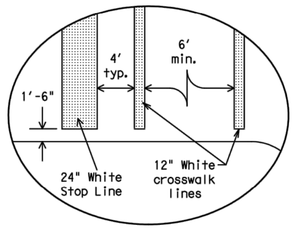
TYPICAL TWLTL AT ONE-WAY STREET AND RIGHT TURN AUXILIARY LANE



TYPICAL TWO-LANE HIGHWAY INTERSECTION WITH LEFT TURN BAYS

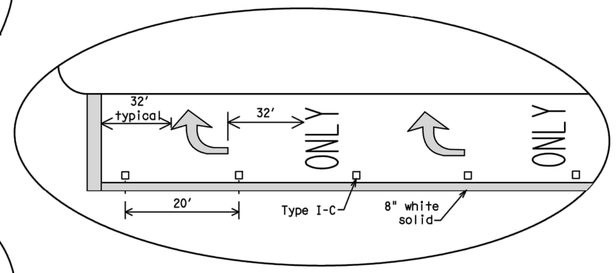


DETAIL A



Final placement of Stop Bar and Crosswalk shall be approved by the Engineer in the field.

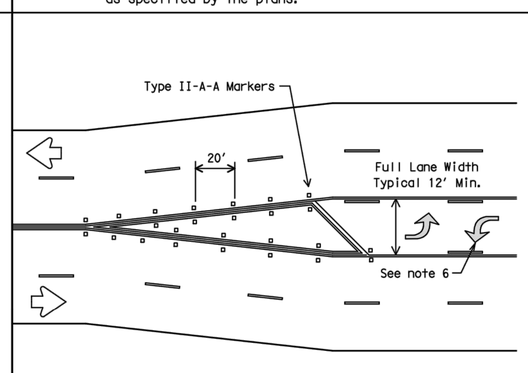
DETAIL B



DETAIL C

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



TYPICAL TRANSITION FOR TWLTL AND DIVIDED HIGHWAY

GENERAL NOTES

1. Refer elsewhere in plans for additional RPM placement and details.
2. Lane use word and arrow markings shall be used where through lanes approaching an intersection become mandatory turn lanes. Lane use word and arrow markings should be used in auxiliary lanes of substantial length. Lane use arrow markings or word and arrow markings may be used in other lanes and turn bays for emphasis. Details for words and arrows as shown in the Standard Highway Sign Designs for Texas.
3. When lane used word and arrow markings are used, two sets of arrows should be used if the length of the bay is greater than 180 feet. When a single lane use arrow or word and arrow marking is used for a short turn lane, it should be located at or near the upstream end of the full-width turn lane.
4. Other crosswalk paterns as shown in the "Texas Manual on Uniform Traffic Control Devices" may be used.
5. Raised pavement marker Type I-C with undivided highways, flush medians and two way left turn lanes. Raised pavement marker Type II-C-R with divided highways and raised medians.
6. A two-way left-turn (TWLT) lane-use arrow pavement marking should be used at or just downstream from the beginning of a two-way left-turn lane within a corridor. Repeating the marking after each intersection or dedicated turn bay is not required unless stated elsewhere in the plans.

Texas Department of Transportation
Traffic Operations Division

PAVEMENT MARKINGS FOR TWO-WAY LEFT TURN LANES DIVIDED HIGHWAYS AND RURAL LEFT TURN BAYS

PM(3)-12

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CONT	SECT	JOB	HIGHWAY
DIST	COUNTY		SHEET NO.

REVISIONS
5-00 2-12
8-00
3-03
2-10

22C

DATE:
FILE:

NO.	REVISION DATE

LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN & MARSHALL INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
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STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

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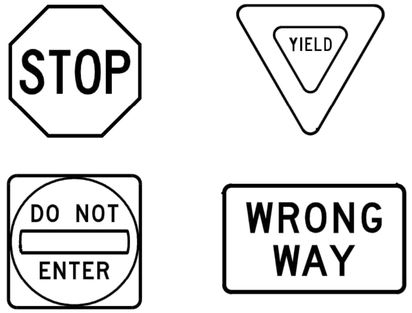
FILE:

REQUIREMENTS FOR RED BACKGROUND REGULATORY SIGNS
(STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)



REQUIREMENTS FOR FOUR SPECIFIC SIGNS ONLY

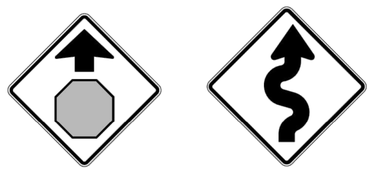
SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	RED	TYPE B OR C SHEETING
BACKGROUND	WHITE	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE B OR C SHEETING
LEGEND	RED	TYPE B OR C SHEETING

REQUIREMENTS FOR WHITE BACKGROUND REGULATORY SIGNS
(EXCLUDING STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)

TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	ALL OTHERS	TYPE B OR C SHEETING
LEGEND, BORDERS AND SYMBOLS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND, BORDERS AND SYMBOLS	ALL OTHER	TYPE B OR C SHEETING

REQUIREMENTS FOR WARNING SIGNS



TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	FLOURESCENT YELLOW	TYPE B_{FL} OR C_{FL} SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND & SYMBOLS	ALL OTHER	TYPE B OR C SHEETING

REQUIREMENTS FOR SCHOOL SIGNS

TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	FLOURESCENT YELLOW GREEN	TYPE B_{FL} OR C_{FL} SHEETING
LEGEND, BORDERS AND SYMBOLS	BLACK	ACRYLIC NON-REFLECTIVE FILM
SYMBOLS	RED	TYPE B OR C SHEETING

GENERAL NOTES

1. Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign tabulation sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD).
2. Sign legend shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets (B, C, D, E, Emod or F).
3. Lateral spacing between letters and numerals shall conform with the SHSD, and any approved changes thereto. Lateral spacing of legend shall provide a balanced appearance when spacing is not shown.
4. Black legend and borders shall be applied by screening process or cut-out acrylic non-reflective black film to background sheeting, or combination thereof.
5. White legend and borders shall be applied by screening process with transparent colored ink, transparent colored overlay film to white background sheeting or cut-out white sheeting to colored background sheeting, or combination thereof.
6. Colored legend shall be applied by screening process with transparent colored ink, transparent colored overlay film or colored sheeting to background sheeting, or combination thereof.
7. Sign substrate shall be any material that meets the Departmental Material Specification requirements of DMS-7110 or approved alternative.
8. Mounting details for roadside mounted signs are shown in the "SMD series" Standard Plan Sheets.

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080
7.5 to 15	0.100
Greater than 15	0.125

DEPARTMENTAL MATERIAL SPECIFICATIONS	
ALUMINUM SIGN BLANKS	DMS-7110
SIGN FACE MATERIALS	DMS-8300

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

http://www.txdot.gov/

Texas Department of Transportation — *Traffic Operations Division Standard*

TYPICAL SIGN REQUIREMENTS

TSR(4)-13

FILE: tsr4-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS 12-03 7-13 9-08	DIST	COUNTY		SHEET NO.

4

NO.	REVISION DATE
1	
2	
3	
4	
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6	
7	
8	

SUMMIT CONSULTING

LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329-4373
TxEng Firm # F-2644 – TxSurv Firm # 100217-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	2/15/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE

SHEET **PM-09**

STRIPE & SIGN DETAILS

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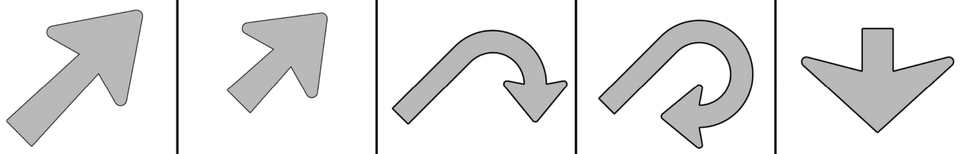
DATE:
FILE:

ARROW DETAILS

for Large Ground-Mounted and Overhead Guide Signs



TYPE	LETTER SIZE	USE
A-1	10.67" U/L and 10" Caps	Single Lane Exits
A-2	13.33" U/L and 12" Caps	
A-3	16" & 20" U/L	
B-1	10.67" U/L and 10" Caps	Multiple Lane Exits
B-2	13.33" U/L and 12" Caps	
B-3	16" & 20" U/L	

CODE	USED ON SIGN NO.
E-3	E5-1aT
E-4	E5-1bT

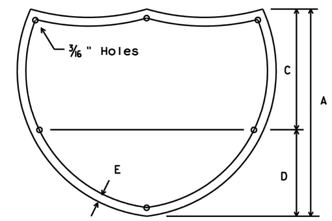
NOTE

Arrow dimensions are shown in the "Standard Highway Sign Designs for Texas" manual.

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

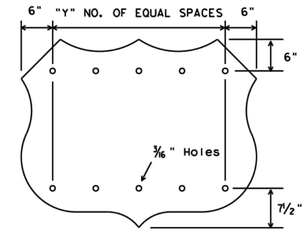
http://www.txdot.gov/

SIGN BLANK PUNCHING DETAILS FOR ATTACHMENTS WHEN SPECIFIED TO BE TYPE A ALUMINUM SIGNS (FOR MOUNTING TO GUIDE SIGN FACE)



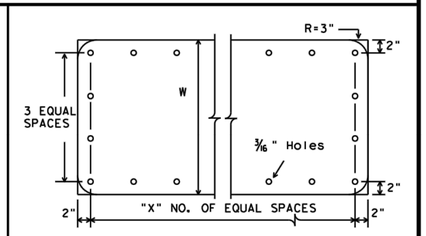
INTERSTATE ROUTE MARKERS

A	C	D	E
36	21	15	1 1/2
48	28	20	1 3/4



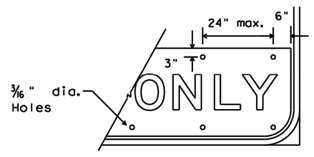
U.S. ROUTE MARKERS

Sign Size	"Y"
24x24	2
30x24	3
36x36	3
45x36	4
48x48	4
60x48	5



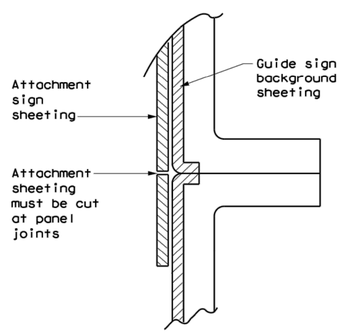
STATE ROUTE MARKERS

No. of Digits	W	X
4	24	4
4	36	5
4	48	6
3	24	3
3	36	4
3	48	5



EXIT ONLY PANEL

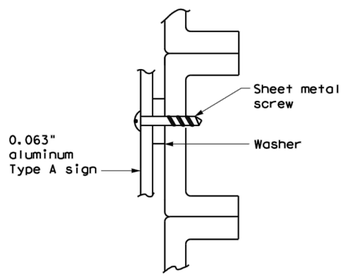
MOUNTING DETAILS OF ATTACHMENTS TO GUIDE SIGN FACE ("EXIT ONLY" AND "LEFT EXIT" PANELS, ROUTE MARKERS AND OTHER ATTACHMENTS)



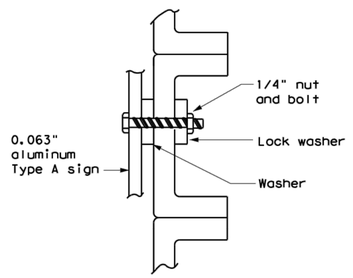
DIRECT APPLIED ATTACHMENT

NOTE:

1. Sheeting for legend, symbols, and borders must be cut at panel joints.
2. Direct applied attachment signs will be subsidiary to "Aluminum Signs" or "Fiberglass Signs".



SCREW ATTACHMENT



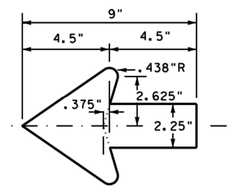
NUT/BOLT ATTACHMENT

NOTE:

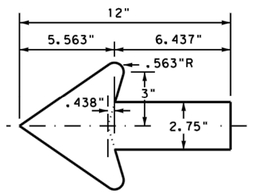
Furnish Type A aluminum sign attachments only when specified in the plans. These signs will be paid for under "Aluminum Signs".

ARROW DETAILS

for Destination Signs (Type D)



Standard arrow to be used with 6 inch letters.



Standard arrow to be used with 8 inch letters.

Texas Department of Transportation

Traffic Operations Division Standard

TYPICAL SIGN REQUIREMENTS

TSR(5)-13

FILE: tsr5-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN MARSHALL INC
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329-4373
TxEng Firm # F-2644 – TxSurv Firm # 100317-00

STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	2/15/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
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STRIPE & SIGN DETAILS

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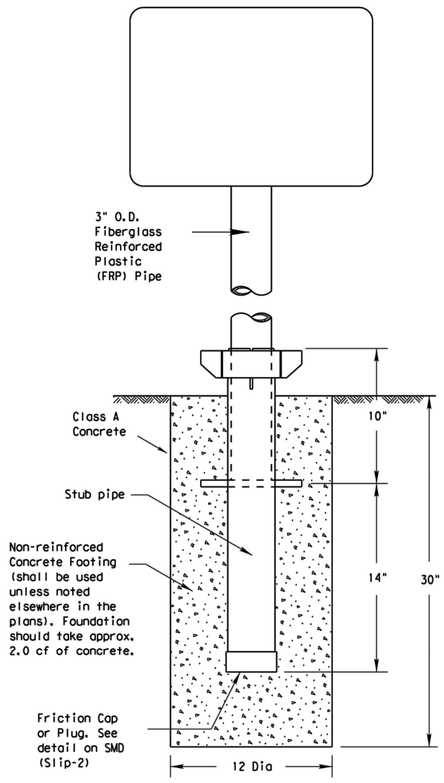
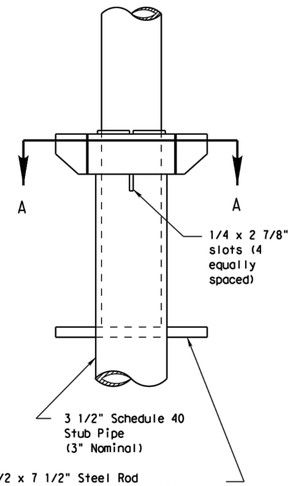
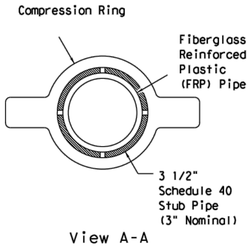
Universal Anchor System with Fiberglass Reinforced Plastic (FRP) Post



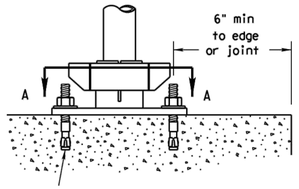
SM RD SGN ASSM TY FRP(X)UA(P)



1/2 x 7 1/2" Steel Rod
Acts as a "stop" for the sign post and prevents stub from turning in the foundation.



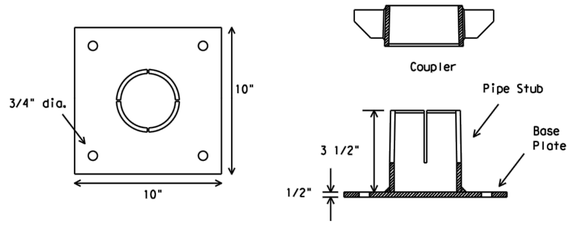
View A-A



5/8" diameter Concrete Anchor - 4 places (embed a min. of 3 3/8" and torque to min. of 50 ft-lbs). Anchor may be expansion or adhesive type.

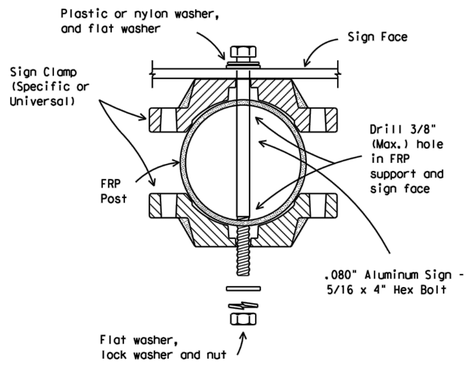
Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. A heavy hex nut per ASTM A563 and hardened washer per ASTM F436. The stud bolt shall have minimum yield and ultimate tensile strengths of 50 and 75 ksi, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Top of bolt shall extend at least flush with top of nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 3 3/8" minimum embedment, shall have a minimum allowable tension and shear of 2450 and 1525 psi, respectively. Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxies and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations.

BOLT-DOWN DETAILS

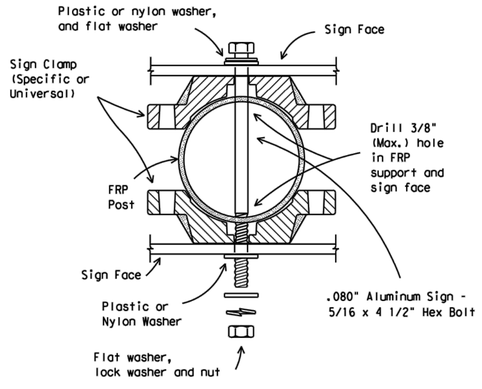


SM RD SGN ASSM TY FRP(X)UB(P)

Typical Sign Mounting Detail for FRP Support with Single Sign



Typical Sign Mounting Detail for FRP Support with Back-to-Back Signs



GENERAL NOTES:

1. FRP sign supports for a single type sign support may be used for signs up to and including 16 square feet. Dual post installation may be used for signs up to and including 32 square feet.
2. All nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing."
3. See the Traffic Operations Division website for detailed drawings of sign clamps. The website address is: http://www.txdot.gov/publications/traffic.htm

FRP POST REQUIREMENTS

1. Materials shall conform to the requirements of Departmental Material Specification DMS-4410 and will be furnished in a yellow or gray color as specified elsewhere in the plans.
2. Thickness of FRP sign support is 0.125" + 0.031", - 0.0".
3. FRP sign supports are prequalified by the Traffic Operations Division. Prequalification procedures are obtained by writing:
   Texas Department of Transportation
   Traffic Operations Division
   125 East 11th Street
   Austin, Texas 78701-2483

UNIVERSAL ANCHOR SYSTEM INSTALLATION PROCEDURES

1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Concrete shall be Class A.
3. Insert base post in foundation hole to depths shown and fill hole with concrete. Cut base post from bottom and ensure a minimum of 18" embedment if installed in solid rock.
4. Level and plumb the base post with coupler using a torpedo level and let concrete set a minimum of 4 days, unless otherwise directed by Engineer. Bottom of base post slots shall be above the concrete footing.
5. Attach sign to FRP post.
6. Insert sign post into base post. Lower until the post comes to rest on the steel rod.
7. Use hammer to ensure the coupler is firmly seated. Top of coupler should be level with top of base post in most instances.
8. Check sign to ensure there is no twist. If loose, increase the tightening of coupler.

BOLT DOWN SIGN SUPPORT

1. Position base plate with coupler on existing concrete.
2. Drill holes into concrete and insert the 5/8" diameter bolts with wedge anchors, and tighten nuts.
3. Attach sign to FRP post.
4. Insert bottom of sign post into pipe stub.
5. Use hammer to ensure the coupler is firmly seated. Top of coupler should be level with top of base post in most instances.
6. Check sign to ensure there is no twist. If loose, increase the tightening of coupler.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS UNIVERSAL ANCHOR SYSTEM WITH FRP POST

SMD(FRP)-08

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LAKEWOOD DRIVE
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STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	2/15/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE

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STRIPE & SIGN DETAILS

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DATE:
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SIGN SUPPORT DESCRIPTIVE CODES

(Descriptive Codes correspond to project estimate and quantities sheets)

SM RD SGN ASSM TY XXXXX(X)XX(X-XXXX)

Post Type

FRP = Fiberglass Reinforced Plastic Pipe (see SMD(FRP))
TWT = Thin-Walled Tubing (see SMD(TWT))
10BWG = 10 BWG Tubing (see SMD(SLIP-1) to (SLIP-3))
S80 = Schedule 80 Pipe (see SMD(SLIP-1) to (SLIP-3))

Number of Posts (1 or 2)

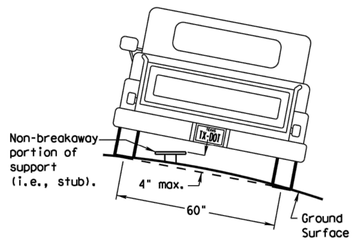
Anchor Type

UA = Universal Anchor - Concreted (see SMD(FRP) and (TWT))
UB = Universal Anchor - Bolted down (see SMD(FRP) and (TWT))
WS = Wedge Anchor Steel - (see SMD(TWT))
WP = Wedge Anchor Plastic (see SMD(TWT))
SA = Slipbase - Concreted (see SMD(SLIP-1) to (SLIP-3))
SB = Slipbase - Bolted Down (see SMD(SLIP-1) to (SLIP-3))

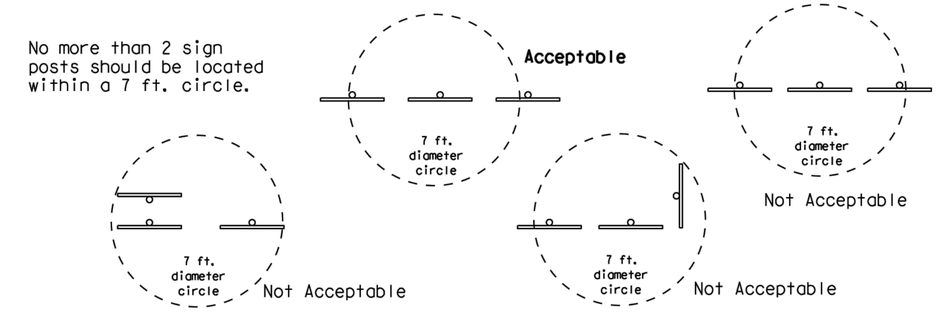
Sign Mounting Designation

P = Prefab. "Plain" (see SMD(SLIP-1) to (SLIP-3), (TWT), (FRP))
T = Prefab. "T" (see SMD(SLIP-1) to (SLIP-3), (TWT))
U = Prefab. "U" (see SMD(SLIP-1) to (SLIP-3))
IF REQUIRED
1EXT or 2EXT = Number of Extensions (see SMD(SLIP-1) to (SLIP-3), (TWT))
BM = Extruded Wind Beam (see SMD(SLIP-1) to (SLIP-3))
WC = 1.12 #/ft Wing Channel (see SMD(SLIP-1) to (SLIP-3))
EXAL = Extruded Aluminum Sign Panels (see SMD(SLIP-3))

REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT

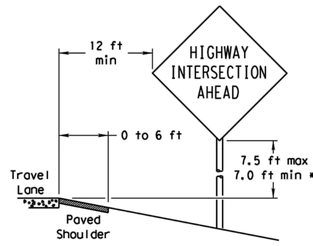


To avoid vehicle undercarriage snagging, any substantial remains of a breakaway support, when it is broken away, should not project more than 4 inches above a 60-inch chord (i.e., typical space between wheel paths).



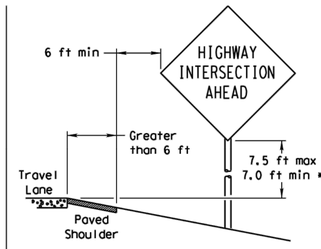
SIGN LOCATION

PAVED SHOULDERS



LESS THAN 6 FT. WIDE

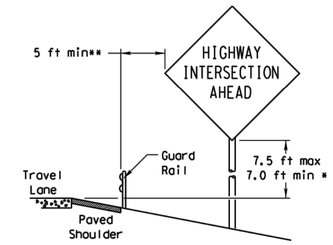
When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



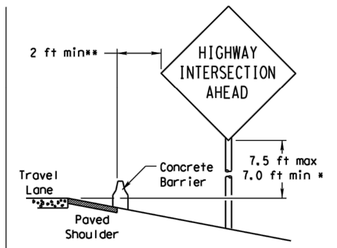
GREATER THAN 6 FT. WIDE

When the shoulder is greater than 6 ft in width, the sign must be placed at least 6 ft. from the edge of the shoulder.

BEHIND BARRIER



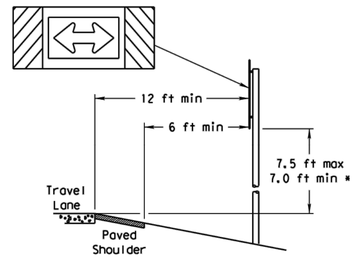
BEHIND GUARDRAIL



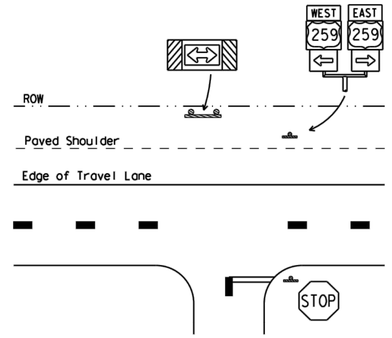
BEHIND CONCRETE BARRIER

**Sign clearance based on distance required for proper guard rail or concrete barrier performance.

T-INTERSECTION



When this sign is needed at the end of a two-lane, two way roadway, the right edge of the sign should be in line with the centerline of the roadway. Place as close to ROW as practical.



* Signs shall be mounted using the following condition that results in the greatest sign elevation:

(1) a minimum of 7 to a maximum of 7.5 feet above the edge of the travel lane or

(2) a minimum of 7 to a maximum of 7.5 feet above the grade at the base of the support when sign is installed on the backslope.

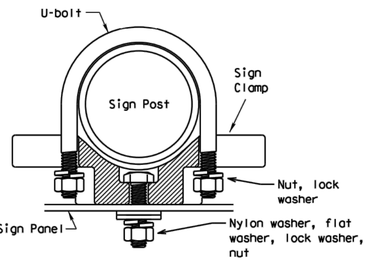
The maximum values may be increased when directed by the Engineer.

See the Traffic Operations Division website for detailed drawings of sign clamps, Triangular Slipbase System components and Wedge Anchor System components.

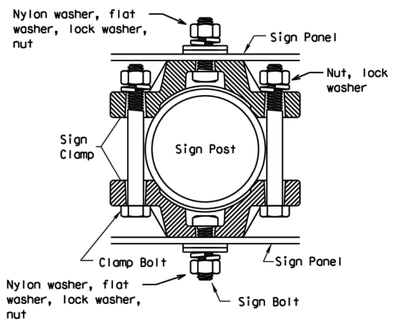
The website address is:
http://www.txdot.gov/publications/traffic.htm

TYPICAL SIGN ATTACHMENT DETAIL

Single Signs



Back-to-Back Signs



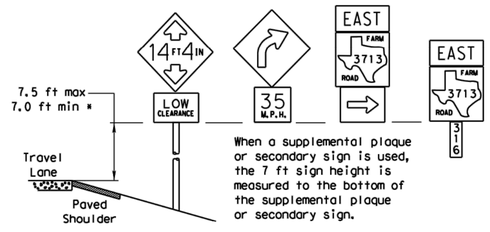
Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

When two sign clamps are used to mount signs back-to-back, use a 5/16-18 UNC galvanized hex head per ASTM A307 with nut and helical-spring lock washer. The approximate bolt lengths for various post sizes and sign clamp types are given in the table at right. The bolt length may need to be adjusted depending upon field conditions.

Sign clamps may be either the specific size clamp or the universal clamp.

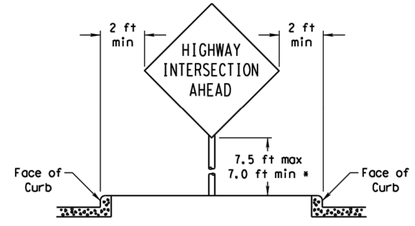
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES



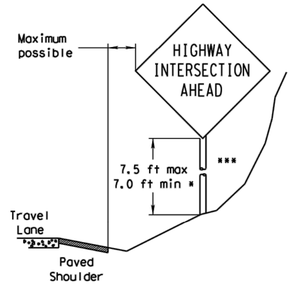
When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

CURB & GUTTER OR RAISED ISLAND



RESTRICTED RIGHT-OF-WAY

(When 6 ft min. is not possible.)



Right-of-way restrictions may be created by rocks, water, vegetation, forest, buildings, a narrow island, or other factors.

In situations where a lateral restriction prevents the minimum horizontal clearance from the edge of the travel lane, signs should be placed as far from the travel lane as practical.

*** Post may be shorter if protected by guardrail or if Engineer determines the post could not be hit due to extreme slope.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

SMD(GEN)-08

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REVISIONS 9-08

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CHISHOLM SUMMIT

LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN & MARSHALL INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329-4373
TxEng Firm # F-2644 – TxSurv Firm # 10031700

STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	2/15/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	PM-12

STRIPE & SIGN DETAILS

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E:\10745 – Bransom Estates\Lakewood\Plans\SHEETS\60% Construction Plans\10745-LAKEWOOD-SIGN & STRIPE-DTL.dwg Tue Sep 27 2022 17:55

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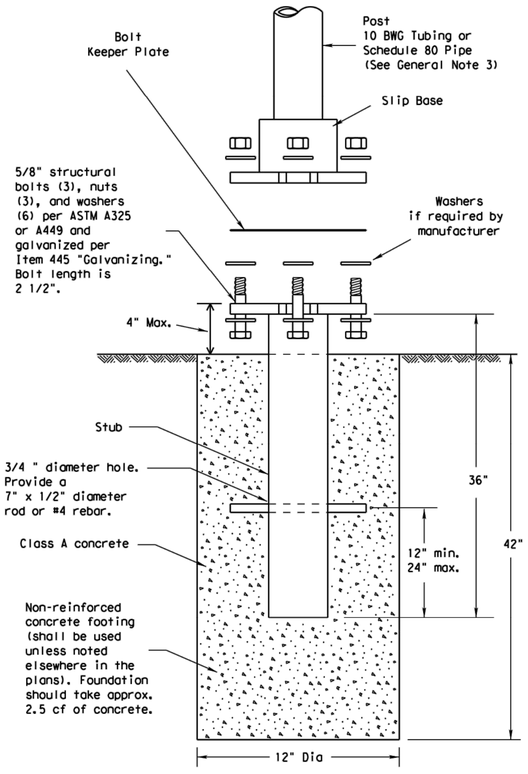
TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS



SM RD SGN ASSM TY XXXXX(X)SA(X-XXXX)

NOTE

There are various devices approved for the Triangular Slipbase System. Please reference the Material Producer List for approved slip base systems. http://www.txdot.gov/business/producer_list.htm The devices shall be installed per manufacturers' recommendations. Installation procedures shall be provided to the Engineer by Contractor.

GENERAL NOTES:

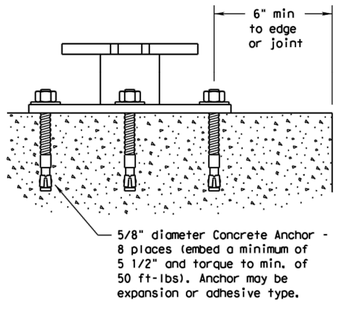
1. Slip base shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to approval of the TxDOT Traffic Standards Engineer.
2. Material used as post with this system shall conform to the following specifications:
   10 BWG Tubing (2.875" outside diameter)
   0.134" nominal wall thickness
   Seamless or electric-resistance welded steel tubing or pipe
   Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
   Other steels may be used if they meet the following:
   55,000 PSI minimum yield strength
   70,000 PSI minimum tensile strength
   20% minimum elongation in 2"
   Wall thickness (uncoated) shall be within the range of 0.122" to 0.138"
   Outside diameter (uncoated) shall be within the range of 2.867" to 2.883"
   Galvanization per ASTM A123 or ASTM A653 G210. For precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.
   Schedule 80 Pipe (2.875" outside diameter)
   0.276" nominal wall thickness
   Steel tubing per ASTM A500 Gr C
   Other seamless or electric-resistance welded steel tubing or pipe with equivalent outside diameter and wall thickness may be used if they meet the following:
   46,000 PSI minimum yield strength
   62,000 PSI minimum tensile strength
   21% minimum elongation in 2"
   Wall thickness (uncoated) shall be within the range of 0.248" to 0.304"
   Outside diameter (uncoated) shall be within the range of 2.855" to 2.895"
   Galvanization per ASTM A123
3. See the Traffic Operations Division website for detailed drawings of sign clamps and Texas Universal Triangular Slipbase System components. The website address is:
   http://www.txdot.gov/publications/traffic.htm
4. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.

ASSEMBLY PROCEDURE

Foundation
1. Prepare 12-inch diameter by 42-inch deep hole. If solid rock is encountered, the depth of the foundation may be reduced such that it is embedded a minimum of 18 inches into the solid rock.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor-driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Concrete shall be Class A.
3. Push the pipe end of the slip base stub into the center of the concrete. Rotate the stub back and forth while pushing it down into the concrete to assure good contact between the concrete and stub. Continue to work the stub into the concrete until it is between 2 to 4 inches above the ground.
4. Plumb the stub. Allow a minimum of 4 days to set, unless otherwise directed by the Engineer.
5. The triangular slipbase system is multidirectional and is designed to release when struck from any direction.

Support
1. Cut support so that the bottom of the sign will be 7 to 7.5 feet above the edge of the travelway (i.e., edge of the closest lane) when slip plate is below the edge of pavement or 7 to 7.5 feet above slip plate when the slip plate is above the edge of the travelway. The cut shall be plumb and straight.
2. Attach sign to support using connections shown. When multiple signs are installed on the same support, ensure the minimum clearance between each sign is maintained. See SMD(SLIP-2) for clearances based on sign types.

CONCRETE ANCHOR



SM RD SGN ASSM TY XXXXX(X)SB(X-XXXX)

Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. Heavy hex nut per ASTM A563, and hardened washer per ASTM F436. The stud bolt shall have a minimum yield and ultimate tensile strength of 50 and 75 KSI, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxies and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations. Top of bolt shall extend at least flush with top of the nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 5 1/2" minimum embedment, shall have a minimum allowable tension and shear of 3900 and 3100 psi, respectively.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-1)-08

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	DIST	COUNTY		SHEET NO.

