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Consider awarding a bid to All Seasons Foam Coatings and authorizing the City Manager to execute a Contract for a new Liner for the Harbor Fountain in the amount of \$142,500 to be funded out of General Fund Reserves, and take any action necessary.

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Consider awarding a bid to B&B Concrete and authorizing the City Manager to execute a Contract for the removal and replacement of 4,200 sf of concrete trail at Myers Park in the amount of \$59,600 to be funded out of the Recreation Development Fund, and take any action necessary.

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P2019-037 - Consider a request by Dub Douphrate of Douphrate & Associates, Inc. on behalf of Carla Rankin Real Estate Holding for the approval of a final plat for Lot 1, Block A, Rankin Addition being a 0.29-acre tract of land identified as Tract 22 of the J. Strickland Survey, Abstract No. 187, City of Rockwall, Rockwall County, Texas, zoned Residential Office (RO) District, situated within the North SH-205 Overlay (N. SH-205 OV) District, addressed as 4035 N. Goliad Street [SH-205], and take any action necessary.

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P2019-038 - Consider a request by Bryon Connally of CBG Surveying Texas, LLC on behalf of Shannon McCord Riddell for the approval of a replat for Lot 1, Block A, Goliad-Riddle Addition being a 0.4079-acre tract of land identified as Lot C, Block 117, B. F. Boydston Addition, City of Rockwall, Rockwall County, Texas, zoned General Retail (GR) District, addressed as 501 S. Goliad Street, and take any action necessary.

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Consider awarding a bid to Play Works - Playwell Group and authorizing the City Manager to execute a Purchase Order for new shade canopy at Tuttle Sports Complex Playground in the amount of \$38,853 to be funded out of the Recreation Development Fund, and take any action necessary.

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Consider authorizing the City Manager to execute an Engineering Services Agreement with Binkley & Barfield, Inc. for the 2020 fiscal year to provide general engineering services for the preparation and review of all TIAs ("traffic impact analysis") submitted to the City of Rockwall, to be funded by the 2019-2020 Engineering Consulting Budget with developer reimbursement, and take any action necessary.	
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Consider authorizing the City Manager to execute an interlocal agreement between the city and Rockwall County regarding fire protection services, and take any action necessary.	
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Appointment with representative(s) of The Downtown Rockwall Association to consider a request to utilize a portion of parking on N. San Jacinto for a valet parking stand (including loading / unloading) for the "Shop Small Saturday" event on November 30, and take any action necessary.

Downtown Ltr 546

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Appointment with Josh Deaton of Sideways BBQ to request permission to sell alcoholic beverages at The Harbor public event venue as part of a Veteran's Day event on November 9, 2019, and take any action necessary.

Request. 549

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Discuss and consider approval of the Hotel Occupancy Subcommittee's recommendation for funding of the "Salute to Veterans" event, and take any action necessary.

Subcommittee recommendation 551

Salute to Veterans Request. 552

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Discuss and consider approval of a resolution providing for the submission of names to the Rockwall Central Appraisal District (CAD) for nominations to the Board of Directors, and take any action necessary.

Rockwall Central Appraisal District Ltr 560

Resolution #19-21. 562

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SP2019-031 - Discuss and consider an appeal by Ryan Moorman of R. D. Moorman, Inc. concerning a variance request denied by the Planning and Zoning Commission in conjunction with an approved site plan for an office building on a 1.244-acre parcel of land identified as Lot 22, Rainbow Acres Addition, City or Rockwall, Rockwall County, Texas, zoned Commercial (C) District, addressed as 259 Ranch Trail, and take any action necessary.

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Discuss and consider appointing a Comprehensive Plan Advisory Committee (CPAC) to assist staff in the annual update to the Comprehensive Plan, and take any action necessary.

Memorandum 578

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Discuss and consider (re)appointments to the city's Airport Advisory Board, Historic Preservation Advisory Board, Main Street Advisory Board, and Park Board and take any action necessary.

Memo 585

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Discuss and consider approval of a resolution establishing a "Complete Count Committee" for the U.S. 2020 Census, and take any action necessary.

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ROCKWALL CITY COUNCIL REGULAR MEETING

Monday, October 07, 2019 - 4:00 PM

City Hall Council Chambers - 385 S. Goliad St., Rockwall, TX 75087

I. CALL PUBLIC MEETING TO ORDER

II. WORK SESSION

- p.11** 1. Hold work session with city attorney to hear briefing regarding recently passed state legislation impacting cities.
- p.22** 2. Hold Work Session to discuss flag pole entry feature on IH-30
- p.28** 3. Hold work session to hear updates to the Engineering Department's "Standards of Design and Construction" and receive City Council input prior to adoption.

III. EXECUTIVE SESSION.

THE CITY OF ROCKWALL CITY COUNCIL WILL RECESS INTO EXECUTIVE SESSION TO DISCUSS THE FOLLOWING MATTERS AS AUTHORIZED BY CHAPTER 551 OF THE TEXAS GOVERNMENT CODE:

- 1. Discussion regarding legal issues pertaining to potential annexation pursuant to Section §551.071 (Attorney/Client Consultation).
- 2. Discussion regarding legal matters pertaining to Breezy Hill pavilion pursuant to Section 551.071 (Consultation with Attorney).
- 3. Discussion regarding City Manager employee evaluation, pursuant to Section 551.074 (Personnel Matters)
- 4. Discussion regarding sale of real property in the vicinity of IH-30 pursuant to Section §551.072 (Real Property) and Section §551.071 (Consultation with Attorney).
- 5. Discussion regarding sale of real property in the vicinity of John King Boulevard pursuant to Section §551.072 (Real Property) and Section §551.071 (Consultation with Attorney).
- 6. Discussion regarding legal issues pertaining to a Facilities Agreement pursuant to Section §551.071 (Attorney/Client Consultation).
- 7. Discussion regarding ballot nominations associated with elections to the Rockwall Central Appraisal District Board pursuant to Section 551.074 (personnel matters)
- 8. Discussion regarding appointments to city regulatory boards, commissions, and committees - specifically the Board of Adjustments - pursuant to Section 551.074 (Personnel Matters)
- 9. Discussion regarding the appeal to the Public Utility Commission filed by the cities of Garland, Mesquite, Plano and Richardson against the North Texas Municipal Water District (NTMWD) regarding water rates pursuant to Section §551.071 (Consultation with Attorney)

IV. ADJOURN EXECUTIVE SESSION

V. RECONVENE PUBLIC MEETING (6:00 P.M.)

VI. TAKE ANY ACTION AS A RESULT OF EXECUTIVE SESSION

VII. INVOCATION AND PLEDGE OF ALLEGIANCE – COUNCILMEMBER FOWLER

VIII. PROCLAMATIONS

p.441 1. Fire Prevention Month

p.443 2. Rockwall Fire Dept. Presentation of Life Saving Award to Tyra Winters

IX. OPEN FORUM

X. CONSENT AGENDA

p.445 1. Consider approval of the minutes from the September 16, 2019 regular city council meeting, and take any action necessary.

p.456 2. Z2019-018 - Consider a request by Rob Whittle for the approval of an **ordinance** amending Planned Development District 5 (PD-5) to change the garage setback requirements for an 11.003-acre tract of land identified as Lots 1-40, Block A, the Highlands Addition, City of Rockwall, Rockwall County, Texas, zoned Planned Development District 5 (PD-5) for Zero Lot Line (ZL-5) District land uses, situated within the SH-205 By-Pass Overlay (SH-205 BY OV) District, located at the northwest corner of the intersection of SH-66 and FM-1141, and take any action necessary **(2nd Reading)**.

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- p.539 15.** Consider authorizing the City Manager to execute an interlocal agreement between the city and Rockwall County regarding fire protection services, and take any action necessary.

XI. APPOINTMENT ITEMS

- p.546 1.** Appointment with representative(s) of The Downtown Rockwall Association to consider a request to utilize a portion of parking on N. San Jacinto for a valet parking stand (including

loading / unloading) for the “Shop Small Saturday” event on November 30, and take any action necessary.

- p.549 2.** Appointment with Josh Deaton of Sideways BBQ to request permission to sell alcoholic beverages at The Harbor public event venue as part of a Veteran’s Day event on November 9, 2019, and take any action necessary.

XII. ACTION ITEMS

- p.551 1.** Discuss and consider approval of the Hotel Occupancy Subcommittee's recommendation for funding of the "Salute to Veterans" event, and take any action necessary.
- p.560 2.** Discuss and consider approval of a resolution providing for the submission of names to the Rockwall Central Appraisal District (CAD) for nominations to the Board of Directors, and take any action necessary.
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- p.585 5.** Discuss and consider (re)appointments to the city's Airport Advisory Board, Historic Preservation Advisory Board, Main Street Advisory Board, and Park Board and take any action necessary.
- p.587 6.** Discuss and consider approval of a resolution establishing a "Complete Count Committee" for the U.S. 2020 Census, and take any action necessary.

XIII. CITY MANAGER’S REPORT, DEPARTMENTAL REPORTS AND RELATED DISCUSSIONS PERTAINING TO CURRENT CITY ACTIVITIES, UPCOMING MEETINGS, FUTURE LEGISLATIVE ACTIVITIES, AND OTHER RELATED MATTERS.

1. Departmental Reports

- p.590** Building Inspections Monthly Report - August 2019
- p.603** GIS Division Monthly Report - August 2019
- p.605** Harbor PD Monthly Report - August 2019
- p.607** Internal Operations Department Monthly Report - August 2019
- p.609** Recreation Monthly Report - August 2019
- p.615** Rockwall Animal Adoption Center Monthly Report - August 2019
- p.618** Rockwall Fire Dept. Monthly Report - August 2019
- p.625** Rockwall Meals on Wheels Senior Services 4th Quarter Report
- p.627** Rockwall Police Department Monthly Report - August 2019
- p.630** STAR Transit Monthly Report - August 2019

2. City Manager’s Report

XIV. EXECUTIVE SESSION

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XV. RECONVENE PUBLIC MEETING & TAKE ANY ACTION AS RESULT OF EXECUTIVE SESSION

XVI. ADJOURNMENT

This facility is wheelchair accessible and accessible parking spaces are available. Request for accommodations or interpretive services must be made 48 hours prior to this meeting. Please contact the City Secretary's Office at (972) 771-7700 or FAX (972) 771-7727 for further information.

The City of Rockwall City Council reserves the right to adjourn into executive session at any time to discuss any of the matters listed on the agenda above, as authorized by Texas Government Code § 551.071 (Consultation with Attorney) § 551.072 (Deliberations about Real Property) § 551.074 (Personnel Matters) and § 551.087 (Economic Development)

I, Kristy Cole, City Secretary for the City of Rockwall, Texas, do hereby certify that this Agenda was posted at City Hall, in a place readily accessible to the general public at all times, on the 4th day of October, 2019 at 4:00 p.m. and remained so posted for at least 72 continuous hours preceding the scheduled time of said meeting.

Kristy Cole, City Secretary
or Margaret Delaney, Asst. to the City Sect.

Date Removed



2019 LEGISLATIVE UPDATE: BILLS IMPACT ON CITIES

Frank J. Garza
Davidson Troilo Ream & Garza

Anti-City Legislative Session

- The 2019 Legislative Session was an **anti-city session**.
Some success because the following bills **did NOT pass**:
 - ▣ S.B. 29, would have limited cities' ability to lobby
 - ▣ "Super-preemption" bills that would have prevented cities from regulating anything to do with business if located in more than 1 city
 - ▣ Short term rental regulation preemption
 - ▣ Bills limiting the issuance of certificates of obligation
 - ▣ Granting the AG authority to settle city environmental lawsuits without city approval
 - ▣ **6 chickens for every backyard**

Revenue Cap



- SB 2 relating to ad valorem taxation.
- SB 2 **did pass &** would re-name the effective tax rate as the "no-new-revenue maintenance and operations (M&O) tax rate."
- SB 2 would re-name the rollback tax rate as the "voter-approval tax rate."
- SB 2 establishes differing voter-approval tax rate calculations for taxing units. For a special taxing unit, the percentage would remain at 8 percent;

Revenue Cap

- Other taxing units (including cities, **except school districts**) the percentage would be limited 3.5 %. Cities would also be able to include their unused increment rate in calculating the voter-approval tax rate
- Cities with a population of 30,000 or more that adopt a tax rate above the voter-approval tax rate would be required to hold an election.
- Cities with a population of less than 30,000 (that adopt a tax rate above the voter-approval tax rate or the de minimis rate (whichever is higher) would have to hold an election to approve the adopted rate.

Residential Permit Fees HB 852

- Bill provides that in determining the amount of a building permit or inspection fee required in connection with the construction or improvement of a residential dwelling, **the city may not consider** (a) the value of the dwelling; or (b) the cost of constructing or improving the dwelling
- The bill was signed by the Gov. on May 21st, and it was **effective immediately**. Options on how to charge for permits include square footage-based fees, a flat fee schedule, or any other non-cost-based and reasonable calculation.

Building Materials- H.B. 2439

- H.B. 2439 relates to certain regulations adopted by cities for the building products, materials, or methods used in the construction or renovation of residential or commercial buildings.
- The bill preempts city ordinances relating prohibition or limitation to building materials; allowing any material to be used provided it's listed in an international building code.
- Bill **passed**.
- Effective September 1, 2019



Permit Shot Clocks-H.B. 3167

- H.B. 3167 relating to county and municipal approval procedures for land development applications.
- The bill places a 30 or 60-day “shot clock” in place during which time a city must approve many permits, or else they’re deemed granted.
- The bill prohibits a City responsible for approving plans from requesting or requiring an applicant to waive a deadline.
- Bill **passed**.
- Effective September 1, 2019.



State Wide Annexation

- SB 6 (Campbell) is a bill passed in the Special Session in 2017
- SB 6 allowed Tier 1 cities to continue annexing land in accordance with then state law.
- **Tier 1 cities** were cities in counties of less than 500,000 residents.
- Complicated procedural process had be followed

Senate Bill 6

- SB 6 provided as a requirement to annex new areas that **Tier 2 cities** in counties of 500,000 or more population
 - Annexation on request of landowner;
 - Annexation by petition of 50% or area landowners when the area has less than 200 residents; or
 - Annexation by conducting an election of the land owners proposed to be annexed if 200 or more residents. **Only if a majority of the voters in the area vote to be annexed,** may the city proceed with annexation. (It will never happen).

State Wide Annexation Restrictions-H.B. 347

- H.B. 347, relating to eliminating distinctions in the application of consent annexation requirements.
- The Bill eliminates the tier 1 and tier 2 distinctions; all cities that will want to annex any area with over 200 residents will need to call an election.
- Any area to be annexed with 200 or less will require a petition to be signed by more than 50% of the landowners
- The bill **passed**.
- Effective date: **Immediately**
- All future annexations, must comply with the Tier 2 process

Elections- H.B. 1048

- H.B. 1048, relating to the use of a county early voting polling place by a political subdivision. The bill would require cities holding May or November elections to use county polling places for early voting by personal appearance.
- May not use City locations unless designated by county as county polling place.
- The bill **passed**.



Open Meetings Act - "Walking Quorum"

- **S.B. 1640** relating to changing the criminal offense of conspiracy to circumvent the open meetings law
- Redefines "**deliberation**" to include a verbal or **written** exchange between a quorum of the Council
- Retitles the criminal conspiracy provision from "conspiracy to circumvent chapter" to "**prohibited series of communications**"
- The bill effective **immediately**

Open Meetings Act

- The bill provides that a councilmember commits an offense if the member:
 - (1) knowingly engages in at least one communication among a series of communications that each occur outside of a meeting authorized and that concern an issue within the jurisdiction of the city in which the members engaging in the individual communications constitute fewer than a quorum of members; **and**
 - (2) knew at the time the member engaged in the communication, **that the series of communications:**
 - (a) **involved or would involve** a quorum; and
 - (b) **would constitute a deliberation once a quorum of members engaged in the series of communications**

Public Information Act-S.B. 944

- Personal Devices and Accounts
 - The bill requires a city employee or official to **turn over** city-related information on **a private device or account** to the city to be stored
 - City shall make reasonable efforts to obtain public information from city employee or elected official if the information has been requested from the city and city is aware or believes that the official has possession of the information



Public Information Act-S.B. 944

- ▣ City employee or official with possession, custody, or control of public information shall surrender or return the information to the City not later than the 10th day after the date the City requests the City employee or official to surrender or return the information
- ▣ Failure to turn over the information is **grounds for discipline** action by the City, including penalties provided by the Act
- ▣ The bill effective **immediately**

Franchise Fee Elimination- S.B. 1152

- ▣ S.B. 1152, relating to the payment of certain fees to municipalities by entities that provide telecommunications and cable or video services installs lines in a city's right-of-way .
- ▣ This bill will cut the fees cities receive for use of city right of way by companies that provide both video and phone service.
- ▣ SB 1152 **passed**
- ▣ Effective September 1, 2019.
- ▣ Litigation filed by cities.



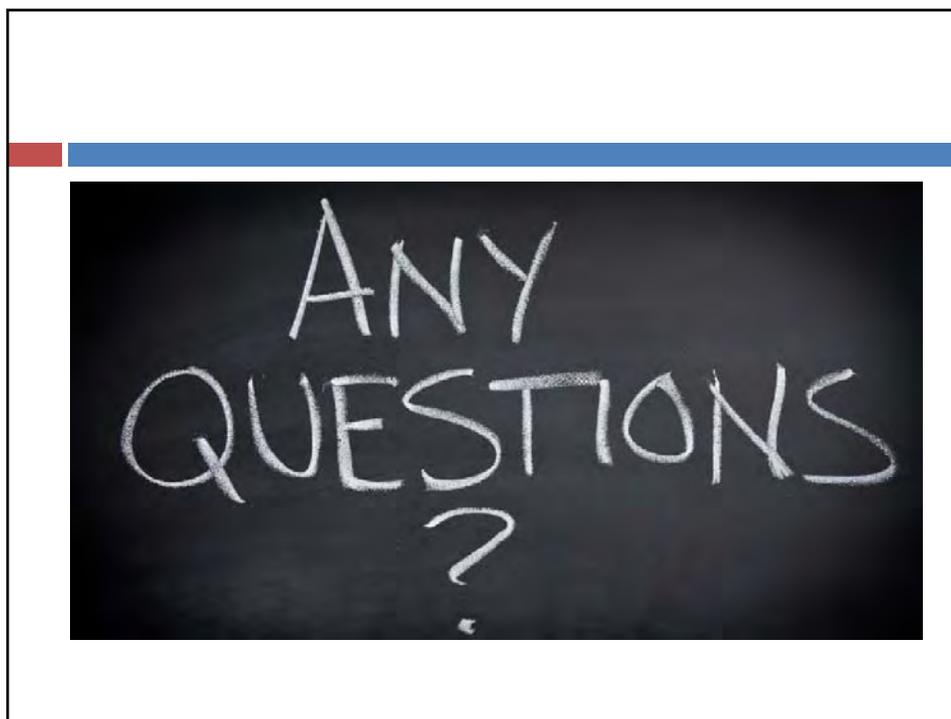
Workers' Compensation for Police Officers- S.B. 1582

- S.B. 1582, relating to benefits for peace officers relating to certain diseases or illnesses. The bill would apply the firefighters' disease presumption law to city police officers except for cancer found in Chapter 607 of Govt. Code.
- Bill **passed**
- Effective September 1, 2019



Dogs on Restaurant Patios- S. B. 476

- S.B. 476 authorizes a restaurant to permit a customer to be accompanied by a dog in an outdoor dining area. The bill sets out the requisite conditions.
- The bill prohibits a City from adopting or enforcing an ordinance that imposes a requirement on a food service establishment that is more stringent than the bill's requirements.
- The bill exempts a service animal from the application of these requirements.
- Bill **passed**.
- Effective September 1, 2019.



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MEMORANDUM

TO: City Council

FROM: Joey Boyd, Assistant City Manager

DATE: October 3, 2019

SUBJECT: Flagpole Entry Feature on Interstate 30

Background

In January 2019, a small planning committee consisting of City Council members Bennie Daniels and Trace Johannesen, Rockwall residents David Cutcomb and John Adams, and city staff began discussing potential sites to place a flagpole entry feature on Interstate 30 at the western boundary of the City. The planning group evaluated 5 separate sites and multiple heights. Attached are exhibits showing the 5 original sites and heights that were initially discussed and considered.

After consideration of all the sites, the planning group selected site #3 as the preferred site due to its proximity to Interstate 30, elevation, and that this location is in State right-of-way and is not shown to be involved in the reconstruction plans for Interstate 30. The plans show that the roadway project will only involve adding a sidewalk around the perimeter of this property. Attached for reference is an aerial overlay of the I-30 improvements. The planning group has discussed several heights but prefers to have a flagpole as tall in height as possible but to stay under the 200' that will require obstruction lighting by the FAA at the top of the pole.

State Approval

TXDOT recently indicated to John Polster, Rockwall County Roadway Consortium consultant, that the State does not have a problem with the project, but they will want to see plans showing a structural footing without any massive above-ground structure. The State didn't indicate a concern with the height. Information for the Flag Project has been

sent to Lane Selman, PE with TXDOT for review. Mr. Selman is the Dallas District Area Engineer. If authorized, staff will work with Mr. Selman locally to get final written approval of the project at this site and develop an agreement for use of the State's property.

Budget Estimates

150' Flagpole with installation:	\$57,750
170' Flagpole with installation:	\$76,114
180' Flagpole with installation:	\$98,340
195/200' Flagpole with installation:	\$113,340

These cost estimates are for the flagpole, foundation, lighting, and two flags and do not include electrical service to the site, landscaping, irrigation, grading, crane rental, retaining walls (if necessary), design and construction administration from a landscape architect if the decision is to make any further improvements to the site other than the installation of the flag pole, electrical and lighting. At the time authorization is given to construct the project, it will go through the bidding process. There are funds available in general fund reserves for this project.

Authorization to Proceed

During the work session, the planning committee is seeking direction as to if the City Council approves of the concept of the entry feature, a confirmation of the 3rd site being the preferred site, and authorization to further study the site by performing a geotechnical study to get a soil report for base design. Based on the geotechnical report, a structural engineering firm will perform foundation design and provide a rendering to submit to TXDOT for approval. The design will be performed and stamped by a structural engineer. The cost for the geotechnical study and report is \$3,500 and base design is \$1,200.

An FAA Study will be required due to the location of the site being within 7 nautical miles of an airport. The study is free but can take up to 12 weeks to complete. This can be conducted while the City gets written authorization from the State and while geotechnical and flagpole base design is being performed for the site.

Staff and member of the planning committee will be available to answer questions at the work session.

IH30 LOOKING WEST FROM RIDGE RD

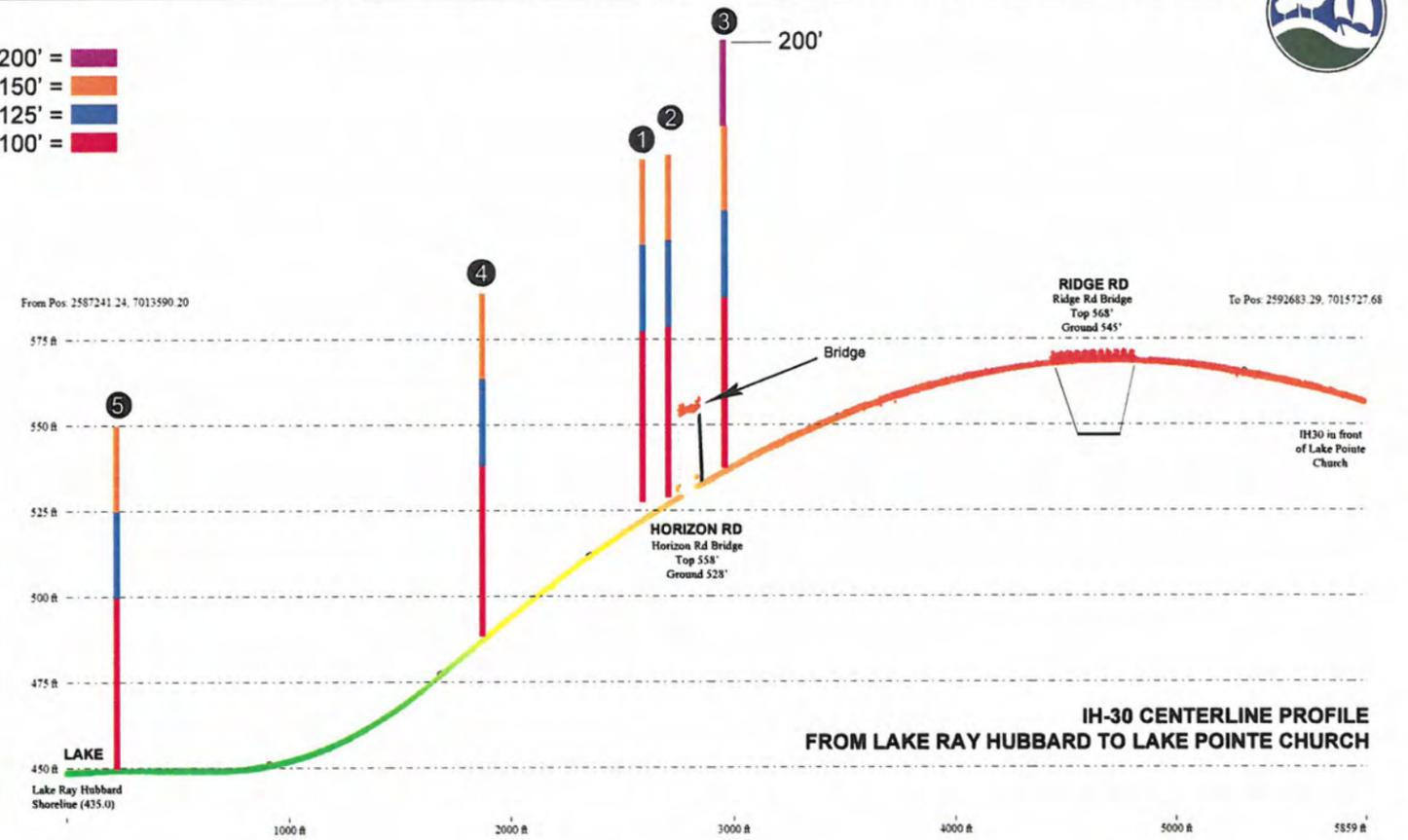
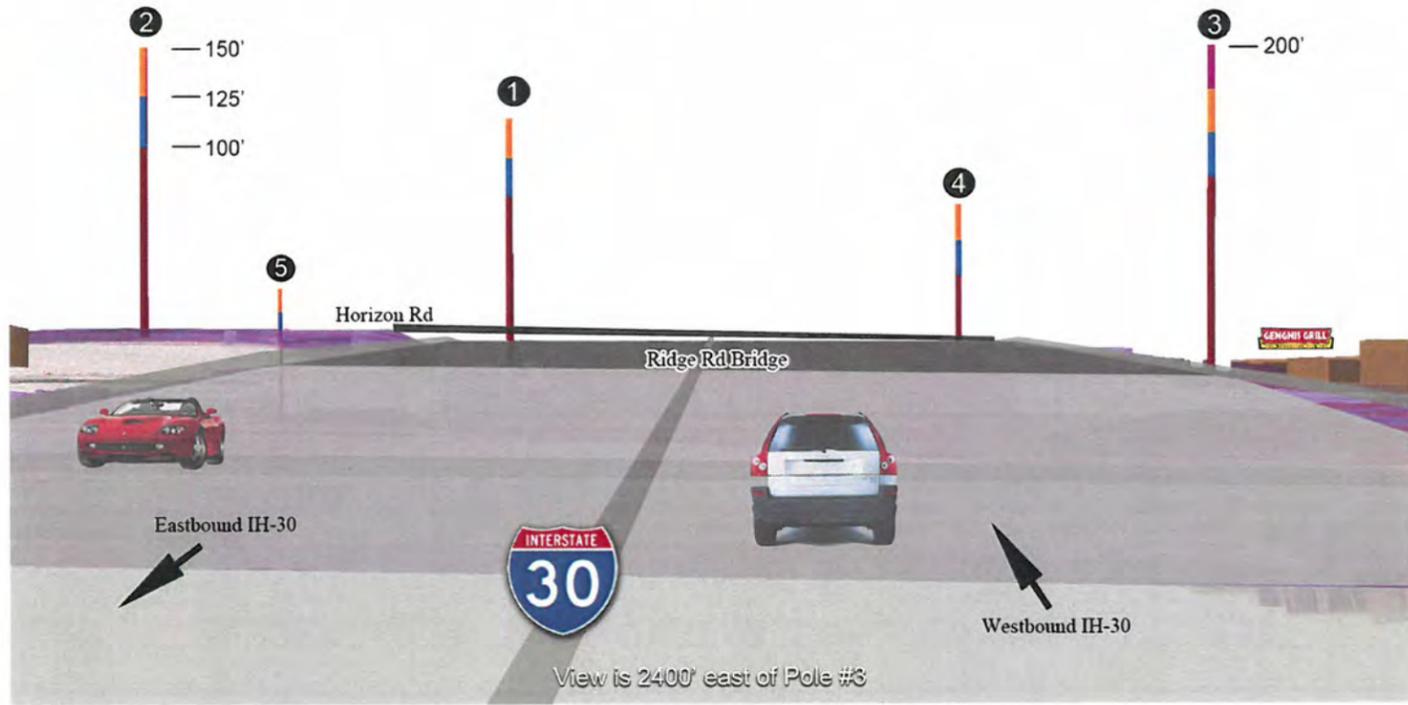


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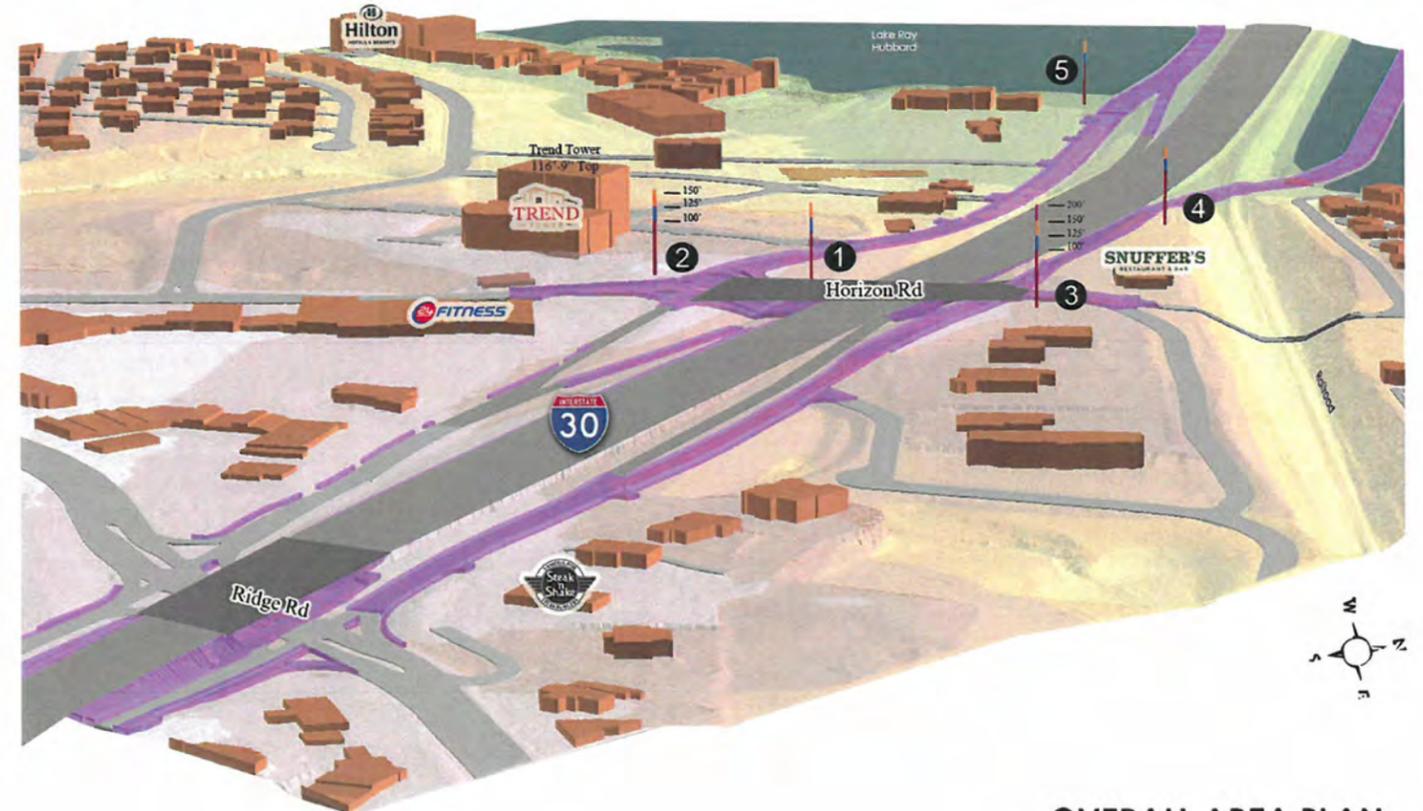
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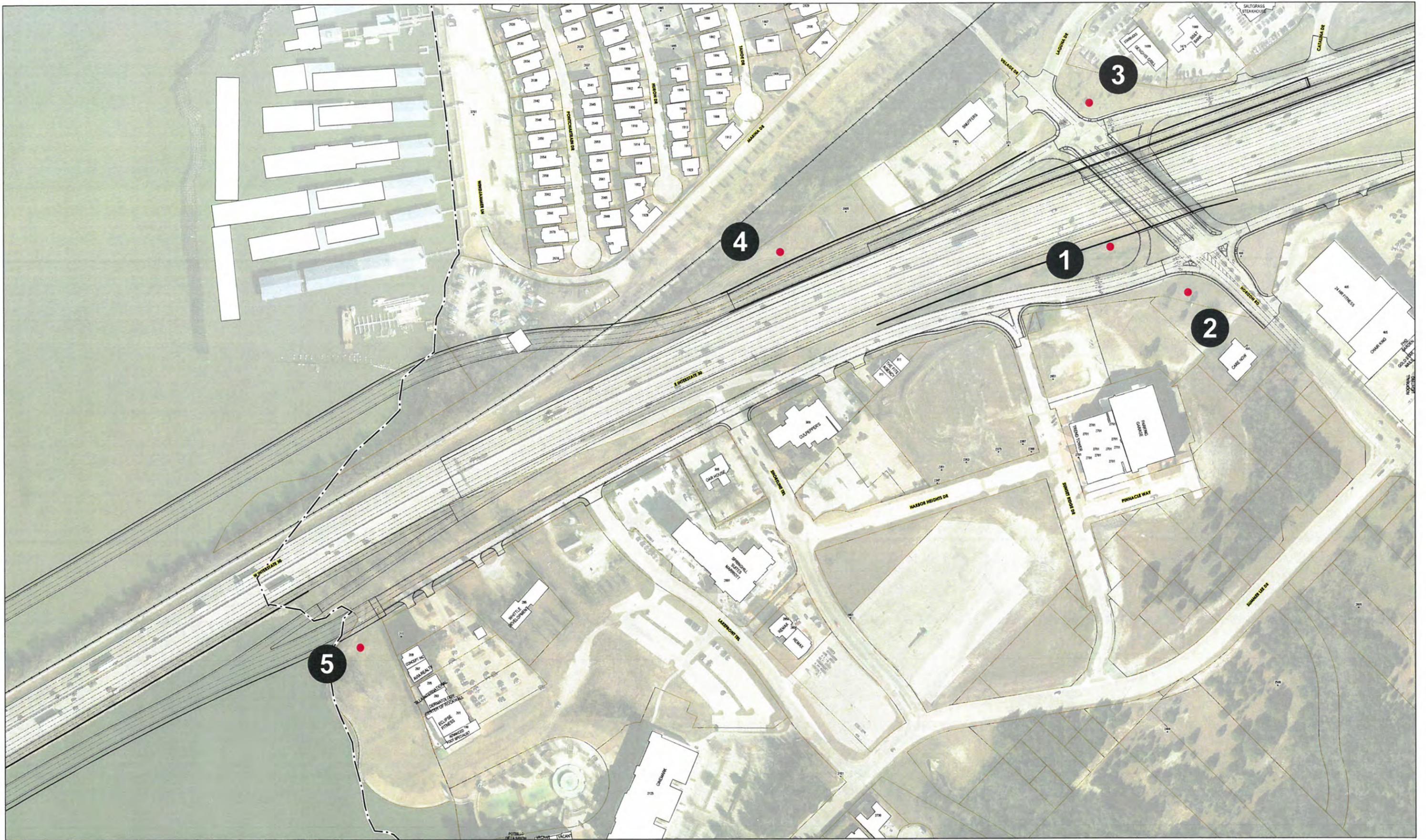
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- 100' = [Red bar]



IH30 LOOKING EAST FROM LAKE



OVERALL AREA PLAN



City of
Rockwall

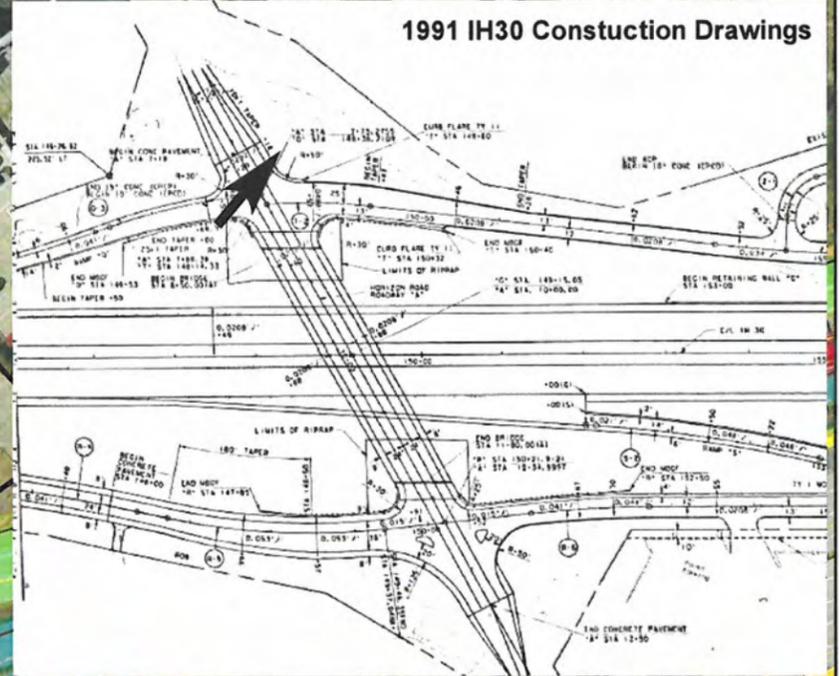
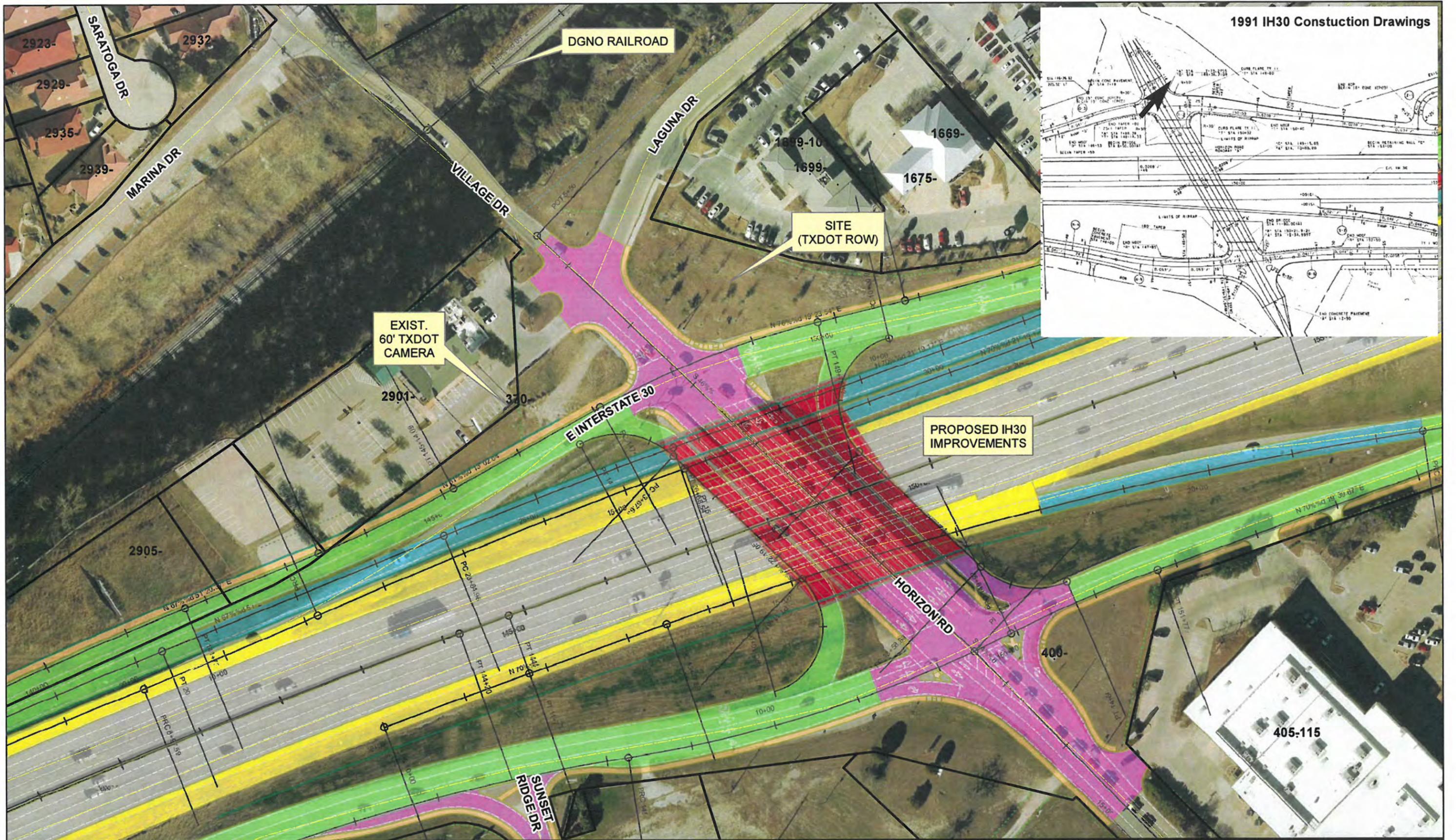


0 150 300 Feet

Date: 11/30/2018

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POTENTIAL FLAG POLE AND MONUMENT SITES
IH30 @ HORIZON RD



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City of Rockwall
The New Horizon

MEMORANDUM

TO: Rick Crowley, City Manager
FROM: Amy Williams, P.E., Director of Public Works/City Engineer
DATE: September 30, 2019
SUBJECT: 2019 Update of the Standards of Design and Construction

Over the course of the last year and half staff has updated the City's Standards of Design and Construction. The current Standards of Design and Construction were approved by City Council on November 7, 2016. Staff conducted several internal reviews of the Standards to address current gaps and additions.

Staff has attached a list of major changes to these standards that were made and the Updated 2019 Standards of Design and Construction. For reference the portions of the standards that have been changed are in "red". There are two of the major items that staff would like to discuss with City Council in detail. They are:

- Section 3.4: Detention
 - The addition of requiring storm water detention in the Buffalo Creek Watershed for all developments. A map has been attached for your reference as far as the extents of the Buffalo Creek Watershed within the City Limits along with a letter of recommendation from the Cities hydrologic and hydraulics engineering consultant.
- Section 6.2: Grading, Fill, Excavation and Earthwork Permit
 - The addition of the following language: *"An early fill, excavation and earthwork permit will not be issued to any development or re-development projects that are in actively being reviewed by the Engineering Division. Grading for the parcels/development will only be released after final construction plan release by the Engineering Division."*

Staff request consideration to proceed with the City Council adoption of the October 2019 update to the Standards of Design and Construction.

If you have any questions, please advise.

AJW

Attachment

Cc: Joey Boyd, Assistant City Manager
Mary Smith, Assistant City Manager
Jeremy White, P.E., CFM, Civil Engineer
Rick Sherer, Water/Wastewater Manager
Billy Chaffin, Superintendent of Streets & Drainage
File

Major Changes to the Standards of Design and Construction

1. General Requirements

- Standard Specifications: Adoption of the 5th Edition, November 2017, NCTCOG Standard Specifications for Public Works Construction.
- Clarification of right-of-way and easement requirements

2. Streets

- Addition of procedures for driveway construction and replacement on TxDOT Facilities.
- Addition of sidewalk requirements for roadway reconstruction project. Result of the 2018 roadway bond project sidewalk policy decision from the September 3, 2019 Council Meeting.
- Clarification of decorative sign poles and fixtures.
- Clarification of requirements for Temporary Traffic Control.
- Addition of Traffic Impact Analysis and Mitigation Requirements.

3. Storm Drainage Facilities

- Clarification of requirements, definitions and procedures pertaining to the Unit Hydrograph Method.
- Addition of requiring storm water detention for all developments within the Buffalo Creek Watershed.
- Addition of requirements for determining local 100-year flood zones.
- Clarifications and expansion of the Flood Studies, Reclamation and Modifications section to work to reduce problems staff has dealt with in past reviews.

4. Vegetation

- Expanded definition of how close trees can be planted next to public utilities based on the size of the utility.

5. Water System and Wastewater System

- Combined Water and Wastewater in to one section.
- Addition of requirements for when a Infrastructure Capacity Study shall be performed.
- Addition of procedures for water and wastewater line installation within TxDOT Right-of-Way
- Clarification of requirements for Crossings (Culvert, Creek, TxDOT Highway, and Railroad)
- Addition of requirements for sizing water and wastewater mains.
- Clarification of requirements for design flow of wastewater system.
- Addition of requirements for dead end water mains.
- Addition of requirements on manholes for internal drop connections, corrosion protection and inflow prevention.
- Addition of structural requirements for wastewater aerial creek crossings.
- Addition of new sub-section for wastewater lift stations and force mains.

6. Miscellaneous Requirements

- Addition of requirements allowing when grading permits are issued.

7. Special Provisions to the NCTCOG's Standard Specifications for Public Works Construction Standards

- Updated to conform to the NCTCOG's 5th Edition, November 2017 and integrate City amendments.

8. Special Provisions to the NCTCOG's Standard Drawings for Public Works Construction Standards

- Updated to conform to the NCTCOG's 5th Edition, November 2017 and integrate City amendments.
- Addition of several new and updated standard details.

Amy Williams, P.E.
City Engineer
City of Rockwall
385 S. Goliad
Rockwall, Texas 75087

September 27, 2019

Re: Detention Considerations for Buffalo Creek Watershed

Dear Ms. Williams:

Two of the largest watershed areas within the City of Rockwall are the Buffalo Creek watershed and the Squabble Creek watershed. Both watersheds have a long history of flooding problems, especially for areas located at the downstream portions of their drainage system. The City's stormwater management requirements for the Squabble Creek watershed have long been more stringent than those for the Buffalo Creek watershed, requiring detention and other mitigation measures for both non-residential and residential developments. In the Buffalo Creek watershed, detention has normally been a requirement for only non-residential development, although some residential developments have incorporated detention facilities or other mitigation measures for the purpose of preventing increases in flooding and flood damage potential.

As the City is well aware, one of the major flooding issues associated with the Buffalo Creek watershed is the ongoing flooding of homes along Rockwall Lake. These flooded homes, for whatever reason, were allowed to be constructed within flood prone areas prior to the City annexing the area. Although detention requirements for future development within the watershed will not prevent or partially mitigate any of the existing flooding conditions in the vicinity of Rockwall Lake, it is highly recommended that the City provide regulation to at least help prevent the flooding situation from becoming worse in the future. Therefore, it is recommended that the City adopt stormwater management standards for the Buffalo Creek watershed similar to those currently enforced in regulating stormwater within the Squabble Creek watershed. Such standards should include the requirement of providing forms of mitigation to include, but not be limited to, detention facilities to prevent any increases in flood peak discharges and flood elevations at all points downstream of any proposed development, extending downstream to include Rockwall Lake (and the discharges through Rockwall Lake Dam). Additionally, as it has been determined that homes around Rockwall Lake, as well as other structures along Buffalo Creek, begin to flood during storm events that produce less than the 100-year frequency rainfall, this standard should not be limited to just the 100-year flood event, but should also include lesser flood events, such as the 10-year, 25-year, and 50-year floods.

It is recognized that the City's ordinances related to stormwater management already requires that proposed construction not cause any unacceptable increases in flooding on other off-site

properties. However, requiring flood detention facilities for new developments within the Buffalo Creek watershed, that are properly designed, constructed, operated, and maintained, will help prevent the current flooding situation along Rockwall Lake from becoming worse, by helping to prevent faster-rising flood levels and helping to prevent increases in lake flood elevations (to levels more than would otherwise occur for any particular flood).

To be consistent with stormwater management requirements throughout the City, it is further recommended that the City consider similar standards for regulating stormwater in other watersheds. For example, similar flooding situations associated with Wallace Lake, located within the Little Buffalo Creek watershed, could benefit by these requirements for proposed construction within the upstream watershed.

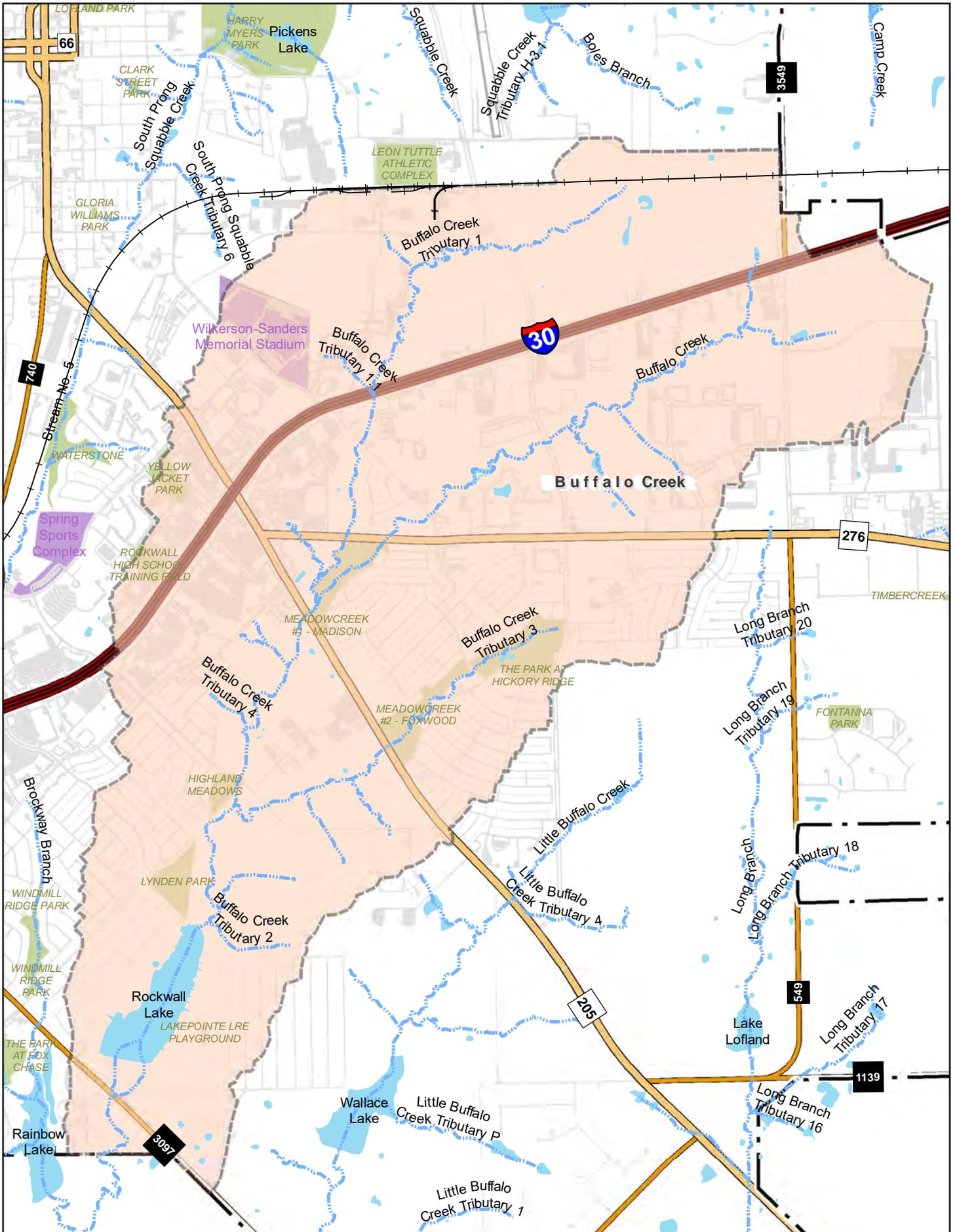
Additionally, the City's Master Drainage Study for the Buffalo Creek watershed has become outdated in many respects. Therefore, it is further recommended that the hydrologic and hydraulic digital computer models for the watershed be updated as soon as possible. Providing such models to engineering consultants for their use in design and analyses of future development projects will help reduce the burden of complying with the City's requirements of proving that proposed construction will not cause increased flooding at Rockwall Lake and along streams downstream of their projects.

Please feel free to contact me if you have any questions or would like to discuss these recommendations.

Sincerely,

Dwayne Stubblefield, P.E., CFM
President
HydroLogical Support Services, LLC
[TBPE Firm No. F-13821]





CITY OF ROCKWALL, TEXAS

**STANDARDS OF DESIGN
AND CONSTRUCTION**



City of Rockwall
The New Horizon

**PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION**

October 2019

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1. GENERAL REQUIREMENTS

1.1 Introduction

The “Standards of Design” are generated to implement the provisions of the Subdivision Ordinance and to provide for the orderly, safe, healthy and uniform development of the area within the corporate city limits and within the surrounding City, extraterritorial jurisdiction (ETJ).

The **5th Edition** of the NCTCOG Standard Specifications for Public Works Construction dated **November 2017** as modified by the City of Rockwall Special Provisions are supplemental and are made a part of these Standards of Design. These documents are to be considered as the minimum requirements of engineering design. The adherence to the requirements of these documents and/or the approval by the City of Rockwall and its agents in no way relieves the developer or their engineer of the responsibility for adequacy of design, which may require more stringent standards than these, the completeness of plans and specifications or the suitability of the completed facilities. In unusual circumstances, the City of Rockwall may determine that designs other than those of the Standards are necessary and will inform the developer of such requirements before final engineering review.

The developer and/or their representative shall obtain authorization from the City of Rockwall, in writing, for any deviations from the requirements set forth in the Standards of Design, Standard Specifications for Construction or Standard Details.

1.2 Standards of Design

The Standards of Design, as adopted by the City of Rockwall, are set forth herein. These standards shall be considered as the minimum requirements, and it shall be the responsibility of the developer to determine if more stringent requirements are necessary for a particular development. It is not intended that the Standards of Design cover all aspects of a development. For those elements omitted, the developer will be expected to provide designs and facilities in accordance with good engineering practice and to cause the facilities to be constructed utilizing first class workmanship and materials. The City Engineer reserves the right to request additional information not covered within these Standards of Design to be included in the design plans by the developer/design engineer in order to validate the intent, safety, constructability, readability and competency of the design plans.

Developer/Engineer must ensure that all design and construction is in accordance with all Federal, State and local regulations and must provide certification on final plans. A copy of all determinations, permits, and approvals

received from Federal, State, and local agencies must be provided **to the Engineering Division prior to approval.**

Engineering design and plans submitted to the Engineering Division by the developer/design engineer shall be in conformance with the adopted Standards of Design and Construction that are in affect when the 1st submittal is received by the Engineering Division. If subsequent submittals have not been received within one (1) year of the previous submittal, any subsequent submittals must conform to the current adopted Standards of Design and Construction. Approved construction plans will expire within one (1) year of approval date, and must be reviewed and revised to meet the current adopted Standards of Design and Construction.

1.3 Standard Specifications for Construction

The City of Rockwall Special Provisions to the NCTCOG Standard Specifications for Public Works Construction, **5th Edition, November 2017**, as adopted by the City of Rockwall is referenced in this document. The Standard Specifications for construction set forth the minimum requirements for materials and workmanship for streets, parking lots, sidewalks, drainage, water and wastewater systems.

1.4 Standard Details

In an effort to have uniformity and to facilitate maintenance, the City has adopted the North Central Texas Council of Governments (NCTCOG) Standard Drawings as modified by the City of Rockwall Special Provisions for certain facilities such as manholes, street sections, sidewalks, water, wastewater, storm water, curb inlets, barrier free ramps, etc. The City of Rockwall Special Provisions can be obtained from the City Engineering Division of the Public Works Department. The NCTCOG Standard Specifications can be obtained from the North Central Texas Council of Governments, Regional Information Center 817-695-9140.

1.5 Inspection of Construction by City Personnel

Inspection of construction and verification of compliance to the plans and specifications shall be conducted by the City of Rockwall staff under the direction of the City Engineer. The facilities included in this inspection requirement are streets, sidewalks, parking lots, alleys, storm drainage facilities, water distribution systems, wastewater collection system, etc. The developer shall advise all of his construction contractors of this requirement. No development will be accepted by the City until all construction has been approved by the City of Rockwall's staff. The developer shall be responsible for any additional expense to the City at a rate established by the City at that time when inspection is done after normal business hours of the City. The date of acceptance will be when all items have been accepted by the City. Twenty months from the date of acceptance the City will determine any failures or defects and repairs will be made by the contractor.

The accepted method of inspection for underground utilities shall be videoed and the City will require a copy of such inspection. The developer or contractor shall be responsible for the cost of the videoed inspection.

1.6 Franchise and Public Utilities to be Underground

All franchise and public utilities within a residential development shall be placed underground. Utilities are defined for this purpose as water pipelines, wastewater pipelines, storm water pipelines, natural gas pipelines, telephone wires, cable TV wires and electric wires. In case of special or unique circumstances, the City may grant variances or exceptions to this requirement. Any request for variance or exception should be submitted in writing to the City of Rockwall setting forth the justification for an exception. The granting of a variance or exception by the City will be in writing. No work will be accepted without written approval from the City Engineer or in the case of franchise utilities, the Planning Director. Commercial developments may have overhead utilities as approved by the City Council.

1.7 Submittal to Utility Companies

The developer shall be responsible for submittal of information needed to design private utilities for the development. This information shall be submitted to the franchise (gas, electric, phone, and cable) companies. Written confirmation from the franchise companies shall be submitted to the Engineering Department, verifying that the affected utility companies have installed their respective utilities prior to engineering acceptance of project.

1.8 Requirements of the Final Engineering Drawings

The final engineering drawings shall conform to the established "Engineering Drawings Requirements" and these Standards of Design. The Engineering Drawings Requirements can be found the Appendix.

The final engineering drawings will consist of drawings showing all information necessary to completely review the engineering design of improvements proposed for or affected by the site and sealed by a Registered Professional Engineer within the State of Texas.

1.9 Engineering Plan Approval/Construction Permit Release

All review fees (plan, flood study, TIA, Lift station, etc.) shall be paid prior to engineering construction permit release and submittal of building permit.

1.10 Easements and ROW

All easements and right-of-way required for construction of a proposed project must be approved and accepted for filing prior to the approval or release of the final design/construction drawings.

A. Requirements for On-Site Easements and Right-of-Way Dedication to the City:

1. All easements and right-of-way shall be dedicated on a plat. No separate instruments will be allowed.
2. No structures (buildings, walls, fences, decks, swimming pools, signage/monuments, etc.) are allowed in or over any easements or right-of-ways. No trees shall be planted within 10' of any public water or sewer line 10" in diameter or larger. No trees shall be planted within 5' of any public water and sewer line less than 10" in diameter. No trees shall be planted within 5' of any public storm system.
3. All drainage and detention easements shall be maintained, repaired, and replaced by the property owner. This statement is to be noted on the plat.
4. No public utilities allowed in detention easements.
5. All right-of-ways shall have a minimum 10' utility easement dedicated adjacent to them.
6. Easement dimensions and other special requirements can be found in the utility's respective section of these Standards.

B. Requirements for Off-Site Easements Dedicated to the City:

1. All easement and right-of-way documents shall be written by the City.
2. Owner/Developer shall furnish the City a current title report and, metes and bounds description, and exhibit that is signed and sealed by a Texas Registered Professional Land Surveyor that shows the easements' or right-of-way, location, and current ownership information.
3. All easements shall be reviewed and approved by the City prior to releasing the documents for signatures by the property owners.
4. The individual or entity requesting the easement shall pay all filing fees required by the County.
5. The individual or entity shall return, to the City, all originally signed documents and a check for filing fees made out to Rockwall County for filing.
6. All filing information for all easements must be shown on all plats.
7. After recordation, a copy of the filed document will be forwarded to the property owner.

1.11 Final Acceptance

Final Acceptance shall occur when all the items on the Checklist for Final Acceptance have been completed and signed-off by the City. An example of the

checklist for final acceptance has been included in the Appendix. Items on the checklist for final acceptance will vary per project and additional items not shown on the check list may be required. After improvements have been constructed, the developer shall be responsible for providing to the City “As Built” or “Record Drawings”. The Design Engineer shall furnish all digital files of the project formatted in Auto Cad 14, or 2000 format or newer **and** Adobe Acrobat (.pdf) format with a CD-ROM **disk or flash drive**. The disk **or drive** shall include a full set of plans along with any landscaping, wall plans, and details sheets.

Submit 1-set of **printed drawings** of the “Record Drawings” containing copies of all sheets. **The printed sheets** will be reviewed by the construction inspector **PRIOR** to producing the “Record Drawing” **digital files on disk or flash drive**. This will allow any revisions to be addressed prior to producing the **digital files**.

Record Drawing Disk drawings shall have the Design Engineers seal, signature and must be stamped and dated as “Record Drawings” or “As Built Drawings” on all sheets.

The City of Rockwall will not accept any Record Drawing disk drawings which include a disclaimer with the like or similar verbiage. A disclaimer shall not directly or indirectly state or indicate that the design engineer or the design engineer’s surveyor/surveyors did not verify grades after construction, or that the Record Drawings were based solely on information provided by the construction contractor/contractors. Any Record Drawings which include like or similar disclaimer verbiage will not be accepted by the City of Rockwall.

Example of Acceptable Disclaimer:

To the best of our knowledge ABC Engineering, Inc., hereby states that this plan is As-Built. This information provided is based on surveying at the site and information provided by the contractor.

1.12 Changes in Standards of Design, Construction Specifications and this Document

These Standards of Design, Construction Specifications and this document can be modified by City Council through ordinance or resolution. This document can also be updated time to time to reflect changes in City requirements. It is the responsibility of the user to obtain the latest revisions of the City’s requirements.

2. STREETS

2.1 General

The street system, including the street layout, shall be in accordance with generally accepted engineering practices and in compliance with the Comprehensive Plan, the latest Thoroughfare Plan, the Zoning Ordinances, the Subdivision Regulations and other applicable regulations. The drainage system, as incorporated into the street system, shall comply with Section 3 of this document. The plans and specifications, design computations, if required, and other applicable data shall be submitted to the City for review. Construction shall not commence prior to approval of the plans and specifications by the City. All changes during construction shall be submitted to the Engineering Division for approval prior to any construction modifications.

2.2 Street Arrangement

Unless otherwise approved by the City, provisions shall be made for the extension of existing major arterials, collector streets and local streets in accordance with the Thoroughfare Plan and any specific street alignments as adopted by the City Council.

Off-center intersections will be considered for approval only for minor collector and local streets and only when there is a minimum property line separation of 125' unless otherwise approved by the City Engineer.

Within residential areas, the following design elements are encouraged: (A) Developing only a limited number of access points to arterial streets bordering the subdivision; (B) More than one point of access; (C) Incorporate curvilinear streets into the plan and (D) Incorporating a discontinuous residential street network, which utilizes three-way intersections in lieu of four-way intersections. When these factors are incorporated into a residential street plan, the result is enhanced character and traffic safety.

2.3 Thoroughfare and Street Geometry

Geometric design standards are presented in two formats within this section. Table 2.1 identifies specific design criteria for each standard roadway type. Figure 2.1A and 2.1B shows the typical cross-section for each standard roadway type. It is noted that dimensions shown are to the face of curb, unless specifically identified otherwise.

Each roadway type is keyed to the City Thoroughfare Plan, with the exception of local streets. The reader is referred to this document for information as to the locations where these roadways are to be used.

Table 2.1 Thoroughfare Geometric Design Standards

Thoroughfare Designation	P6D	M4D	M4U	Minor Collector	M3U		
Thoroughfare Type	Principal Arterial Divided 6-Lane	Minor Arterial Divided 4-Lane	Major Collector Undivided 4-Lane	Minor Collector/ Local Commercial Undivided	Minor Collector w/ Continuous Left Turn Lane	Local (Residential)	Alley
Number Traffic Lanes	6	4	4	2	2	2	1
Minimum Lane Width (feet)	12	12	11	11 + 2 Parking	12	14.5	12
Minimum R.O.W. * Width (feet)	110	85	65	60	70	50	20
Design speed (m.p.h.)	45	40	35	30	30	30	20
Posted Speed (m.p.h.)	40	35	30	25	30		
Stopping sight distance (feet)	400	325	275	200	200	200	125
Median Width ** (feet)	16	14	—	—	Left Turn Lane Width 14'	—	—
Minimum Lateral Clearance (feet)	6	6	6	6	6	—	—
Parking Permitted	NO	NO	NO	COM.-SOME RES.-YES	NO	RES.-YES	NO
Minimum Horizontal Centerline Curvature (feet)	1200	850	Com.-700 Res.-600	Com.-500 Res.-350	Com.-500 Res.-350	Res.-250 Elbow - 50'	See Details
Crest Vertical Curve Minimum K Value	120	80	50	30	30	30	10
Sag Vertical Curve Minimum K Value	90	70	50	40	40	40	20
Maximum Grade (%)	7.5 (For max length of 200')	7.5 (For max length of 200')	7.5	7.5	7.5	10.0	10.0
Minimum Grade (%)	0.7	0.7	0.7	0.7	0.7	0.7	0.7

* RIGHT-OF-WAY REQUIREMENTS FOR STATE HIGHWAYS AND/OR THE PROVISION OF RIGHT TURN LANES OR OTHER INTERSECTION IMPROVEMENTS MAY EXCEED THIS MINIMUM R.O.W. STANDARD.

** LARGER MEDIANS MAY BE REQUIRED TO PROVIDE FOR MULTIPLE TURN LANES.

*** LOCAL RESIDENTIAL CUL-DE-SACS SHALL HAVE A MINIMUM R.O.W. RADIUS OF FIFTY-SEVEN AND HALF FEET (57.5').

**** CROSS-SLOPE VARIANCE NEEDS APPROVAL FROM CITY ENGINEER.

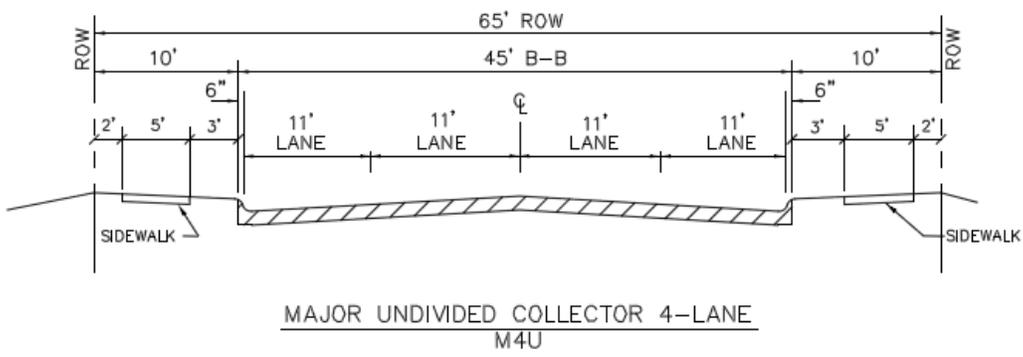
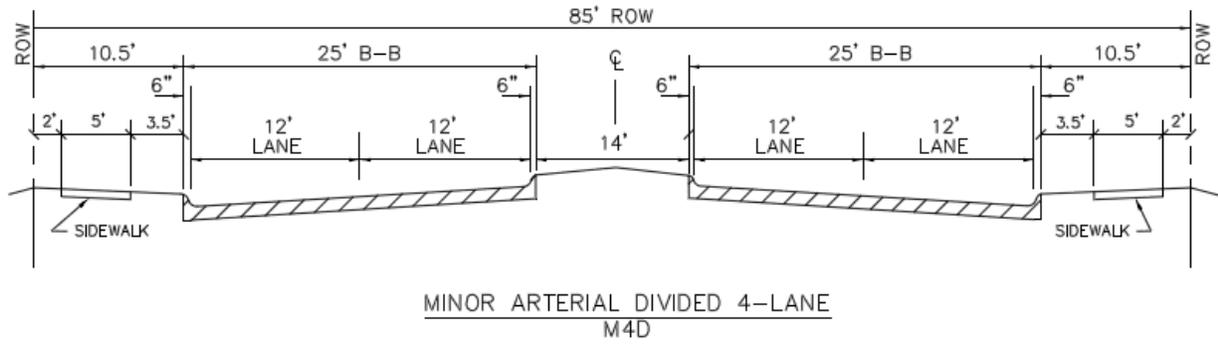
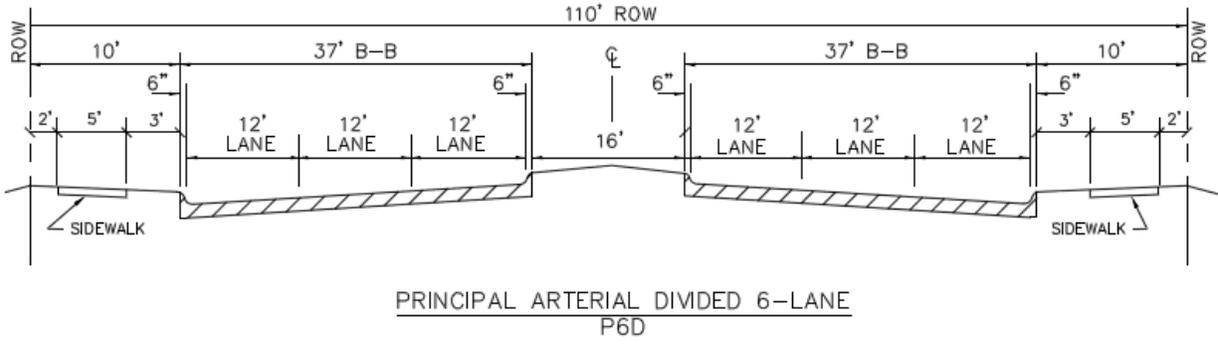
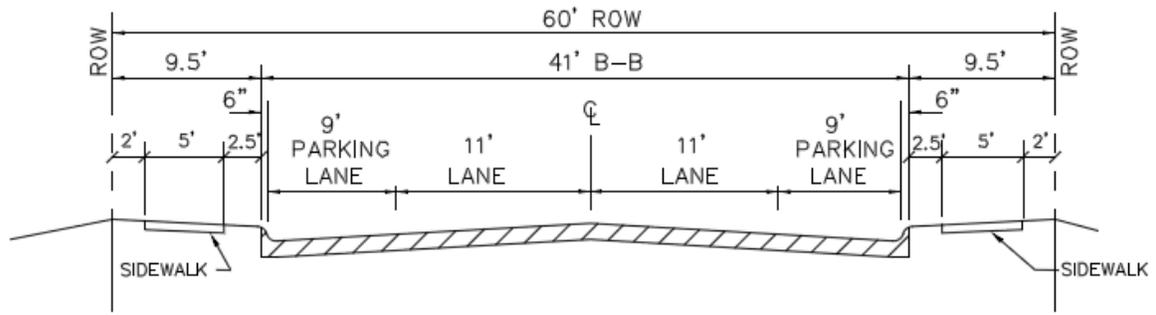
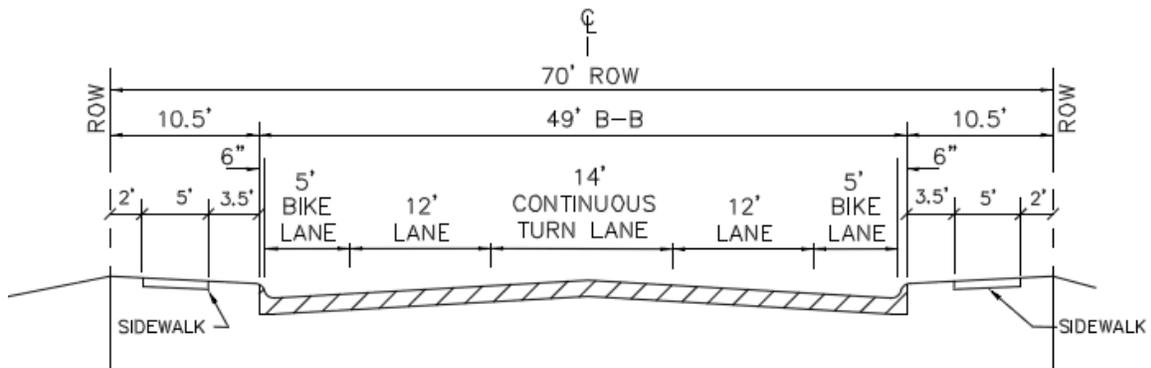


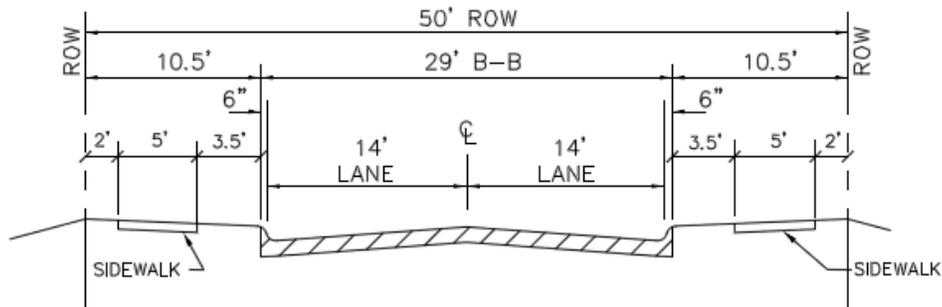
Figure 2.1A: Typical Thoroughfare Cross Sections



MINOR COLLECTOR AND/OR LOCAL COMMERCIAL UNDIVIDED

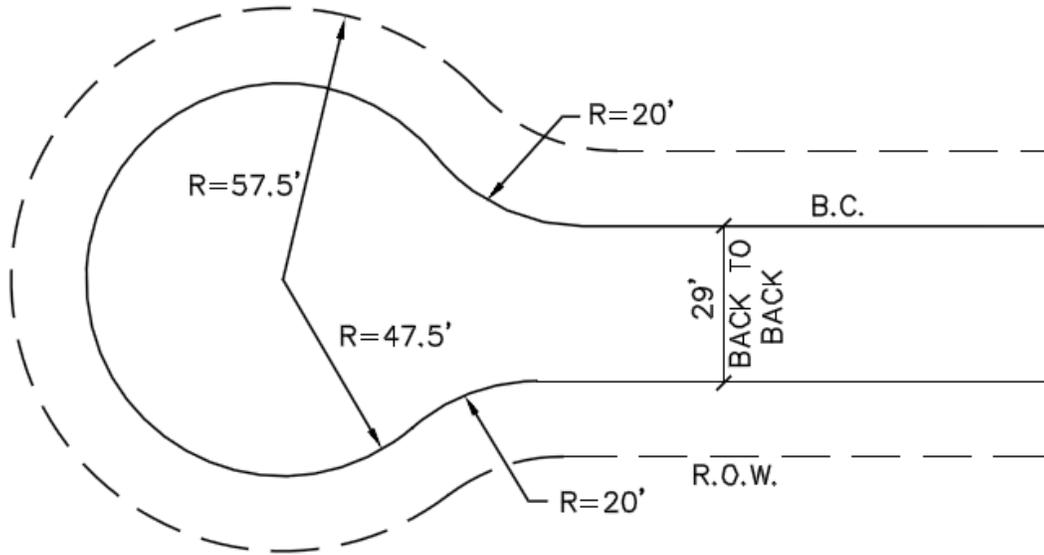


MINOR COLLECTOR - 2 LANE WITH CONTINUOUS LEFT TURN LANE
M3U

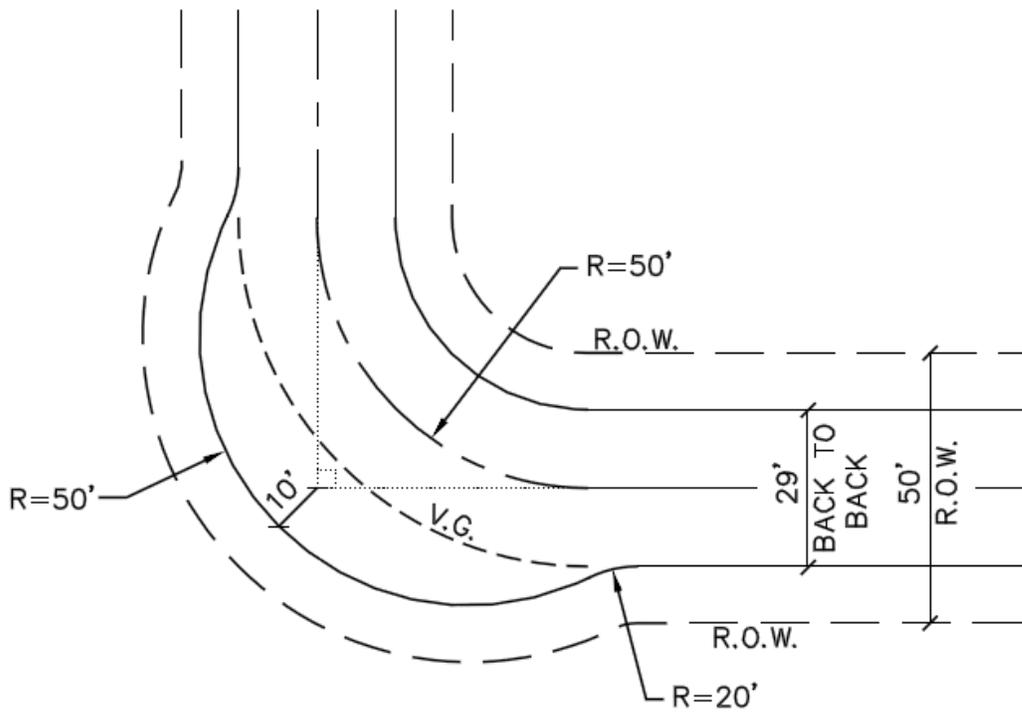


LOCAL (RESIDENTIAL STREET)

Figure 2.1B: Typical Thoroughfare Cross Sections



TYPICAL CUL-DE-SAC



TYPICAL EYEBROW

Figure 2.1C: Typical Thoroughfare Cross Sections

2.4 Turn Lanes

All left turn storage areas shall be eleven (11) feet wide with minimum storage requirements for left-turn lanes as in Figure 2.2. The transition curves used in left-turn lanes shall be two (2), 250-foot radius reverse curves with a total transition length of 100 feet. Medians less than seven (7') feet wide (**face to face**) are required to be constructed of **reinforced integral stained and stamped color concrete a minimum of six (6") inch thick median pavement**. All median noses are to be constructed of City approved **integral stained and stamped color concrete**. **The color and pattern to be approved by the City**. The paver system shall be installed a distance of ten (10') feet from the end of the nose.

2.5 Median Openings, Width, Location and Spacing

Arterial thoroughfares in Rockwall have raised medians. Arterials having continuous two-way left turn lanes are discouraged and may be utilized only in special circumstances with the approval of the City Council.

Median openings at intersections shall be from right-of-way to right-of-way of the intersecting street, unless otherwise approved by the City Engineer.

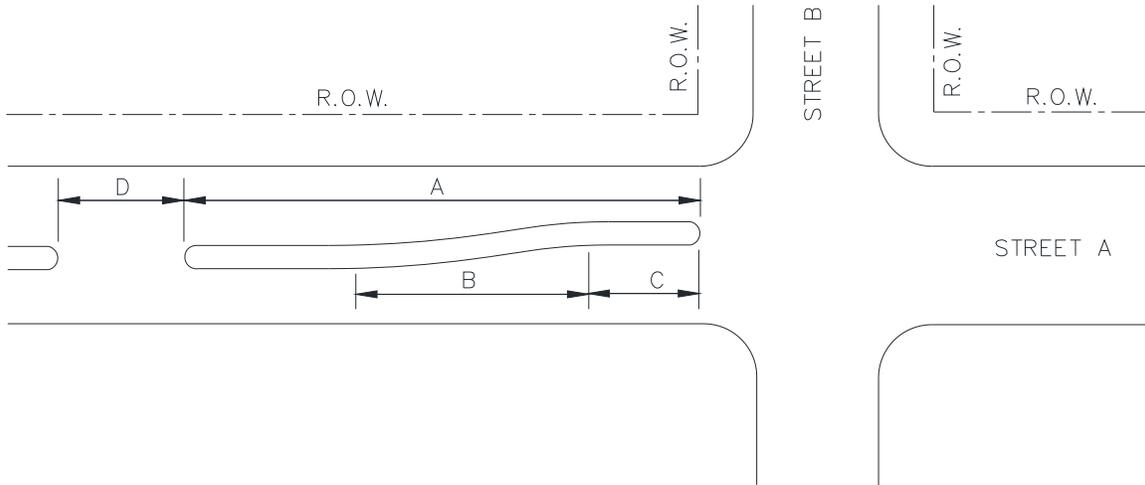
The width of mid-block median openings shall not be less than 60 feet, but no greater than 70 feet.

Using the above requirements, examples of the minimum distance between median openings on a divided street where left-turn storage is provided in both directions are:

- A. 310 feet from nose to nose of the median from the intersection of two major thoroughfares to a street or drive (see Figure 2.2);
- B. 260 feet from nose to nose of the median from the intersection of two secondary thoroughfares or a secondary thoroughfare and a major thoroughfare to a residential street or a drive, and;
- C. 220 feet from nose to nose of the median for intersection combinations of drives and/or residential streets.

Medians less than seven (7') feet wide are required to be constructed of a City approved paver or stamped concrete system. All median noses are to be constructed of City approved paver or stamped concrete system, a distance of ten (10') feet from the end of the nose. Any median that has landscaping requires a mow ramp to be installed for access. Noses shall be a solid poured steel reinforced concrete bullet nose.

Figure 2.2: Median Design Standards



INTERSECTING STREET TYPE		MINIMUM LENGTH (FEET)			
STREET A	STREET B	A	B	C*	D**
Principal Arterial (6 Lanes)	Principal Arterial (6 Lanes)	310	100	150	60
Principal Arterial (6 Lanes)	Minor Arterial (4 Lanes)	260	100	100	60
Principal Arterial (6 Lanes)	Major Collector (4 Lanes) Minor Collector (2 Lanes)	260	100	100	60
Principal Arterial (6 Lanes)	Local/Private (2 Lanes)	220	100	60	60
Minor Arterial (4 Lanes)	Principal Arterial (6 Lanes)	310	100	150	60
Minor Arterial (4 Lanes)	Minor Arterial (4 Lanes)	260	100	100	60
Minor Arterial (4 Lanes)	Major Collector (4 Lanes) Minor Collector (2 Lanes)	260	100	100	60
Minor Arterial (4 Lanes)	Local/Private	220	100	60	60

LEFT-TURN STORAGE AREA WIDTH 11' MINIMUM

MEDIAN WIDTH (SEE GEOMETRIC DESIGN STANDARD FOR PRINCIPAL AND MINOR ARTERIAL).

***MINIMUM LENGTH – ACTUAL LENGTH DEPENDENT UPON ANTICIPATED TURN VOLUME**

**** OR STREET WIDTH + 8 FEET – WHICHEVER IS GREATER. A VARIANCE MAYBE GRANTED BY CITY COUNCIL ON A CASE BY CASE BASIS.**

2.6 Driveway Locations

Minimum standards for driveway separation accessing the same site are shown in Figure 2.3. This standard applies to all non-residential uses.

There is a minimum distance upstream and downstream from adjacent intersections within which driveways should not be located. This separation distance varies with the classification of street and is shown in Figure 2.3. This standard applies to all non-residential users.

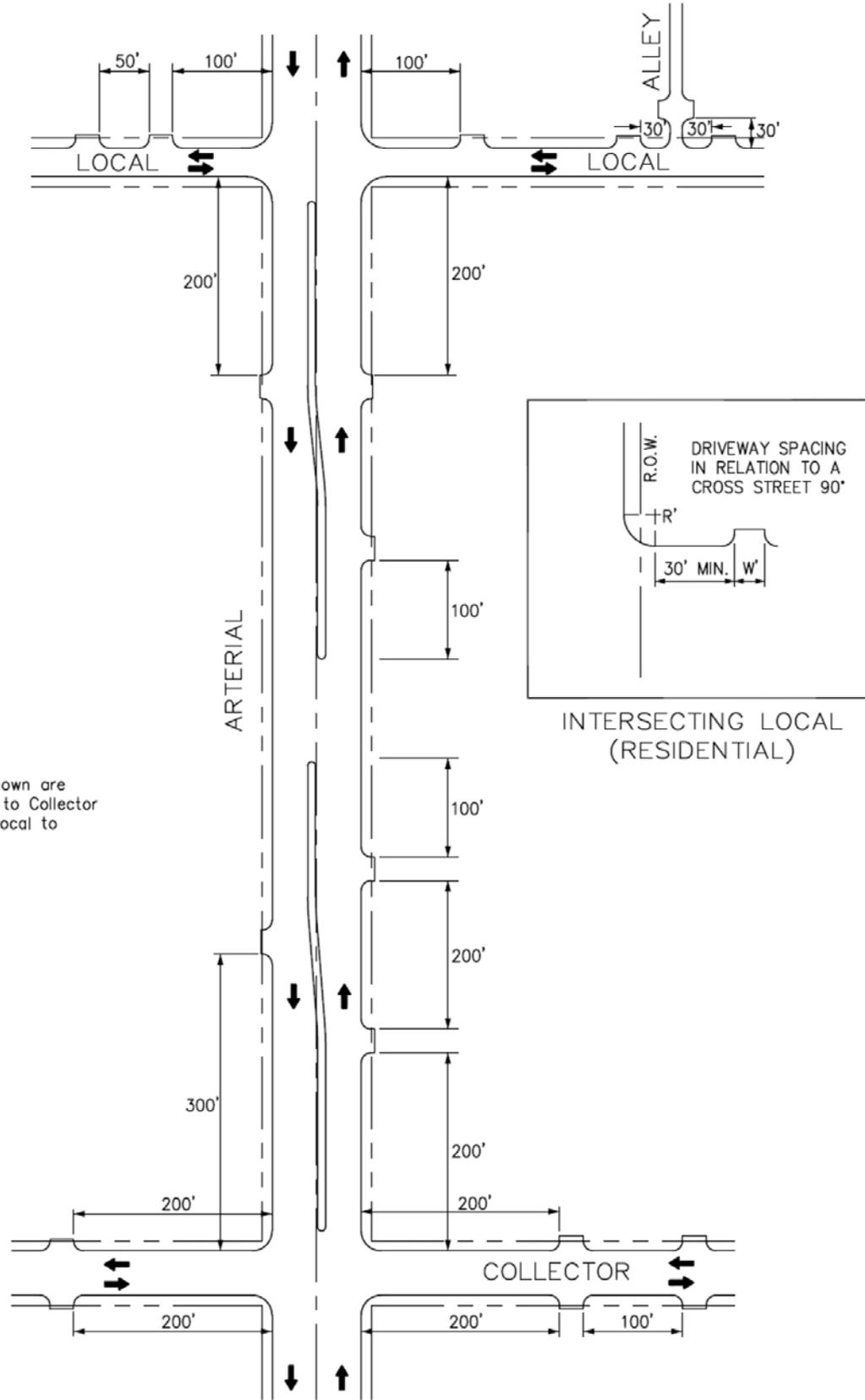
At mid-block access points, there is a minimum distance from a median nose, within which driveways should not be located. This is shown in Figure 2.3 and is equally applicable along both major and minor arterials for non-residential uses. All proposed paving connections to existing paving requires a longitudinal butt joint connection.

2.6.1 Driveways on TxDOT Facilities

Driveways on TxDOT Facilities shall be placed in accordance to City Standards set forth in this section and the requirements of the current TxDOT's Access Management Manual and require TxDOT Driveway Permit approval. TxDOT Driveway Permits shall be processed through the Engineering Division. TxDOT Permit Plan sets shall be 11"x17" in size and signed and sealed by a licensed professional engineer with the State of Texas. Permit plan sets shall include: Typical Sections, Paving Plan and Profile, all applicable TxDOT Standard Details, Traffic Control Plans Sheets, Striping Plans, Demo Plans, Drainage Plans (Drainage Area Map, Storm Sewer Plans and Profiles, Culvert Plans and Profiles), and any other items required by TxDOT or City Engineer to construct the driveway. A Traffic Impact Analysis shall be submitted to the Engineering Division with all TxDOT Driveway Permits.

2.7 Block Lengths

In general, streets shall be provided at such intervals as to serve cross traffic adequately and to intersect with existing streets. Where no existing plats control, the blocks shall be not more than 1,600 feet in length. Block arrangements must provide access to all lots, and in no case, shall a block interfere with traffic circulation.



NOTE:
All dimensions shown are minimums. Local to Collector to be same as Local to Arterial.

Figure 2.3: Minimum Driveway Spacing & Corner Clearance

2.8 Street Intersections

More than two streets intersecting at one point shall be avoided. All streets and thoroughfares should intersect other streets and thoroughfares at an angle of ninety (90) degrees unless otherwise approved by the City Engineer.

Arterial and collector street intersections shall have property line corner clips with a minimum tangent distance of thirty (30) feet. Residential streets shall not normally be required to have a ROW corner clip at their intersection with other streets or thoroughfares, but a 10-foot by 10-foot sidewalk corner easement will be required.

Visibility easements will be required for all ninety (90°) degree intersections. For all intersections that are not ninety (90°) degrees, an engineered visibility easement is required by the design engineer.

- A. Arterial/Collector street intersections - thirty (30) foot by thirty (30) foot easement
- B. Residential street intersections - twenty (20) foot by twenty (20) foot easement
- C. Alley to street intersections - ten (10) foot by ten (10) foot easement

Curb radii at intersections shall have a minimum radius of thirty (30) feet along arterials, twenty-five (25) feet along collectors and twenty (20) feet along residential streets.

In any case where streets intersect at an angle of other than ninety (90) degrees, the City may require non-standard right-of-way corner clips and curb return radii.

All proposed paving connections to existing paving requires a longitudinal butt joint connection.

2.9 Relation to Adjoining Streets

The system of streets designed for the development, except in unusual cases, must connect with streets already dedicated in adjacent developments. Where no adjacent connections are platted, the streets must be the reasonable projection of streets in the nearest subdivided tracts and must be continued to the boundaries of the tract development, so that other developments may eventually connect with the proposed development. Strips of land controlling access to or egress from other property or any street or alley or having the effect of restricting or damaging the adjoining property for development or subdivision purposes or which will not be taxable or accessible for special improvements shall not be permitted in any development unless such reserve strips are conveyed to the City on fee simple. This determination is made by the City

Planning Director or City Engineer. When such access is needed to maintain permanent City owned utilities, the roadway will be an improved right-of-way. If the utilities are temporary, an improved easement may be approved.

2.10 Dead End Streets, Cul-de-Sacs and Courts

Cul-de-sacs are permitted and encouraged within residential subdivisions. Use of this design shall provide proper access to all lots and shall not exceed six hundred (600) feet in length, measured from the center of the cul-de-sac to the center of the intersecting street (not a dead end street). Cul-de-sac shall have a minimum paving radius of forty-seven and half (47 ½) feet and a minimum right-of-way radius of fifty-seven and half (57 ½) feet. Specific aspects of the standard cul-de-sac design are given in Figure 2.1C. In lieu of the typical design shown, the City may approve alternative concepts for a specific application.

2.11 Alleys and Alley Widths

Alleys shall be provided in all residential areas and shall be paved with steel reinforced concrete. No alley may be over 1,000 feet long. The City Council may waive the residential alley requirement, if it is in the best interest of the City. Alleys may be required in commercial and industrial districts. The City may waive this requirement where other definite and assured provisions are made for service access such as off-street loading, unloading and parking consistent with and adequate for the uses proposed. The minimum right-of-way width of an alley shall be twenty (20) feet. Dead-end alleys shall not be permitted. The City may waive this requirement where such dead-end alleys are unavoidable and where adequate turnaround facilities have been provided. Adequate provisions shall be made at all intersections in order that equipment, such as garbage collection vehicles and maintenance vehicles, can maneuver the corners. The interior edge of the pavement, at the corners, shall have a minimum radius of thirty (30) feet. The exterior edge of the pavement, at the corners, shall have a minimum radius of twenty (20) feet. The alley paving is to be flared at the street intersection. The right-of-way limits shall be expanded, if necessary, beyond the minimum requirement in order to include all of the paved section and utilities within the right-of-way of the alley. Alley turnouts shall be paved to the property line and shall be fifteen (15) feet wide at that point. All alleys shall have a minimum of twelve (12) feet of steel reinforced paved concrete roadway. Alley shall have a minimum thickness of seven (7) inches on the exterior edges and five (5) inches in the center sections.

2.12 Street Grades

Arterial streets may have a maximum grade of seven and one-half (7 ½) percent, for a maximum continuous distance of two hundred (200) feet. Collector streets may have a maximum grade of seven and one-half (7 ½) percent. Residential streets may have a maximum grade of ten (10) percent, unless otherwise

approved by the City, where the natural topography is such as to require steeper grades. All streets must have a minimum grade of at least seven-tenths (0.7) of one (1) percent. Centerline grade changes with an algebraic difference of more than one (1) percent shall be connected with vertical curves in compliance with the minimum length requirements set forth in Table 2.2.

Table 2.2A: Crest Vertical Curves

Design Speed (MPH)	Coeff. of Friction (a)	Stopping Sight Dist. (Ft.)	Stopping Sight Dist. Rounded for Design (Ft.)	K	K Rounded for Design
15	0.42	72.98	75	4.01	5
20	0.40	106.83	125	8.59	10
25	0.38	146.70	150	16.19	20
30	0.36	193.58	200	28.20	30
35	0.34	248.72	250	46.55	50
40	0.32	313.67	325	74.03	80
45	0.31	383.12	400	110.44	120

(a) AASHTO, p. 316

**ROUNDED
MINIMUM LENGTH OF VERTICAL CURVE IN FEET
For Speeds and K Values Shown Below
(L = KA)**

Algebraic Grade Diff. (%) (A)	MPH	15	20	25	30	35	40	45
	K	5	10	20	30	50	80	120
1		5	10	20	30	50	80	120
2		10	20	40	60	100	160	240
3		15	30	60	90	150	240	360
4		20	40	80	120	200	320	480
5		25	50	100	150	250	400	600
6		30	60	120	180	300	480	720
7		35	70	140	210	350	560	840
8		40	80	160	240	400	640	960
9		45	90	180	270	450	720	1080
10		50	100	200	300	500	800	1200
11		55	110	220	330	550	880	1320
12		60	120	240	360	600	960	1440
13		65	130	260	390	650	1040	1560
14		70	140	280	420	700	1120	1680
15		75	150	300	450	750	1200	1800

Table 2.2B: Sag Vertical Curves

Design Speed (MPH)	Coeff. of Friction (a)	Stopping Sight Dist. (Ft.)	Stopping Sight Dist. Rounded for Design (Ft.)	K	K Rounded for Design
15	0.42	72.98	75	8.13	10
20	0.40	106.83	125	14.75	20
25	0.38	146.70	150	23.56	30
30	0.36	193.58	200	34.78	40
35	0.34	248.72	250	48.69	50
40	0.32	313.67	325	65.69	70
45	0.31	383.12	400	84.31	90

(a) AASHTO, p. 316
(b) AASHTO, p. 312

**ROUNDED
MINIMUM LENGTH OF VERTICAL CURVE IN FEET
For Speeds and K Values Shown Below
(L = KA)**

Algebraic Grade Diff. (%) (A)	MPH	15	20	25	30	35	40	45
	K	10	20	30	40	50	70	90
1		10	20	30	40	50	70	90
2		20	40	60	80	100	140	180
3		30	60	90	120	150	210	270
4		40	80	120	160	200	280	360
5		50	100	150	200	250	350	450
6		60	120	180	240	300	420	540
7		70	140	210	280	350	490	630
8		80	160	240	320	400	560	720
9		90	180	270	360	450	630	810
10		100	200	300	400	500	700	900
11		110	220	330	440	550	770	990
12		120	240	360	480	600	840	1080
13		130	260	390	520	650	910	1170
14		140	280	420	560	700	980	1260
15		150	300	450	600	750	1050	1350

2.13 Pavement Design

Traffic projections for next 30 years, engineered paving designs, and subgrade conditions are required for the pavement design section determinations of all collector and arterial streets.

2.13.1 Subgrade

Subgrades shall be compacted and finished to a smooth uniform surface. Subgrades of native material which have a Plasticity Index (P.I.) of fifteen (15) or more shall be lime stabilized to a minimum depth of six (6) inches. The lime stabilization shall be used for the full width of the street, back of curb to back of curb, plus twelve (12) inches on outside of the curb. The minimum lime content shall be six (6) percent of the dry weight of the material (at least 27 lbs. per square yard). Lime stabilization or concrete stabilization may be required for soils showing a P.I. of 15 or less. Type of stabilization and paving design will be determined prior to pavement construction by a certified geotechnical testing lab. The subgrade materials will be tested in accordance to the Standard Specifications for Construction, unless otherwise approved by the City. In general, the soils testing will include the testing of Atterburg limits and testing of sulfates to determine if lime stabilization is infeasible. Laboratory tests must be submitted to the Engineering Division for approval to determine amount of lime required. Subgrades should be compacted to ninety-five (95) percent standard densities. No sand is allowed under any paving.

2.13.2 Steel Reinforced Concrete Pavement

All pavement shall be steel reinforced size and spacing shall conform to Table 2.3 below. All non-structural cracks in paving shall be routed and sealed as determined by the City. All reinforcing steel placed within the public right-of-way shall be grade 60 steel and comply with Texas Department of Transportation specifications.

Fly ash may be used in concrete pavement locations provided that the maximum cement reduction does not exceed 20% by weight per cubic yard of concrete. The fly ash replacement shall be 1.25 pounds per 1.0 pound of cement reduction.

At a minimum all concrete pavement shall conform to Table 2.3.

Table 2.3: Steel Reinforced Concrete Pavement Design

Street/Pavement Type	Minimum Thick-ness (inches)	Strength 28-Day (psi)	Minimum Cement (sacks / CY)		Steel Reinforcement	
			Machine placed	Hand Placed	Bar #	Spacing (O.C.E.W.)
Arterial *	10"	3,600	6.0	6.5	#4 bars"	18"
Collector *	8"	3,600	6.0	6.5	#4 bars	18"
Residential	6"	3,600	6.0	6.5	#3 bars	24"
Alley	7"-5"-7"	3,600	6.0	6.5	#3 bars	24"
Fire Lane	6"	3,600	6.0	6.5	#3 bars	24"
Driveways	6"	3,600	6.0	6.5	#3 bars	24"
Barrier Free Ramps	6"	3,600	N/A	6.5	#3 bars	24"
Sidewalks	4"	3,000	N/A	5.5	#3 bars	24"
Parking Lot/Drive Aisles	5"	3,000	5.0	5.5	#3 bars	24"
Dumpster Pads	7"	3,600	6.0	6.5	#3 bars	24"

* Paving section designs for arterials and collectors shall be based off 30 year projected traffic volumes and geotechnical analysis/report. (Paving section design shall include but not limited to the following: pavement thickness, reinforcing size and spacing, pavement strength, subgrade thickness, subgrade treatment type (lime or cement))

Concrete batch designs for all paving, sidewalks, and sewer/storm structures are to be reviewed and approved by the Engineering Division. All batch designs shall be submitted with history of recent cylinder breaks for each separate strength requirement (machine placement and hand placed). All batch designs shall have the current date, project name, and use labeled on each design. Submit batch designs to the Engineering Division a minimum of ten (10) days prior to the projected placement date for review and approval.

During construction the contractor shall furnish the following at his own expense:

- Batch plant control from a qualified commercial laboratory. Laboratory personnel shall be competent to determine free moisture in aggregates and make needed adjustments in control of the mix and slump.
- Prepare a minimum four compression cylinders for each 150 cubic yards of concrete or fraction thereof, with one cylinder break at 7 days, one at 14 days, and a minimum of two cylinders broken at 28 days. Note* No averaging on cylinder breaks.
- Testing labs are to submit copies of any and all concrete cylinder breaks that do not meet 28 day break specifications. Cores are to be taken within ten (10) days of any 28 day cylinder break failures.

- Test data and copies of all laboratory reports for site work are to be directed to the attention of the designated engineering construction inspector that is assigned to the project.

The City of Rockwall may suspend concreting operations if the quality of the concrete being placed is not acceptable or due to adverse climate conditions. Concrete placement shall cease if the concrete temperature meets or exceeds ninety-five (95) degree Fahrenheit. If in the opinion of the owner or the City of Rockwall concrete placement operations shall cease a combination of temperature, wind, and humidity create conditions which are adversely affecting the condition of the concrete. Concrete placement shall also cease if concrete temperature is below forty (40) degrees Fahrenheit and falling. Except by specific written authorization of the owner/City of Rockwall, no concrete shall be placed when the air temperature is less than forty (40) degrees Fahrenheit and falling but may be placed when the air temperature is above thirty-five (35) degrees Fahrenheit and rising, "Pending No Freezing Weather is Imminent" with the temperature being taken in the shade away from artificial heat. When and if such permission is granted, the contractor shall furnish sufficient protective material and devices to enclose and protect the fresh concrete in such a way as to maintain the temperature of fifty (50) degree Fahrenheit for a period of at least five (5) days. No concrete shall be placed on frozen subgrades. If in the opinion of the owner or the City of Rockwall concrete operations shall cease if a combination of temperature, wind, and humidity create conditions which are adversely affecting the condition of the concrete, then concrete placement shall cease. It is to be distinctly understood that the contractor is responsible for the quality and strength of the concrete placed under any weather conditions.

Maximum time intervals between the addition of mixing water and/or cement to the batch, and the placing of concrete in the forms shall not exceed the following:

<u>Air or Concrete Temperature Which Ever is Higher</u>	<u>Maximum Time From Addition Of Water To Placement</u>
<u>Non-Agitated Concrete</u>	
Up to 80° F	30 Minutes
Above 80° F	15 Minutes
<u>Agitated Concrete</u>	
Up to 75° F	90 Minutes
75° to 89° F	60 Minutes
Over 89° F	45 Minutes

The use of an approved set-retarding admixture will permit the extension of the above time maximums, by thirty (30) minutes for agitated concrete only.

2.14 Parkways, Grades and Sidewalks

All parkways shall be constructed to conform to top of curb grades with a standard transverse slope of one-quarter (1/4) inch per foot rise from top of curb to right-of-way. All City right-of-way shall be sodded if disturbed.

Where the natural topography is such as to require steeper grades, transverse slopes (except for sidewalk) up to three-quarter (¾) inch per foot may be used with approval of the City of Rockwall.

Sidewalks shall be provided for all residential streets in subdivisions zoned for one or two family dwellings and on all streets designated on the adopted Master Thoroughfare Plan. Barrier free ramps and sidewalks along screening walls, landscaped areas, trails, parks, open space, greenbelts, and/or drainage ways, shall be installed by the Developer with street construction and the sidewalks in front of residential lots shall be installed by the home builder. The City may require sidewalks in other locations. Sidewalks shall be five (5) feet in width and shall have two (2) feet of green space between the Right of Way line and the outside edge of sidewalk. Sidewalks shall be located wholly within the street Right of Way, sidewalk corner clip easement, or road easement. If a fire hydrant is too close to the sidewalk, swerve sidewalk toward the right-of-way line to maintain five (5) feet clear path. If sidewalk has to be built outside the right-of-way, a sidewalk easement is required. This requirement may be waived by the City Council as provided for in Section 24-17 of the Code of Ordinances.

Sidewalks/Trails wider than 5' will be required to have engineered details.

Sidewalks placed adjacent to the back of the curb must be six (6) feet wide and lugged in to the curb. Sidewalks to be place against the back of curb shall be approved by the City Engineer.

2.14.1 Roadway Reconstruction

During a roadway reconstruction project if a block of a street to be reconstructed does not currently have sidewalks in place, a six (6) foot sidewalk against/adjacent to the curb shall be required on both sides of the roadway within that street block if the following criteria are met:

1. The roadway is above a residential/local classification or on the currently adopted Thoroughfare Plan. (i.e. Minor Collector, Major Collector, Minor Arterial and Major Arterial) and has an Average Daily Traffic (ADT) of 750 vehicles or more per day; or,
2. Any portion of the street block is located within 1,000 feet of a school, city park, or church. In cases where the street block is located within this 1,000 foot buffer the street block shall have a direct connection to another street block or sidewalk system that is also located within the 1,000 foot

buffer. Any street block or sidewalk system that is inhibited from connecting to an existing street block or sidewalk system by a physical barrier (e.g. bridges) may be exempted from this requirement at the discretion of the City Engineer.

For the purpose of this section a street block shall be defined as the section of the road that extends from one (1) street intersection to another, or from a street intersection to the end of a cul-de-sac or dead-end.

This section shall only apply to City initiated reconstruction projects.

2.15 Driveways/Drive Aisles

2.15.1 Residential

Steel reinforced concrete residential driveways to serve single car garages shall not be less than twelve (12) feet. For two car garages, carports and/or storage areas shall be not less than eighteen (18) feet nor more than twenty four (24) feet in width at the property line. The width of the driveway for a three car garage shall be twenty eight (28) feet or larger on a case by case basis.

Residential driveways shall be separated from one another by a distance of at least ten (10) feet. The radii of all residential driveway returns shall be a minimum of five (5) feet and shall not extend past the adjoining property line. The driveway approaches devoted to one use shall not occupy more than sixty percent (60%) of the frontage abutting the roadway or alley.

2.15.2 Multi-Family and Non-Residential

Steel reinforced concrete driveways providing access to multi-family or non-residential uses shall have a minimum width of twenty four (24) feet and a maximum width of forty five (45) feet when measured at their narrowest point near, or at, the property line. The minimum radius for these uses shall be twenty-five (25) feet. Larger radii are encouraged. Limitations on permissible locations for these driveways are addressed in Section 2.6, Driveway Locations. Driveway radii returns shall not extend across abutting property lines. The drive aisles shall have a minimum width of twenty four (24) feet.

2.15.3 Grades

The change in grade between the roadway cross slope and the slope of the driveway apron is important to ensure a smooth, low speed turning maneuver. The maximum algebraic change in grade is shown in Table 2.4. An abrupt change in grade will cause the front bumper to drag on the surface of the street and driveway.

Table 2.4: Driveway Grades and Grade Change

Type	Max Grade	Max Algebraic Change in Grade
Residential	14%	12%
Non-Residential	8%	8%

When an algebraic change in grade occurs within a driveway of more than 4% vertical curve will be required. The minimum recommended lengths of vertical curve for the corresponding change in grade for driveway profiles are shown in Table 2.5. It is recommended to put a 2 foot vertical curve where ever the algebraic change in grade is less than 4%.

Table 2.5: Vertical Curve Lengths for Driveways

Algebraic Change in Grade	Minimum Length (ft)	
	Crest Curve	Sag Curve
< 4%	2	2
4% - 5%	5	6
6% - 8%	5	7
9% - 12%	6	8

All driveway profiles should be designed to accommodate a sidewalk crossing at a maximum allowable cross-slope of 2% in order to meet ADA requirements. A sidewalk crossing grade of 2% shall be incorporated into the driveway even if a sidewalk is not to be constructed at the same time.

Reference Figure 2.4 for driveway profiles on an upgrade and Figure 2.5 for driveway profiles on a downgrade. No downgrade driveways will be allowed for new development or construction. If an existing driveway with a downgrade already exists it shall be reconstructed to conform to Figure 2.5. All down grade driveways shall have a raise that must be equal to or above the top of curb elevation.

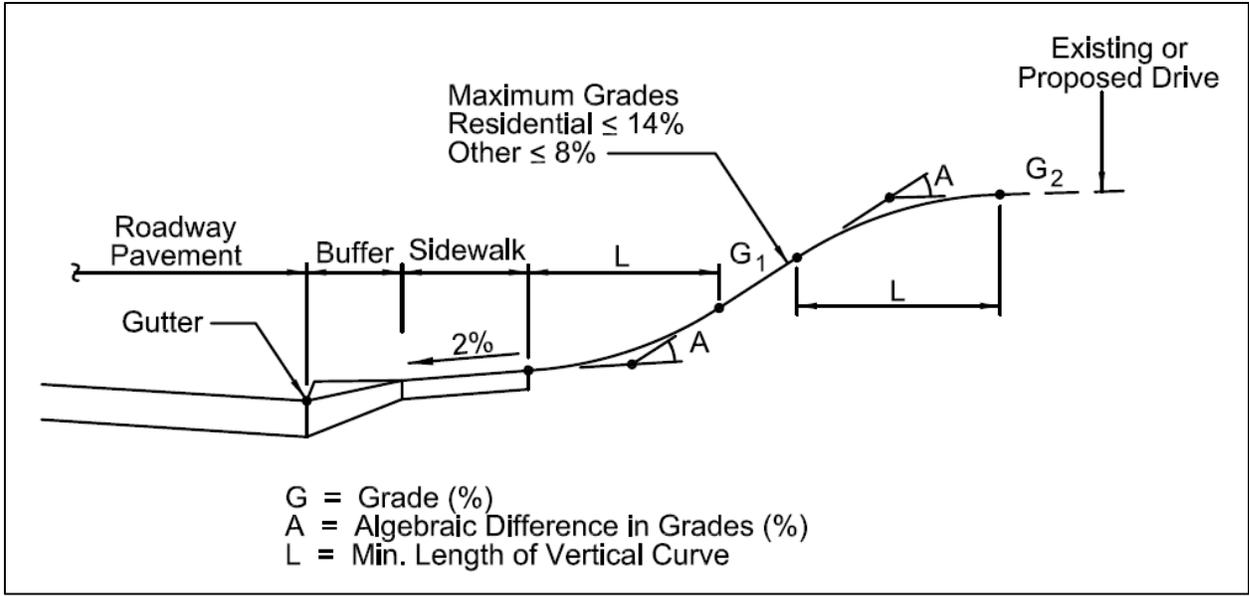


Figure 2.4: Driveway Profiles on an Upgrade

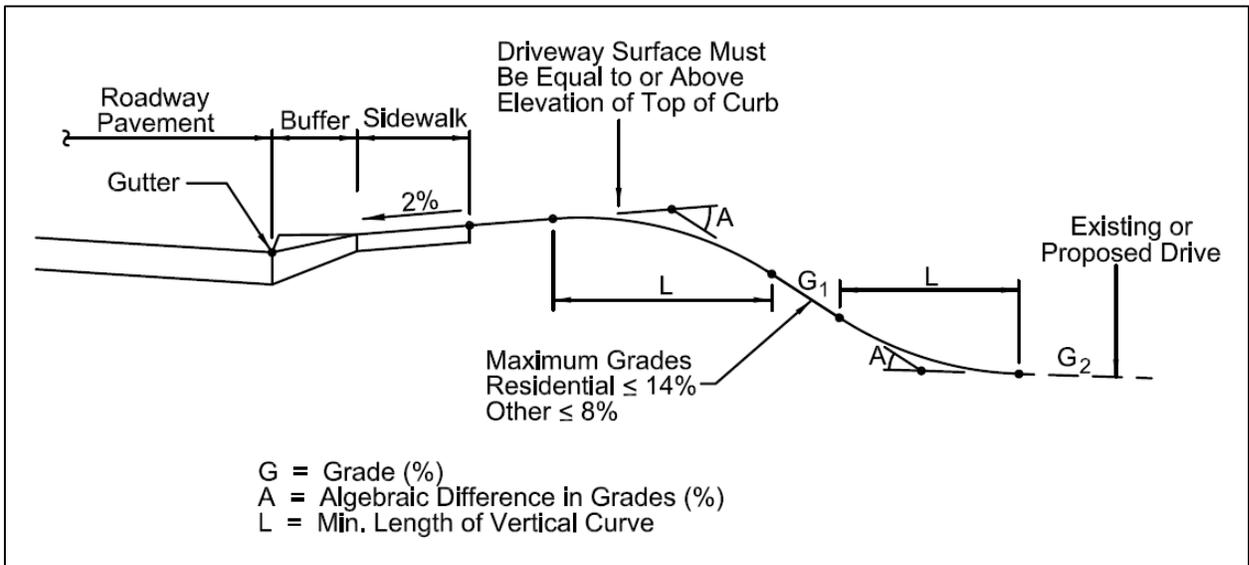


Figure 2.5: Driveway Profiles on a Downgrade

2.16 Traffic Information and Control Devices

Any work disturbing traffic on City streets shall require a signed and sealed traffic control plan by a Registered Professional Engineer in the State of Texas. All signage in City Right of Way shall conform to the Texas Manual of Uniform Traffic Control Devices.

The developer shall be responsible for and arrange for the installation of all pavement striping, regulatory, warning, guide, and school zone signs including posts, as shown on the plans or as directed by the City. Street name signs shall be installed at each intersection. Examples of regulatory, warning, information and guide signs are as follows:

- A. Regulatory signs shall include, but are not limited to, STOP, 4-WAY, YIELD, KEEP RIGHT and speed limit signs.
- B. Warning signs shall include, but are not limited to, DEAD END, NO OUTLET, DIVIDED ROAD, DIP, and PAVEMENT ENDS.
- C. Guide signals shall include, but are not limited to, street name signs, DETOUR, direction arrow and advance arrow.
- D. Traffic striping and buttons shall be provided by the developer as shown on plans or as directed by the City.

All signage within medians shall be break away pole bases.

2.16.1 Regulatory Signage

Regulatory signs should be used only where justified by engineering judgment. All signage plans shall be reviewed and approved by the City of Rockwall Engineering Division and be designed in accordance with the principles described in the current Texas Manual on Uniform Traffic Control Devices (TMUTCD).

All street and regulatory signage shall be installed, inspected and approved, prior to final acceptance of the project. This inspection typically takes place as part of the Engineering Division's final walkthrough. Any sign related issue/issues will be noted on the projects final punch list.

- A. A detailed street and regulatory signage plan is to be submitted to the City of Rockwall Engineering Division. All signs shall be shown in the engineering plans for review and approval. The signage plan shall be shown on a separate signage & pavement marking layout sheet or as a part of the plan & profile sheet. The plan shall identify the specific sign

designation, size and location for each sign. Sign standards shall also be included in the engineering plans.

- B. All signage installed shall comply with the current “*Texas Manual on Uniform Traffic Control Devices*” and the “*Standard Highway Sign Designs for Texas*.” The sign layout drawings shall show the color and dimensions of all sign face legend components including background color, legend color, borders, symbols, letter size and style.
- C. The developer shall be responsible for furnishing and installing all regulatory signage, warning signage and street name signage along with all necessary sign mounts in accordance with the approved engineering plans. A sample production sign shall be submitted to the Traffic Signs & Pavement Markings Supervisor for review and approval. The sample shall be directed to the City of Rockwall Service Center located at 1600 Airport Road, Rockwall Texas 75087. The sample sign must be submitted at least 10 days prior to the scheduled installation date.
- D. For a street with a cul-de-sac end, a standard W 14-2a shall be mounted over the street name blade, if the cul-de-sac is not clearly visible from the adjoining roadway, or is located in excess of 400 linear feet from the adjoining roadway.

2.16.2 Street Name Blades

- A. Street name sign blades shall be double-sided with rounded corners.
- B. Street Name Blades shall be nine-inch (9”) tall flat aluminum. The blades shall be 0.080 inches thick and be a minimum of 36” long.
- C. The lettering for the street signs shall be 3M 3930 high Intensity prismatic material sheeting for street, regulatory and warning signs and shall be high intensity diamond grade type III prismatic. The street sign background shall be green and the legend shall be white.
- D. The street sign blade must incorporate the current City of Rockwall logo. The logo shall consist of white Scotchlite Series 3930 high intensity prismatic material. (Product Code 3930)
- E. Block Numbers are required on all street name blades and shall be located on the top right corner of the street blade.
- F. The lettering for the street blades shall be composed of a combination of lower-case letters with initial upper-case letters. The Clearview TCAD-1W font shall be used. The lettering shall be composed of initial upper-case letters of at least 6 inches in height and lower case letters of at least 4.5

inches in height. For supplementary lettering to indicate the type of street (such as Street, Avenue or Road) shall be composed of initial upper-case letters at least 3-inches in height and lower-case letters at least 2.25 inches in height. Abbreviations may be used (for example St., Ave., or Rd) except the street name itself. The supplementary lettering shall be located at the lower right corner of the street blade, under the block number.

- G. The street blade sign shall consist of green Scotchlite 3930 high intensity prismatic material background (product code 3937) and white Scotchlite 3930 high intensity prismatic material for the lettering (product code – 3930). The background sheeting shall be white 3M 390 high intensity prismatic material. The background material shall be applied to the full width and height of the sign blank leaving no metal exposed. The background material shall be one continuous piece of material. Patching of background material is not allowed and any sign with patching material of any type will be rejected by the City.

Alternative Option:

As an alternative, the foreground color may be green transparent Scotchlite ElectroCut1177 film (E.C. film). Lettering shall be cut out and removed producing a single continuous piece of green transparent film material.

2.16.3 Standard Street Sign Pole and Fixtures

- A. Standard Street Sign Post – shall be 12' long - minimum (2-3/8") galvanized steel round post with a minimum of 60 mil wall thickness.
- B. Standard Post Installation Depth – sign post shall be installed into solid ground to a minimum depth of 24-inches and anchored with a minimum of 60lbs of concrete.
- C. Standard Post Bracket – shall be (18") cast aluminum round post bracket street sign mount for bottom street blade.
- D. Standard Top Crossing Bracket – shall be (12") cast aluminum top crossing street sign bracket mount for top street blade.
- E. Standard Mounting Bracket Assemblies – shall be (2-2/8") diameter aluminum round post interlocking bracket x 2 per pole.

2.16.4 Decorative Sign Poles and Fixtures

The City of Rockwall will allow the installation of decorative signs and posts or other non-standard items by Developers/Homeowners Associations on a case-by-case basis provided that their installation does not result in an adverse

impact to the public safety and that there is no cost to the City for installation or maintenance. Residential Developer requested installations require the documentation of an incorporated Homeowner's Association (HOA). The City of Rockwall maintains only Standard Street and Regulatory Signs/Post installed on public streets within its designated right-of-ways. The City of Rockwall does not maintain Decorative sign poles and fixtures installed by Developers/Homeowners Associations.

If the developer elects to install non-standard decorative signs, sign poles and fixtures, the designated Homeowners Association must enter into a maintenance agreement with the City covering the hold harmless provisions. These provisions shall be noted on the approved final plat for the subdivision. The platted maintenance provisions will serve as the agreement and applies to all non-standard decorative signs, poles/post, hardware, or any other attachments. The City of Rockwall has no maintenance or other responsibility to these items. The ownership and maintenance of all such signs, poles and fixtures become the maintenance responsibility of the designated Homeowners Association.

Decorative Sign Pole/Fixture Submittals:

A detail of the decorative sign poles, pole fixtures and base mounting shall be included with the submittal of the civil engineering construction plans. The submittal shall also to include a scale subdivision street/site plan indicating the location/identification of all proposed signage and post.

HOA Maintenance - Responsibilities and Provisions:

- A. The Homeowners Association is responsible for maintaining all non-standard decorative signs, poles/post, hardware, attachments or other approved non-standard items under this agreement. The City of Rockwall has no maintenance or other responsibility to these items. The City of Rockwall and the Homeowners Association agree the Association will bear any and all maintenance cost related to the said improvements. The City has the statutory authority to install and maintain Traffic Control Devices for vehicular traffic on public streets/roads within the City limits of the City of Rockwall, Texas. This agreement in no way constitutes a change in that authority and does not constitute any delegation of this authority to the Association.
- B. The City of Rockwall reserves the right to install temporary replacement signs using standard sign post mounting or alternate temporary mounting when decorative sign posts and signs are damaged. Routine maintenance/replacement of damaged signs, posts and any sign mounting backboard/trim/hardware or other fixtures is the sole

responsibility of the Homeowners Association and must be repaired within 4 weeks of reporting to the Homeowners Association.

- C. The City of Rockwall will not handle, store or be responsible for any decorative non-standard sign, post or associated fixtures installed under this agreement.
- D. All signs (regulatory and warning) shall be in conformance with the "Texas Manual on Uniform Traffic Control Devices" (Texas MUTCD) and the "Standard Highway Sign Designs for Texas."
- E. Sign posts must be of sufficient height to mount the sign in conformance with the current (Texas MUTCD) requirements. Most typical installations require a vertical clearance of 7 feet from the bottom edge of the sign to the ground surface. Overhead signs must conform to all required standards.
- F. Signs/posts must be installed in locations as provided in the approved engineering/construction plans or as otherwise approved by the City of Rockwall. On occasion it may be necessary to re-locate signage/poles based engineering judgment, study or when otherwise deemed necessary by the City.
- G. The City of Rockwall reserves the right to approve or disapprove any sign/pole design and/or location. The City of Rockwall must approve the color of signposts and any requested sign mounting/trim.

2.16.5 Miscellaneous

Street address markers shall be installed for each lot in the subdivision. The markers shall be located at the center of the lot on the face of the curbs. The address markers shall have a deep green background with reflective white numbers. The number size shall be four (4) inches in height. The background of the address marker shall be eighteen (18) inches in length and from the top of curb to the gutter flow line. The address marker shall show the full numerical portion of the address of the lot.

All signage for multifamily, commercial, retail and industrial developments are required to have a separate permit from the building department. Signs, including any overhangs, are not allowed in any right-of-ways and/or easements. Location of any signage is not approved on engineering plans

2.17 Temporary Traffic Control

When the normal function of the roadway is suspended through closure of any portion of the ROW, temporary construction work zone traffic control devices

shall be installed to effectively guide the motoring public through the area. Consideration for road user safety, worker safety, and the efficiency of road user flow is an integral element of every traffic control zone.

All traffic control plans shall be prepared and submitted to the Engineering Division in accordance with the standards identified in Part VI of the most recent edition of the TMUTCD. Lane closures will not occur on roadways without an approved traffic control plan. Traffic control plans shall be required on all roadways as determined by the City Engineer or the designated representative.

All traffic control plans must be prepared and signed and sealed by an individual that is licensed as a professional engineer in the State of Texas. All traffic control plans and copies of work zone certification must be submitted for review and approval a minimum of seven (7) working days prior to the anticipated temporary traffic control.

The contractor executing the traffic control plan shall notify all affected property owners two (2) weeks prior to any the closures.

Any deviation from an approved traffic control plan must be reviewed by the City Engineer or the designated representative. If an approved traffic control plan is not adhered to, the contractor will first receive a verbal warning and be required to correct the problem immediately. If the deviation is not corrected, all construction work will be suspended, the lane closure will be removed, and the roadway opened to traffic.

All temporary traffic control devices shall be removed as soon as practical when they are no longer needed. When work is suspended for short periods of time at the end of the workday, temporary traffic control devices that are no longer appropriate shall be removed or covered. The first violation of this provision will result in a verbal warning to the construction foreman. Subsequent violations will result in suspension of all work at the job site for a minimum of 48 hours. All contractors working on City funded projects will be charged one working day for each 24 hour closure.

Lane closures on any major or minor arterial will not be permitted between the hours of 6:00 am to 9:00 am and 4:00 pm to 7:00 pm. Where lane closures are needed in a school area, they will not be permitted during peak hours of 7:00 am – 9:00 am and 3:00 pm to 5:00 pm. Closures may be adjusted according to the actual start-finish times of the actual school with approval by the City Engineer. The first violation of this provision will result in a verbal warning to the construction foreman. Subsequent violations will result in suspension of all work at the job site for a minimum of 48 hours. All contractors working on City funded projects will be charged one working day for each 24 hour closure of a roadway whether they are working or not.

2.18 Street Lighting

All developments shall provide streetlights. In general, lights should be located at street intersections and at intervals no greater than four hundred (400) feet apart. Street lights shall be centered one and half (1 ½) feet off the back of curb.

2.19 Barrier Free Ramps

Barrier free ramps shall be provided in all commercial areas and in residential areas which have sidewalks. Ramps shall be located to provide access in accordance with the standards set by the Texas Department of Licensing and Regulation (TDLR) at all pedestrian sidewalks. Laydown curbs and ramps shall be constructed at all street intersections and driveways whether or not sidewalks are being installed. Laydown curbs and ramps shall be constructed by the developer. Barrier free ramps shall have truncated dome plates in the color approved by the City. No truncated dome pavers or ridges allowed.

2.20 Off-Street Parking

All parking areas and spaces shall be designed and constructed of steel reinforced concrete in accordance with the following requirements:

1. All parking areas and spaces shall be designed and constructed of steel reinforced concrete so as to have free ingress and egress at all times.
2. No parking space or parking area shall be designed so as to require a vehicle to back into a public street or across a public sidewalk, except in the case of one and two family dwelling units.
3. Minimum Dimensions for Off-Street Parking:
 - a) Ninety-degree parking (Figures 2.6a and 2.6b) – All parking spaces shall be a minimum of nine (9) feet in width. Each parking space adjacent to a building shall not be less than twenty (20) feet in length. Dual head in parking spaces should be a minimum of twenty (20) feet in length. Parking spaces not adjacent to a building or dual head may be eighteen (18) feet in length with two (2) feet of clear (no obstruction including landscaping, lighting, wheel stops, and/or signage) over hang between curb and sidewalk or property line. Maneuvering space shall not be less than twenty-four (24) feet.
 - b) Sixty-degree angle parking (Figures 2.7a and 2.7b) – Each parking space shall be not less than nine (9) feet wide perpendicular to the parking angle nor less than twenty and one tenth (20.1) feet in length when measured at right angles to the building or parking line. Maneuvering space shall be not less than fourteen and one half (14 ½)

feet for one way traffic or twenty two (22) feet for two way traffic perpendicular to the building or parking line.

- c) Forty-five degree angle parking (Figures 2.8a and 2.8b) – Each parking space shall not be less than nine (9) feet wide perpendicular to the parking angle nor less than nineteen (19) feet in length when measured at right angles to the building or parking line. Maneuvering space shall be not less than twelve (12) feet for one way traffic or twenty-one (21) feet for two-way traffic perpendicular to the building or parking line.
- d) Parallel Parking – Each parking space shall not be less than nine (9) feet in width and twenty-two (22) feet in length. Maneuvering space will not be less than twenty (20) feet.
- e) Handicap Space Parking – Where handicapped parking is required or installed, the design shall be as in Figure 2.9.
- f) When off-street parking facilities are provided in excess of minimum amounts herein specified, or when off-street parking facilities are provided, but not required by this chapter, said off-street parking facilities shall comply with the minimum requirements for parking and maneuvering space herein specified.
- g) Each parking space/stall shall be striped to the minimum dimension detailed out above in this section.
- h) No dead-end parking shall be allowed for more than 6 parking spaces. A minimum turnaround of a 15 feet wide by 64 feet long shall be provide and striped off as “No Parking”.

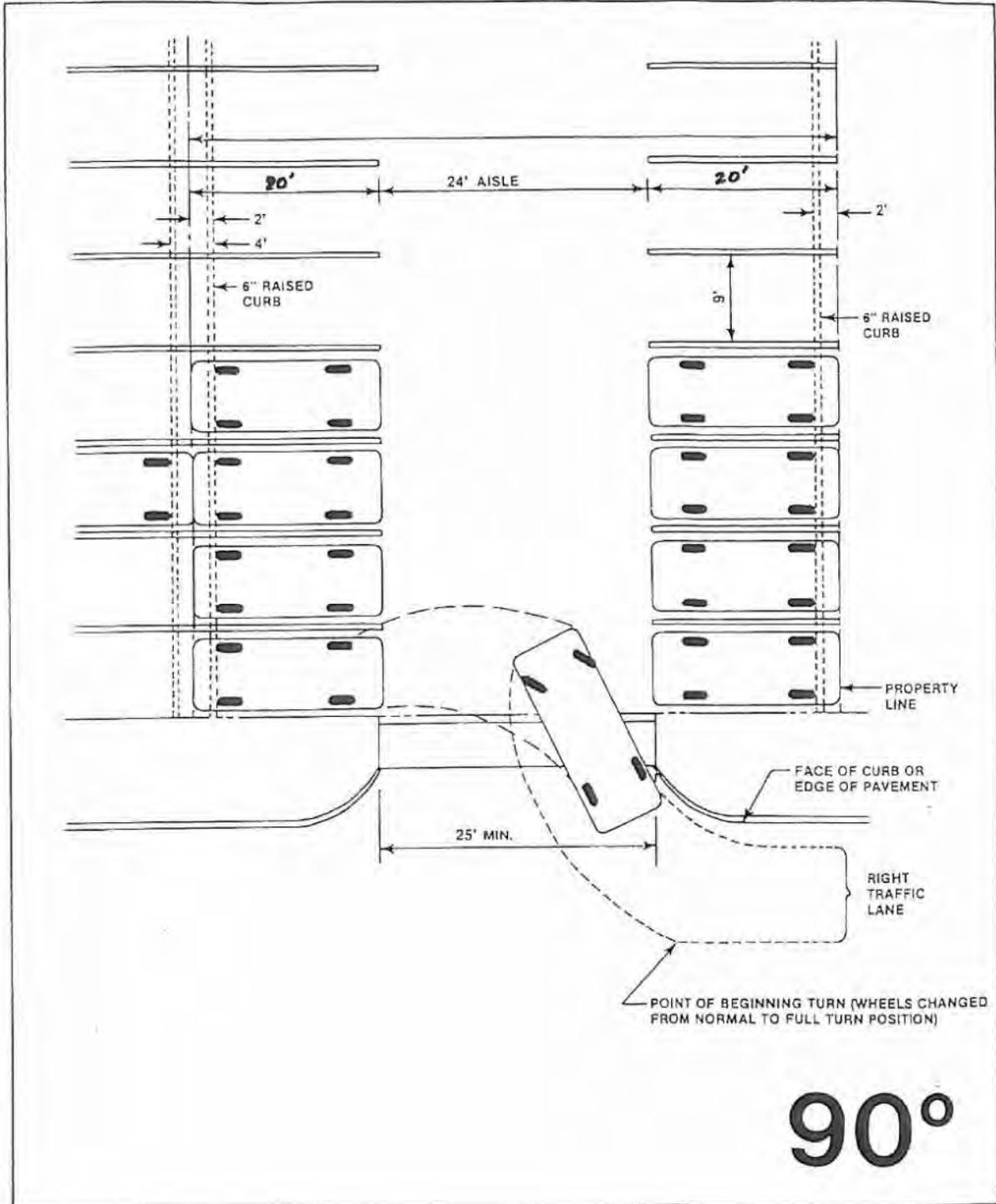


Figure 2.6a: 90° Parking – Double Row

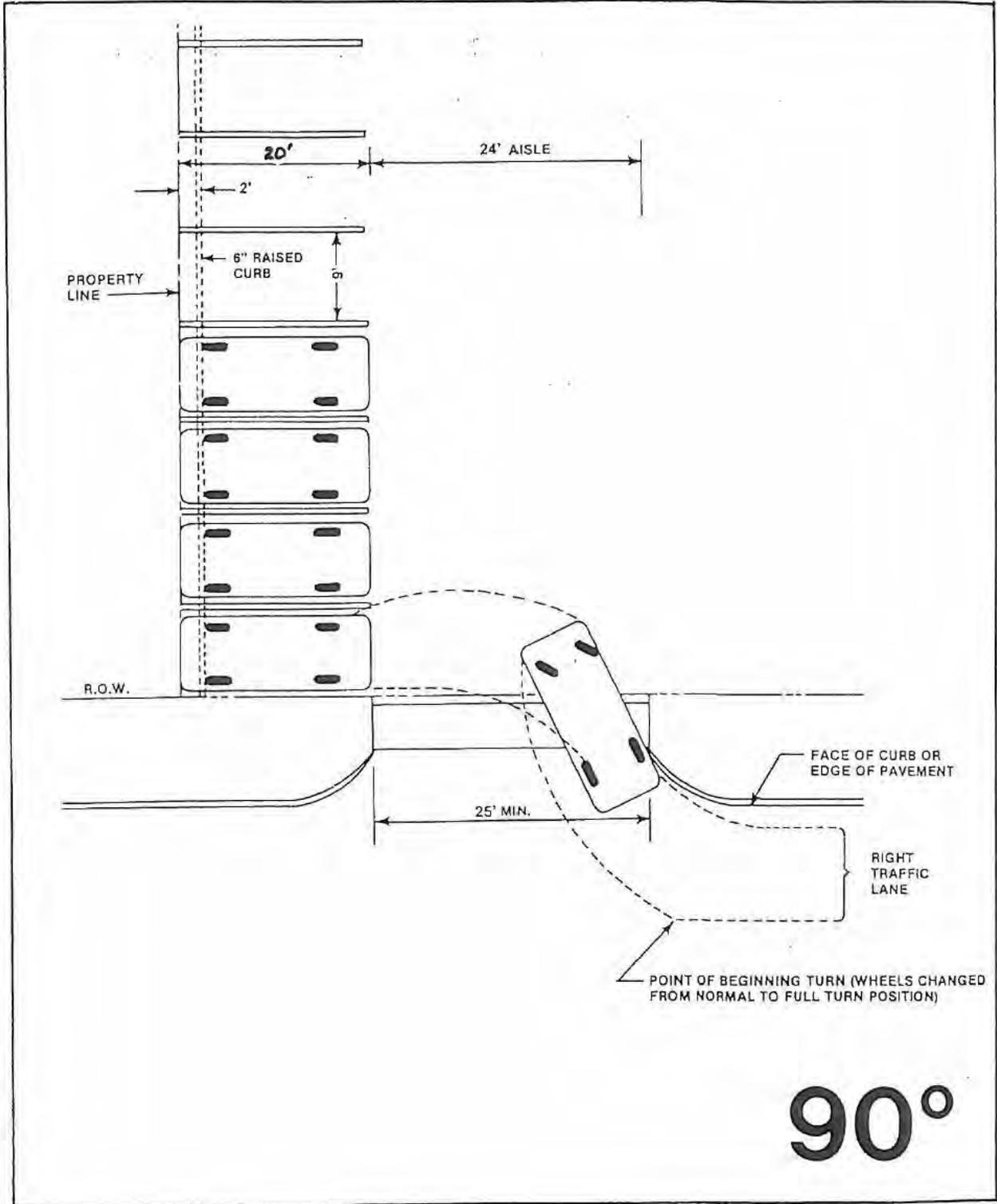


Figure 2.6b: 90° Parking – Single Row

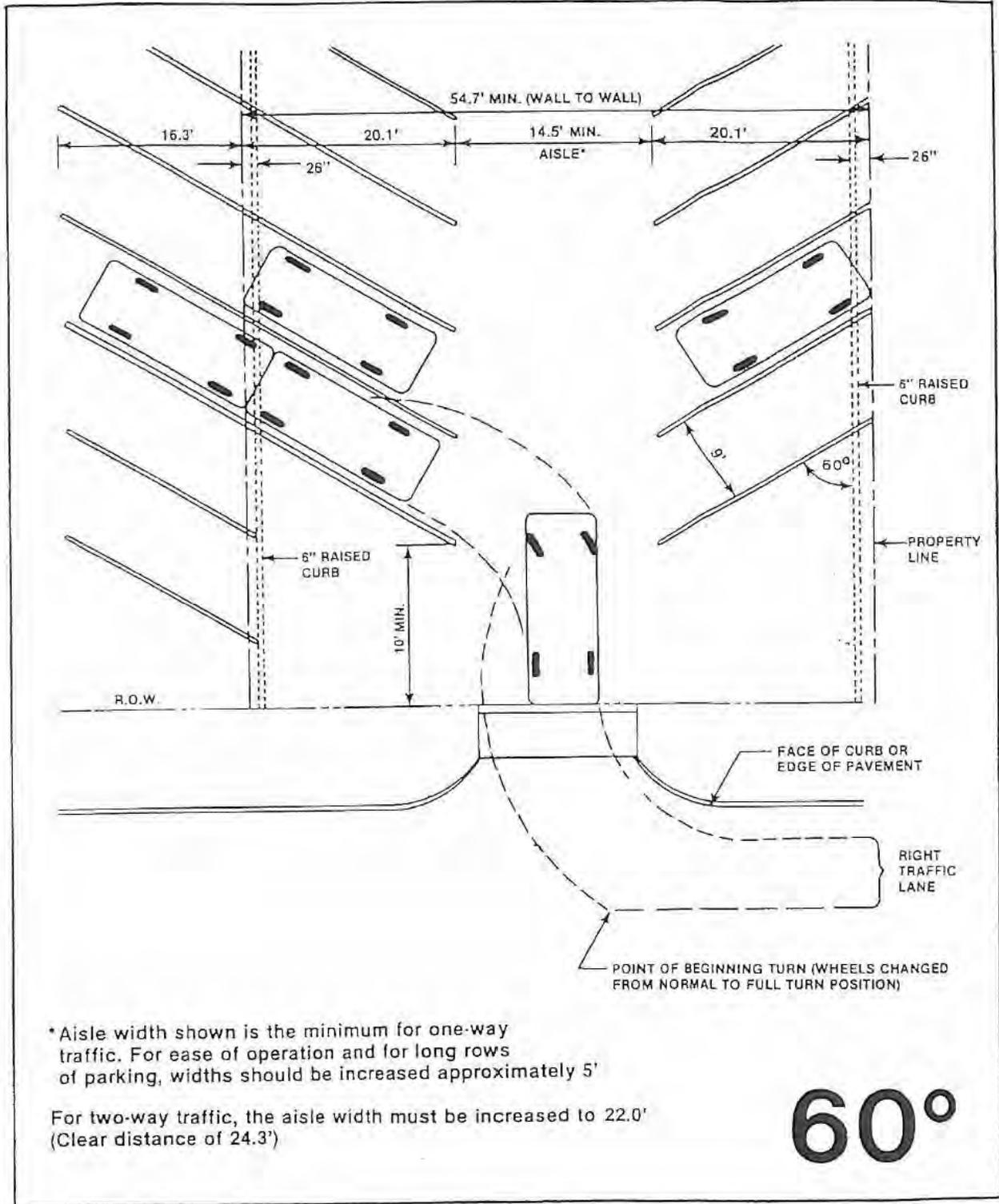


Figure 2.7a: 60° Parking – Double Row

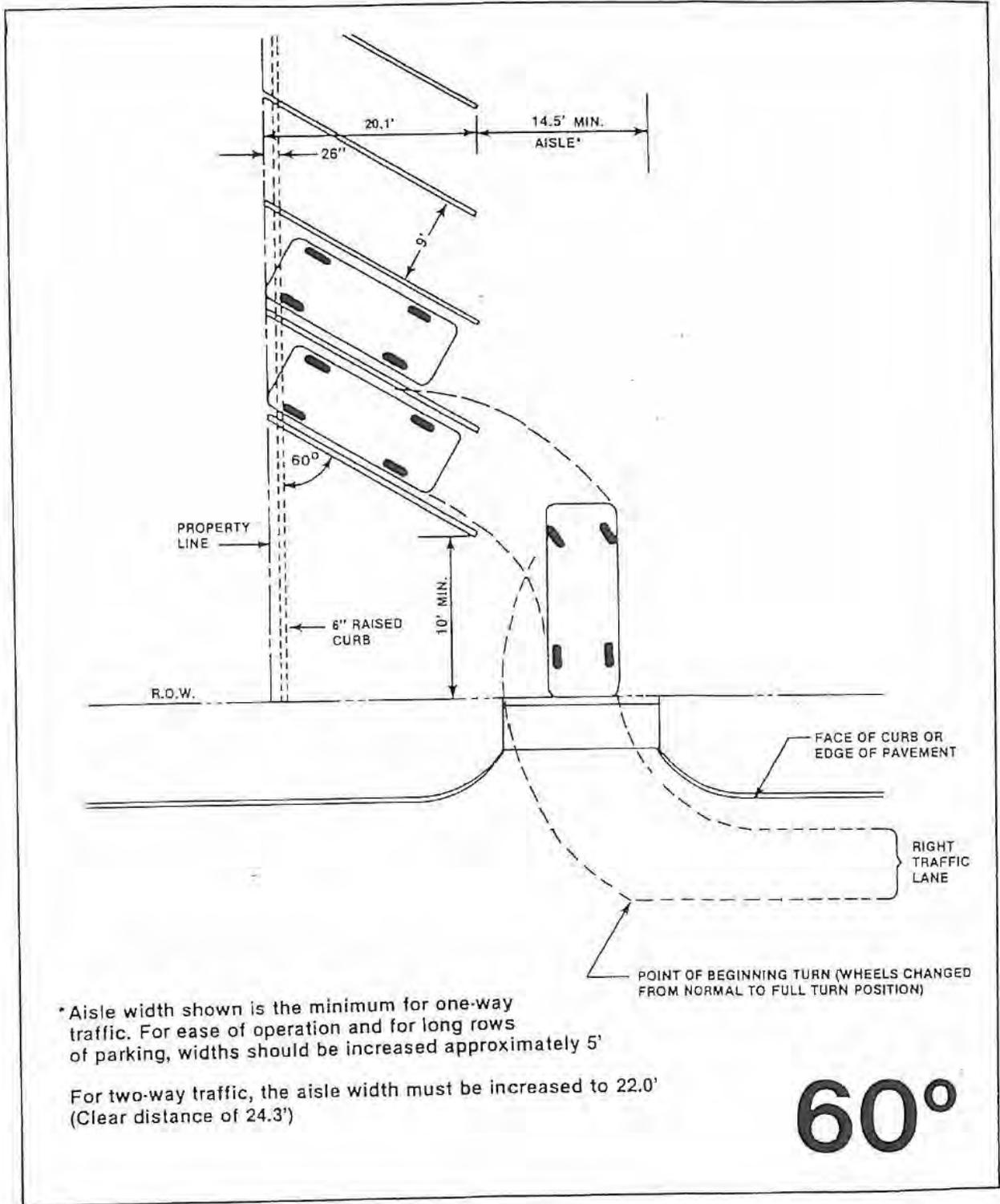


Figure 2.7b: 60° Parking Single Row

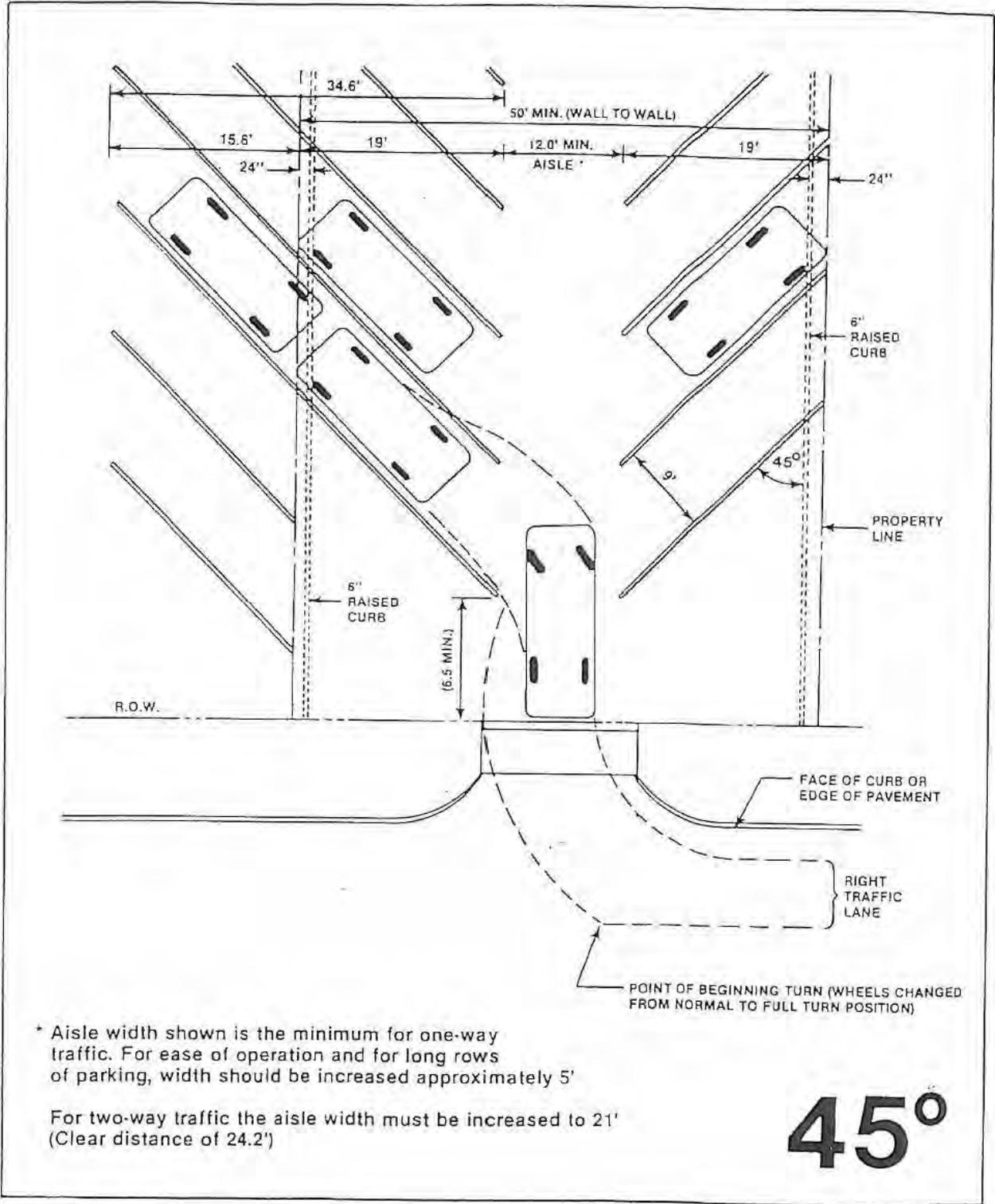


Figure 2.8a: 45° Parking - Double Row

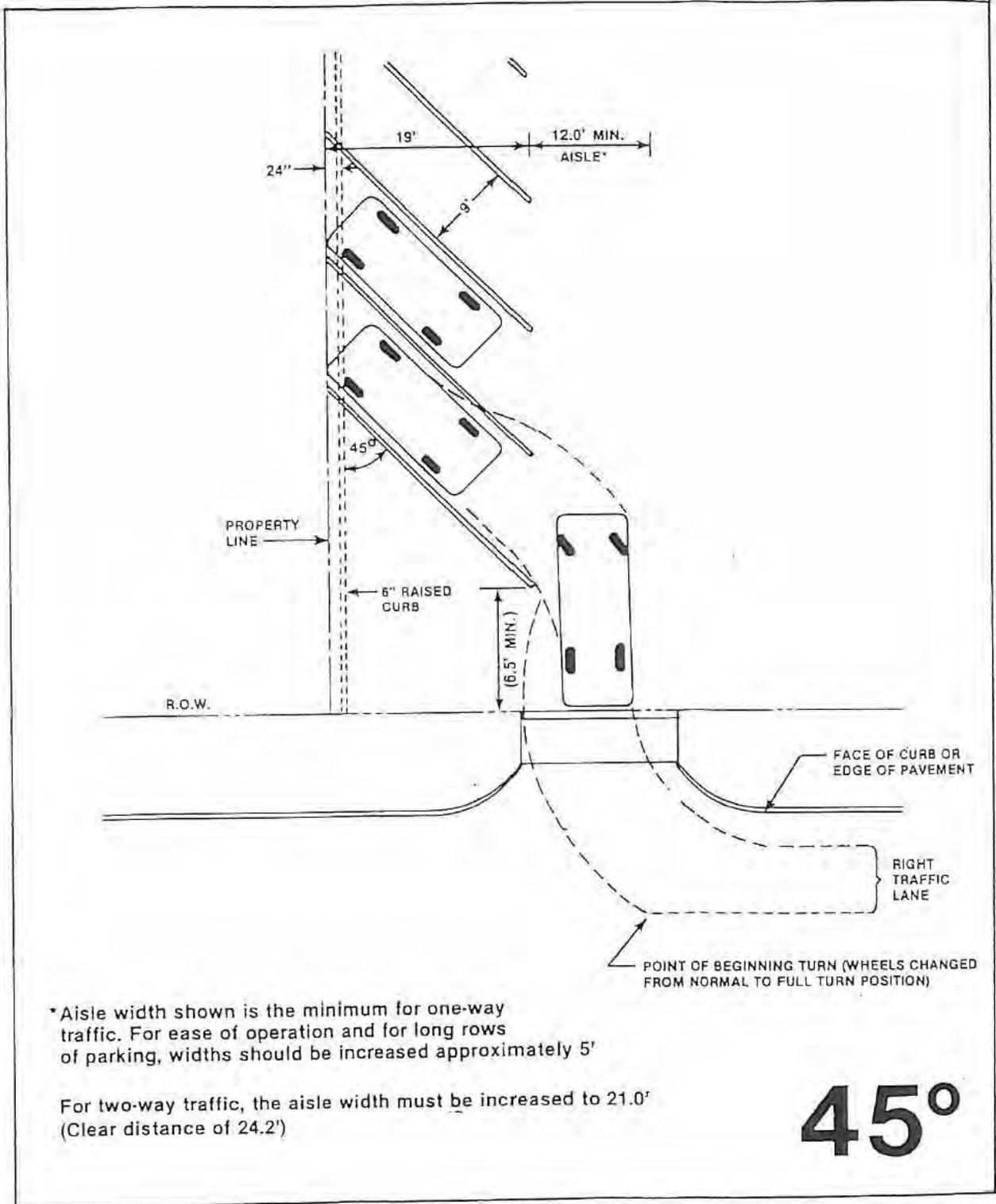
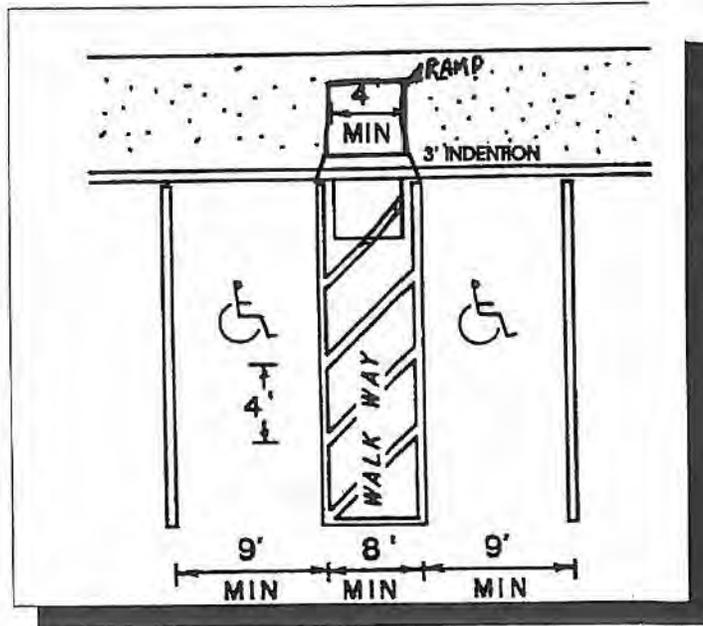
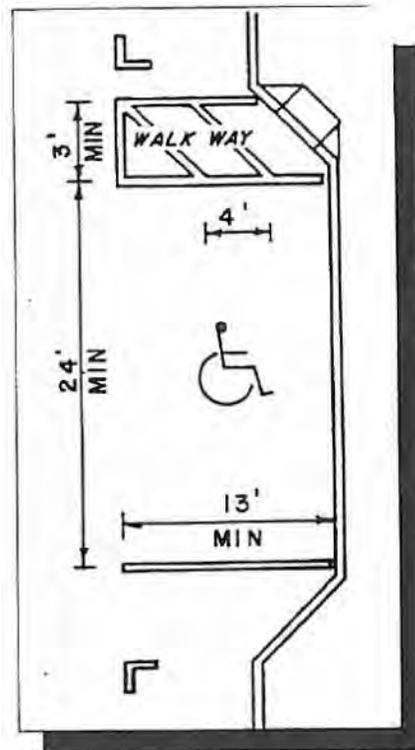


Figure 2.8b: 45° Parking – Single Row



HANDICAPPED
PARKING STANDARDS
Head-in or Angle
parking Dimensions



HANDICAPPED
PARKING
STANDARDS
Parallel parking
Dimensions

Figure 2.9: Handicap Space Parking

4. Paving Standards:
 - a) Unless otherwise approved by the City Council or as specified in these standards, all parking lots shall be paved with steel reinforced concrete and designed according to City standards and specifications. The parking lanes must be clearly marked by approved paint, buttons or other material.
 - b) All driveway approaches shall be constructed of steel reinforced concrete in the same strength, **thickness, and reinforcing** as the adjacent street and shall be curbed per City standards.
 - c) All parking lot pavement and drive aisles shall be steel reinforced concrete except for existing asphalt parking lots being rehabilitated. A steel reinforced concrete or asphalt pavement (rehabilitated parking lots) design shall be provided to the City Engineer for review and approval.
 - d) Industrial and commercial parking lot pavement shall be steel reinforced concrete and designed by a Professional Engineer. Pavement design shall be submitted to the City for approval.
 - e) The pavement within a designated loading area shall be designed and constructed to carry the additional loading of merchandise, goods, sanitation pick-up, etc., in order to prevent any unnecessary failure in the pavement itself. The pavement design shall be included in the engineering construction plans and specifications and submitted to the City Engineer for approval. The pavement design is shall designed by a Geotechnical Engineer.
 - f) Fire lane shall have a maximum running slope of ten (10) percent and a cross slope of five (5) percent. A vertical curve is required for grade breaks greater than one (1) percent.
5. Dead end parking shall be designed and constructed with a minimum length of fifteen (15) feet and width of twenty-four (24) feet turnaround space provided at the end of the dead end parking area.
6. If a portion of an existing street is removed for construction, the entire concrete panel must be removed and replaced with the same strength steel reinforced concrete and one (1") inch thicker than the existing thickness.
7. All entrances or exits in a parking lot shall be a minimum of thirty (30) feet from the beginning point of any corner radius.
8. All entrances or exits in a parking lot shall be a minimum of twenty-four (24) feet and a maximum of forty-five (45) feet in width, unless one-way, in which

case they shall both be a minimum of twelve (12) feet, or as approved by the City Council.

9. No parking areas or parking spaces shall be allowed to pave over or utilize public right-of-way, with the exception of approved entrances and exits, unless the City Council grants an exception and/or a facilities agreement.
10. All multi-family and commercial parking areas and parking spaces shall be designed and constructed to protect adjacent residences from the direct glare of headlights of vehicles using the parking area.
11. No City street curb, alley or street pavement may be cut without a permit from the City.
12. If required, the contractor shall submit a traffic control design to the City of Rockwall Engineering Division prepared by a registered professional engineer prior to beginning of construction. The contractor shall provide signs and barricades in construction areas and comply with the Texas Department of Transportation standard of work zone traffic control. Employees exposed to public vehicular traffic, shall be provided with and wear warning vest or other suitable garments marked with or made of reflective or high visibility material. The contractor shall provide flagman when working inside an active street right-of-ways where necessary.

2.21 Traffic Impact Analysis and Mitigation

2.21.1 Purpose

The purpose of a Traffic Impact Analysis (TIA) is to assess the effects of specific development activity on the existing and planned thoroughfare system. Development activity may include, but is not limited to, rezoning, preliminary site plans, site plans, preliminary plats, driveway permits, certificates of occupancy, and Thoroughfare Plan amendments.

2.21.2 Determination of Applicability

The need for a TIA shall be determined by the City based upon the results and recommendation from a pre-development meeting. It shall be the responsibility of the applicant to demonstrate that a TIA should not be required. If a TIA is required, the level of effort for a TIA submission shall be determined based on the criteria set forth in Table 2.6.

2.21.3 Applicability of TIA Requirements

- A. Zoning, Site Plan and Platting – These TIA requirements shall apply to all requests for land use changes which will establish a land use that is deemed to be more intense than the land use depicted on the Land Use

Plan contained within the Comprehensive Plan for a particular property. Applicable requests will also include zoning, site plan, and platting cases, Thoroughfare Plan amendments, and/or where deemed necessary by the City Engineer, Director of Planning and Zoning, the Planning and Zoning Commission, or the City Council. Special circumstances -- *including but not limited to development with no case history* -- may also require a TIA.

B. Development – These TIA requirements shall apply to all development requests for land uses, except single-family residential developments, which will generate over 100 total trips during the AM or PM peak hour. Applicable development requests include all development related applications. Special cases, in which site generated peak hour trip activity is different from that of the adjacent street (weekdays 7:00-9:00 a.m. and 4:00-6:00 p.m.), may require an additional separate analysis. Such circumstances may include, but are not limited to, the establishment of commercial/retail, entertainment or institutional developments or activity. The TIA requirement may be waived for a development request if a TIA was performed previously with the zoning request and the conditions listed in the report are still current.