26B

NO.	REVISION DATE

CUSTOM BY SUMMIT

LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN AND MARSHALL INC.
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STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

JOB NO.:	10745
DATE:	2/15/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW:	EWE

SHEET **PM-13**

STRIPE & SIGN DETAILS

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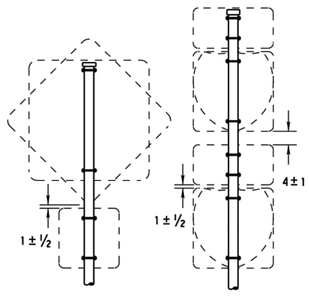

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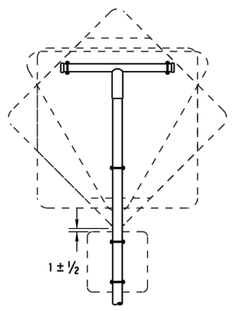

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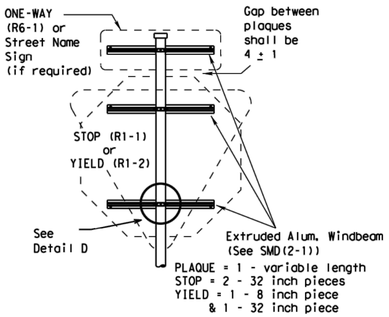

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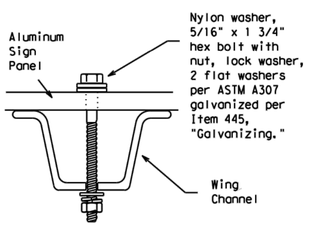
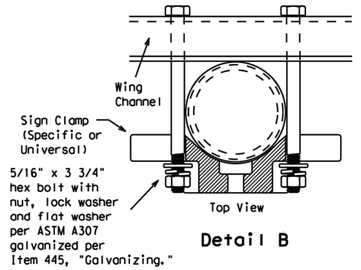
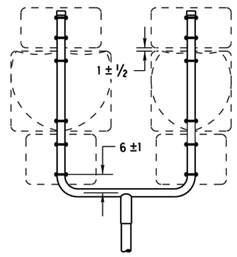


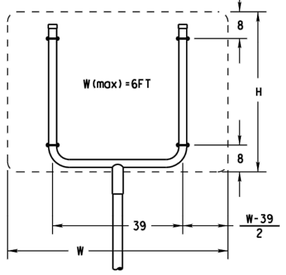
Detail A



Detail B



SM RD SGN ASSM TY XXXXX(1)XX(U)



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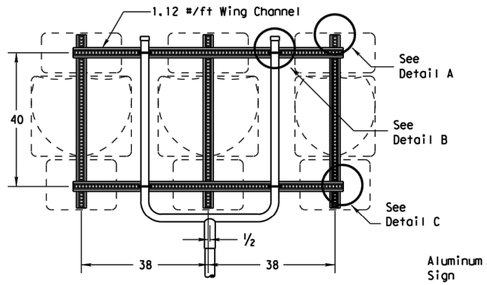
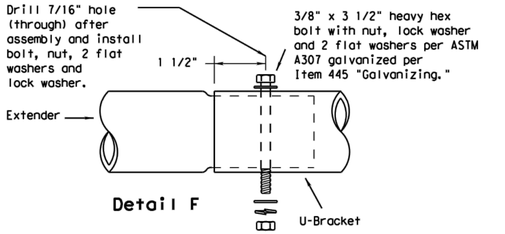
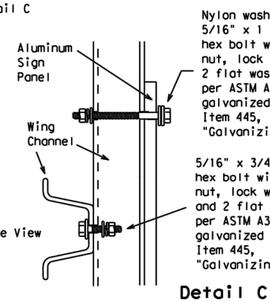


SM RD SGN ASSM TY XXXXX(1)XX(U-WC)
(See Note 11)



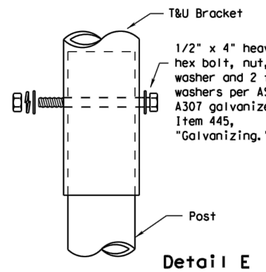
Detail F

Splices shall only be allowed behind the sign substrate.

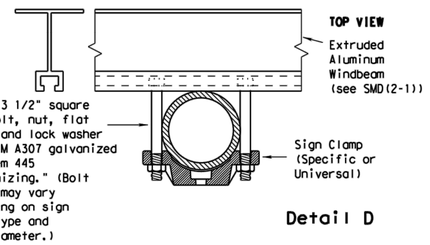


SIDE VIEW

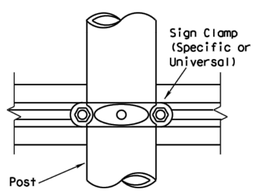
Detail C

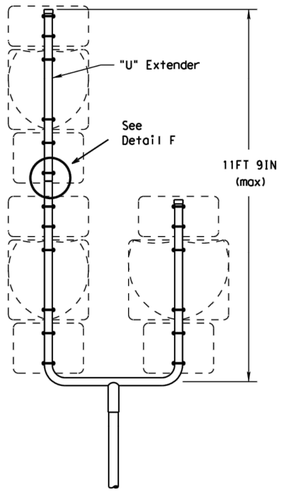


Detail E



Detail D





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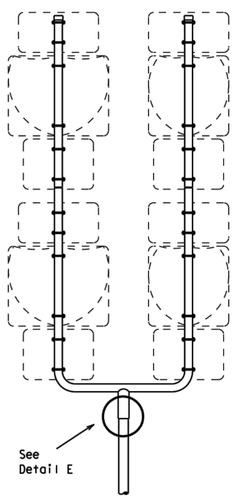

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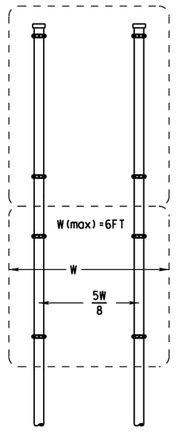
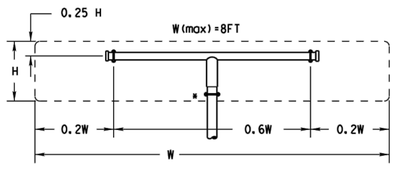


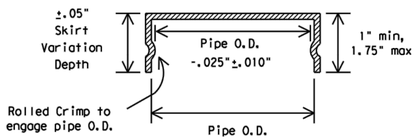
SM RD SGN ASSYM TY XXXXX(2)XX(P)



All dimensions are in english unless detailed otherwise.

SM RD SGN ASSM TY XXXXX(1)XX(T)
(* - See Note 12)

FRICTION CAP DETAIL



Friction caps may be manufactured from hot rolled or cold rolled steel sheets. The minimum sheet metal thickness shall be 24 gauge for all cap sizes.

The rim edges shall be reasonably straight and smooth. Caps shall be sized and formed in such a manner as to produce a drive-on friction fit and have no tendency to rock when seated on the pipe. The depth shall be sufficient to give positive protection against entrance of rainwater. They shall be free of sharp creases or indentations and show no evidence of metal fracture.

Caps shall have an electrodeposited coating of zinc in accordance with the requirements of ASTM B633 Class FE/ZN 8.

GENERAL NOTES:

SIGN SUPPORT	# OF POSTS	MAX. SIGN AREA
10 BWG	1	16 SF
10 BWG	2	32 SF
Sch 80	1	32 SF
Sch 80	2	64 SF

1. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
2. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
3. Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
4. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
5. For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
6. When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
7. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
8. Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
9. Additional route markers may be added vertically, provided the total sign area does not exceed the maximum allowable amount per Note 1.
10. Additional sign clamp required on the "T-bracket" post for 24 inch height signs. Place the clamp 3 inches above bottom of sign when possible.
11. Post open ends shall be fitted with Friction Caps.
12. Sign blanks shall be the sizes and shapes shown on the plans.

REQUIRED SUPPORT

	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
Warning	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
	48-inch Advance School X-ing sign (S1-1)	TY 10BWG(1)XX(T)
	48-inch School X-ing sign (S2-1)	TY 10BWG(1)XX(T)
	Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)XX(T)

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-2)-08

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REVISIONS 9-08

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
CONT	SECT	JOB	HIGHWAY
DIST	COUNTY		SHEET NO.

26C

NO.	REVISION DATE

LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN & MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329-4373
TxEng Firm # F-2644 – TxSurv Firm # 10007700

STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

JOB NO.:	10745
DATE:	2/15/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW:	EWE

SHEET **PM-14**

STRIPE & SIGN DETAILS

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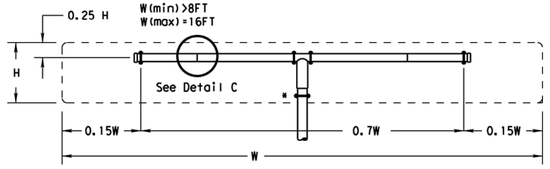
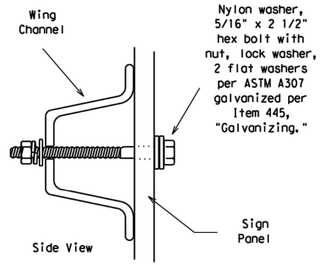
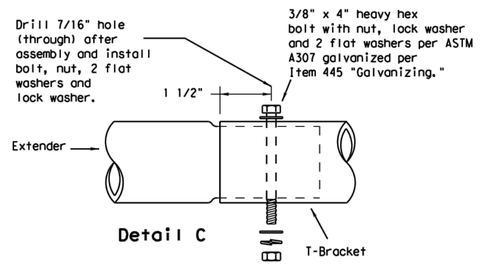


SM RD SGN ASSM TY XXXXX(1)XX(T-2EXT)
(* - See Note 12)

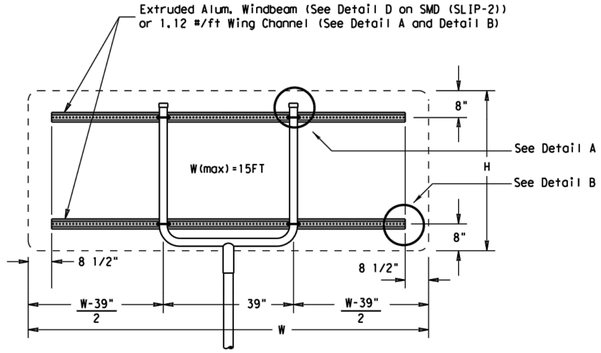


Detail B

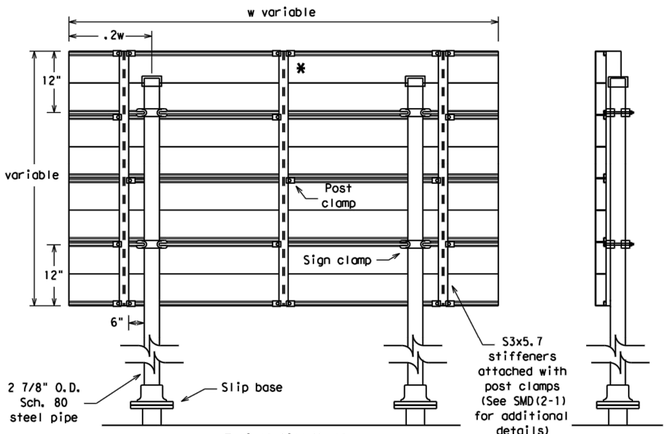


Detail C

Splices shall only be allowed behind the sign substrate.



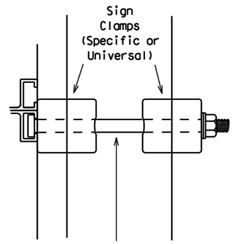
SM RD SGN ASSM TY XXXXX(1)XX(U-XX)



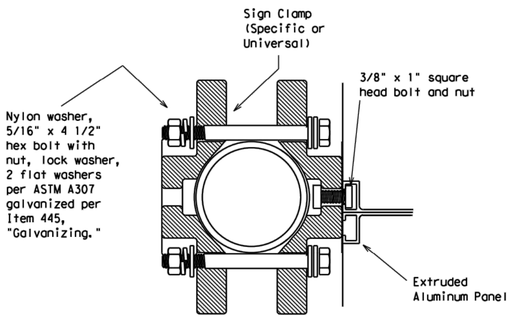
Typical Sign Mount

SM RD SGN ASSM TY S80(2)XX(P-EXAL)

✱ Additional stiffener placed at approximate center of signs when sign width is greater than 10'.



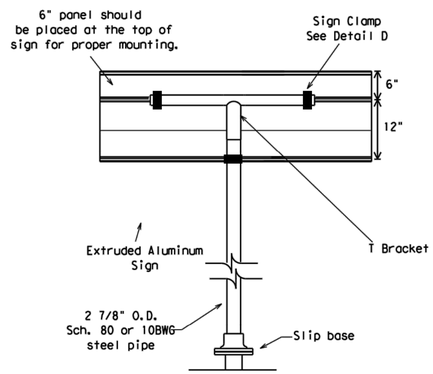
Detail E



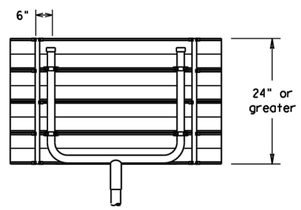
Top View

Detail A

Detail D
EXTRUDED ALUMINUM SIGN WITH T BRACKET



Extruded Aluminum Sign With T Bracket



Use Extruded Alum. Windbeam as stiffeners See SMD (2-1) for additional details

See Detail E for clamp installation

GENERAL NOTES:

SIGN SUPPORT	# OF POSTS	MAX. SIGN AREA
10 BWG	1	16 SF
10 BWG	2	32 SF
Sch 80	1	32 SF
Sch 80	2	64 SF

1. See table above.
2. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
3. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
4. Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
5. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
6. For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
7. When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
8. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
9. Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
10. Sign blanks shall be the sizes and shapes shown on the plans.
11. Additional sign clamp required on the "T-bracket" post for 24 inch high signs. Place the clamp 3 inches above bottom of sign when possible.
12. Post open ends shall be fitted with Friction Caps.

REQUIRED SUPPORT		
	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
Warning	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
	48-inch Advance School X-ing sign (S1-1)	TY 10BWG(1)XX(T)
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	Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)XX(T)

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-3)-08

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REVIEW:	EWE
SHEET	PM-15

STRIPE & SIGN DETAILS

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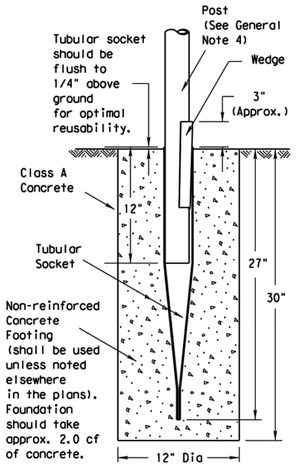
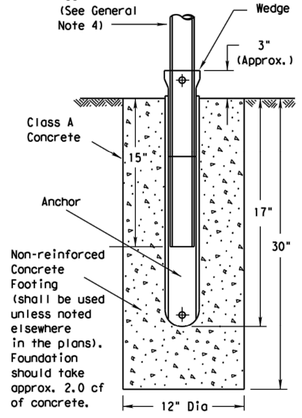
Wedge Anchor Steel System



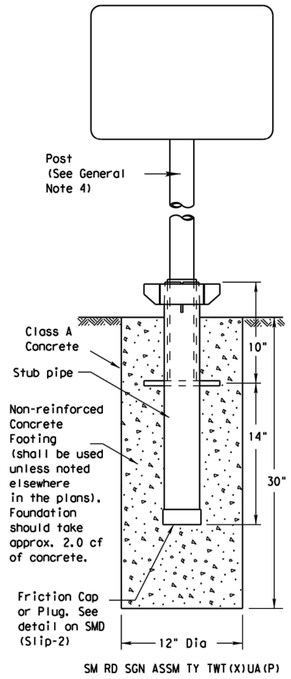
SM RD SGN ASSM TY TWT(X)WS(X)

Wedge Anchor High Density Polyethylene (HDPE) System

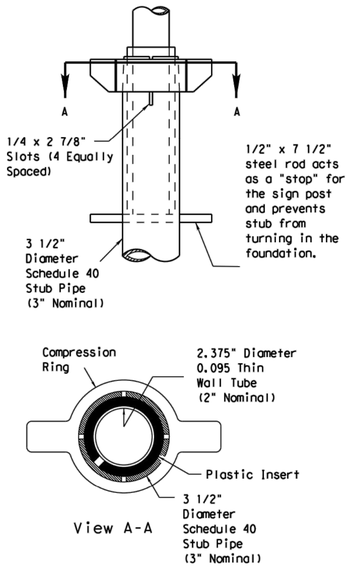


SMD RD SGN ASSM TY TWT(X)WP(X)

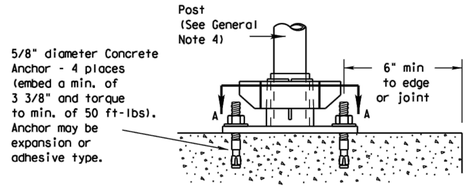
Universal Anchor System with Thin-Walled Tubing Post



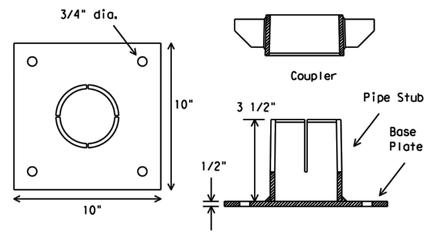
SM RD SGN ASSM TY TWT(X)UA(P)



Plastic insert must be used when using the TWT with either the Universal Anchor System or the Bolt Down Universal Anchor System. The insert should be approx. 10" long and cover the tubing from just above the top of the stub pipe to the bottom of the sign post when using the Universal Anchor System. The insert should be cut to approx. 4 1/2" when used with the Bolt Down Universal Anchor System.

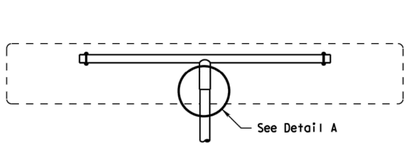


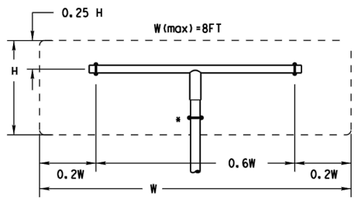
Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. A heavy hex nut per ASTM A563 and hardened washer per ASTM F436. The stud bolt shall have minimum yield and ultimate tensile strengths of 50 and 75 ksi, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Top of bolt shall extend at least flush with top of nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 3 3/8" minimum embedment, shall have a minimum allowable tension and shear of 2450 and 1525 psi, respectively. Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxies and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations.



SM RD SGN ASSM TY TWT(X)UB(P)

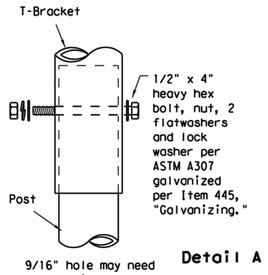
Sign Installation Using a Prefabricated T-Bracket for Thin-Wall Tubing Post





SM RD SGN ASSM TY TWT(X)XX(T)

(* - See General Note 6)



Detail A

9/16" hole may need to be drilled through post to accommodate bolt.

NOTE

The devices shall be installed per manufacturer's recommendations.
Installation procedures shall be provided to the Engineer by Contractor.

GENERAL NOTES:

1. The Wedge Anchor System and the Universal Anchor System with thin wall tubing post may be used to support up to 10 square feet of sign area.
2. The tubular socket, wedge and prefabricated T-bracket shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to the approval of the TxDOT Traffic Standards Engineer.
3. Except for posts (13 BWG Tubing), clamps, nuts and bolts, all components shall be prequalified. A list of prequalified vendors may be obtained from the Material Producer List web page. The website address is: http://www.txdot.gov/business/producer list.htm
4. Material used as post with this system shall conform to the following specifications:
   13 BWG Tubing (2.375" outside diameter) (TWT)
   0.095" nominal wall thickness
   Seamless or electric-resistance welded steel tubing
   Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
   Other steels may be used if they meet the following:
   55,000 PSI minimum yield strength
   70,000 PSI minimum tensile strength
   18% minimum elongation in 2"
   Wall thickness (uncoated) shall be within the range of .083" to .099"
   Outside diameter (uncoated) shall be within the range of 2.369" to 2.381"
   Galvanization per ASTM 123 or ASTM A653 G210. For precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.
5. Sign blanks shall be the sizes and shapes shown on the plans.
6. Additional sign clamp required on the "T-bracket" post for 24" high signs. Place clamp at least 3" above bottom of sign when possible.
7. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
8. See the Traffic Operations Division website for detailed drawings of sign clamps and Wedge Anchor System components. The website address is: http://www.txdot.gov/publications/traffic.htm

WEDGE ANCHOR SYSTEM INSTALLATION PROCEDURE

1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Place concrete into hole until it is approximately flush with the ground. Concrete shall be Class A.
3. Insert tubular socket into concrete until top of socket is approximaely 1/4 " above the concrete footing.
4. Plumb the socket. Allow a minimum 4 days for concrete to set, unless otherwise directed by Engineer..
5. Attach the sign to the sign post.
6. Insert the sign post into socket and align sign face with roadway.
7. Drive the wedge into the socket to secure post. This will leave approximately 3 inches of the wedge exposed.

UNIVERSAL ANCHOR SYSTEM INSTALLATION PROCEDURE

1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. Insert base post in hole to depths shown and backfill hole with concrete.
3. Level and plumb the base post using a torpedo level and allow concrete adequate time to set. The bottom of the slots provided in the stub pipe shall remain above the top of the concrete foundation.
4. Attach the sign to the sign post.
5. Install plastic insert around bottom of post.
6. Insert sign post into base post. Lower until the post comes to rest on steel rod.
7. Seat compression ring using a hammer. Typically, the top of compression ring will be approximately level with top of stub post when optimally installed.
8. Check sign post by hand to ensure it is unable to turn. If loose, increase the tightening of the compression ring.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS WEDGE & UNIVERSAL ANCHOR WITH THIN WALL TUBING POST

SMD(TWT)-08

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FILE:

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LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

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STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

JOB NO.:	10745
DATE:	2/15/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW:	EWE

SHEET PM-16

STRIPE & SIGN DETAILS

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GRAPHIC SCALE 1"=200'
0 200 400 600

LEGEND

	INLET/PIPE PROTECTION		STORM DRAIN & INLET
	SILT FENCE		STORM DRAIN w/ HEADWALL
	CONSTRUCTION ENTRANCE		FLOW ARROW (RUNOFF DIRECTION)

!!!WARNING!!!
APPROXIMATE LOCATION OF EXISTING UNDERGROUND GAS LINE & OVERHEAD ELECTRIC LINES. CONTRACTOR SHALL COORDINATE WITH APPROPRIATE UTILITY COMPANIES PRIOR TO CONSTRUCTION.

!!!WARNING!!!
APPROXIMATE LOCATION OF EXISTING UNDERGROUND GAS LINES. CONTRACTOR SHALL COORDINATE WITH APPROPRIATE UTILITY COMPANIES PRIOR TO CONSTRUCTION.

ID: R0000009444
HOOPER & CO INC

150' UTILITY EASEMENT & RIGHT-OF-WAY
TEXAS ELECTRIC SERVICE COMPANY
VOL. 680, PG. 241 &
VOL. 900, PG. 336
D.R.J.C.T.

ALTA BURL LP
INST. NO. 2017-24915
D.R.J.C.T.

BURLESON 4A ECONOMIC DEVELOPMENT CORPORATION
INST. NO. 2021-21498
D.R.J.C.T.

BURLESON 4A ECONOMIC DEVELOPMENT CORPORATION
INST. NO. 2021-22172
D.R.J.C.T.

BURLESON DEVELOPMENT, INC.
INST. NO. 2017-24891
D.R.J.C.T.

BURLESON DEVELOPMENT, INC.
INST. NO. 2017-22716
D.R.J.C.T.

FUTURE CHISHOLM SUMMIT DEVELOPMENT

INLET PROTECTION
SILT FENCE

MATCHLINE - SEE SHEET EC-02

CONTRACTOR NOTE

THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UTILITIES, WHETHER PRIVATE OR PUBLIC, PRIOR TO EXCAVATING. THE INFORMATION AND DATA SHOWN WITH RESPECT TO EXISTING UNDERGROUND FACILITIES AT OR CONTIGUOUS TO THE SITE IS APPROXIMATE AND BASED ON INFORMATION AND DATA FURNISHED BY THE OWNERS OF SUCH UNDERGROUND FACILITIES OR ON PHYSICAL APPURTENANCES OBSERVED IN THE FIELD. THE OWNER AND ENGINEER SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ANY SUCH INFORMATION OR DATA. AND THE CONTRACTOR SHALL HAVE FULL RESPONSIBILITY FOR REVIEWING AND CHECKING ALL SUCH INFORMATION AND DATA, FOR LOCATING ALL UNDERGROUND FACILITIES, FOR COORDINATION OF THE WORK WITH THE OWNERS OF SUCH UNDERGROUND FACILITIES DURING CONSTRUCTION, FOR THE SAFETY AND PROTECTION THEREOF, AND REPAIRING ANY DAMAGE THERETO RESULTING FROM THE WORK, THE COST OF ALL OF WHICH WILL BE CONSIDERED AS HAVING BEEN INCLUDED IN THE CONTRACT PRICE. CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY ANY AFFECTED UTILITY COMPANIES OR AGENCIES AT LEAST 48 HOURS PRIOR TO BEGINNING CONSTRUCTION.

BENCH MARK ELEVATION : 852.36

CAPPED IRON ROD WITH CAP STAMPED "RDM" AT THE NORTHWEST CORNER OF THE INTERSECTION OF CR 1902 AND CR 1019, APPROXIMATELY 37 FEET NORTHWEST OF THE CENTERLINE OF CR 1019, APPROXIMATELY 45 FEET NORTHEAST OF THE CENTERLINE OF CR 1902, AND APPROXIMATELY 120 FEET SOUTHWEST OF A DRIVEWAY.

NO.	REVISION DATE
1	
2	
3	
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CHISHOLM SUMMIT

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

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SHEET	EC-01

EROSION CONTROL PLAN

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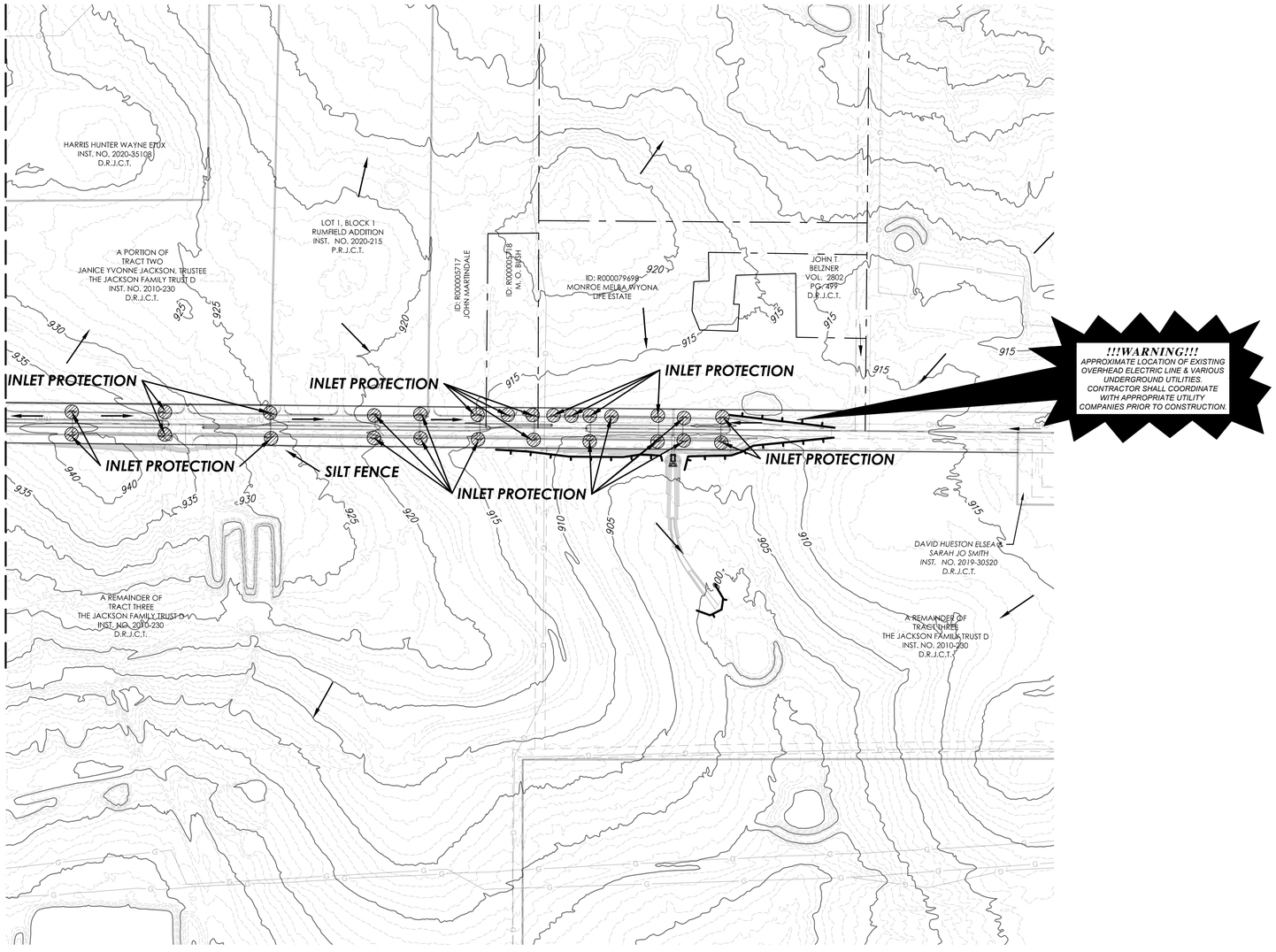

CONTRACTOR NOTE

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GRAPHIC SCALE 1"=200'
0 200 400 600

LEGEND

- INLET/PIPE PROTECTION
- SILT FENCE
- CONSTRUCTION ENTRANCE
- STORM DRAIN & INLET
- STORM DRAIN w/ HEADWALL
- FLOW ARROW (RUNOFF DIRECTION)

BENCH MARK ELEVATION : 852.36

CAPPED IRON ROD WITH CAP STAMPED "RDM" AT THE NORTHWEST CORNER OF THE INTERSECTION OF CR 1902 AND CR 1019, APPROXIMATELY 37 FEET NORTHWEST OF THE CENTERLINE OF CR 1019, APPROXIMATELY 45 FEET NORTHEAST OF THE CENTERLINE OF CR 1902, AND APPROXIMATELY 120 FEET SOUTHWEST OF A DRIVEWAY.

NO.	REVISION DATE

SUMMIT CUSTOM HOMES

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

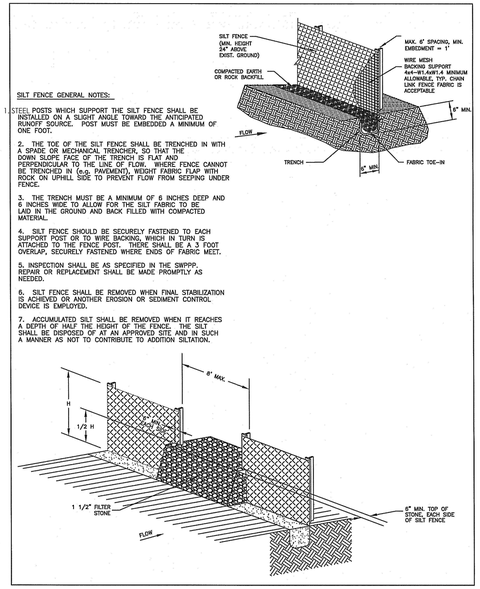
GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 100170

STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	5/11/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE

SHEET **EC-02**

EROSION CONTROL PLAN



SILT FENCE GENERAL NOTES:

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

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

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

4. SILT FENCE SHOULD BE SECURELY FASTENED TO EACH SUPPORT POST OR TO WIRE BACKING, WHICH IN TURN IS ATTACHED TO THE FENCE POST. THERE SHALL BE A 3 FOOT OVERLAP, SECURELY FASTENED WHERE ENDS OF FABRIC MEET.

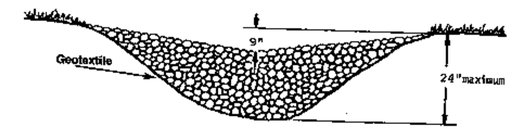
5. INSPECTION SHALL BE AS SPECIFIED IN THE SWPPP. REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.

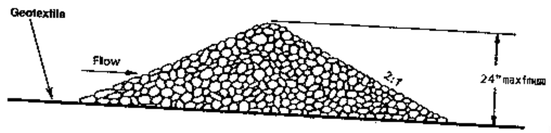
6. SILT FENCE SHALL BE REMOVED WHEN FINAL STABILIZATION IS ACHIEVED OR ANOTHER EROSION OR SEDIMENT CONTROL DEVICE IS EMPLOYED.

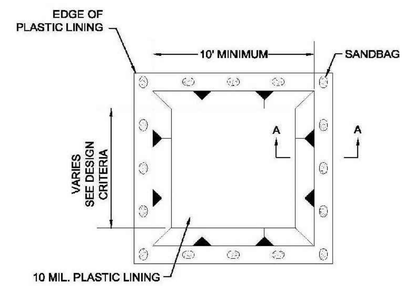
7. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF HALF THE HEIGHT OF THE FENCE. THE SILT SHALL BE DISPOSED OF AT AN APPROVED SITE AND IN SUCH A MANNER AS NOT TO CONTRIBUTE TO ADDITION SILTATION.

Figure 1

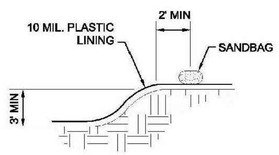
Height Of Check Dams







CONCRETE WASHOUT PLAN VIEW
N.T.S.



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

NOTE: SANDBAGS MAY BE REPLACED BY A SOIL BERM TO ANCHOR THE PLASTIC LINING.

STABILIZED CONSTRUCTION ENTRANCE GENERAL NOTES:

1. STONE SHALL BE 3 TO 5 INCH DIAMETER CRUSHED ROCK OR ACCEPTABLE CRUSHED PORTLAND CEMENT CONCRETE.

2. LENGTH SHALL BE SHOWN ON PLANS, WITH A MINIMUM LENGTH OF 30 FEET FOR LOTS WHICH ARE LESS THAN 150 FEET FROM EDGE OF PAVEMENT. THE MINIMUM DEPTH IN ALL OTHER CASES SHALL BE 50 FEET.