I. Single-Family Residential Exception – A TIA for single-family residential development will not be required if the development contains fewer than six (6) dwelling units unless special circumstances exist, as determined by the City Engineer and/or Director of Planning and Zoning. These special circumstances may include, but are not limited to, impacts to other residential developments from cut-through traffic, inadequate site accessibility, the construction or delay of construction of a thoroughfare prior to or after the anticipated date of construction resulting from a proposed development, or the street or access system not being anticipated to accommodate the expected traffic generation.

C. Depending upon the specific site characteristics of the proposed development, one or more of the following elements may also be required as part of the TIA: an accident analysis, sight distance analysis, traffic simulation, roundabout analysis, traffic signal warrant analysis, queuing analysis, right/left-turn lane analysis, access spacing analysis, link capacity analysis, and/or traffic circulation plan.

Table 2.6: Criteria for Determining TIA Study Requirements

<u>Analysis Category</u>	<u>Criteria</u>	<u>TIA Analysis Periods⁽¹⁾</u>	<u>Study Area⁽⁴⁾</u>
I	<p>Projected site generated ADT of 750 OR Projected site generated peak hour trips of 100 per hour AND No significant modification of traffic signals or roadway geometry proposed</p>	<p>1. Existing year 2. Opening year⁽²⁾</p>	<p>1. All driveway access points, adjacent roadways, and major intersections 2. All signalized intersections on each street serving the site within ¼ mile of the site boundary</p>
II	<p>Projected site generated ADT of 751-2,000 OR Projected site generated peak hour trips of 101-250 per hour OR Installation or modification a traffic signal or roadway geometry proposed, regardless of project size</p>	<p>1. Existing year 2. Opening year⁽³⁾ 3. Five years after completion</p>	<p>1. All driveway access points, adjacent roadways, and major intersections 2. All signalized intersections and major unsignalized intersections on each street serving the site within ½ mile of the site boundary</p>
III	<p>Projected site generated ADT exceeds 2,000 OR Projected site generated peak hour trips exceeds 250 per hour OR Installation or modification of two or more traffic signals, addition of travel lanes, or modification of interchange proposed, regardless of project size</p>	<p>1. Existing year 2. Opening year⁽³⁾ 3. Five years after completion</p>	<p>1. All driveway access points, adjacent roadways, and major intersections 2. All signalized intersections and major unsignalized intersections on each street serving the site within 1 mile of the site boundary</p>

1. Analysis periods shall include build and no-build scenarios. Assume full occupancy for each phase as they open.
2. Assume full build-out and occupancy.
3. Additional analysis periods relating to completion of interim phases may be considered for phased developments to support delaying construction of planned mitigations until future phases are constructed. Assume full build-out and occupancy of each particular phase
4. The City may enlarge or reduce the study area depending on the project. This is meant to provide general guidance to the developer. Land uses within the study area should include recently approved or pending development adjacent to the site.

2.21.4 Requirements for TIA Updates

A TIA shall be updated when the time or circumstances of the original study fall within the parameters presented in Table 2.7. The applicant is responsible for the preparation and submittal of appropriate documentation in order for City staff to process the zoning or development application. A TIA for site development requests must be updated if two (2) years have passed since the original submittal and/or approval, or if existing or assumed conditions have changed within the defined study area.

Table 2.7: Criteria for Determining TIA Update Requirements

<u>Original TIA Report was based on:</u>	<u>Changes to the Originally Proposed Development:</u>	
	<u>Access Changed⁽¹⁾</u> <u>OR</u> <u>Trip Generation Increased by more than 10%</u>	<u>Access Not Changed</u> <u>AND</u> <u>Trip Generation Increased by less than 10%</u>
Zoning; or Preliminary Site Plan or Site Plan that is less than 2 years old	Letter Amendment Required: Identify and report only analysis conditions that have changed	Letter Documenting Change (No analysis is required)
Preliminary Site Plan or Site Plan that is more than 2 years old	Prepare New Study. Must meet all current TIA requirements	Prepare New Study. Must meet all current TIA requirements.

1. Changed access includes proposed new access or refinement of general access locations not specifically addressed in original proposed development.

2.21.5 Funding Resources

- A. The Developer will be responsible for all costs related to the design, construction and implementation of all recommended mitigations that have been accepted and deemed required by the City Engineer not otherwise funded by government agencies. The City Engineer may require consideration of alternative mitigation options that may not have been included in the TIA.
- B. The TIA may take into account the city/state/county approved traffic improvements with dedicated funding. Prior to issuance of a Certificate of Occupancy (CO) permit, the Developer shall complete any required traffic improvements approved by the City as a result of the development which have not been funded or otherwise completed by government agencies. The City may approve delaying the construction of required improvements based on the development’s phasing.

2.21.6 Responsibility of TIA Preparation and Review

- A. A TIA shall be prepared in accordance with all of the guidelines in this section and submitted in accordance with the Development Review Schedule set by the City. The responsibility for TIA preparation shall rest with the applicant and must be performed by a Professional Engineer (P.E.) licensed in the State of Texas with experience in traffic and transportation engineering. The final TIA report must be signed and sealed by the P.E. responsible for the analysis to be considered for review by the City. Application and review fees are due at the time of each submittal. City staff and consultants shall serve primarily in a review and advisory capacity and will only provide data to the applicant when available.
- B. It shall be the responsibility of the applicant to submit two (2) printed and one (1) electronic PDF draft TIA reports and executive summaries prior to the zoning and/or development request submission. The proper number of reports, the timing for submission, and the review of these reports shall be based on standard City development review procedures. Incomplete TIAs or failure to submit a TIA prior to the submission shall delay consideration of zoning and development requests. Should it be determined during the review of any zoning and/or development plans that a TIA is required, consideration shall be deferred until the applicant submits a completed TIA, the TIA has been reviewed, and the City has approved the TIA.
- C. The City and/or the City's consultant shall review the TIA and provide comments to the applicant. It shall be the responsibility of the applicant to submit two (2) printed and one (1) electronic PDF finalized TIA reports and executive summaries once all review comments have been addressed. Electronic submission may substitute for the required hard copies only with written authorization of the City Engineer.

2.21.7 TIA Standards

- A. Capacity Analysis – A capacity analysis for appropriate peak periods shall be conducted for all driveways, intersections, and streets identified during the pre-development meeting. Capacity calculations shall include both near term and long-term projections. Capacity calculations must be based on the operational analysis technique contained in the most current edition of the Highway Capacity Manual (HCM). Alternative calculations must be approved by the City Engineer.
- B. Design Level of Service – The minimum acceptable level of service (LOS) within the City shall be defined as LOS “D” in the peak hour for all critical movements/intersections and links. All development impacts on both thoroughfare and intersection operations must be measured against

this standard.

- C. Trip Generation Resources – The City’s standard for trip generation rates for various land use categories shall be those found in the latest edition of *Trip Generation Manual* published by the Institute of Transportation Engineers (ITE) or other published or recognized sources applicable to the region. Alternate trip generation rates may be accepted on a case-by-case basis if the applicant can provide current supporting data substantiating that their development significantly differs from the ITE rates. The City and/or City’s consultant must approve alternative trip generation rates in writing in advance of the TIA submission.
- D. Trip Reductions – Trip reductions for pass-by trips and mixed-use developments will be permitted, subject to analytical support provided by the applicant and approved by the City and/or the City’s consultant on a case-by-case basis. Assumptions relative to automobile occupancy, transit mode share, or percentage of daily traffic to occur in the peak hour must be documented and will be considered subject to analytical support provided by the applicant.
- E. Study Horizon Years – The TIA must evaluate the impact of the proposed development on both existing traffic conditions and future traffic conditions for the horizon year(s) as specified in Table 2.6. Horizon year(s) are defined as any analysis year beyond the existing year. These applications should take into account the Master Thoroughfare Plan or pending amendments.
- F. Traffic Data Collection – Appropriate traffic counts shall be collected. These shall include weekday/weekend daily and peak-hour traffic counts at all locations as directed by the City, Weekday counts shall be taken on a typical Tuesday, Wednesday or Thursday unless other days are required/approved. Peak-hour intersection turning movement counts shall include 15-minute increments. Traffic counts used in a TIA shall be less than one (1) year old and should occur outside of holiday time periods and when public schools are in session unless otherwise approve by the City Engineer. The City Engineer may request additional counts based on specific conditions. The existing counts shall be presented in figures/exhibits for each intersection counted with original data sheets provided in the Appendix.
- G. Design Standards – The TIA must evaluate site access characteristics including, access spacing requirements, left/right-turn lane requirements, visibility and sight distance requirements, as needed, relative to City of Rockwall and Texas Department of Transportation (TxDOT) requirements, as appropriate. Any TIA with access to a TxDOT facility must meet TxDOT minimum standards and requirements.

- H. Traffic Signal Timing and Phasing – The analysis of all existing traffic signals shall be based on the most current signal timing plans, if available. When signal timing plans are not available the assumed signal timing shall be based on field observations, actuation/detection capabilities and corridor coordination and offsets.

2.21.8 TIA Methodology

- A. Site Location/Study Area – A brief description of the size, general features, and location of the site, including a map of the site in relation to the study area and surrounding vicinity. The description should include all existing and proposed traffic control devices within the study area, posted speed limits on all existing, adjoining or impacted roads, pedestrian facilities, intersection layout, and lane usages. If applicable to the project, information may also include lane widths and right of way widths for all existing roads impacted by the development. Photographs may be included to document existing transportation conditions;
- B. Existing Zoning – A description of the existing zoning for the site and adjacent property, including land area by zoning classification and density by Floor Area Ration (FAR), square footage, number of hotel rooms, and dwelling units, etc. (as applicable);
- C. Existing Development – A description of any existing development on the site and adjacent to the site. If applicable, include impacts to existing development.
- D. Site Access – A description or illustration of the existing and proposed site access points and associated turn lanes and/or median openings, including cross-section, lane assignment, turn restrictions, throat width, curb radii, turn-lane requirements, sight distance calculations and access spacing conditions;
- E. Proposed Zoning/Site Development – A description of the proposed zoning/development for the site, including land area by zoning classification and density by FAR, square footage, number of hotel rooms, and dwelling units, etc. (as applicable); identify recently approved or pending land uses within the area;
- F. Thoroughfare System – A description and/or map of existing planned/proposed thoroughfares and traffic signals for horizon year(s) within the study area;
- G. Model Assumptions and Design Factors – The roadway network must be modeled as accurately as possible using field data measurements, industry standards and engineering judgement. This includes, but is not limited to, intersection/roadway segment geometries, traffic flow characteristics and traffic signal phasing and operations;

- H. Existing Traffic Volumes – Recent traffic counts for the study area including pedestrian and bike volumes where appropriate;
- I. Projected Traffic Volumes – Background traffic projections within the study area for the horizon year(s). Background traffic projections shall include the growth in regional traffic as well as the traffic that will be generated by the undeveloped land adjacent to the site and/or within the study area that is likely to develop by the horizon year(s), as determined by the City Engineer and/or City’s Consultant. These traffic projections shall be based upon recently approved development applications, the current zoning on the undeveloped land, the City’s Future Land Use Plan or the requested future land use of the development;
- J. Density of Development – A table displaying the amount of development assumed for existing zoning and/or the proposed development (using gross floor area, dwelling units, occupied beds, etc., as required by the trip generation methodology);
- K. Existing Site Trip Generation – A table displaying trip generation rates and total trips generated by land use category for the appropriate peak hours and on a daily basis for each phase and full development based on existing zoning (if applicable), and including all appropriate trip reductions (as approved by the City and/or City’s consultant);
- L. Proposed Site Trip Generation – A table displaying trip generation rates and total trips generated by land use category for the appropriate peak hours and on a daily basis for each phase and full development based on existing zoning (if applicable) and/or proposed development, and including all appropriate trip reductions (as approved by the City and/or City’s consultant);
- M. Net Change in Trip Generation (for rezoning cases) – Proposed trip generation minus existing trip generation (if applicable); the net increase in trips to be added to base volumes for the design year;
- N. Trip Distribution and Traffic Assignment – Tables and/or figures/exhibits of trips generated by the proposed development (or net change in trips, if applicable) added to the existing and projected volumes, as appropriate, with distribution and assignment assumptions, unless computer modeling has been performed. Each step of the procedure should be clearly shown in enough detail so that all calculations can be verified;
- O. Level of Service Evaluations – Capacity analyses for appropriate peak hours for both existing conditions and horizon year(s) projections for intersections, thoroughfare links, median openings and turn lanes associated with the site, as applicable. Results of the capacity analyses must be summarized in exhibits and/or tables for each analysis period

and scenario providing the level of service designation and average control delay for each intersection overall and for each major lane group as applicable. Volume-to-capacity ratio and 95th percentile queues should be provided for all movements found to operate at a deficient level of service;

- P. Intersection Control Evaluations – The need for new intersection controls (i.e. traffic signals, all-way stop control) shall be based on warrants and include their impact on the performance of the transportation system;
- Q. Evaluation of Proposed/Necessary Mitigation – Capacity analyses for appropriate peak hours for intersections, thoroughfare links, median openings and turn lanes associated with the site under proposed/necessary traffic mitigation measures;
- R. Conclusions – Identification of all thoroughfares, driveways, intersections, and individual movements that exceed LOS D or and any operational problems likely to occur;
- S. Recommendations – Identify and summarize any necessary roadway improvements and time frames for improvements to occur. Include any intersections, turn lanes, etc which will not be improved to LOS D or better and support for why improvements are not provided. Mitigation measures should be consistent with Traffic Impact Mitigation section below;
- T. Other information required for proper review – As requested by the City Engineer and/or the City’s consultant.

2.21.9 TIA Report Format

- A. The TIA report must be prepared on 8½” x 11” sheets of paper. However, it may contain figures/exhibits on larger sheets, provided they are folded to this size. All text and map products shall be computer-based and provided in both published format and computer file format (PDF). In addition, all electronic files used as part of the traffic analysis (i.e., Synchro, HCS, Passer II/III, CORSIM, VISSIM, ARCADY, etc.) shall be provided.
- B. Traffic volumes must be illustrated on prepared figures/exhibits depicting appropriate movements at each study intersection. This includes, existing and horizon year(s) (i.e. projected background traffic volumes, site generated traffic volumes, background + site generated).
- C. The sections of the TIA report should be categorized according to the outline shown below:

- I.Executive Summary
- II.Introduction
 - a. Purpose & Overview of Study
- III.Existing Conditions
 - a. Site Location/Study Area
 - b. Existing Zoning/Development
 - c. Study roads/streets and intersections
 - d. Traffic Volumes
- IV.Proposed Development
 - a. Zoning, phasing, densities, etc.
 - b. Site Trip Generation
 - c. Net Change in Trip Generation (if applicable)
 - d. Trip Distribution and Traffic Assignment
- V.Projected Volumes
 - a. Background Volumes
 - b. Background + Site Volumes
- VI.Analysis
 - a. Level of Service Evaluations
 - b. Warrant studies (as applicable)
 - c. Link Capacity (as applicable)
 - d. Sight Distance (as applicable)
 - e. Access Spacing (as applicable)
 - f. Left-turn/Right-turn Lanes (as applicable)
 - g. Accident (as applicable)
 - h. Queuing (as applicable)
 - i. Mitigations
- VII.Summary/Conclusions
- VIII.Recommendations
- IX.Appendices

2.21.10 Traffic Impact Mitigation

- A. Mitigation of traffic impacts shall be required if the proposed development would cause a facility or traffic movement (if applicable) to exceed LOS D, or where it already exceeds LOS D and the development would contribute five percent (5%) or more of the total traffic during any projected horizon year. If mitigation is required, the applicant must only mitigate the impact of the proposed development, and would not be responsible for alleviating any deficiencies in the thoroughfare system that may occur without the proposed development.
- B. Mitigation is not required if it can be shown that the traffic impacts of the project are fully mitigated ten (10) years after the final opening with any improvements that are already programmed to be implemented within five (5) years of the initial opening.

2.21.11 Administration of the TIA

Based on the results of the TIA and actions recommended by the City staff, the City's consultant, the Planning & Zoning Commission and/or the City Council, as appropriate, the City shall take one or more of the following actions:

- A. Approve the zoning or development request, if the project has been determined to have no significant impact or where the impacts can be adequately mitigated;
- B. Approve the development request, subject to a phasing plan;
- C. Recommend study of the City Thoroughfare Plan to determine amendments required to increase capacity;
- D. Recommend amendment of the Capital Improvement Program (CIP) to expedite construction of needed improvements; or
- E. Deny the zoning or development request, where the impacts cannot be adequately mitigated.

2.21.12 Cost of TIA Review

The City may utilize an engineering consulting firm to assist City staff in the review of a TIA. The cost of this consultant review shall be borne by the developer, engineer, or property owner submitting the TIA. The City shall first obtain a cost estimate from the engineering consultant for the TIA review at time of the initial TIA submittal. Before the review begins, the developer, engineer, or property owner submitting the TIA shall deposit with the City funds equal to the cost estimate. The City shall disburse the funds to the consulting engineer as the review progresses. Should the consultant fees exceed the initial estimate, the developer, engineer or property owner submitting the TIA shall be informed of the shortage and a new estimate made by the consultant engineer to complete the TIA review. Additional funds will then be deposited with the City by the developer, engineer or property owner submitting the TIA to cover the estimated shortfall before the review of the study resumes. Any unused funds to be reimbursed to the developer, engineer or property owner submitting the TIA. If review process is performed by City staff, the City will submit a cost estimate for TIA review at time of the initial engineering submittal.

3. STORM DRAINAGE FACILITIES

3.1 Introduction

Drainage facilities shall be designed and constructed at such locations and of such size and dimensions to adequately serve the development and the contributing drainage area upstream of the development. The developer shall provide all the necessary easements and rights-of-ways required for drainage structures including, **but not limited to**, storm drains and open channels, (lined or unlined), **flood detention facilities, and stormwater diversion or containment facilities (such as levees, dams, berms and stream diversions)**. The minimum easement widths for drainage facilities shall be per Table 3.1. **For detention pond easements, waterlines and wastewater lines will not be allowed in the easement. A variance to allow walls in detention ponds and easement will be required approval by the Planning and Zoning Commission and appeal from the City Council.**

Table 3.1: Drainage Easements – Minimum Width

		Minimum Easement Width (ft)
Conduit Size	18" – 48" RCP	20'
	48" – 72" RCP	25'
	Box 3' – 4' span, RCB	20'
	Box 5' – 8' span, RCB	25'
	Box 9' – 12' span, RCB	30'
Depth of Conduit	< 14'	20'
	14' - 16'	25'
	17' – 20'	30'
	21' – 23'	35'
	> 23'	40'
Open Channel		15' wider than top width of channel
Emergency Overflow Flume		20'
Creeks/Stream/Floodplains		Reference Erosion Hazard Setback Section
Detention Ponds		Set at 100-YR freeboard elevation. (Ref. Minimum Freeboard Requirements Section)

The design flows for the drainage system shall be calculated by the Rational Method in accordance with the requirements set forth in this document **unless otherwise noted within these Standards (such as where the unit hydrograph methods are required)**. Curbs, inlets, manholes, etc. shall be designed and constructed in accordance to the Standard Details. Materials and construction procedures shall conform to the requirements of the Standard Specifications for Construction.

The developer shall provide plans, specifications, and design calculations for all drainage structures. All open channels that are not concrete lined shall be designed to prevent erosion (Table 3.11). The City shall specifically approve the type of methods used for prevention of erosion.

The design, size, type and location of all storm drainage facilities shall be subject to the approval of the Engineering Division. The requirements set forth herein are considered minimum requirements. **The developer and their engineers shall bear the total responsibility for the adequacy of design. The approval of the facilities by the City in no way relieves the developer and their engineer of this responsibility.**

The design factors, formulas, graphs and procedures described shall serve as means to prove that adequate conveyance of storm water **and adequate flood prevention** within the City is being provided. Responsibility for the actual design remains with the **developers and their** engineers. Deviation from the requirements of these standards shall require the approval of the City Engineer.

The City, as a participant in the National Flood Insurance Program (NFIP), must enforce all parts of its adopted Flood Hazard Damage Prevention and Erosion Control Ordinance, as approved by the Federal Emergency Management Agency (FEMA). Therefore, the requirements of that ordinance are adopted and included as a part of the City's Standards of Design and Construction.

The developer shall be responsible for the necessary facilities to provide drainage patterns and drainage controls such that properties within the overall watershed, whether upstream or downstream of the development, are not adversely affected by storm drainage from facilities on the development. These are outlined in the Storm Drainage Management Plan Section 3.4.

The storm drainage management plan provided as part of the final engineering drawings shall address how storm water on the proposed development and affected adjoining properties will be controlled during phased and completed development. Off-site improvements may be required to carry the additional flows caused by the proposed development. If the downstream system is insufficient to carry the proposed flow **without causing potentially increased flood damages**, detention will be required to release only the flow amount capable of being carried in the existing system.

Storm drainage released from the site will be discharged to a natural water course or storm sewer system of an adequate size to convey the 100-year storm runoff expected after development.

All storm drainage structures shall be constructed with a minimum of 4,200 psi concrete in 28 days with a cement content of not less than 6.5 sack per cubic yard for machine placed and not less than 7.0 sack per cubic yard for hand

place. All batch designs shall be reviewed and approved by the Engineering Division. All batch designs shall have the current date, project name, and use labeled on each design. Submit batch designs to the Engineering Division a minimum of ten (10) days prior to the projected placement date for review and approval. If pre-cast structures are being utilized, shop drawings must be submitted to the City Engineer for approval along with the batch design which is provided by the manufacturer. All drainage structures shall be double formed. No earth forms will be allowed.

3.2 Storm Drainage Design Criteria

3.2.1 Rational Method

For all drainage areas less than 160 acres, the rational method of computing runoff may be used **for design of small drainage facilities (such as storm sewer systems, inlets, street gutter, and small detention facilities)**. The rational method is expressed by the following equation:

$$Q = CIA$$

Equation 3.1

where:

Q = The storm flow rate at a given point (cfs)

C = runoff coefficient (the ratio of rainfall to peak runoff) as indicated in Table 3.2

I = The average intensity of rainfall, for a period equal to the time of flow from the farthest point of the drainage area to the point of design and is obtained from Figure 3.1. (inches/hr)

A = The area that is contributing to the point of design (acres)

3.2.1.1 Runoff Coefficient (C)

For design of proposed drainage facilities using the Rational Method, runoff coefficients shall be based on the future land use. The runoff coefficients for different land uses should be taken from Table 3.2. A weighted runoff coefficient shall be used if different land uses are contributing to a discharge design point.

3.2.1.2 Time of Concentration

The time of concentration is defined as the longest time, without unreasonable delay, that will be required for water to flow from the upper limit of a drainage area to the point of concentration. The time of concentration to any point in a storm drainage system is a combination of the "inlet time" and the time of flow in the storm drain. The inlet time is the period of time required for water to flow over the surface of the ground to the storm drain inlet. The time of concentration **for any one design point** shall not exceed ten (10) minutes **for storm drain designs**.

Using the Rational Method for small drainage acres under average conditions, the minimum time of concentration from the upstream end of a drainage system will coincide with Table 3.3.

Table 3.2: Runoff Coefficient for Types of Land Use

TYPE OF AREA OR LAND USE	ADOPTED RUNOFF COEFFICIENT
Parks or Open Areas	0.35
Single Family Residential or Duplex	0.50
School	0.70
Apartments	0.75
Townhouse	0.80
Churches	0.80
Industrial	0.90
Commercial Business	0.90
Mercantile District	0.90
Retail	0.90
Parking Lot	0.90
Major and Minor Arterials – R.O.W.	0.90

Table 3.3: Minimum Inlet Time of Concentration

TYPE OF AREA OR LAND USE	MINIMUM INLET TIME (minutes)
Parks or Open Areas	20
Single Family Residential or Duplex	10
School	10
Apartments	10
Townhouse	10
Churches	10
Industrial	10
Commercial Business	10
Mercantile District	10
Retail	10
Parking Lot	10
Major and Minor Arterials – R.O.W.	10

Under circumstances which will produce times of concentration in excess of those shown in Table 3.3 the following NRCS TR55 methodology shall be used to determine the time of concentration (Tc). This method separates the flow through the drainage area into sheet flow, shallow concentrated flow, and open channel flow. The Tc is the sum of travel times for sheet flow, concentrated shallow flow and open channel flow. The time of concentration flow path and sheet flow path and following calculations shall be shown in the plans.

- A. Sheet Flow: The maximum allowable length for sheet flow shall be no more than 100 feet if not prior to 100 feet. Guidelines for determining the maximum allowable sheet flow length are provided in Unit Hydrograph Method Section. The T_t in minutes for sheet flow is determined using the following equation:

$$T_t = \frac{0.007(nl)^{0.8}}{(P_2)^{0.5}S^{0.4}}$$

Equation 3.2

where:

T_t = travel time, (hr)

n = Manning's roughness coefficient, (Table 3.4)

l = flow length, (ft)

P_2 = 2-year, 24-hour rainfall, (Table 3.5a)

S = land slope of hydraulic grade line (ft/ft)

Table 3.4: Sheet Flow 'n' Values

Surface Description	n ⁽¹⁾
Smooth surfaces (concrete, asphalt, gravel, or bare soil)	0.011
Fallow (no residue)	0.05
Cultivated soils:	
Residue cover less than 20%	0.06
Residue cover greater than 20%	0.17
Grass:	
Short Prairie Grass	0.15
Dense grasses	0.24
Bermuda grass	0.41
Range (natural)	0.13
Woods:	
Light underbrush	0.40
Dense underbrush	0.80

(1) These "n" values are only applicable for flow depths of approximately 0.1 foot or less where sheet flow occurs. For greater flow depths, typically concentrated shallow overland flow or channel flow occurs, with lower "n" values typical of those generally used in open-channel flow.

B. Shallow concentrated flow travel time is computed as:

$$t_{sc} = \frac{L_{sc}}{3600KS_{sc}^{0.5}}$$

Equation 3.3

where:

t_{sc} = shallow concentrated flow time, (hr)

L_{sc} = shallow concentrated flow length, (ft)

K = 16.13 for unpaved surface, 20.32 for paved surface

S_{sc} = shallow concentrated flow slope, (ft/ft)

C. Channel Flow travel time shall be computed by dividing the channel length by the flow rate obtained from Manning's Equation. This is shown by Equation 3.4.

$$t_{ch} = \frac{L_{ch}}{3600 \frac{1.49}{n} R^{\frac{2}{3}} S_{ch}^{\frac{1}{2}}}$$

Equation 3.4

where:

t_{ch} = channel flow time, (hr.)

L_{ch} = channel flow length, (ft)

S_{ch} = channel flow slope, (ft/ft)

n = Manning's roughness coefficient (Table 3.11)

R = channel hydraulic radius (ft), $R = \frac{a}{p_w}$

where: a = cross sectional area (ft²)

p_w = wetted perimeter (ft)

Since urbanization is anticipated on all drainage areas, all drainage improvements shall be designed for the case of fully developed watersheds. It is generally not practical to design improvements to gravity drainage systems in stages to match development, except in the case of unlined ditches, and then, it is essential that ultimate rights-of-way be obtained at the outset. When the watershed in question is basically undeveloped, the developer shall attempt to anticipate future fully developed conditions and storm water **drainage patterns and flow characteristics** when determining the time of concentration.

3.2.1.3 Rainfall Intensity (I)

The Rainfall intensity shall be taken from Figure 3.1 below for the minimum inlet time above.

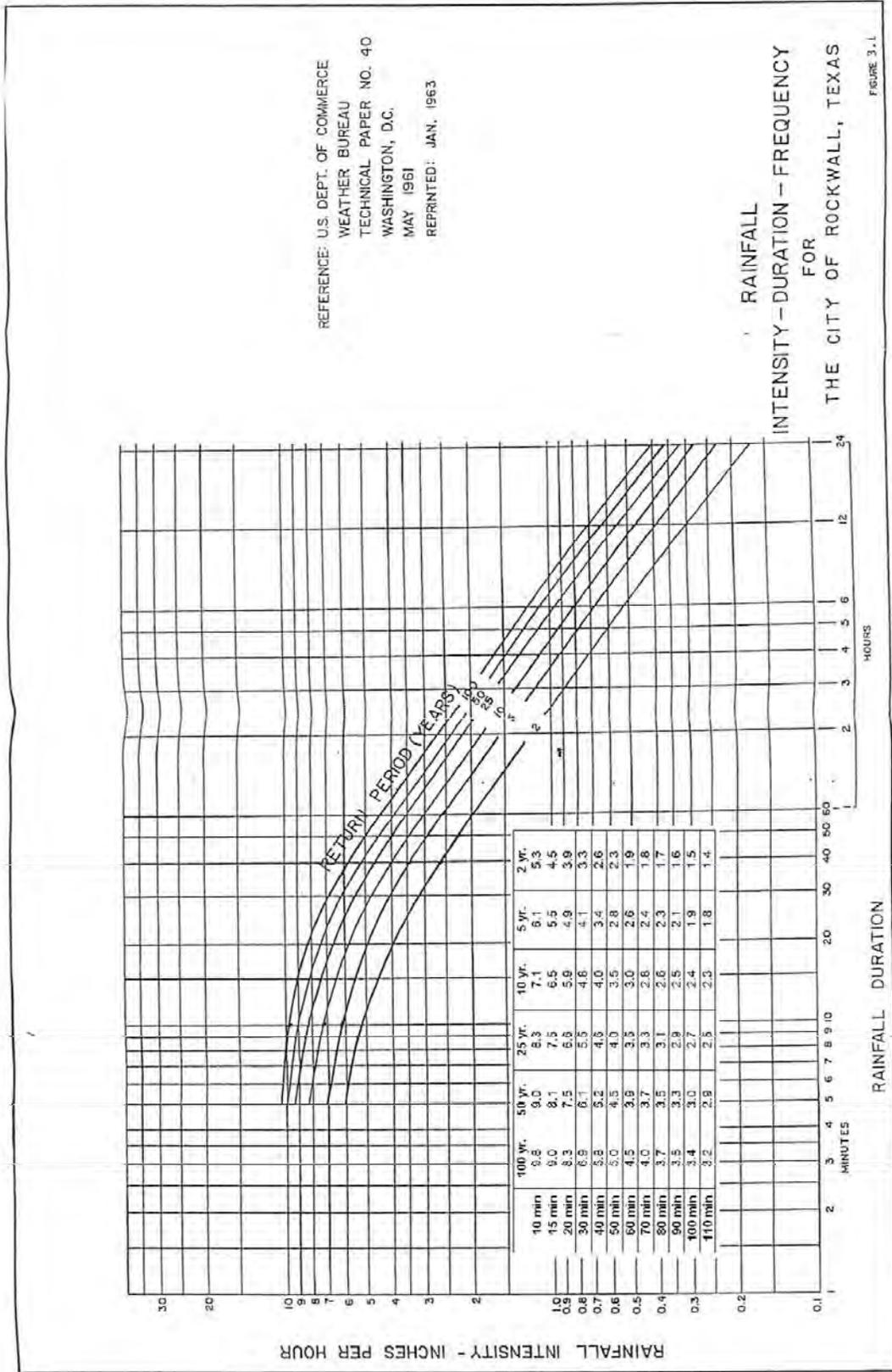


Figure 3.1: IDF Curve

3.2.2 Unit Hydrograph Method

For contributing drainage areas greater than 160 acres, the unit hydrograph method, shall be used to determine the peak storm discharge quantities. **This method shall also be used for verification of adequacy of stormwater detention facilities with contributing drainages areas that are equal to or greater than 20 acres.**

The City will utilize an engineering consulting firm to assist City staff in the review of a flood and detention studies that utilize the Unit Hydrograph Method. The cost of this consultant review shall be borne by the developer, engineer, or property owner submitting the study. The City shall first obtain a cost estimate from the engineering consultant for the study review at time of the initial study submittal. Before the review begins, the developer, engineer, or property owner submitting the study shall deposit with the City funds equal to the cost estimate. The City shall disburse the funds to the consulting engineer as the review progresses. Should the consultant fees exceed the initial estimate, the developer, engineer or property owner submitting the study shall be informed of the shortage and a new estimate made by the consultant engineer to complete the study review. Additional funds will then be deposited with the City by the developer, engineer or property owner submitting the study to cover the estimated shortfall before the review of the study resumes. Any unused funds to be reimbursed to the developer, engineer or property owner submitting the study. If review process is performed by City staff, the City will submit a cost estimate for study review at time of the initial engineering submittal.

The use of a unit hydrograph method shall be based upon standard and accepted engineering principles used in the profession. Acceptable methods include the **Natural Resources Conservation Service (NRCS)** Technical Release Number 55 (TR-55) for drainage areas 160 acres to 2,000 acres and **NRCS's** Technical Release Number 20 (TR-20), or the United States Army Corps of Engineers HEC-HMS models for drainage areas 160 acres or more. **When the flood study involves a watershed that does not already have any available hydrology model, or in the case where conversion of an existing model to a later version hydrology model is desired, the City's preference is the latest version of HEC-HMS model available.**

When the unit hydrograph method is used, a flood study report shall be prepared and provided to the City Engineer, documenting the methodology, assumptions, derivation of all data used, and results of the study. In order to maintain consistency of all hydrologic studies within the City, the following requirements/conditions shall be used when performing the unit hydrograph method. These requirements/conditions shall be included in the plan set and the flood study report:

1. Use the NRCS 24-hour Type III Rainfall Distribution.
2. Use wet antecedent soil moisture conditions (AMC-III).
 - a. Storm runoff/loss parameter calculations, such as NRCS runoff curve numbers (CN). CN values should first be computed based on average antecedent soil moisture conditions (AMC-II) to the nearest 0.1 value (CN₂), based on hydrologic soil group, land cover and treatment practices. Then compute the CN₃ value for AMC-III conditions, to the nearest 0.1 value, using the NRCS conversion equation as follows:

$$CN_3 = \frac{23CN_2}{10 + 0.13CN_2}$$

Equation 3.4a

3. Compute both pre-construction conditions (based on existing off-site watershed conditions) and post-construction conditions and show comparison in summary table of results.
4. In addition to No. 3 compute projected future fully developed conditions to determine design elevations and erosion protection.
5. 24-hour rainfall storm totals, (See Table 3.5a)
6. Time of Concentration (T_c) and Lag Time Calculations, computed to the nearest 0.01 hour: The lag time is generally considered to be 0.6 x T_c. The T_c calculations should include sheet flow travel time, shallow concentrated flow travel time, channel flow travel time, and travel time associated with any storm sewer system pipes, street gutter flow, and other travel times. Storm sewer pipe travel time may be derived based on design velocities and pipe flow lengths from available or proposed sewer pipe plans. General guidelines pertaining to NRCS TR-55 methodology for determining flow times for sheet flow, concentrated shallow flow, channel flow, and other flow types are included in the section above. The length of sheet flow used with the unit hydrograph method should be determined based on the following procedures to determine where sheet flow ends:
 - a. Field investigations, where possible, to detect overland drainage patterns and where sheet flow transitions to other types of overland or pipe flow (such as observation of beginning of overland flow rill erosion patterns or entrance to a storm water inlet).
 - b. Information from topographic maps, such as deflections in elevation contours indicating where sheet flow ends and shallow concentrated flow or channel flow may begin.
 - c. For areas where previous construction has occurred, review of as-built drainage plans.
 - d. High-resolution photography, which may indicate locations where overland flow begins to form shallow concentrated flow as evidenced by erosion patterns.
 - e. If the length of sheet flow cannot be determined by the above procedures, or if it is determined by the above procedures to be

greater than 100 feet, the maximum length to be used shall be the lesser of 100 feet or the length computed by the following equation [as taken from the NRCS National Engineering Handbook, Part 630 – Hydrology, Chapter 15]:

$$L = \frac{100S^{0.5}}{n}$$

Equation 3.4b

where:

L = limiting sheet flow length, (ft)

S = land slope over length L, (ft/ft)

n = Manning's roughness coefficient over length L

7. When using a unit hydrograph procedure, mixing the hydrology modeling data with data based on differing procedures is not acceptable:
 - a. The time of concentration should be calculated using actual travel time computations. [Do not assume a 10-minute inlet time as assumed in Rational Method].
 - b. Use total storm precipitations (inches) listed in Table 3.5a. [Do not use rainfall intensities (inches/hour) or derive total storm precipitation based on the Rational Method rainfall intensities].
 - c. For detention ponds with drainage areas greater than 20 acres, if a proposed pond and dam is first designed based on Modified Rational Method, but is found to be inadequate when checked with the unit hydrograph method, then it should be re-designed to safely pass the maximum required design storm using the unit hydrograph method, without flow passing over the top of the dam (and with required freeboard) and without increased discharges being passed downstream from the project site.
8. Drainage areas shall be rounded to the nearest 0.01 acre (0.000001 sq. mi.) in hydrology models, as well as for areas of land use and soil categories when computing composite runoff curve numbers.
9. Impervious areas of a drainage basin should be included within the computed composite runoff curve number calculations used in the hydrology models (instead of using a percentage of impervious area in combination with a weighted curve number in hydrology models that contain that option).
10. Stream reach hydrograph routing computations within hydrology models must be performed using a procedure that accounts for the effects of channel and floodplain storage (such as Modified Puls method), so that impacts on flood discharges due to loss of flood valley storage within the reach, whether caused by currently proposed construction or due to future development, can be determined.

11. NRCS runoff curve numbers listed in NRCS's Technical Release 55 (TR-55) for urban and residential districts are generally inappropriate for typical developments in the City of Rockwall, due to the indicated low percentage of impervious areas indicated with the values. Therefore, curve numbers typical of conditions in the City of Rockwall are included in Table 3.5b. These values should be used in most cases; however, other curve numbers for conditions not listed in Table 3.5b may be derived and used if reasonably justified and documented.
12. Options available in hydrology models to automatically compute pond spillway discharges, based on spillway or outlet type or configuration, are sometimes limited and often do not adequately represent the designed spillway. In such cases, pond water surface elevations versus discharges may need to be computed by other methods and entered into the hydrology model as user defined paired data.

Table 3.5a: Precipitation Frequency Estimates (Inches) for Rockwall, Texas

ARI* (Years)	Duration														
	5 min	10 min	15 min	30 min	60 min	2 hr	3 hr	6 hr	12 hr	24 hr	2 days	3 days	4 days	7 days	10 days
1	---	---	---	1.23	1.60	1.85	2.03	2.44	2.88	3.30	---	---	---	---	---
2	0.495	0.83	1.06	1.47	1.90	2.31	2.54	3.03	3.52	4.09	4.76	---	5.53	6.35	7.09
5	0.58	0.97	1.24	1.79	2.36	3.08	3.35	4.02	4.77	5.48	6.21	---	7.22	8.39	9.24
10	0.64	1.07	1.37	2.02	2.69	3.62	3.95	4.75	5.64	6.57	7.39	---	8.40	9.83	10.90
25	0.73	1.22	1.57	2.35	3.17	4.25	4.65	5.73	6.59	7.67	8.80	---	10.12	11.56	12.87
50	0.80	1.34	1.72	2.61	3.53	4.75	5.20	6.35	7.50	8.70	9.91	---	11.54	13.25	14.53
100	0.87	1.47	1.88	2.87	3.90	5.25	5.77	7.02	8.50	9.75	11.32	---	13.09	14.60	16.25
500	---	---	---	---	---	---	---	---	---	12.0	---	---	---	---	---
PMP*	---	---	---	---	---	---	---	30.8	36.4	41.5	46.80	49.2	---	---	---

* ARI = Average Recurrence Interval

* PMP = Probable Maximum Precipitation

References: U.S. Department of Commerce / National Oceanic and Atmospheric Administration / National Weather Service and U.S. Department of the Army:

1. Technical Memorandum NWS HYDRO-35, Five- to 60-Minute Precipitation Frequency for the Eastern and Central United States, June 1977.
2. Technical Paper No. 40, Rainfall Frequency Atlas of the United States for Durations from 30 Minutes to 24 Hours and Return Periods from 1 to 100 Years, May 1961.
3. Technical Paper No. 49, Two- to Ten-Day Precipitation for Return Periods of 2 to 100 Years in the Contiguous United States, 1961
4. Hydrometeorological Report No. 51, Probable Maximum Precipitation Estimates, United States East of the 105th Meridian, June 1978.

Note: For rainfall durations of 5 minutes through 60 minutes, rainfall frequency estimates for ARI's of 2 years through 100 years are based on Technical Memorandum NWS HYDRO-35, which supersedes values presented in Technical Paper No. 40.

Table 3.5b: NRCS Runoff Curve Numbers (AMC_{II}) for Various Land Use Classifications

Land Use Classification	Hydrologic Soil Group			
	A	B	C	D
Wooded (Wf)	36	60	73	79
Wooded (Wg)	30	55	70	77
Open Space/Range/Pasture (OSf)	49	69	79	84
Open Space/Range/Pasture (OSg)	39	61	74	80
Cultivated, Straight Row (Csr)	72	81	88	91
Cultivated, Contoured w/o Terracing (Cc)	70	79	84	88
Cultivated, Contoured and Terraced (Cct)	66	74	80	82
Residential (R20) **	59	74	82	86
Residential (R30) **	60	75	83	87
Residential (R40) **	66	78	85	88
Residential (R50) **	69	80	86	89
Residential (R60) **	74	83	88	91
Residential (R70) **	80	87	91	93
Bare Soil	77	86	91	94
Commercial/Business/Multifamily (CBM)	89	92	94	95
Industrial	81	88	91	93
Dirt or Gravel Roads, R.O.W. (Rd)	76	85	89	91
Paved Roads, R.O.W. (Rp)	83	89	92	93
Inundated (W)	100	100	100	100
Urban High Runoff Equivalent *	83	89	92	94

* Urban high runoff equivalent is used only for projected fully-developed watershed conditions.

** Residential coding refers to percent impervious (for example, R60 is for 60% impervious) (For areas that fall between listed Values, Please round to the nearest coding.)

Note: Curve numbers listed above are for average antecedent moisture conditions (AMC_{II}).

3.2.3 Design Storm Frequencies

The design storm frequencies shall be the 100-year storm.

For the Rational Method the relationship between rainfall intensity, duration and frequency is set forth in Figure 3.1. These curves have been developed using Technical Paper No. 40, "Rainfall Frequency Atlas of the United States" by the U.S. Weather Bureau.

For the Unit Hydrograph Method the total rainfall **for the 24-hour duration storm** is used. See Table 3.5a.

3.2.4 Drainage Calculations Summary Tables

The calculations of the storm water discharge shall be provided to the City. As a minimum, the engineering plans shall include:

- Existing and Proposed Drainage Area Calculations Table using Form 3.1,
- Inlet Calculations Table using Form 3.2
- Storm Sewer Calculations Table using Form 3.3.
- Open Channel Calculations Table using Form 3.4
- Culvert Design Calculations Table using Form 3.5

Form 3.1: Drainage Area Calculations Table

Area ID	Total Drainage Area (acres)	Areas Drained			Weighted Runoff Coeff. C (acres)	C*A (acres)
		Parks or Open Area (C=0.35) (acres)	Residential (C=0.5) (acres)	Comm. (C=0.9) (acres)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)

Time of Concentration T _c (min)	Design Storm Frequency (yrs)	Intensity I (in/hr)	Storm Runoff Q (cfs)	Drains To/ Remarks (12)
(8)	(9)	(10)	(11)	(12)

Instructions for Form 3.1: Drainage Area Calculation Table

Column (1)	Drainage area identification number or designation
Column (2)	Total Drainage area in acres
Column (3 to 5)	Area drained for each land use type in acres (add additional columns for different land use areas as needed) Runoff Coefficient taken from Table 3.2
Column (6)	Weighted Runoff Coefficient calculated from Columns 2 to 5
Column (7)	Product of Column (2) and Column (6)
Column (8)	Minimum inlet time of concentration taken from Table 3.3
Column (9)	Design Storm Frequency, shall be 100-yr for all areas
Column (10)	Using the time of concentration and design storm frequency, the rainfall intensity is taken from Figure 3.1
Column (11)	Solution of Equation 3.1
Column (12)	A detailed description of where the drainage area drains to including but not limited to Inlet ID, Street Location, Creek Name, Detention Pond Designation, etc.

3.2.5 Flow in Streets

Capacity of Arterials, Collectors and Residential streets shall be calculated using a straight crown: Storm water flow in streets having a straight crown shall be calculated as follows:

$$Q = \frac{0.56}{n} S_x^{\frac{5}{3}} S^{\frac{1}{2}} T^{\frac{8}{3}}$$

Equation 3.5

where:

Q = gutter flow rate, (cfs)

n = Manning's roughness coefficient; value = 0.0175

S = the longitudinal slope of the street gutter, (ft/ft)

S_x = pavement cross slope, (ft/ft)

T = ponded width, (ft)

3.2.6 Flow in Alleys

Capacity of alleys should be taken from Manning's Equation:

$$Q = \frac{1.49}{n} AR^{2/3} S^{1/2}$$

Equation 3.6

where:

Q = alley flow rate, (cfs)

n = Manning's roughness coefficient; value = 0.0175

A = cross sectional area of flow, (ft²)

R = hydraulic radius, (ft)

S = the longitudinal slope of the alley, (ft/ft)

3.2.7 Permissible Spread of Water (Ponding Width)

3.2.7.1 General

Spread of water refers to the amount of water that may be allowed to collect in streets during a storm of specific design frequency. The following Equation 3.7, a re-arranging of Equation 3.5, shall be used to determine the ponding width “T” for straight crowned streets. (Arterials, Collectors and Residential).

$$T = 1.24 \left(\frac{Qn}{S_x^{5/3} S^{1/2}} \right)^{8/3}$$

Equation 3.7

where:

Q = gutter flow rate, (cfs)

n = Manning’s roughness coefficient; value = 0.0175

S = the longitudinal slope of the street gutter, (ft/ft)

S_x = pavement cross slope, (ft/ft)

T = ponded width, (ft)

In order that excess storm water will not collect in streets during a storm of the design frequency, the following spread of water values shall be used for the various types of streets. Figure 3.2 provided below shows the relationship between thoroughfare type, gutter flow capacity and street slope based on maximum permissible ponding width described in the next sub-sections.

3.2.7.2 Major and Minor Arterials (P6D & M4D) – Divided

Based on pavement cross-slope of 2.0%, the 100-year Design Frequency flow shall not exceed the elevation of the lowest top of curb. The design engineer shall verify that one lane of traffic in each direction shall remain free of ponding in the 100-year storm event.

3.2.7.3 Collector Streets – (M4U, M3U & Minor Collector)

Based on a straight cross-slope with a roof top crown of six (6) inches, the 100-year storm event flows shall not exceed the top of curb, six (6) inches.

3.2.7.4 Residential Streets

Based on a straight cross-slope with a roof top crown of six (6) inches, the 100-year storm event flows shall not exceed the top of curb, six (6) inches.

3.2.7.5 Alleys

The 100-year Design Frequency shall not exceed the capacity of the alley pavement, a depth of five (5) inches. No ponding will be allowed beyond the pavement edge. Alley paving to be warped to drain the paving toward the inlet.

3.2.7.6 Parking Lots

The 100-yr design frequency shall not exceed a depth of six (6) inches except where on pavement detention is occurring where one (1) foot in depth is permissible.

3.2.8 **Inlet Design**

3.2.8.1 General

Determination of the required size of the storm drain inlets will be based on the calculations called out in this section and the instructions for FORM 3.2: Inlet Design Calculations Table.

3.2.8.2 Types of Inlets

City requires the use of depressed curb inlets. A depressed curb inlet is more efficient than a non-depressed inlet because a depressed inlet induces a greater cross-flow toward the inlet allowing less water to flow past it. Also, the transition out of the depression causes a backwater effect, which further increases the capacity of the storm drain. A gutter depression for all curb inlets shall be six (6) inches, as shown in the Standard Details. Inlets shall be sized in multiplier of five (5) feet (5, 10, 15 and 20). Construction of inlets shall be in accordance with the Standard Details. Use Table 3.6 for the selection of inlets to be used within the City. No grate inlets are allowed without approval from the City Engineer.

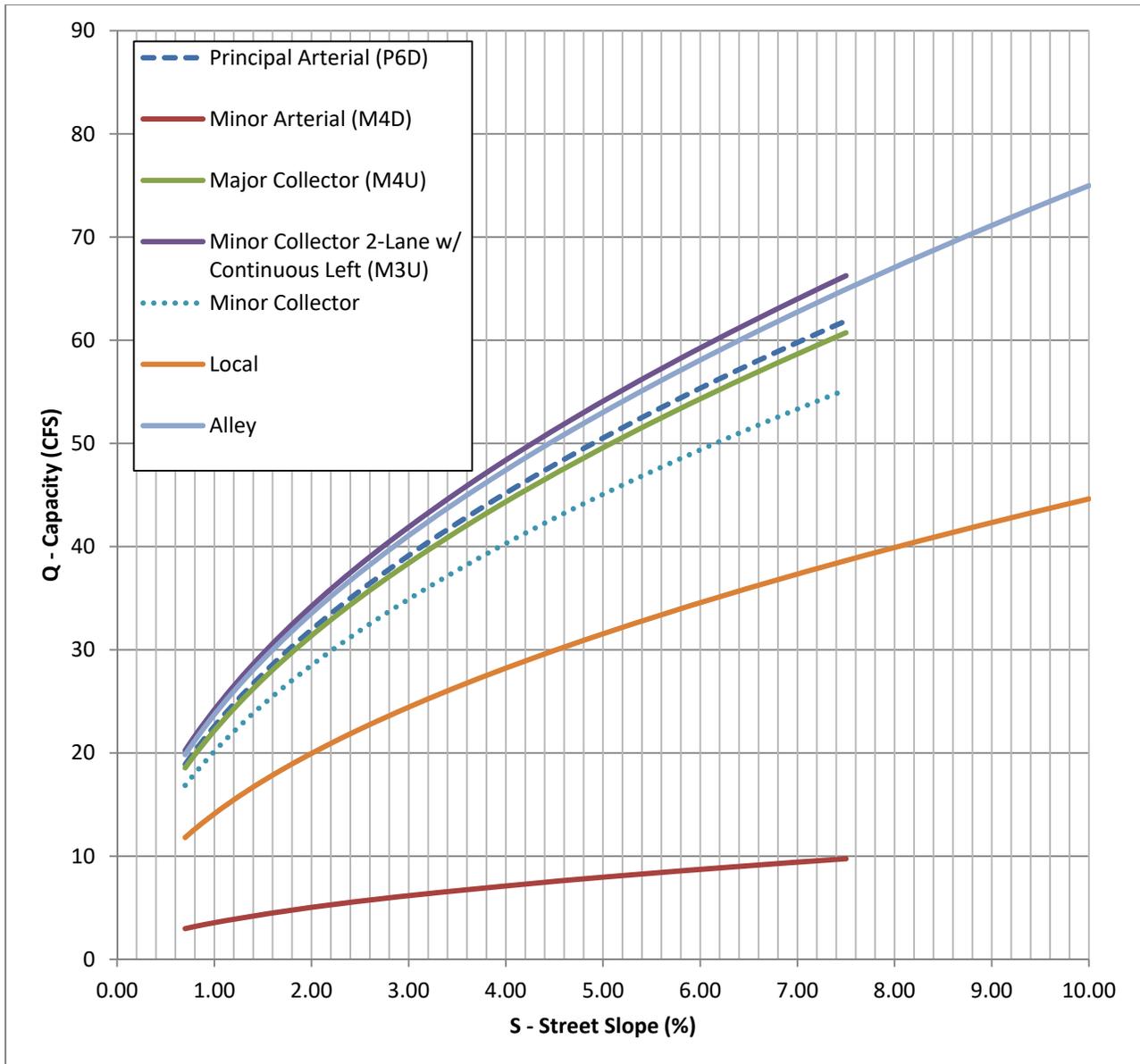


Figure 3.2: Thoroughfare Gutter Capacity based on Maximum Permissible Ponding Width

Table 3.6: Storm Drain Inlets

<u>INLET DESCRIPTION</u>	<u>AVAILABLE INLET SIZES</u>	<u>WHERE USED</u>	<u>DESIGN EQUATIONS</u>
Standard Curb Opening Inlet on Grade	5' 10' 15' 20'	Arterials (P6D & M4D) Collectors (M4U, Minor & M3U) Local (Residential) Alley	Equation 3.8 through 3.16
Standard Curb Opening Inlet at Low Point	5' 10' 15' 20'	Arterials (P6D & M4D) Collectors (M4U, Minor & M3U) Local (Residential) Alley	Equation 3.17 & 3.18
Recessed Curb Opening Inlet on Grade	5' 10' 15' 20'	Street Grade 6% or Greater Arterials (P6D & M4D) Collectors (M4U, Minor & M3U)	Equation 3.8 through 3.16
Combination Inlet on Grade	4' 6' 8'	Combination Inlets to be Used Where Space Behind Curb Prohibits Other Inlet Types and Alleys City Engineer Approval Required	
Combination Inlet at Low Grade	4' 6' 8'	Combination Inlets to be Used Where Space Behind Curb Prohibits Other Inlet Types and Alleys City Engineer Approval Required	
Grate Inlet	2 Grate 3 Grate 4 Grate 6 Grate	No grate inlets are allowed without approval from the City Engineer	
Drop Inlet	2'x2' 3'x3' 4'x4' 5'x5'	Open Channels/Area Drain	Equation 3.19 & 3.20

3.2.8.3 Location

All inlets (edge of opening) shall be a minimum of ten (10) feet from street or driveway curb return. Recessed inlets will be required to be installed at all inlet locations where the street grade is to be 6% or greater except on residential streets. At locations where depressed inlets are expected to interfere with pedestrian activity, usually at crosswalks or interior spans of the block used for parking, a depression of less than six (6) inches may be required. These locations may require additional inlet width to compensate for the reduced depression. The City will consider all variances from a standard six- (6) inch gutter on an individual basis.

- A. Major and Minor Arterials (Divided): Inlets shall be located at street intersections, at low points of grade or where the gutter flow exceeds the permissible spread of water criteria. Inlets shall be located, when possible, on lesser traveled streets or alleys when grades permit. Inlets located on arterials and where street grade is 6% or greater shall be recessed in order to minimize interference of the gutter depression with travel lanes. In super-elevated sections, inlets placed against the

center medians shall have no gutter depression and shall intercept gutter flow at the point of vertical curvatures to prevent flow from crossing the arterial. Unless expressly approved by the City Engineer, storm waters will not be allowed to cross arterials on the surface in valley gutters or otherwise. All sag inlets will require a reinforced concrete emergency overflow flume. The capacity of the emergency overflow flume shall equal or exceed the 100-yr design storm flow coming to the sag point.

- B. Collector Streets: Inlets shall be located at street intersections, low points of grade or where the gutter flow exceeds the permissible spread of water criteria. Inlets shall be located, when at all possible, on lesser traveled streets or alleys where grade permits. All sag inlets will require a reinforced concrete emergency overflow flume. The capacity of the emergency overflow flume shall equal or exceed the 100-yr design storm flow coming to the sag point.
- C. Residential Streets: Inlets shall be located at street intersections, low points of grade or where the gutter flow exceeds the permissible spread of water criteria. All sag inlets will require a reinforced concrete emergency overflow flume unless the design engineer calculates that the street will carry the overflow above the crest of the roadway without the water surface elevation exceeding the top of curb. The capacity of the emergency overflow flume shall equal or exceed the 100-yr design storm flow coming to the sag point.
- D. Alleys: Inlets shall be located before intersections with streets, alley to alley intersections, change in alley directions, low points of grade or where the gutter flow exceeds the permissible spread of water criteria. All sag inlets will require a reinforced concrete emergency overflow flume. The capacity of the emergency overflow flume shall equal or exceed the 100-yr design storm flow coming to the sag point.
- E. Parking Lots: Inlets shall be located at all sag points and before ponding exceeds six (6) in depth except when on pavement detention is occurring.

3.2.8.4 Curb Inlets On-Grade

The sizing of curb inlets on-grade shall be done based on the following Equations 3.8 through 3.16 and Figure 3.3. Figures 3.4 through 3.9 are provided as reference for On-Grade Curb Inlet Capacities on the City Thoroughfares.

$$L_r = 0.6Q^{0.42}S^{0.3} \left(\frac{1}{nS_e} \right)^{0.6}$$

Equation 3.8

where:

L_r = length of curb inlet required (ft)

Q = flow rate in gutter (cfs)

S = longitudinal slope (ft./ft)

n = Manning's roughness coefficient, value = 0.0175

S_e = equivalent cross slope (ft./ft.)

$$S_e = S_x + \frac{a}{W} E_0$$

Equation 3.9

where:

S_e = equivalent cross slope (ft/ft)

S_x = cross slope of the road (ft/ft)

a = gutter depression depth (ft), all inlet depressions shall be 0.50 feet (6 inches)

W = gutter depression width (ft)

standard inlets $W = 2.0$ ft, recessed inlets $W = 3.0$ ft

E_0 = ratio of depression flow to total flow

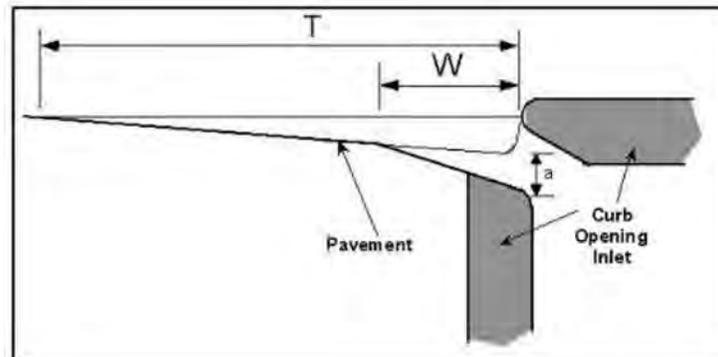


Figure 3.3: Gutter Cross-Section Diagram

$$E_0 = \frac{K_w}{K_w + K_0}$$

Equation 3.10

where:

E_0 = ratio of depression flow to total flow

K_w = conveyance of the depressed gutter section (cfs)

K_0 = conveyance of the gutter section beyond the depression (cfs)

$$K = \frac{1.486A^{5/3}}{nP^{2/3}}$$

Equation 3.11

where:

K = conveyance of cross section (cfs)

A = area of cross section (ft²)

n = Manning's roughness coefficient, value = 0.0175

P = wetted perimeter (ft)

$$A_w = WS_x \left(T - \frac{W}{2} \right) + \frac{1}{2} aW$$

Equation 3.12

where:

A_w = area of depressed gutter section (ft²)

W = gutter depression width (ft)

standard inlets W = 2.0 ft, recessed inlets W = 3.0 ft

S_x = cross slope (ft/ft)

T = calculated ponded width (ft)

a = gutter depression depth (ft), all inlet depressions shall be 0.50 feet (6 inches)

$$P_w = \sqrt{(WS_x + a)^2 + W^2}$$

Equation 3.13

where:

P_w = wetted perimeter of depressed gutter section (ft)

W = gutter depression width (ft)

standard inlets W = 2.0 ft, recessed inlets W = 3.0 ft

S_x = cross slope (ft./ft)

a = gutter depression depth (ft), all inlet depressions shall be 0.50 feet (6 inches)

$$A_0 = \frac{S_x}{2} (T - W)^2$$

Equation 3.14

A₀ = area of gutter/road section beyond the depression width (ft²)

S_x = cross slope (ft/ft)

W = gutter depression width (ft)

standard inlets W = 2.0 ft, recessed inlets W = 3.0 ft

T = calculated ponded width

$$P_0 = T - W$$

Equation 3.15

P₀ = wetted perimeter of the depressed gutter section (ft)

T = calculated ponded width (ft)

W = gutter depression width (ft)

(standard inlets W = 2.0 ft, recessed inlets W = 3.0 ft)

For determining the bypass of an curb inlet on grade use the following Equation 3.13 which factors in the ratio of the actual length of curb inlet (L_a) to the length of inlet required (L_r)

$$Q_{bypass} = Q \left(1 - \frac{L_a}{L_r} \right)^{1.8}$$

Equation 3.16

where:

Q_{bypass} = carryover discharge (cfs)

Q = total discharge (cfs)

L_a = design length of the curb opening inlet (ft)

L_r = length of curb opening inlet required to intercept the total flow (ft)

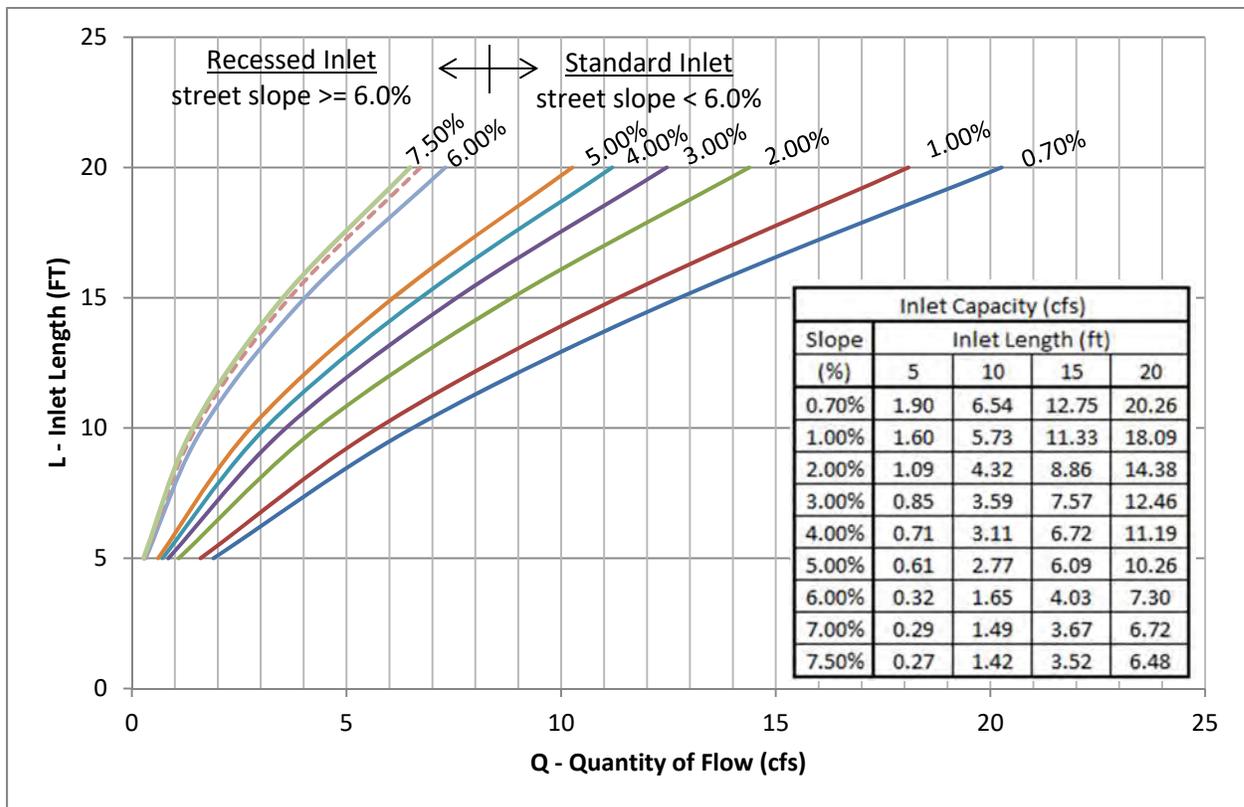


Figure 3.4: Curb Inlet Capacity On-Grade Principal & Minor Arterial (P6D & M4D)

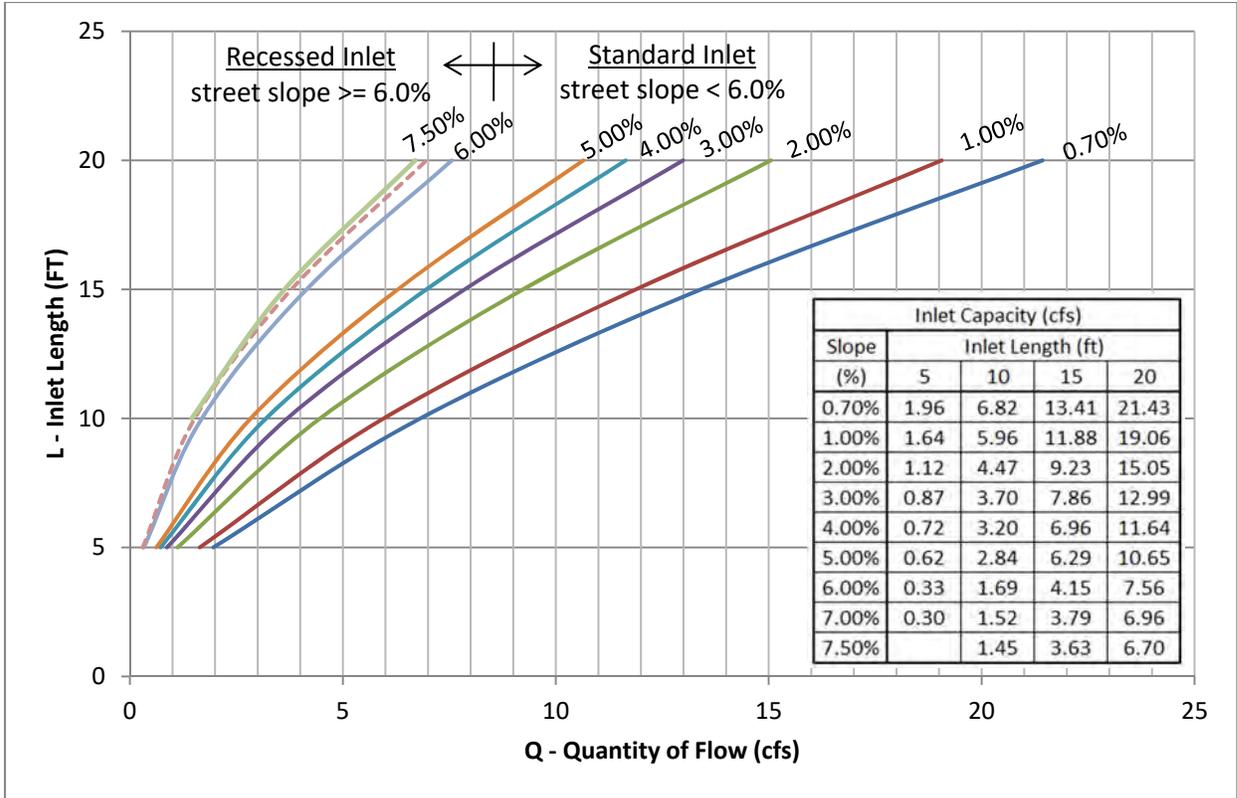


Figure 3.5: Curb Inlet Capacity On-Grade Major Collector (M4U)

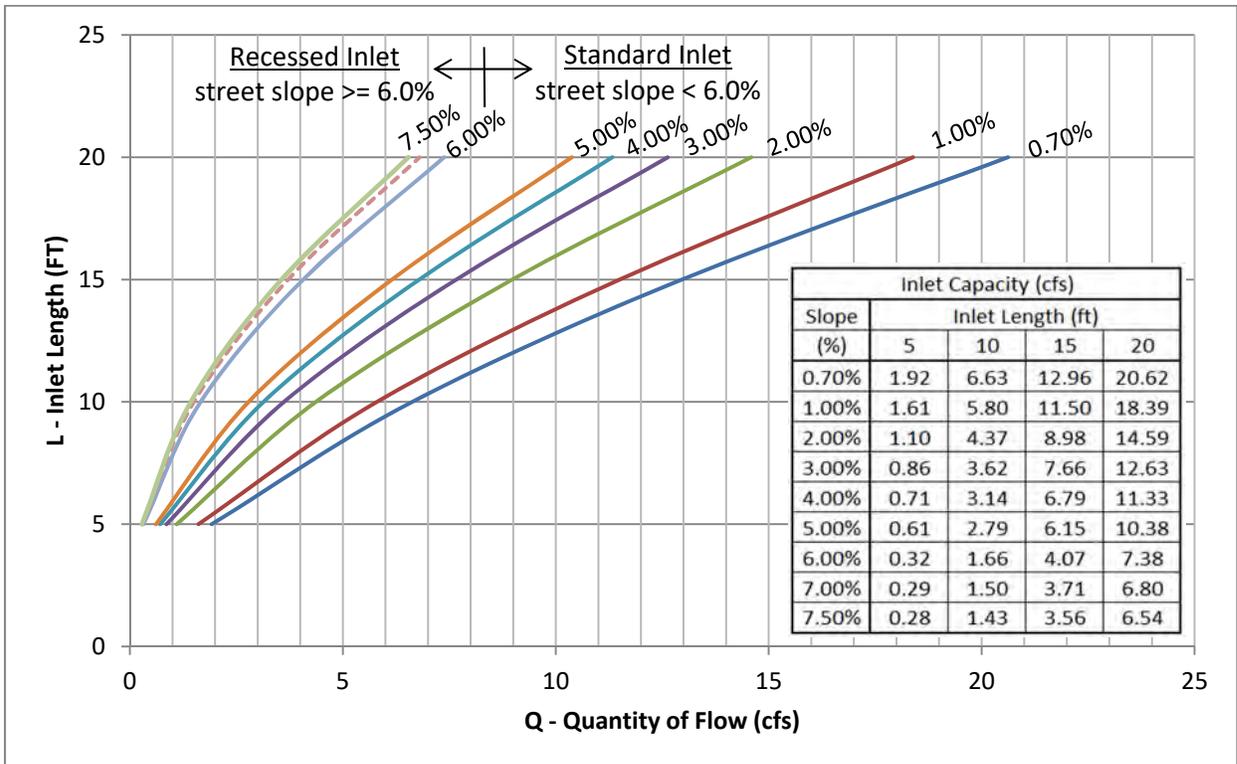


Figure 3.6: Curb Inlet Capacity On-Grade Collector 2-Lane w. Continuous Left (M3U)

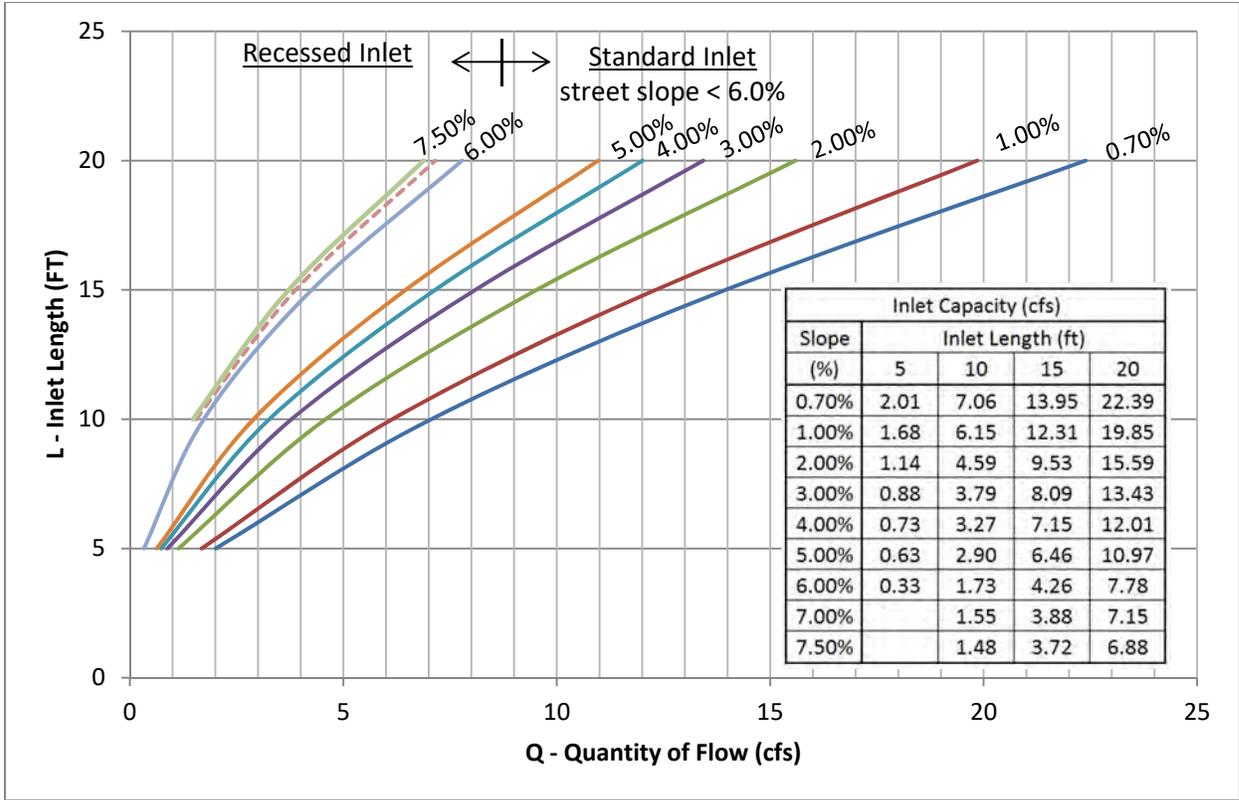


Figure 3.7: Curb Inlet Capacity On-Grade Minor Collector

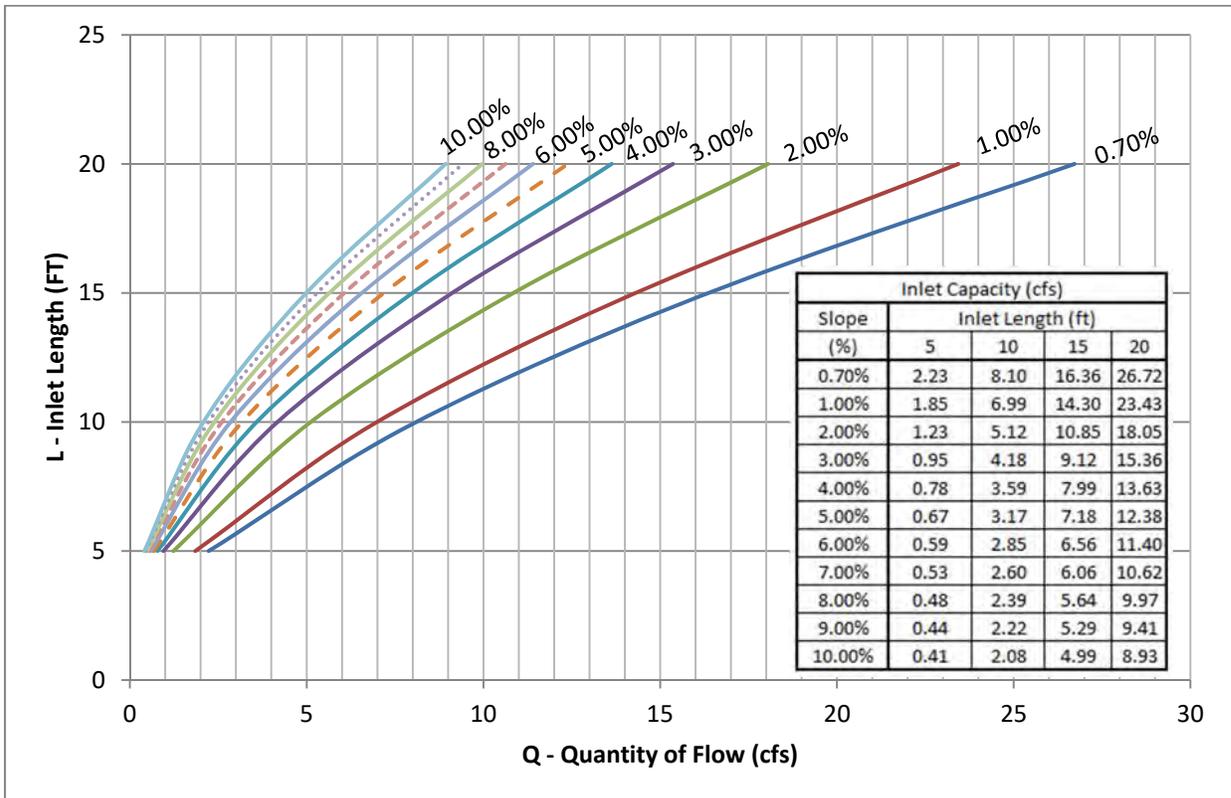


Figure 3.8: Curb Inlet Capacity On-Grade Local (Residential) Street

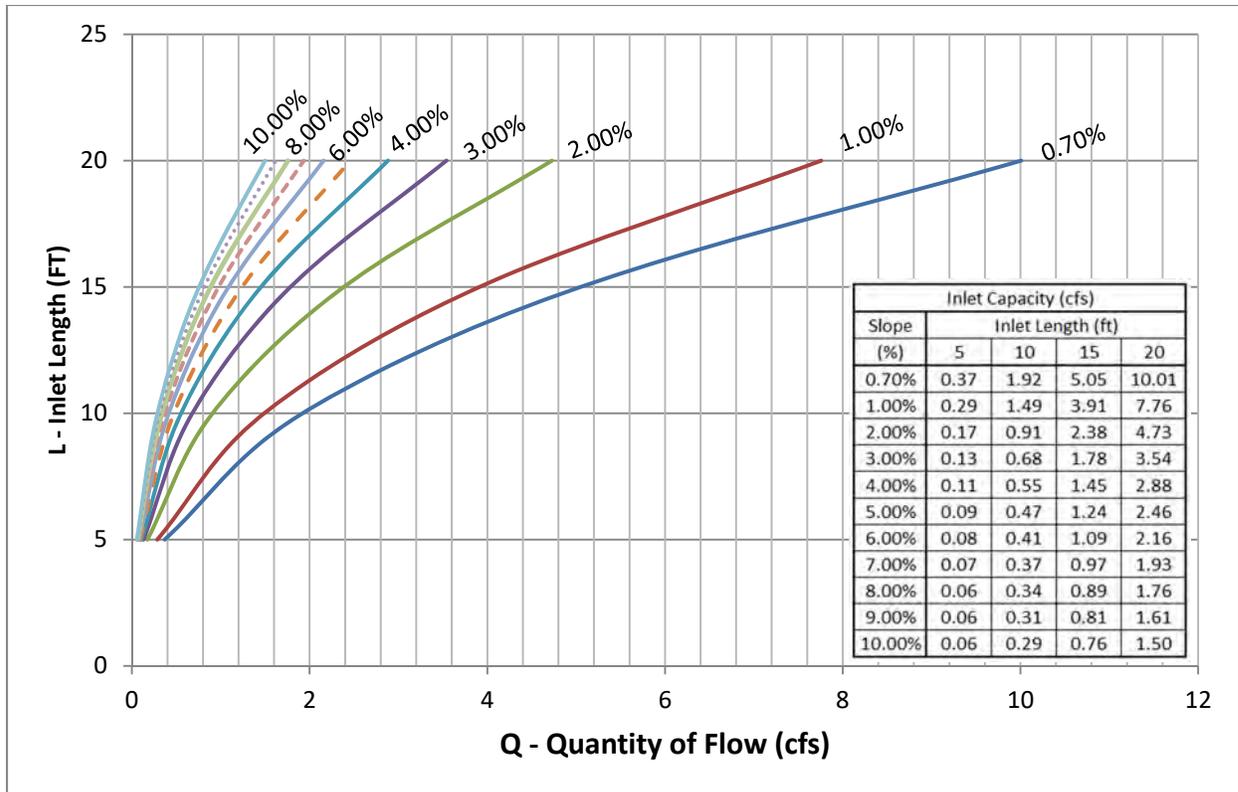


Figure 3.9: Curb Inlet Capacity On-Grade Alley

3.2.8.5 Curb Inlets at Sag/Low Point

Determining the capacity of curb inlets at sag/low point shall be taken from Equation 3.17 while the inlet operates as a weir until the water depth approaches 1.4 times the curb opening height.

$$Q = 2.3(L + 1.8W)y^{1.5} \quad \text{Equation 3.17}$$

Equation 3.14 can be rearranged to find the required curb inlet length at a sag point as shown in Equation 3.18.

$$L = \frac{Q}{2.3y^{1.5}} - 1.8W \quad \text{Equation 3.18}$$

where:

Q = total flow reaching inlet (cfs)

y = depth of flow (ft)

L = length of curb inlet opening (ft)

W = gutter depression width (ft)

standard inlets W = 2.0 ft, recessed inlets W = 3.0 ft

Figures 3.10 through 3.11 are provided as reference for Standard and Recessed Sag Curb Inlet Capacities.

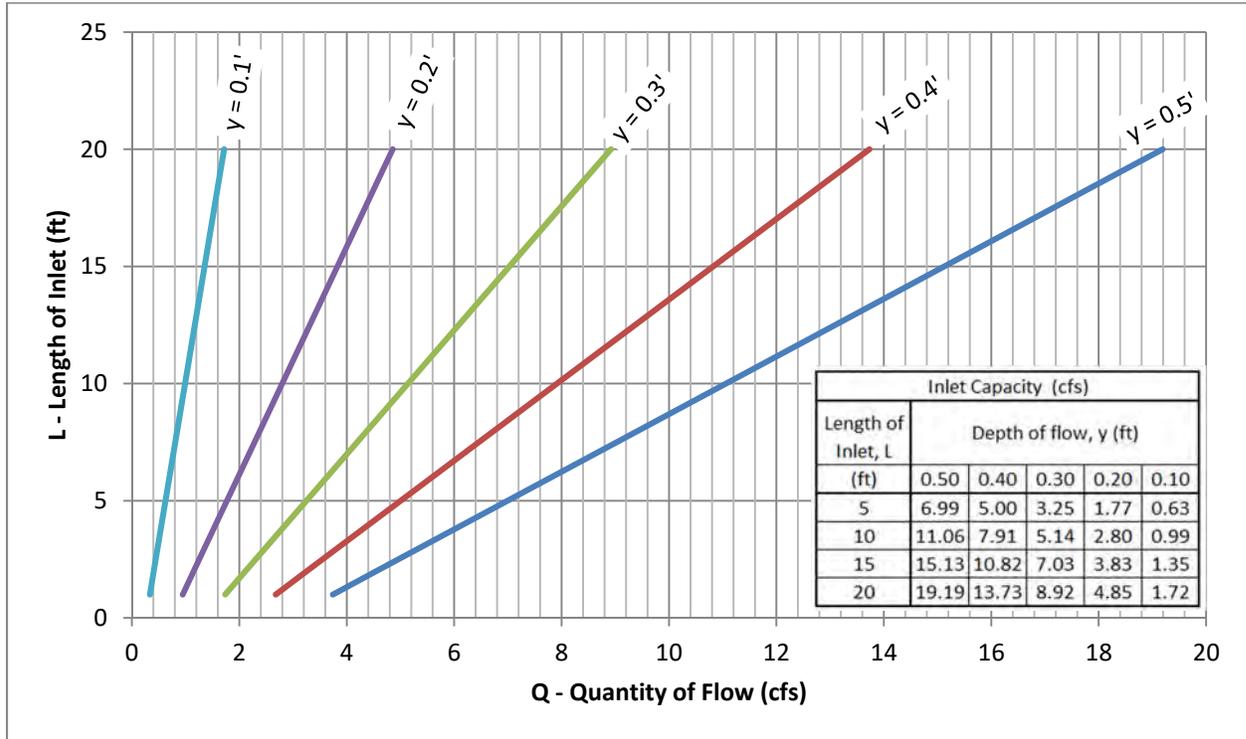


Figure 3.10: Standard Curb Inlet Capacity Sag/Low Point

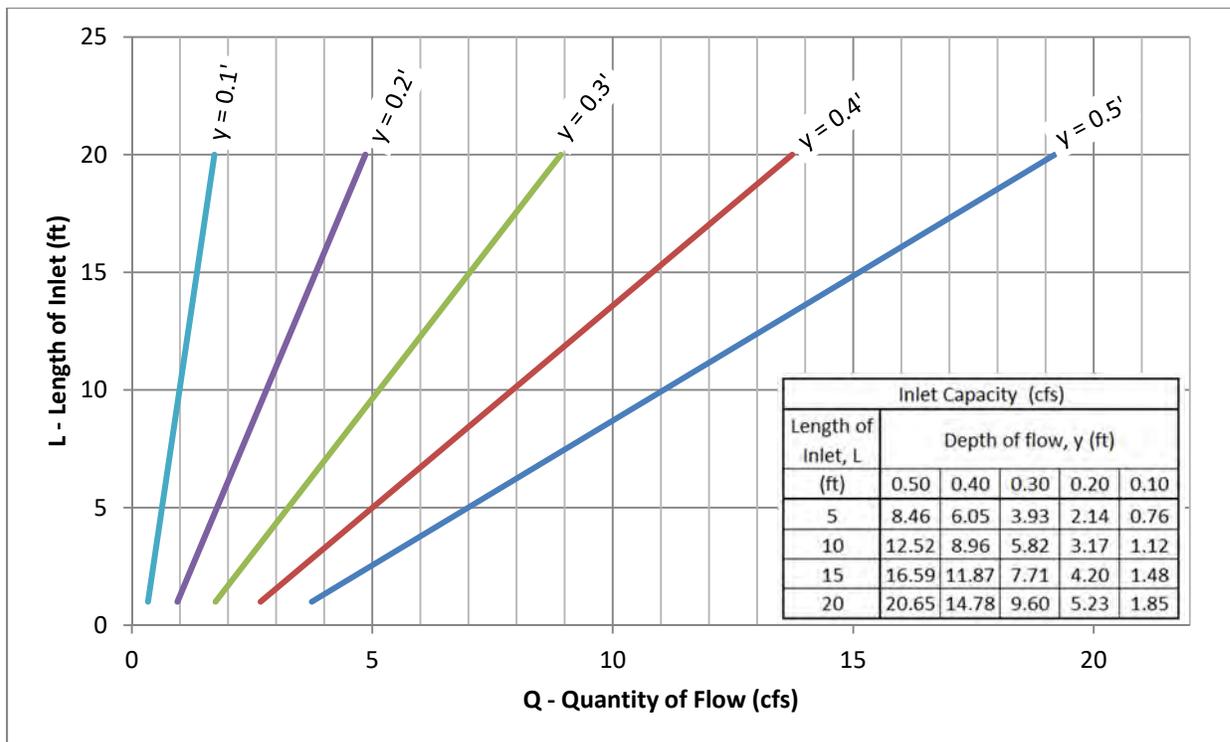


Figure 3.11: Recessed Curb Inlet Capacity Sag/Low Point

3.2.9 Drop Inlets / 'Y' Inlet Design

The capacity of drop inlets shall be taken from the Equation 3.19. All drop inlets shall be sized to have a maximum allowable head (depth of water) on the inlet to be six (6) inches.

$$Q = 3.087Ly^{3/2}$$

Equation 3.19

The equation can be rearranged to find the length of Drop Inlet opening as shown in Equation 3.20.

$$L = \frac{Q}{3.087y^{3/2}}$$

Equation 3.20

where:

Q = flow to inlet (cfs)

L = length of inlet opening (ft)

y = depth of water (head) at inlet (ft)

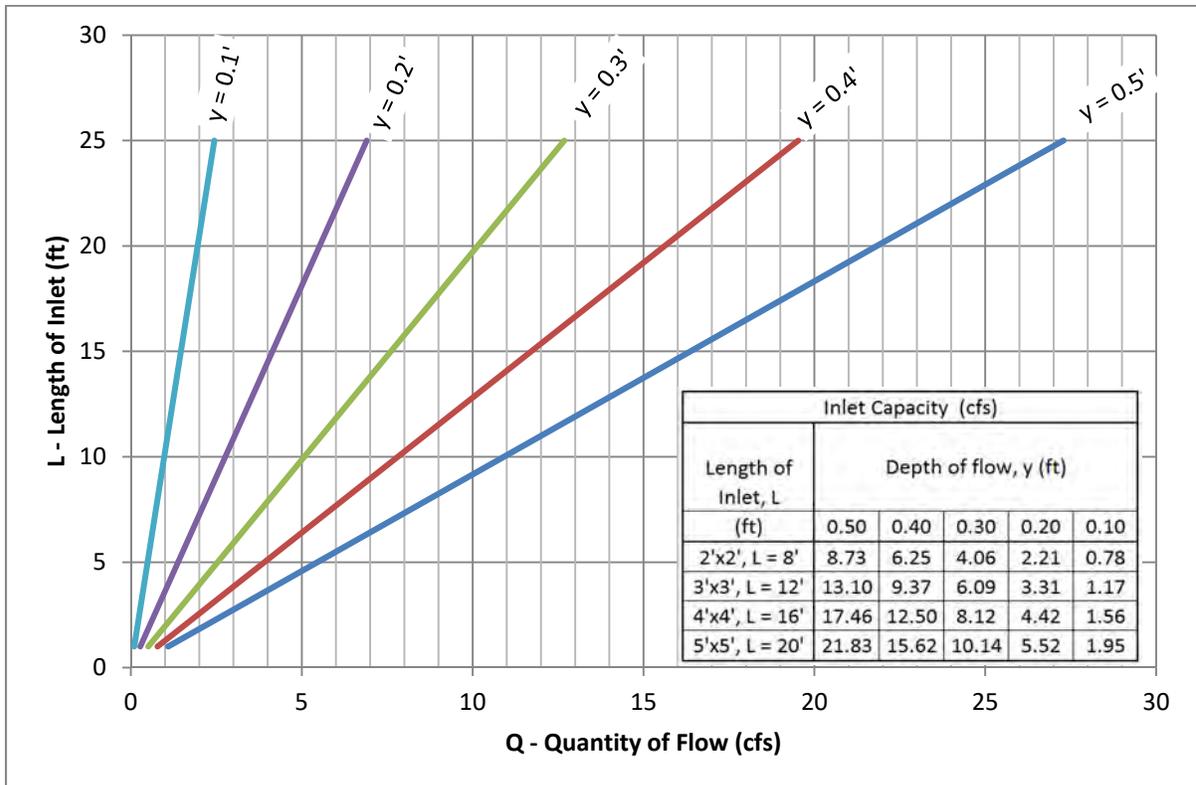


Figure 3.12: Drop/'Y' Inlet Capacity

3.2.1 Combination and Grate Inlet Design

When allowed by the City Engineer combination and grate Inlets shall be sized using Figures 3.13 through Figure 3.20.

Form 3.2: Inlet Design Calculations Table

Inlet ID	Location			Area Runoff						
	Alignment	Station	Offset	Design Freq.	C	Area ID	Time of Concentration T _c	Intensity I	Area A	Runoff Q
				(yr)			(min)	(in/hr)	(acres)	(cfs)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)

Upstream Bypass C*A	Total Gutter Flow Q _a	Gutter Flow							
		Thoroughfare Type	On-Grade/Sag	Manning's n	Long Slope S	Crown Type	Cross Slope S _x	Depression	
								Depth a	Width W
(cfs)	(cfs)				(ft/ft)		(ft/ft)	(ft)	(ft)
(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)

Gutter Flow					Inlets Capacity			
Ponding Width/Spread		Depth of Gutter Flow		Max. Allowable Flow based on Max. Allowable Ponding Width Q _{allow gutter}	Depressed Gutter Section		Section Beyond Depression	
(allow) T _{allow}	(actual) T _{actual}	(allow) Y _{allow}	(actual) Y _{actual}		Area	Wetted Perimeter	Area	Wetted Perimeter
(ft)	(ft)	(ft)	(ft)		A _w	P _w	A ₀	P ₀
(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)

Inlets Capacity						Inlet By-pass			Remarks	
Conveyance		Ratio of Depression flow to Total Flow E ₀	Equivalent Cross-slope, S _e	Inlet Length		Inlet Capacity Q _c	Flow Q _{bypass}	C*A		To Inlet ID
Depression Section K _w	Section Beyond Depression K ₀			Required L _{Req'd}	Actual L _{Actual}					
(cfs)	(cfs)		(ft/ft)	(ft)	(ft)	(cfs)	(cfs)			
(31)	(32)	(33)	(34)	(35)	(36)	(37)	(38)	(39)	(40)	(41)

Instructions for Form 3.2: Inlet Design Calculation Table

Column (1)	Inlet number or designation, starting with the most upstream inlet.
Column (2)	Street Alignment/ Name in which the inlet is located.
Column (3)	Station along the alignment in which the inlet is located.
Column (4)	Offset distance and side (RT/LT) inlet is located.
Column (5)	Design Storm Frequency, shall be 100-yr for all inlets.
Column (6)	Runoff coefficient taken from Table 3.2.
Column (7)	Contributing drainage area ID.
Column (8)	Minimum inlet time of concentration taken from Table 3.3.
Column (9)	Using the time of concentration and design storm frequency, the rainfall intensity is taken from Figure 3.1.
Column (10)	Runoff area to inlet in acres.
Column (11)	Solution of Equation 3.1.
Column (12)	Taken from Column (39) of the upstream inlet.
Column (13)	$= \text{Column (9)} \left\{ \frac{\text{Column(12)} + \{\{\text{Column(6)} * \text{Column(10)}\}}{\text{Column(9)}} \right\}$
Column (14)	Thoroughfare Type Taken from Section 2 Streets, (P6D, M4D, M4U, M3U, Minor Collector, Local, Alley, Parking).
Column (15)	Determined by location of inlet (On-Grade or Sag).
Column (16)	Manning's n value.
Column (17)	Street longitudinal gutter slope of the street taken in (feet/feet).
Column (18)	Street crown type on which the inlet is located.
Column (19)	Street cross-slope in feet/feet .
Column (20)	Gutter depression depth, reference Figure 3.3.
Column (21)	Gutter depression width, reference Figure 3.3.
Column (22)	Determined by the type of thoroughfare in the permissible spread width section.
Column (23)	Solution of Equation 3.7.
Column (24)	The product of Column (22) and Column (19).
Column (25)	The product of Column (23) and Column (19).
Column (26)	Solution of Equation 3.5 using the maximum allowable pond width from Column (22).
Column (27)	Solution of Equation 3.12.
Column (28)	Solution of Equation 3.13.
Column (29)	Solution of Equation 3.14.
Column (30)	Solution of Equation 3.15.
Column (31)	Solution of Equation 3.11 using Columns (27) and (28).
Column (32)	Solution of Equation 3.11 using Columns (29) and (30).
Column (33)	Solution of Equation 3.10.
Column (34)	Solution of Equation 3.9.
Column (35)	Solution of Equation 3.8 for on-grade curb inlets, Equation 3.18 for sag curb inlet, or Equation 3.20 for drop inlets.
Column (36)	Selected Inlet Size.
Column (37)	The capacity of the selected inlet size of Column (35), solution found by

	iteratively solving for capacity based on Equation 3.8 for curb inlets, Equation 3.17 for sag curb inlets, Equation 3.19 for drop inlets.
Column (38)	For on-grade inlets the solution of Equation 3.16.
Column (39)	Equal Column (38) divided by Column (9).
Column (40)	Next downstream inlet to which by the by-pass is going.
Column (41)	Special design comments are entered here.



EXAMPLE

Known:

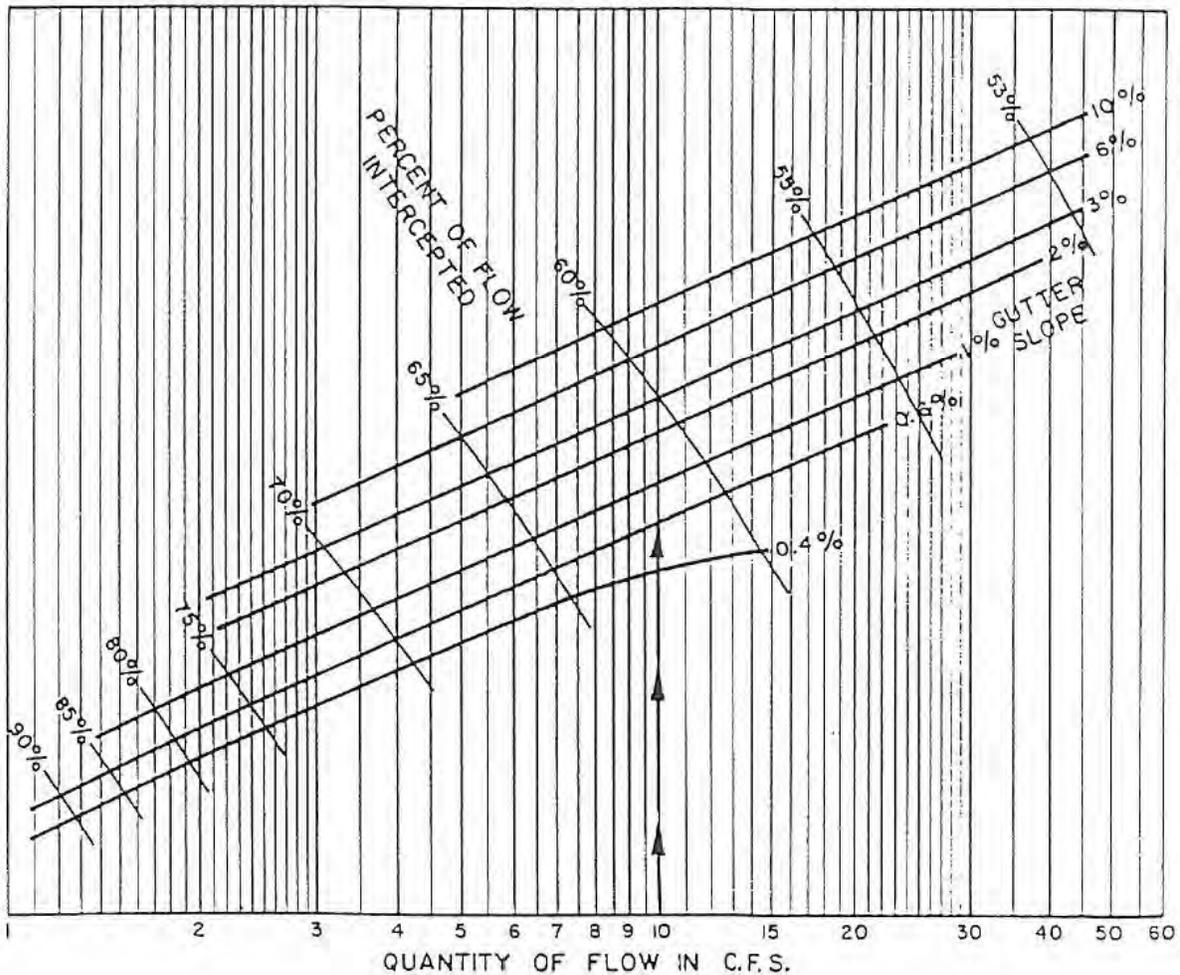
Quantity of Flow = 10.0 c.f.s.
Gutter Slope = 0.6 %

Find:

Capacity of Two Grate Combination
Inlet

Solution:

Enter Graph at 10.0 c.f.s.
Intersect Slope = 0.6 %
Read Percent of Flow
Intercepted = 62 %
62 % of 10.0 c.f.s. = 6.2 c.f.s.
as Capacity of Two Grate
Combination Inlet
Remaining Gutter Flow =
10.0 c.f.s - 6.2 c.f.s. = 3.8 c.f.s.



TWO GRATE COMBINATION INLET
CAPACITY CURVES
ON GRADE

Figure 3.13: Two Grate Combination Inlet Capacity Curves on Grade



EXAMPLE

Known:

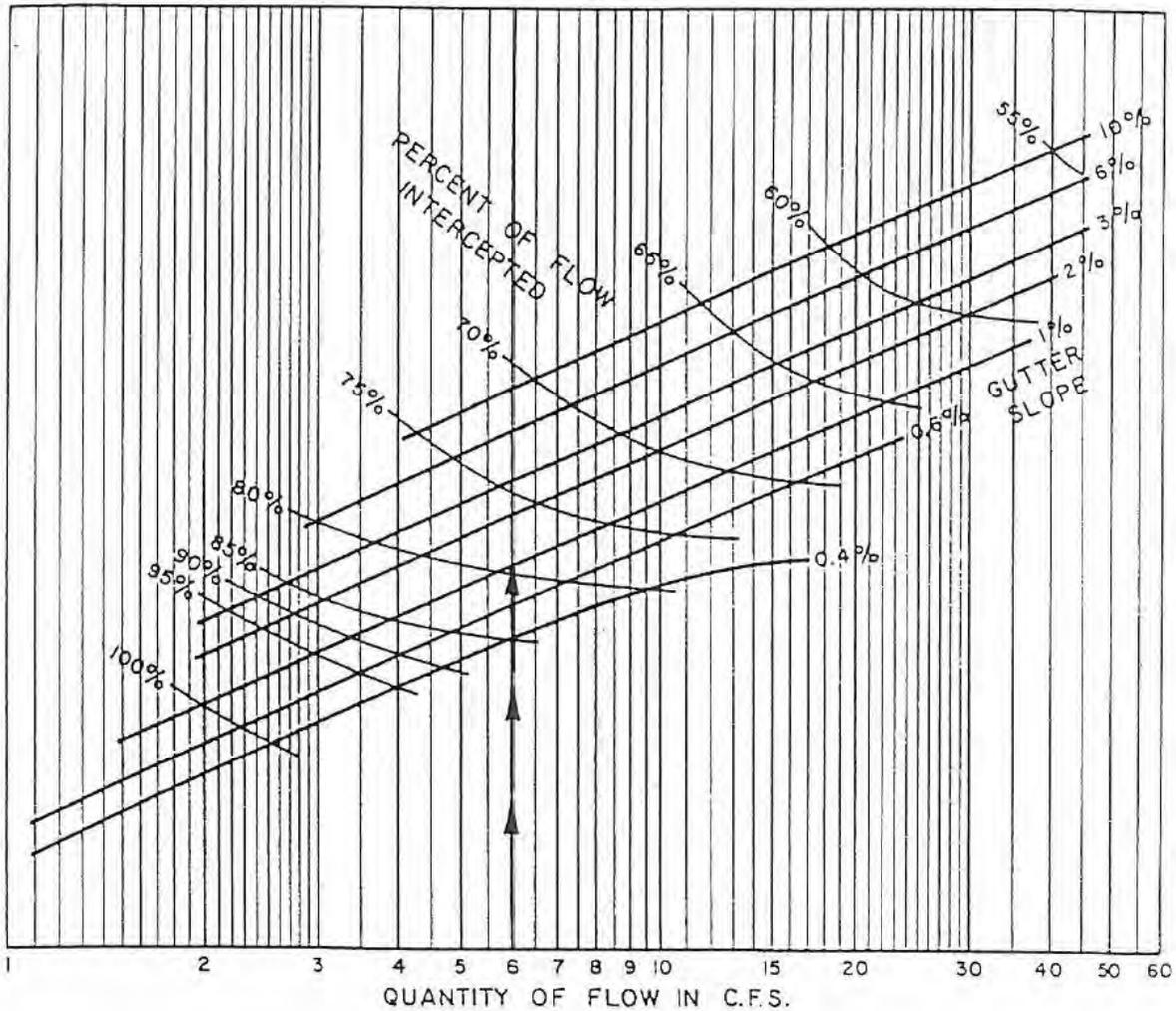
Quantity of Flow = 6.0 c.f.s.
Gutter Slope = 1.0 %

Find:

Capacity of Four Grate Combination
Inlet

Solution:

Enter Graph at 6.0 c.f.s.
Intersect Slope = 1.0 %
Read Percent of Flow
Intercepted = 79 %
79 % of 6.0 c.f.s. = 4.7 c.f.s.
as Capacity of Four Grate
Combination Inlet
Remaining Gutter Flow =
6.0 c.f.s. - 4.7 c.f.s. = 1.3 c.f.s.



FOUR GRATE COMBINATION INLET
CAPACITY CURVES
ON GRADE

Figure 3.14: Four Grate Combination Inlet Capacity Curves on Grade



EXAMPLE

Known:

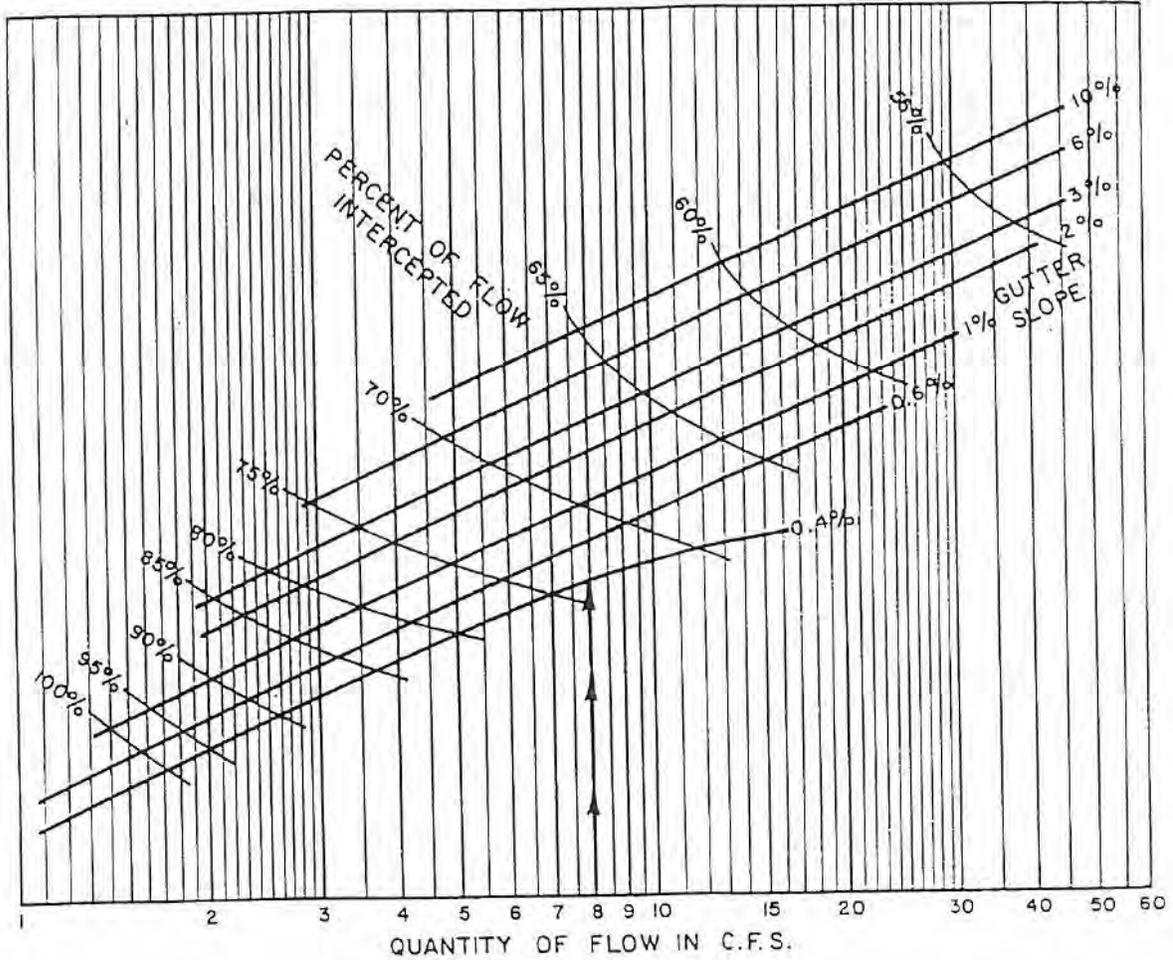
Quantity of Flow = 8.0 c.f.s.
Gutter Slope = 0.4%

Find:

Capacity of Three Grate Inlet

Solution:

Enter Graph at 8.0 c.f.s.
Intersect Slope = 0.4%
Read Percent of Flow Intercepted = 74%
74% of 8.0 c.f.s. = 5.9 c.f.s.
as Capacity of Three Grate Inlet
Remaining Gutter Flow =
8.0 c.f.s. - 5.9 c.f.s. = 2.1 c.f.s.



THREE GRATE INLET AND
THREE GRATE COMBINATION INLET
CAPACITY CURVES
ON GRADE

Figure 3.15: Three Grate Inlet and Three Grate Combination Inlet Capacity Curves on Grade



EXAMPLE

Known:

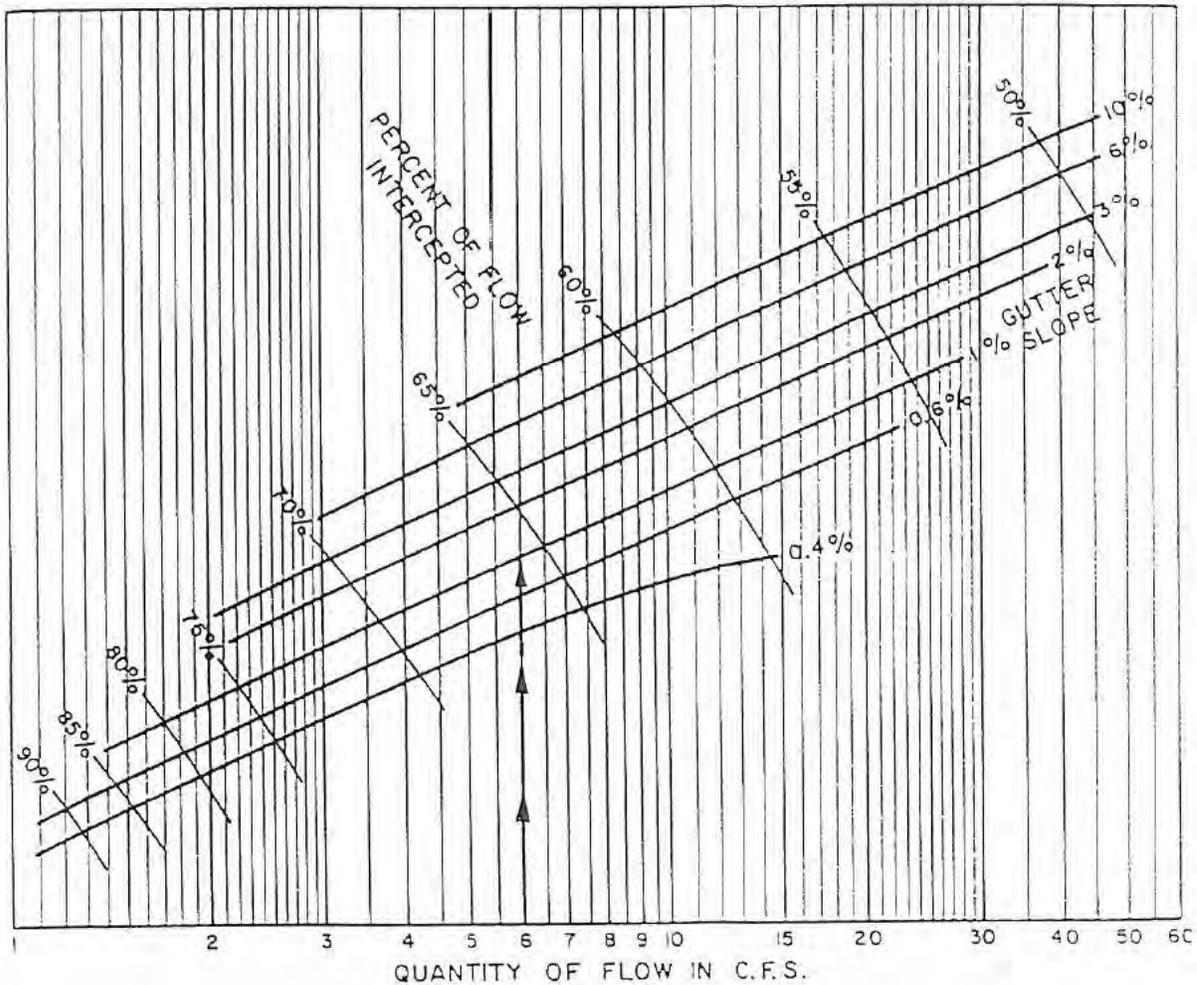
- Quantity of Flow = 6.0 c.f.s.
- Gutter Slope = 1.0%

Find:

- Capacity of Two Grate Inlet

Solution:

- Enter Graph at 6.0 c.f.s.
- Intersect Slope = 1.0%
- Read Percent of Flow Intercepted = 66%
- 66% of 6.0 c.f.s. = 4.0 c.f.s.
- as Capacity of Two Grate Inlet
- Remaining Gutter Flow = 6.0 c.f.s. - 4.0 c.f.s. = 2.0 c.f.s.



TWO GRATE INLET
CAPACITY CURVES
ON GRADE

Figure 3.16: Two Grate Inlet Capacity Curves on Grade



EXAMPLE

Known:

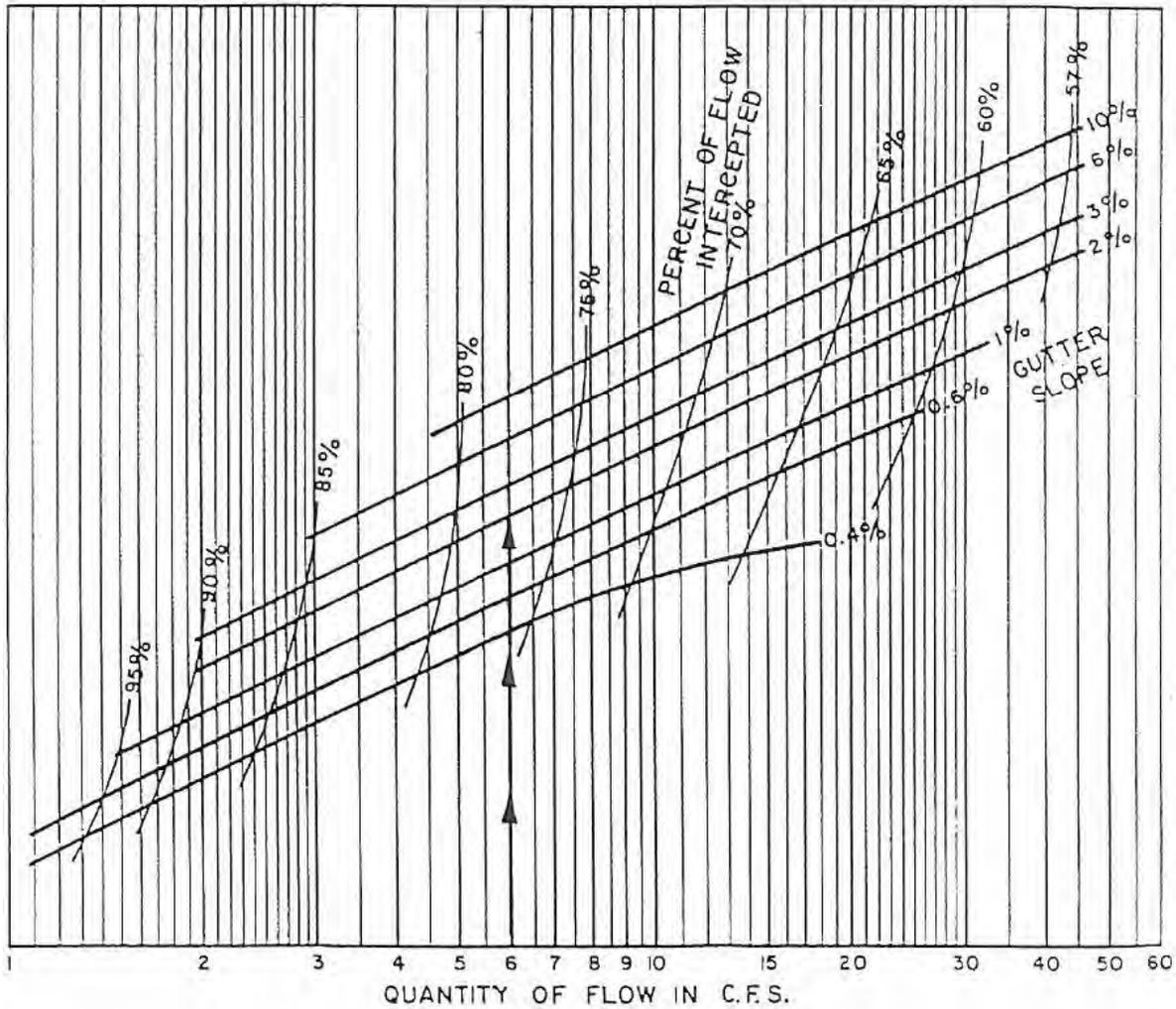
- Quantity of Flow = 6.0 c.f.s.
- Gutter Slope = 1.0%

Find:

Capacity of Four Grate Inlet

Solution:

- Enter Graph at 6.0 c.f.s.
- Intersect Slope = 1.0%
- Read Percent of Flow Intercepted = 77%
- 77% of 6.0 c.f.s. = 4.6 c.f.s.
- as Capacity of Four Grate Inlet
- Remaining Gutter Flow = 6.0 c.f.s. - 4.6 c.f.s. = 1.4 c.f.s.



FOUR GRATE INLET
CAPACITY CURVES
ON GRADE

Figure 3.17: Four Grate Inlet Capacity Curves on Grade



EXAMPLE

Known:

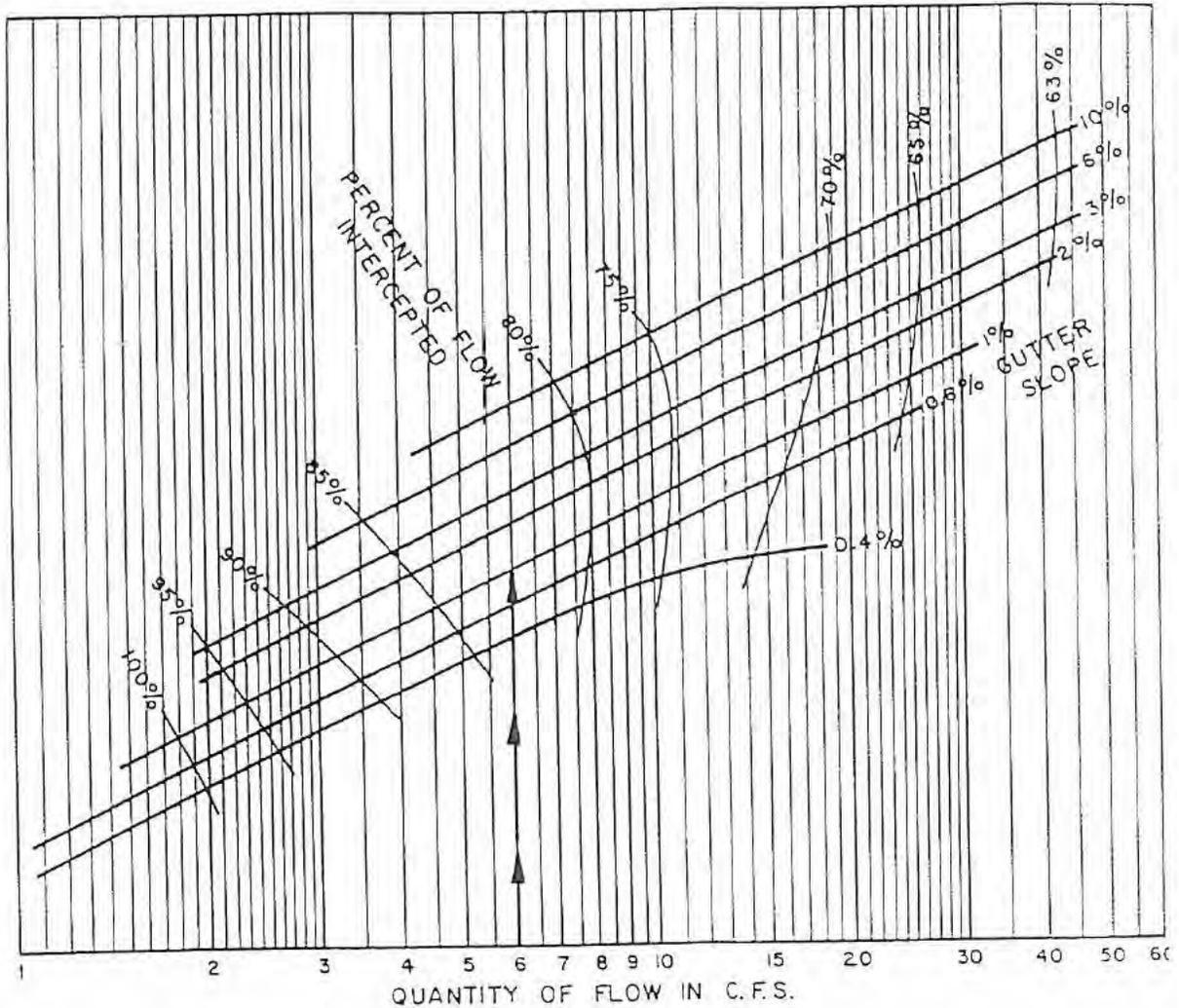
Quantity of Flow = 6.0 c.f.s.
Gutter Slope = 1.0%

Find:

Capacity of Six Grate Inlet

Solution:

Enter Graph at 6.0 c.f.s.
Intersect Slope = 1.0%
Read Percent of Flow Intercepted = 82%
82% of 6.0 c.f.s. = 4.9 c.f.s.
as Capacity of Six Grate Inlet
Remaining Gutter Flow =
6.0 c.f.s. - 4.9 c.f.s. = 1.1 c.f.s.



SIX GRATE INLET
CAPACITY CURVES
ON GRADE

Figure 3.18: Six Grate Inlet Capacity Curves on Grade



EXAMPLE

Known:

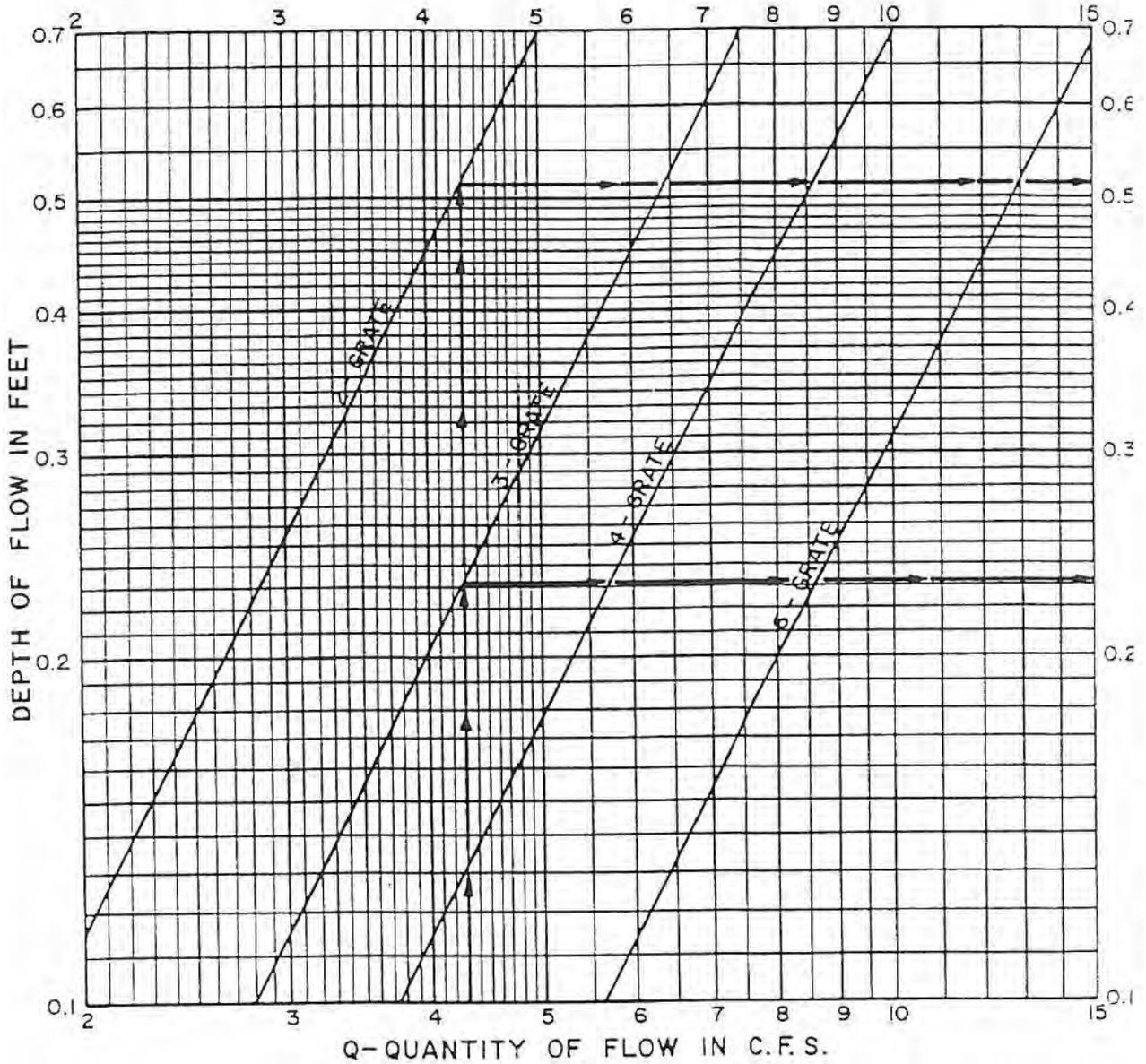
Quantity of Flow = 4.3 c.f.s.
Maximum Depth of Flow Desired
at Low Point = 0.3'

Find:

Inlet Required

Solution:

Enter Graph at 4.3 c.f.s.
Intersect 3 - Grate at 0.23'
Intersect 2 - Grate at 0.51'
Use 3 - Grate



GRATE INLET
CAPACITY CURVES
AT LOW POINT

Figure 3.19: Grate Inlet Capacity Curves at Low Point



EXAMPLE

Known:

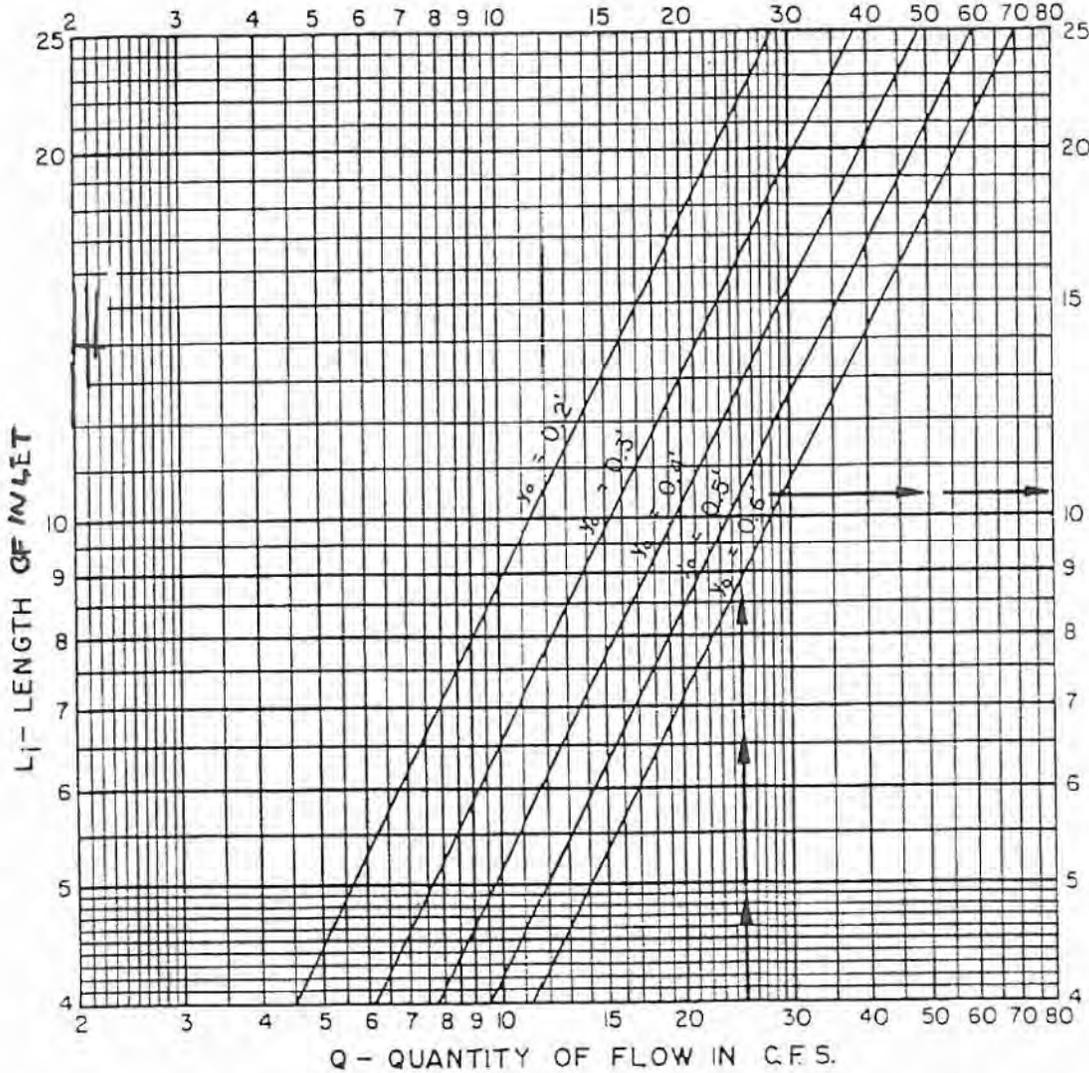
Quantity of Flow = 25.0 c.f.s.
Maximum Depth of Flow Desired
At Low Point (y_0) = 0.5'

Solution:

Enter Graph at 25.0 c.f.s.
Intersect $y_0 = 0.5'$
Read $L_i = 10.4'$
Use 12' inlet

Find:

Length of Inlet Required (L_i)



ROUGHNESS COEFFICIENT $n = .0175$	
STREET WIDTH	CROWN TYPE
ALL	Straight and Parabolic

COMBINATION INLET
CAPACITY CURVES
AT LOW POINT

Figure 3.20: Combination Inlet Capacity Curves at Low Point

3.2.2 Flow in Storm Drain Conduits and Their Appurtenances

3.2.2.1 Hydraulic Gradient of Conduits

A storm drainage conduit must have sufficient capacity to discharge a design storm with a minimum of interruption and inconvenience to the public using streets and thoroughfares. The size of the conduit is determined by accumulating runoff from contributing inlets and calculating the slope of a hydraulic gradient from Manning's Equation:

$$S_f = \frac{Qn^2}{1.49AR^{2/3}}$$

Equation 3.21

where:

Q = flow in conduit, (cfs)

n = Manning's roughness coefficient; value = 0.013

A = cross sectional area of flow, (ft²)

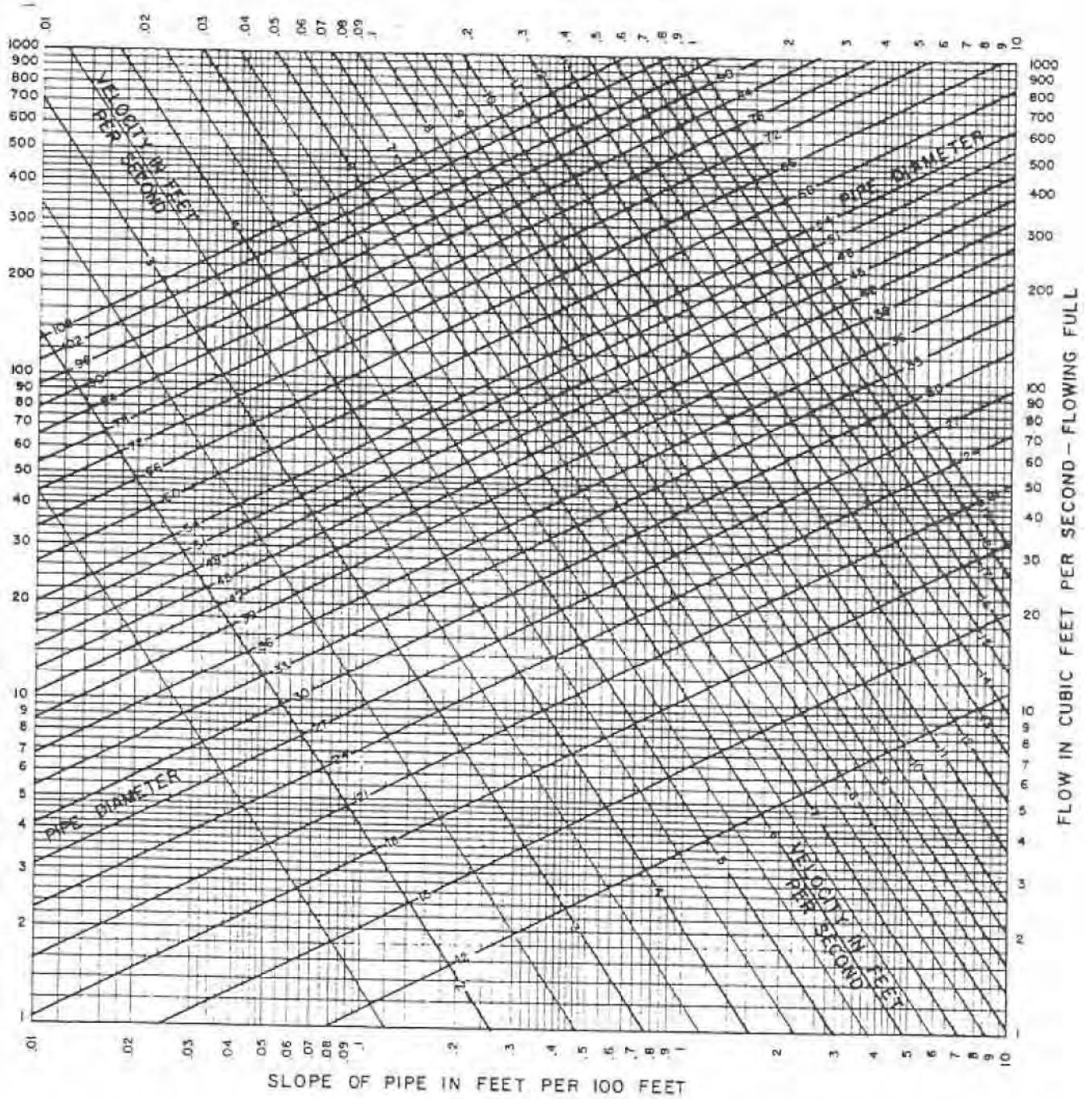
R = hydraulic radius, (ft)

S_f = hydraulic friction slope, (ft/ft)

Hydraulic gradient for the selected conduit size shall be 1.50' below gutter (2.0' below top of curb) for each contributing inlet to insure that the selected conduit will carry the design flow at an elevation below the gutter profile. As the conduit size is selected and the hydraulic gradient is plotted between each inlet pickup point, a head loss due to a change in velocity and pipe size must be incorporated in the gradient profile.

At an outfall/headwall the starting hydraulic grade line (HGL) for a conduit system shall be set to the greater of the following: the conduit soffit or the 100yr water surface elevation for the receiving channel or detention pond.

Concrete pipe conduit shall be used to carry the storm water, and flow chart, FIGURE 3.21, based on Manning's Equation may be used to determine the various hydraulic elements including the pipe size, the hydraulic gradient and the velocity. Special hydraulic calculators are also available for solution of Manning's Equation.



CAPACITY OF CIRCULAR
PIPES FLOWING FULL

A GRAPHICAL SOLUTION
OF
MANNING'S EQUATION

$$V = \frac{1.486}{n} R^{2/3} S^{1/2}$$

n = 0.013

Figure 3.21: Capacity of Circular Pipes Flowing Full

The roughness coefficient 'n' for storm sewer conduit shall be 0.013.

With the hydraulic gradient established, considerable latitude is available for establishment of the conduit flow line. The inside top of the conduit must be at or below the hydraulic gradient thus allowing the conduit to be lowered where necessary. The hydraulic gradient at every inlet should be plotted directly on the construction plan profile worksheet and adjusted as necessary.

There will be hydraulic conditions, which cause the conduits to flow partially full, and where this occurs, the hydraulic gradient should be shown at the inside crown (soffit) of the conduit. This procedure will provide a means for conservatively selecting a conduit size, which will carry the flood discharge.

All public storm sewer systems shall be reinforced concrete pipe. Storm sewer pipe, with two (2) feet or less of cover, are required to be Class IV reinforced concrete pipe. All storm pipes and laterals are required to have a plan and profile on engineering plans. All flow data (Q_{100} , Q_{cap} , velocity, hydraulic slope) is required at every change in pipe size, **slope** and/or change in flow **rate**.

3.2.2.2 Minor Head Losses

When establishing the hydraulic gradeline of a storm sewer, minor head losses at points of turbulence shall be calculated and included in the computation of the hydraulic gradeline.

Entrance Losses

Entrance losses to a closed storm sewer system from an open channel or lake shall be calculated using Equation 3.22.

$$H_L = K_E \frac{V_1^2}{2g}$$

Equation 3.22

where:

H_L = head loss (ft)

K_E = head loss coefficient (see Table 3.7).

V_1 = velocity in the downstream conduit (ft/s)

g = the acceleration of gravity (32.3 ft/s²)

Table 3.7: Entrance Loss Coefficients

Type of Structure and Design of Entrance	Coeff. K_E
Pipe (Concrete)	
Projecting from fill, socket end (groove-end)	0.2
Projecting from fill, square cut end	0.5
Headwall or headwall and wingwalls	
Socket end of pipe (groove-end)	0.2
Square-edge	0.5
Rounded (radius = 1/12D)	0.2
Mitered to conform to fill slope	0.7
End-section conforming to fill slope	0.5
Beveled edges, 33.7- or 45-degree bevels	0.2
Side- or slope-tapered inlet	0.2
Pipe, or Pipe-Arch, (Corrugated Metal)	
Projecting from fill (no headwall)	0.9
Headwall or headwall and wingwalls square-edge	0.5
Mitered to conform to fill slope, paved or unpaved slope	0.7
End-section conforming to fill slope	0.5
Beveled edges, 33.7- or 45-degree bevels	0.2
Side- or slope-tapered inlet	0.2
Box (Reinforced Concrete)	
Headwall parallel to embankment (no wingwalls)	
Square-edged on 3 edges	0.5
Rounded on 3 edges to radius of 1/12 barrel dimension or beveled edges on 3 sides	0.2
Wingwalls at 30- to 75-degrees to barrel	
Square-edged at crown	0.4
Crown edge rounded to radius of 1/12 barrel dimension dimension, or beveled top edge	0.2
Wingwall at 10- to 25-degrees to barrel	
Square-edged at crown	0.5
Wingwall parallel (extension of sides)	
Square-edged at crown	0.7
Side- or slope-tapered inlet	0.2

Inlet Losses

Inlet losses shall be calculated using Equation 3.23.

$$H_L = 1.25 \frac{V_{Lat}^2}{2g}$$

Equation 3.23

where:

H_L = head loss (ft)

V_{LAT} = velocity in the lateral (ft/s)

g = the acceleration of gravity (32.2 ft/s²)

Expansion Losses

For pipe size expansions, head loss shall be calculated using the following Equation 3.24.

$$H_L = \left(1 - \left(\frac{D_1}{D_2}\right)^2\right) \frac{V_1^2}{2g}$$

Equation 3.24

Where:

H_L = head loss (ft)

V_1 = upstream velocity (ft/s)

D_1 = upstream conduit diameter (ft)

D_2 = downstream conduit diameter (ft)

g = the acceleration of gravity (32.2 ft/s²)

Manhole and Bend Losses

Head losses associated with manholes for pipe direction changes and bends in pipes of equal diameter shall be calculated using Equation 3.25.

$$H_L = K_j \frac{V_2^2}{2g}$$

Equation 3.25

Where:

H_L = Head loss (ft)

K_j = Head loss coefficient (see Table 3.8).

V_2 = Downstream velocity (ft/s)

g = the acceleration of gravity (32.2 ft/s²)

Junction Losses

Head losses associated with wye connections or manholes with branch laterals entering the main line shall be calculated by using Equation 3.26.

$$H_L = \frac{V_2^2}{2g} - K_j \frac{V_1^2}{2g}$$

Equation 3.26

Where:

H_L = Head loss (ft)

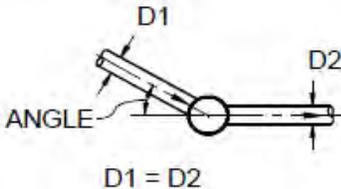
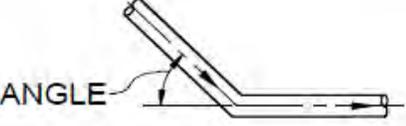
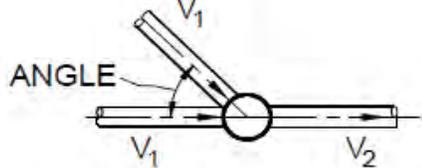
V_1 = Velocity in the upstream conduit (ft/s)

V_2 = Velocity in the downstream conduit (ft/s)

K_j = Head loss coefficient from Table 3.8.

g = the acceleration of gravity (32.2 ft/s²)

Table 3.8: Velocity Head Loss Coefficients for Closed Conduits

MANHOLE AT CHANGE IN PIPE DIRECTION		
DESCRIPTION	ANGLE	HEAD LOSS COEFFICIENT K_j
 <p>$D1 = D2$</p>	90°	0.55
	60°	0.48
	45°	0.42
	30°	0.3
	0°	0.05
BENDS IN PIPES		
DESCRIPTION	ANGLE	HEAD LOSS COEFFICIENT K_j
	90°	0.5
	60°	0.43
	45°	0.37
	30°	0.25
JUNCTION		
DESCRIPTION	ANGLE	HEAD LOSS COEFFICIENT K_j
	0°	1
	22 1/2°	0.75
	45°	0.5
	60°	0.35
	90°	0.25

3.2.2.3 Minimum Grades

Storm drains should operate with flow velocities sufficient to prevent excessive deposits of solid materials; otherwise objectionable clogging may result. The controlling velocity with regard to sediment deposition is near the bottom of the conduit and considerably less than the mean velocity of the storm. Storm drains shall be designed to have a minimum mean velocity flowing full of 2.5 feet per second (f.p.s.). Table 3.9 indicates the minimum grades for concrete pipe with “Manning’s “n” = 0.013 and flowing at 2.5 f.p.s.

Table 3.9: Minimum Grades for Storm Drain Pipelines

Pipe Dia. (Inches)	Slope (foot/foot)	Pipe Dia. (Inches)	Slope (foot/foot)
18	0.0018	48	0.0005
21	0.0015	54	0.0005
24	0.0013	60	0.0004
27	0.0011	66	0.0004
30	0.0009	72	0.0003
33	0.0008	78	0.0003
36	0.0007	84	0.0003
39	0.0006	90	0.0002
42	0.0006	96	0.0002
45	0.0005	102	0.0002

3.2.2.4 Maximum Velocities

The slope of a storm sewer should also be such that excessive velocities will not damage the pipeline or drainage structures. Table 3.10 delineates the maximum desirable velocities for storm sewer.

Table 3.10: Maximum Velocities in Closed Conduits

Type of Conduit	Maximum Velocity
Culverts	15 f.p.s.
Inlet Laterals	15 f.p.s.
Storm Sewer Pipe	12.5 f.p.s.

* The maximum velocities shall be the actual velocity – full flow or partial **flow**.

3.2.2.5 Discharge of Storm Drain Pipe

Storm drain pipes discharging into Lake Ray Hubbard shall be set such that the top of the pipe shall be set at elevation 435.5 or otherwise approved by the City Engineer. Discharge into Lake Ray Hubbard will require approval from the City of Dallas. Pipes discharging **into** the lake

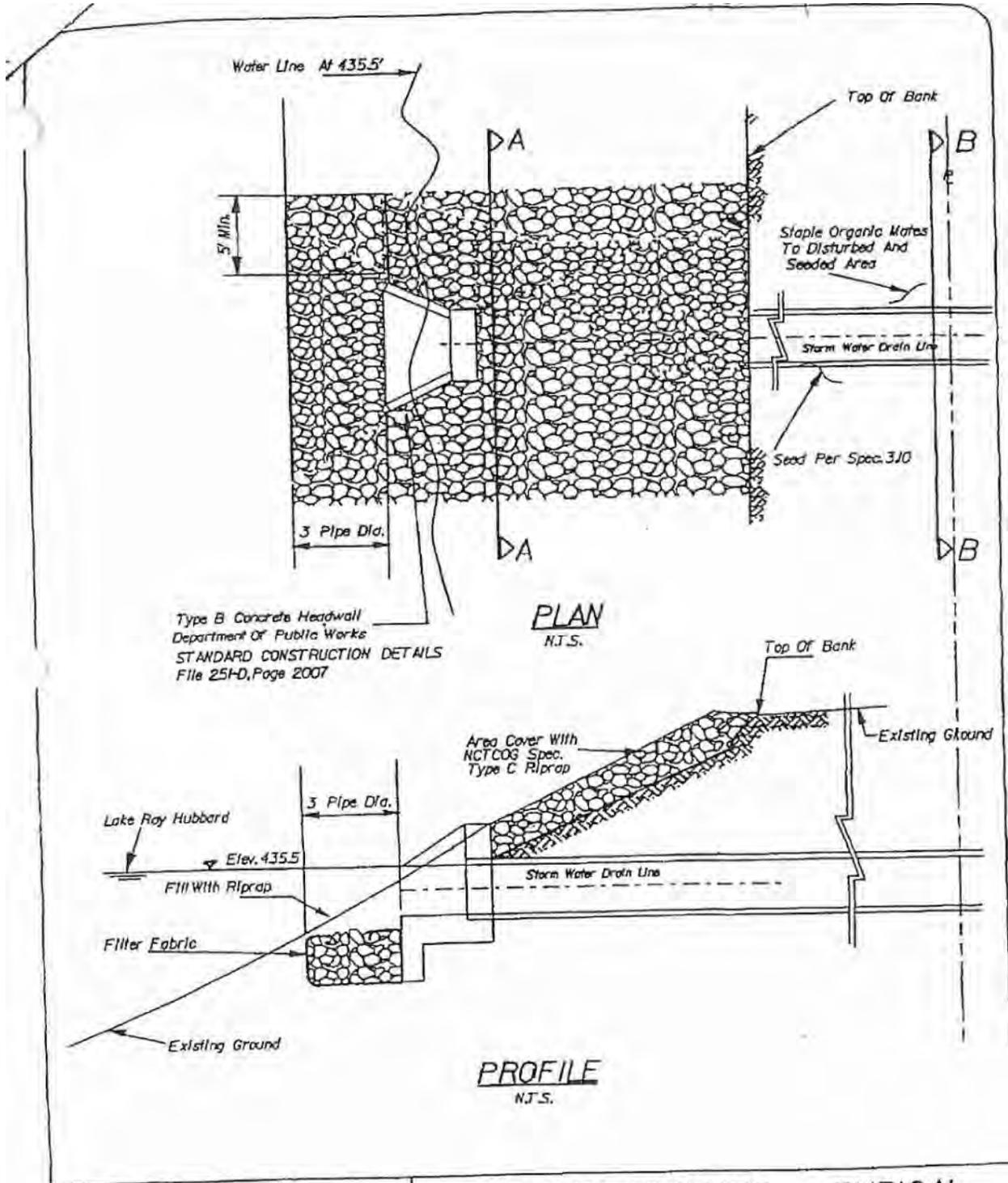
shall run to the lake **to prevent erosion of the shoreline** (City of Dallas detail, see Exhibit 3A). Where storm drain pipes discharge into water courses, the invert of the pipe shall be at the same grade as the low point of the water course and angled a maximum of sixty (60) degrees to flow downstream. Adequate grouted rock riprap or other erosion protection shall be provided. Storm sewers shall discharge into open channels at a maximum velocity of eight (8) feet per second.

3.2.2.6 Manholes

Storm drain manholes shall be located at intervals not to exceed five hundred (500) feet **for all underground storm conduit systems. Manholes shall also be placed at locations where CCTV and Vac-con equipment can inspect/clean entire system without getting stuck or unable to make bends/wye connection turns. Therefore manholes shall also be placed where there is no more than one (1) bend or wye connection between manholes or inlets.** Inlet and manhole lids shall be twenty-four (24) inches with locking lids.

3.2.2.7 Lateral Lines

The minimum size of reinforced concrete storm sewer line from the inlet box to the collector lines shall be eighteen (18) inches in diameter for a discharge of less than 10 cfs. Where discharge exceeds 10 cfs and/or connects to a ten (10) foot inlet, lateral lines shall be a minimum of twenty-one (21) inches in diameter.



LAKE RAY HUBBARD - TYPICAL STORM SEWER INSTALLATION

Exhibit 3A

3.2.2.8 100-Year Flood Zones

Where the Federal Emergency Management Administration (FEMA) has defined a flood hazard area with regard to a drainage course **as shown on the effective Flood Insurance Rate Maps (FIRMs)**, the flood hazard zone and the floodplain, floodway, **cross-section lines and water surface elevations at each cross-section**, if available, shall be shown on the plat and **engineering plans**.

3.2.2.9 Local 100-Year Flood Zones

Where flood information has not been determined for streams, creeks, channels, or impoundments located within or adjacent to a proposed development, the 100-year fully developed flood elevations and flood boundaries shall be determined by the developers' engineers. The local floodplain, **cross-section lines and water surface elevations at each cross-section shall be shown on the plat and engineering plans**.

3.2.2.10 Floodplain Markers

The City will provide floodplain markers to be installed by the developer which shall be placed at the property corner of each lot adjacent to the flood plain and a maximum distance apart of 300 feet along the floodplain line.

3.2.2.11 Inlet Markers

The City will provide "No Dumping, Drains to Waterway" inlet markers to be installed on each inlet by the developer.

3.2.2.12 Dumpsters

If a dumpster is to facilitate any type of food, food by-product, or oil/grease based product disposal, the dumpster site area shall drain through a private oil/water separator prior to **connecting to the storm water system**. All dumpster surface area must drain into a private slot or area drain to prevent any drainage from leaving the dumpster area. **This private system shall discharge into a storm system and cannot discharge into a wastewater system**.

3.2.2.13 Fueling Stations

If there is a fueling station on the site the storm line serving the fueling station drainage area shall have an oil/water separator installed before leaving the site. **This private system shall discharge into a storm system and cannot discharge into a wastewater system**.

3.2.2.14 Testing

All storm sewers and laterals shall be visually inspected by photographic means (television and DVD) at the contractor's expense prior to final acceptance by the City of Rockwall. Any sags, open joints, cracked pipes, etc. shall be repaired or removed by the contractor at the

contractor's expense. Pipes shall be cleaned prior to televising the pipe. The contractor shall furnish a DVD to the Engineering Division inspector for review.

3.2.3 Storm Sewer Design – Closed Conduit

3.2.3.1 General

To facilitate the design of closed conduit storm sewers, design will be based on the calculations called out in this section and the instructions for Form 3.3: Storm Sewer Calculations. Form 3.3 in its entirety shall be included in the plans and calculations shall be provided for each system including laterals.

Form 3.3: Storm Sewer Calculations Table

SYSTEM ID	Conduit Properties								
	Collection Point Station		Length	# of Barrels	Pipe Size	Box		Type	Area
	U/S	D/S				Span	Rise		
			(ft)		(inches)	(ft)	(ft)		(ft ²)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)

Conduit Properties					Incremental Drainage Area				
Wetted Perimeter P _w	Hydraulic Radius	Manning's n	Flowline Elevation		Slope	Inlet ID	Area	Runoff Coeff. C	Incremental C*A
			Up-stream	Down-stream					
(ft)	(ft)				(ft/ft)		(acres)		
(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)

Accum-ulated C*A	Up-stream T _c	Design Storm Freq.	Intensity I	Runoff Q	Conduit Capacity Q _c	Partial Flow	Velocity V	Time in Conduit
	(min)	(yr)	(in/hr)	(cfs)	(cfs)	(Yes/No)	(ft/s)	(min)
(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)

Friction Slope S _f	Friction Head-loss	HGL		Headloss Calculations					Design HGL	Top of Curb Elev.	HGL Depth Below T/C	Remarks
		U/S	D/S	$\frac{V_1^2}{2g}$	$\frac{V_2^2}{2g}$	Jct. Type	Coeff. K _J	Head-loss H _L				
(ft/ft)	(ft)			(ft)	(ft)			(ft)			(ft)	
(30)	(31)	(32)	(33)	(34)	(35)	(36)	(37)	(38)	(39)	(40)	(41)	(42)

Instructions for Form 3.3: Storm Sewer Calculation Table

Column (1)	System ID, if private label (ex. Line-A, Line-B,; Lat-A1, Lat-A2,)
Column (2)	Storm sewer line station at the upstream end of conduit section
Column (3)	Storm sewer line station at the downstream end of conduit section
Column (4)	Length of Conduit segment, equal to Column (2) minus Column (3)
Column (5)	Number of barrels of conduit
Column (6)	Size of Pipe in inches
Column (7)	Span of Box Conduit
Column (8)	Rise of Box Conduit
Column (9)	Conduit Type (ex. RCP, RCB, PVC, HDPE,)
Column (10)	Conduit area
Column (11)	Wetted Perimeter
Column (12)	Equal to Column (10) divided by Column (11)
Column (13)	Manning's Roughness Coefficient
Column (14)	Conduit flowline elevation at the upstream end of conduit section
Column (15)	Conduit flowline elevation at the downstream end of conduit section
Column (16)	Conduit slope in feet/feet
Column (17)	The incremental drainage area ID contributing to the conduit section
Column (18)	The incremental drainage area in acres contributing to the conduit section
Column (19)	The incremental drainage area runoff coefficient contributing to the conduit section
Column (20)	Equal to Column (18) multiplied by Column (19)
Column (21)	Equal to Column (20) plus Column (21) of the upstream conduit section
Column (22)	Equal to inlet Tc if most upstream conduit section, or the sum of previous conduit section Column (22) and Column (29)
Column (23)	Design Storm Frequency shall be 100-yr
Column (24)	Shall be taken from Figure 3.1 using Columns (22) and (23)
Column (25)	Solution of Equation 3.1 using Columns (21) and (24)
Column (26)	Solution of Manning's Equation 3.6 where the conduit is flowing full (depth of flow is equal to height of conduit)
Column (27)	Yes, if Column (25) < Column (26). No, if Column (25) ≥ Column (26)
Column (28)	The actual velocity within the conduit
Column (29)	Equal to Column (4) divided by Column (28) divided by 60 sec/min
Column (30)	Solution of Equation 3.21
Column (31)	Equal to Column (4) multiplied by Column (30)
Column (32)	Upstream Hydraulic Grade Line. Equal to Column (33) plus Column (31)
Column (33)	This is the beginning hydraulic gradient of the line. It is equal to the Design HGL Column (38) for the next downstream segment, or the beginning HGL of the system.
Column (34)	Velocity Head of the incoming pipe at the wye, junction, inlet or manhole.
Column (35)	Velocity Head of the outgoing pipe (the pipe segment being analyzed) at the wye, junction, inlet or manhole.
Column (36)	Upstream junction type (ex. Inlet, 60° Wye, 30° Bend, Jct. Box,)

Column (37)	Taken from Tables 3.8
Column (38)	Taken for Equations 3.23 through 3.26 depending on Junction Type
Column (39)	Upstream Hydraulic Grade Line design point of the conduit segment. Column (24) plus Column (32)
Column (40)	The top of curb elevation at which the inlet is located
Column (41)	Equal to the Column (40) minus Column (39)
Column (42)	Special design comments are entered here.

3.2.4 Storm Sewer Design – Open Channels

3.2.4.1 General

All channels shall **be designed to** have a minimum bottom width of six (6) feet and based on a maximum flow and a minimum flow line slope of one (1) percent. Side slopes of channels shall not be steeper than one (1) foot rise to four (4) feet horizontal distance. Where slopes are steeper than 4 to 1, the slopes shall be concrete lined for slope protection. In unlined open channels, the side slopes and channel slopes shall be such that erosion is controlled and the channel is stable. Channels discharging into Lake Ray Hubbard must have City of Dallas approval and shall have inverts a minimum of two (2) feet below normal conservation pool level (435.5). Channels discharging into water courses shall have the same invert level as the water course.

The instructions for Form 3.4: Open Drainage Channel Calculations Table, have been included in this section to facilitate the hydraulic design of an open channel.

INSTRUCTIONS FOR FORM 3.4:
OPEN DRAINAGE CHANNEL CALCULATIONS

Column (1)	Downstream limit of the section of channel under consideration.
Column (2)	Upstream limit of the section of channel under consideration.
Column (3)	Type of channel as shown shall be either Type I natural unimproved channel, Type II unlined with maintenance section, (concrete pilot channel) or Type III, concrete lined channel.
Column (4)	Flow in the section of channel under consideration.
Column (5)	Roughness coefficient of the channel cross-section taken from TABLE 3.11.
Column (6)	Slope of the channel which is most often parallel to slope of the hydraulic gradient.
Column (7)	Square root of Column (6).
Column (8)	Calculation is made using the values in Columns (4), (5) and (7).
Column (9)	Assumed width of the bottom width of the channel.
Column (10)	Assumed depth of flow.
Column (11)	Assumed slope of the sides of the channel.
Column (12)	Area of flow which is calculated based on Columns (9), (10) and (11).
Column (13)	Wetter perimeter calculated from Columns (9), (10) and (11).
Column (14)	Value is calculated from Columns (12) and (13).
Column (15)	Column (14) raised to 2/3 power.
Column (16)	Product of Column (13) times Column (15).
When the value of Column (16) equals the value of Column (8) the channel has been adequately sized. When the value of Column (16) exceeds the value of Column (8) by more than five percent, the channel width or depth should be decreased and another trial section analyzed.	
Column (17)	Calculation is based on the values of Columns (4) and (12)
Column (18)	Calculation is based on Column (17)
Column (19)	Remarks concerning the channel section analyzed may be entered.



Table 3.11: Roughness Coefficients for Open Channels and Maximum Velocity

Channel Description	Minimum	Roughness Coefficient Normal	Maximum	Maximum Velocity
<u>Minor Natural Streams - Type I Channel</u>				
Moderately Well Defined Channel				
Grass and Weeds, Little Brush	0.025	0.030	0.033	8
Dense Weeds, Little Brush	0.030	0.035	0.040	8
Weeds, Light Brush on Banks	0.030	0.035	0.040	8
Weeds, Heavy Brush on Banks	0.035	0.050	0.060	8
Weeds, Dense Willows on Banks	0.040	0.060	0.080	8
Irregular Channel with Pools and Meanders				
Grass and Weeds, Little Brush	0.030	0.036	0.042	8
Dense Weeds, Little Brush	0.036	0.042	0.048	8
Weeds, Light Brush on Banks	0.036	0.042	0.048	8
Weeds, Heavy Brush on Banks	0.042	0.060	0.072	8
Weeds, Dense Willows on Banks	0.048	0.072	0.096	8
Flood Plain, Pasture				
Short Grass, No Brush	0.025	0.030	0.035	8
Tall Grass, No Brush	0.030	0.035	0.050	8
Flood Plain, Cultivated				
No Crops	0.025	0.030	0.035	8
Mature Crops	0.030	0.040	0.050	8
Flood Plain, Uncleared				
Heavy Weeds, Light Brush	0.035	0.050	0.070	8
Medium to Dense Brush	0.070	0.100	0.160	8
Trees with Flood State below Branches	0.080	0.100	0.120	8
<u>Major Natural Streams - Type I Channel</u>				
The roughness coefficient is less than that for minor streams of similar description because banks offer less effective resistance.				
Moderately Well Defined Channel	0.025	--	0.060	8
Irregular Channel	0.035	--	0.100	8
<u>Unlined Vegetated Channels - Type II Channel</u>				
Mowed Grass, Clay Soil	0.025	0.030	0.035	8
Mowed Grass, Sandy Soil	0.025	0.030	0.035	6
<u>Unlined Non-Vegetated Channels - Type II Channel</u>				
Clean Gravel Section	0.022	0.025	0.030	8
Shale	0.025	0.030	0.035	10
Smooth Rock	0.025	0.030	0.035	15
<u>Lined Channels - Type II</u>				
Smooth Finished Concrete	0.013	0.015	0.020	15
Riprap (Rubble)	0.030	0.040	0.050	12

3.2.5 Culvert Design

3.2.5.1 General

The design of culverts shall be sized to convey the discharge of the design flood frequency of 100-yr fully-developed watershed. The hydraulic calculations shall be entered into Form 3.5, which is further described herein. If computer modeling software is used in culvert design such as HY-8, HEC-RAS, etc. all input and output parameters shall be included in the plans, or in a certified report referenced in the plans.

Where a parallel culvert is to be placed in a roadside ditch the culvert headwalls shall start at the end of the curb return and extend beyond the return.

1. Information in the upper right of form:

- Culvert Location – This is a word description of the physical location.
- Length – The actual length of the culvert.
- Total Discharge, Q – This is the flow computed on FORM 3.1.
- Design Storm Frequency – 100-year storm
- Roughness Coefficient, n – value = 0.013.
- Maximum Discharge Velocity – Obtained from TABLE 3.12.
- Tailwater – This is the design depth of water in the downstream channel and is obtained in connection with the channel design performed on FORM 3.4.
- D.S. Channel Width – This is the bottom width of the downstream channel. The culvert should be sized to approximate this width whenever possible.
- Entrance Description – This is a listing of the actual condition as shown in the “Culvert Entrance Data” shown on the calculation sheet.
- Roadway Elevation – The elevation of the top of curb at the upstream end of culvert.
- U.S. Culvert F.L. – The flow line of the culvert at the upstream end.
- Difference – The difference in elevations of the roadway and the upstream flow line.
- Required Freeboard – The vertical distance required for safety between the upstream design water surface and the roadway elevation or such other requirements, which may occur because of particular physical conditions.
- Allowable Headwater – This is obtained by subtracting the freeboard from the difference shown immediately above.
- D.S. Culvert F.L. – The flow line elevation of the downstream end of the culvert.

- Culvert Slope, S – This is the physical slope of the structure calculated as indicated.

The instructions for FORM 3.5: Culvert Design Calculations Table have been included in this section to facilitate the hydraulic design of a culvert.

Table 3.12: Culvert Discharge Velocities

<u>Culvert Discharges On</u>	<u>Maximum Allowable Velocity (f.p.s.)</u>
Earth (Sandy)	6
Earth (Clay)	8
Sodded Earth	8
Concrete	15
Shale	10
Rock	15

*Velocities are based on actual velocity – partial or full flow

**INSTRUCTIONS FOR FORM 3.5:
CULVERT DESIGN CALCULATIONS**

Columns 1 through 10 deal with selection of trial culvert size and are explained as follows:	
Column 1	Total design discharge, Q, passing through the culvert divided by the allowable maximum velocity gives trial total area of culvert opening.
Column 2	Culvert width should be reasonably close to the channel bottom width, W, downstream of the culvert.
Column 3	Lower range for choosing culvert depth is trial area of culvert opening, Column 1 divided by channel width, Column 2.
Column 4	Allowable headwater obtained from upper right of sheet.
Column 5	Trial depth, D, of culvert corresponding to available standard sized and between the numerical values of Columns 3 and 4.
Columns 6, 7 and 8 are solved simultaneously based on providing a total area equivalent to the trial area of opening in Column 1.	
Column 6	Number of culvert openings.
Column 7	Inside width of one opening.
Column 8	Inside depth of one opening if culvert is box structure or diameter if culvert is pipe.
Column 9	Column 6 multiplied by Column 7 and Column 8.
Column 10	Total discharge divided by number of openings shown in Column 6.
Columns 11 through 15 (Inlet Control) and 16 through 27 (Outlet Control) deal with headwater calculations which verify hydraulics of trial culvert selected and are explained as follows.	
Column 11	Obtained from upper right of sheet.



Column 12	When the allowable headwater is equal to or less than the value in Column 8, enter Case I. When the allowable headwater is more than the value in Column 8, enter Case II.
Column 13	Column 10 divided by Column 7.
Column 14	Obtained from FIGURE 3.22 for box culverts or FIGURE 3.23 for pipe culverts.
Column 15	Column 14 multiplied by Column 8.
Column 16	Obtained from upper part of sheet.
Column 17	Obtained from FIGURE 3.24 for box culverts and FIGURE 3.25 for pipe culverts.
Column 18	Tailwater depth from upper right of sheet.
Column 19	Culvert slope, S, multiplied by culvert length, both obtained from upper right of sheet.
Column 20	Sum of Columns 17 and 18, minus Column 19.
Column 21	Obtained from FIGURE 3.24 for box culverts and FIGURE 3.25 for pipe culverts.
Column 22	Critical depth obtained from FIGURE 3.26 for box culverts and FIGURE 3.27 for pipe culverts.
Column 23	Sum of Columns 22 and 8 divided by 2.
Column 24	Tailwater depth from upper right of sheet.
Column 25	Enter the larger of the two values shown in Column 23 or Column 24.
Column 26	Previously calculated in Column 19 and may be transposed.
Column 27	The sum of Columns 21 and 25 minus Column 26.
Column 28	Enter the larger of the values from either Column 15, Column 20 or Column 27. This determines the controlling hydraulic conditions of the particular size culvert investigated.
Column 29	When the Engineer is satisfied with the hydraulic investigations of various culverts and has determined which would be the most economical selection; the description should be entered.

CULVERT DESIGN CALCULATIONS

CULVERT ENTRANCE DATA

CONCRETE BOX CULVERT		Wingwall Flare Angle Entrance Edge	
TYPE	FLARE ANGLE	ENTRANCE EDGE	K _e
1A	30° to 75°	Square	0.4
1B	30° to 75°	Round	0.3
2A	15° to 30° & 75° to 90°	Square	0.3
2B	15° to 30° & 75° to 90°	Round	0.3
3A	0° (Extension of Sides)	Square	0.7
3B	0° (Extension of Sides)	Round	0.5

CONCRETE PIPE

TYPE	ENTRANCE DESCRIPTION	K _e
4	Spigot End With Headwall	0.5
5	Bell End With Headwall	0.2
6A	Bell End Projecting With No Headwall	0.3
6B	Spigot End Projecting With No Headwall	0.6

CULVERT LOCATION: _____ LENGTH, L: _____

TOTAL DISCHARGE, Q: _____ DESIGN STORM FREQ: _____

ROUGHNESS COEFF, n: _____ MAX. VEL: _____

TAILWATER: _____ D. S. CHANNEL WIDTH: _____

ENTRANCE DESCRIPTION: _____

RDWY. ELEV. _____ U.S. CULV. E.L. _____

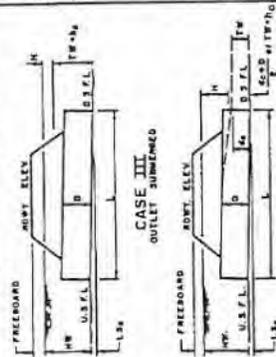
U.S. CULV. F.L. _____ D.S. CULV. E.L. _____

DIFFERENCE _____ DIFFERENCE _____

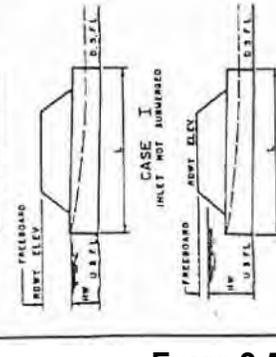
REGD. FREEBOARD _____ FT. CULV. SLOPE, S₀ _____

ALLOW. HEADWATER _____ FT. S₀ _____

OUTLET CONTROL

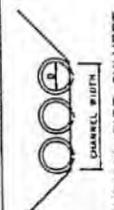


CASE III
OUTLET SUBMERGED

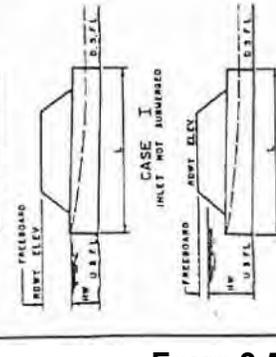


CASE IV
OUTLET NOT SUBMERGED

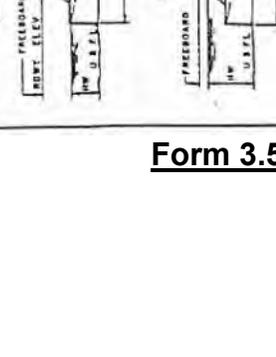
TYPICAL PIPE CULVERT



INLET CONTROL

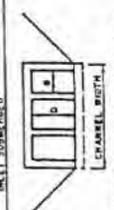


CASE I
INLET NOT SUBMERGED



CASE II
INLET SUBMERGED

TYPICAL BOX CULVERT



HEADWATER CALCULATION

OUTLET CONTROL (See Figure 27.28, 29, A, 30)

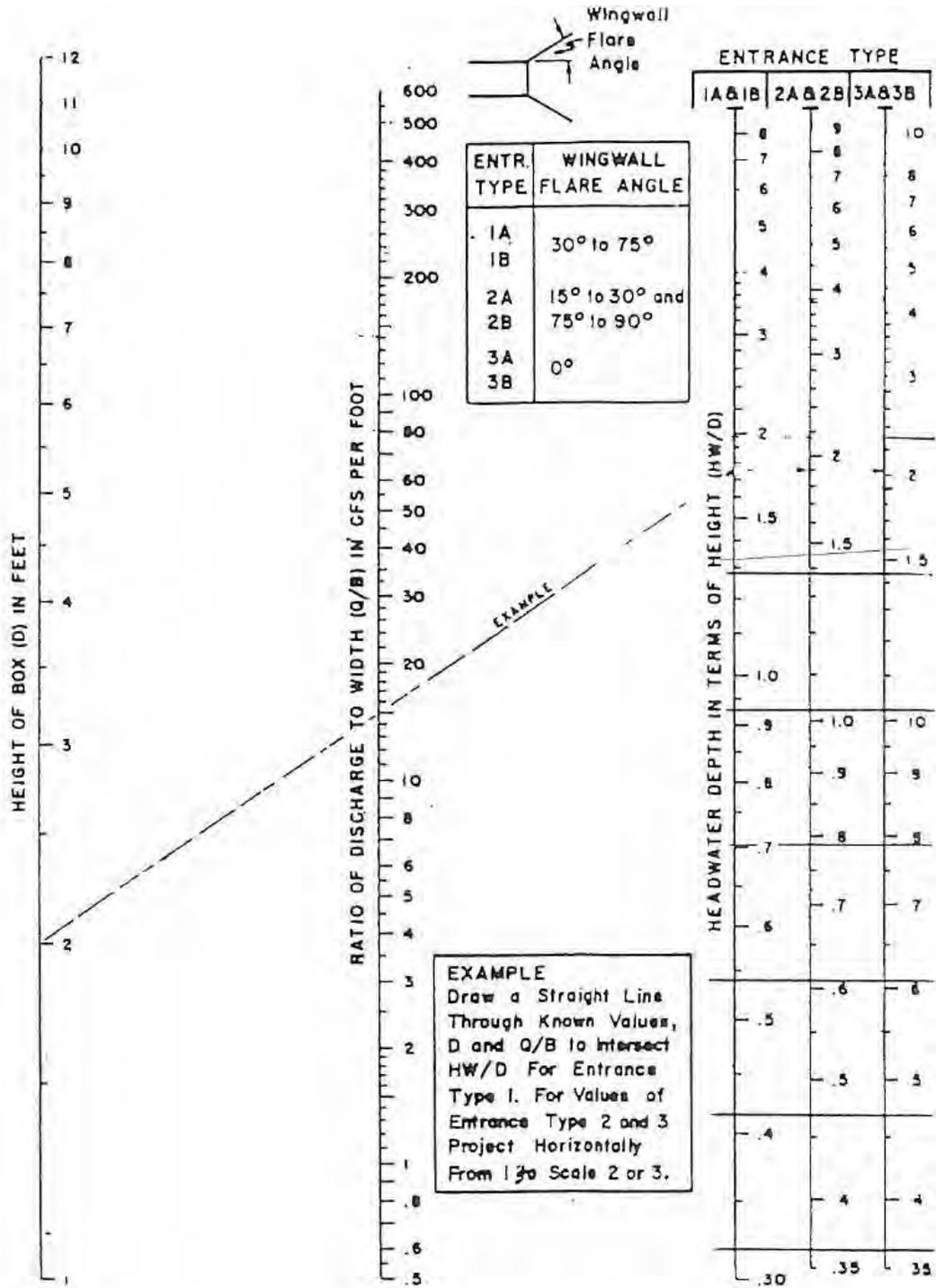
ENTRANCE

ENTRANCE	HW = H + TW - L x S ₀ (feet)	"H" (feet)	"TW" (feet)	L x S ₀ (feet)	"HW" (feet)	L x S ₀ (feet)
4						
5						
6A						
6B						

INLET CONTROL (See Figure 25.82c)

INLET CONTROL	H/W	D/B	Case	No.	Entrance Type	"O" Each Opening (c.f.t.)	Total Culvert Area "A _c " (sq.ft.)	Box Depth or Pipe Dia. "D" (feet)	Width of Box "B" (feet)	No. of Openings	Try Depth "D" (feet)	T-Ac/W (feet)	AWW (feet)	Channel Width "W" (feet)	Trials Area of Opening (sq. ft.)
1															
2															
3															
4															
5															
6															
7															
8															
9															
10															
11															
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28															
29															

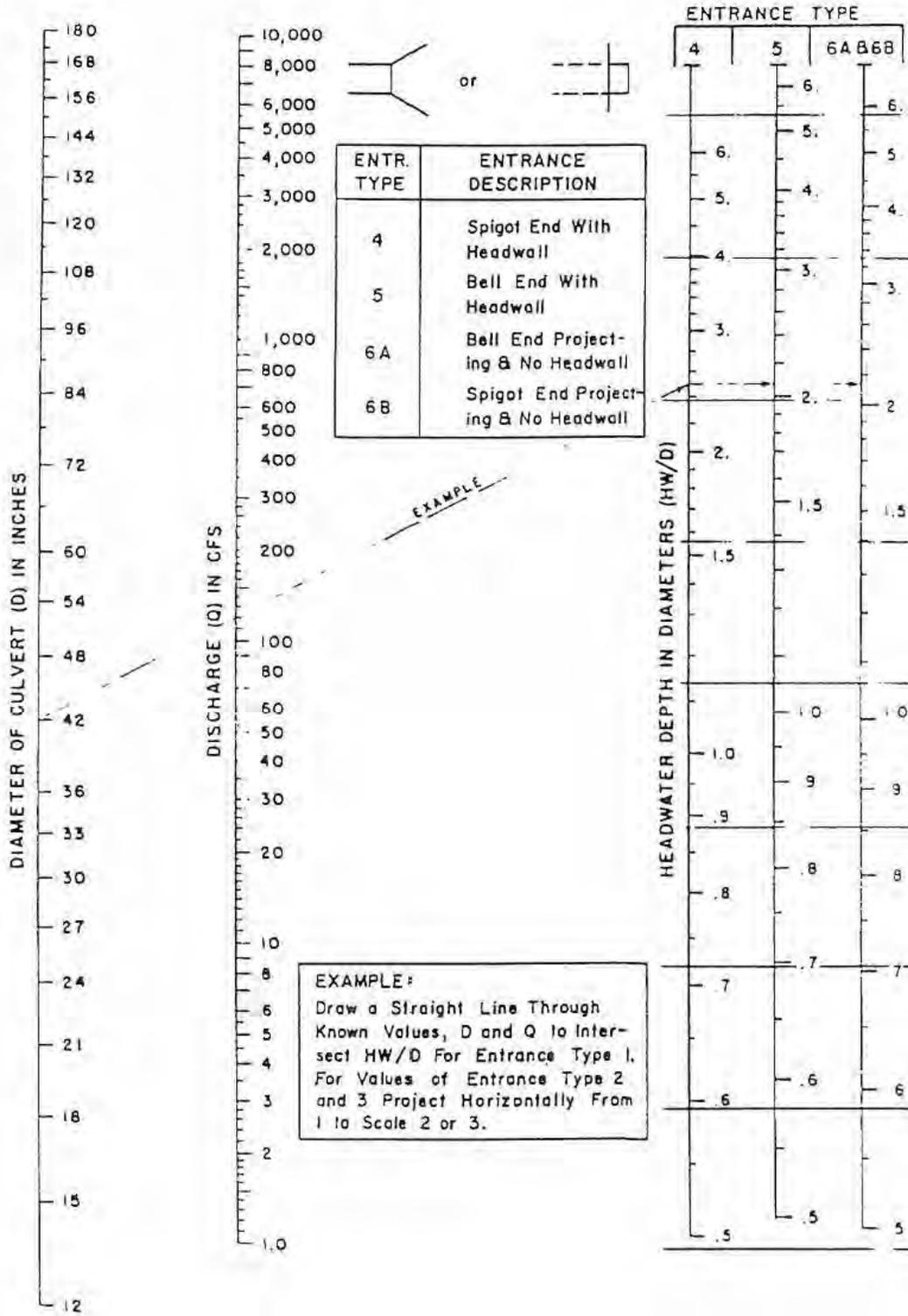
Form 3.5: Culvert Design Calculations Table



BUREAU OF PUBLIC ROADS JAN 1963

HEADWATER DEPTH
FOR CONCRETE BOX
CULVERT WITH
INLET CONTROL

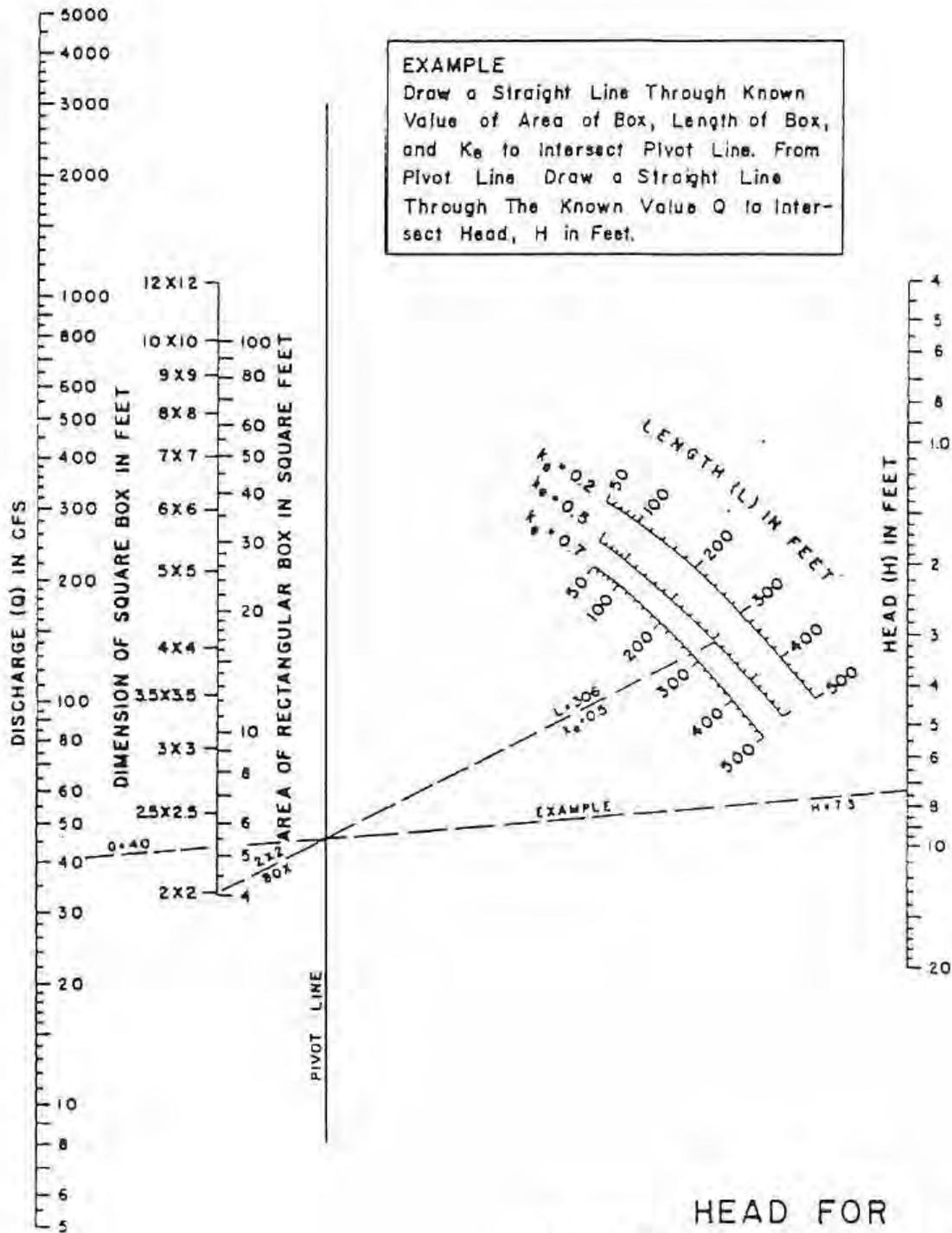
Figure 3.22: Headwater Depth for Concrete Box Culvert with Inlet Control



BUREAU OF PUBLIC ROADS JAN 1963

HEADWATER DEPTH FOR
CONCRETE PIPE CULVERTS
WITH INLET CONTROL

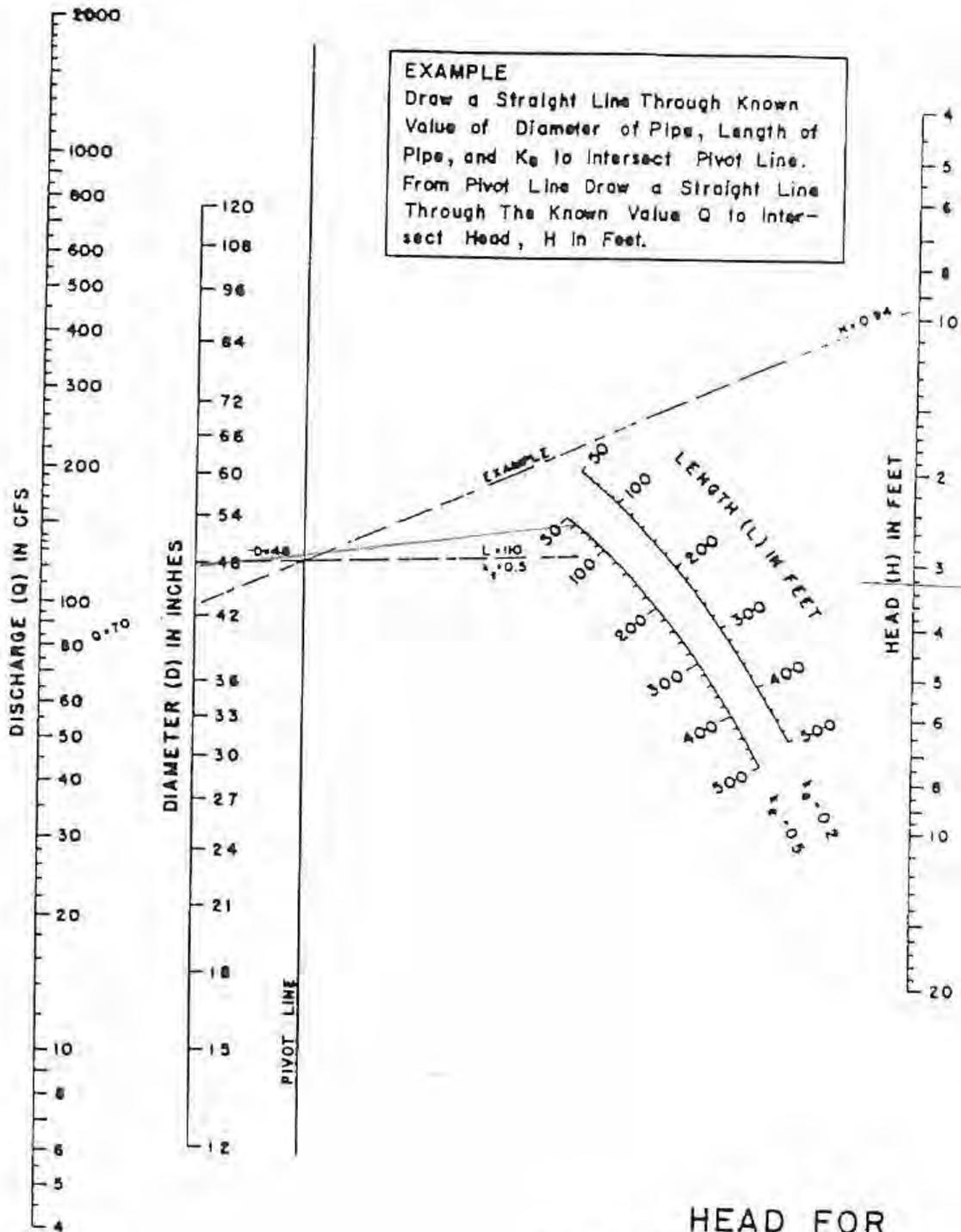
Figure 3.23: Headwater Depth for Concrete Pipe Culvert with Inlet Control



HEAD FOR
CONCRETE BOX CULVERTS
FLOWING FULL
 $n = 0.012$

BUREAU OF PUBLIC ROADS JAN. 1963

Figure 3.24: Head for Concrete Box Culvert Flowing Full



HEAD FOR
CONCRETE PIPE CULVERTS
FLOWING FULL
 $n = 0.012$

BUREAU OF PUBLIC ROADS, June 1963

Figure 3.25: Head for Concrete Pipe Culverts Flowing Full



EXAMPLE

Known:

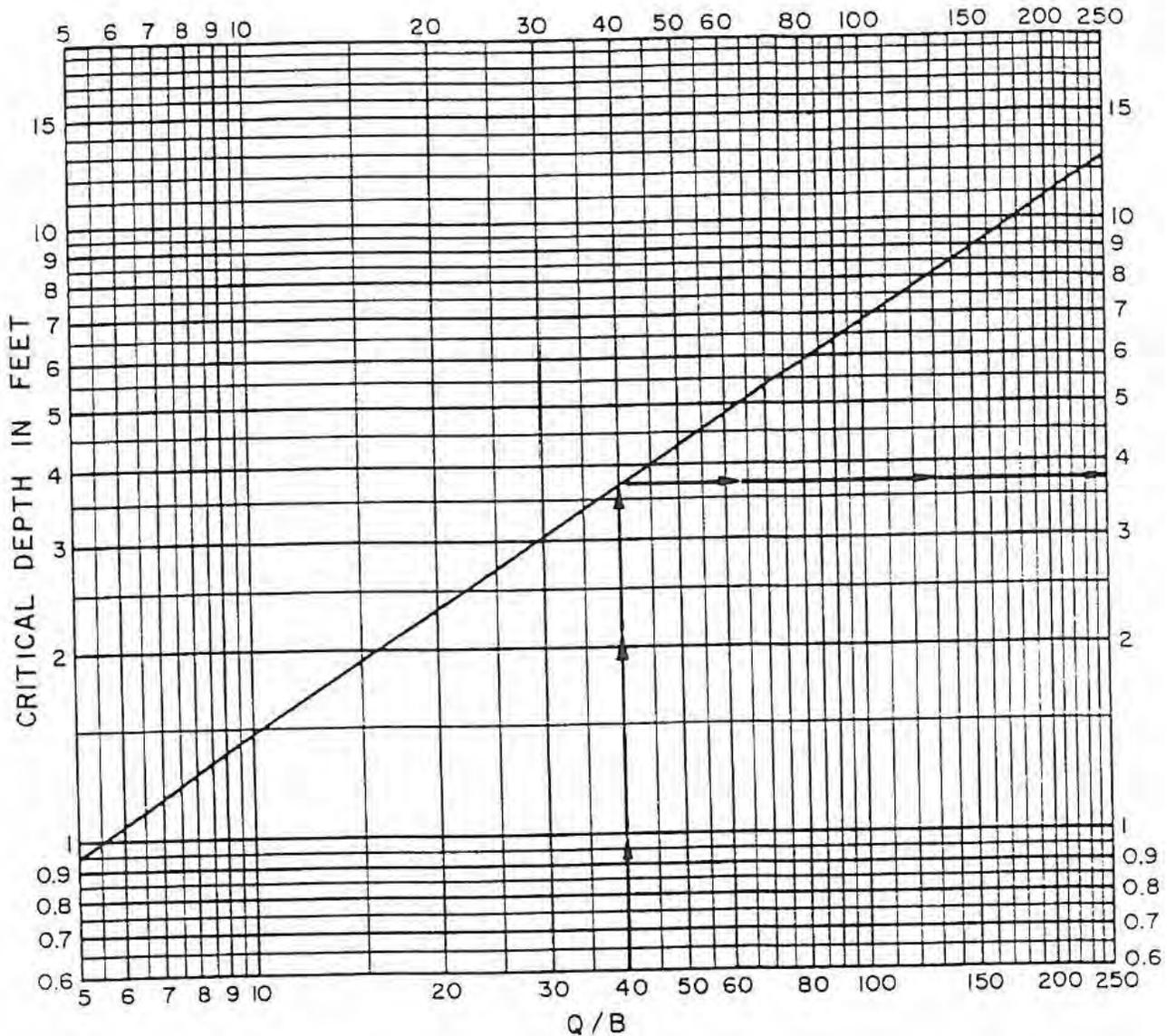
Discharge = 200 c.f.s.
Width of Conduit = 5'
 $Q/B = 40$

Solution:

Enter Graph at $Q/B = 40$
Intersect Critical Depth
at 3.7

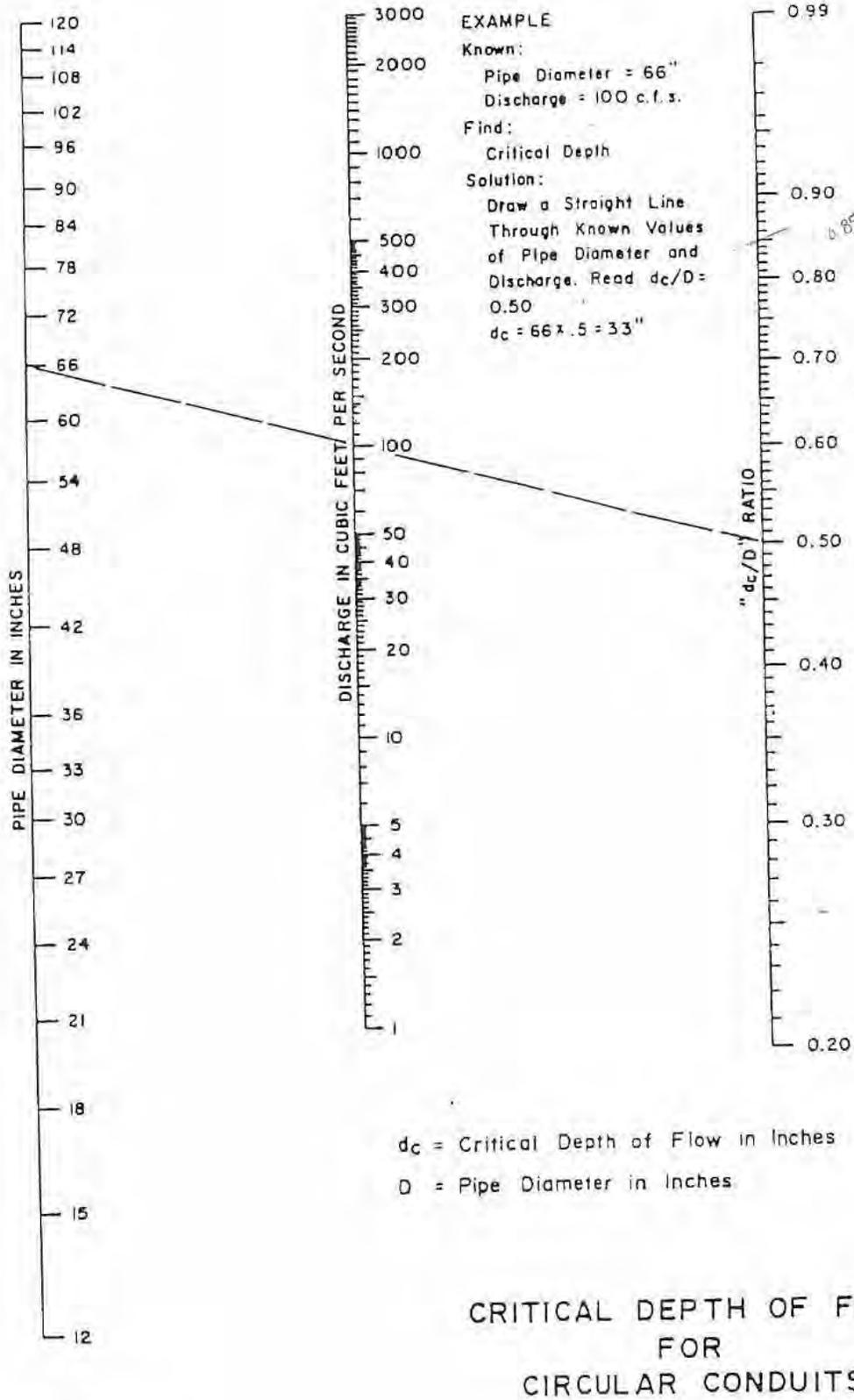
Find:

Critical Depth



CRITICAL DEPTH
OF FLOW FOR
RECTANGULAR CONDUITS

Figure 3.26: Critical Depth of Flow for Rectangular Conduits



TEXAS HIGHWAY DEPARTMENT

Figure 3.27: Critical Depth of Flow for Circular Conduits

3.2.6 Bridge Design

- A. A scour analysis shall be performed and submitted in or with the design plans.
- B. For all bridges a flood study report shall be prepared and provided to the City Engineer, documenting the methodology, assumptions, derivation of all data used, and results of the study.
- C. The 100-yr projected fully developed water surface elevation shall not be increased upstream or downstream of the bridge.

3.2.7 Erosion Hazard Setback

3.2.7.1 Definition and Purpose

Erosion hazard setbacks shall be determined for every stream and creek (flowing or not) in which natural channels are to be preserved. The purpose of this erosion hazard setback is to reduce the potential for any damage to a private lot, building, utilities or street right-of-way caused by the natural erosion of the creek bank and to minimize the expenditure of public funds for stream bank stabilization projects. The erosion hazard setback shall be included within the drainage easement and its own lot and block that is maintained by the property owner for the stream/creek for any property plat or re-plat.

3.2.7.2 Determination

The erosion hazard setback shall be determined by the following steps:

- Locate the toe of the natural stream bank. The toe may be located outside of the low flow channel.
- Project at a 4(H):1(V) line sloping away from the center of the creek/stream until it intersects natural ground or the new proposed elevation, whichever results in the greater setback.
- From this intersecting point continue an additional 15 feet **horizontally** away from bank. This shall set the limit of the erosion hazard setback.
- In certain scenarios the calculated erosion hazard setback is within the 100-yr fully developed floodplain. In these scenarios the erosion hazard setback shall be set to 10 feet beyond the 2 foot of freeboard elevation for the 100-yr fully developed floodplain.

The typical erosion hazard setback established by steps above is shown in Figure 3.28.

Proof of determination of the above shall be included in the Engineering Plan set. It shall include the following:

- Locating and labeling of the toe of the natural stream bank. If trapezoidal in nature both toes shall be identified.
- Existing one-foot topographic contours of the entire site.
- Projected hypothetical one-foot contours representing the 4(H):1(V) line sloping away from the center of the creek/stream until it intersects natural ground or the new proposed elevation
- Show and label hypothetical projected intersecting point/top of 4:1 slope line.
- Show and label Erosion Hazard Setback (15 foot offset away from bank of intersecting point/top of 4:1 slope line)
- Show and label 100-yr fully developed floodplain.
- Show and label 2 foot freeboard line.
- Show and label 10 foot offset of the 2 foot freeboard line.
- Show and label the required Drainage Easement that encompasses the Erosion Hazard Setback and Floodplain.

3.2.7.3 Non-Permitted Structures

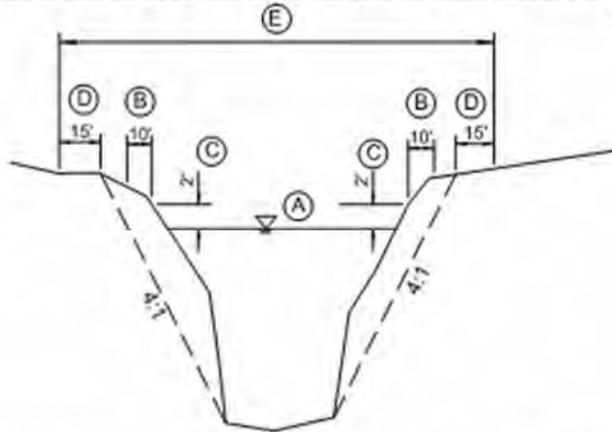
The following are non-permitted structures within the erosion hazard setback: building, wall, parking lot, driveway, fences, decks, swimming pools, signage, monumentation, **detention structures/ponds** or other structures. **Water and wastewater lines shall be placed beneath the projected 4:1 slope line. The pipe shall be concrete encased when there is less than 4 foot of cover from the 4:1 slope line.**

3.2.7.4 Modifications

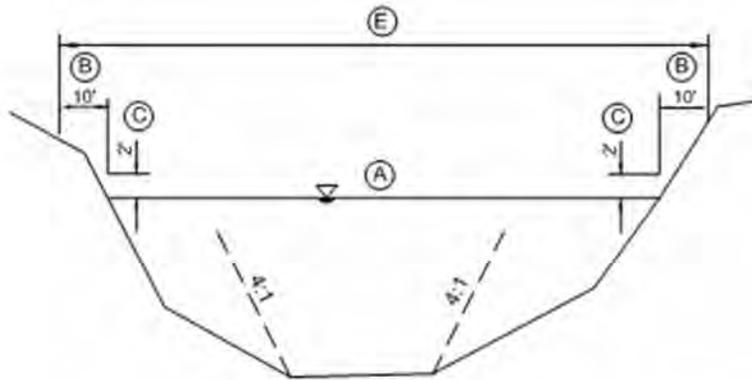
Any modifications to the erosion hazard setback will require the following items and approval by the City Engineer:

- A geotechnical and stream geomorphological stability analysis signed and sealed by a licensed professional geotechnical engineer within the State of Texas.
- Structural plans, calculations and report of the permanent stream bank stabilization measures signed and sealed by a licensed professional structural engineer within the State of Texas.
- Grading permit.
- Adequate access to maintain the stream bank stabilization measures indefinitely.

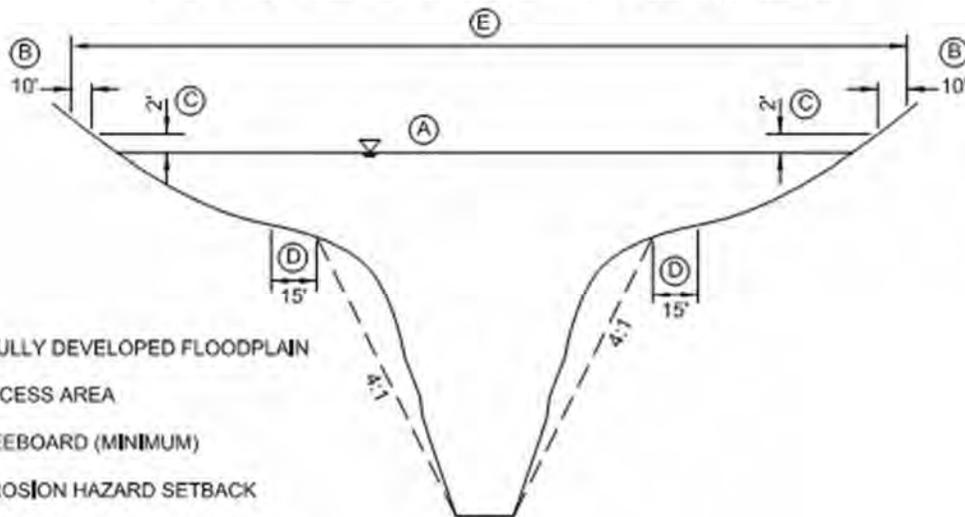
SCENARIO 1 (Floodplain within Erosion Hazard Setback)



SCENARIO 2 (Erosion Hazard Setback within Floodplain)



SCENARIO 3 (Erosion Hazard Setback within Floodplain)



NOTES:

- (A) 100 YEAR FULLY DEVELOPED FLOODPLAIN
- (B) 10 FOOT ACCESS AREA
- (C) 2 FOOT FREEBOARD (MINIMUM)
- (D) 15 FOOT EROSION HAZARD SETBACK
- (E) EXTENTS OF DRAINAGE EASEMENT

Figure 3.28: Erosion Hazard Setbacks and Drainage Easements

3.3 Minimum Freeboard Requirements

To help prevent flood damages and protect public safety, all design elevation requirements related to water surface elevations and flood elevations shall be based, at a minimum, on the 100-year flood, fully-developed watershed conditions. The difference between a minimum design elevation above the 100-year flood is commonly referred to as minimum freeboard. Table 3.13 provides a summary of absolute minimum freeboard requirements for design and construction in the City of Rockwall. However, prudent engineering in setting design elevations should be incorporated into any design. In some situations, a greater freeboard than those listed in Table 3.13 may be required by the City, at the discretion of the City Engineer, or as required by State and Federal regulations and guideline, depending of flood hazard potential in relation to property damages and public safety. The City’s minimum freeboard requirements are not intended to take precedence over State and Federal regulations (except when the City’s requirements exceed those set by State and Federal regulations). The minimum elevations of all flood protection levees and all dams must meet requirements of all State and Federal regulations and guidelines.

Table 3.13: Minimum Freeboard Requirements

Description	Minimum Freeboard above 100-year Flood Elevation (ft)*
Minimum Floor Elevations (including basements and sunken floor areas):	
Residential	2.0
Non-Residential (unless flood proofed; see flood damage prevention ordinance)	2.0
Building Pad Elevations for Structures (at lowest adjacent structure grade)	1.0
Dams (freeboard above effective crest elevation of dam, after allowing for settlement and consolidation of embankment):	
Less than or equal to 5-ft maximum height	1.0
More than 5-ft maximum height (must meet State and Federal Requirements)	2.0
Dams with entire embankment having overflow protection (such as concrete)	1.0
Detention and Retention Ponds (freeboard along all shoreline areas around the pond):	
Per dam height:	
With Dams less than or equal to 5-ft maximum height	1.0
With Dams more than 5-ft maximum height	2.0
Incised Ponds (no dam)	1.0
Per area draining to pond:	
1 acre or less drainage area	0.0
5 acres to 1 acre drainage area	1.0
Greater than 5 acres	2.0
Flood Protection Levees, Dikes, or Walls (City Engineer Approval Required):	
Significant or High Hazard Flood Damage or Public Safety Potential	3.0
Low Hazard Flood Damage Potential or Public Safety Potential	2.0
Public Roadways, Alleys, and Parking Lots (as measured from edge of pavement/top of curb)	1.0

Channels	1.0
Bridges (as measured from lowest point of low chord)	1.0
Culverts (as measured from edge of pavement/top of curb)	1.0
Sanitary Sewer and Water Manhole Covers	2.0

*The 100-year flood elevations as determined based on discharges resulting from a fully-developed watershed. Greater freeboard may be required, at discretion of City Engineer (depending on flood hazard potential) or by State and Federal Regulations.

3.4 Detention

3.4.1 Intent

It is the City's intent to utilize detention (or detention/retention) of storm water runoff as a solution towards control of potential hazards created by storm water runoff including; reduction in the impact on downstream storm water **drainage** facilities; prevention of erosive conditions in water drainage ways; protection **against** downstream and adjacent property damage; and preservation of existing floodplains along major creeks. Detention basins may also improve water quality by allowing some sediment to settle out.

3.4.2 Where is Detention Required?

- A. All non-residential development (not within the Downtown Zoning District or other redevelopment areas that will not impact the storm water flow) shall construct detention facilities.
- B. Residential developments shall construct detention facilities if it is determined that the downstream system does not have **adequate hydraulic** capacity for the developed flow and the capacity of the downstream system cannot be increased to allow the conveyance of the developed flows.
- C. All development within the Squabble Creek **and Buffalo Creek watersheds** will construct detention facilities and provide a flood study using hydrology and hydraulic models, to prove that the proposed development will not cause any increase in peak flood discharge rates and flood elevations at all **computed points downstream of the proposed development. For Squabble Creek this study shall extend downstream to Lake Ray Hubbard and for Buffalo Creek shall extend downstream through Rockwall Lake Dam.**

3.4.3 Type of Detention Facilities

The following detention facilities are to be utilized for detention.

3.4.3.1 Site of ½ Acre or Less

- A. Underground
- B. On concrete Parking Surface (max 1-foot water depth)

3.4.3.2 Site of Greater Than ½ Acre, On-site

- A. Underground
- B. On concrete Parking Surface (max 1-foot water depth)

C. Detention Basin

- Side Slopes 4 to 1, or Less (no fencing allowed)
- Area to be Landscaped
- Maintained by Developer
- Additional Amenities Preferred
- Ownership Stays With Property Owner
- Dams Over 5-foot to be approved by State. Dam must meet state dam safety guidelines.

3.4.3.3 Greater Than ½ Acre, Off-site Shared

A. Detention Basin Shared with Other Developments

- May Expand Existing Pond
- No Increase in 100-year Flood Plain Elevation
- Capacity Expanded Above Existing Water Surface
- Need Engineering Study

B. Flow to Regional Detention Basin

- Regional Facility Manager (owner of facility) Must Approve Improvements
- Developer/s Funds Improvements to Regional Basin
- Developer/s Improves Storm Water Conveyance System to Basin (based on fully-developed 100-year flow)
- Dams Over 5-foot to be approved by State. Dam must meet state dam safety guidelines.
- Dam Cannot be Over 15-feet tall
- Basins with Water Retention to have Stored Water Depth of at Least 4-feet
- Need Landscaping and Amenity Features (Approved by Planning Dept.)
- Facility Manager to Assure Good Retained Water Quality
- Trash Collectors Required at Outfall Structures
- Side Slopes to be 4 to 1 or Less
- Developer/Owner Owns and Maintains Basin
- Facility Manager to Develop and Perform Maintenance Program
- Underground (preferred); Natural Open Channel (existing creek with 100-year developed capacity); Developer/s to Obtain Additional Drainage Easement for 100-year Developed Flow Area; No Concrete or Gabion Sidewalls
- Possible Pro-rata from Other Developments that Utilize Basin

C. Existing Lake

- Lake Manager Must Approve
- Developer/s Fund Improvements to Lake
- Developer/s Improves Storm Water Conveyance System to Lake (developed 100-year flow): Underground (preferred); Natural Open Channel (existing creek with developed 100-year capacity);

Developers to Obtain Additional Drainage Easement for 100-year Developed Flow Area; No Concrete or Gabion Channel Sidewalls

- Additional Storage Out of 100-year Storage

3.4.3.4 Existing Ponds

A. Developer/s Improve Existing Undesirable Detention Facilities

- Remove Fencing Where Possible
- Provide Concrete Flume in Bottom
- Provide Landscaping
- Improve Maintenance Access
- Reconstruct with Underground System
- Remove Pond by Conveying Storm Water Flow to Shared Detention Facility **without adverse impacts to other properties.**

3.4.4 **Geometry, Restrictions and Appurtenances**

- A. Detention ponds shall have a side slope 4:1 or flatter.
- B. The detention pond bottom grade shall be at a minimum of 1% slope. A 4-inch thick concrete low flow flume shall be installed from the ponds inlet structure/structures to the outfall structure.
- C. All detention ponds **and reserved shoreline** shall have **the appropriate amount of freeboard as called out in Table 3.13 – Minimum Freeboard Requirements** from the 100-year water surface, **based on flood inflows determined assuming fully-developed watershed conditions (without consideration of any future upstream detention),** including incised ponds (without embankment/dams), **or a higher design criteria if required by the State.**
- D. The State of Texas has jurisdiction of all dams, regardless of dam height or impoundment storage size, if they are classified by State regulations and guidelines with hazard classifications as “high – or significant-hazard”. [Reference: Texas Administrative Code, Title 30, Part 1, Chapter 299, Subchapter A, (a)(3)]. Dams with maximum height of over 5 feet must be approved by the State, unless the dam maximum height is less than 15 feet and a registered professional engineer licensed in Texas adequately shows, with an engineering study using the State of Texas Dam Safety guidelines and regulations, that a sudden breach of the dam during a major flood event, as specified and determined by the State’s procedures, would not cause any significant increase in flooding or significant increase in flood damages as compared to a non-breach of the dam during a non-breach flood event. For dams permanently impounding water, the study should also determine the extent of additional flooding that would be caused by a sudden breach of the dam during non-flooding events. If the breach of the dam can be proven to not cause any significant flood

damages (other than to the dam embankment), then it can be proven to be classified as a “low-hazard” dam by State definition, and the dam may be exempt, at the City Engineer’s discretion, from requiring State review and approval. However, regardless of whether the dam design is reviewed by the State, all dams, regardless of size, must have an emergency spillway and be designed, constructed, maintained, and operated per State Dam Safety Guidelines, including emergency action management. The maximum height of the dam, hazard classifications, and “significant” increased flooding (as related to embankment breach analyses) are determined based on the State’s definitions and regulations.

- E. No detention **is** allowed in **the FEMA 100-yr** and local 100-yr fully developed floodplain.
- F. No detention **pond is** allowed with outlet elevation below a receiving stream’s or channel’s 100-yr fully developed flood elevation.
- G. No franchise utilities (Gas, Electric, Cable, Telephone, Communications, etc.), water lines and wastewater lines (except storm systems) are allowed in detention ponds, and detention easements.
- H. Underground detention systems must be a fully enclosed pipe system.
- I. **The detention** pond shall have an emergency overflow in case the main outfall structure gets clogged. The emergency overflow shall be sized to pass the **fully-developed 100-year flood at a minimum, or greater based on State Dam Safety requirements**. **City-approved** erosion protection shall be placed along the length of the emergency overflow to the flowline of the receiving structure, creek or channel, **and extended as necessary to prevent erosion of the dam structure**.
- J. The detention systems are to be installed and verified for design compliance along with the associated storm sewer and outfall structures and drainage channels, prior to any paving operations. All **constructed** detention ponds, drainage ways, and open channels shall have the sides and bottom stabilized with sod or anchored seeded matting prior to any paving construction (including building slab). The matting or sod shall be anchored at high velocity locations if deemed necessary. Erosion protection is to be placed at the **pond’s** outflow structure along with any associated erosion BMP’s noted on the erosion control plan
- K. Sometimes a detention facility will be utilized by several developments, and then a pro-rata agreement/**detention masterplan** may be entered into with the development constructing the facility and the other developments utilizing the facility **Without a pro-rata agreement/detention master plan of all parties in advance of construction of all combined developments, no**

new proposed development will be allowed to take credit for any “over detention” of a previous development or the reduction of discharges from a previous development within the watershed in the determination of detention requirements.

- L. Detention pond outfall structures shall be fitted with a trash rack.

3.4.5 Detention Calculations

The detention design calculations and outfall rating curves shall be included in the plans and flood study. Increased peak discharges from the detention basin are not allowed for the 5-year, 10-year, 25-year and 100-yr frequency floods based on existing off-site conditions.

3.4.5.1 Methodology

Detention facilities that have a drainage area of less than 20 acres shall be sized using the Modified Rational Method. If the drainage area is equal to or greater than 20 acres then the Unit Hydrograph Method shall be used. The Modified Rational method may be used for drainage areas more than 20 acres but the Unit Hydrograph Method must be performed as a comparison. The more conservative of the two methods shall be used to design the pond (and technical documentation of both methods should be provided to the City for review and verification of the most conservative method selected).

The following conditions shall be used when implementing the Modified Rational Method.

- A. The proposed development will construct detention facilities to detain the increase in runoff between the existing 100-year flows (C-undeveloped, $T_c = 20$ minute) and the fully developed flows (C – depends on zoning, $T_c = 10$ minute). The “C” value is based on zoning, not pervious/impervious areas. Large area of dedicated open space dedicated to City can be considered by City in this value.

- B. Storm rainfall intensity (in/hr) for different storm years shall be as follows:

	100 year	50 year	25 year	10 year	5 year	2 year
10 min	9.8	9.0	8.3	7.1	6.1	5.3
15 min	9.0	8.1	7.5	6.5	5.5	4.5
20 min	8.3	7.5	6.6	5.9	4.9	3.9
30 min	6.9	6.1	5.5	4.8	4.1	3.3
40 min	5.8	5.2	4.6	4.0	3.4	2.6
50 min	5.0	4.5	4.0	3.5	2.8	2.3
60 min	4.5	3.9	3.5	3.0	2.6	1.9
70 min	4.0	3.7	3.3	2.8	2.4	1.8
80 min	3.7	3.5	3.1	2.6	2.3	1.7

90 min	3.5	3.3	2.9	2.5	2.1	1.6
100 min	3.4	3.0	2.7	2.4	1.9	1.5
110 min	3.2	2.9	2.5	2.3	1.8	1.4

C. The following is an example calculation on how the Modified Rational Method is performed to determine detention volume:

MODIFIED RATIONAL METHOD DETENTION BASIN DESIGN

Given: A 10-acre site, currently agricultural use, is to be developed for townhouses. The entire area is the drainage area of the proposed detention basin.

Determine: Maximum release rate and required detention storage.

Solution:

1. Determine 100-year peak runoff rate prior to site development. This is the maximum release rate from site after development.

NOTE: Where a basin is being designed to provide detention for both its drainage area and a by-pass area; the maximum release rate is equal to the peak runoff rate prior to site development for the total of the areas minus the peak runoff rate after development for the by-pass area. This rate for the by-pass area will vary with the duration being considered.

2. Determine inflow hydrograph for storms of various durations in order to determine maximum volume required with release rate determined in Step 1.

NOTE: Incrementally increase durations by 10 minutes to determine maximum required volume. The duration with a peak inflow less than maximum release rate or where required storage is less than storage for the prior duration is the last increment.

PROCEDURE

STEP 1. Present Conditions (Agricultural)

$$Q = C \cdot I \cdot A$$

$$C = 0.35$$

$$T_c = 20 \text{ minutes}$$

$$I_{100} = 8.3 \text{ in/hr}$$

$$Q_{100} = (0.35)(8.3)(10 \text{ acres}) = 29.05 \text{ cfs (Maximum release rate)}$$

STEP 2. Future Conditions (Townhouses)

$$C = 0.80$$

$$T_c = 10 \text{ minutes}$$

$$I_{100} = 9.8 \text{ in/hr}$$

$$Q_{100} = (0.80)(9.8)(10 \text{ acres}) = 78.40 \text{ cfs}$$

Check various duration storms:

15 minutes	$I = 9.0$	$Q = (0.80)(9.0)(10 \text{ acres}) = 72.0 \text{ cfs}$
20 minutes	$I = 8.3$	$Q = (0.80)(8.3)(10 \text{ acres}) = 66.4 \text{ cfs}$
30 minutes	$I = 6.9$	$Q = (0.80)(6.9)(10 \text{ acres}) = 55.2 \text{ cfs}$
40 minutes	$I = 5.8$	$Q = (0.80)(5.8)(10 \text{ acres}) = 46.4 \text{ cfs}$
50 minutes	$I = 5.0$	$Q = (0.80)(5.0)(10 \text{ acres}) = 40.0 \text{ cfs}$
60 minutes	$I = 4.5$	$Q = (0.80)(4.5)(10 \text{ acres}) = 36.0 \text{ cfs}$
70 minutes	$I = 4.0$	$Q = (0.80)(4.0)(10 \text{ acres}) = 32.0 \text{ cfs}$
80 minutes	$I = 3.7$	$Q = (0.80)(3.7)(10 \text{ acres}) = 29.6 \text{ cfs}$
90 minutes	$I = 3.5$	$Q = (0.80)(3.5)(10 \text{ acres}) = 28.0 \text{ cfs}$
100 minutes	$I = 3.4$	$Q = (0.80)(3.4)(10 \text{ acres}) = 27.2 \text{ cfs}$
110 minutes	$I = 3.2$	$Q = (0.80)(3.2)(10 \text{ acres}) = 25.6 \text{ cfs}$

Maximum Storage Volume is determined by deducting the volume of runoff released during the time of inflow from the total inflow for each storm duration.

10 min Storm	Inflow = $(10)(78.4 \text{ cfs})(60 \text{ sec/min})$	= 47,040 cf
	Outflow = $(0.5)(20 \text{ min})(29.05 \text{ cfs})(60 \text{ sec/min})$	= <u>17,430 cf</u> = 29,610 cf
15 min Storm	Inflow = $(15)(72.0 \text{ cfs})(60 \text{ sec/min})$	= 64,800 cf
	Outflow = $(0.5)(25 \text{ min})(29.05 \text{ cfs})(60 \text{ sec/min})$	= <u>21,788 cf</u> = 43,012 cf
20 min Storm	Inflow = $(20)(66.4 \text{ cfs})(60 \text{ sec/min})$	= 79,680 cf
	Outflow = $(0.5)(30 \text{ min})(29.05 \text{ cfs})(60 \text{ sec/min})$	= <u>26,145 cf</u> = 53,535 cf
30 min Storm	Inflow = $(30)(55.2 \text{ cfs})(60 \text{ sec/min})$	= 99,360 cf
	Outflow = $(0.5)(40 \text{ min})(29.05 \text{ cfs})(60 \text{ sec/min})$	= <u>34,860 cf</u> = 64,500 cf
40 min Storm	Inflow = $(40)(46.4 \text{ cfs})(60 \text{ sec/min})$	= 111,360 cf
	Outflow = $(0.5)(50 \text{ min})(29.05 \text{ cfs})(60 \text{ sec/min})$	= <u>43,575 cf</u> = 67,785 cf
50 min Storm	Inflow = $(50)(40.0 \text{ cfs})(60 \text{ sec/min})$	= 120,000 cf
	Outflow = $(0.5)(60 \text{ min})(29.05 \text{ cfs})(60 \text{ sec/min})$	= <u>52,290 cf</u> = 67,710 cf

60 min Storm	Inflow = (60)(36.0 cfs)(60 sec/min)	= 129,600 cf
	Outflow = (0.5)(70 min)(29.05 cfs)(60 sec/min)	= <u>61,005 cf</u>
		= 68,595 cf
70 min Storm	Inflow = (70)(32.0 cfs)(60 sec/min)	= 134,400 cf
	Outflow = (0.5)(80 min)(29.05 cfs)(60 sec/min)	= <u>69,720 cf</u>
		= 64,680 cf
80 min Storm	Inflow = (80)(29.6 cfs)(60 sec/min)	= 142,080 cf
	Outflow = (0.5)(90 min)(29.05 cfs)(60 sec/min)	= <u>78,435 cf</u>
		= 63,645 cf
90 min Storm	Inflow = (90)(28.0 cfs)(60 sec/min)	= 151,200 cf
	Outflow = (0.5)(100 min)(29.05 cfs)(60 sec/min)	= <u>87,150 cf</u>
		= 64,050 cf
100 min Storm	Inflow = (100)(27.2 cfs)(60 sec/min)	= 163,200 cf
	Outflow = (0.5)(110 min)(29.05 cfs)(60 sec/min)	= <u>95,865 cf</u>
		= 67,335 cf
110 min Storm	Inflow = (110)(25.6 cfs)(60 sec/min)	= 168,960 cf
	Outflow = (0.5)(120 min)(29.05 cfs)(60 sec/min)	= <u>104,580 cf</u>
		= 64,380 cf

Maximum volume required is **68,595 cf** at the 60 min. storm duration.

3.4.5.2 Outfall Structures

Detention out fall structures shall be multi-staged and designed to detain the 5-yr, 10-yr, 25yr and 100-yr storm events without increasing the peak discharge. A chart shall be furnished by the design engineer showing the allowable flows verses the actual flows through the detention pond outflow structure for 5-yr, 10-yr, 25-yr, and 100-yr storm events.

When the design is based on the Modified Rational Method, outfall structures shall be designed in accordance to the equations established in Hydraulic Engineering Circular No. 22, Urban Drainage Design Manual (HEC-22). The Engineer shall include all calculations/ equations for the outfall structure in the plans, including each stage of the structure (5-yr, 10-yr, 25-yr, and 100-yr storm events).

When the detention pond and outfall structure is designed using a unit hydrograph method (hydrology model) and a hydraulic model is being prepared (such as for a detention pond with dam located across a stream for which flood elevations will be determined), the outfall structure discharges may be determined with the hydraulic model. All

flow characteristics and conditions of the outfall structure should be adequately represented in the hydraulic model or other calculations to account for orifice flow conditions, weir flow conditions, and full-pipe and partially-full pipe flow conditions for all discharge openings, pipes, and overflow areas of both the discharge structure and the dam. The resulting discharge versus pond flood elevation data should be adequately represented in the hydrology model to ensure that the flood elevations computed with the hydrology model reasonably agree with those computed by the hydraulic model for all ranges of discharges.

City approved erosion protection shall be placed around the outfall structure and shall extend downstream the entire flow path length to the flowline of the receiving structure, creek or channel. The erosion protection shall extend to 2 feet above the 100-yr water surface elevation.

3.5 Floodplain Studies, Reclamation and Modification

All floodplain studies, reclamation, modification, flood boundary delineations and design of structures within or adjacent to creeks or streams shall meet the following guidelines set forth in this section and the most current Flood Hazard Damage Prevention and Control Ordinance.

- A. The qualified professional engineer licensed in the State of Texas shall prepare a flood study report documenting all data, methodology, and assumptions used in the study. The study report shall be properly signed and sealed, and include a concluding statement certifying that the hydrologic and hydraulic study is based on standard engineering practice, that the project is constructed, or proposed to be constructed, as shown in certified engineering plans used in the study such that there will be no adverse increases in flooding or flood damages on other properties and that the project meets the requirements of all parts of the City's current Flood Hazard Damage Prevention and Control Ordinance.
- B. Flood studies shall follow the general procedures set by FEMA for applying for a LOMR or CLOMR, including hydrologic and hydraulic modeling; drainage area workmap; floodplain workmap; annotated FIRM; FEMA forms; and complete technical documentation of all data used in the study, including, but not limited to, calculations of times-of-concentrations or lag times and calculations of other runoff parameters such as NRCS curve numbers. For hydrology models, drainage areas should be determined to the nearest 0.01 acre (0.000015 sq. mi.); times of concentration and lag times should be computed to the nearest 0.01 hour (6 min.); and NRCS composite runoff curve numbers should be computed to the nearest 0.1 value. Other requirements are contained in Unit Hydrograph Method Section of these standards. These

procedures shall be performed even for **flood** studies not being submitted to FEMA.

- C. Floodplains **and watersheds** shall be modeled using standard practice engineering models **that are public domain**. The use of computer modeling software that is not public domain will require approval by the City Engineer. **[The most recent versions of HEC-HMS and HEC-RAS are currently the City's preferred hydrology and hydraulic models for flood studies. The use of these models is highly encouraged in cases where a conversion from older models is desired or in previously-unstudied areas where new models are to be created].**
- D. All design elevations shall be based on computed flood elevations using flood discharges for 100-year projected fully-developed watershed conditions, **including the effects of changes in storm water runoff and effects of encroachment and changes in flood valley storage caused by the proposed project.**
- E. All flood study models shall utilize the most current available models from the City or FEMA as base models **(if available)** and shall incorporate all additional modifications that have occurred since the last update **of these models**. **Conversion of base models to newer approved digital models is allowed, as noted below.**
- F. Results of hydrology and floodplain hydraulic computer models shall be summarized in tabular form, to show differences in computed 100-year flood discharges and flood elevations. The computer model results to be included in the comparison tables include:
- a. The original effective base **hydrology and hydraulic** models, if available, as provided by the City or FEMA.
 - b. Improved modeling procedures may be allowed and included, such as conversion of original models to newer versions of computer modeling software, such as conversion of HEC-2 models to HEC-RAS **and conversion of TR-20 or HEC-1 models to HEC-HMS**. Conversion to computer software that is not free public domain software ~~or~~ **and** that is not on FEMA's approved list of computer modeling software must receive approval by the City Engineer. **Results of conversion to improved modeling should be performed prior to any updates or corrections to the model data and compared in tabular form with the original base model results.**
 - c. Corrected **hydrologic and hydraulic** models **(commonly referred to as "corrected effective" models by FEMA procedures)** to include any improved data or needed corrections, such as new surveyed floodplain cross sections, inclusion of additional cross sections, or improved

topographic mapping, but should not include and man-made changes to the watershed or floodplain.

- d. Pre-project hydrologic and hydraulic models, to update the computer models by adding man-made changes that have occurred in the watershed and floodplain since the date of the original effective base models. [If there are no updates based on man-made changes, then the “corrected effective” and “pre-project” models are the same].
- e. Post-project hydrologic and hydraulic models, to include all changes that are included in the pre-project models, plus hydrologic and hydraulic characteristics that are representative of changes based on the project’s proposed final completed construction. The post-project hydrology should include changes in runoff conditions related to modifications of land cover and grading, changes in times-of-concentration or lag times, alteration of stream channels and floodplain areas (including changes in floodplain valley storage and changes in flow velocities), changes in drainage areas and drainage patterns, and any proposed mitigation to prevent increases in flood discharges. The post-project hydraulic models should include effects to floodplain hydraulic characteristics, including changes in floodplain and channel configuration, such as encroachments, excavations, channelization, proposed hydraulic structures, clearing of areas that will be continually maintained, and changes in hydrology (flood discharges). The effects of temporary clearing of vegetation in areas that will not be maintained should not be included.

Hydrologic and hydraulic computer modeling must be provided for both existing watershed conditions (both pre-project and post-project conditions), with summary comparisons of various steps (“a” through “e”, above) shown in tabular form, to include computed 100-year discharges and flood elevations. The results of hydrology and hydraulic post-project models will be compared with results of pre-project models to verify compliance of City Standards requiring no increased flooding on other properties. Additionally, hydrology and hydraulic models must be provided based on fully-developed watershed conditions with the proposed project. The results of the fully-developed condition models, will be used to determine compliance with the City’s design elevation standards. When construction of a project will be in phases, the City Engineer may require flood studies to be submitted for each phase.

- G. When transferring discharges computed by the hydrology models as input data entered into the hydraulic models, round-off of discharges is allowed only to the nearest one (1) cfs. All hydrology models should be set to compute discharges to the nearest one (1) cfs and flood elevations (such as in ponds) to the nearest 0.01 ft. All hydraulic models should be set to compute flood elevations to the nearest 0.01 ft. Locations of flow changes in the hydraulic

model should be carefully determined to avoid undue under-calculation of flood elevations. For example, in order to prevent unreasonable under-calculations of flood elevations along portions streams, discharges computed at sub-basin outlets along a stream should normally be used in the hydraulic model for a reasonable extended portion of the upstream floodplain reach, in order to avoid neglecting all of the lateral inflow within the upper stream reach in the hydraulic model computations.

- H. The completed flood study, including detailed technical documentation; printed hydraulic and hydrological model input data and output results, digital model files (as listed in “F”, above, for both existing and projected future fully-developed watershed conditions), supporting calculations, drainage area maps, floodplain boundary maps, and certification statement (as noted in “A.”, above) shall be submitted to the City for review.
- I. The watershed work map(s) should include the following:
 - a. Multiple watershed work maps may be submitted for pre-project and proposed project conditions, as long as all of the following items are provided.
 - b. Total watershed drainage area and sub-basin drainage delineation boundaries, including those representative of the original base hydrology model, the corrected drainage delineations (if any), and proposed project changes in drainage delineations and any added sub-basins. All sub-areas should be labeled in agreement with sub-area labels used in the hydrology models.
 - c. Topography overlaid on high-resolution aerial photography, with elevation contour labeling.
 - d. Delineation of hydrologic soil groups and land cover conditions (these may be included on a separate map, with drainage delineations).
 - e. Property boundaries of the tract of land where the proposed project is located, including any proposed division lines for the current and future project phases.
 - f. Proposed project, with proposed grading and changes in land cover.
 - g. Stream channel centerline flow path, with flow direction indicated.
 - h. Flow path used in determining times-of-concentration or lag times (both pre-project and modifications based on proposed construction).

- i. Title block, legend, north arrow, and bar scale.
- J. The floodplain work map(s) should include the following:
- a. Multiple floodplain work maps may be submitted, as long as all of the following items are provided.
 - b. Floodplain cross sections, with location and orientation relative to the floodplain, with labels in agreement with the stations referenced in the hydraulic models. If the study involves a stream that has been previously studied, stream stationing should be in general agreement with stationing used in the previous study. For streams with no previous flood studies, the stream stationing should be based on channel distance upstream from the stream's point of termination (downstream location of where the stream enters a larger receiving stream or major lake (such as Lake Ray Hubbard).
 - c. Topography overlaid on high-resolution aerial photography, with elevation contour labeling.
 - d. Floodplain boundaries and flood elevations for the 100-year flood using discharges for both pre-project existing watershed conditions and modifications based on proposed project discharges.
 - e. Floodplain boundaries identified on the Flood Insurance Rate Maps as Special Flood Hazard Areas, and floodplain boundaries from previous studies (if available from the City) with 100-year flood elevations.
 - f. Floodplain boundaries and flood elevations for the 100-year flood based on projected fully-developed watershed conditions, with the proposed project.
 - g. Stream channel centerline (invert) with direction of flow indicated (for both pre-project and any changes in stream channel centerline based on the proposed construction).
 - h. Property boundaries of the tract of land where the proposed project is located, including any proposed division lines for the current and future project phases.
 - i. Title block, legend, north arrow, and bar scale.
- K. In order for the City to maintain and update their hydrology and hydraulic computer models, after construction is completed, the developer's engineer must update **and submit to the City** their **final certified flood study report**, with hydrology and hydraulic models, along with all supporting calculations, maps,

report, AutoCAD (.dwg files), and GIS files and other exhibits to adequately represent as-built conditions. If the project has been submitted to FEMA, the updated models and revisions to flood study reports should include all modifications that were approved by FEMA.

- L. The City Engineer will determine whether the proposed development will require a LOMR or CLOMR. All documentation prepared for submitting to FEMA (LOMRs/CLOMRs) will be reviewed by the City. The City will not approve the flood study prepared for a LOMR, nor sign a LOMR application form, until construction grading associated with the LOMR has been completed, certified “as-built” plans are submitted to the City, construction has been verified by onsite inspection(s), and all required Local, Federal, and State permits and approvals have been received.
- M. The City will utilize an engineering consulting firm to assist City staff in the review of a flood study. The cost of this consultant review shall be borne by the developer, engineer, or property owner submitting the flood study. The City shall first obtain a cost estimate from the engineering consultant for the flood study review at time of the initial flood study submittal. Before the review begins, the developer, engineer, or property owner submitting the flood study shall deposit with the City funds equal to the cost estimate. The City shall disburse the funds to the consulting engineer as the review progresses. Should the consultant fees exceed the initial estimate, the developer, engineer or property owner submitting the flood study shall be informed of the shortage and a new estimate made by the consultant engineer to complete the flood study review. Additional funds will then be deposited with the City by the developer, engineer or property owner submitting the flood study to cover the estimated shortfall before the review of the study resumes. Any unused funds to be reimbursed to the developer, engineer or property owner submitting the flood study. If review process is performed by City staff, the City will submit a cost estimate for flood study review at time of the initial engineering submittal.

3.6 Storm Drainage Management Plan

3.6.1 **General**

Storm drainage facilities shall include all elements of a drainage system consisting of streets, alleys, storm drains, channels, culverts, bridges, swales and any other facility through which or over which storm water flows, all of which the City must have a right in, either in the form of a dedicated right-of-way, floodway or drainage easements.

3.6.2 **Site Drainage**

All new subdivisions shall provide as part of the subdivision review process a complete storm drainage management plan. This plan will include, but not be limited to, the following: a complete review of all on-site, upstream and downstream drainage within the impacted watershed; determine all on-

site and downstream drainage facility improvements due to the increased runoff from the proposed development and future upstream and downstream developments; and contain calculations necessary to determine compliance with the Standards of Design herein. Detention will be required if the downstream storm system is not capable of handling the proposed drainage flows. The plan shall be done, using current zoning conditions or land use prescribed by the City's Land Use Plan (whichever creates the greatest storm water runoff), with maximum development considered throughout the watershed. The storm drainage plan shall show all necessary improvements with flow data provided at each point of interception of water. As part of the storm drainage plan, the developer shall show a lot grading plan to direct all water to proper intersection points avoiding cross flow of water from lot to lot. All upstream discharge shall be intercepted and carried through the proper intersection points avoiding cross flow of water from lot to lot. All upstream discharge shall be intercepted and carried through the proposed development in compliance with the Standards of Design herein. All discharge from the proposed development shall be designed in accordance with the Standards of Design herein with all necessary improvements being installed by the developer to protect downstream property and adjacent properties from damage. The determination of necessary improvements to existing drainage facilities downstream of a proposed development shall be reviewed by the City Engineer for compliance and adequacy. Deviations from the City Engineer's recommendations and the Standards of Design herein may be approved through the requesting and granting of a variance by the City Council. If a storm drainage plan has been completed prior to new proposed development in question, the developer may use this plan if the City Engineer deems the existing plan is adequate.

3.6.3 Subdivision Development

All subdivision developments shall be built in complete compliance with a storm drainage plan as outlined herein. All lots shall be graded at the time of development in accordance with the plan. All grading shall not exceed a slope of 4 to 1 unless approved by the City Engineer. Approved erosion control shall be provided as part of the development construction on any or all lots within the development to protect the drainage, lot development and adjacent property.

The finish building pad for all subdivision developments shall be elevated to a minimum of 1.0 foot above the crown of the road. In no circumstance shall a building pad and finish floor of any structure be placed below street grade.

3.6.4 Construction Erosion Controls

Construction Erosion Controls shall follow the guidelines set out in NCTCOG's iSWM™ Technical Manual: Construction Controls April 2010, Revised 9/2014 or more recent revision.

In order to address the requirements of pollution reduction at construction sites, a variety of controls should be employed to reduce soil erosion, reduce sediment loss from the site, and manage construction-generated waste and construction related toxic materials. Controls consist of both temporary and permanent methods to reduce pollution from a construction site. The majority of controls address loss of soil from the site. Soil loss in the form of erosion and sediment due to storm events and wind constitute the majority of pollution generated from construction sites. Controls that address erosion and sediment are typically more site specific than waste and toxics management. Erosion and sediment controls are dependent on site slopes, drainage patterns and drainage quantities along with other site-specific conditions. Materials and waste management consists primarily of "good housekeeping" practices which are dependent on the type of construction and the quantity and type of building materials.

Control measures shall follow the control selection guide set forth in the iSWM manual. Control measures from each of the three categories; Erosion Controls, Sediment Controls and the Material and Waste Controls shall be used in the design of an Erosion Control Plan for a site. Standard details called out in Division 1000 of NCTCOG's Standard Specifications and Standard drawing shall be utilized as well in the development of an erosion control plan.

Control Measures such as Silt Fences, Inlet Protection, rock berms, etc. shall be removed from the site once grass cover has been established. Grass cover shall be determined by the Vegetation section of these Standards.

1. Construction Entrance:

No crushed concrete is allowed and rock must be a minimum of twelve (12) inches thick using well graded rock with minimum diameters of four (4) to six (6) inches.

2. Silt Fence:

No wooden stakes to be allowed on any erosion control device.

3. Performance:

Erosion from construction sites can be a significant water quality problem. Developing areas are cleared of vegetation during

construction leaving the soil exposed and susceptible to erosion. Runoff then transports eroded sediment from these areas and deposits it downstream. The accumulation of silt in streams and ponds is a form of water pollution that is unattractive and impedes drainage.

Prevention is a key aspect of erosion control. Many of the control methods presented herein can be placed in a manner that will protect highly erodible areas such as steep slopes. The prevention of erosion requires prior planning to ascertain the placement of selected control methods. The rewards of this planning will be a significant reduction in soil loss. Not only can soil loss be prevented, but eroded soil can be recovered on the construction site and used for fill.

The particulate material in construction site runoff is generally heavier and larger than particulates in urban runoff. These attributes facilitate the removal of the material whether the removal is by settling in a sediment trap or by filtration through a filter fence. Temporary sediment traps, filters and routing devices can effectively control erosion for construction sites if properly applied. These methods are even more effective when permanent management techniques are used in an effort to control temporary increases in sediment loads.

3.6.5 Lot Development

All lot developments shall include a drainage plan preventing all diversion of water from the approved path of discharge. The builder at the time of permit application shall furnish a grading plan in compliance with the appropriate chapter of the building code adopted by the City, the grading plan for the development and the storm drainage plan approved for that particular development. If the re-grading of a lot is necessary, the builder shall be required to furnish a new drainage plan indicating the diversion and rerouting of the affected storm water. When the re-grading of a lot prevents the drainage from flowing to the proper structures as designated in the drainage plan, then the builder will furnish a registered engineer's review for adequacy of existing structures to which the water is diverted. If improvements are necessary to provide for adequate drainage due to re-grading of a lot, then the improvement must be made at the builder's expense before a grading permit or other permits for construction will be issued by the City. The City Engineer will review the information submitted for compliance with the approved grading and drainage management plan. Accepted City streets are not to be used as an erosion control. No inlet protection is allowed in an accepted City street.

- A. Off-Site Cost Sharing: The developer shall be fully responsible for the construction of off-site drainage improvements necessary for his subdivision and the surrounding area, unless other provisions are approved by the City Council. Provisions for reimbursement of cost in excess of those necessary to serve his subdivision, and any other provisions, shall be made a part of a facilities agreement. For any subsequent subdivision utilizing such facilities, any cost due prior developers shall be pro-rated based on the increased contribution of storm water runoff. Such pro-rated amounts shall be made a part of any subsequent agreement, collected by the City and repaid to the original developer making such improvements.

The original developer shall provide the City with acceptable documentation of actual construction cost from which calculation of reimbursable amounts will be made for inclusion in the facilities agreement.

- B. Exemptions: when a development is of two lots or less and in the City Engineer's opinion does not affect existing drainage facilities or affect the adjacent property, the City Engineer may allow the developer to waive any off-site pro-rata costs.
- C. All City right-of-ways shall be sodded if disturbed. No artificial grass is allowed in any City right-of-way and/or easements.
- D. Before Acceptance of Streets and Alleys silt fencing shall be placed at the back of curb/edge of all pavement.

4. VEGETATION

4.1 General

All seeding, sodding and fertilizer requirements are to be done in accordance with the North Central Texas Council of Governments (NCTCOG) Standards and Specifications (Under Item 202) as modified by the City of Rockwall – Item 202

4.2 Coverage

The developer shall establish grass and maintain the seeded area, including watering, until a “**Permanent** Stand of Grass” is obtained at which time the project will be accepted by the City. A “Stand of Grass” shall consist of 75% to 80% coverage and a minimum of one-inch (1”) in height as determined by the City. Re-seeding will be required in all washed areas and areas that don’t grow.

All City right-of-ways shall be sodded if disturbed. No artificial grass is allowed in any City right-of-way and/or easements.

4.3 Planting Season

- | | |
|----------|---|
| Type I | Bermuda Grass – Hulled
50 lbs./acre, April through June |
| Type II | Annual Rye Grass
40 lbs./acre, September through March |
| Type III | Bermuda Grass – Unhulled
50 lbs./acre, January through March and July through August |

A mix of seed shall be used in overlapping planting seasons.

4.4 Additional Information

For a public utility less than 10 inches in size no tree shall be planted within 5 feet of the utility and for a utility greater than or equal to 10 inches in size no tree shall be planted within 10 feet of the utility.

If trees are approved by Zoning to be within the right-of-way then a City approved root barrier will be required to be installed in order to keep roots from degrading the pavement structure.

Vegetation over two feet in height shall not be planted in any visibility easement or potential sight visibility (including medians).

5. WATER AND WASTEWATER SYSTEMS

5.1 General Requirements

The design and construction of the water and wastewater system to serve the development shall be in accordance with good engineering principles, with these Standards of Design, the Standard Specifications for Construction and the Standard Details and with the requirements of the Texas Commission on Environmental Quality (TCEQ).

All materials to be permanently incorporated for use on projects in the City of Rockwall shall be produced in the United States of America, alternate products must be approved in writing prior to installation by the City Engineer. Therefore, “Domestically produced in the United States of America” means all manufacturing processes must occur in the United States of America, to mean, in one of the 50 States, the District of Columbia, Puerto Rico or in the territories and possessions of the United States.

All on-site and off-site water and wastewater mains shall be sized and located to conform to projected demands in accordance with the current Water Master Plan and Wastewater Master Plan and the computer model with regard to the impact of each development on the existing and proposed water system. No construction shall commence prior to the approval of the plans and specifications by the City.

5.1.1 System Capacity Studies

A Water and Wastewater System Capacity Study shall be performed for all developments or re-developments that propose a change in existing land use (change in density) that does not conform to the Cities current Water and Wastewater System Master Plan.

The City will utilize an engineering consulting firm to assist City staff in performing Water and Wastewater System Capacity Studies. The cost of this study, by the consultant, shall be borne by the developer, engineer, or property owner requesting the proposed change in land use. The City shall first obtain a cost estimate from the engineering consultant for the study at time of the initial submittal. Before the study begins, the developer, engineer, or property owner submitting for a change in land use shall deposit with the City funds equal to the cost estimate. The City shall disburse the funds to the consulting engineer as the study progresses. Should the consultant fees exceed the initial estimate, the developer, engineer or property owner submitting for the change in land use shall be informed of the shortage and a new estimate made by the consultant engineer to complete the study. Additional funds will then be deposited with the City by the developer, engineer or property owner to cover the estimated shortfall before the study is complete. Any unused funds to be

reimbursed to the developer, engineer or property owner submitting for a change in land use. If review process is performed by City staff, the City will submit a cost estimate for the study at time of the initial submittal.

5.1.2 Connections for Future Adjacent Developments

All development shall accommodate future adjacent and upstream/downstream developments by extending water and wastewater lines across the proposed development in order to create water and wastewater systems connectivity. This connectivity will provided for an ease of future development and limited disturbance to existing developments. These extensions of the water and wastewater facilities shall match the City’s Water Master Plan and Wastewater Master Plan.

5.1.3 Easements

If a water or wastewater main is located on private property the mains shall be within an easement that conforms to the minimum width in Table 5.1.

Table 5.1: Water & Wastewater Line Easements – Minimum Width

		Minimum Easement Width (ft)
Conduit Size	<= 48” diameter	20’
	> 48” diameter	Approval City Engineer
Depth of Conduit	< 14’	20’
	14’ - 16’	25’
	17’ – 20’	30’
	21’ – 23’	35’
	> 23’	40’

5.1.4 Separation of Water and Wastewater Lines

All water lines and wastewater lines shall be separated 10 foot horizontally and per TCEQ Rules and Regulations. Refer to the following:

- Chapter 290 - Public Drinking Water SUBCHAPTER D: RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS §§290.38 - 290.47
- Chapter 217 - Design Criteria for Domestic Wastewater Systems SUBCHAPTER C: CONVENTIONAL COLLECTION SYSTEMS §§217.51 - 217.70

For separation between storm lines a spacing of 5 foot horizontal shall be maintained from outside dimension of storm pipe to the water or wastewater line.

5.1.5 Water and Wastewater Lines within TxDOT Right-of-Way

Water and wastewater lines within or crossing a TxDOT right-of-way shall meet the requirements of the TxDOT District Office and the TxDOT Utility Manual. Utility permits for lines within or crossing TxDOT rights-of-way shall be processed through the Engineering Division. TXDOT Permit Plan sets shall

be 11"x17" in size and signed and sealed by a licensed professional engineer with the State of Texas. Plan sets shall include all applicable TxDOT Standard Details and Traffic Control Plans Sheets to construct the lines.

5.1.6 Boring, Jacking and Tunneling

All water and wastewater mains to be installed in steel casing under existing roadways, railroads, and creeks shall be installed by a method other than open cut, unless otherwise approved by the City Engineer. All Boring of existing water lines mains shall be shall be by dry bore methods. All boring of water and wastewater lines shall be by dry bore methods. No wet bores will be allowed.

Steel casing thickness and diameter size shall be designed by the engineer of record for construction and maintenance of the carrier pipe per the requirements below. Raci patented casing spacers, or approved equal, shall be used. No bends and/or curves are permitted with casing pipes. Casings may also be required where deemed necessary by the City Engineer. The construction bore and receiving pit shall be located at a minimum distance of 4 feet behind the back of curb. The engineer of record shall provide a distance greater than 4 feet where there is no curb or barrier protection at the edge of pavement. Additional bore setback distances or shoring shall be required to maintain roadway integrity and the safety of construction personnel. When bore and receiving pits are located on private property, permanent water and wastewater easements for the pits will be required for the installation and future maintenance of the line.

The engineer of record shall design the pipe casing for the following loading conditions and/or applicable combinations thereof:

- Cooper's E-80 Railway loading or AASHTO HS20 loading, as applicable.
- Earth loading with the height of fill above the casing as shown on the plans as existing or finish grade whichever is greater.
- All other applicable loading conditions, including loads applied during transportation and handling.
- Max casing deflection of ½-inch from the above loading conditions.

Engineer of records shall consider the location, size, and depth of bore and receiving pits relative to existing utilities when establishing the beginning and ending stations.

Manufacturers: Paint Manufacturers for pipe casing shall be 46-465 H.B. Tnemecol – Tnemec Inc. or approved equal.

5.1.7 Crossings

5.1.7.1 Culvert Crossings

A steel encasement pipe shall be used to encase the carrier pipe with a minimum vertical clearance of two (2) feet from the bottom of the culvert and casing pipe. The encasement pipe shall be extended a minimum of five (5) feet from the outside edge of a box culvert or the outside diameter edge of the storm sewer for future maintenance of the carrier pipe. All culvert crossing shall be profiled.

5.1.7.2 Creek Crossings

Water and wastewater lines at creek crossing shall be design to go under the flowline of the crossing. The lines shall be steel encasement pipe with a minimum vertical clearance of four (4) feet from the encasement pipe and the flowline of the creek to protect from future creek undercutting. The encasement pipe shall be extended to the creeks erosion hazard set back line for future maintenance of the carrier pipe. Where an erosion hazard set back does not exist due to a shallow creek the encasement pipe shall extend 15 feet on either side of the main channel of the creek. All creek crossings shall be profiled and shall show the erosion hazard set back line along with the projected 4(H):1(V) sloping line and 15 foot buffer from the intersecting point of the ground.

Aerial crossing of water lines are not allowed.

Aerial crossings for wastewater lines may be used only when all other alternatives have been evaluated and determined not to be feasible. Aerial crossings of wastewater lines require approval of the City Engineer. If an aerial crossing is to be installed reference additional requirements in the Wastewater System Section.

5.1.7.3 TxDOT Highway Crossing

A steel encasement pipe shall be used to encase the carrier pipe at all TxDOT highway crossings. The crossing shall be at 90 degree (perpendicular) to the highway. All boring of water and wastewater lines shall be by dry bore methods. No wet bores will be allowed unless approved in writing by the TxDOT District Office.

5.1.7.4 Railroad Crossings

Prior to the design of any railroad crossing, the engineer of record shall contact the railroad and the appropriate regulatory agency to determine if there are any special design and/or construction requirements and shall copy the City Engineer on all correspondence with each regulatory agency.

5.2 WATER SYSTEM

5.2.1 **General**

All facilities shall be sufficient size to provide adequate capacity for ultimate development as called out in the latest copy of the Water Master Plan. The water mains shall be sized to meet the maximum instant domestic requirements plus an appropriate allowance for fire protection water. The design criteria for water demand shall be submitted to the City with the plans and specifications. The City reserves the right to require larger water mains than required for the proposed development in order to provide capacities for areas outside the development. The developer will be responsible to construct water mains adjacent to his property in accordance with the latest Water Master Plan or as required by the City Engineer.

5.2.2 **Connections to Existing Distribution System**

Preliminary discussions concerning take-off points in the water system should be conducted with the City of Rockwall Engineering Division or its designated representative prior to finalizing the preliminary designs of the water system, which will serve the development. Connections to the City's existing water system will be allowed only at locations where the City believes that sufficient quantity and pressures are available to meet the projected requirements of the development. In general, the connections to the existing water system shall be made in such a manner to keep "shut-downs" to a minimum. Preference should be given to a tapping valve connection.

In a proposed development where City water is not adjacent to the property but is accessible, the developer shall provide, at their expense, a minimum of eight (8") inch water main, an off-site water main of sufficient size to serve his development or as shown on the City's Water Master Plan, whichever is larger. The City can participate (if funds are available) or collect pro-rata for the oversize of the required line. The City participation must be approved by the City Council. The proposed development may require a loop into the existing water system in order to provide adequate water pressure. The loop will be at the developer's expense. All water main shall be extended to the property lines for future connections.

In general, the City will not approve a development, which cannot be served by extensions to the City water system. Some areas in the City are served by public water supply corporations. The Developer shall contact these public water supply corporations for notification of future development. The Developer shall still be responsible to construct water facilities that meet City requirements and as shown on the City's Water Master Plan. The City will inspect the water facilities.

Under unusual circumstances, the City may consider approval of a private water system, which will supply an adequate quantity of potable water to every lot in a residential development. Such systems must meet the approval of the City, the TCEQ, the State Board of Insurance and other appropriate regulatory agencies. In addition, an agreement between the City and the developer must be executed whereby the City may acquire the system at such time as it can be connected into the City’s owned and operated distribution network. In all cases, the engineering drawings shall show the source of water for the development.

5.2.3 Sizing of Water Mains

- A. Water mains shall be sized to have maximum velocities of 7 feet per second for Maximum Daily Demands and maximum velocities of 10 feet per second for Combined Maximum Daily Demand and Fire Flow Demands.
- B. Table 5.2 provides the water demand for residential land uses and non-residential land uses and shall apply for any development where the lot layout has not been finalized. Land uses not listed shall be classified by the land use they most nearly resemble in Table 5.2 or calculated by the engineer in accordance with the anticipated use. The engineer shall submit the Maximum Daily Demand and the Maximum Hourly Demand to the City Engineer for review and approval. The City reserves the right to assign a higher water usage rate, population per unit, and/or units per acre to be used for developments anticipated to generate higher than typical usage rates.

Table 5.2: Water Demand Rates

Land Use	Units Per Acre	Population per Unit	Max Day per Capita (gpcd)	Max Hour per Capita (gpcd)	Max Day per Acre (gpac)	Max Hour per Acre (gpac)
Residential						
Single Family - Low Density	3.5	2.87	350	700		
Single Family - Medium Density	8.0	2.87	350	700		
Single Family - High Density	18.0	2.87	350	700		
Townhome	4.0	2.50	350	700		
Multi Family	12.0-16.0	2.00	350	700		
Non-Residential						
Mixed Use / Live Work / Downtown			350	700		
Commercial Retail / Business Center					1,500	3,000
Public / Quasi-Public					1,500	2,000
Commercial Industrial					2,000	3,000
Special Commercial Corridor / Technology Employment Center					3,000	3,900
Light Manufacturing *					2,000	3,000
Heavy Manufacturing *					2,500	3,000
Schools (Elementary)			39 per student	52 per student		
Schools (Middle / High Schools / Colleges)					1,500	2,000

Hospitals			720 gpd per bed	864 gpd per bed		
Nursing Homes / Assisted Living			240 gpd per bed	288 gpd per bed		
Restaurants					1,500	3,000
Parks and Open Space					1,500	1,500
Golf Course **					1,000	1,000

* Engineer shall provide the maximum daily demand and maximum hourly demand flows and/or the number and size of water meters proposed for the particular land use for review by the City.

** Engineer shall provide the number and size of water and irrigation meters proposed for the golf course for review by the City.

C. The engineer shall sufficiently size all water mains to provide adequate capacity for ultimate development as called out in the latest copy of the Water Master Plan. For all developments, re-developments, and any type of facility tying into the City’s water distribution system, the following guidelines shall be used:

- i. The engineer shall obtain the available record drawings. When record drawings are not available, field investigations and verifications shall be required prior to construction.
- ii. The standard water main sizes that shall be used are noted in the Table 5.3.

Table 5.3: Standard Water Main Sizes

8 inch	12 inch	16inch	18 inch	20 inch
24 inch	30 inch	36 inch	42 inch	48 inch
54 inch	60 inch	66 inch	72 inch	-----

- iii. The minimum water main size to serve residential areas shall be eight inches (8”) in diameter
- iv. The minimum water main size serving commercial, business, industrial, etc. shall be eight inches (8”).
- v. Fire Flow Demands for all districts shall be calculated with a minimum residual pressure of 20 psi under combined fire and domestic (Maximum Daily Demand) water flow conditions and/or the latest requirement by the TCEQ. The developer shall provide facilities sufficient for fire flows in accordance with the minimum criteria set for by the City’s Fire Marshal Office.
- vi. Mains are to be sized to ensure less than 1 foot of head loss per 1000 feet of water main using a Hazen Williams coefficient of C = 110 for the Maximum Hourly Demand flow rates within the subdivision internal distribution system.
- vii. Mains shall be sized to provide service to adjacent properties.

5.2.4 Water Mains Location/Alignment

Water pipelines shall be located in the parkways between the back of the curb and the street right-of-way. The location shall be six feet (6') from the back of curb on the north side of east-west streets and on the west side of north-south streets. When horizontal curvature is used the minimum radius of curvature shall be equal to that recommended by the pipe manufacturer.

A blue EMS Locator Pad will be located as shown in the Standard Drawings. Water mains shall have blue EMS locator pads at every two hundred fifty (250') feet, change in direction, valve, curb stop, and service connection to the main water main.

5.2.5 Depth of Cover

The minimum depth of cover for water mains are indicated in Table 5.4.

Table 5.4: Depth of Cover to Top of Pipe

Pipe Size	Minimum Depth of Cover
6 inch through 8 inch	4.0 feet
12 inch through 18 inch	5.0 feet
20 inch and larger	6.0 feet

The engineer shall consider the ultimate roadway elevations in determining the depth of cover. Additional depth of cover shall be required for future development and as directed by the City Engineer. Depths of cover greater than 8 feet shall be approved by the City Engineer.

5.2.6 Pipe Material and Embedment

Water mains shall be PVC pipe conforming to the Standard Specifications for Construction. In general, the water pipelines shall be AWWA C900-16 PVC Pipe (blue in color) for all sizes, DR 14 (PC 305) for pipeline sizes 12-inch and smaller, and DR 18 (PC 235) for 14-inch and larger water pipelines. All pipes shall be installed in embedment material as shown on the Standard Drawings and in conformance with the Standard Specifications for Construction.

5.2.7 Valves

Valves shall be installed to isolate pipe at a minimum of every other fire hydrant and on both sides of all public roadways. All gate valves shall comply with the approved list or an approved equal with resilient seat only and shall conform to and shall be installed according to the Standard Specifications for Construction.

- A. Valves shall be placed in straight run sections at spacing no greater than 500 feet.
- B. All valve boxes shall be encased in a concrete pad that shall be twelve inches by twelve inches by six inches (24"x24"x6") and reinforced with No. 3 steel bars.
- C. Valve extensions shall be 316 stainless steel.
- D. Unless otherwise requested by the developer and approved by the City, valves shall be located in the northwest quadrant of the street intersection.
- E. Valves shall be placed at or near the ends of mains in such a manner that a shutdown can be made for a future main extension without causing loss of service on the existing main. A minimum of 20 feet of main shall be installed past the valve and mechanical pipe thrust restraints shall be used to anchor it.
- F. Where fire lines are connected to the water main, valves shall be installed on one side of the connection to provide the ability to isolate the main line and continue to provide water to the fire line. The fire line shall be provided with a valve at the connection with the main line.
- G. Valve boxes shall be provided for buried valves. They shall be three-piece screw-type cast iron boxes of the extension type. The three pieces shall consist of the top section, bottom section, and cover.
- H. Two inch square nuts that would be over 4 feet deep shall have stainless steel valve stem extensions. In these cases, the 2 inch square valve operating nut shall be no greater than 2 feet from the finish grade. Valve box extensions may be cast iron or C-900 PVC.

5.2.7.1 Gate Valves

Valves 12 inches and under shall be Resilient Wedge Gate Valves (RWGV). Valves are required to have 316 Stainless Steel hardware. Gate valves shall be located outside the paved streets and shall be six feet (6') from back of curb of the intersecting street. In general, gate valves shall be located at street intersections (except for fire hydrant leads).

5.2.7.2 Butterfly Valves

Valves greater than 12 inches shall be flanged butterfly type spaced at a maximum of 1,000 foot intervals. All valves shall have horizontal mounted actuators with a manhole for access to the actuators.

5.2.7.3 Air Release, Air/Vacuum, and Combination Air Valves

- A. Air release valves, air/vacuum, and combination air valves shall be required on 16 inch and larger water mains and as necessary for proper system operation. There are three primary functions of the valves that the engineer shall consider as follows:

- i. To vent large volumes of air during filling of the line;
 - ii. To allow air into the pipe during emptying for maintenance and/or repairs; and,
 - iii. To vent small volumes of air that come out of solution during service.
- B. Typically these are installed at high points where the pipeline has a vertical change in gradient. Additional installation locations may be requested by the City Engineer.
- C. A fire hydrant shall be required at high points on 12 inch water mains for air relief and flushing maintenance operations. When a fire hydrant cannot be used, an air release valve may be approved by the City Engineer.

5.2.8 Fittings

Mega-lugs or approved equal shall be installed. No compaction fittings allowed. Fittings shall be ductile iron in accordance with AWWA C110 or AWWA C153. All buried metal shall be wrapped in polyethylene tube wrap.

5.2.9 Connection to existing Water Mains

5.2.9.1 Tapping Sleeves and Valves

- A. Size on size tapping sleeves are not allowed. The largest allowable tapping sleeve shall be the main line size less one standard pipe size (Example: 16 inch x 12 inch, 8 inch x 6 inch, etc.). If a size on size connection is required, then a cut-in connection shall be used.
- B. Connections to an existing line shall be made with full body stainless steel tapping sleeve and valve. A resilient wedge gate valve shall be flanged to the tapping sleeve.

5.2.9.2 Cut-In Connection

When connecting to an existing main, it may be required to provide a cut-in connection with a tee and valve being installed into the existing main in lieu of a tapping sleeve and valve where there is not an existing main line valve between proposed water connection locations as directed by the City Engineer. A test shut down of the existing water main(s) shall be conducted by the Public Works Department - Water Division. The requirement for a test shut-down may be waived with approvals of the City Engineer.

5.2.10 Dead-End Mains

- A. Dead-end mains shall be avoided and may only be considered when a looped or interconnected water main system is not available. The design of all water

distribution systems should include the opportunity for future looping or interconnect of any approved or proposed dead-end line.

- B. All dead-end lines shall only be installed upon approval from the City Engineer and at a maximum length of 150 feet.
- C. Dead-end non-residential water mains shall only have one fire hydrant or service without looping the water main.
- D. Where dead-end mains are approved, the engineer shall provide flush point at the end of the dead end main.

5.2.11 Fire Hydrants

In general, fire hydrants shall be located at each street intersection and at intervals on the interior of each block.

A. Residential and Duplex

Residential and duplex areas shall have a fire hydrant at each street intersection and at four hundred foot (400') intervals on the interior of each block.

B. Multi Family

Multi-Family areas shall have a fire hydrant at each street intersection and at four hundred foot (400') intervals on the interior of each block and along fire lanes.

C. Commercial, Retail and Industrial

Commercial, retail and industrial areas shall have a fire hydrant at each street intersection and at a maximum of four hundred foot (400') intervals on the interior of each block and along fire lanes

Fire hydrants shall be installed a minimum of three feet (3') and no greater than six feet (6') behind curb of a fire lane, driveway, access, and/or street **as measured from the centerline of the fire hydrant to back of curb, edge of pavement, or fire lane**. All fire hydrants shall have five feet (5') of clearance around, **including parking stall curbs**.

The spacing of fire hydrants shall be measured along the street frontage or fire lanes. The City Fire Marshal and Engineering Division shall review all fire hydrant spacing. When a special condition exists due to land use, the Fire Marshal or City Engineer may require additional hydrants for fire protection. All existing fire flows and pressure tests shall be obtained from a private company (City does not perform this test).

Fire hydrants shall comply with the approved list or an approved equal conforming to the requirements set forth in the Standard Specifications for Construction. All fire hydrants shall be installed with a six-inch (6") gate valve on the hydrant lead. The installation shall be as set forth in the

Standard Specifications for Construction. Fire hydrants shall be painted to meet the City's requirements for color code as set forth in the Standard Specifications. In general, the fire hydrant will be reflective silver with differing cap color, which corresponds to the size of hydrant feeder line, as detailed in Approved Water Materials List in the Appendix. Fire hydrants shall be installed at the end of each dead end line. Minimum main size for a fire hydrant shall be eight inches (8") if main is fifty feet (50') or longer. Fire hydrants are not to be powder coated. Fire hydrants are to be a minimum of nineteen (19) inches to a maximum of twenty-eight (28) inches above final grade. All fire hydrants to have five (5) feet of clearance from any structure or parked vehicle. Nozzle diameter shall be two hose nozzles measuring two and one-half (2 ½) inches nominal inner diameter and one pumper nozzle measuring four and one-half (4 ½) inches nominal inner diameter. All nozzles are to have National Standard Hose Threads. **The operating nut and nozzle nuts shall be 1 ½ inch pentagon-point to flat size/shape.**

- A. **Standard fire hydrant barrel shoe depth where ever practical shall be 5 feet. The fire hydrant lead line shall be adjusted to meet the standard fire hydrant depth.**
- B. **The connection to the main line shall include a flanged tee connected to a flange by mechanical joint gate valve. The mechanical joint shall be restrained so that the fire hydrant is anchored to the valve.**
- C. **Specifications – Fire hydrants shall be three-way breakaway type no less than 5- 1/4 inch size. Mechanical joint connection is required.**

5.2.12 Water Service Connections

Service connections shall be in accordance with the designs shown on the Standard Drawings. The materials shall comply with approved list or approved equal and shall be installed in accordance with the Standard Specifications for Construction.

- A. All service pipelines shall be constructed of SDR-9 (Polytube) having a minimum size of one-inch (1"). All connections shall be **compression** type or approved equal.
- B. **Detector pads embedded in sand shall be installed above all service connections.**
- C. All meter boxes shall be set between the sidewalk and the back of curb. Meter box tops shall be set one-half inch to one and one-half inch (1/2" to 1 ½") above the curb, and an angle meter stop shall be set six inches (6") below the meter box top. Meter boxes shall have a one-inch (1") wide slot from five inches (5") below the top of the box to the bottom of the box on the side facing the lot for service connection.
- D. **A domestic and/or irrigation service connection shall not be allowed on fire hydrant leads.**

- E. Service saddle shall be double bronze flattened straps (no banded straps shall be allowed) with brass body. Minimum size tap shall be 1 inch diameter.
- F. All meters two-inch (2") and under shall be supplied by the City and will be at developer's/contractor's expense. All meters greater than two inches shall be furnished and paid for by the developer/contractor.
- G. Concrete meter vaults are required for meter sizes 3 inches and larger, meters and vaults shall be provided by the contractor. Meter vault and meter requirements are shown in the Standard Drawing section.
- H. Residential Water Meters
 - a. In single family residential developments, the nearest edge of the water meter box shall be a minimum of 6 inches behind the back of curb, and the water service shall be no more than 12 inches deep, covered with a meter box in place at grade. If no curb is present, the water meter shall be located at the right of way line, no more than 12 inches deep, covered with a meter box in place at grade. Along roadways without a curb, the water service line shall be constructed at a minimum of 24 inches below the ditch flowline. Meter boxes shall not be placed in the invert of a ditch.
 - b. For multi-family, condominium and townhouse developments installation of multiple meter boxes: may only be installed at approved locations. Each service box shall service one (1) lot. Installation on multiple meters per water service will not be allowed. Only one meter per service will be allowed.
- I. Non-Residential Water Meters
 - a. Installation of non-residential meters will include two mainline valves, one bypass valve with chain and lock, and bypass line, all located inside the vault. Clearances between fasteners on valves, strainers, and meters to interior surfaces shall provide adequate room for maintenance.
 - b. Non-residential water meters will be located in a water easement and clear of high traffic areas.
 - c. Water meter vaults shall be sized according to the size of the water meter and to allow for a minimum of a 12 inch clear working area for maintenance and operation. Minimum water meter vault sizes are shown in the City of Rockwall Standard Details.
 - d. Non-residential irrigation meters shall have a testable double check backflow preventer.

5.2.13 Abandonment of Water Mains

- A. The engineer is to note the limits and appropriate conditions for abandoning existing water mains that are being replaced. For lines being abandoned, the engineer should note and locate points of cut and plug at the junction with the line that remains in service.

- B. The engineer shall make allowances to permit the existing and proposed mains to remain in service simultaneously thereby providing a means for transferring customer's services from the old main to the new main with minimum interruption. If the construction of a proposed main necessitates the abandoning of the existing main prior to the new main's placement into service, then provisions for a temporary water main with services must be addressed with the design.
- C. Abandoned water lines to remain in place shall be cut and plugged and all void spaces within the abandoned line shall be filled with grout, flowable fill or an expandable permanent foam product. Valves to be abandoned in place shall have any extensions and the valve box removed and shall be capped in concrete.
- D. Existing fire hydrants and valves located on mains being abandoned are to be removed and delivered to the Public Works Department.

5.3 WASTEWATER SYSTEM

5.3.1 **General**

All facilities shall be sufficient size to provide adequate capacity for the ultimate development. The wastewater lines shall be sized to meet the peak-day dry weather flow plus an appropriate allowance for infiltration of storm water. The minimum wastewater main size (other than service lines) for all developments shall be eight inches (8") in diameter. The design criteria and calculation shall be submitted to the City with the plans and specifications. The City reserves the right to require a wastewater main of a larger size than that required by the development in order to provide capacities for areas outside of the development. **Wastewater systems shall be designed so that all wastewater mains will be gravity flow. The use of a wastewater lift station can only be allowed with written approval by the City Engineer.**

Connections to substandard mains and manholes shall not be allowed. Substandard mains shall be determined by the City Engineer based on criteria including, but not limited to: size, material, condition, flow rate, capacity, etc. Offsite improvements may be necessary to provide adequate wastewater service to the site.

All wastewater mains shall be installed at a depth sufficient to permit all water mains to be above the wastewater when the water main has a minimum cover of four feet (4'). In such cases where water mains either cross or otherwise come within 10 feet (10') of a wastewater main, the wastewater main may be PVC pressure pipe with a minimum working pressure class of 150 psi or encased in concrete.

5.3.2 **Ownership and Maintenance**

5.3.2.1 Ownership

Ownership of wastewater systems shall conform to the following:

- Wastewater mains within right-of-way or easements shall be owned by the City. This shall include the manholes and cleanouts on those lines.
- Wastewater service laterals shall be owned by the property being serviced, from the wastewater main connection to the structure being serviced. This includes any and all **manholes and** cleanouts on the service lateral.

5.3.2.2 Maintenance

Maintenance of wastewater system shall conform to the following:

- Wastewater mains within right-of-way or easements shall be maintained by the City. This shall include the manholes and cleanouts on those lines.

- Wastewater service lateral shall be maintained by the property owner being served from the structure to the right-of-way line and the City shall maintain from the right-of-way line to the wastewater main.

5.3.3 Connections to Existing Wastewater Collection System

Preliminary discussion concerning entrance points in the wastewater system should be conducted with the City of Rockwall Engineering Division or its designated representative prior to finalizing the preliminary designs of the collection system to serve the development. In a proposed development where City wastewater facilities are not adjacent to the property but are accessible, the developer shall provide, at his expense, an off-site wastewater interceptor of sufficient size to serve his development and the contributing service area (using fully developed flows), or as shown on the City's Wastewater Master Plan, whichever is larger. Developers can request a pro-rata agreement for wastewater over-size above ten (10") inch to be executed with the City, where the City collects a pro-rated amount as other developments connect to the system. This money would be distributed back to the developer that constructed the over-sized system. The pro-rata agreement requires approval by City Council.

Connections to Existing Wastewater Mains – When connecting a 6 inch or larger new line to an existing wastewater main the engineer shall provide a new manhole at the point of connection. Prior to breaking into the existing line the new manhole and upstream pipe segment shall pass inspection by the City Engineer or designated representative. Connections in residential locations shall be completed after the preliminary walk through has been performed by the Engineering Department and approval is granted.

In general, the City will not approve a development which cannot be served by extensions to the City's wastewater collection system unless the development has received an approved variance granted by City Council.

5.3.4 Design Flow

All wastewater collection systems shall be designed in accordance with the current Wastewater Master Plan.

Where possible, all collection systems will be laid out so that all lines will be gravity flow unless approved by the City Engineer.

All wastewater collection systems must be designed to convey the peak wet weather flow from the entire service area including offsite areas through the system. The basin delineation shall be provided by using the latest LIDAR and surveyed contours. Contours shall be provided on 2 foot or less intervals.

Flow calculations must include the specifics of the average daily flows, peak factor (ratio of peak to average flows) and the allowance for inflow and infiltration.

5.3.5 Sizing Wastewater Collection Mains

5.3.5.1 General

- A. The engineer shall reference the Wastewater Master plan to determine the size of wastewater mains required in order to serve the development. For all developments or re-developments that propose a change in existing land use (change in density) that does not conform to the Cities current Wastewater System Master Plan a Wastewater System Capacity Study shall be performed. This shall be done as per Section 5.1.1 – System Capacity Studies.
- B. The standard wastewater pipe sizes that shall be used are noted in the Table 5.5.

Table 5.5: Standard Wastewater Collection System Pipe Sizes

8 inch	10 inch	12 inch	15 inch	18 inch
21 inch	24 inch	27 inch	30 inch	33 inch
36 inch	39 inch	42 inch	48 inch	54 inch
60 inch	-----	-----	-----	-----

5.3.5.2 Average Daily Flow

- A. Table 5.6 shall be used to calculate the average daily wastewater flow. The collection system shall be designed based on the peak flow calculations, plus an allowance for Inflow and Infiltration.
- B. For replacement of existing sewer for additional capacity, wastewater flow data will be provided by the City Engineer and the Cities wastewater modeling consultant from data generated by the Wastewater Master Plan computer model.
- C. Wastewaters with direct connections to service lines shall be designed to be no more than 70% full and interceptors shall be designed for 100% full.
- D. Table 5.6 summarizes the residential and non-residential land use wastewater usage rates. Land uses not listed shall be classified by the land use they most nearly resemble in Table 5-8 or calculated by the engineer in accordance with the anticipated use. The engineer shall submit the average daily flow and peak flow calculations including off-site flows within the drainage basin to the City Engineer for review and approval. The City reserves the right to assign a higher wastewater usage rate and/or population per unit to be used for developments anticipated to generate higher than typical usage rates.

Table 5.6: Wastewater Per Capita and Usage Rates

Land Use	Units per Acre	Population per Unit	Average Daily Flow (gallons per person or unit /day)	Average Daily Flow per Acre (gpad)
Residential				
Single Family - Low Density	3.5	2.87	90	
Single Family - Medium Density	8.0	2.87	90	
Single Family - High Density	18.0	2.87	90	
Townhome	4.0	2.5	90	
Multi Family	12.0-16.0	2.00	80	
Non-Residential				
Mixed Use / Live Work / Downtown				800
Commercial Retail / Business Center				800
Public / Quasi-Public				1,000
Commercial Industrial				1,500
Special Commercial Corridor / Technology Employment Center				1,200
Light Manufacturing *				1,500
Heavy Manufacturing *				3,000
Schools (Elementary)			30 per student	
Schools (Middle / High Schools / Colleges)			30 per student	
Hospitals			400 per bed	
Nursing Homes / Assisted Living			300 per bed	
Restaurants			50 per seat	
Hotels			200 per room	
Parks and Open Space				0
Golf Course**				100

5.3.5.3 Peak Flow Factor

Peak flow factors are as follows:

- A. For average daily flow less than 0.05 MGD – Peak Flow Factor = 5.
- B. For average daily flow between 0.05 MGD and 1.0 MGD – Peak Flow Factor = 4.
- C. For average daily flow between 1.0 MGD and 2.0 MGD – Peak Flow Factor = 3.5.
- D. For average daily flow greater than 2.0 MGD – Peak Flow Factor = 3.

5.3.5.4 Inflow and Infiltration

After determining the peak flow amount, the engineer shall add an average daily inflow and infiltration rate of 400 gpad. The inflow and infiltration amount calculated shall be added to the peak flow calculated, with the resultant being the peak wet weather flow, the basis for design.

5.3.6 Wastewater Mains

Wastewater pipelines shall be located in the parkways between the back of the curb and the street right-of-way. The location shall be six feet (6') from the back of the curb on the south side of east-west streets and on the east side of north-south streets. A green EMS Locator Pad is to be installed at every manhole, cleanout, and service connection to the wastewater main. If a wastewater line is to be constructed greater than 10 feet in depth and services are required than a parallel line is to be constructed at a depth shallower than 10 feet. The deeper line shall be 6' from the back of curb in the pavement side and the shallower line with services shall be 6 feet from the back of curb toward the right of way.

5.3.6.1 Pipe Material

Allowable for gravity wastewater mains shall be per Table 5.7.

Table 5.7: Pipe Materials for Wastewater Gravity Mains

Pipe Size	Pipe Material
4 inch through 15 inch	Green PVC – SDR 35 (ASTM D3034) [less 10 ft cover] Green PVC – SDR 26 (ASTM D3034) [10 ft or more cover]
18 inch and Lager	Green PVC – PS 46 (ASTM F679) [less 10 ft cover] Green PVC – PS 115 (ASTM F679) [10 ft or more cover]

Pipe shall have a minimum earth cover of four (4') feet. All pipes shall be installed in embedment material as shown on the Standard Details and in conformance for the Standard Specification for Construction. Any main with less than minimum cover shall be encased in concrete and is subject to approval by the City Engineer. Depth of cover greater than 20 feet must be approved by the City Engineer. All pipelines shall be tested for infiltration.

5.3.6.2 Minimum Grades

Wastewater lines should operate with velocities of flow sufficient to prevent excessive deposits of solid materials, otherwise objectionable clogging may result. The controlling velocity with regard to sediment deposition is near the bottom of the conduit and considerably less than the mean velocity flowing full of 2.5 feet per second (f.p.s.). Table 5.8 indicates the minimum grades for wastewater pipe with a Manning's "n" = 0.013 and flowing at 2.4 f.p.s.

Table 5.8: Minimum Grades for Wastewater Pipelines

Pipe Size (Inches)	Slope (n = 0.013) (Foot/Foot)	Pipe Size (Inches)	Slope (n = 0.013) (Foot/Foot)
6	0.0050	39	0.0006
8	0.0033	42	0.0006
10	0.0025	45	0.0005
12	0.0023	48	0.0005
15	0.0023	54	0.0004
18	0.0018	60	0.0004
21	0.0015	66	0.0004
24	0.0013	72	0.0003
27	0.0011	78	0.0003
30	0.0009	84	0.0003
33	0.0008	96	0.0002
36	0.0007		

5.3.6.3 Curved Sewers

No vertical curves will be allowed. Horizontal curvature may be allowed by joint deflection or pipe flexure but not both. The Engineer must specify on the plans the method of deflection allowed and the allowable radius or joint deflection for each pipe size.

When pipe flexure is used, the minimum radius of curvature shall be equal to that recommended by the pipe manufacturer or $300 \cdot D_0$, where D_0 is the average outside diameter of the pipe in inches, whichever is greater. The Engineer shall note on the plans that when using pipe flexure, all joints are to remain fully seated.

If a joint deflection will be used to provide horizontal curvature, the allowable deflection shall be 5° or 80% of the Manufacturer's recommended maximum joint deflection, or 80% of the National Reference Standard maximum recommended joint reflection, whichever is less. When joint reflection is used, the Engineer must specify the size of mandrel used for reflection testing. The mandrel shall be sized to verify that the maximum joint deflection has not been exceeded.

Horizontal curves shall match change in street direction as near as possible.

5.3.7 Wastewater Service Laterals

Wastewater service pipelines shall be laid to each lot. The service pipelines shall be plastic pipe having a minimum diameter of four inches (4") and shall extend to the property line. Wastewater service pipelines shall be located on the lower side of each lot and as approved on the final construction plans by the City. In general, a service pipeline shall serve only one lot. Special wastewater service sizing may be required in some instances. Where water

and wastewater pipelines pass within nine feet (9') of each other, the method of construction shall be specified in order to meet TCEQ criteria. No wastewater main shall be located nearer than five feet (5') from any tree. Service lines cannot connect to wastewater mains that are over ten feet (10') deep.

Service laterals shall have a minimum horizontal separation of 10 feet downstream from the water service.

Retail and Commercial – Service lateral size shall be 6 inch minimum at a 2 percent minimum grade.

5.3.8 Manholes

In general, manholes shall be located at all intersections of wastewater pipelines, changes in grade, changes in alignment and at distances not to exceed five hundred feet (500'). All manholes will be hydrostatically or vacuum tested. For manholes that have an epoxy coating after constructed, a spark test will be required prior to acceptance. Manhole sizing shall be per Table 5.9 with a thirty inch (30") lid. If a manhole exceeds ten (10') feet in depth, increase the diameter by one (1') foot from the sizes given in Table 5.9.

Table 5.9: Minimum Manhole Sizes

<u>Wastewater Main Size</u>	<u>Minimum Manhole Diameter</u>
6", 8" and 10"	4.0 foot *
12", 15", 18", 21", 24" and 27"	5.0 foot *
30" and 36"	6.0 foot *

* Internal Drop Manholes shall be 6.0 foot minimum

Manholes shall be a minimum of 4,200 psi pre-cast concrete (minimum 6.5 sack mix) or cast-in-place (minimum 7.0 sack mix) and shall conform to Standard Details and the Standard Specifications for Construction. Existing brick manholes shall be replaced. All private manholes shall have covers with the label "Private" forged into the cover.

5.3.8.1 Internal Drop Manholes

Internal drop manholes shall be required when the inflow elevation is more than 18 inches above the outflow elevation. New internal drop manholes shall be constructed with inside drops with a 6 foot minimum diameter. Depending on the depth of the drop manhole and inside clearances between drop bowl apparatus and the manhole, the City Engineer may increase the minimum diameter above 6 feet. Drop manholes shall increase in diameter as necessary to accommodate the pipe for an internal drop connection as necessary to provide 48 inches of clear space for construction and maintenance operations. Within the manhole the inverts shall be sloped to maintain a smooth transition

through the manhole connecting all inlets and outlets. Outside drop connections will not be allowed.

5.3.8.2 Corrosion Protection

All Manholes shall have Raven Liner 405 epoxy coating, ConShield, or approved equal, shall be installed in all new manholes and in existing manholes being modified. Consheild must have terracotta color dye mixed in the precast and cast-in-place concrete. Where connections to existing manholes are made the contractor shall rehab manhole as necessary and install a 125 mil thick coating of Raven Liner 405 or approved equal. Manhole shall be replaced at the developer's/contractor's expense if it cannot be rehabilitated.

5.3.8.3 Watertight Sealed Manholes

All manholes shall be sealed if located in an area of storm water flow (paving, creek, drain way, etc.). When manholes are placed within the limits of the fully developed 100-year floodplain watertight sealed manholes (Type S) shall be used to prevent the entrance of stormwater and properly vent manhole. Manholes installed in the floodplain shall be a minimum of (60") diameter with a concentric flat top that has a rim elevation (2') above the limits of the fully developed 100-year floodplain. When allowed by the City Engineer manholes may be below the 100-year floodplain but must be bolted and gasketed. Every third manhole shall be vented (2') feet above the fully developed 100-year floodplain elevation or 4 feet above the adjacent ground line, whichever is higher. Manhole rim shall be a minimum of 2 feet above ground line. The engineer shall obtain and provide the elevation of the fully developed 100-year floodplain.

5.3.8.4 Inflow Prevention

In order to reduce the size of wastewater system main trunk lines and reduce the cost of wastewater treatment efforts to reducing inflow and infiltration in to the wastewater collection system shall be taken. All manholes (public or private) shall be fitted with inflow prevention. The inflow prevention shall conform to the measures called out in standard detail R-5031.

5.3.9 **Cleanouts**

Cleanouts shall be constructed on the end of all lines. The maximum distance between a manhole and an upstream cleanout is two hundred fifty feet (250'). Cleanouts may be located at the end of the line only.

Double clean outs shall be installed for non-residential services at the right of way line, property line, or easement line where a public line changes to a private service.

Cleanouts shall conform to the Standard Details and the Standard Specifications for Construction.

5.3.10 Testing

All wastewater lines shall be tested for infiltration in accordance with the procedures set forth in the Standard Specifications for Construction. In general, all wastewater pipes shall be installed so that the completed wastewater will have a maximum exfiltration of one hundred fifty (150) gallons per inch of internal diameter, per mile of pipe, per 24 hours, where the maximum hydrostatic head at the centerline of the pipe does not exceed twenty-five (25) feet. All wastewater pipes shall be inspected by photographic means (television or DVD) prior to final acceptance. The contractor shall furnish a DVD to the Engineering Division Construction Inspector for review. Any sags, open joints, cracked pipes, etc. shall be repaired or removed by the contractor at the contractor's expense. A television survey will be performed as part of the final testing in the twentieth (20th) month of the maintenance period. The City's representative shall be present at all testing. All expenses for this work shall be the developer's responsibility.

5.3.11 Abandoning Existing Wastewater Mains and Manholes

When an existing wastewater line is to be abandoned all services and laterals on the main to be abandoned shall connect back into the system. All existing wastewater mains that are to be abandoned shall be videotaped to determine the location of the services and laterals. A copy of the videos shall be given to the Cities Construction Inspector for review before the line is fully abandoned.

All abandoned wastewater and force main lines shall be cut and plugged **and all void spaces within the abandoned line shall be filled with grout, flowable fill or an expandable permanent foam product.**

Wastewater manholes shall be abandoned per Standard Drawing No. 5170.

5.3.12 Creek Crossings

Wastewater lines constructed under or over any flowing stream or semi-permanent body of water, such as a marsh or pond, shall be installed inside a separate watertight encasement pipe. Wastewater lines shall have manholes on each side of the crossing.

The engineer of record shall determine the type and limits of any special embedment, and specify the limits for specialized backfills to prevent soil erosion at the areas of trench backfill as approved by the City Engineer.

5.3.12.1 Aerial Creek Crossings

Aerial crossings for wastewater lines may be used only when all other alternatives have been evaluated and determine not to be feasible. Aerial crossings of wastewater lines require approval of the City Engineer.

Aerial crossing shall meet the following requirements:

- The design of all piers, bents, restraints, abutments, steel casing, etc. for the aerial crossing shall be performed and signed and sealed by a Professional Structural Engineer licensed in the State of Texas.
- The engineer of record shall use steel encasement pipe around all aerial carrier pipes. The carrier pipe shall be restrained or welded all around joints or be a monolithic pipe between a span section.
- The pier spacing for the aerial crossing supports must maintain adequate grade, and span the 100-year floodway.
- A span section must withstand the hydraulic forces applied by the occurrence of a 100-year flood including buoyancy. Both the aerial crossing encasement pipe and the supporting structure shall be capable of withstanding impacts from debris and water.
- A scour analysis report prepared by a geotechnical professional engineer shall be submitted to the City Engineer for review.
- A Hydrologic and Hydraulics Study of the aerial crossing shall be performed. The aerial crossing shall not increase the 100-year floodplain water surface elevations or velocities.
- Geotechnical borings at the creek crossing and report shall be prepared by a Professional Geotechnical Engineer licensed in the State of Texas.
- Wastewater lines shall have manholes on each side of the crossing.
- The upstream bent/abutment section of the aerial crossing shall be designed with a minimum 2-inch underdrain at the flowline of the embedment to collect infiltration that is travel within the upstream embedment of the aerial crossing. This shall day light at the aerial crossing current day slope to prevent erosion of the aerial crossing at the upstream end.
- The aerial crossing shall be designed to extend to the erosion hazard setback line with piers and bents.

5.3.12.2 Inverted Siphon

Inverted siphons at creek crossings for wastewater lines are not allowed.

5.4 WASTEWATER LIFT STATIONS AND FORCE MAINS

5.4.1 General

All lift station design plans and specifications shall be submitted to the City Engineer and TCEQ for review and approval prior to construction. Developments which increase the flow to existing lift stations will be subject to a pro-rata charge if sufficient capacity is available in the existing lift station or will be required to increase the capacity of the existing facility. Lift stations and force mains shall be designed and built for the upstream drainage area using a fully developed condition. This will include off-site areas if applicable. Developers are responsible for the construction of regional lift stations and force mains, per the Wastewater Master Plan. Developers can request a pro-rata agreement be executed with the City, where the City collects a pro-rated amount as other developments connect to the system. This money would be distributed back to the developer that constructed the oversized system. The pro-rata agreement requires approval by City Council.

The City will utilize an engineering consulting firm to assist City staff in the review of a report and plans for wastewater lift stations and force mains. The cost of this consultant review shall be borne by the developer, engineer, or property owner submitting the report and plans for wastewater lift stations and force mains. The City shall first obtain a cost estimate from the engineering consultant for the review at time of the initial engineering submittal. Before the review begins, the developer, engineer, or property owner submitting the report and plans for wastewater lift stations and force mains shall deposit with the City funds equal to the cost estimate. The City shall disburse the funds to the consulting engineer as the review progresses. Should the consultant fees exceed the initial estimate, the developer, engineer or property owner submitting the report and plans for wastewater lift stations and force mains shall be informed of the shortage and a new estimate made by the consultant engineer to complete the review. Additional funds will then be deposited with the City by the developer, engineer or property owner submitting the report and plans for wastewater lift stations and force mains to cover the estimated shortfall before the review resumes. Any unused funds to be reimbursed to the developer, engineer or property owner submitting the report and plans for wastewater lift stations and force mains. If review process is performed by City staff, the City will submit a cost estimate for the review at time of the initial engineering submittal.

5.4.2 Design Report and Plans

A typed lift station and force main design report shall be prepared and signed and sealed by a registered professional engineer licensed in the State of Texas.

5.4.2.1 Report

The typed report shall include the following information at a minimum:

- A brief summary of project scope that includes:
 - General description of proposed development
 - General explanation on circumstances that warrant a lift station including other options considered.
 - Description of any potential phasing of lift station until sewer basin is built-out if City Engineer approves lift station size less than fully developed conditions.
- Influent hydraulic calculations showing:
 - Area in acres of the sewer basin and the development.
 - The area of each proposed use for the development and the ultimate projected use for the basin per City future land use.
 - The average design flow and the maximum peak flow for the basin and the development.
 - Elevation of the proposed lift station site.
 - The elevation of the proposed discharge point of the force main.
- Wet well volume calculations
- Force main size with proposed velocities in pipe.
- Power outage records on Electric provider letterhead for power outages in area for the past 24 months.
- Opinion of probable costs for lift station, force main, and annual operating and maintenance costs.
- Ground water levels in proposed site area.
- Proposed system's effect on existing system's capacity.
- Odor control methods shall be submitted to the City Engineer for review and approval. The potential odor determination must include the estimated flows immediately following construction and throughout a system's 50-year expected life cycle.

5.4.2.2 Plans

The plan or plans submitted shall contain the following information:

- Scale
- North Arrow
- Vicinity map
- Delineation of the boundary of the proposed development and offsite areas of the sewer basin (service area) in which the development lies. Basin delineation shall be provided using NCTCOG, LIDAR or surveyed contours. Contours shall be provided on 2 foot or less intervals. USGS topo is not permissible.

- Area in acres of the development and of the sewer basin contributing to the Lift Station.
- Proposed use or uses for the development and service area.
- The proposed lift station location.
- The proposed force main routing.
- Delineation of the 100-year Fully Developed flood plain, FEMA 100-year flood plain and Erosion Hazard setbacks.
- The location and size of the existing collection system at the tie-in point.
- Property lines, easement lines, ROW lines.

5.4.3 Site Selection

The following are the minimum criteria that shall be met for a lift station site.

The station should be located as remotely as possible from populated areas. The lift station site shall not be located within 150 feet of an existing or proposed residential dwelling and 100 feet from a residential lot.

The station shall be protected from the 100-year flood and shall be accessible during a 100-year flood. The elevation of the site shall be a minimum of 1 feet above both the Fully Developed 100-year flood plain.

The station site and its access shall be dedicated to the City as a wastewater easement. The fencing set back shall be 5 feet from the easement line to allow for a landscape and drainage buffer.

The station site shall be located so it may serve as much of the entire sewer drainage basin as possible. This may require that the station be located off-site of the development. When a station serves a larger area than the proposed development, the developer can request a pro-rata agreement with the City to be reimbursed the cost of excess capacity as other developments connect to the system.

5.4.4 Site Requirements

The lift station site shall conform to the requirements in these subsections and Typical Lift Station Site Layout - Figure 5.1.

5.4.4.1 Access

Access drive will be provided by a reinforced concrete pavement from a public street and/or dedicated access easement. Concrete shall be a minimum 8 inches thick, 3,600 psi (6.5 sack/CY) with #4 bars at 18" O.C.E.W. -reinforced concrete pavement with a minimum of 20 feet in width and 40 feet in length (within fenced area of lift station) to allow maintenance vehicles to park fully outside of the City right-of-way.

When an access drive for the lift station connects to a City Thoroughfare or TxDOT designated highway a “T” shaped turnaround shall be provided with applicable turning radii. The alignment of the drive shall allow maintenance vehicles the ability to back up straight to the wet well.

Access shall be functional during a 100-year flood. All area within the lift station fencing and access drive shall be a minimum of 1 foot above the water level caused by a 100-year fully developed floodplain.

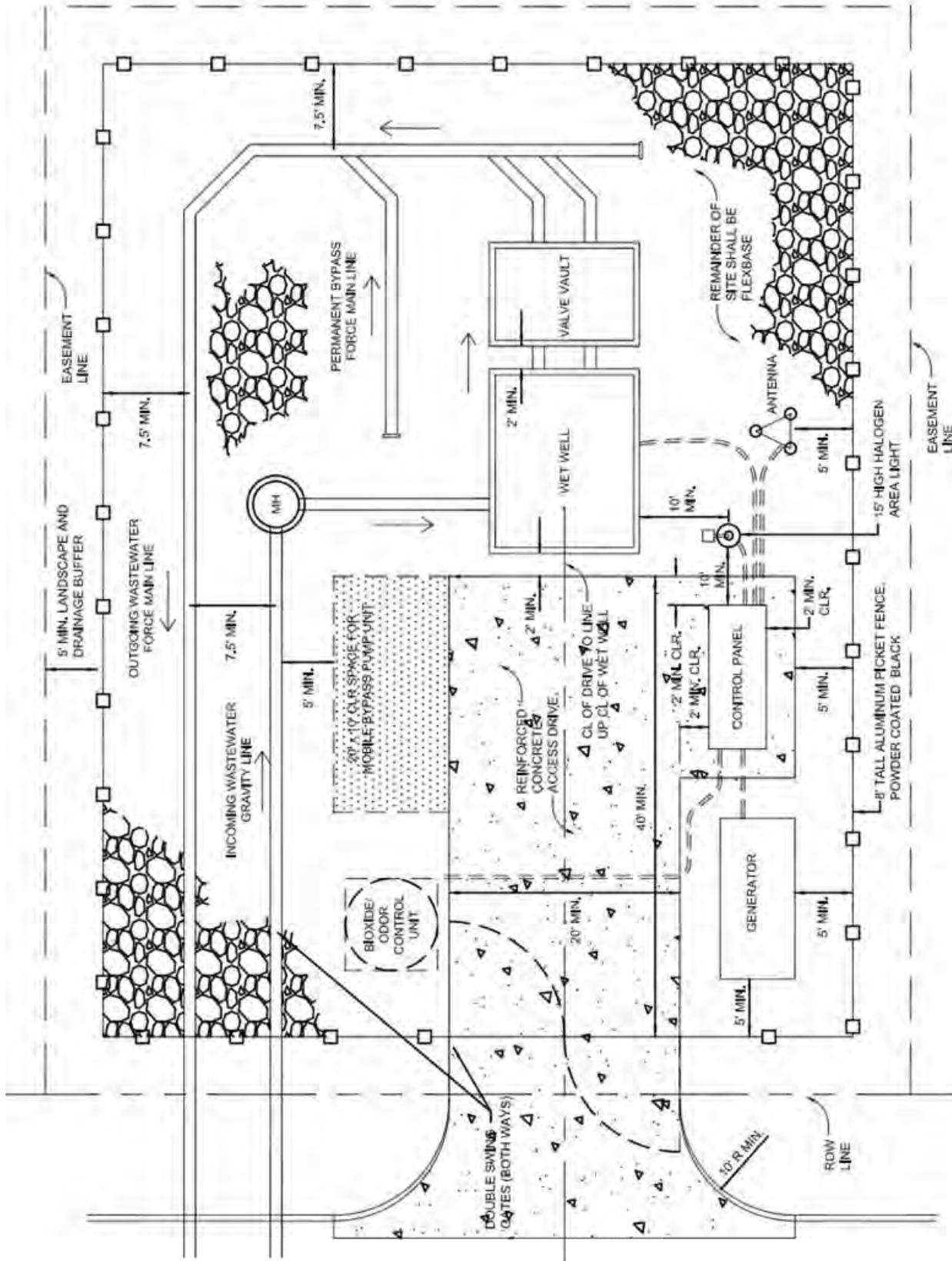


Figure 5.1: Typical Lift Station Site Layout

5.4.4.2 Security

At a minimum, security of the lift station site shall be provided by an intruder-resistant fence (IRF) to restrict access by an unauthorized person(s). The IRF shall be placed around the perimeter of the site encompassing all interior structures and apparatuses and shall maintain a minimum 5 foot clearance from all lift station components and 7.5 foot off of lift station piping.

The IRF shall be a minimum of 8 feet aluminum picket fence with a 20 foot wide minimum double swing gate for access. All components shall be manufactured from aluminum extrusions having a minimum ultimate strength of 35,000 psi, using 6005 T5 alloy. The fence, post and gates shall be powder coated black with a minimum cure film thickness of 2.0 mils.

Technical Data

Pickets: The hollow pickets shall pass through the rails and are to be attached using stainless steel screws allowing the pickets to be always parallel to the terrain. Screws shall be on one side of rail only. Pickets shall be 1" square x 0.062" thick.

Horizontal Rails: Rails shall be C-Channels with ribbed reinforced side walls. Square holes shall be punched in the top of the rails to allow the pickets to pass through.

- Four rails are required.
- Heavy Industrial Rails shall be 1-5/8" x 1-5/8" with a side thickness of 0.100", top wall thickness 0.070" and bottom wall thickness of 0.062", which snaps into the top allowing all screws to be enclosed inside the rail.

Posts: Posts shall be hollow square extrusion with holes pre-punched to allow the rails from the fence sections to slide into them. All posts shall include aluminum post caps. Posts can be placed no more than 6 feet apart.

- Line Posts and End Posts are 3" square x 0.125" thick
- Gate Posts are 4" square x 0.125" thick weighing 9.00 pounds per foot

Gates: Gates shall be fabricated with 2" or 2½" square ends, 1-5/8" x 1-5/8" rails and 1" square pickets. The gate shall be a double swing gate. Gate shall match appearance of fence panel. The gate shall have a double rail that allows for hidden fasteners and no exposed cavities under the rail. Gate shall be designed and manufactured by the fence manufacturer.

- Each gate shall have a hasp for chain locking welded to the frame as detailed in the construction plans.
- Gates shall be designed and manufactured by the fence manufacturer.
- Assembled section shall be able to support 500-pounds of vertical load at the mid-point of any horizontal frame rail.

- Swing gates shall include cane-bolts for each gate panel. The cane-boll shall have a stop to hold it in the up position for operating the gate.
- Hinges shall have minimum 3/8" stainless steel pins.

Post Installation: The post shall be set 36" in the concrete footing. The gate post shall set a minimum of 48" into the concrete footing.

There should be a minimum of a 5ft landscape and drainage buffer from the easement line to the Lift Station fencing. The 5 ft buffer shall have red tip photinias place within the buffer to screen the lift station site.

5.4.4.3 Site Interior

Interior of the site that is not part of the access drive shall be a minimum 6 inches thick flex base. Site shall be graded to drain away from the station to prevent storm water inflow or infiltration into the wet well, valve vault and manholes. The wet well and valve vault top elevation shall be a minimum of 12 inches higher that interior concrete and flex base.

Control panel shall have a 2 foot minimum clear reinforced concrete working area away from face, sides and back of cabinet. Electrical and Instrumentation Panels shall be located where they do not obstruct vehicle access to the wet well or the dry well. They shall be placed at an elevation so that they are easily accessible.

A 15 foot high halogen area light with photometric cell on an aluminum pole shall be placed within 10 feet of wet well and control panel without obstructing daily operations.

5.4.5 **Wet Well and Valve Vault Design**

5.4.5.1 Wet Well Design

Wet well shall be cast in place or pre-cast watertight and gas tight walls with watertight joint meeting ASTM C478-90. Steel, HDPE and RCP are not acceptable materials. The tops may be pre-cast with the hatches built in. All wall penetrations through the wet well wall shall be gas tight. The wet well shall be hydrostatically tested to the top of the wet well for 48 hours prior to putting the lift station into service. Only losses due to evaporation will be tolerated.

Additional design requirements are as follows:

A. Orientation

- Orientation shall consider the routing of incoming sewer and force main for ease of maintenance and to minimize effluent turbulence.
- Orientation shall allow a 5 ton vehicle to pull in forwards or backwards directly to the wet well or the dry well.

- All influent gravity mains discharging into the wet well shall be located so that the invert/flowline is above the “on” setting liquid level of the pumps.
- B. Level Sensors
- Level control system shall use a PRESSURE TRANSDUCER with BUILT IN SURGE PROTECTION for pump operation with Off and High Level Floats as BACK-UP in case transducer fails.
 - Sensors shall be provided for “All Pumps Off,” “Lead Pump On,” “Lag Pump On,” and “High Level Alarm” levels as well as additional “Lag-Lag Pump On” for lift stations with more than two pumps.
 - Level Sensors shall be placed in the wet well.
- C. Wet Well and Valve Vault Separation
- Wet wells and valve vaults shall be separated by a minimum of 2.0 feet.
- D. Liner and Coatings
- Wet wells shall have a minimum of 10 percent sloped bottoms to the pump intakes and shall have a smooth finish to avoid excess sludge deposits.
 - Wet wells shall be Con-sheild, Raven Lining or approved equal to protect against hydrogen sulfide gases.
- E. Hatches
- The wet well shall have a lockable odor suppressing aluminum door with an aluminum frame and safety grate. The minimum opening size shall be 4 feet x 6 feet with 2 doors large enough to adequately maintain the wet well.
 - All hatches shall have accommodations for locking above grade with 3/8” shaft padlocks provided by the City.
- F. Ventilation
- The design of a wet well must reduce odor potential in a populated area or as directed by the City Engineer.
 - Passive ventilation structures shall be provided and must include screening to prevent the entry of birds and insects to the wet well. An air vent pipe shall have a minimum diameter of 4 inches with outlet located 1 foot above wet well top.
 - Continuous mechanical ventilation structures shall be provided with ventilation equipment providing a minimum capacity of 12 air exchanges per hour and be constructed of corrosion resistant material.
- G. Cable Strain Relief – A stainless steel cable holder shall be provided for all cables in the wet well for cable strain relief purposes.

5.4.5.2 Wet Well Volume

- A. Wet well volume for a submersible pump station is the volume contained above the top of the motor, or as specified by the pump manufacturer.

- B. High level alarm elevation shall be a minimum of 60 inches below the top of the wet well or 48 inches below the flowline elevation of the lowest service tap, whichever elevation is lower.
- Alarm shall be sent when both pumps are running on a duplex station or when the level is 6 inches to 12 inches over all pumps running. The City Engineer shall approve all situations and levels that need to trigger an alarm.
 - Wet well volume shall be calculated by the following method:

$$V = \frac{TQ}{4(7.48)}$$

where:

V = active volume, (cubic feet)

Q = pump capacity, (gallons per minute)

T = cycle time, (minutes)

7.48 = conversion factor, (gallons per cubic foot)

- C. Pump cycle time, based on Peak Flow, must equal or exceed the criteria shown in Table 5.10.

Table 5.10: Minimum Pump Cycle Time

Pump Horsepower	Minimum Cycle Times
< 50	6 minutes
50-100	10 minutes
> 100	15 minutes

- D. The operation cycle “T” shall not be less than 10 minutes for Average flow and not more than 60 minutes for minimum flow conditions. The operation cycle time must exceed the manufacturer’s requirements.

5.4.5.3 Valve Vault

- A. Valve vaults shall have sloped bottoms towards a floor drain to remove liquid build up. The floor drain line from the valve vault connecting to the wet well must prevent gas and liquids from entering valve vault.
- B. The valve vault shall have a lockable aluminum door with an aluminum frame. The minimum opening size shall be 2 feet x 3 feet or large enough to adequately maintain the valve vault.

5.4.6 **Pumps, Lift Station Piping, and Valves**

5.4.6.1 Pumps

- A. Stations shall contain a minimum of two pumps and shall be capable of handling peak flows with one pump out of service.

- B. All pumps shall be explosion proof, non-clog, submersible type capable of passing a 2-1/2 inch diameter sphere or greater. Vortex impellers shall be used to prevent clogging.
- C. Pumps shall be sized to operate at optimum efficiency. Minimum acceptable efficiency at the operating point will be 60 percent. The minimum required horsepower for the motor must be capable of handling the entire range as shown in the pump curve. Where necessary, a higher horsepower pump will be required to prevent any damage to the motor as a result of loss of hydraulic head situation.
- D. All submersible pumps shall be equipped with an automatic flush valve attached to the pump volute using the hydraulic energy created by the pump operation to temporarily suspend settled materials.
- E. The pump rail system shall be MTM Sch 40 stainless steel with supports on 8 feet maximum spacing.

5.4.6.2 Pump Capacity

- A. The firm pumping capacity shall be greater than the peak flow for the entire fully developed drainage basin. If the fully developed drainage basin is significantly larger than the proposed development and it is not feasible to design for this flow, the firm capacity may be designed to handle a portion of the basin with the ability to expand for the ultimate basin capacity with approval from the City Engineer.
- B. The pump curves shall be selected so that during normal operating conditions the pumps will run near the best efficiency point. The curves shall not approach shut off head when the pumps are running together.
- C. System head curves, pump curves, and head calculations shall be submitted. Calculations and pump curves at both minimum (all pumps off) and maximum (last normal operating pump on) static heads, and for a C value of both 100 and 140 must be provided for each pump and for the combination of pumps with modified pump curves. Head calculations shall be the sum of static head, friction head in force main and lift station piping, and a fittings head.
- D. Flow calculations, system curves, and head calculations shall be shown in the construction drawings as well as in a final design report. Final design report shall include all of the preliminary design submittal requirements with the exception of the replacement of final design information.

5.4.6.3 Lift Station Piping

- A. Piping inside the lift station shall be ductile iron Class 200 psi, AWWA C151-75, C171-76, or latest edition thereof. Pipe shall be centrifugally cast with rubber gasket type joint. All fittings shall be ductile iron Class 250 meeting AWWA C110-77 or latest revision for sizes 12 inches and smaller or Class150 on sizes 14 inches and larger. All pipe and fittings shall have a prime coat on the outside surface and shall have an interior lining of 40-mils nominal dry film thickness of Protecto 401

Ceramic Epoxy Lining or approved equal, applied in accordance to the manufacturer's recommendations.

- B. All nut and bolt assemblies inside the wet well shall be ASTM 316 stainless steel.
- C. Lift station piping shall be designed with an additional emergency bypass pump connection, allowing the station to be operated with the primary pump(s) out of service for an extended period of time. The bypass pump connection shall be fitted with a CamLock fitting and cap. Bypass piping shall be supported by a strut type pipe support set in a reinforced concrete pad. By-pass piping and valves shall maintain a minimum of a 24 inch clear from the ground.

5.4.6.4 Valves

(Isolation valves, check valves, and air release/vacuum valves shall be located in the valve vault)

A. Isolation Valves

- Each pump shall have one isolation valve downstream of the pump and check valve, including a discharge pressure gauge between the pump and isolation valve. Isolation valves shall be resilient seated gate valves meeting the City Standard Specifications. The discharge pressure gauge shall be a minimum of 4 inch diameter within the appropriate pressure ranges for the design.
- All external nuts and bolts shall be ASTM 316 stainless steel.

B. Check Valves

- Check valves shall be a controlled closing swing check valve with a lever and spring.
- Check valves shall be located upstream of the isolation valve.
- All external nuts and bolts shall be ASTM 316 stainless steel.

C. Air Release/Vacuum Valves

- Air release valves of a type suitable for wastewater service shall be installed along the force main where the force main would be prone to trapped air.
- The type of valve shall be air release or a combination of air release and vacuum breaker. Valves shall be fitted with blow off valves, quick disconnect coupling and hose to permit back flushing after installation without dismantling the valve.
- All external nuts and bolts shall be ASTM 316 stainless steel.
- The engineer shall determine the valve type and location. The calculations for valve type and valve sizing shall be provided to the City Engineer.
- Isolation valves for 3 inch and smaller air release valves shall be all bronze or brass. Isolation valves 4 inch and larger shall meet standard specifications for resilient wedge gate valve.
- Locations of the air release/vacuum valves shall be shown on the plan and profile sheets for the force main.

5.4.7 Force Main

5.4.7.1 General

- A. Force main capacity shall be sized to meet the pump capacity. The force main shall be sized to handle the ultimate basin capacity. The force main may be designed to handle a portion of the basin with the ability to expand for the ultimate basin capacity if approved by the City Engineer. The minimum force main size shall be 4 inch diameter except for grinder pump lift stations. The minimum recommended velocity is 3 feet per second, and the velocity shall not be less than 2.5 feet per second when only the smallest pump is in operation.
- B. Force main sewer pipe shall be designed to meet the working pressure requirements of the particular application. Design calculations and pipe selection shall be submitted to the City Engineer in report format.
- C. A force main must be designed to abate any anticipated odor.
- D. Force main pipe materials shall AWWA C900-16 PVC Pipe (green in color) for all sizes, DR 14 (PC 305) for pipeline sizes 12-inch and smaller, and DR 18 (PC 235) for 14-inch and larger wastewater pipelines.
- E. For trench depths greater than 12 feet or other dead and/or live loading considerations, the engineer shall provide a pipe with the appropriate DR rating which shall exceed the minimum requirements.
- F. All fittings shall be wrapped ductile iron in accordance with AWWA C110 or AWWA C153. Fittings shall have a prime coat on the outside surface and shall have an interior lining of 40-mils nominal dry film thickness of Protecto 401 Ceramic Epoxy Lining or approved equal, applied in accordance to the manufacturer's recommendations
- G. All valves and fittings shall be restrained with Mega-lug or approved equal. Joint material for PVC shall conform to ASTM F471.
- H. Plans shall include plan and profile for the force main.
- I. Force main shall have a minimum of 4 feet of cover and be laid to standard specifications for potable waterline.
- J. Force main separation and design criteria from water mains and all other utility lines shall meet the minimum requirements from TCEQ.
- K. All force mains shall have green EMS locator pads at every two hundred fifty (250') feet, change in direction, valve, manhole, etc.

5.4.7.2 Embedment

- A. All force main pipes shall be installed in embedment material as shown on the Standard Details and in conformance for the Standard Specification for Construction

5.4.8 Control Panel

5.4.8.1 General:

The control system shall be designed to operate the required number of pumps specified on the drawing at the power characteristics shown on the plans.

The control function shall provide for the operation of the pumps in Hand (manual) and Auto (controlled by PLC). See "24VAC Regulator System" for further information. The control shall function as described below. The equipment listed below is a guide and does not relieve the supplier from providing a system that will function as required.

5.4.8.2 Enclosure:

The enclosure shall be a NEMA 4x rated stainless steel. The enclosure shall be a wall mount type with a minimum depth of 8" sized to adequately house all the components. The door gasket shall be rubber composition with a retainer to assure a positive weatherproof seal. **The door shall operate with a single action handle that accepts a 3/8" shaft padlock** and opens a minimum of 180 degrees.

5.4.8.3 Inner Dead Front Door:

A polished aluminum dead front shall be mounted on a continuous aircraft type hinge, contain cutouts for mounted equipment, and provide protection of personnel from live internal wiring. Cutouts for breaker handles shall be provided to allow operation of breakers without entering the compartment. **No door mounted operating mechanisms allowed for breaker operation.** All control switches, indicator pilot lights, ONE general purpose GFI duplex receptacle and other operational devices shall be mounted on the external surface of the dead front. The dead front shall open a minimum of 150 degrees to allow access to equipment for maintenance. A 3/4" break shall be formed around the perimeter of the dead front to provide rigidity.

5.4.8.4 Back Plate:

The back plate shall be manufactured of 12-gauge sheet steel and be finished with a primer coat and two (2) coats of baked on white enamel. All devices shall be permanently identified.

5.4.8.5 Power Distribution:

The panel power distribution shall include all necessary components and be wired with stranded copper conductors rated at a minimum of 90 degrees C.

System shall be equipped with an **Emergency Generator** with an automatic transfer switch **capable of programmable test dates and times. Inputs shall be provided to PLC to indicate Generator**

Running, Generator Alarm, and Generator Low Fuel Level OR a Stand Alone Manual Double Throw Safety Switch to allow hard wiring to a portable generator. Emergency Generator shall meet the requirements of the most recently adopted noise ordinance.

No door mounted operating mechanisms allowed for breaker operation in control panel. All conductor terminations shall be as recommended by the device manufacturer.

5.4.8.6 Circuit Breakers:

All circuit breakers shall be heavy-duty thermal magnetic or motor circuit protectors similar and equal to Square D type FAL. Each motor breaker shall be adequately sized to meet the pump motor operating characteristics and shall have a minimum of 10,000 amps interrupting capacity for 230 VAC and 14,000 amps at 480 VAC. The control circuit and the duplex receptacles shall be individually controlled by heavy-duty breakers.

Circuit breakers shall be indicating type, providing “ON-OFF-TRIP” positions of the operating handle. When the breaker is tripped automatically, the handle shall assume a middle position indicating “TRIP”. Thermal magnetic breakers shall be quick-made and quick-break on both manual and automatic operation and have inverse time characteristics secured through the use of bimetallic tripping elements supplemented by a magnetic trip.

Breakers shall be designed so that an overload on one pole automatically trips and opens all legs. Field installed handled ties shall not be acceptable.

5.4.8.7 Motor Starters:

Motor starters shall be open frame, across the line; NEMA rated with individual overload protection in each leg. Motor starter contact and coil shall be replaceable from the front of the starter without being removed from its mounted position. **Overload heaters shall be solid state motor logic type** with the following features: 3 to 1 adjustment for trip current, phase loss and unbalance protection, LED power indication, ambient insensitive and self-powered, and shall have availability of electrical remote reset. Overloads shall be sized for the full load amperage draw of the pumps. Definite purpose contactors, fractional size starters and horsepower rated contactors or relays shall not be acceptable.

5.4.8.8 Transformers:

Control transformers shall provide the 120 VAC and/or 24 VAC for control circuits. Transformers shall be fused on the primary and secondary circuits. The secondary shall be grounded.

5.4.8.9 Lightning-Transient Protection:

A lightning-transient protector with tell-tale warning lights on each phase to indicate loss of protection on the individual phases shall be provided. The device shall be solid state with a response time of less than 5 nanoseconds withstanding surge capacity of 6500 amperes. Unit shall be instant recovery, long life and have no holdover currents.

5.4.8.10 Phase Monitor:

A line voltage rated, adjustable phase monitor shall be installed to sense low voltage, loss of power, reversed phasing and loss of a phase. Control circuit shall de-energize upon sensing any of the faults and shall automatically restore service upon return to normal power.

5.4.8.11 Alarm System:

The alarm light shall be a weatherproof, shatterproof, red light fixture with 500 lumens minimum to indicate alarm conditions. The alarm light shall be turned on by the alarm level.

The alarm light shall be mounted on the exterior of the cabinet. The alarm horn shall provide an audio signal of not less than 90 db at 10 feet. An **alarm silence switch** shall be **mounted on the exterior of the cabinet** and deactivate the alarm horn; however, the alarm light shall flash until the alarm condition ceases to exist. **An input shall be provided to PLC to indicate High Wet Well Condition.**

5.4.8.12 24 VAC Regulator System:

SCADA:

Equipment for SCADA shall be Kimark part # TR-Y160-C50-P-ICC consisting of a **PLC, Radio, Antenna, etc.** to operate the system. Control cabinet **components shall be installed when the panel is built.**

Programming shall be included in purchase price of the above part by Kimark, using Schneider Electric Proworx32 PLC programming software. **Check with Kimark to verify all needed inputs and outputs for PLC Programing.**

Contact Kimark for equipment specifications for installation in the control panel and on the rack. Engineer shall contact the Public Works Department - Pump Division at 972-771-7730 for current contact for Kimark. Programming shall be included in purchase price of the above part by Kimark, using Schneider Electric Unity PLC programming software. Check with Kimark to verify all needed inputs and outputs for PLC Programing.

The control system shall provide for both automatic and manual control and alternation of the pumps to maintain a pumped down condition of the wet well.

Wet well levels shall be sensed by a pressure transducer. **Float regulators shall be installed as back up for HIGH and LOW levels only.** The transducer shall sense the “OFF”, “LEAD”, “LAG”, and “HIGH” levels as given on the plans. As the level in the wet well raises the lead pump, as determined by the alternator, shall start and pump the station to the “OFF” position. In the event the incoming flow exceeds the capacity of the lead pump, the lag pump shall start and both pumps shall run to the off level. If the wet well level continues to rise, high well alarm functions shall be activated. The alternator shall switch when the off level is reached.

All inputs and outputs shall be wired to a terminal strip at bottom of cabinet.

5.4.8.13 Ancillary Equipment:

HOA Switches: A three position HOA switch shall be provided on the inner dead front for each pump. **Inputs shall be provided to PLC to indicate position of HOA.**

Run Indicators: A run pilot indicator shall be provided on the inner dead front. All indicator lights shall be push to test. **Inputs shall be provided to PLC to indicate pump running.**

Elapsed Time: Elapse time meter shall be mounted on the dead front door.

Cabinet Temperature Control: The cabinet shall be equipped with a panel heater controlled by a thermostat and a vent fan controlled by a thermostat.

Receptacles: One duplex receptacle located on inner dead front door for general purpose use. This receptacle shall be of the ground fault type, 120volt, and protected by a 20 amp breaker. A second single receptacle shall be located on the back panel to provide power for UPS back up system. This receptacle shall be 120 volt and protected by a separate 20 amp breaker.

UPS Back Up System: Will provided **120 Volt power** to SCADA communication equipment and all low voltage power transformers. This must be installed in the control panel. UPS shall be APC 650VA 120 Volt or equivalent.

The System must be able to transmit all alarms and wet well levels when on backup power.