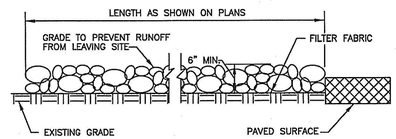
3. THE THICKNESS SHALL NOT BE LESS THAN 6 INCHES.

4. THE WIDTH SHALL BE NO LESS THAN THE FULL WIDTH OF ALL POINTS OF INGRESS OR EGRESS.

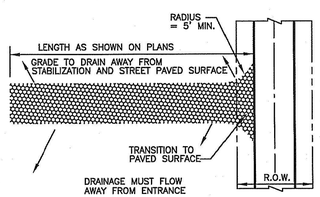
5. WHEN NECESSARY, VEHICLES SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO A PUBLIC ROADWAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE WITH DRAINAGE FLOWING AWAY FROM BOTH THE STREET AND THE STABILIZED ENTRANCE. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATERCOURSE USING APPROVED METHODS.

6. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING SEDIMENT ONTO PAVED SURFACES. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PAVED SURFACES MUST BE REMOVED IMMEDIATELY.

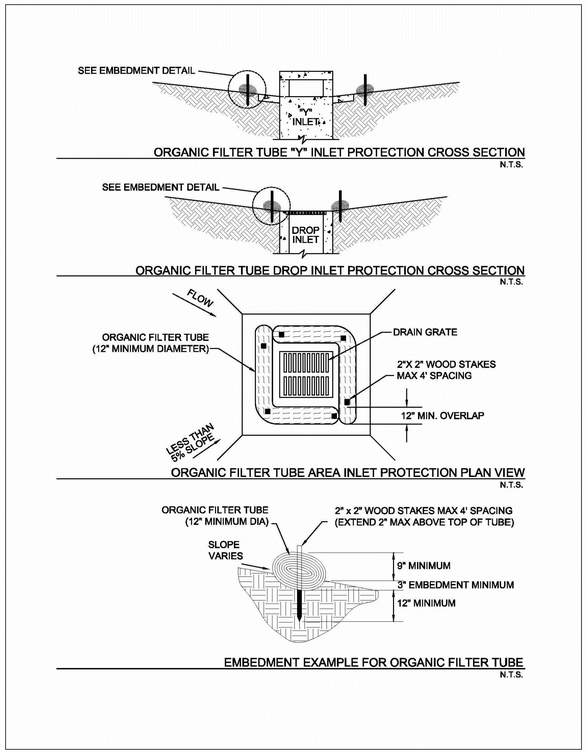
7. THE ENTRANCE MUST BE PROPERLY GRADED OR INCORPORATE A DRAINAGE SWALE TO PREVENT RUNOFF FROM LEAVING THE CONSTRUCTION SITE.



PROFILE VIEW
N.T.S.



PLAN VIEW
N.T.S.



ORGANIC FILTER TUBE "Y" INLET PROTECTION CROSS SECTION
N.T.S.

ORGANIC FILTER TUBE DROP INLET PROTECTION CROSS SECTION
N.T.S.

ORGANIC FILTER TUBE AREA INLET PROTECTION PLAN VIEW
N.T.S.

EMBEDMENT EXAMPLE FOR ORGANIC FILTER TUBE
N.T.S.

Figure 3.13 Schematics of Organic Filter Tube Area Inlet Protection

NO.	REVISION DATE
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LAKEWOOD DRIVE

90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN & MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 10001700

STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	5/11/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	EC-03

EROSION CONTROL DETAILS

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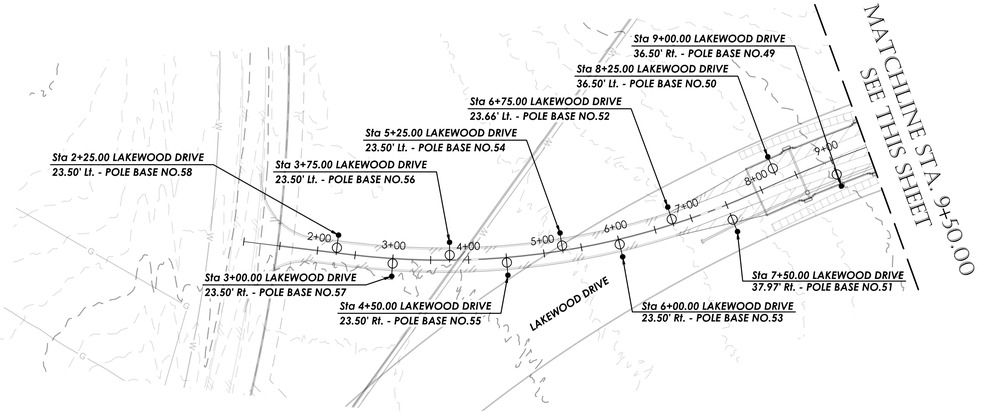
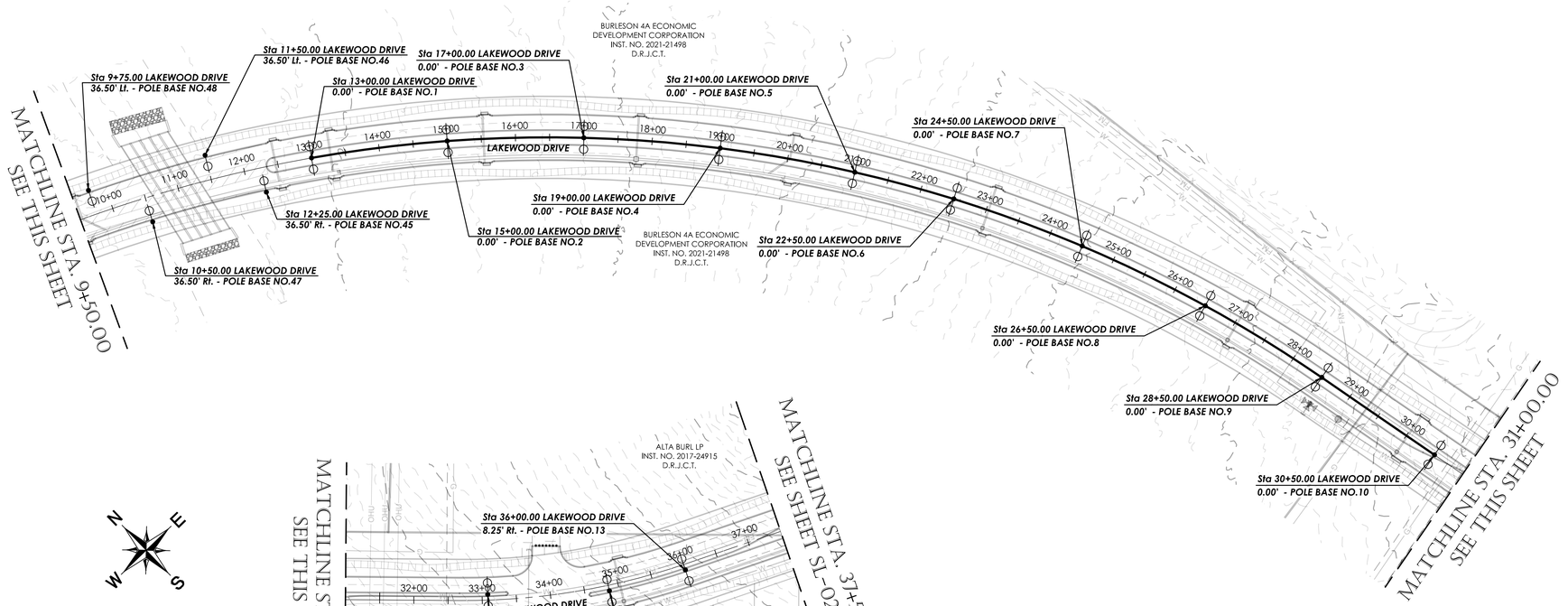
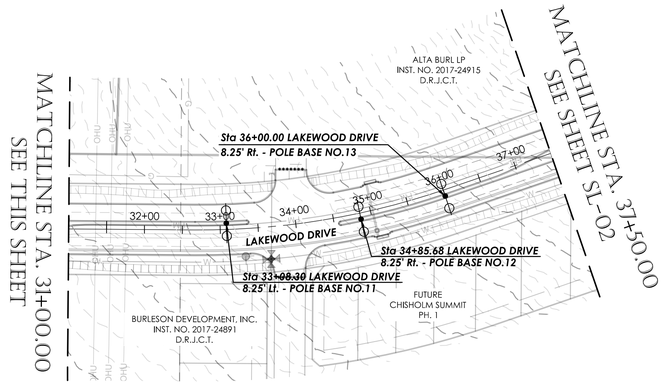
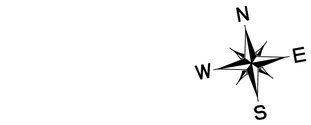
LEGEND

	Proposed	Existing
Force Main	FM	
Sanitary Sewer	S	
Water	W	
Storm Drain Line		
Street Light		









NO.	REVISION DATE

LAKEWOOD DRIVE

90% CONSTRUCTION PLANS

CITY OF BURLESON

JOHNSON COUNTY, TX

GOODWIN AND MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 100170-00

Street Light Note

Unless otherwise noted, all street lights to be double arm street lights with black powder coating. Contractor to verify prior to installation.

NOTES:

STREET LIGHT LAYOUT AS SHOWN IS BASED ON A PRELIMINARY DESIGN BY UNITED CO-OP AND IS FOR SCHEMATIC PURPOSES ONLY. DEVELOPER HAS CONTRACTED WITH UNITED CO-OP FOR THE DESIGN & INSTALLATION OF ELECTRICAL FACILITIES AND CONDUITS NECESSARY TO SERVE THE STREET LIGHTS. THE DEVELOPER IS RESPONSIBLE FOR THE STREET LIGHTS, CONDUITS, PULL BOXES, AND LIGHT POLE FOUNDATIONS.

GOODWIN & MARSHALL, INC. SHALL BE HELD HARMLESS FOR THE FINAL DESIGN, LOCATION AND INSTALLATION OF ALL CITY STREET LIGHTS ASSOCIATED WITH THIS PROJECT.

BENCH MARK ELEVATION : 852.36

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STATE OF TEXAS
BRENT A. CALDWELL
108515
LICENSED PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	5/12/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE

SHEET **SL-01**

STREET LIGHT LAYOUT

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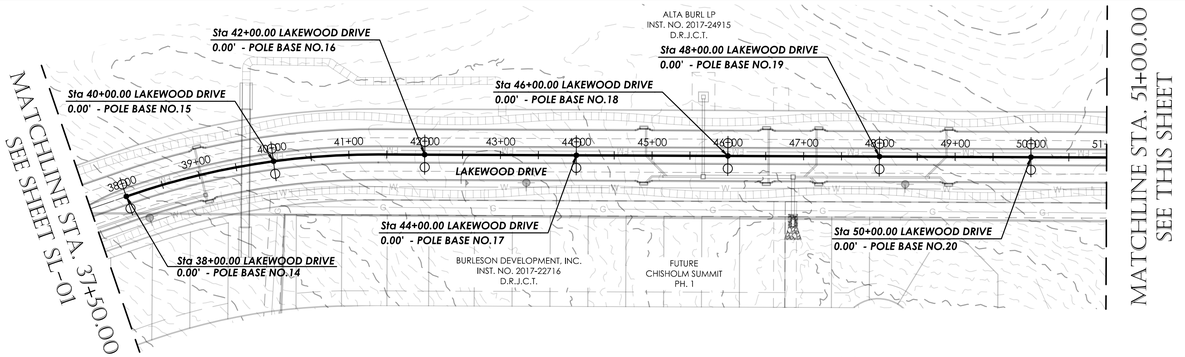
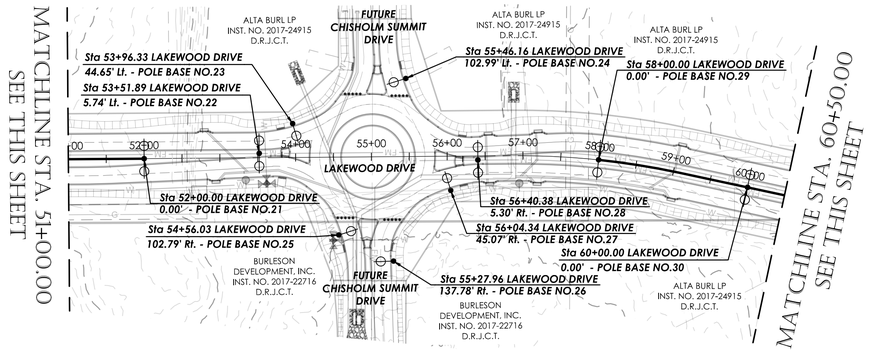
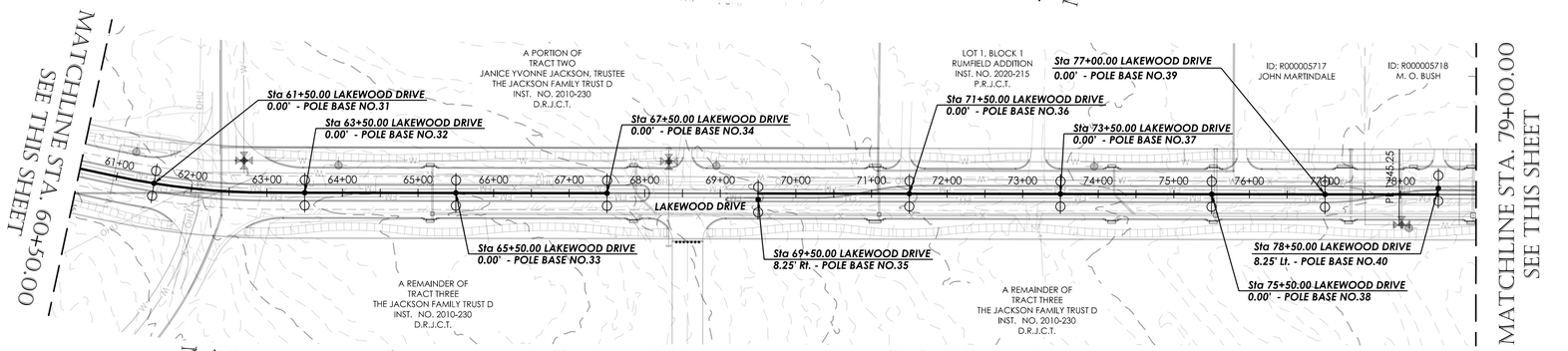
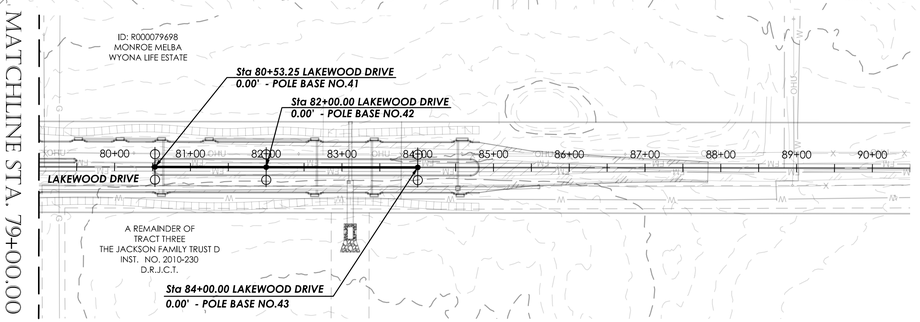
LEGEND

	Proposed	Existing
Force Main	FM	
Sanitary Sewer	S	
Water	W	
Storm Drain Line		
Street Light		









GRAPHIC SCALE 1"=100'
0 100 200 300

NO.	REVISION DATE

LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN & MARSHALL, INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329-4373
TxEng Firm # F-2644 – TxSurv Firm # 10051700

Street Light Note

Unless otherwise noted, all street lights to be double arm street lights with black powder coating. Contractor to verify prior to installation.

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STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	5/12/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	SL-02

STREET LIGHT LAYOUT

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26’ Standard Streetlight (Cobra Style)

100w $17.34 per month

*Wood pole mounted optional

DESCRIPTION

The Verdeon LED roadway luminaire combines optical performance, energy efficiency, and outstanding versatility to meet the requirements of any roadway application. Advanced optical technology delivers unparalleled uniformity, scalability, and budget-beating operating costs for municipal streets and highways. UL/cUL listed for wet locations with an optional IP66 enclosure rating available.

SPECIFICATION FEATURES

Construction
Heavy-duty die-cast aluminum housing and door. Tool-less entry, hinged removable door for easy maintenance. 3G vibration rated.

Optics
Optics are precisely designed to shape the distribution maximizing efficiency and fixture spacing. Offered standard in 4000K (+/- 275K) CCT and 70 CRI. Optional 5700K CCT and 3000K CCT are available.

Electrical
120-277V 50/60Hz, 347V 60Hz or 480V 60Hz operation. 10kV/10kA common- and differential- mode surge protection available.Thermal management transfers heat away from the LED source for optimal efficiency, light output and lumen maintenance. Operates in ambient temperatures from -40°C to 40°C. 50°C HA (high ambient) option available. Standard three-position tunnel type terminal block. LED modules are modules are IP66 rated.

Mounting
Two-bolt/one-bracket slipfitter with cast-in pipe stop and 2.5° leveling steps. Four-bolt/two-clamp mounting option. Fixed-in-place bird guard seals around 1-1/4” to 2” (1-5/8” to 2-3/8” O.D.) mounting arms. Optional 15” pole mount arm available with round pole adapter and mounting hardware included.

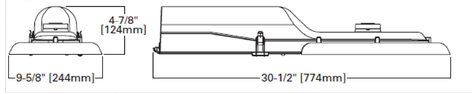
Finish
Housing and cast parts finished in five-stage super TGIC polyester powder coat paint, 2.5 mil nominal thickness for superior protection against fade and wear. Consult your lighting representative at Eaton for a complete selection of standard colors.

Warranty
Five-year warranty.

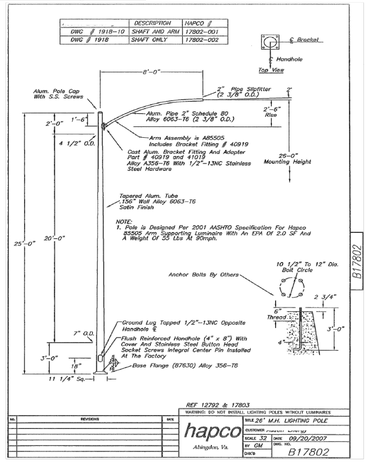
26’ Standard Streetlight (Cobra Style)

DIMENSIONS

VERD



Standard



26’ Standard Streetlight (Cobra Style)

POWER AND LUMENS

Light Engine		A016	A018	A01	A028	A02	G-A028	G-A02
Nominal Power (Watts) @ 120V		36W	51W	64W	72W	92W	103W	143W
Nominal Power (Watts) @ 277V		36W	51W	64W	72W	92W	103W	143W
Nominal Power (Watts) @ 347V		40W	56W	N/A	79W	101W	113W	154W
Nominal Power (Watts) @ 480V		40W	56W	N/A	79W	101W	113W	154W
Optics								
Type II	Lumens	3,855	4,936	5,839	7,858	9,294	12,064	15,332
	BUG Rating	B1-U0-G1	B1-U0-G1	B1-U0-G1	B2-U0-G2	B2-U0-G2	B2-U0-G2	B3-U0-G3
Type III	Lumens	3,775	4,833	5,716	7,693	9,099	11,946	15,182
	BUG Rating	B1-U0-G1	B1-U0-G1	B1-U0-G1	B2-U0-G2	B2-U0-G2	B2-U0-G2	B2-U0-G2
Type IV	Lumens	3,785	4,846	5,732	7,714	9,123	11,944	15,180
	BUG Rating	B1-U0-G2	B1-U0-G2	B1-U0-G2	B1-U0-G3	B2-U0-G3	B2-U0-G3	B2-U0-G4
Type V	Lumens	3,864	4,948	5,852	7,876	9,315	12,137	15,425
	BUG Rating	B3-U0-G2	B3-U0-G2	B3-U0-G2	B3-U0-G3	B4-U0-G3	B4-U0-G3	B4-U0-G3

NOTE: Lumen output for AP Grey fixture color, 120-277V.

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SUMMIT CONSTRUCTION

LAKEWOOD DRIVE
90% CONSTRUCTION PLANS
CITY OF BURLESON
JOHNSON COUNTY, TX

GOODWIN MARSHALL INC
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329 - 4373
TxEng Firm # F-2644 – TxSurv Firm # 100170

STATE OF TEXAS
BRENT A. CALDWELL
108515
PROFESSIONAL ENGINEER
09/28/22

JOB NO. :	10745
DATE :	5/12/22
DSGN/DRFT:	BAC/KJJ&LKP
REVIEW :	EWE
SHEET	SL-03

STREET LIGHT DETAILS

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EXHIBIT “C”

CONSTRUCTION SUBCONTRACT

This is a Construction Subcontract (Subcontract) between **RA DEVELOPMENT, LTD.** (Contractor) and **AMS COMPANY, INC.** (Subcontractor). This Subcontract is effective as of **SEPTEMBER 28, 2022.**

Prime Contract: Contractor has entered into a contract (Prime Contract) dated **JUNE 7, 2021** with **CITY OF BURLESON, TEXAS** (Owner) known also as Ordinance CSO #1775-06-2021.

Contractor and Subcontractor further agree as follows:

ARTICLE 1—PRELIMINARY MATTERS

1.01 *Prime Contract*

A. The Prime Contract requires Contractor to perform and furnish construction labor, materials, equipment, and services ("Prime Contract Work") in connection with the Project described therein. The Prime Contract (excluding compensation and other confidential information) is incorporated in this Subcontract by reference. Portions of the Prime Contract are attached as Exhibit 1 to this Subcontract; Subcontractor may review other non-confidential portions upon request. The Project described in the Prime Contract is summarized as follows:

LAKEWOOD DRIVE FROM FM 1902 TO CR 1020, BURLESON, TEXAS

1.02 *Scope of Subcontract Work*

A. Contractor hereby retains Subcontractor to provide construction labor, materials, equipment, and services under this Subcontract described as follows:

SEE ATTACHED SCOPE OF WORK & UNIT PRICING ("Subcontract Work").

B. The Subcontract Work is a part of the Prime Contract Work. Except as otherwise stated in this Subcontract, the provisions of the Prime Contract that apply to the performance and quality of the Prime Contract Work apply to the Subcontract Work.

C. The express terms of this Paragraph 1.02 govern in establishing the Subcontract scope of work. The divisions and sections of the Prime Contract's Specifications and the identifications and organization of the Prime Contract's drawings do not control or limit Contractor in dividing the Work among subcontractors or suppliers, or delineating the work to be performed by, or obligations of any specific trade, including Subcontractor.

D. Certain exclusions have been established by the Subcontractor as a part of the bid process. Unless otherwise specified in the Subcontract Work, the exclusions are to include:

This proposal excludes the following:
Bonds, Permits, Fees, Material Testing, Utility removals, relocates or adjustments. Any demo/removals to existing structures, buildings, barns, power poles, electrical, boxes, valves, manholes, meters, storm drain pipe, inlets, headwalls, culverts, water, sanitary sewer, buried debris, wells or anything else not specifically listed on our proposal. Any cutting, plugging, capping, disconnection or rerouting of utilities. Any Erosion Control. SWPPP Book or SWPPP Inspections. Structural excavation or backfill for walls, footings, culverts, foundations, etc. Grading for flumes, flatwork, sidewalks, riprap, etc. Traffic Control, Signs or Barricades. Any Fence/Gate work. Importing any topsoil (we will use/respread onsite topsoil material only as is, no blending, mixing, amending or rock picking the topsoil).Any Seeding, Hydromulching, Grassing or Soil Retention Blanket. Importing any select fill, common fill, sand, gravel, aggregates, flexbase, riprap or granular fill. Any paving subgrade undercut and/or subgrade replacement. Maintaining of Grades, Compaction or Moisture Control. Any excavation/grading for detours or detour removal work. Grading, graveling or maintaining existing driveways ingress/egress. Any Clean Up or Handling Spoils of Other Trades. Any lime or cement stabilization. Pavement, median or curb backfill. Any re-grading after utilities and/or paving.

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This proposal is based on the following:
*Two mobilizations to complete all work west of CR 1016. First mobilization will be to do the clearing and grubbing, earthwork and grading. The second mobilization will be to respread the onsite topsoil.
*Four mobilizations to complete all work east of CR 1016. First mobilization will be to do the clearing and grubbing, earthwork and grading on the north bound side. The second mobilization will be to respread the onsite topsoil on the north bound side. Third mobilization will be to do the clearing and grubbing, earthwork and grading on the south bound side. The forth mobilization will be to respread the onsite topsoil on the south bound side.
*Civil Grading Plan Sheets GR-01 thru GR-09 prepared by Goodwin & Marshall dated September 2022.
*All borrow fill material required for the project northwest of CR 1016 will be obtained from the owners property via our off-road equipment at the following locations. One borrow location is near the lat long 32.51684310092214, -97.41581845669133. Another option location is at 32.5236853765844, -97.40792512764034. Another option location at 32.5231683873063, -97.41953104107732. (If any clearing, grubbing or prep work is required at the borrow site(s) then this will be additional work).
*All excess roadway excavation from the roadway section southeast of CR 1016 will be stockpiled on the owners property at the following locations. One location is at 32.5109589884081, -97.41741959073237 and another location is at 32.51917560284703, -97.40191733234161 (If any clearing, grubbing or prep work is required at the borrow site then this will be additional work).
*All grading to + or - .10'
*This document becoming part of the agreement resulting from it.
*Price good for 60 days from this proposal date.

1.03 *Subcontract Documents*

A. The Subcontract Documents are identified in Article 14 of this Subcontract.

1.04 *Independent Contractor*

A. Subcontractor is an independent contractor, and is not an employee or partner of, or a joint-venturer with Contractor, and has no contractual relationship or privity with Owner or Owner's engineers or consultants.

ARTICLE 2—OBLIGATIONS OF THE PRIME CONTRACT

2.01 *Incorporation of Prime Contract Obligations*

A. The Subcontractor is bound to the Contractor under the Subcontract to the same extent that the Contractor is bound to the Owner under the Prime Contract, and Subcontractor shall comply with all requirements, terms, and conditions of the Prime Contract that relate in any way to the performance and completion of the Subcontract Work.

B. The obligation of the Subcontractor to comply with the requirements, terms, and conditions of the Prime Contract does not provide any rights, benefits, or third-party beneficiary standing to the Subcontractor with respect to the Prime Contract.

2.02 *Precedence of Subcontract*

A. If a provision of this Subcontract conflicts with a provision of the Prime Contract, the terms of this Subcontract govern, unless under controlling laws the conflicted provision of the Prime Contract cannot be waived.

ARTICLE 3—SUBCONTRACT TIMES

3.01 *Subcontract Times*

A. The Subcontract Work will be completed in full on or before **DECEMBER 31, 2023.**

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B. Subcontractor shall provide all required submittals on a timely basis, and shall provide sufficient labor and materials to comply with the Contractor's progress schedule and avoid delaying the progress of Contractor's work under the Prime Contract. Subcontractor shall make modifications in the performance and completion of the Subcontract Work as necessary to comply with modifications, if any, in the Contractor's progress schedule.

C. The time for completion of the Subcontract Work, as set forth in Paragraph 3.01.A, and compliance with the Contractor's progress schedule, as set forth in Paragraph 3.01.B, all as duly modified under this Subcontract, together will be referred to as "Subcontract Times."

3.02 *Time of the Essence*

A. Subcontractor's obligation to comply with the Subcontract Times is of the essence of the Subcontract.

3.03 *Damages for Late Completion*

A. Subcontractor and Contractor recognize that Contractor will suffer financial loss if the Subcontract Work is not completed within the Subcontract Times.

B. The damages resulting to the Contractor may include liquidated damages, special damages, and other damages (if any) assessed by the Owner, actual damages claimed by the Owner as a result of the delay, and the Contractor's costs for extended general conditions, field overhead, and home office overhead.

C. As a result of the losses, costs, and damages recognized in Paragraphs 3.03.A. and B., if Subcontractor fails to complete the Subcontract Work within the Subcontract Times, and without limiting any additional remedies available to Contractor, Subcontractor shall pay Contractor for losses, costs, and damages incurred by Contractor for Subcontractor's failure to comply with the Subcontract Times, including the share attributable to Subcontractor of delay damages and costs imposed on or levied against Contractor. Contractor has the right to set off any such amounts against payments due Subcontractor under this Subcontract.

ARTICLE 4—SUBCONTRACT PRICE

4.01 *Payment Obligation*

A. Contractor shall pay Subcontractor for completion of the Subcontract Work in accordance with the Subcontract Documents an amount equal to the sum of the amounts determined pursuant to the following paragraphs, and not to exceed: **$1,761,892.00**.

B. For all Subcontract Work other than Unit Price Work, a lump sum of: $0.00

1. Cash Allowances: All specific cash allowances are included in the above price and include the cost to Subcontractor (less any applicable trade discounts) of materials and equipment required by the cash allowances to be delivered at the site, and all applicable taxes. Subcontractor's costs for unloading and handling on the site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Subcontract Price, and no demand for additional payment on account of any of the foregoing will be valid.

C. For all Unit Price Work, an amount equal to the sum of the established unit price for each separately identified item of Unit Price Work multiplied by the actual quantity of that item:

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SEE ATTACHED SCOPE OF WORK & UNIT PRICING

The extended prices for Unit Price Work set forth as of the Subcontract Date are based on estimated quantities. Estimated quantities are not guaranteed, and determinations of actual quantities will be verified by the Contractor and will be subject to any applicable procedures for measurement and verification under the Prime Contract.

ARTICLE 5—PAYMENT PROCEDURES

5.01 *Progress Payments*

A. *Applications for Payments*

1. Ten days prior to the date established in the Prime Contract for submission by the Contractor of the Contractor's application for each progress payment (but not more often than once a month), Subcontractor shall submit to Contractor for review a draft progress payment application covering the Subcontract Work completed as of the date of the progress payment application. The amount requested under each progress payment application will be calculated in accordance with Article 4, and: (a) for lump sum work by determining the percentage of the Subcontract Work completed as of the date of the progress payment application; (b) for unit price work by applying unit prices to units provided; (c) subject to subtraction to account for amounts previously paid. Subcontractor's progress payments will be subject to the retainage provisions of the Prime Contract, or to retainage of **five (5)** percent, whichever is greater.

2. Each Subcontractor progress payment application must be accompanied by supporting documentation required by the Prime Contract to be attached to the Contractor's progress payment submission. The Subcontract progress payment application must also be accompanied by required lien waivers; a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all liens; and for stored material and equipment, evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect Owner's interest therein. All such supporting documentation must be satisfactory to Contractor and Owner. Application for progress payment may be submitted no more than once a month by Subcontractor to Contractor.

3. Beginning with Subcontractor's second progress payment application, each Subcontractor progress payment application must include a Subcontractor's affidavit stating that all previous progress payments received on account of the Subcontract Work have been paid to persons and entities providing labor, equipment, materials and services on account of amounts received on behalf of said sub-subcontractors, suppliers, and vendors from prior progress payment applications. Each Subcontractor's affidavit must list all sub-subcontractors, suppliers, and vendors having contracts with Subcontractor to provide said labor, equipment, material, and services on the Project including the amount of each contract, the amount paid to date and the amount due or to become due to each sub-subcontractor, supplier, and vendor. Each progress payment application must also include lien waivers executed by each sub-subcontractor, supplier, and vendor listed on the Subcontractor's affidavit.

B. *Review of Applications*

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1. Within five days after receipt of each draft progress payment application submitted by Subcontractor, Contractor will return the draft progress payment application with corrections (if any). Subcontractor will submit a final progress payment application, incorporating all resolved corrections, together with all supporting documentation, within three days thereafter.

2. Contractor may withhold amounts requested in one or more payment applications from the Subcontractor in whole or part if one or more of the following occurs:

    a. The Subcontract Work is defective, or completed Subcontract Work has been damaged, requiring correction or replacement;

    b. The Subcontract Price has been reduced by change orders;

    c. The Contractor has been required to correct defective Subcontract Work or complete Subcontract Work;

    d. Claims have been made against Contractor on account of Subcontractor's performance or furnishing of the Subcontract Work;

    e. Liens have been filed in connection with the Subcontract Work, except where Subcontractor has delivered a specific bond satisfactory to Contractor and Owner to secure the satisfaction and discharge of such liens;

    f. The Owner has exercised a set-off against payments to Contractor attributable to Subcontractor's activities or performance of the Subcontract Work; or

    g. The Subcontractor has defaulted under the terms of the Subcontract.

C. *Payment:* Contractor shall pay Subcontractor any amounts due to Subcontractor under a payment application for Subcontract Work within 30 days after Contractor's receipt from the Owner of payment for such Subcontract Work.

ARTICLE 6—FINAL PAYMENT AND COMPLETION

6.01 *Final Payment*

A. Upon final completion of obligations under the Subcontract, including acceptance by Owner (or its representative) of the Subcontract Work as part of the Work under the Prime Contract, and submission and acceptance of all close-out documents required under the Subcontract, Subcontractor shall submit to Contractor an application for final payment and release of retainage, if any.

B. Final payment becomes due 30 days after Contractor's receipt of payment from the Owner of amounts requested on behalf of Subcontractor. Contractor's receipt of payment of retainage withheld by Owner from amounts due to Contractor for the Subcontract Work is an express condition precedent to Contractor's obligation to pay such retainage to Subcontractor.

6.02 *Final Lien Waivers*

A. Upon the request of Contractor, Subcontractor shall submit, as part of the application for final payment, a final waiver of lien and sworn statement indicating all sub-subcontractors, suppliers, and vendors, their contract amounts, and the final amounts paid to each sub-subcontractor, supplier, and vendor.

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6.03 *Warranty of Title*

A. Subcontractor warrants and guarantees that title to all Subcontract Work, materials, and equipment furnished under the Subcontract will pass to Owner free and clear of all liens and other title defects, and all patent, licensing, copyright, or royalty obligations.