Motor Protection: A control and status module shall sense either motor over temperature or seal leakage, and shall turn off the pump, lock out the pump, and send an alarm. **Inputs shall be provided to PLC to indicate Pump Fail, Seal Fail and Temp Fail individually for each pump.**

5.4.8.14 Miscellaneous:

Panel Racks:

Posts supporting racks shall be **3” minimum rigid conduit capped and bolted directly to channel framework supporting the panels.**

Panels shall have a **“rain shield” structure using ¼” minimum aluminum plating** providing a **solid back plate** behind panels **continuous to overhead plate** to protect panel from rain. Provide lighting mounted on structure with switch mounted on exterior of panel to light up panel area.

Contact City of Rockwall at 972-771-7730 for location of existing type structure.

Each pump must have its own conduit for power cord and a separate conduit for all float wires.

Drawings: Control panel schematic drawings shall be submitted for approval with the submittal plans.

Final control panel wire schematic drawings including a list of all legends (2 sets total) shall be provided. One set shall be encapsulated in Mylar and attached to the inside of the front door of the control cabinet. A second set shall be delivered to the City of Rockwall Wastewater Division.

Panel Markings: All component parts in the control panel shall be permanently marked and identified as they are indicated on the drawing. Marking shall be on the back plate adjacent to the component. All control conductors shall be identified with wire markers as close as practical to each end of conductors.

Panel Wiring: All wiring in panel shall maintain a **minimum of 1 1/2”** spacing between components and wire ways.

Testing: All panels shall be tested to the power requirements as shown on the plans to assure proper operation of all the components. Each control function shall be activated to check for proper operation and indication.

Guarantee: All equipment shall be guaranteed for a period of three (3) years from date of acceptance. The guarantee is effective against all defects in workmanship and/or defective components. The warranty is limited to replacement or repair of the defective equipment.

6. MISCELLANEOUS REQUIREMENTS

6.1 Grading

The backfill material shall be placed in layers not to exceed eight (8) inches loose thickness. The moisture content shall be uniform and near the optimum moisture content for the material. In cases, where the materials being placed do not have the proper moisture, the material shall be dried out or additional moisture shall be added by satisfactory methods such that the additional water is distributed uniformly throughout the material being placed. The layers of the backfill shall be reduced in thickness when satisfactory compaction cannot be obtained with the equipment being used. In all cases a density of not less than ninety-five (95) percent of the standard proctor density must be obtained. The contractor shall arrange for the necessary laboratory testing, at their expense, to determine the density of the material. All franchise utility companies (phone, gas, electrical, cable, internet, and any utility that isn't supplied by the City) working within the right-of-ways of streets or alleys shall also comply with the above noted specifications with laboratory testing results provided to the City of Rockwall. Easement locations under pavement shall also have a density control backfill to ninety-five (95) percent of the standard proctor density. All densities are to be within the acceptable moisture range of (-2 to +4) percent of optimum moisture unless otherwise approved by the City Engineer.

A sheeps-foot roller shall be utilized for compaction of all fill material. Mechanical tamping is allowed for trench backfill.

It shall be the responsibility of the Developer to adjust all City and franchise utilities the final grades of the development.

All slopes should be a maximum of 4:1 and a minimum of 1%. In locations where a 4:1 slope is not possible, retaining walls, gabion baskets, concrete slope protection or other approved retaining methods may be required. Retaining methods must be approved by the City Engineer.

At the beginning of the project the Developer will provide offset stakes at intervals of fifty (50) feet. The stakes will be offset from the back of the outside curb, a convenient distance to permit all operations, to be completed without disturbing these stakes. Information that shall be included on the stakes includes the station number, offset distance from back of curb, and elevations of hub. It will be the contractors responsibility to maintain these stakes, and use the information for all other horizontal and vertical control required. The contractor will set all forms using the data shown on the approved plans.

6.2 Grading, Fill, Excavation and Earthwork Permit

A grading, fill, excavation and earthwork permit shall be obtained prior to stockpiling or filling property within the City limits. No filling in drainage swales, creeks, wetlands, etc. is allowed without a flood study approval. Erosion protection shall be installed around stockpiled or stored material until grass is established. If fill is placed for use other than stockpiling or storage, a grading plan shall be prepared by a Professional Engineer and submitted with the grading, fill, excavation and earthwork permit. Temporary stockpiles have a maximum time limit of six (6) months. Densities shall be taken and proper compaction techniques used when placing the fill. In all cases a Professional Engineer shall certify that the proposed fill location is not within a stream or creek (flowing or not) flood plain. If the City Engineer determines the fill is to be placed near a creek or stream or possible drainage way, the 100-year floodplain shall be staked by a registered surveyor.

An early fill, excavation and earthwork permit will not be issued to any development or re-development projects that are in actively being reviewed by the Engineering Division. Grading for the parcels/development will only be released after final construction plan release by the Engineering Division.

The City of Rockwall requires that the design engineer provide a letter of concurrence. The letter is to verify that the drainage patterns, grade to drains locations, detention systems including outfall structures, detention pond volume, pad elevations, and drainage structures located within the project scope were installed to the general elevations as shown on the approved plans. The letter shall also verify that the project was constructed to meet the approved design requirements or is within acceptable design tolerances (max 0.2 feet for residential pad elevations). The design engineer or their designated representative shall direct all survey work necessary to verify elevations and design compliance. The letter of concurrence is to have the seal and signature of the design engineer.

6.3 Private Utility Construction

6.3.1 Trench Backfill – City Right-of-Way

1. No concrete streets shall be open cut by utility companies without City approval. Utilities crossing concrete streets shall be tunneled or bored.
2. Asphalt streets may be open cut. Backfill above utilities shall be concrete stabilized sand or cement. The asphalt pavement shall be repaired per City detail.
3. All trench backfill is to be compacted to 95% Standard Proctor Density within City rights-of-way. The compaction may be obtained by mechanical tamping, rolling, etc. No water jetting is allowed. In the parkway, the backfill material may be from the excavated trench, except

no rocks larger than two inches (2") shall be used. Material from rock or shale excavation cannot be used. The contractor for the utility company or the utility company shall furnish density reports from a materials testing company verifying the densities. Densities shall be taken at each **twelve-inch (12")** lift at a maximum spacing of 150 feet. The moisture content shall be uniform and near the optimum moisture content for the material. In cases, where the materials being placed do not have the proper moisture, the material shall be dried out or additional moisture shall be added by satisfactory methods such that the additional water is distributed uniformly throughout the material being placed.

6.3.2 Parkway Cleanup

The contractor for the utility company or utility company shall remove any rocks or excess trench material from the parkway and replace any disturbed areas with grass sod.

6.4 Additional Permits or Approvals

Developer or developer's representative is responsible for obtaining any other approvals or permits needed for their development, for example: TCEQ, TXDOT, City of Dallas, FEMA, USACOE etc. prior to start of construction. Copies of the permits/approvals shall be furnished to the City.

6.5 Retaining Walls

- A. Retaining walls or concrete slope protection shall be installed where lot slope is greater than 4:1.
- B. No railroad tie retaining walls shall be constructed in public or private property.
- C. No retaining walls including the footing shall be placed in the right-of-way, easements or overlapping property lines.
- D. All retaining walls shall be stone, masonry or reinforced concrete with a stone face or form liner. No smooth concrete retaining walls to be installed.
- E. Retaining walls three feet (3') and higher shall be designed and inspected by a professional licensed engineer in the State of Texas. Property lines and right-of-ways shall be noted on the wall plans. The City requires a verification letter (signed/sealed) from the design engineer stating that the retaining walls installed with the site/subdivision were inspected by the engineer or their designated representative and that the walls were installed to the engineered design and general construction standards. The

verification letter shall be delivered to the Engineering Division prior to the project acceptance by the City.

- F. Retaining walls over 30” in height that have sidewalk, trail or other walking surface **on the top side of the wall** will require railing.
- G. **Traffic rated guard rail or barrier will be required when roadway, parking lot or alley is within 10 feet of a retaining wall that is over 30” in height.**
- H. Gabion retaining walls may be used only with City Engineer’s approval for walls less than three feet (3’) along drainage ways.
- I. All retaining walls shall be placed according to offset hubs set by certified professional surveyors noting grade cuts, wall elevations and stop points for each wall end. Wall locations and elevations shall match those shown on the approved site grading plans.

6.6 Maintenance Bonds

The City requires ten (10%) percent-two (2) year maintenance bond for paving, paving improvements, water systems, wastewater systems, storm sewer systems including detention systems, and associated fixtures and structures which are located within the right-of-ways or defined easements. The two (2) year maintenance bond is to state “from date of City acceptance” as the starting time.

A review of the site shall be conducted at twenty (20) months into the two (2) year maintenance period. The design engineer or their designated representative shall be present to walk the site with the City of Rockwall Engineering Inspection personnel.

6.7 Construction

6.7.1 **Preliminary Site Preparation**

Site Preparation - The below noted site preparation items are to be in place, inspected and approved by the City, prior to the start of any clearing, grubbing or grading operations.

1. Protected trees which are designated to remain on site - are to be identified, tagged and banded with bright orange or red bands.
2. Protected trees which are designated to be removed from the site are to be identified tagged and banded with blue bands or blue paint markings.
3. Tree identification tags – are to consist of metal tags which have the tree identification number stenciled or stamped or engraved on the tag. The

numbers used to identify the protected trees shall correspond to the tree identification number noted on the approved treescape plans.

4. Protected Tree - Barrier Fencing:

- Chain link barrier fencing – shall be placed around the drip lines of the individual protected trees or groups of protected trees, which are designated to remain at the site if they are located within 10-feet of any cut/fill grading location.
- Plastic mesh barrier fencing - shall be placed around the drip lines of individual protected trees or groups of protected trees, which are located over 10-feet or more outside a cut/fill grading location.

5. Silt fence along with construction entrance and any other designated erosion BMP's must be installed and inspected. No silt fencing may be installed at the site until the trees have been identified, banded, tagged, fenced and inspected by the City.

6. Portable toilet facilities will be required on all construction sites or as otherwise deemed necessary by the City of Rockwall. It is essential that adequate on-site restroom facilities be available for all construction workers. It will be the responsibility of the contractor to install and maintain the facilities through the completion of the project. These facilities must be on site and verified prior to moving personnel on site and before construction can begin.

7. Portable trash receptacle is to remain on the job site through the course of construction. The site is to remain free of construction litter and debris. Construction workers shall place all lunch trash in the “trash containers” immediately after lunch. Trash receptacle must be on site and verified prior to moving personnel on site and before construction can begin.

8. Construction Site Working Hours and Noise Control Signage – Construction and construction related activities are limited to the hours of 7:00 am to 7:00 pm Monday through Friday and 8:00 am to 7:00 pm on Saturday. No Sunday construction allowed. The City of Rockwall requires that a sign be posted at each Commercial/Residential development construction site. The sign must be installed at the site and verified prior to moving personnel on site and before construction can begin. The construction related activities are to include but not be limited to the following:

- Maintenance, servicing and fueling of construction equipment.
- The delivery of construction related materials and/or construction equipment.

At locations where compliance to Ordinance 05-45 is not being observed, the City of Rockwall may issue written orders to stop work or further regulate the site construction work hours. The City may also issue citations if it is determined that a violation of the construction ordinance exist.

(Construction Site Sign - Example)

<p style="text-align: center;">Ordinance # 05-45 Construction Site Working Hours and Noise Control</p> <p>City Ordinance – No. <u>05-45</u> limits construction and construction related activities to the hours of 7:00 a.m. - 7:00 p.m. Monday through Friday, and 8:00 a.m. - 7:00 p.m. on Saturday. (<u>No Sunday construction allowed</u>).</p> <p style="text-align: center;">ORDENANZA #05-45 HORAS DE TRABAJO EN EL SITIO DE CONSTRUCCION Y EL CONTROL DE RUIDO</p> <p>La Ordenanza de la Ciudad – No. <u>05-45</u> limita la construcción y las actividades relacionadas con la construcción a las horas de 7:00 a.m. – 7:00 p.m. de Lunes a Viernes, y de 8:00 a.m. – 7:00 p.m. los Sábados. (<u>No se permitirá construcción los Domingo</u>).</p>

Noise Ordinance Sign
(Sign Size – 3' wide x 2' tall)

6.7.2 Inspection Scheduling

It is the responsibility of the contractor to schedule inspections prior to construction. Inspections may be scheduled and coordinated in the field or by cell phone directly with the Engineering Division Construction Inspector. Inspection of construction and verification of compliance to plans and specifications shall be conducted by the City of Rockwall Engineering Construction Inspector. The general contractor shall notify all of his construction contractors of this requirement. Items to be inspected must be sufficiently ready for inspection at the time of your requested inspection appointment as inspector's time is limited. Failure to be ready for inspections may result in inspection rescheduling to the following day. No development will be accepted by the City of Rockwall until all construction has been approved by the City of Rockwall inspectors.

1. Saturday Inspections: The contractor will be charged a minimum 2 hours inspection charge for all Saturday inspections. All Saturday inspections must be scheduled in writing to the Engineering Division by noon on the Thursday before the inspection date. A signed Saturday Engineering Inspection Request form must be emailed to the City Engineer and Senior

Construction Inspector. Approval/disapproval will be emailed back to the requesting contractor with the Saturday inspector's information. All cancellations must be given verbally and **in writing** to the Saturday inspector no later than 8 am on day of inspection. Two hours of overtime inspection will be charged to the contractor if no cancellation is given prior to the inspector arriving at the project site. Contractor must sign Engineering Inspector's Report of Overtime form to finalize the inspection. No acceptance and/or certification of occupancy will be given until all overtime engineering inspection fees are paid in full.

2. **Before/After Weekday Hours Inspections:** Contractor will be charged on 15 minute intervals for any before/after hour's inspections. Contractor must sign Engineering Inspector's Report of Overtime form to finalize the inspection. No acceptance and/or certification of occupancy will be given until all overtime engineering inspection fees are paid in full.

6.7.3 Vertical Above Slab Construction Permit

No vertical (above slab) construction will be allowed until such time as the following minimum site requirements have been addressed at the site and a vertical above slab construction permit has been issued. Minimum requirements for vertical construction are subject to but not necessarily limited to the below noted items:

- Fire lane pavement is installed, tested, and approved for use
- Fire lane pavement is painted and marked to Fire Department specifications
- Water lines for the site are installed, tested, and approved for use
- All fire hydrants are installed and approved for use
- Fire hydrant nozzles and bonnets are painted as per line size color code
- Reflective fire hydrant locator buttons are in place at hydrant pavement locations
- Fire hydrants are flow tested to verify flow at designated hydrant locations
- Fire hydrant nozzle diameters, proper height above final grade, and clearance are verified and approved
- Silt fence is placed above the fire lane if it is deemed necessary at positive flow areas
- Exterior building materials are approved by the Planning and Zoning Department.

6.7.4 Disposal of Excess Materials

The contractor shall properly dispose of all excess material by removing from the job site all the brush, trash, debris, etc. upon completion of construction. All material shall be properly disposed.

6.7.5 Construction Site Safety

Construction site safety measures are to be in place at all construction projects located within the City of Rockwall. All necessary measures required to ensure that safe work zones exist for the protection of construction workers and general public living in or near such construction zones. Construction zones shall comply with work zone traffic control specifications and requirements. Occupational Health and Safety Administration requirements and regulations must be in compliance. Temporary construction fencing is to be placed around open trenches, pits, or other locations deemed necessary by the City of Rockwall. Any miscellaneous items that may pose direct or potential hazard to workers or the general public that is known by the contractor or brought to the attention of the contractor shall be addressed immediately.

It is the responsibility of the contractor(s) to establish and maintain construction site safety measures. However, the City of Rockwall will temporarily suspend work at a construction site if it is deemed necessary due to unsafe or hazardous conditions until such conditions have been corrected.

In each circumstance where it is deemed that proper safety measures are not being followed, a warning will be issued by the engineering construction inspector. Construction may be temporarily suspended if deemed necessary until items responsible for issuance of the safety warning have been properly addressed. Issuance of three (3) or more safety warnings will require that the designated construction be suspended until such time that a safety meeting is scheduled with contractor personnel along with City of Rockwall representatives to discuss the appropriate measures to correct the identified problems and determine any further possible actions which may be necessary.

7. Special Provisions to the NCTCOG’s Standard Specifications for Public Works Construction Standards

All work included as a part of this contract shall be performed in accordance with the Standard Specifications for Public Works Construction, North Central Texas, **November 2017, Fifth Edition**, except where noted otherwise in the City of Rockwall’s Supplemental Special Provisions, the Special Conditions included in the Specifications and Contract Documents.

The North Central Texas Standard Specifications shall be modified and clarified by the addition to the following requirements to the various items. Except when specifically stated, none of the requirements of the North Central Texas Standard Specifications shall be deleted.

7.1 Division 100 General Provisions

NOTE: The **(1)** symbol specifies that this item is also covered in the City of Rockwall’s “Special Provisions” to the “Standard Specifications for Public Works Construction, North Central Texas”. These Special Provisions are additional and modify the “Standard Specification”

Table 8.1: Revisions to NCTCOG’s Division 100 General Provisions

<u>Revised</u>	<u>Standard Specification Item No.</u>	<u>Description</u>
	101	DEFINITIONS AND ABBREVIATIONS
	101.1	Definitions
	101.2	Abbreviations and Acronyms
	102	PROPOSAL PROCEDURES
	102.1	Proposal Form
	102.2	Quantities in Proposal Form
	102.3	Examination of Plans, Specifications and Site of the Work
	102.4	Preparation of Proposal
	102.5	Proposal Guaranty
	102.6	Filing of Proposals
	102.7	Withdrawing Proposals
	102.8	Opening Proposals
	102.9	Consideration of Proposal
	102.10	Irregular Proposals
	102.11	Rejection of Proposals



	102.12	Disqualification of Bidders
	102.13	Return of Proposal
	103.	AWARD AND EXECUTION CONTRACT
	103.1	Contractor's Warranties and Understanding
(1)	103.2	Award of Contract
	103.3	Surety Bonds
(1)	103.4	Insurance
	103.5	Execution of Contract
	103.6	Notice to Proceed and Commencement of Work
	103.7	Delay of Contract
	103.8	Order of Work to be Performed
	104.	SCOPE OF WORK
	104.1	Intent of contract Documents
	104.2	Change of Modification of Contract
	104.3	Disrupted Work and Claims for Additional Compensation
	104.4	Performance of Extra Disputed Work
	105.	CONTROL OF WORK
(1)	105.1	Contract of Documents
(1)	105.2	Workmanship, Warranties and Guarantees
(1)	105.3	Shop Drawings, Product Data and Samples
(1)	105.4	Construction Stakes
(1)	105.5	Means and Methods of Construction
	105.6	Supervision by Contractor
(1)	105.7	Owner's Representatives
	105.8	Service of Notices
	105.9	Inspection
(1)	105.10	Acceptance
	106	CONTROL OF MATERIAL
	106.1	Substitution of Materials
	106.2	Materials and Equipment
	106.3	Salvageable Material
	106.4	Off-Site Storage
	106.5	Samples and Tests of Materials
	106.6	Surplus Material
	107	LEGAL RELATIONS AND CONTRACT RESPONSIBILITIES
	107.1	Contractor Independence
	107.2	No Third Party Contractual Rights
(1)	107.3	Indemnification

	107.4	Owner's Officers, Employees or Agents
	107.5	Venue and Governing Law
	107.6	No Waiver of Legal Rights
	107.7	Severability
	107.8	Headings
	107.9	Obligation to Perform Functions
(1)	107.10	Performance of the Work
	107.11	Successors and Assigns
	107.12	Supervision and Construction of Procedures
	107.13	Labor and Materials
(1)	107.14	Equal Employment Opportunity
(1)	107.15	State and Local Sales and Use Taxes
	107.16	Patents
(1)	107.17	Compliance with Laws
	107.18	Sanitary Provisions
	107.19	Public Convenience and Safety
(1)	107.20	Protection of Work and Persons and Property
	107.21	Project Signs
	107.22	Working Area
	107.23	Railway Crossings
	107.24	Existing Structures, Facilities and Appurtenances
	107.25	Project Clean-Up
	107.26	Disposal of Materials
	107.27	Restoration of Property
	107.28	Environmental Compliance
	108.	PROSECTUTION AND PROGRESS
	108.1	Progress Schedule
	108.2	Prosecution of the Work
	108.3	Other Contractors; Obligation to Cooperate
	108.4	Employees
	108.5	Subcontracts
	108.6	Assignments
	108.7	Owner's Right to Temporarily Suspend Work
	108.8	Delays; Extension of time; Liquidated Damages
	108.9	Contractor Default: Owner's Right to Suspend Work and Annul Contract
	108.10	Suspension by Court Order Against The Owner
	108.11	Termination For Convenience of the Owner
	108.12	Claims Against Owner and Action Theron
	108.13	Use of Completed Portions of Work
	109	MEASUREMENT AND PAYMENT

	109.1	Payment for Labor and Material; No Liens
	109.2	Payment for Materials
	109.3	Payment for Extra Work
	109.4	Payment Withheld
(1)	109.5	Monthly Estimate, Partial Payments, Retainage, Final Inspection, Acceptance and final Payment
	109.6	Wire Transfers
	110	AIR QUALITY REQUIREMENTS FOR EQUIPMENT
	110.1	Equipment Requirements
	110.2	Operational Requirements
	110.3	Reporting to Owner
	110.4	Enforcement

ITEM 103 AWARD AND EXECUTION CONTRACT

103.2 Award of Contract

Delete Item 103.2 in its entirety and substitute therefore the following:

It is the intention of the Owner to award a contract for the work included in this project on the basis of the lowest acceptable bid submitted by a qualified bidder, as determined by the Owner.

Within five (5) working days after the bid opening, the low bidder shall submit such evidence as the Owner may require establishing the bidder's qualifications to satisfactorily perform the work included in this project. Information that may be required shall include the following:

- (1) Current Financial Statement.
- (2) Letter of Auditor's opinion.
- (3) Previous years Balance Sheet, Income Statement and Change of Financial Position.
- (4) List of projects that have been satisfactorily completed by the Bidder that are of the same general type as included in this contract, together with names, addresses and phone numbers or persons familiar with this work.
- (5) Other information that may be pertinent to the Bidder's Qualifications.

Should the bidder fail to produce evidence satisfactory to the Owner on any of the foregoing points he may be disqualified and the work awarded to the next bidder so qualifying.

The Owner will notify the successful bidder, in writing, within sixty (60) days after the date of receiving bids, of the acceptance of the proposal. The Contractor or Contractors shall complete execution of the required bonds and Contract within ten (10) days of such notice.

103.4 Insurance

Add the following sub-item:

103.4.6 Bonds and Insurance

103.4.6.1 Performance, Payment and Other Bonds

Contractor shall furnish Performance and Payment Bonds as security for the faithful performance and payment of all his obligations under the Contract Documents. These Bonds shall be, at all times, in amounts equal to the total Contract Price, and in such form as set forth in the Contract Documents and with such corporate sureties as are licensed to conduct business in the state where the Project is located and are named in the current list of “Surety Companies Acceptable on Federal Bonds” as published in the Federal Register by the Audit Staff Bureau of Accounts, U.S. Treasury Department. The Performance and Payment Bonds shall be expanded to include any extension of the Contract Period of total Price.

If the surety on any Bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business in terminated in any state where any part of the Project is located in revoked, Contractor shall within five (5) days thereafter substitute another Bond and surety, both of which may be acceptable to the City.

103.4.6.2 Additional Bonds and Insurance

Prior to delivery of the executed Contract by City to the Contractor, City may require CONTRACTOR to furnish such other Bonds and such additional insurance in such form and with such sureties or insurers as the City may require.

ITEM 105 CONTROL OF WORK

105.1 Contract of Documents

105.1.1 Priority of Contract Documents

Change the first sentence of Item 105.1.1 to read:

In case of conflict between contract documents, priority of interpretation shall be in the following order: signed agreement, performance and payment bonds, addenda, special conditions, project (or contract) drawings and specifications, City of Rockwall Special Provisions to the Standard Specifications for Public Works Construction – North Central Texas, standard drawings, advertisement for bids, contractor’s bid proposal and bid form.

105.1.3 Contract Drawings and Specifications

Add the following:

In general, the number of copies of the plans and specifications furnished to the Contractor shall be limited to five (5). Additional copies may be obtained at cost of reproduction.

105.2 Workmanship, Warranties and Guarantees

105.2.2 Special Warranty

Add the following:

The Contractor shall provide a Maintenance Bond in the amount of ten percent (10%) of the total amount of the contract guaranteeing the work in accordance with the plans and specifications for a period of two (2) years after acceptance by the City of Rockwall. This bond shall provide for repair and/or

replacement of all defects due to faulty material and workmanship that appear within a period of two (2) years from the date of completion and acceptance of the improvements by the City of Rockwall.

105.3 Shop Drawings, Product Data and Samples

Add the following:

Review of Shop Drawings by the Engineer shall be of the sole purpose of determining the sufficiency of the said drawings or schedules to result in finished improvements in conformance with the plans and specifications, and shall not relieve the Contractor of his duty as an independent contractor. It being understood and agreed that the Engineer does not assume any duty to pass upon the propriety or adequacy of such drawings or schedules or any means or methods reflected thereby in relation to the safety of either person or property during the contractors performance hereunder.

105.4 Construction Stakes

Add the following to the first paragraph:

The Contractor shall be required to utilize the control monuments provided in the plans to set horizontal and vertical control and construction staking with the contractor's own surveyor.

105.5 Means and Methods of Construction

Add the following:

105.5.1 Water for Construction

The Contactor shall make the necessary arrangements for securing and transporting all water required in the construction, including water required for mixing of concrete, sprinkling, testing, flushing, flooding or jetting. The Contactor shall provide water as required at his own expenses.

Any party requesting the use of a temporary meter on a fire hydrant in the City of Rockwall shall execute an agreement with the City of Rockwall and shall deposit with the City of Rockwall the amount required by ordinance. Such deposit shall be returned upon payment of all charges for water use, and upon return of the meter, fittings, and wrench in their original condition.

Stationary meters shall be locked to fire hydrants at all times. Installation, set up and service fees shall be in the amounts established by ordinance.

It shall be unlawful for any person to open or close any fire hydrant used to obtain water for any purpose with any tool or device other than a standard accepted fire hydrant wrench, which can be supplied by the City of Rockwall.

All stationary fire hydrant meters shall be read monthly at their location in the field. All mobile fire hydrant meters are to be brought to the Utility Maintenance Department, Rockwall, Texas, between the 1st and 10th of each month to be read.

Temporary fire hydrant meters shall be read monthly by representatives of the City of Rockwall, and bills rendered at the current rates for all consumption. Customers using such meters shall comply with the written procedures implemented by the City with regard to making the meters

available to be read by representatives of the Rockwall Water Division. It shall be unlawful for any person to fail to make such meter available to be read by representatives of the Rockwall Utilities Division, as required by written procedures issued by the City.

Upon conviction of violation of the above requirements punishment shall be by fine not to exceed Two Hundred Dollars (\$200.00). Each day on which a violation exists shall constitute a separate offense.

105.7 Owner's Representatives

Add the following:

105.7.3 Observation of Work by Engineer

The Engineer shall make periodic visits to the site to familiarize himself/herself generally with the progress of the executed work and to determine if such work generally meets the essential performance and design features and the technical and functional engineering requirements of the Contract Documents; provided and except, however, that the Engineer shall not be responsible for making any detailed, exhaustive, comprehensive or continuous on-site inspection of the quality or quantity of the work or be in any way responsible, directly or indirectly, for the construction means, methods, techniques, sequences, quality, procedures, programs, safety precautions or lack of same incident thereto or in connection therewith. Notwithstanding any other provision of this agreement or any other Contract Document, the Engineer shall not be in any way responsible or liable for any acts, errors, omissions or negligence of the Contractor, any subcontractor or any of the Contractor's or subcontractor's agents, servants or employees or any other person, firm or corporation performing or attempting to perform any of the work.

105.10 Acceptance

Add the following:

Once the work is satisfactory to the City of Rockwall and in accordance with the plans, specifications, contract documents, and the City has received; the Contractor's Affidavit of Final Payment and Release, Maintenance Bond, and Contractor's redlines/markups plans of actual work performed by the Contractor will the City issue a certificate of acceptance.

ITEM 107 LEGAL RELATIONS AND CONTRACT RESPONSIBILITIES

107.3 Indemnification

Delete Item 107.2 in its entirety and substitute therefore the following:

The Contractor and his sureties shall indemnify, defend and save harmless the OWNER and all of its officers, agents and employees, ENGINEER and all of its officers and employees from all suits, actions or claims of any character, name and description brought for or on account of any injuries, including death or damages received or sustained by any person, persons or property on account of the operations of the Contractor, his agents, employees or subcontractors; or on account

of any negligent act or fault of the Contractor, his agents, employees or subcontractors in the execution of said contract; or on account of the failure of the Contractor to provide the necessary barricades, warning lights or signs; and shall be required to pay any judgment, with cost, which may be obtained against the Owner or Engineer growing out of such injury, including death or damage.

107.14 Equal Employment Opportunity

Delete Item **107.14.5** Reports in this item in its entirety.

107.15 State and Local Sales and use Taxes

Delete in its entirety and substitute therefore the following;

Recent legislation has removed the sales tax exemption previously provided by Section 151.311 of the Tax Code covering tangible personal property purchased by a contractor for use in the performance of a contract for the improvement of City-owned realty.

It is still possible, however, for a contractor to make tax-free purchases of tangible personal property that will be incorporated into and become part of a City construction project through the use of a “separated contract” with the City. A “separated contract” is one, which separates charges for materials from charges for labor. Under such a contract, the contractor becomes a “seller” of those materials, which are incorporated into the project, such as bricks, lumber, concrete, paint, etc. The contractor issues a resale certificate in lieu of paying the sales tax at the time such items are purchased. The contractor then receives an exemption certificate from the City for those materials. (This procedure may not be used, however, for materials, which do not become a part of the finished product. For example, equipment rentals, form materials, etc. are not considered as becoming “incorporated” into the project.)

Utilization of this “separated contract” approach eliminates the need for bidders to figure in sales tax for materials, which are to be incorporated into the project. Bid items, which contain non-taxable materials, are identified in the Bid Schedule or this project. The successful bidder will be required to complete a Contract Form provided by the Owner identifying and separating non-taxable materials from the labor and taxable materials which are not incorporated into the finished project. The completed contractor form will be used to develop the “separated contract” and will determine the extent of the tax exemption.

107.17 Compliance with Laws

Add the following sub item:

107.17.2 Antitrust

The Contractor hereby assigns to the Owner any and all claims for over-charges associated with this contract which arise under the Antitrust Laws of the United States, 15 U.S.C.A. Section 1, et seq., (1973).

Add the following sub item:

107.17.3 Wage Rate

All employees of the Contractor on the work to be performed under this contract shall be paid the prevailing wage scale in this locality for work of a

similar character, and in no event less than the rates shown in the Special conditions to the Specifications.

107.20 Protection of Work and Persons and Property

107.20.2 Protection of Persons and Property

Add the following:

The Contractor shall at all times exercise reasonable precautions for the safety of employees and others on or near the work and shall comply with all applicable provisions of Federal, State, and Municipal Safety laws and building and construction codes. All machinery equipment and other physical hazards shall be guarded in accordance with the "Manual of Accident Prevention in Construction" of the Associated General Contractors of America except where incompatible with Federal, State and Municipal laws or regulations. The Contractor shall provide such machinery, guards, safe walkways, ladders, bridges, gangplanks and other safety devices. The safety precautions actually taken and their adequacy shall be the sole responsibility of the Contractor, acting at his discretion as an independent contractor.

Add the following sub item:

107.20.4 Small Claims for Damages or Injury

If any person files a claim against the OWNER or CONTRACTOR for personal injury or property damage resulting from, arising out of, or caused by the operations of the Contractor, or any work within the limits of the project, the Contractor must either submit to the Owner a duly executed full release within thirty (30) days from the date of written claim, or immediately report the claim to his liability insurance carrier for their action in adjusting the claim. If the Contractor fails to comply with this provision within the stipulated time limit, it will be Automatically deemed that the Contractor has appointed the Owner as its irrevocable Attorney in Fact authorizing the Owner to report the claim directly with the liability insurance carrier. This provision is in and of itself a Power of Attorney from the Contractor to the Owner which authorizes the Owner to take said action on behalf of the Contractor without the necessity of the execution of any other document. If the Contractor fails to comply with the provisions of this item the Owner, at its own discretion, may terminate this contract or take any other actions it deems appropriate. Any payment or portion thereof due the Contractor, whether it is a final payment, progress payment, payment out of retainage or refund payment may be withheld by the Owner as is authorized by item 109.4. Bankruptcy, insolvency or denial of liability by the insurance carrier shall not exonerate the Contractor from liability.

ITEM 109 MEASUREMENT AND PAYMENT

109.5 Monthly Estimate, Partial Payments, Retainage, Final Inspection, Acceptance and Final Payment

109.5.2 Retainage

Add the following:

(4) On projects where the contract price, at the time of execution, is greater than \$400,000.00 the Owner may retain 10 percent of the amount due the Contractor, with the retainage above 5 percent deposited in an interest bearing account and interest earned on such 5 percent retained funds shall be paid to the Contractor upon completion of the contract.

109.5.3 Final Inspection and Acceptance

Add the following:

Within ten (10) days after the Contractor has given the Engineer written notice that the work has been completed, or substantially completed, the Engineer and the Owner shall inspect the work and within said time, if the work be found to be completed or substantially completed in accordance with the Contract Documents, the Engineer shall issue to the Owner and the Contractor his Certificate of Completion, and there upon it shall be the duty of the Owner within ten (10) days to insure a Certificate of acceptance of the work to the Contractor or to advise the Contractor in writing of the reason for non-acceptance.

Definition of Substantially Complete: The date of substantial completion of a project or specified area of a project is the date when the construction is sufficiently completed, in accordance with the contract documents, as modified by any change order agreed to by the parties, so that the Owner can occupy or utilize the project or specified area of the project for the use for which it was intended.

7.2 Division 200 Site Protection & Preparation

NOTE: The **(1)** symbol specifies that this item is also covered in the City of Rockwall’s “Special Provisions” to the “Standard Specifications for Public Works Construction, North Central Texas”. These Special Provisions are additional and modify the “Standard Specification”

Table 8.2: Revisions to NCTCOG’s Division 200 Site Protection & Preparation

<u>Revised</u>	<u>Standard Specification Item No.</u>	<u>Description</u>
	201.	SITE PROTECTION
	201.1.	Removal, Protection, and Replacement of Trees, Shrubbery, Plants, Sod and Other Vegetation
	201.2.	Determining Location and Protection of Existing Structures and Utilities
	201.3.	Maintenance of Streets and Rights of Way During Construction
	202.	TEMPORARY EROSION, SEDIMENTATION, AND WATER POLLUTION PREVENTION AND CONTROL
	202.1.	Description
	202.2.	Items of Work and Materials
	202.3.	Pre-construction Submittals
	202.4.	Construction Requirements
(1)	202.5.	Silt Fence
	202.6.	Interceptor Swale
	202.7.	Diversion Dike
	202.8.	Triangular Sediment Filter Dike
	202.9.	Check Dam (Rock)
	202.10.	Check Dam (Filter Tube)
(1)	202.11.	Stabilized Construction Exit
	202.12.	Stop Outlet Sediment Trap
	202.13.	Pipe Slope Drain
	202.14.	Inlet Protection
	202.15.	Erosion Control Blankets
	202.16.	Section Held for Future Use
	202.17.	Section Held for Future Use
	202.18.	Filter Tubes
	202.19.	Measurement and Payment
	203.	SITE PREPARATION
	203.1.	General Site Preparation

(1)	203.2.	Unclassified Street Excavation
	203.3.	Section Held for Future Use
	203.4.	Borrow & Spoil
(1)	203.5.	Embankment
	203.6.	Dust Control
	204.	LANDSCAPING
	204.1.	Removal, Protection, and Replacement of Trees, Shrubbery, Plants, Sod and Other Vegetation
(1)	204.2.	Topsoil
	204.3.	Soil Amendments
	204.4.	Fertilizer
	204.5.	Sodding
(1)	204.6.	Seeding Turf-grass
	204.7.	Rejection

ITEM 201 TEMPORARY EROSION, SEDIMENTATION, AND WATER POLLUTION PREVENTION AND CONTROL

202.5. Silt Fence

202.5.2. Materials

202.5.2.2. Posts

Delete the last sentence in its entirety and replace with the following:
No wood stakes shall be allowed.

202.11. Stabilized Construction Exit

202.11.2. Materials

202.11.2.1 Stone

Delete the following subsection in its entirety and replace with the following:

Stone material shall consist of 4 to 6-inch minimum course aggregate riprap and shall be placed in a layer 12-inch thick. No crushed concrete shall be allowed.

ITEM 203 SITE PREPERATION

203.2. Unclassified Street Excavation

203.2.3. General

Add to the following as the third paragraph:

Unless otherwise approved in writing by the City of Rockwall, where excavation to grade established in the field by the Owner terminates in loose or solid rock, the Contractor shall excavate 6 inches below the required subgrade elevations for the entire roadbed width and shall backfill with suitable selected materials as indicated on the plans. Suitable selected material shall include lime treated subgrade or a base material having a plasticity index not

greater than 12. Payment for such work will be made under the items of unclassified street excavation, lime treated subgrade and hydrated lime. The 6-inch lime treated subgrade or base shall be compacted to 95% standard proctor density.

ITEM 204 LANDSCAPING

204.2. Topsoil

204.2.3. Construction Methods

Add the following:

A minimum of four (4) inches of topsoil shall be provided on all major thoroughfare medians and rights-of-way and on all earthen channel slopes to the lines and grades established by the construction plans. This will be material imported from off site. The City will approve material prior to placement.

204.6 Seeding Turfgrass

204.6.1. General

Add the following:

The Contractor shall maintain the seeded areas including watering until a "Stand of Grass" is obtained. A "**Permanent** Stand of Grass" shall consist of **75% to 80%** coverage, a minimum of one (1) inch in height. Re-seeding will be required in washed areas.

204.6.3. Planting Season and Application Rate

Delete the mixture, rate, and planting dates in Table **204.6.3.(a)** Seeding Turfgrass and substitute:

Type I: Bermuda Grass - Hulled
50 lbs/acre April - June

Type II: Annual Rye Grass
40 lbs/acre September - March

Type III Bermuda Grass - Unhulled
January - March/July - August - 50 lbs/acre

A mix of seed shall be used in overlapping seasons.

7.3 Division 300 Roadway Construction

NOTE: The **(1)** symbol specifies that this item is also covered in the City of Rockwall’s “Special Provisions” to the “Standard Specifications for Public Works Construction, North Central Texas”. These Special Provisions are additional and modify the “Standard Specification”

Table 8.3: Revisions to NCTCOG’s Division 300 Roadway Construction

<u>Revised</u>	<u>Standard Specification Item No.</u>	<u>Description</u>
	301.	SUBGRADE, SUBBASE AND BASE PREPARATION
	301.1.	General
(1)	301.2.	Lime Treatment
(1)	301.3.	Portland Cement Treatment
	301.4.	Asphalt Emulsion Treatment
(1)	301.5.	Flexible Sub-base or Base (Crushed Stone/Concrete)
	301.6.	Geo-textiles Used in Paving applications
	302.	ASPHALT PAVEMENT
	302.1.	Description
	302.2.	Aggregates for Hot-Mix Asphalt Pavement
	302.3.	Bituminous Materials
	302.4.	Section Held for Future Use
	302.5.	Storage, Heating and Application Temperature of Bituminous Materials
	302.6.	Emulsified Asphalt Treatment
	302.7.	Prime Coat
	302.8.	Asphalt Base Course
	302.9.	Hot-Mix Asphalt Pavement
	302.10.	Measurement and Payment
	303.	PORTLAND CEMENT CONCRETE PAVEMENT
	303.1.	Description
(1)	303.2.	Portland Cement Concrete Pavement Materials
(1)	303.3.	Mix Design and Mixing Concrete
	303.4.	Equipment
(1)	303.5.	Construction Methods
	303.6.	Alley Paving
	303.7.	Pavement Leave-outs
(1)	303.8.	Pavement Testing and Evaluation
	303.9.	Measurement and Payment

	304.	PAVING UNITS
(1)	304.1.	Solid Concrete Interlocking Paving Units
	305.	MISCELLANEOUS ROADWAY CONSTRUCTION
(1)	305.1.	Concrete Curb and Gutter
(1)	305.2.	Concrete Sidewalks, Driveway Approaches, and Barrier Free Ramps
(1)	305.3.	Concrete Medians
	305.4.	Reinforced Concrete Headers

ITEM 301. SUBGRADE, SUBBASE AND BASE PREPERATION

301.2 Lime Treatment

Add the following sentences:

Quick Lime shall not be used in the construction of roadway work in the City. Dry hydrated lime shall not be used for treating subgrade or base material unless specified on the plans

301.2.1. Materials

301.2.1.2. Quicklime

301.2.1.2.1. General

Add to the beginning of the first paragraph:

Quicklime (dry) shall not be used in the City without written approval from the City.

301.2.3. Lime Treatment Construction Methods

301.2.3.3. General Construction

301.2.3.3.1. Treatment for Materials in Place

Add the following:

Prior to final compaction of subgrade, samples of the subgrade material shall be collected by a testing laboratory approved by the City, and laboratory tests made to determine the amount of lime required.

The application rate for hydrated lime shall be selected to obtain at least the optimum lime percentage indicated by test method ASTM C977-83a, Appendix XI; however, not less than 27 lbs. per S.Y. shall be applied. A Geotechnical Engineer's report reflecting the recommended application rate and including supporting test data shall be submitted in writing to the City, for approval prior to beginning any lime treatment. Laboratory test may be waived provided a minimum of 36 lbs. per S.Y. is applied. Testing shall look for sulfates to see if Lime Treatment will cause and adverse effect on the subgrade.

301.2.3.7. Maintenance

Add the following to the first paragraph:

The lime treated subgrade shall be moist cured until covered by other base or pavement up to fourteen (14) days after final compaction.

After 14 days without covering an application of 0.10 to 0.20 gallons per square yard emulsified asphalt shall be applied at the Contractor's expense. Reapplication of emulsified asphalt may be required if lime treated subgrade is not covered shortly after first application. Lime treated subgrade may be covered by other base or pavement when density of 95% of maximum at optimum moisture content is obtained.

301.3 Portland Cement Treatment

Add the following:

Portland cement modification of subgrade soils is not approved in Rockwall. Subgrade soils means natural ground or embankment encountered in the construction.

301.5 Flexible Subbase or Base (Crushed Stone/Concrete)

301.5.1. Material

301.5.1.1. General

Add the sentence:

No local limestone material shall be used as flexible base (crushed limestone) on Rockwall paving projects, unless otherwise shown on the plans.

301.5.1.2 Tests and Physical Requirements

After the first sentence add the sentence:

Samples of crushed limestone shall be submitted to the engineer testing laboratory employed by the City for testing and conformance with the specifications.

ITEM 303 PORTLAND CEMENT PAVEMENT

303.2. Portland Cement Concrete Pavement Materials

303.2.1. Aggregates for Portland Cement Concrete

303.2.1.3. Coarse Aggregates

Gradation: Add the sentence: For Rockwall paving projects, the coarse aggregate's gradation shall meet the requirements of Size No. 4 shown in the table.

303.3 Mix Design and Mixing Concrete for Pavement

303.3.5. Mixing and Delivery

303.3.5.3. Central Mixing Plant

Add the following:

When a fly ash admixture is used with Type I cement in the production of portland cement concrete, separate silos shall be provided for fly ash and cement and provisions shall be made for individual measurements.

303.5 Construction Methods

303.5.6.Finishing

Delete 303.5.6. and add the following:

The finished concrete pavement construction under these specifications is expected to meet certain quality standards for surface of the concrete including the durability, texture, riding surface and appearance. The surface must be durable, firm, dense and well bonded to the aggregate to maintain an appearance and texture which is satisfactory to the Owner. Concrete pavement having a poor surface which has spalled (exposed aggregate) due to poor quality paste, high water-cement ratio, over-vibration, improper curing, extreme weather or any other reason, or does not have a satisfactory riding surface shall be removed and replaced at the Contractor's expense. It is extremely important that the pavement have a good rideable surface, free from undulations and rough joints. The City Engineer shall determine the acceptability of the pavement.

303.5.6.1. Machine Finishing

Machine finishing of pavement shall include the use of power-driven spreaders, reciprocating type power-driven vibrators, power-driven transverse strike-off, and screed.

The concrete pavement shall be consolidated by a reciprocating type mechanical vibrator. As soon as the concrete has been spread between the forms, the mechanical vibrator shall be operated to consolidate the concrete and remove all voids. Hand manipulated vibrators shall be used for areas not covered by the mechanical vibratory unit.

The transverse finishing machine shall first be operated to compact and finish the pavement to the required section and grade, without surface voids. The machine shall be operated over each area as many times and at such intervals as directed. At least two trips will be required and the last trip over a given area shall be a continuous run of not less than 40 feet. After completion of finishing with the transverse finishing machine a transverse drag float may be used.

After the floating has been completed and the excess water removed, but while the concrete is still plastic, the surface of the concrete shall be tested for trueness with an approved 10-foot steel straightedge furnished by the Contractor. The straightedge shall be operated from the side of the pavement, placed parallel to the pavement centerline and passed across the slab to reveal any high spots or depressions. The straightedge shall be advanced along the pavement in successive stages of not more than one-half its length. Practically perfect contact of the straightedge with surface will be required, and the pavement shall be leveled to this condition, in order to insure conformity with the surface test required below after the pavement has fully hardened and to insure a smooth rideable surface. Any correction of the surface required shall be accomplished by adding

concrete if required and by operating the longitudinal float over the area. The surface test with the straightedge shall then be repeated.

After completion of the straightedge testing and surface correction the surface of the pavement shall be finished by an approved method. Methods available for pavement surface finish including a burlap drag finish, a broom finish or a belt finish. Unless otherwise shown on the plans, the pavement surface shall be finished with the burlap drag.

303.5.6.1.1. Burlap Drag Finish

If the surface texture is to be a drag finish, a drag shall be used; it shall consist of a seamless strip of damp burlap or cotton fabric, and it shall produce a uniform surface of gritty texture after dragging it longitudinally along the full width of pavement. For pavement 16 feet or more in width, the drag shall be mounted on a bridge which travels on the forms. The diameter of the drag shall be such that a strip of burlap or fabric at least 3 feet wide is in contact with the full width of pavement surface while the drag is used. The drag shall consist of not less than two layers of burlap with the bottom layer approximately 6 inches wider than the upper layer. The drag shall be maintained in such a condition that the resultant surface is of uniform appearance and reasonably free from gravels over 1/16-inch in depth. Drags shall be maintained clean and free from encrusted mortar. Drags that cannot be cleaned shall be discarded and new drags substituted.

303.5.6.1.2. Broom Finish

If the surface texture is to be broom finished, it shall be applied when the water sheen has practically disappeared. The broom shall be drawn from the center to the edge of the pavement with adjacent strokes slightly overlapping. The broom operation shall be so executed that the corrugation produced in the surface shall be uniform in appearance and not more than 1/16-inch in depth. Brooming shall be completed before the concrete is in such condition that the surface will be torn or unduly roughened by the operation. The surface thus finished shall be free from rough and porous areas, irregularities, and depressions resulting from improper handling of the broom. Brooms shall be of the quality, size, and construction and shall be operated to produce a surface finish meeting the approval of the Owner. Subject to the approval of the Owner, the Contractor may be permitted to substitute mechanical brooming in lieu of the manual brooming as herein described.

303.5.6.1.3. Belt Finish

If the surface texture is to be belt finish, when straightedging is completed and after sheen has practically disappeared and just before the concrete becomes non-plastic,

the surface shall be belted with a 2-ply canvas belt not less than 8 inches wide and at least 3 feet longer than the pavement width. Hand belts shall have suitable handles to permit controlled, uniform manipulation. The belt shall be operated with short strokes transverse to the centerline and with a rapid advance parallel to the centerline.

303.5.6.2. Hand Finishing

Hand finishing of concrete pavement will be permitted in areas where it is not practical or possible to construct with finishing machines. These areas include, but are not limited to, intersections, left turn lanes, crossovers, transition areas and where the pavement width is not uniform. In all hand finished areas, one-half (1/2) extra sack of cement per cubic yard of concrete shall be used in the mix. In hand finished areas, the concrete shall be struck off with an approved strike-off screed to such elevation that when consolidated and finished the surface of the pavement shall conform to the required section and grade. The strike template shall be moved forward with a combined transverse and longitudinal motion in the direction the work is progressing, maintaining a slight excess of material in front of the cutting edge. The concrete shall then be tamped with an approved tamping template to compact the concrete thoroughly and eliminate surface voids and the surface screeded to required section. After completion of a strike-off, consolidation and transverse screeding, a hand-operated longitudinal float shall be operated to test and level the surface to the required grade.

Workmen shall operate the float from approved bridges riding on the forms and spanning the pavement. The longitudinal float shall be held in contact with the surface and parallel to the centerline and operated with short longitudinal strokes while being passed from one side of the pavement to the other. If contact with the pavement is not made at all points, additional concrete shall be placed, if required, and screeded, and the float shall be used to produce a satisfactory surface. Care shall be exercised to keep the ends of the float from digging into the surface of the pavement. After a section has been smoothed so that the float maintains contact with the surface at all points in being passed from one side to the other, the bridges may be moved forward half the length of the float and the operation repeated. Other operations and surfaces tests shall be as required for machine finishing.

303.5.6.3. Edging at Forms and Joints

After the final finish, but before the concrete has taken its initial set, the edges of the pavement along each side of each slab, and on each side of transverse expansion joints, formed joints, transverse construction joints, and emergency construction joints shall be worked with an approved tool and rounded to the radius required by the plans. A well-defined and continuous radius shall be produced and a smooth,

dense mortar finish obtained. The surface of the slab shall not be unduly disturbed by tilting of the tool during use.

At all joints, any tool marks appearing on the slab adjacent to the joints shall be eliminated by brooming the surface. In doing this, the rounding of the edge shall not be disturbed. All concrete on top of the joint filler shall be completely removed.

All joints shall be tested with a straightedge before the concrete has set, and correction shall be made if one side of the joint is higher than the other or if they are higher or lower than the adjacent slabs.

303.8 Pavement Testing and Elevation

303.8.2. Pavement Thickness Test

Delete in its entirety and substitute therefore the following:

Upon completion of the work and before final acceptance and final payment shall be made, pavement thickness tests shall be made by the Contractor. Tests shall be made at 400-foot spacings along the length of the pavement. In the event a deficiency in the thickness of pavement is revealed, two (2) subsequent sets necessary to isolate the deficiency shall be made - one at a jointed section prior to the deficient station and one at a jointed section following the deficient station. Additional tests shall be obtained as necessary, at jointed section intervals to isolate the deficient area. Removal and replacement of concrete shall extend to joint boundaries, the full width of pavement section. If the average thickness of pavement in a particular section is less than called for on the plans, the pavement section shall be removed and replaced with the correct thickness, extending to joint boundaries, the full width of the pavement section, at the Contractor's entire expense. No additional payment over the contract unit price shall be made for any pavement of a thickness exceeding that required on the plans.

303.8.3. Pavement Strength Test

303.8.3.1 For Standard Classes of Concrete

Revise the first paragraph to read:

During the progress of the work, the Inspector or a commercial laboratory shall cast test cylinders or beams to maintain a check on the strengths of the concrete being placed. Add the following sentence and table: A table titled "PAVEMENT STRENGTH REQUIREMENTS", is provided showing the required pavement thickness, 7-day strength, 28-day strength, minimum cement factor and maximum slump for each street type to be constructed in Rockwall.

Add to the 5th paragraph:

Test cores shall be obtained within ten (10) working days after the 28-day test results have been provided by the commercial laboratory. All test cores shall be obtained by a commercial laboratory, at the Contractors expense. One (1) core shall be obtained in the immediate area of the deficiency and two (2) additional cores shall be obtained - one at a jointed section prior to the deficient station and one

at a jointed section following the deficient station. Additional cores shall be obtained as necessary, at jointed section intervals to isolate the deficient area. Removal and replacement of concrete shall extend to joint boundaries, the full width of pavement section.

Amend the second sentence of the 7th paragraph to read:

"Pavement not meeting the minimum specified 28-day strength after cores have been tested shall be removed and replaced at the Contractor's expense."

Delete the table 303.8.3.1.(a) and the paragraph below it.

Add the following table:

Pavement Strength Requirements

Street Type	Minimum Thick-ness (inches)	Compr. 7-Day (psi)	Strength 28-Day (psi)	Minimum Cement (sacks / CY)		Slump (inches)
				Machine placed	Hand Placed	
* Arterial	10"	2,500	3,600	6.0	6.5	3" to 5"
* Collector	8"	2,500	3,600	6.0	6.5	3" to 5"
Residential	6"	2,500	3,600	6.0	6.5	3" to 5"
Alley	7"-5"-7"	2,500	3,600	6.0	6.5	3" to 5"
Fire Lane	6"	2,500	3,600	6.0	6.5	3" to 5"
Driveways	6"	2,500	3,600	6.0	6.5	3" to 5"
Barrier Free Ramps	5"	2,500	3,600	N/A	6.5	3" to 5"
Sidewalks	4"	2,100	3,000	N/A	5.5	3" to 5"
Parking Lot/ Drive Aisles	5"	2,100	3,000	5.0	5.5	3" to 5"
Dumpster Pads	7"	2,500	3,600	6.0	6.5	3" to 5"

- * Paving section designs for arterials and collectors shall be based off 30 year projected traffic volumes and geotechnical analysis/report. (Paving section design shall include but not limited to the following: pavement thickness, reinforcing size and spacing, pavement strength, subgrade thickness, subgrade treatment type (lime or cement))

ITEM 304 PAVING UNITS

304.1. Solid Concrete Interlocking Paving Units

304.1.2. Materials

304.1.2.2. Base

Delete in its entirety and replace with the following:

The base shall be constructed of 3,600 psi reinforced concrete meeting the requirements of Item 303 of the Standard Specifications.

#4 reinforcing bars shall be placed 18 inches on center, both ways, in all concrete.

304.1.3. Construction Methods

304.1.3.3. Construction Procedures

304.1.3.3.3 Paving Units and Joints

Delete paragraph two in its entirety and replace with the following:

Joints between paving units shall have a spacing of (1/8").

304.1.4. Measurement and Payment

Delete in its entirety and replace with the following:

Interlocking Concrete Paving Stone shall be measured and paid for by the square foot of stone, sand and concrete base furnished and installed, which price shall include all labor, including excavation, materials, equipment, tools and incidentals necessary to complete the work. No separate payment shall be made for 6" concrete base or washed sand. Payment for removal and disposal of existing concrete median pavement, if required, shall be made by the square foot. Payment shall include all labor, equipment, materials, tools, and incidentals necessary to complete the work.

ITEM 305. MISCELLANEOUS ROADWAY CONSTRUCTION

305.1. Concrete Curb and Gutter

305.1.3. Construction Methods

305.1.3.2. Reinforcing Steel

The third sentence, first paragraph shall be revised to read:

All bars at splices shall be lapped a minimum of 30 diameters of the bar or 12-inches, whichever is greater.

305.2 Concrete Sidewalks, Driveway Approaches, and Barrier Free Ramps

305.2.2. Materials

305.2.2.2. Reinforcement

Revise the first sentence to read:

Driveway approaches and walk reinforcing shall be No. 3 bars on 24-inch centers.

305.2.3. Construction Methods

305.2.3.1. General

Add to end of first paragraph:

The drive approach shall have a minimum thickness equal to the thickness of the adjacent street or 6 inches, whichever is greater.

305.2.3.7. Joints

Revise second sentence to read:

Expansion joints shall be placed in the sidewalk at 20-foot intervals or as otherwise specified by the Owner.

305.3. Concrete Medians

Delete in entirety.

7.4 Division 400 Roadway Maintenance & Rehabilitation

NOTE: The **(1)** symbol specifies that this item is also covered in the City of Rockwall’s “Special Provisions” to the “Standard Specifications for Public Works Construction, North Central Texas”. These Special Provisions are additional and modify the “Standard Specification”

Table 8.4: Revisions to NCTCOG’s Division 400 Roadway Maintenance & Rehabilitation

<u>Revised</u>	<u>Standard Specification Item No.</u>	<u>Description</u>
	401.	CRACK SEALING
	401.1.	General
	401.2.	Materials
	401.3.	Methods
	401.4	Measurement and Payment
	402.	PAVEMENT CUT, EXCAVATION AND REPAIR
	402.1.	General Requirements
	402.2.	Minimum Size of Repair
(1)	402.3.	Sawing
	402.4.	Replacing Paved Surfaces
	403.	ASPHALTIC PAVEMENT REPAIR
	403.1.	Description
	403.2.	Materials and Mixing
	403.3.	Methods
	403.4.	Measurement and Payment
	404.	SURFACE TREATMENT
	404.1.	Description
	404.2.	General
	404.3.	Slurry Seals and Micro-(Re)Surfacing
	404.4.	Bituminous Surface Treatment (Chip Seal)
	405.	ULTRA THIN CONCRETE PAVING (WHITETOPPING)
	405.1.	Description
	405.2.	Materials
	405.3.	Construction Methods
	405.4.	Measurements
	405.5.	Payment

ITEM 402 PAVEMENT CUT, EXCAVATION AND REPAIR

402.3 Sawing

402.3.2. Equipment

Revise second paragraph to read:

Saw blades shall make a clean, smooth cut, producing a groove a minimum of 3/8-inch wide and to the full depth required by these specifications or as shown on the plans.

7.5 Division 500 Underground Construction & Appurtenances

NOTE: The **(1)** symbol specifies that this item is also covered in the City of Rockwall’s “Special Provisions” to the “Standard Specifications for Public Works Construction, North Central Texas”. These Special Provisions are additional and modify the “Standard Specification”

Table 8.5: Revisions to NCTCOG’s Division 500 Underground Construction & Appurtenances

<u>Revised</u>	<u>Standard Specification Item No.</u>	<u>Description</u>
	501.	UNDERGROUND CONDUIT MATERIALS
	501.1.	General
	501.2.	Clay Wastewater Pipe
	501.3.	Vitrified Clay Pipe for Micro-tunneling, Slip-lining, Pipe Bursting and Tunnels
(1)	501.4.	Concrete Pressure Pipe and Fittings
(1)	501.5.	Reinforced Concrete Wastewater Pipe With Rubber Gasket Joints
	501.6.	Reinforced Concrete Culvert, Storm Drain, Pipe and Box Section
(1)	501.7.	Ductile-Iron Pressure Pipe and Fittings
	501.8.	Ductile-Iron Pipe for Pipe Rehabilitation
(1)	501.9.	Steel Pipe and Fittings
	501.10.	Seamless Copper Tubing
	501.11.	Corrugated Metal Pipe or Arch Shapes
	501.12.	Structural Plate Structures
	501.13.	Tunnel Liner Plates
(1)	501.14.	Polyvinyl Chloride (PVC) Water Pipe
	501.15.	Polyvinyl Chloride (PVC) Pressure-Rated (SDR Series)
	501.16.	Molecularly Oriented Polyvinyl Chloride (PVCO) Water Pipe
	501.17.	Polyvinyl Chloride (PVC) Wastewater Pipe & Fittings with Dimension Control
	501.18.	Polyvinyl Chloride (PVC) Profile Gravity Wastewater Pipe and Fittings-For Direct Bury and Slip-lining Applications
	501.19.	PVC Composite Pipe for Wastewater Conduits
	501.20.	Polyvinyl Chloride (PVC) Corrugated Storm Water Pipe with Smooth Interior and Fittings
	501.21.	Solid Wall Polyethylene Plastic Pipe for Water, Wastewater and Pipe Rehabilitation
	501.22.	Polyethylene (PE) Large Diameter Wastewater Pipe with

		Modified Wall Profiles and Performance Standards
	501.23.	Polyethylene (PE) Corrugated Drainage Tubing and Corrugated Smooth Lined Storm Water Pipe and Fittings
	501.24.	Fiberglass (Glass-Fiber-Reinforced Thermosetting-Resin) Wastewater Pipe
	501.25.	Fiberglass (Glass-Fiber-Reinforced Thermosetting-Resin) Water Pipe
	502.	APPURTENANCES
(1)	502.1.	Manholes
	502.2.	Wastewater Main Cleanouts
(1)	502.3.	Fire Hydrants
	502.4.	Thrust Restraint
(1)	502.5.	Fittings
(1)	502.6.	Valves
	502.7.	Performed Flexible Conduit Joint Sealant
	502.8.	Polyethylene Wrap for Metal Pipe Fittings
	502.9.	Corrosion-Resistant Coatings and Liners for Wastewater Conduit and Appurtenances
	502.10.	Connections to Conduit for Service
	502.11.	Miscellaneous Conduit Connections
	502.12.	Structures
	503.	TRENCHLESS INSTALLATION
	503.1.	Conduit Materials
	503.2.	Tunnel/Chasing Pipe Spacers
	503.3.	Methods of Jacking, Boring or Tunneling
	503.4.	Measurement and Payment
	504.	OPEN CUT - BACKFILL
	504.1.	General
(1)	504.2.	Materials
(1)	504.3.	Excavation and Foundation
(1)	504.4.	Backfill-General Requirements
(1)	504.5.	Embedment
(1)	504.6.	Final Backfill
	504.7.	Measurement and Payment of Backfill
	505.	OPEN CUT – GENERAL CONDUIT INSTALLATION
	505.1.	General
	505.2.	General Installation Requirements for Pipe Types
	506.	OPEN CUT – WATER CONDUIT INSTALLATION

	506.1.	Description
	506.2.	Materials
(1)	506.3.	Laying Water Conduit
	506.4.	Pipe Joints
(1)	506.5.	Hydrostatic Test
	506.6.	Connections to Existing Water Conduits
	506.7.	Purging and Disinfection of Water Conduits
	506.8.	Plugs
	506.9.	Measurements and Payments
	507.	OPEN CUT- WASTEWATER CONDUIT INSTALLATION
	507.1.	Description
	507.2	Materials
	507.3.	Laying Wastewater Conduit
	507.4.	Wastewater Conduit Joints
(1)	507.5.	Test and Inspections
	507.6.	Measurement and Payment for Wastewater Conduit Installation
	508.	OPEN CUT – STORM WATER CONDUIT INSTALLATION
	508.1.	Description
	508.2.	General
	508.3.	Reinforced Concrete Pipe for Storm Water
	508.4.	Corrugated Metal Pipe
	508.5.	Structural Plate Conduit
	508.6	Measurement and Payment for Storm Water Conduit Installation
(1)	508.7	Storm Sewer Conduit Inspection
	509.	CROSSINGS
	509.1.	General
	509.2.	State Highway Crossings
	509.3.	Street and Alley Crossings
	509.4.	Railroad Crossing
(1)	509.5.	Creek and River Crossings
	509.6.	Measurement and Payment of Crossings

ITEM 501.UNDERGROUND CONDUIT MATERIALS

501.4 Concrete Pressure Pipe and Fittings

Add the following:

C302 Reinforced Concrete Pressure Pipe, Non Cylinder Type, for Water and Other Liquids, and C300 Reinforced Concrete Pressure Pipe, Steel Cylinder Type, for

Water and Other Liquids are not approved for use in the City, unless otherwise shown in the plans or approved in writing. Reinforced concrete cylinder pipe in sizes 16 inches through 21 inches shall be Bar-Wrapped Concrete Cylinder Pipe AWWA Type C303. For pipe 42 inches in diameter and above the pipe shall be Prestressed Concrete Pressure Pipe, Steel Cylinder Type, AWWA Type C301. Between 24 inches and 36 inches the pipe furnished may be either type. All pipe shall be designed to withstand the working pressure and external load as shown in the plans.

501.5 Reinforced Concrete Wastewater Pipe With Rubber Gasket Joints

501.5.1. General

Add the following:

All reinforced concrete pipe used in the sanitary sewer system shall conform to ASTM Designation C76 and shall be of the Thick Wall Pipe design with aggregates consisting of limestone aggregate in the proportion of at least 75 percent by weight of the total aggregates, unless otherwise provided in the Special Conditions to the Specifications.

501.7 Ductile-Iron Pressure Pipe and Fittings

501.7.1. General

Add the following:

Minimum design thickness for all Ductile-Iron Pipe installed shall be Class 51 on sizes 12 inches and smaller, and Class 52 on sizes 14 inches and larger.

501.9 Steel Pipe and Fittings

501.9.3. Pipe and Fitting Requirements

Substitute the second to last sentence with the following:

All steel pipe to be furnished for this project shall be designed in accordance with AWWA M11 for the most critical application of internal pressures and external loads. The following design conditions shall apply:

Internal Pressure (Design to account for working and surge together)

- 1) Working Pressure of 200 psi
- 2) Surge allowance of 250 psi

External Loading for Buried Pipe

- 1) External loads shall be comprised of the weight of the backfill together with live and impact loads. Earth loads shall be calculated based on ditch and positive projecting conduit. The earth load for the pipe design shall be the greater of the above two conditions.
- 2) External live loads shall be at least equivalent to AASHTO HS-20 loading.
- 3) Modulus of soil reaction (E') < 1000 psi
- 4) Unit weight of fill (w) > 120 pcf
- 5) Deflection lag factor ($D1$) (1.0)
- 6) Bedding constant (K) = 0.100
- 7) $hw = h =$ depth of cover above top of pipe

- 8) Maximum deflection in percent of pipe diameter shall be as determined by AWWA M11, latest edition, as calculated using moment of inertia of steel cross section of pipe wall. Moment of inertia of cement mortar shall not be included in calculation of maximum deflection.

Available Deflections

Mortar-lined and coated = 2 percent of pipe diameter

Maximum Working Stress

The maximum combined stress based on working pressure shall be no greater than 50 percent of the minimum yield strength or 18,000 psi, whichever is less.

The maximum combined stress based on test pressure shall be no greater than 75 percent of the minimum yield strength or 24,000 psi, whichever is less.

501.9.4. Joints

Add the following:

In general, pipe joints shall be as follows, as indicated on the Drawings or as specified.

- 1) Flanged joints shall be provided as a minimum at all flanged valves, meters and other equipment.
 - a. Flanges: Unless otherwise noted, flanges shall conform to the requirements of AWWA C207, Table D, E or F as required.
 - b. Flange Bolts and Nuts: Shall be furnished in size and numbers stipulated in AWWA C207. Unless otherwise indicated, bolts shall be carbon steel to meet the requirements of ASTM Designation A307, Grade B for regular joints.
- 2) Restrained Lap-Welded slip joints (expanded bell) with a single fillet weld.
- 3) Carnegie-Shape Rubber Gasket Joint: Bell and spigot rubber gasket joint will be furnished with the bell end of the pipe mechanically expanded to the required internal diameter and the spigot end furnished as a sized Carnegie shape welded to the opposite end of the pipe. The expanded bell and Carnegie spigot shall be designed such that when the pipe is laid and jointed, it will be self centered, and the O-ring rubber gasket will be enclosed tightly on all four sides and confined under compression adequate to ensure watertightness. Gaskets to be full-face for use with flat face flanges and ring type for use with raised face flanges. Gasket material for water service pipe shall be cloth inserted rubber sheet, 1/8-inch thick or red rubber, ASTM D1330, Grade 1. Gasket material for air piping shall be as above, but of EPDM.
- 4) Mechanical Couplings: Mechanical couplings designed to provide a stress relieving flexible joint shall consist of a cylindrical sleeve, two gaskets, two follower rings and a set of bolts and nuts.
 - a. Sleeves: Manufactured of ASTM A53 steel for sizes 10-inches and smaller. ASTM A36 steel for sizes 12-inches and larger. Minimum sleeve length shall be five inches for pipe 12-inches and smaller,

7-inches for pipe 14-inches through 24-inches, and 10-inches for pipe larger than 24-inches.

- b. Follower Rings: Ductile Iron ASTM A536 or AISI C1020 Steel.
- c. Bolts and Nuts: High strength low alloy steel with heavy semi-finished hexagon nuts.
- d. Gaskets: Shall be of synthetic rubber suitable for operating conditions.
- e. Shop Finish: Manufacturer's standard unless otherwise noted.
- f. Manufacturer: Baker 200, Dresser Style 39, Rockwell Series 411 or approved equal.

501.14 Polyvinyl Chlorine (PVC) Water Pipe

Add the following:

All PVC water pipelines shall be AWWA C900-16 PVC Pipe (blue in color), DR 14 (PC 305) for pipeline sizes 12-inch and smaller, and DR 18 (PC 235) for 14-inch and larger water pipelines. All PVC water pipe shall be extruded PVC pipe of the rubber gasket type joint and shall be furnished in 20-foot nominal laying lengths.

All fittings shall be ductile-iron of bell and spigot or mechanical joint, Class 250, in accordance with AWWA Specification C 110, C 111 or C 153 (Compact), and shall be tar coated on the outside surface and shall have an interior cement lining with seal coat per AWWA Specification C104, unless otherwise shown in the plans.

502 APPURTENANCES

502.1 Manholes

502.1.1. Manhole Materials

502.1.1.1. Precast Reinforced Manhole Sections

502.1.1.1.1. Joints

Add the following:

All sanitary sewer manholes installed in the City of Rockwall, shall have "O" ring joints conforming with ASTM Designation C443

502.1.4. Manhole Construction

502.1.4.1. Manhole Types and Requirements

502.1.4.1.1. Cast-In-Place Concrete Manholes

Add the following:

502.1.4.1.1.1. Forms

Manholes shall be constructed in place in accordance with the details shown in the plans and using forms as market by Improved Construction Methods, Inc., Jacksonville, Arkansas or Symons Corp., DePlaines, Illinois, or an approved equal.

502.1.4.1.1.2. Base

The base shall be cast monolithically with the rest of the manhole. The invert and flow channel shall be formed during or immediately after the placing of the

concrete and trowel-finished as soon as the concrete has set sufficiently. The concrete must set for 24 hours before any pipe inside the manhole is trimmed. Concrete shall be minimum 4200 psi.

The base concrete shall be 4200 psi, maximum slump 4 inches vibrated or tamped on undisturbed bearing. The base shall have a minimum diameter or width of at least 1'-0" greater than the outside diameter of the manhole, and a minimum thickness including the area under the pipe as follows:

0' to 12' manhole.....	12"
12' to 20' manhole.....	15"
20' and above.....	18"

502.1.4.1.1.3. Invert

All invert channels shall be smooth and accurately shaped to a semi-circular bottom conforming to the inside of the adjacent sewer section. Inverts shall be formed directly in the concrete of the manhole base or may be constructed by laying full section sewer pipe through the manhole and breaking out the top half after the base is constructed. Inverts shall extend up at least half of the diameter of the pipe. Changes in the direction of the sewer and entering branches shall have a true curve of as large a radius as the size of the manhole will permit. Where the pipe is laid through the manhole, the invert shall be finished to 1/4-inch below the center of the pipe. The pipe shall be trimmed down to 1/4-inch below the surface of the invert, and the edges of the pipe along the invert and at the walls of the manhole shall be plastered and brush-finished. Plaster shall be 2-parts of masonry sand to 1-part of Portland cement, or an approved non-shrink grout.

502.1.4.1.1.4. Manhole Barrel Section

The vertical forms, wall spaces, and placing cone must be carefully positioned and firmly clamped in place before any placement is made. The wall spacers must be located 90 degrees from each other. The manhole shall be cast of 4200 psi concrete with a maximum slump of 4 inches. The first placement shall consist of approximately 1/2 yard of concrete evenly around the walls and vibrated until there is a minimum slump of 60 degrees from the bottom of the forms to the bearing surface both inside and outside of the manhole. When this is complete and before additional concrete is added, the concrete must be carefully vibrated on each side of each pipe. Additional concrete must be deposited in evenly distributed layers of

about 18 inches with each layer vibrated to bond it to the preceding layer. The wall spacers must be raised as the placements are made with the area from which the spacer is withdrawn being carefully vibrated. Excessive vibration is to be avoided. A maximum of 2% calcium chloride may be added to the concrete, at the Contractor's option, to speed the set. The forms may be removed as soon as the concrete has sufficiently set (approximately 2 hours after placement depending on field conditions).

Form marks and offsets up to 1-inch will be permitted on the outside surface of the manhole. Form marks and offsets up to 1/2-inch will be permitted inside the manhole. All offsets on the inside surface of the manhole will be smoothed and plastered so there is no projection or irregularity capable of scratching a worker or catching and holding water or solid materials. Honeycomb will be plastered with a mortar consisting of 3 parts of masonry sand and 1-part Portland cement upon removal of the forms. Manholes deemed to be structurally unsound shall be replaced.

502.1.4.1.1.5. Backfilling

Will be performed evenly and carefully around the manhole 24 hours or more after the placement of concrete is completed and shall conform to these specifications.

502.1.4.1.1.6. Cold Joints:

Should circumstances make a cold joint necessary, a formed groove or reinforcing dowels will be required in the top of the first placement for shear protection. Immediately before the second placement is made, the surface of the cold joint shall be thoroughly cleaned and wetted with a 1-1/2 inch layer of mortar (2 parts sand and 1-part cement) being deposited on the surface. Cold joints below the natural water table or in the bottom 4 feet of the manhole shall include an approved waterstop material. Waterstops shall be heavy duty polyvinyl conforming to Corps of Engineers Specification CRD-572, latest edition, as manufactured by Serviced Products Division of W.R. Grace and Co.; B.F. Goodrich Company; Electrovert, Inc.; W.R. Meadows, Inc.; or approved equal.

502.3 Fire Hydrants

302.3.1. Materials

Delete all parts of Item 502.3.1 in its entirety except sub items 502.3.1.3, 502.3.1.4., 502.3.1.10, and 502.3.1.14.

Add the following:

All fire hydrants furnished shall conform strictly with the latest specification C-502 of the American Water Works Association Standards for dry barrel fire hydrants and must comply with the following supplementary details and changes or addition.

a) Inlet Connection:

Unless otherwise specified the inlet connection shall be a six (6) inch standard mechanical joint complete with all joint accessories. The inlet shoe shall be cast of the same or stronger metal than the lower barrel to prevent impact damage of the shoe. The interior of the shoe, including the lower valve plate and/or cap nut shall have a protective epoxy coating of at least 4 mils applied in the shop. If a cap nut is utilized it must be locked in place with a stainless steel lock washer or similar non-corrosive device and all machined surfaces must be protected from water intrusion to prevent corrosion and assure ease of field teardown or maintenance.

b) Main Valve:

The main valve shall be reversible compression type, closing with the pressure and shall be not less than 5-1/4" in diameter. Composition of the main valve shall be molded rubber or neoprene having a durometer hardness of 90 ± 5 and shall be not less than 1" thick to protect against hydrant chatter and give long term durability.

c) Outlet Nozzles:

All hydrants shall be "three way", equipped with two hose nozzles and one pumper nozzle.

d) Diameter Outlet Nozzles:

The hydrant shall have two hose nozzles, two and one-half (2-1/2") inches nominal I.D., and one pumper nozzle four and one-half (4-1/2") inches nominal I.D. with Natural Standard Hose Threads.

e) Nozzle Attachment:

All nozzles shall be mechanically connected into the barrel and have "O" Ring pressure seals to provide a positive seal between nozzles and hydrant barrel. A suitable nozzle lock shall be provided and shall be stainless steel or bronze. Nozzles shall not be caulked in.

Nozzle caps shall be furnished with pentagon nut the same size as the operating nut. They shall be furnished with interior rubber gaskets that will seat against bronze nozzles. All caps shall be secured to hydrant barrel by heavy duty non-kinking chains with a chain loop on each cap that permits free turning of the cap, for speed and ease of removal by fire fighters.

f) Operating Nut:

The operating nut shall be non-rising, pentagonal shape, measuring 1-1/4" at the top and 1-1/2" at the base from point to flat. Pentagon shall have a depth of at least one and one-quarter inch (1-1/4"). The hydrant shall be constructed in such a manner that the operating nut, "O" Rings and washers can be removed and replaced

without removing the bonnet. All bearing surfaces of the operating nut shall be bronze.

g) Holddown Nut:

Holddown nut must have integral weather seal. Resilient seal between holddown nut and operating nut shall prevent debris entry to protect operating nut from damage.

h) Lubrication Reservoir:

The hydrant shall have a completely "O" Ring sealed oil reservoir with a minimum of two (2) "O" Ring pressure seals to prevent contamination of the oil around the operating parts of the hydrant. The oil reservoir shall be cast in such a manner that all operating parts shall be repairable without removal of the bonnet to facilitate repairs and shall be of a design that all bearing surfaces and threaded parts will be automatically lubricated upon each operation of the hydrant. If bearing surfaces are not lubricated, the design shall keep operating friction to a minimum. A high wear resistant thermoset plastic anti-friction washer shall be in place above the thrust collar to minimize operation torque and facilitate long term ease of operation. The operating threads must be sealed against contact with water to all times regardless of open or closed position of main valve. The hydrant shall have the capability of field personnel to visually check oil level and add additional oil if needed. Filler and inspection plug shall be recessed or flush type.

i) Traffic Feature:

Hydrants shall be "traffic model" having upper and lower barrel joined approximately two inches (2") above the ground line by a breakable "swivel" flange providing 360 degree rotation of the upper barrel for nozzle positioning and must be capable of rotating barrel with line pressure on. The ground line shall not be less than eighteen inches (18") below the centerline of the lowest nozzle and shall be clearly marked in a permanent manner on the lower barrel. A breakable stainless steel stem coupling shall join the two-piece stem adjacent to the ground line flange. Screws, clevis pins, fasteners or bolts used in the coupling shall be Series 300 stainless steel. The weakened portion of the stem coupling shall be located to divert pressure from the stem coupling directly to the upper and lower stems when torque is applied in seat ring removal.

Design of the coupling shall be such that when the coupling is broken, no part of the coupling will shatter or come loose and fall into hydrant and the break will not occur through the pins or bolts holding the coupling to the stem.

j) Drain Valve Assembly:

Hydrants shall be equipped with two drain valves which drain the barrel when the hydrant is closed and seal shut when the hydrant is in the open position. The upper valve plate, seat ring and drain ring (shoe bushing) must be bronze and work in conjunction to form an all bronze drainway. Upper valve plate if not bronze, must be epoxy coated.

The bronze seat ring shall be a minimum 5-1/4" inside diameter and shall thread into a bronze drain ring forming an all bronze drainway with two (2) drain outlets for double protection against drain clogging and corrosive damage. All bronze components shall have less than 16% zinc alloy, Grade A to give high corrosion resistance as recommended in Section 2.1, Table I of American Water Works Association Standard C-502. Seat ring seals shall be "O" Rings. Hydrant shall be designed so that during opening and closing operation(s), water pressure force flushes the drain valve and drain openings to prevent clogging, thus allowing barrel drainage.

k) Repair:

All internal operating parts shall be removable from above ground level with a lightweight stem wrench.

l) Provisions for Extension:

All hydrants shall be capable of being extended to accommodate future grade changes without excavation. Extension of the hydrant shall be made by adding at the groundline flange a new coupling and stem section equal to the length of the extension. This must facilitate easy field grade adjustment.

Stem extensions made by adding new section of stem to the threaded section of the stem at the top of the hydrant will not be accepted.

Extension kits must be available from manufacturer in six-inch (6") increments.

m) Pressure Loss and Working Pressure

Pressure loss through one (1) four and one-half inch (4-1/2") nozzle at 1000 GPM shall not be more than 5.0 psi.

n) Nuts and Bolts

Body Bolts, studs and nuts shall be 316 stainless steel.

Add the following:

502.3.4. Paint and Protective Coatings

All fire hydrants furnished under these specifications shall have paint and protective coatings applied at the factory or in the field as specified herein.

a) Factory Coating:

All hydrants shall be cleaned at the factory by shot blasting and shall be painted above the groundline (at the factory) with two (2) coats of neutral orange rust-prohibitive primer which shall be compatible with the finished coating.

All continuously wetted ferrous metal surfaces in the hydrant shoe shall be protected with a two-part thermoset epoxy coating to a nominal thickness of 4 mils of corrosion protection and shall be of a color that is easily identified as an epoxy coating. All other exposed exterior surfaces below ground level shall be coated with asphalt varnish as specified in American Water Works Association Standard C-502, Section 4.2 or as otherwise outlined in these specifications. All

remaining interior surfaces above the main valve, except machined surfaces such as the threaded portion of the operating stem or nut, shall be coated with asphalt varnish.

The thermoset epoxy coating shall be a two-part epoxy and shall function as a physical, chemical and electrical barrier between the base metal to which it is applied and the surroundings. The coating shall be non-toxic and shall not impart taste to water. The coating must be formulated from materials deemed acceptable per the Food & Drug Administration Document Title 21 of the Federal Regulations of Food Additives, Section 121.2514 entitled Resins & Polymeric Coatings. The coating shall have a satin finish and shall be suitable for field overcoating and touch-up with the same coating material without sanding or special surface preparation, or application of heat in excess of room temperatures.

b) Field Coatings:

All hydrants shall be field painted at the time the Contractor is instructed by the Public Works Inspector and shall be painted above ground with two (2) coats of aluminum paint, Mobil 11-A-19 or Tnemec 2-color, Tnemec-Gloss or approved equal according to the following color schedule:

Water Main Size	Bonnet and Caps Color
6"	Silver
8"	Blue
10" & Larger	Yellow

Add the following:

502.3.5. Experience and Certification

Fire hydrants, furnished under these specifications, shall be manufactured by a firm that has been producing hydrants of this general type continuously for the past five (5) years. Each company or manufacturer supplying hydrants under these specifications shall have on file, at the City of Rockwall, approved records of experience and detailed drawings of the proposed hydrants. Drawings shall cover the specific hydrant to be furnished for installation in the City and shall show all dimensions including metal thickness, construction details and materials used in all parts of the hydrant together with ASTM Designation and structural properties of these materials.

For ease of identification, all hydrants shall have "City of Rockwall, Texas" stenciled on the lower barrel. This stencil shall be applied at the factory. The manufacturer shall furnish to the City of Rockwall, a Certification that the fire hydrant complies with the specifications without any exceptions. This certification shall apply to specific hydrants being installed within the City water distribution system. The certification shall state (1) the number of hydrants covered by the certification, (2) the Addition where hydrants are being installed or the Project Name and (3) name of Contractor installing hydrants.

The City may require the Manufacturer, Supplier or Contractor to dismantle hydrants at any time to determine compliance with these specifications. Location of any hydrant within the City system, installed after adoption of these specifications, that does not meet the specifications completely shall be cause for prohibiting the future use of any hydrants from the same manufacturer.

502.5 Fittings

502.5.1. Brass Stops, Cocks and Fittings for Water Works Service

Add the following:

502.5.1.2. Physicals

All pressure holding components of brass stops or fittings shall be certifiably pressure tested before assembly as specified herein, including meter coupling tailpieces, flared nuts, compression nuts, etc.

502.5.1.3. Design Features of Stop and Cocks

The stem end of the key, prestaked key nut and the "D" washer shall be so designed that they turn in unison and if tightened to the failure point, the stem will not break causing the key to blow out.

Corporation, curb and angle stop bodies shall be of one-piece construction to provide optimum resistance to installation, operating and earth-load stresses. The operating head and checks of these stops shall be integrally cast with the plug or cap of the stop for maximum resistance to torque feature.

Angle valves shall have a lockwing and shall be "O" ring sealed at the top of the key to prevent leakage during operation and to act as a secondary protection against external top leakage. Meter swivel nuts shall be of the saddle nut construction to support the meter during installation. Inlet flare and compression parts for angle valves shall be field interchangeable on 3/4-inch and 1-inch sizes to make repairs easier and more economical.

502.5.1.4. Design Features of Fittings

Add the following to the third paragraph of this item:

Flare joints shall have curved metal to metal seating surfaces and flare nuts shall meet the following overall minimum length to insure that the flare nut will give adequate pipe support to this type of joint.

<u>Flare Nut - Minimum</u>	<u>Overall Length</u>
3/4"	1-1/2"
1"	2"
1-1/2"	3"
2"	3-1/2"

Add the following to the sixth paragraph of this item:

All stops and fitting joints shall be of the compression type for copper pipe unless otherwise noted. Compression coupling nuts shall be designed to "bottom out" on a machined shoulder on the fitting to

provide a visual check for proper assembly and eliminate field judgment errors of the installation. The coupling nut shall house the compression gasket in a smooth machined area and shall be internally coated with a fluorocarbon (Teflon) lubricant to prevent gasket damage and reduce installation torques. The compression gasket shall be a heavy armored gasket to provide electrical continuity through the fitting and prevent gasket cold flow and shall house a concave hardened stainless steel overlapping gripper band that is automatically activated and set by shouldering out the fitting properly.

Minimum pullout (or tensile strength) required of these fittings after installation to protect against earthloads are as follows:

3/4 "	2,000 lbs.
1"	3,000 lbs.
1-1/2"	3,500 lbs.
2"	4,000 lbs.

All outlet threads on compression connections shall be compatible with the City's present drilling and tapping machine equipment.

502.6 Valves

502.6.1. Metal-Seated Gate Valves for Ordinary Water Works Service

502.6.1.2. Bonnet Bolting

Delete in its entirety and replace with the following:

Body Bolts, studs and nuts shall be 316 stainless steel.

502.6.2. Resilient-Seated Gate Valves for Ordinary Water Works Service

502.6.2.1. General Description

Add the following:

Unless otherwise approved in writing, all Gate Valves for direct buried service in the City's distribution system, 6 inches through 12 inches in diameter, shall be Resilient Seated Gate Valves that conform strictly with the latest specification C-509 of the American Water Works Association Standards and must comply with the following supplementary details, changes or additions. Gate valves shall be iron body designed for a working pressure of 250 psi. All valves shall be hydrostatically tested at 200 psi and shell tested at 500 psi. Any leakage during testing shall be cause for rejection. For ease of repair the body, bonnet and stuffing box shall be flanged together with ASTM Grade B bolts and nuts. Each valve shall have the maker's initials, pressure rating, and year in which manufactured cast in the body.

502.6.2.2. Bonnet Bolting

Delete in its entirety and replace with the following:

Body Bolts, studs and nuts shall be 316 stainless steel.

502.6.2.5. Valve Stem and Nuts

Add the following:

Stems shall be machined from manganese bronze rod with an integral forged thrust collar machined to size. The stems shall be non-rising and equipped for nut operation, which shall be opened by turning to the left. The seals shall consist of two "O" rings above and one "O" ring below the thrust collar. An anti-friction washer shall be located above and below the thrust collar for operating torque. The stem nut shall be ASTM B-62 bronze.

502.6.2.17. Resilient Wedge

Add the following:

The wedge shall be cast iron, fully encapsulated in molded rubber complying with ASTM D2000. Wedge must have molded wedge guides preventing the disc from tilting downstream during operation. Protective guide cap bearings made of polymer bearing material to provide a bearing interface between the wedge guide and valve interior.

502.6.2.18. Paint and Protective Coatings:

Add the following:

All valves furnished under these specifications shall be painted on the exterior as specified in AWWA C-509 with asphalt varnish.

All ferrous metal surfaces in the internal part of the valve shall be protected with a fusion epoxy coating to a nominal thickness of 10 mils for corrosion protection and shall be of a color that is easily identified as an epoxy coating.

The proguard fusion epoxy coating shall fully comply with AWWA C550 and certified NSF 61. The coating shall be non-toxic and shall not impart taste to water. The coating must be formulated from materials deemed acceptable per the Food & Drug Administration Document Title 21 of the Federal Regulations of Food Additives, Section 121.2514 entitled Resins and Polymeric Coatings. The coating shall have a satin finish and shall be suitable for field overcoating and touchup with the same coating material without sanding or special surface preparation, or application of heat in excess of room temperature.

502.6.2.19. Experience and Certification

Add the following:

Valves, furnished under these specifications, shall be manufactured by a firm that has been producing valves of this general type continuously for the past five (5) years. Each company or manufacturer supplying valves under these specifications shall have on file, with the City of Rockwall, approved records of experience and detailed drawings of the proposed valves. Drawings shall cover the specific valve to be furnished for installation and shall show all dimensions including metal thickness, construction details and materials used in all parts of the valve together with ASTM Designation and Structural properties of these materials.

The manufacturer shall furnish to the City of Rockwall, a Certification that the valve complies with the specifications without any

exceptions. This certification shall apply to specific valves being installed within the City water distribution system. The certification shall state (1) the number of valves covered by the certifications, (2) the Addition where valves are being installed or the Project Name, and (3) name of Contractor installing valves.

The City may require the Manufacturer, Supplier or Contractor to dismantle valves at any time to determine compliance with these specifications. Location of any valve within the City system, installed after adoption of these specifications, that does not meet the specifications completely shall be cause for prohibiting the future use of any valves from the same manufacturer.

502.6.2.20. Tapping Sleeves:

Add the following:

The materials for tapping sleeve bodies shall be cast-iron or ductile-iron in accordance with AWWA Standard C110 (ANSI 21.10), in two sections, or halves to be bolted together with high-strength, corrosion resistant, low alloy steel bolts conforming to AWWA Standard C111 (ANSI 21.11).

Cast iron and ductile-iron sleeve shall be mechanical joint, or as specified, or dimensions to secure proper fit on the type and class of pipe on which they are to be used. Each sleeve shall be furnished with a 3/8-inch test opening so that tests can be made prior to tapping. Opening shall be provided with a 3/8-inch bronze plug.

502.6.5. Butterfly Valves

Add the following:

All Butterfly Valves for installation underground in the City's distribution system 16 inches through 48 inches shall be in accordance with this specification.

All butterfly valves furnished shall conform strictly with the latest specification C-504 of the American Water Works Association Standard for rubber-seated butterfly valves and must comply with the following supplementary details and changes or addition.

a) Body:

The body shall be cast-iron ASTM A126, Class B and shall have face to face dimensions in accordance with AWWA Standards for short body, Class 150-B. All butterfly valves shall have a floating body seat ring to compensate for change in direction of flow to assure bottle-tight seal in either direction.

b) Shaft:

Valve shafts shall be an 18-8, Type 316 stainless steel. Valve disc and shaft shall be standard self adjusting Chevron "V" type packing. Shaft seals shall be of a design allowing replacement without removing the valve shaft.

c) Disc and Seat:

The valve disc shall be cast iron ASTM A126, Class B. The valve seat shall be Buna-N located on the valve body. Valves 20" and smaller

shall have a bonded seat that meets test procedures in ASTM D429, Method B. Valves 24" and larger shall be retained in the valve body by mechanical means without the use of metal retainers or other devices located in the flow stream.

d) Operator:

Butterfly valve operators shall be of the traveling nut design. All operators shall have adjustable mechanical stop limiting devices to prevent over travel of the disc. The operator shall have a mechanical stop which will withstand an input torque of 450 Ft. lbs. against the stop. The traveling nut shall engage alignment grooves in the housing.

e) Operation:

Unless otherwise shown in the plans, all valves shall open counter clockwise.

f) Valve Ends:

Valve ends shall be Mechanical Joint End, or Flanged Ends. Mechanical joint valves shall come complete with bolts, nuts, gaskets and glands. It shall be the responsibility of the Contractor to coordinate the ends of the adjoining pipe with the type valve end he/she proposes to use.

g) Testing:

All valves seats shall be tested at 150 psi as described in AWWA C-504 and in addition shall have a shell test of 300 psi. Any leakage shall be cause for rejection.

h) Paint and Protective Coatings:

All butterfly valves furnished under these specifications shall be painted on exterior as specified in AWWA C-504, with asphalt varnish.

All ferrous metal surfaces in the internal part of the valve shall be protected with a two-part thermoset epoxy coating to a nominal thickness of 4 mils for corrosion protection and shall be of a color that is easily identified as an epoxy coating. This shall be applied in shop.

The thermoset epoxy coating shall be a two-part epoxy and shall function as a physical, chemical and electrical barrier between the base metal to which it is applied and the surroundings. The coating shall be non-toxic and shall not impart taste to water. The coating must be formulated from materials deemed acceptable per the Food & Drug Administration Document Title 21 of the Federal Regulations of Food Additives, Section 121.2514 entitled Resins & Polymeric Coatings. The coating shall have a satin finish and shall be suitable for field overcoating and touchup with the same coating material without sanding or special surface preparation, or application of heat in excess of room temperatures.

i) Experience and Certification:

Butterfly valves, furnished under these specifications, shall be manufactured by a firm that has been producing valves of this general type continuously for the past five (5) years. Each company or manufacturer supplying valves under these specifications shall have on

file, at the City of Rockwall, approved records of experience and detailed drawings of the proposed valves. Drawings shall cover the specific valve to be furnished for installation in the City of Rockwall and shall show all dimensions including metal thickness, construction details and materials used in all parts of the valve together with ASTM Designation and structural properties of these materials.

The manufacturer shall furnish to the City, a Certification that the valve complies with the specifications without any exceptions. This certification shall apply to specific valve being installed with the City water distribution system. The certification shall state (1) the number of valves covered by the certification, (2) the Addition where valves are being installed or the Project Name and (3) name of Contractor installing valves.

The City may require the Manufacturer, Supplier or Contractor to dismantle valves at any time to determine compliance with these specifications. Location of any valve with the City system, installed after adoption of these specifications, that does not meet the specifications completely shall be cause for prohibiting the future use of any valves from the same manufacturer.

ITEM 504. OPEN CUT – BACKFILL

504.2 Materials

504.2.2. Pipe Bedding Material for Storm, Water and Sanitary Sewer Mains

Add the following:

Unless otherwise indicated, storm sewer pipe shall be bedded with Class “C” bedding in accordance with the details shown on the plans.

504.2.2.1. Crushed Stone Embedment

Add the following:

Where stone is called out for pipe embedment, Standard Crushed Rock-Aggregate, Grade 4, shall be used unless otherwise approved in writing.

504.3. Excavation and Foundation

Add the Following:

504.3.1 Excavation

Add the following:

Prior to start of excavation the Contractor shall remove and stockpile the Topsoil and protect the Topsoil from contamination during construction.

504.5 Embedment

Add the following:

Rock Cuttings or Sand will not be permitted in the pipe bedding for sanitary sewer or water lines in the City of Rockwall.

504.5.2. Embedment Classes

504.5.2.9. Class "C" Embedment

Replace the last sentence in its entirety with the following sentence:

Density shall be at least 95% of maximum density under paving, 90% of maximum density elsewhere, as determined by ASTM D698.

504.5.2.15. Class "H" Embedment

Class "H" Embedment shall be used on the P.V.C. Sanitary Sewer Pipe installed within the City of Rockwall.

On PVC Pipe 18 inches through 27 inches in diameter the crushed stone shall be brought up in uniform layers to a point nine inches over the top of the pipe when compacted.

504.6. Final Backfill

Add the following:

After the trench has been refilled, topsoil shall be replaced to the extent that rock, excavated from the trench, will be completely covered and the area is returned to its original condition, except that in cultivated areas a minimum of 12 inches of top soil shall be replaced.

504.6.1. Excavated Material

Add the following:

The material used in the backfill shall be pulverized to the extent necessary to produce a free flowing material free of clay balls larger than 6-inch diameter.

506. OPEN CUT - WATER CONDUIT INSTALLATION

506.3. Laying Water Conduit

Add the following:

Valves for installation in the City's distribution system shall be installed by direct burial as shown on the standard detail sheets and shall be provided with valve boxes for operation of the valve.

506.5 Hydrostatic Test

Delete first paragraph and table and replace with:

All hydrostatic tests shall be maintained over a period of not less than four hours.

"Before being accepted, all ductile iron, C-900 PVC or concrete cylinder water mains shall be tested with a hydraulic test pressure of not less than four hours. Concrete pressure pipe shall be tested with a hydraulic test pressure of 120 percent of the design pressure. Steel pressure pipe shall be tested with a hydraulic test pressure not to exceed 150 percent and not less than 120 percent of the designed working pressure. The rate of leakage of all pipe tested shall not exceed the amounts shown in the tables titled "Hydrostatic Test-C-900 PVC, Steel or Ductile Iron Water Mains" or "Hydrostatic Test-Concrete Cylinder Water Mains". Water lines of material in combination shall be tested for the type of pipe (material) with the least stringent hydraulic test pressure and maintained over a period of not less than four hours."

HYDROSTATIC TEST
C900-16 PVC, STEEL OR DUCTILE-IRON WATER MAINS

L.F. PIPE	GALLONS ALLOWED								
	Pipe Diameter								
	4"	6"	8"	10"	12"	14"	16"	18"	20"
5	0.016	0.024	0.032	0.039	0.047	0.055	0.063	0.071	0.079
10	0.032	0.047	0.063	0.079	0.095	0.110	0.126	0.142	0.158
20	0.063	0.095	0.126	0.158	0.189	0.221	0.253	0.284	0.316
30	0.095	0.142	0.189	0.237	0.284	0.331	0.379	0.426	0.473
40	0.126	0.189	0.253	0.316	0.379	0.442	0.505	0.568	0.631
50	0.158	0.239	0.316	0.395	0.473	0.552	0.631	0.710	0.789
60	0.189	0.284	0.379	0.473	0.568	0.663	0.758	0.852	0.947
70	0.221	0.331	0.442	0.552	0.663	0.773	0.884	0.994	1.105
80	0.253	0.379	0.505	0.631	0.756	0.884	1.010	1.136	1.263
90	0.284	0.426	0.568	0.710	0.852	0.994	1.136	1.278	1.420
100	0.316	0.473	0.631	0.789	0.947	1.105	1.263	1.420	1.578
200	0.631	0.947	1.263	1.578	1.894	2.210	2.525	2.841	3.157
300	0.947	1.420	1.894	2.367	2.841	3.314	3.788	4.261	4.735
400	1.263	1.894	2.525	3.157	3.788	4.419	5.051	5.682	6.313
500	1.578	2.367	3.157	3.946	4.735	5.524	6.313	7.102	7.891
600	1.894	2.841	3.788	4.735	5.682	6.629	7.576	8.523	9.470
700	2.210	3.314	4.419	5.524	6.629	7.734	8.838	9.943	11.048
800	2.525	3.788	5.051	6.313	7.576	8.838	10.101	11.364	12.626
900	2.841	4.261	5.682	7.102	8.523	9.943	11.364	12.784	14.205
1000	3.157	4.735	6.313	7.891	9.470	11.048	12.626	14.205	15.783

Maximum allowable water loss in 4 hours at 180 pounds per square inch of pressure for a rate of 25 gallons per inch diameter of pipe per mile over a 24-hour period

EQUATION THE ABOVE CHART IS BASED ON:

$$\text{Maximum Loss (Gal.)} = 25 \times \text{Diameter of Pipe (inches)} \times \frac{\text{L.F. of Pipe}}{5280 \text{ Pipe}} \times \frac{4}{24}$$

**HYDROSTATIC TEST
CONCRETE CYLINDER WATER MAINS**

L.F. PIPE	GALLONS ALLOWED								
	Pipe Diameter								
	4"	6"	8"	10"	12"	14"	16"	18"	20"
5	0.031	0.047	0.063	0.078	0.095	0.110	0.126	0.142	0.158
10	0.063	0.095	0.126	0.158	0.189	0.221	0.253	0.284	0.315
20	0.126	0.189	0.253	0.316	0.379	0.442	0.505	0.568	0.631
30	0.188	0.284	0.379	0.473	0.568	0.663	0.758	0.852	0.947
40	0.253	0.379	0.505	0.631	0.758	0.884	1.010	1.136	1.263
50	0.316	0.473	0.631	0.789	0.947	1.105	1.263	1.420	1.578
60	0.379	0.568	0.758	0.947	1.136	1.326	1.515	1.704	1.894
70	0.442	0.663	0.884	1.105	1.326	1.547	1.768	1.989	2.210
80	0.505	0.758	1.010	1.263	1.515	1.768	2.020	2.273	2.525
90	0.568	0.852	1.136	1.420	1.704	1.989	2.273	2.557	2.841
100	0.631	0.947	1.263	1.578	1.894	2.209	2.525	2.841	3.156
200	1.263	1.894	2.525	3.156	3.788	4.419	5.050	5.682	6.313
300	1.894	2.841	3.788	4.735	5.682	6.628	7.575	8.522	9.470
400	2.525	3.788	5.050	6.313	7.575	8.838	10.100	11.363	12.626
500	3.158	4.735	6.313	7.891	9.470	11.047	12.626	14.204	15.782
600	3.788	5.682	7.575	9.469	11.363	13.257	15.151	17.045	18.938
700	4.419	6.628	8.838	11.047	13.257	15.468	17.676	19.885	22.095
800	5.050	7.575	10.100	12.626	15.152	17.676	20.201	22.726	25.251
900	5.682	8.522	11.363	14.204	17.044	19.886	22.726	25.567	28.405
1000	6.313	9.469	12.626	15.782	18.939	22.096	25.253	28.408	31.564

Maximum allowable water loss in 4 hours at 180 pounds per square inch of pressure for a rate of 50 gallons per inch diameter of pipe per mile over a 24-hour period

EQUATION THE ABOVE CHART IS BASED ON:

$$\text{Maximum Loss (Gal.)} = 50 \times \text{Diameter of Pipe (inches)} \times \frac{\text{L.F. of Pipe}}{5280 \text{ Pipe}} \times \frac{4}{24}$$

507 OPEN CUT – WASTEWATER CONDUIT INSTALLATION

507.5. Tests and Inspections

507.5.2. Television Inspection

Add the following to this section:

All sanitary sewer pipe construction in this contract shall be visually inspected by photographic means (television and video taped) prior to final acceptance by the Owner. No separate measurement or payment shall be provided for the video inspection. All labor, materials and equipment required are subsidiary to the appropriate bid items as established in the Proposal and Bid Schedule.

ITEM 508 OPEN CUT – STORM WATER CONDUIT INSTALLATION

Add the following:

508.8 Inspection

All storm sewers shall be visually inspected by photographic means (television and video taped) , at Contractor's expense, prior to final acceptance by the City. Any sags, open joints, cracked pipes, etc. shall be repaired or removed by the Contractor at Contractor's expense. Pipes will be cleaned prior to televising the pipe. The contractor shall furnish a DVD formatted video to the City.

ITEM 509 CROSSINGS

509.5. Creek and River Crossings

Add the following:

509.5.1. Aerial Crossings

509.5.1.1. General

Piers for aerial crossings will be drilled piers and columns of the diameter shown on the plans. Piers shall be founded at least 6'-0" into firm gray limestone and 8'-0" into undisturbed material, unless otherwise directed by the Owner.

Materials and workmanship required to construct piers and cap shall conform to Reinforced Concrete Structures, of the specifications. Concrete of piers shall be Class A, 3000 psi.

Anchor straps and bolts shall be installed as shown on the plans, and shall be hot dipped galvanized after fabrication.

After installing the aerial crossing, including the junction collars with the main sewer pipe, an approved coal tar mastic jointing compound shall be installed the full inside circumference of the pipe at each joint to produce a smooth surface with no sharp flow transitions.

509.5.1.2. Steel Pipe

Steel pipe used of Aerial Crossings shall be of the diameter and wall thickness shown on the plans and shall be line pipe manufactured in accordance with the following specifications:

- 1) AWWA C200-75 Mill Type Steel Water Pipe, Grade B
- 2) ASTM A139, Grade B

Pipe shall be designed for a clear span as shown on the plans. Couplings shall be Dresser Type 38, or approved equal and shall be located as shown on the plans. Bolts shall be stainless steel or galvanized.

The steel pipe sizes shown on the plans are the nominal diameters of the minimum size steel pipe which may be furnished and installed. Pipe of a larger size may be furnished at the Contractor's option, but no extra payment will be allowed. If larger pipe is utilized, it shall be set so as to retain the flow lines designated on the plans.

All steel pipe shall receive an interior shop-applied Liquid Epoxy Coating System in conformance with AWWA C-210, latest revision.

509.5.1.3. Exterior Painting

Exterior painting for aerial crossings shall conform to Item 804.2.

All surface prepared in the field shall be inspected by the City of Rockwall for adequate surface preparation as defined above prior to application of paint coating. All surfaces to be painted in the field shall have their readiness for painting approved by the City of Rockwall before work is started.

Paint shall be applied to all ferrous material part of the aerial crossing including but not limited to pipe, couplings, straps, nuts, bolts, etc.

509.5.1.3.1. Paints

Paints for aerial crossings shall be:

- 1) TNEMEC Series 66, or Mobile 78 Series, or Koppers 200 HB, 5.0 mil dry film thickness each coat.
- 2) TNEMEC Series 66, or Mobile 78 Series, or Koppers 200 HB, 6.0 mil dry film thickness each coat.

Approved material of other manufacturers which are equivalent in all respects to the brands named above, may be substituted upon approval. All paint applied must be by the same manufacturer. The color on the final coat shall be selected by the City of Rockwall.

509.5.1.4. Measurement of Payment

Aerial crossings will be measured for payment per each between the limits shown on the plans and will be paid for at the lump sum bid price for each crossing in the Bid Schedule.

Concrete piers and collars to the elevations shown in the plans will be measured and paid for in the lump sum price for aerial crossings. Payment in vertical feet for additional depth of reinforced concrete piers as approved by the City of Rockwall, shall be as provided in the Proposal and Bid Schedule.

Payment of the unit or lump sum prices shall be full compensation for furnishing all labor, supervisions, materials, tools, equipment, and incidentals, and for performing all work necessary in construction the aerial crossings and piers, including excavation, dewatering, backfilling, disposal of surplus material, painting, testing,

concrete encasement, hauling, transportation costs, disposal costs, salvaging, and any other work required in accordance with the Plans and Specifications.

7.6 Division 600 Conduit & Appurtenance Rehabilitation

NOTE: The **(1)** symbol specifies that this item is also covered in the City of Rockwall’s “Special Provisions” to the “Standard Specifications for Public Works Construction, North Central Texas”. These Special Provisions are additional and modify the “Standard Specification”

Table 8.6: Revisions to NCTCOG’s Division 600 Conduit & Appurtenance Rehabilitation

<u>Revised</u>	<u>Standard Specification Item No.</u>	<u>Description</u>
	601.	PIPELINE REHABILITATION
	601.1.	Description
	601.2.	General
	601.3.	General Materials
	601.4.	General Methods
	601.5.	Section Held for Future Use
	601.6.	Section Held for Future Use
	601.7.	Cured-In-Place Pipe Liner (CIPP Liner)
	601.8.	Pipe Bursting With Polyethylene
	601.9.	Pipe Bursting With Rigid Place
	601.10.	Polyvinyl Chloride (PVC) Profile Gravity Liner Pipe (Segmental Sliplining)
	601.11.	Measurement and Payment
	602.	REHABILITATION OF MANHOLES OR UNDERGROUND VAULTS
	602.1	General
	602.2.	Submittals
	602.3.	Quality Assurance
	602.4.	Delivery, Storage and Handling
	602.5.	Rehabilitation
	602.7.	Inspection and Testing
	602.8.	Measurement and Payment
	603.	ABATEMENT OF COATINGS CONTAINING HEAVY METALS
	603.1.	General
	603.2.	Job Plan
	603.3.	Testing
	603.4.	Monitoring
	603.5.	Protection

	603.6.	Lead-Based Coating Removal
	603.7.	Lead-Based Coating Encapsulation
	603.8.	Clean-Up and Disposal
	603.9.	Payment
	604.	REMOVAL OF ASBESTOS-CEMENT PIPE (ACP)
	604.1	General
	604.2	Job Plan
	604.3	Procedures
	604.4	Disposal
	604.5	Payment

7.7 Division 700 Structures

NOTE: The **(1)** symbol specifies that this item is also covered in the City of Rockwall’s “Special Provisions” to the “Standard Specifications for Public Works Construction, North Central Texas”. These Special Provisions are additional and modify the “Standard Specification”

Table 8.7: Revisions to NCTCOG’s Division 700 Structures

<u>Revised</u>	<u>Standard Specification Item No.</u>	<u>Description</u>
	701.	GENERAL STRUCTURES
	701.1.	Structural Wood Products
	701.2.	Structural Excavation
	701.3.	Structural Bolting
	702.	CONCRETE STRUCTURES
	702.1.	Description
	702.2.	Concrete Structure Materials
(1)	702.3.	Mix Design and Mixing Concrete for Structures
	702.4.	Mix Design and Mixing Lightweight Concrete for Structures
	702.5.	Constructing Concrete Structures
	702.6.	Pre-stressed Concrete for Structures
	702.7.	Pneumatically Placed Concrete (Guniting)
	702.8.	Drilled Shaft Foundations
	702.9.	Pre-cast and Cast-In-Place Concrete Units
	703.	STEEL STRUCTURES
	703.1.	Description
	703.2.	Materials for Steel Structures
	703.3.	Steel Structure Construction
	703.4.	Painting Metal Structures
	703.5.	Measurement and Payment
	704.	PILING
	704.1.	Piling Materials
	704.2.	Driving Piling
	704.3.	Penetration
	704.4.	Bearing Resistance
	704.5.	Constructing Cast-In-Place, Pre-stressed Concrete Piling
	704.6.	Measurement and Payment

ITEM 702 CONCRETE STRUCTURES

702.3. Mix Design and Mixing Concrete for Structures

702.3.4. Quality of Concrete

702.3.4.2. Standard Classes

Add the following:

Type "G" Concrete: Min.- Sacks Cement per C.Y. – 7.0; min. 28-day Comp. Strength - 5,000 psi; Min. 7-day Strength 3600 psi; Max. Water Cement Ratio - 5.0; Course Aggregate 1-1/2”.

7.8 Division 800 Miscellaneous Construction & Materials

NOTE: The **(1)** symbol specifies that this item is also covered in the City of Rockwall’s “Special Provisions” to the “Standard Specifications for Public Works Construction, North Central Texas”. These Special Provisions are additional and modify the “Standard Specification”

Table 8.8: Revisions to NCTCOG’s Division 800 Miscellaneous Construction & Materials

<u>Revised</u>	<u>Standard Specification Item No.</u>	<u>Description</u>
	801.	BARRIERS, WARNING & DEOUR SIGNS AND FENCES
	801.1.	Barriers and Warning and Detour Signs
(1)	801.2.	Metal Beam Guard Fence
	801.3.	Railing
	801.4.	Chain Link Fence
(1)	801.5.	Wire Fence
	802.	STEPS AND RETAINING WALLS
	802.1.	Concrete Steps
	802.2.	Concrete Retaining Walls
	802.3.	Segmental Retaining Wall Systems
	802.4.	Cofferdams
	803.	SLOPE AND CHANNEL PROTECTION
	803.1.	Articulating Concrete Block
(1)	803.2.	Gabion Structures
(1)	803.3.	Riprap
	803.4.	Geotextiles Used in Drainage and Stabilization Applications
	804.	PAINTING AND OTHER PROTECTIVE TREATMENTS; PAVEMENT MARKING
	804.1.	Description
(2)	804.2.	Painting and Marking
	804.3.	Galvanizing
	804.4.	Measurement and Payment
	804.5.	Specialty Coatings
	805.	ELECTRICAL COMPONENTS AND CONDUIT
	805.1.	Description
	805.2.	General Requirements for Electrical Components

(1)	805.3.	Conduit Construction Methods
(1)	805.4.	Measurement and Payment
	806.	METALS MATERIALS
	806.1.	General
	806.2.	Structural Steel
	806.3.	Forgings
	806.4.	Castings
	806.5.	Copper
	806.6.	Bolts, Nuts and Washers
	806.7.	Measurement and Payment

801 BARRIERS, WARNING & DETOUR SIGNS, AND FENCES

801.1. Barriers and Warning And Detour Signs

Add the Following

Reflectorized marking for guard rail and other traffic control used shall meet the requirements of 3M Scotchlite Brand Reflective Sheeting Grade, Series 2800, 3800 or 5800, or equal. The marking shall conform to U.S. Department of Transportation, Federal Highway Administration, STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS, 1979 FP-79, Type III A, Sections 633.36 and 718.01 and Federal Supply Service, General Services Administration, LS-300 C, SHEETING AND TAPE REFLECTIVE NON-EXPOSED LENS, Reflectivity 2, Class 4.

801.2. Metal Beam Guard Fence

Add the following:

Reflectorized Marking shall be applied to metal beam guardrail at locations shown on the plans. To apply properly, the following equipment and accessories are recommended:

a. Heat Activated Adhesive

(1) Heat lamp vacuum applicator with temperature control.

(2) Remove protective liner from adhesive and place glossy side of liner over the sign face. Sheeting and liner may require perforation to aid in air evaluation.

b. Pressure Sensitive Adhesive

(1) 48" Interstate Squeeze Roll Applicator.

(2) Hand application. To obtain maximum initial adhesion use firm pressure with 2" (5 cm) rubber roller or plastic squeeze. Multiple, heavy overlapping strokes should be used. Resqueeze all edges.

801.5. Wire Fencing

801.5.2. Material

Add the following:

801.5.2.1. Wire Fencing Fabric:

All chain link fencing shall be No. 9 gage copper bearing open-hearth steel wire.

801.5.2.2. Posts

801.5.2.2.1 Metal Posts

All posts shall be heavily galvanized by the hot-dip process after fabrication and shall be fitted with watertight malleable iron caps. All posts shall be of the following size and shape:

801.5.2.2.2. Line Posts

"H" Section hot rolled weighing not less than 4.10 pounds per linear foot or 3-1/2-inch O.D. pipe weighing not less than 3.65 pounds per linear foot.

801.5.2.2.3. Terminal Posts

Three inch (3") steel pipe weighing not less than 5.79 pounds per linear foot.

801.5.2.2.4. Gate Posts

Four inch (4") O.D. steel pipe weighing not less than 9.11 pounds per linear foot.

801.5.2.3. Rails, Gates, Braces and Fittings

Shall be 1-5/8 inch steel pipe weighing not less than 2.27 pounds per linear foot.

ITEM 803 SLOPE AND CHANNEL PROTECTION

803.2. Gabion Structures

803.2.2. Materials

803.2.2.1. Baskets

Add the sentence:

All wire used, including tie and connecting wire, shall be certified by Mill Test Reports showing compliance with specification requirements.

803.2.2.2. Stone

Add the following:

Facing stone shall be hand selected, large stone and shall be selected for best appearance. Facing stone shall be an off-white color and prior to laying the stone, samples shall be delivered to the site and shall be approved by the Engineer for gradation and appearance.

803.2.3. Gabion Construction

803.2.3.1. Geotextile Filter Layer

Add the following:

High strength permeable barrier fabric for use as a filter media, shall be placed along the earth side of the Gabion Structures. The permeable barrier fabric to be used shall be TREVIRA S1115 as manufactured by Hoechst Fibers Industries, Spartanburg, South Carolina; MIRAFI 140 Fabric, produced by Fiber Industries, Inc.; Bidim

U-14 as distributed by Quline Corporation, Houston, Texas, or approved equal.

803.3. Riprap

803.3.2. Riprap Materials

803.3.2.2. Stone

803.3.2.2.1. Types

Broken Concrete.

Delete this sub-section and replace with the following wording:

Broken concrete shall not be used for riprap.

ITEM 804 PAINTING AND OTHER PROTECTIVE TREATMENTS, PAVEMENT MARKINGS

804.2 Painting and Marking

804.2.3. Preparing Structures for Paint

804.2.3.1. Descaling, Cleaning and Preparation of Surfaces

Add the following:

Prior to painting concrete or masonry screening walls the concrete must be thoroughly cured and dry for proper adhesion of paint. Preparation of work shall include either of the following:

(1) The concert surface shall be thoroughly washed with a solution of one (1) gallon Muriatic Acid to ten (10) gallons H₂O (Caution: Always add acid to H₂O rather than H₂O to acid).

Rinse thoroughly with clear water and paint while damp.

(2) Treatment of surface with masonry conditioner such as a clear alkali-resistant soya alkyd binder type sealer or as recommended by paint manufacturer.

804.2.5. Painting New Structures

804.2.5.5. Finish Coats

Add the following:

On masonry walls which are painted, the total dry film thickness shall be 6 mils (2 coats applied at 8 mils wet and spreading rate = 200 square feet per gallon based on 36% \pm 2% Volume Solids). The thickness shall be tested using a Wet Film Thickness Gage.

804.2.6. Cleaning and Painting Existing Structures

Add the following:

Masonry walls which require repainting shall be sand blasted or cleaned with a power brush, removing all mastic, powdery, thick layered, peeling or heavily chalked old paint. Spot prime all bare areas with Masonry Conditioner. If old paint is a cement-based paint, apply Masonry Conditioner to entire surface and apply 2 coats of paint in accordance with 8.9.3 (k) above.

ITEM 805 ELECTRICAL COMPONENTS AND CONDUIT

805.3. Material

Add the following:

In the City of Rockwall, conduit for street lighting shall be 2 inch PVC pipe and for traffic control shall be 3-inch PVC pipe, meeting the requirements of Item 2.10, Electrical Components.

Add the following:

805.3.7. Pull Box.

All pull boxes shall be #36 supplied by Traffic Signal Equipment Company, Fort Worth, Texas or approved equal. Boxes shall be approximately 10 1/2"x17"x12" and shall be furnished with a concrete cover.

805.4 Conduit Construction Methods

Revise first sentence, third paragraph to read as follows:

All conduit shall be placed a minimum of thirty-six (36) inches below finish grade. Conduit in median shall be placed a minimum of thirty-six (36) inches below inside of curb as shown on plans.

8. Special Provisions to the NCTCOG’s Standard Drawings for Public Works Construction Standards

All work within the City of Rockwall shall conform to the standard drawings called out within this section. The City of Rockwall’s Standard Drawing for Construction shall conform to Section II – Standard Drawings for North Central Texas Council of Governments Standard Specifications and Standard Drawings, **November 2004, Fifth Edition**.

The North Central Texas Standard Drawings shall be modified and clarified by the deletion, revision, and/or addition of the following drawings. Except when specifically stated, none of the standard drawings of the North Central Texas Standard Specifications shall be deleted.

8.1 Division 1000 Erosion and Sediment Control

- NOTE:**
- (1) Deleted NCTCOG Drawing
 - (2) Revised NCTGOG Drawing (see revisions below)
 - (3) Added Rockwall Standard Drawing (see drawing below)
 - (4) Added Current TxDOT Standards

Table 9.1: Revisions to NCTCOG’s Division 1000 Erosion and Sediment Control

<u>Revised</u>	<u>Drawing No.</u>	<u>Subject</u>
	1010	RESERVED
(1)	1020A	Silt Fence
(3)	R-1020A	Silt Fence
(1)	1020B	Silt Fence—General Notes
(3)	R-1020B	Silt Fence – General Notes
	1030A	Interceptor Swale
	1030B	Interceptor Swale
	1040A	Diversion Dike
	1040B	Diversion Dike
	1050A	Triangular Sediment Filter Dike
	1050B	Triangular Sediment Filter Dike
	1060A	Rock Check Dam
(1)	1060B	Rock Check Dam
(3)	R-1060B	Rock Check Dam
(1)	1070A	Stabilized Construction Entrance
(3)	R-1070A	Stabilized Construction Entrance
(1)	1070B	Stabilized Construction Entrance
(3)	R-1070B	Stabilized Construction Entrance

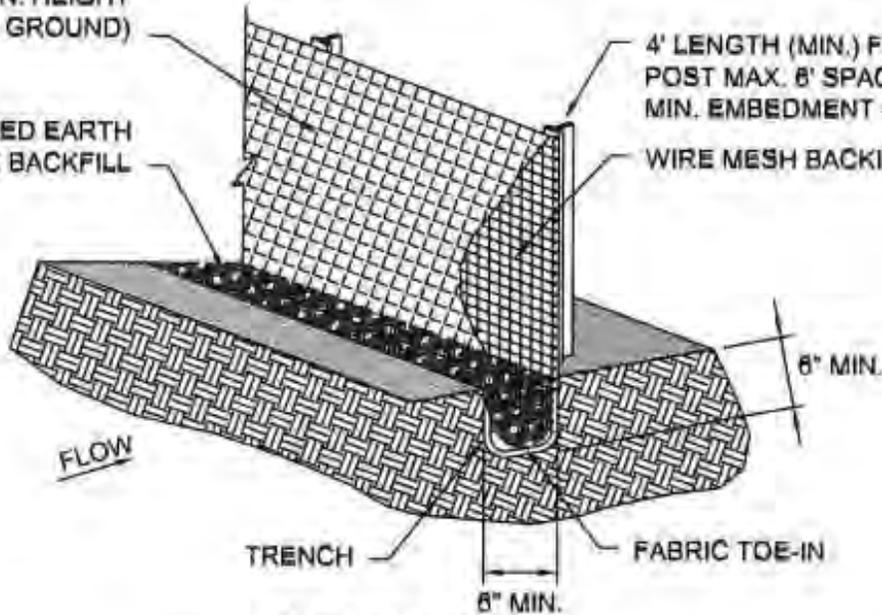
<u>Revised</u>	<u>Drawing No.</u>	<u>Subject</u>
	1080A	Sandbag Check Dam
	1080B	Sandbag Check Dam
(1)	1090	Stone Outlet – Sediment Trap
(3)	R-1090	Stone Outlet – Sediment Trap
	1100	Pipe Outlet – Sediment Basin
	1110	Pipe Slope Drain
	1120	Inlet Protection – Filter Barrier
(1)	1130	Inlet Protection Drop – Block and Gravel
(1)	1140	Inlet Protection Curb – Block and Gravel
	1150	Inlet Protection – Excavated Impoundment
	1160A	Erosion Control Blankets
	1160B	Erosion Control Blankets

SILT FENCE (MIN. HEIGHT 24" ABOVE EXIST. GROUND)

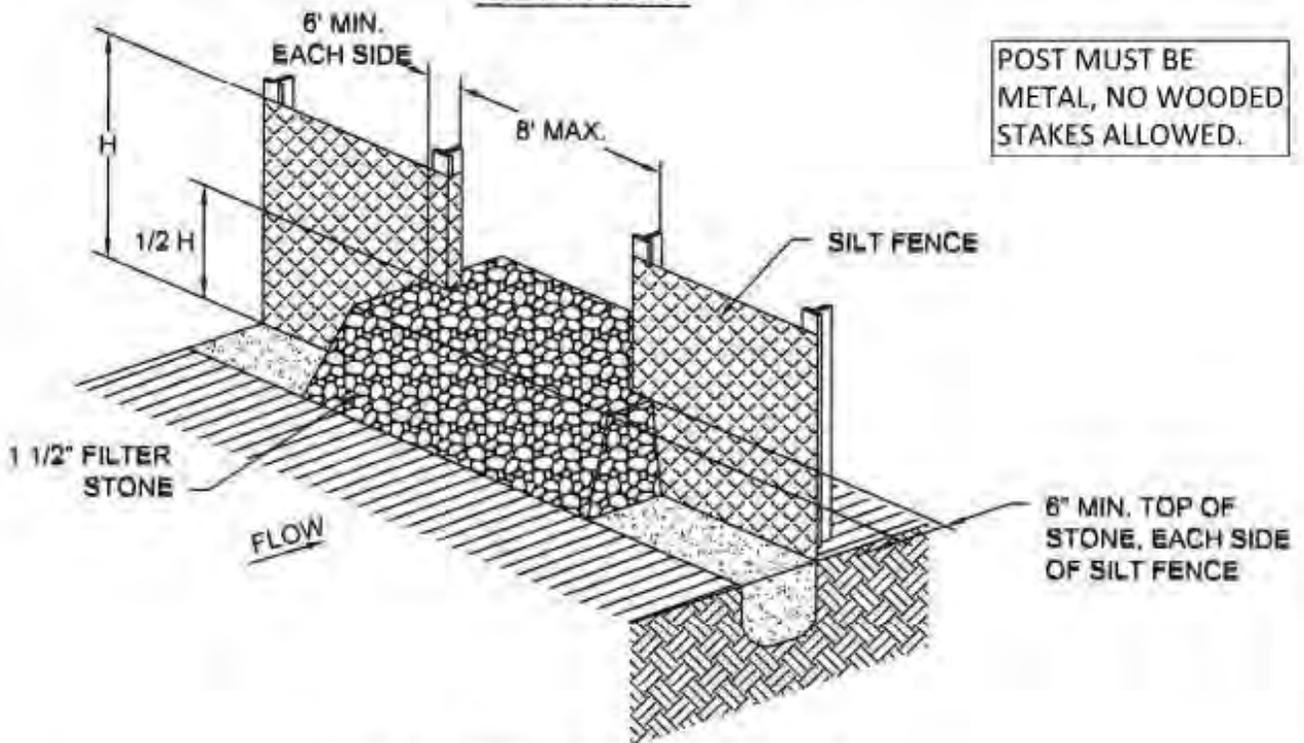
COMPACTED EARTH OR ROCK BACKFILL

4' LENGTH (MIN.) FENCE POST MAX. 8' SPACING, MIN. EMBEDMENT = 1'

WIRE MESH BACKING



SILT FENCE



POST MUST BE METAL, NO WOODED STAKES ALLOWED.

STONE OVERFLOW STRUCTURE

SILT FENCE

CITY OF ROCKWALL

STANDARD SPECIFICATION REFERENCE
202.5*



DATE
Mar. 2018

STANDARD DRAWING NO.
R-1020A

SILT FENCE GENERAL NOTES:

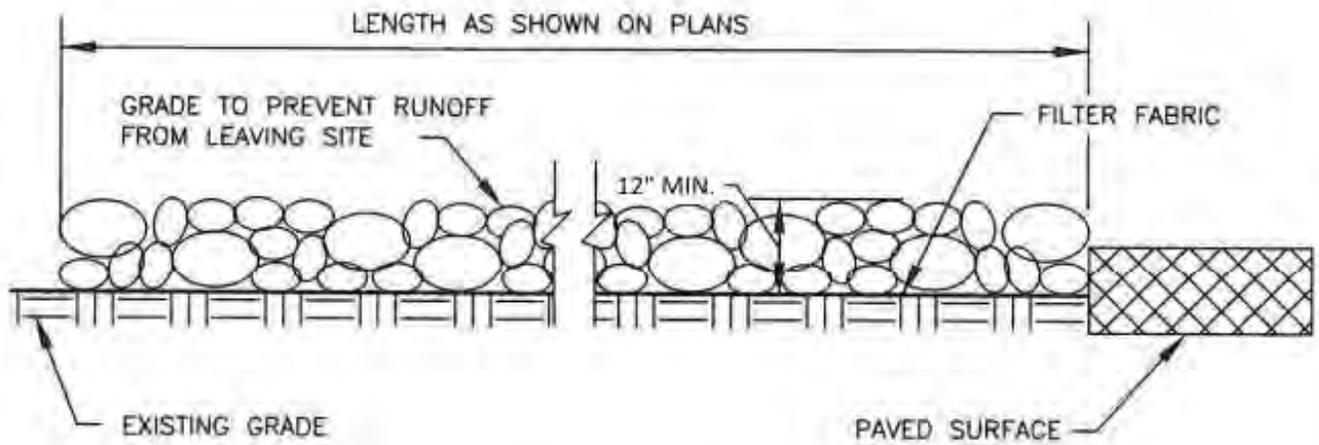
1. POSTS WHICH SUPPORT THE SILT FENCE SHALL BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF ONE FOOT.
2. THE TOE OF THE SILT FENCE SHALL BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWNSLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW. WHERE FENCE CANNOT BE TRENCHED IN (e.g. PAVEMENT), WEIGHT FABRIC FLAP WITH ROCK ON UPHILL SIDE TO PREVENT FLOW FROM SEEPING UNDER FENCE.
3. THE TRENCH MUST BE A MINIMUM OF 6 INCHES DEEP AND 6 INCHES WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.
4. SILT FENCE SHOULD BE SECURELY FASTENED TO EACH 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 TO NOT CONTRIBUTE TO ADDITIONAL SILTATION.
8. FILTER STONE SHALL BE WRAPPED IN FILTER FABRIC AND BURIED SIX (6") INCHES MINIMUM.

SILT FENCE	CITY OF ROCKWALL	STANDARD SPECIFICATION REFERENCE 202.5*	
		DATE Mar. 2018	STANDARD DRAWING NO. R-1020B

ROCK CHECK DAM GENERAL NOTES:

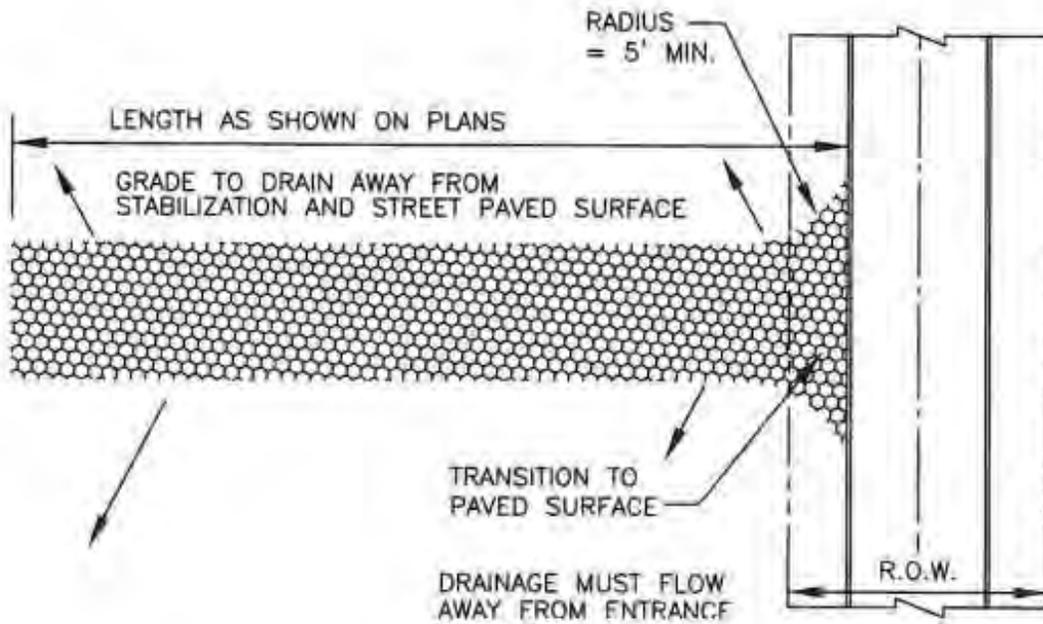
1. STONE SHALL BE WELL GRADED WITH SIZE RANGE FROM 1½ TO 3½ INCHES IN DIAMETER DEPENDING ON EXPECTED FLOWS.
2. THE CHECK DAM SHALL BE INSPECTED AS SPECIFIED IN THE SWPPP AND SHALL BE REPLACED WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED DUE TO SILT ACCUMULATION AMONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.
3. WHEN SILT REACHES A DEPTH EQUAL TO ONE-THIRD OF THE HEIGHT OF THE CHECK DAM OR ONE FOOT, WHICHEVER IS LESS, THE SILT SHALL BE REMOVED AND DISPOSED OF PROPERLY.
4. WHEN THE SITE HAS ACHIEVED FINAL STABILIZATION OR ANOTHER EROSION OR SEDIMENT CONTROL DEVICE IS EMPLOYED, THE CHECK DAM AND ACCUMULATED SILT SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED MANNER.
5. FILTER STONE SHALL BE WRAPPED IN APPROPRIATE SIZED WIRE MESH TO CONTAIN STONE AND BURIED SIX (6") INCHES MINIMUM.

ROCK CHECK DAM	CITY OF ROCKWALL	STANDARD SPECIFICATION REFERENCE 202.9 *	
		DATE Mar. 2018	STANDARD DRAWING NO. R-1060B



PROFILE VIEW

N.T.S.



PLAN VIEW

N.T.S.

Note: No crushed concrete allowed.

STABILIZED CONSTRUCTION

CITY OF ROCKWALL

STANDARD SPECIFICATION REFERENCE
202.11 *

ENTRANCE



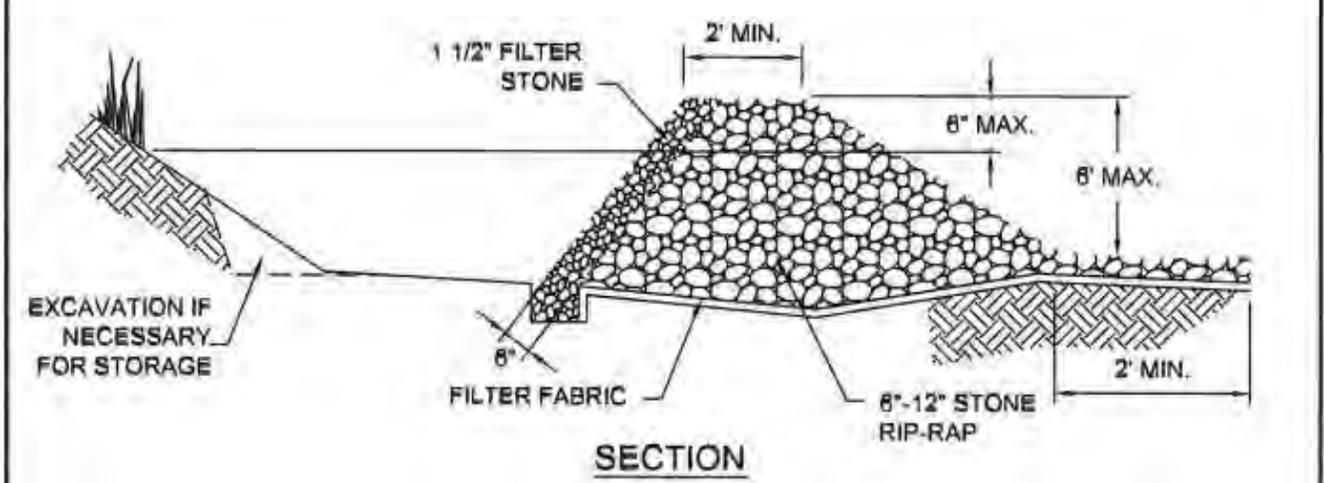
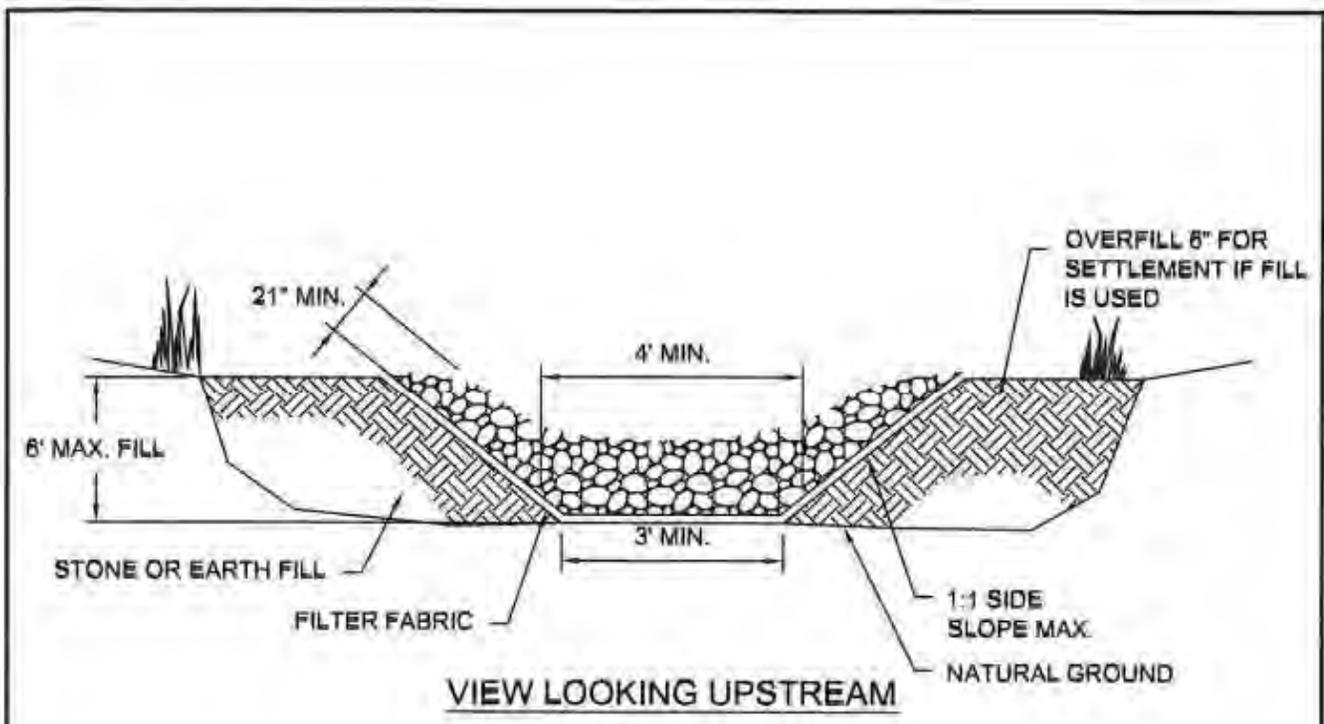
DATE
Mar. 2018

STANDARD DRAWING NO.
R-1070A

STABILIZED CONSTRUCTION ENTRANCE GENERAL NOTES:

1. STONE SHALL BE 4 TO 6 INCH DIAMETER COARSE AGGREGATE.
2. MINIMUM LENGTH SHALL BE 50 FEET AND WIDTH SHALL BE 20 FEET.
3. THE THICKNESS SHALL NOT BE LESS THAN 12 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 OF 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.
8. PREVENT SHORTCUTTING OF THE FULL LENGTH OF THE CONSTRUCTION ENTRANCE BY INSTALLING BARRIERS AS NECESSARY.
9. INSPECTION SHALL BE AS SPECIFIED IN THE SWPPP.
10. NO CRUSHED CONCRETE ALLOWED.

STABILIZED CONSTRUCTION	CITY OF ROCKWALL	STANDARD SPECIFICATION REFERENCE 202.11*	
ENTRANCE		DATE Mar. 2018	STANDARD DRAWING NO. R-1070B



NOTE: FILTER STONE SHALL BE WRAPPED IN APPROPRIATE SIZED WIRE MESH TO CONTAIN STONE.

<p>STONE OUTLET SEDIMENT TRAP</p>	<p>CITY OF ROCKWALL</p> 	<p>STANDARD SPECIFICATION REFERENCE 202.12 *</p>
	<p>DATE Mar. 2018</p>	<p>STANDARD DRAWING NO. R-1090</p>

8.2 Division 2000 Pavement Systems

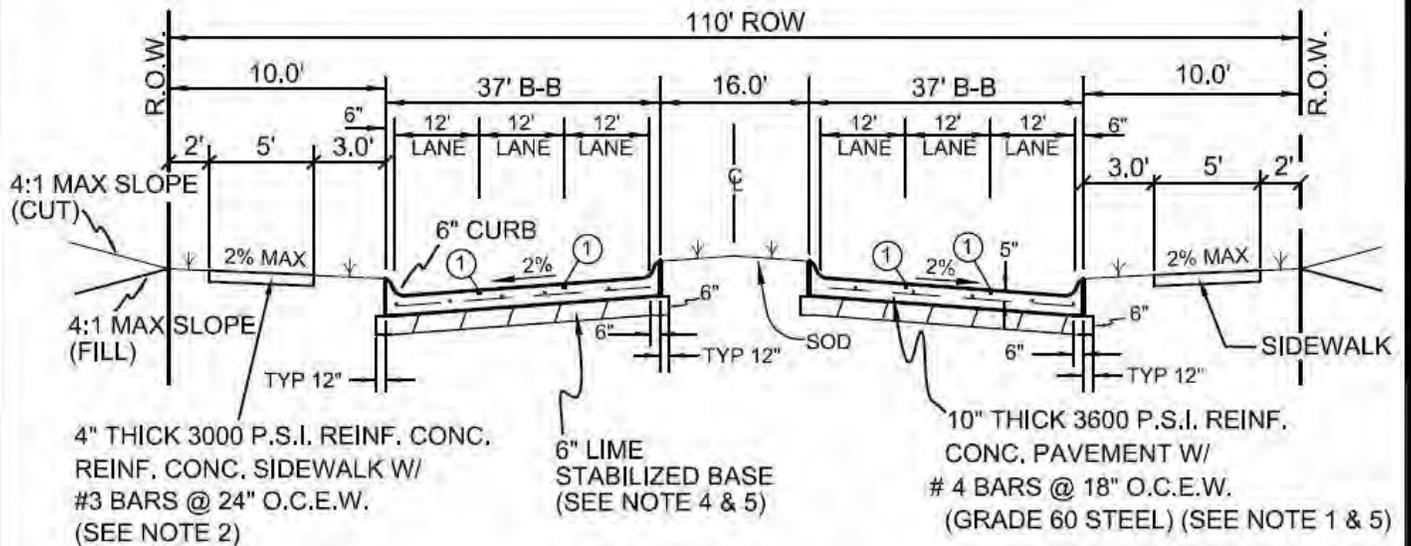
- NOTE:**
- (1) Deleted NCTCOG Drawing
 - (2) Revised NCTGOG Drawing (see revisions below)
 - (3) Added Rockwall Standard Drawing (see drawing below)
 - (4) Added Current TxDOT Standards

Table 9.2: Revisions to NCTCOG’s Division 2000 Pavement Systems

<u>Revised</u>	<u>Drawing No.</u>	<u>Subject</u>
(1)	2010	Reinforced Concrete Pavement – Six Lane Divided Thoroughfare
(3)	R-2010	Reinforced Concrete Pavement – (P6D) Principal Arterial Divided 6-Lane
(1)	2020	Reinforced Concrete Pavement – Four Lane Divided Thoroughfare
(3)	R-2020	Reinforced Concrete Pavement – (M4D) Minor Arterial Divided 4-Lane
(1)	2030	Reinforced Concrete Pavement – 2- & 4- Undivided Thoroughfare
(3)	R-2030	Reinforced Concrete Pavement – (M4U) Major Collector Undivided 4-Lane
(3)	R-2031	Reinforced Concrete Pavement – Minor Collector/Local Commercial
(3)	R-2032	Reinforced Concrete Pavement – (M3U) Minor Collector – 2 Lane with Continuous Left Turn Lane
(3)	R-2033	Reinforced Concrete Pavement – Local Residential Street
(1)	2040	Reinforced Concrete Pavement – Alleys
(3)	R-2040	Reinforced Concrete Pavement – Alleys
(3)	R-2041	Reinforced Concrete Pavement – Fire Lane
(1)	2050	Reinforced Concrete Pavement – Joints
(3)	R-2050	Reinforced Concrete Pavement - Joints
(3)	R-2051	Reinforced Concrete Pavement – Longitudinal Butt Joint
	2060	Reinforced Concrete Pavement – Transverse Joint Spacing
(1)	2070	Reinforced Concrete Pavement – Street Headers
(3)	R-2070	Reinforced Concrete Pavement – Street Headers
	2080	Reinforced Concrete Pavement – Bridge Approach Slab
(1)	2090	Hot Mix Asphalt Pavement – Six Lane Divided Thoroughfare
(1)	2100	Hot Mix Asphalt Pavement – Four Lane Divided Thoroughfare
(1)	2110	Hot Mix Asphalt Pavement – 2- & 4- Undivided Thoroughfare

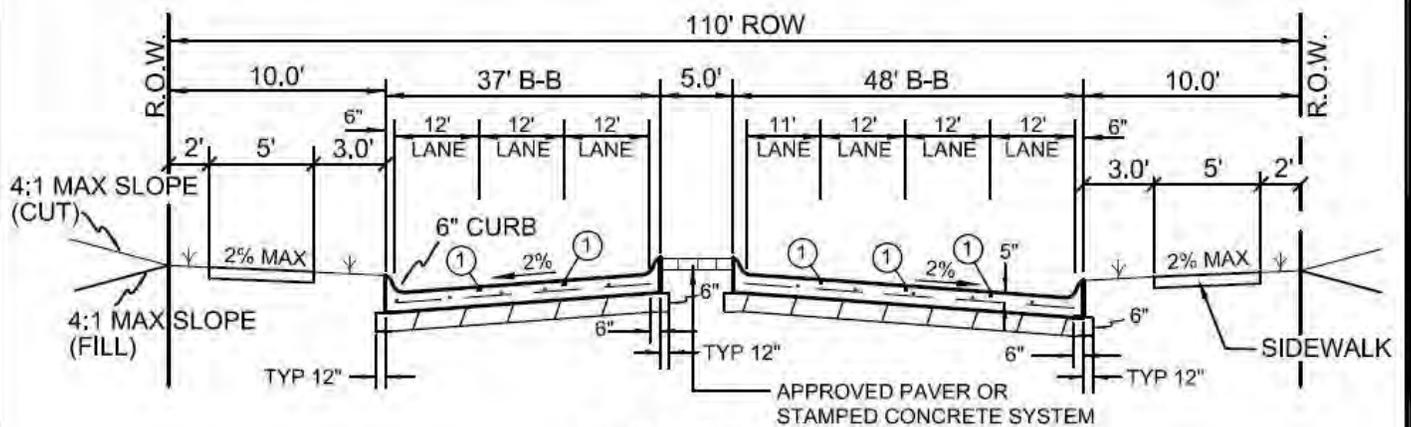
<u>Revised</u>	<u>Drawing No.</u>	<u>Subject</u>
	2120	Concrete Curb and Gutter – Integral, Separate, and Doweled
(1)	2125A- 2125B	Curb Ramps
(3)	R-2125A- R-2125D	Directional Curb Ramp
(4)		TxDOT: PED-18: Pedestrian Facilities – Curb Ramps
(1)	2130	Median Island Pavement – Nose & Left Turn Lane
(3)	R-2130	Median Island Pavement – Nose & Left Turn Lane
(1)	2140	Median Island Pavement – Monolithic Concrete Nose
(3)	R-2140	Median Island Pavement – Monolithic Concrete Nose
(1)	2150A- 2150B	Driveway Approach – Flared Return Type
(1)	2155	Driveway Approach – Radius Return Type
(3)	R-2150	Driveway Detail – Residential Driveway
(1)	2160	Alley Approach – Radius Return Type
(3)	R-2160	Alley Approach – Radius Return Type
(1)	2170	Reinforced Concrete Sidewalks – Joints and Spacing
(3)	R-2170	Reinforced Concrete Sidewalks – Joints and Spacing
(1)	2180	Reinforced Concrete Retaining Wall – Integral With Sidewalk
(3)	R-2180	Reinforced Concrete Retaining Wall - Integral With Sidewalk
(1)	2190	Pavement Systems – General Notes
(3)	R-2190	Pavement Systems – General Notes
	2200	Subdrains – Pavement Subgrade
(1)	2210	Alley Geometrics – Type “A”: & Type “B”
(3)	R-2210	Alley Geometrics – Type “A”: & Type “B”
(1)	2220	Alley Geometrics – Type “C”: & Type “D”
(3)	R-2220	Alley Geometrics - Type “C”: & Type “D”
(1)	2230	Alley Geometrics – Type “E”: & Type “F”
(3)	R-2230	Alley Geometrics - Type “E”: & Type “F”
(1)	2240	Alley Geometrics – Type “G”: & Type “H”
(3)	R-2240	Alley Geometrics - Type “G”: & Type “H”
(1)	2250	Alley Geometrics – Type “J”
(3)	R-2250	Alley Geometrics - Type “J”
(3)	R-2251	Alley Geometrics – Alley Warping at Inlet
	2260	Alley Intersection – Proposed to Existing
(3)	R-2270	Left Turn Lane – Concrete Removal & Replacement
(1)	2270A	Metal Beam Guard Fence – Roadside Placement & Beam Elements
(1)	2270B	Metal Beam Guard Fence – Line Post & Connections
(1)	2270C	Metal Beam Guard Fence – End Section & Angle Anchor Post
(1)	2270D	Metal Beam Guard Fence – Special End Shoe & Anchor

<u>Revised</u>	<u>Drawing No.</u>	<u>Subject</u>
		<i>Post</i>
(1)	2270E	<i>Metal Beam Guard Fence – General Notes</i>
(1)	2280A	<i>Metal Beam Guard Fence – Two-Way Traffic Bridge End</i>
(1)	2280B	<i>Metal Beam Guard Fence – Two-Way Traffic Bridge End</i>
(4)		TxDOT: Metal Beam Guard Fence
	2290	Metal Beam Guard Fence – End of Road
(3)	R-2300	Street Regulatory Sign - Street Name Blades
(3)	R-2310	Illuminated Street Name Sign – ILSN Sign Detail
(3)	R-2320	Raised Pavement Markings – Lane Lines
(3)	R-2330	Raised Pavement Markings – Chevron and Crosshatch
(3)	R-2340	Raised Pavement Markings – Intersection Approach
(3)	R-2350	Type C Intersection – Right Lane Drop Markings
(3)	R-2360	Typical Thoroughfare Layouts
(3)	R-2370	Typical Crosswalk Layouts
(3)	R-2380	Typical Crosswalk and Dashed Markings
(3)	R-2390	Chevron Striping
(3)	R-2400	Diagonal Crosshatch Striping



**110' ROW – Principal 6 Lane
Divided Arterial
Regular Section**
(Not to Scale)

- ① SAWED LONGITUDINAL CONTRACTION, OR CONSTRUCTION JOINT

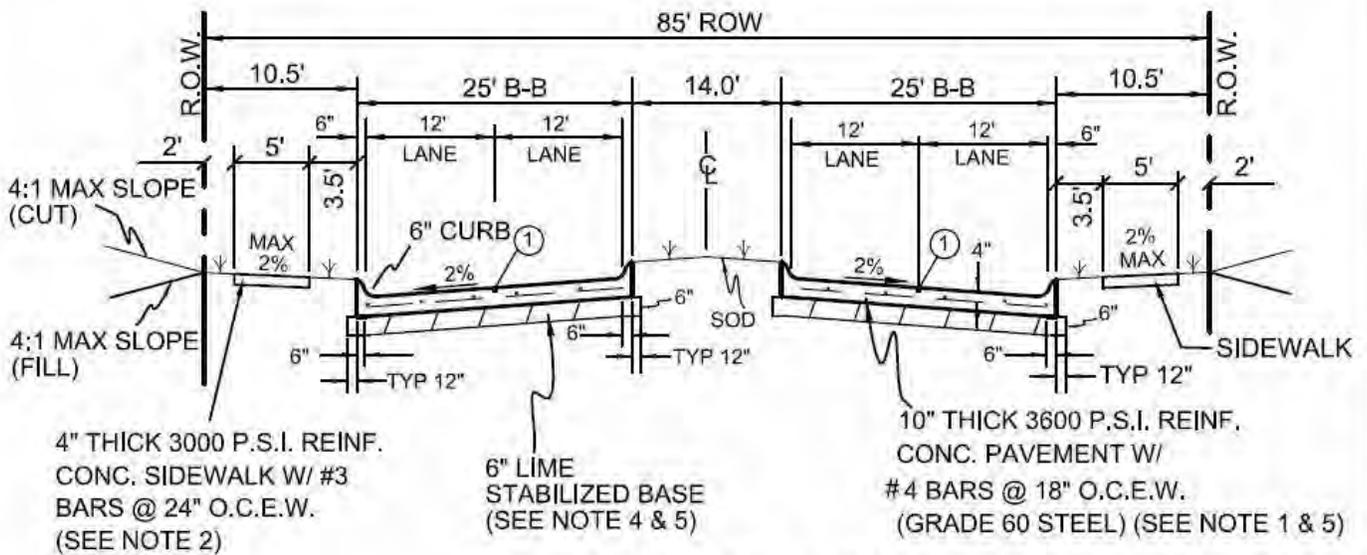


Left Turn Section
(Not to Scale)

NOTES:

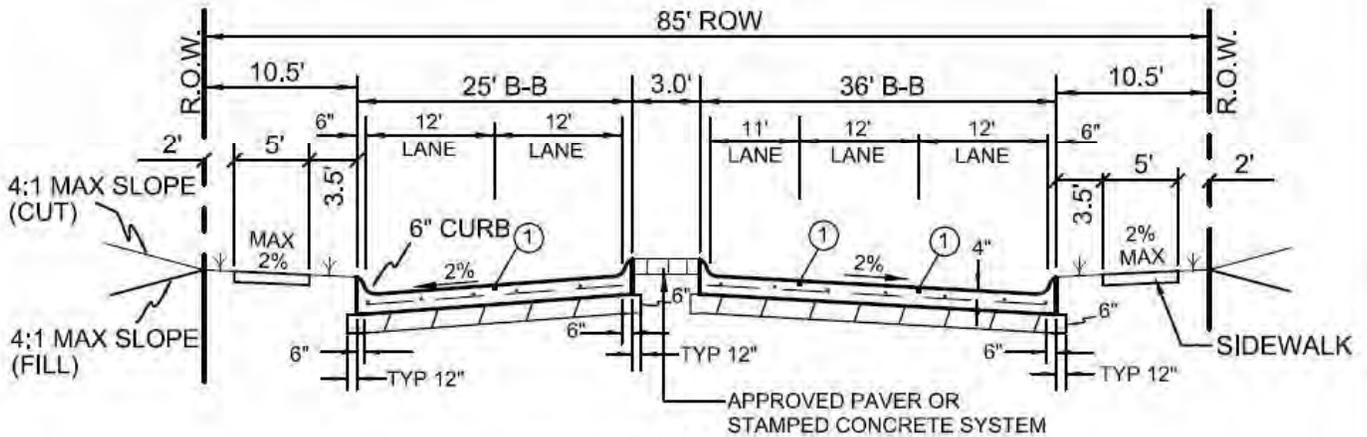
1. Street pavement cement content to be no less than 6.0 sacks per cubic yard for machine placed and not less than 6.5 sacks per cubic yard for hand placed.
2. Sidewalk Cement content of not less than 5.5 sack per cubic yard.
3. No sand allowed under pavement or sidewalks.
4. Minimum lime content shall be 6% of dry weight of material (at least 27 lbs/SY) compact to 95% standard density.
5. Paving Section design shall be based off the 30 year projected traffic volumes and geotechnical analysis/report.

REINFORCED CONCRETE PAVEMENT	CITY OF ROCKWALL		
(P6D) PRINCIPAL ARTERIAL DIVIDED 6-LANE		DATE AUG. '15	DRAWING NO. R-2010



**85' ROW – Minor 4 Lane
Divided Arterial
Regular Section
(Not to Scale)**

① SAWED LONGITUDINAL
CONTRACTION, OR
CONSTRUCTION JOINT

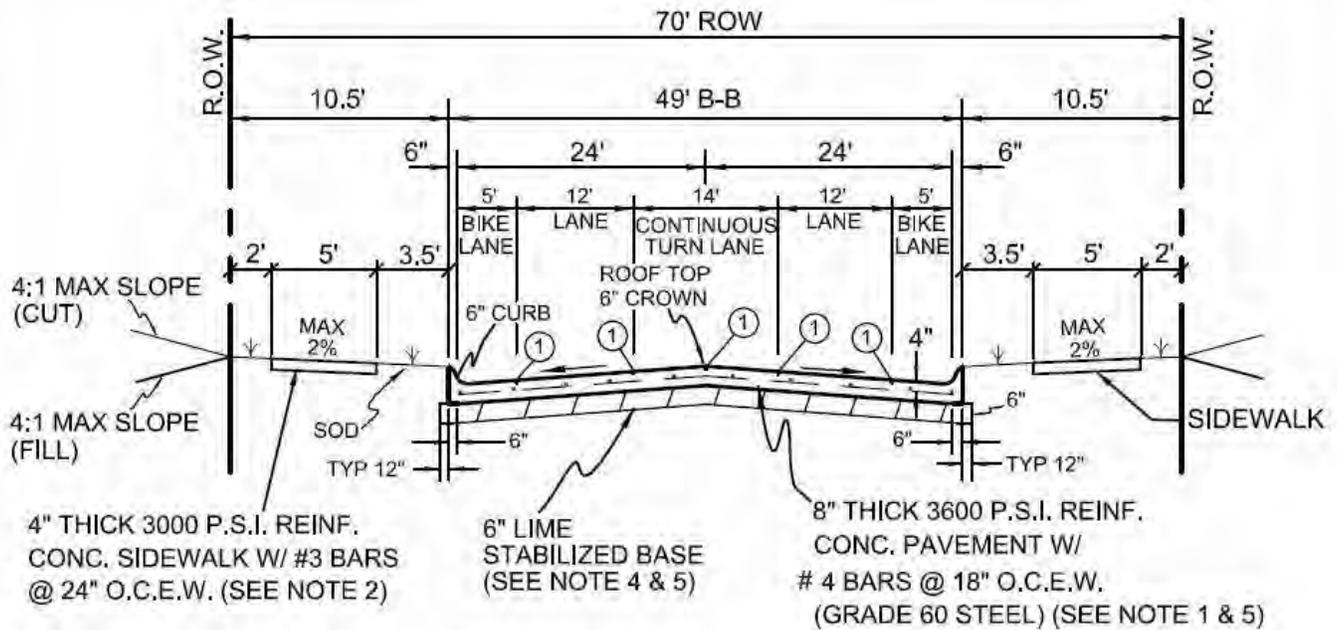


**Left Turn Section
(Not to Scale)**

NOTES:

1. Street pavement cement content to be no less than 6 sacks per cubic yard for machine placed and not less than 6.5 sacks per cubic yard for hand placed.
2. Sidewalk Cement content of not less than 5.5 sack per cubic yard.
3. No sand allowed under pavement or sidewalks.
4. Minimum lime content shall be 6% of dry weight of material (at least 27 lbs/SY) compacted to 95% standard density.
5. Paving Section design shall be based off the 30 year projected traffic volumes and geotechnical analysis/report.

REINFORCED CONCRETE PAVEMENT	CITY OF ROCKWALL				
(M4D) MINOR ARTERIAL DIVIDED 4-LANE					
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">DATE</td> <td style="width: 50%;">DRAWING NO.</td> </tr> <tr> <td style="text-align: center;">AUG. '15</td> <td style="text-align: center;">R-2020</td> </tr> </table>	DATE	DRAWING NO.	AUG. '15	R-2020
DATE	DRAWING NO.				
AUG. '15	R-2020				



① SAWED LONGITUDINAL CONTRACTION, OR CONSTRUCTION JOINT

70' ROW – Minor Collector
2 Lane with Continuous Left Turn Lane
 (Not to Scale)

NOTES:

1. Street pavement cement content to be no less than 6 sacks per cubic yard for machine placed and not less than 6.5 sacks per cubic yard for hand placed.
2. Sidewalk Cement content of not less than 5.5 sack per cubic yard.
3. No sand allowed under pavement or sidewalks.
4. Minimum lime content shall be 6% of dry weight of material (at least 27 lbs/SY) compacted to 95% standard density.
5. Paving Section design shall be based off the 30 year projected traffic volumes and geotechnical analysis/report.

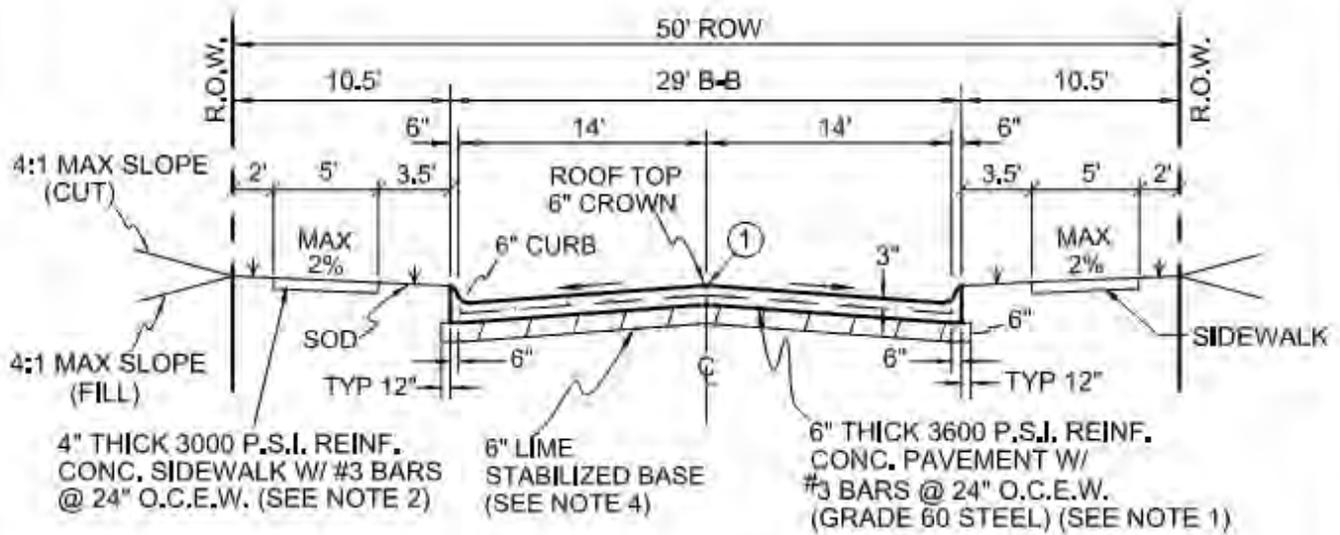
REINFORCED CONCRETE PAVEMENT

CITY OF ROCKWALL

(M3U) MINOR COLLECTOR – 2 LANE
 WITH CONTINUOUS LEFT TURN LANE



DATE	DRAWING NO.
AUG. '15	R-2032



① SAWED LONGITUDINAL CONTRACTION, OR CONSTRUCTION JOINT

50' R.O.W. Residential Street
(Not to Scale)

NOTES:

1. Street pavement cement content to be no less than 6 sacks per cubic yard for machine placed and not less than 6.5 sacks per cubic yard for hand placed.
2. Sidewalk Cement content of not less than 5.5 sack per cubic yard.
3. No sand allowed under pavement or sidewalks.
4. Minimum lime content shall be 6% of dry weight of material (at least 27 lbs/SY) compacted to 95% standard density.

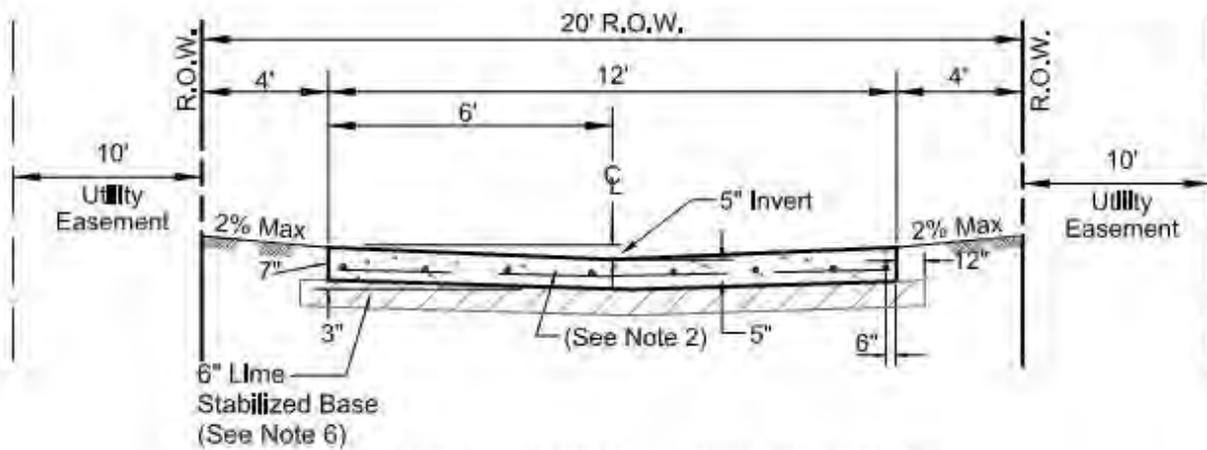
REINFORCED CONCRETE PAVEMENT

CITY OF ROCKWALL

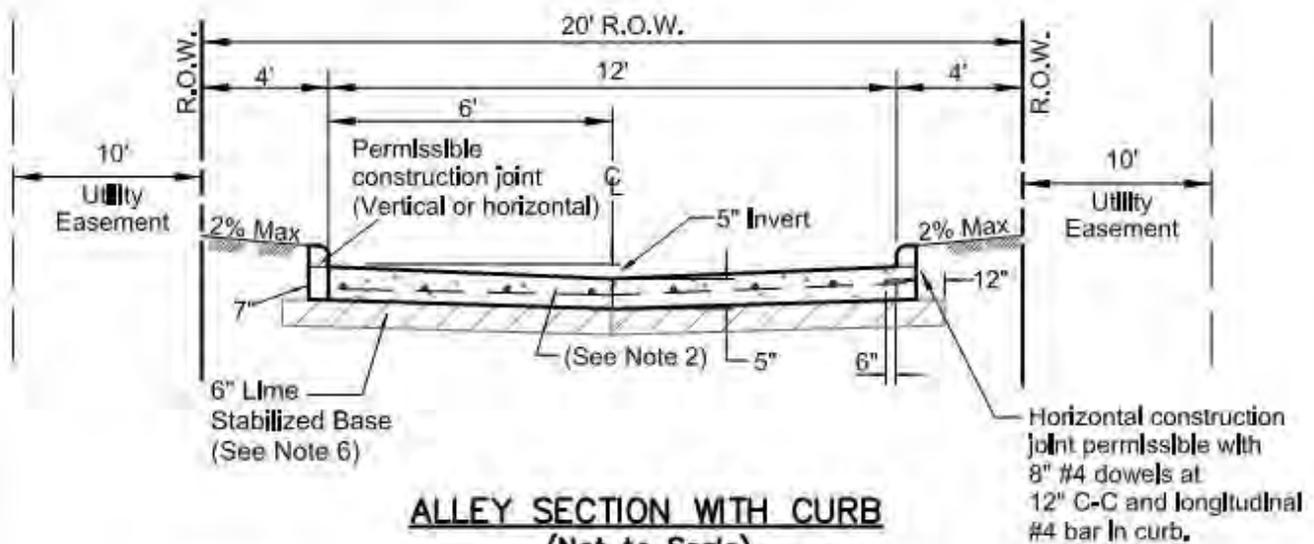
LOCAL RESIDENTIAL STREET



DATE	DRAWING NO.
AUG. '19	R-2033



ALLEY SECTION WITHOUT CURB
(Not to Scale)

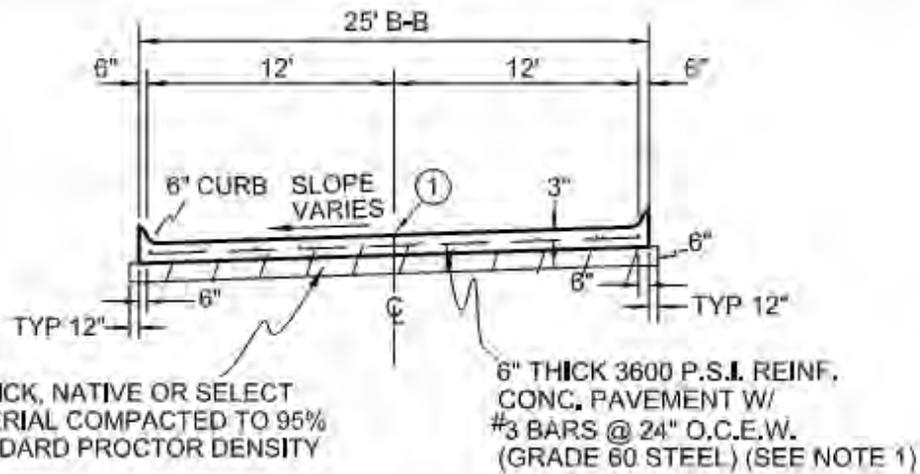


ALLEY SECTION WITH CURB
(Not to Scale)

NOTES:

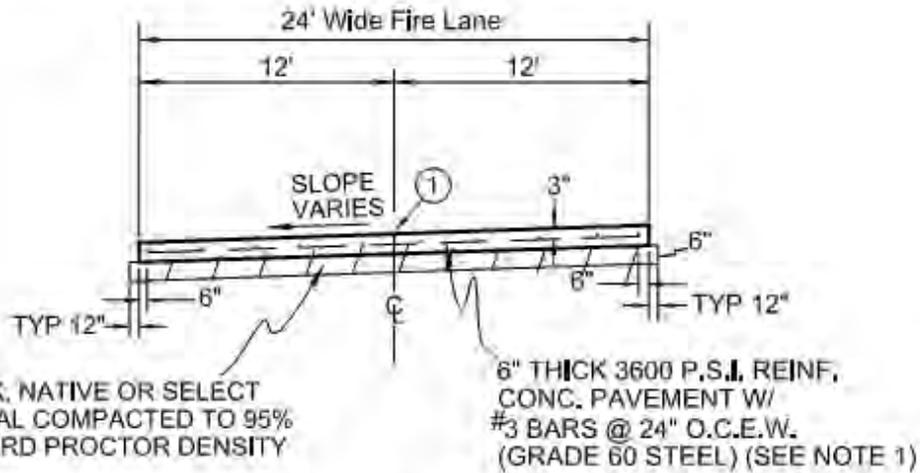
1. Provide sawed transverse contraction joints not more than 20' C-C.
2. Reinforced with no. 3 bars at 24" C-C both ways.
3. Expansion joints to be placed at all intersections and not to exceed 600' between joints.
4. Concrete shall be 7"-5"-7" Thick 3,600 P.S.I., Alley cement content shall be min. 6.0 sack for machine placed and 6.5 sack mix for hand placed.
5. No sand allowed under pavement.
6. Minimum lime content shall be 6% of dry weight of material (at least 27 lbs/SY) compacted to 95% standard density.

REINFORCED CONCRETE PAVEMENT		CITY OF ROCKWALL	
ALLEYS			DATE AUG '19
			DRAWING NO. R-2040



24' Wide Fire Lane with Curbs
(Not to Scale)

① SAWED LONGITUDINAL CONTRACTION OR CONSTRUCTION JOINT

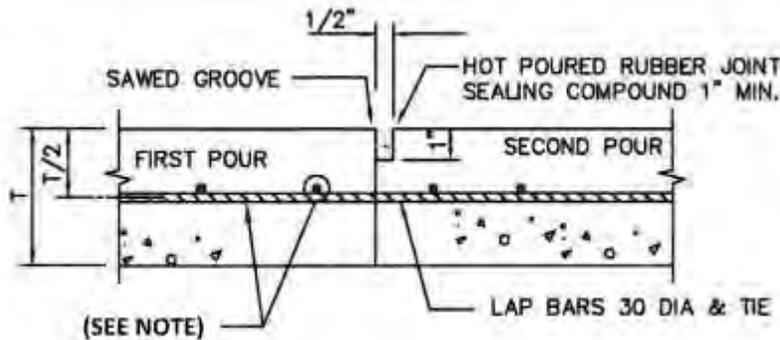


24' Wide Fire Lane
(Not to Scale)

NOTES:

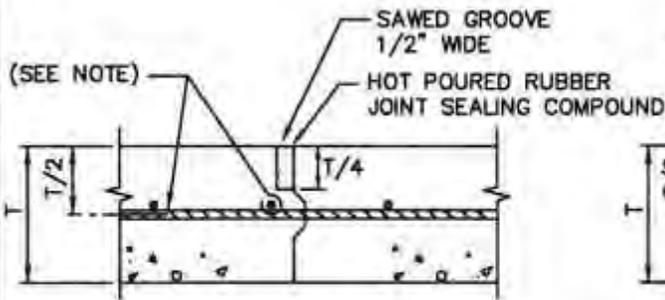
1. Street pavement cement content to be no less than 6 sacks per cubic yard for machine placed and not less than 6.5 sacks per cubic yard for hand placed.
2. Sidewalk Cement content of not less than 5.5 sack per cubic yard.
3. No sand allowed under pavement or sidewalks.

REINFORCED CONCRETE PAVEMENT	CITY OF ROCKWALL		
FIRE LANE		DATE AUG. '19	DRAWING NO. R-2041



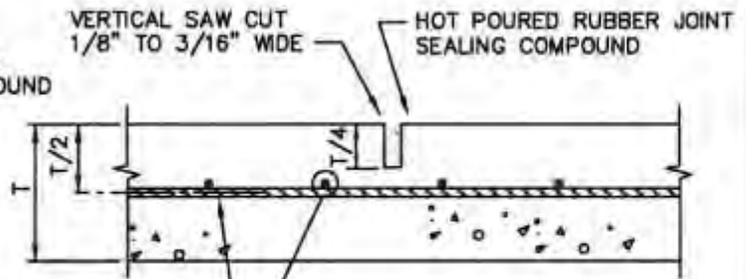
CONSTRUCTION JOINT

N.T.S.



KEYWAY JOINT

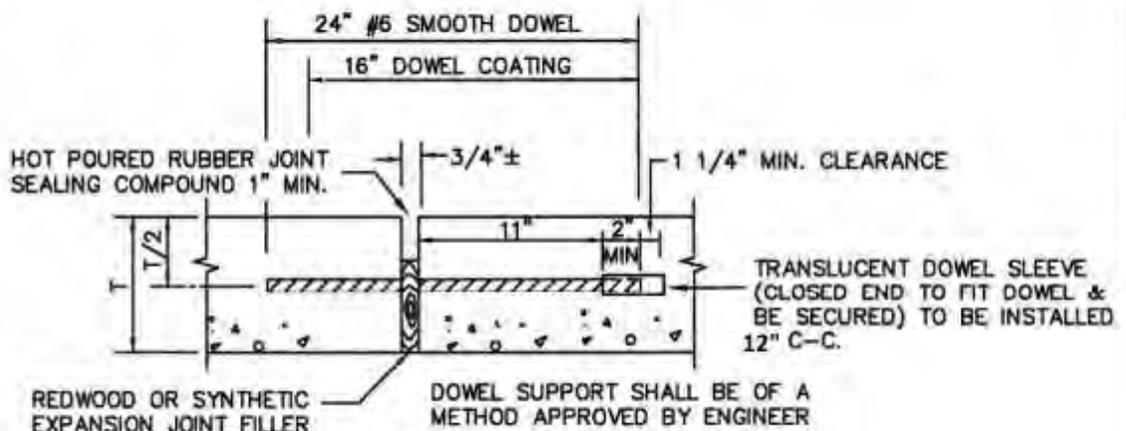
(FOR PAVEMENT THICKNESS > 6")
N.T.S.



SAWED CONTRACTION JOINT

N.T.S.

NOTE:
REINFORCING SHALL BE - #3 BARS AT 24" FOR 6"
THICK PAVEMENT AND LESS. #4 BARS AT 18"
FOR 8" THICK PAVEMENT AND GREATER.



EXPANSION JOINT

(SPACED 600 FT. MAXIMUM; LOCATE AT
STRUCTURES AND AT INTERSECTION P.C.'S & P.T.'S)
N.T.S.

REINFORCED CONCRETE PAVEMENT

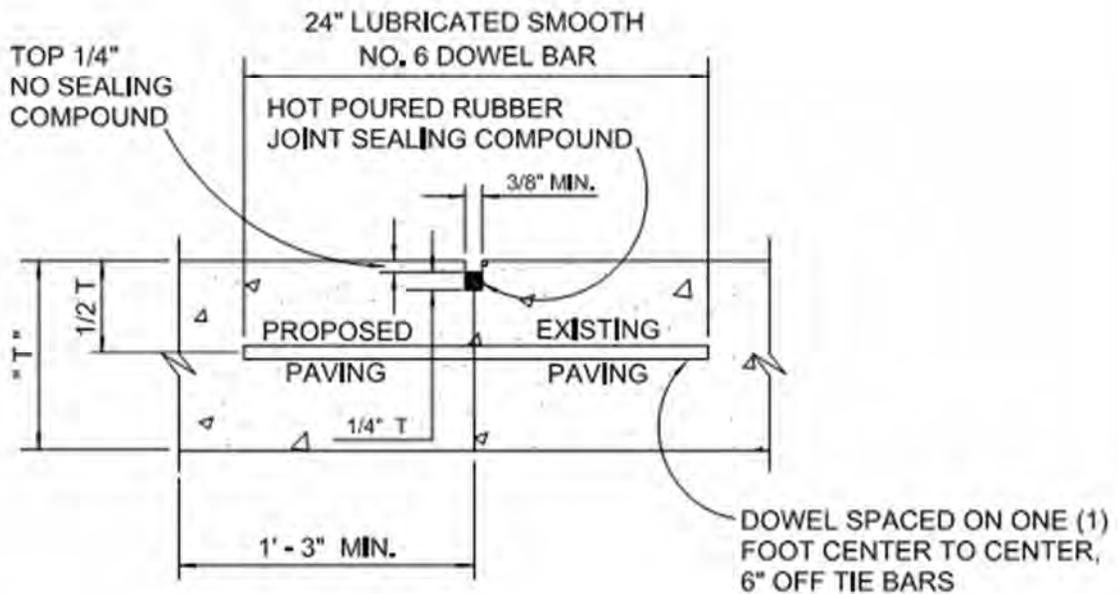
CITY OF ROCKWALL

STANDARD SPECIFICATION REFERENCE
303.5.4.

JOINTS



DATE: Mar. 2018
STANDARD DRAWING NO.: R-2050



NOTES: T = PAVEMENT

1. LONGITUDINAL BUTT CONSTRUCTION MAY BE UTILIZED IN PLACE OF LONGITUDINAL HINGED (KEYWAY) JOINT AT CONTRACTORS OPTION.
2. DOWEL BARS SHALL BE DRILLED INTO PAVEMENT HORIZONTALLY BY USE OF A MECHANICAL RIG.
3. DRILLING BY HAND IS NOT ACCEPTABLE, PUSHING DOWEL BARS INTO GREEN CONCRETE NOT ACCEPTABLE.

LONGITUDINAL BUTT JOINT
NOT TO SCALE

REINFORCED CONCRETE PAVEMENT

CITY OF ROCKWALL

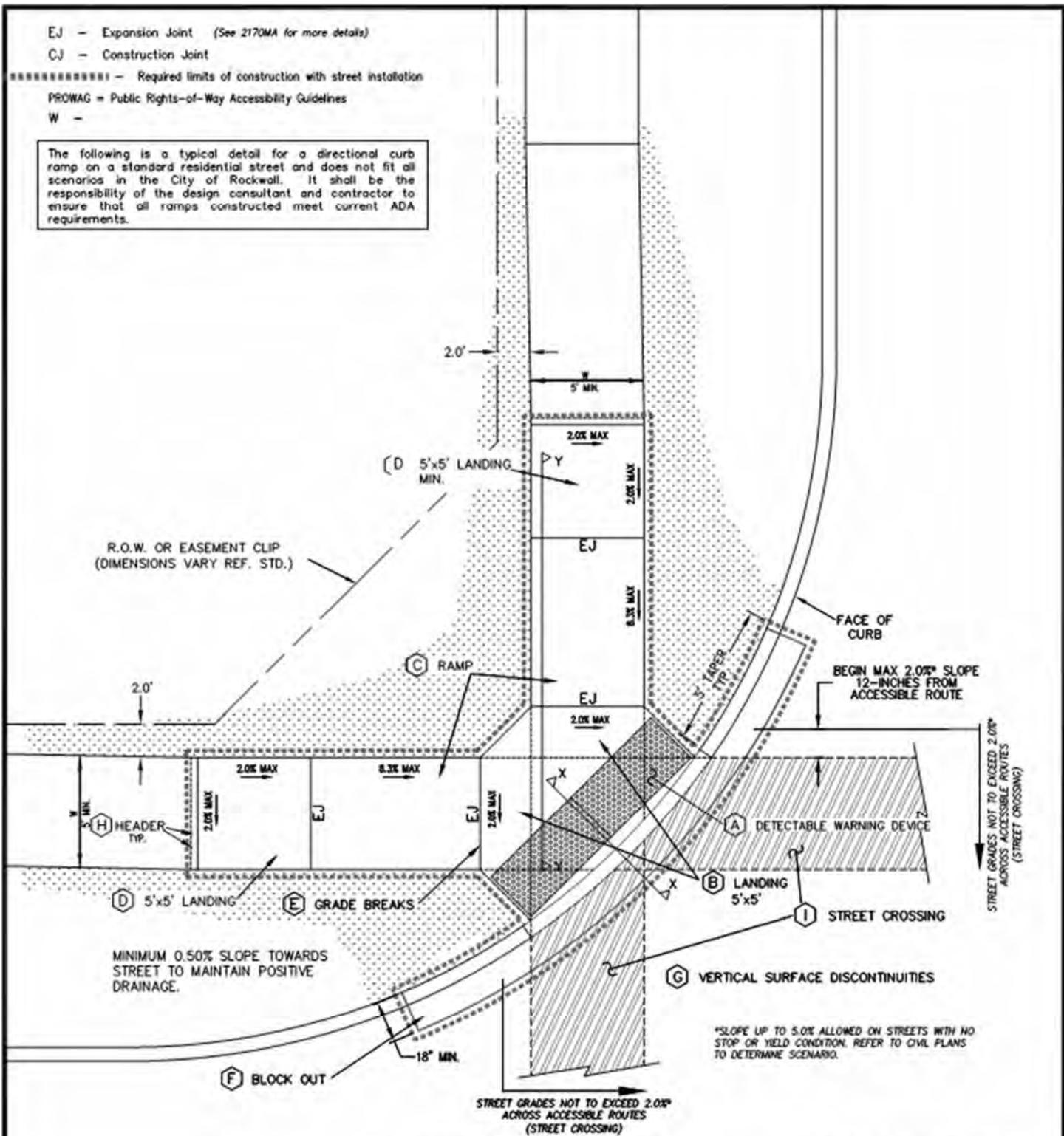
LONGITUDINAL BUTT JOINT



DATE	DRAWING NO.
OCT. '17	R-2051

EJ - Expansion Joint (See 2170MA for more details)
 CJ - Construction Joint
 ===== - Required limits of construction with street installation
 PROWAG = Public Rights-of-Way Accessibility Guidelines
 W -

The following is a typical detail for a directional curb ramp on a standard residential street and does not fit all scenarios in the City of Rockwall. It shall be the responsibility of the design consultant and contractor to ensure that all ramps constructed meet current ADA requirements.



NOTES: All newly constructed sidewalks, curb ramps and crosswalks installed within City of Rockwall public rights-of-way shall be considered a pedestrian access route and shall conform to the most current "Draft" Guidelines for Public Rights-of-Way created by the United States Access Board.

1. SEE DETAIL R-2125B FOR RAMP FEATURE DESCRIPTIONS
2. SEE DETAIL R-2125C FOR SECTIONS X-X AND Y-Y
3. SEE DETAIL R-2125D FOR ADDITIONAL NOTES

DIRECTIONAL CURB RAMP	CITY OF ROCKWALL		DATE	DRAWING NO.
			MAR. '17	R-2125A

A

Detectable Warning Devices (DWD) shall be pre-manufactured cast-in-place truncated dome plates installed to the manufacturer's specifications, and shall meet all ADA requirements. No Brick Pavers allowed. Color to be approved by the City. DWD shall be 24 inches in length for the full width of the street connection starting at the back of curb. A maximum 2-inch border shall be allowed on the sides of the DWD for proper installation.

B

Also known as "Clear Space" per ADA PROWAG, the City requires a minimum landing space of 5-foot by 5-foot at the bottom of every ramp. This landing space shall have a cross slope in both directions that does not exceed 2.0% and shall be wholly outside the parallel vehicular travel path.

C

The ramp component of the directional curb ramp shall have a continuous longitudinal slope more than 5% and less than 8.3%. The ramp shall also have a cross slope of no more than 2.0%. Length of ramp can vary, but shall not exceed 15 feet to achieve desired elevation change.

D

Also known as "Turning Space" per ADA PROWAG, a minimum landing space of 5-foot by 5-foot shall be at the top of every ramp. This landing (turning) space shall have a cross slope in both directions that does not exceed 2.0%. Landing must match width of sidewalk and length shall be the same distance ("Squared" Landing).

E

All curb ramps shall have grade breaks at the top and bottom that are perpendicular to the direction of the ramp run. Where the ends of the bottom grade break are less than or equal to 5 feet, the DWD shall be placed within the ramp at the bottom grade break. Where either end of the bottom grade break is greater than 5 feet, the DWD shall be placed behind the back of the curb.

F

Paving contractor shall leave block out with a keyway joint installed, minimum of 18 inches measured from back of curb. Block out shall be poured monolithically with Curb Ramp. Concrete shall tie to street paving with a keyway joint per NCTCOG detail 2050. No curb shall be constructed where a DWD is provided. The curb on either side shall have a typical 5 foot taper to transition from the standard 6-inch curb height to be flush with ramp.

G

All work associated with accessible routes shall be installed flush with all features to minimize vertical surface discontinuities. Each segment along accessible route shall be flush with no more (zero tolerance) than a 1/4-inch grade separation (elevation difference), or 1/2-inch grade separation if beveled (bevel slope shall not be steeper than 50%).

H

A sidewalk header shall be constructed at ends of all work performed.

I

Street crossings shall adhere to same guidelines as other accessible routes within public right-of-way, and shall be for the full width of the in-line accessible route. Cross slope shall not exceed 2%*. New street construction shall incorporate all ADA design requirements. It shall be the responsibility of the Design Professional and Contractor to ensure all street crossings meet the requirements of PROWAG. Street alterations on existing streets to bring to compliance shall be at the City Engineer's discretion.

J

All curbs constructed as part of an ADA Ramp shall match City curb standards.

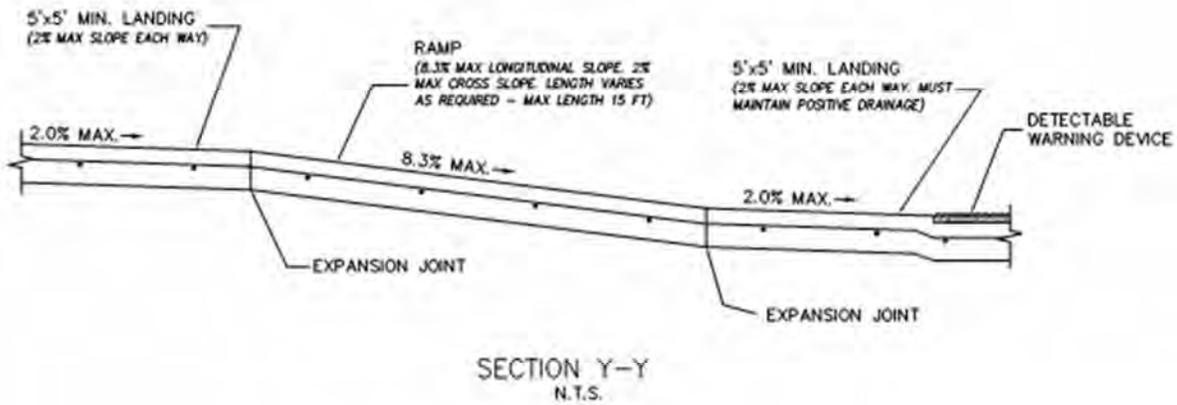
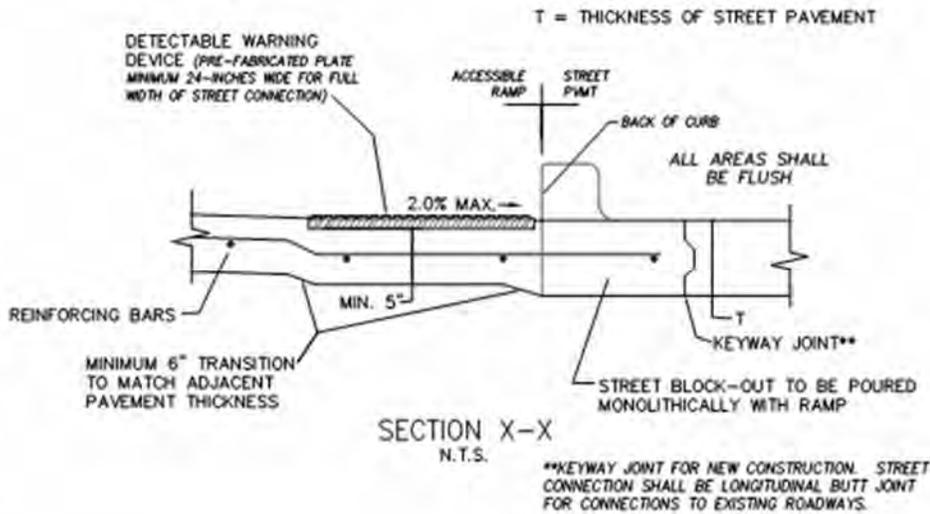
* See PROWAG special design considerations when street crossing has no stop or yield condition.

DIRECTIONAL CURB RAMP

CITY OF ROCKWALL



DATE MAR. '17 DRAWING NO. R-2125B



NOTE: ALL SIDEWALK CURB RAMPS WILL BE 3,600 PSI (6.5 SACK/CY) CONCRETE.

DIRECTIONAL CURB RAMP

CITY OF ROCKWALL



DATE	DRAWING NO.
MAR. '17	R-2125C

PEDESTRIAN ACCESSIBILITY (WITHIN PUBLIC R.O.W.)

All newly constructed sidewalks, curb ramps and crosswalks installed within City of Rockwall public rights-of-way shall be considered a pedestrian access route and shall conform to the most current Guidelines for Public Rights-of-Way created by the United States Access Board.

CURB RAMPS

1. All slopes shown are MAXIMUM ALLOWABLE. Lesser slopes that will still drain properly should be used. Adjust curb ramp length or grade of approach sidewalks as directed.
2. Landings shall be 5'x 5' minimum with a maximum 2% slope in the transverse and longitudinal directions..
3. Clear space at the bottom of curb ramps shall be a minimum of 5'x 5' wholly contained within the crosswalk and wholly outside the parallel vehicular travel path.
4. Maximum allowable cross slope on sidewalk and curb ramp surfaces is 2%.
5. Additional information on curb ramp location, design, light reflective value and texture may be found in the most current edition of the Texas Accessibility Standards (TAS) and 16 TAC 68.102. Federal guidelines shall supersede any conflicts.
6. 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 and accessible routes shall align with theoretical crosswalks unless otherwise directed.
7. Handrails are not required on curb ramps.
8. Provide a flush transition where the curb ramps connect to the street.
9. Accessible routes are considered "ramps" when longitudinal slopes are between 5% and 8.3% (maximum allowable). Sidewalks under 5% longitudinal slope are deemed accessible routes and must follow all applicable guidelines.

DETECTABLE WARNING DEVICE

10. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with Section 705 of the TAS. The surface must contrast visually with adjoining surfaces. Furnish and install an approved cast-in-place dark red detectable warning surface material adjacent to uncolored concrete, unless specified elsewhere in the plans.
11. Detectable Warning Materials shall be truncated dome plates in the color approved by the City. Install products in accordance with manufacturer's specifications.
12. Detectable warning surfaces must be slip resistant and not allow water to accumulate.
13. Detectable warning surfaces shall be a minimum of 24" 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.
14. Detectable warning surfaces shall be located so that the edge nearest the curb line is at the back of curb. When placed on the ramp, align the rows of domes to be perpendicular to the grade break between the ramp run and the street. Where detectable warning surfaces are provided on a surface with a slope that is less than 5 percent, dome orientation is less critical. Detectable warning surfaces may be curved along the corner radius.

SIDEWALKS

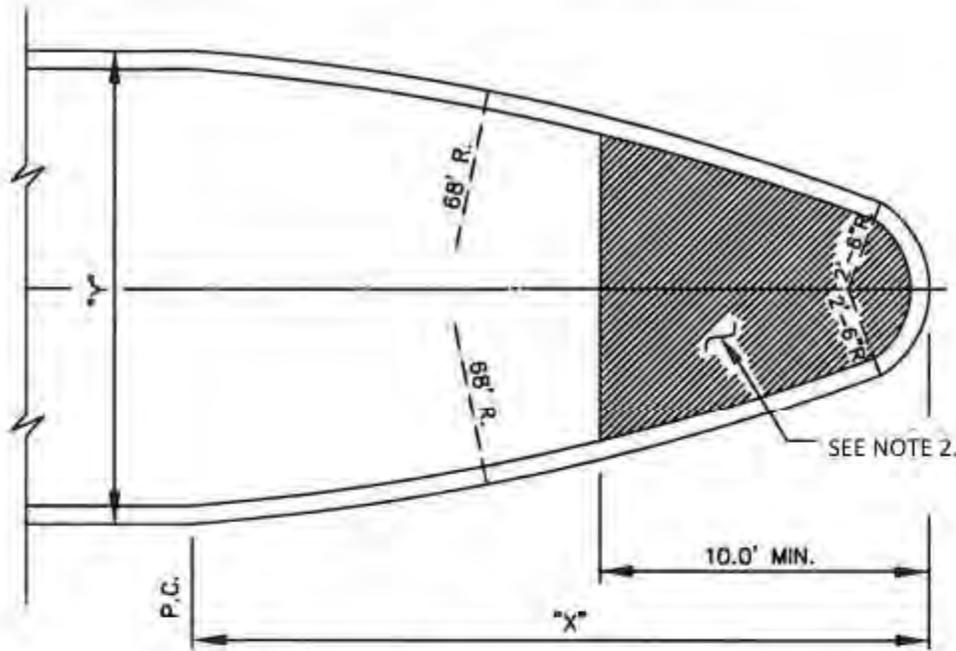
15. Provide clear ground space at operable parts, including pedestrian push buttons. Operable parts shall be placed within one or more reach ranges specified in TAS 308.
16. Place traffic signal or illumination poles, ground boxes, controller boxes, signs, drainage facilities and other items so as not to obstruct the pedestrian access route or clear ground space.
17. Street grades and cross slopes shall be as shown elsewhere in the plans.
18. Changes in level greater than 1/4 inch are not permitted (1/2 inch with bevel).
19. 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 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 TAS 505.
20. Handrail extensions shall not protrude into the usable landing area or into intersecting pedestrian routes.

DIRECTIONAL CURB RAMP

CITY OF ROCKWALL



DATE	DRAWING NO.
MAR. '17	R-2125D



DIMENSIONS OF MEDIAN NOSE

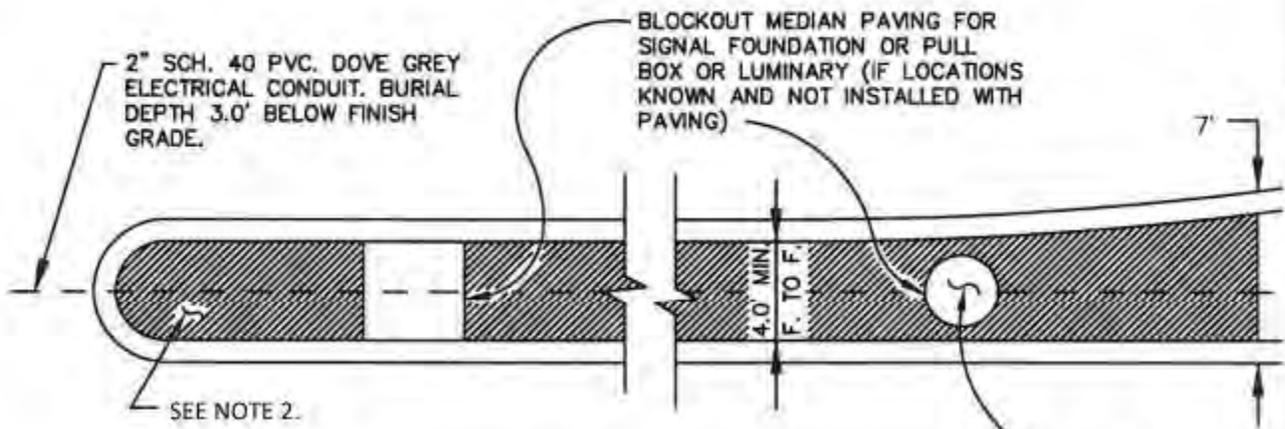
Y = 15'	X = 27.6'
Y = 16'	X = 28.8'
Y = 17'	X = 29.9'
Y = 18'	X = 30.9'

CONCRETE NOSE FOR MEDIAN ISLAND

N.T.S.

NOTES

1. LEFT TURN LANE SHALL HAVE A MOWER ACCESS RAMP.
2. MEDIAN PAVING TO BE CONSTRUCTED OF INTEGRAL STAMPED & STAINED REINFORCED CONCRETE, COLOR AND PATTERN TO BE APPROVED BY THE CITY. CONCRETE TO BE MINIMUM SIX (6") INCH 3600PSI (6.5 SACK/CY) WITH #4 BARS ON 18" CENTERS.
3. STREET LIGHT POLE BASES IN MEDIAN ARE TO HAVE THIRTY-SIX (36") INCH BY THIRTY-SIX (36") INCH, FOUR (4") INCH THICK, 3000PSI REINFORCED CONCRETE MOW STRIP.



LEFT TURN LANE MEDIAN PAVEMENT

N.T.S.

MEDIAN ISLAND PAVEMENT
NOSE & LEFT TURN LANE

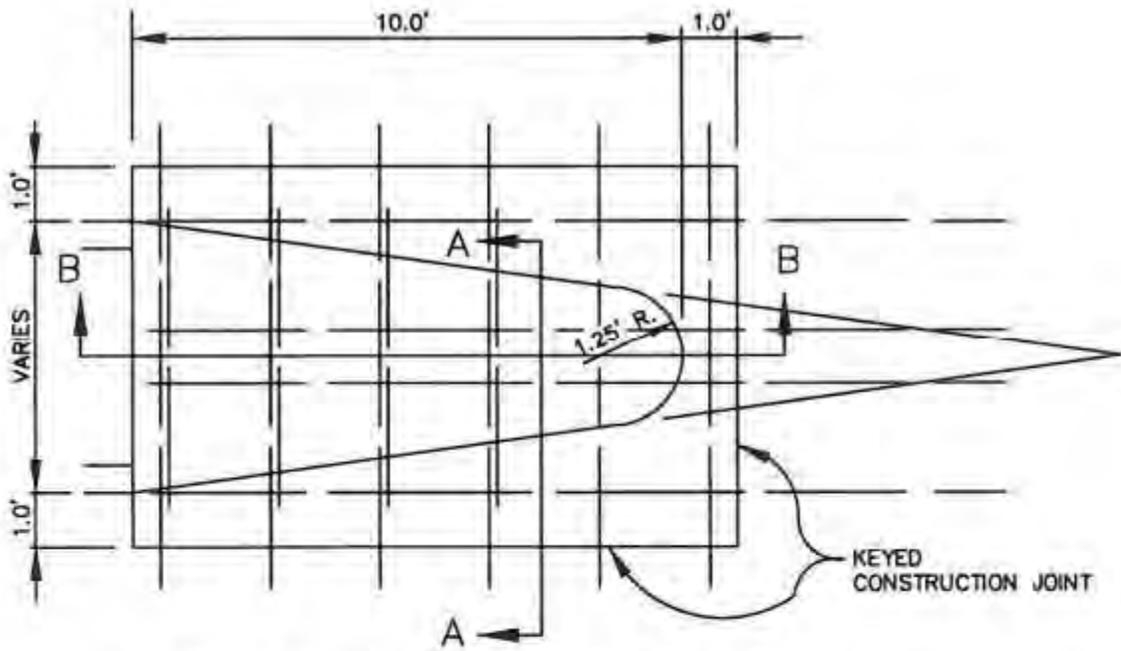
CITY OF ROCKWALL



STANDARD SPECIFICATION REFERENCE
305.3

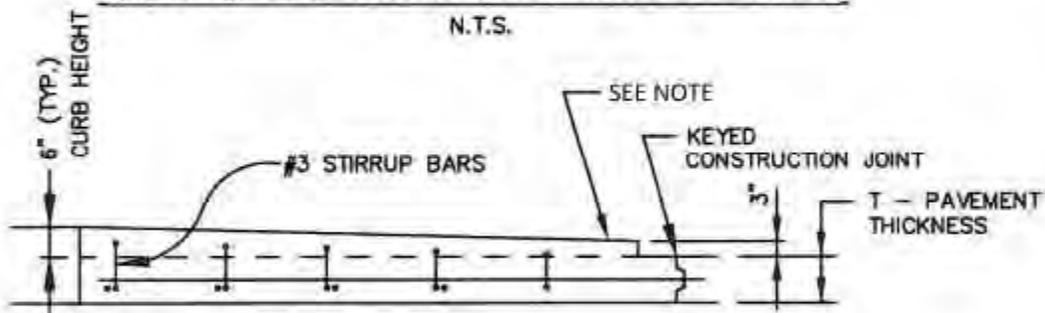
DATE
AUG. '19

STANDARD DRAWING NO.
R-2130



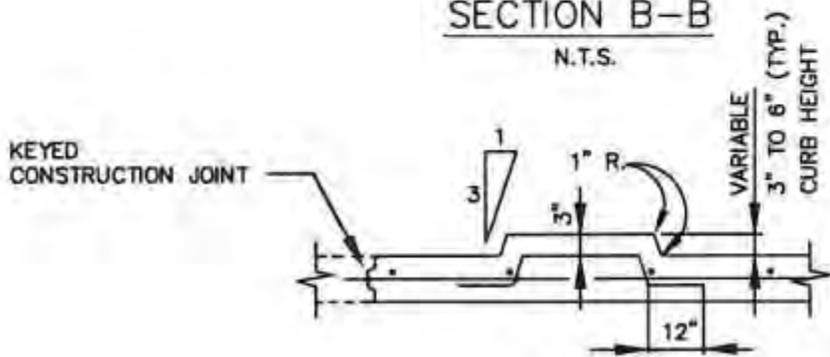
MONOLITHIC CONCRETE MEDIAN NOSE

N.T.S.



SECTION B-B

N.T.S.



SECTION A-A

N.T.S.

NOTE

1. MEDIAN NOSE PAVEMENT STRENGTH SHALL MATCH THAT OF STREET PAVING.
2. MONOLITHIC NOSE REQUIRED WHEN LESS THAN 6.0' FACE TO FACE.
3. REINFORCEMENT BARS SHALL MATCH THOSE IN PAVEMENT.

MEDIAN ISLAND PAVEMENT
MONOLITHIC CONCRETE NOSE

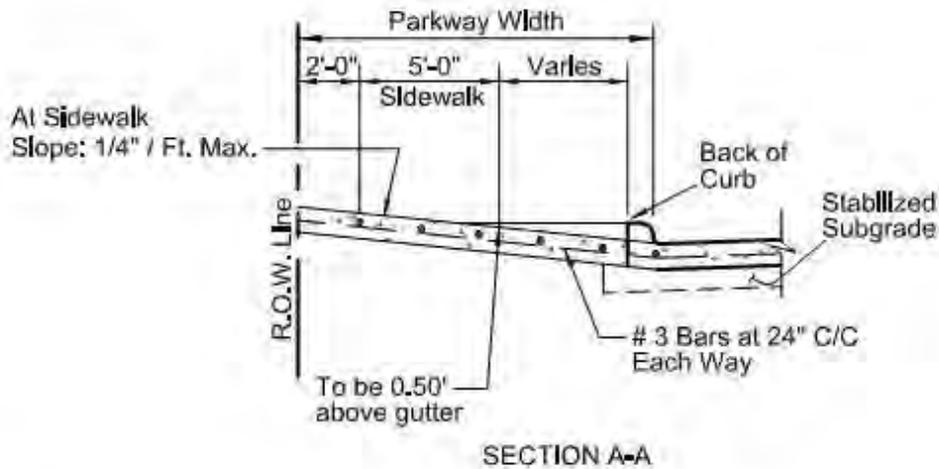
CITY OF ROCKWALL



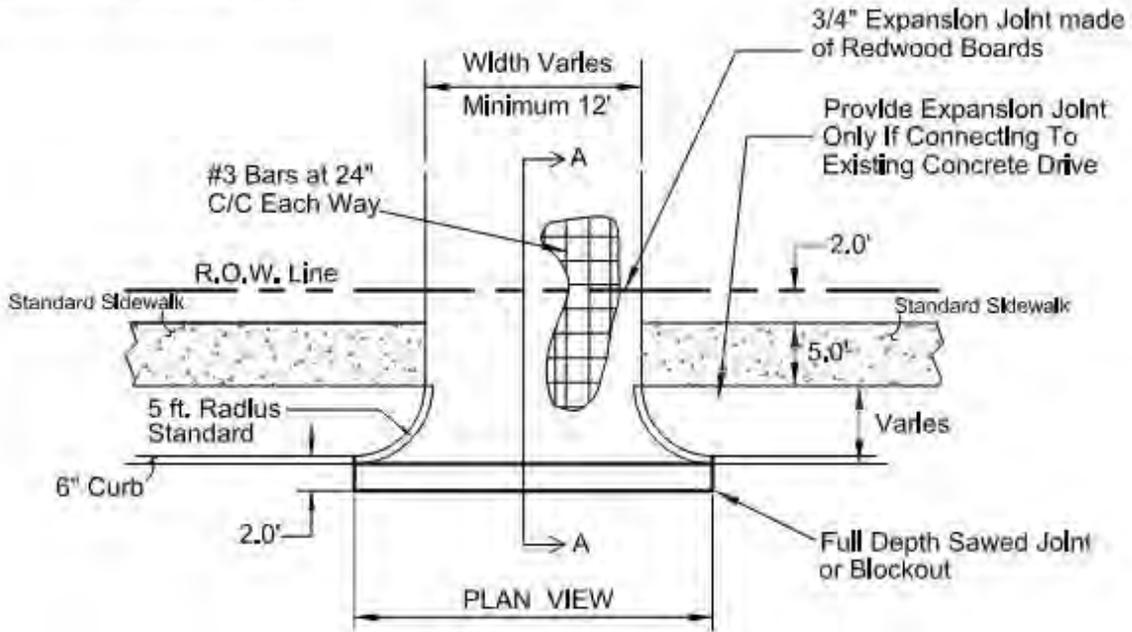
STANDARD SPECIFICATION REFERENCE
305.3

DATE
AUG. '19

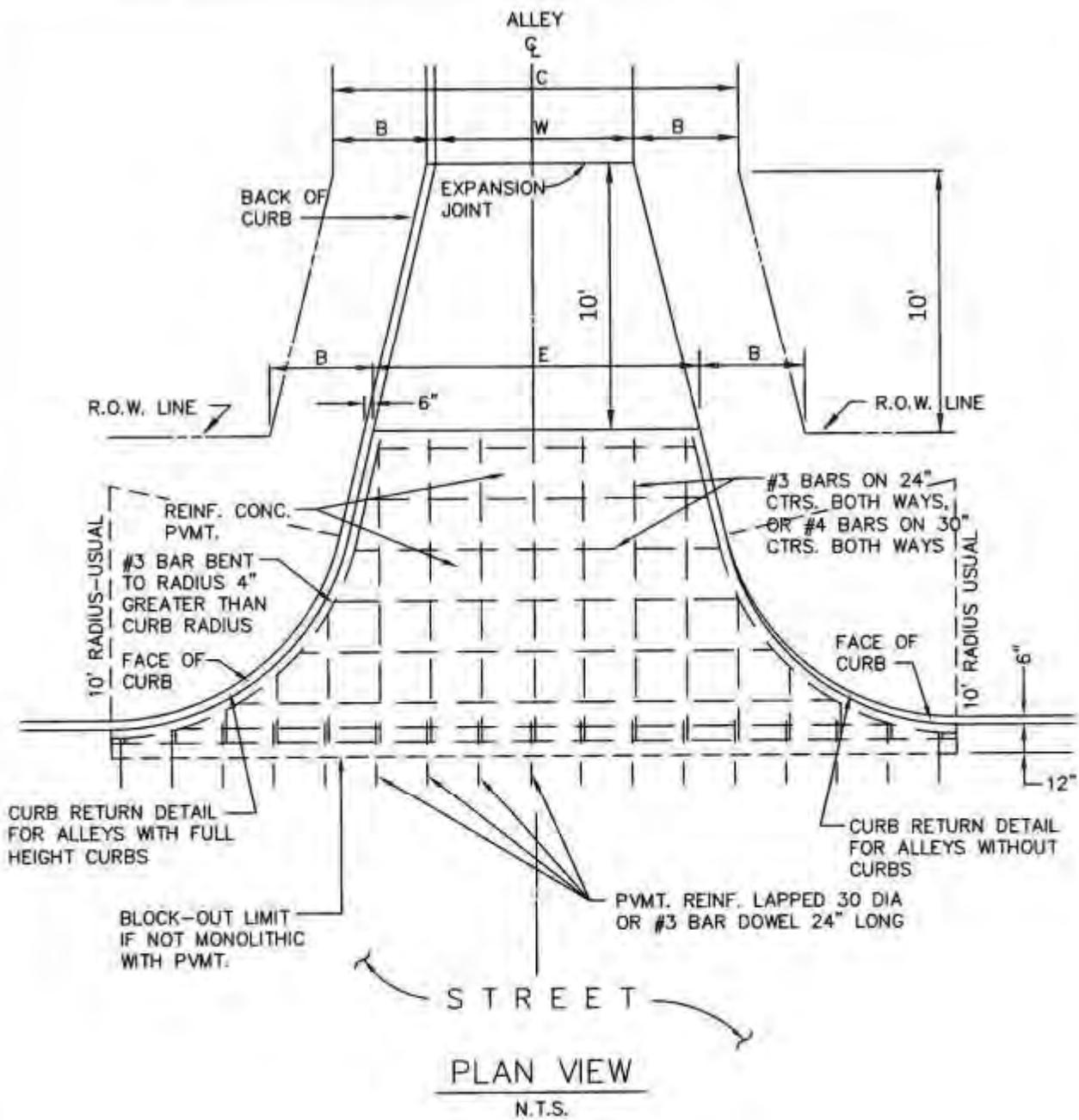
STANDARD DRAWING NO.
R-2140



NOTE:
 Sidewalk section thru driveway
 to be poured same thickness as
 driveway - 6" Thick 3,600 P.S.I.
 Reinf. Conc. Pymt. w/ #3 Bars
 @ 24" O.C.E.W. (Grade 60 Steel)



DRIVEWAY DETAIL	CITY OF ROCKWALL 	DATE	DRAWING NO.
RESIDENTIAL DRIVEWAY		AUG '19	R-2150



ALLEY WIDTH (W)	R.O.W. WIDTH (C)	B	E
12'	20'	4'	14'

ALLEY APPROACH
RADIUS RETURN TYPE

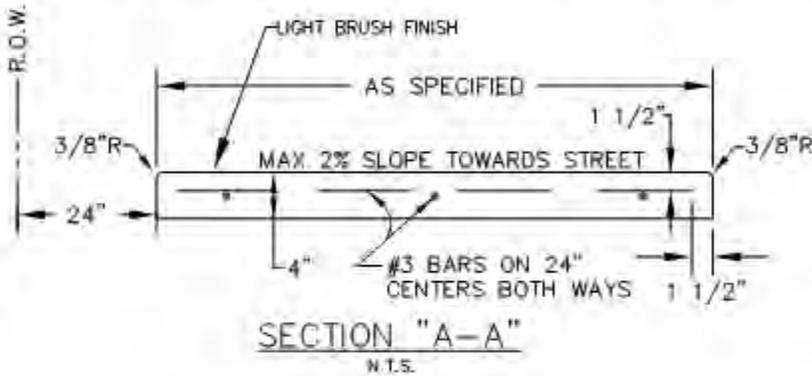
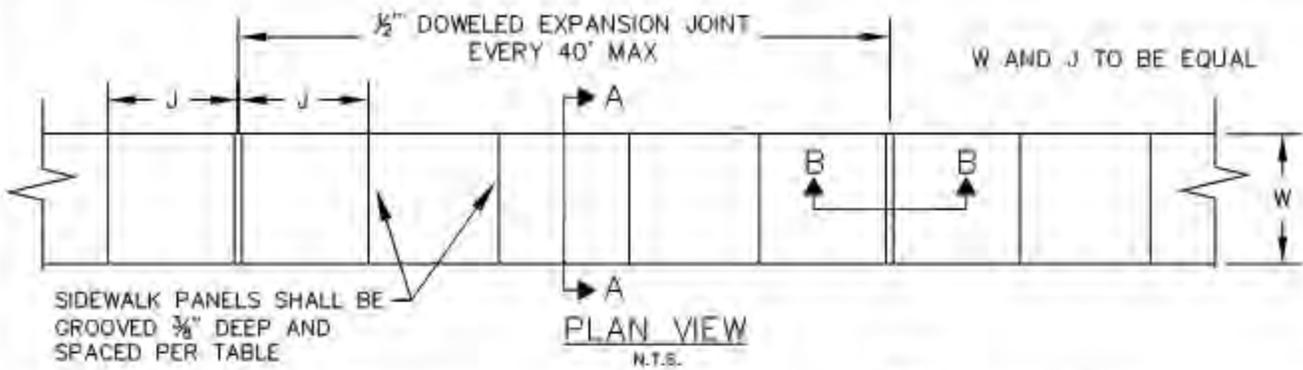
CITY OF ROCKWALL



STANDARD SPECIFICATION REFERENCE
305.2

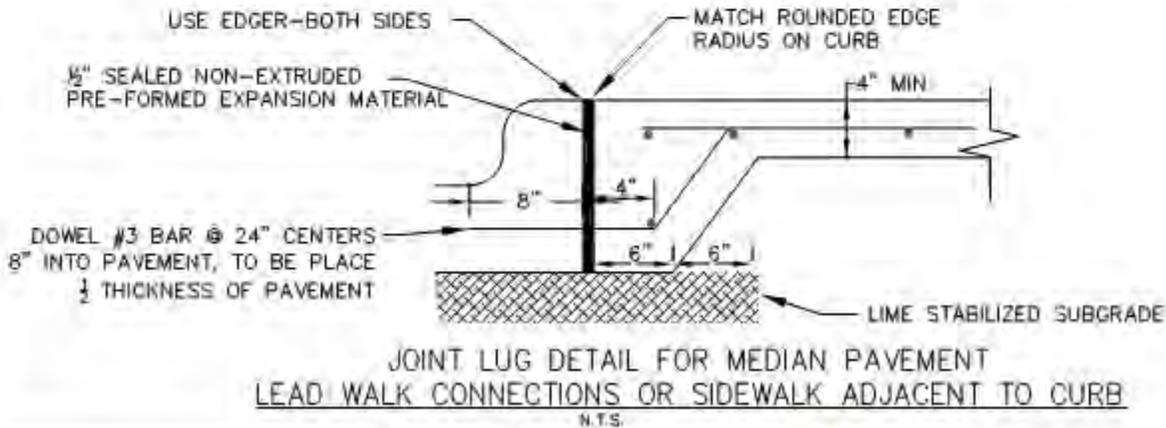
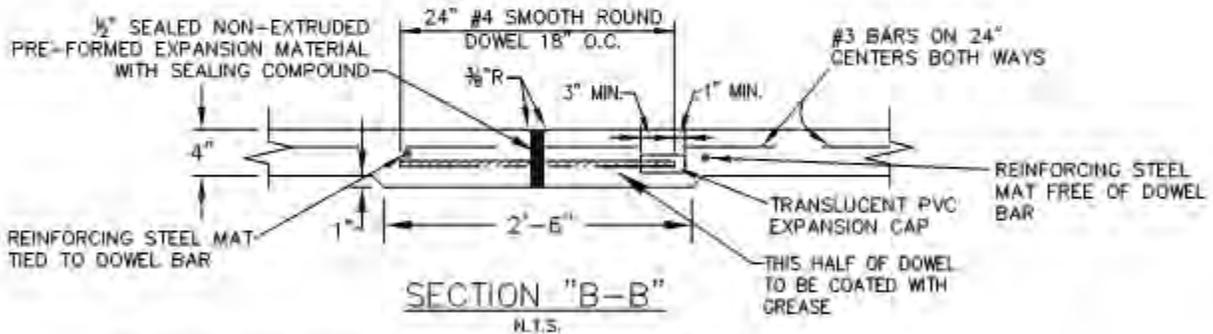
DATE
Mar. 2018

STANDARD DRAWING NO.
R-2160



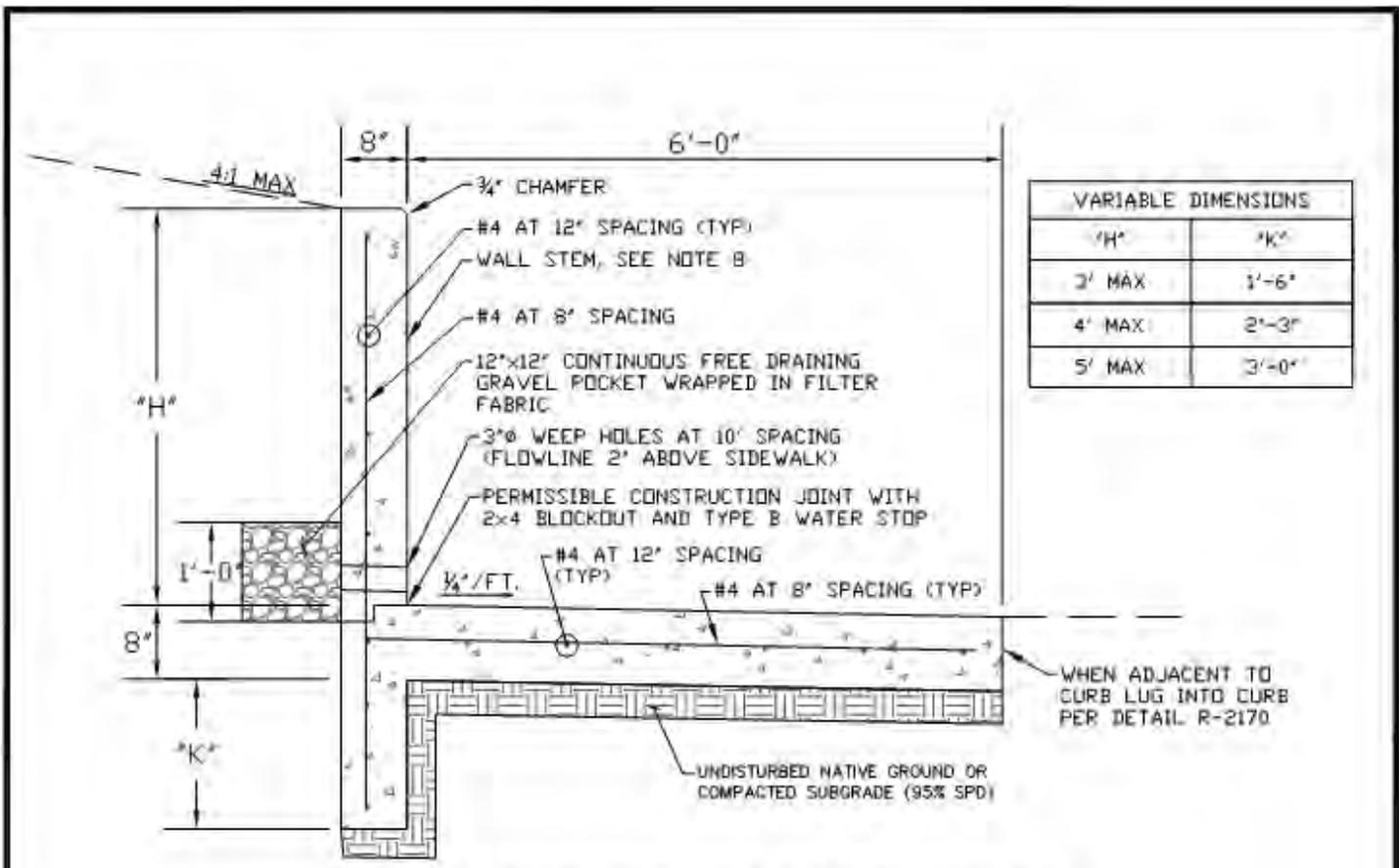
NOTES:

1. CROSS SLOPE OF SIDEWALK SHALL BE NO GREATER THAN 2%
2. SIDEWALK CONCRETE WITHIN CITY R.O.W. SHALL BE MINIMUM 3,000 PSI (5.5 SACK/C.Y.) CONCRETE.
3. ALL SIDEWALKS SHALL MAINTAIN POSITIVE DRAINAGE.
4. ALL HONEYCOMB IN BACK OF CURB TO BE TROWEL-PLASTERED BEFORE POURING SIDEWALK.
5. MINIMUM WIDTH OF 6' IF SIDEWALK ADJACENT TO CURB A LUGGED INTO THE CURB.
6. STEEL WIRE MESH IS NOT ACCEPTABLE.



JOINT LUG DETAIL FOR MEDIAN PAVEMENT
LEAD WALK CONNECTIONS OR SIDEWALK ADJACENT TO CURB
N.T.S.

REINFORCED CONCRETE SIDEWALKS	CITY OF ROCKWALL	
		
JOINTS AND SPACING	DATE AUG '19	DRAWING NO. R-2170



VARIABLE DIMENSIONS	
'H'	'K'
3' MAX	1'-6"
4' MAX	2'-3"
5' MAX	3'-0"

RETAINING WALL WITH INTEGRAL SIDEWALK

N.T.S.

NOTES:

- FOR USE OF THIS STANDARD DETAIL, THE FOLLOWING GEOTECHNICAL SITE CONDITIONS MUST BE MET:
 - MINIMUM ALLOWABLE BEARING PRESSURE: 1,500 PSF
 - MINIMUM COEFFICIENT OF FRICTION: 0.3
 - MAXIMUM ACTIVE PRESSURE COEFFICIENT (K_a): 0.65
- ALL MATERIALS SHALL BE SUBMITTED FOR APPROVAL PRIOR TO CONSTRUCTION.
- ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI.
- ALL REINFORCING STEEL SHALL BE GRADE 60.
- ALL CLEAR COVER SHALL BE 2" WHERE FORMED AND 3" WHERE CAST AGAINST EARTH.
- IF ANY SURCHARGE LOAD IS ANTICIPATED AN ENGINEERING DESIGN IS REQUIRED, SEALED BY A REGISTERED ENGINEER IN THE STATE OF TEXAS. THIS INCLUDES DEAD LOAD SURCHARGES AND LIVE LOAD SURCHARGES SUCH AS TRAFFIC LOADS.
- JOINT LOCATIONS SHALL MATCH ON SIDEWALK AND WALL. JOINT SPACING SHALL BE EVERY 30 FEET FOR CONTROL JOINTS AND EVERY 90 FEET FOR EXPANSION JOINTS. TYPE B WATERSTOP SHALL BE APPLIED ON THE FILL SIDE OF ALL EXPANSION AND CONSTRUCTION JOINTS.
- WALL FACE SHALL BE FORM LINER OR STONE VENEER WITH RANDOM ROCK ASHLAR PATTERN; NO SMOOTH CONCRETE SURFACE ALLOWED.

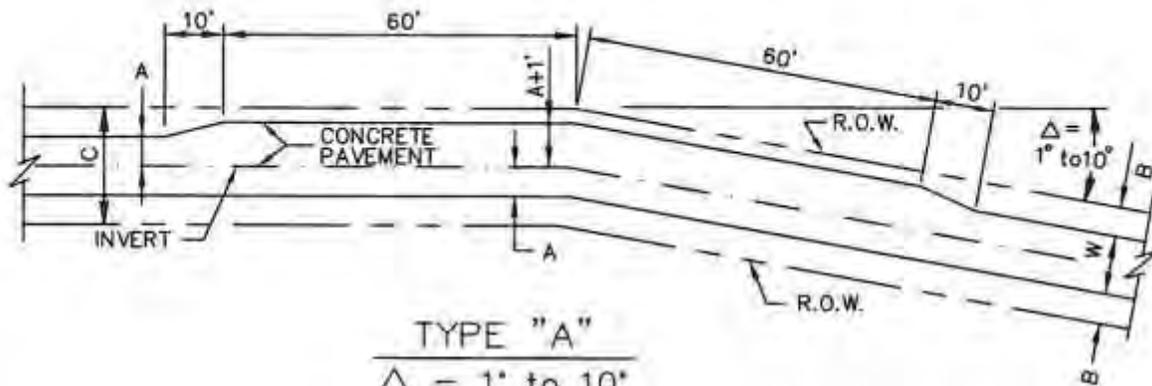
REINFORCED CONCRETE RETAINING WALL	CITY OF ROCKWALL		
		DATE	DRAWING NO.
INTEGRAL WITH SIDEWALK		AUG '19	R-2180

GENERAL NOTES:

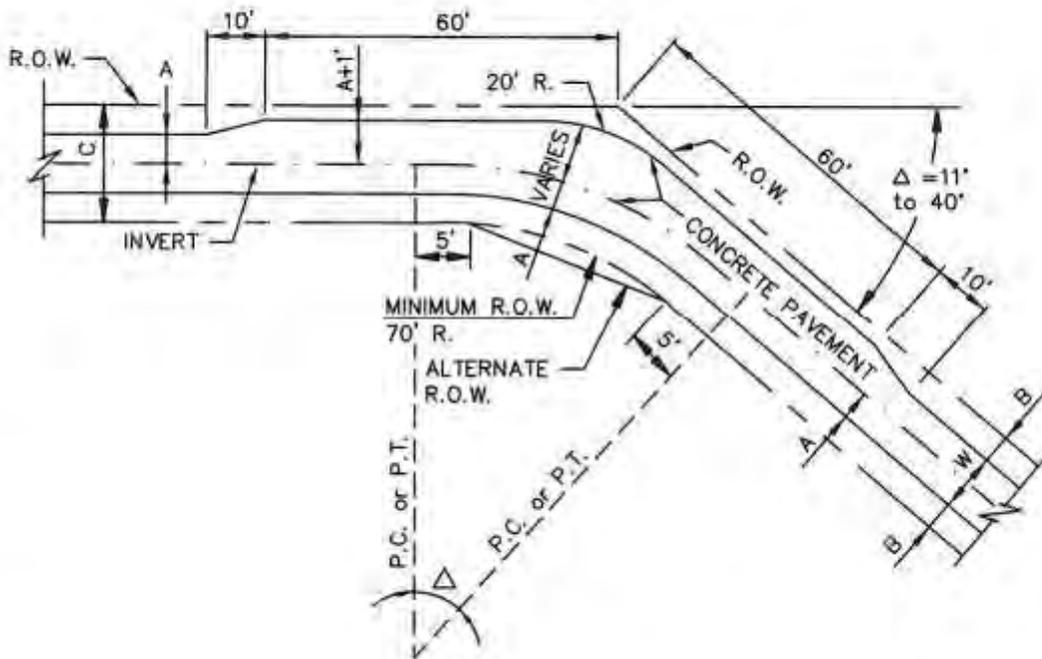
1. REINFORCED CONCRETE PAVEMENT:
 - A. ALL CURBS SHALL BE PLACED INTEGRAL WITH PAVEMENT UNLESS OTHERWISE APPROVED BY THE OWNER.
 - B. CURBS SHALL MEET THE SAME COMPRESSIVE STRENGTH AS SPECIFIED FOR THE PAVEMENT.
 - C. BAR LAPS SHALL BE 30 DIAMETERS.
 - D. REINFORCING BARS SHALL BE SUPPORTED BY CHAIRS OR OTHER DEVICES APPROVED BY THE OWNER.

2. SUBGRADE: (UNLESS OTHERWISE SPECIFIED BY OWNER)
 - A. SUBGRADE UNDER ALL PAVEMENTS SHALL BE STABILIZED TO A MINIMUM DEPTH OF SIX (6") INCHES WITH HYDRATED LIME CEMENT. LABORATORY TESTS WILL BE PERFORMED TO DETERMINE THE AMOUNT OF LIME OR CEMENT TO USE.

PAVEMENT SYSTEMS GENERAL NOTES	CITY OF ROCKWALL 	STANDARD SPECIFICATION REFERENCE	
		302,303	
		DATE	STANDARD DRAWING NO.
		Mar. 2018	R-2190



TYPE "A"
 $\Delta = 1^\circ \text{ to } 10^\circ$
 N.T.S.



TYPE "B"
 $\Delta = 11^\circ \text{ to } 40^\circ$
 N.T.S.

NOTES:

1. ALLEY WIDTH SHALL BE TWELVE (12') FEET MINIMUM.
2. ALLEY R.O.W. SHALL BE TWENTY (20') FEET MINIMUM.
3. DIMENSION A= SIX (6') FEET.
4. DIMENSION B= FOUR (4') FEET.

ALLEY GEOMETRICS
 TYPE "A" & TYPE "B"

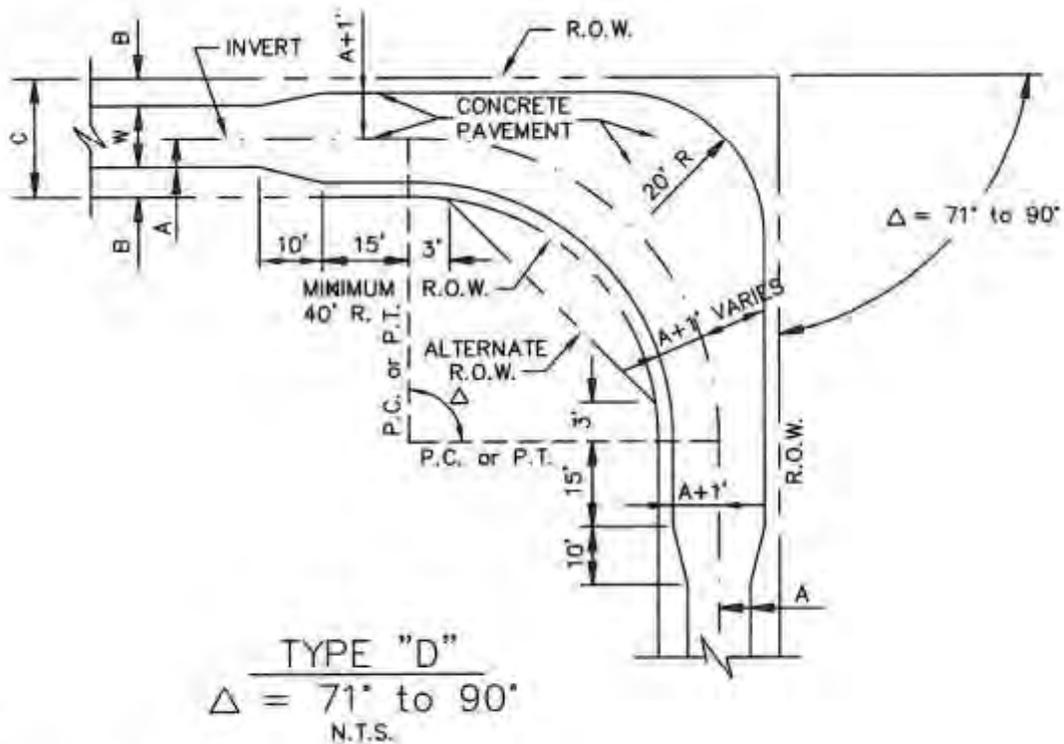
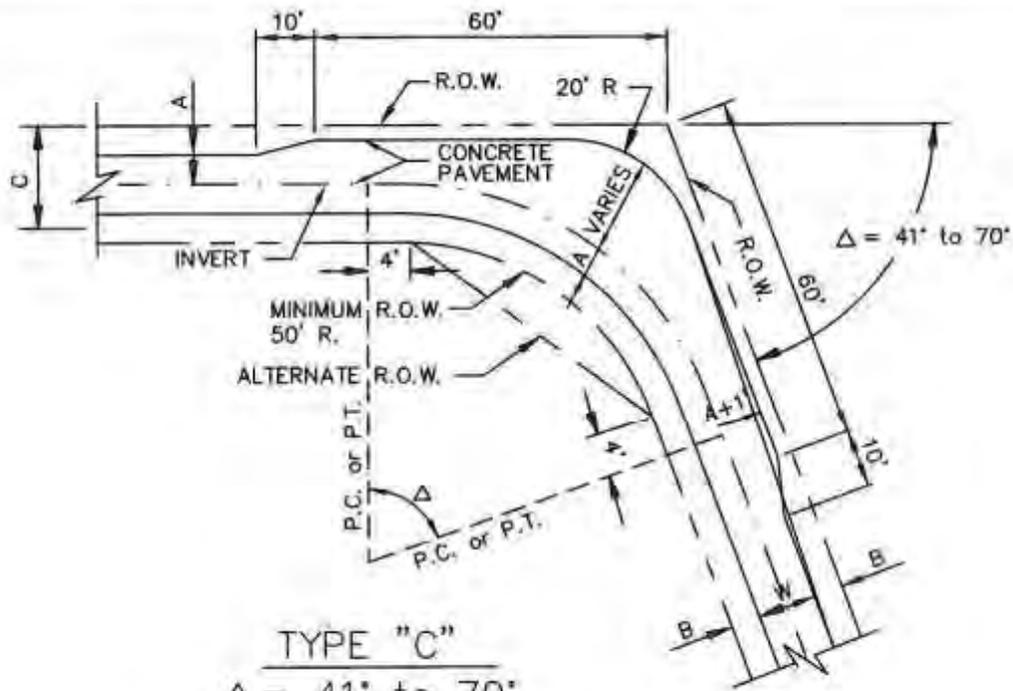
CITY OF ROCKWALL



STANDARD SPECIFICATION REFERENCE
 303.5

DATE
 Mar. 2018

STANDARD DRAWING NO.
 R-2210



NOTES:

1. ALLEY WIDTH SHALL BE TWELVE (12') FEET MINIMUM.
2. ALLEY R.O.W. SHALL BE TWENTY (20') FEET MINIMUM.
3. DIMENSION A= SIX (6') FEET.
4. DIMENSION B= FOUR (4') FEET.

ALLEY GEOMETRICS

TYPE "C" & TYPE "D"

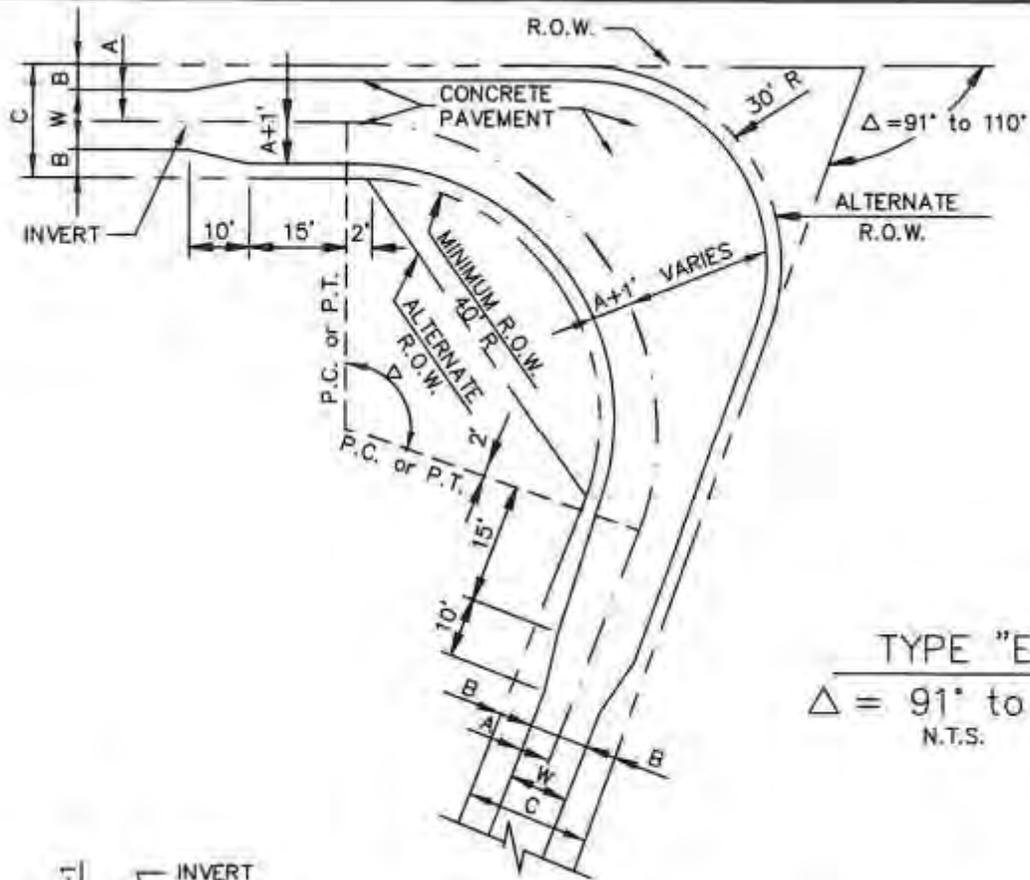
CITY OF ROCKWALL



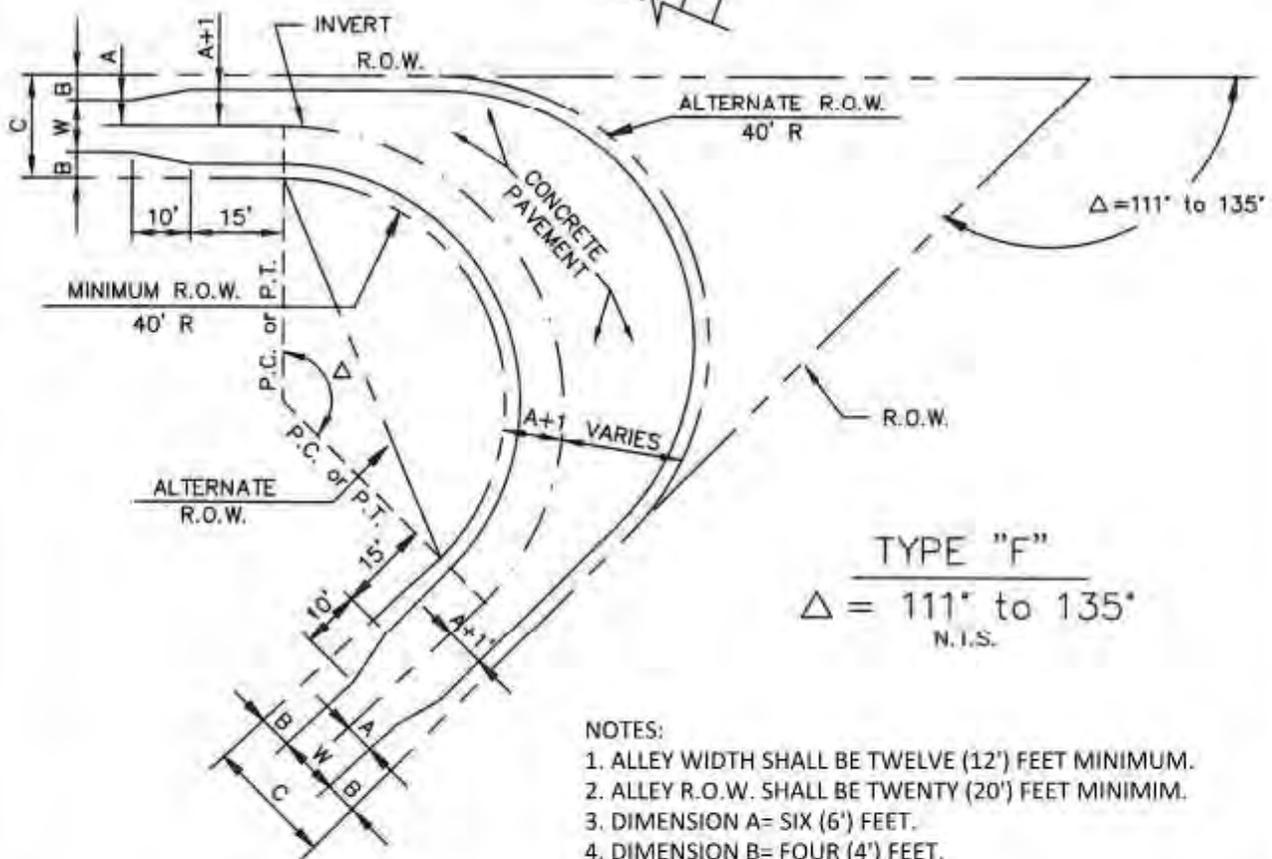
STANDARD SPECIFICATION REFERENCE
303.5

DATE
Mar. 2018

STANDARD DRAWING NO.
R-2220



TYPE "E"
 $\Delta = 91^\circ \text{ to } 110^\circ$
 N.T.S.



TYPE "F"
 $\Delta = 111^\circ \text{ to } 135^\circ$
 N.I.S.

NOTES:

1. ALLEY WIDTH SHALL BE TWELVE (12') FEET MINIMUM.
2. ALLEY R.O.W. SHALL BE TWENTY (20') FEET MINIMUM.
3. DIMENSION A= SIX (6') FEET.
4. DIMENSION B= FOUR (4') FEET.

ALLEY GEOMETRICS

TYPE "E" & TYPE "F"

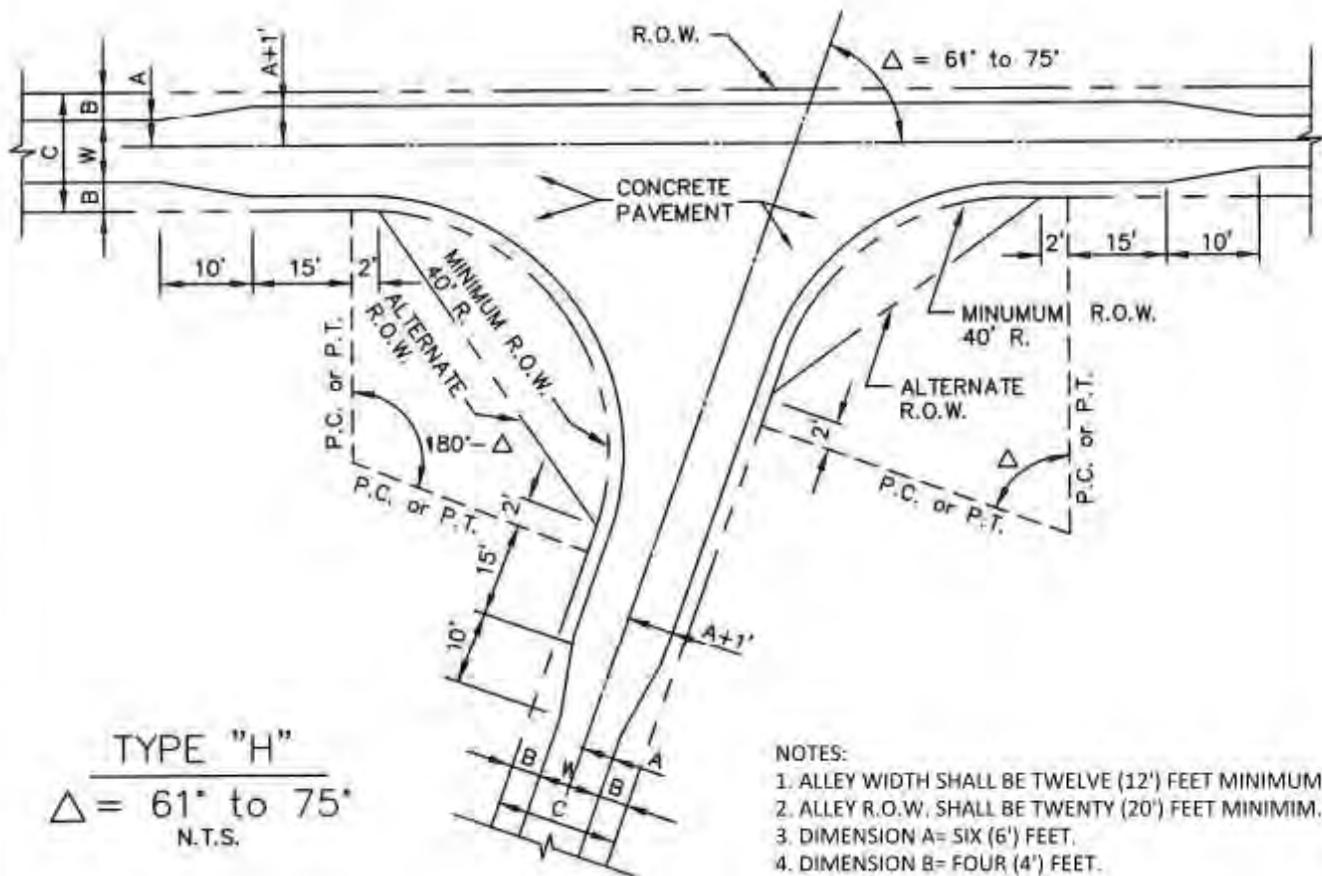
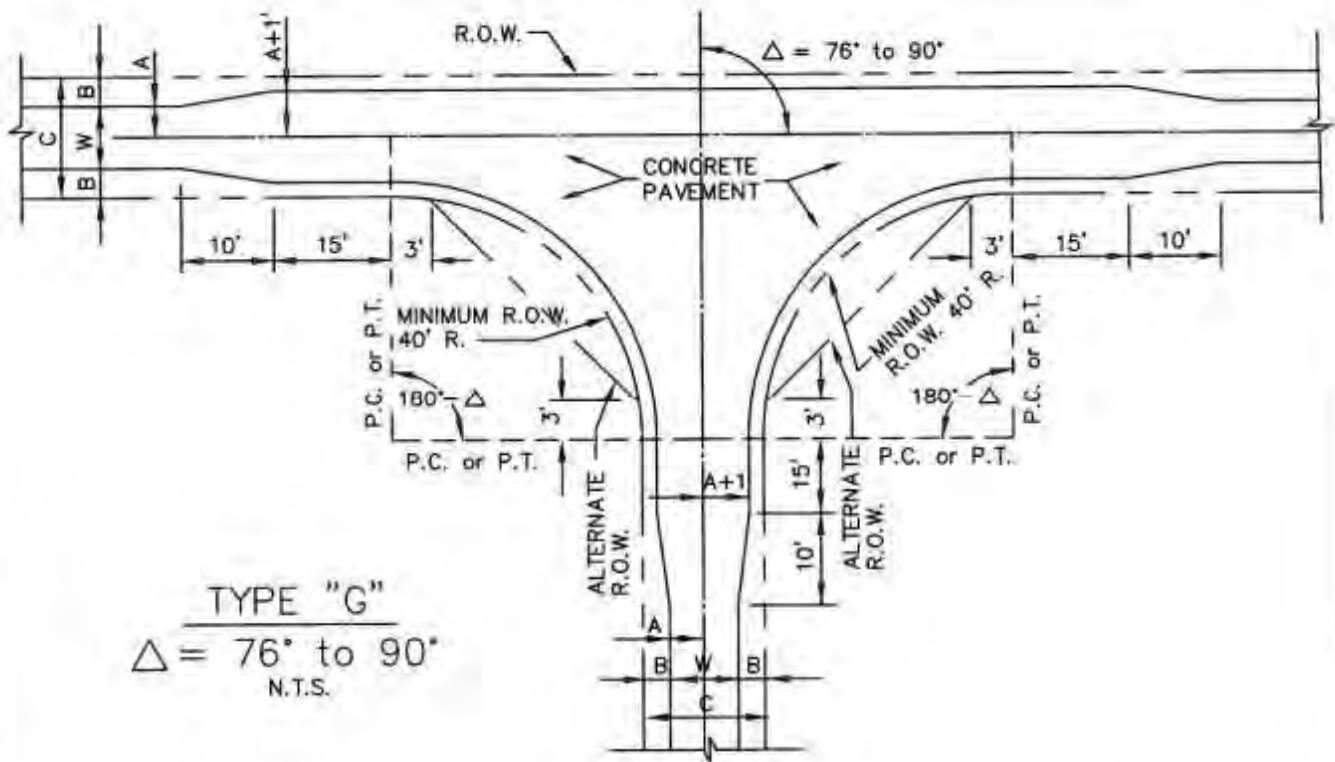
CITY OF ROCKWALL



STANDARD SPECIFICATION REFERENCE
 303.5

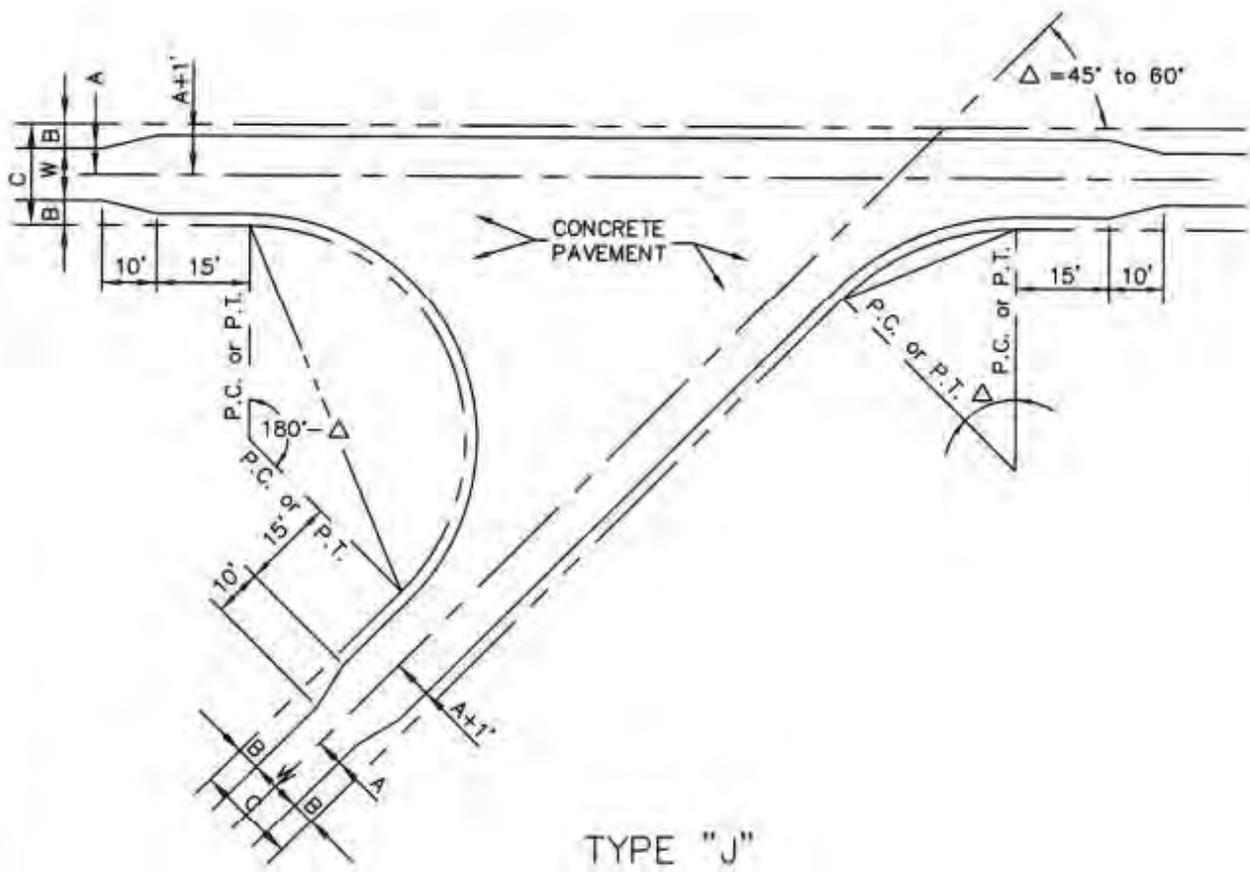
DATE
 Mar. 2018

STANDARD DRAWING NO.
 R-2230



- NOTES:
1. ALLEY WIDTH SHALL BE TWELVE (12') FEET MINIMUM.
 2. ALLEY R.O.W. SHALL BE TWENTY (20') FEET MINIMUM.
 3. DIMENSION A= SIX (6') FEET.
 4. DIMENSION B= FOUR (4') FEET.

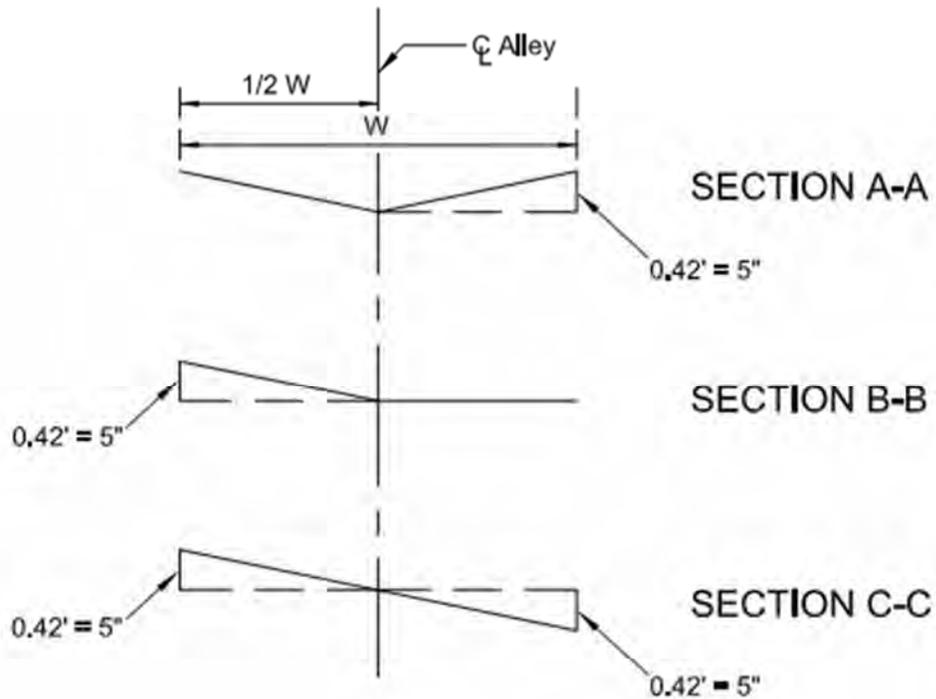
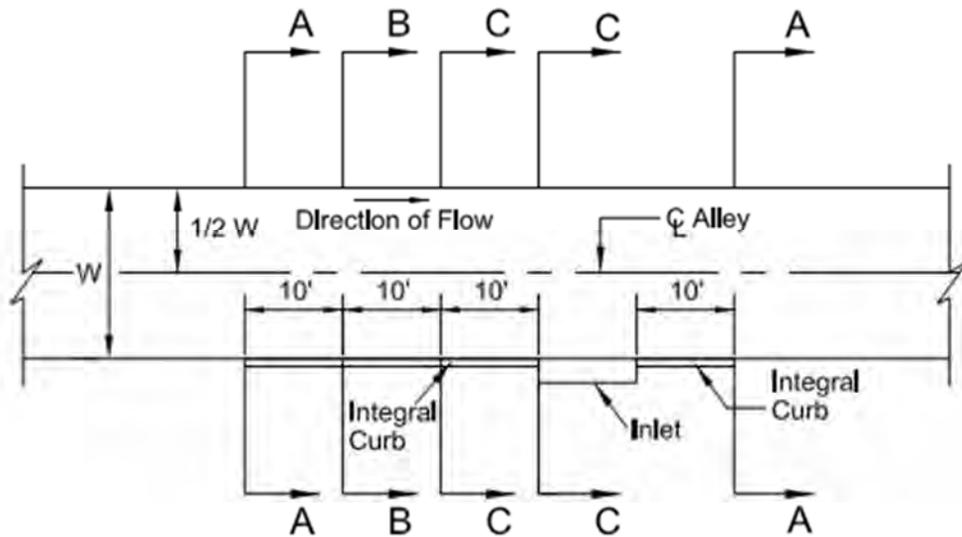
ALLEY GEOMETRICS TYPE "G" & TYPE "H"	CITY OF ROCKWALL 	STANDARD SPECIFICATION REFERENCE 303.5 DATE Mar. 2018 STANDARD DRAWING NO. R-2240
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TYPE "J"
 $\Delta = 45^\circ \text{ to } 60^\circ$
 N.T.S.

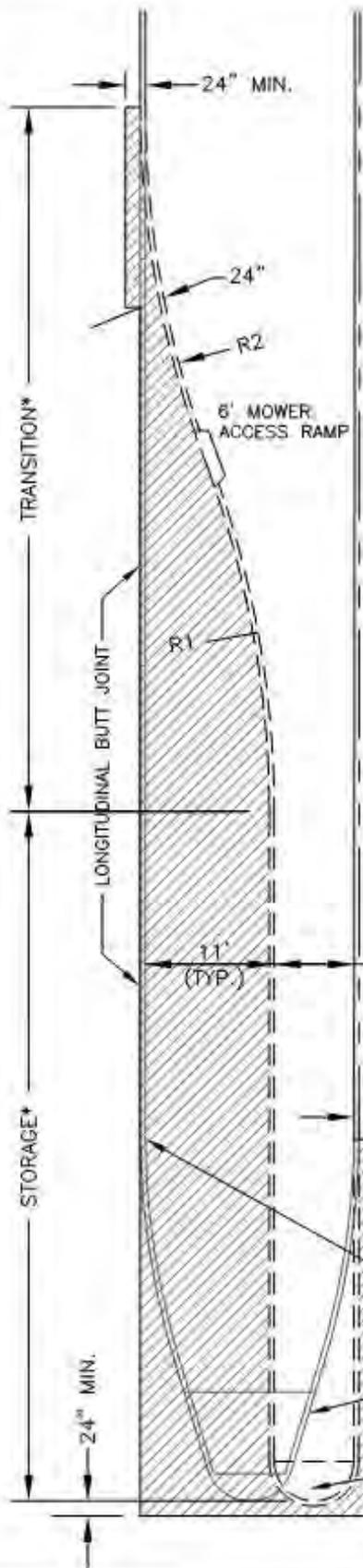
- NOTES:
1. ALLEY WIDTH SHALL BE TWELVE (12') FEET MINIMUM.
 2. ALLEY R.O.W. SHALL BE TWENTY (20') FEET MINIMUM.
 3. DIMENSION A= SIX (6') FEET.
 4. DIMENSION B= FOUR (4') FEET.

ALLEY GEOMETRICS TYPE "J"	CITY OF ROCKWALL 	STANDARD SPECIFICATION REFERENCE 303.5	
		DATE Mar. 2018	STANDARD DRAWING NO. R-2250



TYPICAL ALLEY WARPING AT INLET
(Not to Scale)

ALLEY GEOMETRICS	CITY OF ROCKWALL		
ALLEY WARPING AT INLET		DATE OCT. '17	DRAWING NO. R-2251



NOTES:

1. ALL DIMENSIONS ARE TO BACK OF CURB UNLESS OTHERWISE NOTED.
2. NO CONCRETE REPLACEMENT WIDTH SHALL BE LESS THAN 24".
3. PAVEMENT SECTION SHALL MATCH THAT OF EXISTING STREET.
4. ALL TIEBARS FOR LONGITUDINAL CONSTRUCTION JOINTS SHALL BE MACHINE DRILLED. NO HAND DRILLING ALLOWED.
5. IF MEDIAN WIDTH $\leq 7'$ (FACE TO FACE) THEN 6" THICK REINFORCED INTEGRAL STAINED AND STAMPED COLOR CONCRETE MEDIAN PAVEMENT SHALL BE INSTALLED.
6. ALL SAWCUTS TO BE FULL DEPTH AND EITHER PERPENDICULAR AND/OR PARALLEL WITH STREET CENTERLINE. NO ANGLED OR CURVED SAWCUTS ALLOWED.
7. WHEN SAWCUT EXCEEDS HALF OF CONSTRUCTION JOINT PANEL WIDTH, FULL PANEL REMOVAL AND REPLACEMENT SHALL BE REQUIRED.
8. TYPICAL R1/R2 VALUES:
 250' TYP. FOR SINGLE TURN LANE
 250' TYP. FOR DUAL TURN LANE
9. MUST MATCH JOINTS OF ADJACENT TRAFFIC LANES

* REFER TO CONSTRUCTION DRAWINGS FOR STORAGE, TRANSITION AND RADII DIMENSIONS.

SEE NOTE #5

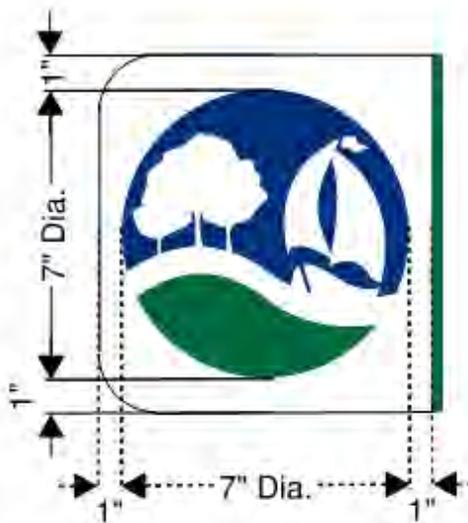
LEFT TURN LANE

CITY OF ROCKWALL

CONCRETE REMOVAL & REPLACEMENT



DATE	DRAWING NO.
AUG. '19	R-2270



Rockwall Logo Detail
 NOT TO SCALE

Notes:

1. Street name blades shall consist of white SCOTCHLITE 3930 High Intensity Prismatic Material, digitally printed using HP Latex 360 or higher.
 Green: Pantone 335C with overlay CMYK 100-0-20-0 set to darken.
 Blue: Pantone 287C.

2. Lettering to be composed of a combination of upper and lowercase letters, with initial uppercase letters. Font to be Clearview TCAD-1w with uppercase to be 6" Min. height and lowercase to be 4.5" Min. height. No more than 65% compression on font width.

3. Lettering for street designations and block numbers to be composed of initial uppercase letters at least 3" Min. height and lower-case letters at least 2.25" Min. height.

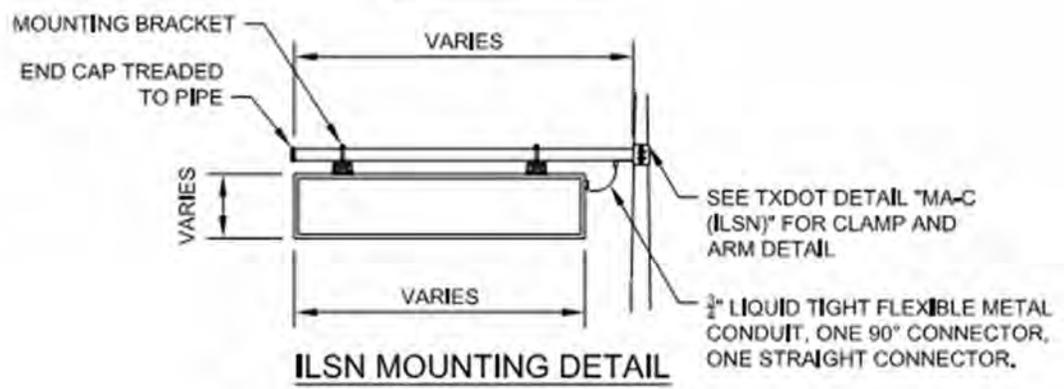
4. Sign post to be 2 3/8" O.D. galvanized steel tube sign pole.

STREET SIGN DETAIL
 NOT TO SCALE

STREET REGULATORY SIGNAGE	CITY OF ROCKWALL		
TYPICAL STREET SIGN DETAIL		DATE May 2018	DRAWING NO. R-2300



**EXAMPLE SINGLE STREET
NAME DETAIL**

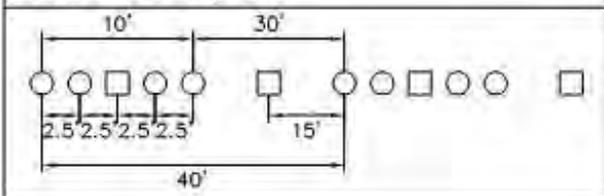


NOTES:

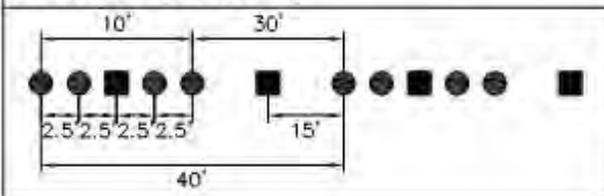
1. UNLESS OTHERWISE SPECIFIED, ALL LETTER SPACING AND WIDTH SHALL BE 100% OF THE US DOT MINIMUM RECOMMENDATION.
 - A. LEGENDS REQUIRING LENGTHS GREATER THAN THE 96" WIDTH OF THE SIGN USING STANDARD SPACING, MAY BE ADJUSTED TO FIT.
2. ILSNS UP TO 6' IN LENGTH MAY BE PLACED ON A 7' ILSN CLAMP-ON ARM, ILSNS UP TO 8' IN LENGTH MAY BE PLACED ON A 9' ILSN CLAMP-ON ARM.
3. LETTERING SIZE AND SPACING BETWEEN THE VARIOUS SIGN ELEMENTS SHALL FOLLOW THE CURRENT VERSION OF THE *STANDARD HIGHWAY SIGN DESIGNS FOR TEXAS* MANUAL FOR D3-1.
 - A. DESIRED LETTER HEIGHT FOR STREET NAME SIGNS SHALL BE 12" FOR UPPER CASE LETTERS. STREET NAME LETTER HEIGHT MAY BE REDUCED TO 10" TO REDUCE THE SIZE OF THE SIGN AS NEEDED.
4. THE CITY LOGO HEIGHT SHALL MATCH MAXIMUM TEXT SIZE HEIGHT ON SIGN LEGEND. THE LOGO SHALL BE PLACED ON THE LEFT SIDE OF EACH SIDE OF THE SIGN ON A WHITE BACKGROUND.
5. THE ILSN LEGEND MAY BE COMPOSED OF ONE LINE OR TWO LINES OF TEXT. CONTRACTOR TO VERIFY WITH CITY BEFORE SUBMITTING SHOP DRAWINGS FOR SIGNS WITH TWO LINES OF TEXT.
6. SIGNS SHALL BE EDGELIT LED ILLUMINATED
7. FACE COLOR/MATERIAL: GREEN EC FILM OVER HIGH-INTENSITY TRANSLUCENT REFLECTIVE WHITE SHEETING ON UV LEXAN.
8. FRAME WIDTH TO BE PROVIDED BY MANUFACTURER.
9. SIGN BODIES AND DOORS ARE TO BE POWDER COATED GLOSSY BLACK.
10. SIGNS SHALL BE SINGLE SIDED EXCEPT UNDER THE FOLLOWING CONDITION:
SIGN SHALL BE DOUBLE SIDED IF BOTH APPROACHES FACING THE SIGN ARE UNDIVIDED(NO MEDIAN).
11. SIGNS SHALL BE TOP MOUNTED USING STANDARD TXDOT DETAILS.
12. ILSN SHALL BE MOUNTED ON A STANDARD TXDOT ILSN CLAMP-ON ARM UNLESS OTHERWISE DIRECTED IN THE PLANS
13. ILSN SHALL BE FULLY GASKETED AND WATERTIGHT.
14. TRAFFIC SIGNAL POLE SHALL BE AT LEAST 24' HEIGHT. (SEE TXDOT TRAFFIC SIGNAL POLE STANDARDS)
15. A SEPARATE PHOTOCCELL FOR ILSN/120 VOLT CIRCUIT WILL BE REQUIRED.
16. TWO #8 XHHW CONDUCTORS SHALL BE INSTALLED FROM SERVICE TO TERMINAL BLOCK OF EACH POLE WITH ILSN UNLESS OTHERWISE SHOWN IN THE PLANS, (CONDUCTORS FROM SERVICE TO TERMINAL BLOCK OF EACH POLE SHALL BE PAID FOR SEPARATELY FROM THE ILSN PAY ITEM.)
 - A. DAISY CHAIN ALL ILSNS UNLESS OTHERWISE DIRECTED IN THE PLANS.
17. TWO # 12 XHHW CONDUCTORS SHALL BE INSTALLED FROM TERMINAL BLOCK OF POLE TO ILSN UNLESS OTHERWISE SHOWN IN THE PLANS, (CONDUCTORS FROM THE TERMINAL BLOCK OF EACH POLE TO ILSN SHALL BE PAID FOR SEPARATELY FROM THE ILSN PAY ITEM.)
18. CONTRACTOR TO SUBMIT SHOP DRAWINGS OF THE LED ILSNS TO CITY OF ROCKWALL FOR APPROVAL PRIOR TO FABRICATION.
19. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EQUIPMENT NECESSARY TO INSTALL THE ILSN SIGN.
20. ALL ILSNS SHALL FOLLOW ALL RULES AND GUIDELINES AS SPECIFIED IN THE MOST RECENT EDITIONS OF THE *STANDARD HIGHWAY SIGN DESIGNS FOR TEXAS* AND THE *TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES*. SHOULD ANY CONFLICTS BETWEEN THE ABOVE NOTES AND THESE DOCUMENTS, THESE DOCUMENTS SHALL GOVERN.

ILLUMINATED STREET NAME SIGN	CITY OF ROCKWALL		
ILSN SIGN DETAIL		DATE JUN '17	DRAWING NO. R-2310

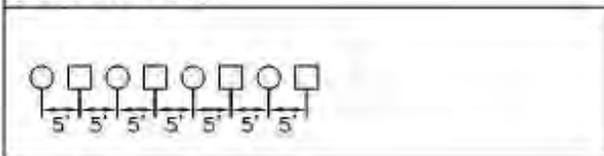
BROKEN WHITE LANE LINE



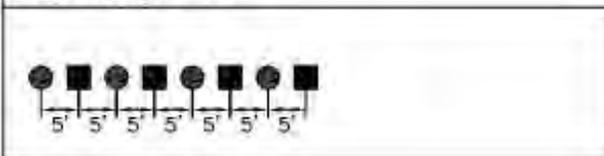
BROKEN YELLOW LANE LINE



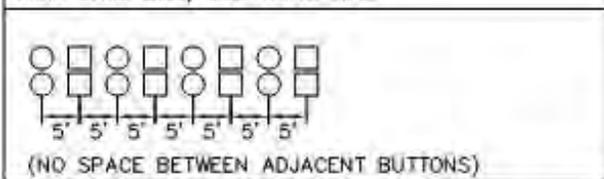
SINGLE WHITE LINE



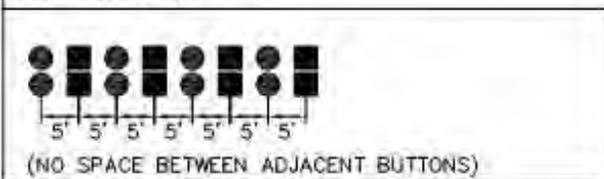
SINGLE YELLOW LINE



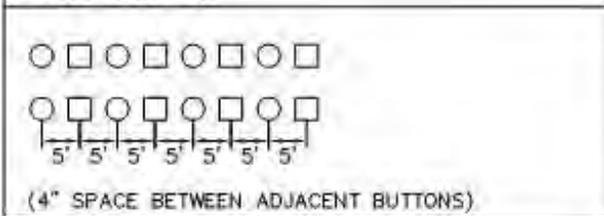
TURN LANE LINE/WIDE WHITE LINE



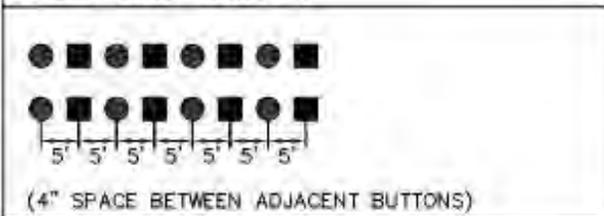
WIDE YELLOW LINE



DOUBLE WHITE LINE



DOUBLE YELLOW CENTERLINE



NOTES:

UNLESS OTHERWISE NOTED, THE FOLLOWING BUTTON TYPES SHALL BE USED:

- = 4" ROUND YELLOW CERAMIC NON-REFLECTIVE BUTTON
- = 4" SQUARE YELLOW/YELLOW ACRYLIC REFLECTIVE BUTTON
- = 4" ROUND WHITE CERAMIC NON-REFLECTIVE BUTTON
- = 4" SQUARE CLEAR/RED ACRYLIC REFLECTIVE BUTTON

RAISED PAVEMENT MARKINGS

LANE LINES

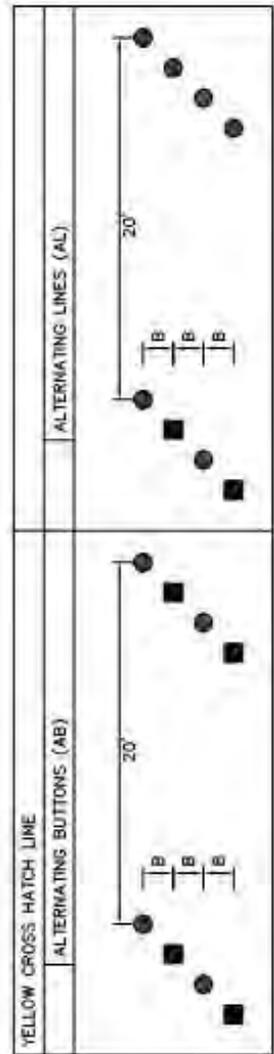
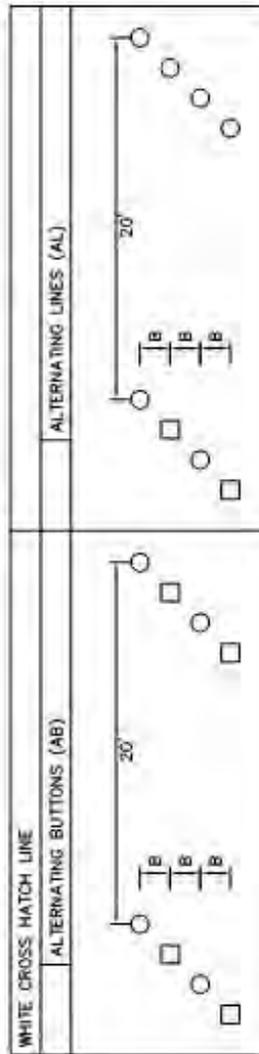
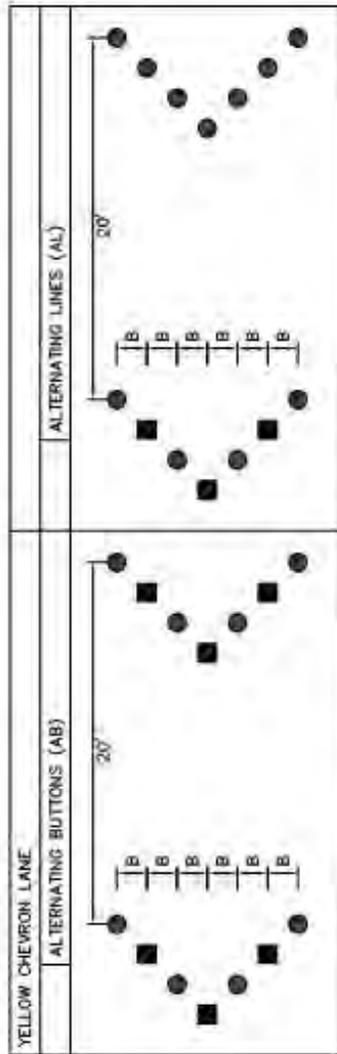
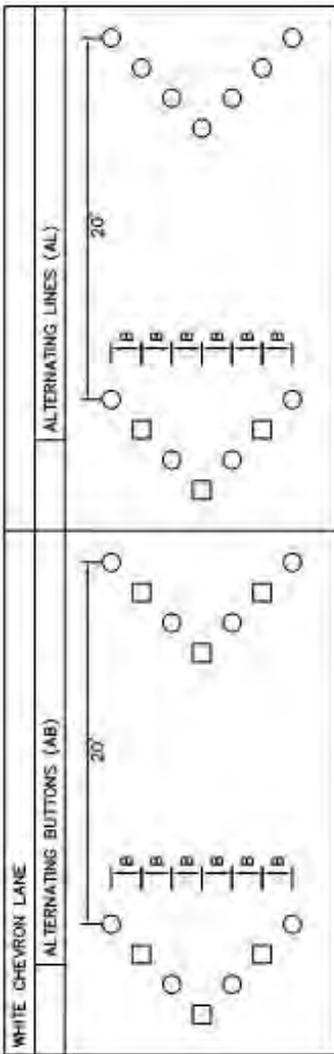
CITY OF ROCKWALL



STANDARD SPECIFICATION REFERENCE

DATE
Mar. 2018

STANDARD DRAWING NO.
R-2320



NOTES:

UNLESS OTHERWISE NOTED, THE FOLLOWING BUTTON TYPES SHALL BE USED:

- = 4" ROUND YELLOW CERAMIC NON-REFLECTIVE BUTTON
- = 4" SQUARE YELLOW/YELLOW ACRYLIC REFLECTIVE BUTTON
- = 4" ROUND WHITE CERAMIC NON-REFLECTIVE BUTTON
- = 4" SQUARE CLEAR/RED ACRYLIC REFLECTIVE BUTTON

FOR CHEVRON AND CROSS-HATCH LINES, THE FOLLOWING DIMENSIONS WILL BE NOTED ON THE PLANS.

B = THE DISTANCE BETWEEN ADJACENT BUTTONS ON A LINE (MEASURED ALONG A LINE PERPENDICULAR TO THE BUTTONED AREA, NOT ALONG THE 45 DEGREE LINE)

RAISED PAVEMENT MARKINGS
CHEVRON AND CROSSHATCH

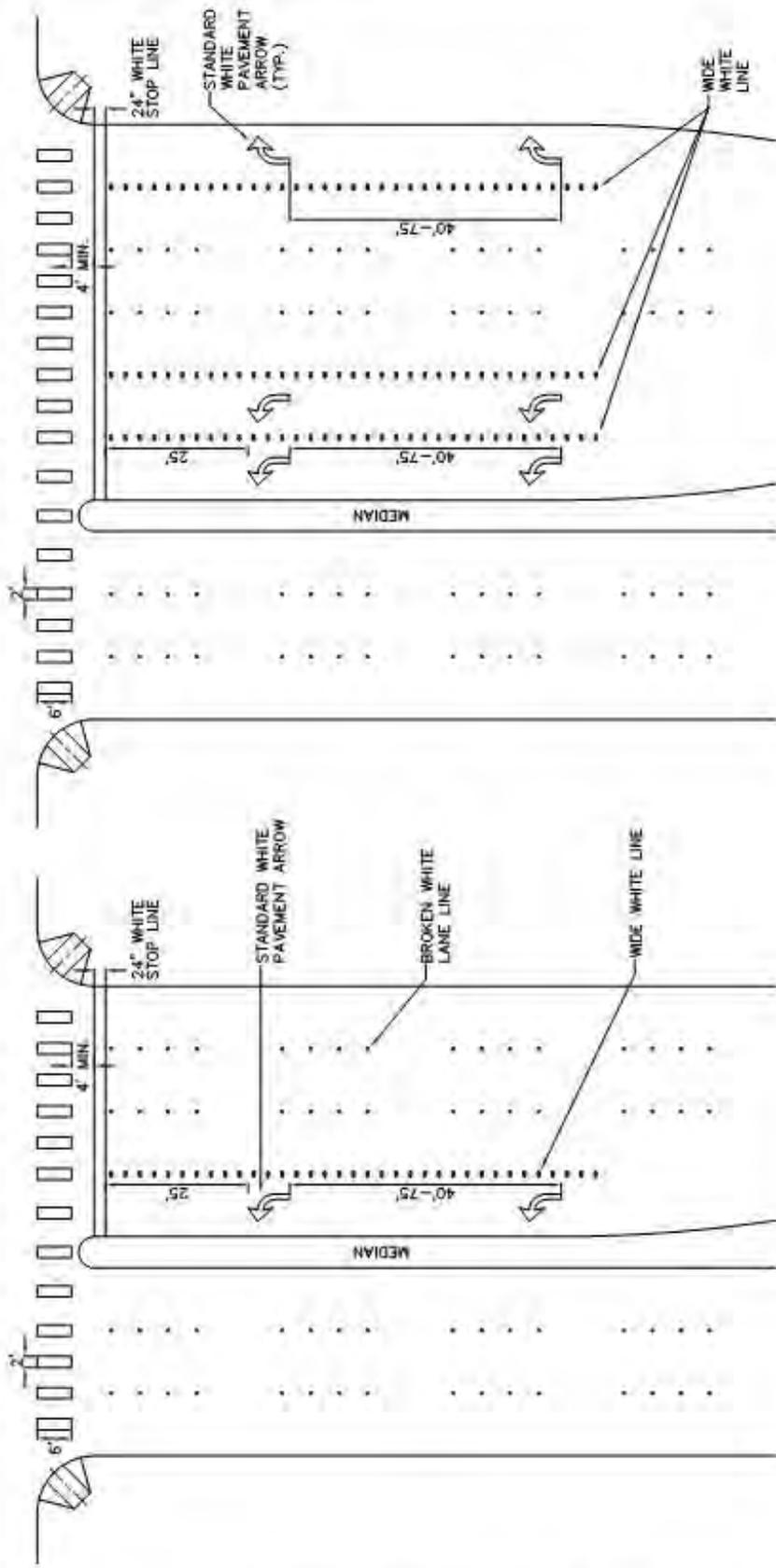
CITY OF ROCKWALL



STANDARD SPECIFICATION REFERENCE

DATE
Mar. 2018

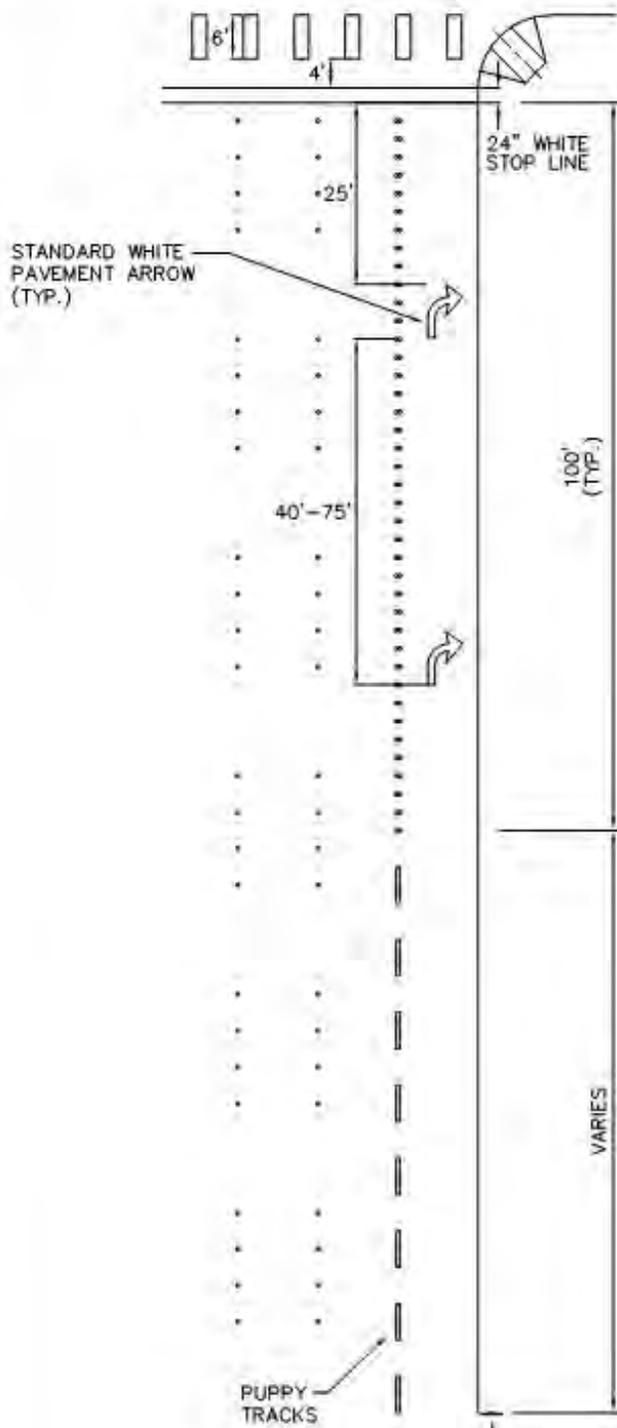
STANDARD DRAWING NO.
R-2330



DUAL LEFT TURN LANE & RIGHT TURN LANE

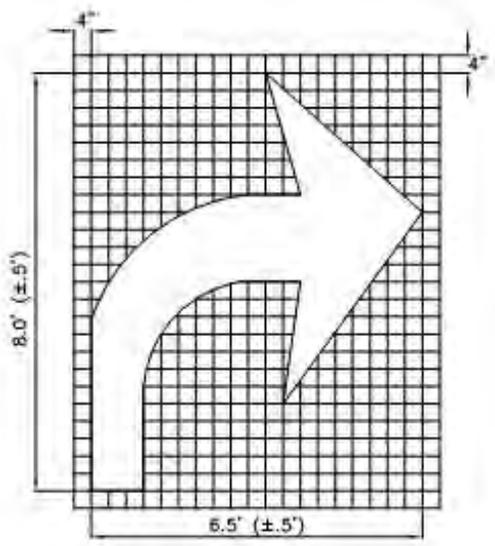
TYPICAL APPROACH

<p>RAISED PAVEMENT MARKINGS INTERSECTION APPROACH</p>	<p>CITY OF ROCKWALL</p> 	<p>STANDARD SPECIFICATION REFERENCE</p>	
		<p>DATE Mar. 2018</p>	<p>STANDARD DRAWING NO. R-2340</p>



RIGHT LANE
MUST
TURN RIGHT

R3-7R



TURN ARROW

TYPE C INTERSECTION

RIGHT LANE DROP MARKINGS

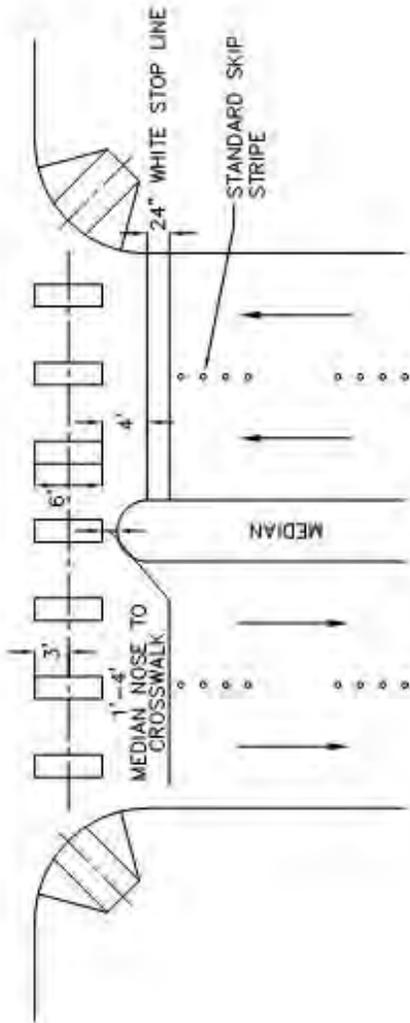
CITY OF ROCKWALL



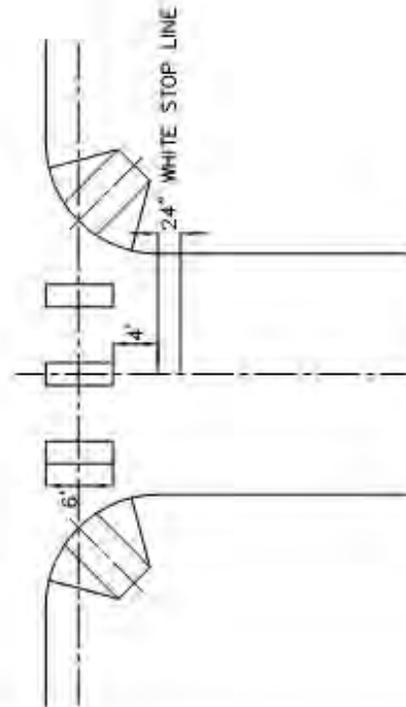
STANDARD SPECIFICATION REFERENCE

DATE
Mar. 2018

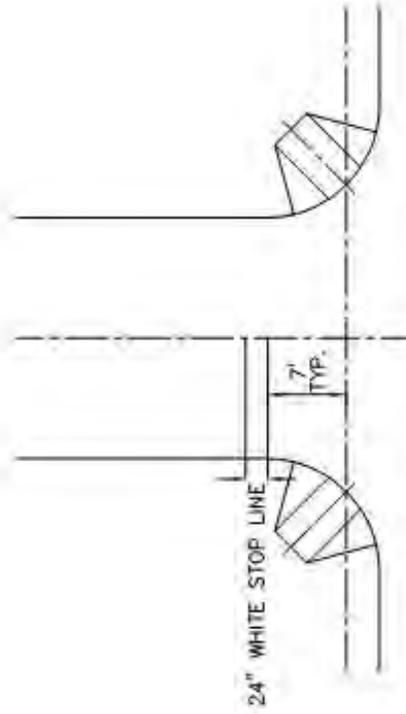
STANDARD DRAWING NO.
R-2350



TYPICAL LAYOUT
TYPE D THOROUGHFARE
STOP LINE WITH CROSSWALK



TYPICAL LAYOUT
TYPE F&G THOROUGHFARE
CROSSWALK WITH STOP LINE



TYPICAL LAYOUT
TYPE F&G THOROUGHFARE
STOP LINE WITHOUT CROSSWALK

TYPICAL THOROUGHFARE
LAYOUTS

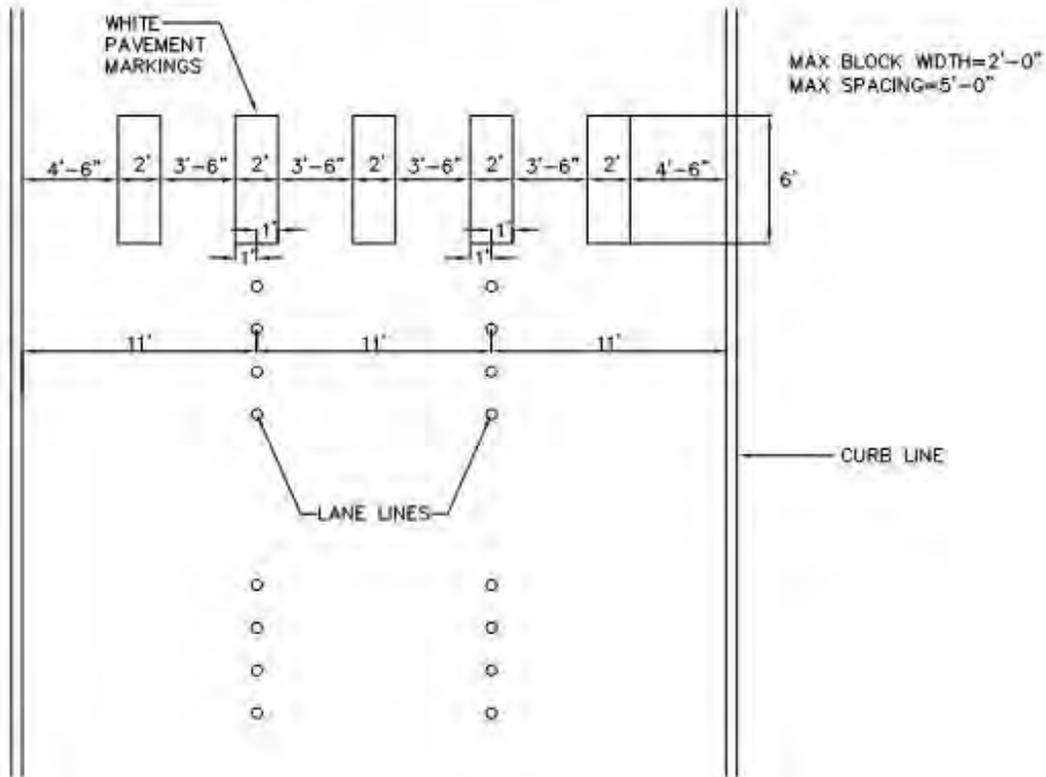
CITY OF ROCKWALL



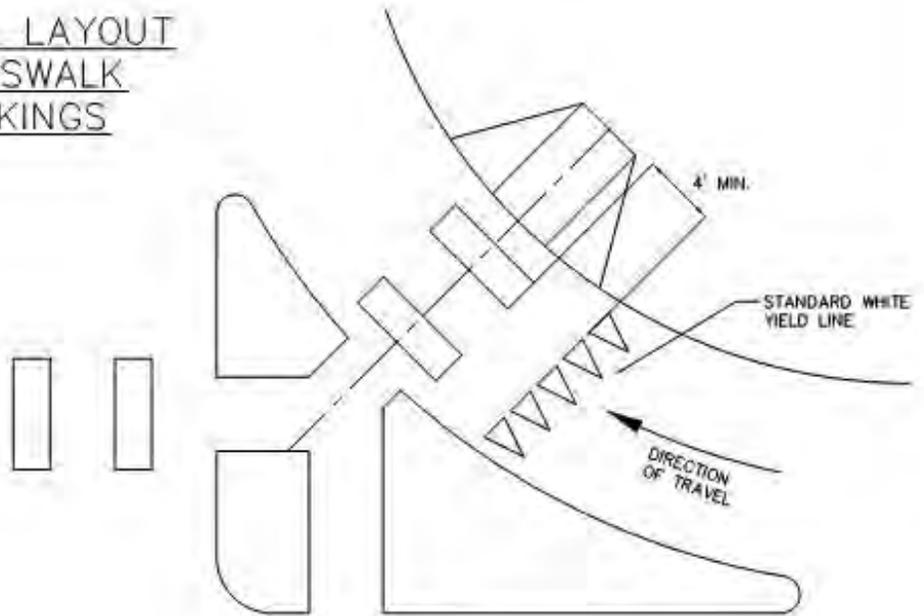
STANDARD SPECIFICATION REFERENCE

DATE
Mar. 2018

STANDARD DRAWING NO.
R-2360



TYPICAL LAYOUT
CROSSWALK
MARKINGS



TYPICAL LAYOUT
CHANNELIZING ISLAND
YIELD LINE WITH CROSSWALK

TYPICAL CROSSWALK
LAYOUTS

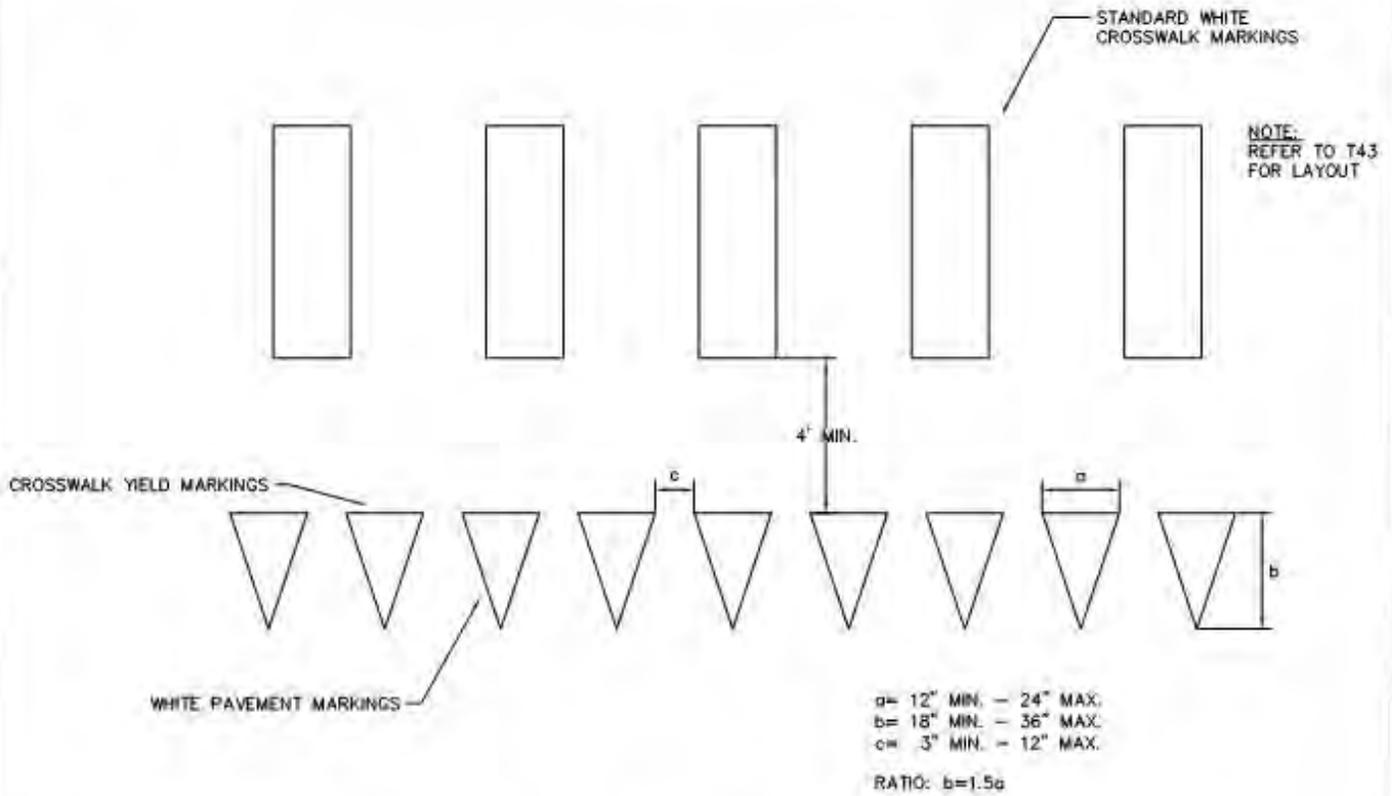
CITY OF ROCKWALL



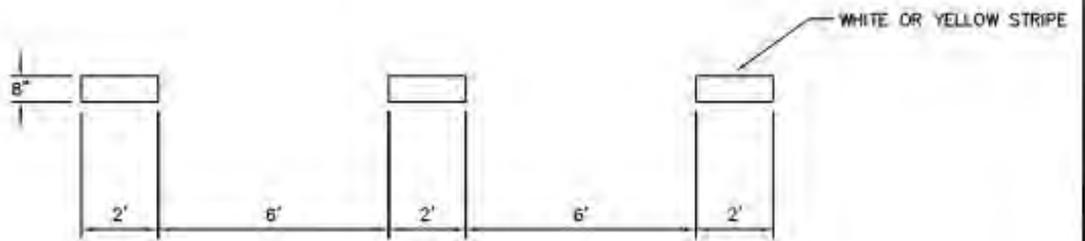
STANDARD SPECIFICATION REFERENCE

DATE
Mar. 2018

STANDARD DRAWING NO.
R-2370

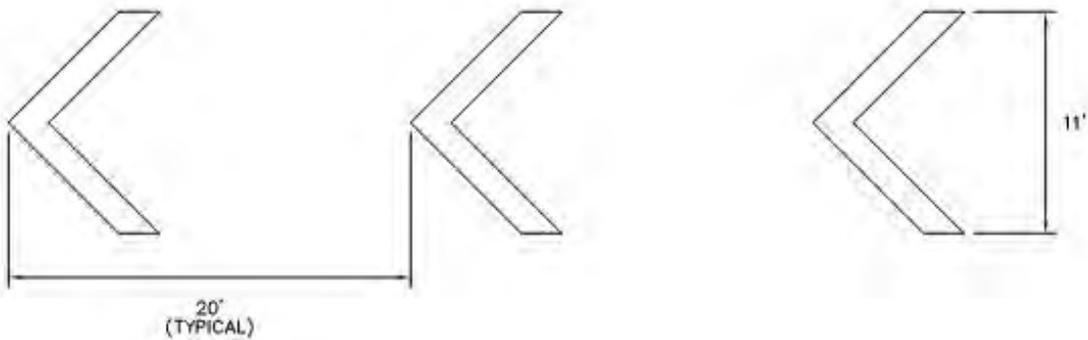


CROSSWALK MARKINGS

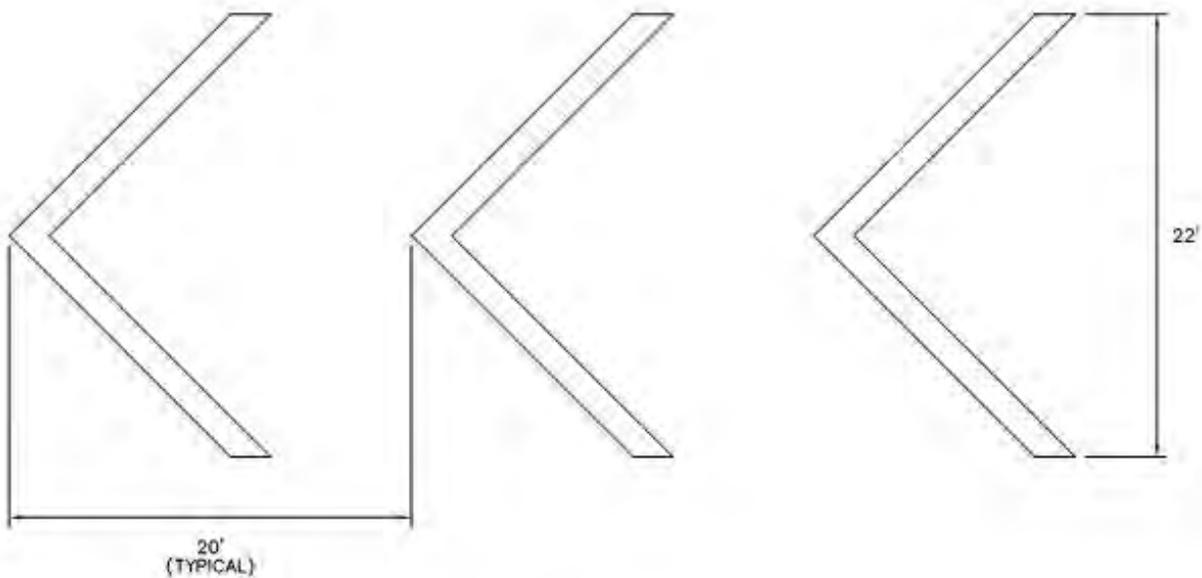


DASH LINE ("PUPPY TRACK") MARKINGS

TYPICAL CROSSWALK AND DASHED MARKINGS	CITY OF ROCKWALL 	STANDARD SPECIFICATION REFERENCE	
		DATE Mar. 2018	STANDARD DRAWING NO. R-2380

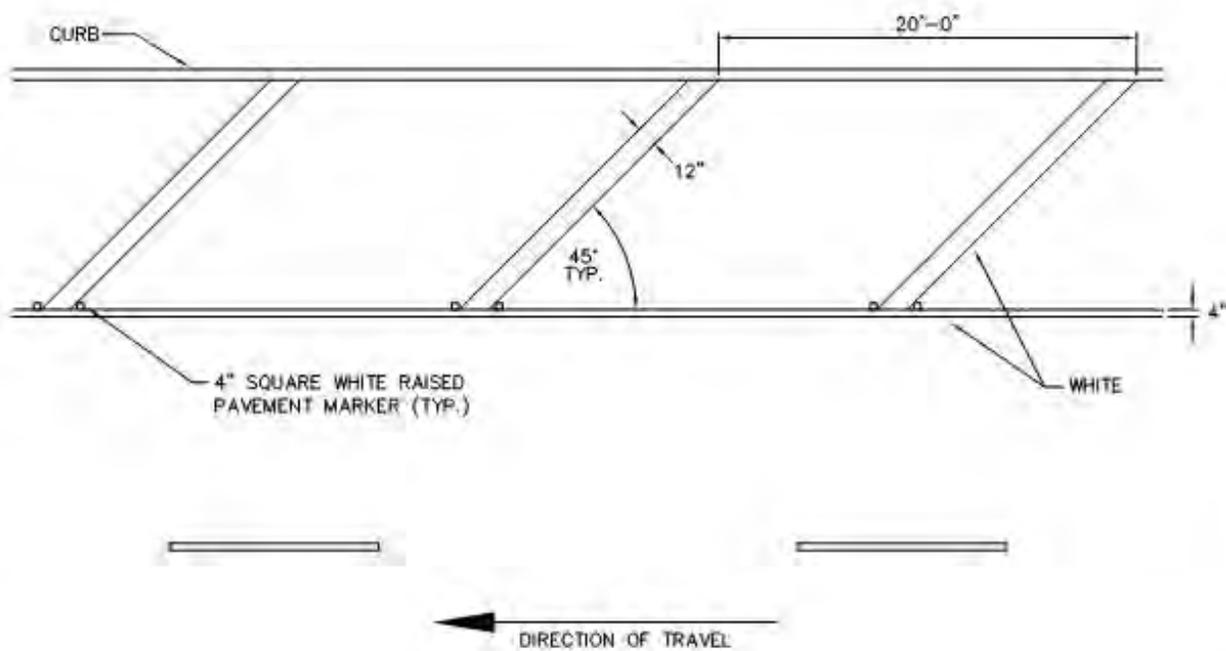
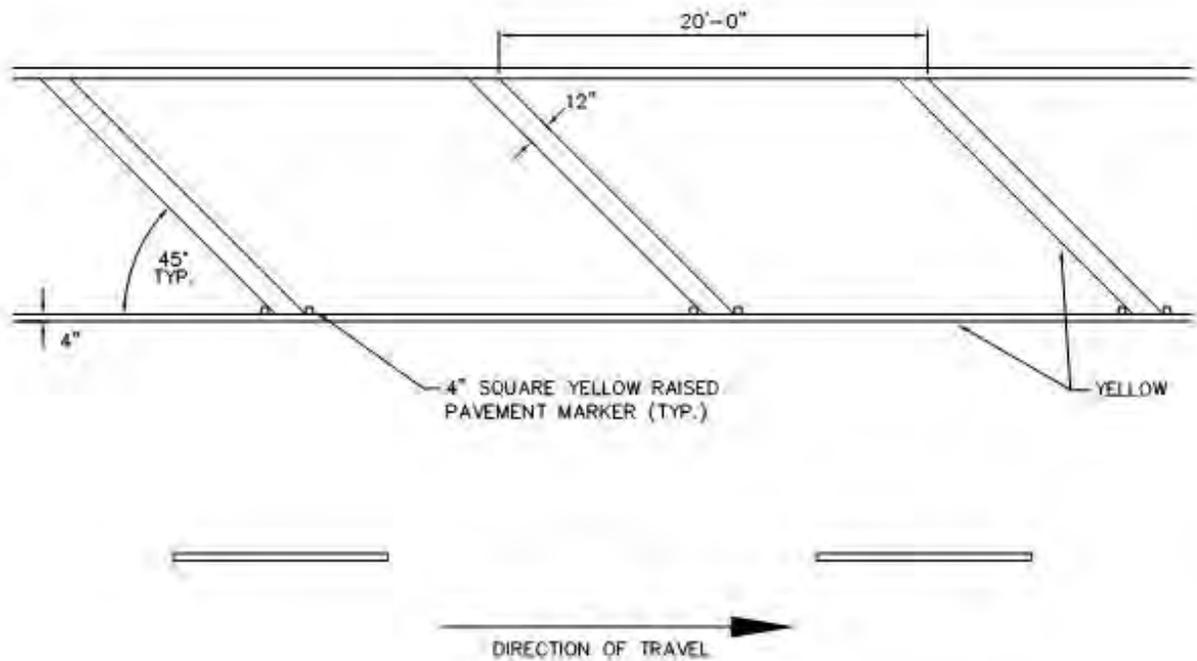


11' WIDE CHEVRON STRIPE



22' WIDE CHEVRON STRIPE

CHEVRON STRIPING	CITY OF ROCKWALL 	STANDARD SPECIFICATION REFERENCE.	
		DATE Mar. 2018	STANDARD DRAWING NO. R-2390



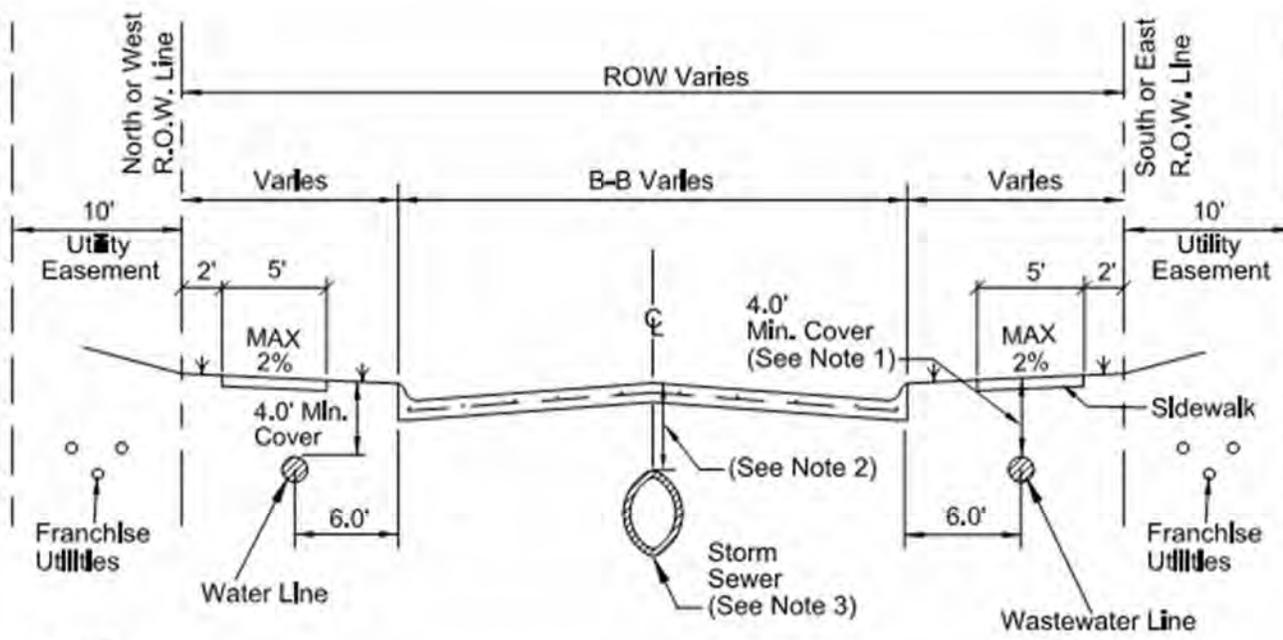
DIAGONAL CROSSHATCH STRIPING	CITY OF ROCKWALL 	STANDARD SPECIFICATION REFERENCE	
		DATE Mar. 2018	STANDARD DRAWING NO. R-2400

8.3 Division 3000 General Underground Conduit

- NOTE:**
- (1) Deleted NCTCOG Drawing
 - (2) Revised NCTGOG Drawing (see revisions below)
 - (3) Added Rockwall Standard Drawing (see drawing below)
 - (4) Added Current TxDOT Standards

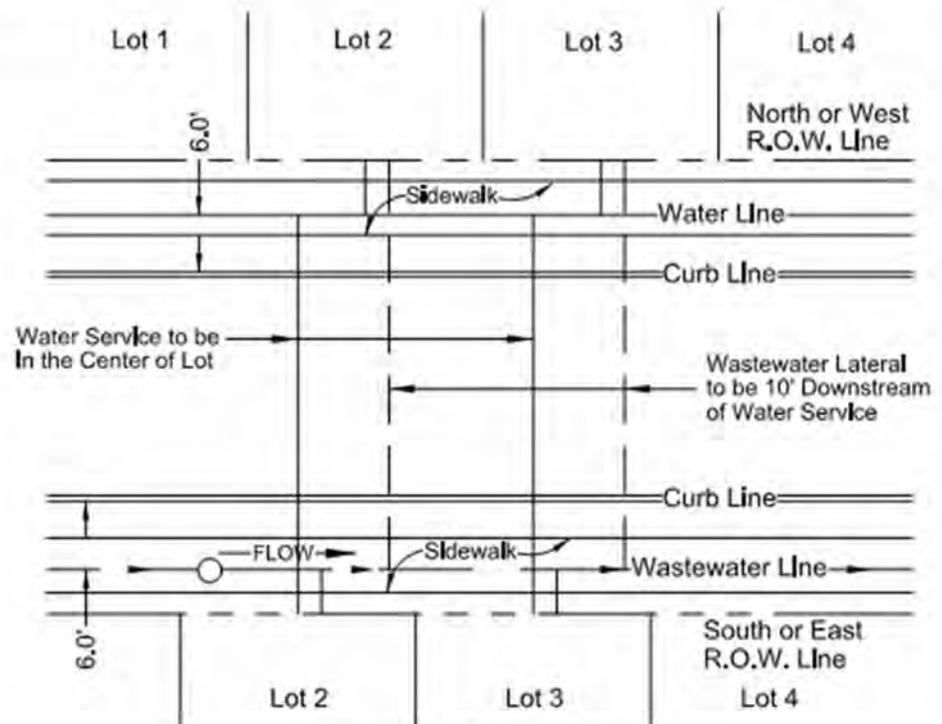
Table 9.3: Revisions to NCTCOG’s Division 3000 General Underground Conduit

<u>Revised</u>	<u>Drawing No.</u>	<u>Subject</u>
(3)	R-3000	Utilities Location Detail
(1)	3010	Embedment – Class “A” & “A-1”
(3)	R-3010	Embedment – Class “A” & “A-1”
(1)	3020	Embedment – Class “B”, “B+” & “B-1”
(3)	R-3020	Embedment – Class “B”, “B+” & “B-1”
(1)	3030	Embedment – Class “B-2”, “B-3” & “B-4”
(3)	R-3030	Embedment – Class “B-2”, “B-3” & “B-4”
(1)	3040	Embedment – Class “C”, “C+” & “C-1”
(3)	R-3040	Embedment – Class “C”, “C+” & “C-1”
(1)	3050	Embedment – Class “D+” & “G”
(3)	R-3050	Embedment – Class “D+” & “G”
(1)	3060	Embedment – Class “G-1” & “H”
(3)	R-3060	Embedment – Class “G-1” & “H”
(1)	3070A	Pavement Cut and Repair – Concrete and Parkway
(3)	R-3070A	Pavement Cut and Repair – Concrete and Parkway
(1)	3070B	Pavement Cut and Repair – Asphalt
(3)	R-3070B	Pavement Cut and Repair – Asphalt
(1)	3070C	Pavement Cut and Repair – Extent – Residential
(1)	3070D	Pavement Cut and Repair – Extent – Multiple Lanes
(1)	3080	Infiltration Protection – Conduit Under Channel
(3)	R-3090	Underground Conduit – Steel Encased Bore



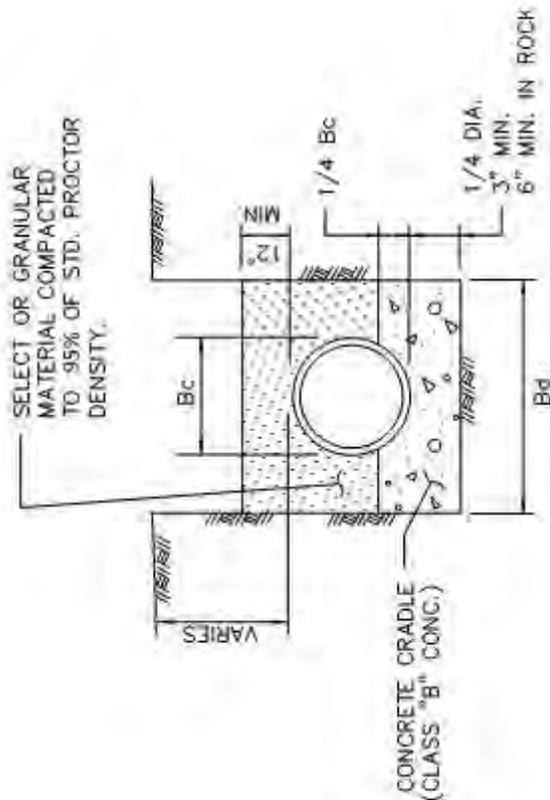
NOTE:

1. If wastewater line has a cover greater than ten feet (10') than pipe shall be minimum SDR 26 and no services allowed.
2. If cover is two (2) feet or less than Class IV RCP is required.
3. Horizontal location of storm sewer for divided roads to be determined by design engineer. Not to be placed in the parkway.