6.04 *Waiver of Claims*

A. Final payment by Contractor to Subcontractor constitutes:

1. A waiver of all claims by Contractor against Subcontractor, except claims arising from unsettled liens, from defective Subcontract Work appearing after final inspection, from failure to comply with the Subcontract Documents or the terms of any special guarantees specified therein, or from Subcontractor's continuing obligations under the Prime Contract; and

2. A waiver of all claims by Subcontractor against Contractor other than those previously made in accordance with the requirements herein that remain unsettled.

ARTICLE 7—SUB-SUBCONTRACTORS

7.01 *Subcontractor's Responsibility*

A. Subcontractor shall be fully responsible to Contractor for all acts and omissions of the sub-subcontractors, suppliers, and other individuals or entities performing or furnishing any of the Subcontract Work, just as Subcontractor is responsible for Subcontractor's own acts and omissions.

7.02 *No Third-Party Relationships*

A. Nothing in the Subcontract Documents creates for the benefit of any such sub-subcontractor, supplier, or other individual or entity any contractual relationship between Contractor, Owner, or Owner's engineers or consultants and any such sub-subcontractor, supplier, or other individual or entity.

B. Nothing in the Subcontract Documents creates any obligation on the part of Contractor, Owner, or Engineer to pay or to see to the payment of any money due any such sub-subcontractor, supplier, or other individual or entity, except as may otherwise be required by laws and regulations.

ARTICLE 8—PERFORMANCE OF THE SUBCONTRACT WORK

8.01 *Subcontractor's Obligations*

A. Subcontractor shall provide all material, equipment, services, and labor necessary for the completion of the Subcontract Work.

B. All materials and equipment must be as specified in the Subcontract Documents and be of good quality and new, except as otherwise provided in the Subcontract Documents. Subcontractor shall provide Contractor with such information and test results required under the Prime Contract to verify the quality of the materials and equipment furnished under the Subcontract Documents.

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8.02 *Verification of Existing Conditions*

A. The dimensions, locations, and limits of the Subcontract Work are shown or indicated in the Subcontract Documents.

B. The Contractor has used reasonable efforts to verify the accuracy of dimensions, locations, and limits in the Subcontract Documents, but takes no responsibility for the verification of information concerning actual conditions affecting the Subcontract Work. Subcontractor has an independent obligation to verify actual conditions, including but not limited to dimensions, locations, and limits, prior to ordering equipment and materials and performing the Subcontract Work, and shall be responsible for all costs and expenses resulting from the failure to verify such information.

8.03 *Supervision*

A. At all times during the progress of the Subcontract Work, Subcontractor shall assign an authorized representative to provide competent, on-site supervision. Such representative must not be replaced without written notice to Contractor except under extraordinary circumstances.

B. Subcontractor shall be solely responsible for scheduling and coordinating the work of sub-subcontractors, suppliers, and other individuals or entities performing or furnishing any of the Subcontract Work under a direct or indirect contract with Subcontractor.

C. Subcontractor shall supervise, inspect, and direct the Subcontract Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Subcontract Work in accordance with the Subcontract Documents.

8.04 *Coordination with Other Subcontractors; Other Work at the Site*

A. Subcontractor shall cooperate with other subcontractors and coordinate its Subcontract Work and schedule with other subcontractors on the Project. Subcontractor shall attend coordination meetings and endeavor to resolve all conflicts with other subcontractors without the intervention of Contractor. If a conflict cannot be resolved without the intervention of Contractor, the decision of Contractor regarding resolution of the conflict will be final.

B. Subcontractor shall not damage, delay, or interfere with the work of other subcontractors or of Contractor, Owner, or others working at the site, shall be responsible for the cost of damage, delay, or interference caused by the operations of Subcontractor to the work of others.

8.05 *Prosecution of the Subcontract Work*

A. *Clean-up:* On not less than a daily basis, Subcontractor shall be responsible for cleaning up and removing all debris and waste resulting from the Subcontract Work, to avoid interference with the work and progress of others at the site. If Subcontractor fails to clean up and remove waste and debris in accordance with this provision, Contractor may provide for clean-up and removal of waste and debris at Subcontractor's expense.

B. *Hoisting and Lifting:* Subcontractor shall provide all hoisting and lifting required for the Subcontract Work, unless Contractor has otherwise expressly agreed to provide hoisting, lifting, or both.

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C. *Temporary Utility Services and Temporary Facilities:* Subcontractor shall at its expense provide temporary utility services and temporary facilities needed for the performance of the Subcontract Work, except those temporary utility services and temporary facilities that Contractor has expressly agreed to provide at its expense.

D. *Safety and Protection*

1. Subcontractor shall perform the Subcontract Work in a safe manner, taking full responsibility for the prevention of harm or injury to its workforce, and taking all reasonable steps necessary to protect from harm, injury, or damage all persons, property, structures, materials, and equipment at or adjacent to the Subcontractor's work areas.

2. Subcontractor shall comply with the safety programs of the Owner and Contractor, when Subcontractor has been made aware of such requirements in writing.

3. Subcontractor shall coordinate the safety of its employees, Subcontractor's lower-tier subcontractors, and Subcontractor's suppliers with Contractor's safety representative, and shall comply with all applicable OSHA and other laws and regulations related to safety and protection. Subcontractor shall ensure that its employees and the on-site employees of Subcontractor's lower-tier subcontractors and suppliers are properly trained and understand (a) Owner's, Contractor's, and Subcontractor's safety requirements, and (b) applicable safety laws and regulations. Subcontractor is responsible for furnishing to Contractor and others as applicable all required material safety data sheets.

4. Subcontractor shall report promptly to Contractor all injuries, accidents, and damage that occurs during the performance of the Subcontract Work, and all failures or near-miss events that could have resulted in serious injury, even if no serious injury actually occurred.

E. *Labor:* Subcontractor shall comply with applicable labor and jurisdictional requirements to prevent strikes and other work stoppages and slowdowns that would interfere with the Subcontract Work and the work of others. Subcontractor shall be responsible for delays resulting from Subcontractor's violation of this provision.

F. *Communications with Owner and Engineer:* Subcontractor shall communicate with Owner, Owner's engineers, and Owner's other representatives solely through Contractor, with the following limited exceptions: (1) in the case of an emergency, Subcontractor may communicate directly with any entity or individual in the interests of safety and protection of property, (2) Subcontractor may directly request Owner to provide information about amounts paid to Contractor on account of Subcontract Work performed, and (3) Subcontractor may directly request Owner to provide Subcontractor with a copy of any payment bond furnished by Contractor.

8.06 *Correction and Warranties*

A. Subcontractor warrants and guarantees to Contractor that all Subcontract Work will be in accordance with the Subcontract Documents and will not be defective. Subcontractor's warranty and guarantee hereunder excludes defects or damage caused by abuse, modification, or improper maintenance or operation by persons other than Subcontractor and its sub-subcontractors, suppliers, or any other individual or entity for whom Subcontractor is responsible; or normal wear and tear under normal usage.

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B. Subcontractor's obligation to perform and complete the Subcontract Work in accordance with the Subcontract Documents will be absolute and Subcontractor shall be fully responsible for the Subcontract Work under the Subcontract to the same extent that Contractor is responsible for the Subcontract Work to the Owner under the Prime Contract.

C. Subcontractor shall correct the Subcontract Work to the same extent that Contractor is required to correct the Prime Contract Work (including the Subcontract Work) under the Prime Contract. Subcontractor shall correct Subcontract Work whether or not installed or completed. If the Subcontract Work has been rejected, Subcontractor shall remove such rejected Subcontract Work from the Project at the direction of Contractor, and replace it with Subcontract Work that is not defective.

D. For a period of one year after substantial completion of the Prime Contract Work, and for any additional period beyond one year as required under the Prime Contract for correction by the Contractor of the Prime Contract Work, and promptly after receipt of written notice, Subcontractor shall correct all defective Subcontract Work as directed by Contractor. Subcontractor shall indemnify Contractor, Owner, Owner's engineers and consultants, for all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any such correction or removal (including but not limited to all costs of repair or replacement of work of others).

E. All such correction obligations are in addition to the warranty, guarantee, and contractual duties established above and elsewhere in the Subcontract Documents.

F. The obligations under this Paragraph 8.06 will survive completion of the Subcontract Work and, when the Prime Contract is complete and ready for final payment by Owner, Contractor may assign its rights under this Paragraph 8.06 to Owner upon agreement between Owner and Contractor and notice to Subcontractor.

ARTICLE 9—CHANGES TO THE SUBCONTRACT

9.01 *Changes*

A. Without invalidating the Subcontract, Contractor may, at any time or from time to time, order changes to the Subcontract Work including additions, deletions, or revisions in the Subcontract Work. Subcontractor shall promptly proceed with the Subcontract Work as changed. All changed Subcontract Work will be performed under the applicable conditions of the Subcontract Documents. Subcontractor shall not perform any changes to the Subcontract Work that would increase the Subcontract Price or Subcontract Times without express written authority from Contractor.

B. Subcontractor shall deliver notice of each request for a change in compensation or time within 7 days of the associated directive to perform changed Subcontract Work, and not later than 2 days before Prime Contract requirements relative to submitting claims and change proposals.

C. Changes in the Subcontract Price for changed Subcontract Work will be made on the basis of either a mutually acceptable lump sum price, or under unit prices consistent with the unit prices set forth in the Subcontract as of the Subcontract Date. To the extent the changed Subcontract Work has no predetermined costs or unit prices under the original Subcontract, and the parties do not agree to a lump sum for the changed Subcontract Work, the amount

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of the request for changed compensation will be based upon Subcontractor's cost of labor (consistent with any applicable rates negotiated under the original Subcontract), plus the direct costs of sub-subcontracts, materials and equipment to be consumed or incorporated in the changed Subcontract Work, plus overhead and profit consistent with the price negotiated for the original Subcontract Work and subject to approval by Contractor.

D. To the extent that a change to the Subcontract Work resulted from a revision of the Prime Contract, the compensation to Subcontractor for such changed Subcontract Work will be limited to the amount collected by Contractor from Owner on behalf of Subcontractor for such change in the Subcontract Work. In the event that the revision results in a deduction of the Subcontract Price, the deduction will be based upon the share of the deduction assessed against Contractor under the Prime Contract that is attributable to the change in Subcontract Work.

ARTICLE 10—BONDS, INSURANCE, AND INDEMNIFICATION

10.01 *Performance Bond, Payment Bond, and Other Bonds*

A. If expressly listed as Subcontract Documents in Article 13, or expressly required of Subcontractor elsewhere in the Subcontract Documents, Subcontractor shall at its expense furnish a performance bond and a payment bond, each in an amount equal to or greater than the Subcontract Price, as security for the faithful performance and payment of all of Subcontractor's obligations under the Subcontract Documents. If the Subcontract Documents as of the Subcontract Date do not require performance and payment bonds, but Contractor subsequently instructs Subcontractor to furnish such bonds, Subcontractor shall do so at Contractor's expense.

B. The performance and payment bonds must remain in effect until not less than the longer of: (1) one year after the date when final payment becomes due from Contractor; or (2) completion of the correction period specified in this Subcontract, except as provided otherwise by applicable laws or regulations. Subcontractor shall also furnish such other bonds as are required by the Subcontract Documents. The performance bond will be issued on EJCDC® C-610 Performance Bond (2018) or by other form deemed acceptable by Contractor. The Payment Bond will be issued on the EJCDC® C-615 Payment Bond (2018) or by other form deemed acceptable by Contractor. Terms of these bonds apply except as expressly provided otherwise by laws or regulations.

C. If the Prime Contract requires that Contractor furnish a Warranty Bond, then Subcontractor shall furnish a Warranty Bond with respect to the Subcontract Work, under the same requirements. The bond will be issued using EJCDC® C-612, Warranty Bond (2018) or by other form deemed acceptable by Contractor.

D. All bonds must be executed by such sureties as are named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority must show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

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E. Subcontractor shall obtain the required bonds from surety companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds in the required amounts.

F. If the surety on a bond furnished by Subcontractor is declared bankrupt or becomes insolvent, or its right to do business is terminated in any state or jurisdiction where any part of the Project is located, or the surety ceases to meet the requirements above, then Subcontractor shall promptly notify Contractor and shall, within 20 days after the event giving rise to such notification, furnish another bond and surety, both of which must comply with the bond and surety requirements above.

G. If the Subcontract requires Subcontractor to provide its own performance bond and payment bond, as described in Paragraphs 10.01.A. through D., the Contractor may, at its sole discretion, provide such bonds for the Subcontractor, either as individual instruments or as a part of Contractor's bonding. In such case Subcontractor shall be responsible to Contractor for a proportionate share of Contractor's bond costs, computed as the percentage of the total Subcontract Price relative to the total bonded Contract Price, and the Subcontract Price will be adjusted accordingly.

H. As an alternative to requiring Subcontractor to provide or contribute to the cost of performance bonds or payment bonds as described in this Paragraph 10.01, the Contractor may, at its sole discretion, waive such requirements for this Subcontract, and the Subcontract Price will be adjusted accordingly.

I. If Subcontractor has failed to obtain a required bond, Contractor may exclude the Subcontractor from the site and exercise Contractor's termination rights under Article 11.

J. Upon request, Contractor shall provide a copy of the payment bond to any sub-subcontractor, supplier, or other person or entity claiming to have furnished labor or materials used in the performance of the Subcontract Work.

10.02 *Insurance—General Provisions*

A. Subcontractor shall obtain and maintain insurance as required in this Article and in any Subcontract exhibit or supplementary Subcontract Document regarding insurance.

B. All insurance required by the Subcontract to be purchased and maintained by Subcontractor must be obtained from insurance companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue insurance policies for the required limits and coverages. Unless a different standard is indicated elsewhere in the Subcontract Documents, all companies that provide insurance policies required under this Subcontract must have an A.M. Best rating of A-VII or better.

C. Subcontractor shall deliver to Contractor, with copies to each named insured and additional insured (as identified here or elsewhere in the Subcontract Documents), certificates of insurance establishing that Subcontractor has obtained and is maintaining the policies, coverages, and endorsements required by the Subcontract. Upon request by Contractor or any other insured, Subcontractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Subcontractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

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D. Failure of Contractor to demand such certificates or other evidence of the Subcontractor's full compliance with these insurance requirements, or failure of Contractor to identify a deficiency in compliance from the evidence provided, will not be construed as a waiver of the Subcontractor's obligation to obtain and maintain such insurance.

E. If Subcontractor does not purchase or maintain all of the insurance required of it by this Subcontract, the Subcontractor shall notify Contractor in writing of such failure to purchase prior to the start of the Subcontract Work, or of such failure to maintain prior to any change in the required coverage.

F. If Subcontractor has failed to obtain and maintain required insurance, Contractor may exclude the Subcontractor from the site and exercise Contractor's termination rights under Article 11.

G. Without prejudice to any other right or remedy, if Subcontractor has failed to obtain required insurance, Contractor may elect to obtain equivalent insurance to protect Contractor's interests at the expense of Subcontractor, and the Subcontract Price will be adjusted accordingly.

H. Contractor does not represent that insurance coverage and limits established in this Subcontract necessarily will be adequate to protect Subcontractor or Subcontractor's interests.

I. The insurance and insurance limits required herein will not be deemed as a limitation on Subcontractor's liability under the indemnities granted to Contractor and other individuals and entities in the Subcontract Documents.

10.03 *Subcontractor's Insurance*

A. *Workers' Compensation:* Subcontractor shall purchase and maintain workers' compensation and employer's liability insurance for:

1. claims under workers' compensation, disability benefits, and other similar employee benefit acts.

2. United States Longshoreman and Harbor Workers' Compensation Act (if applicable) and Jones Act coverage (if applicable).

3. claims for damages because of bodily injury, occupational sickness or disease, or death of Subcontractor's employees (by stop-gap endorsement in monopolist worker's compensation states).

4. Foreign voluntary worker compensation (if applicable).

Workers' Compensation and Related Policies	Policy limits of not less than:
Workers' Compensation	
State	Statutory
Applicable Federal (e.g., Longshoreman's)	Statutory
Foreign voluntary workers' compensation (employer's responsibility coverage), if applicable	Statutory
Jones Act (if applicable)	
Bodily injury by accident—each accident	Statutory
Bodily injury by disease—aggregate	$500,000

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Employer's Liability	
Each accident	Statutory
Each employee	$ 100,000
Policy limit	Statutory

B. *Commercial General Liability—Claims Covered:* Subcontractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Subcontractor, on an occurrence basis, against:

1. Claims for damages because of bodily injury, sickness or disease, or death of any person other than Subcontractor's employees;
2. Claims for damages insured by reasonably available personal injury liability coverage; and
3. Damages because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.

C. *Commercial General Liability—Form and Content:* Subcontractor's commercial liability policy must be written on a 1996 (or later) ISO commercial general liability form (occurrence form) and include the following coverages and endorsements:

1. Products and completed operations coverage:
   a. Such insurance must remain in effect for three years after final payment.
   b. Subcontractor shall furnish Contractor and each other additional insured (as identified in this Article or elsewhere in the Subcontract Documents) evidence of continuation of such insurance at final payment and three years thereafter.
2. Blanket contractual liability coverage, including but not limited to coverage of Subcontractor's contractual indemnity obligations under the Subcontract Documents.
3. Severability of interest.
4. Underground, explosion, and collapse coverage.
5. Personal injury coverage.
6. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together); or their equivalent if Subcontractor demonstrates that the specified endorsements are not commercially available.
7. For design professional additional insureds, ISO Endorsement CG 20 32 07 04, "Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured" or its equivalent.
8. If governing law invalidates or restricts the use of a specified additional insurance endorsement, then Subcontractor will furnish an endorsement that is compliant with governing law while providing reasonable protection of the interests of the additional insureds.

D. *Commercial General Liability—Excluded Content:* The commercial general liability insurance policy, including its coverages, endorsements, and incorporated provisions, must not include any of the following:

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1. Any modification of the standard definition of "insured contract" (except to delete the railroad protective liability exclusion if Subcontractor is required to indemnify a railroad or others with respect to Work within 50 feet of railroad property).
2. Any exclusion for water intrusion or water damage.
3. Any provisions resulting in the erosion of insurance limits by defense costs other than those already incorporated in ISO form CG 00 01.
4. Any exclusion of coverage relating to earth subsidence or movement.
5. Any exclusion for the insured's vicarious liability, strict liability, or statutory liability (other than worker's compensation).
6. Any limitation or exclusion based on the nature of Subcontractor's work.
7. Any professional liability exclusion broader in effect than the most recent edition of ISO form CG 22 79.

Commercial General Liability	Policy limits of not less than:
General Aggregate	$500,000

E. *Automobile Liability:* Subcontractor shall purchase and maintain automobile liability insurance against claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle. The automobile liability policy must be written on an occurrence basis.

Automobile Liability	Policy limits of not less than:
Bodily Injury	
Combined Single Limit (Bodily Injury and Property Damage)	$500,000

F. *Umbrella or Excess Liability:* Subcontractor shall purchase and maintain umbrella or excess liability insurance written over the underlying employer's liability, commercial general liability, and automobile liability insurance described in the paragraphs above. The coverage afforded must be at least as broad as that of each and every one of the underlying policies.

Excess or Umbrella Liability	Policy limits of not less than:
Each Occurrence	$1,000,000

G. This section intentionally left blank.

H. *Additional Insureds:* The Subcontractor's commercial general liability, automobile liability, employer's liability, umbrella or excess, and pollution liability policies must include and list as additional insureds Contractor, Owner, and Owner's engineers, architects, and consultants, and any individuals or entities identified as additional insureds elsewhere in the Subcontract Documents; include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds; and the insurance afforded to these additional insureds must provide primary

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coverage for all claims covered thereby (including as applicable those arising from both ongoing and completed operations) on a non-contributory basis. Subcontractor shall obtain all necessary endorsements to support these requirements.

I. *Subcontractor's Professional Liability Insurance:* If Subcontractor will provide or furnish professional services under this Subcontract, through a delegation of professional design services or otherwise, then Subcontractor shall be responsible for purchasing and maintaining applicable professional liability insurance. This insurance must cover negligent acts, errors, or omissions in the performance of professional design or related services by the insured or others for whom the insured is legally liable. The insurance must be maintained throughout the duration of the Subcontract and for a minimum of two years after Substantial Completion of the Project. The retroactive date on the policy must pre-date the commencement of furnishing services on the Project.

J. *General provisions:* The policies of insurance required by this Paragraph 10.03 must:

1. include at least the specific coverages provided in this Subcontract.

2. be written for not less than the limits of liability expressly provided in this Subcontract, including any Subcontract exhibit or supplementary Subcontract Document specifying insurance policy limits, or if no such express insurance limits are set forth in the Subcontract, then for not less than the limits required of Contractor by Owner in the Prime Contract, for the corresponding types of insurance. If laws or regulations require a higher limit, then Subcontractor shall meet such legal requirement.

3. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 10 days prior written notice has been given to Subcontractor. Within three days of receipt of any such written notice, Subcontractor shall provide a copy of the notice to Contractor and each other insured under the policy.

4. remain in effect at least until final payment (and longer if expressly required herein) and at all times thereafter when Subcontractor may be correcting, removing, or replacing defective Subcontract Work as a warranty or correction obligation, or otherwise, or returning to the site to conduct other tasks arising from the Subcontract Documents.

5. be appropriate for the Subcontract Work being performed and provide protection from claims that may arise out of or result from Subcontractor's performance of the Subcontract Work and Subcontractor's other obligations under the Subcontract Documents, whether it is to be performed by Subcontractor, any lower-tier subcontractor or supplier, or by anyone directly or indirectly employed by any of them to perform any of the Subcontract Work, or by anyone for whose acts any of them may be liable.

K. Subcontractor waives all rights against Owner, Contractor, and all individuals or entities identified in the Prime Contract's Supplementary Conditions to be listed as insureds or additional insureds under the builder's risk, installation floater, or other forms of property insurance, and against the Owner's engineers and consultants, and their consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such builder's risk, installation floater, or other form of property insurance applicable to the work under the Prime Contract; and Contractor waives all rights against Subcontractor for all such losses and damages caused

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by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such builder's risk, installation floater, or other form of property insurance applicable to the work under the Prime Contract.

L. If Contractor is responsible under the Prime Contract and any builder's risk or other property insurance policy for the payment of a deductible, or an amount within a deductible, and the need to pay such deductible or amount within a deductible is attributable in whole or part to the actions or inactions of Subcontractor, its sub-subcontractors, employees, agents, or others for which Subcontractor is responsible, then Subcontractor shall pay its attributable share of such deductible.

M. Upon request the Contractor shall provide to Subcontractor a copy of any builder's risk, installation floater, or other property insurance policy applicable to the work under the Prime Contract. Contractor may block out (redact) any confidential premium or pricing information contained in any such policy. Subcontractor may elect to obtain other insurance at its expense, if it concludes that its interests are not insured under such policy.

N. *Other Required Insurance*

1. Provide certificate of insurance evidencing the required coverages to :

a. RA Development, 236 E Ellison St., Burleson, TX 76028; attn: Justin Bond, COO

b. City of Burleson, 141 W. Renfro St, Burleson, TX 76028; attn: Eric Oscarson, Director of Public Works

10.04 *Indemnification*

A. To the fullest extent permitted by laws and regulations, Subcontractor shall indemnify and hold harmless Contractor, Owner, and Owner's engineers and consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Subcontract Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Subcontract Work itself), including the loss of use resulting therefrom, but only to the extent caused by any negligent act or omission of Subcontractor, any lower tier subcontractor, supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Subcontract Work or anyone for whose acts any of them may be liable.

B. In addition to the indemnification obligations in the preceding paragraph, Subcontractor shall indemnify Contractor for all economic costs and expenses, including attorney's fees, for any claim against Contractor as a result of and to the extent caused by Subcontractor's breach of any obligation under the Subcontract.

C. In any and all claims against Contractor, Owner, or Owner's engineers or consultants, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors by any employee (or the survivor or personal representative of such employee) of Subcontractor, any lower tier subcontractor, any supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Subcontract Work, or anyone for whose acts any of them may be liable, the indemnification obligation under

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Paragraph 10.04.A. must not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Subcontractor, lower-tier subcontractor, supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

D. With respect to the Subcontract Work, the breach of obligations under the Subcontract, and any negligent act or omission of Subcontractor, any lower tier subcontractor, supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Subcontract Work, or anyone for whose acts any of them may be liable, and to the fullest extent permitted by law, Subcontractor assumes the same or corresponding responsibilities as Contractor for indemnity obligations set forth in the Prime Contract.

ARTICLE 11—SUSPENSION AND TERMINATION

11.01 *Contractor May Suspend Work*

A. In the event that Owner suspends the work of Contractor under the Prime Contract, Contractor may suspend the performance of the Subcontract or any portion thereof for a period of not more than 90 consecutive days, by giving notice in writing to Subcontractor of such suspension. Subcontractor shall resume the Subcontract Work when instructed by Contractor to do so. Subcontractor shall be granted an adjustment in the Subcontract Price or an extension of the Subcontract Times, or both, directly attributable to any such suspension only to the extent that Contractor receives an adjustment of the Prime Contract price or the Prime Contract time for the Subcontractor's proportionate share of work under the Prime Contract.

B. Contractor may suspend the Subcontract Work for a period of not more than 90 days, or to the extent permitted by the progress schedule or any express provision of the Subcontract Documents, for Contractor's own purposes.

C. Contractor may suspend the work of Subcontractor with all costs and liability for any delay in the Subcontract Work and others to be assessed against the Subcontractor for the following Subcontract violations until the Subcontractor demonstrates it has cured the violations as follows:

1. Subcontractor fails to comply with the Owner's or Contractor's safety program;
2. Subcontractor or its employees are in violation of OSHA or state or local safety laws or regulations;
3. Subcontractor has installed defective Subcontract Work that is not in compliance with the Subcontract Documents and has failed to cure the defective Subcontract Work;
4. Subcontractor has violated any laws or regulations applicable to the performance of the Subcontract Work; and
5. Subcontractor has failed to pay a supplier or lower-tier subcontractor pursuant to Subcontractor's legal or contractual obligations.

D. If Subcontractor fails to comply with the progress schedule, causing delay to the Subcontract Work or the Prime Contract work, after three days' notice by Contractor and failure of Subcontractor to demonstrate that it has implemented procedures to comply with the schedule through measures such as providing supplemental labor, materials, and tools, then

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Contractor may implement its own procedures to meet the schedule, by providing supplemental labor, materials, tools, or taking other measures, through its own or other forces, and Contractor may assess the cost of such supplemental procedures against the Subcontract.

11.02 *Contractor May Terminate for Cause*

A. The occurrence of any one or more of the following events will justify termination for cause:

1. Subcontractor's persistent failure to perform the Subcontract Work in accordance with the Subcontract Documents (including, but not limited to, failure to supply sufficient skilled workers, suitable materials, or equipment, or failure to adhere to the Subcontract progress schedule);

2. Subcontractor's disregard of laws or regulations of any public body having jurisdiction;

3. Subcontractor's repeated disregard of the authority of Contractor; or

4. Subcontractor's failure to perform or otherwise to comply with a material term of the Subcontract.

B. If one or more of the events identified in the preceding paragraph occur, Contractor may, after giving Subcontractor 7 days written notice of its intent to terminate the services of Subcontractor, or in the event the Subcontractor provided a performance bond covering the Subcontract the Contractor may provide notice to the Subcontractor and surety in accordance with the requirements of the applicable performance bond of its intent to terminate the services of Subcontractor to preserve Contractor's rights under the performance bond. Upon termination of the Subcontract, Contractor may:

1. exclude Subcontractor from the site, and take possession of the Subcontract Work;

2. incorporate in the Subcontract Work all materials and equipment stored at the site, or for which Contractor has paid Subcontractor but which are stored elsewhere; and

3. complete the Subcontract Work as Contractor may deem expedient.

C. If Contractor proceeds as provided in Paragraph 11.02.B., Subcontractor shall not be entitled to receive any further payment until the Subcontract Work is completed. If the unpaid balance of the Subcontract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor arising out of or relating to completing the Subcontract Work, such excess will be paid to Subcontractor. If such claims, costs, losses, and damages exceed such unpaid balance, Subcontractor shall pay the difference to Contractor. When exercising any rights or remedies under this paragraph, Contractor shall not be required to obtain the lowest price for the Subcontract Work performed.

D. Notwithstanding Paragraphs 11.02.A. and 11.02.B., Subcontractor's services will not be terminated if Subcontractor begins within four days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 14 days of receipt of said notice. If the Subcontractor fails to cure within 14 days of receipt of said notice, the Subcontract will be deemed terminated in accordance with provisions 11.02.A through 11.02.C upon two days' notice by the Contractor following the 14-day period.

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E. Where Subcontractor's services have been so terminated by Contractor, the termination will not affect any rights or remedies of Contractor against Subcontractor then existing or which may thereafter accrue. Any retention or payment of money due Subcontractor by Contractor will not release Subcontractor from liability.

F. If and to the extent that Subcontractor has provided a performance bond, the termination procedures of that bond will supersede the procedures in this Paragraph 11.02.

11.03 *Termination of Contractor or Rejection of Subcontract by Owner*

A. The Contractor may terminate the Subcontract at any time, if the Prime Contract is terminated by the Owner, or if Owner rejects the Subcontract in accordance with the terms of the Prime Contract, the Contractor may terminate the Subcontract without penalty.

B. In the event of a termination pursuant to Paragraph 11.03, the costs and expenses to be paid to Subcontractor resulting from a termination under this provision must be limited to the costs and expenses recovered by Contractor from Owner on Subcontractor's behalf.

11.04 *Contractor May Terminate for Convenience*

A. Upon 7 days written notice to Subcontractor, Contractor may, without cause and without prejudice to any other right or remedy of Contractor, terminate the Subcontract. In such case, Subcontractor shall be paid for (without duplication of any items):

1. Completed and acceptable Subcontract Work executed in accordance with the Subcontract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Subcontract Work;

2. Expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Subcontract in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and

3. Reasonable expenses directly attributable to termination.

B. Subcontractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

11.05 *Subcontractor May Stop Work or Terminate*

A. If, through no act or fault of Subcontractor, Contractor after receipt of payment from Owner fails to make payment due Subcontractor, for more than 30 days after payment is due, then Subcontractor may, upon 7 days written notice to Contractor, and provided Contractor does not remedy such failure within 7 days thereafter, terminate the Subcontract and recover payment from Contractor subject to the terms of this Subcontract.

B. As an alternative to terminating the Subcontract and without prejudice to any other right or remedy, if a payment owed to Subcontractor is more than 30 days past due, then Subcontractor may, 7 days after written notice to Contractor, stop the Subcontract Work until payment is made of all such amounts due Subcontractor, including interest thereon at an annual rate of five percent per annum, or if applicable at the rate prescribed by law, without penalty.

C. If the Contractor suspends the Subcontractor's work for more than 120 days, the Subcontractor may upon 7 days' written notice terminate the Subcontract and recover the

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amounts due the Subcontractor for Subcontract Work completed as of the date of termination, including retainage withheld from the Subcontractor to date and interest thereon at an annual rate of five percent per annum, or if applicable at the rate prescribed by law, without penalty.

ARTICLE 12—CLAIMS AND DISPUTE RESOLUTION

12.01 *Claims*

A. As a condition precedent to any consideration, pursuit, or recovery by Subcontractor of any change proposal, request, demand, or claim (collectively referred to as "Claim") seeking an increase in Subcontract Price, Subcontract Time, or both, Subcontractor shall provide notice of any such Claim to Contractor no less than 30 days after the event giving rise to the Claim, and for Claims related in any way to the Owner or Prime Contract, within five days.

B. Subcontractor's recovery of additional cost, time, or both cost and time for any Claim attributable to the Owner will be limited to the proportionate recovery by Contractor against Owner for such Claim. Subcontractor will cooperate and assist Contractor in pursuing any Claim by Contractor against Owner on behalf of Subcontractor, including the timely preparation and delivery of supporting documentation.

C. If the pursuit of any Claim by Contractor against Owner on Subcontractor's behalf requires the expenditure by Contractor of legal or consulting fees, or results in litigation, arbitration, or any dispute resolution procedures, Subcontractor agrees to pay for a proportionate share of attorneys' fees, consultant fees, and litigation, arbitration, and other resolution costs incurred by Contractor in pursuing the claim on behalf of Subcontractor, based upon the amount claimed by Subcontractor as compared to the total value of the claim pursued by the Contractor.

D. Except as provided by applicable lien, bond, or prompt payment laws, Subcontractor shall not make any direct claims against Owner for compensation or additional compensation for performance of the Subcontract Work.

12.02 *Dispute Resolution*

A. Either Contractor or Subcontractor may request mediation of any dispute between Contractor and Subcontractor in connection with this Subcontract that has not been settled to their mutual satisfaction within the applicable notice or cure periods provided in this Subcontract, or that Contractor has not pursued against Owner as described above. The mediation will be governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Subcontract Date. The request for mediation must be submitted in writing to the American Arbitration Association and the other party to this Subcontract.

B. Contractor and Subcontractor shall participate in the mediation process in good faith. The process must be concluded within 60 days of filing of the request. The date of termination of the mediation must be determined by application of the mediation rules referenced above.

C. If the dispute is not resolved by mediation, each party to this Subcontract shall be barred from further action to assert its claim after 30 days after termination of the mediation unless, within that time period, Contractor or Subcontractor:

1. elects in writing to invoke any dispute resolution procedure expressly provided for in a Subcontract exhibit or elsewhere in the Subcontract Documents; or

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2. agrees with the other party to submit the dispute to another dispute resolution process; or

3. gives written notice to the other party of the intent to submit the claim to a court of competent jurisdiction.

D. If Contractor is engaged in an arbitration with Owner that relates, in whole or in part, to a dispute between Contractor and Subcontractor, then Contractor shall have the sole and exclusive discretion to join Subcontractor as a party to the Contractor-Owner arbitration. Subcontractor consents to the jurisdiction of any such arbitration proceeding to which it is joined pursuant to this provision.