UTILITY SERVICE DETAIL

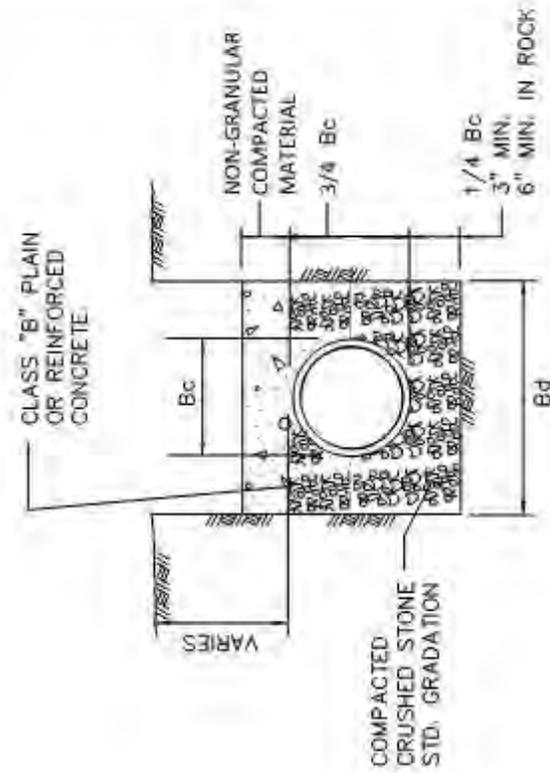
GENERAL UNDERGROUND CONDUIT	CITY OF ROCKWALL 	DATE OCT. '17	DRAWING NO. R-3000
UTILITIES LOCATION DETAIL			



CLASS "A"

CLASS "B" CONCRETE CRADLE
 PLAIN CONC. LF 2.8
 REINF. CONC. LF 3.4 P=0.4%

N.T.S.



CLASS "A-1"

CLASS "B" CONCRETE CAP
 PLAIN CONC. LF 2.8
 REINF. CONC. LF 3.4 P=0.4%
 REINF. CONC. LF 4.8 P=1.0%

N.T.S.

NOTES:

1. LF. = LOAD FACTOR TO BE USED TO DETERMINE 3 EDGE BEARING BASED ON TYPE OF EMBEDMENT.
2. FREE-FALL OF CONCRETE NOT TO EXCEED 5 FT. MAXIMUM.
3. P = Rho FOR STEEL %
4. Bc = OUTSIDE DIAMETER OF PIPE
5. Bd = TRENCH WIDTH

STANDARD DRAWING NO.
 3010

EMBEDMENT

CLASS "A" & "A-1"

CITY OF ROCKWALL



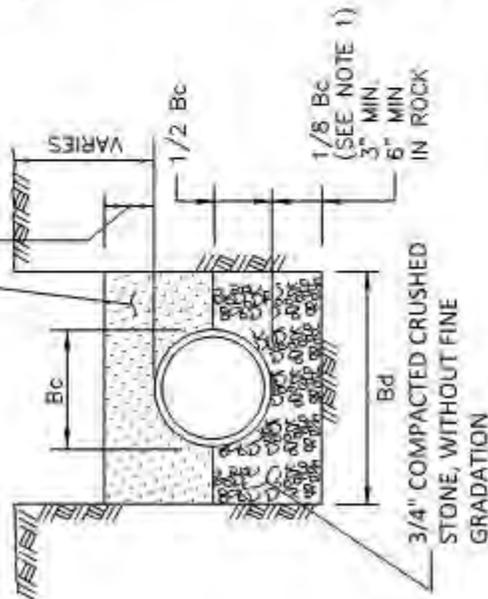
STANDARD SPECIFICATION REFERENCE
 504.5

DATE
 Mar. 2018

STANDARD DRAWING NO.
 R-3010

SELECT OR NON-GRANULAR MATERIAL COMPACTED TO 95% OF STD. PROCTOR DENSITY

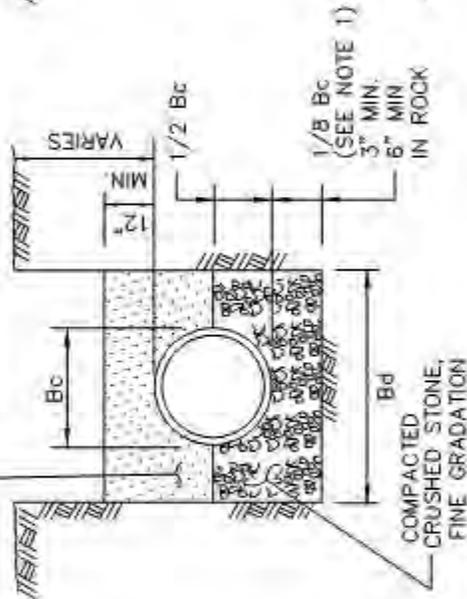
AS SHOWN
ON PLANS



CLASS "B"

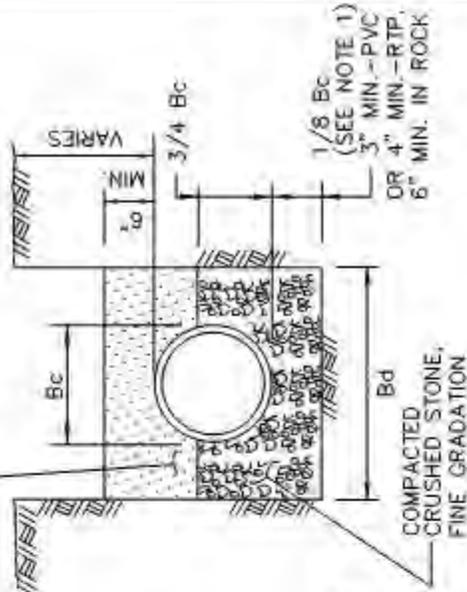
N.T.S.

(TO BE USED FOR RCP STORM SEWER PIPE)



CLASS "B+"

N.T.S.



CLASS "B-1"

N.T.S.

NOTES:

1. FOR MAINS 42" DIAMETER AND LARGER LARGER, 1/8 Bc SHALL BE TAKEN AS 6".
2. Bc = OUTSIDE DIAMETER OF PIPE
3. Bd = TRENCH WIDTH

STANDARD DRAWING NO.
R-3020

CITY OF ROCKWALL



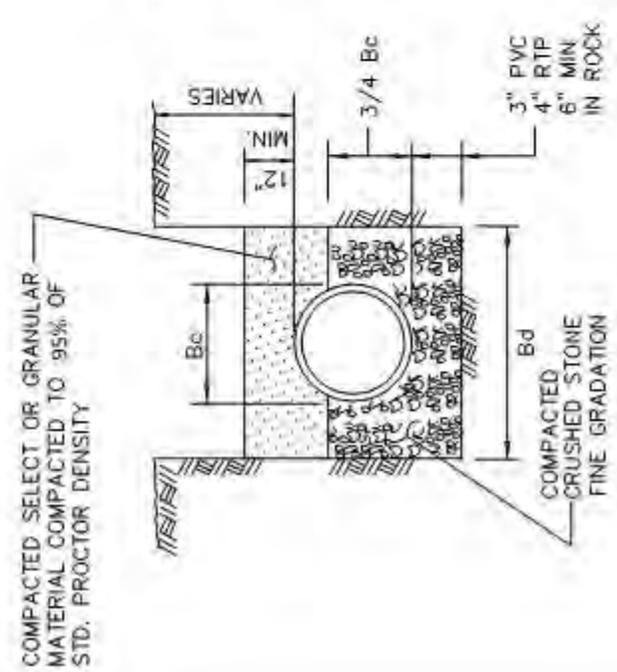
STANDARD SPECIFICATION REFERENCE
504.5

DATE
Mar. 2018

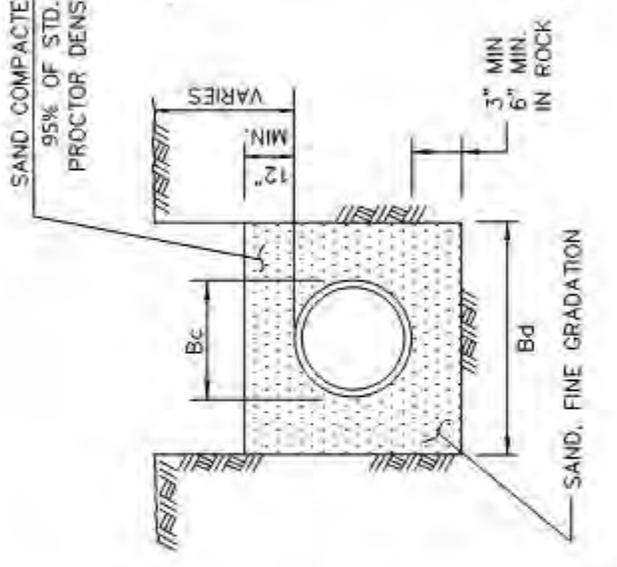
STANDARD DRAWING NO.
R-3020

EMBEDMENT

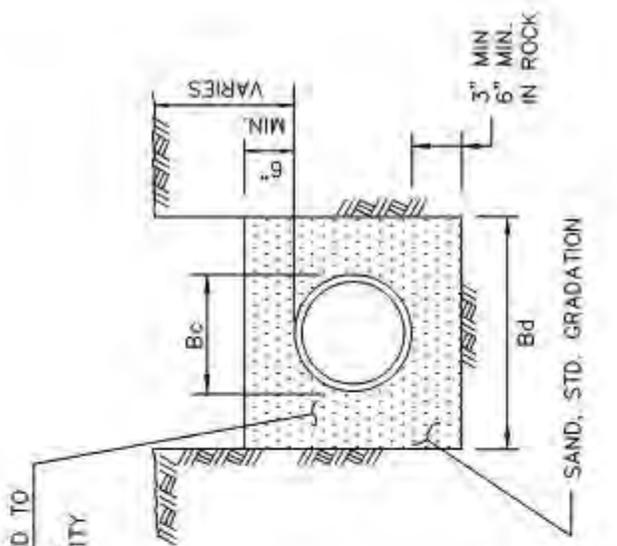
CLASS "B", "B+", & "B-1"



CLASS "B-2"
N.T.S.



CLASS "B-3"
N.T.S.



CLASS "B-4"
N.T.S.

(TO BE USED FOR PVC WATER PIPE AND PVC WASTE WATER FORCE MAIN PIPE)

NOTES:

1. Bc = OUTSIDE DIAMETER OF PIPE
2. Bd = TRENCH WIDTH
3. NO GRANULAR MATERIAL ABOVE ROCK OR STONE EMBEDMENT

STANDARD DRAWING NO
3030

EMBEDMENT
CLASS "B-2", "B-3", & "B-4"

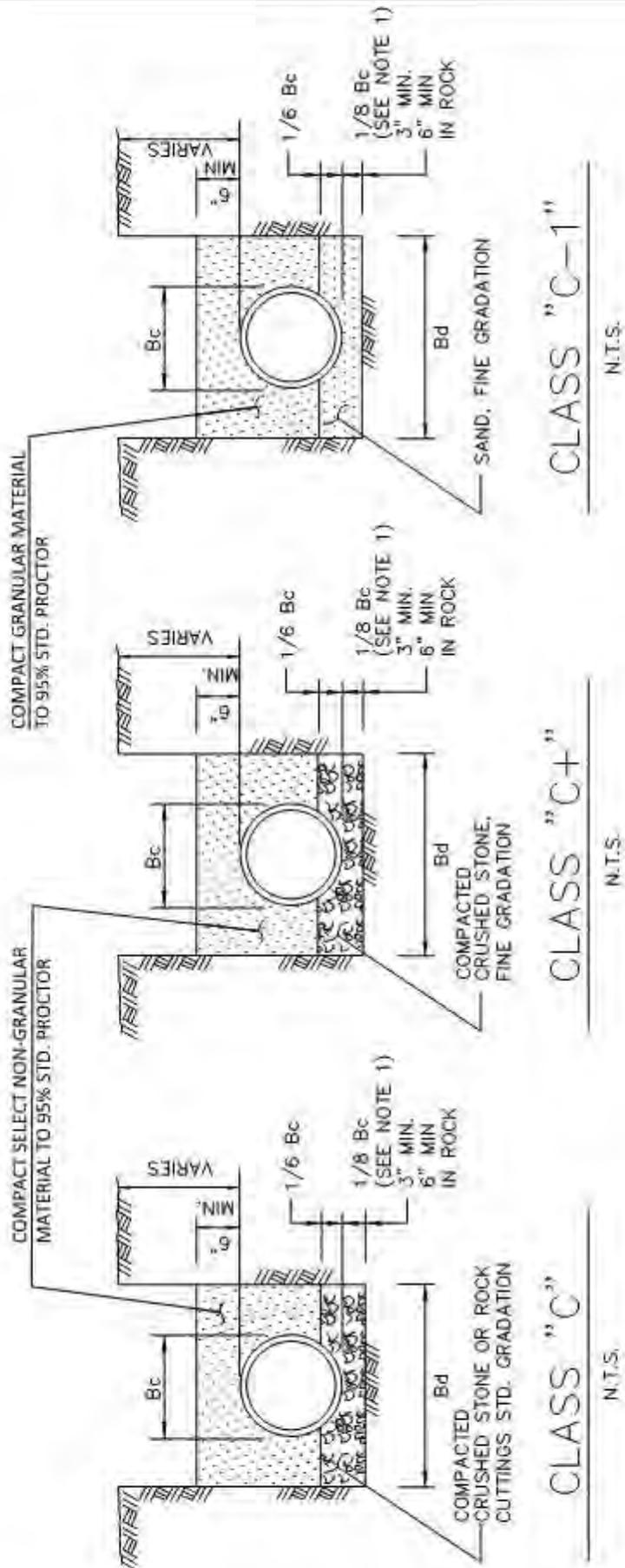
CITY OF ROCKWALL



STANDARD SPECIFICATION REFERENCE
504.5

DATE
AUG. '19

STANDARD DRAWING NO.
R-3030



NOTES:

1. FOR MAINS 42" DIAMETER AND LARGER, 1/8 Bc SHALL BE TAKEN AS 6"
2. Bc = OUTSIDE DIAMETER OF PIPE
3. Bd = TRENCH WIDTH

STANDARD SPECIFICATION REFERENCE	504.5
DATE	Mar. 2018
STANDARD DRAWING NO.	R-3040

CITY OF ROCKWALL

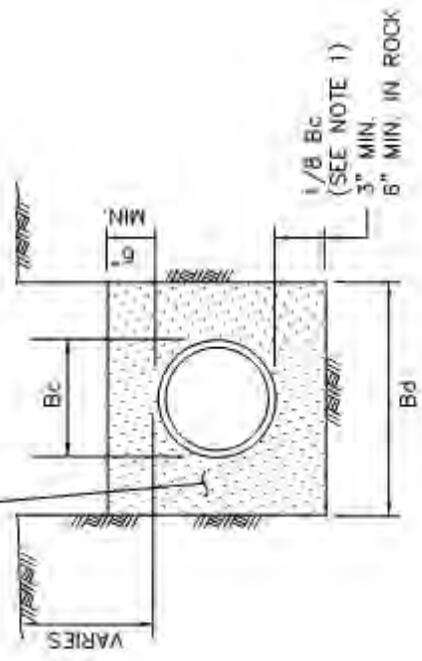


EMBEDMENT

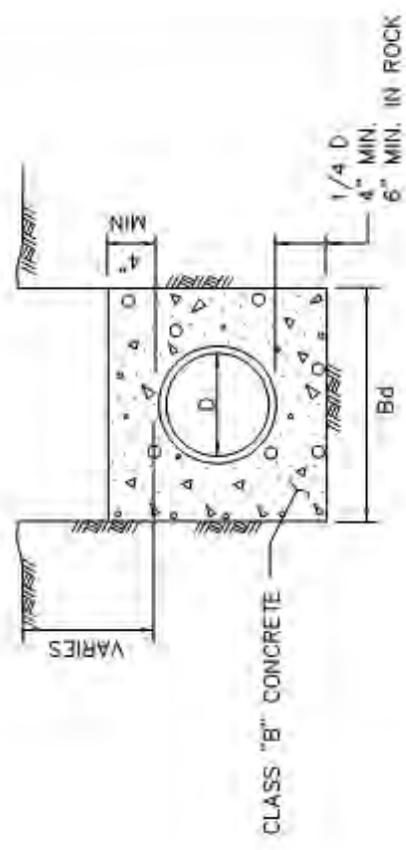
CLASS "C", "C+", & "C-1"

STANDARD DRAWING NO.	R-3040
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SELECT MATERIAL
COMPACTED TO 95%
STD. PROCTOR DENSITY.



CLASS "D+"
N.T.S.



CLASS "G"
N.T.S.

NOTES:

1. FOR MAINS 42" DIAMETER AND LARGER, 1/8 Bc SHALL BE TAKEN AS 6".
2. Bc = OUTSIDE DIAMETER OF PIPE
3. Bd = TRENCH WIDTH
4. D = INSIDE DIAMETER OF PIPE

STANDARD DRAWING NO.
R-3050

EMBEDMENT
CLASS "D+" & "G"

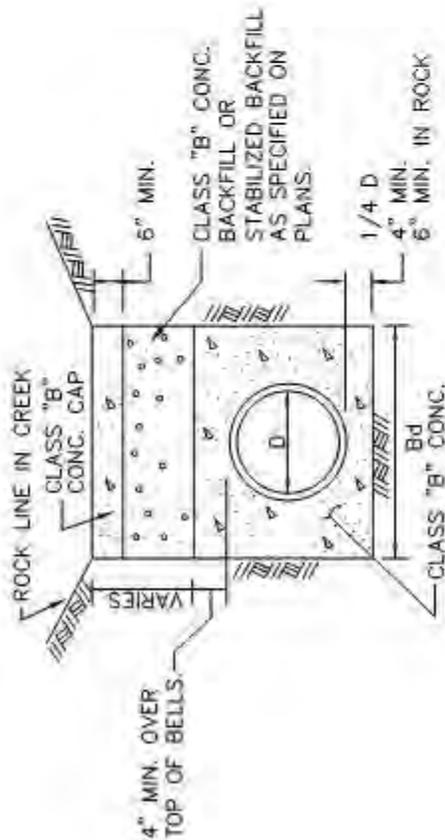
CITY OF ROCKWALL



STANDARD SPECIFICATION REFERENCE
504.5

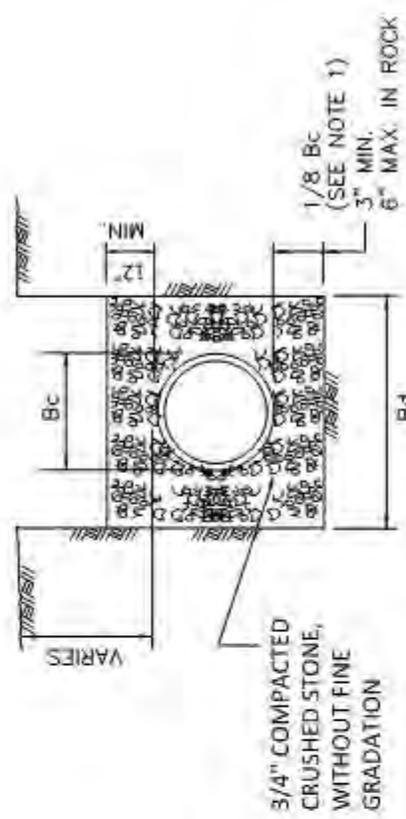
DATE
Mar. 2018

STANDARD DRAWING NO.
R-3050



CLASS "G-1"

(FOR ROCK DITCHES IN CREEKS)
N.T.S.



CLASS "H"

N.T.S.

(TO BE USED FOR PVC WASTEWATER PIPE)

NOTES:

1. FOR MAINS 42" DIAMETER AND LARGER, 1/8 Bc SHALL BE TAKEN AS 6".
2. Bd = TRENCH WIDTH
3. Bc = OUTSIDE DIAMETER OF PIPE
4. D = INSIDE DIAMETER OF PIPE

STANDARD DRAWING NO.
R-3060

EMBEDMENT
CLASS "G-1" & "H"

CITY OF ROCKWALL

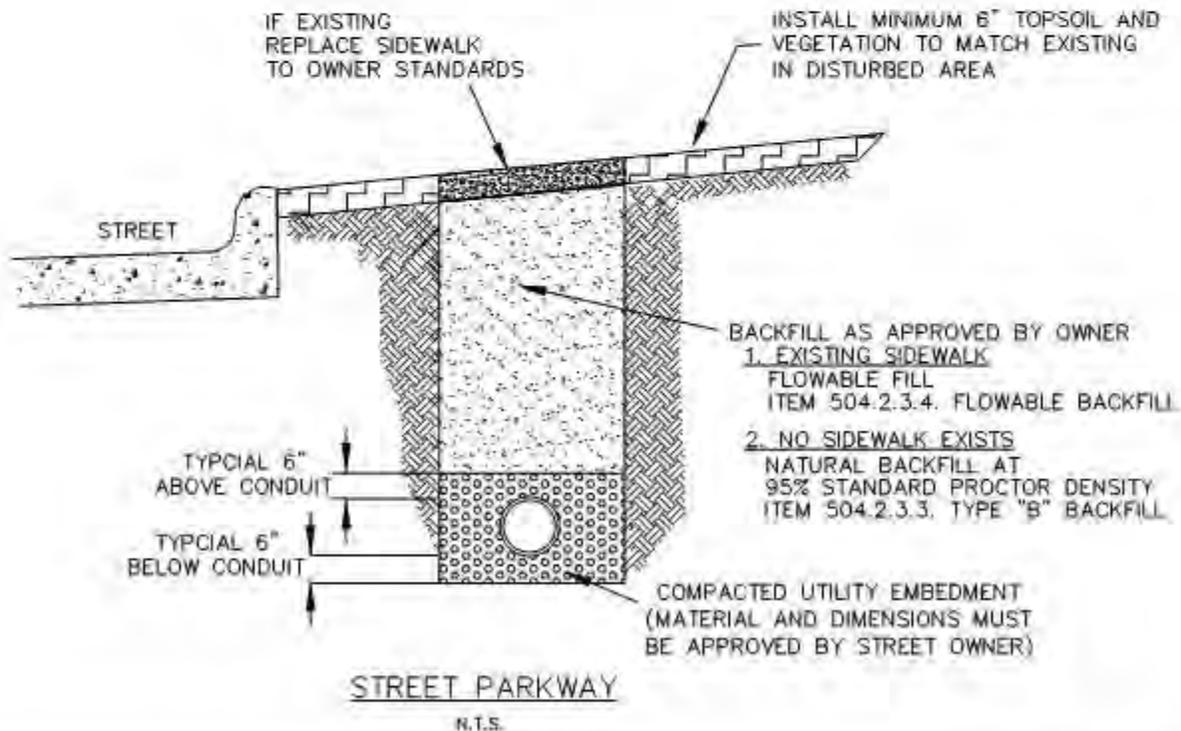
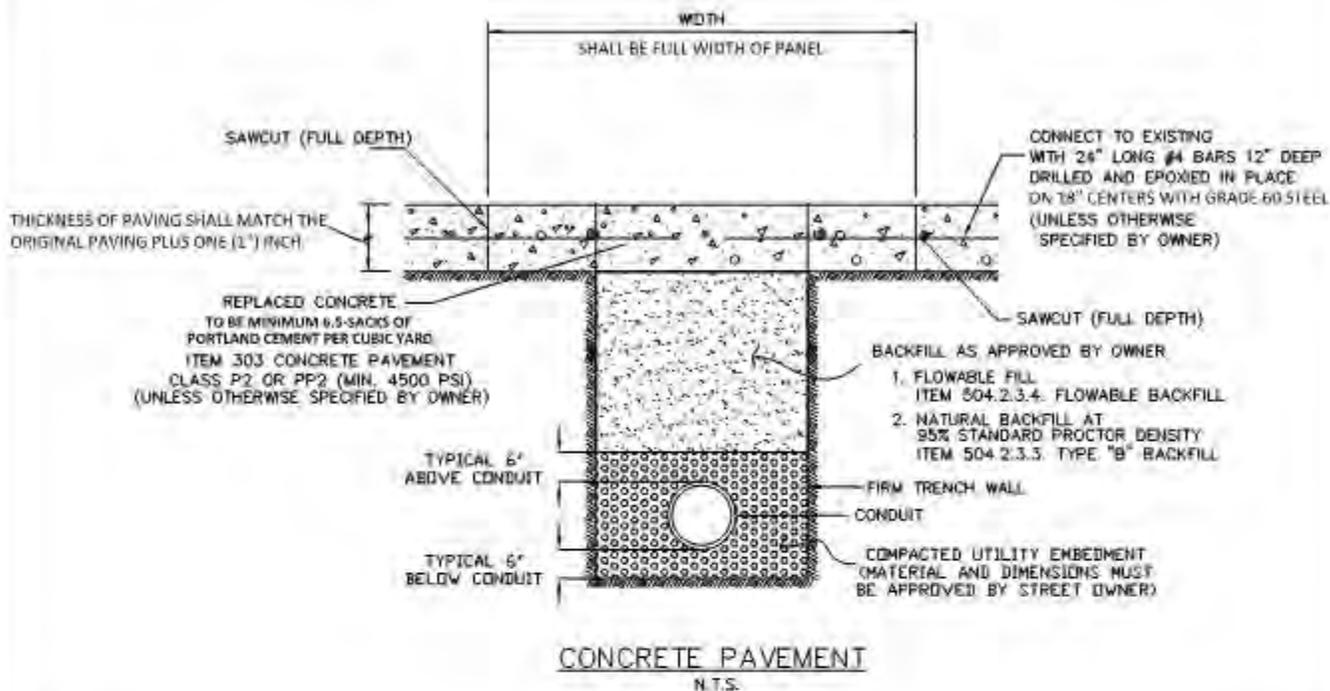


STANDARD SPECIFICATION REFERENCE
504.5

DATE
AUG. '19

STANDARD DRAWING NO.
R-3060

GENERAL NOTE: CHECK WITH STREET OWNER FOR SPECIFIC REQUIREMENTS NOT CONTAINED HEREIN



PAVEMENT CUT AND REPAIR
CONCRETE AND PARKWAY

CITY OF ROCKWALL

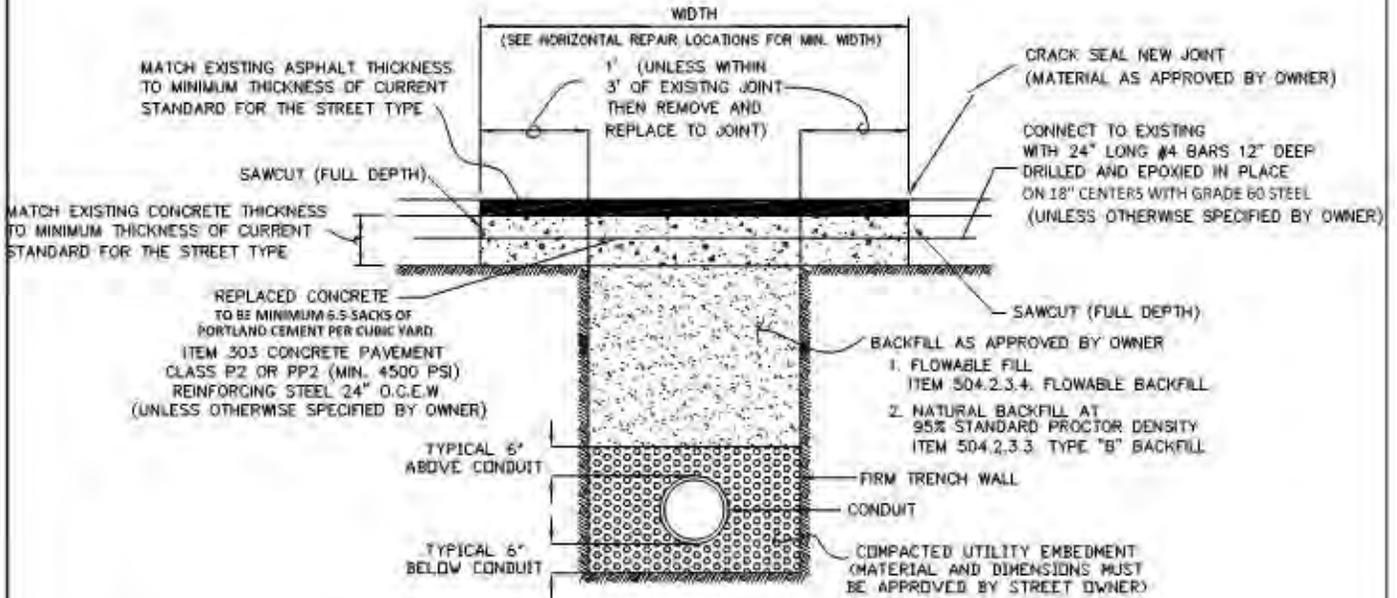


STANDARD SPECIFICATION REFERENCE
402

DATE
Mar, 2018

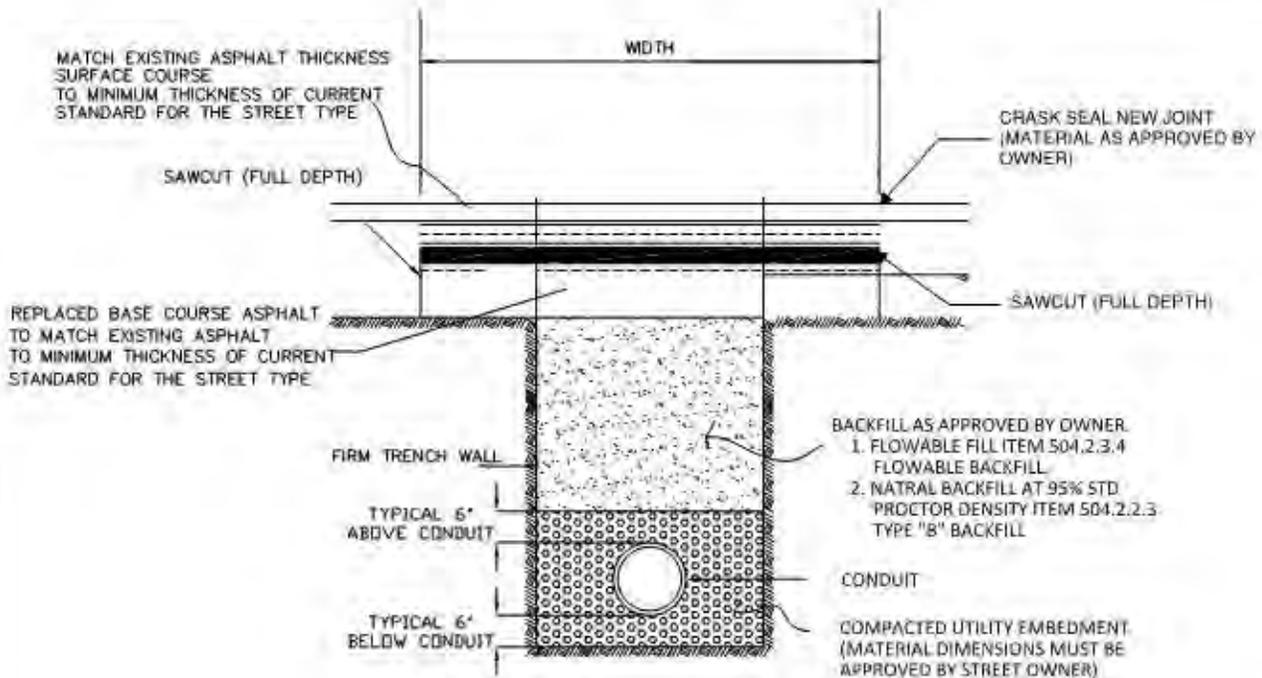
STANDARD DRAWING NO.
R-3070A

GENERAL NOTE: CHECK WITH STREET OWNER FOR SPECIFIC REQUIREMENTS NOT CONTAINED HEREIN



CONCRETE PAVEMENT WITH ASPHALT OVERLAY

N.T.S.



FULL DEPTH ASPHALT PAVEMENT

N.T.S.

PAVEMENT CUT AND REPAIR

CITY OF ROCKWALL

STANDARD SPECIFICATION REFERENCE

402

ASPHALT

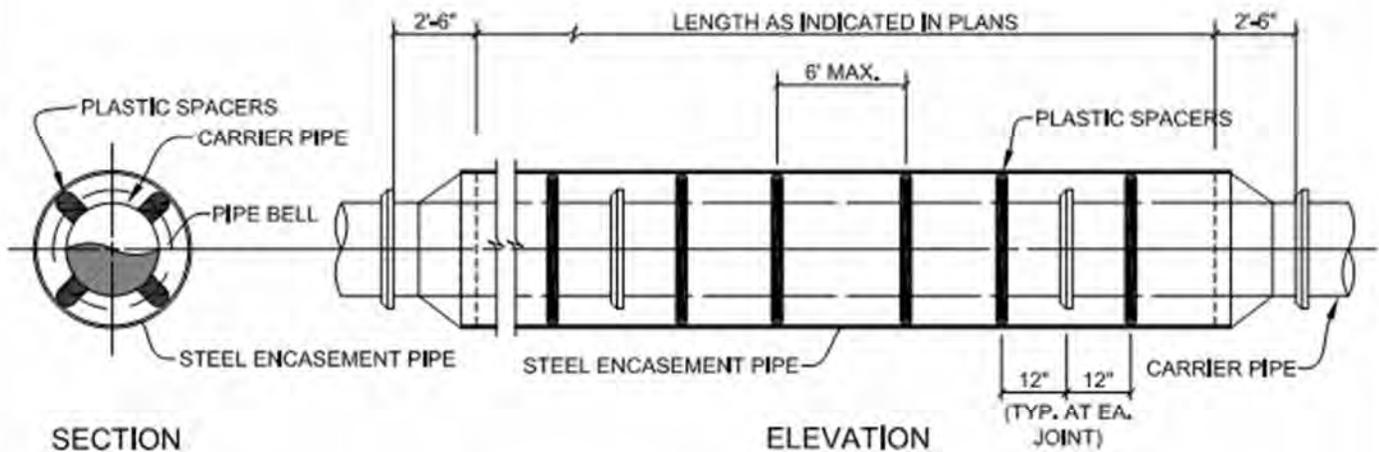


DATE

Mar. 2018

STANDARD DRAWING NO.

R-3070B



ENCASED ROAD BORE

NO SCALE

NOTES:

- 1) ALL BORES BY CONTRACTOR SHALL BE DRY BORES.
- 2) PREFABRICATED PLASTIC SPACERS SHALL BE RACI NORTH AMERICA OR APPROVED EQUAL, FOR THE SPECIFIC APPLICATION AS RECOMMENDED BY THE MANUFACTURER.
- 3) CONTRACTOR SHALL PROVIDE SUPPORT UNDER CARRIER PIPE TO HAVE A MIN. 1" CLEARANCE BETWEEN PIPE BELL AND ENCASEMENT PIPE.
- 4) ENDS OF ENCASEMENT PIPE SHALL HAVE END SEALS INSTALLED PER MANUFACTURER'S REQUIREMENTS. END SEALS SHALL BE CCI MODEL ESW WRAP-AROUND BY CCI PIPELINE SYSTEMS OR APPROVED EQUAL.
- 5) THE DESIGN ENGINEER SHALL DESIGN THE MINIMUM THICKNESS OF THE ENCASEMENT PIPE. DESIGN WILL NEED TO INCLUDE DEAD LOADING BASED ON THE HEIGHT OF COVER AND HS-20 LOADINGS FOR ROADWAY CROSSINGS AND E-80 LOADINGS FOR RAILROAD CROSSINGS.
- 6) STEEL ENCASEMENT PIPE SHALL CONFORM TO AWWA C-200. PIPE SHALL BE FABRICATED IN ACCORDANCE WITH ASTM A-570 FROM STEEL PLATES HAVING MINIMUM YIELD STRENGTH 36,000 PSI.
- 7) STEEL ENCASEMENT PIPE SHALL BE PAINTED INSIDE AND OUTSIDE WITH TWO COATS OF TNEMEC, HB TNEMECOL, SERIES 46+465 COAL TAR, OR CITY APPROVED EQUIVALENT PRIOR TO DELIVERY TO THE JOB SITE. MINIMUM COATING INSIDE AND OUTSIDE SHALL BE 12+MILS DRY FILM THICKNESS (DFT) PER EACH COAT.
- 8) ENCASEMENT PIPE SHALL BE FIELD WELDED IN ACCORDANCE WITH AWWA C-206. WELDED JOINTS SHALL BE WIRE BRUSHED AND PAINTED WITH ONE COAT OF TNEMEC, OMNITHANE SERIES 530, 2.5-MILS DRY FILM THICKNESS (DFT) OR CITY APPROVED EQUIVALENT.

UNDERGROUND CONDUIT

CITY OF ROCKWALL

STEEL ENCASED BORE



DATE
OCT. '17

DRAWING NO.
R-3090

8.4 Division 4000 Water Distribution

- NOTE:**
- (1) Deleted NCTCOG Drawing
 - (2) Revised NCTGOG Drawing (see revisions below)
 - (3) Added Rockwall Standard Drawing (see drawing below)
 - (4) Added Current TxDOT Standards

Table 9.4: Revisions to NCTCOG’s Division 4000 Water Distribution

<u>Revised</u>	<u>Drawing No.</u>	<u>Subject</u>
	4010A	Horizontal Thrust Blocking – At Pipe Bend
	4010B	Horizontal Thrust Blocking – At Pipe Bend
	4010C	Horizontal Thrust Blocking – At Pipe Bend
	4020	Horizontal Thrust Blocking – At Tees and Plugs
	4030	Vertical Thrust Blocking – At Pipe Bend
	4040	Thrust Block – General Notes
(1)	4050	Gate Valve 4” to 12” – Box & Extension Stem
(3)	R-4050	Gate Valve 4” to 12” – Box & Extension Stem
(1)	4060A	Vault Construction – Horizontal Gate Valve ≥ 16”
(1)	4060B	Vault Construction – Horizontal Gate Valve ≥ 16”
(3)	R-4060	16” Thru 21” – Horizontal Butterfly Valves
(1)	4070A	Vault Construction – Vertical Gate Valve ≥ 16”
(1)	4070B	Vault Construction – Vertical Gate Valve ≥ 16”
	4080A	Vault Construction – Butterfly Valve ≥ 48”
	4080B	Vault Construction – Butterfly Valve ≥ 48”
(1)	4090	Combination Air Vacuum Valve – Type “1”
(3)	R-4090	Combination Air Vacuum Valve – Type “1”
	4100A	Combination Air Vacuum Valve – Type “2”
	4100B	Air Release Valve – Type “2”
(1)	4110	Flush Point Installation – Type “1”
(3)	R-4110	Flush Point Installation – Type “1”
(1)	4120	Fire Hydrant – Installation
(3)	R-4120	Fire Hydrant - Installation
(1)	4130	Water Service Installation – ¾” or 1” Line
(3)	R-4130	Water Service Installation – ¾” or 1” Line
(1)	4140	Water Service Installation – 1 ½” or 2” Line
(3)	R-4140	Water Service Installation – 1 ½” or 2” Line
(3)	R-4145	Single Service Meter Tail Connection
(1)	4150	4” Combination Service – With 4” Meter
(3)	R-4150	4” Combination Service – With 4” Meter
(1)	4160	8” Detector Check – Service with 8” Meter
(3)	R-4060	Domestic Meter Vault – 3”, 4” or 6” Line
(3)	4170	8” Fire-Line Standpipe – Service with 8” Meter
(3)	R-4070	Irrigation Meter Vault – 3”, 4” or 6” Line
(1)	4180	4” Domestic Service – With 3” Meter
(1)	4190A	Large Service Meter – Vault Installation

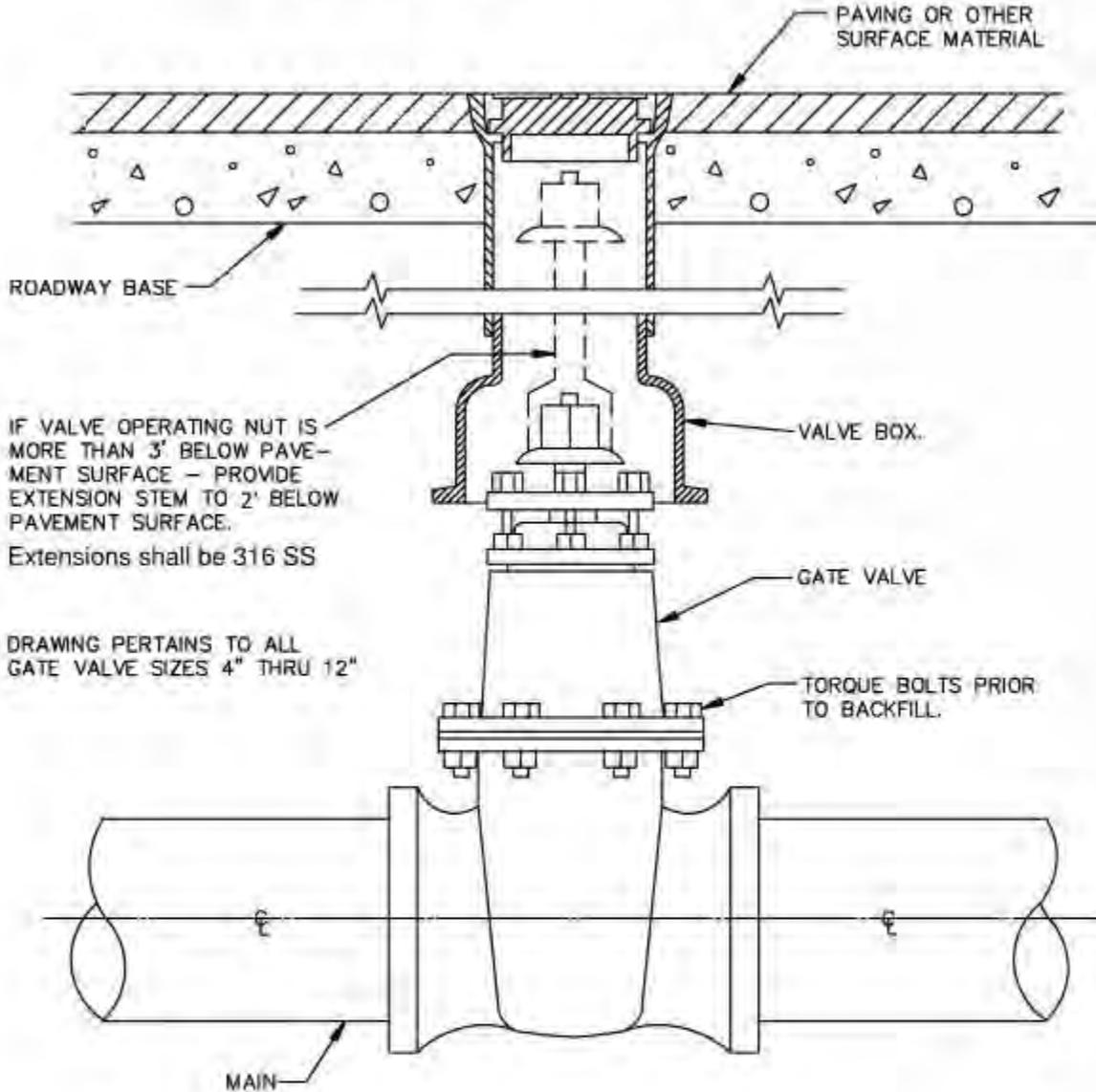


City of Rockwall

<u>Revised</u>	<u>Drawing No.</u>	<u>Subject</u>
(1)	4190B	Large Service Meter – Precast Vault
(1)	4200	Water Main Lowering – Below Wastewater Main
(3)	R-4200	Water Main Lowering – Below Wastewater Main

NOTE:

IN UNPAVED AREAS, INSTALL 2' x 2' x 6" CONCRETE VALVE PAD FLUSH WITH THE TOP OF VALVE BOX. REINFORCE WITH #3 BARS ON 6" CENTERS BOTH WAYS.



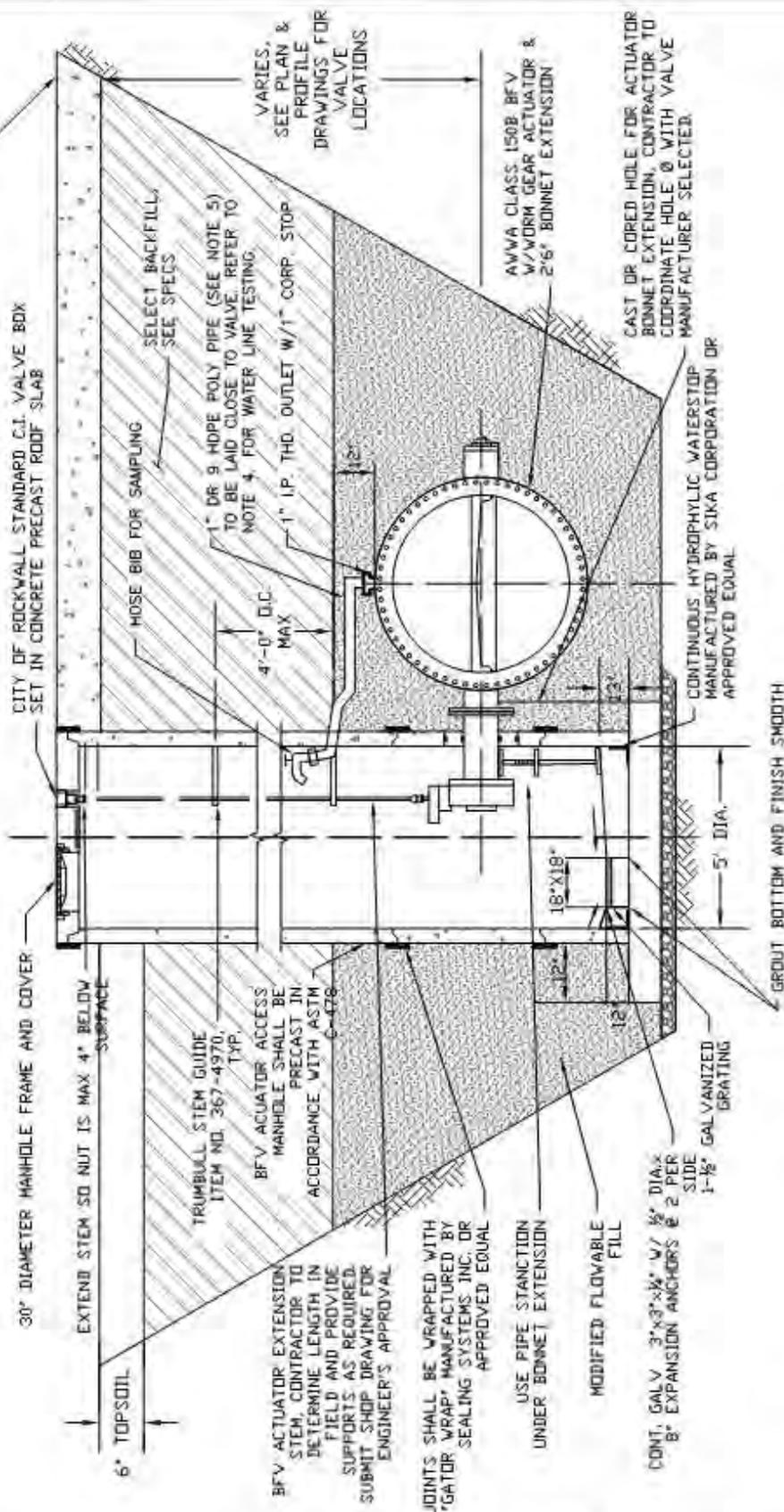
IF VALVE OPERATING NUT IS MORE THAN 3' BELOW PAVEMENT SURFACE - PROVIDE EXTENSION STEM TO 2' BELOW PAVEMENT SURFACE.
Extensions shall be 316 SS

DRAWING PERTAINS TO ALL GATE VALVE SIZES 4" THRU 12"

GATE VALVE BOX AND
EXTENSION STEM
N.T.S.

GATE VALVE 4" TO 12" BOX & EXTENSION STEM	CITY OF ROCKWALL 	STANDARD SPECIFICATION REFERENCE 502.6.6*	
		DATE AUG. '19	STANDARD DRAWING NO. R-4050

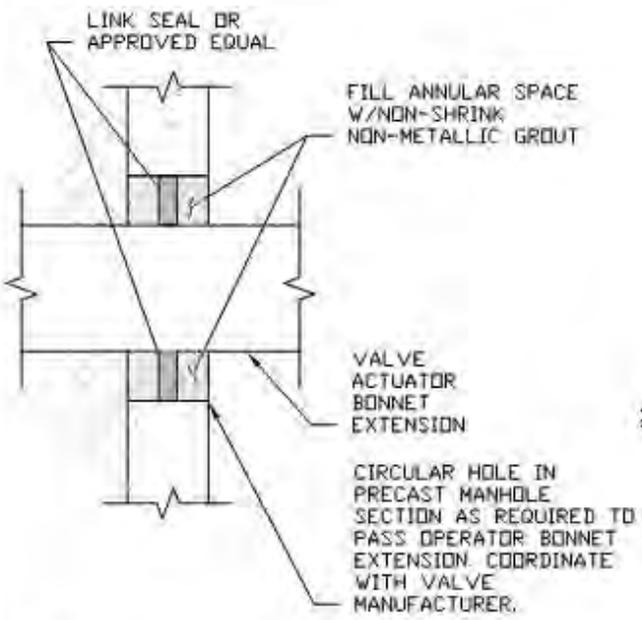
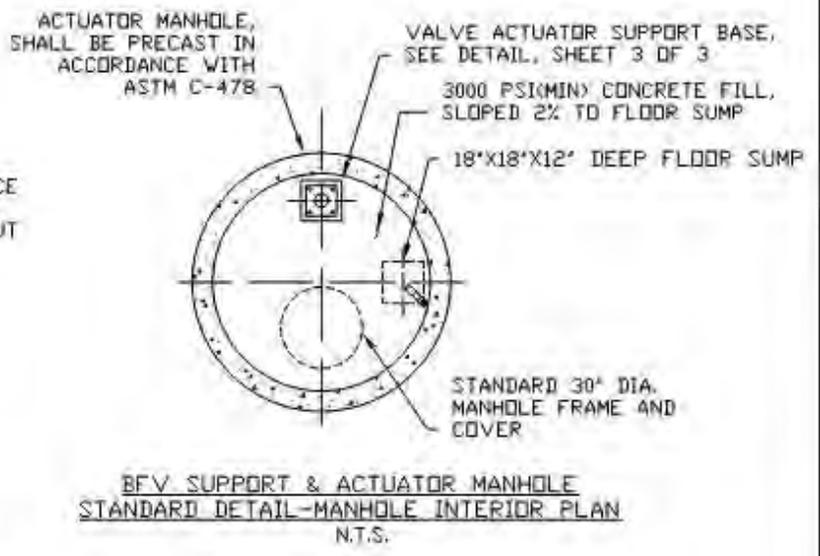
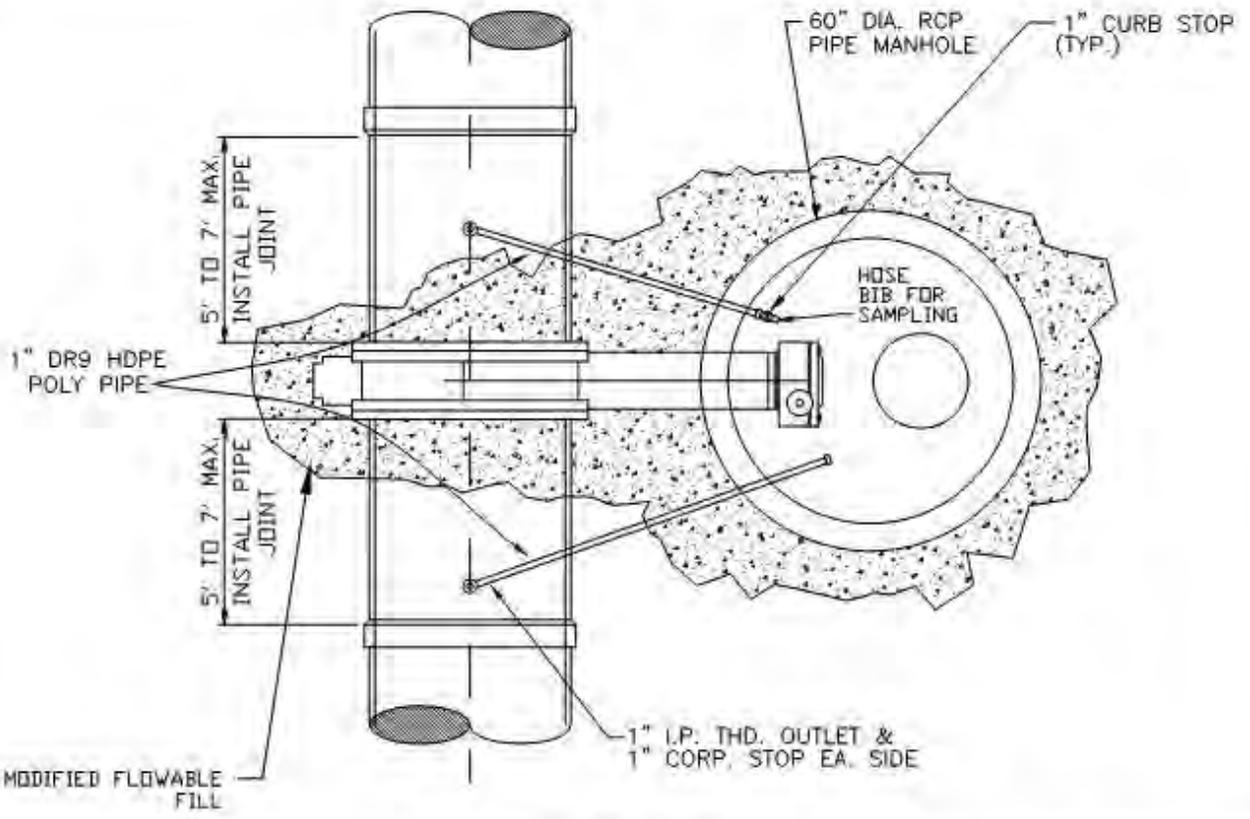
PAVEMENT REPLACEMENT AS REQUIRED, SEE PLAN & PROFILE DRAWINGS FOR VALVE LOCATIONS & PAVEMENT REPLACEMENT DETAILS FOR REPAIRS



- NOTES:
1. VALVE OPERATOR EXTENSION STEM SHALL BE 1" SOLID STEEL WITH WELDED CONNECTIONS. EXTENSION STEM SHALL NOT UTILIZE CLIPS AND SHALL NOT BE PERMANENTLY CONNECTED TO ACTUATOR.
 2. WAX TAPE ALL BURIED FLANGES, BOLTS, AND MECHANICAL JOINTS.
 3. WRAP VALVE IN 8 MIL POLYETHYLENE SHEET FOR BOND BREAKER PRIOR TO PLACEMENT OF MODIFIED FLOWABLE FILL.
 4. DURING THE WATER LINE TESTING PROCESS, THE 1" HOPE DR9 POLY PIPE SHALL BE EXTENDED AND SUPPORTED TO 3 FEET ABOVE THE RIM ELEVATION OF THE VAULT FOR USE AS A WATER SAMPLING TEST STATION.
 5. POLY PIPE SHALL BE SEAMLESS 250 PSI BLUE COLORED POLYETHYLENE ASTM D2757, DR 9, CTS WATER PIPE.
 6. CONTRACTOR SHALL VERIFY VALVE BONNET, ACTUATOR, AND STEM EXTENSION DIMENSIONS WITH VALVE MANUFACTURER. COORDINATE LOCATION OF THE 2-INCH SQUARE NUT WITH VALVE BOX CAST IN MANHOLE ROOF SLAB. SUBMIT SHOP DRAWINGS CLEARLY SHOWING DIMENSIONS AND LOCATION OF THE ALL SLAB OPENINGS. ENSURE ADEQUATE CLEARANCE FOR ACTUATOR AND HATCH OPENING.
 7. FOR SIZES ABOVE 20-INCH, THE ENGINEER OF RECORD SHALL SUBMIT A STRUCTURAL DESIGN TO THE CITY FOR REVIEW AND APPROVAL FOR CONSTRUCTION. THE STRUCTURAL DESIGN AND DETAIL SHALL FOLLOW THE GENERAL CONFIGURATION AND LAYOUT ILLUSTRATED IN STD. DWG. NO. R-4060

SHEET 1 OF 3

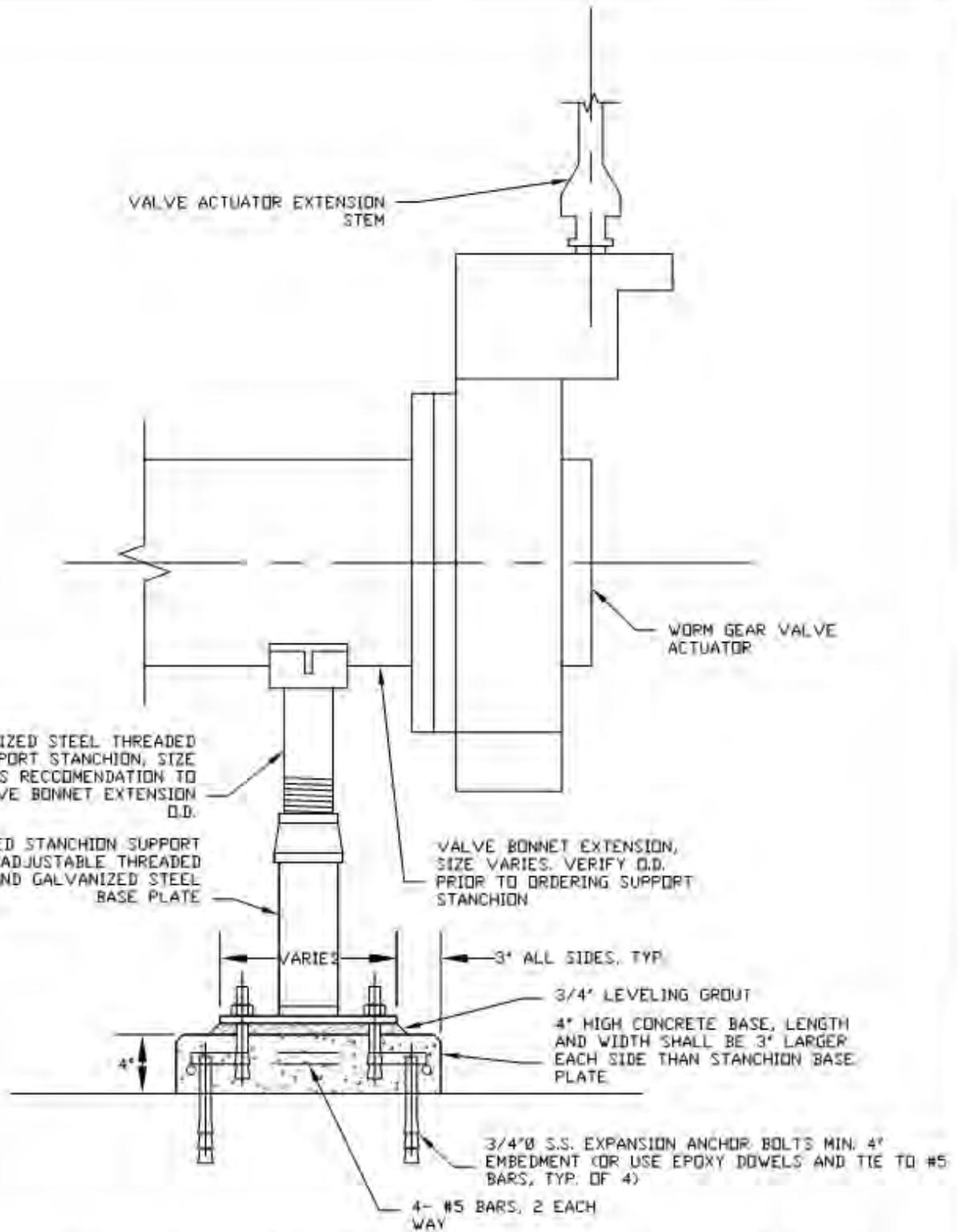
16" THRU 21"	CITY OF ROCKWALL	DATE
HORIZONTAL BUTTERFLY VALVES		DRAWING NO. AUG '19 R-4060



MANHOLE WALL PENETRATION DETAIL
N.T.S.

SHEET 2 OF 3

16" THRU 21"	CITY OF ROCKWALL		
HORIZONTAL BUTTERFLY VALVES		DATE AUG '19	DRAWING NO. R-4060



BFV SUPPORT & ACTUATOR MANHOLE STANDARD DETAIL - VALVE ACTUATOR SUPPORT

N.T.S.

SHEET 3 OF 3

16" THRU 21"

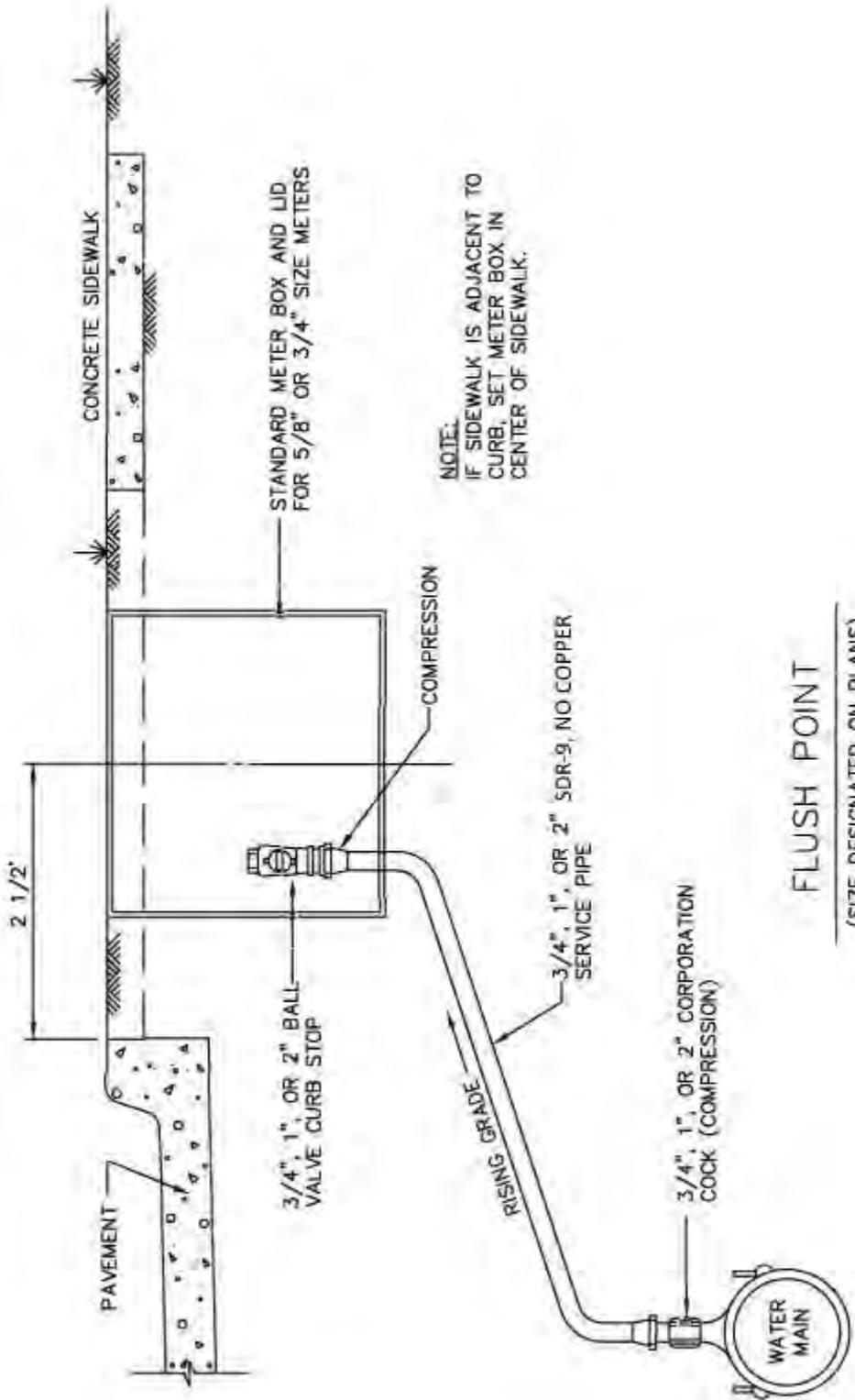
CITY OF ROCKWALL



HORIZONTAL BUTTERFLY VALVES

DATE
AUG '19

DRAWING NO.
R-4060



NOTE:
IF SIDEWALK IS ADJACENT TO CURB, SET METER BOX IN CENTER OF SIDEWALK.

FLUSH POINT
(SIZE DESIGNATED ON PLANS)
N.T.S.

STANDARD SPECIFICATION REFERENCE	502.10.3*
DATE	Mar. 2018
STANDARD DRAWING NO.	R-4110

CITY OF ROCKWALL



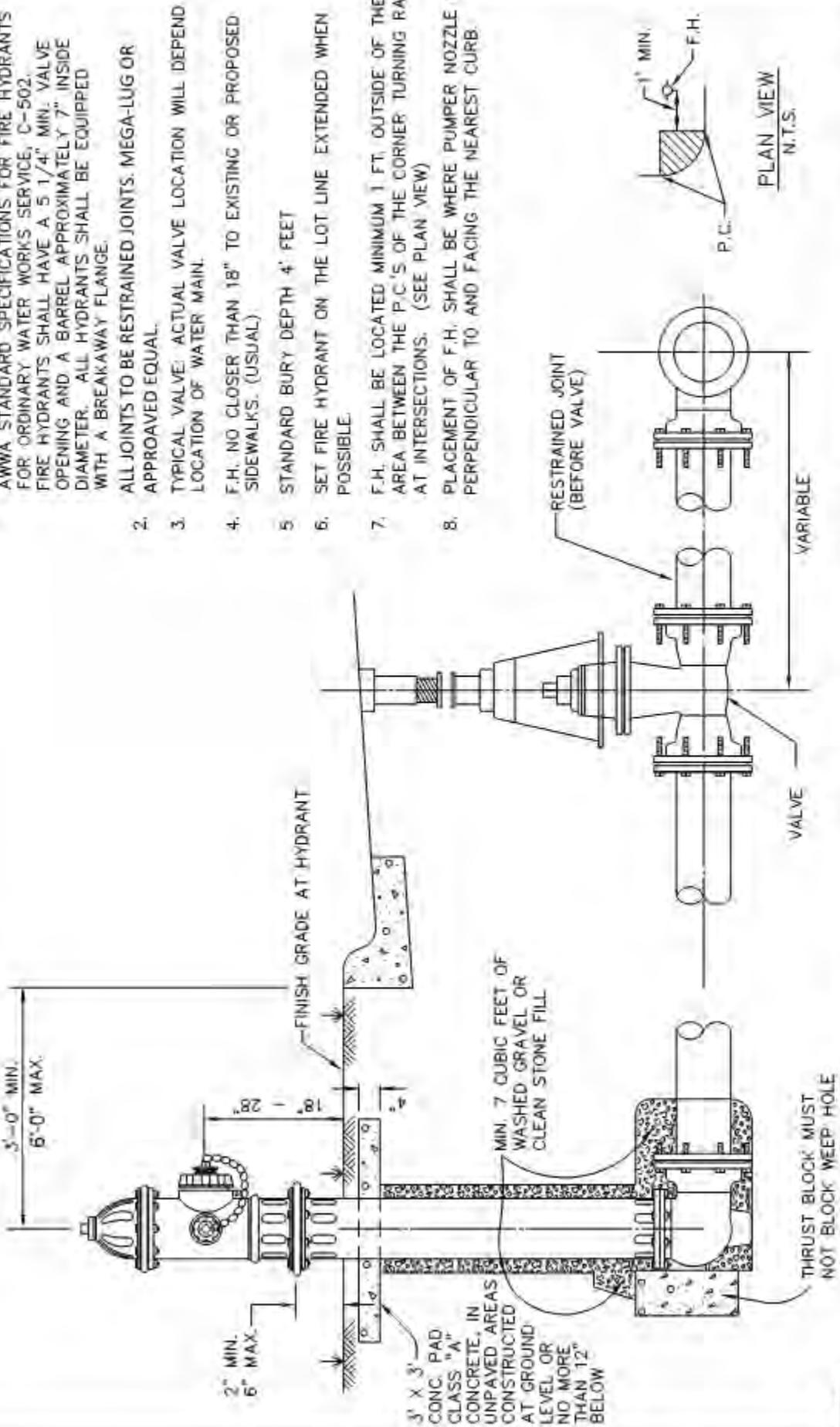
FLUSH POINT INSTALLATION

TYPE "1"

STANDARD DRAWING NO.
R-4110

NOTES:

1. IN GENERAL, ALL FIRE HYDRANTS SHALL CONFORM TO AWWA STANDARD SPECIFICATIONS FOR FIRE HYDRANTS FOR ORDINARY WATER WORKS SERVICE, C-502. FIRE HYDRANTS SHALL HAVE A 5 1/4" MIN. VALVE OPENING AND A BARREL APPROXIMATELY 7" INSIDE DIAMETER. ALL HYDRANTS SHALL BE EQUIPPED WITH A BREAKAWAY FLANGE.
2. ALL JOINTS TO BE RESTRAINED JOINTS. MEGA-LUG OR APPROVED EQUAL.
3. TYPICAL VALVE: ACTUAL VALVE LOCATION WILL DEPEND ON LOCATION OF WATER MAIN.
4. F.H. NO CLOSER THAN 18" TO EXISTING OR PROPOSED SIDEWALKS. (USUAL)
5. STANDARD BURY DEPTH 4' FEET
6. SET FIRE HYDRANT ON THE LOT LINE EXTENDED WHEN POSSIBLE.
7. F.H. SHALL BE LOCATED MINIMUM 1 FT. OUTSIDE OF THE AREA BETWEEN THE P.C.'S OF THE CORNER TURNING RADII AT INTERSECTIONS. (SEE PLAN VIEW)
8. PLACEMENT OF F.H. SHALL BE WHERE PUMPER NOZZLE IS PERPENDICULAR TO AND FACING THE NEAREST CURB.



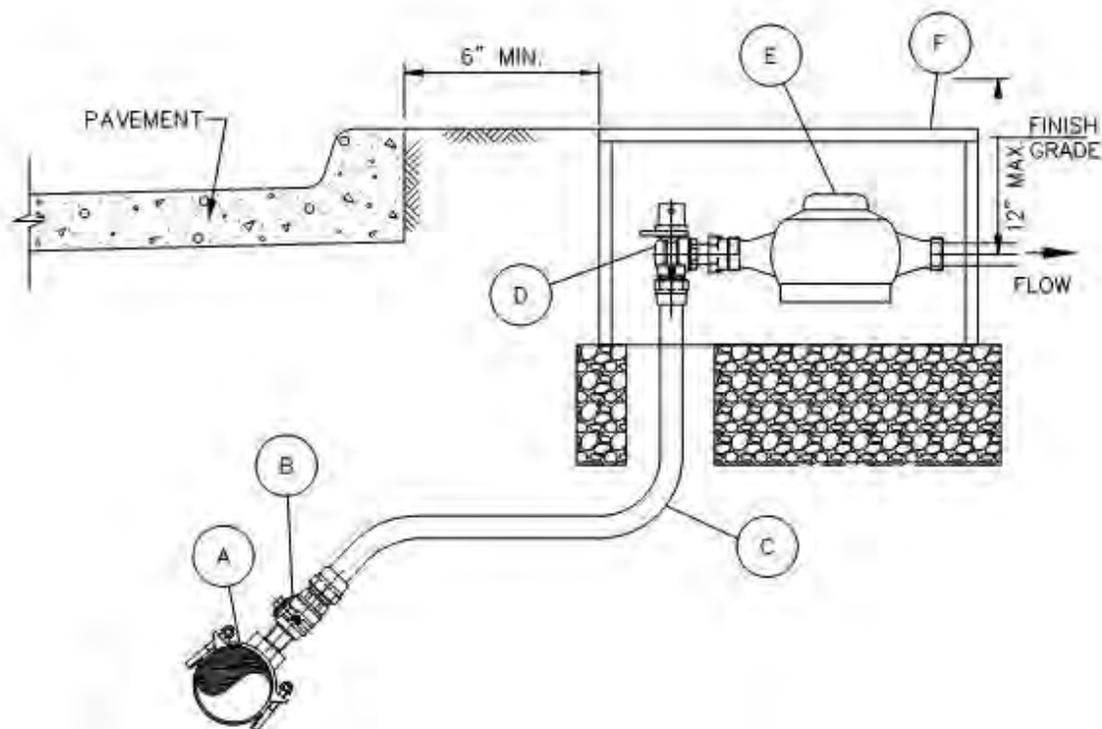
STANDARD SPECIFICATION REFERENCE	502.3
DATE	AUG. 2019
STANDARD DRAWING NO	R-4120

CITY OF ROCKWALL



FIRE HYDRANT
INSTALLATION

STANDARD DRAWING NO
R-4120



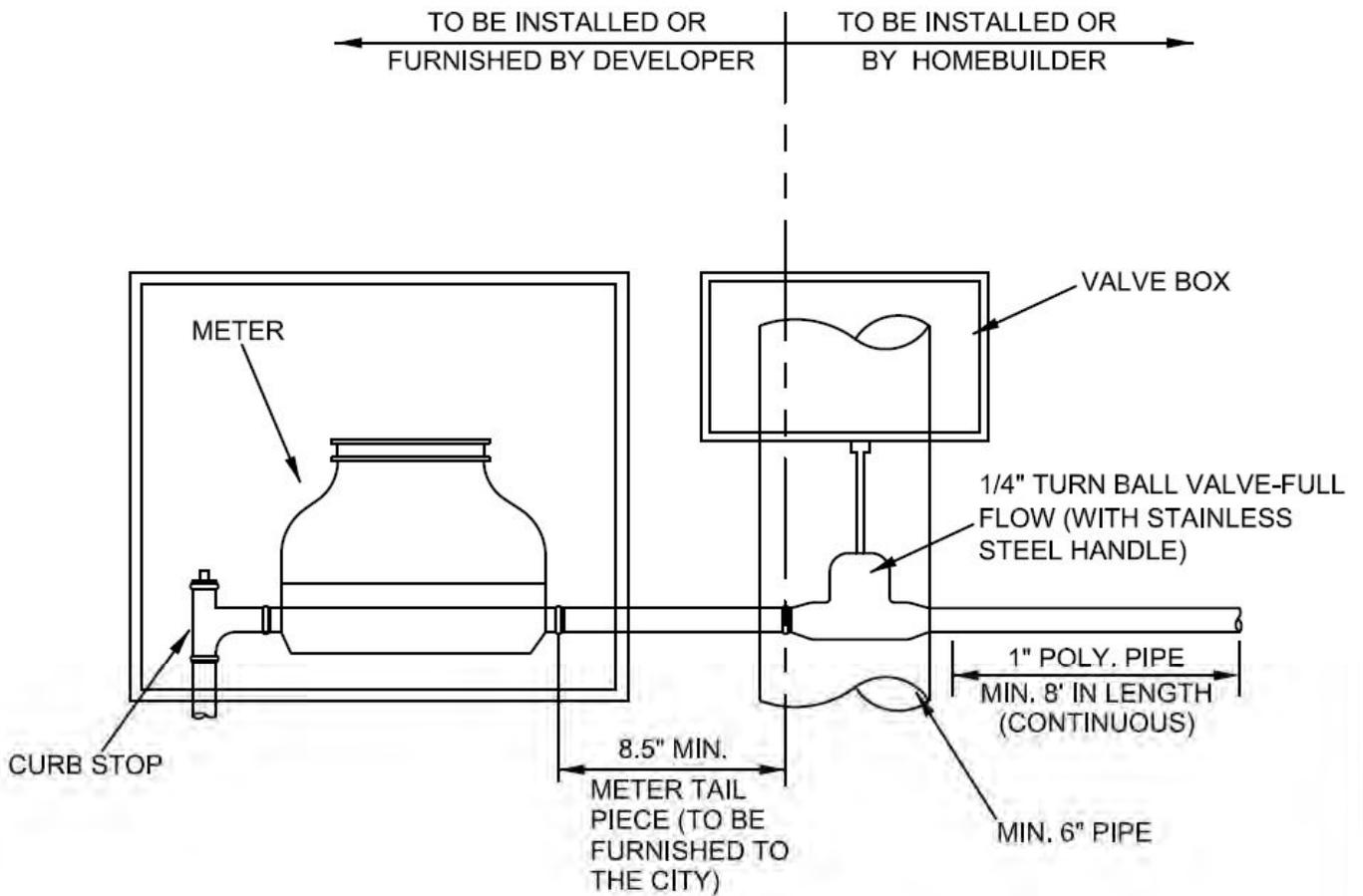
NOTES:

1. SERVICE PIPE SHALL BE 1" OR 2" SEAMLESS 250 PSI BLUE COLORED POLYETHYLENE ASTM D2737, SDR 9, CTS WATER SERVICE PIPE, NSF61 APPROVED.
2. TOP OF METER BOXES SHALL BE 1" ABOVE FINISHED GRADE.
3. METER BOX SHALL HAVE A MINIMUM OF 6" OF GRAVEL BENEATH METER BOX AS ILLUSTRATED.
4. LOCATION OF THE METER BOX SHALL BE LOCATED TO ALLOW 6" CLEARANCE FROM CURB.

MATERIAL LIST:

- A. SERVICE SADDLE SHALL BE BRASS WITH DOUBLE BRONZE FLATTENED STRAPS OR STAINLESS STEEL DOUBLE BOLT WIDE STRAPS. NO BANDED OR HINGED STRAPS SHALL BE ALLOWED. SERVICE SADDLES SHALL MEET AWWA/CC TAPPING OUTLET (TAPERED THREADS) REQUIREMENTS. ALL SERVICE SADDLES SHALL BE PER APPROVED WATER MATERIALS LIST.
- B. 1" OR 2" CORPORATION STOP PER APPROVED WATER MATERIALS LIST.
- C. 1" OR 2" SERVICE PIPE SHALL BE SEAMLESS 250 PSI BLUE COLORED POLYETHYLENE ASTM D2737, SDR9, CTS WATER SERVICE PIPE, NSF61 APPROVED.
- D. 1" OR 2" LOCKING ANGLE METER VALVE (STOP) PER APPROVED WATER MATERIALS LIST.
- E. WATER METERS CENTERED IN BOX AS ILLUSTRATED.
- F. ROUND METER BOX PER APPROVED WATER MATERIALS LIST.

WATER SERVICE INSTALLATION	CITY OF ROCKWALL		
1" OR 2" LINE		DATE AUG '19	DRAWING NO. R-4130



NOTE:

VALVE BOX TO BE TRAFFIC RATED IF UNDER PAVING.

SINGLE SERVICE METER TAIL CONNECTION

NOT TO SCALE

WATER METER DETAIL

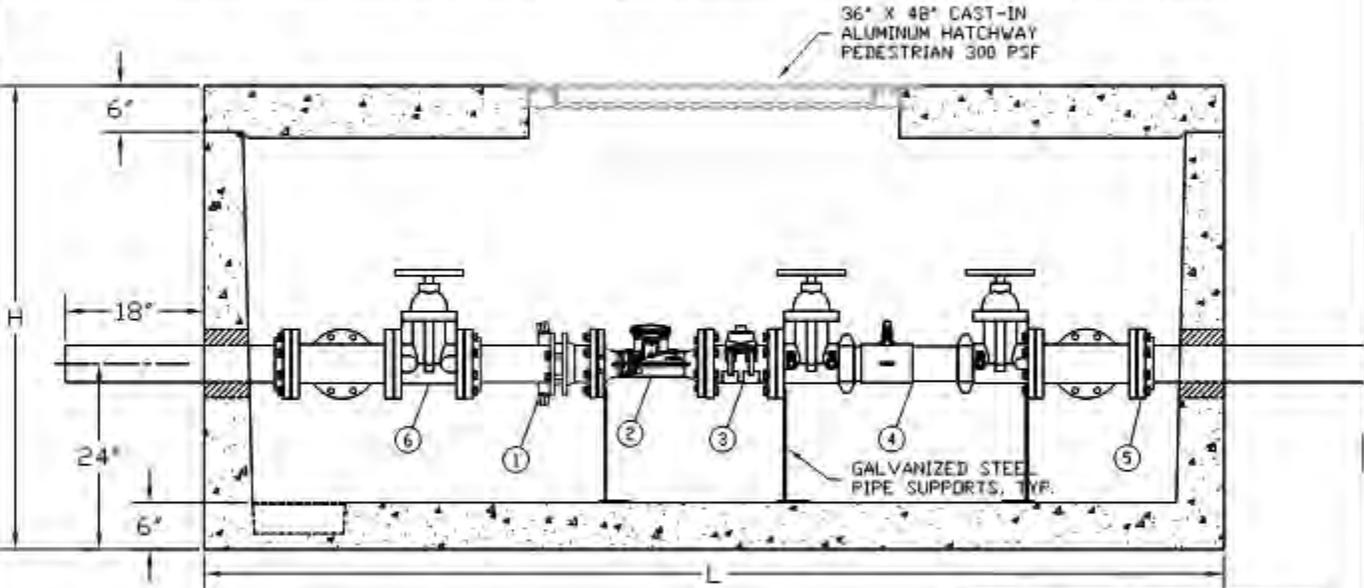
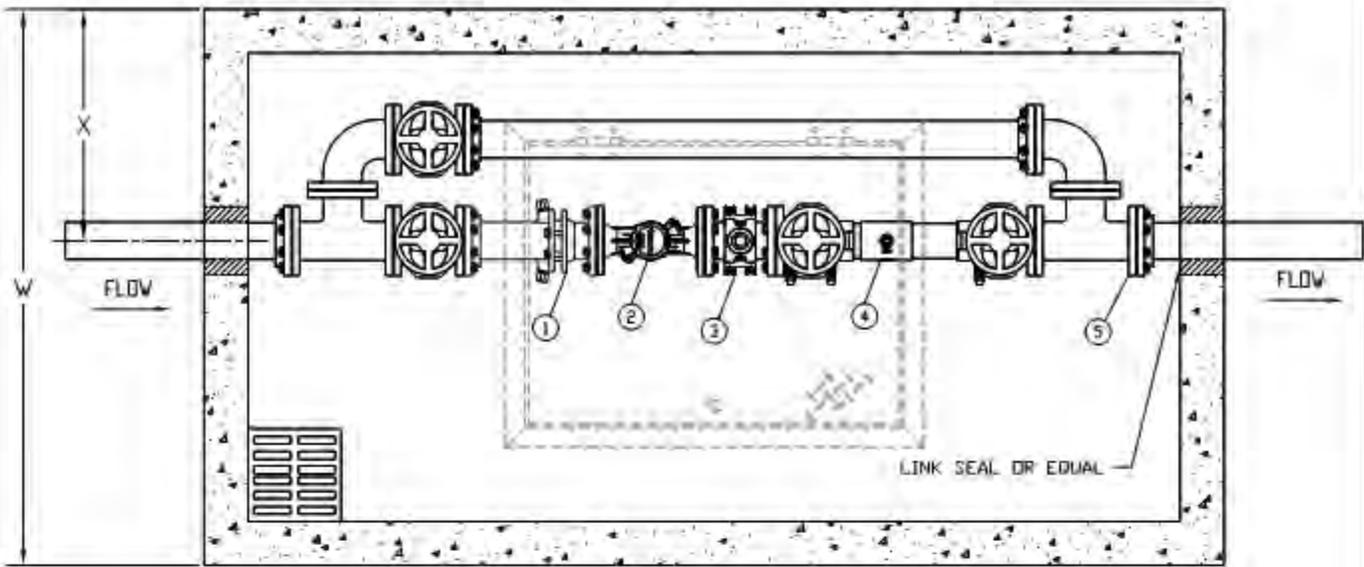
CITY OF ROCKWALL

SINGLE SERVICE



DATE
AUG. '15

DRAWING NO.
R-4145



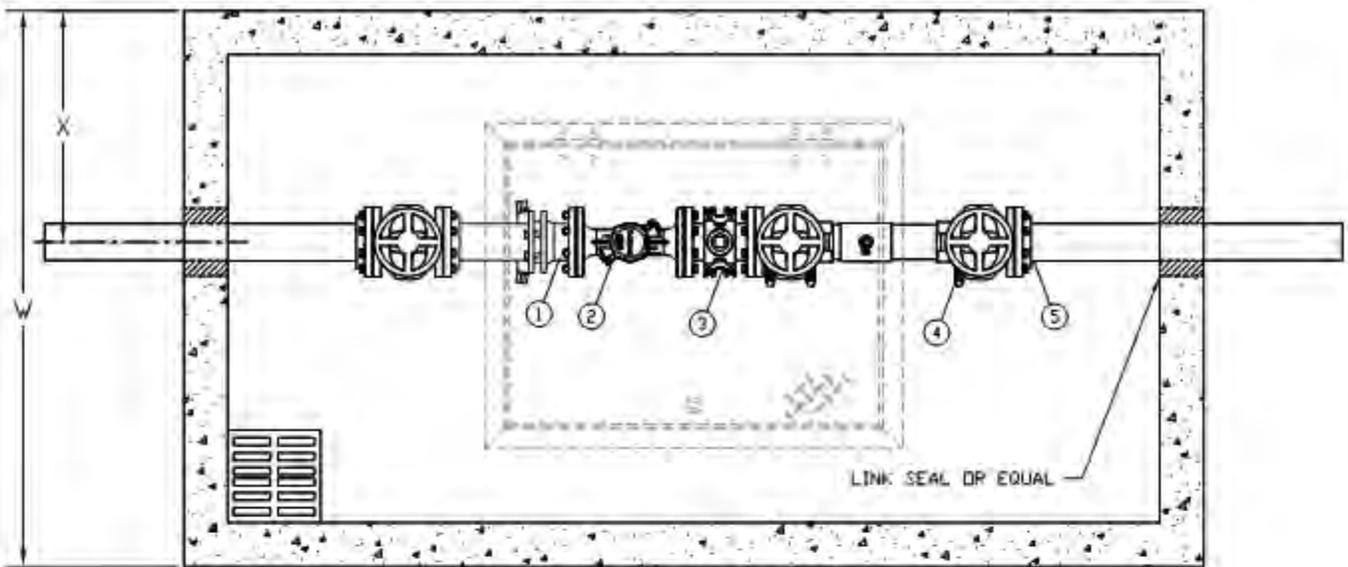
SIZE	L	W	H
3"	11'-0"	6'-0"	5'-0"
4"	8'-8"	5'-0"	5'-0"
6"	11'-0"	6'-0"	5'-0"

NOTES:

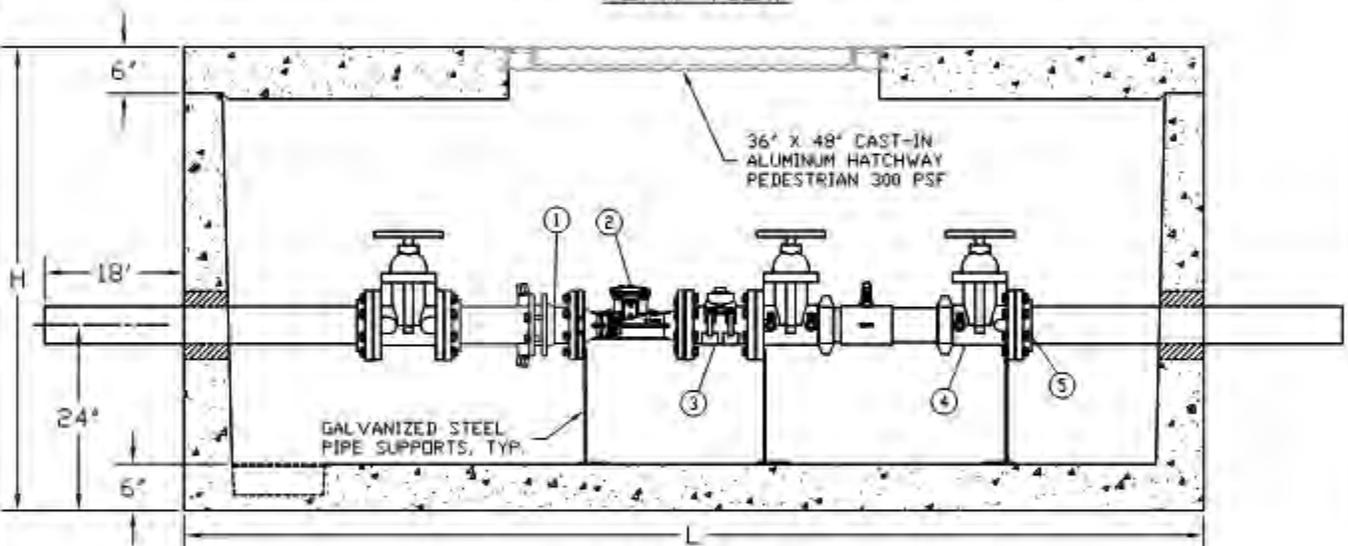
1. CONCRETE SHALL HAVE MIN STRENGTH OF 4200 PSI AT 28 DAYS. NO CAST IN PLACE VAULTS SHALL BE ALLOWED.
2. REINFORCEMENT SHALL BE GRADE 60. STEEL BAR SHALL CONFORM TO ASTM A615 ON REQUIRED CENTERS OR EQUALS.
3. ACCESS IS 1/4" ALUMINUM DIAMOND PLATE COVER WITH ALUMINUM FRAME. HATCH TO BE FURNISHED WITH 316 STAINLESS STEEL SLAM LOCK & HINGES.

ITEM	DESCRIPTION
1	FLANGE COUPLING ADAPTER
2	MASTER METER OCTAVE METER
3	STRAPPING SADDLE W/2" NPT PLUG
4	DOUBLE CHECK ASSEMBLY
5	FLG X P.E. SPOOL, D.I.
6	FLG NRS GATE VALVE

IRRIGATION WATER METER VAULT	CITY OF ROCKWALL	
3", 4" OR 6" LINE		DATE AUG '19
		DRAWING NO. R-4160



PLAN VIEW



ELEVATION VIEW

SIZE	L	W	H
3"	11'- 0"	6'- 0"	5'- 0"
4"	11'- 0"	6'- 0"	5'- 0"
6"	11'- 0"	6'- 0"	5'- 0"

NOTES:

1. CONCRETE SHALL HAVE MIN STRENGTH OF 4200 PSI AT 28 DAYS. NO CAST IN PLACE VAULTS SHALL BE ALLOWED.
2. REINFORCEMENT SHALL BE GRADE 60. STEEL BAR SHALL CONFORM TO ASTM A615 ON REQUIRED CENTERS OR EQUALS.
3. ACCESS IS 1/4" ALUMINUM DIAMOND PLATE COVER WITH ALUMINUM FRAME. HATCH TO BE FURNISHED WITH 316 STAINLESS STEEL SLAM LOCK & HINGES.

ITEM	DESCRIPTION
1	FLANGE COUPLING ADAPTER
2	MASTER METER OCTAVE METER
3	STRAPPING SADDLE W/2" NPT PLUG
4	DOUBLE CHECK ASSEMBLY
5	FLG X P.E. SPOOL, D.I.

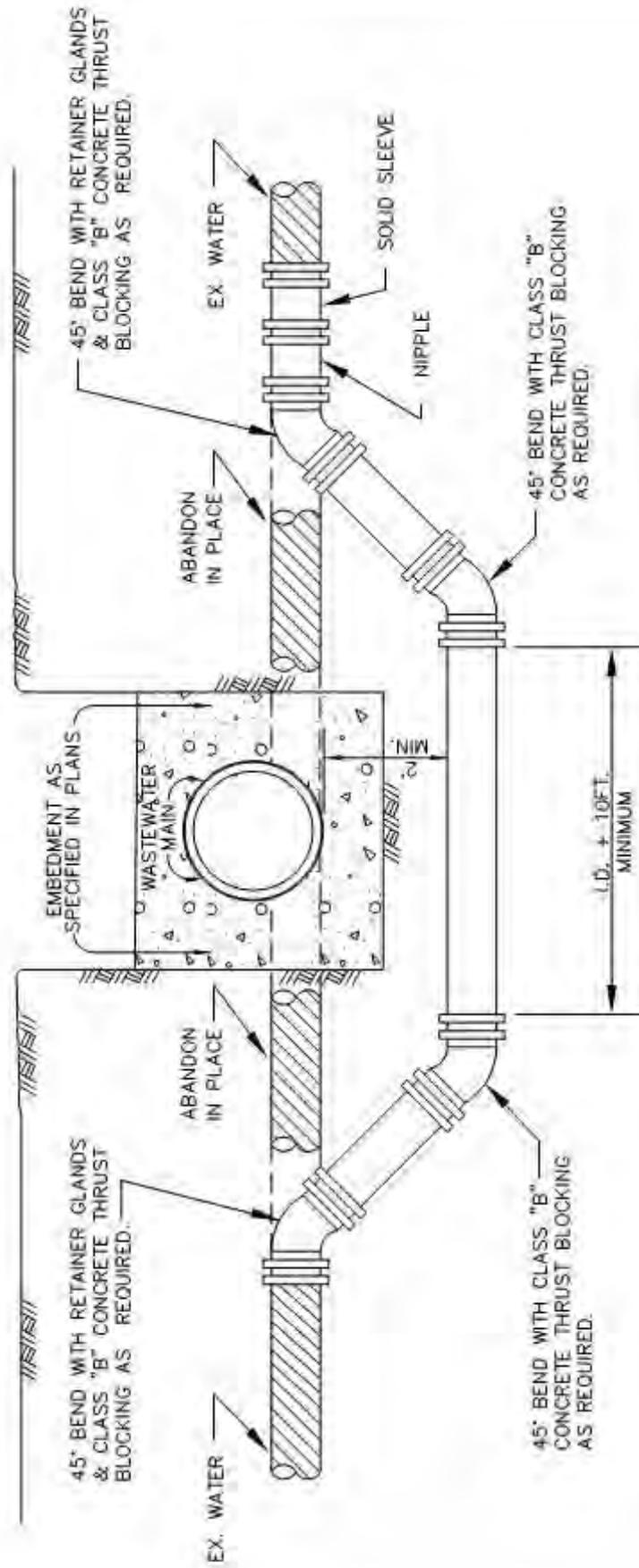
IRRIGATION WATER METER VAULT

CITY OF ROCKWALL

3", 4" OR 6" LINE



DATE AUG '19	DRAWING NO. R-4170
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CONCRETE ENCASEMENT SHALL ENCASE ENTIRE WASTEWATER MAIN. DEFLECT WATER LINE WHEN POSSIBLE.

STANDARD SPECIFICATION REFERENCE	506.6
DATE	Mar. 2018
STANDARD DRAWING NO	R-4200

CITY OF ROCKWALL



WATER MAIN LOWERING
BELOW WASTEWATER MAIN

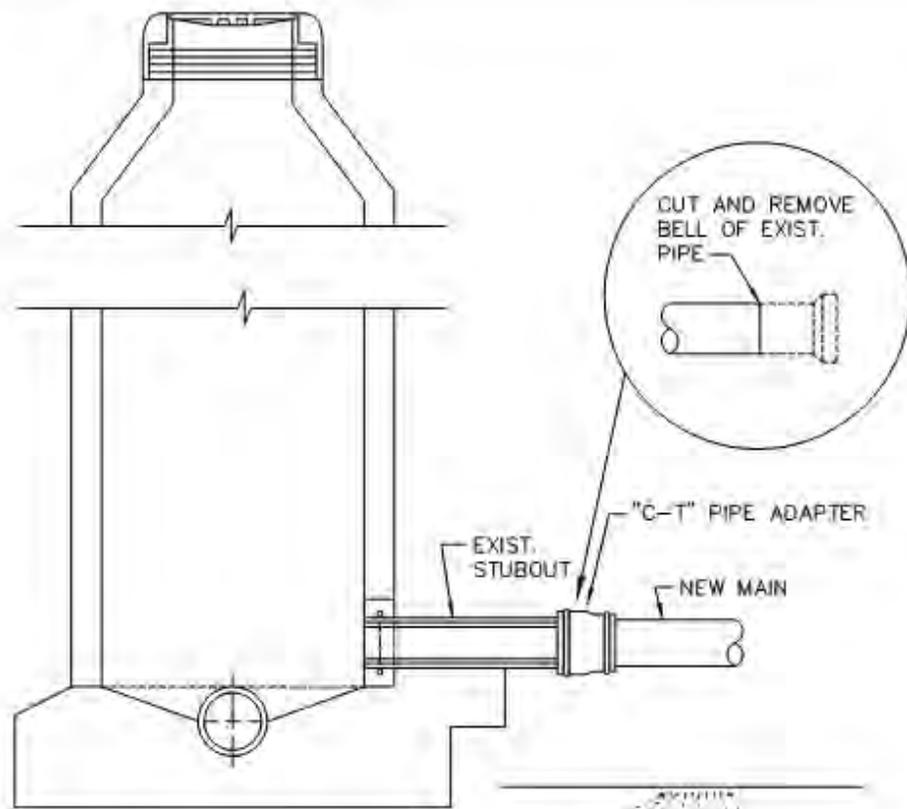
STANDARD DRAWING NO	R-4200
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8.5 Division 5000 Wastewater Collection

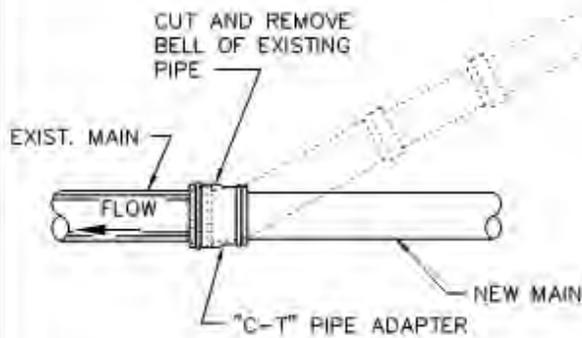
- NOTE:**
- (1) Deleted NCTCOG Drawing
 - (2) Revised NCTGOG Drawing (see revisions below)
 - (3) Added Rockwall Standard Drawing (see drawing below)
 - (4) Added Current TxDOT Standards

Table 9.5: Revisions to NCTCOG’s Division 5000 Wastewater Collection

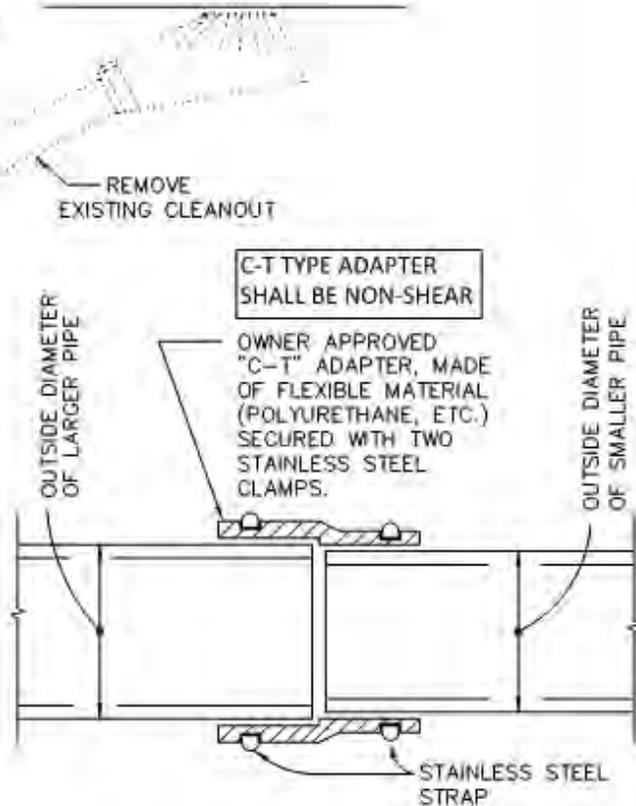
<u>Revised</u>	<u>Drawing No.</u>	<u>Subject</u>
(1)	5010	Wastewater Main Tie-In – At Cleanout or M.H. Stubout
(3)	R-5010	Wastewater Main Tie-In – At Cleanout or M.H. Stubout
(1)	5020	Wastewater Manhole – Precast
(3)	R-5020	Wastewater Manhole – Precast
(1)	5030	Wastewater Manhole – Cast-In-Place
(3)	R-5030	Wastewater Manhole – Cast-In-Place
(1)	5040	Wastewater Manhole – Fiberglass
(1)	5050	Wastewater Manhole – Pressure Type
(3)	R-5050	Wastewater Manhole – Pressure Type
(1)	5060	Wastewater Manhole – Vented
(3)	R-5060	Wastewater Manhole – Vented
(1)	5070	Wastewater Manhole – Outside Drop Connections
(1)	5080	Wastewater Manhole – Inside Drop Connection
(3)	R-5080	Wastewater Manhole – Inside Drop Connection
	5090	Wastewater Manhole – Line Intersection
	5100	Wastewater Manhole – False Bottom
(3)	R-5101	Wastewater Manhole – Hinged Rim & Cover
(3)	R-5102	Wastewater Manhole – Bolt and Gasket Rim & Cover
(3)	R-5103	Wastewater Manhole – Private Rim & Cover
(1)	5110	Wastewater Main – Cleanout
(3)	R-5110	Wastewater Main – Cleanout
(1)	5120	Wastewater Laterals – With & Without Cleanout
(3)	R-5120	Wastewater Lateral Connections – Residential
(1)	5130	Wastewater Lateral Connections – In Earth & In Rock
	5140	Wastewater Lateral Connections – Cleanout Frame & Cover
(1)	5150	Wastewater Lateral Stubout – In Advance of Paving
(3)	R-5150	Wastewater Lateral Stubout – In Advance of Paving
(1)	5160	Wastewater Lateral Replacement – In Advance of Paving
(3)	R-5160	Wastewater Lateral Replacement – In Advance of Paving
(1)	5170	Abandonment of Manhole – In or Out of Pavement
(3)	R-5170	Abandonment of Manhole – In or Out of Pavement
(3)	R-5180	Manhole and Valve Vault – Mow Strip



AT STUBOUT
N.T.S.



AT CLEANOUT
N.T.S.



"C-T" PIPE ADAPTER
N.T.S.

NOTE:

THIS DETAIL FOR USE ONLY WHEN NEW MAIN WILL NOT MATE WITH EXISTING MAIN JOINT DUE TO DIFFERENT DIMENSIONS OR MATERIALS AND A MANHOLE IS NOT REQUIRED.

WASTEWATER MAIN TIE-IN
AT CLEANOUT OR M.H. STUBOUT

CITY OF ROCKWALL



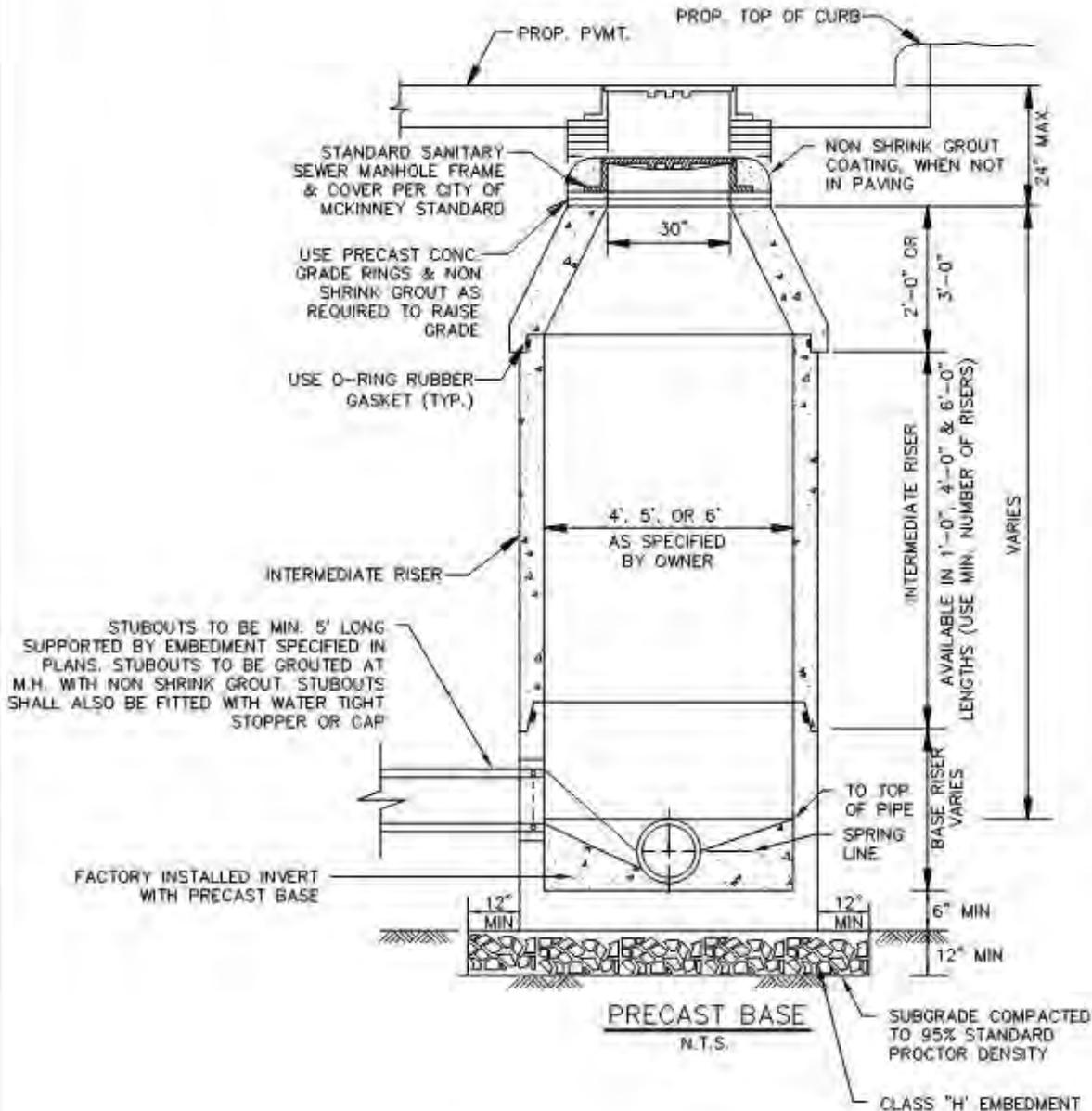
STANDARD SPECIFICATION REFERENCE
502.10

DATE
Mar. 2018

STANDARD DRAWING NO.
R-5010

NOTES:

1. FIRST MAIN LINE JOINT TO BE A MIN. OF 5' LONG.
2. IF FALSE M.H. ARE REQUIRED, THEY SHALL BE CONSTRUCTED, INSTALLED AND REMOVED PER STD. DWG. NO. 5100.
3. M.H.'S LOCATED OUTSIDE OF PAVING SHALL BE CONSTRUCTED WITH A CONCRETE MOW STRIP PER STD. DWG. NO. R-7005.
4. REFER TO STD. DWG. NO. R-5031 FOR INFLOW PROTECTION AT MANHOLE GRADE RINGS, MANHOLE JOINTS AND ON OUTSIDE OF STRUCTURE.
5. REFER TO STD. DWG. NO. R-5032 FOR CORROSION PROTECTION.
6. CONCRETE SHALL BE 4,200 PSI (7.0 SACK/CY) 28 DAY STRENGTH.
7. REINFORCING SHALL MEET OR EXCEED ASTM C478 REQUIREMENTS.
8. INSTALL GREEN EMS DISK AT ALL MANHOLES.
9. LIP TO BE PRECAST.



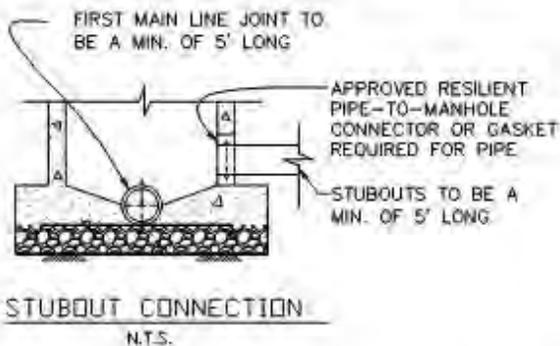
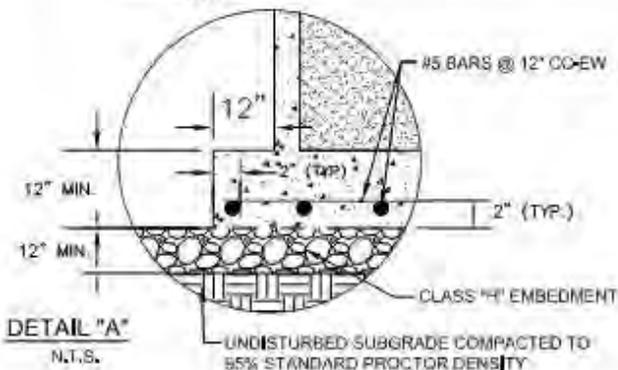
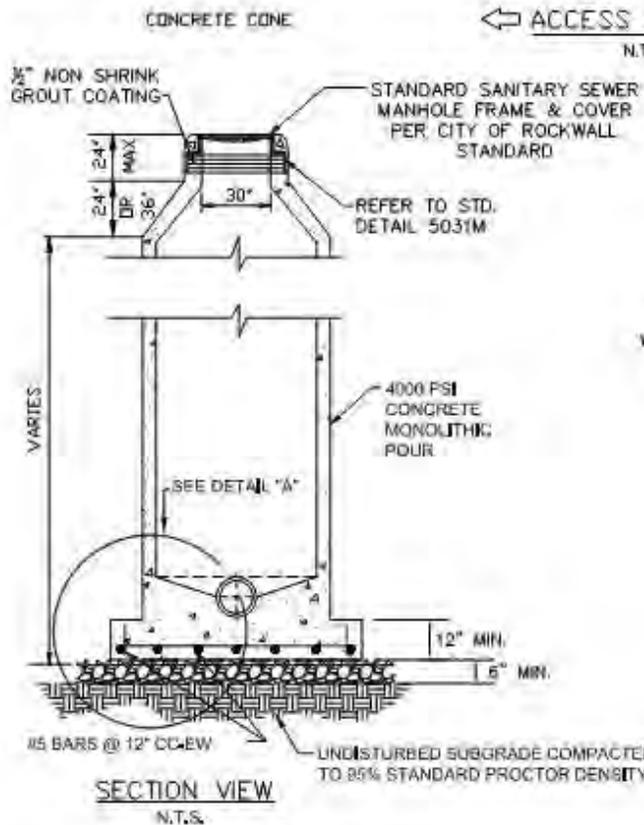
WASTEWATER MANHOLE

CITY OF ROCKWALL

PRECAST

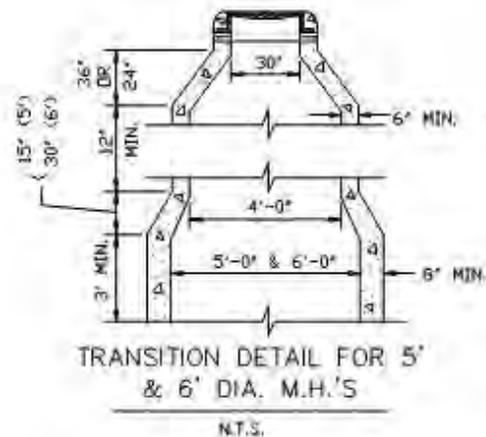
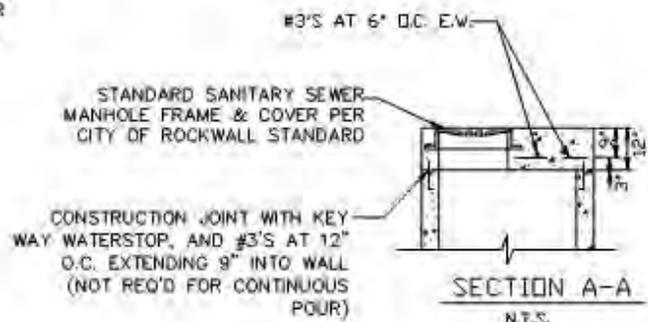


DATE	DRAWING NO.
AUG '19	R-5020



← ACCESS OPTIONS →
N.T.S.

REINFORCED CONCRETE SLAB (FLAT TOP)
TO BE USED WHEN MANHOLE IS IN FLOODPLAIN



NOTES:

- IF FALSE M.H. BOTTOMS ARE REQUIRED THEY SHALL BE CONSTRUCTED, INSTALLED AND REMOVED. PER STD. DWG. NO. 5100
- M.H.'S LOCATED OUTSIDE OF PAVING SHALL BE CONSTRUCTED WITH A CONCRETE MOW STRIP PER STANDARD DETAIL R-7005.
- REFER TO STD. DWG. NO. R-5031 FOR INFLOW PROTECTION AT MANHOLE GRADE RINGS AND ON THE OUTSIDE OF MANHOLE STRUCTURE.
- CAST IN PLACE BASE MUST BE A MINIMUM 12" THICK WITH #5 BARS @ 12" OC-EW (EACH WAY) AND SHALL EXTEND 1' BEYOND MANHOLE.
- CONCRETE SHALL BE 4,200 PSI (7.0 SACK/CY) 28 DAY STRENGTH.
- REINFORCING SHALL MEET OR EXCEED ASTM C478 REQUIREMENTS.
- INSTALL GREEN EMS DISK AT ALL MANHOLES.

WASTEWATER MANHOLE

CAST-IN-PLACE

CITY OF ROCKWALL

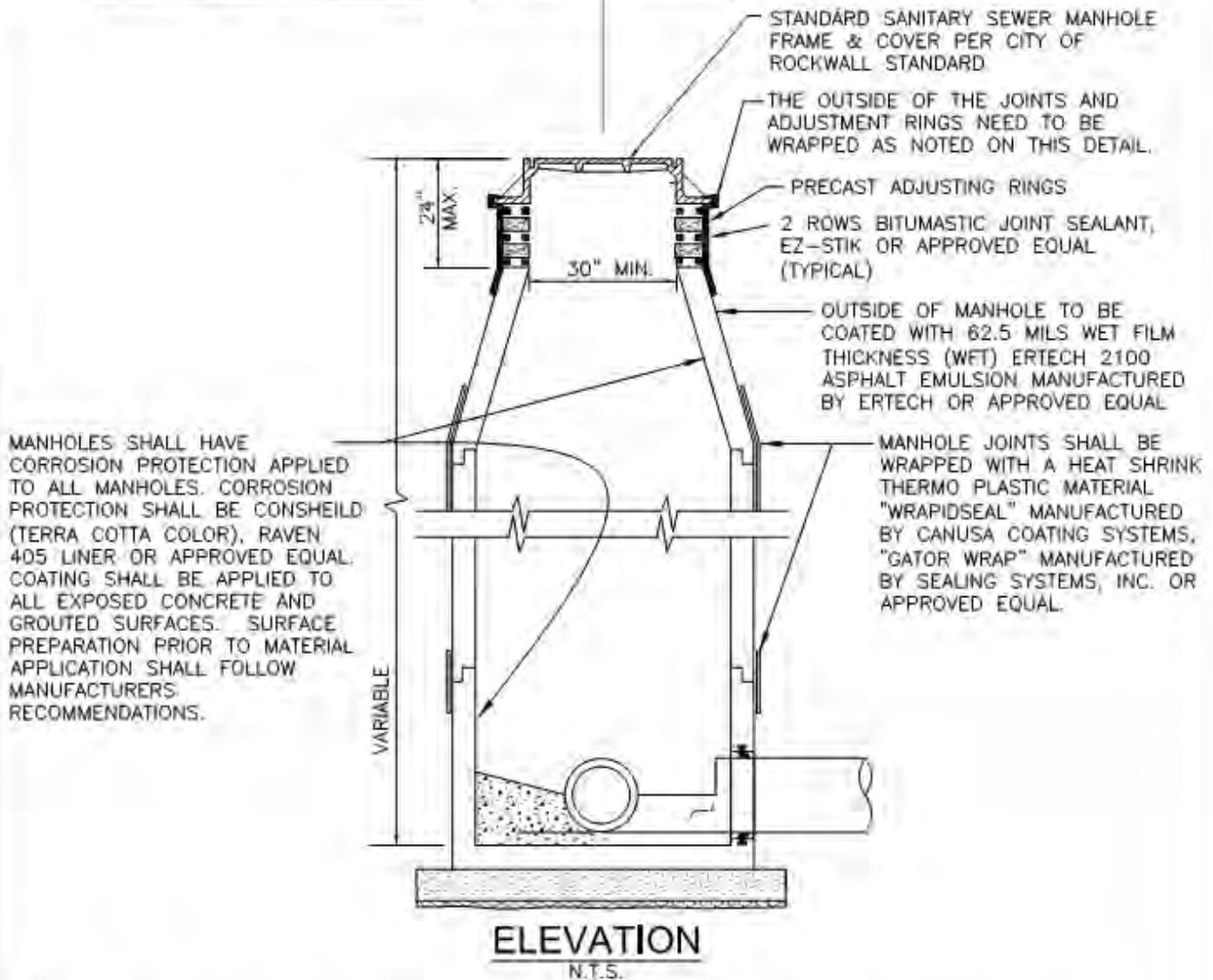


DATE
AUG '19

DRAWING NO.
R-5030

CORROSION PROTECTION

INFLOW PREVENTION



INFLOW PREVENTION NOTES:

1. REQUIRED ON ALL SANITARY SEWER MANHOLES AND LIFT STATION WET WELLS AND VALVE VAULTS.

CORROSION PREVENTION NOTES:

1. TO CORROSION PROTECTIVE COATING PROCESS, PRESSURE WASH AND CLEAN STRUCTURE. FILL BUG HOLES, JOINTS, HONEYCOMBS AND AROUND PIPE PENETRATIONS WITH A CEMENTITIOUS REPAIR MATERIAL (CRM) AS NEEDED. USE STRONG SEAL MS2C MANUFACTURED BY THE STRONG COMPANY, INC. OR APPROVED EQUAL. THEN APPLY A MINIMUM OF 125 MILS (1/2 INCH) THICKNESS OF A POLYURETHANE COATING MATERIAL (EXISTING MANHOLES REQUIRE A MINIMUM OF 250 MILS THICKNESS OF POLYURETHANE COATING MATERIAL). FOR THE POLYURETHANE COATING MATERIAL USE RAVEN 405 LINER OR APPROVED EQUAL.
2. ADDITIONAL CLEANING, PREPARATION, AND REPAIR METHODS MAY BE REQUIRED FOR EXISTING MANHOLES DEPENDING ON CONDITION ASSESSMENT OF THE MANHOLE. CONTACT ENGINEERING DIVISION FOR ADDITIONAL SPECIFICATIONS.
3. SPARK TESTING IS REQUIRED FOR COATINGS. COST FOR TESTING IS SUBSIDIARY TO OTHER BID ITEMS. CITY INSPECTOR TO BE PRESENT FOR SPARK TESTING. CONTRACTOR TO PROVIDE WRITTEN SPARK TEST RESULTS TO CITY.
4. EXISTING BRICK MANHOLES SHALL BE REPLACED.
5. REQUIRED ON ALL WASTEWATER MANHOLES AND LIFT STATION WET WELLS.

WASTEWATER MANHOLE

CITY OF ROCKWALL

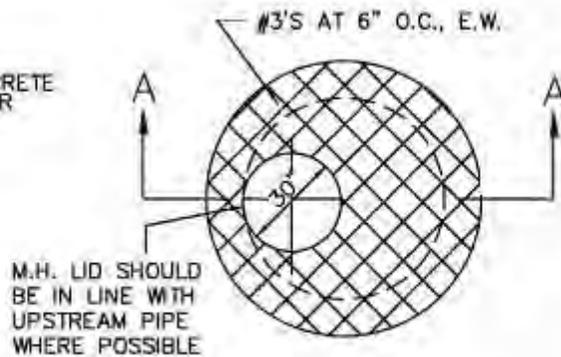
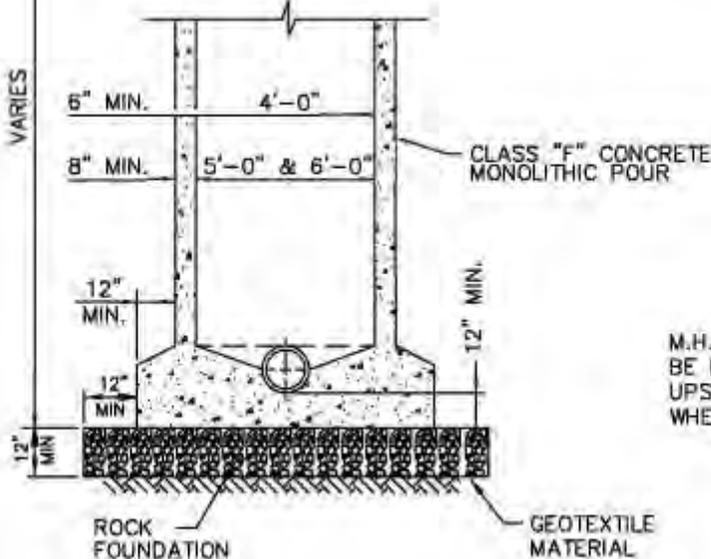
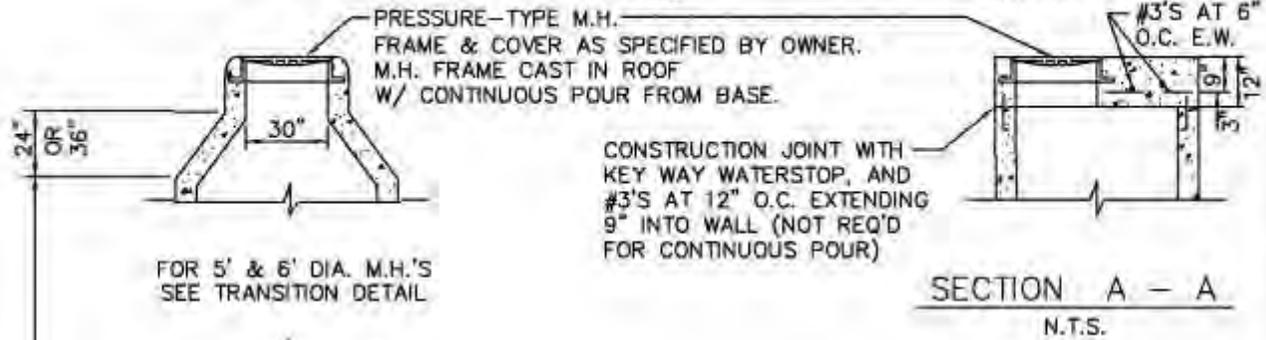
INFLOW PREVENTION & CORROSION PROTECTION



DATE
AUG '19

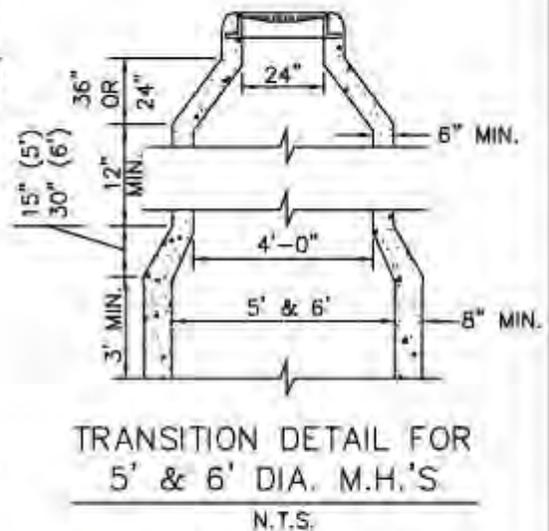
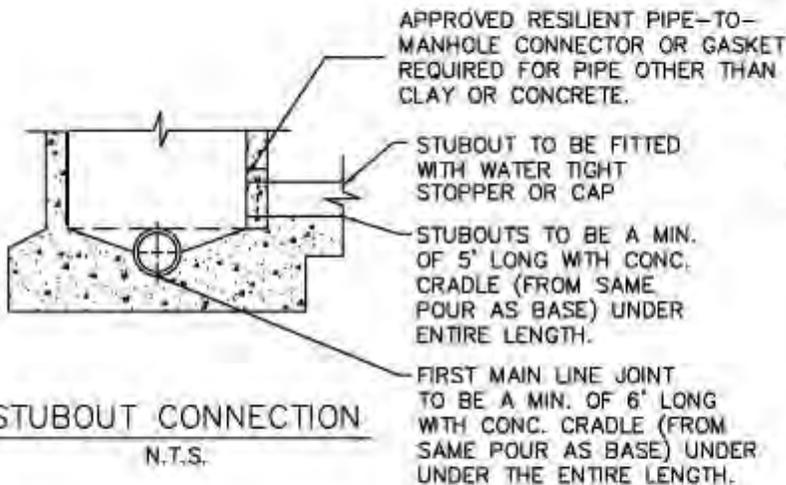
DRAWING NO.
R-5031

CONCRETE CONE ← ROOF OPTIONS → REINFORCED CONCRETE SLAB



ROOF STEEL LAYOUT
N.T.S.

INSTALL GREEN EMS DISKS AT ALL MANHOLES.



WASTEWATER MANHOLE
PRESSURE-TYPE

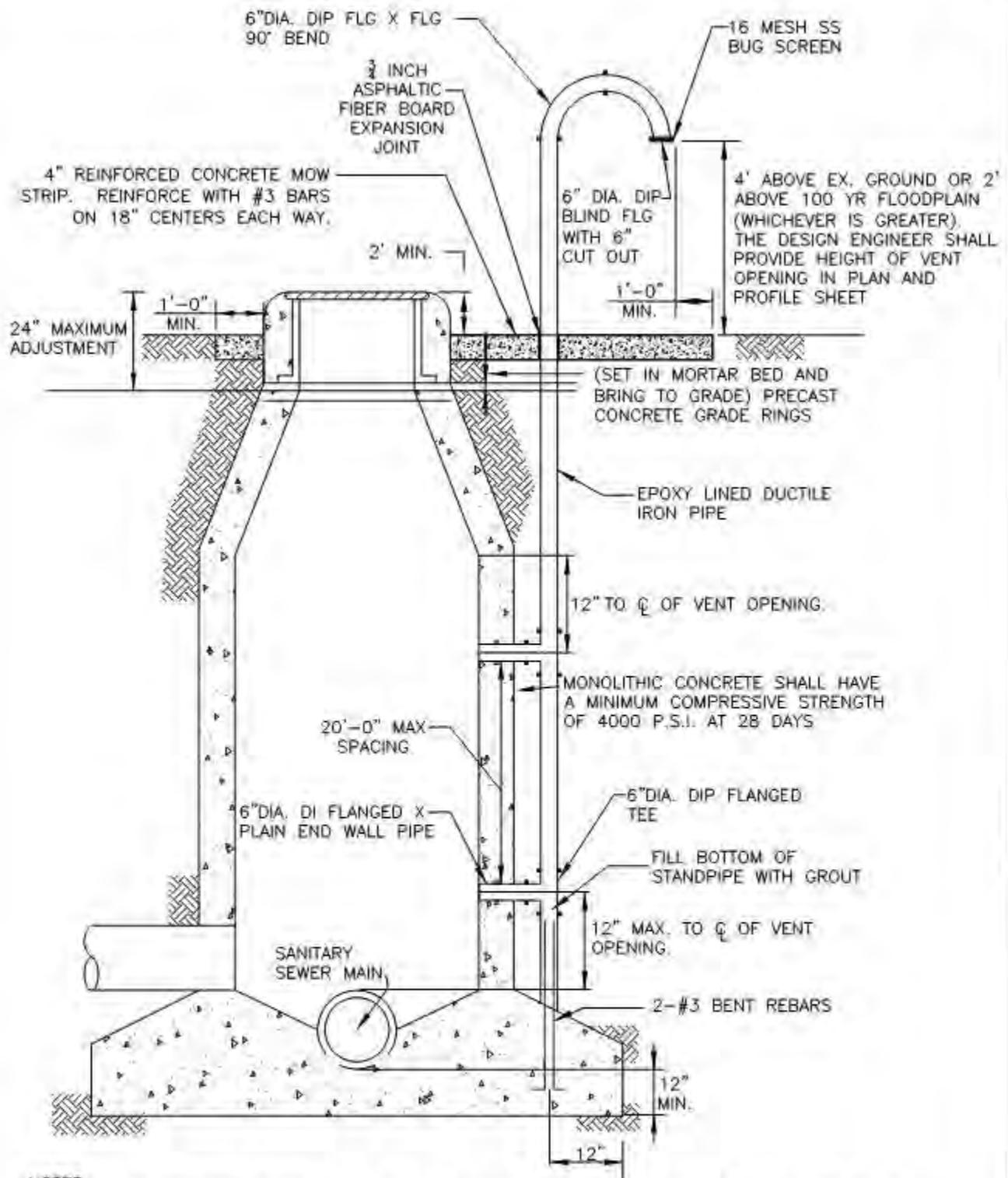
CITY OF ROCKWALL



STANDARD SPECIFICATION REFERENCE
502.1.4.15*

DATE
Mar. 2018

STANDARD DRAWING NO.
R-5050



NOTES:

1. REFER TO STANDARD DETAIL R-5030 FOR MANHOLE. CONCRETE SHALL BE MONOLITHIC POUR.
2. REFER TO STD. DWG. NO. R-5031 FOR INFLOW PROTECTION AT MANHOLE GRADE RINGS, MANHOLE JOINTS, AND ON OUTSIDE OF STRUCTURE.

SHEET 1 OF 2

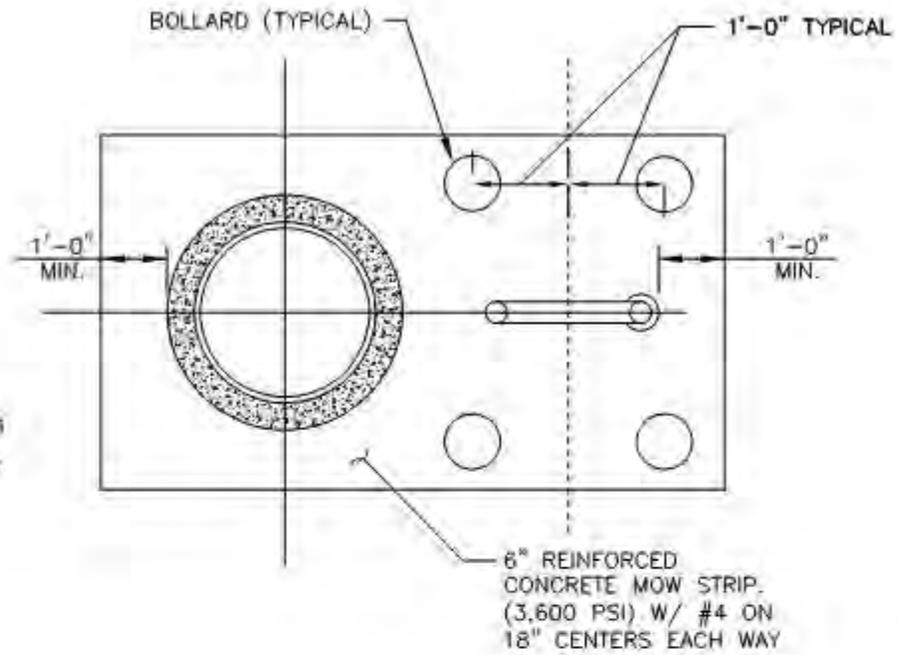
WASTEWATER MANHOLE

CITY OF ROCKWALL

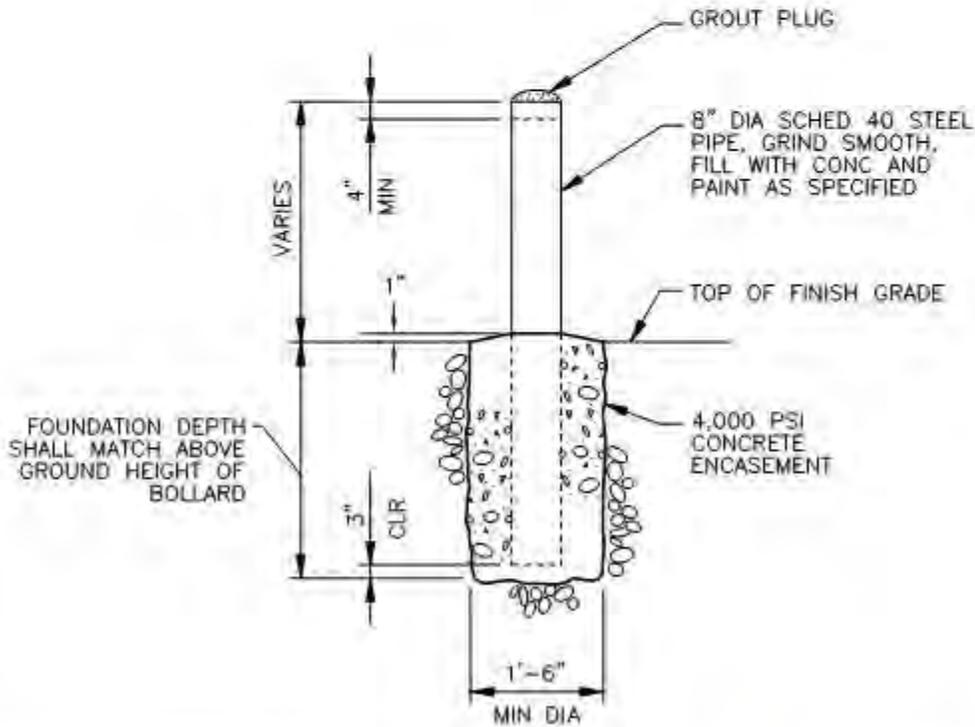
VENTED



DATE AUG '19	DRAWING NO. R-5060
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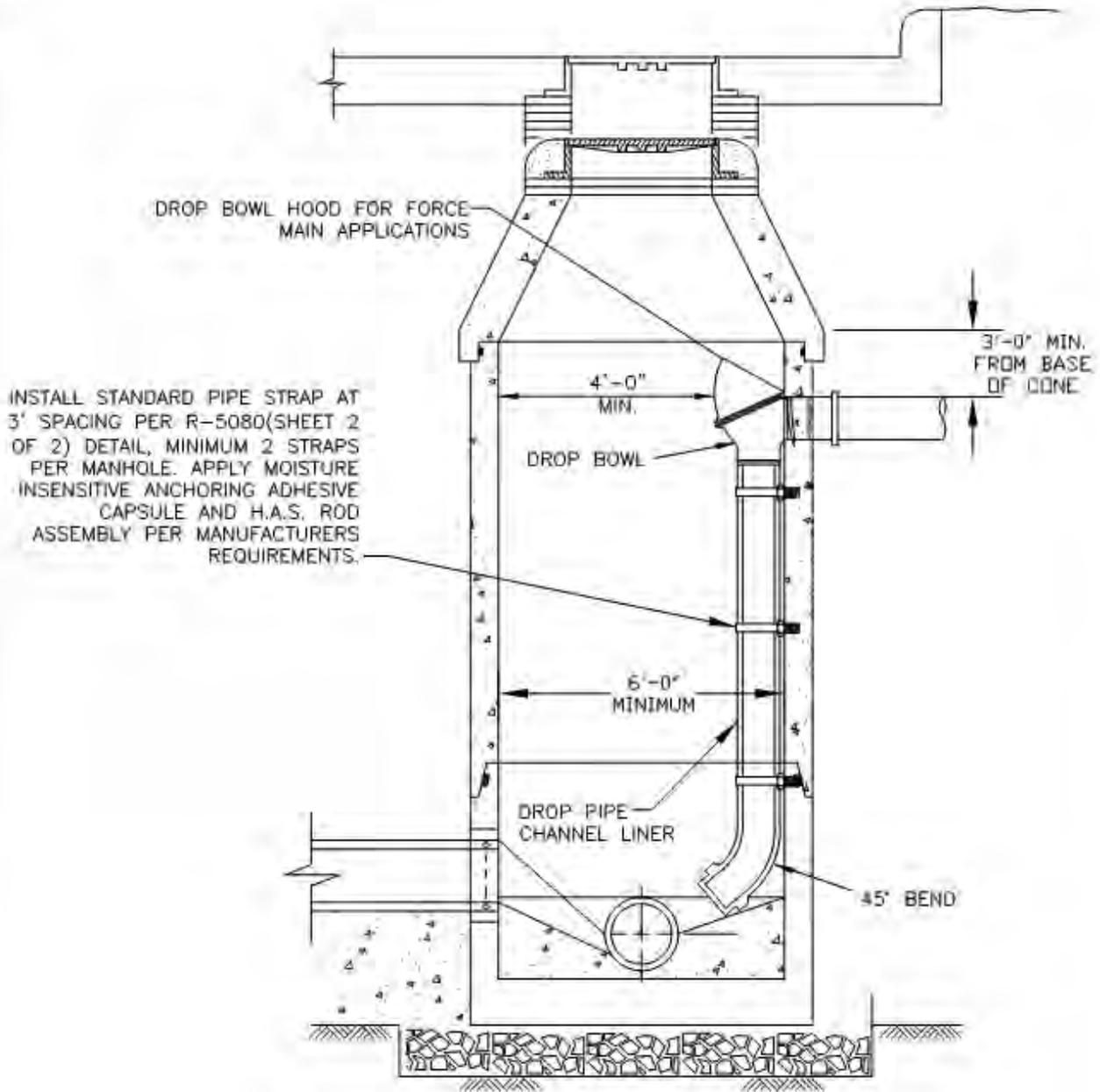


NOTES:
 1. BOLLARD HEIGHT SHALL EXTEND TO 1 FOOT ABOVE THE OVERALL HEIGHT OF THE VENT PIPE.



SHEET 2 OF 2

WASTEWATER MANHOLE	CITY OF ROCKWALL		
VENTED		DATE AUG '19	DRAWING NO. R-5060



ELEVATION
N.T.S.

NOTE:
1. DROP BOWL, DROP PIPE CHANNEL LINER AND STAINLESS STEEL PIPE CLAMPS AS MANUFACTURED BY RELINER/DURAN INC. OR APPROVED EQUAL.

SHEET 1 OF 2

WASTEWATER MANHOLE	CITY OF ROCKWALL		
DROP CONNECTIONS		DATE AUG '19	DRAWING NO R-5080

HVA ADHESIVE CAPSULE ANCHOR

- A. DRILL HOLES WITH ANSI B212.15 MATCHED TOLERANCE CARBIDE TIPPED DRILL BITS WITH DRILL IN ROTO-HAMMER MODE OR USE A MATCHED TOLERANCE DIAMOND CORE DRILL BIT OF DIAMETER SPECIFIED BY HILTI.
- B. DRILLED HOLE SPECIFICATIONS (DIAMETER & DEPTH) SHALL COMPLY WITH HILTI SPECIFICATION OR ICC ESR 1682.
- C. ALLOWABLE LOADS MAY BE INCREASED BY 35-1/3% FOR SHORT-TERM WIND OR SEISMIC LOAD RESISTANCE (AW ICC ESR 1682 UNLESS NOT PERMITTED BY THE APPLICABLE BUILDING CODE).
- D. WHEN CONDUCTED, PROOF TEST ANCHORS IN THE FIELD TO 150-200% OF HILTI PUBLISHED ALLOWABLE TENSION LOAD UNLESS NOTED OTHERWISE IN A PROOF TEST LOAD TABLE. TORQUE TESTING IS NOT PERMITTED.
- E. ANCHORS SHALL BE TIGHTENED WITH A CALIBRATED TORQUE WRENCH. USE OF AN IMPACT WRENCH IS NOT PERMITTED.
- F. CONTACT HILTI TECHNICAL SUPPORT AT 1-800-879-8000 FOR INSTALLATION INSTRUCTIONS IN SUBMERGED WATER CONDITIONS.
- G. CONTACT HILTI TECHNICAL SUPPORT AT 1-800-879-8000 FOR ADDITIONAL ASSISTANCE WITH HVA ADHESIVE ANCHOR INSTALLATIONS.
- H. INSTALLATION INSTRUCTIONS:

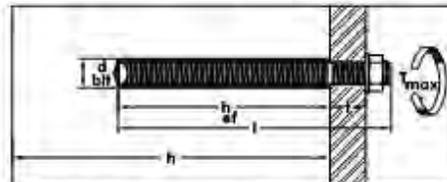
1. FOR HVA ADHESIVE CAPSULES WITH H.A.S. THREADED RODS:
 1. DRILL ANCHOR HOLE WITH A CARBIDE BIT (SEE NOTE 1 ABOVE), TO SPECIFIED EMBEDMENT DEPTH.
 2. CLEAN HOLE WITH COMPRESSED AIR OR BLOW OUT PUMP. INSERT NOZZLE TO BOTTOM OF HOLE.
 3. IF USING MATCHED TOLERANCE CORE BIT, REMOVE STANDING WATER FROM HOLE.
 4. INSERT APPROPRIATE HVA CAPSULE INTO HOLE WITH POINTED END FIRST. CAPSULE LENGTH IS LONGER THAN STANDARD EMBEDMENT AND WILL PROTRUDE FROM HOLE. DO NOT CUT OFF ANY PART OF THE HVA CAPSULE.
 5. THREAD NUT ONTO ROD.
 6. PLACE A WASHER ON FIRST NUT AND THREAD BLACK SETTING NUT DOWN ON WASHER.
 7. TIGHTEN NUTS TOGETHER SO THAT BLACK SETTING WASHER IS AT TOP OF ROD.
 8. INSERT SQUARE DRIVE SHAFT INTO HAMMER DRILL AND ATTACH PROPER IMPACT SOCKET.
 9. WITH HAMMER DRILL ON ROTARY HAMMER, ENGAGE TOP NUT OF HAS ROD ASSEMBLY AND ROTOHAMMER ROD THROUGH CAPSULE(S) INTO THE HOLE. STOP DRILL ROTATION IMMEDIATELY UPON REACHING BOTTOM OF HOLE.
 10. DO NOT DISTURB OR LOAD ANCHOR BEFORE CURING TIME ELAPSES.

HVA INSTALLATION SPECIFICATION TABLE FOR H.A.S. RODS

DETAILS	H.A.S. Rod Size	1/2	3/8	1/2	5/8	3/4	7/8	1	1-1/4
d: nominal bit diameter	h _v	13/32	9/16	11/16	7/8	1	1-1/8	1-3/8	1-3/8
h ₁ : min. depth of embed. capsule length	h ₁	3-1/2	4-1/4	5	6-0/8	6-3/8	6-3/4	7-1/4	7-1/4
h ₂ : max. thickness fastener	h ₂	1	1-1/2	1-3/4	2	2-1/4	2-1/2	2-3/4	2-3/4
T: max. tightening torque	All Hilti Rods	15	30	75	150	175	235	400	
h ₃ : minimum base material thickness	h ₃ of h ₁ inch	5-1/4	6-3/8	7-1/2	10	10	12-3/8	15	
	h ₃ of h ₁ mm	138 + 2	163 + 2	191 + 2	254 + 2	254 + 2	315 + 2	381 + 2	
Recommended Hilti Rotary Hammer Drill		TE-6, 15, 18M, 25	TE-18M, 25, 55, 75	TF-55, 75	TF-75				

For SE 1 Inch - 25.4mm, (FH) 1.4 (N)mm
Curing Time Table (Approximate)

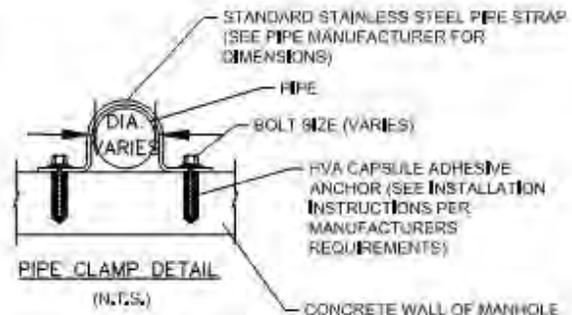
Approx. Curing Time	Base Material Temperature
20 minutes	ABOVE 60° F (15° C)
30 minutes	50° F (10° C)
1 Hour	42° F (5° C)
5 Hour	23° F (-5° C)



HILTI HVA ADHESIVE CAPSULE ANCHOR OR APPROVED EQUAL

INSTALLATION INSTRUCTIONS:

1. SET THE DRILL DEPTH GAUGE AND DRILL A HOLE TO THE REQUIRED HOLE DEPTH. IMPORTANT: CLEAN OUT DUST AND DEBRIS. USE COMPRESSED AIR OR VACUUM AT BOTTOM OF THE HOLE. WHEN USING THE HILTI MATCHED TOLERANCE DIAMOND CORE BIT, IMMEDIATELY REMOVE STANDING WATER.
2. INSERT APPROPRIATE DIAMETER HVA ADHESIVE CAPSULE INTO PRE-DRILLED HOLE IN BASE MATERIAL. NOTE: THE BEST METHOD FOR SETTING MULTIPLE CAPSULES IS TO CRUSH THE FIRST CAPSULE(S) INTO THE HOLE AND THEN INSERT THE NEXT CAPSULE. DO NOT CUT OFF CAPSULES PARTIALLY PROTRUDING FROM THE HOLE.
3. CAPSULE LENGTH IS LONGER THAN STANDARD EMBED. DEPTH AND WILL PROTRUDE FROM THE HOLE.
4. THREAD A H.A.S. NUT ON THE H.A.S. ROD. PLACE A WASHER ON TOP OF THE FIRST NUT AND THEN THREAD A BLACK SETTING NUT DOWN ON TOP OF THE WASHER. TIGHTEN THE TWO NUTS TOGETHER "LOCKING" THE WASHER BETWEEN THEM. THE TOP NUT SHOULD BE FLUSH WITH THE TOP OF THE ROD.
5. INSERT A SQUARE DRIVE SHAFT INTO THE HAMMER DRILL AND ATTACH THE PROPER IMPACT SOCKET. AT THE ROTARY HAMMER DRILL SETTING, ENGAGE THE TOP NUT OF THE HAS ROD ASSEMBLY WITH THE SOCKET AND DRIVE THE ROD DOWN THROUGH THE CAPSULE(S). STOP DRILL ROTATION IMMEDIATELY UPON REACHING BOTTOM OF HOLE.
6. DO NOT DISTURB OR LOAD THE SET ANCHOR BEFORE THE SPECIFIED CURING TIME ELAPSES.



PIPE CLAMP DETAIL (N.T.S.)

DROP FIXTURE ANCHOR (N.T.S.)

SHEET 2 OF 2

WASTEWATER MANHOLE

CITY OF ROCKWALL

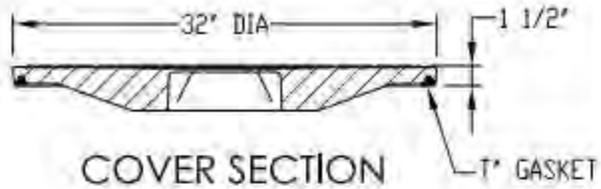
DROP CONNECTIONS



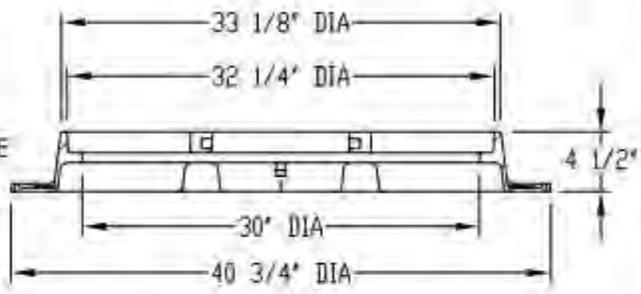
DATE: AUG '19
DRAWING NO.: R-5080



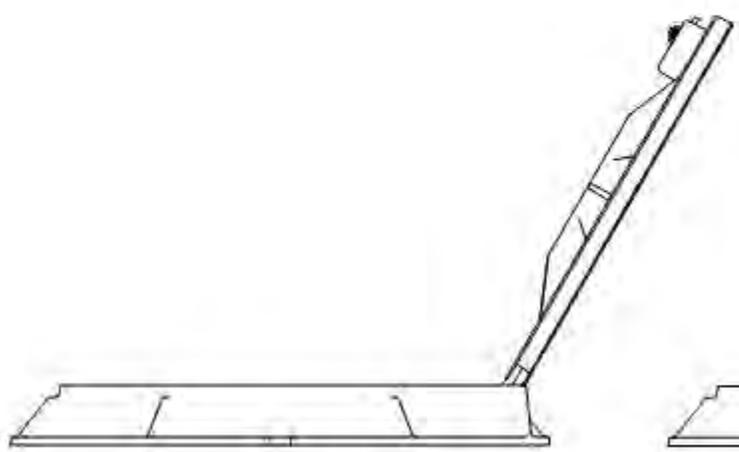
PLAN VIEW



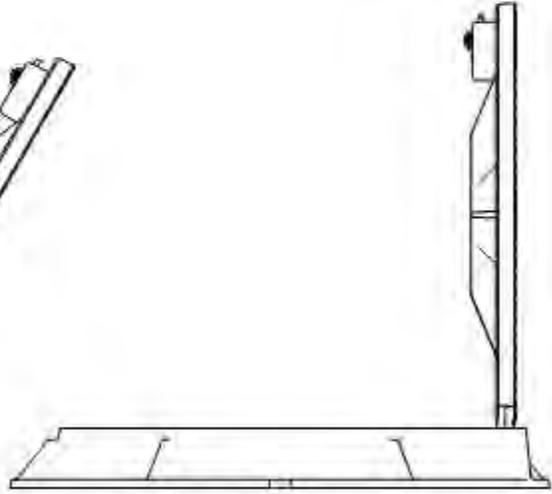
COVER SECTION



FRAME SECTION

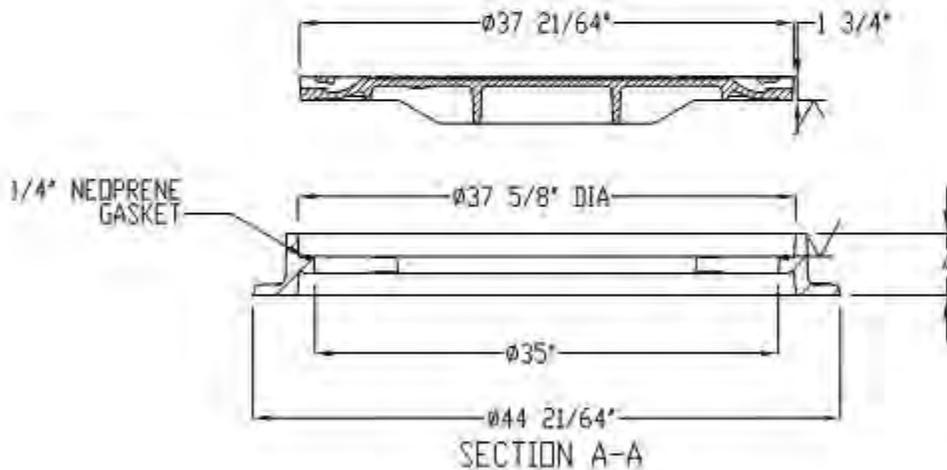
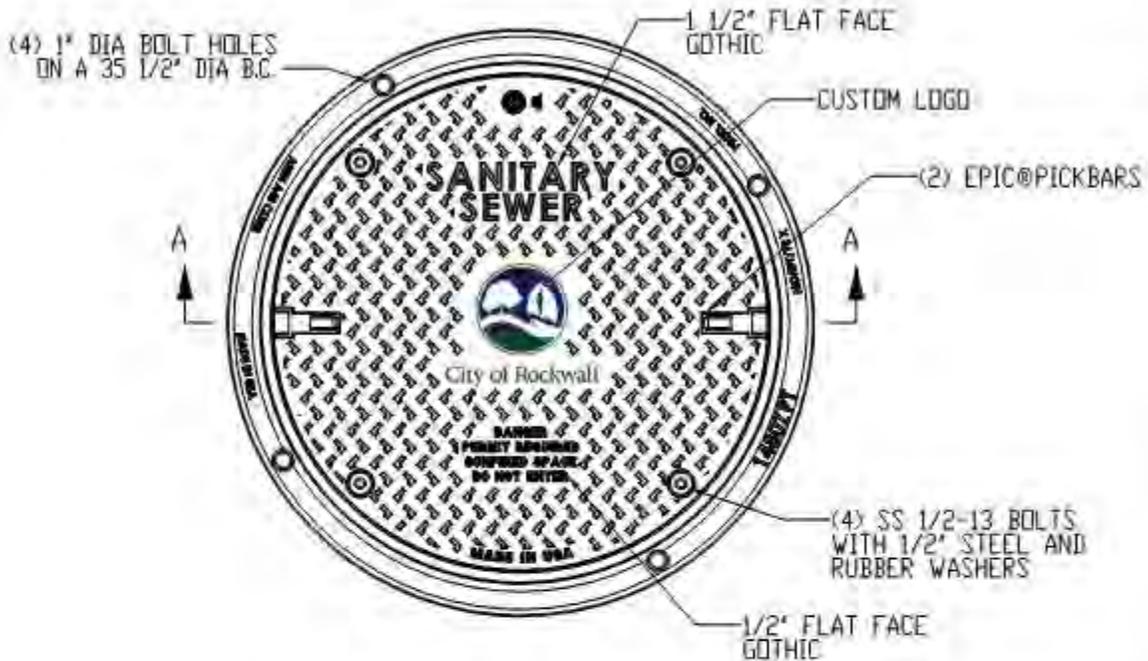


FULLY OPENED POSITION AT 120°

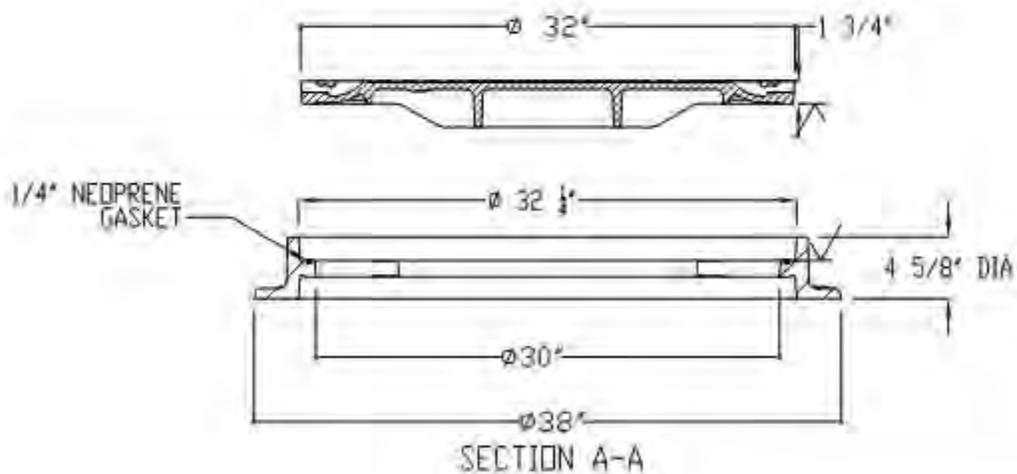
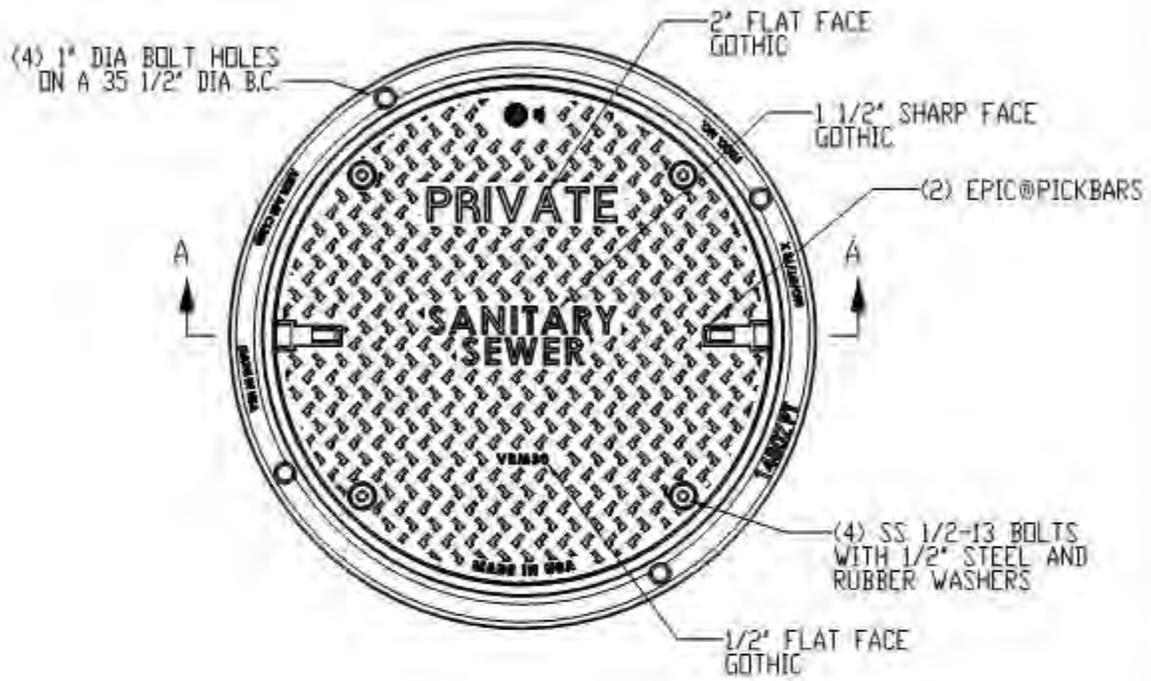


SAFETY LOCK & REMOVAL POSITION AT 90°

WASTEWATER MANHOLE	CITY OF ROCKWALL		
HINGED RIM AND COVER		DATE AUG '19	DRAWING NO. R-5101



WASTEWATER MANHOLE		CITY OF ROCKWALL	
BOLT AND GASKET RIM AND COVER			
		DATE AUG '19	DRAWING NO. R-5102



WASTEWATER MANHOLE

PRIVATE RIM AND COVER

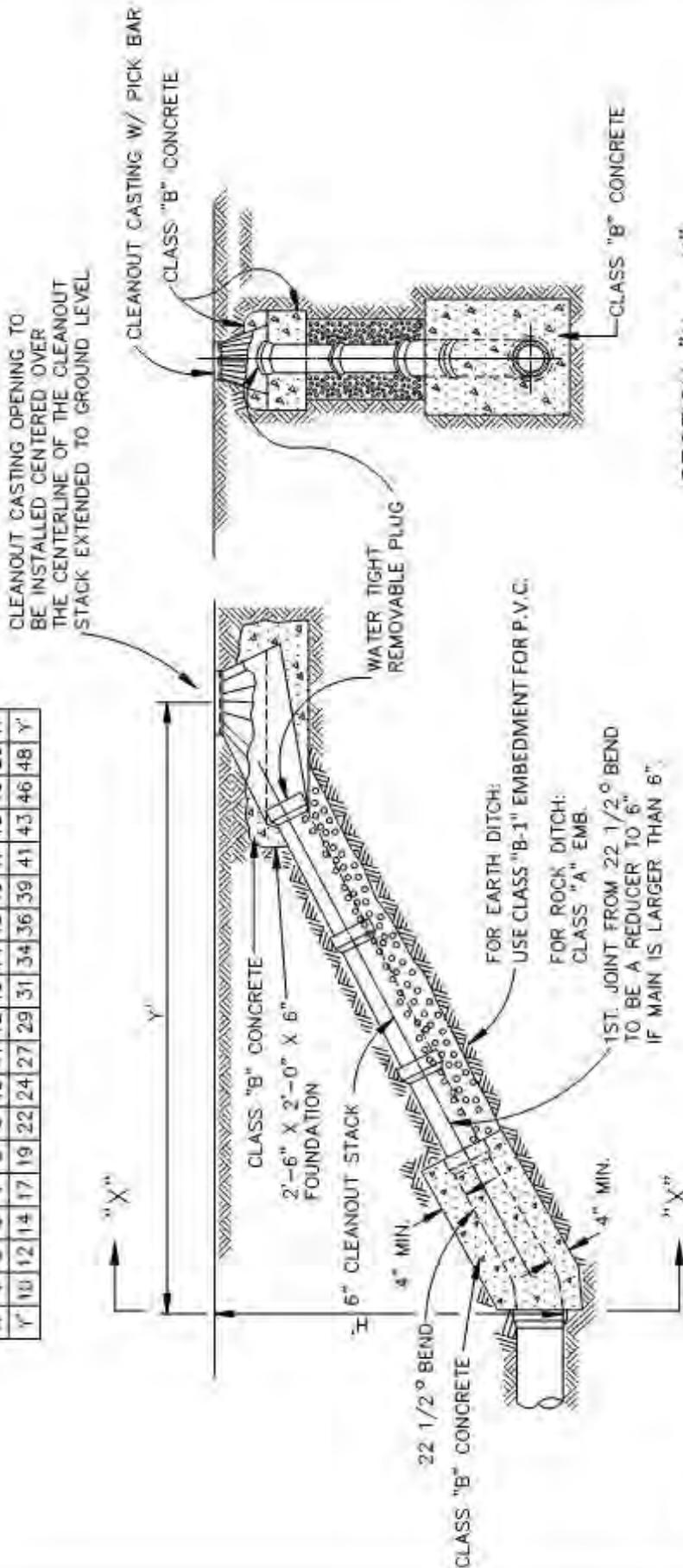
CITY OF ROCKWALL



DATE
AUG '19

DRAWING NO.
R-5103

H'	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Y'	10	12	14	17	19	22	24	27	29	31	34	36	39	41	43	46	48



- NOTES:
- IF CLEANOUT IS PLACED IN ADVANCE OF PAVEMENT PLACE SAND AROUND CLEANOUT CASTING IN LIEU OF CLASS "B" CONCRETE.
 - IF CLEANOUT IS OUTSIDE OF PAVEMENT, CENTER CASTING IN 15"x15" CLASS "A" CONCRETE PAD "4" THICK.