ARTICLE 13—SUBCONTRACT DOCUMENTS

13.01 *Subcontract Contents*

A. The Subcontract Documents consist of the following:

1. This Subcontract.

2. Subcontract Scope of Work and Unit Price.

3. Exclusions based on Subcontractor Proposal

4. The following which may be delivered or issued on or after the Subcontract Date and are not attached hereto:

a. Lakewood Drive Construction Plans, GMCivil Engineering

b. Prime Contract.

c. Payment & Performance Bond.

d. Notice to Proceed.

e. Work Change Directives.

f. Change Orders.

g. Field Orders.

h. Warranty Bond, if any.

B. The Subcontract Documents may only be amended, modified, or supplemented by written agreement of Contractor and Subcontractor.

ARTICLE 14—MISCELLANEOUS

14.01 *Terms*

Terms used in this Subcontract will have the meanings stated here, or in the Prime Contract's General Conditions and Supplementary Conditions.

14.02 *Assignment of Subcontract*

No assignment by Subcontractor of any rights under or interests in the Subcontract will be binding on Contractor without Contractor's written consent; and, specifically but without limitation, payments that may become due and money that is due may not be assigned by Subcontractor without such consent (except to the extent that the effect of this restriction may be limited by

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law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Subcontract Documents.

14.03 *Successors and Assigns*

Contractor and Subcontractor each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Subcontract Documents.

14.04 *Severability*

Any provision or part of the Subcontract Documents held to be void or unenforceable under any law or regulation will be deemed stricken, and all remaining provisions must continue to be valid and binding upon Contractor and Subcontractor, which agree that the Subcontract Documents will be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

ARTICLE 15—SUBCONTRACTOR'S REPRESENTATIONS AND CERTIFICATIONS

15.01 *Subcontractor's Representations*

A. In order to induce Contractor to enter into this Subcontract, Subcontractor makes the following representations:

1. Subcontractor has examined and carefully studied the Subcontract Documents, and any data and reference items identified in the Subcontract Documents, including but not limited to initial schedules identified by Contractor.

2. Subcontractor has visited the site, conducted a thorough visual examination of the site and adjacent areas, and become familiar with the general, local, and site conditions that may affect cost, progress, and performance of the Subcontract Work.

3. Subcontractor is familiar with and is satisfied as to all laws and regulations that may affect cost, progress, and performance of the Subcontract Work.

4. Subcontractor has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the site and drawings of physical conditions relating to existing surface or subsurface structures at the site that have been identified by the Prime Contract or Subcontract, especially with respect to technical data in such reports and drawings.

5. Subcontractor has carefully studied reports and drawings of hazardous environmental conditions, if any, at or adjacent to the site that have been identified in the Prime Contract or Subcontract, especially with respect to technical data in such reports and drawings.

6. Subcontractor has considered the information known to Subcontractor itself; information commonly known to contractors and subcontractors doing business in the locality of the site; information and observations obtained from visits to the site; the Subcontract Documents; and the site-related reports and drawings, if any, identified in the Prime Contract or Subcontract, with respect to the effect of such information, observations, and documents on (a) the cost, progress, and performance of the Subcontract Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Subcontractor; and (c) Subcontractor's safety precautions and programs.

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7. Based on the information and observations referred to in the preceding paragraphs, Subcontractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Subcontract Work at the Subcontract Price, within the Subcontract Times, and in accordance with the other terms and conditions of the Subcontract.

8. Subcontractor is aware of the general nature of work to be performed by Owner, Contractor, other subcontractors, and others at the site that relates to the Subcontract Work as indicated in the Subcontract Documents.

9. Subcontractor has given Contractor written notice of all conflicts, errors, ambiguities, or discrepancies that Subcontractor has discovered in the Subcontract Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Contractor is acceptable to Subcontractor.

10. The Subcontract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Subcontract Work.

11. Subcontractor's entry into this Subcontract constitutes an incontrovertible representation by Subcontractor that without exception all prices in the Subcontract are premised upon performing and furnishing the Subcontract Work required by the Subcontract Documents.

15.02 *Subcontractor's Certifications*

A. Subcontractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Subcontract. For the purposes of this paragraph:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process or in the Subcontract execution;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Subcontract to the detriment of Owner or Contractor, (b) to establish bid or Subcontract prices at artificial non-competitive levels, or (c) to deprive Owner or Contractor of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner or Contractor, a purpose of which is to establish bid prices at artificial, non-competitive levels; and

4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Subcontract.

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IN WITNESS WHEREOF, Contractor and Subcontractor have signed this Subcontract.

The Effective Date of the Subcontract is SEPTEMBER 28, 2022.

Contractor:	Subcontractor:
R.A. DEVELOPMENT, LTD.	AMS COMPANY, INC.
By: _____ *(individual's signature)*	By: _____ *(individual's signature)*
Name: ROCKY BRANSOM	Name: Chad Allen *(typed or printed)*
Title: PRESIDENT	Title: President *(typed or printed)*
Date: 9-28-22 *(date signed)*	Date: 09/27/2022 *(date signed)*
	(If Subcontractor is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)
Attest: _____ *(individual's signature)*	Attest: _____ *(individual's signature)*
Name: Justin Bond *(typed or printed)*	Name: *(typed or printed)*
Title: COO *(typed or printed)*	Title: *(typed or printed)*
Address for giving notices:	Address for giving notices:
236 E. ELLISON ST.	P.O. Box 136
BURLESON, TX 76028	Cleburne, TX 76033
Designated Representative:	Designated Representative:
Name: JUSTIN BOND *(typed or printed)*	Name: Cyle Burchfield *(typed or printed)*
Title: COO *(typed or printed)*	Title: Estimator *(typed or printed)*
Address:	Address:
236 E. ELLISON ST.	P.O. Box 136
BURLESON, TX 76028	Cleburne, TX 76033
Phone: 817-880-1220	Phone: 817-641-8804
Email: JUSTIN@RADEV.BIZ	Email: Cburchfield@amsexcavating.com
(If Contractor or Subcontractor is a corporation, attach evidence of authority to sign.	License No.: *(where applicable)*
	State:

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Lakewood Drive

SCOPE OF WORK AND UNIT PRICING

Line Item#	EXCAVATION - AMS COMPANY, INC.	Original Contract Sum	QUANTITY AND BUDGET Quantity	Unit	Unit Price	Total
	LAKEWOOD DRIVE - WEST OF CR 1016					
1	Mobilization	$ 12,000.00	1.0	EA	12,000.00	12,000.00
2	Clearing & Grubbing	$ 49,600.00	62.0	STA	800.00	49,600.00
3	Remove Ex. Fence	$ 11,400.00	5,700.0	LF	2.00	11,400.00
4	Remove Ex. Gravel Driveway	$ 1,500.00	1,500.0	SY	1.00	1,500.00
5	Strip & Stockpile Topsoil	$ 25,500.00	8,500.0	CY	3.00	25,500.00
6	Roadway Excavation	$ 72,000.00	16,000.0	CY	4.50	72,000.00
7	Roadway Borrow Fill	$ 960,000.00	60,000.0	CY	16.00	960,000.00
8	Grade to + or - .10'	$ 31,000.00	62.0	STA	500.00	31,000.00
9	Respread Onsite Topsoil	$ 59,500.00	8,500.0	CY	7.00	59,500.00
10	Construction Staking & Site Layout	$ 12,000.00	1.0	EA	12,000.00	12,000.00
	LAKEWOOD DRIVE - EAST OF CR 1016					
11	Mobilization	$ 20,000.00	1.0	EA	20,000.00	20,000.00
12	Clearing & Grubbing	$ 31,200.00	26.0	STA	1,200.00	31,200.00
13	Remove Ex. Asphalt Roadway	$ 13,200.00	6,600.0	SY	2.00	13,200.00
14	Strip & Stockpile Topsoil	$ 21,000.00	3,500.0	CY	6.00	21,000.00
15	Roadway Excavation	$ 127,500.00	17,000.0	CY	7.50	127,500.00
16	Grade to + or - .10'	$ 20,800.00	26.0	STA	800.00	20,800.00
17	Respread Onsite Topsoil	$ 42,000.00	3,500.0	CY	12.00	42,000.00
18	Construction Staking & Site Layout	$ 12,000.00	1.0	EA	12,000.00	12,000.00
	MISCELLANEOUS	$ -				
19	Barb Wire Fence or Equivalent	$ 100,692.00	5,594.0	LF	18.00	100,692.00

Lakewood Drive

SCOPE OF WORK AND UNIT PRICING

20	Gate Removals	$	12,000.00	4.0 EA	3,000.00	12,000.00
21	Driveway and Culvert Removal	$	12,000.00	4.0 EA	3,000.00	12,000.00
22	Gas Crossing Mats & Materials	$	75,000.00	30.0 EA	2,500.00	75,000.00
23	Soil Testing	$	40,000.00	1.0 EA	40,000.00	40,000.00
	Total	$	1,761,892.00	**Total Budget Price:**		**$1,761,892.00**

CONSTRUCTION SUBCONTRACT

This is a Construction Subcontract (Subcontract) between **RA DEVELOPMENT, LTD.** (Contractor) and **GILCO CONTRACTING, INC.** (Subcontractor). This Subcontract is effective as of **SEPTEMBER 28, 2022.**

Prime Contract: Contractor has entered into a contract (Prime Contract) dated **JUNE 7, 2021** with **CITY OF BURLESON, TEXAS** (Owner) known also as Ordinance CSO #1775-06-2021.

Contractor and Subcontractor further agree as follows:

ARTICLE 1—PRELIMINARY MATTERS

1.01 *Prime Contract*

A. The Prime Contract requires Contractor to perform and furnish construction labor, materials, equipment, and services ("Prime Contract Work") in connection with the Project described therein. The Prime Contract (excluding compensation and other confidential information) is incorporated in this Subcontract by reference. Portions of the Prime Contract are attached as Exhibit 1 to this Subcontract; Subcontractor may review other non-confidential portions upon request. The Project described in the Prime Contract is summarized as follows:

LAKEWOOD DRIVE FROM FM 1902 TO CR 1020, BURLESON, TEXAS

1.02 *Scope of Subcontract Work*

A. Contractor hereby retains Subcontractor to provide construction labor, materials, equipment, and services under this Subcontract described as follows:

SEE ATTACHED SCOPE OF WORK & UNIT PRICING ("Subcontract Work").

B. The Subcontract Work is a part of the Prime Contract Work. Except as otherwise stated in this Subcontract, the provisions of the Prime Contract that apply to the performance and quality of the Prime Contract Work apply to the Subcontract Work.

C. The express terms of this Paragraph 1.02 govern in establishing the Subcontract scope of work. The divisions and sections of the Prime Contract's Specifications and the identifications and organization of the Prime Contract's drawings do not control or limit Contractor in dividing the Work among subcontractors or suppliers, or delineating the work to be performed by, or obligations of any specific trade, including Subcontractor.

D. Certain exclusions have been established by the Subcontractor as a part of the bid process. Unless otherwise specified in the Subcontract Work, the exclusions are to include:

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QUALIFICATIONS AND/OR EXCLUSIONS:

1. **This proposal shall be made a part of any contract for this project.**
2. Gilco reserves the right to approve Owner's credit prior to executing an agreement. Confirmation of funding will be required.
3. Pricing and working days are based upon ONE move-in each for lime stabilization, concrete paving, and miscellaneous concrete work with continuous operations based on our schedule. This will generally require that excavation, water, sewer, storm drainage and franchise utility crossings will be complete and tested prior to our mobilization. In addition, the streets should be staked and regraded after utility completion. The pricing of any work, for which we must remobilize, complete or repair other contractors work, will be paid on a cost plus basis.
4. Unless listed as a bid item, Gilco DOES NOT include bonds, testing, staking, layout, AGC dues, permit fees, inspection fees, imported topsoil, seed hydromulching, erosion control devices, SWPPP, rock rip rap, pavement markings, street signs, electrical or irrigation conduits, sleeves, traffic control or barricading, arrow boards, message boards, truck mounted/fixed attenuator, irrigation adjustments, moisture conditioning, permanent survey monuments, prime coat on subgrade, haul-off of excess material or import of select material, poly sheeting, pedestrian handrails, sulfate treatment, exposing/relocating/clean-up for franchise utilities, handling or processing of pipe spoils, variable height curbs at inlets, adjustments of manholes/cleanouts/water valves in excess of 6" depth or from changes in size, construction entrances, any cost for heating/cooling concrete by any means due to low/high weather temps, or any item not specifically quoted.
5. Gilco's bid is based on work being done in a ROW that will be dedicated to the city and does not include sales taxes.
6. Gilco will accept subgrade at plus or minus one tenth of a foot with respect to plan grades.
7. All backfill material for our curbs will be with available, adjacent material only. No hauling or importing of backfill material is included.
8. Gilco is to be paid for all actual measured quantities of work completed.
9. **Pricing is based on Owner providing, and City approving, a suitable on-site location for Gilco to erect and operate a portable concrete batch plant.**
10. Owner to provide adequate clearing to properly construct streets full-width utilizing a slip form paver, concrete belt placer and concrete haul trucks. This will require a minimum clearance of 25' from back of curb.
11. Gilco's bid is based on Owner providing subgrade that is suitable for lime stabilization. Any rock encountered shall be undercut and replaced with suitable material by the excavation contractor. This applies to street and/or alley subgrade and parkway areas. If required, Gilco can provide this on an hourly basis.
12. It is the intent of this proposal that all monies due to Gilco, including final retainage, will be paid within 30 days of City acceptance of project. Any stoppage of work more than 30 days not directly attributable to Gilco will be cause for immediate payment of all retainage and any other amounts which are owed at that time.
13. This proposal is based on Gilco having an unrestricted supply of water throughout the entire project and at normal cost. Gilco is not responsible for delays due to City water restrictions.
14. Gilco will submit monthly pay applications for work complete though the end of the month. Payment shall be due on the 10th of the following month.
15. With respect to indemnification, Gilco Contracting, Inc. will only be liable for our own negligence.
16. Gilco's pricing for sidewalks/trails include excavation for the depth of concrete only. Excavated material from any item to remain onsite.
17. Any Traffic Control or Barricading quoted within this proposal is for Gilco's scope of work only.
18. Gilco's proposal is based on plans dated May 2022 By Goodwin & Marshall, Inc.
19. **Gilco's proposal is based on the current price of locally available concrete materials and freight rates. Due to market volatility prices are subject to change and will be based on costs at the time of purchase in order to have the best chance at material delivery to t**
20. **This project will be completed within 120 WORKING DAYS, based on the availability of local raw materials and the owner's commitment to allow Gilco to schedule its own operations.**
21. Gilco will not be responsible for the cost of damages to concrete pavement due to utility trench settlement, heaving of these trenches, or boring under concrete pavement.
22. The finish elevations of this project may not allow enough space for the use of a portable concrete batch plant. This will necessitate postponing the construction of some retaining walls and an area of approximately 200' x 400' will need to be graded to acceptable elevations by the grading contractor. If a portable concrete batch plant cannot be used, please add $25.50/SY to the unit price of concrete paving.
23. Fuel Surcharge will be assessed when the price of diesel fuel rises above $7.00 p/g. Diesel fuel price will be based on the DFW price per AAA site https://gasprices.aaa.com.
24. Gilco cannot guarantee mobilization until January 1 2023.

1.03 *Subcontract Documents*

A. The Subcontract Documents are identified in Article 14 of this Subcontract.

1.04 *Independent Contractor*

A. Subcontractor is an independent contractor, and is not an employee or partner of, or a joint-venturer with Contractor, and has no contractual relationship or privity with Owner or Owner's engineers or consultants.

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ARTICLE 2—OBLIGATIONS OF THE PRIME CONTRACT

2.01 *Incorporation of Prime Contract Obligations*

A. The Subcontractor is bound to the Contractor under the Subcontract to the same extent that the Contractor is bound to the Owner under the Prime Contract, and Subcontractor shall comply with all requirements, terms, and conditions of the Prime Contract that relate in any way to the performance and completion of the Subcontract Work.

B. The obligation of the Subcontractor to comply with the requirements, terms, and conditions of the Prime Contract does not provide any rights, benefits, or third-party beneficiary standing to the Subcontractor with respect to the Prime Contract.

2.02 *Precedence of Subcontract*

A. If a provision of this Subcontract conflicts with a provision of the Prime Contract, the terms of this Subcontract govern, unless under controlling laws the conflicted provision of the Prime Contract cannot be waived.

ARTICLE 3—SUBCONTRACT TIMES

3.01 *Subcontract Times*

A. The Subcontract Work will be completed in full on or before **DECEMBER 31, 2023.**

B. Subcontractor shall provide all required submittals on a timely basis, and shall provide sufficient labor and materials to comply with the Contractor's progress schedule and avoid delaying the progress of Contractor's work under the Prime Contract. Subcontractor shall make modifications in the performance and completion of the Subcontract Work as necessary to comply with modifications, if any, in the Contractor's progress schedule.

C. The time for completion of the Subcontract Work, as set forth in Paragraph 3.01.A, and compliance with the Contractor's progress schedule, as set forth in Paragraph 3.01.B, all as duly modified under this Subcontract, together will be referred to as "Subcontract Times."

3.02 *Time of the Essence*

A. Subcontractor's obligation to comply with the Subcontract Times is of the essence of the Subcontract.

3.03 *Damages for Late Completion*

A. Subcontractor and Contractor recognize that Contractor will suffer financial loss if the Subcontract Work is not completed within the Subcontract Times.

B. The damages resulting to the Contractor may include liquidated damages, special damages, and other damages (if any) assessed by the Owner, actual damages claimed by the Owner as a result of the delay, and the Contractor's costs for extended general conditions, field overhead, and home office overhead.

C. As a result of the losses, costs, and damages recognized in Paragraphs 3.03.A. and B., if Subcontractor fails to complete the Subcontract Work within the Subcontract Times, and without limiting any additional remedies available to Contractor, Subcontractor shall pay Contractor for losses, costs, and damages incurred by Contractor for Subcontractor's failure to comply with the Subcontract Times, including the share attributable to Subcontractor of

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delay damages and costs imposed on or levied against Contractor. Contractor has the right to set off any such amounts against payments due Subcontractor under this Subcontract.

ARTICLE 4—SUBCONTRACT PRICE

4.01 *Payment Obligation*

A. Contractor shall pay Subcontractor for completion of the Subcontract Work in accordance with the Subcontract Documents an amount equal to the sum of the amounts determined pursuant to the following paragraphs, and not to exceed: **$6,238,693.41**.

B. For all Subcontract Work other than Unit Price Work, a lump sum of: $0.00

1. Cash Allowances: All specific cash allowances are included in the above price and include the cost to Subcontractor (less any applicable trade discounts) of materials and equipment required by the cash allowances to be delivered at the site, and all applicable taxes. Subcontractor's costs for unloading and handling on the site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Subcontract Price, and no demand for additional payment on account of any of the foregoing will be valid.

C. For all Unit Price Work, an amount equal to the sum of the established unit price for each separately identified item of Unit Price Work multiplied by the actual quantity of that item:

SEE ATTACHED SCOPE OF WORK & UNIT PRICING

The extended prices for Unit Price Work set forth as of the Subcontract Date are based on estimated quantities. Estimated quantities are not guaranteed, and determinations of actual quantities will be verified by the Contractor and will be subject to any applicable procedures for measurement and verification under the Prime Contract.

ARTICLE 5—PAYMENT PROCEDURES

5.01 *Progress Payments*

A. *Applications for Payments*

1. Ten days prior to the date established in the Prime Contract for submission by the Contractor of the Contractor's application for each progress payment (but not more often than once a month), Subcontractor shall submit to Contractor for review a draft progress payment application covering the Subcontract Work completed as of the date of the progress payment application. The amount requested under each progress payment application will be calculated in accordance with Article 4, and: (a) for lump sum work by determining the percentage of the Subcontract Work completed as of the date of the progress payment application; (b) for unit price work by applying unit prices to units provided; (c) subject to subtraction to account for amounts previously paid. Subcontractor's progress payments will be subject to the retainage provisions of the Prime Contract, or to retainage of **five (5)** percent, whichever is greater.

2. Each Subcontractor progress payment application must be accompanied by supporting documentation required by the Prime Contract to be attached to the Contractor's progress payment submission. The Subcontract progress payment application must also

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be accompanied by required lien waivers; a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all liens; and for stored material and equipment, evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect Owner's interest therein. All such supporting documentation must be satisfactory to Contractor and Owner. Application for progress payment may be submitted no more than once a month by Subcontractor to Contractor.

3. Beginning with Subcontractor's second progress payment application, each Subcontractor progress payment application must include a Subcontractor's affidavit stating that all previous progress payments received on account of the Subcontract Work have been paid to persons and entities providing labor, equipment, materials and services on account of amounts received on behalf of said sub-subcontractors, suppliers, and vendors from prior progress payment applications. Each Subcontractor's affidavit must list all sub-subcontractors, suppliers, and vendors having contracts with Subcontractor to provide said labor, equipment, material, and services on the Project including the amount of each contract, the amount paid to date and the amount due or to become due to each sub-subcontractor, supplier, and vendor. Each progress payment application must also include lien waivers executed by each sub-subcontractor, supplier, and vendor listed on the Subcontractor's affidavit.

B. *Review of Applications*

1. Within five days after receipt of each draft progress payment application submitted by Subcontractor, Contractor will return the draft progress payment application with corrections (if any). Subcontractor will submit a final progress payment application, incorporating all resolved corrections, together with all supporting documentation, within three days thereafter.

2. Contractor may withhold amounts requested in one or more payment applications from the Subcontractor in whole or part if one or more of the following occurs:

   a. The Subcontract Work is defective, or completed Subcontract Work has been damaged, requiring correction or replacement;

   b. The Subcontract Price has been reduced by change orders;

   c. The Contractor has been required to correct defective Subcontract Work or complete Subcontract Work;

   d. Claims have been made against Contractor on account of Subcontractor's performance or furnishing of the Subcontract Work;

   e. Liens have been filed in connection with the Subcontract Work, except where Subcontractor has delivered a specific bond satisfactory to Contractor and Owner to secure the satisfaction and discharge of such liens;

   f. The Owner has exercised a set-off against payments to Contractor attributable to Subcontractor's activities or performance of the Subcontract Work; or

   g. The Subcontractor has defaulted under the terms of the Subcontract.

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C. *Payment:* Contractor shall pay Subcontractor any amounts due to Subcontractor under a payment application for Subcontract Work within 30 days after Contractor's receipt from the Owner of payment for such Subcontract Work.

ARTICLE 6—FINAL PAYMENT AND COMPLETION

6.01 *Final Payment*

A. Upon final completion of obligations under the Subcontract, including acceptance by Owner (or its representative) of the Subcontract Work as part of the Work under the Prime Contract, and submission and acceptance of all close-out documents required under the Subcontract, Subcontractor shall submit to Contractor an application for final payment and release of retainage, if any.

B. Final payment becomes due 30 days after Contractor's receipt of payment from the Owner of amounts requested on behalf of Subcontractor. Contractor's receipt of payment of retainage withheld by Owner from amounts due to Contractor for the Subcontract Work is an express condition precedent to Contractor's obligation to pay such retainage to Subcontractor.

6.02 *Final Lien Waivers*

A. Upon the request of Contractor, Subcontractor shall submit, as part of the application for final payment, a final waiver of lien and sworn statement indicating all sub-subcontractors, suppliers, and vendors, their contract amounts, and the final amounts paid to each sub-subcontractor, supplier, and vendor.

6.03 *Warranty of Title*

A. Subcontractor warrants and guarantees that title to all Subcontract Work, materials, and equipment furnished under the Subcontract will pass to Owner free and clear of all liens and other title defects, and all patent, licensing, copyright, or royalty obligations.

6.04 *Waiver of Claims*

A. Final payment by Contractor to Subcontractor constitutes:

1. A waiver of all claims by Contractor against Subcontractor, except claims arising from unsettled liens, from defective Subcontract Work appearing after final inspection, from failure to comply with the Subcontract Documents or the terms of any special guarantees specified therein, or from Subcontractor's continuing obligations under the Prime Contract; and

2. A waiver of all claims by Subcontractor against Contractor other than those previously made in accordance with the requirements herein that remain unsettled.

ARTICLE 7—SUB-SUBCONTRACTORS

7.01 *Subcontractor's Responsibility*

A. Subcontractor shall be fully responsible to Contractor for all acts and omissions of the sub-subcontractors, suppliers, and other individuals or entities performing or furnishing any of the Subcontract Work, just as Subcontractor is responsible for Subcontractor's own acts and omissions.

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7.02 *No Third-Party Relationships*

A. Nothing in the Subcontract Documents creates for the benefit of any such sub-subcontractor, supplier, or other individual or entity any contractual relationship between Contractor, Owner, or Owner's engineers or consultants and any such sub-subcontractor, supplier, or other individual or entity.

B. Nothing in the Subcontract Documents creates any obligation on the part of Contractor, Owner, or Engineer to pay or to see to the payment of any money due any such sub-subcontractor, supplier, or other individual or entity, except as may otherwise be required by laws and regulations.

ARTICLE 8—PERFORMANCE OF THE SUBCONTRACT WORK

8.01 *Subcontractor's Obligations*

A. Subcontractor shall provide all material, equipment, services, and labor necessary for the completion of the Subcontract Work.

B. All materials and equipment must be as specified in the Subcontract Documents and be of good quality and new, except as otherwise provided in the Subcontract Documents. Subcontractor shall provide Contractor with such information and test results required under the Prime Contract to verify the quality of the materials and equipment furnished under the Subcontract Documents.

8.02 *Verification of Existing Conditions*

A. The dimensions, locations, and limits of the Subcontract Work are shown or indicated in the Subcontract Documents.

B. The Contractor has used reasonable efforts to verify the accuracy of dimensions, locations, and limits in the Subcontract Documents, but takes no responsibility for the verification of information concerning actual conditions affecting the Subcontract Work. Subcontractor has an independent obligation to verify actual conditions, including but not limited to dimensions, locations, and limits, prior to ordering equipment and materials and performing the Subcontract Work, and shall be responsible for all costs and expenses resulting from the failure to verify such information.

8.03 *Supervision*

A. At all times during the progress of the Subcontract Work, Subcontractor shall assign an authorized representative to provide competent, on-site supervision. Such representative must not be replaced without written notice to Contractor except under extraordinary circumstances.

B. Subcontractor shall be solely responsible for scheduling and coordinating the work of sub-subcontractors, suppliers, and other individuals or entities performing or furnishing any of the Subcontract Work under a direct or indirect contract with Subcontractor.

C. Subcontractor shall supervise, inspect, and direct the Subcontract Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Subcontract Work in accordance with the Subcontract Documents.

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8.04 *Coordination with Other Subcontractors; Other Work at the Site*

A. Subcontractor shall cooperate with other subcontractors and coordinate its Subcontract Work and schedule with other subcontractors on the Project. Subcontractor shall attend coordination meetings and endeavor to resolve all conflicts with other subcontractors without the intervention of Contractor. If a conflict cannot be resolved without the intervention of Contractor, the decision of Contractor regarding resolution of the conflict will be final.

B. Subcontractor shall not damage, delay, or interfere with the work of other subcontractors or of Contractor, Owner, or others working at the site, shall be responsible for the cost of damage, delay, or interference caused by the operations of Subcontractor to the work of others.

8.05 *Prosecution of the Subcontract Work*

A. *Clean-up:* On not less than a daily basis, Subcontractor shall be responsible for cleaning up and removing all debris and waste resulting from the Subcontract Work, to avoid interference with the work and progress of others at the site. If Subcontractor fails to clean up and remove waste and debris in accordance with this provision, Contractor may provide for clean-up and removal of waste and debris at Subcontractor's expense.

B. *Hoisting and Lifting:* Subcontractor shall provide all hoisting and lifting required for the Subcontract Work, unless Contractor has otherwise expressly agreed to provide hoisting, lifting, or both.

C. *Temporary Utility Services and Temporary Facilities:* Subcontractor shall at its expense provide temporary utility services and temporary facilities needed for the performance of the Subcontract Work, except those temporary utility services and temporary facilities that Contractor has expressly agreed to provide at its expense.

D. *Safety and Protection*

1. Subcontractor shall perform the Subcontract Work in a safe manner, taking full responsibility for the prevention of harm or injury to its workforce, and taking all reasonable steps necessary to protect from harm, injury, or damage all persons, property, structures, materials, and equipment at or adjacent to the Subcontractor's work areas.

2. Subcontractor shall comply with the safety programs of the Owner and Contractor, when Subcontractor has been made aware of such requirements in writing.

3. Subcontractor shall coordinate the safety of its employees, Subcontractor's lower-tier subcontractors, and Subcontractor's suppliers with Contractor's safety representative, and shall comply with all applicable OSHA and other laws and regulations related to safety and protection. Subcontractor shall ensure that its employees and the on-site employees of Subcontractor's lower-tier subcontractors and suppliers are properly trained and understand (a) Owner's, Contractor's, and Subcontractor's safety requirements, and (b) applicable safety laws and regulations. Subcontractor is responsible for furnishing to Contractor and others as applicable all required material safety data sheets.

4. Subcontractor shall report promptly to Contractor all injuries, accidents, and damage that occurs during the performance of the Subcontract Work, and all failures or near-miss events that could have resulted in serious injury, even if no serious injury actually occurred.

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E. *Labor:* Subcontractor shall comply with applicable labor and jurisdictional requirements to prevent strikes and other work stoppages and slowdowns that would interfere with the Subcontract Work and the work of others. Subcontractor shall be responsible for delays resulting from Subcontractor's violation of this provision.

F. *Communications with Owner and Engineer:* Subcontractor shall communicate with Owner, Owner's engineers, and Owner's other representatives solely through Contractor, with the following limited exceptions: (1) in the case of an emergency, Subcontractor may communicate directly with any entity or individual in the interests of safety and protection of property, (2) Subcontractor may directly request Owner to provide information about amounts paid to Contractor on account of Subcontract Work performed, and (3) Subcontractor may directly request Owner to provide Subcontractor with a copy of any payment bond furnished by Contractor.

8.06 *Correction and Warranties*

A. Subcontractor warrants and guarantees to Contractor that all Subcontract Work will be in accordance with the Subcontract Documents and will not be defective. Subcontractor's warranty and guarantee hereunder excludes defects or damage caused by abuse, modification, or improper maintenance or operation by persons other than Subcontractor and its sub-subcontractors, suppliers, or any other individual or entity for whom Subcontractor is responsible; or normal wear and tear under normal usage.

B. Subcontractor's obligation to perform and complete the Subcontract Work in accordance with the Subcontract Documents will be absolute and Subcontractor shall be fully responsible for the Subcontract Work under the Subcontract to the same extent that Contractor is responsible for the Subcontract Work to the Owner under the Prime Contract.

C. Subcontractor shall correct the Subcontract Work to the same extent that Contractor is required to correct the Prime Contract Work (including the Subcontract Work) under the Prime Contract. Subcontractor shall correct Subcontract Work whether or not installed or completed. If the Subcontract Work has been rejected, Subcontractor shall remove such rejected Subcontract Work from the Project at the direction of Contractor, and replace it with Subcontract Work that is not defective.

D. For a period of one year after substantial completion of the Prime Contract Work, and for any additional period beyond one year as required under the Prime Contract for correction by the Contractor of the Prime Contract Work, and promptly after receipt of written notice, Subcontractor shall correct all defective Subcontract Work as directed by Contractor. Subcontractor shall indemnify Contractor, Owner, Owner's engineers and consultants, for all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any such correction or removal (including but not limited to all costs of repair or replacement of work of others).

E. All such correction obligations are in addition to the warranty, guarantee, and contractual duties established above and elsewhere in the Subcontract Documents.

F. The obligations under this Paragraph 8.06 will survive completion of the Subcontract Work and, when the Prime Contract is complete and ready for final payment by Owner, Contractor may assign its rights under this Paragraph 8.06 to Owner upon agreement between Owner and Contractor and notice to Subcontractor.

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ARTICLE 9—CHANGES TO THE SUBCONTRACT

9.01 *Changes*

A. Without invalidating the Subcontract, Contractor may, at any time or from time to time, order changes to the Subcontract Work including additions, deletions, or revisions in the Subcontract Work. Subcontractor shall promptly proceed with the Subcontract Work as changed. All changed Subcontract Work will be performed under the applicable conditions of the Subcontract Documents. Subcontractor shall not perform any changes to the Subcontract Work that would increase the Subcontract Price or Subcontract Times without express written authority from Contractor.

B. Subcontractor shall deliver notice of each request for a change in compensation or time within 7 days of the associated directive to perform changed Subcontract Work, and not later than 2 days before Prime Contract requirements relative to submitting claims and change proposals.

C. Changes in the Subcontract Price for changed Subcontract Work will be made on the basis of either a mutually acceptable lump sum price, or under unit prices consistent with the unit prices set forth in the Subcontract as of the Subcontract Date. To the extent the changed Subcontract Work has no predetermined costs or unit prices under the original Subcontract, and the parties do not agree to a lump sum for the changed Subcontract Work, the amount of the request for changed compensation will be based upon Subcontractor's cost of labor (consistent with any applicable rates negotiated under the original Subcontract), plus the direct costs of sub-subcontracts, materials and equipment to be consumed or incorporated in the changed Subcontract Work, plus overhead and profit consistent with the price negotiated for the original Subcontract Work and subject to approval by Contractor.

D. To the extent that a change to the Subcontract Work resulted from a revision of the Prime Contract, the compensation to Subcontractor for such changed Subcontract Work will be limited to the amount collected by Contractor from Owner on behalf of Subcontractor for such change in the Subcontract Work. In the event that the revision results in a deduction of the Subcontract Price, the deduction will be based upon the share of the deduction assessed against Contractor under the Prime Contract that is attributable to the change in Subcontract Work.

ARTICLE 10—BONDS, INSURANCE, AND INDEMNIFICATION

10.01 *Performance Bond, Payment Bond, and Other Bonds*

A. If expressly listed as Subcontract Documents in Article 13, or expressly required of Subcontractor elsewhere in the Subcontract Documents, Subcontractor shall at its expense furnish a performance bond and a payment bond, each in an amount equal to or greater than the Subcontract Price, as security for the faithful performance and payment of all of Subcontractor's obligations under the Subcontract Documents. If the Subcontract Documents as of the Subcontract Date do not require performance and payment bonds, but Contractor subsequently instructs Subcontractor to furnish such bonds, Subcontractor shall do so at Contractor's expense.