STANDARD SPECIFICATION REFERENCE
502.2

DATE
Mar. 2018

STANDARD DRAWING NO.
R-5110

CITY OF ROCKWALL

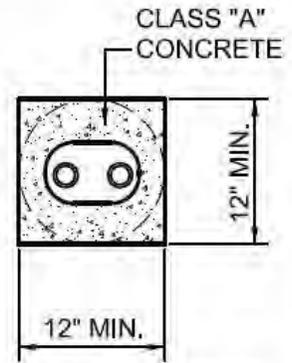
WASTEWATER MAIN

CLEANOUT

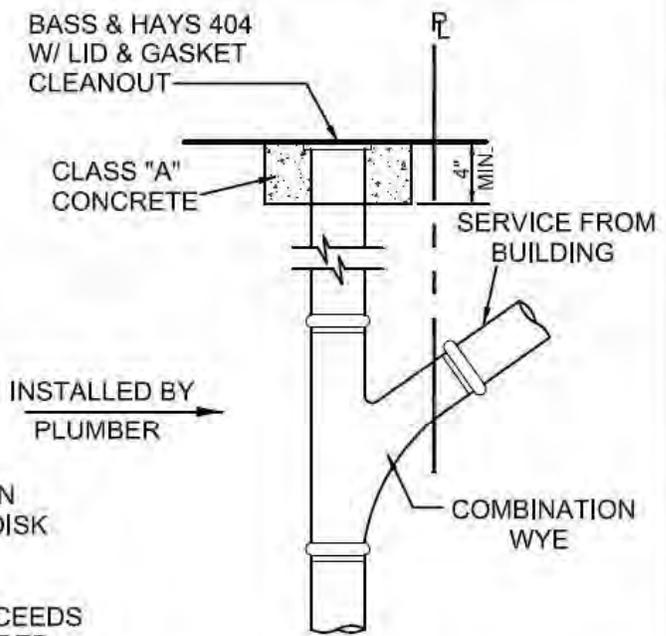
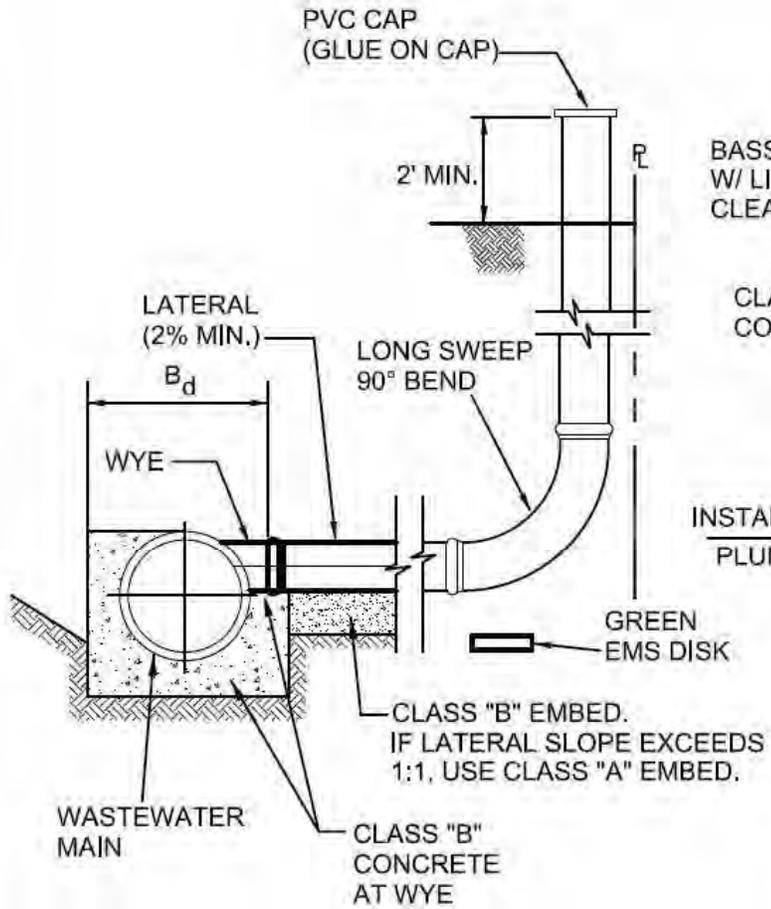
STANDARD DRAWING NO.
R-5110

CLASS CONCRETE	BAGS CEMENT PER C.Y.	MIN. STRENGTH 28 - DAY PSI
A	5.5	3000
B	4	2000

THE CLEANOUT MAY BE PLACED IN THE PARKWAY OR SIDEWALK, IF NECESSARY



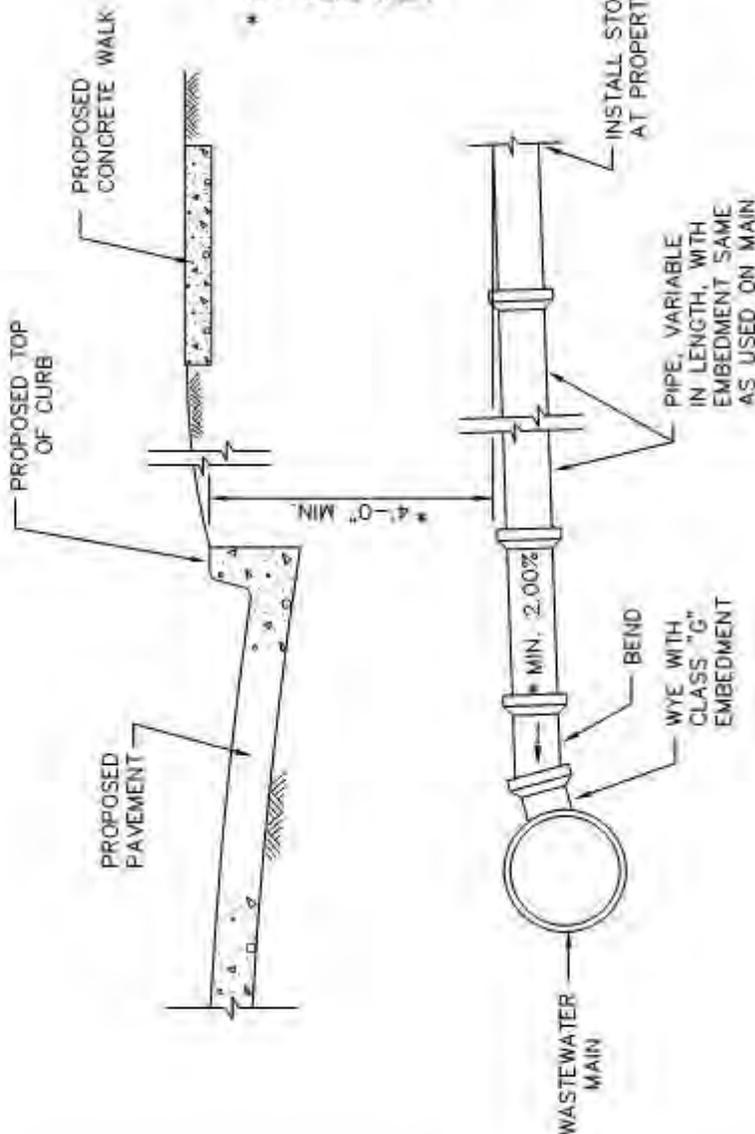
TOP VIEW OF CLEANOUT



PLUMBER TO CUT CLEANOUT RISER TO INSTALL COMBINATION WYE TO CORRESPOND W/ GRADE OF THE PIPE LEADING FROM BUILDING. AFTER INSTALLATION OF THE WYE, INSERT CLEANOUT INTO THE TOP OF THE RISOR.

WASTEWATER LATERAL	CITY OF ROCKWALL		
CONNECTIONS – RESIDENTIAL		DATE AUG. '15	DRAWING NO. R-5120

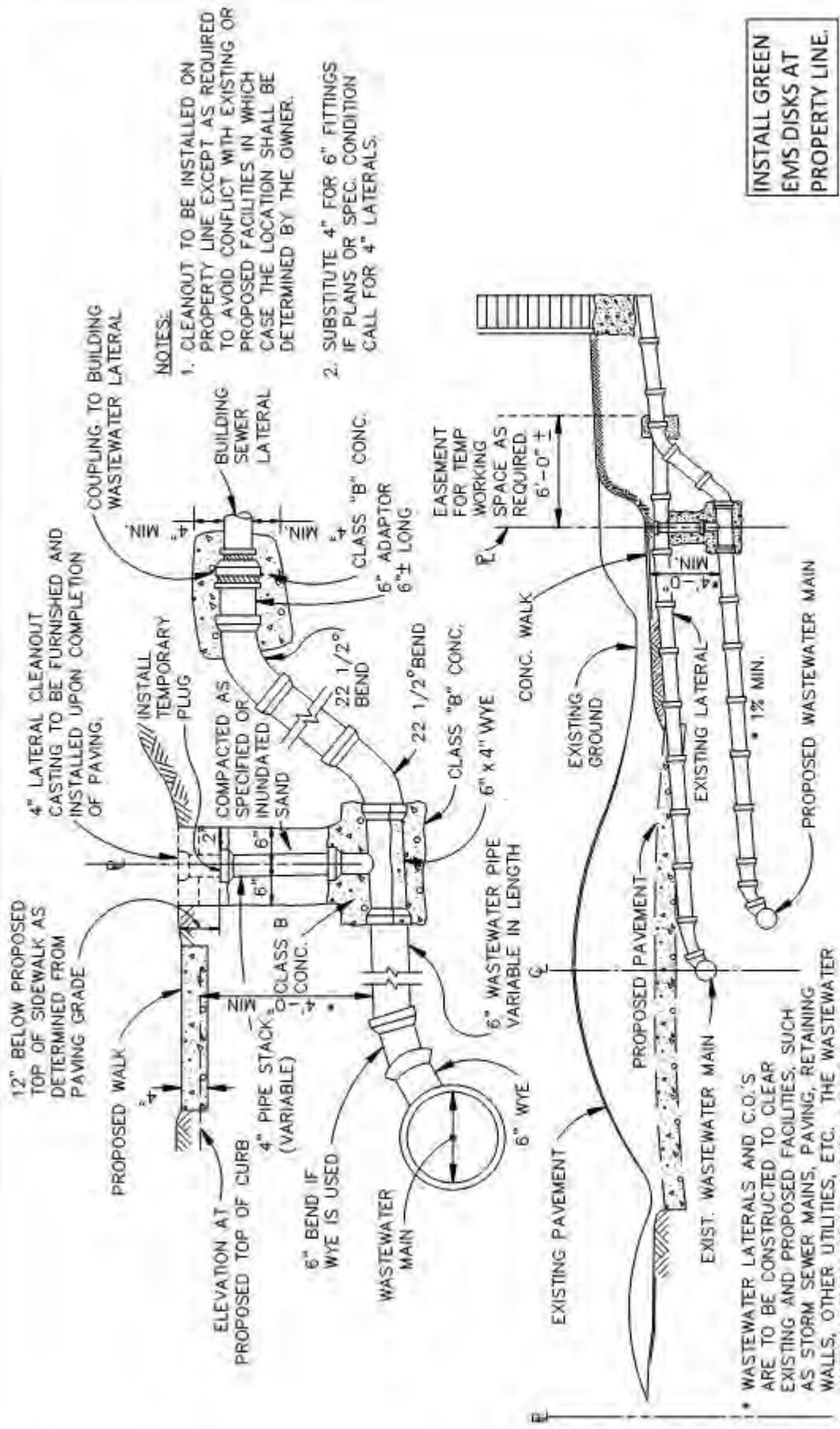
INSTALL GREEN
EMS DISKS AT
END OF LATERAL.



* WASTEWATER LATERALS ARE TO BE CONSTRUCTED TO CLEAR EXISTING AND PROPOSED FACILITIES, SUCH AS STORM SEWER MAINS, RETAINING WALLS, OTHER UTILITIES, ETC. THE WASTEWATER LATERAL SHALL HAVE A MINIMUM COVER OF 4'-0" BELOW THE PROPOSED CURB GRADE AT THE PROPERTY LINE, DETERMINED FROM PAVING GRADE, OR AS REQUIRED TO MAINTAIN A MINIMUM OF 2.00% GRADE, OR AS DIRECTED BY THE OWNER.

WASTEWATER LATERAL STUBOUT
(FOR FUTURE CONNECTION, 4" OR 6" AS SPECIFIED)
N.T.S.

CITY OF ROCKWALL		STANDARD SPECIFICATION REFERENCE
		502.10
		DATE
WASTEWATER LATERAL STUBOUT		Mar. 2018
IN ADVANCE OF PAVING		STANDARD DRAWING NO.
		R-5150



NOTES:

1. CLEANOUT TO BE INSTALLED ON PROPERTY LINE EXCEPT AS REQUIRED TO AVOID CONFLICT WITH EXISTING OR PROPOSED FACILITIES IN WHICH CASE THE LOCATION SHALL BE DETERMINED BY THE OWNER.
2. SUBSTITUTE 4" FOR 6" FITTINGS IF PLANS OR SPEC. CONDITION CALL FOR 4" LATERALS.

**INSTALL GREEN
EMS DISKS AT
PROPERTY LINE.**

WASTEWATER LATERAL REPLACEMENT

N.T.S.

* WASTEWATER LATERALS AND C.O.'S ARE TO BE CONSTRUCTED TO CLEAR EXISTING AND PROPOSED FACILITIES, SUCH AS STORM SEWER MAINS, PAVING, RETAINING WALLS, OTHER UTILITIES, ETC. THE WASTEWATER LATERAL SHALL HAVE A MIN. COVER OF 4' BELOW THE PROPOSED CURB GRADE AT THE PROPERTY LINE, OR AS REQUIRED TO MAINTAIN A MINIMUM OF 1.00% GRADE, OR AS DIRECTED BY THE OWNER.

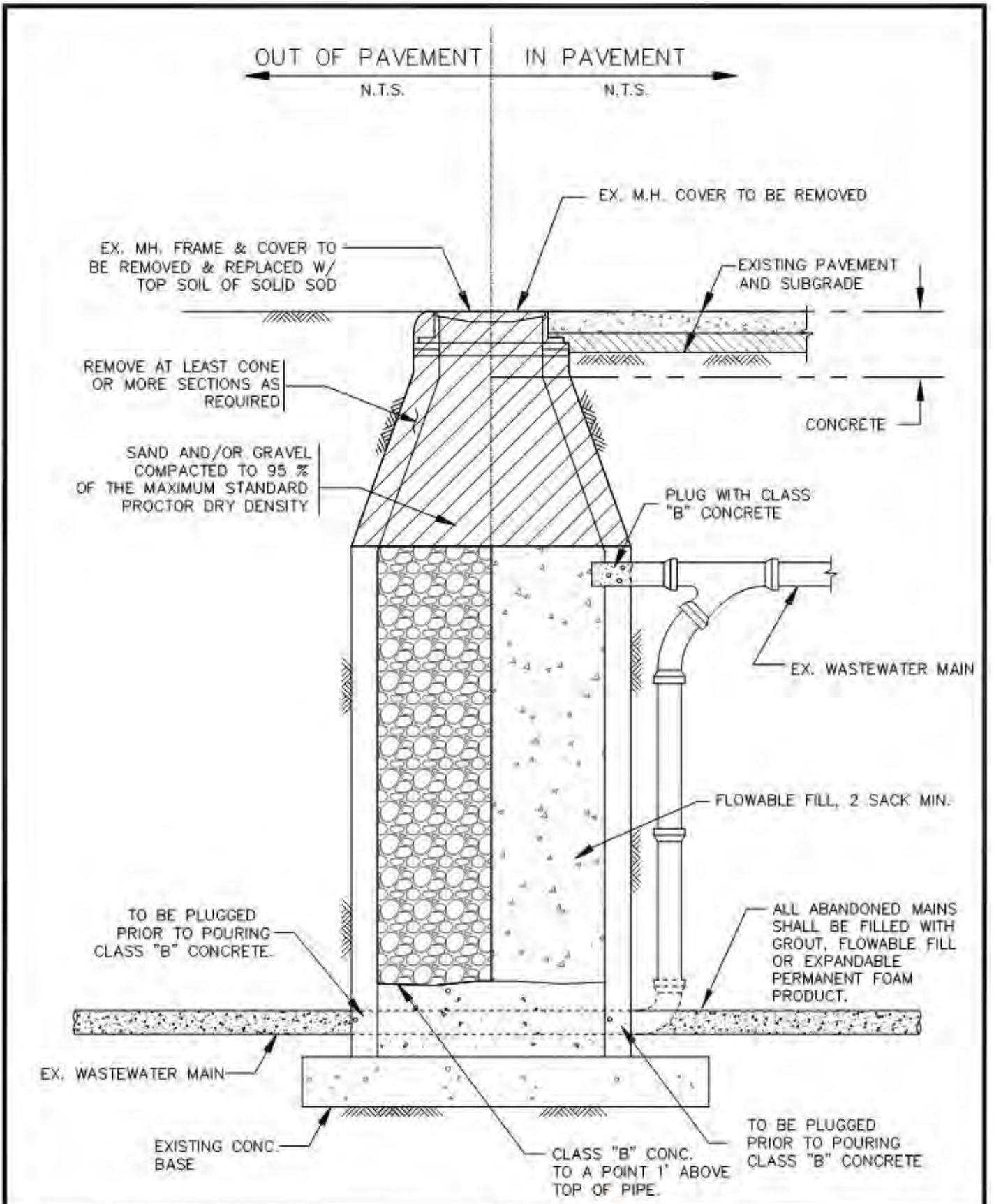
STANDARD SPECIFICATION REFERENCE	502.10
DATE	Mar. 2018
STANDARD DRAWING NO.	R-5160

CITY OF ROCKWALL

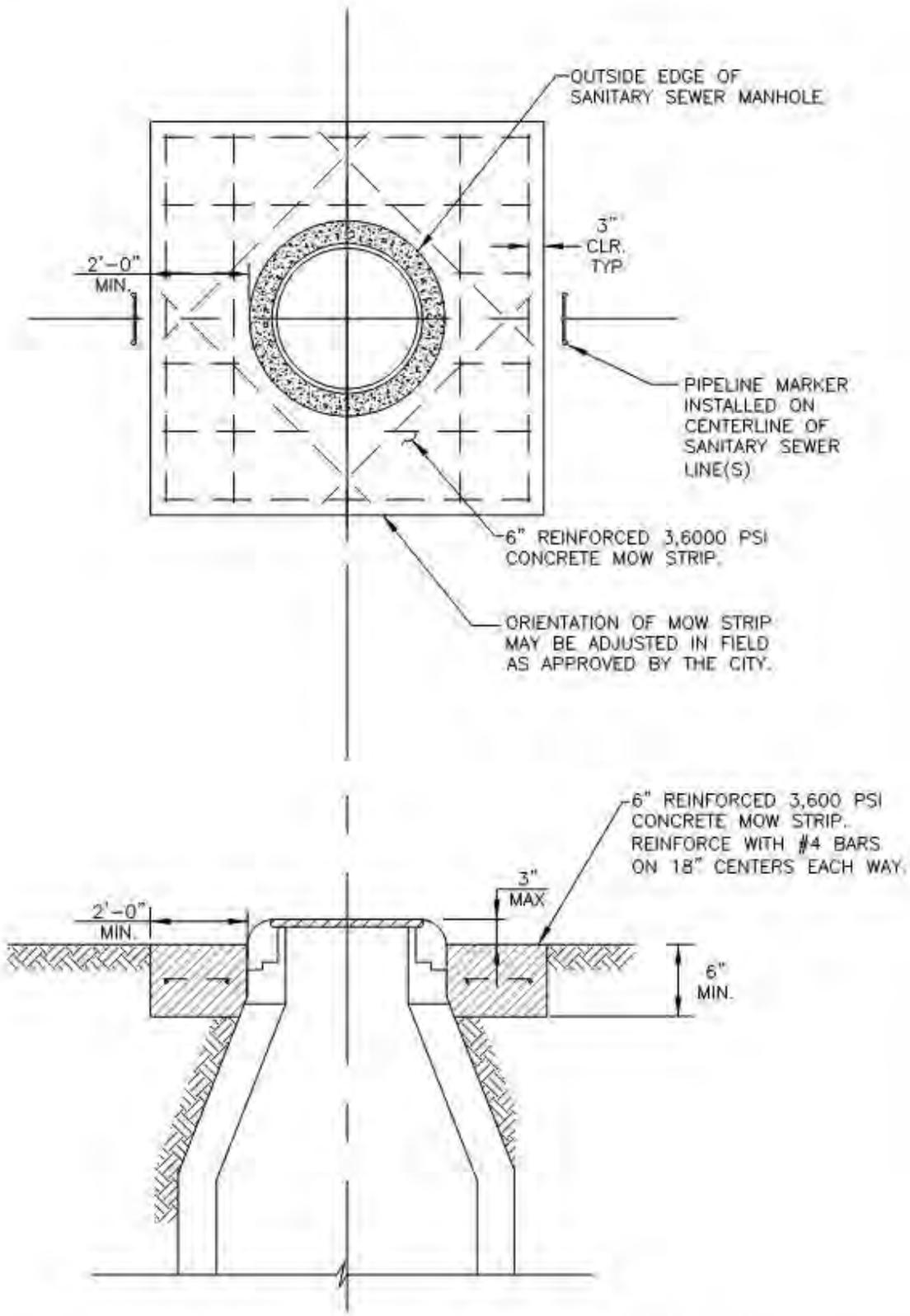


**WASTEWATER LATERAL REPLACEMENT
IN ADVANCE OF PAVING**

STANDARD DRAWING NO.
R-5160



<p>ABANDONMENT OF MANHOLE</p>	<p>CITY OF ROCKWALL</p>		
<p>INSIDE AND OUTSIDE OF PAVEMENT</p>		<p>DATE AUG '19</p>	<p>DRAWING NO. R-5170</p>



MANHOLE AND VALVE VAULT	CITY OF ROCKWALL		
MOW STRIP		DATE AUG '19	DRAWING NO. R-5180

8.6 Division 6000 Storm Water Drainage

- NOTE:**
- (1) Deleted NCTCOG Drawing
 - (2) Revised NCTGOG Drawing (see revisions below)
 - (3) Added Rockwall Standard Drawing (see drawing below)
 - (4) Added Current TxDOT Standards

Table 9.6: Revisions to NCTCOG’s Division 6000 Storm Water Drainage

<u>Revised</u>	<u>Drawing No.</u>	<u>Subject</u>
(1)	6010A	Storm Water Manhole – 4’, 5’, 6’ Square
(3)	R-6010A	Storm Water Manhole – 4’, 5’, 6’ Square
(1)	6010B	Storm Water Manhole – 4’, 5’, 6’ Square
(3)	R-6010B	Storm Water Manhole – 4’, 5’, 6’ Square
(1)	6020A	Curb Inlet – 5’, 10’ 15’ or 20’ Opening
(3)	R-6020A	Curb Inlet – 5’, 10’ 15’ or 20’ Opening
(1)	6020B	Curb Inlet – Cross Section & Inlet Throat
(3)	R-6020B	Curb Inlet – Cross Section & Inlet Throat
(1)	6020C	Curb Inlet – Rebar & M.H. Frame & Cover
(3)	R-6020C	Curb Inlet – Rebar & M.H. Frame & Cover
(1)	6020D	Curb Inlet – Bill of Reinforcing Steel
(3)	R-6020D	Curb Inlet – Bill of Reinforcing Steel
(1)	6020E	Curb Inlet – Summary of Quantities
(3)	R-6020E	Curb Inlet – Summary of Quantities
(1)	6030A	Curb Inlet Recessed – 5’, 10’ 15’ or 20’ Opening
(3)	R-6030A	Curb Inlet Recessed – 5’, 10’ 15’ or 20’ Opening
(1)	6030B	Curb Inlet Recessed – Cross Section & Center Beam
(3)	R-6030B	Curb Inlet Recessed – Cross Section & Center Beam
(1)	6030C	Curb Inlet Recessed – Inlet Throat & M.H. Frame & Cover
(3)	R-6030C	Curb Inlet Recessed – Inlet Throat & M.H. Frame & Cover
(1)	6030D	Curb Inlet Recessed – General Notes
(3)	R-6030D	Curb Inlet Recessed – General Notes
(1)	6040	Drop Inlet – 2’, 4’, 5’, or 6’ Square
(3)	R-6040	Drop Inlet – 2’, 4’, 5’, or 6’ Square
(1)	6050	Full Channel Lining – Concrete Reinforced
(3)	R-6050	Full Channel Lining – Concrete Reinforced
(1)	6060	Concrete Apron – Vertical Headwall
(3)	R-6060	Concrete Apron – Vertical Headwall
(1)	6070	Concrete Apron – Sloping Headwall
(3)	R-6070	Concrete Apron - Sloping Headwall
(4)		TxDOT: Single Box Culvert – Cast-in-place and Precast
(4)		TxDOT: Multiple Box Culvert – Cast-in-place
(4)		TxDOT: Wingwalls for Single & Multi-Box Culverts
(4)		TxDOT: Concrete Headwalls for Pipe Culverts
(4)		TxDOT: Safety End Treatment for Box Culverts
(4)		TxDOT: Safety End Treatment For Pipe Culverts

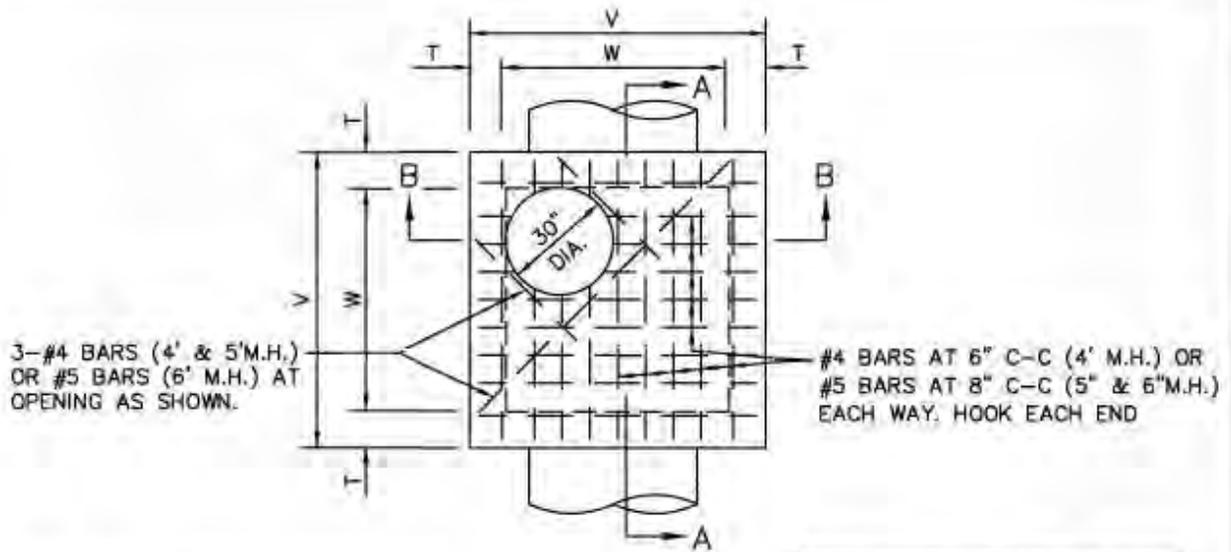


Note: Storm sewer headwalls, wingwalls, box culverts and safety pipe runners shall be per Texas Department of Transportation Standard Details and made part of the City of Rockwall Standard Details.

TxDOT Standard Drawings

Drawings shall be modified as follows:

1. All concrete for structures shall be Class F (4200 psi, minimum 6.5 sack cement).
2. No fly ash is allowed in concrete for structures.

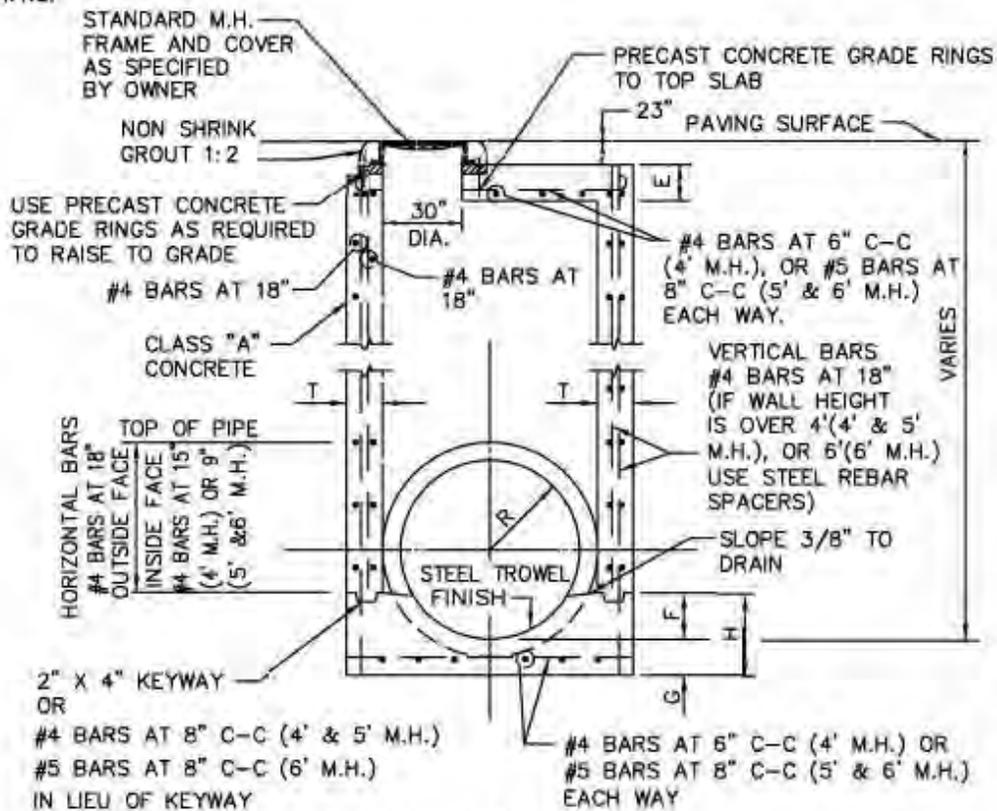


PLAN
N.T.S.

ALL CONCRETE STRUCTURES
SHALL BE CLASS F (4200psi,
MIN. 6.5 SACK CEMENT).
NO FLY ASH IS ALLOWED IN
CONCRETE STRUCTURES.

M.H. SIZE(W)	V	T	E	F	G	H
4'	5'-4"	8"	6"	9"	6"	1'-3"
5'	6'-4"	8"	6"	12"	8"	1'-8"
6'	7'-6"	9"	9"	16"	10"	2'-2"

TABLE OF DIMENSIONS
N.T.S.



SECTION B-B
N.T.S.

STORM WATER MANHOLE
4', 5', OR 6' SQUARE

CITY OF ROCKWALL

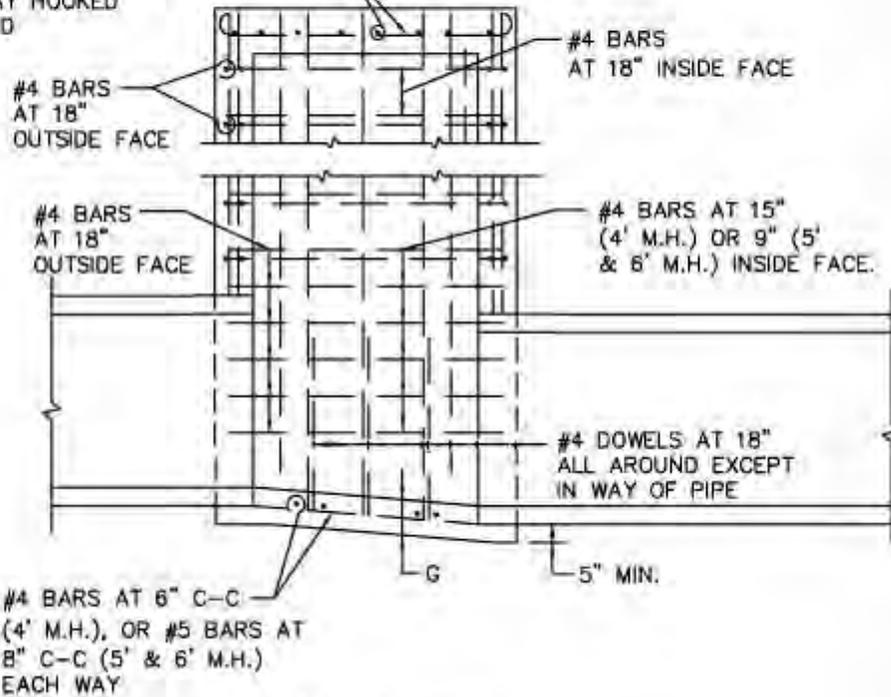


STANDARD SPECIFICATION REFERENCE
502.1.4.1*

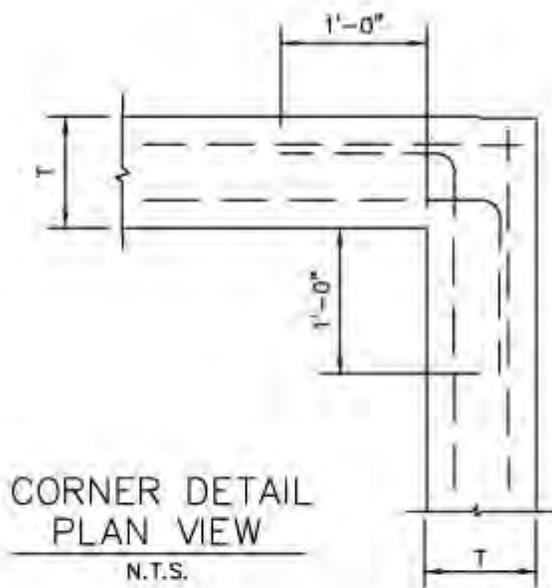
DATE
Mar. 2018

STANDARD DRAWING NO.
R-6010A

#4 BARS AT 6" C-C (4' M.H.), OR
 #5 BARS AT 8" C-C (5' & 6' M.H.)
 EACH WAY HOOKED
 EACH END



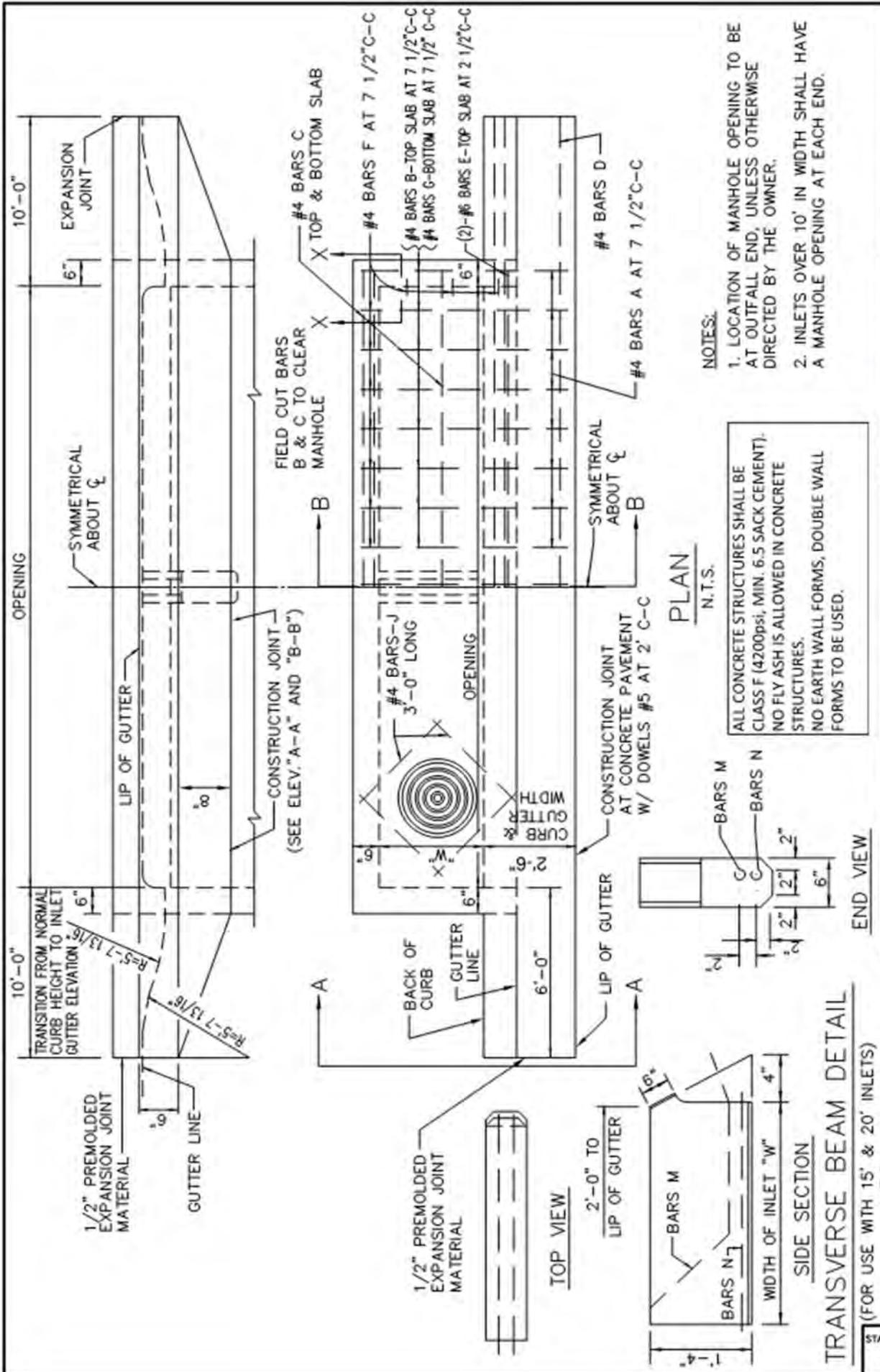
SECTION A-A
 N.T.S.



NOTES:

1. SLOPE INVERT OF MANHOLE AS INDICATED ON PLAN-PROFILE SHEET.
2. LAYERS OF REINFORCING STEEL NEAREST THE INTERIOR AND EXTERIOR SURFACE SHALL HAVE A COVER OF 2" TO THE CENTER OF BARS, UNLESS OTHERWISE NOTED.
3. ALL CONCRETE STRUCTURES SHALL BE CLASS F (4200psi, MIN. 6.5 SACK CEMENT).
4. NO FLY ASH IS ALLOWED IN CONCRETE STRUCTURES.

STORM WATER MANHOLE 4', 5', OR 6' SQUARE	CITY OF ROCKWALL 	STANDARD SPECIFICATION REFERENCE 502.1.4.1*	
		DATE Mar. 2018	STANDARD DRAWING NO. R-6010B



NOTES:

1. LOCATION OF MANHOLE OPENING TO BE AT OUTFALL END, UNLESS OTHERWISE DIRECTED BY THE OWNER.
2. INLETS OVER 10' IN WIDTH SHALL HAVE A MANHOLE OPENING AT EACH END.

ALL CONCRETE STRUCTURES SHALL BE CLASS F (4200psi, MIN. 6.5 SACK CEMENT). NO FLY ASH IS ALLOWED IN CONCRETE STRUCTURES. NO EARTH WALL FORMS, DOUBLE WALL FORMS TO BE USED.

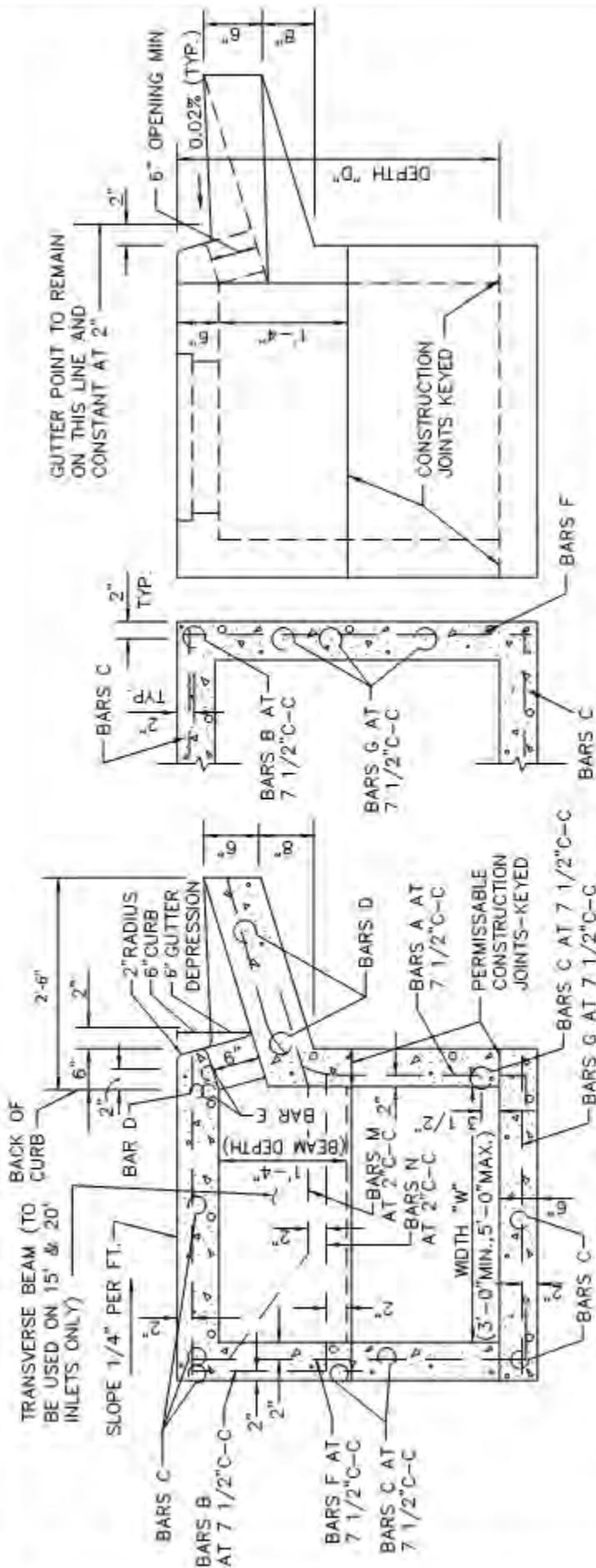
STANDARD SPECIFICATION REFERENCE	702
DATE	AUG. 2019
STANDARD DRAWING NO.	R-6020A

CITY OF ROCKWALL



CURB INLET
5', 10', 15' OR 20' OPENING

STANDARD DRAWING NO.	R-6020A
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SECTION "A-A"

N.T.S.

SECTION "X-X"

N.T.S.

SECTION "B-B"

N.T.S.

ALL CONCRETE STRUCTURES SHALL BE CLASS F (4200psi, MIN. 6.5 SACK CEMENT). NO FLY ASH IS ALLOWED IN CONCRETE STRUCTURES. NO EARTH WALL FORMS, DOUBLE WALL FORMS TO BE USED.

GENERAL NOTES:

1. ALL CONCRETE SHALL BE CLASS "A" CONCRETE.
2. REINFORCING BARS SHALL BE STANDARD GRADE STEEL, DEFORMED REINFORCING BARS OF A DIAMETER AND LENGTH AS SHOWN.
3. CHAMFER ALL EXPOSED CORNERS 3/4" EXCEPT WHERE OTHERWISE NOTED.
4. DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTERS OF BARS.
5. FIELD CUT AND BEND BARS AS NECESSARY TO ACCOMMODATE STORM SEWER PIPE.
6. RING AND COVER SHALL BE APPROVED BY THE OWNER AND INSTALLED BY THE CONTRACTOR.

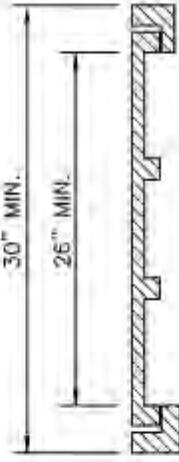
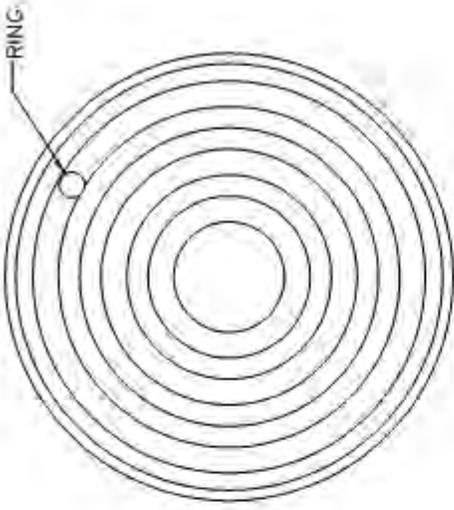
STANDARD SPECIFICATION REFERENCE	702
DATE	AUG. 2019
STANDARD DRAWING NO.	R-6020B

CITY OF ROCKWALL



CURB INLET
CROSS SECTION & INLET THROAT

STANDARD DRAWING NO.
R-6020B



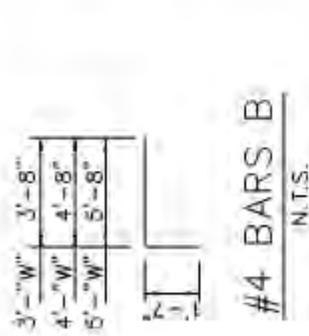
CAST IRON
FRAME AND COVER
N.T.S.

BARS C LGTH. OPEN. +0'-8"
BARS D LGTH. OPEN. +11'-8"
#4 BARS C & D
N.T.S.

"W"+0'-8"
#4 BARS G
N.T.S.

ALL CONCRETE STRUCTURES
SHALL BE CLASS F (4200psi,
MIN. 6.5 SACK CEMENT).
NO FLY ASH IS ALLOWED IN
CONCRETE STRUCTURES.
INLET LID TO BE LOCKING.

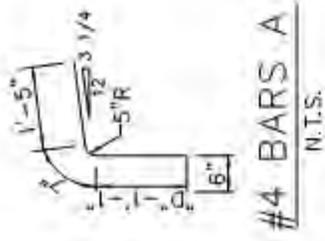
"W"+0'-8"
#5 BARS N
N.T.S.



#4 BARS B
N.T.S.



#4 BARS F
N.T.S.



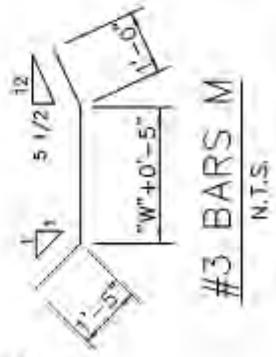
#4 BARS A
N.T.S.



#4 BARS E
N.T.S.



#4 BARS J
N.T.S.



#3 BARS M
N.T.S.

STANDARD SPECIFICATION REFERENCE	702
DATE	Mar. 2018
STANDARD DRAWING NO.	R-6020C

CITY OF ROCKWALL

CURB INLET
REBAR & M.H. FRAME & COVER

STANDARD DRAWING NO.
6020C

SUMMARY OF QUANTITIES FOR CURB INLETS

DEPTH "0"	5'-0" OPENING						10'-0" OPENING						15'-0" OPENING						20'-0" OPENING					
	WIDTH 3'-0"		WIDTH 4'-0"		WIDTH 5'-0"		WIDTH 3'-0"		WIDTH 4'-0"		WIDTH 5'-0"		WIDTH 3'-0"		WIDTH 4'-0"		WIDTH 5'-0"		WIDTH 3'-0"		WIDTH 4'-0"		WIDTH 5'-0"	
	CONC. C.Y.	STEEL LBS.	CONC. C.Y.	STEEL LBS.	CONC. C.Y.	STEEL LBS.	CONC. C.Y.	STEEL LBS.	CONC. C.Y.	STEEL LBS.	CONC. C.Y.	STEEL LBS.	CONC. C.Y.	STEEL LBS.	CONC. C.Y.	STEEL LBS.	CONC. C.Y.	STEEL LBS.	CONC. C.Y.	STEEL LBS.	CONC. C.Y.	STEEL LBS.	CONC. C.Y.	STEEL LBS.
3'-6"	2.62	306	2.95	332	3.28	373	4.12	479	4.64	521	5.20	564	5.69	667	6.40	721	7.10	775	7.20	846	8.11	909	9.03	976
3'-9"	2.70	309	3.04	341	3.39	373	4.25	494	4.78	536	5.34	579	5.87	687	6.58	741	7.30	796	7.42	874	8.34	937	9.27	1010
4'-0"	2.78	328	3.14	364	3.49	399	4.38	518	4.92	565	5.49	610	6.05	718	6.77	776	7.49	835	7.64	909	8.58	976	9.51	1046
4'-3"	2.87	334	3.23	370	3.59	406	4.51	526	5.06	573	5.64	619	6.22	729	6.95	787	7.69	847	7.87	922	8.81	990	9.75	1061
4'-6"	2.95	356	3.32	394	3.69	431	4.64	558	5.20	607	5.79	656	6.40	770	7.14	830	7.88	891	8.09	973	9.04	1043	9.99	1115
4'-9"	3.03	361	3.41	410	3.79	438	4.77	566	5.34	616	5.94	665	6.57	780	7.32	841	8.07	903	8.31	986	9.27	1056	10.23	1129
5'-0"	3.12	367	3.51	416	3.90	445	4.90	574	5.47	624	6.09	674	6.75	791	7.51	853	8.27	915	8.53	999	9.50	1070	10.47	1144
5'-3"	3.20	383	3.60	424	4.00	465	5.03	600	5.61	652	6.23	704	6.93	827	7.69	890	8.46	955	8.76	1044	9.73	1118	10.71	1194
5'-6"	3.28	389	3.69	430	4.10	472	5.16	608	5.75	661	6.38	713	7.11	837	7.88	901	8.66	967	8.98	1057	9.97	1131	10.95	1208
5'-9"	3.37	405	3.78	451	4.20	495	5.29	635	5.89	690	6.53	744	7.28	874	8.07	940	8.85	1007	9.20	1102	10.20	1178	11.19	1258
6'-0"	3.45	415	3.88	460	4.30	504	5.42	646	6.03	702	6.68	757	7.45	888	8.25	954	9.05	1022	9.42	1119	10.43	1196	11.43	1276
6'-3"	3.53	425	3.97	470	4.41	515	5.55	661	6.17	718	6.83	773	7.63	908	8.44	975	9.24	1044	9.64	1147	10.66	1223	11.67	1305
6'-6"	3.62	437	4.06	486	4.51	532	5.68	681	6.31	739	6.97	797	7.81	935	8.62	1005	9.43	1057	9.87	1178	10.89	1258	11.92	1340
6'-9"	3.70	441	4.15	490	4.61	537	5.81	688	6.45	747	7.12	806	7.98	945	8.81	1015	9.63	1066	10.09	1191	11.12	1272	12.15	1355
7'-0"	3.78	460	4.25	510	4.71	560	5.94	716	6.59	777	7.27	837	8.16	981	8.99	1053	9.82	1126	10.31	1237	11.35	1319	12.40	1404
7'-3"	3.86	465	4.34	516	4.81	567	6.07	724	6.72	785	7.42	846	8.33	992	9.18	1065	10.02	1138	10.53	1249	11.59	1333	12.64	1418
7'-6"	3.95	477	4.43	529	4.91	570	6.20	742	6.86	804	7.57	866	8.51	1016	9.36	1089	10.21	1163	10.75	1290	11.82	1365	12.88	1451
7'-9"	4.03	491	4.53	544	5.02	597	6.33	762	7.00	826	7.71	890	8.67	1040	9.55	1116	10.41	1193	10.98	1313	12.05	1399	13.12	1498
8'-0"	4.12	496	4.62	550	5.12	604	6.46	770	7.14	834	7.86	899	8.86	1051	9.73	1129	10.60	1205	11.20	1325	12.28	1412	13.36	1510
8'-3"	4.20	504	4.71	559	5.22	613	6.59	784	7.28	849	8.01	915	9.04	1059	9.92	1149	10.80	1228	11.42	1353	12.51	1440	13.60	1529
8'-6"	4.28	519	4.80	576	5.32	632	6.71	804	7.42	871	8.16	938	9.21	1107	10.10	1176	10.99	1257	11.64	1385	12.74	1474	13.84	1565
8'-9"	4.37	528	4.90	586	5.42	643	6.84	819	7.56	886	8.31	954	9.39	1119	10.29	1199	11.18	1280	11.87	1410	12.97	1500	14.08	1592
9'-0"	4.45	545	4.99	605	5.53	664	6.97	842	7.70	912	8.46	982	9.56	1148	10.47	1231	11.38	1313	12.09	1447	13.21	1539	14.32	1631
9'-3"	4.53	554	5.08	614	5.63	674	7.10	858	7.84	929	8.60	999	9.74	1169	10.66	1252	11.57	1335	12.31	1474	13.44	1563	14.56	1660
9'-6"	4.62	568	5.17	630	5.73	692	7.23	878	7.97	950	8.75	1022	9.92	1195	10.84	1280	11.77	1365	12.53	1505	13.67	1600	14.80	1696
10'-0"	4.78	582	5.36	645	5.93	708	7.49	900	8.11	974	9.05	1048	10.27	1227	11.21	1312	12.16	1399	12.98	1546	14.13	1642	15.29	1739

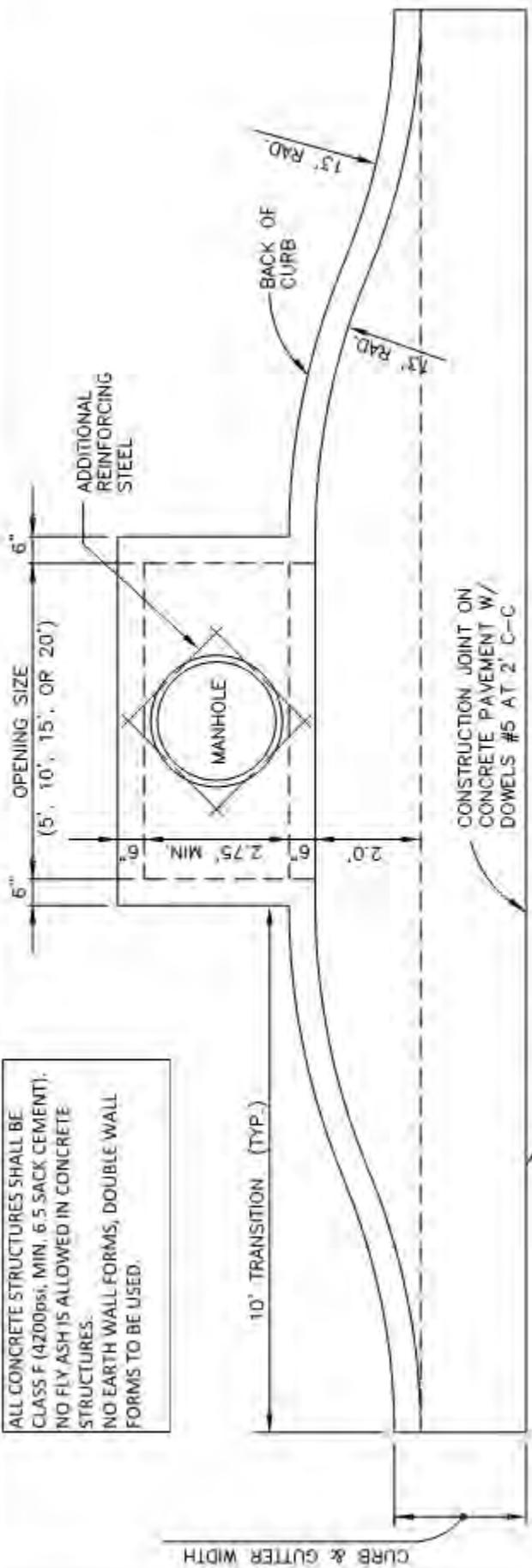
NOTE:

FOR CONVENIENCE, DEPTHS OF INLETS SHOWN IN ABOVE TABLES ARE IN INCREMENTS OF 3 INCHES BUT ANY DEPTHS OTHER THAN THOSE SHOWN ABOVE MAY BE USED WHEREVER DEEMED NECESSARY. QUANTITIES FOR OTHER DEPTHS FALLING WITHIN THE LIMITS OF THE TABLE MAY BE FOUND BY INTERPOLATION.

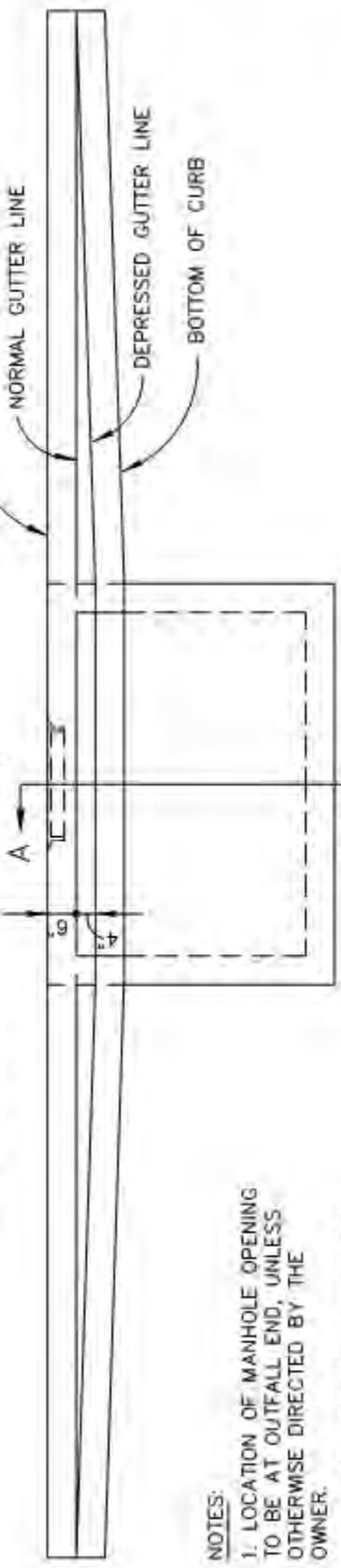
ALL CONCRETE STRUCTURES SHALL BE CLASS F (4200psi, MIN. 6.5 SACK CEMENT). NO FLY ASH IS ALLOWED IN CONCRETE STRUCTURES.

STANDARD DRAWING NO. R-6020E	CITY OF ROCKWALL	STANDARD SPECIFICATION REFERENCE
		702
SUMMARY OF QUANTITIES		DATE
		Mar. 2018
CITY OF ROCKWALL		STANDARD DRAWING NO.
		R-6020E

ALL CONCRETE STRUCTURES SHALL BE CLASS F (4200psi, MIN. 6 SACK CEMENT). NO FLY ASH IS ALLOWED IN CONCRETE STRUCTURES.
NO EARTH WALL FORMS, DOUBLE WALL FORMS TO BE USED.



PLAN
N.T.S.



ELEVATION
N.T.S.

- NOTES:
1. LOCATION OF MANHOLE OPENING TO BE AT OUTFALL END, UNLESS OTHERWISE DIRECTED BY THE OWNER.
 2. IF INLET OPENING IS OVER 10' WIDTH, THEN THERE SHALL BE A MANHOLE OPENING AT EACH END OF INLET.

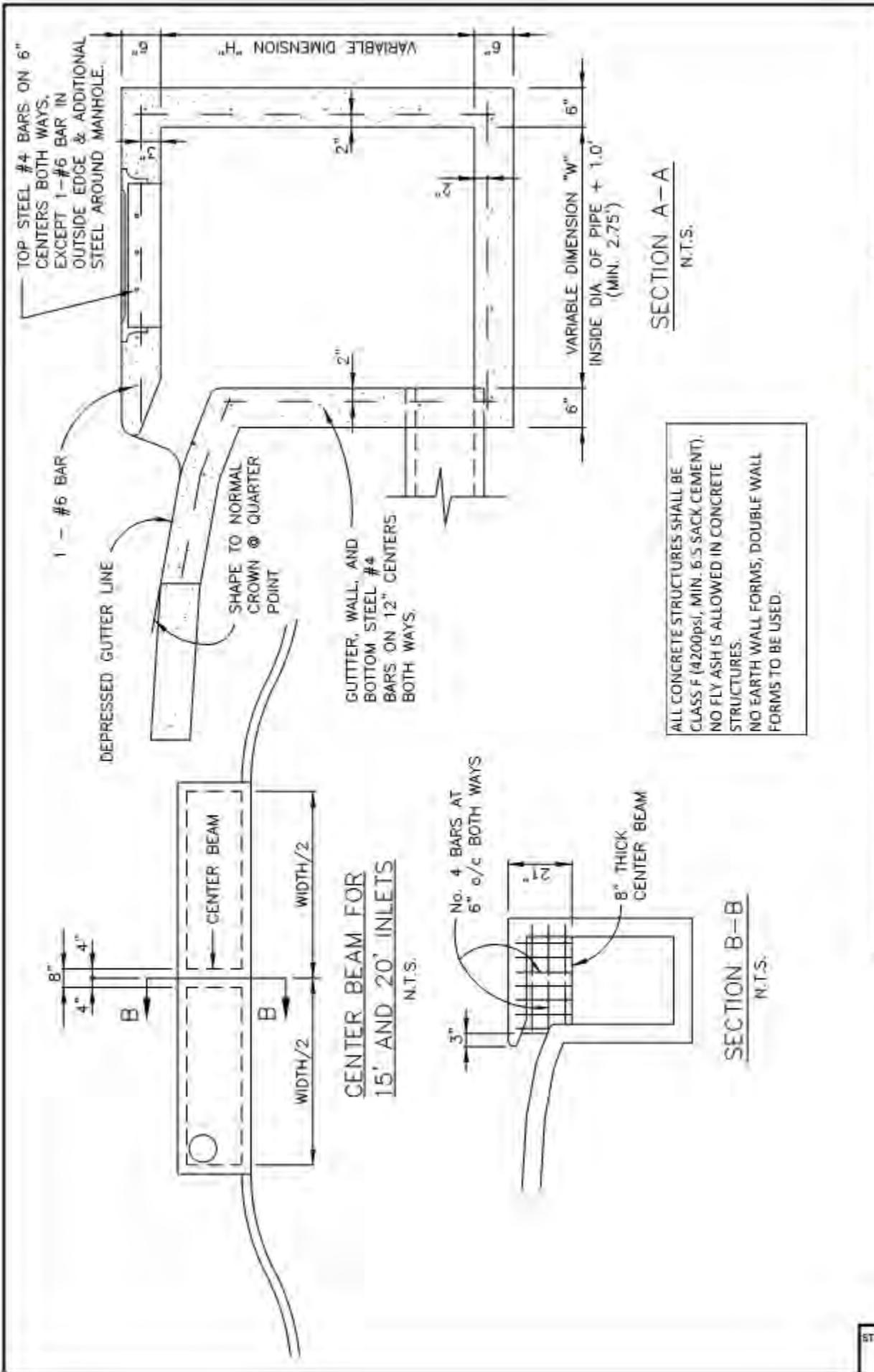
CURB & GUTTER WIDTH

STANDARD SPECIFICATION REFERENCE	702
DATE	Mar. 2018
STANDARD DRAWING NO.	R-6030A

CITY OF ROCKWALL

CURB INLET RECESSED
5', 10', 15' OR 20' OPENING

STANDARD DRAWING NO.
R-6030A



SECTION A-A
N.T.S.

ALL CONCRETE STRUCTURES SHALL BE CLASS F (4200psi, MIN. 5-5 SACK CEMENT). NO FLY ASH IS ALLOWED IN CONCRETE STRUCTURES. NO EARTH WALL FORMS, DOUBLE WALL FORMS TO BE USED.

SECTION B-B
N.T.S.

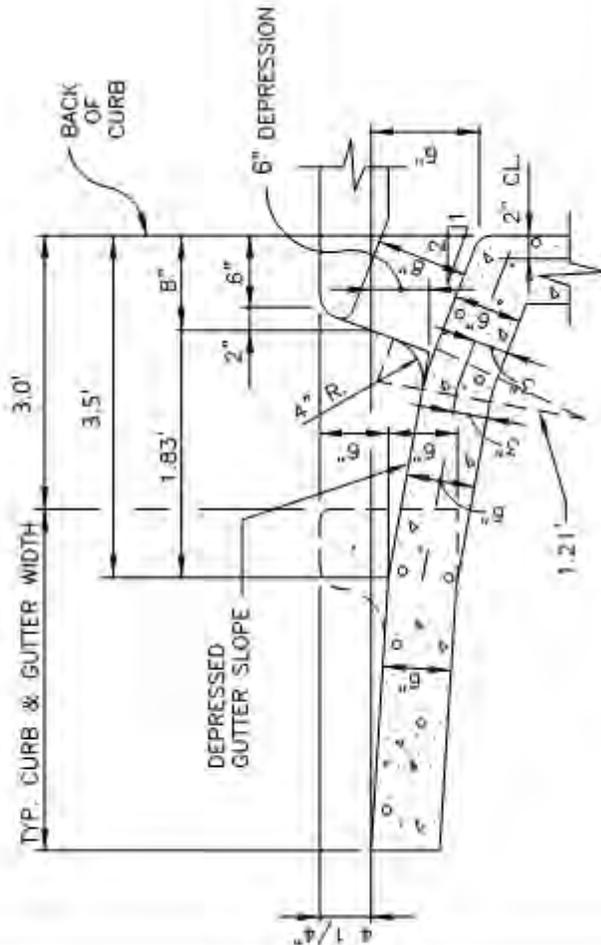
CENTER BEAM FOR
15' AND 20' INLETS
N.T.S.

STANDARD SPECIFICATION REFERENCE	702
DATE	Mar. 2018
STANDARD DRAWING NO	R-6030B

CITY OF ROCKWALL

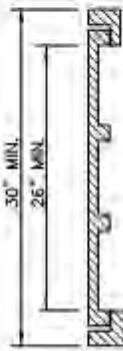
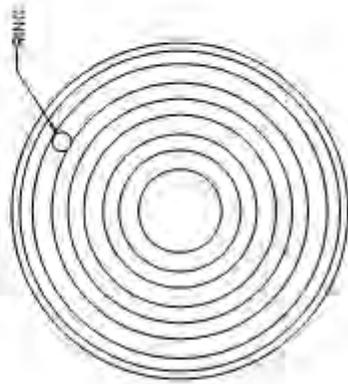
CURB INLET RECESSED
CROSS SECTION & CENTER BEAM

STANDARD DRAWING NO	R-6030B
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INLET THROAT
N.T.S.

ALL CONCRETE STRUCTURES SHALL BE CLASS F (4200psi, MIN. 6.5 SACK CEMENT). NO FLY ASH IS ALLOWED IN CONCRETE STRUCTURES.



MANHOLE FRAME & COVER
N.T.S.

INLET LID OF BE LOCKING

STANDARD SPECIFICATION REFERENCE	702
DATE	Mar. 2018
STANDARD DRAWING NO.	R-6030C

CITY OF ROCKWALL

CURB INLET RECESSED
INLET THROAT & M.H. FRAME & COVER

STANDARD DRAWING NO.
R-6030C

GENERAL NOTES:

1. IN GENERAL, 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 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". ALL EXPOSED CORNERS SHALL BE CHAMFERED 3/4".
4. ALL REINFORCING STEEL SHALL HAVE A MINIMUM COVER OF 2" TO THE CENTERS OF THE BARS.
5. 10'-0" OF EXISTING CURB AND GUTTER UPSTREAM AND 10'-0" OF EXISTING CURB AND GUTTER DOWNSTREAM SHALL BE REMOVED AND REPOURED INTEGRALLY WITH EACH INLET.
6. ALL BACK FILLING SHALL BE PERFORMED BY MECHANICAL TAMPING TO 95% STANDARD PROCTOR DENSITY.
7. ALL CONCRETE STRUCTURES SHALL BE CLASS F (4200psi, MIN. 6.5 SACK CEMENT).
8. NO FLY ASH IS ALLOWED IN CONCRETE STRUCTURES.

STANDARD DRAWING NO.
R-6030D

CURB INLET RECESSED

GENERAL NOTES

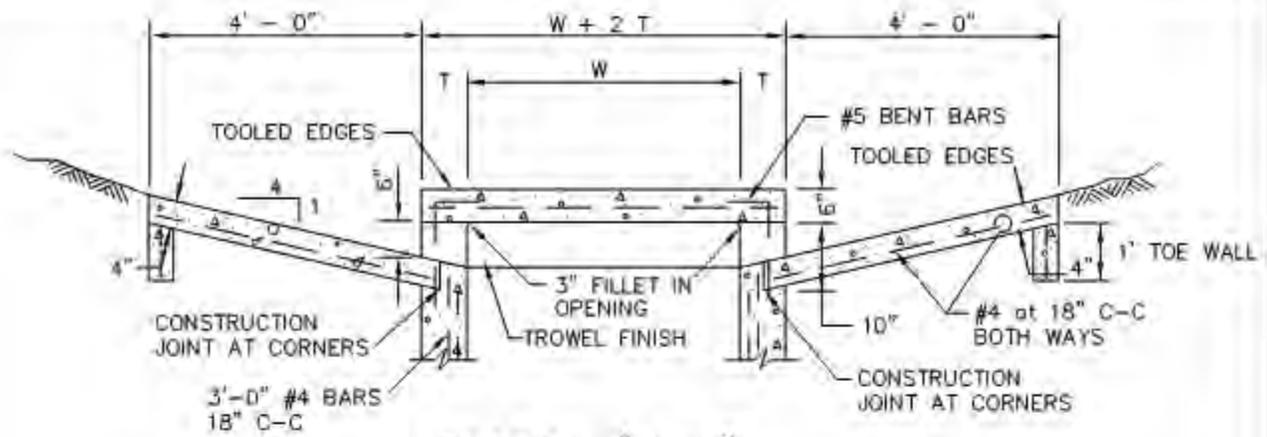
CITY OF ROCKWALL



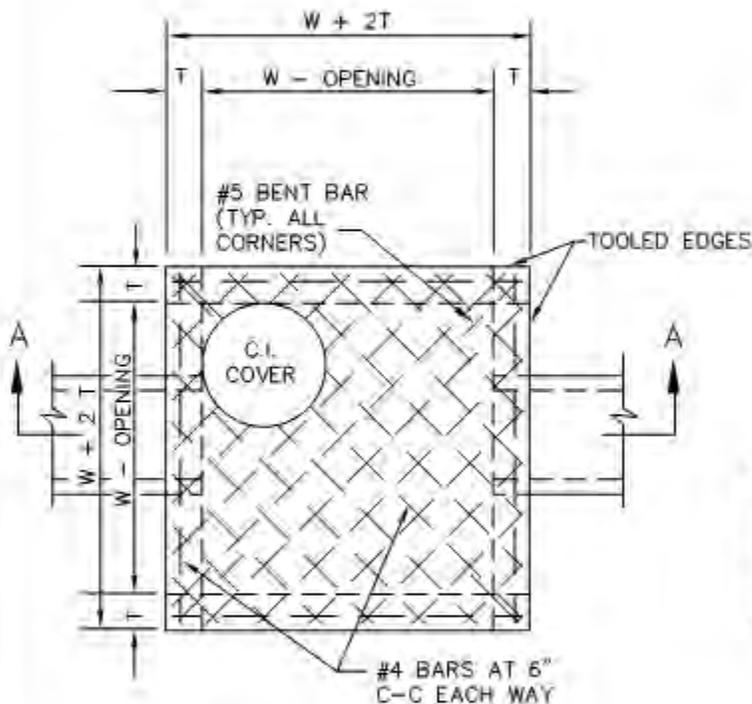
STANDARD SPECIFICATION REFERENCE
702

DATE
Mar. 2018

STANDARD DRAWING NO.
R-6030D



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



PLAN OF TOP SLAB
N.T.S.

ALL CONCRETE STRUCTURES SHALL BE CLASS F (4200psi, MIN. 6.5 SACK CEMENT). NO FLY ASH IS ALLOWED IN CONCRETE STRUCTURES. NO EARTH WALL FORMS, DOUBLE WALL FORMS TO BE USED.

INLET SIZE	T	W
2' SQUARE	7"	2'-0"
4' SQUARE	7"	4'-0"
5' SQUARE	8"	5'-0"
6' SQUARE	9"	6'-0"

NOTES:

1. MATERIAL AND WORKMANSHIP SHALL CONFORM WITH THE REQUIREMENTS OF NCTCOG STANDARD SPECIFICATIONS FOR STANDARD CONCRETE MANHOLES, MINIMUM CLASS "A" CONCRETE.
2. LAYERS OF REINFORCING STEEL NEAREST THE INTERIOR AND EXTERIOR SURFACES SHALL HAVE A COVER OF 2" TO THE CENTER OF BARS, UNLESS OTHERWISE NOTED.
3. FOR DETAILS OF REINFORCING OF LOWER PORTIONS OF INLET SEE APPROPRIATE SQUARE MANHOLE DETAILS.
4. DEPTH OF DROP INLET FROM FINISHED GRADE TO FLOW LINE OF INLET IS VARIABLE. APPROXIMATE DEPTH WILL BE SHOWN ON PLANS AT LOCATION OF INLET.
5. ALL STANDARD DROP INLETS SHALL HAVE ONE OPENING ON EACH SIDE UNLESS OTHERWISE SHOWN ON PLANS.
6. DECK MAY BE REINFORCED SAME AS 4' SQUARE MANHOLE.

DROP INLET

2', 4', 5' OR 6' SQUARE

CITY OF ROCKWALL



STANDARD SPECIFICATION REFERENCE
702

DATE
Mar. 2018

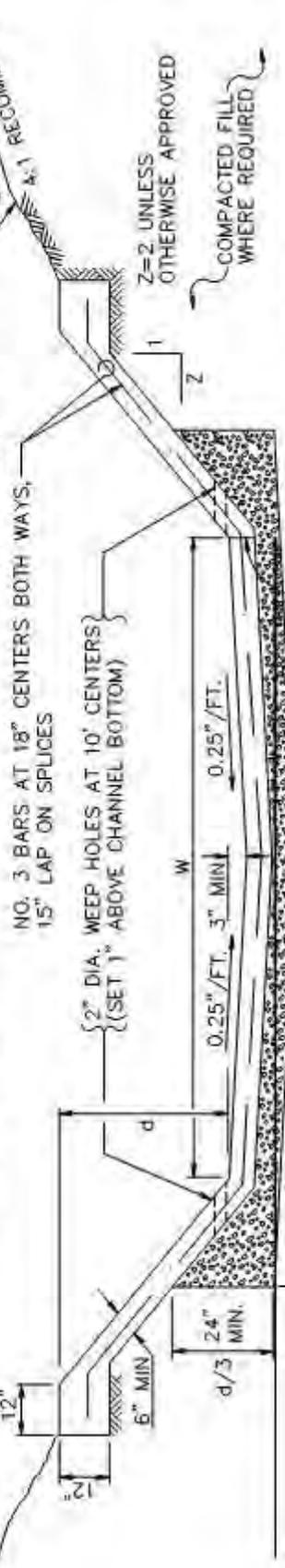
STANDARD DRAWING NO.
R-6040

FILL AREAS SHALL BE COMPACTED TO 95% STD. PROCTOR DENSITY AT OPTIMUM MOISTURE CONTENT PRIOR TO CHANNEL EXCAVATION.

ALL CONCRETE SHALL BE CLASS "A"

HYDROSEED, BLOCK SOD, OR DISC SEED

3'-1 MAX. 1'-4 RECOMMENDED



Z=2 UNLESS OTHERWISE APPROVED

COMPACTED FILL WHERE REQUIRED

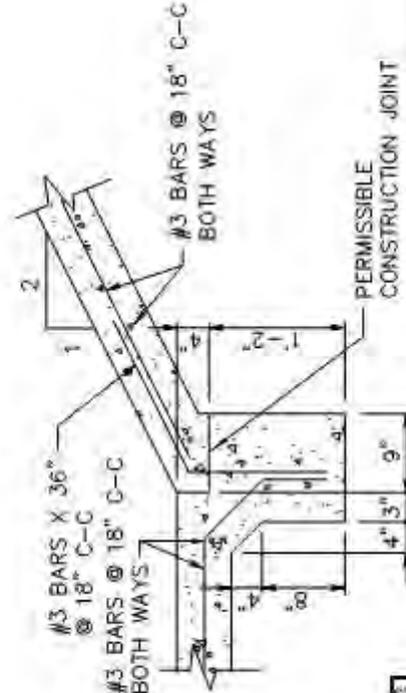
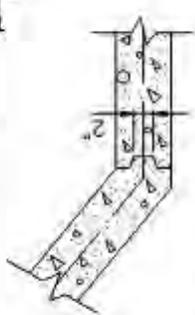
6" MIN. WASHED ROCK WITH CONTINUOUS FILTER FABRIC, UNLESS FABRIC SPECIFICALLY DELETED BY THE OWNER.

NOTE: WASHED ROCK SHALL BE GAP GRADED 1 1/2"

CONSTRUCTION JOINT WHERE PERMITTED

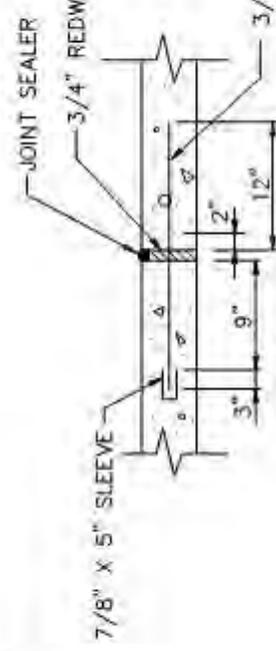
REINFORCED CONCRETE CHANNEL SECTION
N.T.S.

CONSTRUCTION JOINT
N.T.S.



ALTERNATE CONSTRUCTION JOINT
N.T.S.

ALL CONCRETE STRUCTURES SHALL BE CLASS F (4200psi, MIN. 6.5 SACK CEMENT). NO FLY ASH IS ALLOWED IN CONCRETE STRUCTURES.



TRANSVERSE EXPANSION JOINT

SPACE 100' C-C AND USE AT ENDS OF CURVES - P.C. AND P.T. N.T.S.

STANDARD DRAWING NO. R-6050

FULL CHANNEL LINING CONCRETE REINFORCED

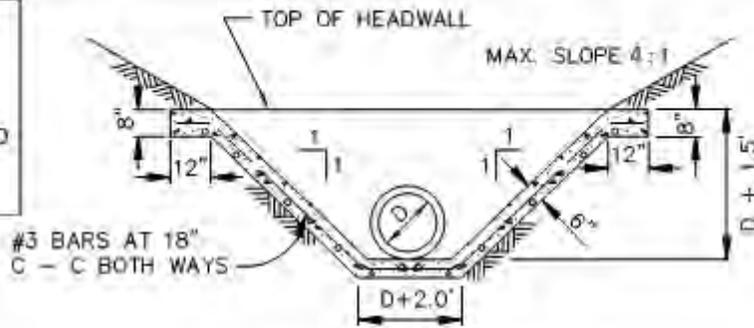


CITY OF ROCKWALL

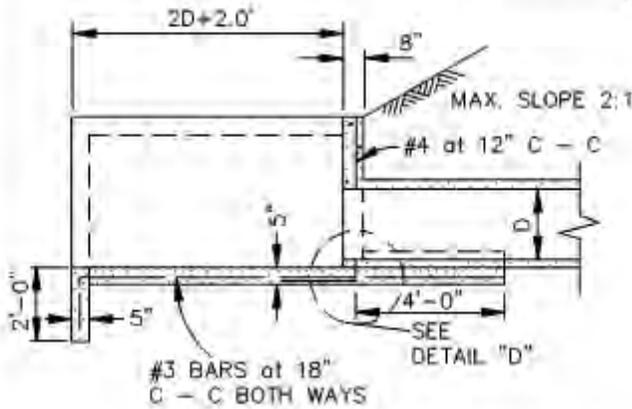
STANDARD SPECIFICATION REFERENCE 803.3

DATE Mar. 2018
STANDARD DRAWING NO. R-6050

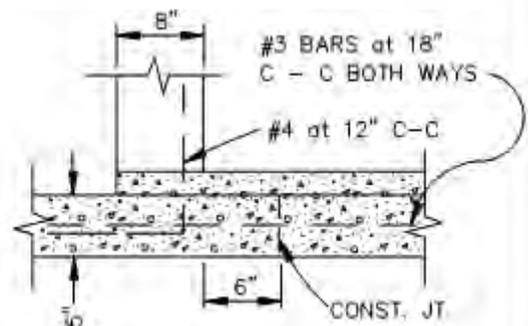
ALL CONCRETE STRUCTURES SHALL BE CLASS F (4200psi, MIN. 6.5 SACK CEMENT). NO FLY ASH IS ALLOWED IN CONCRETE STRUCTURES.



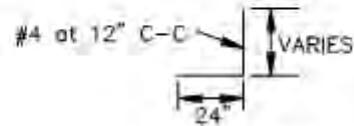
SECTION "B-B"
N.T.S.



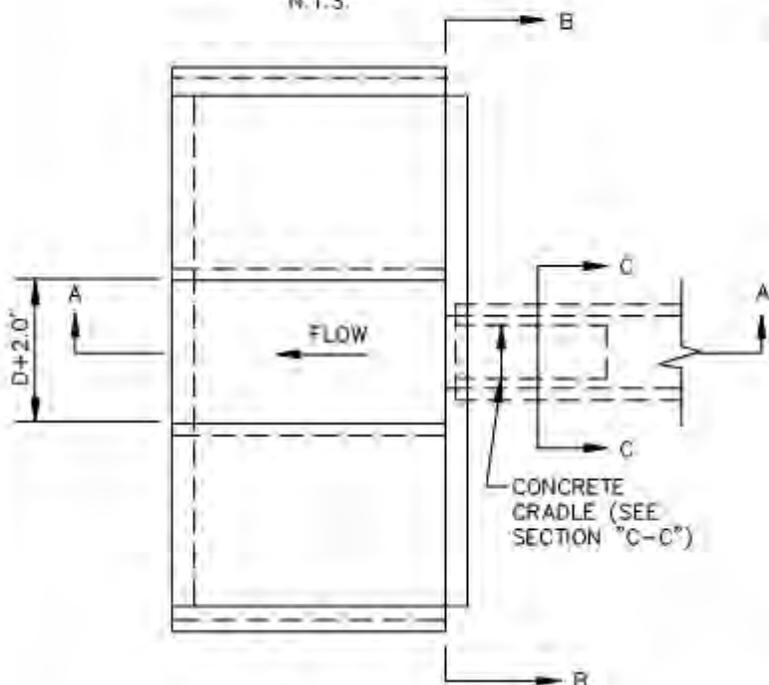
SECTION "A-A"
N.T.S.



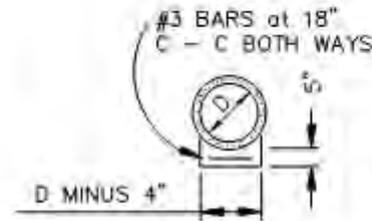
DETAIL "D"
N.T.S.



BAR DETAIL
N.T.S.



PLAN
N.T.S.



SECTION "C-C"
N.T.S.

NOTE:
CONCRETE SHALL BE CLASS "A"

CONCRETE APRON
VERTICAL HEADWALL

CITY OF ROCKWALL

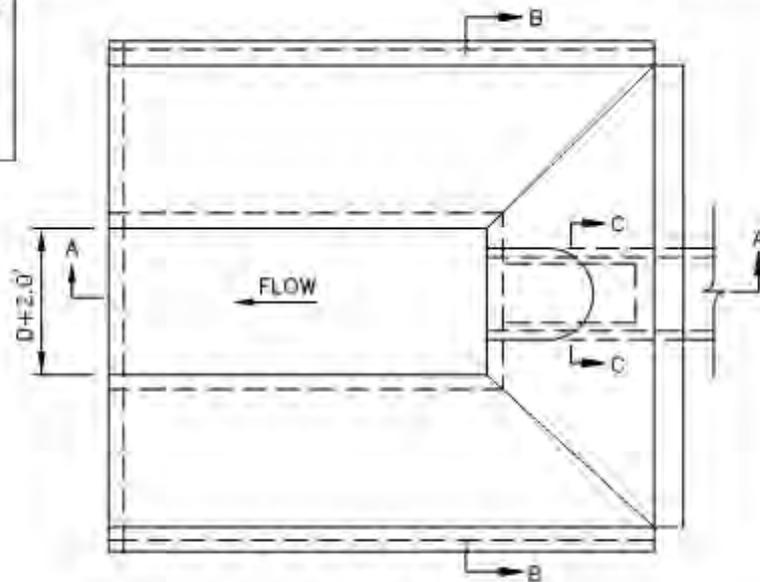


STANDARD SPECIFICATION REFERENCE
803.3

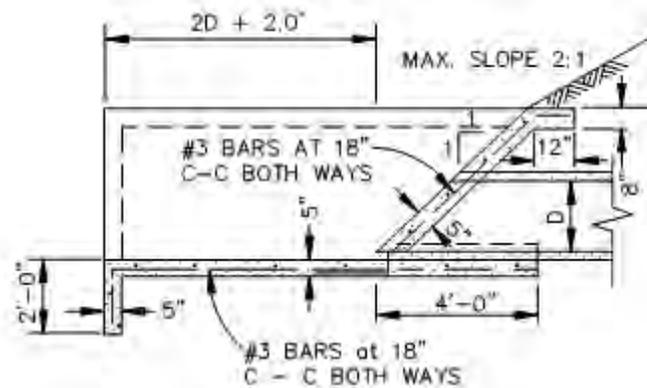
DATE
Mar. 2018

STANDARD DRAWING NO.
R-6060

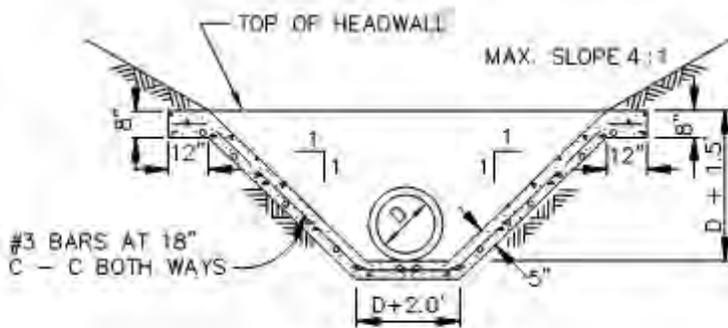
ALL CONCRETE STRUCTURES SHALL BE CLASS F (4200psi, MIN. 6.5 SACK CEMENT). NO FLY ASH IS ALLOWED IN CONCRETE STRUCTURES.



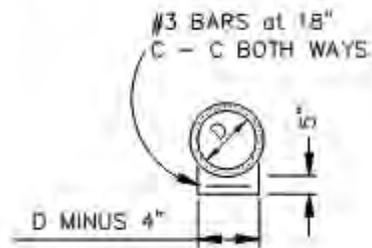
PLAN
N.T.S.



SECTION A-A
N.T.S.



SECTION B-B
N.T.S.



SECTION C-C
N.T.S.

NOTE:
CONCRETE SHALL BE CLASS "A".

CONCRETE APRON
SLOPING HEADWALL

CITY OF ROCKWALL



STANDARD SPECIFICATION REFERENCE
803.3

DATE
Mar. 2018

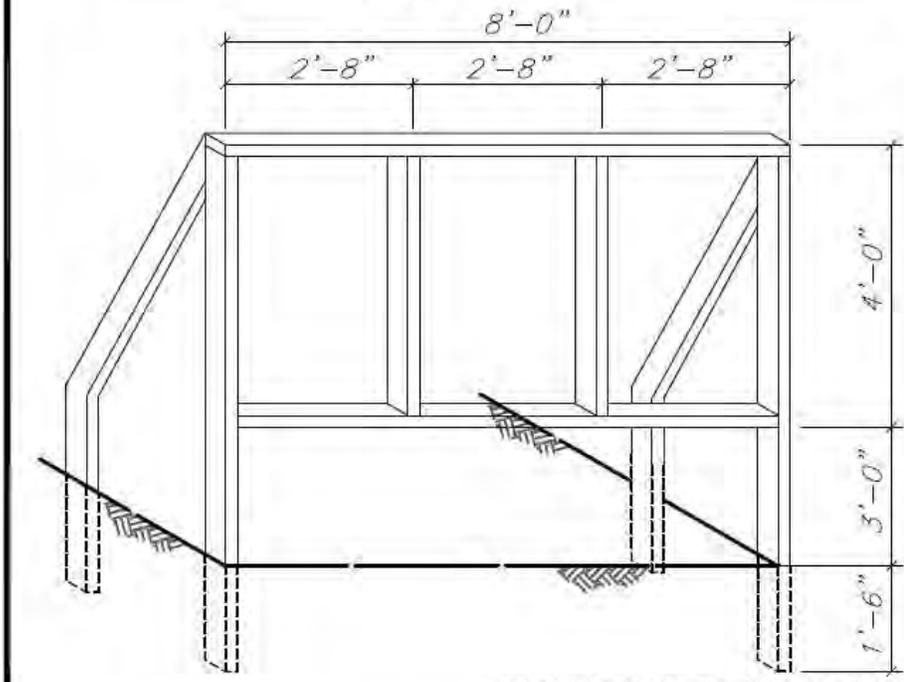
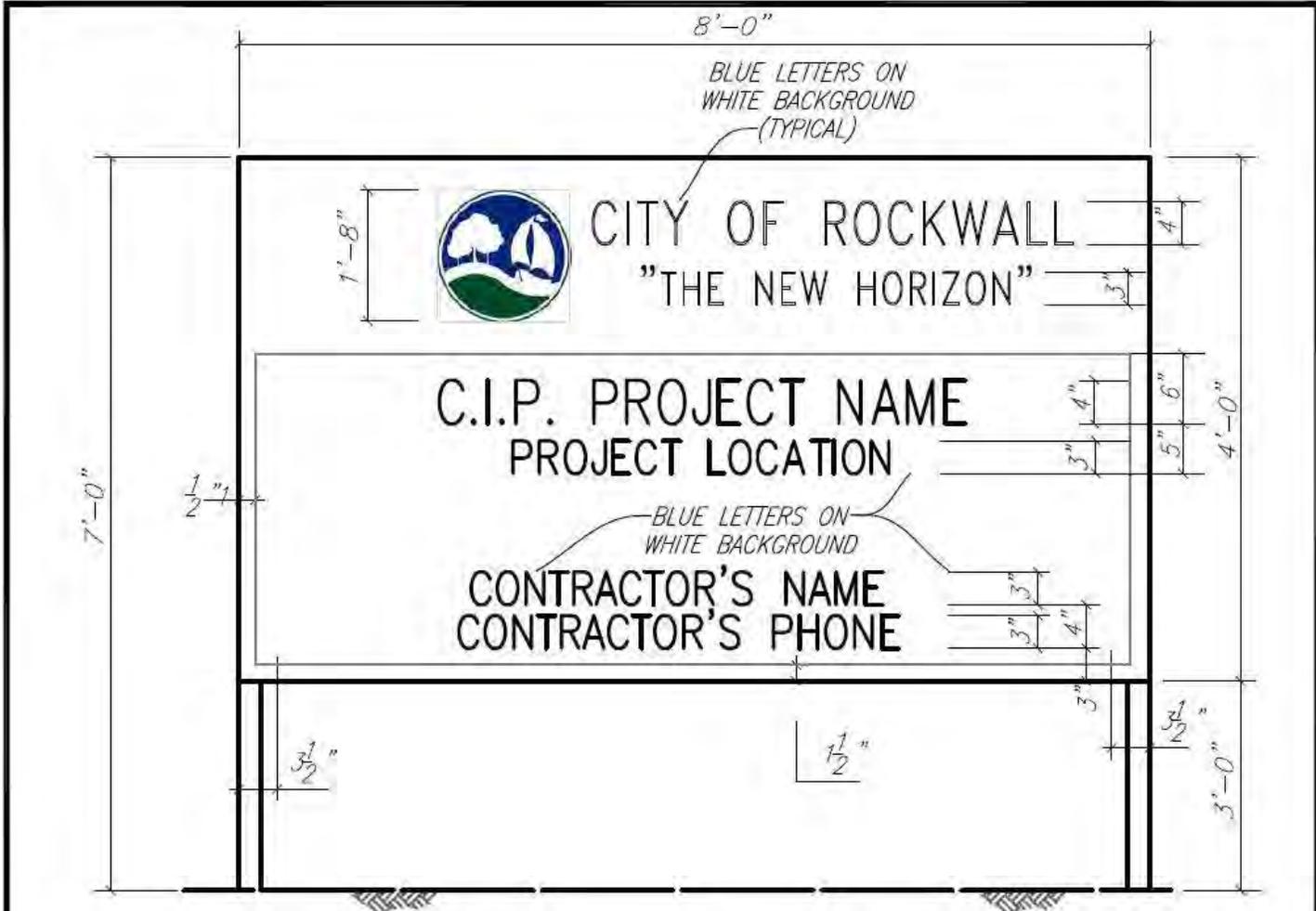
STANDARD DRAWING NO.
R-6070

8.7 Division 7000 Rockwall Miscellaneous Details

This Division 7000 is to be added to the NCTCOG's Standard Drawings for Public Works Construction Standards. Division 7000 contains miscellaneous standard details added by the City. The following Table 9.7 contains a list of the miscellaneous standards being added.

Table 9.7: Division 7000 Rockwall Miscellaneous Details

<u>Drawing No.</u>	<u>Subject</u>
R-7010	Miscellaneous Details – Construction Sign Detail
R-7020	Miscellaneous Details – Residential Lot Typical Wall & Swale Detail



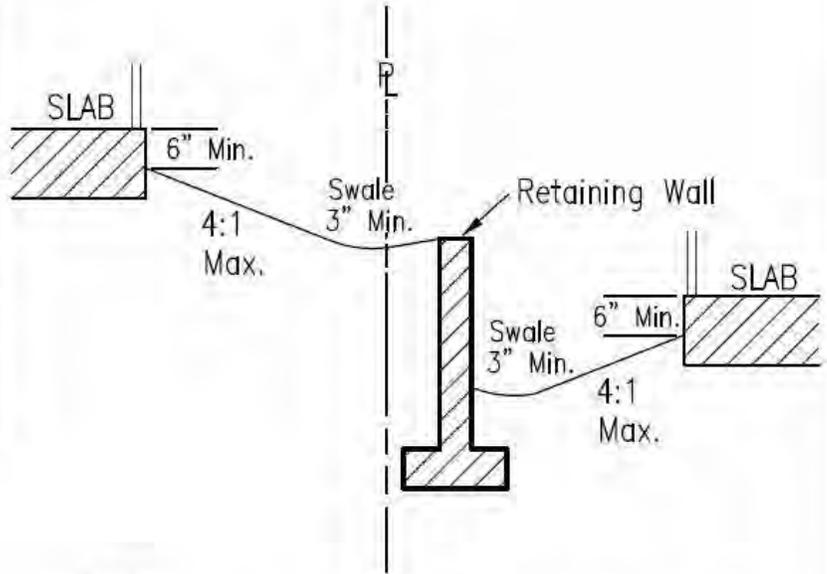
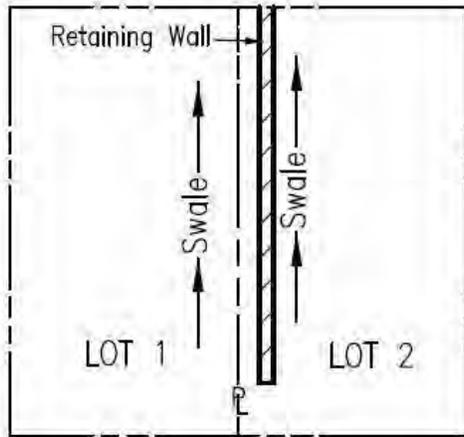
SIGN PANEL 3/4" EXTERIOR PLYWOOD
PAINT AS SHOWN ON DETAIL ABOVE

FRAME 2"x4" STOCK FRAME TO BE
PAINTED WHITE

ALL PAINT TO BE "EXTERIOR GRADE"

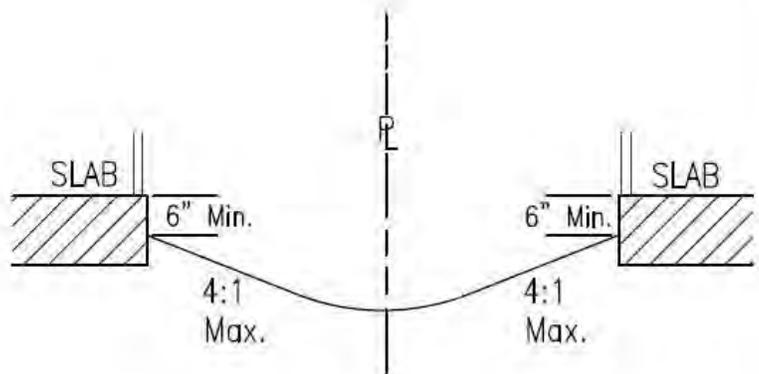
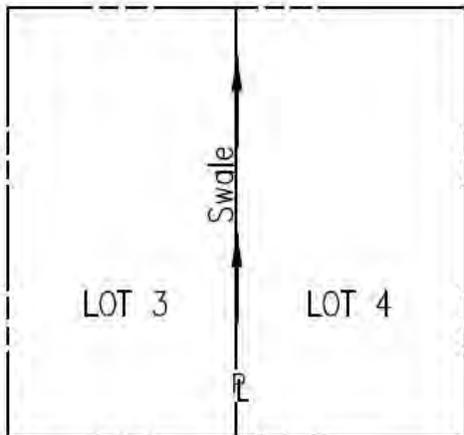
SIGN FRAME ELEVATION

MISCELLANEOUS DETAILS	CITY OF ROCKWALL		
CONSTRUCTION SIGN DETAIL		DATE AUG. '15	DRAWING NO. R-7010



NOTE:

No Retaining Walls including the footing shall be placed in the right-of-way, easements, or overlapping property lines.



NO WALL

MISCELLANEOUS DETAILS

RESIDENTIAL LOT
TYPICAL WALL & SWALE DETAIL

CITY OF ROCKWALL



DATE
AUG. '15

DRAWING NO.
R-7020

APPENDIX

APPENDIX A – Engineering **Plan Review Check List**

Engineering Plan Review Check List

Item Description
Administrative Items
Engineering Plan Submission Application with submittal checklist
Engineering-Plan Review Checklist
Four Complete Copies of Engineering Plans Initial Submittal; Three Complete Copies of Engineering Plans Re-Submittal; Two additional sets each submittal is proposed lift station.
Markups from Previous Submittals, if subsequent submittal
Annotated Review Comments, if applicable
Two copies of any Study or Report Completed in Support of the Project
Submission of Required Fire Flows Form to Fire Marshal
Submission of Fire Hydrant Flow Form to Fire Marshal
Floodplain Administrator Development Permit Application
Storm Drainage Management Plan
TxDOT preliminary letter of approval for Drive Approach Connections
TxDOT permits obtained
Franchised Utility Approval Obtained (specify)
Other Agency or Land Owner Approval Obtained (specify)
Corps of Engineers (COE) Wetland Permit Obtained (if applicable) or letter of determination
Federal Emergency Management Agency (FEMA) Letter of Map Revision (LOMR)
Other Agreements (explain)
Studies - If Required
Geotechnical Report
Federal Emergency Management Agency (FEMA) Letter of Map Revision (LOMR) Flood Study
Wetland Determination
Lift Station Report
Hydraulic Study Submitted
Water Study Submitted
Sanitary Sewer Capacity Study Submitted
Traffic Impact Analysis
Flood Study (100 year-fully developed) (Local or FEMA)
Sight Visibility Determination for easements
All Sheets
Sheet Size 24" x 36"
Title Block with Subdivision Name, Project Name and Sheet Description
Revision Block - Filled Out
North Arrow

Item Description
Vertical and Horizontal Scale Listed and Accurate
Benchmarks Listed and Described
Legend of All Drawing Symbols and Line Types Used
Engineer's Seal, Signature and Date per Texas Engineering Practices Act
Responsibility Note Required on All Sheets except site plan and standard details: "ALL RESPONSIBILITY FOR ADEQUACY OF DESIGN REMAINS WITH THE DESIGN ENGINEER. THE CITY OF ROCKWALL, IN REVIEWING AND RELEASING PLANS FOR CONSTRUCTION, ASSUMES NO RESPONSIBILITY FOR ADEQUACY OR ACCURACY OF DESIGN."
Provide Key Map for Large Projects Showing Sheet Locations
Clear Drafting with Proper Line Weights for Ease of Reading
No Overlapping Text
Drafting at Adequate Scale to Obtain Ease of Reading and Scanning
Cover Sheet
Project Name
Official Plat Name as Assigned by the Planning and Zoning Department (including Block & Lot)
Official Project Address Assigned by the City Planning and Zoning Department
Mapsc0 Grid Reference
Month and Year of Probable Start of Project Construction
Revision Table
Engineer Contact Information (Name, Address, Phone Number, email address)
Owner Contact Information (Name, Address, Phone Number, email address)
Sheet Index - List ALL sheets included in plan set including details
Location Map with North Arrow
Side Bar - Plat Subdivision Name & Project Name
Title of type of sheet (i.e. Grading, Utility, Water,....)
Approved Site Plan
Approved Site Plan
Approved Landscape/Treescape Plan
Approved Landscape and Treescape Plan
Proposed Final Plat
Plat Included
Correct Plat Name
Plat Closure Calculations (Sealed by Registered Surveyor or Engineer)
GPS Grid Coordinates Shown for the Property Corners Properly Into City Monumentation System (x, y coordinates on 2 property corners)
Location map
Street Names with Right-of-Ways Widths Identified

Item Description
Benchmark (if near drainage feature or flood zone)
Basis of bearing
Metes and Bounds of Tract
Adjacent Land Ownership Information
List Corners Found or Set
Property Pins Shown for tracts across ROW with verification of existing ROW Widths
Building Setback Lines Shown
Recording Volume and Page Information for all separate easements and ROW dedications within platted area or adjacent tracts
100-Year Floodplain for Fully Developed Conditions showing cross sections and elevations
Minimum Finished Floor Elevations Shown (if near drainage feature or flood zone)
Drainage & Drainage Maintenance Easements Shown and annotated
Required Utility Easements Shown (20' minimum width) and annotated
Access Easements Shown and annotated
ROW. Dedication Shown and annotated
ROW Corner Clips and annotated
All Existing easements (on-site) shown and annotated
Visibility Easements Shown and annotated
Surveyor Seal, Signature and Date
Demolition Plan
All existing topographic features including but not limited to: pavement, curbs sidewalks, barrier-free-ramps, light poles, driveways, storm sewer inlets, manholes, junction boxes headwalls retaining walls, fences, mailboxes landscape planters, trees, etc.
All wet utilities (water lines, wastewater lines and storm sewer) including sizes
All franchise utilities (electric, cable, communications, gas, etc.)
Pavement removals with full depth pavement sawcut locations
Water line, wastewater line and storm sewer removals
Dimensional Control & Paving Plan
Lot Boundary with Dimensions and Bearings
Street Names Shown
Existing ROW
ROW. Dedication and ROW Corner Clips Shown with Dimensions
Verification of public rights-of-way width ("variable width" is not acceptable) (When Required)
Visibility Easements Shown as Required by City Code
Building Setback Lines Shown
Dimensions (thickness, width, length, radius) for all paved areas (parking areas, driveways, fire lanes, turn lanes, drive aisles, sidewalks, etc)
Driveways Location, Spacing and Width Meet City Code and TxDOT Requirements

Item Description
Driveways- Width, Radius, Distance to Adjacent Drives, Alignment with other Drives Across Street Shown
Fire Lane - Width, Radius & Distance from Building Shown and Detailed including turn-arounds and dead-ends
All Pavement Thickness, Concrete Strength, Reinforcing, Subgrade Detailed Per City Requirements
Location of Fire Sprinkler Fire Department Connection (FDC) Shown
Location of Electrical Transformers Shown
Dumpster Location, Access and Construction Requirements Met and approved by Planning and Zoning Department (Backing Distance and Maneuver - Accessible by SU-30 Turning Template)
All Existing and Proposed Utility and Drainage Easements Shown
Existing and Required Access Easements Shown
Screening Wall Location, Foundation, Height, Start/End of Wall
Retaining Wall Location, Foundation, Height, Start/End of Wall
Existing and Required Sidewalks and Trails Shown with Dimensions
Show Location of Required ADA Ramps
Limits of 100-Year Ultimate Flood Plain Shown (FEMA and local)
Note Identifying Reference for 100-Year Floodplain and WSE Information with cross section with elevations
New/Relocating Left Turn Lane and/or deceleration lanes complies with City and TxDOT Requirements (Spacing, Length, Construction)
Existing and Proposed Infrastructure within Median Modifications Shown (Trees, Street Lights, Conduit, Irrigation, pavers, etc)
Street Lighting and Street Sign Plan
Roadway Paving Plan and Profile
Street Name and Cross Street Names
Block, Lot, and Address Labels
All existing and proposed easements
Dimensions labels of roadway width, ROW width, sidewalk widths, curb return radius, etc.
Show and label all storm sewer inlets with roadway stationing
Legend showing type of pavements, thickness, strength, reinforcing, etc.
Roadway centerline stationing every 100 ft, al labels for all Start, PC, PT, PI, PRC, etc.
Driveway centerline stationing location off roadway
Label Cross-slope (At cross-slope transitions the cross-slope shall be labeled every 25 ft and at critical design points)
Show and Label Proposed Profile station and elevation (All Slopes, VPI, PI, Vertical Curves, LP, HP, K, e, PC, PT,VPRC, etc.)
Show and Label Existing ground Centerline, Left ROW, Right ROW, and any other critical profiles
Show in Profile an Major Utility Crossing (Culverts, Water/Wastewater Transmission Lines, Gas Transmission Lines, Electric and Communication Duct Banks)
Existing and Proposed Ground lines elevation in profile every 50 ft
100-Year floodplain line and WSEL

Item Description
Cross-Sections
Cross sections shall be provided for all Arterial and Collector Roadways
Cross-Sections shall be taken every 50 feet, driveway centerline, intersecting streets, and other critical points or features.
Include Existing and Proposed ROW lines
Existing Ground Line
Proposed Pavement thickness, and subgrade depths, and sidewalks
Proposed Slopes
Cross-sections at Driveways shall have all slope and VC Labeled
Grading Plan
Benchmarks
Exist Lot Lines & Corners (lot lines screened if being changed)
Proposed Lot Lines
Existing (screened) & Proposed ROW
Street Names Shown
Drainage Easements for Drainage Features and Structures Shown
Existing & Proposed Improvements (paving and building footprints)
Minimum Finished Floor (FF) Elevations for Structures meet Requirements of Drainage Ordinance
Minimum Finished Floor (FF) Elevation Shown for each Structure
Existing & Proposed Contours for Site and Minimum of 50' Beyond Property Lines (with appropriate contour interval) with all ponds and waterways labeled
Existing & Proposed Spot Elev. Showing Grade; High & Low Points; Swales, Inverts & Ridges with Flow Arrows
Label Lot Area and Disturbed Land Area
Adjacent Property Improvements Within Minimum 25' of site
Existing & Proposed On-site and Off-site Drainage Features (Design Info Shown)
Maximum Cross Slope 4H:1V (H=Horizontal, V=Vertical) Min Running Slope 1% for unpaved areas
Ditches Adjacent to Site Cleared, Cleaned & Regraded (only with permission from property owner)
Positive Overflow Routes with elevations (All public roads that have a sag require an overflow route)
Lot grading to be above street elevation (Residential Only)
Limits of 100-Year Ultimate Floodplain Shown
Ultimate (Fully Developed) 100-Year Floodplain Water Surface Elevations (WSE's) shown on cross sections
Note Identifying Reference for 100-Year Floodplain and WSE Information
Cross sections to scale with hydraulic calculations
Location of Cross-Sections With Stationing Shown
Cut or Fill Areas shown on Cross-Sections

Item Description
Existing and Proposed Retaining Walls with Top & Bottom Spot Elevations and calculations as required
No Residential Cross Lot Drainage
Grading Plan Matches Drainage Area Map
Does Grading Plan Address Impacts to Adjacent Properties Requiring Easements or Letters of Permission
All Detention Areas with Flumes with Elevations and Side Slopes Labeled
Retaining Wall Plan and Profiles
Label Beginning and Ending of Wall
Label Top of Wall, Bottom of Wall, Bottom of Footing
Railing type and limits
Detailed Structural Sections for each differing section type
Flume locations shown in plan and sections (no water allowed to overtop retaining walls)
Show locations of all Water, Sanitary Sewer, Storm Sewer, Franchise Utility Crossings in Plan
Show locations of all Water, Sanitary Sewer, Storm Sewer, Franchise Utility Crossings in Profile along with elevations
Profile Existing Natural Ground Line, Proposed Ground Line at Bottom and Top of Wall
Drainage Area Map
Existing Drainage Area Map (Pre-Project Conditions), Proposed Drainage Area Map (Current proposed phase of development conditions) and Ultimate Drainage Area Map (Built-out conditions of development)
Storm Drainage Analysis and design shall comply with the Drainage Ordinance and the Flood Hazard Damage Prevention and Control Ordinance.
Existing and Proposed Drainage System and Structures Shown (pipe, inlets, etc)
Current Zoning or Anticipated Ultimate Development Shown and Correct For Off-Site Areas
Ensure Site Drainage is Collected on Site
Design for a Ultimate (Fully Developed) 100 Year Storm Event
Design showing Elevation Contours for the Entire Off-Site Drainage Basin and 50' beyond Property
Design with most recent surveyed Contour Information
Drainage Area Map shows Subbasins For Each Collection Point and Inlet
Each Drainage Area has ID, Q100, Acres and Direction of Flow to the Outfall Shown
Each Outfall labeled with an Identification, direction of flow and Total Flow
Drainage Direction Arrows for Both On-site and Off-site Drainage Basins
Indicate all Sags and Crests With Flow Arrows
City Standard Drainage Area Map Calculation Table for Current and Future Conditions With Outfall Summary Included
I - Values Meet City Requirements
C - Values Meet City Requirements (based on Zoning)
Time of Concentration Values Used Meet City Requirements
Q - Calculated Flow in cfs

Item Description
Provide a Subtotal for each Major Drainage Line
Drainage Area Map & Calculations for all Offsite Drainage
Limits of 100-Year Ultimate Floodplain Shown
Ultimate (Fully Developed) 100-Year Floodplain Water Surface Elevations (WSE's) shown (FEMA and local)
Note Identifying Reference for 100 Year Floodplain and WSE Information (FEMA and local)
Show Limits of Each Plan Sheet (Tile)
Show Detention
Show Existing Drainage Areas (lighter line type)
Label where each drainage area drains (inlet number, swale, etc.)
Storm Drainage Plans and Profiles (Storm Drainage Structures including Pipe, Inlets, Etc.)
Benchmark Location and Elevation
Flood Study / FEMA FIRM Map Reference Information Listed by Note
Storm Sewer Alignment Logical, Sharp Bends Eliminated
Collecting On-Site Drainage with Storm Sewer/Inlets
Profile Given for all Storm Sewer Mains and Laterals (shall be along the centerline of pipe)
Pipe Size, Material and Class Identified on Plan and Profile
Hydraulic Grade Line Shown on all Storm Sewer Profiles for Mains/Laterals, in both full and partial flow conduit conditions
Hydraulic Grade Line Elevations labeled on Storm Sewer Profiles at every change in flow, change in pipe size, horizontal bend, vertical bend, wye, manhole, inlet, headwall, etc.
Other Hydraulic Info Shown on Storm Sewer Profiles for all Mains/Laterals (Q100, Qcap, Velocity, V2/2g) on every conduit section between every junction and/or increase in flow
Vertical and Horizontal Alignment and Slope Shown for all Mains/Laterals on Plan and Profile
Hydraulic Grade Line Meets City Design Requirements
Starting Hydraulic Grade Line Calculations/Assumptions Listed
Starting Hydraulic Grade Line Meets City Design Requirements
Pipe Velocity Within Ordinance Requirements and Limitations
Elevation Information on Plan View (Flowlines, Top-of-Curb, Hgl or 100 yr water surface (partial flow) at every inlet, etc) Matches Profile View
Show Crossings of Existing and Proposed Water and Sanitary Sewer on Storm Sewer Profile
Note minimum Cover for Pipes and Culverts
Drainage System Reviewed for Constructability - Depth and Clearance From Streets, Structures, Other Utilities (dimensions)
Inlet Capacity Calculations Provided In City Standard Tabular Form
Inlets Placed to Capture Runoff Before It Enters Street or Major Thoroughfare
Storm Sewer Calculations Provided In City Standard Tabular Form
If Street Drainage, Calculations Showing Curb & Street Capacity
If Street Drainage, Show Nearest Inlet & all Upstream Drainage
Inlet Construction Layout Information Shown (Top of Curb, Flowline, Throat Elevation, Type, Size, Hgl, Q100, Etc)

Item Description
Storm Sewer Inlet Location, Size, Type, and Construction Detail Per City Requirements
Storm Sewer Manhole Location, Size, Type, and Construction Detail Per City Requirements
Outfall, Headwall, and Other Structure Location, Type, Velocity and Erosion/Scouring Protection Per City Standards
Positive Overflow Route Through Site with grades
Sag Points Identified and Paved Positive Overflow Designed
Outfall/Headwall Locations No Greater Than 1' Above Creek Flowline and Pointed Down Stream
Outfalls Discharge into Existing Drainage Features or Provide Easements as Required
Outfall Velocity Meets City Requirements
Outfall Protection / Energy Dissipation When Required
Appropriate Details are Included for Structures, Junction Boxes, Headwalls and Inlets (if different than NCTCOG 4 th Ed. or City details)
Connection Details Provided for Non-Standard Connections
Limits of 100-Year Ultimate Floodplain Shown (FEMA and local)
Ultimate (Fully Developed) 100-Year Floodplain Water Surface Elevations (WSE's) shown (FEMA and local)
Note Identifying Reference for 100 Year Floodplain and WSE Information
Drainage Easements for Drainage Features and Structures Shown (15' minimum width)
Storm Drainage Plans and Profiles (Ditches, Swales, and Open Channels)
Direction of Flow Indicated for Ditches, Swales and Open Channels
Ditches, Swales and Open Channels have 100 year Ultimate Water Surface Shown on Profile (min 1% Running Slope)
Ditches, Swales and Open Channels have 100 year Ultimate Water Surface Shown on Cross Sections
Ditches, Swales and Open Channels Armored with Approved Material in Areas Where Average & Localized Velocities are Above 6 fps
Ditches, Swales and Open Channels can Carry 100-year Ultimate Storm with required Freeboard
Ditches, Swales and Open Channels Hydraulic Information Shown On Plans
Ditches, Swales and Open Channels Hydraulic Information Shown On Plans Matches Hydraulic Report or Flood Study Submitted
Ditches, Swales and Open Channels Side Slopes Less Than 4H:1V for Grassed/Un-Armored Sections
Ditch, Swale and Open Channel Width, Depth, Running and Side Slopes and Capacity Per City Requirements
Drainage Easements for Drainage Features and Structures Shown
Storm Drainage Plans (Detention and Ponds)
Required Detention Shown
Detention Calculation Shown and Correct
Outfall discharge curves for required storm events
Detention/Retention Pond Location, Size, Depth, Capacity, and Material Per City Requirements, 100 year Water Surface Elevations
Provide Access and Structures that Contribute to Long Term Maintenance of Detention Pond

Item Description
Drainage Easements for Drainage Features and Structures Shown (15' minimum width)
Provide chart showing flow allowable vs. flow actual for Q ₅ , Q ₁₀ , Q ₂₅ , and Q ₁₀₀
Utility Plans (Water & Wastewater)
Water
Water Main Sized In Compliance with Water System Master Plan
Water Mains Provided to Front Property Along all Street Frontages or Otherwise Extended to Serve Adjacent Properties
Water Main Extension Required By Code Shown
Water Mains Looped to Provide Circulating and Redundant Feed
Water Main Size, Material and Class Called Out
Existing Water Mains and Valves Shown; Show Valves on both sides of Tap in Case Area Needs to be Isolated
Existing & Proposed Fire Hydrants Shown
Utility Easements for Water Mains Shown
Proposed and Existing Fire Lanes Shown
Fire Hydrant Spacing Meets Requirements of Adopted International Fire Code (IFC)
Fire Sprinkler Fire Department Connection (FDC) Location Shown
Water Main Fittings, Valves, etc Identified
Water Mains 16" and Larger Profiled
All Water Main Bores Profiled
All Crossings Identified on Appropriate Profile
Bore complies with Bore and Utility Crossing General Design Standards and TxDOT Standards if in TxDOT ROW
Existing Water Meters Shown
Proposed Water Meters Shown (Both Domestic and Irrigation)
Domestic and Irrigation Water Meters on Looped/Circulating Main
All Water Meters on Separate Service - No Water Meter "Bullheads" or Manifolds Allowed
Water Meters Location, Preferred to be in Unpaved Area
Water Meter Sizes Identified
Appropriate Double Check/Backflow Prevention Shown on Private Side of All Meters
Water System Reviewed for Constructability and Maintenance - Depth and Clearance From Streets, Structures, Other Utilities (Dimensions)
Water Mains Identified as Either Public or Private with Lines of Demarcation
Utility Crossings Shown in All Profiles and Bore Profiles including Franchise Utilities and Street Light Utilities
If Fire Sprinkler Line is Shown, Add Note to Plans to Indicated the Requirement for Separate Permit from the Fire Department and label min 10-foot separation distance from all other utilities
Wastewater
Wastewater Mains Provided to Front Property or Otherwise Extended to Serve Upstream Property
Existing Wastewater Mains, Manholes, Cleanouts and Services Shown

Item Description
Proposed Wastewater Mains, Manholes, Cleanouts and Services Shown
Sanitary Sewer Mains Profiled along centerline of pipe
Bore complies with Bore and Utility Crossing General Design Standards and TxDOT Standards if in TxDOT ROW
Wastewater Main Size, Material and Class Identified on Plan and Profile
Wastewater Main Depth, Slope, Service Locations, Cleanouts and Manholes shown in all Profiles
Wastewater Rim, Flow Line In & Flow Line Out Elevations for All Manholes (min 2% drop between manhole flow-in and flow-out)
Utility Crossings Shown in All Profiles and Bore Profiles including Franchise Utilities and Street Light Utilities
Wastewater System Reviewed for Constructability and Maintainability - Depth and Clearance From Streets, Structures, Other Utilities (Dimensions)
All Existing and Proposed Public and Private Easements and Rights of Way Shown
Wastewater Mains Identified as Either Public or Private with Lines of Demarcation and Private Utility Note
Private Utility Note: "ALL WASTEWATER WORK DESIGNATED AS "PRIVATE" IN THIS SET OF PLANS SHALL BE INSTALLED IN ACCORDANCE WITH THE INTERNATIONAL PLUMBING CODE, PERMITTED AND INSPECTED BY THE CITY BUILDING INSPECTION DEPARTMENT AND INSTALLED BY A LICENSED PLUMBER."
Lift Station
Lift Station Report
Dimension and Site Plans
Grading Plan
Force Main Plan and Profile
Landscape Plan
Electrical and Control Plans
Detail Sheets
Erosion Control (For Sites Greater 1- Acre or Larger) / SWP3 (If Required by TCEQ Regulations)
Owners Name , Address & Phone No.
Developers Name Address & Phone No.
Engineers Name Address & Phone No.
Site Acreage Listed
Disturbed Acreage Listed (Acres)
Limits of Construction and Disturbed Areas Shown
Existing Ground Contours, Drainage Features and Structures
100-Yr Flood Plain with Elevations (FEMA and local)
Limits of Trees/Shrubs to Remain
Grades to Match Grading Plan
Proposed Storm Drainage, Structures & Pavement
Borrow & Spoil Area Identified

Item Description
BMP Locations, details, Calculations, and Maintenance Schedule
Sediment Basin, required if disturbed area greater than 10 acres
Standard Details
All Standard Details that are required for construction from Standard Specifications for Public Works Construction, North Central Texas, Fifth Edition, or the City of Rockwall Standards of Design and Construction shall be included in all plan sets.
TXDOT Details
Include all Pertinent Details called out in plans

APPENDIX B – Approved Water Materials List

Approved Water Materials List

All materials on this list do not require separate submittals. All materials must be new and in good condition.

Fire Hydrants

- Mueller “Super Centurion 250-A423”
- American Darling “B-84B-5”
- Waterous “Pacer WB67”
- Clow “Medallion”
- M&H “Model 129 & 929”
- WaterMaster 5CD250

Valves (all bolts, **nuts and washers** for valves to be type 316 stainless steel)

- Mueller Resilient Seat
- Mueller Resilient Wedge
- Mueller Butterfly
- American Darling Resilient Wedge
- American Darling Butterfly
- U.S. Pipe & Foundry “Metro-Seal” Resilient Wedge
- American Flow Control – Series 2500 Resilient Wedge Valve
- Clow Resilient Wedge
- Pratt Butterfly
- American AVK Resilient Seated Gate Valve Series 25, 4”-12”

Valves – Air Release / Combination Air & Vacuum

- Vent-O-Mat 025 RBX 2521 – 1”
- Vent-O-Mat 050 RBX 2521 – 2”

Tapping Sleeves and Valves (all bolts, nuts and washers to be type 316 stainless steel)

- All require ¾” NPT brass test plug.

Sleeves (all bolts, nuts and washers to be type 316 stainless steel)

- Mueller H-304 Stainless Steel Tapping Sleeve w/Stainless Steel Flange
- Tyler Traverse Tapping Sleeve
- Clow Traverse Tapping Sleeve
- Dresser Style 630 Heavy Stainless Steel Tapping Sleeve
- PowerSeal Model 3490 Stainless Steel Tapping Sleeve
- Ford All Stainless Tapping Sleeve Style FTSS
- Ford All Stainless Tapping Sleeve Style FTSS-MJ
- Smith-Blair 665 Stainless Steel Tapping Sleeve with Stainless Steel Flange
- Smith-Blair 665MJ Stainless Steel Tapping Sleeve with Stainless Steel Flange
- Romac Industries, SST III

Service Saddles

Service Saddles (for PVC, DI or CI)				
Size/Manufacturer	Mueller	Jones	Ford	A.Y. McDonald
¾-inch, 2 Strap	BR-2B, BR-2S	J-979, J-969	202B, 202BS	3825, 3845
1-inch, 2 Strap	BR-2B, BR-2S	J-979, J-969	202B, 202BS	3825, 3845
1 ½ -inch, 2 Strap	BR-2B, BR-2S	J-979, J-969	202B, 202BS	3825, 3845
2-inch, 2 Strap	BR-2B, BR-2S	J-979, J-969	202B, 202BS	3825, 3845

All of the above service saddles are to be cc thread. Saddles must be supplied with stainless steel bolt/nut/washer, with the exception of a double strap bronze saddle.

Restraint (Retainer) Glands (all bolts, nuts and washers to be type 316 stainless steel)

- Uni-Flange Series 1400 for 4” thru 12” (Ductile Iron)
- Uni-Flange Series 1500 for 4” thru 12” (C900 PVC)
- EBAA Iron 1100 Series Megalug (Ductile Iron)
- EBAA Iron 2000PV Series Megalug (C900 PVC)
- Stargrip Series 4000 (C900 PVC)
- Stargrip Series 3000 (Ductile Iron)
- Sigma – One Lok (C900/905 PVC)
- Tyler Union Field Lock (Ductile Iron)
- Tyler Union Tufgrip 1000 (Ductile Iron)
- Tyler Union Tufgrip 2000 (PVC)

Restraint (Internal Joint Restrained) (all bolts, nuts and washers to be type 316 stainless steel)

- Eagle LOC 900 for 4” thru 12” C900 DR14 PVC Pipe
- Diamond Lok-21 for 4” thru 12” C900 DR14 PVC Pipe

Corporation Valve (Stops)

Corporation Valves				
Size/Manufacturer	Mueller	Jones	Ford	A.Y. McDonald
¾-inch	B-25008	J-1937-SG	FB-1000-3-Q	4701BQ
1-inch	B-25008	J-1937-SG	FB-1000-4-Q	4701BQ
1 ½ -inch	B-25008	J-1937-SG	FB-1000-6-Q	4701BQ
2-inch	B-25008	J-1937-SG	FB-1000-7-Q	4701BQ

Angle Valves (Stops)

Angle Meter Valves				
Size/ Manufacturer	Mueller	Jones	Ford	A.Y. McDonald
¾-inch	B-24258	J-1963W-SG	BA43-332-WQ	4602BQ 3/4
1-inch	B-24258	J-1963W-SG	BA43-444-WQ	4602BQ 1
1 ½ -inch	B-24276	J-1975W-SG	BFA43-666-WQ	4602BQ 1 ½
2-inch	B-24276	J-1975W-SG	BFA43-777-WQ	4602BQ 2

Ductile Iron Fittings (Compact Only -C153)

- American Pipe
- Tyler Pipe Products
- Clow Products
- Star Pipe Products (tees, bends & anchor nipples)
- Sigma/Nappco Products (tees, bends & anchor nipples)
- Griffin Pipe Products

Valve Stacks and Boxes

- Bass & Hays adjustable valve box Model No. 2436S

Fire Hydrant Paint

Main Size	Color	Paint
6"	Silver – Top & Bottom	Sherwin Williams Silver-Brite Heavy Duty Rust Resistant Aluminum Paint B59S11
8"	Safety Blue Top – Aluminum Bottom	Sherwin Williams Heavy Duty Rust Resistant Aluminum Paint-Safety Blue B54T104
10" or larger	Yellow Top – Aluminum Bottom	Sherwin Williams Heavy Duty Rust Resistant Aluminum Paint-Safety Yellow B54Y37

Meter Boxes

< 1 inch Service	DFW1814F-1BA DFW Plastics, Inc Not Traffic Rated
1-1/2-inch, 2-inch Service	DFW2818F-1BA DFW Plastics, Inc Not Traffic Rated
Traffic Rated Meter Box	DFW65C-14-10BA DFW65C-1BA - Can DFW65C-Overlay-Lid DFW Plastics
Lids	DFW 18-AMRL-lid E Series

APPENDIX C – Approved Wastewater Materials List

Approved Wastewater Materials List

Note: All specified materials on this list do not require separate submittals. All materials must be new and in good condition.

Wastewater Main and Service Pipe (Gravity Flow Only)

- ASTM D3034 SDR-35 PVC 4" to 15" Diameter (Green in color)
- ASTM D3034 SDR-26 PVC 18" to 30" Diameter and for any wastewater installed 10' and deeper (Green in color)
- ASTM D3262 Fiberglass Sewer Pipe 18" to 54" and ASTM 4161 Fiberglass Fittings (must submit thickness design for wall thickness calculations) Approved Manufactures for Fiberglass Pipe and fitting are Hobas Pipe, US Composite Pipe South and Ameron International.

Manhole Pipe Connectors

- Link-Seal
- A-LOC
- KOR-N-SEAL – 306 Series By National Pollution Control Systems Inc.
- PS (Press-Seal) – PSX: Direct Drive

Wastewater Manhole Lids and Rings

- Pamrex with Lock
- East Jordan Iron Works 30" ERGO XL with Camlock Security closing device, MPIC Pick slot, elastomer T-Gasket in lid and infiltration plugs at the hinges. – Product No. 00148026L01
- East Jordan Iron Works 24" ERGO with Camlock Security closing device, MPIC Pick slot, elastomer T-Gasket in lid and infiltration plugs at the hinges – Product No. NPR10-1213A (for retrofit work only).

Manhole Coatings (No dark colors allowed)

- Raven 405 (125 mils thick)-light blue colored only
- ConShield-terra cotta colored only (must be spark tested per NACE International Standard)

Geotextile Material (installed under precast manholes)

- Mirafi 140N
- Geotex 401

Manhole Grade Rings

- HDPE Adjustment Rings by Ladtech Inc.
- ARPRO Expanded Polypropylene, ASTM D3575, by Cretex Seals
- East Jordan Iron Works Infra-Riser.

Pre-Cast Manhole Gaskets

- Hanson – CR 097
- Hydroconduit – Profile

Manhole Chimney Seals and Ring & Cover Sealing Systems

- Cretex with stainless steel self locking bands. (interior & exterior)
- Riser Wrap by PSI

Manhole Drop Bowl

- Reliner / Duran Inc., Inside Drop Bowl with Stainless Steel anchor assemblies
- Approved Equal

Cleanout

- Bass & Hays 404 Lateral Cleanout with lid and gasket
- Bass & Hays 339 Wastewater Cleanout Boot

Double Cleanout Meter Box

- Bass & Hays 3-LID2 (Sewer)
- Approved Equal

Threaded Anchor

- Hilti – KB3-SS304 5/8” anchor bolts or equal
- Stainless Steel all thread 5/8” (embedded min 4-1/2” into cone with a epoxy or Wedge-it)
- Simpson Strong Tie – Strong-Bolt 5/8”

Force Main Pipe

- AWWA C-905 pipe, green colored

Air Release Valve

- Vent-O-Mat Anti-Shock Air Release and Vacuum Break Valves
- Approved Equal

Isolation Gate Valve

- American-Series 2500 2”-12” Resilient Wedge Gate Valves with Flanged Ends
- Approved Equal

All exposed Stainless Steel Bolts and Nuts must be coated with approved anti-seize compound: Permatex Nickel Anti-Seize or approved equal.

Materials not on this list will need to be submitted for review

APPENDIX D – Example Checklist for Final Acceptance
(Residential and Commercial)

EXAMPLE – CHECKLIST FOR FINAL ACCEPTANCE (RESIDENTIAL)

(DATE)

(ENGINEER'S NAME)

(ENGINEERING COMPANY)

(ADDRESS)

(CITY, TX ZIP)

Re. (PROJECT NAME) – Checklist for final acceptance

Dear (ENGINEER'S NAME),

The following items are to be completed at the above mentioned site to bring the project into compliance with City specifications and to meet specific project requirements. The listed items are items identified during the walkover of the site and are to be addressed prior to final acceptance of the project. The City will conduct daily site visits (during daily rounds) at the project until completion of the noted items. A copy of this list will also be directed to the developer/owner and general contractor. The below listed items are to be directed to the appropriate responsible parties for completion.

-Required Documentation-

1. The City of Rockwall requires that the design engineer provide a letter of concurrence. The letter is to verify that the drainage flow patterns, grade to drain locations, pad elevations, and drainage structures, including the volume of the surface and/or subsurface detention system and detention outlet structure located at the project were installed to the general elevations as shown on the approved plans. The letter shall also verify that the project was constructed to meet the approved design requirements or is within acceptable design tolerances. **The Design Engineer or his designated representative shall direct all “survey-work” necessary to verify elevations and design compliance.** The letter of concurrence is to have the **seal and signature** of the design engineer.

Example of Letter of Concurrence verbiage which will not be accepted by the City:

“A representative of this company visited the site and has visually verified to the best of the engineer’s professional opinion, knowledge and belief, the final grading and site drainage comply with the City approved plans and details”.

Example of Letter of Concurrence verbiage which will be accepted by the City:

“A representative of this company visited the site and has visually verified to the best of the engineer’s professional opinion, knowledge and belief, that based on my observations along with survey work conducted at the site, the final grading, site drainage, and detention outfall with required volume comply with the City approved plans and details”.

2. The Design Engineer shall furnish a digital file of the project formatted in Auto Cad 14, or 2000 format or newer **and** Adobe Acrobat (pdf.) format with a CD-ROM. The disk shall include a full set of plans along with any landscaping, wall plans, and details sheets.

- Submit 1-set of blue line drawings of the “Record Drawings” containing copies of all sheets. The blue line copy will be reviewed by the construction inspector PRIOR to producing the “Record Drawing” disk. This will allow any revisions to be addressed prior to producing the disk.

Record Drawing Disk drawings shall have the Design Engineers seal, signature and must be stamped and dated as “Record Drawings” or “As Built Drawings” on all sheets.

The City of Rockwall will not accept any Record Drawing disk drawings which include a disclaimer with the like or similar verbiage. A disclaimer shall not directly or indirectly state or indicate that the design engineer or the design engineers, surveyor/surveyors did not verify or grades after construction, or that the Record Drawings were based solely on information provided by the construction contractor/contractors. Any Record Drawings which include like or similar disclaimer verbiage will not be accepted by the City of Rockwall.

Example of Acceptable Disclaimer:

To the best of our knowledge Smith Engineering, Inc., hereby states that this plan is As-Built. This information provided is based on surveying at the site and information provided by the contractor.

3. 4% Engineering Inspection Fee (Final As-Built Adjustments) – Prior to the start of construction at the project, engineering inspection fees for the project were established. The preliminary inspection fee amounts were based upon the projected contract quantity and unit price amounts which were submitted to the City. A fee based on 4% of the projected quantity cost was paid to the City. The final fee amounts are to be adjusted if necessary to match the unit quantity and unit price amounts based on the as-built contract unit quantity amounts. Please provide a copy of the as-built quantity amounts with total amounts for each item. The as built amounts should be noted or stamped as “as-built contract quantity and unit price amounts”. The engineering inspection fee charged by the City will be adjusted to match these amounts if necessary. The City is to receive payment on the adjusted cost amounts prior to project acceptance. As-built contract unit quantity and unit price amounts for the pavement, drive approaches, sidewalks, barrier free ramps, wastewater, storm sewer, drainage structures (including underground detention), water lines, along with all associated fixtures which are located within the defined right-of-ways and easements of the project.
4. All weekday and weekend overtime engineering inspections fees are to be paid.
5. Flood study review fees to be paid if there is an excess due over the initial review fee. If all of the initial fees were not utilized for the flood study review, those monies will be refunded.
6. Gas and Electric facilities are to be installed at the site and be ready to provide service to each lot. A letter of installation verification and operation will be required from electric and gas project managers and will need to be directed to the City of Rockwall prior to project acceptance or any early lot releases. The letter may be from the above noted parties or their designated representatives.
7. Storm Sewer Outfall Coordinates - It is now necessary to tie down all the storm sewer outfall pipes to our state plane Coordinate System. The design engineer will be required to provide the following coordinate information which is to be submitted in letterform showing the x, y, and z coordinates at the end of all storm sewer outfalls of the project.

8. The City of Rockwall – Elevation Survey Monuments which are to be installed at the project shall be tied to the City of Rockwall monument coordinates both horizontally and vertically. The information shall be transferred to the City of Rockwall. **Elevations and monument locations are to be shown on the as built mylars on both the paving plans and the storm sewer plans and shall also be submitted to the City in letter-form.** The monuments are to be supplied by the City of Rockwall and installed by the utility contractor. The monument locations are as follows:
 - A. (LOCATION)
 - B. (LOCATION)
9. Right-of-way Compaction and Density Reports – Final grade densities are to be conducted at approximately each 500 – foot intervals on both sides of each street in the general fill areas of the right-of-ways. Full Depth trench densities are to be taken at all utility trenching locations where trenching operations consisted of cutting trench 10-inches wide or wider. All final grade right-of-way and easement compaction density tests are to be a minimum of 95% of the standard proctor density. Copies of the compaction tests performed for the developer’s contractors as well as by the franchise utility company’s contractors shall be provided to the City prior to project acceptance.
10. Maintenance bonds are to be submitted to the City of Rockwall for the paving and utilities installed at the project. The bonds shall be **two-year** 10% maintenance bonds to cover maintenance, for a two-year timeline starting from the **“Date of City of Rockwall’s Acceptance”** for the project. There is to be no date in the starting timeline only the above wording.
 - A. The utility bond shall cover the following utility systems and their associated fixtures.
 - o Water
 - o Wastewater
 - o Storm sewer (including detention systems)
 - B. The paving bond shall cover the following:
 - o Street Pavement.
 - o Driveway Approaches
 - o Side walks.
 - o Barrier free ramps.
11. Engineered Retaining Wall Inspection & Letter of Concurrence – The City requires the design engineer for any retaining wall which is three-feet in height or taller, to periodically inspect, or make arrangements for his designated representative to periodically inspect the retaining wall/walls during the construction process. The design engineer is to submit letter of concurrence for the retaining wall/walls to the City prior to project acceptance. The letter shall contain the **seal and signature** of the retaining wall design engineer.
12. City Council approved and owner signed final/replat plat mylars and tax certificates to be submitted to Planning Department for filing.

- Site Items -

1. **Site Working Hours and Noise Control Signage - Ordinance No. 05-45** – signs are to be placed at all

entrances, which provides an access entry way into the subdivision. The signs are to note allowed hours of construction as mandated by the City Ordinance. The signs must be installed prior to project acceptance or prior to the start of any early lot release construction. The signs may be placed in the City right-of-way provided that it is not placed within the 30-foot visibility easement clips, which are located at all street intersections. Each posted sign shall contain the following ordinance work-hours information and contain both the English and the Spanish version of the ordinance. The face of the sign shall be a minimum of 4-feet wide by 3-feet tall with the sign post being approximately 4-feet tall when measured from the top of the ground to the bottom of the sign face. The maximum height of the sign shall not exceed a height of 7-feet, 6 inches when measured from the top of the ground to the top of the sign. The sign face shall consist of a white background with blue or black lettering. The letters shall be of sufficient size so as to be readily visible to all vehicular traffic entering the subdivision.

City of Rockwall - Ordinance

Ordinance # 05-45
Construction Site Working Hours and Noise Control

City Ordinance – No. 05-45 limits construction and construction related activities to the hours of 7:00 a.m. - 7:00 p.m. Monday through Friday, and 8:00 a.m. - 7:00 p.m. on Saturday. (No Sunday construction allowed).

ORDENANZA # 05-45
HORAS DE TRABAJO EN EL SITIO DE CONSTRUCCION Y EL CONTROL DE RUIDO

La Ordenanza de la Ciudad – No. 05-45 limita la construcción y las actividades relacionadas con la construcción a las horas de 7:00 a.m. – 7:00 p.m. de Lunes a Viernes, y de 8:00 a.m. – 7:00 p.m. los Sábados. (No se permitirá construcción los Domingo).

(Sign size to be approximately 4-feet wide x 3-feet tall)

2. The maximum slope allowed by the City will be a 4:1 slope, however this slope will only be allowed when it is not possible or feasible to achieve a slope of 4:1 or less. Retaining walls or other City approved retaining methods will be required where it is not possible or feasible to comply with the 4:1 maximum slope requirement. All slopes are to be compacted to 95% of the standard proctor density.
3. Install floodway monument markers. The City will furnish the marker cap, which is to be set in concrete as directed by the City of Rockwall. The developers designated representative shall install the marker prior to project acceptance. Monument installation shall meet City of Rockwall specifications.
 - A. The monument marker location is to be shown on the Record Drawing Mylar's on the grading plan.

- B. The City of Rockwall will furnish the marker cap.
 - C. Install “No Dumping, Drains to Waterway” inlet markers to be installed on each inlet by the developer
4. Street Address Marker Blocks – shall be painted on the curbs in the center of each lot and comply with the City of Rockwall specifications. The street address markers are to be installed at each lot in the subdivision. The markers shall be located at the center of the lot on the face of the street curb. The address markers shall have a Forest green background with reflective white numbers. The number size shall be four-inches in height. The background of the address marker shall be eighteen-inches in length and be located from the top of the curb to the gutter flow line. The address marks shall show the full numerical portion of the address of the lot.
 5. Interior Erosion Protection – install reinforced silt fencing which complies with (NCTCOG) standard drawing (1020A) Third Addition. Silt fencing is to be installed at the back of the street pavement curbs and at 1-foot off the outside pavement edge of the alleys. The silt fence should contain the entire perimeter of the disturbed lot areas.
 6. When installing the silt fence at the street (back of curb) and alley (edge of paving) locations take care to address the following issues:
 - A. Allow for a clearance radius of 5-feet around each hydrant.
 - B. Block the silt fence around and to the backside of each water meter.
 - C. When placing the silt fence at an alley intersection be sure to transition the silt fence to allow a turning radius for vehicles.
 - D. Do place the silt fence within the sight visibility easements which are located at the street and alley intersections.
 7. Maintain existing or install additional construction site erosion BMP’s as necessary, to stabilize the disturbed soil or contain silt migration.
 8. All street and alley parkways and right-of-way locations are to be graded so as to obtain a 2% grade (1/4-inch per foot) slope. All parkways and right-of-way locations are to have positive drainage flow towards the street or alley to the right-of-way. The transitional grading from the right-of-way to the existing natural grade is to match the approved grading plans.
 9. Final Site Grading – all grading is to be completed and verified to meet the approved grading plans. All graded areas including slopes are to be brought to a final grade surface that is smooth and uniform being relatively free of erosion washouts, tire ruts, dirt clods, silt deposits, etc, care should be taken to re-grade any rough surface areas prior to the application of grass seed, sod or erosion matting.
 10. Remove and dispose any miscellaneous construction related debris, trash rocks etc from the job-site and properly dispose.
 11. Rout and seal all miscellaneous random cracks which are located in the street and alley locations.
 12. Provide the construction inspector with electronic copies of all testing reports for the project. These

shall include but not be limited to soils reports, utility densities, utility videos along with supporting documents, subgrade test reports and all concrete related reports for utilities and paving.

13. Conduct a video survey of the public sanitary and storm lines to the construction inspector assigned to the project. Videos shall be taken after the franchise utilities on the project have been completed.
14. Complete the installation of all barrier free ramps.
15. Construct all sidewalks that are located in the common open areas.
16. Clean and sweep all roadways to remove all of the dirt and debris that has accumulated during construction.
17. Random Pavement Depth Checks – random depth core test are to be conducted at various street and alley locations, as directed by the engineering inspector. The location of the test and the number of test necessary will be left to the discretion of the engineering inspector.
18. Complete the landscaping per the approved landscaping plans.
19. Fire hydrants are required to have a nozzle height of 19-inches to 28-inches above the final grade elevation. Hydrant nozzles that do not meet this specification are to be raised or lowered as necessary to obtain compliance.
20. All fire hydrants are to have a clearance radius of 5-feet in all directions. No structures, traffic bollards, silt fencing, landscaping etc, are to be placed within the clearance area.
21. Paint all fire hydrants located at the site to City specifications. A minimum of two coats of aluminum paint, Mobitec 11-A-19 or Tnemec 2-color Tnemec-Gloss or approved equal are to be applied to each hydrant. The fire hydrant body shall be painted silver. The hydrant nozzle and bonnet are to be painted to comply with the following line size color code. The color indicating the line size shall be as follows:
 - A. Solid silver for 6-inch water mains.
 - B. Blue for 8-inch lines water mains.
 - C. Yellow for 10-inch water mains and above.
22. Water Valve and Waste Water Manhole Curb Cut Marks – The pavement curbs are to be marked at all water valve and waste water manhole locations. The curb cut marks are to be sawn into the pavement curb. The curb cut marks are to consist of the following :
 - A. Valves – place a (V) mark on the curb to note the valve locations, (blue paint for general, white paint for stub outs or dead ends, and red paint for fire hydrants and or fire lines).
 - B. Manholes – place a (M-H) mark on the pavement curb to indicate manhole locations (green paint).
 - C. Curb stops – place a (I) mark on the pavement curb to indicate curb stop locations (blue paint).

- D. Cleanouts – place a (II) mark on the pavement curb to indicate sewer clean out locations (green paint).
23. Seal and vacuum test all manholes. All manholes which require grade adjustments are to be re-tested.
24. Perform a television camera inspection of all sanitary sewer and storm sewers, along with the associated storm sewer laterals. Copies of the inspection tapes which are to be on a thumb drive or DVD format are to be submitted to *Engineering Inspector* with the City of Rockwall Engineering Department. Videos shall be taken after the franchise utilities on the project have been completed. Also forward the results of all air and mandrel test to *Engineering Inspector*.
25. The lift station is to be operational and approved for use, by the design engineer and the City of Rockwall.
26. Install guard rail at all locations as noted on the approved plans.
27. Ryan Miller - Director of Planning and Zoning or his designated representative shall conduct an inspection of the landscaping and project screening upon completion.
28. Information (Future Item) – Twenty-Month Maintenance Review – The City of Rockwall requires a twenty-month maintenance review of every project. This review is to be conducted at twenty-months into the two-year maintenance warranty. The Design Engineer or his designated representative along with the contractors designated representatives shall be present to perform a walkover of the project with the City of Rockwall. A second T.V. camera of sanitary sewer main shall be done at this time with a thumb drive or DVD formatted copy provided to the City of Rockwall
29. Grass is to be established in all disturbed areas. Grass shall be at least 1” in height with 75%-80% coverage of all disturbed areas.

For additional information, regarding this check list or site work status please contact – *Engineering Inspector* who is the designated Construction Inspector for the site-work on this project for the City of Rockwall, regarding this list. Project acceptance is subject to but not necessarily limited to the above listed punch list items. *Engineering Inspector* may be reached at telephone no. 972-771-7746.

Sincerely,

Engineering Inspector
Construction Inspector
City of Rockwall Engineering Department

EXAMPLE – CHECKLIST FOR FINAL ACCEPTANCE (COMMERCIAL)

(DATE)

(ENGINEER'S NAME)

(ENGINEERING COMPANY)

(ADDRESS)

(CITY, TX ZIP)

Re: (PROJECT NAME) – Checklist for final acceptance

Dear (ENGINEER'S NAME),

The following items are to be completed at the above mentioned site to bring the project into compliance with City specifications and to meet specific project requirements. The listed items are items identified during the walkover of the site and are to be addressed prior to final acceptance of the project. The City will conduct daily site visits (during daily rounds) at the project until completion of the noted items. A copy of this list will also be directed to the developer/owner and general contractor. The below listed items are to be directed to the appropriate responsible parties for completion.

-Required Documentation-

1. The City of Rockwall requires that the design engineer provide a letter of concurrence. The letter is to verify that the drainage flow patterns, grade to drain locations and drainage structures, including the volume of the surface and/or subsurface detention system and detention outlet structure located at the project were installed to the general elevations as shown on the approved plans. The letter shall also verify that the project was constructed to meet the approved design requirements or is within acceptable design tolerances. **The Design Engineer or his designated representative shall direct all “survey-work” necessary to verify elevations and design compliance.** The letter of concurrence is to have the **seal and signature** of the design engineer.

Example of Letter of Concurrence verbiage which will not be accepted by the City:

“A representative of this company visited the site and has visually verified to the best of the engineer’s professional opinion, knowledge and belief, the final grading and site drainage comply with the City approved plans and details”.

Example of Letter of Concurrence verbiage which will be accepted by the City:

“A representative of this company visited the site and has visually verified to the best of the engineer’s professional opinion, knowledge and belief, that based on my observations along with survey work conducted at the site, the final grading, site drainage, and detention outfall with required volume comply with the City approved plans and details”.

2. The Design Engineer shall furnish a digital file of the project formatted in Auto Cad 14, or 2000 format or newer **and** Adobe Acrobat (pdf.) format with a CD-ROM. The disk shall include a full set of plans along with any landscaping, wall plans, and details sheets.

- Submit 1-set of blue line drawings of the “Record Drawings” containing copies of all sheets. The blue line copy will be reviewed by the construction inspector PRIOR to producing the “Record Drawing” disk. This will allow any revisions to be addressed prior to producing the disk.

Record Drawing Disk drawings shall have the Design Engineers seal, signature and must be stamped and dated as “Record Drawings” or “As Built Drawings” on all sheets.

The City of Rockwall will not accept any Record Drawing disk drawings which include a disclaimer with the like or similar verbiage. A disclaimer shall not directly or indirectly state or indicate that the design engineer or the design engineers, surveyor/surveyors did not verify or grades after construction, or that the Record Drawings were based solely on information provided by the construction contractor/contractors. Any Record Drawings which include like or similar disclaimer verbiage will not be accepted by the City of Rockwall.

Example of Acceptable Disclaimer:

To the best of our knowledge Smith Engineering, Inc., hereby states that this plan is As-Built. This information provided is based on surveying at the site and information provided by the contractor.

3. 4% Engineering Inspection Fee (Final As-Built Adjustments) – Prior to the start of construction at the project, engineering inspection fees for the project were established. The preliminary inspection fee amounts were based upon the projected contract quantity and unit price amounts which were submitted to the City. A fee based on 4% of the projected quantity cost was paid to the City. The final fee amounts are to be adjusted if necessary to match the unit quantity and unit price amounts based on the as-built contract unit quantity amounts. Please provide a copy of the as-built quantity amounts with total amounts for each item. The as built amounts should be noted or stamped as “as-built contract quantity and unit price amounts”. The engineering inspection fee charged by the City will be adjusted to match these amounts if necessary. The City is to receive payment on the adjusted cost amounts prior to project acceptance. As-built contract unit quantity and unit price amounts for the pavement (including fire lane if applicable), drive approaches, sidewalks, barrier free ramps, wastewater, storm sewer, drainage structures (including underground detention), water lines, along with all associated fixtures which are located within the defined right-of-ways and easements of the project.
4. All weekday and weekend overtime engineering inspections fees are to be paid.
5. Flood study review fees to be paid if there is an excess due over the initial review fee. If all of the initial fees were not utilized for the flood study review, those monies will be refunded.
6. Storm Sewer Outfall Coordinates - It is now necessary to tie down all the storm sewer outfall pipes to our state plane Coordinate System. The design engineer will be required to provide the following coordinate information which is to be submitted in letterform showing the x, y, and z coordinates at the end of all storm sewer outfalls of the project.
7. Maintenance bonds are to be submitted to the City of Rockwall for the paving and utilities installed at the project. The bonds shall be two-year 10% maintenance bonds to cover maintenance, for a two-year timeline starting from the “Date of City of Rockwall’s Acceptance” for the project. There is to be no date in the starting timeline only the above wording.

- A. The utility bond shall cover the following utility systems and their associated fixtures.
 - o Water
 - o Wastewater
 - o Storm sewer (including detention systems)
 - B. The paving bond shall cover the following:
 - o Street Pavement.
 - o Driveway Approaches
 - o Fire Lane.
 - o Side walks.
 - o Barrier free ramps.
8. Engineered Retaining Wall Inspection & Letter of Concurrence – The City requires the design engineer for any retaining wall which is three-feet in height or taller, to periodically inspect, or make arrangements for his designated representative to periodically inspect the retaining wall/walls during the construction process. The design engineer is to submit letter of concurrence for the retaining wall/walls to the City prior to project acceptance. The letter shall contain the **seal and signature** of the retaining wall design engineer.
9. City Council approved and owner signed final/replat plat mylars and tax certificates to be submitted to Planning Department for filing.

- Site Items -

1. Grass is to be established at all of the disturbed areas. The grass is to be maintained until such time that a general coverage density of 75-80% of the disturbed area has been established with a minimum grass stand height of one-inch.
2. Maintain existing or install additional construction site erosion BMP's as necessary, to stabilize the disturbed soil or contain silt migration.
3. All fire lanes are to be sawn and crack sealed. All miscellaneous random cracks are to be routed and sealed. All expansion joints are to be sealed in the fire lane.
4. The fire lane is to be re-painted where necessary if there are locations where the fire lane is scuffed or is flaking. The locations which require re-painting shall be sandblasted, prior to re-painting.
5. Wipe the inside ring and cover of the sanitary sewer manhole, using "Non-Shrink" grout and seal if necessary.
6. Repair all gouges, cracks, and other deformities on the curbs.
7. Adjust meter cans and valve stacks to final grade elevation.
8. Adjust fire hydrants to grade. All fire hydrants must have the operating nut between 19 and 28 inches above the final grade elevation around them.
9. All fire hydrants are to have a clearance radius of 5-feet in all directions. No structures, traffic bollards, barricades, guardrail, landscaping etc, are to be placed within the clearance area.
10. All valve stacks located outside of paving are to have a 2'x2' four inch thick reinforced concrete pad

around them.