B. The performance and payment bonds must remain in effect until not less than the longer of: (1) one year after the date when final payment becomes due from Contractor; or

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(2) completion of the correction period specified in this Subcontract, except as provided otherwise by applicable laws or regulations. Subcontractor shall also furnish such other bonds as are required by the Subcontract Documents. The performance bond will be issued on EJCDC® C-610 Performance Bond (2018) or by other form deemed acceptable by Contractor. The Payment Bond will be issued on the EJCDC® C-615 Payment Bond (2018) or by other form deemed acceptable by Contractor. Terms of these bonds apply except as expressly provided otherwise by laws or regulations.

C. If the Prime Contract requires that Contractor furnish a Warranty Bond, then Subcontractor shall furnish a Warranty Bond with respect to the Subcontract Work, under the same requirements. The bond will be issued using EJCDC® C-612, Warranty Bond (2018) or by other form deemed acceptable by Contractor.

D. All bonds must be executed by such sureties as are named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority must show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

E. Subcontractor shall obtain the required bonds from surety companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds in the required amounts.

F. If the surety on a bond furnished by Subcontractor is declared bankrupt or becomes insolvent, or its right to do business is terminated in any state or jurisdiction where any part of the Project is located, or the surety ceases to meet the requirements above, then Subcontractor shall promptly notify Contractor and shall, within 20 days after the event giving rise to such notification, furnish another bond and surety, both of which must comply with the bond and surety requirements above.

G. If the Subcontract requires Subcontractor to provide its own performance bond and payment bond, as described in Paragraphs 10.01.A. through D., the Contractor may, at its sole discretion, provide such bonds for the Subcontractor, either as individual instruments or as a part of Contractor's bonding. In such case Subcontractor shall be responsible to Contractor for a proportionate share of Contractor's bond costs, computed as the percentage of the total Subcontract Price relative to the total bonded Contract Price, and the Subcontract Price will be adjusted accordingly.

H. As an alternative to requiring Subcontractor to provide or contribute to the cost of performance bonds or payment bonds as described in this Paragraph 10.01, the Contractor may, at its sole discretion, waive such requirements for this Subcontract, and the Subcontract Price will be adjusted accordingly.

I. If Subcontractor has failed to obtain a required bond, Contractor may exclude the Subcontractor from the site and exercise Contractor's termination rights under Article 11.

J. Upon request, Contractor shall provide a copy of the payment bond to any sub-subcontractor, supplier, or other person or entity claiming to have furnished labor or materials used in the performance of the Subcontract Work.

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10.02 *Insurance—General Provisions*

A. Subcontractor shall obtain and maintain insurance as required in this Article and in any Subcontract exhibit or supplementary Subcontract Document regarding insurance.

B. All insurance required by the Subcontract to be purchased and maintained by Subcontractor must be obtained from insurance companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue insurance policies for the required limits and coverages. Unless a different standard is indicated elsewhere in the Subcontract Documents, all companies that provide insurance policies required under this Subcontract must have an A.M. Best rating of A-VII or better.

C. Subcontractor shall deliver to Contractor, with copies to each named insured and additional insured (as identified here or elsewhere in the Subcontract Documents), certificates of insurance establishing that Subcontractor has obtained and is maintaining the policies, coverages, and endorsements required by the Subcontract. Upon request by Contractor or any other insured, Subcontractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Subcontractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

D. Failure of Contractor to demand such certificates or other evidence of the Subcontractor's full compliance with these insurance requirements, or failure of Contractor to identify a deficiency in compliance from the evidence provided, will not be construed as a waiver of the Subcontractor's obligation to obtain and maintain such insurance.

E. If Subcontractor does not purchase or maintain all of the insurance required of it by this Subcontract, the Subcontractor shall notify Contractor in writing of such failure to purchase prior to the start of the Subcontract Work, or of such failure to maintain prior to any change in the required coverage.

F. If Subcontractor has failed to obtain and maintain required insurance, Contractor may exclude the Subcontractor from the site and exercise Contractor's termination rights under Article 11.

G. Without prejudice to any other right or remedy, if Subcontractor has failed to obtain required insurance, Contractor may elect to obtain equivalent insurance to protect Contractor's interests at the expense of Subcontractor, and the Subcontract Price will be adjusted accordingly.

H. Contractor does not represent that insurance coverage and limits established in this Subcontract necessarily will be adequate to protect Subcontractor or Subcontractor's interests.

I. The insurance and insurance limits required herein will not be deemed as a limitation on Subcontractor's liability under the indemnities granted to Contractor and other individuals and entities in the Subcontract Documents.

10.03 *Subcontractor's Insurance*

A. *Workers' Compensation:* Subcontractor shall purchase and maintain workers' compensation and employer's liability insurance for:

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1. claims under workers' compensation, disability benefits, and other similar employee benefit acts.
2. United States Longshoreman and Harbor Workers' Compensation Act (if applicable) and Jones Act coverage (if applicable).
3. claims for damages because of bodily injury, occupational sickness or disease, or death of Subcontractor's employees (by stop-gap endorsement in monopolist worker's compensation states).
4. Foreign voluntary worker compensation (if applicable).

Workers' Compensation and Related Policies	Policy limits of not less than:
Workers' Compensation	
State	Statutory
Applicable Federal (e.g., Longshoreman's)	Statutory
Foreign voluntary workers' compensation (employer's responsibility coverage), if applicable	Statutory
Jones Act (if applicable)	
Bodily injury by accident—each accident	Statutory
Bodily injury by disease—aggregate	$500,000
Employer's Liability	
Each accident	Statutory
Each employee	$ 100,000
Policy limit	Statutory

B. *Commercial General Liability—Claims Covered:* Subcontractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Subcontractor, on an occurrence basis, against:

1. Claims for damages because of bodily injury, sickness or disease, or death of any person other than Subcontractor's employees;
2. Claims for damages insured by reasonably available personal injury liability coverage; and
3. Damages because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.

C. *Commercial General Liability—Form and Content:* Subcontractor's commercial liability policy must be written on a 1996 (or later) ISO commercial general liability form (occurrence form) and include the following coverages and endorsements:

1. Products and completed operations coverage:
   a. Such insurance must remain in effect for three years after final payment.
   b. Subcontractor shall furnish Contractor and each other additional insured (as identified in this Article or elsewhere in the Subcontract Documents) evidence of continuation of such insurance at final payment and three years thereafter.
2. Blanket contractual liability coverage, including but not limited to coverage of Subcontractor's contractual indemnity obligations under the Subcontract Documents.

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3. Severability of interest.
4. Underground, explosion, and collapse coverage.
5. Personal injury coverage.
6. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together); or their equivalent if Subcontractor demonstrates that the specified endorsements are not commercially available.
7. For design professional additional insureds, ISO Endorsement CG 20 32 07 04, "Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured" or its equivalent.
8. If governing law invalidates or restricts the use of a specified additional insurance endorsement, then Subcontractor will furnish an endorsement that is compliant with governing law while providing reasonable protection of the interests of the additional insureds.

D. *Commercial General Liability—Excluded Content:* The commercial general liability insurance policy, including its coverages, endorsements, and incorporated provisions, must not include any of the following:

1. Any modification of the standard definition of "insured contract" (except to delete the railroad protective liability exclusion if Subcontractor is required to indemnify a railroad or others with respect to Work within 50 feet of railroad property).
2. Any exclusion for water intrusion or water damage.
3. Any provisions resulting in the erosion of insurance limits by defense costs other than those already incorporated in ISO form CG 00 01.
4. Any exclusion of coverage relating to earth subsidence or movement.
5. Any exclusion for the insured's vicarious liability, strict liability, or statutory liability (other than worker's compensation).
6. Any limitation or exclusion based on the nature of Subcontractor's work.
7. Any professional liability exclusion broader in effect than the most recent edition of ISO form CG 22 79.

Commercial General Liability	**Policy limits of not less than:**
General Aggregate	$500,000

E. *Automobile Liability:* Subcontractor shall purchase and maintain automobile liability insurance against claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle. The automobile liability policy must be written on an occurrence basis.

Automobile Liability	**Policy limits of not less than:**
Bodily Injury	

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Combined Single Limit (Bodily Injury and Property Damage)	$500,000

F. *Umbrella or Excess Liability:* Subcontractor shall purchase and maintain umbrella or excess liability insurance written over the underlying employer's liability, commercial general liability, and automobile liability insurance described in the paragraphs above. The coverage afforded must be at least as broad as that of each and every one of the underlying policies.

Excess or Umbrella Liability	**Policy limits of not less than:**
Each Occurrence	$1,000,000

G. This section intentionally left blank.

H. *Additional Insureds:* The Subcontractor's commercial general liability, automobile liability, employer's liability, umbrella or excess, and pollution liability policies must include and list as additional insureds Contractor, Owner, and Owner's engineers, architects, and consultants, and any individuals or entities identified as additional insureds elsewhere in the Subcontract Documents; include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds; and the insurance afforded to these additional insureds must provide primary coverage for all claims covered thereby (including as applicable those arising from both ongoing and completed operations) on a non-contributory basis. Subcontractor shall obtain all necessary endorsements to support these requirements.

I. *Subcontractor's Professional Liability Insurance:* If Subcontractor will provide or furnish professional services under this Subcontract, through a delegation of professional design services or otherwise, then Subcontractor shall be responsible for purchasing and maintaining applicable professional liability insurance. This insurance must cover negligent acts, errors, or omissions in the performance of professional design or related services by the insured or others for whom the insured is legally liable. The insurance must be maintained throughout the duration of the Subcontract and for a minimum of two years after Substantial Completion of the Project. The retroactive date on the policy must pre-date the commencement of furnishing services on the Project.

J. *General provisions:* The policies of insurance required by this Paragraph 10.03 must:

1. include at least the specific coverages provided in this Subcontract.

2. be written for not less than the limits of liability expressly provided in this Subcontract, including any Subcontract exhibit or supplementary Subcontract Document specifying insurance policy limits, or if no such express insurance limits are set forth in the Subcontract, then for not less than the limits required of Contractor by Owner in the Prime Contract, for the corresponding types of insurance. If laws or regulations require a higher limit, then Subcontractor shall meet such legal requirement.

3. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 10 days prior written notice has been given to Subcontractor. Within three days of receipt of any such written notice, Subcontractor shall provide a copy of the notice to Contractor and each other insured under the policy.

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4. remain in effect at least until final payment (and longer if expressly required herein) and at all times thereafter when Subcontractor may be correcting, removing, or replacing defective Subcontract Work as a warranty or correction obligation, or otherwise, or returning to the site to conduct other tasks arising from the Subcontract Documents.

5. be appropriate for the Subcontract Work being performed and provide protection from claims that may arise out of or result from Subcontractor's performance of the Subcontract Work and Subcontractor's other obligations under the Subcontract Documents, whether it is to be performed by Subcontractor, any lower-tier subcontractor or supplier, or by anyone directly or indirectly employed by any of them to perform any of the Subcontract Work, or by anyone for whose acts any of them may be liable.

K. Subcontractor waives all rights against Owner, Contractor, and all individuals or entities identified in the Prime Contract's Supplementary Conditions to be listed as insureds or additional insureds under the builder's risk, installation floater, or other forms of property insurance, and against the Owner's engineers and consultants, and their consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such builder's risk, installation floater, or other form of property insurance applicable to the work under the Prime Contract; and Contractor waives all rights against Subcontractor for all such losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such builder's risk, installation floater, or other form of property insurance applicable to the work under the Prime Contract.

L. If Contractor is responsible under the Prime Contract and any builder's risk or other property insurance policy for the payment of a deductible, or an amount within a deductible, and the need to pay such deductible or amount within a deductible is attributable in whole or part to the actions or inactions of Subcontractor, its sub-subcontractors, employees, agents, or others for which Subcontractor is responsible, then Subcontractor shall pay its attributable share of such deductible.

M. Upon request the Contractor shall provide to Subcontractor a copy of any builder's risk, installation floater, or other property insurance policy applicable to the work under the Prime Contract. Contractor may block out (redact) any confidential premium or pricing information contained in any such policy. Subcontractor may elect to obtain other insurance at its expense, if it concludes that its interests are not insured under such policy.

N. *Other Required Insurance*

1. Provide certificate of insurance evidencing the required coverages to :

a. RA Development, 236 E Ellison St., Burleson, TX 76028; attn: Justin Bond, COO

b. City of Burleson, 141 W. Renfro St, Burleson, TX 76028; attn: Eric Oscarson, Director of Public Works

10.04 *Indemnification*

A. To the fullest extent permitted by laws and regulations, Subcontractor shall indemnify and hold harmless Contractor, Owner, and Owner's engineers and consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not

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limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Subcontract Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Subcontract Work itself), including the loss of use resulting therefrom, but only to the extent caused by any negligent act or omission of Subcontractor, any lower tier subcontractor, supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Subcontract Work or anyone for whose acts any of them may be liable.

B. In addition to the indemnification obligations in the preceding paragraph, Subcontractor shall indemnify Contractor for all economic costs and expenses, including attorney's fees, for any claim against Contractor as a result of and to the extent caused by Subcontractor's breach of any obligation under the Subcontract.

C. In any and all claims against Contractor, Owner, or Owner's engineers or consultants, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors by any employee (or the survivor or personal representative of such employee) of Subcontractor, any lower tier subcontractor, any supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Subcontract Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 10.04.A. must not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Subcontractor, lower-tier subcontractor, supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

D. With respect to the Subcontract Work, the breach of obligations under the Subcontract, and any negligent act or omission of Subcontractor, any lower tier subcontractor, supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Subcontract Work, or anyone for whose acts any of them may be liable, and to the fullest extent permitted by law, Subcontractor assumes the same or corresponding responsibilities as Contractor for indemnity obligations set forth in the Prime Contract.

ARTICLE 11—SUSPENSION AND TERMINATION

11.01 *Contractor May Suspend Work*

A. In the event that Owner suspends the work of Contractor under the Prime Contract, Contractor may suspend the performance of the Subcontract or any portion thereof for a period of not more than 90 consecutive days, by giving notice in writing to Subcontractor of such suspension. Subcontractor shall resume the Subcontract Work when instructed by Contractor to do so. Subcontractor shall be granted an adjustment in the Subcontract Price or an extension of the Subcontract Times, or both, directly attributable to any such suspension only to the extent that Contractor receives an adjustment of the Prime Contract price or the Prime Contract time for the Subcontractor's proportionate share of work under the Prime Contract.

B. Contractor may suspend the Subcontract Work for a period of not more than 90 days, or to the extent permitted by the progress schedule or any express provision of the Subcontract Documents, for Contractor's own purposes.

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C. Contractor may suspend the work of Subcontractor with all costs and liability for any delay in the Subcontract Work and others to be assessed against the Subcontractor for the following Subcontract violations until the Subcontractor demonstrates it has cured the violations as follows:

1. Subcontractor fails to comply with the Owner's or Contractor's safety program;
2. Subcontractor or its employees are in violation of OSHA or state or local safety laws or regulations;
3. Subcontractor has installed defective Subcontract Work that is not in compliance with the Subcontract Documents and has failed to cure the defective Subcontract Work;
4. Subcontractor has violated any laws or regulations applicable to the performance of the Subcontract Work; and
5. Subcontractor has failed to pay a supplier or lower-tier subcontractor pursuant to Subcontractor's legal or contractual obligations.

D. If Subcontractor fails to comply with the progress schedule, causing delay to the Subcontract Work or the Prime Contract work, after three days' notice by Contractor and failure of Subcontractor to demonstrate that it has implemented procedures to comply with the schedule through measures such as providing supplemental labor, materials, and tools, then Contractor may implement its own procedures to meet the schedule, by providing supplemental labor, materials, tools, or taking other measures, through its own or other forces, and Contractor may assess the cost of such supplemental procedures against the Subcontract.

11.02 *Contractor May Terminate for Cause*

A. The occurrence of any one or more of the following events will justify termination for cause:

1. Subcontractor's persistent failure to perform the Subcontract Work in accordance with the Subcontract Documents (including, but not limited to, failure to supply sufficient skilled workers, suitable materials, or equipment, or failure to adhere to the Subcontract progress schedule);
2. Subcontractor's disregard of laws or regulations of any public body having jurisdiction;
3. Subcontractor's repeated disregard of the authority of Contractor; or
4. Subcontractor's failure to perform or otherwise to comply with a material term of the Subcontract.

B. If one or more of the events identified in the preceding paragraph occur, Contractor may, after giving Subcontractor 7 days written notice of its intent to terminate the services of Subcontractor, or in the event the Subcontractor provided a performance bond covering the Subcontract the Contractor may provide notice to the Subcontractor and surety in accordance with the requirements of the applicable performance bond of its intent to terminate the services of Subcontractor to preserve Contractor's rights under the performance bond. Upon termination of the Subcontract, Contractor may:

1. exclude Subcontractor from the site, and take possession of the Subcontract Work;
2. incorporate in the Subcontract Work all materials and equipment stored at the site, or for which Contractor has paid Subcontractor but which are stored elsewhere; and

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3. complete the Subcontract Work as Contractor may deem expedient.

C. If Contractor proceeds as provided in Paragraph 11.02.B., Subcontractor shall not be entitled to receive any further payment until the Subcontract Work is completed. If the unpaid balance of the Subcontract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor arising out of or relating to completing the Subcontract Work, such excess will be paid to Subcontractor. If such claims, costs, losses, and damages exceed such unpaid balance, Subcontractor shall pay the difference to Contractor. When exercising any rights or remedies under this paragraph, Contractor shall not be required to obtain the lowest price for the Subcontract Work performed.

D. Notwithstanding Paragraphs 11.02.A. and 11.02.B., Subcontractor's services will not be terminated if Subcontractor begins within four days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 14 days of receipt of said notice. If the Subcontractor fails to cure within 14 days of receipt of said notice, the Subcontract will be deemed terminated in accordance with provisions 11.02.A through 11.02.C upon two days' notice by the Contractor following the 14-day period.

E. Where Subcontractor's services have been so terminated by Contractor, the termination will not affect any rights or remedies of Contractor against Subcontractor then existing or which may thereafter accrue. Any retention or payment of money due Subcontractor by Contractor will not release Subcontractor from liability.

F. If and to the extent that Subcontractor has provided a performance bond, the termination procedures of that bond will supersede the procedures in this Paragraph 11.02.

11.03 *Termination of Contractor or Rejection of Subcontract by Owner*

A. The Contractor may terminate the Subcontract at any time, if the Prime Contract is terminated by the Owner, or if Owner rejects the Subcontract in accordance with the terms of the Prime Contract, the Contractor may terminate the Subcontract without penalty.

B. In the event of a termination pursuant to Paragraph 11.03, the costs and expenses to be paid to Subcontractor resulting from a termination under this provision must be limited to the costs and expenses recovered by Contractor from Owner on Subcontractor's behalf.

11.04 *Contractor May Terminate for Convenience*

A. Upon 7 days written notice to Subcontractor, Contractor may, without cause and without prejudice to any other right or remedy of Contractor, terminate the Subcontract. In such case, Subcontractor shall be paid for (without duplication of any items):

1. Completed and acceptable Subcontract Work executed in accordance with the Subcontract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Subcontract Work;

2. Expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Subcontract in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and

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3. Reasonable expenses directly attributable to termination.

B. Subcontractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

11.05 *Subcontractor May Stop Work or Terminate*

A. If, through no act or fault of Subcontractor, Contractor after receipt of payment from Owner fails to make payment due Subcontractor, for more than 30 days after payment is due, then Subcontractor may, upon 7 days written notice to Contractor, and provided Contractor does not remedy such failure within 7 days thereafter, terminate the Subcontract and recover payment from Contractor subject to the terms of this Subcontract.

B. As an alternative to terminating the Subcontract and without prejudice to any other right or remedy, if a payment owed to Subcontractor is more than 30 days past due, then Subcontractor may, 7 days after written notice to Contractor, stop the Subcontract Work until payment is made of all such amounts due Subcontractor, including interest thereon at an annual rate of five percent per annum, or if applicable at the rate prescribed by law, without penalty.

C. If the Contractor suspends the Subcontractor's work for more than 120 days, the Subcontractor may upon 7 days' written notice terminate the Subcontract and recover the amounts due the Subcontractor for Subcontract Work completed as of the date of termination, including retainage withheld from the Subcontractor to date and interest thereon at an annual rate of five percent per annum, or if applicable at the rate prescribed by law, without penalty.

ARTICLE 12—CLAIMS AND DISPUTE RESOLUTION

12.01 *Claims*

A. As a condition precedent to any consideration, pursuit, or recovery by Subcontractor of any change proposal, request, demand, or claim (collectively referred to as "Claim") seeking an increase in Subcontract Price, Subcontract Time, or both, Subcontractor shall provide notice of any such Claim to Contractor no less than 30 days after the event giving rise to the Claim, and for Claims related in any way to the Owner or Prime Contract, within five days.

B. Subcontractor's recovery of additional cost, time, or both cost and time for any Claim attributable to the Owner will be limited to the proportionate recovery by Contractor against Owner for such Claim. Subcontractor will cooperate and assist Contractor in pursuing any Claim by Contractor against Owner on behalf of Subcontractor, including the timely preparation and delivery of supporting documentation.

C. If the pursuit of any Claim by Contractor against Owner on Subcontractor's behalf requires the expenditure by Contractor of legal or consulting fees, or results in litigation, arbitration, or any dispute resolution procedures, Subcontractor agrees to pay for a proportionate share of attorneys' fees, consultant fees, and litigation, arbitration, and other resolution costs incurred by Contractor in pursuing the claim on behalf of Subcontractor, based upon the amount claimed by Subcontractor as compared to the total value of the claim pursued by the Contractor.

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D. Except as provided by applicable lien, bond, or prompt payment laws, Subcontractor shall not make any direct claims against Owner for compensation or additional compensation for performance of the Subcontract Work.

12.02 *Dispute Resolution*

A. Either Contractor or Subcontractor may request mediation of any dispute between Contractor and Subcontractor in connection with this Subcontract that has not been settled to their mutual satisfaction within the applicable notice or cure periods provided in this Subcontract, or that Contractor has not pursued against Owner as described above. The mediation will be governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Subcontract Date. The request for mediation must be submitted in writing to the American Arbitration Association and the other party to this Subcontract.

B. Contractor and Subcontractor shall participate in the mediation process in good faith. The process must be concluded within 60 days of filing of the request. The date of termination of the mediation must be determined by application of the mediation rules referenced above.

C. If the dispute is not resolved by mediation, each party to this Subcontract shall be barred from further action to assert its claim after 30 days after termination of the mediation unless, within that time period, Contractor or Subcontractor:

1. elects in writing to invoke any dispute resolution procedure expressly provided for in a Subcontract exhibit or elsewhere in the Subcontract Documents; or

2. agrees with the other party to submit the dispute to another dispute resolution process; or

3. gives written notice to the other party of the intent to submit the claim to a court of competent jurisdiction.

D. If Contractor is engaged in an arbitration with Owner that relates, in whole or in part, to a dispute between Contractor and Subcontractor, then Contractor shall have the sole and exclusive discretion to join Subcontractor as a party to the Contractor-Owner arbitration. Subcontractor consents to the jurisdiction of any such arbitration proceeding to which it is joined pursuant to this provision.

ARTICLE 13—SUBCONTRACT DOCUMENTS

13.01 *Subcontract Contents*

A. The Subcontract Documents consist of the following:

1. This Subcontract.

2. Subcontract Scope of Work and Unit Price.

3. Exclusions based on Subcontractor Proposal

4. The following which may be delivered or issued on or after the Subcontract Date and are not attached hereto:

a. Lakewood Drive Construction Plans, GMCivil Engineering; Signed & Sealed September 27, 2022

b. Prime Contract.

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c. Payment & Performance Bond.

d. Notice to Proceed.

e. Work Change Directives.

f. Change Orders.

g. Field Orders.

h. Warranty Bond, if any.

B. The Subcontract Documents may only be amended, modified, or supplemented by written agreement of Contractor and Subcontractor.

ARTICLE 14—MISCELLANEOUS

14.01 *Terms*

Terms used in this Subcontract will have the meanings stated here, or in the Prime Contract's General Conditions and Supplementary Conditions.

14.02 *Assignment of Subcontract*

No assignment by Subcontractor of any rights under or interests in the Subcontract will be binding on Contractor without Contractor's written consent; and, specifically but without limitation, payments that may become due and money that is due may not be assigned by Subcontractor without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Subcontract Documents.

14.03 *Successors and Assigns*

Contractor and Subcontractor each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Subcontract Documents.

14.04 *Severability*

Any provision or part of the Subcontract Documents held to be void or unenforceable under any law or regulation will be deemed stricken, and all remaining provisions must continue to be valid and binding upon Contractor and Subcontractor, which agree that the Subcontract Documents will be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

ARTICLE 15—SUBCONTRACTOR'S REPRESENTATIONS AND CERTIFICATIONS

15.01 *Subcontractor's Representations*

A. In order to induce Contractor to enter into this Subcontract, Subcontractor makes the following representations:

1. Subcontractor has examined and carefully studied the Subcontract Documents, and any data and reference items identified in the Subcontract Documents, including but not limited to initial schedules identified by Contractor.

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2. Subcontractor has visited the site, conducted a thorough visual examination of the site and adjacent areas, and become familiar with the general, local, and site conditions that may affect cost, progress, and performance of the Subcontract Work.

3. Subcontractor is familiar with and is satisfied as to all laws and regulations that may affect cost, progress, and performance of the Subcontract Work.

4. Subcontractor has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the site and drawings of physical conditions relating to existing surface or subsurface structures at the site that have been identified by the Prime Contract or Subcontract, especially with respect to technical data in such reports and drawings.

5. Subcontractor has carefully studied reports and drawings of hazardous environmental conditions, if any, at or adjacent to the site that have been identified in the Prime Contract or Subcontract, especially with respect to technical data in such reports and drawings.

6. Subcontractor has considered the information known to Subcontractor itself; information commonly known to contractors and subcontractors doing business in the locality of the site; information and observations obtained from visits to the site; the Subcontract Documents; and the site-related reports and drawings, if any, identified in the Prime Contract or Subcontract, with respect to the effect of such information, observations, and documents on (a) the cost, progress, and performance of the Subcontract Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Subcontractor; and (c) Subcontractor's safety precautions and programs.

7. Based on the information and observations referred to in the preceding paragraphs, Subcontractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Subcontract Work at the Subcontract Price, within the Subcontract Times, and in accordance with the other terms and conditions of the Subcontract.

8. Subcontractor is aware of the general nature of work to be performed by Owner, Contractor, other subcontractors, and others at the site that relates to the Subcontract Work as indicated in the Subcontract Documents.

9. Subcontractor has given Contractor written notice of all conflicts, errors, ambiguities, or discrepancies that Subcontractor has discovered in the Subcontract Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Contractor is acceptable to Subcontractor.

10. The Subcontract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Subcontract Work.

11. Subcontractor's entry into this Subcontract constitutes an incontrovertible representation by Subcontractor that without exception all prices in the Subcontract are premised upon performing and furnishing the Subcontract Work required by the Subcontract Documents.

15.02 *Subcontractor's Certifications*

A. Subcontractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Subcontract. For the purposes of this paragraph:

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1. “corrupt practice” means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process or in the Subcontract execution;
2. “fraudulent practice” means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Subcontract to the detriment of Owner or Contractor, (b) to establish bid or Subcontract prices at artificial non-competitive levels, or (c) to deprive Owner or Contractor of the benefits of free and open competition;
3. “collusive practice” means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner or Contractor, a purpose of which is to establish bid prices at artificial, non-competitive levels; and
4. “coercive practice” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Subcontract.

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IN WITNESS WHEREOF, Contractor and Subcontractor have signed this Subcontract.

The Effective Date of the Subcontract is SEPTEMBER 28, 2022.

Contractor:

R.A. DEVELOPMENT, LTD.

By: _____
(individual's signature)

Name: ROCKY BRANSOM

Title: PRESIDENT

Date: 9-28-22
(date signed)

Attest: _____
(individual's signature)

Name: Justin Bond
(typed or printed)

Title: COO
(typed or printed)

Address for giving notices:

236 E. ELLISON ST.

BURLESON, TX 76028

Designated Representative:

Name: JUSTIN BOND
(typed or printed)

Title: COO
(typed or printed)

Address:

236 E. ELLISON ST.

BURLESON, TX 76028

Phone: 817-880-1220

Email: JUSTIN@RADEV.BIZ

(If Contractor or Subcontractor is a corporation, attach evidence of authority to sign.

Subcontractor:

GILCO CONTRACTING, INC.

By: _____
(individual's signature)

Name: Leia McQuien
(typed or printed)

Title: VP of Operations
(typed or printed)

Date: _____
(date signed)

(If Subcontractor is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest: _____
(individual's signature)

Name: Heather Williams
(typed or printed)

Title: Operations Coordinator
(typed or printed)

Address for giving notices:

6331 Southwest Blvd.

Benbrook, Texas 76132

Designated Representative:

Name: Johnathan Turner
(typed or printed)

Title: VP of Construction
(typed or printed)

Address:

6331 Southwest Blvd.

Benbrook, Texas 76132

Phone: 817-929-0527

Email: jdt@gilcocontracting.com

License No.: n/a
(where applicable)

State: _____

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Lakewood Drive

SCOPE OF WORK AND UNIT PRICING

Line Item#	PAVING - GILCO CONTRACTING, INC.		QUANTITY AND BUDGET			
		Original Contract Sum	Quantity	Unit	Unit Price	Total
1	8" Concrete Pavement	$ 3,173,859.27	45,231	SY	70.17	3,173,859.27
2	8" Compacted Lime Subgrade	$ 176,958.00	49,155	SY	3.60	176,958.00
3	Hydrated Lime 42#/SY	$ 281,116.80	1,032	TON	272.40	281,116.80
4	7" HMAC Pavement	$ 372,456.00	5,173	SY	72.00	372,456.00
5	8" Compacted Lime Subgrade	$ 26,935.30	5,497	SY	4.90	26,935.30
6	Hydrated Lime 42#/SY	$ 31,326.00	115	TON	272.40	31,326.00
7	4" Stained and Stamped Concrete	$ 212,945.25	1,645	SY	129.45	212,945.25
8	8" Stained and Stamped Concrete	$ 126,720.60	508	SY	249.45	126,720.60
9	Integral 11" Colored Concrete	$ 16,941.60	48	SY	352.95	16,941.60
10	3" Depth River Rock w/ DeWitt Fabric	$ 4,729.95	207	SY	22.85	4,729.95
11	2' Height Ret. Wall (Roundabout)	$ 29,228.40	207	LF	141.20	29,228.40
12	Monolithic Median Nose	$ 810.00	9	SY	90.00	810.00
13	End of Road Barricade	$ 10,500.00	7	EA	1,500.00	10,500.00
14	Concrete Header	$ 4,500.00	225	LF	20.00	4,500.00
15	Sawcut & Remove Ex. Asphalt Pvmt.	$ 1,730.00	173	LF	10.00	1,730.00
16	Type 7 Ramps	$ 44,800.00	10	EA	4,480.00	44,800.00
17	Type 1 Ramps	$ 17,720.00	8	EA	2,215.00	17,720.00
18	Detectable Warnings (Median)	$ 2,880.00	8	EA	360.00	2,880.00
19	10' Concrete Sidewalk	$ 1,117,641.00	15,206	LF	73.50	1,117,641.00

Lakewood Drive

SCOPE OF WORK AND UNIT PRICING

20	10' Pedestrian Underpass S/W	$	30,282.00	412	LF	73.50	30,282.00
21	3" Mountable Curb (Median)	$	352.00	352	LF	1.00	352.00
22	6" Mountable Curb (Median)	$	278.00	278	LF	1.00	278.00
23	6" Standard Curb (Median)	$	258.00	258	LF	1.00	258.00
24	7" Vertical Curb (Median)	$	10,923.00	10,923	LF	1.00	10,923.00
25	TxDOT Single Guardrail Assembly	$	64,757.00	841	LF	77.00	64,757.00
26	CR 914 Full Width Mill & Overlay	$	124,027.05	5,289	SY	23.45	124,027.05
27	Traffic Control	$	10,000.00	1	LS	10,000.00	10,000.00
28	Payment / Performance / Maintenance Bonds	$	81,475.94	1	EA	81,475.94	81,475.94
29	Staking & Survey	$	85,000.00	1	EA	85,000.00	85,000.00
30	Testing	$	80,000.00	1	EA	80,000.00	80,000.00
31	Concrete Washout Area	$	6,000.00	2	EA	3,000.00	6,000.00
32	R1-2 Sign	$	4,000.00	4	EA.	1,000.00	4,000.00
33	Wl 1-2 & W l6-7 Sign	$	8,720.00	8	EA.	1,090.00	8,720.00
34	W2-6 & W 16-17P Sign	$	2,236.00	2	EA.	1,118.00	2,236.00
35	R6-4A Sign	$	2,000.00	2	EA.	1,000.00	2,000.00
36	R4-8 Sign	$	2,000.00	2	EA.	1,000.00	2,000.00
37	Rl-1 Sign	$	6,000.00	6	EA.	1,000.00	6,000.00
38	W9-2L Sign	$	2,000.00	2	EA.	1,000.00	2,000.00
39	Wl-7 Sign	$	1,000.00	1	EA.	1,000.00	1,000.00
40	R3-8 Sign	$	2,000.00	2	EA.	1,000.00	2,000.00
41	4" Yellow Solid Line	$	1,700.00	1,360	L.F.	1.25	1,700.00
42	4" White Broken Line	$	15,407.50	12,326	L.F.	1.25	15,407.50

Lakewood Drive

SCOPE OF WORK AND UNIT PRICING

43	4" White Solid Line	$ 11,813.75	9,451	L.F.	1.25	11,813.75
44	8" White Solid Line	$ 2,160.00	864	L.F.	2.50	2,160.00
45	24" White Solid Line	$ 9,881.00	820	L.F.	12.05	9,881.00
46	White Arrow	$ 7,800.00	24	EA.	325.00	7,800.00
47	White Double Arrow	$ 2,340.00	4	EA.	585.00	2,340.00
48	White Word	$ 8,000.00	16	EA.	500.00	8,000.00
49	18" White Yield Line	$ 1,085.00	100	L.F.	10.85	1,085.00
50	8" White Broken Line	$ 1,300.00	520	L.F.	2.50	1,300.00
51	Remove Existing Soilid White Line	$ 99.00	110	LF	0.90	99.00
	Total	$ 6,238,693.41	**Total Bid Price:**			**$6,238,693.41**

CONSTRUCTION SUBCONTRACT

This is a Construction Subcontract (Subcontract) between **RA DEVELOPMENT, LTD.** (Contractor) and **TROPHY CONSTRUCTION SERVICES, LLC** (Subcontractor). This Subcontract is effective as of **SEPTEMBER 28, 2022.**

Prime Contract: Contractor has entered into a contract (Prime Contract) dated **JUNE 7, 2021** with **CITY OF BURLESON, TEXAS** (Owner) known also as Ordinance CSO #1775-06-2021.

Contractor and Subcontractor further agree as follows:

ARTICLE 1—PRELIMINARY MATTERS

1.01 *Prime Contract*

A. The Prime Contract requires Contractor to perform and furnish construction labor, materials, equipment, and services ("Prime Contract Work") in connection with the Project described therein. The Prime Contract (excluding compensation and other confidential information) is incorporated in this Subcontract by reference. Portions of the Prime Contract are attached as Exhibit 1 to this Subcontract; Subcontractor may review other non-confidential portions upon request. The Project described in the Prime Contract is summarized as follows:

LAKEWOOD DRIVE FROM FM 1902 TO CR 1020, BURLESON, TEXAS

1.02 *Scope of Subcontract Work*

A. Contractor hereby retains Subcontractor to provide construction labor, materials, equipment, and services under this Subcontract described as follows:

SEE ATTACHED SCOPE OF WORK & UNIT PRICING ("Subcontract Work").

B. The Subcontract Work is a part of the Prime Contract Work. Except as otherwise stated in this Subcontract, the provisions of the Prime Contract that apply to the performance and quality of the Prime Contract Work apply to the Subcontract Work.

C. The express terms of this Paragraph 1.02 govern in establishing the Subcontract scope of work. The divisions and sections of the Prime Contract's Specifications and the identifications and organization of the Prime Contract's drawings do not control or limit Contractor in dividing the Work among subcontractors or suppliers, or delineating the work to be performed by, or obligations of any specific trade, including Subcontractor.

D. Certain exclusions have been established by the Subcontractor as a part of the bid process. Unless otherwise specified in the Subcontract Work, the exclusions are to include:

Exclusions: *Rock Exc (Geotech Required), Flow Fill Backfill, Sawcut/Demo, Demo Fence & Gravel Driveway, Paving Replacement, Grease Interceptor/Sample Well (Installation up to Wye), On-Bldg FDC, Inlet Throats, Retaining Walls, Franchise/Dry Utilities, Concrete Washout, Erosion Control (Seed/Sod/Entrances/Silt Fence/Check Dams), Import, Density Testing, Bonds, Traffic Control, Landscaping/Restoration, SWPPP, Fees (Impact/Permit/Meter/Tap), Portable Restroom, Mandrel, Bypass Pumping, Tree Removal, Remove/Relocate Light Poles, Hold Guy Wires. Any items not specifically included above are excluded.*

Note: This proposal is based on a mutually agreeable subcontract agreement. Contractor is to be paid per Installed Quantities. Proposal is acceptable for 30 days from Bid Date.

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1.03 *Subcontract Documents*

A. The Subcontract Documents are identified in Article 14 of this Subcontract.

1.04 *Independent Contractor*

A. Subcontractor is an independent contractor, and is not an employee or partner of, or a joint-venturer with Contractor, and has no contractual relationship or privity with Owner or Owner's engineers or consultants.

ARTICLE 2—OBLIGATIONS OF THE PRIME CONTRACT

2.01 *Incorporation of Prime Contract Obligations*

A. The Subcontractor is bound to the Contractor under the Subcontract to the same extent that the Contractor is bound to the Owner under the Prime Contract, and Subcontractor shall comply with all requirements, terms, and conditions of the Prime Contract that relate in any way to the performance and completion of the Subcontract Work.

B. The obligation of the Subcontractor to comply with the requirements, terms, and conditions of the Prime Contract does not provide any rights, benefits, or third-party beneficiary standing to the Subcontractor with respect to the Prime Contract.

2.02 *Precedence of Subcontract*

A. If a provision of this Subcontract conflicts with a provision of the Prime Contract, the terms of this Subcontract govern, unless under controlling laws the conflicted provision of the Prime Contract cannot be waived.

ARTICLE 3—SUBCONTRACT TIMES

3.01 *Subcontract Times*

A. The Subcontract Work will be completed in full on or before **DECEMBER 31, 2023.**

B. Subcontractor shall provide all required submittals on a timely basis, and shall provide sufficient labor and materials to comply with the Contractor's progress schedule and avoid delaying the progress of Contractor's work under the Prime Contract. Subcontractor shall make modifications in the performance and completion of the Subcontract Work as necessary to comply with modifications, if any, in the Contractor's progress schedule.

C. The time for completion of the Subcontract Work, as set forth in Paragraph 3.01.A, and compliance with the Contractor's progress schedule, as set forth in Paragraph 3.01.B, all as duly modified under this Subcontract, together will be referred to as "Subcontract Times."

3.02 *Time of the Essence*

A. Subcontractor's obligation to comply with the Subcontract Times is of the essence of the Subcontract.

3.03 *Damages for Late Completion*

A. Subcontractor and Contractor recognize that Contractor will suffer financial loss if the Subcontract Work is not completed within the Subcontract Times.

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B. The damages resulting to the Contractor may include liquidated damages, special damages, and other damages (if any) assessed by the Owner, actual damages claimed by the Owner as a result of the delay, and the Contractor's costs for extended general conditions, field overhead, and home office overhead.

C. As a result of the losses, costs, and damages recognized in Paragraphs 3.03.A. and B., if Subcontractor fails to complete the Subcontract Work within the Subcontract Times, and without limiting any additional remedies available to Contractor, Subcontractor shall pay Contractor for losses, costs, and damages incurred by Contractor for Subcontractor's failure to comply with the Subcontract Times, including the share attributable to Subcontractor of delay damages and costs imposed on or levied against Contractor. Contractor has the right to set off any such amounts against payments due Subcontractor under this Subcontract.

ARTICLE 4—SUBCONTRACT PRICE

4.01 *Payment Obligation*

A. Contractor shall pay Subcontractor for completion of the Subcontract Work in accordance with the Subcontract Documents an amount equal to the sum of the amounts determined pursuant to the following paragraphs, and not to exceed: **$6,983,545.10**.

B. For all Subcontract Work other than Unit Price Work, a lump sum of: $0.00

1. Cash Allowances: All specific cash allowances are included in the above price and include the cost to Subcontractor (less any applicable trade discounts) of materials and equipment required by the cash allowances to be delivered at the site, and all applicable taxes. Subcontractor's costs for unloading and handling on the site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Subcontract Price, and no demand for additional payment on account of any of the foregoing will be valid.

C. For all Unit Price Work, an amount equal to the sum of the established unit price for each separately identified item of Unit Price Work multiplied by the actual quantity of that item:

SEE ATTACHED SCOPE OF WORK & UNIT PRICING

The extended prices for Unit Price Work set forth as of the Subcontract Date are based on estimated quantities. Estimated quantities are not guaranteed, and determinations of actual quantities will be verified by the Contractor and will be subject to any applicable procedures for measurement and verification under the Prime Contract.

ARTICLE 5—PAYMENT PROCEDURES

5.01 *Progress Payments*

A. *Applications for Payments*

1. Ten days prior to the date established in the Prime Contract for submission by the Contractor of the Contractor's application for each progress payment (but not more often than once a month), Subcontractor shall submit to Contractor for review a draft progress payment application covering the Subcontract Work completed as of the date of the progress payment application. The amount requested under each progress payment

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application will be calculated in accordance with Article 4, and: (a) for lump sum work by determining the percentage of the Subcontract Work completed as of the date of the progress payment application; (b) for unit price work by applying unit prices to units provided; (c) subject to subtraction to account for amounts previously paid. Subcontractor's progress payments will be subject to the retainage provisions of the Prime Contract, or to retainage of **five (5)** percent, whichever is greater.

2. Each Subcontractor progress payment application must be accompanied by supporting documentation required by the Prime Contract to be attached to the Contractor's progress payment submission. The Subcontract progress payment application must also be accompanied by required lien waivers; a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all liens; and for stored material and equipment, evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect Owner's interest therein. All such supporting documentation must be satisfactory to Contractor and Owner. Application for progress payment may be submitted no more than once a month by Subcontractor to Contractor.

3. Beginning with Subcontractor's second progress payment application, each Subcontractor progress payment application must include a Subcontractor's affidavit stating that all previous progress payments received on account of the Subcontract Work have been paid to persons and entities providing labor, equipment, materials and services on account of amounts received on behalf of said sub-subcontractors, suppliers, and vendors from prior progress payment applications. Each Subcontractor's affidavit must list all sub-subcontractors, suppliers, and vendors having contracts with Subcontractor to provide said labor, equipment, material, and services on the Project including the amount of each contract, the amount paid to date and the amount due or to become due to each sub-subcontractor, supplier, and vendor. Each progress payment application must also include lien waivers executed by each sub-subcontractor, supplier, and vendor listed on the Subcontractor's affidavit.

B. *Review of Applications*

1. Within five days after receipt of each draft progress payment application submitted by Subcontractor, Contractor will return the draft progress payment application with corrections (if any). Subcontractor will submit a final progress payment application, incorporating all resolved corrections, together with all supporting documentation, within three days thereafter.

2. Contractor may withhold amounts requested in one or more payment applications from the Subcontractor in whole or part if one or more of the following occurs:

   a. The Subcontract Work is defective, or completed Subcontract Work has been damaged, requiring correction or replacement;

   b. The Subcontract Price has been reduced by change orders;

   c. The Contractor has been required to correct defective Subcontract Work or complete Subcontract Work;

   d. Claims have been made against Contractor on account of Subcontractor's performance or furnishing of the Subcontract Work;

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e. Liens have been filed in connection with the Subcontract Work, except where Subcontractor has delivered a specific bond satisfactory to Contractor and Owner to secure the satisfaction and discharge of such liens;

f. The Owner has exercised a set-off against payments to Contractor attributable to Subcontractor's activities or performance of the Subcontract Work; or

g. The Subcontractor has defaulted under the terms of the Subcontract.

C. *Payment:* Contractor shall pay Subcontractor any amounts due to Subcontractor under a payment application for Subcontract Work within 30 days after Contractor's receipt from the Owner of payment for such Subcontract Work.

ARTICLE 6—FINAL PAYMENT AND COMPLETION

6.01 *Final Payment*

A. Upon final completion of obligations under the Subcontract, including acceptance by Owner (or its representative) of the Subcontract Work as part of the Work under the Prime Contract, and submission and acceptance of all close-out documents required under the Subcontract, Subcontractor shall submit to Contractor an application for final payment and release of retainage, if any.

B. Final payment becomes due 30 days after Contractor's receipt of payment from the Owner of amounts requested on behalf of Subcontractor. Contractor's receipt of payment of retainage withheld by Owner from amounts due to Contractor for the Subcontract Work is an express condition precedent to Contractor's obligation to pay such retainage to Subcontractor.

6.02 *Final Lien Waivers*

A. Upon the request of Contractor, Subcontractor shall submit, as part of the application for final payment, a final waiver of lien and sworn statement indicating all sub-subcontractors, suppliers, and vendors, their contract amounts, and the final amounts paid to each sub-subcontractor, supplier, and vendor.

6.03 *Warranty of Title*

A. Subcontractor warrants and guarantees that title to all Subcontract Work, materials, and equipment furnished under the Subcontract will pass to Owner free and clear of all liens and other title defects, and all patent, licensing, copyright, or royalty obligations.

6.04 *Waiver of Claims*

A. Final payment by Contractor to Subcontractor constitutes:

1. A waiver of all claims by Contractor against Subcontractor, except claims arising from unsettled liens, from defective Subcontract Work appearing after final inspection, from failure to comply with the Subcontract Documents or the terms of any special guarantees specified therein, or from Subcontractor's continuing obligations under the Prime Contract; and

2. A waiver of all claims by Subcontractor against Contractor other than those previously made in accordance with the requirements herein that remain unsettled.

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ARTICLE 7—SUB-SUBCONTRACTORS

7.01 *Subcontractor's Responsibility*

A. Subcontractor shall be fully responsible to Contractor for all acts and omissions of the sub-subcontractors, suppliers, and other individuals or entities performing or furnishing any of the Subcontract Work, just as Subcontractor is responsible for Subcontractor's own acts and omissions.

7.02 *No Third-Party Relationships*

A. Nothing in the Subcontract Documents creates for the benefit of any such sub-subcontractor, supplier, or other individual or entity any contractual relationship between Contractor, Owner, or Owner's engineers or consultants and any such sub-subcontractor, supplier, or other individual or entity.

B. Nothing in the Subcontract Documents creates any obligation on the part of Contractor, Owner, or Engineer to pay or to see to the payment of any money due any such sub-subcontractor, supplier, or other individual or entity, except as may otherwise be required by laws and regulations.

ARTICLE 8—PERFORMANCE OF THE SUBCONTRACT WORK

8.01 *Subcontractor's Obligations*

A. Subcontractor shall provide all material, equipment, services, and labor necessary for the completion of the Subcontract Work.

B. All materials and equipment must be as specified in the Subcontract Documents and be of good quality and new, except as otherwise provided in the Subcontract Documents. Subcontractor shall provide Contractor with such information and test results required under the Prime Contract to verify the quality of the materials and equipment furnished under the Subcontract Documents.

8.02 *Verification of Existing Conditions*

A. The dimensions, locations, and limits of the Subcontract Work are shown or indicated in the Subcontract Documents.

B. The Contractor has used reasonable efforts to verify the accuracy of dimensions, locations, and limits in the Subcontract Documents, but takes no responsibility for the verification of information concerning actual conditions affecting the Subcontract Work. Subcontractor has an independent obligation to verify actual conditions, including but not limited to dimensions, locations, and limits, prior to ordering equipment and materials and performing the Subcontract Work, and shall be responsible for all costs and expenses resulting from the failure to verify such information.

8.03 *Supervision*

A. At all times during the progress of the Subcontract Work, Subcontractor shall assign an authorized representative to provide competent, on-site supervision. Such representative must not be replaced without written notice to Contractor except under extraordinary circumstances.

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B. Subcontractor shall be solely responsible for scheduling and coordinating the work of sub-subcontractors, suppliers, and other individuals or entities performing or furnishing any of the Subcontract Work under a direct or indirect contract with Subcontractor.

C. Subcontractor shall supervise, inspect, and direct the Subcontract Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Subcontract Work in accordance with the Subcontract Documents.

8.04 *Coordination with Other Subcontractors; Other Work at the Site*

A. Subcontractor shall cooperate with other subcontractors and coordinate its Subcontract Work and schedule with other subcontractors on the Project. Subcontractor shall attend coordination meetings and endeavor to resolve all conflicts with other subcontractors without the intervention of Contractor. If a conflict cannot be resolved without the intervention of Contractor, the decision of Contractor regarding resolution of the conflict will be final.

B. Subcontractor shall not damage, delay, or interfere with the work of other subcontractors or of Contractor, Owner, or others working at the site, shall be responsible for the cost of damage, delay, or interference caused by the operations of Subcontractor to the work of others.

8.05 *Prosecution of the Subcontract Work*

A. *Clean-up:* On not less than a daily basis, Subcontractor shall be responsible for cleaning up and removing all debris and waste resulting from the Subcontract Work, to avoid interference with the work and progress of others at the site. If Subcontractor fails to clean up and remove waste and debris in accordance with this provision, Contractor may provide for clean-up and removal of waste and debris at Subcontractor's expense.

B. *Hoisting and Lifting:* Subcontractor shall provide all hoisting and lifting required for the Subcontract Work, unless Contractor has otherwise expressly agreed to provide hoisting, lifting, or both.

C. *Temporary Utility Services and Temporary Facilities:* Subcontractor shall at its expense provide temporary utility services and temporary facilities needed for the performance of the Subcontract Work, except those temporary utility services and temporary facilities that Contractor has expressly agreed to provide at its expense.

D. *Safety and Protection*

1. Subcontractor shall perform the Subcontract Work in a safe manner, taking full responsibility for the prevention of harm or injury to its workforce, and taking all reasonable steps necessary to protect from harm, injury, or damage all persons, property, structures, materials, and equipment at or adjacent to the Subcontractor's work areas.

2. Subcontractor shall comply with the safety programs of the Owner and Contractor, when Subcontractor has been made aware of such requirements in writing.

3. Subcontractor shall coordinate the safety of its employees, Subcontractor's lower-tier subcontractors, and Subcontractor's suppliers with Contractor's safety representative, and shall comply with all applicable OSHA and other laws and regulations related to safety and protection. Subcontractor shall ensure that its employees and the on-site employees of Subcontractor's lower-tier subcontractors and suppliers are properly trained and

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understand (a) Owner's, Contractor's, and Subcontractor's safety requirements, and (b) applicable safety laws and regulations. Subcontractor is responsible for furnishing to Contractor and others as applicable all required material safety data sheets.

4. Subcontractor shall report promptly to Contractor all injuries, accidents, and damage that occurs during the performance of the Subcontract Work, and all failures or near-miss events that could have resulted in serious injury, even if no serious injury actually occurred.

E. *Labor:* Subcontractor shall comply with applicable labor and jurisdictional requirements to prevent strikes and other work stoppages and slowdowns that would interfere with the Subcontract Work and the work of others. Subcontractor shall be responsible for delays resulting from Subcontractor's violation of this provision.

F. *Communications with Owner and Engineer:* Subcontractor shall communicate with Owner, Owner's engineers, and Owner's other representatives solely through Contractor, with the following limited exceptions: (1) in the case of an emergency, Subcontractor may communicate directly with any entity or individual in the interests of safety and protection of property, (2) Subcontractor may directly request Owner to provide information about amounts paid to Contractor on account of Subcontract Work performed, and (3) Subcontractor may directly request Owner to provide Subcontractor with a copy of any payment bond furnished by Contractor.

8.06 *Correction and Warranties*

A. Subcontractor warrants and guarantees to Contractor that all Subcontract Work will be in accordance with the Subcontract Documents and will not be defective. Subcontractor's warranty and guarantee hereunder excludes defects or damage caused by abuse, modification, or improper maintenance or operation by persons other than Subcontractor and its sub-subcontractors, suppliers, or any other individual or entity for whom Subcontractor is responsible; or normal wear and tear under normal usage.

B. Subcontractor's obligation to perform and complete the Subcontract Work in accordance with the Subcontract Documents will be absolute and Subcontractor shall be fully responsible for the Subcontract Work under the Subcontract to the same extent that Contractor is responsible for the Subcontract Work to the Owner under the Prime Contract.

C. Subcontractor shall correct the Subcontract Work to the same extent that Contractor is required to correct the Prime Contract Work (including the Subcontract Work) under the Prime Contract. Subcontractor shall correct Subcontract Work whether or not installed or completed. If the Subcontract Work has been rejected, Subcontractor shall remove such rejected Subcontract Work from the Project at the direction of Contractor, and replace it with Subcontract Work that is not defective.

D. For a period of one year after substantial completion of the Prime Contract Work, and for any additional period beyond one year as required under the Prime Contract for correction by the Contractor of the Prime Contract Work, and promptly after receipt of written notice, Subcontractor shall correct all defective Subcontract Work as directed by Contractor. Subcontractor shall indemnify Contractor, Owner, Owner's engineers and consultants, for all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other

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dispute resolution costs) arising out of or relating to any such correction or removal (including but not limited to all costs of repair or replacement of work of others).

E. All such correction obligations are in addition to the warranty, guarantee, and contractual duties established above and elsewhere in the Subcontract Documents.

F. The obligations under this Paragraph 8.06 will survive completion of the Subcontract Work and, when the Prime Contract is complete and ready for final payment by Owner, Contractor may assign its rights under this Paragraph 8.06 to Owner upon agreement between Owner and Contractor and notice to Subcontractor.

ARTICLE 9—CHANGES TO THE SUBCONTRACT

9.01 *Changes*

A. Without invalidating the Subcontract, Contractor may, at any time or from time to time, order changes to the Subcontract Work including additions, deletions, or revisions in the Subcontract Work. Subcontractor shall promptly proceed with the Subcontract Work as changed. All changed Subcontract Work will be performed under the applicable conditions of the Subcontract Documents. Subcontractor shall not perform any changes to the Subcontract Work that would increase the Subcontract Price or Subcontract Times without express written authority from Contractor.

B. Subcontractor shall deliver notice of each request for a change in compensation or time within 7 days of the associated directive to perform changed Subcontract Work, and not later than 2 days before Prime Contract requirements relative to submitting claims and change proposals.

C. Changes in the Subcontract Price for changed Subcontract Work will be made on the basis of either a mutually acceptable lump sum price, or under unit prices consistent with the unit prices set forth in the Subcontract as of the Subcontract Date. To the extent the changed Subcontract Work has no predetermined costs or unit prices under the original Subcontract, and the parties do not agree to a lump sum for the changed Subcontract Work, the amount of the request for changed compensation will be based upon Subcontractor's cost of labor (consistent with any applicable rates negotiated under the original Subcontract), plus the direct costs of sub-subcontracts, materials and equipment to be consumed or incorporated in the changed Subcontract Work, plus overhead and profit consistent with the price negotiated for the original Subcontract Work and subject to approval by Contractor.

D. To the extent that a change to the Subcontract Work resulted from a revision of the Prime Contract, the compensation to Subcontractor for such changed Subcontract Work will be limited to the amount collected by Contractor from Owner on behalf of Subcontractor for such change in the Subcontract Work. In the event that the revision results in a deduction of the Subcontract Price, the deduction will be based upon the share of the deduction assessed against Contractor under the Prime Contract that is attributable to the change in Subcontract Work.

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ARTICLE 10—BONDS, INSURANCE, AND INDEMNIFICATION

10.01 *Performance Bond, Payment Bond, and Other Bonds*

A. If expressly listed as Subcontract Documents in Article 13, or expressly required of Subcontractor elsewhere in the Subcontract Documents, Subcontractor shall at its expense furnish a performance bond and a payment bond, each in an amount equal to or greater than the Subcontract Price, as security for the faithful performance and payment of all of Subcontractor's obligations under the Subcontract Documents. If the Subcontract Documents as of the Subcontract Date do not require performance and payment bonds, but Contractor subsequently instructs Subcontractor to furnish such bonds, Subcontractor shall do so at Contractor's expense.

B. The performance and payment bonds must remain in effect until not less than the longer of: (1) one year after the date when final payment becomes due from Contractor; or (2) completion of the correction period specified in this Subcontract, except as provided otherwise by applicable laws or regulations. Subcontractor shall also furnish such other bonds as are required by the Subcontract Documents. The performance bond will be issued on EJCDC® C-610 Performance Bond (2018) or by other form deemed acceptable by Contractor. The Payment Bond will be issued on the EJCDC® C-615 Payment Bond (2018) or by other form deemed acceptable by Contractor. Terms of these bonds apply except as expressly provided otherwise by laws or regulations.

C. If the Prime Contract requires that Contractor furnish a Warranty Bond, then Subcontractor shall furnish a Warranty Bond with respect to the Subcontract Work, under the same requirements. The bond will be issued using EJCDC® C-612, Warranty Bond (2018) or by other form deemed acceptable by Contractor.

D. All bonds must be executed by such sureties as are named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority must show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

E. Subcontractor shall obtain the required bonds from surety companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds in the required amounts.

F. If the surety on a bond furnished by Subcontractor is declared bankrupt or becomes insolvent, or its right to do business is terminated in any state or jurisdiction where any part of the Project is located, or the surety ceases to meet the requirements above, then Subcontractor shall promptly notify Contractor and shall, within 20 days after the event giving rise to such notification, furnish another bond and surety, both of which must comply with the bond and surety requirements above.

G. If the Subcontract requires Subcontractor to provide its own performance bond and payment bond, as described in Paragraphs 10.01.A. through D., the Contractor may, at its sole discretion, provide such bonds for the Subcontractor, either as individual instruments or as a part of Contractor's bonding. In such case Subcontractor shall be responsible to Contractor for a proportionate share of Contractor's bond costs, computed as the percentage of the total

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Subcontract Price relative to the total bonded Contract Price, and the Subcontract Price will be adjusted accordingly.

H. As an alternative to requiring Subcontractor to provide or contribute to the cost of performance bonds or payment bonds as described in this Paragraph 10.01, the Contractor may, at its sole discretion, waive such requirements for this Subcontract, and the Subcontract Price will be adjusted accordingly.

I. If Subcontractor has failed to obtain a required bond, Contractor may exclude the Subcontractor from the site and exercise Contractor's termination rights under Article 11.

J. Upon request, Contractor shall provide a copy of the payment bond to any sub-subcontractor, supplier, or other person or entity claiming to have furnished labor or materials used in the performance of the Subcontract Work.

10.02 *Insurance—General Provisions*

A. Subcontractor shall obtain and maintain insurance as required in this Article and in any Subcontract exhibit or supplementary Subcontract Document regarding insurance.

B. All insurance required by the Subcontract to be purchased and maintained by Subcontractor must be obtained from insurance companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue insurance policies for the required limits and coverages. Unless a different standard is indicated elsewhere in the Subcontract Documents, all companies that provide insurance policies required under this Subcontract must have an A.M. Best rating of A-VII or better.

C. Subcontractor shall deliver to Contractor, with copies to each named insured and additional insured (as identified here or elsewhere in the Subcontract Documents), certificates of insurance establishing that Subcontractor has obtained and is maintaining the policies, coverages, and endorsements required by the Subcontract. Upon request by Contractor or any other insured, Subcontractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Subcontractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

D. Failure of Contractor to demand such certificates or other evidence of the Subcontractor's full compliance with these insurance requirements, or failure of Contractor to identify a deficiency in compliance from the evidence provided, will not be construed as a waiver of the Subcontractor's obligation to obtain and maintain such insurance.

E. If Subcontractor does not purchase or maintain all of the insurance required of it by this Subcontract, the Subcontractor shall notify Contractor in writing of such failure to purchase prior to the start of the Subcontract Work, or of such failure to maintain prior to any change in the required coverage.

F. If Subcontractor has failed to obtain and maintain required insurance, Contractor may exclude the Subcontractor from the site and exercise Contractor's termination rights under Article 11.

G. Without prejudice to any other right or remedy, if Subcontractor has failed to obtain required insurance, Contractor may elect to obtain equivalent insurance to protect Contractor's interests at the expense of Subcontractor, and the Subcontract Price will be adjusted accordingly.

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H. Contractor does not represent that insurance coverage and limits established in this Subcontract necessarily will be adequate to protect Subcontractor or Subcontractor's interests.

I. The insurance and insurance limits required herein will not be deemed as a limitation on Subcontractor's liability under the indemnities granted to Contractor and other individuals and entities in the Subcontract Documents.

10.03 *Subcontractor's Insurance*

A. *Workers' Compensation:* Subcontractor shall purchase and maintain workers' compensation and employer's liability insurance for:

1. claims under workers' compensation, disability benefits, and other similar employee benefit acts.

2. United States Longshoreman and Harbor Workers' Compensation Act (if applicable) and Jones Act coverage (if applicable).

3. claims for damages because of bodily injury, occupational sickness or disease, or death of Subcontractor's employees (by stop-gap endorsement in monopolist worker's compensation states).

4. Foreign voluntary worker compensation (if applicable).

Workers' Compensation and Related Policies	Policy limits of not less than:
Workers' Compensation	
State	Statutory
Applicable Federal (e.g., Longshoreman's)	Statutory
Foreign voluntary workers' compensation (employer's responsibility coverage), if applicable	Statutory
Jones Act (if applicable)	
Bodily injury by accident—each accident	Statutory
Bodily injury by disease—aggregate	$500,000
Employer's Liability	
Each accident	Statutory
Each employee	$ 100,000
Policy limit	Statutory

B. *Commercial General Liability—Claims Covered:* Subcontractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Subcontractor, on an occurrence basis, against:

1. Claims for damages because of bodily injury, sickness or disease, or death of any person other than Subcontractor's employees;

2. Claims for damages insured by reasonably available personal injury liability coverage; and

3. Damages because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.

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C. *Commercial General Liability—Form and Content:* Subcontractor's commercial liability policy must be written on a 1996 (or later) ISO commercial general liability form (occurrence form) and include the following coverages and endorsements:

1. Products and completed operations coverage:
    a. Such insurance must remain in effect for three years after final payment.
    b. Subcontractor shall furnish Contractor and each other additional insured (as identified in this Article or elsewhere in the Subcontract Documents) evidence of continuation of such insurance at final payment and three years thereafter.
2. Blanket contractual liability coverage, including but not limited to coverage of Subcontractor's contractual indemnity obligations under the Subcontract Documents.
3. Severability of interest.
4. Underground, explosion, and collapse coverage.
5. Personal injury coverage.
6. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together); or their equivalent if Subcontractor demonstrates that the specified endorsements are not commercially available.
7. For design professional additional insureds, ISO Endorsement CG 20 32 07 04, "Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured" or its equivalent.
8. If governing law invalidates or restricts the use of a specified additional insurance endorsement, then Subcontractor will furnish an endorsement that is compliant with governing law while providing reasonable protection of the interests of the additional insureds.

D. *Commercial General Liability—Excluded Content:* The commercial general liability insurance policy, including its coverages, endorsements, and incorporated provisions, must not include any of the following:

1. Any modification of the standard definition of "insured contract" (except to delete the railroad protective liability exclusion if Subcontractor is required to indemnify a railroad or others with respect to Work within 50 feet of railroad property).
2. Any exclusion for water intrusion or water damage.
3. Any provisions resulting in the erosion of insurance limits by defense costs other than those already incorporated in ISO form CG 00 01.
4. Any exclusion of coverage relating to earth subsidence or movement.
5. Any exclusion for the insured's vicarious liability, strict liability, or statutory liability (other than worker's compensation).
6. Any limitation or exclusion based on the nature of Subcontractor's work.
7. Any professional liability exclusion broader in effect than the most recent edition of ISO form CG 22 79.

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Commercial General Liability	Policy limits of not less than:
General Aggregate	$500,000

E. *Automobile Liability:* Subcontractor shall purchase and maintain automobile liability insurance against claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle. The automobile liability policy must be written on an occurrence basis.

Automobile Liability	Policy limits of not less than:
Bodily Injury	
Combined Single Limit (Bodily Injury and Property Damage)	$500,000

F. *Umbrella or Excess Liability:* Subcontractor shall purchase and maintain umbrella or excess liability insurance written over the underlying employer's liability, commercial general liability, and automobile liability insurance described in the paragraphs above. The coverage afforded must be at least as broad as that of each and every one of the underlying policies.

Excess or Umbrella Liability	Policy limits of not less than:
Each Occurrence	$1,000,000

G. This section intentionally left blank.

H. *Additional Insureds:* The Subcontractor's commercial general liability, automobile liability, employer's liability, umbrella or excess, and pollution liability policies must include and list as additional insureds Contractor, Owner, and Owner's engineers, architects, and consultants, and any individuals or entities identified as additional insureds elsewhere in the Subcontract Documents; include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds; and the insurance afforded to these additional insureds must provide primary coverage for all claims covered thereby (including as applicable those arising from both ongoing and completed operations) on a non-contributory basis. Subcontractor shall obtain all necessary endorsements to support these requirements.

I. *Subcontractor's Professional Liability Insurance:* If Subcontractor will provide or furnish professional services under this Subcontract, through a delegation of professional design services or otherwise, then Subcontractor shall be responsible for purchasing and maintaining applicable professional liability insurance. This insurance must cover negligent acts, errors, or omissions in the performance of professional design or related services by the insured or others for whom the insured is legally liable. The insurance must be maintained throughout the duration of the Subcontract and for a minimum of two years after Substantial Completion of the Project. The retroactive date on the policy must pre-date the commencement of furnishing services on the Project.

J. *General provisions:* The policies of insurance required by this Paragraph 10.03 must:

1. include at least the specific coverages provided in this Subcontract.

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2. be written for not less than the limits of liability expressly provided in this Subcontract, including any Subcontract exhibit or supplementary Subcontract Document specifying insurance policy limits, or if no such express insurance limits are set forth in the Subcontract, then for not less than the limits required of Contractor by Owner in the Prime Contract, for the corresponding types of insurance. If laws or regulations require a higher limit, then Subcontractor shall meet such legal requirement.

3. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 10 days prior written notice has been given to Subcontractor. Within three days of receipt of any such written notice, Subcontractor shall provide a copy of the notice to Contractor and each other insured under the policy.

4. remain in effect at least until final payment (and longer if expressly required herein) and at all times thereafter when Subcontractor may be correcting, removing, or replacing defective Subcontract Work as a warranty or correction obligation, or otherwise, or returning to the site to conduct other tasks arising from the Subcontract Documents.

5. be appropriate for the Subcontract Work being performed and provide protection from claims that may arise out of or result from Subcontractor's performance of the Subcontract Work and Subcontractor's other obligations under the Subcontract Documents, whether it is to be performed by Subcontractor, any lower-tier subcontractor or supplier, or by anyone directly or indirectly employed by any of them to perform any of the Subcontract Work, or by anyone for whose acts any of them may be liable.

K. Subcontractor waives all rights against Owner, Contractor, and all individuals or entities identified in the Prime Contract's Supplementary Conditions to be listed as insureds or additional insureds under the builder's risk, installation floater, or other forms of property insurance, and against the Owner's engineers and consultants, and their consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such builder's risk, installation floater, or other form of property insurance applicable to the work under the Prime Contract; and Contractor waives all rights against Subcontractor for all such losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such builder's risk, installation floater, or other form of property insurance applicable to the work under the Prime Contract.

L. If Contractor is responsible under the Prime Contract and any builder's risk or other property insurance policy for the payment of a deductible, or an amount within a deductible, and the need to pay such deductible or amount within a deductible is attributable in whole or part to the actions or inactions of Subcontractor, its sub-subcontractors, employees, agents, or others for which Subcontractor is responsible, then Subcontractor shall pay its attributable share of such deductible.

M. Upon request the Contractor shall provide to Subcontractor a copy of any builder's risk, installation floater, or other property insurance policy applicable to the work under the Prime Contract. Contractor may block out (redact) any confidential premium or pricing information contained in any such policy. Subcontractor may elect to obtain other insurance at its expense, if it concludes that its interests are not insured under such policy.

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N. *Other Required Insurance*

1. Provide certificate of insurance evidencing the required coverages to :

   a. RA Development, 236 E Ellison St., Burleson, TX 76028; attn: Justin Bond, COO

   b. City of Burleson, 141 W. Renfro St, Burleson, TX 76028; attn: Eric Oscarson, Director of Public Works

10.04 *Indemnification*

A. To the fullest extent permitted by laws and regulations, Subcontractor shall indemnify and hold harmless Contractor, Owner, and Owner's engineers and consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Subcontract Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Subcontract Work itself), including the loss of use resulting therefrom, but only to the extent caused by any negligent act or omission of Subcontractor, any lower tier subcontractor, supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Subcontract Work or anyone for whose acts any of them may be liable.

B. In addition to the indemnification obligations in the preceding paragraph, Subcontractor shall indemnify Contractor for all economic costs and expenses, including attorney's fees, for any claim against Contractor as a result of and to the extent caused by Subcontractor's breach of any obligation under the Subcontract.

C. In any and all claims against Contractor, Owner, or Owner's engineers or consultants, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors by any employee (or the survivor or personal representative of such employee) of Subcontractor, any lower tier subcontractor, any supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Subcontract Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 10.04.A. must not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Subcontractor, lower-tier subcontractor, supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

D. With respect to the Subcontract Work, the breach of obligations under the Subcontract, and any negligent act or omission of Subcontractor, any lower tier subcontractor, supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Subcontract Work, or anyone for whose acts any of them may be liable, and to the fullest extent permitted by law, Subcontractor assumes the same or corresponding responsibilities as Contractor for indemnity obligations set forth in the Prime Contract.

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ARTICLE 11—SUSPENSION AND TERMINATION

11.01 *Contractor May Suspend Work*

A. In the event that Owner suspends the work of Contractor under the Prime Contract, Contractor may suspend the performance of the Subcontract or any portion thereof for a period of not more than 90 consecutive days, by giving notice in writing to Subcontractor of such suspension. Subcontractor shall resume the Subcontract Work when instructed by Contractor to do so. Subcontractor shall be granted an adjustment in the Subcontract Price or an extension of the Subcontract Times, or both, directly attributable to any such suspension only to the extent that Contractor receives an adjustment of the Prime Contract price or the Prime Contract time for the Subcontractor's proportionate share of work under the Prime Contract.

B. Contractor may suspend the Subcontract Work for a period of not more than 90 days, or to the extent permitted by the progress schedule or any express provision of the Subcontract Documents, for Contractor's own purposes.

C. Contractor may suspend the work of Subcontractor with all costs and liability for any delay in the Subcontract Work and others to be assessed against the Subcontractor for the following Subcontract violations until the Subcontractor demonstrates it has cured the violations as follows:

1. Subcontractor fails to comply with the Owner's or Contractor's safety program;
2. Subcontractor or its employees are in violation of OSHA or state or local safety laws or regulations;
3. Subcontractor has installed defective Subcontract Work that is not in compliance with the Subcontract Documents and has failed to cure the defective Subcontract Work;
4. Subcontractor has violated any laws or regulations applicable to the performance of the Subcontract Work; and
5. Subcontractor has failed to pay a supplier or lower-tier subcontractor pursuant to Subcontractor's legal or contractual obligations.

D. If Subcontractor fails to comply with the progress schedule, causing delay to the Subcontract Work or the Prime Contract work, after three days' notice by Contractor and failure of Subcontractor to demonstrate that it has implemented procedures to comply with the schedule through measures such as providing supplemental labor, materials, and tools, then Contractor may implement its own procedures to meet the schedule, by providing supplemental labor, materials, tools, or taking other measures, through its own or other forces, and Contractor may assess the cost of such supplemental procedures against the Subcontract.

11.02 *Contractor May Terminate for Cause*

A. The occurrence of any one or more of the following events will justify termination for cause:

1. Subcontractor's persistent failure to perform the Subcontract Work in accordance with the Subcontract Documents (including, but not limited to, failure to supply sufficient skilled workers, suitable materials, or equipment, or failure to adhere to the Subcontract progress schedule);

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2. Subcontractor's disregard of laws or regulations of any public body having jurisdiction;

3. Subcontractor's repeated disregard of the authority of Contractor; or

4. Subcontractor's failure to perform or otherwise to comply with a material term of the Subcontract.

B. If one or more of the events identified in the preceding paragraph occur, Contractor may, after giving Subcontractor 7 days written notice of its intent to terminate the services of Subcontractor, or in the event the Subcontractor provided a performance bond covering the Subcontract the Contractor may provide notice to the Subcontractor and surety in accordance with the requirements of the applicable performance bond of its intent to terminate the services of Subcontractor to preserve Contractor's rights under the performance bond. Upon termination of the Subcontract, Contractor may:

1. exclude Subcontractor from the site, and take possession of the Subcontract Work;

2. incorporate in the Subcontract Work all materials and equipment stored at the site, or for which Contractor has paid Subcontractor but which are stored elsewhere; and

3. complete the Subcontract Work as Contractor may deem expedient.

C. If Contractor proceeds as provided in Paragraph 11.02.B., Subcontractor shall not be entitled to receive any further payment until the Subcontract Work is completed. If the unpaid balance of the Subcontract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor arising out of or relating to completing the Subcontract Work, such excess will be paid to Subcontractor. If such claims, costs, losses, and damages exceed such unpaid balance, Subcontractor shall pay the difference to Contractor. When exercising any rights or remedies under this paragraph, Contractor shall not be required to obtain the lowest price for the Subcontract Work performed.

D. Notwithstanding Paragraphs 11.02.A. and 11.02.B., Subcontractor's services will not be terminated if Subcontractor begins within four days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 14 days of receipt of said notice. If the Subcontractor fails to cure within 14 days of receipt of said notice, the Subcontract will be deemed terminated in accordance with provisions 11.02.A through 11.02.C upon two days' notice by the Contractor following the 14-day period.

E. Where Subcontractor's services have been so terminated by Contractor, the termination will not affect any rights or remedies of Contractor against Subcontractor then existing or which may thereafter accrue. Any retention or payment of money due Subcontractor by Contractor will not release Subcontractor from liability.

F. If and to the extent that Subcontractor has provided a performance bond, the termination procedures of that bond will supersede the procedures in this Paragraph 11.02.

11.03 *Termination of Contractor or Rejection of Subcontract by Owner*

A. The Contractor may terminate the Subcontract at any time, if the Prime Contract is terminated by the Owner, or if Owner rejects the Subcontract in accordance with the terms of the Prime Contract, the Contractor may terminate the Subcontract without penalty.

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B. In the event of a termination pursuant to Paragraph 11.03, the costs and expenses to be paid to Subcontractor resulting from a termination under this provision must be limited to the costs and expenses recovered by Contractor from Owner on Subcontractor's behalf.

11.04 *Contractor May Terminate for Convenience*

A. Upon 7 days written notice to Subcontractor, Contractor may, without cause and without prejudice to any other right or remedy of Contractor, terminate the Subcontract. In such case, Subcontractor shall be paid for (without duplication of any items):

1. Completed and acceptable Subcontract Work executed in accordance with the Subcontract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Subcontract Work;

2. Expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Subcontract in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and

3. Reasonable expenses directly attributable to termination.

B. Subcontractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

11.05 *Subcontractor May Stop Work or Terminate*

A. If, through no act or fault of Subcontractor, Contractor after receipt of payment from Owner fails to make payment due Subcontractor, for more than 30 days after payment is due, then Subcontractor may, upon 7 days written notice to Contractor, and provided Contractor does not remedy such failure within 7 days thereafter, terminate the Subcontract and recover payment from Contractor subject to the terms of this Subcontract.

B. As an alternative to terminating the Subcontract and without prejudice to any other right or remedy, if a payment owed to Subcontractor is more than 30 days past due, then Subcontractor may, 7 days after written notice to Contractor, stop the Subcontract Work until payment is made of all such amounts due Subcontractor, including interest thereon at an annual rate of five percent per annum, or if applicable at the rate prescribed by law, without penalty.

C. If the Contractor suspends the Subcontractor's work for more than 120 days, the Subcontractor may upon 7 days' written notice terminate the Subcontract and recover the amounts due the Subcontractor for Subcontract Work completed as of the date of termination, including retainage withheld from the Subcontractor to date and interest thereon at an annual rate of five percent per annum, or if applicable at the rate prescribed by law, without penalty.

ARTICLE 12—CLAIMS AND DISPUTE RESOLUTION

12.01 *Claims*

A. As a condition precedent to any consideration, pursuit, or recovery by Subcontractor of any change proposal, request, demand, or claim (collectively referred to as "Claim") seeking an increase in Subcontract Price, Subcontract Time, or both, Subcontractor shall provide notice

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of any such Claim to Contractor no less than 30 days after the event giving rise to the Claim, and for Claims related in any way to the Owner or Prime Contract, within five days.

B. Subcontractor's recovery of additional cost, time, or both cost and time for any Claim attributable to the Owner will be limited to the proportionate recovery by Contractor against Owner for such Claim. Subcontractor will cooperate and assist Contractor in pursuing any Claim by Contractor against Owner on behalf of Subcontractor, including the timely preparation and delivery of supporting documentation.

C. If the pursuit of any Claim by Contractor against Owner on Subcontractor's behalf requires the expenditure by Contractor of legal or consulting fees, or results in litigation, arbitration, or any dispute resolution procedures, Subcontractor agrees to pay for a proportionate share of attorneys' fees, consultant fees, and litigation, arbitration, and other resolution costs incurred by Contractor in pursuing the claim on behalf of Subcontractor, based upon the amount claimed by Subcontractor as compared to the total value of the claim pursued by the Contractor.

D. Except as provided by applicable lien, bond, or prompt payment laws, Subcontractor shall not make any direct claims against Owner for compensation or additional compensation for performance of the Subcontract Work.

12.02 *Dispute Resolution*

A. Either Contractor or Subcontractor may request mediation of any dispute between Contractor and Subcontractor in connection with this Subcontract that has not been settled to their mutual satisfaction within the applicable notice or cure periods provided in this Subcontract, or that Contractor has not pursued against Owner as described above. The mediation will be governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Subcontract Date. The request for mediation must be submitted in writing to the American Arbitration Association and the other party to this Subcontract.

B. Contractor and Subcontractor shall participate in the mediation process in good faith. The process must be concluded within 60 days of filing of the request. The date of termination of the mediation must be determined by application of the mediation rules referenced above.

C. If the dispute is not resolved by mediation, each party to this Subcontract shall be barred from further action to assert its claim after 30 days after termination of the mediation unless, within that time period, Contractor or Subcontractor:

1. elects in writing to invoke any dispute resolution procedure expressly provided for in a Subcontract exhibit or elsewhere in the Subcontract Documents; or

2. agrees with the other party to submit the dispute to another dispute resolution process; or

3. gives written notice to the other party of the intent to submit the claim to a court of competent jurisdiction.

D. If Contractor is engaged in an arbitration with Owner that relates, in whole or in part, to a dispute between Contractor and Subcontractor, then Contractor shall have the sole and exclusive discretion to join Subcontractor as a party to the Contractor-Owner arbitration. Subcontractor consents to the jurisdiction of any such arbitration proceeding to which it is joined pursuant to this provision.

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ARTICLE 13—SUBCONTRACT DOCUMENTS

13.01 *Subcontract Contents*

A. The Subcontract Documents consist of the following:

1. This Subcontract.
2. Subcontract Scope of Work and Unit Price.
3. Exclusions based on Subcontractor Proposal
4. The following which may be delivered or issued on or after the Subcontract Date and are not attached hereto:

a. Lakewood Drive Construction Plans, GMCivil Engineering

b. Prime Contract.

c. Payment & Performance Bond.

d. Notice to Proceed.

e. Work Change Directives.

f. Change Orders.

g. Field Orders.

h. Warranty Bond, if any.

B. The Subcontract Documents may only be amended, modified, or supplemented by written agreement of Contractor and Subcontractor.

ARTICLE 14—MISCELLANEOUS

14.01 *Terms*

Terms used in this Subcontract will have the meanings stated here, or in the Prime Contract's General Conditions and Supplementary Conditions.

14.02 *Assignment of Subcontract*

No assignment by Subcontractor of any rights under or interests in the Subcontract will be binding on Contractor without Contractor's written consent; and, specifically but without limitation, payments that may become due and money that is due may not be assigned by Subcontractor without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Subcontract Documents.

14.03 *Successors and Assigns*

Contractor and Subcontractor each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Subcontract Documents.

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14.04 *Severability*

Any provision or part of the Subcontract Documents held to be void or unenforceable under any law or regulation will be deemed stricken, and all remaining provisions must continue to be valid and binding upon Contractor and Subcontractor, which agree that the Subcontract Documents will be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

ARTICLE 15—SUBCONTRACTOR'S REPRESENTATIONS AND CERTIFICATIONS

15.01 *Subcontractor's Representations*

A. In order to induce Contractor to enter into this Subcontract, Subcontractor makes the following representations:

1. Subcontractor has examined and carefully studied the Subcontract Documents, and any data and reference items identified in the Subcontract Documents, including but not limited to initial schedules identified by Contractor.

2. Subcontractor has visited the site, conducted a thorough visual examination of the site and adjacent areas, and become familiar with the general, local, and site conditions that may affect cost, progress, and performance of the Subcontract Work.

3. Subcontractor is familiar with and is satisfied as to all laws and regulations that may affect cost, progress, and performance of the Subcontract Work.

4. Subcontractor has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the site and drawings of physical conditions relating to existing surface or subsurface structures at the site that have been identified by the Prime Contract or Subcontract, especially with respect to technical data in such reports and drawings.

5. Subcontractor has carefully studied reports and drawings of hazardous environmental conditions, if any, at or adjacent to the site that have been identified in the Prime Contract or Subcontract, especially with respect to technical data in such reports and drawings.

6. Subcontractor has considered the information known to Subcontractor itself; information commonly known to contractors and subcontractors doing business in the locality of the site; information and observations obtained from visits to the site; the Subcontract Documents; and the site-related reports and drawings, if any, identified in the Prime Contract or Subcontract, with respect to the effect of such information, observations, and documents on (a) the cost, progress, and performance of the Subcontract Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Subcontractor; and (c) Subcontractor's safety precautions and programs.

7. Based on the information and observations referred to in the preceding paragraphs, Subcontractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Subcontract Work at the Subcontract Price, within the Subcontract Times, and in accordance with the other terms and conditions of the Subcontract.

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8. Subcontractor is aware of the general nature of work to be performed by Owner, Contractor, other subcontractors, and others at the site that relates to the Subcontract Work as indicated in the Subcontract Documents.

9. Subcontractor has given Contractor written notice of all conflicts, errors, ambiguities, or discrepancies that Subcontractor has discovered in the Subcontract Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Contractor is acceptable to Subcontractor.

10. The Subcontract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Subcontract Work.

11. Subcontractor's entry into this Subcontract constitutes an incontrovertible representation by Subcontractor that without exception all prices in the Subcontract are premised upon performing and furnishing the Subcontract Work required by the Subcontract Documents.

15.02 *Subcontractor's Certifications*

A. Subcontractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Subcontract. For the purposes of this paragraph:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process or in the Subcontract execution;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Subcontract to the detriment of Owner or Contractor, (b) to establish bid or Subcontract prices at artificial non-competitive levels, or (c) to deprive Owner or Contractor of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner or Contractor, a purpose of which is to establish bid prices at artificial, non-competitive levels; and

4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Subcontract.

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IN WITNESS WHEREOF, Contractor and Subcontractor have signed this Subcontract.

The Effective Date of the Subcontract is SEPTEMBER 28, 2022.

Contractor:	Subcontractor:
R.A. DEVELOPMENT, LTD.	TROPHY CONSTRUCTION SERVICES, LLC
By: _____ *(individual's signature)*	By: _____ *(individual's signature)*
Name: ROCKY BRANSOM	Name: James Wade Allard *(typed or printed)*
Title: PRESIDENT	Title: Vice President *(typed or printed)*
Date: 9/27/22 *(date signed)*	Date: 9-27-22 *(date signed)*
	(If Subcontractor is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)
Attest: _____ *(individual's signature)*	Attest: _____ *(individual's signature)*
Name: JUSTIN BOND *(typed or printed)*	Name: Kristie Turner *(typed or printed)*
Title: COO *(typed or printed)*	Title: *(typed or printed)*
Address for giving notices:	Address for giving notices:
236 E. ELLISON ST.	236 E. Ellison St.
BURLESON, TX 76028	Burleson TX 76028
Designated Representative:	Designated Representative:
Name: JUSTIN BOND *(typed or printed)*	Name: WADE ALLARD *(typed or printed)*
Title: COO *(typed or printed)*	Title: VP *(typed or printed)*
Address:	Address:
236 E. ELLISON ST.	236 E. Ellison St.
BURLESON, TX 76028	Burleson TX 76028
Phone: 817-880-1220	Phone: 682-459-3797
Email: JUSTIN@RADEV.BIZ	Email: wade@trophyconstructionservices.com
(If Contractor or Subcontractor is a corporation, attach evidence of authority to sign.	License No.: — *(where applicable)*
	State: —

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Lakewood Drive

SCOPE OF WORK AND UNIT PRICING

Line Item#	UTILITIES - TROPHY CONSTRUCTION	Original Contract Sum	QUANTITY AND BUDGET			
			Quantity	Unit	Unit Price	Total
1	8" PVC C900 W.L.	$ 210,834.50	1,775.00	LF	118.78	210,834.50
2	8" Gate Valve & Box	$ 41,508.00	10.00	EA	4,150.80	41,508.00
3	Std. Fire Hyd. Assemb. w/ 6" Gate Valve & Box	$ 33,588.00	4.00	EA	8,397.00	33,588.00
4	2" Irrigation Meter	$ 9,537.00	3.00	EA	3,179.00	9,537.00
5	Connect to Ex. 8" W.L.	$ 6,507.72	2.00	EA	3,253.86	6,507.72
6	8" End & Plug & Flush Assembly	$ 6,030.24	2.00	EA	3,015.12	6,030.24
7	Mobilization	$ 70,775.00	1.00	EA	70,775.00	70,775.00
8	10' Depressed Curb Inlets	$ 349,631.40	60.00	EA	5,827.19	349,631.40
9	15' Depressed Curb Inlets	$ 48,559.95	5.00	EA	9,711.99	48,559.95
10	20' Depressed Curb Inlets	$ 13,596.79	1.00	EA	13,596.79	13,596.79
11	21" R.C.P. Class III	$ 224,098.66	2,461.00	LF	91.06	224,098.66
12	21" R.C.P. Class IV	$ 3,885.12	32.00	LF	121.41	3,885.12
13	24" R.C.P. Class III	$ 184,686.84	1,767.00	LF	104.52	184,686.84
14	24" R.C.P. Class IV	$ 76,994.00	548.00	LF	140.50	76,994.00
15	27" R.C.P. Class III	$ 178,559.04	1,184.00	LF	150.81	178,559.04
16	30" R.C.P. Class III	$ 69,169.31	397.00	LF	174.23	69,169.31
17	36" R.C.P. Class III	$ 41,290.56	216.00	LF	191.16	41,290.56
18	36" R.C.P. Class IV	$ 53,209.98	211.00	LF	252.18	53,209.98

Lakewood Drive

SCOPE OF WORK AND UNIT PRICING

19	42" R.C.P.	$	220,986.72	656.00	LF	336.87	220,986.72
20	4'x3' R.C.B	$	298,878.93	609.00	LF	490.77	298,878.93
21	4'x4' R.C.B	$	225,681.12	432.00	LF	522.41	225,681.12
22	5'x4' R.C.B	$	257,097.12	408.00	LF	630.14	257,097.12
23	8'x4' R.C.B	$	78,625.56	78.00	LF	1,008.02	78,625.56
24	6'x3' R.C.B	$	460,582.08	672.00	LF	685.39	460,582.08
25	5-12'x4' R.C.B.	$	1,300,489.80	170.00	LF	7,649.94	1,300,489.80
26	10'x8' Class V R.C.B.	$	237,410.40	155	LF	1,531.68	237,410.40
27	10'x8' R.C.B. Hdwl.	$	28,945.12	2	EA	14,472.56	28,945.12
28	4'x4' Junction Box	$	56,977.04	8.00	EA	7,122.13	56,977.04
29	5'x5' Junction Box	$	38,847.96	4.00	EA	9,711.99	38,847.96
30	6'x6' Junction Box	$	24,603.72	2.00	EA	12,301.86	24,603.72
31	4'x4' Riser w/S.D.M.H.	$	29,783.44	2.00	EA	14,891.72	29,783.44
32	4'x4' Drop Inlet	$	6,993.00	1.00	EA	6,993.00	6,993.00
33	4'x3' R.C.B. Hdwl.	$	6,028.58	1.00	EA	6,028.58	6,028.58
34	4'x4' R.C.B. Hdwl.	$	16,459.92	2.00	EA	8,229.96	16,459.92
35	6'x3' R.C.B. Hdwl.	$	17,754.86	2.00	EA	8,877.43	17,754.86
36	8'x4' R.C.B. Hdwl.	$	10,301.85	1.00	EA	10,301.85	10,301.85
37	5-12'x4' R.C.B. Hdwl.	$	135,838.38	2.00	EA	67,919.19	135,838.38
38	4'x3' R.C.B. Hdwl. - HANDRAIL ONLY	$	8,000.00	1.00	EA	8,000.00	8,000.00
39	4'x4' R.C.B. Hdwl. - HANDRAIL ONLY	$	16,000.00	2.00	EA	8,000.00	16,000.00
40	6'x3' R.C.B. Hdwl. - HANDRAIL ONLY	$	20,000.00	2.00	EA	10,000.00	20,000.00

Lakewood Drive

SCOPE OF WORK AND UNIT PRICING

41	8'x4' R.C.B. Hdwl. - HANDRAIL ONLY	$	10,000.00	1.00	EA	10,000.00	10,000.00
42	5-12'x4' R.C.B. Hdwl.- HANDRAIL ONLY	$	20,000.00	2.00	EA	10,000.00	20,000.00
43	24" End & Plug	$	272.90	1.00	EA	272.90	272.90
44	27" End & Plug	$	931.50	3.00	EA	310.50	931.50
45	42" End & Plug	$	865.40	2.00	EA	432.70	865.40
46	4'x4' End & Plug	$	646.50	1.00	EA	646.50	646.50
47	Grade to Drain	$	54,782.85	1,095.00	LF	50.03	54,782.85
48	Class II Rock Rip Rap	$	70,153.79	343.00	SY	204.53	70,153.79
49	Class III Rock Rip Rap	$	67,415.04	231.00	SY	291.84	67,415.04
50	Trench Safety	$	40,517.90	11,744.32	LF	3.45	40,517.90
51	Gas Pipeline Relocation	$	250,000.00	1.00	EA	250,000.00	250,000.00
52	Payment / Performance / Maintenance Bonds	$	353,732.00	1.00	EA	353,732.00	353,732.00
53	Haul Off	$	242,595.00	16,173.00	CY	15.00	242,595.00
54	Survey & Staking	$	97,110.75	11,771.00	LF	8.25	97,110.75
55	Hydrovac / SUE	$	30,000.00	30.00	EA	1,000.00	30,000.00
56	TV Storm Sewer	$	34,891.50	9,969.00	LF	3.50	34,891.50
57	8" Concrete Flatwork / Headwall	$	14,904.00	432.00	SF	34.50	14,904.00
58	4'x4' Manhole (3') Slab Top	$	12,644.00	2.00	EA	6,322.00	12,644.00
59	RCP Pipe Collars	$	10,512.00	8.00	EA	1,314.00	10,512.00
60	Water Testing	$	4,260.00	1,775.00	LF	2.40	4,260.00
61	4" Irrigation Sleeve	$	34,216.60	2,060.00	LF	16.61	34,216.60
62	Cut-In 8"x8" Tee	$	11,378.00	2.00	EA	5,689.00	11,378.00

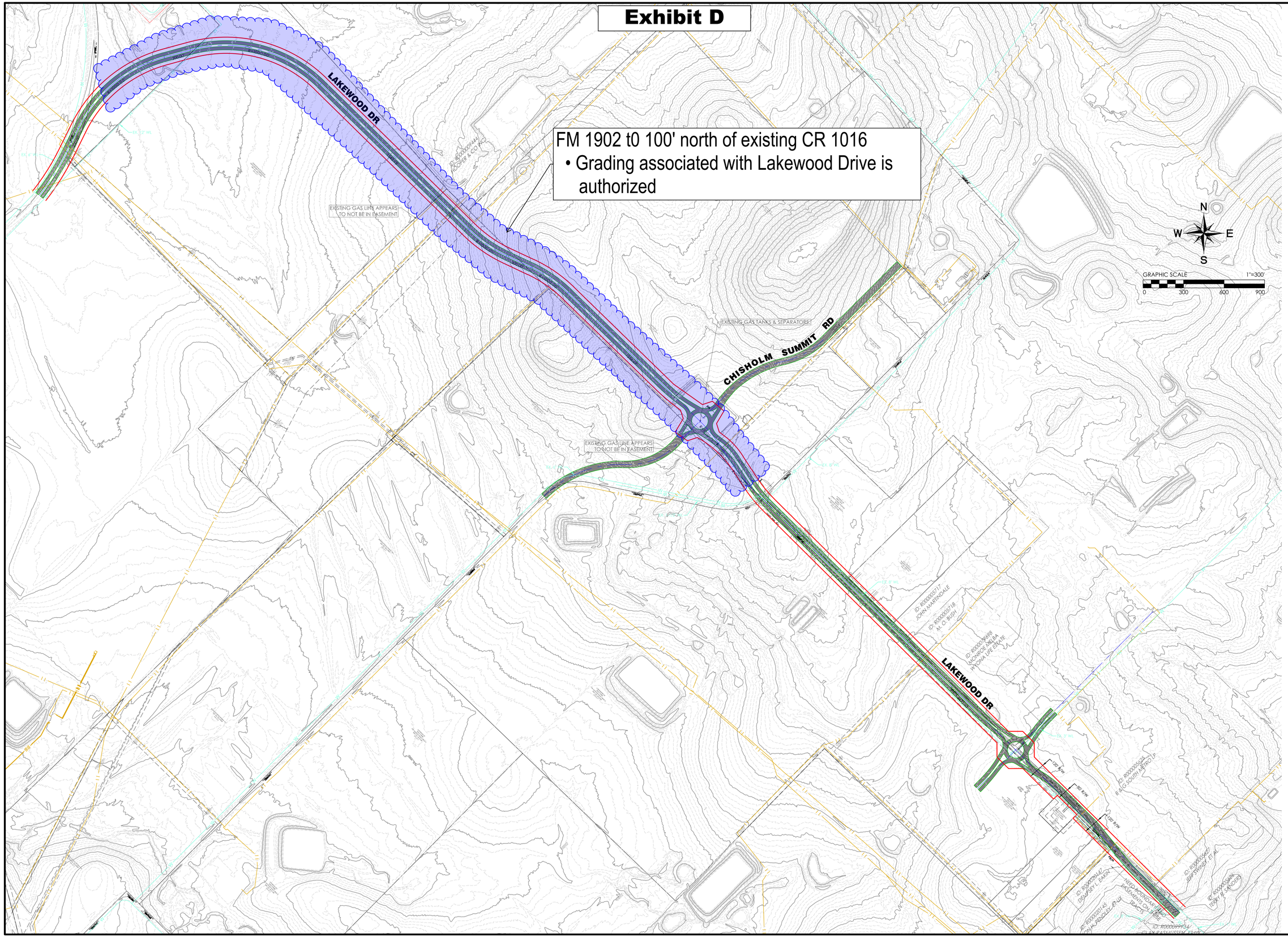
Lakewood Drive

SCOPE OF WORK AND UNIT PRICING

63	Miscellaneous W.L. Relocations	$	118,780.00	1,000.00	LF	118.78	118,780.00
64	6" PVC C900 DR-14	$	2,240.00	40.00	LF	56.00	2,240.00
65	2" Copper	$	2,440.00	40.00	LF	61.00	2,440.00
66	8" Concrete Encasement (WL/SS Crossing)	$	3,240.00	40.00	LF	81.00	3,240.00
67	Clearing & Tree Chipping	$	49,800.00	33.2	AC	1,500.00	49,800.00
68	Silt Fence	$	44,712.00	14,904.0	LF	3.00	44,712.00
69	Inlet Protection	$	7,734.90	69.0	EA	112.10	7,734.90
70	Construction Entrance	$	7,251.00	2.0	EA	3,625.50	7,251.00
71	Erosion Protection Maintenance	$	5,329.76	1.0	LS	5,329.76	5,329.76
72	Job Site Facilities	$	30,000.00	12.0	MO	2,500.00	30,000.00
73	Water Meter / Water Usage	$	36,000.00	12.0	MO	3,000.00	36,000.00
74	Permanent Fence Replacement	$	102,680.00	2,567.0	LF	40.00	102,680.00
75	SWPPP / Inspections	$	36,000.00	12.0	MO	3,000.00	36,000.00
76	Grass Seeding / Soil Stabilization	$	56,760.00	34,400.0	LF	1.65	56,760.00
	Total	$	6,983,545.10	**Total Bid Price:**			**$6,983,545.10**

EXHIBIT “D”

Exhibit D



PROPOSED
LAKEWOOD ALIGNMENT
CITY OF BURLESON, JOHNSON COUNTY, TEXAS
Date: August 2021

GOODWIN MARSHALL INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
(817) 329-4373
Tx Eng Firm # F-2944 – Tx Surv Firm # 10021700

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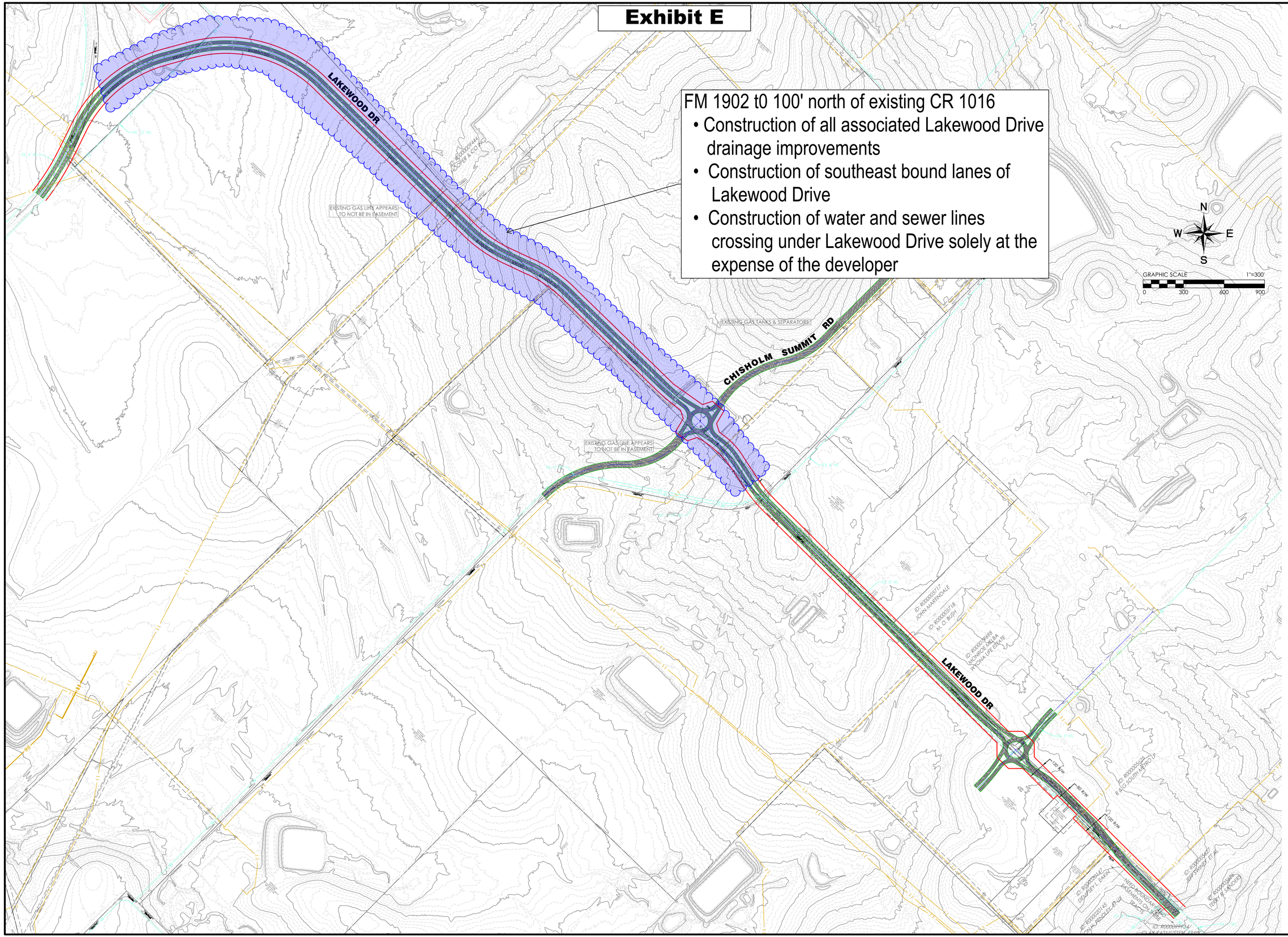
SHEET 1 of 1

EXHIBIT “E”

Exhibit E



FM 1902 t0 100' north of existing CR 1016

- Construction of all associated Lakewood Drive drainage improvements
- Construction of southeast bound lanes of Lakewood Drive
- Construction of water and sewer lines crossing under Lakewood Drive solely at the expense of the developer

PROPOSED
LAKEWOOD ALIGNMENT
CITY OF BURLESON, JOHNSON COUNTY, TEXAS
Date: August 2021

GOODWIN MARSHALL INC.
CIVIL ENGINEERS – PLANNERS – SURVEYORS
2405 Mustang Drive, Grapevine, Texas 76051
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SHEET 1 of 1