11. Water Valve and Waste Water manhole curb cut marks- The pavement curbs are to be marked at all water valve and waste water manhole locations. The curb cut marks are to be sawn into the pavement curb. The curb cut marks are to consist of the following:
 - A. Valves - Place a (V) mark on the curb to note the valve locations, (blue paint for general, white paint for sub outs or dead ends, and red paint for fire hydrants and or fire lines).
 - B. Curb stops – Place a (I) mark on the pavement curb to indicate curb stop locations, (blue paint).
 - C. Clean outs – Place a (II) mark on the pavement curb to indicate sewer clean-out locations, (green paint).
12. Cut an invert in the sanitary sewer connection into the existing manhole at station 0+00, and re-seal the bottom of the manhole.
13. Clean mud from concrete flume in detention pond.
14. Install floodway monument markers. The City will furnish the marker cap, which is to be set in concrete as directed by the City of Rockwall. The developers designated representative shall install the marker prior to project acceptance. Monument installation shall meet City of Rockwall specifications.
 - A. **The monument marker location is to be shown on the Record Drawing Mylar's on the grading plan.**
 - B. The City of Rockwall will furnish the marker cap.
 - C. Install “No Dumping, Drains to Waterway” inlet markers to be installed on each inlet by the developer
15. All parking lot and handicap striping along with all associated signs must be installed.
16. All construction related trash material and miscellaneous debris is to be removed from the site and properly disposed.
17. Maximum slopes allowed by the City of Rockwall shall be a 3:1 slope. All slope areas which exceed the above noted slope requirements are to be re-graded or retained unless otherwise approved by the City Engineer. All slopes are to be graded so as to achieve the most gradual slope possible, unless otherwise noted on the approved construction plans.
18. Final Grading – re-establish all drainage swales, as necessary to achieve conformance to the drainage patterns shown on the approved grading plans. Grade to drain any locations which may hold water or obstruct approved drainage flow patterns. All graded areas, including slopes are to be brought to a final grade surface that is smooth and uniform being relatively free of erosion washouts, tire ruts, dirt clods, silt deposits etc, care should be taken to re-grade any rough surface areas prior to the application of erosion matting or grass seeding.
19. All required landscaping is to be installed at the site and comply with the approved landscape plan.



The site landscaping is to be inspected by Ryan Miller- Director of Planning and Zoning, or his designated representative prior to project acceptance.

For additional information, regarding this check list or site work status please contact – (*Inspector's Name*), who is the designated Construction Inspector for the site-work on this project for the City of Rockwall, regarding this list. Project acceptance is subject to but not necessarily limited to the above listed punch list items. (*Inspector's Name*) may be reached at telephone no. 972-771-7746.

Sincerely,

Construction Inspector
City of Rockwall, Engineering Department

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Rockwall, Texas

Proclamation

Whereas, the City of Rockwall is committed to ensuring the safety and security of all those living in and visiting Rockwall; and

Whereas, fire is a serious public safety concern, both locally and nationally, and homes are the locations where people are at greatest risk from fire; and

Whereas, Rockwall residents should identify places in their home where fires can start and eliminate those hazards as well as install smoke alarms in every sleeping room, outside each separate sleeping area, and on every level of the home; and

Whereas, Rockwall residents who have planned and practiced a home fire escape plan are more prepared and will therefore be more likely to survive a fire; and

Whereas, the Rockwall Fire Department is dedicated to reducing the occurrence of home fires and home fire injuries through prevention and protection education; and

Whereas, Rockwall's residents are able to take action to increase their safety from fire, especially in their homes; and

Whereas, the 2019 Fire Prevention theme - **“Not Every Hero Wears a Cape. Plan and Practice Your Escape”** – works to educate everyone about the small but important actions they can take to be a hero by keeping themselves and those around them safe.

Now, Therefore I, Jim Pruitt, Mayor of the City of Rockwall do hereby proclaim **October 2019** as **Fire Prevention Month** in the City of Rockwall and urge all residents to be aware of their surroundings, look for available ways out in the event of a fire or other emergency, respond when the smoke alarm sounds by exiting the building immediately, and to support the many public safety activities and efforts of the Rockwall Fire Department during Fire Prevention Month 2019.

In Witness Whereof, I hereunto set my hand and seal this 7th day of October, 2019.



Jim Pruitt, Mayor

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Rockwall High Student is a Homecoming Hero After Saving Boy in Parade



(ROCKWALL, TX – Sept. 30, 2019) Tyra Winters is not your ordinary high school cheerleader. Not only can she tumble down the field while leading a crowd, she is a hero!

During the Rockwall High School homecoming parade, Tyra's courage and leadership skills would be put to the test.

While she was in the parade, she heard someone yelling "HELP" and saw a boy choking on a piece of candy. Without hesitation, Tyra rushed over to the boy, performed the Heimlich maneuver until the candy dislodged.

Her courage and kind spirit saved the boy.

Thank you, Tyra!

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2 **ROCKWALL CITY COUNCIL REGULAR MEETING**

3 **Monday, September 16, 2019 - 5:00 PM**

4 **City Hall Council Chambers - 385 S. Goliad St., Rockwall, TX 75087**

5
6 **I. CALL PUBLIC MEETING TO ORDER**

7 Mayor Pruitt called the public meeting to order at 5:00 p.m. with the following council members and staff
8 being present: Mayor Jim Pruitt, Council Members Patrick Trowbridge, Kevin Fowler, Bennie Daniels and
9 Trace Johannesen, City Manager Rick Crowley, Assistant City Managers Mary Smith and Joey Boyd and City
10 Attorney Frank Garza. Mayor Pro Tem Dana Macalik and Councilmember John Hohenshelt were absent
11 from the entirety of the meeting.

12
13 Mayor Pruitt then read the below listed discussion items into the public record before recessing the
14 meeting to go into Executive Session at 5:01 p.m.

15
16 **II. EXECUTIVE SESSION.**

17 **THE CITY OF ROCKWALL CITY COUNCIL WILL RECESS INTO EXECUTIVE SESSION TO DISCUSS THE**
18 **FOLLOWING MATTERS AS AUTHORIZED BY CHAPTER 551 OF THE TEXAS GOVERNMENT CODE:**

- 19 1. Discussion regarding legal issues pertaining to potential annexation pursuant to Section §551.071
20 (Attorney/Client Consultation).
- 21 2. Discussion regarding ballot nominations associated with elections to the Rockwall Central
22 Appraisal District Board pursuant to Section 551.074 (personnel matters)
- 23 3. Discussion regarding appointments to and interviews for city regulatory boards, commissions,
24 and committees - specifically the Board of Adjustments - pursuant to Section 551.074 (Personnel
25 Matters)
- 26 4. Discussion regarding the appeal to the Public Utility Commission filed by the cities of Garland,
27 Mesquite, Plano and Richardson against the North Texas Municipal Water District (NTMWD)
28 regarding water rates pursuant to Section §551.071 (Consultation with Attorney)

29 **III. ADJOURN EXECUTIVE SESSION**

30
31 **Council adjourned from Executive Session at 5:52 p.m.**

32
33 **IV. RECONVENE PUBLIC MEETING (6:00 P.M.)**

34 **Mayor Pruitt reconvened the public meeting at 6:06 p.m.**

35 **V. TAKE ANY ACTION AS A RESULT OF EXECUTIVE SESSION**

36 **Mayor Pruitt indicated that no action is needed as a result of Executive Session.**

37
38 **VI. INVOCATION AND PLEDGE OF ALLEGIANCE – MAYOR PRUITT**

39 Mayor Pruitt delivered the invocation and led the Pledge of Allegiance.

40 **VII. PROCLAMATIONS**

41 1. Constitution Week

42 Two guests, including Mrs. Marilyn King, came forth and addressed the audience and Council concerning
43 "Daughters of the American Revolution" (DAR) and the importance of the U.S. Constitution. Mayor Pruitt
44 then read and presented the proclamation for "Constitution Week."
45

46 **VIII. OPEN FORUM**

47 Mayor Pruitt explained how Open Forum is conducted, asking if anyone would like to come forth at this
48 time to address the Council.
49

50 Jim Turner
51 1691 E. Old Quail Run
52 Rockwall, TX
53

54 Mr. Turner came forth and expressed concern about the SH-205 / John King Boulevard roadway 'swap.' He
55 encouraged the city to hold a public forum and/or put out additional information about this topic, as he
56 believes that a lot of residents are uninformed about this topic. He thanked Council Members for replying
57 to his email; however, he believes the general public needs much more information about this topic.
58

59 There being no one else wishing to come forth and speak, Mayor Pruitt closed Open Forum.
60

61 **IX. CONSENT AGENDA**

62 1. Consider approval of the minutes from the September 3, 2019 regular city council meeting, and
63 take any action necessary.

64 2. Consider approving an annual contract extension to Terracare for Landscape Maintenance and
65 authorizing the City Manager to execute a contract extension in the amount of \$502,480 to be
66 funded out of General Fund, Parks Operations Budget, and take any action necessary.

67 3. Consider approval of an **ordinance** amending the Code of Ordinances in Chapter 10. "Buildings
68 and Building Regulations;" Article III. "Building Code;" Article IV. "Residential Code;" Article VI.
69 "Plumbing Code;" Article VII. "Fuel Gas Code; and Article IX. "Electrical Code" for the purpose of
70 updating the codes to conform to changes made by the 86th Legislature through passage of H.B.
71 2439, and taken any action necessary. **(2nd reading)**

72 4. **P2019-017** - Consider a request by Chase Finch of Corwin Engineering, Inc. on behalf of Suresh
73 Shridharani of Harlan Properties, Inc. for the approval of a preliminary plat for the Emerson Farms
74 Subdivision containing 107 single-family residential lots on a 138.756-acre tract of land identified
75 as Tract 1 of the J. Lockhart Survey, Abstract No. 137, City of Rockwall, Rockwall County, Texas,
76 zoned Planned Development District 76 (PD-76) for Single Family 1 (SF-1) District land uses,

77 generally located on the east side of Dowell Road south of the intersection of SH-276 and Dowell
78 Road, and take any action necessary.

79 **5. P2019-031** - Consider a request by Pat Atkins of the Saddle Star Land Development, LLC on behalf
80 of the owner Jeff Kennemer of the Saddle Star Land Development, LLC for the approval of a final
81 plat for Phase 1 of the Saddle Star South Subdivision containing 66 single-family residential lots
82 on a 26.411-acre tract of land identified as a portion of a larger 44.292-acre tract of land
83 identified as Tract 2-03 of the P. B. Harrison Survey, Abstract No. 97, City of Rockwall, Rockwall
84 County, Texas, zoned Planned Development District 79 (PD-79) for Single-Family 8.4 (SF-8.4)
85 District land uses, situated within the SH-205 By-Pass Overlay (SH-205 BY-OV) District, located on
86 the north side of John King Boulevard east of the intersection of Featherstone Drive John King
87 Boulevard, and take any action necessary.

88 **6. P2019-033** - Consider a request by Bill Bricker of Columbia Development Company, LLC on behalf
89 of David and Laura Cline for the approval of a replat for Lot 47, Block D, Park Place West Phase II
90 Addition being a 0.184-acre parcel of land being currently identified as Lot 20, Block D, Park Place
91 West Phase II Addition, City of Rockwall, Rockwall County, Texas, zoned Planned Development
92 District 59 (PD-59) for Single-Family 7 (SF-7) District land uses, addressed as 408 Jordan Farm
93 Circle, and take any action necessary.

94 **Councilmember Fowler moved to approve the entire Consent Agenda (#s 1, 2, 3, 4, 5, and 6).**
95 **Councilmember Trowbridge seconded the motion, which passed unanimously of those present (Macalik**
96 **and Hohenshelt absent).**

97
98 **The ordinance caption for Consent Agenda item #3 was read as follows:**

99 **CITY OF ROCKWALL**
100 **ORDINANCE NO. 19-34**

101
102 **AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF ROCKWALL, TEXAS,**
103 **AMENDING THE CODE OF ORDINANCES IN CHAPTER 10. *BUILDINGS AND BUILDING***
104 ***REGULATIONS*; ARTICLE III. *BUILDING CODE*; ARTICLE IV. *RESIDENTIAL CODE*;**
105 **ARTICLE VI. *PLUMBING CODE*; ARTICLE VII. *FUEL GAS CODE*; AND ARTICLE IX.**
106 ***ELECTRICAL CODE*; AS HERETOFORE AMENDED, FOR THE PURPOSE OF UPDATING**
107 **THE CODES TO CONFORM TO CHANGES MADE BY THE 86TH LEGISLATIVE SESSION**
108 **THROUGH PASSAGE OF H.B. 2439; PROVIDING FOR A PENALTY OF FINE NOT TO**
109 **EXCEED THE SUM OF TWO THOUSAND DOLLARS (\$2,000.00) FOR EACH OFFENSE;**
110 **PROVIDING FOR A SEVERABILITY CLAUSE; PROVIDING FOR A REPEALER CLAUSE;**
111 **PROVIDING FOR AN EFFECTIVE DATE.**

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113
114
115 **X. APPOINTMENT ITEMS**

116 **1.** Appointment with the Planning and Zoning Chairman to discuss and answer any questions
117 regarding cases on the agenda and related issues and take any action necessary.

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Jerry Welch from the Planning & Zoning Commission came forth and briefed the Council on recommendations of the Commission relative to planning-related items on tonight's city council meeting agenda. Council took no action pertaining to this agenda item.

Mayor Pruitt addressed Open Forum next.

XI. PUBLIC HEARING ITEMS

- 1. Z2019-017** - Hold a public hearing to discuss and consider a request by Lance Tyler of Marc Development, LLC for the approval of an **ordinance** for a zoning change from an Agricultural (AG) District to a Planned Development District for Two-Family (2F) District land uses to allow townhomes on a 1.27-acre tract of land identified as Tract 29 & 29-1 of the S. S. McCurry Survey, Abstract No. 146, City of Rockwall, Rockwall County, Texas, zoned Agricultural (AG) District, situated within the SH-205 By-Pass Overlay (SH-205 BY-OV) District, addressed as 1451 FM-1141, and take any action necessary **(1st Reading)**.

Planning Director Ryan Miller briefly explained that the applicant has requested to withdraw this application at this time. However, since it was advertised, the Council will still need to take action. Following brief comments, Councilmember Trowbridge moved to accept the applicant's request to withdraw. Councilmember Johannesen seconded the motion, which, after brief comments, passed by a vote of 5 ayes with 2 absent (Macalik and Hohenshelt).

- 2. Z2019-018** - Hold a public hearing to discuss and consider a request by Rob Whittle for the approval of an **ordinance** amending Planned Development District 5 (PD-5) to change the garage setback requirements for an 11.003-acre tract of land identified as Lots 1-40, Block A, the Highlands Addition, City of Rockwall, Rockwall County, Texas, zoned Planned Development District 5 (PD-5) for Zero Lot Line (ZL-5) District land uses, situated within the SH-205 By-Pass Overlay (SH-205 BY OV) District, located at the northwest corner of the intersection of SH-66 and FM-1114, and take any action necessary **(1st Reading)**.

Planning Director Ryan Miller provided background information concerning this agenda item. Notices were sent out to property owners and residents located within 500' of the subject property and PD-5. Also, homeowners associations were also noticed. One email was received back in favor. 12 notices and 2 emails expressing opposition were received. Two emails and 5 notices were received back expressing opposition to the land use, and 7 notices were received back expressing opposition to Case No. 2019-018. In addition, the Planning & Zoning Commission heard this case and has recommended approval of the amendment to the PD, per staff's conditions of approval by a vote of 6-0 with Commissioner Moeller being absent.

Rob Whittle
P.O. Box 369
Rockwall, TX

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Mr. Whittle, the applicant, came forth and briefly addressed Council concerning his request. He generally asked Council to approve his request.

Mayor Pruitt opened the public hearing, asking if anyone would like to come forth and speak at this time. There being no one indicating such, Mayor Pruitt then closed the public hearing.

Councilmember Trowbridge moved to approve Z2019-018. Councilmember Fowler seconded the motion. The ordinance was read as follows:

**CITY OF ROCKWALL
ORDINANCE NO. 19-XX**

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF ROCKWALL, TEXAS AMENDING PLANNED DEVELOPMENT DISTRICT 5 (PD-5) [ORDINANCE NO.'S 73-31, 87-23, 88-11, 96-25 & 00-28] AND THE UNIFIED DEVELOPMENT CODE [ORDINANCE NO. 04-38] OF THE CITY OF ROCKWALL, AS HERETOFORE AMENDED, FOR THE PURPOSE OF AMENDING PLANNED DEVELOPMENT DISTRICT 5 (PD-5), BEING A ~547.68-ACRE TRACT OF LAND SITUATED WITHIN THE S. S. McCURRY SURVEY, ABSTRACT NO. 146, CITY OF ROCKWALL, ROCKWALL COUNTY, TEXAS AND MORE FULLY DESCRIBED HEREIN BY EXHIBIT 'A' AND DEPICTED IN EXHIBIT 'B' OF THIS ORDINANCE; PROVIDING FOR SPECIAL CONDITIONS; PROVIDING FOR A PENALTY OF A FINE NOT TO EXCEED THE SUM OF TWO THOUSAND DOLLARS (\$2,000.00) FOR EACH OFFENSE; PROVIDING FOR A SEVERABILITY CLAUSE; PROVIDING FOR A REPEALER CLAUSE; PROVIDING FOR AN EFFECTIVE DATE.

The motion passed by a vote of 5 ayes with 2 absent (Macalik, Hohenshelt).

Mayor Pruitt next addressed the proclamation for Constitution Week.

- 3. Z2019-019** - Hold a public hearing to discuss and consider a request by Doug Henderson of Crafton Communications, Inc. for the approval of an ordinance for a Specific Use Permit (SUP) allowing a Freestanding Commercial Antenna on a 0.0055-acre portion of a larger 1.24-acre parcel of land, identified as Lot 9, Block A, Horizon Ridge Center Addition, City of Rockwall, Rockwall County, Texas, zoned Planned Development District 9 (PD-9) for General Retail (GR) District land uses, addressed as 920 Rockwall Parkway, and take any action necessary (1st Reading).

Planning Director Ryan Miller indicated that the applicant expressed to staff this afternoon that he would like to withdraw this request. Mayor Pruitt then moved to allow the applicant to withdraw this application/request. Councilman Fowler seconded the motion. The motion passed by a vote of 5 ayes with 2 absences (Macalik and Hohenshelt).

- 4. Z2019-020** - Hold a public hearing to discuss and consider a request by Todd Panzner for the approval of an ordinance for a zoning change from an Agricultural (AG) District to a Commercial (C) District for a 11.85-acre tract of land identified as Tract 1-1 of the J. H. Bailey Survey, Abstract

201 No. 22, City of Rockwall, Rockwall County, Texas, zoned Agricultural (AG) District, situated within
202 the SH-276 Overlay (SH-276 OV) District, generally located south of the intersection of Green
203 Circle and SH-276, and take any action necessary **(1st Reading)**.

204 **Planning Director Ryan Miller provided background information concerning this agenda item. He**
205 **indicated that sixteen notices were sent out to adjacent property owners and residents located within**
206 **500' of the subject property. One notice has been received back in favor. In addition, the Planning &**
207 **Zoning Commission has recommended approval of this request.**

208
209 **Todd Panzner**
210 **1600 Eldridge Pkwy., Apt. 1204**
211 **Houston, TX**

212
213 **The applicant briefly came forth and addressed Council.**

214
215 **Mayor Pruitt opened the public hearing, asking if anyone would like to come forth and speak. There**
216 **being no one indicating such, he then closed the public hearing.**

217
218 **Councilman Fowler moved to approve Z2019-020. Councilmember Johannesen seconded the motion. The**
219 **ordinance caption was read as follows:**

220
221 **CITY OF ROCKWALL**

222 **ORDINANCE NO. 19-XX**

223 **AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF ROCKWALL, TEXAS,**
224 **AMENDING THE UNIFIED DEVELOPMENT CODE [*ORDINANCE NO. 04-38*] OF THE CITY**
225 **OF ROCKWALL, AS HERETOFORE AMENDED SO AS TO FURTHER AMEND THE**
226 **ZONING MAP TO ADOPT A CHANGE IN ZONING FROM AN AGRICULTURAL (AG)**
227 **DISTRICT TO A COMMERCIAL (C) DISTRICT FOR AN 11.85-ACRE TRACT OF LAND**
228 **IDENTIFIED AS TRACT 1-1 OF THE J. H. BAILEY SURVEY, ABSTRACT NO. 22, CITY OF**
229 **ROCKWALL, ROCKWALL COUNTY, TEXAS AND MORE SPECIFICALLY DESCRIBED IN**
230 **EXHIBIT 'A' OF THIS ORDINANCE; PROVIDING FOR SPECIAL CONDITIONS;**
231 **PROVIDING FOR A PENALTY OF FINE NOT TO EXCEED THE SUM OF TWO THOUSAND**
232 **DOLLARS (\$2,000.00) FOR EACH OFFENSE; PROVIDING FOR A SEVERABILITY**
233 **CLAUSE; PROVIDING FOR A REPEALER CLAUSE; PROVIDING FOR AN EFFECTIVE**
234 **DATE.**

235
236 **The motion passed by a vote of 5 ayes with 2 absences (Macalik and Hohenshelt).**

237
238 **XII. ACTION ITEMS**

239 **1.** Discuss and consider a request by Phil Wagner of the Rockwall Economic Development
240 Corporation for the approval of an **ordinance** establishing a two (2) hour parking limit for all on-
241 street parking within the Rockwall Technology Park and Corporate Crossing, and take any action
242 necessary. **(1st Reading)**

243 **Mr. Phil Wagner came forth and shared that he has spoken with the city attorney, Mr. Garza, and it has**
244 **been suggested that one caveat be added to this ordinance between first and second reading. And that is**
245 **that parking permits would be issued for those vehicles that have no other option but to park for more**

246 than 2-hours at a time (i.e. construction-related vehicles doing work in the area). Mayor Pruitt asked who
247 would be issuing said permits. Mr. Crowley, City Manager, shared that the REDC staff would issue said
248 permits on behalf of the city. Mayor Pruitt expressed concern and general disagreement with criminalizing
249 parking and with empowering the REDC to issue the permits and decide who will and won't be criminalized.
250 General discussion ensued pertaining to the fact that the original building occupant received a parking
251 requirement variance; however, since that time, the original tenant is no longer there, and a new tenant
252 is now occupying the facility. The new tenant operates a type of business that has many employees,
253 whereas the original tenant operated a business that did not have a lot of employees. This is how and why
254 the parking woes have emerged. General discussion ensued pertaining to enforcement. Mayor Pruitt
255 strongly expressed opposition to making this a criminal matter when it is truly a civil matter. He does not
256 mind making it a civil penalty; however, he has a problem utilizing our Police Department to enforce these
257 parking limitations on a criminal basis. City Attorney Frank Garza provided brief comments, generally
258 indicating that enforcing this two-hour parking limit will be very difficult to enforce. Also, he does
259 understand the mayor's concerns pertaining to creating criminal penalties concerning this topic. That is
260 why some cities have made it an 'administrative violation' rather than a 'criminal violation.'

261
262 **Craig Renfro**
263 **1556 Parkside Circle**
264 **Rockwall, TX**

265
266 Mr. Renfro, current Chairman of the REDC, came forth and shared his observations pertaining to the
267 parking congestion in the area. He generally indicated that the parking congestion is causing potential
268 business prospects to be dissuaded from signing contracts to locate their business(es) in the Tech Park
269 because of the parking-related concerns. He seemed to reinforce Mr. Wagner's sentiments that some sort
270 of remedy is most assuredly needed with regards to solving the parking-related concerns. It is viewed as
271 negative by companies that visit from places like China and Germany.

272
273 General discussion ensued pertaining to civil versus criminal remedies associated with solving the parking
274 concerns. Mr. Wagner mentioned that the property's deeds, covenants and restrictions do call for no 'on
275 street' parking; however, he has concerns about taking a tenant to court and suing them (civilly) to get
276 them to comply and remedy their parking problems.

277
278 Council generally asked the City Manager to go out to the Tech Park and speak with the tenant to explain
279 to the tenant the parking-related remedies that the city *could* potentially institute if they are unable to get
280 their own parking congestion under control.

281
282 **So, Council took no formal action pertaining to this agenda item at this time.**

283
284 **2.** Discuss and consider approval of the Rockwall Economic Development Corporation (REDC)
285 budget for fiscal year 2020 and amended budget for fiscal year 2019, and take any action
286 necessary

287 **Following brief comments from Mrs. Smith, Assistant City Manager/Finance Director, Mayor Pruitt moved**
288 **to approve the budget and amended budget. Councilmember Johannesen seconded the motion, which**
289 **passed by a vote of 5 ayes with 2 absences (Hohenshelt and Macalik).**

290
291 **3.** Discuss and consider approval of the Rockwall Technology Park Association budget for fiscal year
292 2020 and amended budget for fiscal year 2019, and take any action necessary.

293 Phil Wagner of the REDC came forth and shared that this is essentially Rockwall’s business park, and there
294 are approximately twenty tenants that operate there. The REDC owns land there, and it handles
295 maintenance of common areas, irrigation, planters and the like. Councilmember Trowbridge moved to
296 approve the budget as presented. Councilmember Fowler seconded the motion, which passed
297 unanimously of those present (5 ayes with 2 absences – Macalik and Hohenshelt).

298 4. Discuss and consider the Hotel Tax Subcommittee recommendations for funding allocations in
299 fiscal year 2020, including authorizing the City Manager to execute associated funding
300 agreements, and take any action necessary.

301 Mary Smith, Assistant City Manager and Finance Director of the City, provided brief background
302 information pertaining to this agenda item. City Attorney Frank Garza indicated that if any councilmember
303 is a member of an organization’s board of directors (not a member of the organization itself, but a member
304 of the actual board of directors), then he needs to recuse himself from voting on the funding request for
305 that particular organization. Indication was given that Councilman Fowler is a member of the Noon
306 Rotary’s Board, and Councilmember Johannesen is a member of the American Legion’s Board. Therefore,
307 they will recuse themselves from voting on those organizations’ funding requests.

308
309 Councilmember Trowbridge then moved to approve all recommended funding requests except for the
310 American Legion and Noon Rotary ones. Councilmember Daniels seconded the motion, which passed by a
311 vote of 5 ayes and 2 absences (Macalik and Hohenshelt).

312
313 Fowler moved to approve the funding request for the American Legion. Councilman Daniels seconded the
314 motion, which passed by a vote of 4 ayes, 1 abstention (Johannesen) and 2 absences (Macalik and
315 Hohenshelt).

316
317 Councilman Trowbridge moved to approve the Noon Rotary-related funding request. Councilman
318 Johannesen seconded the motion, which passed by a vote of 4 ayes, 1 abstention (Fowler) and 2 absences
319 (Macalik and Hohenshelt).

320
321 5. Discuss and consider approval of an ordinance amending the budget for fiscal year 2019, and
322 take any action necessary.

323 Mayor Pruitt moved to approve the ordinance amending the budget. Councilman Trowbridge seconded
324 the motion, which passed by a vote of 5 ayes with 2 absences (Hohenshelt, Macalik).

325
326 6. Discuss and consider approval of an ordinance adopting the proposed budget for fiscal year 2020,
327 and take any action necessary.

328 Councilmember Trowbridge moved to approve the ordinance adopting the budget. Councilmember
329 Johannesen seconded the motion. The ordinance was read as follows:

330 CITY OF ROCKWALL
331 ORDINANCE NO. 19-36
332

333 AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF ROCKWALL, TEXAS, APPROVING AND
334 ADOPTING A BUDGET FOR THE CITY FOR THE FISCAL YEAR OCTOBER 1, 2019, THROUGH
335 SEPTEMBER 30, 2020; PROVIDING THAT EXPENDITURES FOR SAID FISCAL YEAR SHALL BE

336 MADE IN ACCORDANCE WITH THE SAID BUDGET; AND PROVIDING FOR AN EFFECTIVE
337 DATE.

338
339 The motion passed by a vote of 5 ayes with 2 absences (Macalik and Hohenshelt).

340 7. Discuss and consider approval of an ordinance levying ad valorem taxes for the tax year 2019,
341 and take any action necessary.

342 Mayor Pruitt moved to approve the tax rate at a lower rate of .3879 (per \$100 of assessed valuation), which
343 is just below the effective tax rate. Councilmember Daniels seconded the motion. The ordinance caption
344 was read as follows:

345 CITY OF ROCKWALL, TEXAS
346 ORDINANCE NO. 19-37
347

348 AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF ROCKWALL, TEXAS,
349 LEVYING THE AD VALOREM TAXES FOR THE YEAR 2019 AT A RATE OF \$.3879 PER
350 ONE HUNDRED DOLLARS (\$100.00) ASSESSED VALUATION ON ALL TAXABLE
351 PROPERTY WITHIN THE CORPORATE LIMITS OF THE CITY AS OF JANUARY 1, 2019
352 TO PROVIDE REVENUES FOR THE PAYMENT OF CURRENT EXPENSES AND TO
353 PROVIDE AN INTEREST AND SINKING FUND ON ALL OUTSTANDING DEBTS OF THE
354 CITY; PROVIDING FOR DUE AND DELINQUENT DATES, TOGETHER WITH PENALTIES
355 AND INTEREST; APPROVING THE 2019 TAX ROLL; PROVIDING FOR EXEMPTIONS OF
356 PERSONS OVER SIXTY-FIVE (65) YEARS; PROVIDING AN EFFECTIVE DATE.
357

358 The motion passed by a vote of 5 ayes with 2 absences (Macalik and Hohenshelt).

359
360 8. Discuss and consider (re)appointments to the city's Airport Advisory Board, Historic Preservation
361 Advisory Board, Main Street Advisory Board, and Park Board and take any action necessary.

362 No discussion took place, and no action was taken concerning this agenda item.

363
364 9. Discuss and consider authorizing the City Manager to negotiate agreements with WME and Red
365 11 Music for Founders Day Festival opening and headliner entertainment to be paid from Hotel
366 Occupancy Tax Funds in the amount of \$45,000, and take any action necessary.

367 Councilmember Fowler moved to authorize the City Manager to negotiate the agreements with WME and
368 Red 11 Music for Founder's Day, as presented. Councilmember Johannesen seconded the motion, which
369 passed by a vote of 5 ayes with 2 absences (Macalik and Hohenshelt).

370 XIII. EXECUTIVE SESSION

371 THE CITY OF ROCKWALL CITY COUNCIL WILL RECESS INTO EXECUTIVE SESSION TO DISCUSS THE
372 FOLLOWING MATTERS AS AUTHORIZED BY CHAPTER 551 OF THE TEXAS GOVERNMENT CODE:

- 373 1. Discussion regarding legal issues pertaining to potential annexation pursuant to Section §551.071
374 (Attorney/Client Consultation).
375 2. Discussion regarding ballot nominations associated with elections to the Rockwall Central
376 Appraisal District Board pursuant to Section 551.074 (personnel matters)

- 377 **3.** Discussion regarding appointments to and interviews for city regulatory boards, commissions,
378 and committees - specifically the Board of Adjustments - pursuant to Section 551.074 (Personnel
379 Matters)
380 **4.** Discussion regarding the appeal to the Public Utility Commission filed by the cities of Garland,
381 Mesquite, Plano and Richardson against the North Texas Municipal Water District (NTMWD)
382 regarding water rates pursuant to Section §551.071 (Consultation with Attorney)

383 **XIV. RECONVENE PUBLIC MEETING & TAKE ANY ACTION AS RESULT OF EXECUTIVE SESSION**

384 **Council did not reconvene in Executive Session following the close of the public meeting agenda.**

385 **XV. ADJOURNMENT**

386 **Mayor Pruitt adjourned the meeting at 7:27 p.m.**

387

388 **PASSED AND APPROVED BY THE CITY COUNCIL OF THE CITY OF ROCKWALL, TEXAS, THIS 7TH DAY OF**

389 **OCTOBER, 2019.**

390

391 **ATTEST:**

392

JIM PRUITT, MAYOR

393

394 **_____
KRISTY COLE, CITY SECRETARY**

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CITY OF ROCKWALL

ORDINANCE NO. 19-38

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF ROCKWALL, TEXAS AMENDING PLANNED DEVELOPMENT DISTRICT 5 (PD-5) [*ORDINANCE NO.'S 73-31, 87-23, 88-11, 96-25 & 00-28*] AND THE UNIFIED DEVELOPMENT CODE [*ORDINANCE NO. 04-38*] OF THE CITY OF ROCKWALL, AS HERETOFORE AMENDED, FOR THE PURPOSE OF AMENDING PLANNED DEVELOPMENT DISTRICT 5 (PD-5), BEING A ~547.68-ACRE TRACT OF LAND SITUATED WITHIN THE S. S. McCURRY SURVEY, ABSTRACT NO. 146, CITY OF ROCKWALL, ROCKWALL COUNTY, TEXAS AND MORE FULLY DESCRIBED HEREIN BY *EXHIBIT 'A'* AND DEPICTED IN *EXHIBIT 'B'* OF THIS ORDINANCE; PROVIDING FOR SPECIAL CONDITIONS; PROVIDING FOR A PENALTY OF A FINE NOT TO EXCEED THE SUM OF TWO THOUSAND DOLLARS (\$2,000.00) FOR EACH OFFENSE; PROVIDING FOR A SEVERABILITY CLAUSE; PROVIDING FOR A REPEALER CLAUSE; PROVIDING FOR AN EFFECTIVE DATE.

WHEREAS, the City has received a request by Rob Whittle for the approval of an amendment to Planned Development District 5 (PD-5) [*Ordinance No.'s 73-31, 87-23, 88-11, 96-25 & 00-28*] for the purpose of amending the garage orientation requirements for an 11.003-acre portion of the larger ~547.68-acre Planned Development District, which is situated within the S. S. McCurry Survey, Abstract No. 146, City of Rockwall, Rockwall County, Texas, identified as Planned Development District 5 (PD-5), and more fully described in *Exhibit 'A'* and depicted in *Exhibit 'B'* of this ordinance, which hereinafter shall be referred to as the *Subject Property* and incorporated by reference herein; and

WHEREAS, the Planning and Zoning Commission of the City of Rockwall and the governing body of the City of Rockwall in compliance with the laws of the State of Texas and the ordinances of the City of Rockwall have given the requisite notices by publication and otherwise, and have held public hearings and afforded a full and fair hearing to all property owners generally and to all persons interested in and situated in the affected area, and in the vicinity thereof, and the governing body in the exercise of its legislative discretion, has concluded that Planned Development District 5 (PD-5) [*Ordinance No.'s 73-31, 87-23, 88-11, 96-25 & 00-28*] and the Unified Development Code [*Ordinance No. 04-38*] should be amended as follows:

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF ROCKWALL, TEXAS:

SECTION 1. That the approval of this ordinance shall supersede all requirements stipulated in *Ordinance No.'s 73-31, 87-23, 88-11, 96-25 & 00-28*;

SECTION 2. That the *Subject Property* shall be used only in the manner and for the purposes authorized by this Planned Development District Ordinance and the Unified Development Code [*Ordinance No. 04-38*] of the City of Rockwall as heretofore amended, as amended herein by granting this zoning change, and as maybe amended in the future;

SECTION 3. That development of the *Subject Property* shall generally be in accordance with the *Concept Plan*, described in *Exhibit 'B'* of this ordinance, attached hereto and incorporated herein by reference as *Exhibit 'B'*, which is deemed hereby to be a condition of approval of the amended zoning classification for the *Subject Property*;

SECTION 4. That development of the *Subject Property* shall generally be in accordance with the *PD Development Standards*, described in *Exhibit 'C'* of this ordinance, attached hereto and incorporated herein by reference as *Exhibit 'C'*, which is deemed hereby to be a condition of approval of the amended zoning classification for the *Subject Property*;

SECTION 5. That the official zoning map of the City of Rockwall, Texas be corrected to reflect the change in zoning described here in.

SECTION 6. That any person, firm, or corporation violating any of the provisions of this ordinance shall be deemed guilty of a misdemeanor and upon conviction shall be punished by a penalty of fine not to exceed the sum of two thousand dollars (\$2,000.00) for each offense and each and every day such offense shall continue shall be deemed to constitute a separate offense;

SECTION 7. That if any section, paragraph, or provision of this ordinance or the application of that section, paragraph, or provision to any person, firm, corporation or situation is for any reason judged invalid, the adjudication shall not affect any other section, paragraph, or provision of this ordinance or the application of any other section, paragraph or provision to any other person, firm, corporation or situation, nor shall adjudication affect any other section, paragraph, or provision of the Unified Development Code [*Ordinance No. 04-38*], and the City Council declares that it would have adopted the valid portions and applications of the ordinance without the invalid parts and to this end the provisions for this ordinance are declared to be severable;

SECTION 8. The standards in this ordinance shall control in the event of a conflict between this ordinance and any provision of the Unified Development Code [*Ordinance No. 04-38*] of any provision of the *City Code*, ordinance, resolution, rule, regulation, or procedure that provides a specific standard that is different from and inconsistent with this ordinance. References to zoning district regulations or other standards in the Unified Development Code [*Ordinance No. 04-38*] (*including references to the Unified Development Code*), and references to overlay districts, in this ordinance or any of the *Exhibits* hereto are those in effect on the date this ordinance was passed and approved by the City Council of the City of Rockwall, Texas;

SECTION 9. That this ordinance shall take effect immediately from and after its passage;

PASSED AND APPROVED BY THE CITY COUNCIL OF THE CITY OF ROCKWALL, TEXAS, THIS THE 7TH DAY OF OCTOBER, 2019.

Jim Pruitt, Mayor

ATTEST:

Kristy Cole, City Secretary

APPROVED AS TO FORM:

Frank J. Garza, City Attorney

1st Reading: 09-16-2019

2nd Reading: 10-07-2019

EXHIBIT 'A':
Legal Description

BEING 547.68 acres of land (also known as Planned Development No. 5, City of Rockwall) generally situated in Abstract 146, S. S. McCurry Survey, Abstract 122, M. B. Jones Survey, and Abstract 124, J. H. B. Jones Survey in the County of Rockwall, Texas and being more particularly described by metes and bounds as follows:

BEGINNING at a point on the Eastern Right of Way line of North John King Blvd. and East Quail Run Rd. (located at NAD83 Texas State Plane GPS Coordinate (Grid): 2599456.003E, 7035211.252N Feet), point also bears North 4°-12'-55" East a distance of 2,426.862 feet, from a White Water Ln. storm drainage inlet benchmark (NAD83 Texas State Plane GPS Coordinate (Grid): 2598875.433E, 7032771.106 N feet):

- 1 **THENCE** South 1°-55'-15" East, a distance of 87.002 feet, for a corner;
- 2 **THENCE** North 89°-59'-44" East, a distance of 139.965 feet, for a corner;
- 3 **THENCE** South 0°-12'-13" East, a distance of 752.184 feet, for a corner;
- 4 **THENCE** North 89°-26'-3" East, a distance of 113.821 feet, for a corner;
- 5 **THENCE** South 0°-28'-28" East, along the Eastern Right of Way line of North John King Blvd., distance of 1266.225 feet, for a corner;
- 6 **THENCE** South 89°-56'-36" West, a distance of 125.88 feet, for a corner;
- 7 **THENCE** South 1°-19'-57" East, along the Eastern boundary of the Caruth Lakes Addition, a distance of 484.248 feet, for a corner;
- 8 **THENCE** South 88°-7'-18" West, a distance of 222.984 feet, for a corner;
- 9 **THENCE** South 1°-10'-33" East, a distance of 419.674 feet, to the beginning of a curve to the left having a radius of 358.409 feet;
- 10 **CONTINUING** along said curve to the left, through a central angle of 13° 24' 34", a distance of 83.691 feet, a chord bearing of South 31°-54'-10" West, an arc length of 83.882 feet, tangent of 42.133 feet for a corner;
- 11 **THENCE** North 1°-41'-27" West, a distance of 143.627 feet, for a corner;
- 12 **THENCE** South 88°-32'-19" West, a distance of 207 feet, for a corner;
- 13 **THENCE** South 1°-41'-27" East, a distance of 490.818 feet, to a point;
- 14 **THENCE** South 1°-41'-27" East, a distance of 260.031 feet, for a corner;
- 15 **THENCE** South 89°-19'-55" East, a distance of 150.377 feet, for a corner;
- 16 **THENCE** South 1°-27'-36" East, a distance of 299.847 feet, for a corner;
- 17 **THENCE** North 87°-52'-30" East, a distance of 14.643 feet, for a corner;
- 18 **THENCE** South 0°-38'-51" East, a distance of 466.086 feet, for a corner;
- 19 **THENCE** North 89°-7'-10" East, a distance of 42.873 feet, for a corner;
- 20 **THENCE** South 1°-59'-37" East, along the centerline of FM1141, a distance of 755.941 feet, to the beginning of a curve to the right having a radius of 463.619 feet;
- 21 **CONTINUING** along said curve to the right, through a central angle of 25° 29' 28", a distance of 204.568 feet, a chord bearing of South 20°-17'-10" West, an arc length of 206.265 feet, tangent of 104.868 feet for a corner;
- 22 **THENCE** South 16°-36'-29" West, a distance of 0.296 feet, for a corner;
- 23 **THENCE** South 88°-11'-53" West, along the centerline of State Highway 66 (Williams St), a distance of 1265.935 feet, for a corner;
- 24 **THENCE** North 0°-29'-15" West, a distance of 154.265 feet, for a corner;
- 25 **THENCE** South 88°-21'-55" West, a distance of 249.226 feet, for a corner;
- 26 **THENCE** South 1°-55'-26" West, a distance of 116.711 feet, to a point;
- 27 **THENCE** South 0°-34'-45" East, a distance of 35.308 feet, for a corner;
- 28 **THENCE** South 89°-8'-43" West, a distance of 63.899 feet, to the beginning of a curve to the left having a radius of 892.973 feet;
- 29 **CONTINUING** along said curve to the left, through a central angle of 13° 56' 26", a distance of 83.691 feet, a chord bearing of South 82°-28'-34" West, an arc length of 217.267 feet, tangent of 109.173 feet to a point;
- 30 **THENCE** North 81°-52'-11" West, a distance of 28.666 feet, to a point;
- 31 **THENCE** North 84°-46'-25" West, a distance of 370.870 feet, for a corner;
- 32 **THENCE** North 0°-13'-33" West, a distance of 166.864 feet, for a corner;
- 33 **THENCE** South 89°-8'-37" West, a distance of 775.659 feet, for a corner;
- 34 **THENCE** North 0°-8'-56" West, a distance of 1331.182 feet, to a point;

EXHIBIT 'A':
Legal Description

- 35 **THENCE** North 7°-19'-27" West, a distance of 46.023 feet, to a point;
- 36 **THENCE** North 0°-32'-38" West, a distance of 123.421 feet, for a corner;
- 37 **THENCE** South 89°-20'-56" West, a distance of 749.143 feet, for a corner;
- 38 **THENCE** South 5°-24'-36" East, a distance of 10.011 feet, for a corner;
- 39 **THENCE** South 88°-53'-57" West, a distance of 247.504 feet, to a point;
- 40 **THENCE** South 87°-17'-12" West, a distance of 0.478 feet, to a point;
- 41 **THENCE** South 87°-3'-23" West, a distance of 47.974 feet, to a point;
- 42 **THENCE** South 88°-30'-6" West, a distance of 447.084 feet, for a corner;
- 43 **THENCE** South 9°-13'-57" West, a distance of 68.404 feet, for a corner;
- 44 **THENCE** South 89°-5'-31" West, a distance of 596.411 feet, to the beginning of a curve to the left having a radius of 4342.699 feet;
- 45 **CONTINUING** along said curve to the left, through a central angle of 10° 41' 5", a distance of 808.673 feet, a chord bearing of North 9°-50'-4" West, an arc length of 809.846feet, tangent of 406.101 feet to a point;
- 46 **THENCE** North 14°-15'-56" West, along the centerline of State Highway 205 (N. Goliad St.), a distance of 3030.52 feet, for a corner;
- 47 **THENCE** North 88°-15'-29" East, a distance of 784.634 feet, to a point;
- 48 **THENCE** North 89°-36'-51" East, along the centerline of East Quail Run Rd., a distance of 1968.743 feet, for a corner;
- 49 **THENCE** South 3°-32'-29" East, a distance of 969.901 feet, for a corner;
- 50 **THENCE** North 88°-30'-49" East, a distance of 1779.891 feet, for a corner;
- 51 **THENCE** North 0°-21'-3" West, a distance of 530.608 feet, to a point;
- 52 **THENCE** North 1°-35'-46" West, a distance of 424.101 feet, for a corner;
- 53 **THENCE** North 89°-10'-59" East, along the centerline of East Quail Run Rd., a distance of 847.002 feet, for a corner;
- 54 **THENCE** South 0°-16'-35" East, a distance of 462.415 feet, for a corner;
- 55 **THENCE** South 89°-23'-26" East, a distance of 435.817 feet, for a corner;
- 56 **THENCE** North 0°-4'-34" West, a distance of 473.06 feet, for a corner;
- 57 **THENCE** North 89°-2'-49" East, a distance of 99.793 feet, to the beginning of a curve to the left having a radius of 113.58 feet;
- 58 **CONTINUING** along said curve to the left, through a central angle of 69° 11' 2", a distance of 128.965 feet, a chord bearing of North 49°-25'-7" East, an arc length of 137.147 feet, tangent of 78.33 feet to a point;
- 59 **THENCE** North 89°-14'-25" East, a distance of 22.678 feet to the *POINT OF BEGINNING AND CONTAINING* 547.68 acres of land (23,856,878.88 square feet) more or less. The above description also intended to follow all adjacent existing city limits, and abutting parcel boundaries unless noted.

Closure Report

Number of Courses: 59

Total Perimeter Length: 26622.146

Misclosure As X/Y: 0, 0.001

Misclosure As Direction/Distance: N 24°-14'-24" E, 0.001 feet

**EXHIBIT 'B':
Concept Plan**

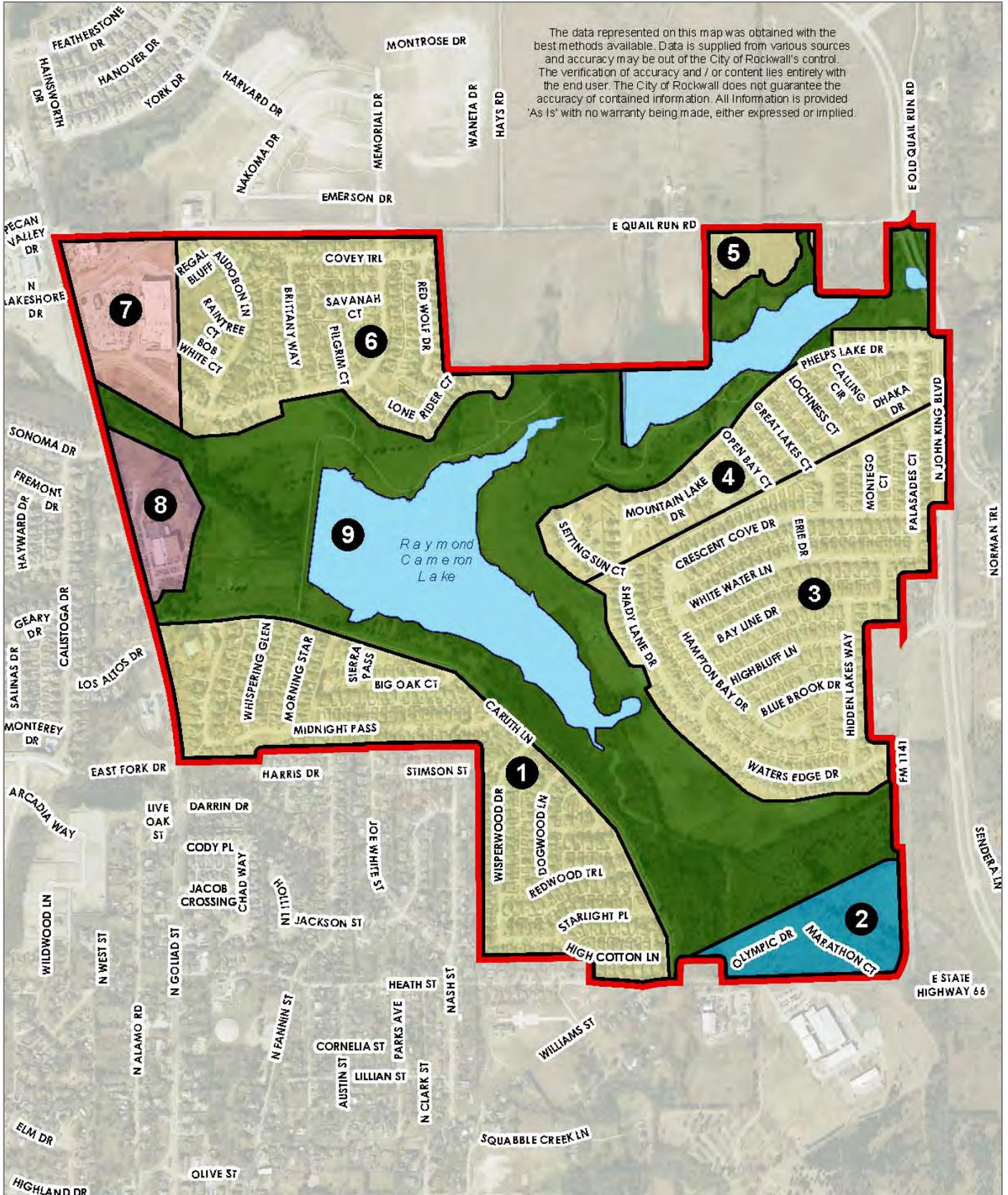


EXHIBIT 'C':
PD Development Standards

(A) Purpose.

- (1) October 7, 2019. The purpose of this amendment to Planned Development District 5 (PD-5) is to consolidate *Ordinance No.'s 73-31, 87-23, 88-11, 96-25 & 00-28*; however, this ordinance does not change the intent, restrictions or land uses established in any previous ordinance with the exception of changing the garage setback requirements for *Tract 2* as depicted in *Exhibit 'B'* of this ordinance.

(B) Density and Development Standards

- (1) Tracts 1 & 3. The area identified as *Tracts 1 & 3* in *Exhibit 'B'* of this ordinance shall be subject to the land use and development standards permitted for the Single-Family 7 (SF-7) District as stipulated by Article IV, *Permissible Uses*, and Article V, *District Development Standards*, of the Unified Development Code (UDC) of the City of Rockwall as heretofore amended, as amended herein by granting this zoning change, and as maybe amended in the future.
- (2) Tracts 4, 5 & 6. The area identified as *Tracts 4, 5 & 6* in *Exhibit 'B'* of this ordinance shall be subject to the land use and development standards permitted for the Single-Family 8.4 (SF-8.4) District as stipulated by Article IV, *Permissible Uses*, and Article V, *District Development Standards*, of the Unified Development Code (UDC) of the City of Rockwall as heretofore amended, as amended herein by granting this zoning change, and as maybe amended in the future.
- (3) Tract 2. The area identified as *Tract 2* in *Exhibit 'B'* of this ordinance shall be subject to the land use and development standards permitted for the Zero Lot Line (ZL-5) District as stipulated by Article IV, *Permissible Uses*, and Article V, *District Development Standards*, of the Unified Development Code (UDC) of the City of Rockwall as heretofore amended, as amended herein by granting this zoning change, and as maybe amended in the future, with the following additional conditions:
- (a) Garage Orientation. Garages shall be permitted to be oriented in a front entry configuration; however, garages oriented toward the street in a front entry configuration must be situated a minimum of five (5) feet behind the front building façade of the primary structure. In addition, properties utilizing a front entry configuration shall have a minimum of a 25-foot front yard building setback. In this case the front façade of the primary structure does not include an accessory structure attached to the primary structure (e.g. a porch, sunroom, etcetera). All garage configurations that are not front entry shall meet the requirements of Article VI, *Parking and Loading*, of the Unified Development Code (UDC).
- (4) Tract 7. The area identified as *Tract 7* in *Exhibit 'B'* of this ordinance shall be subject to the land use and development standards permitted for the General Retail (GR) District as stipulated by Article IV, *Permissible Uses*, and Article V, *District Development Standards*, of the Unified Development Code (UDC) of the City of Rockwall as heretofore amended, as amended herein by granting this zoning change, and as maybe amended in the future, with the following additional land uses being permitted *by-right*:
- Planned Shopping Center (*Less Than 19.0-Acres*)
 - Neighborhood Convenience Center
 - Restaurants
 - Restaurants with Drive Through/Drive-In Facilities
 - Restaurants with Accessory Outdoor Seating
 - Pharmacy with Drive Through/Drive-In Facilities
 - Retail Store Limited to Six (6) Gas Pump Dispensers¹

Notes:

¹: *Subject to review by the Architectural Review Board (ARB), Planning and Zoning Commission, and City Council.*

EXHIBIT 'C':
PD Development Standards

(5) Tract 8. The area identified as *Tract 8* in *Exhibit 'B'* of this ordinance shall be subject to the land use and development standards permitted for the Agricultural (AG) District as stipulated by Article IV, *Permissible Uses*, and Article V, *District Development Standards*, of the Unified Development Code (UDC) of the City of Rockwall as heretofore amended, as amended herein by granting this zoning change, and as maybe amended in the future, with the following additional land uses being permitted *by-right*.

Community or Recreation Club (*Public or Private*)

(6) Tract 9. The area identified as *Tract 9* in *Exhibit 'B'* of this ordinance is designated as open space/public park land.

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CITY OF ROCKWALL

ORDINANCE NO. 19-39

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF ROCKWALL, TEXAS, AMENDING THE UNIFIED DEVELOPMENT CODE [*ORDINANCE NO. 04-38*] OF THE CITY OF ROCKWALL, AS HERETOFORE AMENDED SO AS TO FURTHER AMEND THE ZONING MAP TO ADOPT A CHANGE IN ZONING FROM AN AGRICULTURAL (AG) DISTRICT TO A COMMERCIAL (C) DISTRICT FOR AN 11.85-ACRE TRACT OF LAND IDENTIFIED AS TRACT 1-1 OF THE J. H. BAILEY SURVEY, ABSTRACT NO. 22, CITY OF ROCKWALL, ROCKWALL COUNTY, TEXAS AND MORE SPECIFICALLY DESCRIBED IN EXHIBIT 'A' OF THIS ORDINANCE; PROVIDING FOR SPECIAL CONDITIONS; PROVIDING FOR A PENALTY OF FINE NOT TO EXCEED THE SUM OF TWO THOUSAND DOLLARS (\$2,000.00) FOR EACH OFFENSE; PROVIDING FOR A SEVERABILITY CLAUSE; PROVIDING FOR A REPEALER CLAUSE; PROVIDING FOR AN EFFECTIVE DATE.

WHEREAS, the City has received a request from Todd Panzner for the approval of a change in zoning from an Agricultural (AG) District to a Commercial (C) District for an 11.85-acre tract of land identified as Tract 1-1, of the J. H. Bailey Survey, Abstract No. 22, City of Rockwall, Rockwall County, Texas, zoned Agricultural (AG) District, situated within the SH-276 Overlay (SH-276 OV) District, generally located south of the intersection of Green Circle and SH-276, and more specifically depicted in *Exhibit 'A'* of this ordinance, which hereinafter shall be referred to as the *Subject Property* and incorporated by reference herein; and

WHEREAS, the Planning and Zoning Commission of the City of Rockwall and the governing body of the City of Rockwall in compliance with the laws of the State of Texas and the ordinances of the City of Rockwall have given the requisite notices by publication and otherwise, and have held public hearings and afforded a full and fair hearing to all property owners generally and to all persons interested in and situated in the affected area, and in the vicinity thereof, and the governing body in the exercise of its legislative discretion, has concluded that the Unified Development Code [*Ordinance No. 04-38*] should be amended as follows:

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF ROCKWALL, TEXAS:

SECTION 1. That the Unified Development Code [*Ordinance No. 04-38*] of the City of Rockwall, Texas, as heretofore amended, be and the same are hereby amended by amending the zoning map of the City of Rockwall so as to change the zoning of the *Subject Property* from an Agricultural (AG) District to a Commercial (C) District; and

SECTION 2. That the *Subject Property* shall be used and developed only in the manner and for the purposes provided for a *Commercial (C) District* as stipulated by Subsection 1.1, *Use of Land and Buildings*, of Article IV, *Permissible Uses*, and Subsection 4.05, *Commercial (C) District*, of Section 4, *Commercial Districts*, of Article V, *District Development Standards*, of the Unified Development Code (UDC) [*Ordinance No. 04-38*] of the City of Rockwall as heretofore amended, as amended herein by granting of this zoning change, and as may be amended in the future;

SECTION 3. That the official zoning map of the City be corrected to reflect the changes in the

zoning described herein.

SECTION 4. Any person, firm, or corporation violating any of the provisions of this ordinance shall be deemed guilty of a misdemeanor and upon conviction shall be punished by a penalty of fine not to exceed the sum of *TWO THOUSAND DOLLARS* (\$2,000.00) for each offence and each and every day such offense shall continue shall be deemed to constitute a separate offense.

SECTION 5. If any section, paragraph, or provision of this ordinance or the application of that section, paragraph, or provision to any person, firm, corporation or situation is for any reason judged invalid, the adjudication shall not affect any other section, paragraph, or provision of this ordinance or the application of any other section, paragraph or provision to any other person, firm, corporation or situation, nor shall adjudication affect any other section, paragraph, or provision of the Unified Development Code of the City of Rockwall, Texas, and the City Council declares that it would have adopted the valid portions and applications of the ordinance without the invalid parts and to this end the provisions for this ordinance are declared to be severable.

SECTION 6. That all ordinances of the City of Rockwall in conflict with the provisions of this ordinance be and the same are hereby repealed, and all other ordinances of the City of Rockwall not in conflict with the provisions of this ordinance shall remain in full force and effect.

SECTION 7. That this ordinance shall take effect immediately from and after its passage.

PASSED AND APPROVED BY THE CITY COUNCIL OF THE CITY OF ROCKWALL, TEXAS, ON THIS THE 7TH DAY OF OCTOBER, 2019.

Jim Pruitt, Mayor

ATTEST:

Kristy Cole, City Secretary

APPROVED AS TO FORM:

Frank J. Garza, City Attorney

1st Reading: 09-16-2019

2nd Reading: 10-07-2019

Exhibit 'A'
Legal Description

All that certain lot, tract or parcel of land situated in the J.H. BAILEY SURVEY, ABSTRACT NO. 22, Rockwall County Texas, and being a part of that 47.10 acres tract of land as described in a Warranty deed from Billie Marie Peoples to Michael L. Peoples and Donnie B. Peoples, dated February 2, 1996 and being recorded in Volume 1084, Page 266 of the Real Property Records of Rockwall County, Texas, and being more particularly described as follows:

BEGINNING at a 1/2" iron rod found for corner, said point being N. 89 deg. 50 min. 18 sec. W., 223.09 feet and along a curve to the right having a central angle of 09 deg. 14 min. 53 sec., a radius of 2924.79 feet, a chord of N. 85 deg. 12 min. 51 sec. W., 471.58 feet, and an arc distance of 472.09 feet from a 3/8" iron rod found at the Northeast corner of the above cited tract, said point being in the South right-of-way line of State Highway 276;

THENCE S. 00 deg. 11 min. 00 sec. E. (Controlling bearing line) parallel to the East line of said tract, a distance of 1285.02 feet to a 1/2" iron rod set with yellow plastic cap stamped "R.S.C.I. RPLS 5034" for corner in the South line of said tract;

THENCE S. 89 deg. 49 min. 44 sec. W. along the South line of said tract, a distance of 440.11 feet to a 1/2" iron rod set with yellow plastic cap stamped "R.S.C.I. RPLS 5034" for corner;

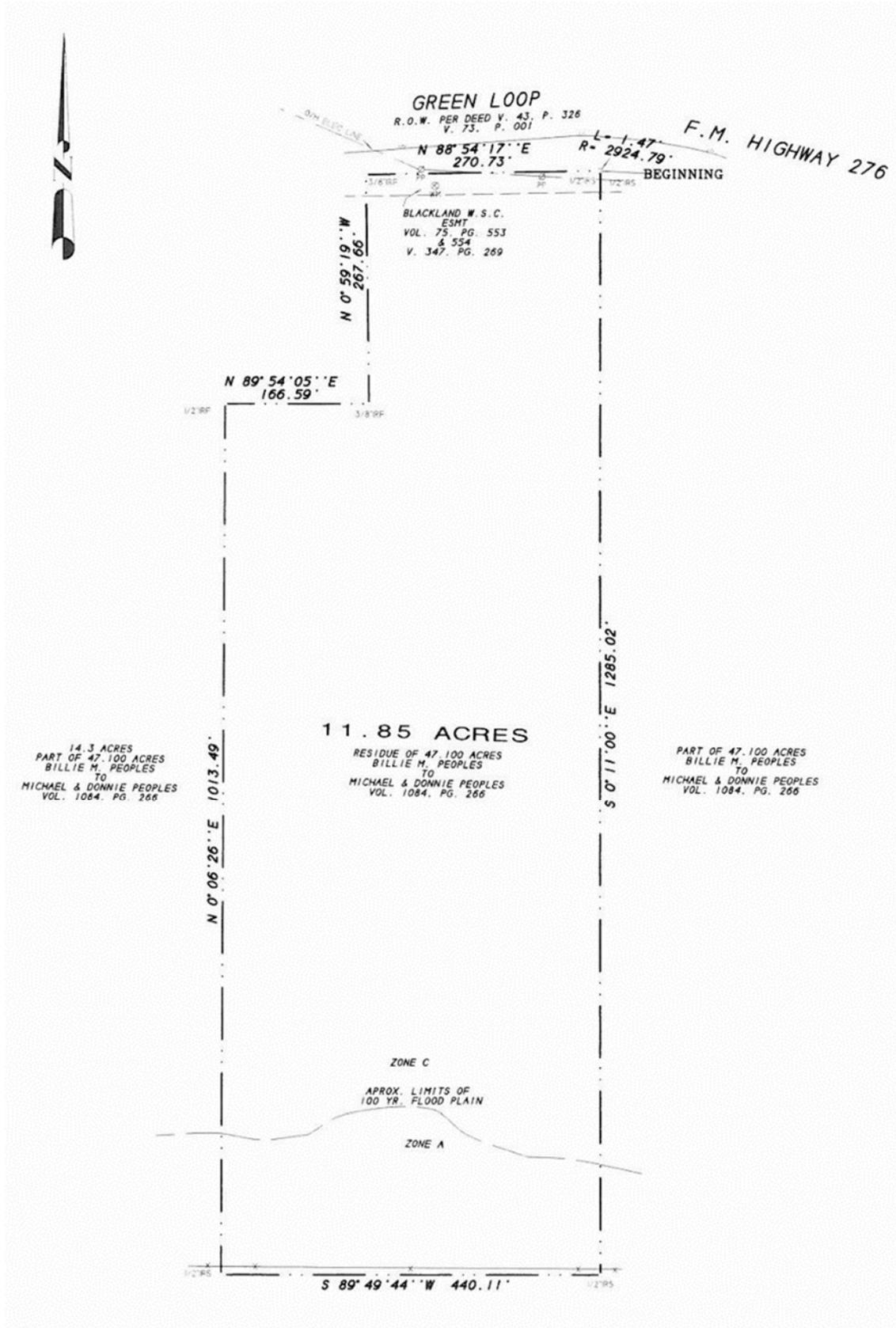
THENCE N. 00 deg. 06 min. 26 sec. E. a distance of 1013.49 feet to a 1/2" iron rod found for corner;
THENCE N. 89 deg. 54 min. 05 sec. E. a distance of 166.59 feet to a 3/8" iron rod found for corner;

THENCE N. 00 deg. 59 min. 19 sec. W. a distance of 267.66 feet to a 1/2" iron rod set with yellow plastic cap stamped "R.S.C.I. RPLS 5034" for corner in the South right-of-way line of Green Loop and in the North boundary line of said 47.10 acres tract;

THENCE N. 88 deg. 54 min. 17 sec. E. along Green Loop a distance of 270.73 feet to a 1/2" iron rod set with yellow plastic cap stamped "R.S.C.I. RPLS 5034" for corner in the Southwest right-of-way line of State Highway 276;

THENCE in a Southeasterly direction along a curve to the left having a central angle of 00 deg. 01 min. 44 sec., a radius of 2924.79 feet, a chord of S. 80 deg. 34 min. 33 sec. E., 147 feet, along said right-of-way line an arc distance of 1.47 feet to the *POINT OF BEGINING* and containing 11.85 acres of land.

Exhibit 'B'
Survey



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CITY OF ROCKWALL, TEXAS MEMORANDUM

TO: Richard Crowley, City Manager
FROM: Lea Ann Ewing, Purchasing Agent
DATE: Oct. 4, 2019
SUBJECT: Bid Award for New Liner for Harbor Fountain Basin

Approved in the General Fund, Harbor Operations budget is \$165,000 for removal of the existing liner and add a new liner to the Harbor fountain basin. The current fountain liner manufacturer is out of business. Staff has been working with liner product manufacturers for about a year in search of a liner that would have a stronger polymer chemistry to withstand breakdown because of the fluctuating water PH level and have a minimum useful life of 10 years. Only one product was located that met these two requirements – Elastaflex HP manufactured by Specialty Products Inc. The 2020 budget request was prepared using this product specs and cost.

This new liner project was published for sealed competitive bid and one bidder responded, All Seasons Foam Coatings who is the only certified applicator of the Elastaflex HP product in the State of Texas. The reason why this project was bid is this particular product does not hold a US Patent and staff thought there might be a similar product in the industry that was missed during the liner spec development process. The total bid cost of this project is \$142,500 with the remaining budget dollars used as needed for fountain concrete and stone coping repairs.

For Council consideration is the bid award to All Seasons Foam Coatings for \$142,500 and authorize the City Manager to execute a contract for this project.

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CITY OF ROCKWALL, TEXAS MEMORANDUM

TO: Richard Crowley, City Manager
FROM: Lea Ann Ewing, Purchasing Agent
DATE: Oct. 1, 2019
SUBJECT: Bid Award for Myers Park Concrete Trail Replacement

Approved in the Recreation Development budget is \$60,000 for the replacement of approximately 4,200 square feet of concrete trail along the west side of the Myers Park pond trail loop. The total cost of this project is \$59,600 using the City of Mesquite Purchasing coop contract vendor B & B Concrete. As a member and participant in this cooperative, the City has met all formal bidding requirements pertaining to this construction project.

For Council consideration is the bid award to B & B Concrete for \$59,600 and authorize the City Manager to execute a contract for this project.

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CITY OF ROCKWALL

CITY COUNCIL CASE MEMO

PLANNING AND ZONING DEPARTMENT

385 S. GOLIAD STREET • ROCKWALL, TX 75087

PHONE: (972) 771-7745 • EMAIL: PLANNING@ROCKWALL.COM

TO: Mayor and City Council
DATE: October 7, 2019
APPLICANT: Dub Douphrate; *Douphrate & Associates, Inc.*
CASE NUMBER: P2019-037; *Lot 1, Block A, Rankin Addition*

SUMMARY

Consider a request by Dub Douphrate of Douphrate & Associates, Inc. on behalf of Carla Rankin Real Estate Holding for the approval of a final plat for Lot 1, Block A, Rankin Addition being a 0.29-acre tract of land identified as Tract 22 of the J. Strickland Survey, Abstract No. 187, City of Rockwall, Rockwall County, Texas, zoned Residential Office (RO) District, situated within the North SH-205 Overlay (N. SH-205 OV) District, addressed as 4035 N. Goliad Street [SH-205], and take any action necessary.

PLAT INFORMATION

- The applicant is requesting to final plat a 0.29-acre tract of land (*i.e. Tract 22, of the J. Strickland Survey, Abstract No. 187*) into one (1) lot (*i.e. Lot 1, Block A, Rankin Addition*) for the purpose of converting a single-family home into an office.
- The subject property was annexed in 1983 [*Ordinance No. 83-57*] and currently contains a single-family home. On June 25, 2019, the Planning and Zoning Commission approved a site plan [*Case No. SP2019-020*] for the purpose of converting a single-family home into an office.
- The surveyor has completed the majority of the technical revisions requested by staff, and this plat - *conforming to the requirements for final plats as stipulated by the Subdivision Ordinance in the Municipal Code of Ordinances* -- is recommended for conditional approval pending the completion of final technical modifications and submittal requirements.
- Conditional approval of this plat by the City Council shall constitute approval subject to the conditions stipulated in the *Conditions of Approval* section below.
- With the exception of the items listed in the *Conditions of Approval* section of this case memo, this plat is in substantial compliance with the requirements of the *Subdivision Ordinance* in the Municipal Code of Ordinances.

CONDITIONS OF APPROVAL

If the City Council chooses to approve the final plat for *Lot 1, Block A, Rankin Addition*, staff would propose the following conditions of approval:

- (1) The final plat shall conform to all requirements stipulated by the Planning, Engineering and Fire Departments;
- (2) Any construction resulting from the approval of this plat shall conform to the requirements set forth by the Unified Development Code (UDC), the International Building Code (IBC), the Rockwall Municipal Code of Ordinances, city adopted engineering and fire codes and with all other applicable regulatory requirements administered and/or enforced by the state and federal government.

PLANNING AND ZONING COMMISSION

On September 24, 2019, the Planning and Zoning Commission's motion to recommend approval of the applicant's request with staff recommendations passed by a vote of 7-0.



P2019-037 - RANKIN OFFICE BUILDING
 FINAL PLAT - LOCATION MAP = [icon]

0 15 30 60 90 120 Feet

GLENMERE

SF-10

R-O

AG

GOLIAD

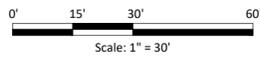
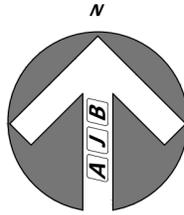


City of Rockwall

Planning & Zoning Department
 385 S. Goliad Street
 Rockwall, Texas 75032
 (P): (972) 771-7745
 (W): www.rockwall.com

The City of Rockwall GIS maps are continually under development and therefore subject to change without notice. While we endeavor to provide timely and accurate information, we make no guarantees. The City of Rockwall makes no warranty, express or implied, including warranties of merchantability and fitness for a particular purpose. Use of the information is the sole responsibility of the user.

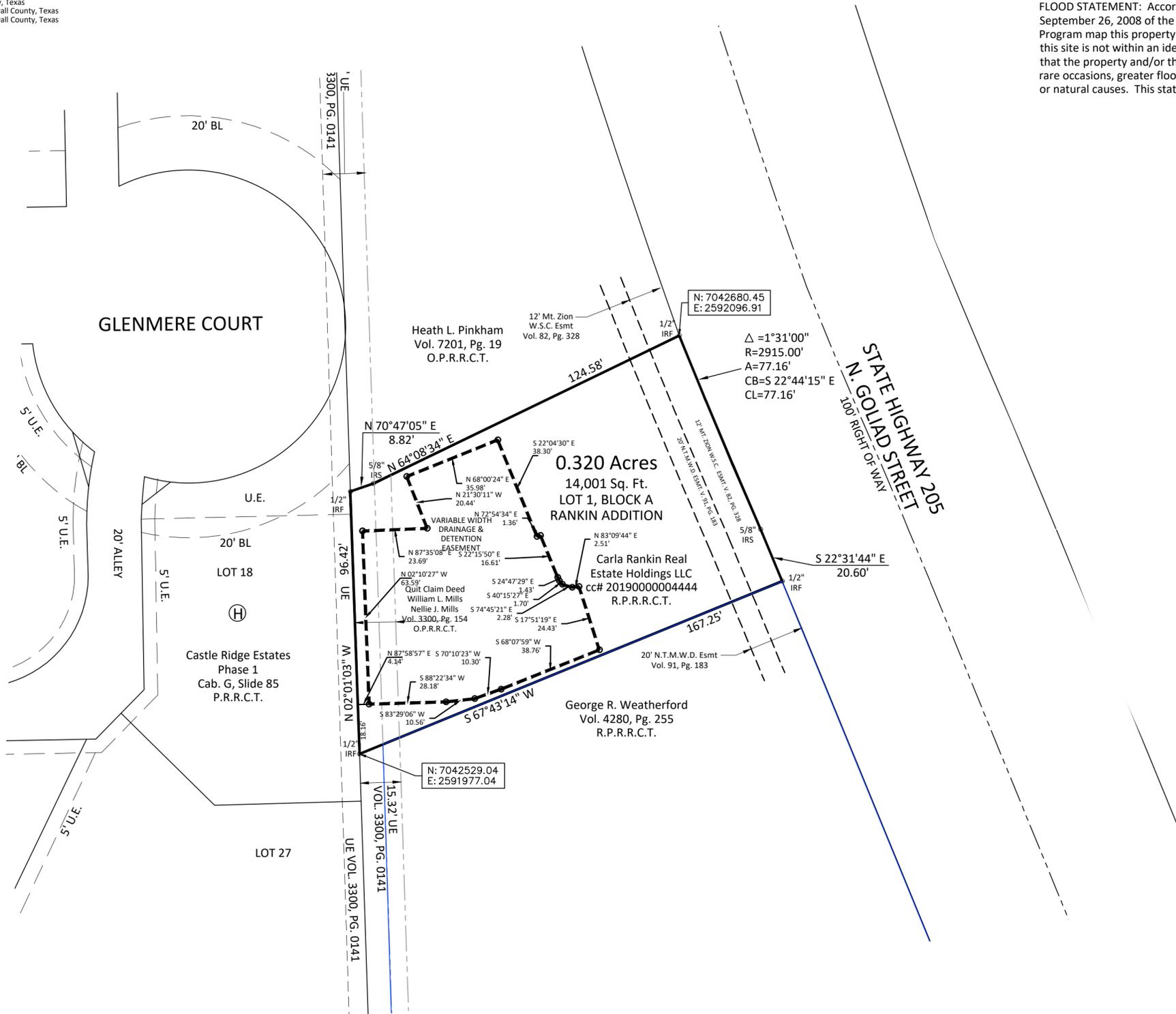
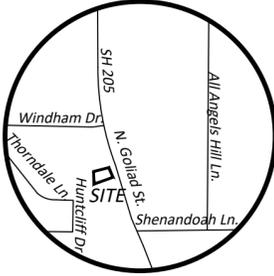




LEGEND

IRF	Iron Rod Found
IRS	Iron Rod Set
DRRCT	Deed Records Rockwall County, Texas
PRRCT	Plat Records Rockwall County, Texas
RPRRCT	Real Property Records Rockwall County, Texas
OPRRCT	Official Public Records Rockwall County, Texas

Vicinity Map
(Not to Scale)



GENERAL NOTES:

It shall be the policy of the City of Rockwall to withhold issuing building permits until all streets, water, sewer and storm drainage systems have been accepted by the City. The approval of a plat by the City does not constitute any representation, assurance or guarantee that any building within such plat shall be approved, authorized or permit therefore issued, nor shall such approval constitute any representation, assurance or guarantee by the City of the adequacy and availability for water for personal use and fire protection within such plat, as required under Ordinance 83-54.

The use of the word "certify or certificate" used hereon constitutes an expression of professional opinion regarding those facts of findings which are the subject of the certification, and does not constitute a warranty or guarantee, either expressed or implied.

Basis of Bearings: Bearings are based on document recorded in Clerk File #201900000444 or the Official Public Records, Rockwall County, Texas.

FLOOD STATEMENT: According to Community Panel No. 48397C0030L, dated September 26, 2008 of the Federal Emergency Management Agency, National Flood Insurance Program map this property is within Flood Zone "X", which is not a special flood hazard area. If this site is not within an identified special flood hazard area, this flood statement does not imply that the property and/or the structures thereon will be free from flooding or flood damage. On rare occasions, greater floods can and will occur and flood heights may be increased by man-made or natural causes. This statement shall not create liability on the part of the Surveyor

Case No.: P
 FINAL PLAT
 RANKIN ADDITION
 LOT 1, BLOCK A
 BEING 0.320 ACRES LOCATED IN THE J. STRICKLAND
 SURVEY, ABSTRACT NO. 187
 CITY OF ROCKWALL, ROCKWALL COUNTY, TEXAS

Owner:
 CARLA RANKIN REAL ESTATE HOLDINGS LLC
 807 MOUNTCASTLE DRIVE
 ROCKWALL, TEXAS 75087

Scale: 1" = 30'	Checked By: A.J. Bedford
Date: July 7, 2019	P.C.: Cryer/Spradling
Technician: Bedford	File: RANKIN ADDITION FINAL PLAT
Drawn By: Bedford	Job No. 658-006
	GF No.

301 N. Alamo Rd. • Rockwall, Texas 75087
 (972) 722-0225 • www.ajbedfordgroup.com, ajb@ajbedfordgroup.com

Sheet:
 1
 of: 2



Engineer:
 DOUPHRAE & ASSOCIATES, INC.
 TEXAS REGISTERED ENGINEERING FIRM F-886
 2235 RIDGE ROAD
 ROCKWALL, TEXAS 75087 972-771-9004

TBPLS REG#10118200

N:\ALL FILES\DOUPHRAE\4035 N GOLIAD\RANKIN ADDITION FINAL PLAT.dwg, PLAT, 8/16/2019 9:04:37 AM

OWNER'S CERTIFICATE

**STATE OF TEXAS
COUNTY OF ROCKWALL**

BEING a 0.320 acre tract of land situated in the J. STRICKLAND SURVEY, ABSTRACT NO. 187, in the City of Rockwall, Rockwall Dallas, County, Texas and being part of a conveyed to CARLA RANKIN REAL ESTATE HOLDINGS, LLC according to the document recorded in Clerk File #201900000444 of the Official Public Records of Rockwall County, Texas and being more particularly described as follows:

BEGINNING at a ½ inch iron rod found for southwest corner of the herein described tract of land and being located in the east line of CASTLE RIDGE ESTATES, PHASE 1 recorded in CABINET G, SLIDE 85 of the Official Public Records of Rockwall County, Texas;

THENCE with the east line of said CASTLE RIDGE ESTATES, PHASE 1, **NORTH 02°01'03" WEST** a distance of **96.42** feet to a ½ inch iron rod found for corner;

THENCE departing the east line of said Castle Ridge Estates, **NORTH 70°47'05" EAST** a distance of **8.82** feet to a 5/8 inch iron rod set for corner;

THENCE NORTH 64°08'34" EAST a distance of **124.58** feet to a ½ inch iron rod found is the west line of STATE HIGHWAY 205 (NORTH GOLIAD STREET) and being the beginning of a curve to the left having a radius of 2,915.00 and a chord bearing of South 22°44'15" East;

THENCE along the west line of said STATE HIGHWAY 205 (NORTH GOLIAD STREET) as follows:

Continuing with said curve to the left through a central angle of **01°31'00"** for an arc length of **77.16** feet to a 5/8 inch iron rod set for corner;

SOUTH 22°31'44" EAST a distance of **20.60** feet to a ½ inch iron rod found for corner;

THENCE departing the west line of said STATE HIGHWAY 205 (NORTH GOLIAD STREET), **SOUTH 67°43'14" WEST** a distance of **167.25** feet to a ½ iron rod found for corner in the east line of said CASTLE RIDGE ESTATES, PHASE 1;

THENCE along the east line of said CASTLE RIDGE ESTATES, PHASE 1, **NORTH 02°01'03" WEST** a distance of **96.42** feet to the **POINT OF BEGINNING**;

CONTAINING within these metes and bounds **0.320 acre or 14,001 square feet** of land more or less.

NOW, THEREFORE, KNOW ALL MEN BY THESE PRESENTS:
STATE OF TEXAS
COUNTY OF ROCKWALL

We, **CARLA RANKIN REAL ESTATE HOLDINGS, LLC** the undersigned owners of the land shown on this plat, and designated herein as the **RANKIN ADDITION** subdivision to the City of Rockwall, Texas, and whose name is subscribed hereto, hereby dedicate to the use of the public forever all streets, alleys, parks, water courses, drains, easements and public places thereon shown on the purpose and consideration therein expressed. We further certify that all other parties who have a mortgage or lien interest in the **RANKIN ADDITION** subdivision have been notified and signed this plat. We understand and do hereby reserve the easement strips shown on this plat for the purposes stated and for the mutual use and accommodation of all utilities desiring to use or using same. We also understand the following:

1. No buildings shall be constructed or placed upon, over, or across the utility easements as described herein.
2. Any public utility shall have the right to remove and keep removed all or part of any buildings, fences, trees, shrubs, or other growths or improvements which in any way endanger or interfere with construction, maintenance or efficiency of their respective system on any of these easement strips; and any public utility shall at all times have the right of ingress or egress to, from and upon the said easement strips for purpose of construction, reconstruction, inspecting, patrolling, maintaining, and either adding to or removing all or part of their respective system without the necessity of, at any time, procuring the permission of anyone.
3. The City of Rockwall will not be responsible for any claims of any nature resulting from or occasioned by the establishment of grade of streets in the subdivision.
4. The developer and subdivision engineer shall bear total responsibility for storm drain improvements.
5. The developer shall be responsible for the necessary facilities to provide drainage patterns and drainage controls such that properties within the drainage area are not adversely affected by storm drainage from the development.
6. No house dwelling unit, or other structure shall be constructed on any lot in this addition by the owner or any other person until the developer and/or owner has complied with all requirements of the Subdivision Regulations of the City of Rockwall regarding improvements with respect to the entire block on the street or streets on which property abuts, including the actual installation of streets with the required base and paving, curb and gutter, water and sewer, drainage structures, storm structures, storm sewers, and alleys, all according to the specifications of the City of Rockwall;
7. Property owner is responsible for maintenance, repair, and replacement of all detention/drainage facilities in easements;

Until an escrow deposit, sufficient to pay for the cost of such improvements, as determined by the city's engineer and/or city administrator, computed on a private commercial rate basis, has been made with the city secretary, accompanied by an agreement signed by the developer and/or owner, authorizing the city to make such improvements at prevailing private commercial rates, or have the same made by a contractor and pay for the same out of the escrow deposit, should the developer and/or owner fail or refuse to install the required improvements within the time stated in such written agreement, but in no case shall the City be obligated to make such improvements itself. Such deposit may be used by the owner and/or developer as progress payments as the work progresses in making such improvements by making certified requisitions to the city secretary, supported by evidence of work done; or

Until the developer and/or owner files a corporate surety bond with the city secretary in a sum equal to the cost of such improvements for the designated area, guaranteeing the installation thereof within the time stated in the bond, which time shall be fixed by the city council of the City of Rockwall.

We further acknowledge that the dedications and/or exaction's made herein are proportional to the impact of the Subdivision upon the public services required in order that the development will comport with the present and future growth needs of the City; We, my (our) successors and assigns hereby waive any claim, damage, or cause of action that We may have as a result of the dedication of exactions made herein.

CARLA RANKIN REAL ESTATE HOLDINGS, LLC

Name: _____
Title: _____

STATE OF TEXAS
COUNTY OF ROCKWALL

Before me, the undersigned authority, on this day personally appeared _____, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purpose and consideration therein stated.

Given upon my hand and seal of office this ____ day of _____, 2019

Notary Public in and for the State of Texas

SURVEYOR'S CERTIFICATE

NOW, THEREFORE KNOW ALL MEN BY THESE PRESENTS:

THAT I, Austin J. Bedford, do hereby certify that I prepared this plat from an actual and accurate survey of the land, and that the corner monuments shown thereon were properly placed under my personal supervision.

"Preliminary, this document shall not be recorded for any purpose and shall not be used or viewed or relied upon as a final survey document"

Austin J. Bedford
Registered Professional Land Surveyor No. 4132
jay@ajbedfordgroup.com
A.J. Bedford Group, Inc.
301 North Alamo Road
Rockwall, Texas 75087

GENERAL NOTES:

It shall be the policy of the City of Rockwall to withhold issuing building permits until all streets, water, sewer and storm drainage systems have been accepted by the City. The approval of a plat by the City does not constitute any representation, assurance or guarantee that any building within such plat shall be approved, authorized or permit therefore issued, nor shall such approval constitute any representation, assurance or guarantee by the City of the adequacy and availability for water for personal use and fire protection within such plat, as required under Ordinance 83-54.

The use of the word "certify or certificate" used hereon constitutes an expression of professional opinion regarding those facts of findings which are the subject of the certification, and does not constitute a warranty or guarantee, either expressed or implied.

Basis of Bearings: Bearings are based on document recorded in Clerk File #201900000444 or the Official Public Records, Rockwall County, Texas.

FLOOD STATEMENT: According to Community Panel No. 48397C0030L, dated September 26, 2008 of the Federal Emergency Management Agency, National Flood Insurance Program map this property is within Flood Zone "X", which is not a special flood hazard area. If this site is not within an identified special flood hazard area, this flood statement does not imply that the property and/or the structures thereon will be free from flooding or flood damage. On rare occasions, greater floods can and will occur and flood heights may be increased by man-made or natural causes. This statement shall not create liability on the part of the Surveyor

RECOMMENDED FOR FINAL APPROVAL

Planning and Zoning Commission Date

APPROVED

I hereby certify that the above and foregoing plat of an addition to the City of Rockwall, Texas, was approved by the City Council of the City of Rockwall on the ____ day of _____, 2019.

This approval shall be invalid unless the approved plat for such addition is recorded in the office of the County Clerk of Rockwall, County, Texas, within one hundred eighty (180) days from said date of final approval.

WITNESS OUR HANDS, this ____ day of _____, 2019.

Mayor, City of Rockwall City Secretary City Engineer

Case No.: P
**FINAL PLAT
RANKIN ADDITION
LOT 1, BLOCK A**
BEING 0.320 ACRES LOCATED IN THE J. STRICKLAND SURVEY, ABSTRACT NO. 187
CITY OF ROCKWALL, ROCKWALL COUNTY, TEXAS

Owner: CARLA RANKIN REAL ESTATE HOLDINGS LLC
807 MOUNTCASTLE DRIVE
ROCKWALL, TEXAS 75087
Engineer: DOUPHRADE & ASSOCIATES, INC.
TEXAS REGISTERED ENGINEERING FIRM F-886
2235 RIDGE ROAD
ROCKWALL, TEXAS 75087 972-771-9004

Scale: 1" = 60'
Date: July 7, 2019
Checked By: Cryer/Spradling
P.C.: RANKIN ADDITION FINAL PLAT
Technician: Bedford
File: RANKIN ADDITION FINAL PLAT
Drawn By: Bedford
Job. No. 658-006
GF No.

301 N. Alamo Rd. * Rockwall, Texas 75087
(972) 722-0225, www.ajbedfordgroup.com

Sheet:
2
of: 3



TBPLS REG#10118200

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CITY OF ROCKWALL

CITY COUNCIL CASE MEMO

PLANNING AND ZONING DEPARTMENT

385 S. GOLIAD STREET • ROCKWALL, TX 75087

PHONE: (972) 771-7745 • EMAIL: PLANNING@ROCKWALL.COM

TO: Mayor and City Council
DATE: October 7, 2019
APPLICANT: Bryon Connally; *CBG Surveying Texas, LLC*
CASE NUMBER: P2019-038; *Lot 1, Block A, Goliad-Riddell Addition*

SUMMARY

Consider a request by Bryon Connally of CBG Surveying Texas, LLC on behalf of Shannon McCord Riddell for the approval of a replat for Lot 1, Block A, Goliad-Riddle Addition being a 0.4079-acre tract of land identified as Lot C, Block 117, B. F. Boydston Addition, City of Rockwall, Rockwall County, Texas, zoned General Retail (GR) District, addressed as 501 S. Goliad Street, and take any action necessary.

PLAT INFORMATION

- The applicant is requesting the approval of a replat for a 0.4079-acre parcel of land [*i.e. Lot 1, Block A, Goliad-Riddell Addition*] for purpose of establishing a drainage & detention easement for the in conjunction with the expansion of the existing building on the subject property. The *subject property* is zoned General Retail (GR) District and addressed as 501 S. Goliad Street.
- On August 13, 2019, the Planning and Zoning Commission approved a site plan [*i.e. SP2019-029*] for the purpose of expanding an existing personal service facility [*i.e. Jour Salon & Spa*] subject property. The proposed expansion will increase the total square footage of the existing structure to 3,448 SF (*i.e. an increase of 736 SF*). According to the Rockwall Central Appraisal District (RCAD) records, the existing structure was constructed in 1990.
- The surveyor has completed the majority of the technical revisions requested by staff, and this plat - *conforming to the requirements for final plats as stipulated by the Subdivision Ordinance in the Municipal Code of Ordinances* -- is recommended for conditional approval pending the completion of final technical modifications and submittal requirements.
- Conditional approval of this plat by the City Council shall constitute approval subject to the conditions stipulated in the *Conditions of Approval* section below.
- With the exception of the items listed in the *Conditions of Approval* section of this case memo, this plat is in substantial compliance with the requirements of the *Subdivision Ordinance* in the Municipal Code of Ordinances.

CONDITIONS OF APPROVAL

If the City Council chooses to approve the replat for *Lot 1, Block A, Goliad-Riddell Addition*, staff would propose the following conditions of approval:

- (1) All technical comments from the Engineering, Planning and Fire Departments shall be addressed prior to the filing of this plat;

(2) Any construction resulting from the approval of this plat shall conform to the requirements set forth by the Unified Development Code (UDC), the International Building Code (IBC), the Rockwall Municipal Code of Ordinances, city adopted engineering and fire codes and with all other applicable regulatory requirements administered and/or enforced by the state and federal government.

PLANNING AND ZONING COMMISSION

On September 24, 2019, the Planning and Zoning Commission's motion to recommend approval of the replat with staff conditions passed by a vote of 7-0.

0 12.5 25 50 75 100 Feet

P2019-038 - LOT 1, BLOCK A, GOLIAD-RIDDELL ADDITION
REPLAT - LOCATION MAP = 

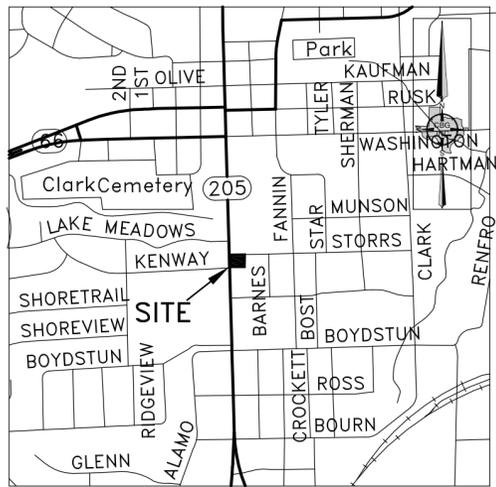


City of Rockwall

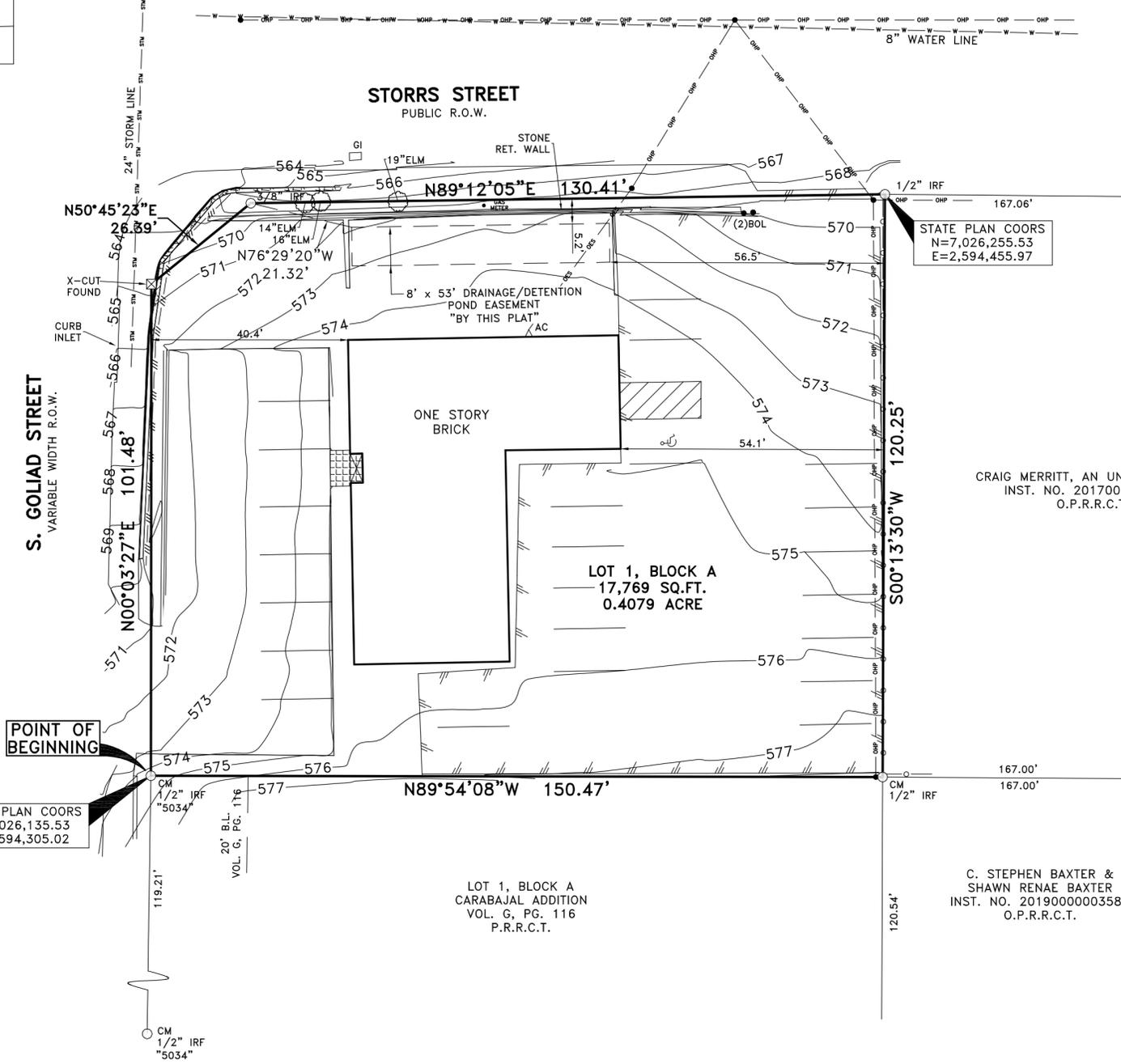
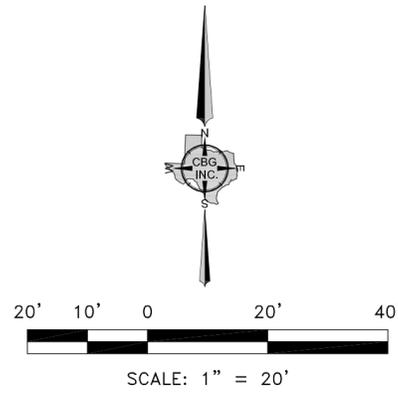
Planning & Zoning Department
385 S. Goliad Street
Rockwall, Texas 75032
(P): (972) 771-7745
(W): www.rockwall.com

The City of Rockwall GIS maps are continually under development and therefore subject to change without notice. While we endeavor to provide timely and accurate information, we make no guarantees. The City of Rockwall makes no warranty, express or implied, including warranties of merchantability and fitness for a particular purpose. Use of the information is the sole responsibility of the user.





VICINITY MAP
NOT TO SCALE



STATE PLAN COORS
N=7,026,135.53
E=2,594,305.02

STATE PLAN COORS
N=7,026,255.53
E=2,594,455.97

LOT 1, BLOCK A
CARABAJAL ADDITION
VOL. G, PG. 116
P.R.R.C.T.

CRAIG MERRITT, AN UNMARRIED MAN
INST. NO. 20170000016401
O.P.R.R.C.T.

C. STEPHEN BAXTER &
SHAWN RENAE BAXTER
INST. NO. 2019000003588
O.P.R.R.C.T.

GENERAL NOTES:

- 1) THE BASIS OF BEARINGS FOR THIS SURVEY IS THE TEXAS COORDINATE SYSTEM OF 1983, NORTH CENTRAL ZONE, (4202) GEODETIC BEARING ESTABLISHED BY GPS MEASUREMENTS.
- 2) THE PURPOSE OF THIS PLAT IS TO CREATE 1 LOT.
- 3) COORDINATES SHOWN HEREON ARE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, NORTH AMERICAN DATUM OF 1983 ON GRID COORDINATE VALUES, NO SCALE AND NO PROJECTION.
- 4) ACCORDING TO THE F.I.R.M. IN MAP NO. 48397C0040L, THIS PROPERTY DOES LIE IN ZONE X AND DOES NOT LIE WITHIN THE 100 YEAR FLOOD ZONE.
- 5) DRAINAGE/DETENTION EASEMENT SHALL BE OWNED, MAINTAINED, REPAIRED BY PROPERTY OWNER.

LEGEND:

IRS	IRON ROD SET WITH YELLOW PLASTIC CAP
STAMPED "CBG SURVEYING"	
1/2 IRF	1/2 INCH IRON ROD FOUND
CM	CONTROLLING MONUMENT
N	NORTHING
E	EASTING
VOL	VOLUME
PG	PAGE
R.O.W.	RIGHT-OF-WAY
CAB.	CABINET
SQ.FT.	SQUARE FEET
D.R.R.C.T.	DEED RECORDS, ROCKWALL COUNTY, TEXAS
R.R.R.C.T.	PLAT RECORDS, ROCKWALL COUNTY, TEXAS

(SHEET 1 OF 2)

REPLAT
GOLIAD-RIDDELL ADDITION
LOT 1, BLOCK A
17,769 SQ.FT. / 0.4079 ACRES
E.P. GAINES CHISUM SURVEY, ABSTRACT NO. 64
CITY OF ROCKWALL, ROCKWALL COUNTY, TEXAS

PLANNING & SURVEYING
Main Office
12025 Shiloh Road, Ste. 230
Dallas, TX 75228
P 214.349.9485
F 214.349.2216
Firm No. 10168800
www.cbginetx.com

OWNER: SHANNON McCORD RIDDELL
501 S. GOLIAD STREET
ROCKWALL, TEXAS 75087
972-979-0866
SHANNON@LITTLETIPSYBOUTIQUE.COM

SCALE: 1"=20' / DATE: 8/16/2019 / JOB NO. 1912983-1PLAT / DRAWN BY: CC

CASE NO. _____

OWNER'S CERTIFICATE

STATE OF TEXAS
COUNTY OF ROCKWALL

WHEREAS, Shannon McCord Riddell, a married woman, being the owner of a tract of land situated in the E.P. Gaines Chisum Survey, Abstract No. 64 and being that same tract of land conveyed to Shannon McCord Riddell by General Warranty Deed recorded in Instrument No. 20140000018421, Official Public Records, Rockwall County, Texas, and being more particularly described by metes and bounds as follows:

BEGINNING at a 1/2 inch iron rod stamped "5034" found at the Northwest corner of Lot 1, Block A of Carabajal Addition, an Addition to the City of Rockwall, Rockwall County, Texas, according to the map recorded in Volume G, Page 116, Map Records, Rockwall County, Texas, said point being on the East right-of-way line of S. Goliad Street (variable width right-of-way);

THENCE North 00 degrees 03 minutes 27 seconds East, along said East right-of-way line of said S. Goliad Street, a distance of 101.48 feet to an "X" found at a corner clip;

THENCE North 50 degrees 45 minutes 23 seconds East, along said corner clip, a distance of 26.39 feet to a 3/8 inch iron rod found for corner on the South right-of-way line of Storrs Street (public right-of-way);

THENCE North 89 degrees 12 minutes 05 seconds East, along said South right-of-way line of said Storrs Street, a distance of 130.41 feet to a 1/2 inch iron rod found at the Northwest corner of a tract of land conveyed to Craig Merritt by Deed recorded in Instrument No. 20170000016401, Official Public Records, Rockwall County, Texas, said corner being in the South right-of-way line of said Storrs Street;

THENCE South 00 degrees 13 minutes 30 seconds West, along the West line of said Merritt tract, a distance of 120.25 feet to a 1/2 inch iron rod found for corner, said corner being the Southwest corner of said Merritt tract, also being the Northwest corner of a tract of land conveyed to C. Stephen Baxter and Shawn Renae Baxter by Deed recorded in Instrument No. 20190000003588, Official Public Records, Rockwall County, Texas, said corner also being the Northeast corner of said Lot 1, Block A, Carabajal Addition;

THENCE North 89 degrees 54 minutes 08 seconds West, along the North line of said Lot 1, Block A, Carabajal Addition, a distance of 150.47 feet to the POINT OF BEGINNING and containing 17,769 square feet or 0.4079 of an acre of land.

NOW, THEREFORE, KNOW ALL MEN BY THESE PRESENTS:

STATE OF TEXAS
COUNTY OF ROCKWALL

We the undersigned owner(s) of the land shown on this plat, and designated herein as the **GOLIAD-RIDDELL ADDITION**, an addition to the City of Rockwall, Texas, and whose name is subscribed hereto, hereby dedicate to the use of the public forever all streets, alleys, parks, water courses, drains, easements and public places thereon shown on the purpose and consideration therein expressed. We further certify that all other parties who have a mortgage or lien interest in the **GOLIAD-RIDDELL ADDITION** have been notified and signed this plat.

I understand and do hereby reserve the easement strips shown on this plat for the purposes stated and for the mutual use and accommodation of all utilities desiring to use or using same. I (we) also understand the following:

1. No buildings shall be constructed or placed upon, over, or across the utility easements as described herein.
2. Any public utility shall have the right to remove and keep removed all or part of any buildings, fences, trees, shrubs, or other growths or improvements which in any way endanger or interfere with construction, maintenance or efficiency of their respective system on any of these easement strips; and any public utility shall at all times have the right of ingress or egress to, from and upon the said easement strips for purpose of construction, reconstruction, inspecting, patrolling, maintaining, and either adding to or removing all or part of their respective system without the necessity of, at any time, procuring the permission of anyone.

3. The City of Rockwall will not be responsible for any claims of any nature resulting from or occasioned by the establishment of grade of streets in the subdivision.

4. The developer and subdivision engineer shall bear total responsibility for storm drain improvements.

5. The developer shall be responsible for the necessary facilities to provide drainage patterns and drainage controls such that properties within the drainage area are not adversely affected by storm drainage from the development.

6. No house dwelling unit, or other structure shall be constructed on any lot in this addition by the owner or any other person until the developer and/or owner has complied with all requirements of the Subdivision Regulations of the City of Rockwall regarding improvements with respect to the entire block on the street or streets on which property abuts, including the actual installation of streets with the required base and paving, curb and gutter, water and sewer, drainage structures, storm structures, storm sewers, and alleys, all according to the specifications of the City of Rockwall; or

Until an escrow deposit, sufficient to pay for the cost of such improvements, as determined by the city's engineer and/or city administrator, computed on a private commercial rate basis, has been made with the city secretary, accompanied by an agreement signed by the developer and/or owner, authorizing the city to make such improvements at prevailing private commercial rates, or have the same made by a contractor and pay for the same out of the escrow deposit, should the developer and/or owner fail or refuse to install the required improvements within the time stated in such written agreement, but in no case shall the City be obligated to make such improvements itself. Such deposit may be used by the owner and/or developer as progress payments as the work progresses in making such improvements by making certified requisitions to the city secretary, supported by evidence of work done; or

Until the developer and/or owner files a corporate surety bond with the city secretary in a sum equal to the cost of such improvements for the designated area, guaranteeing the installation thereof within the time stated in the bond, which time shall be fixed by the city council of the City of Rockwall.

We further acknowledge that the dedications and/or exaction's made herein are proportional to the impact of the Subdivision upon the public services required in order that the development will comport with the present and future growth needs of the City; We, our successors and assigns hereby waive any claim, damage, or cause of action that We may have as a result of the dedication of exactions made herein.

By: _____
Shannon McCord Riddell, (Owner)

STATE OF TEXAS
COUNTY OF ROCKWALL

Before me, the undersigned authority, on this day personally appeared Shannon McCord Riddell, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purpose and consideration therein stated.

Given upon my hand and seal of office this ____day of_____, 2019.

By: _____
printed name: _____
Notary Public in and for the State of Texas

NOTE: It shall be the policy of the City of Rockwall to withhold issuing building permits until all streets, water, sewer and storm drainage systems have been accepted by the City. The approval of a plat by the City does not constitute any representation, assurance or guarantee that any building within such plat shall be approved, authorized or permit therefore issued, nor shall such approval constitute any representation, assurance or guarantee by the City of the adequacy and availability for water for personal use and fire protection within such plat, as required under Ordinance 83-54.

SURVEYOR'S CERTIFICATE

NOW, THEREFORE KNOW ALL MEN BY THESE PRESENTS:

THAT I, Bryan Connally, a Registered Professional Land Surveyor, licensed by the State of Texas, do hereby certify that I prepared this plat from an actual and accurate survey of the land, and that the corner monuments shown thereon were properly placed under my personal supervision.

Dated this the _____ day of _____, 2019.

RELEASED FOR REVIEW 8/8/19 PRELIMINARY, THIS DOCUMENT SHALL NOT BE RECORDED FOR ANY PURPOSES AND SHALL NOT BE USED OR VIEWED OR RELIED UPON AS A FINAL SURVEY DOCUMENT.

Bryan Connally
Texas Registered Professional Land Surveyor No. 5513

RECOMMENDED FOR FINAL APPROVAL

_____ Date _____
Planning and Zoning Commission

APPROVED

I hereby certify that the above and foregoing plat of an addition to the City of Rockwall, Texas, was approved by the Council of the City of Rockwall on the ____ day of _____ 2019.

This approval shall be invalid unless the approved plat for such addition is recorded in the office of the County Clerk of Rockwall County, Texas within one hundred eighty (180) days from said date of final approval.

WITNESS OUR HANDS, this ____ day of _____, 2019.

Mayor, City of Rockwall

City Secretary

City Engineer

(SHEET 2 OF 2)

REPLAT
GOLIAD-RIDDELL ADDITION
LOT 1, BLOCK A
17,769 SQ.FT. / 0.4079 ACRES
E.P. GAINES CHISUM SURVEY, ABSTRACT NO. 64
CITY OF ROCKWALL, ROCKWALL COUNTY, TEXAS



CBG
SURVEYING TEXAS LLC
PROFESSIONAL LAND SURVEYORS
DFW - Houston - East Texas - Austin - San Antonio

PLANNING & SURVEYING
Main Office
12025 Shiloh Road, Ste. 230
Dallas, TX 75228
P 214.349.9485
F 214.349.2216
Firm No. 10168800
www.cbginetx.com

OWNER: SHANNON McCORD RIDDELL
501 S. GOLIAD STREET
ROCKWALL, TEXAS 75087
972-979-0866
SHANNON@LITTLELIPSYBOUTIQUE.COM

SCALE: 1"=20' / DATE: 8/16/2019 / JOB NO. 1912983-1PLAT / DRAWN BY: CC

CASE NO. _____

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CITY OF ROCKWALL, TEXAS MEMORANDUM

TO: Richard Crowley, City Manager
FROM: Lea Ann Ewing, Purchasing Agent
DATE: Oct. 1, 2019
SUBJECT: Bid Award for Shade Canopy Replacement at Tuttle Sports Complex
Playground

Approved in the Recreation Development budget is \$39,000 for replacement of the shade canopy over the playground at Tuttle Sports Complex. The total cost of this project is \$38,853 using the Texas Association of School Boards Buy Board Purchasing coop contract vendor Play Works – Playwell Group. As a member and participant in this cooperative, the City has met all formal bidding requirements pertaining to the purchase and install of the new canopy.

For Council consideration is the bid award to Play Works – Playwell Group for \$38,853 and authorize the City Manager to execute a purchase order for this project.

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CITY OF ROCKWALL, TEXAS MEMORANDUM

TO: Richard Crowley, City Manager
FROM: Lea Ann Ewing, Purchasing Agent
DATE: October 1, 2019
SUBJECT: Purchase of a New Brush Truck for Streets Department

Approved in the General Fund, Streets and Drainage Operations budget is \$195,000 to purchase a new Brush Truck using General Fund Reserves.

The unit is available from MHC (Kenworth) Dallas through the Buy Board purchasing cooperative contract 521-16. As a member and participant in this cooperative, the City has met all formal bidding requirements pertaining to this purchase.

For Council consideration is the bid award to MHC for \$190,462.32 for this new truck and authorize the City Manager to execute the purchase order.

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City of Rockwall
The New Horizon

MEMORANDUM

TO: Mayor and Council

FROM: Joey Boyd, Assistant City Manager

DATE: September 10, 2019

SUBJECT: Routine Airport Maintenance Program Grant Agreement

As part of the budget process, the City Council approved funds for maintenance and improvements at the Ralph M. Hall / Rockwall Municipal Airport. The Routine Airport Maintenance Program grant funds up to \$100,000.00 per year for each general aviation airport and reimburses local governments 50% of the cost of these smaller projects.

Attached is the FY 2020 RAMP grant agreement between the State and the City for the Ralph M. Hall / Rockwall Municipal Airport for consideration. The City Council is asked to consider approval of the contract and authorize the City Manager to enter into an agreement with the Texas Department of Transportation – Aviation Division for the City of Rockwall to participate in the Routine Airport Maintenance Program.

**TEXAS DEPARTMENT OF TRANSPORTATION
GRANT FOR ROUTINE AIRPORT MAINTENANCE PROGRAM
(State Assisted Airport Routine Maintenance)**

TxDOT Project ID.: M2018RCKW

Part I - Identification of the Project

TO: The City of Rockwall, Texas

FROM: The State of Texas, acting through the Texas Department of Transportation

This Grant is made between the Texas Department of Transportation, (hereinafter referred to as the "State"), on behalf of the State of Texas, and the City of Rockwall, Texas, (hereinafter referred to as the "Sponsor").

This Grant Agreement is entered into between the State and the Sponsor shown above, under the authority granted and in compliance with the provisions of the Transportation Code Chapter 21.

The project is for **airport maintenance** at the ROCKWALL - RALPH M HALL/ROCKWALL MUNI Airport.

Part II - Offer of Financial Assistance

1. For the purposes of this Grant, the annual routine maintenance project cost, Amount A, is estimated as found on Attachment A, Scope of Services, attached hereto and made a part of this grant agreement.

State financial assistance granted will be used solely and exclusively for airport maintenance and other incidental items as approved by the State. Actual work to be performed under this agreement is found on Attachment A, Scope of Services. State financial assistance, Amount B, will be for fifty percent (50%) of the eligible project costs for this project or \$50,000.00, whichever is less, per fiscal year and subject to availability of state appropriations.

Scope of Services, Attachment A, of this Grant, may be amended, subject to availability of state funds, to include additional approved airport maintenance work. Scope amendments require submittal of an Amended Scope of Services, Attachment A.

Services will not be accomplished by the State until receipt of Sponsor's share of project costs.

Only work items as described in Attachment A, Scope of Services of this Grant are reimbursable under this grant.

Work shall be accomplished by August 31, 2020, unless otherwise approved by the State.

2. The State shall determine fair and eligible project costs for work scope. Sponsor's share of estimated project costs, Amount C, shall be as found on Attachment A and any amendments.

It is mutually understood and agreed that if, during the term of this agreement, the State determines that there is an overrun in the estimated annual routine maintenance costs, the State may increase the grant to cover the amount of the overrun within the above stated percentages and subject to the maximum amount of state funding.

The State will not authorize expenditures in excess of the dollar amounts identified in this Agreement and any amendments, without the consent of the Sponsor.

3. Sponsor, by accepting this Grant certifies and, upon request, shall furnish proof to the State that it has sufficient funds to meet its share of the costs. The Sponsor grants to the State the right to audit any books and records of the Sponsor to verify expended funds.

Upon execution of this Agreement and written demand by the State, the Sponsor's financial obligation (Amount C) shall be due in cash and payable in full to the State. State may request the Sponsor's financial obligation in partial payments. Should the Sponsor fail to pay their obligation, either in whole or in part, within 30 days of written demand, the State may exercise its rights under Paragraph V-3. Likewise, should the State be unwilling or unable to pay its obligation in a timely manner, the failure to pay shall be considered a breach and the Sponsor may exercise any rights and remedies it has at law or equity.

The State shall reimburse or credit the Sponsor, at the financial closure of the project, any excess funds provided by the Sponsor which exceed Sponsor's share (Amount C).

4. The Sponsor specifically agrees that it shall pay any project costs which exceed the amount of financial participation agreed to by the State. It is further agreed that the Sponsor will reimburse the State for any payment or payments made by the State which are in excess of the percentage of financial assistance (Amount B) as stated in Paragraph II-1.

5. Scope of Services may be accomplished by State contracts or through local contracts of the Sponsor as determined appropriate by the State. All locally contracted work must be approved by the State for scope and reasonable cost. Reimbursement requests for locally contracted work shall be submitted on forms provided by the State and shall include copies of the invoices for materials or services. Payment shall be made for no more than 50% of allowable charges.

The State will not participate in funding for force account work conducted by the Sponsor.

6. This Grant shall terminate upon completion of the scope of services.

Part III - Sponsor Responsibilities

1. In accepting this Grant, if applicable, the Sponsor guarantees that:
 - a. it will, in the operation of the facility, comply with all applicable state and federal laws, rules, regulations, procedures, covenants and assurances required by the State in connection with this Grant; and
 - b. the Airport or navigational facility which is the subject of this Grant shall be controlled by the Sponsor for a period of at least 20 years; and
 - c. consistent with safety and security requirements, it shall make the airport or air navigational facility available to all types, kinds and classes of aeronautical use without discrimination between such types, kinds and classes and shall provide adequate public access during the period of this Grant; and
 - d. it shall not grant or permit anyone to exercise an exclusive right for the conduct of aeronautical activity on or about an airport landing area. Aeronautical activities include, but are not limited to scheduled airline flights, charter flights, flight instruction, aircraft sales, rental and repair, sale of aviation petroleum products and aerial applications. The landing area consists of runways or landing strips, taxiways, parking aprons, roads, airport lighting and navigational aids; and
 - e. through the fence access shall be reviewed and approved by the State; and
 - f. it shall not permit non-aeronautical use of airport facilities without prior approval of the State; and

- g. the Sponsor shall submit to the State annual statements of airport revenues and expenses when requested; and
- h. all fees collected for the use of the airport shall be reasonable and nondiscriminatory. The proceeds from such fees shall be used solely for the development, operation and maintenance of the airport or navigational facility; and
- i. an Airport Fund shall be established by resolution, order or ordinance in the treasury of the Sponsor, or evidence of the prior creation of an existing airport fund or properly executed copy of the resolution, order, or ordinance creating such a fund, shall be submitted to the State. The fund may be an account as part of another fund, but must be accounted for in such a manner that all revenues, expenses, retained earnings, and balances in the account are discernible from other types of moneys identified in the fund as a whole. All fees, charges, rents, and money from any source derived from airport operations must be deposited in the Airport Fund and shall not be diverted to the general revenue fund or another revenue fund of the Sponsor. All expenditures from the Airport Fund shall be solely for airport purposes. Sponsor shall be ineligible for a subsequent grant or loan by the State unless, prior to such subsequent grant or loan, Sponsor has complied with the requirements of this subparagraph; and
- j. the Sponsor shall operate runway lighting at least at low intensity from sunset to sunrise; and
- k. insofar as it is reasonable and within its power, Sponsor shall adopt and enforce zoning regulations to restrict the height of structures and use of land adjacent to or in the immediate vicinity of the airport to heights and activities compatible with normal airport operations as provided in Tex. Loc. Govt. Code Ann. Sections 241.001 et seq. (Vernon and Vernon Supp.). Sponsor shall also acquire and retain aviation easements or other property interests in or rights to use of land or airspace, unless sponsor can show that acquisition and retention of such interest will be impractical or will result in undue hardship to Sponsor. Sponsor shall be ineligible for a subsequent grant or loan by the State unless Sponsor has, prior to subsequent approval of a grant or loan, adopted and passed an airport hazard zoning ordinance or order approved by the State.
- l. mowing services will not be eligible for state financial assistance. Sponsor will be responsible for 100% of any mowing services.

2. The Sponsor, to the extent of its legal authority to do so, shall save harmless the State, the State's agents, employees or contractors from all claims and liability due to activities of the Sponsor, the Sponsor's agents or employees performed under this agreement. The Sponsor, to the extent of its legal authority to do so, shall also save harmless the State, the State's agents, employees or contractors from any and all expenses, including attorney fees which might be incurred by the State in litigation or otherwise resisting claim or liabilities which might be imposed on the State as the result of those activities by the Sponsor, the Sponsor's agents or employees.
3. The Sponsor's acceptance of this Offer and ratification and adoption of this Grant shall be evidenced by execution of this Grant by the Sponsor. The Grant shall comprise a contract, constituting the obligations and rights of the State of Texas and the Sponsor with respect to the accomplishment of the project and the operation and maintenance of the airport.

If it becomes unreasonable or impractical to complete the project, the State may void this agreement and release the Sponsor from any further obligation of project costs.

4. Upon entering into this Grant, Sponsor agrees to name an individual, as the Sponsor's Authorized Representative, who shall be the State's contact with regard to this project. The Representative shall receive all correspondence and documents associated with this grant and shall make or shall acquire approvals and disapprovals for this grant as required on behalf of the Sponsor, and coordinate schedule for work items as required.
5. By the acceptance of grant funds for the maintenance of eligible airport buildings, the Sponsor certifies that the buildings are owned by the Sponsor. The buildings may be leased but if the lease agreement specifies that the lessee is responsible for the upkeep and repairs of the building no state funds shall be used for that purpose.
6. Sponsor shall request reimbursement of eligible project costs on forms provided by the State. All reimbursement requests are required to include a copy of the invoices for the materials or services. The reimbursement request will be submitted no more than once a month.
7. The Sponsor's acceptance of this Agreement shall comprise a Grant Agreement, as provided by the Transportation Code, Chapter 21, constituting the contractual obligations and rights of the State of Texas and the Sponsor with respect to the accomplishment of the airport maintenance and compliance with the assurances and conditions as provided. Such Grant Agreement shall become effective upon the State's written Notice to Proceed issued following execution of this agreement.

Part IV - Nomination of the Agent

1. The Sponsor designates the State as the party to receive and disburse all funds used, or to be used, in payment of the costs of the project, or in reimbursement to either of the parties for costs incurred.
2. The State shall, for all purposes in connection with the project identified above, be the Agent of the Sponsor. The Sponsor grants the State a power of attorney to act as its agent to perform the following services:
 - a. accept, receive, and deposit with the State any and all project funds granted, allowed, and paid or made available by the Sponsor, the State of Texas, or any other entity;
 - b. enter into contracts as necessary for execution of scope of services;
 - c. if State enters into a contract as Agent: exercise supervision and direction of the project work as the State reasonably finds appropriate. Where there is an irreconcilable conflict or difference of opinion, judgment, order or direction between the State and the Sponsor or any service provider, the State shall issue a written order which shall prevail and be controlling;
 - d. receive, review, approve and pay invoices and payment requests for services and materials supplied in accordance with the State approved contracts;
 - e. obtain an audit as may be required by state regulations; the State Auditor may conduct an audit or investigation of any entity receiving funds from TxDOT directly under this contract or indirectly through a subcontract under this contract. Acceptance of funds directly under this contract or indirectly through a subcontract under this contract acts as acceptance of the authority of the State Auditor, under the direction of the legislative audit committee, to conduct an audit or investigation in connection with those funds. An entity that is the subject of an audit or investigation must provide the state auditor with access to any information the state auditor considers relevant to the investigation or audit.
 - f. reimburse sponsor for approved contract maintenance costs no more than once a month.

Part V - Recitals

1. This Grant is executed for the sole benefit of the contracting parties and is not intended or executed for the direct or incidental benefit of any third party.
2. It is the intent of this grant to not supplant local funds normally utilized for airport maintenance, and that any state financial assistance offered under this grant be in addition to those local funds normally dedicated for airport maintenance.

3. This Grant is subject to the applicable provisions of the Transportation Code, Chapters 21 and 22, and the Airport Zoning Act, Tex. Loc. Govt. Code Ann. Sections 241.001 et seq. (Vernon and Vernon Supp.). Failure to comply with the terms of this Grant or with the rules and statutes shall be considered a breach of this contract and will allow the State to pursue the remedies for breach as stated below.
 - a. Of primary importance to the State is compliance with the terms and conditions of this Grant. If, however, after all reasonable attempts to require compliance have failed, the State finds that the Sponsor is unwilling and/or unable to comply with any of the terms of this Grant, the State, may pursue any of the following remedies: (1) require a refund of any financial assistance money expended pursuant to this Grant, (2) deny Sponsor's future requests for aid, (3) request the Attorney General to bring suit seeking reimbursement of any financial assistance money expended on the project pursuant to this Grant, provided however, these remedies shall not limit the State's authority to enforce its rules, regulations or orders as otherwise provided by law, (4) declare this Grant null and void, or (5) any other remedy available at law or in equity.
 - b. Venue for resolution by a court of competent jurisdiction of any dispute arising under the terms of this Grant, or for enforcement of any of the provisions of this Grant, is specifically set by Grant of the parties in Travis County, Texas.
4. The State reserves the right to amend or withdraw this Grant at any time prior to acceptance by the Sponsor. The acceptance period cannot be greater than 30 days after issuance unless extended by the State.
5. This Grant constitutes the full and total understanding of the parties concerning their rights and responsibilities in regard to this project and shall not be modified, amended, rescinded or revoked unless such modification, amendment, rescission or revocation is agreed to by both parties in writing and executed by both parties.
6. All commitments by the Sponsor and the State are subject to constitutional and statutory limitations and restrictions binding upon the Sponsor and the State (including Sections 5 and 7 of Article 11 of the Texas Constitution, if applicable) and to the availability of funds which lawfully may be applied.

Part VI - Acceptances

Sponsor

The City of Rockwall, Texas, does ratify and adopt all statements, representations, warranties, covenants, agreements, and all terms and conditions of this Grant.

Executed this _____ day of _____, 20____.

The City of Rockwall, Texas

Sponsor

Sponsor Signature

Sponsor Title

Certificate of Attorney

I, _____, acting as attorney for the City of Rockwall, Texas, do certify that I have fully examined the Grant and the proceedings taken by the Sponsor relating to the acceptance of the Grant, and find that the manner of acceptance and execution of the Grant by the Sponsor, is in accordance with the laws of the State of Texas.

Dated at _____, Texas, this _____ day of _____, 20____.

Attorney's Signature

Acceptance of the State

Executed by and approved for the Texas Transportation Commission for the purpose and effect of activating and/or carrying out the orders, established policies or work programs and grants heretofore approved and authorized by the Texas Transportation Commission.

STATE OF TEXAS

TEXAS DEPARTMENT OF TRANSPORTATION

By: _____

Date: _____

Attachment A

Scope of Services
TxDOT Project ID: M2018RCKW

Eligible Scope Item	Estimated Costs Amount A	State Share Amount B	Sponsor Share Amount C
GENERAL MAINTENANCE	\$70,000.00	\$35,000.00	\$35,000.00
TOTAL	\$70,000.00	\$35,000.00	\$35,000.00

Accepted By: The City of Rockwall, Texas

Signature

Title: _____

Date: _____

GENERAL MAINTENANCE: As needed, Sponsor may contract for services / purchase materials for routine maintenance / improvement of airport pavements, signage, drainage, AWOS systems, approach aids, lighting systems, utility infrastructure, fencing, herbicide / application, sponsor owned and operated fuel systems, hangars, terminal buildings and security systems; professional services for environmental compliance, approved project design. Special projects to be determined and added by amendment.

Only work items as described in Attachment A, Scope of Services of this Grant are reimbursable under this grant.

CERTIFICATION OF AIRPORT FUND

TxDOT Project ID: M2018RCKW

The City of Rockwall does certify that an Airport Fund has been established for the Sponsor, and that all fees, charges, rents, and money from any source derived from airport operations will be deposited for the benefit of the Airport Fund and will not be diverted for other general revenue fund expenditures or any other special fund of the Sponsor and that all expenditures from the Fund will be solely for airport purposes. The fund may be an account as part of another fund, but must be accounted for in such a manner that all revenues, expenses, retained earnings, and balances in the account are discernible from other types of moneys identified in the fund as a whole.

Sponsor: The City of Rockwall, Texas

By: _____

Title: _____

Date: _____

Certification of State Single Audit Requirements

I, _____, do certify that the City of Rockwall, Texas,

(Designated Representative)

will comply with all requirements of the State of Texas Single Audit Act if the City of Rockwall, Texas, spends or receives more than the threshold amount in any grant funding sources during the most recently audited fiscal year. And in following those requirements, the City of Rockwall, Texas, will submit the report to the audit division of the Texas Department of Transportation. If your entity did not meet the threshold in grant receivables or expenditures, please submit a letter indicating that your entity is not required to have a State Single Audit performed for the most recent audited fiscal year.

Signature

Title

Date

DESIGNATION OF SPONSOR'S AUTHORIZED REPRESENTATIVE

TxDOT Project ID: M2018RCKW

The City of Rockwall, Texas, designates, _____
(Name, Title)

as the Sponsor's authorized representative, who shall receive all correspondence and documents associated with this grant and who shall make or shall acquire approvals and disapprovals for this grant as required on behalf of the Sponsor.

Sponsor: The City of Rockwall, Texas

By: _____

Title: _____

Date: _____

DESIGNATED REPRESENTATIVE

Mailing Address: _____

Overnight Mailing Address: _____

Telephone Number: _____

Fax Number: _____

Email Address: _____

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City of Rockwall
The New Horizon

MEMORANDUM

TO: City Council

FROM: Joey Boyd, Assistant City Manager

DATE: September 11, 2019

SUBJECT: STAR Transit Contract for Fiscal Year 2020

Included for City Council review and consideration is the agreement between the City of Rockwall and STAR Transit for transportation services in the City for fiscal year 2020.

The key points of the agreement are:

- The term of the agreement is: October 1, 2019 through September 30, 2020.
- The City and STAR agree that no fixed route service may be provided under the terms of this Agreement, that no funds from this Agreement will be utilized to support a fixed route service, and that STAR Transit will not request funds or in kind support from the City if STAR Transit elects to operate a fixed route in the City of Rockwall under funding outside of this Agreement.
- Service will be provided five (5) days per week, Monday through Friday and begin at 5:00 AM and end at 9 PM. A total of 22 hours of in-service time including pre- and post-trip time on average each operating day will be limited exclusively to trip origins in the incorporated areas of the City of Rockwall.
- The hourly rate charged for transit service is \$49.95.

The City Council is asked to consider approval of the contract with STAR Transit in the amount of \$109,884 and authorize the City Manager to execute the agreement on behalf of the City of Rockwall. Funds are available in the Administration Operating Budget for this service.

**INTERLOCAL COOPERATIVE AGREEMENT
BETWEEN
STAR TRANSIT
AND
CITY OF ROCKWALL, TEXAS**

This Interlocal Cooperative Agreement ("Agreement") is between STAR TRANSIT ("STAR Transit") a political sub-division of the State of Texas and the CITY OF ROCKWALL, Texas ("CITY") a political sub-division of the State of Texas, each organized and existing under the laws of the State of Texas, and acting by, through and under the authority of their respective governing bodies. STAR Transit and the CITY may each be referred to as a "Party" to this Agreement and may be collectively referred to as "Parties" in this Agreement.

WITNESSETH

WHEREAS, STAR Transit is a Rural Transit District established pursuant to the authority of Chapter 458, Texas Transportation Code, as amended, with its headquarters in Terrell, Texas, and currently provides transit services within several area jurisdictions; and

WHEREAS, the CITY is a local government entity of the State of Texas; and

WHEREAS, the CITY has requested STAR Transit provide services and is authorized to execute this Agreement with STAR Transit for the purpose of providing for the operation and management of public transportation services for the benefit of the citizens of the CITY; and

WHEREAS, STAR Transit, its officers and supervisory employees are trained and experienced in the operation and management of public transportation and is authorized to execute this Agreement with the CITY for the purpose of providing services as specified herein; and

WHEREAS, the Agreement is made pursuant to and under the authority of the Interlocal Cooperation Act of 1971, as amended, and codified in Chapter 791 of the Texas Government Code (the "Act"); and

WHEREAS, STAR Transit and the CITY are local governments as defined in §791.003 of the Act, and each are empowered by §791.011 of the Act to contract with each other to provide governmental functions and services including public and elderly transportation; and

WHEREAS, STAR Transit publishes an annual cost of service letter with its Fiscal Year operating cost schedule no later than June 1 each year and utilizes an hourly rate to adjust amounts payable by its local partners, including CITY, each year; and,

WHEREAS, the purpose of this Agreement is to provide a variety of public transit services to the benefit of residents and businesses in the CITY, the "Public Transit Services".

NOW, THEREFORE, for and in consideration of the mutual promises and covenants contained herein, the receipt and sufficiency of which are hereby acknowledged, the Parties hereby agree as follows:

ARTICLE I
Incorporation of Recitals

The foregoing recitals are hereby incorporated into the body of this Agreement and shall be considered part of the mutual covenants, consideration and promises that bind the Parties.

ARTICLE II
Term

This Agreement shall be effective upon execution by both Parties with services already in progress due to previous arrangements between the Parties and the initial term shall begin on October 1, 2019 and end on September 30, 2020. If not otherwise terminated in accordance with the termination provisions of Article V of this Agreement, this Agreement extends for subsequent twelve (12) month periods starting on the first (1st) day of October each year.

ARTICLE III

Rights, Duties and Responsibilities of STAR Transit

- 3.1 Board of Directors. STAR Transit is designated to supervise the performance of this Agreement and to operate the Public Transit Service within the CITY's jurisdictions and subdivisions. Such operations shall be overseen solely by the STAR Transit Board of Directors. STAR Transit shall be responsible for the safe, efficient, and effective operation of all services provided.
- 3.2 Management Scope. STAR Transit agrees to manage, supervise and operate the Public Transit Services in an efficient and economical manner. STAR Transit shall operate all properties, equipment, facilities, routes, and services now or hereafter existing for the purposes of this Agreement. STAR Transit shall provide full and complete management services for the Public Transit Service and any specific duties and obligations set forth shall not be construed as limitations. STAR Transit shall perform the active direction of the Public Transit Services, including transportation, maintenance, schedule preparation, dispatching, communications, accounting, public relations, and safety. All such services may be provided at the principal office of STAR Transit in Terrell, Texas or at such other place, or places as STAR Transit shall determine.
- 3.3 Administrative Functions. STAR Transit shall administer all properties, equipment, buses, vehicles, facilities, maintenance, gasoline, repairs, replacements, services, expenditures, and resources necessary for safe, efficient, and effective operations. STAR Transit shall employ, train, furnish, and supervise the personnel necessary for the operation of the Public Transit Services. STAR Transit shall oversee all aspects of employment including employee recruiting, selection, training, wages and benefits. STAR Transit shall perform all aspects of general administrative oversight including technical guidance, payroll, accounts payable, purchasing, contracting, finance and other administration necessary for the proper operation of the system.
- 3.4 Transit Vehicle Operators. Every vehicle providing Public Transit Service under this Agreement shall be operated by an operator duly licensed by the State of Texas to operate vehicles of the type and size being operated by such operator and such operator shall be appropriately dress in a uniform selected by STAR Transit.

3.5 Routes, Schedules, Fares. The Public Transit Services shall be operated with routes and schedule established by STAR Transit with input from CITY. In no case shall the Public Transit Services operate on a Saturday, Sunday, regular annual holidays as designated by the STAR Transit Board of Directors, or days on which STAR Transit deem conditions are unsafe or otherwise inappropriate for service in accordance with Section 7.4. STAR Transit shall have authority to make modifications to any routes without the necessity of obtaining CITY approval. In no case shall the Public Transit Services require a service beginning prior to 5:00 AM or ending after 9:00 PM. Fares for riders shall be established by the STAR Transit Board of Directors and such fares shall be consistent throughout the STAR Transit system. The Parties agree that no fixed route service may be provided under the terms of this Agreement, that no funds from this Agreement will be utilized to support a fixed route service, and that STAR Transit will not request funds or in kind support from CITY if STAR Transit elects to operate a fixed route in the City of Rockwall under funding outside of this Agreement.

3.6 Transit Vehicles. STAR Transit shall use only such vehicles as are appropriate to provide the Public Transit Service. All vehicles shall be fully compliant with the Americans with Disabilities Act of 1990, U.S. Code §12101, et. seq., as amended and relevant regulations applicable thereto, licensed for passenger operations by the State of Texas and equipped with a two-way communication system. STAR Transit shall provide or cause to be provided all mechanical and other repairs, maintenance and upkeep necessary to maintain vehicles in good working order and in a clean, sanitary and safe condition.

3.7 Operating Cost Charge to CITY. STAR Transit shall charge for services and CITY agrees to compensate STAR Transit for services based on the following:

- A. Service Days: Service up to five (5) days per week, Monday through Friday; set and calculated as two hundred fifty (250) service days each Fiscal Year. This number of Service Days shall be charged each Fiscal Year regardless of actual calendar service days or events as noted in Section 7.4. This number of charged Service Days may be adjusted only by Amendment to the Contract duly approved by CITY and the STAR Transit Board of Directors.
- B. Daily Hours: A total of twenty-two (22) hours of in-service time including pre- and post-trip time on average each operating day. Average Daily Hours may be adjusted, in writing, by mutual agreement of the parties, no more often than once per every one hundred and twenty (120) calendar days.

- C. Hourly Cost: For the first STAR Transit Fiscal Year, average cost per hour shall be charged at forty-nine dollars and ninety-five cents (\$49.95). Each Fiscal Year thereafter, during the term of this Agreement, the average cost per hour shall be charged at the current STAR Transit Public Transit Hourly Rate. The STAR Transit Board of Directors shall publish an annual cost of service letter with its upcoming Fiscal Year operating cost schedule no later than the first (1st) day of June each year and utilize that hourly rate to adjust amounts payable by CITY.
- D. Annual Operating Cost. Each Fiscal Year, the annual operating cost shall be calculated by multiplying Service Days (Line A) by Daily Hours (Line B) and by Hourly Cost (Line C).
- E. Operating Off-Sets. STAR Transit expects a net sixty percent (60%) operating cost subsidy on the Public Transit Service from a combination of Federal, State, Regional, and Private Contract sources. So long as such subsidy is in place, it shall be used as an off-set to reduce the Annual Operating Cost charged to CITY. The Operating Off-Set may be adjusted only by Amendment to the Agreement duly approved by CITY and the STAR Transit Board of Directors.
- F. Monthly Charge to CITY. The Monthly Charge to CITY shall be the Annual Operating Cost (Line E) multiplied by any Operating Off-Set (Line F) divided by twelve (12). For the first Fiscal Year, the Monthly Charge to CITY is set at nine thousand one hundred fifty-seven dollars (\$9,157.00). Payment for all services shall be due fifteen (15) days in advance of service. STAR Transit shall invoice CITY for each service month no earlier than forty-five (45) days prior to each service month. For future Fiscal Years, starting with the cost for operations in to be performed in October 2020, STAR Transit shall invoice, and CITY agrees to pay, based on the up-to-date monthly calculation as described herein.
- G. Subsequent Fiscal Years. In following STAR Transit Fiscal Years, the monthly charge to CITY shall be calculated by STAR Transit with the identical methodology utilizing any updated parameters. This calculation and the resulting monthly rate will be provided by STAR Transit in writing to CITY prior to the first (1st) day of June each year.
- H. Additional Services. Any month in which the CITY requests average daily hours for non-holiday weekdays exceeding the average daily hours established in Section 3.7 (B) shall be a month in which STAR Transit shall increase the monthly charge in the next available billing cycle by the total number of increased hours (or partial hours) of service multiplied by the current charter rate as established by the STAR Transit Board of Directors. Any other special services requested by CITY and scheduled by STAR Transit, which is not covered under the specific monthly service terms of this Agreement, or under subsequent duly approved Amendments or modifications, shall be billed to CITY on the next available invoice by STAR Transit at the current charter rate as established by the STAR Transit Board of Directors.

- 3.8 Capital Cost Charge to CITY. The parties concur that the CITY will not participate in capital expenditures.
- 3.9 Marketing. STAR Transit will provide the CITY with service information for posting on the CITY Website and advertise the services on the STAR Transit homepage. As part of its regular outreach programs, STAR Transit will market the Public Transit Service in a variety of media and locations likely to attract potential riders. STAR Transit shall maintain rights to final approval of all marketing materials.
- 3.10 Reporting. STAR Transit will provide the CITY a monthly summary of ridership data within thirty (30) days after the last day of the preceding month, an annual summary of ridership after the end of the STAR Transit Fiscal Year, a copy of the adopted Annual Budget, and a copy of the approved annual audit.
- 3.11 Contract Management. STAR Transit will pursue and apply for grant funding opportunities which may be applicable to and beneficial to the Agreement. STAR Transit will be responsible for complying with the obligations and responsibilities under all grants and all accompanying certifications, assurances, and agreements made or given by the Federal Transit Administration, Texas Department of Transportation, or any other applicable entity. STAR Transit will be responsible for complying with all applicable laws, rules, regulations and guidelines associated with STAR Transit services. STAR Transit will provide any documents needed to support Federal, State, or Regional grant administration or other data or audit requirements to the appropriate entity in a timely manner. Grant funding shall be used to offset monthly charges to the CITY if applicable to service provided within the CITY.
- 3.12 Permits. STAR Transit shall secure or cause to be secured, at its cost and expense, all permits and other governmental authorizations, which may be required to fulfill this Agreement.

ARTICLE IV

Rights, Duties and Responsibilities of the CITY

- 4.1 Payment for Service. CITY shall pay all invoices provided by STAR Transit under this Agreement within thirty (30) days of receipt. Such payments shall constitute a current expense of the CITY and shall not in any way be considered or construed to be a debt of the CITY's in contravention of any constitutional, statutory, or charter provision. Any CITY paying for STAR Transit's services must make those payments with current revenues available and the CITY hereby affirms that funds to pay said payments to STAR Transit are available for the current Fiscal Year.
- 4.2 Parking. Permit STAR Transit to access or temporarily park vehicles in the public parking areas of CITY facilities under the condition that such access does not exceed one (1) hour per episode
- 4.3 Promotions. The CITY shall promote services via CITY facilities, municipal resident water bill, CITY Social Media Outlets, News Releases, CITY Website and additional promotional opportunities that become available during the duration of the Agreement. The CITY shall facilitate, as needed and within CITY budget constraints, the efforts of STAR Transit to market the Public Transit Services. CITY shall make all CITY generated marketing materials available for review and approval by STAR Transit.

ARTICLE V

Termination

- 5.1 Program Conclusion. During the initial term, but no later than June 30, 2020, either party may provide written notice of termination to be effective on September 30, 2020. During subsequent twelve (12) month terms, either party may provide written notice of termination no later than June 30 for the following Fiscal Year commencing on the first (1st) day of October.
- 5.2 Mutual Agreement. This Agreement may be terminated immediately at any time by a written agreement signed by both Parties setting forth the agreed termination date.
- 5.3 Termination due to Default. Termination due to Default must be preceded by (1) written notice stating specific provision violated in this Agreement, (2) a thirty (30) day period for cure and (3) a second notice of failure to cure and final termination. A Party shall be in default of this Agreement if such Party fails to timely keep or perform any term, provision, covenant, or condition to be kept or performed by such Party under the terms of this Agreement and/or any other agreement now or

hereafter existing between the Parties and such failure continues for thirty (30) days after written notice by the non-defaulting Party to the defaulting Party (a "Default"). Upon the occurrence of a Default, the non-defaulting Party shall have the right to terminate this Agreement by written notice to the defaulting Party and shall further have the right to exercise any and/or all other rights and/or remedies available to such Party at common law, by statute, in equity or otherwise pursuant to the laws of the State of Texas. In addition, CITY may terminate due to default if performance standards are not met or if CITY deems the operation of the service by STAR Transit is unreliable, unsafe or of poor quality.

- 5.4 Termination by Operation or Breach of Law. In the performance of this agreement, STAR Transit shall comply with all state, federal and local laws, regulations and standards. If the purpose or intent of this agreement is prevented or is contrary to any other law, including but not limited to section 458.012, Texas Transportation Code, this agreement shall be deemed null and void and of no force and effect. If the operation of the service by STAR Transit is in violation of any law or regulation that does not frustrate the purpose or intent of this agreement, or if repeated violations occur, the CITY may terminate the service immediately upon notice. Any pre-paid amounts for monthly service shall be immediately refunded to CITY.

ARTICLE VI

Responsible Party Provisions

- 6.1 Legal Liability. As a designated political subdivision, STAR Transit is a "governmental unit" as that term is defined in Chapter 101 of the Texas Civil Practice and Remedies Code. Therefore, the extent of STAR Transit's liability for actions arising out of the operation of a public transportation system shall be governed by Chapter 101 of the Texas Civil Practice and Remedies Code.
- 6.2 Limitation of Liability. To the extent authorized by the Constitution and laws of the State of Texas, the Parties agree that each Party shall be responsible for its own acts and omissions and the acts and omissions of its agents, representatives and employees in the performance of this Agreement. It is expressly understood and agreed by the Parties that neither Party shall be held liable for the acts or omissions of the other Party or for the acts or omissions of the other Party's agents, representatives, or employees in the performance of this Agreement. Both parties shall hold harmless, indemnify and defend the other from and against any claims, damages, losses or liability

of any character, type, or description, including all expenses of litigation, court costs, and attorney's fees, for injury or death to any person, injury or loss to any property, or economic loss, received or sustained by any person or persons, or property, directly or indirectly arising out of, or occasioned by the acts, omissions or conduct of the indemnifying party, without waiving the party's governmental, sovereign or other immunities or defenses available under Texas law and without waiving any defenses of the parties under Texas law.

- 6.3 Insurance. Each party shall maintain its own insurance in sufficient amounts to cover any occurrence or claim related to its responsibilities in delivering the Public Transit Services.
- 6.4 Immunity. In the execution and performance of this Agreement, the Parties do not waive, and neither Party shall be deemed to have waived, any immunity or defense that would otherwise be available to each Party as a local governmental entity and/or political subdivision of the State of Texas. Nothing in this Agreement shall be deemed or construed to created any right or interest in any person not a party to this Agreement, and there are no third-party beneficiaries hereof.
- 6.5 Survival. All provisions of this Article shall expressly survive the termination of this Agreement.

Article VII

Miscellaneous

- 7.1 Captions. The descriptive captions of this Agreement are for convenience of reference only and shall in no way define, describe, limit, expand or affect the scope, terms, conditions, or intent of this Agreement.
- 7.2 Compliance with Laws. STAR Transit and its officers, agents and employees shall comply with all applicable federal, state and local health, safety, disability, environmental and other laws, ordinances, rules and regulations in the performance of the Public Transit Service.
- 7.3 Powers. STAR Transit has all the powers of CITY necessary to operate its services. By way of illustration, but not for limitation, STAR Transit has the power to contract, to acquire and own real and personal property, and to accept and expend funds from government, legal entities and

individuals. STAR Transit does not have the power to tax, to obligate CITY, to assess CITY, or to adopt ordinances or laws.

- 7.4 Force Majeure. STAR Transit shall not be liable to CITY for any failure, delay, interruption of service caused by acts of God, fire, snow, ice, flooding, tornado, utility outages, riots, civil commotion, labor disruptions, sabotage, sovereign conduct, acts of terror, or any other cause beyond the reasonable control of STAR Transit and not attributable to any neglect or negligence on the part of STAR Transit. In the event of such occurrence, the time for performance of such services shall be suspended until such time that such inability to perform shall be removed. STAR Transit shall make all reasonable efforts to mitigate the effects of any such suspension or interruption of service and CITY shall not be entitled to any compensation for any such event.
- 7.5 Severability. The sections, paragraphs, sentences, clauses, and phrases of this Agreement are severable and, if any phrase, clause, sentence, paragraph, or section of this Agreement should be declared invalid, illegal, or unenforceable by the final judgment or decree of any court of competent jurisdiction, such invalidity shall not affect the validity or enforceability of any of the remaining phrases, clauses, sentences, paragraphs, and sections of this Agreement and such remaining provisions shall remain in full force and effect and shall be construed and enforced as if the invalid provision had never been included in the Agreement.
- 7.6 Notices. Any notice required or permitted to be given under the terms of this Agreement shall be in writing and shall be considered properly given if mailed by United States mail, certified mail, return receipt requested, in a postage paid envelope addressed to the Party at the address set forth below, or by delivering same in person to the intended addressee by hand delivery or by a nationally recognized courier service such as Federal Express or United Parcel Service. Notices mailed by certified mail as set forth above shall be effective upon deposit in the United States mail. Notice given in any other manner shall be effective only if and when received by the addressee. For purposes of notice, the addresses of the Parties shall be as set forth below; provided, however, that any Party shall have the right to change such Party's address for notice purposes by giving the other Party at least thirty (30) days prior written notice of such change of address in the manner set forth herein:

STAR Transit: STAR Transit;
Attn: Executive Director
P.O. Box 703
Terrell, TX 75160

CITY: City Manager; City of Rockwall
385 S. Goliad Street
Rockwall, TX 75087

- 7.7 Entire Agreement. This Agreement, together with all attachments hereto, sets forth the entire Agreement between the Parties with respect to the subject matter hereof, and all prior discussions, representations, proposals, offers, and oral or written communications of any nature are entirely superseded hereby and extinguished by the execution of this Agreement.
- 7.8 Modification. This Agreement may only be revised, modified, or amended by a written document signed by STAR Transit and the CITY. Oral revisions, modification, or amendments are not permitted.
- 7.9 Waiver. All waivers, to be effective, must be in writing and signed by the waiving party. No failure by either Party to insist upon the strict or timely performance of any covenant, duty, agreement, term, or condition of this Agreement shall constitute a waiver of any such covenant, duty, agreement, term, or condition. No delay or omission in the exercise of any right or remedy accruing to either Party upon a breach of this Agreement shall impair such right or remedy or be construed as a waiver of any such breach or a waiver of any breach theretofore or thereafter occurring.
- 7.10 Authority. Each Party represents and warrants to the other that this Agreement has been authorized by the governing body of such Party and that each such Party has the full power and authority to enter into and fulfill its obligations under this Agreement. Each person signing this Agreement represents that such person has the authority to sign this Agreement on behalf of the Party indicated.
- 7.11 Assignment. This Agreement shall not be assigned or transferred by either Party without prior written consent of the other Party, which consent shall not be unreasonably withheld.

7.12 Independence. The Parties are acting herein as independent contractors and independent employers. Nothing herein shall create or be construed as creating a partnership, joint venture or agency relationship between any of the Parties and no Party shall have the authority to bind the other in any respect. Nothing in this Agreement prevents STAR Transit from pursue contracting opportunities to provide any services with other public and private entities within the CITY or outside the CITY.

7.13 Effective Date. This Agreement shall not be effective unless and until it is executed by both STAR Transit and the CITY. "Effective Date" as used herein shall mean the later of the two dates this Agreement is executed by STAR Transit and the CITY.

IN WITNESS WHEREOF, the Parties hereto have executed this Agreement by their duly authorized agents, officers, and/or officials on the dates set forth below.

CITY OF ROCKWALL, TX

STAR TRANSIT

By: _____

By: _____

Name: _____

Name: _____

Title: _____

Title: _____

Date: _____

Date: _____

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City of Rockwall
The New Horizon

MEMORANDUM

TO: Rockwall City Council

FROM: Joey Boyd, Assistant City Manager

DATE: September 10, 2019

SUBJECT: Contract with Meals On Wheels Senior Services

Margie VerHagen, Executive Director of Meals On Wheels Senior Services, requested funding for nutritional / senior service programs provided in Rockwall in the amount of \$40,000. This amount was approved in the operating budget for this fiscal year. Attached for the City Council's review and consideration is a contract with Meals On Wheels for FY 2020.

The City Council is asked to consider approval of the proposed contract and authorize the City Manager to enter into an agreement with Meals On Wheels Senior Services for nutritional and senior service programs in the City of Rockwall.

**AGREEMENT FOR NUTRITIONAL PROGRAMS
FOR THE ELDERLY AND DISABLED**

STATE OF TEXAS §
COUNTY OF ROCKWALL § **KNOW ALL MEN BY THESE PRESENTS:**

THIS AGREEMENT is entered into by the **CITY OF ROCKWALL, COUNTY OF ROCKWALL, TEXAS (hereinafter referred to as "City")**, a municipal corporation, acting by and through Rick Crowley, City Manager, its duly authorized representative and **MEALS ON WHEELS SENIOR SERVICES, a nonprofit Texas corporation**, acting by and through Margie VerHagen, its duly authorized representative. The parties do hereby covenant and agree as follows:

Section 1. Grant. For and in consideration of compliance by Meals On Wheels Senior Services with covenants and conditions herein set forth, and the ordinances and regulations of the City, the City hereby contracts with Meals On Wheels Senior Services to provide certain nutritional programs to the elderly and disabled within the corporate limits of the City.

Meals On Wheels Senior Services shall conduct operations in accordance with all federal, state and local laws that exist at the time of the execution of this agreement and any additional laws, regulations, or requirements that may become effective during the term of this agreement. In addition, Meals On Wheels Senior Services agrees to conduct operations in accordance with the description of services outlined in Attachment "A" attached hereto and made a part hereof for all purposes. Meals On Wheels Senior Services shall be responsible for obtaining any permits or licenses required to fulfill its obligations under this agreement.

Section 2. Payment. City agrees to pay Meals On Wheels Senior Services the sum of **Forty Thousand Dollars and No/Cents (\$40,000.00)** for the provision of certain nutritional / service programs to the elderly and disabled. Said payments shall be made on the following dates: **December 31, 2019 for 1st Quarter, March 31, 2020 for 2nd Quarter, June 30, 2020 for 3rd Quarter, and September 30, 2020 for 4th Quarter upon Receiving a Quarterly Report and Invoice.**

Section 3. Term. This agreement is to take effect and continue and remain in full force and effect for a period to expire on September 30, 2020.

Section 4. Scope and Nature of Operation. It is expressly agreed and understood that Meals On Wheels Senior Services shall provide the services as outlined in Attachment "A" continuously during the contract period.

Section 5. Surety and Cancellation. If at any time, the City Council determines that Meals On Wheels Senior Services has failed to perform, or performed in an unacceptable manner, any of the terms, covenants or conditions herein set forth, the City may revoke and cancel this agreement. The City Council shall be the sole judge of whether Meals On Wheels Senior Services has failed to perform. Meals On Wheels Senior Services shall be given written notice at least 10 days prior to consideration by the City Council of such action. Should the City Council revoke this agreement, Meals On Wheels Senior Services shall be responsible for reimbursing the City on a pro-rata basis any unearned funds paid by the City.

Section 6. Complaint Handling by Meals On Wheels Senior Services. Meals On Wheels Senior Services shall, at its own expense, provide a locally accessible telephone number and will answer calls from 9:00 a.m. until 5:00 p.m. daily, Monday through Friday, excluding such holidays as may be approved by the City, for the purpose of handling complaints and other calls regarding services provided by Meals On Wheels Senior Services. Meals On Wheels Senior Services shall maintain a log of all complaints and disposition of the complaints. This log shall be submitted to the City on a monthly basis. All complaints shall be given prompt and courteous attention and when possible, shall be resolved within a 24-hour period.

Section 7. Vehicular Identification. There are no vehicle identification requirements at this time. Provided that such markings or identification becomes necessary during the term of this agreement, the parties agree to implement such markings, and if so, will be the responsibility of Meals On Wheels Senior Services.

Section 8. Reporting. Meals On Wheels Senior Services shall provide quarterly reports to the City detailing the following:

Nutritional Programs for the Elderly and Disabled

- a. Number of users – average daily and monthly totals
- b. Type of services provided
- c. Complaint logs

Section 9. Books and Records. Meals On Wheels Senior Services agrees to maintain adequate books and records relating to their performance under the provisions of the Agreement. The City may request from Meals On Wheels Senior Services specific periodic reports containing information deemed necessary by the City. The records of Meals On Wheels Senior Services applicable to the performance of this agreement shall and will be available when wanted for inspection by the City at any time during normal working hours upon 10 days written request.

Section 10. Indemnification Insurance. Meals On Wheels Senior Services assumes risk of loss or injury to property or persons arising from any of its operations under this agreement and agrees to indemnify and hold harmless the City from all claims, demands, suits, judgments, costs or expenses, including expenses of litigation and attorney's fees, arising from any such loss or injury. It is expressly understood that the foregoing provisions shall not in any way limit the liability of Meals On Wheels Senior Services. Meals On Wheels Senior Services shall require that all drivers carry at all times, in the vehicle, insurance certificates of financial responsibility.

Section 11. Assignment. No assignment, transfer, subletting, conveyance or disposition of this agreement or any right occurring under it shall be made in whole or in part by Meals On Wheels Senior Services without the prior written consent of the City Council. In the event Meals On Wheels Senior Services assigns, transfers, sublets, conveys, or disposes of this agreement without the prior consent of the City Council, the City may, at its discretion, terminate this agreement.

Section 12. Venue. This agreement shall be considered consummated in Rockwall County, Texas. All actions brought hereunder shall be brought in Rockwall County, Texas.

MEALS ON WHEELS SENIOR SERVICES

Margie VerHagen, Executive Director

Date

ATTACHMENT A

Nutritional / Service Programs

Nutritional Programs

Title III

C-1 Congregate Meals

- Clients over 60 years old receive nutritious meals at a Senior Center.
- Meals should provide 1/3 of the RDA nutrition requirements.
- Meals are served a minimum of 250 days a year.

C-2 Home Delivered Meals

- Meals delivered to eligible homebound seniors due to physical or health reasons.
- Meals should provide 1/3 of the RDA nutrition requirements.
- Meals are delivered a minimum of 250 days a year.

Title IXX and XX

To provide nutritious meals to those who are handicapped or disabled (of any age) and home bound.

- Meals should provide 1/3 of the RDA nutrition requirements.
- Meals are delivered a minimum of 250 days a year as needed.

General Senior Services

Information and educational seminars and symposiums will be sponsored by Meals On Wheels Senior Services concerning benefits counseling, prescription drugs, senior health, training sessions, caregiver support and information, referrals, social events as venues for information and education exchange, ombudsman services, entitlement programs and senior issues, i.e. Medicare/Medicaid information and pharmaceutical assistance, and emergency food bags in the winter.

ATTACHMENT B Holidays

The following are closure days for which Meals On Wheels Senior Services will not be providing services but will render services the following working day:

Thanksgiving Day
Christmas Day
New Year's Day
Martin Luther King, Jr. Holiday
Memorial Day
July 4th
Labor Day

Bad Weather days as determined by Meals On Wheels Senior Services pending weather reports and street conditions.

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CITY OF ROCKWALL, TEXAS MEMORANDUM

TO: Richard Crowley, City Manager
FROM: Lea Ann Ewing, Purchasing Agent
DATE: October 1, 2019
SUBJECT: Purchase of a New VAC-CON Truck for Sewer Department

Approved in the Water and Sewer Fund, Sewer Operations budget is \$401,100 to purchase a new VAC Truck. This vehicle/equipment unit will be used to clean lift station pumps, perform hydro excavation and unclog lines and drains.

The unit is available from Freightliner/CLS Equipment Company, VAC-CON dealer through the H-GAC purchasing cooperative contract HT06-18. As a member and participant in this cooperative, the City has met all formal bidding requirements pertaining to this purchase.

For Council consideration is the total bid award to Freightliner/CLS of \$389,415.25 for this unit and authorize the City Manager to execute the purchase order.

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City of Rockwall
The New Horizon

MEMORANDUM

TO: Rick Crowley, City Manager

FROM: Amy Williams, Director of Public Works/City Engineer

DATE: September 30, 2019

SUBJECT: General Engineering Service Agreement for Traffic Impact Analysis

At the November 5, 2018 City Council meeting, the City Council approved a policy requiring a Traffic Impact Analysis (TIA) for specific zoning applications. To recoup the City's review costs, a Traffic Impact Analysis (TIA) review fee was implemented in October 2018 by the City for developments requiring a TIA. The City currently use Binkley & Barfield, Inc. as the Cities Engineering Traffic Review Consultant, to perform the review of TIAs and to ensure compliance with the City's TIA requirements.

Binkley & Barfield's, Inc. current contract ends on September 30, 2019 with the City. Staff requests the City Council consider approval of the attached Engineering Services Agreement with Binkley & Barfield, Inc. for the 2020 fiscal year to provide general engineering services for the preparation and review of all TIAs submitted to the City of Rockwall. This agreement will be funded by the 2019-2020 Engineering Consulting budget with developer reimbursement.

AW:jw

Cc:
Mary Smith, Assistant City Manager
Jeremy White, P.E., CFM, Civil Engineer
File

STATE OF TEXAS ◆
 ◆
COUNTY OF ROCKWALL ◆

PROFESSIONAL ENGINEERING SERVICES CONTRACT

This Agreement is made and entered into in Rockwall County, Texas, between City of Rockwall, Texas ("CITY"), a municipal corporation and political subdivision of the State of Texas, acting by and through its City Manager and Binkley & Barfield, Inc., ("ENGINEER"), located at 1801 Gateway Blvd., Suite 101 Richardson, Texas 75080, Engineers duly licensed and practicing under the laws of the State of Texas.

WHEREAS, CITY desires to engage Engineer as an independent contractor to render certain technical and professional services necessary for performing:

PROFESSIONAL ENGINEERING SERVICES for Miscellaneous Traffic Consulting Services.

NOW, THEREFORE, for and in consideration of the mutual covenants and agreements contained herein, the Parties hereby agree as follows:

1. Scope of Work

Engineer agrees to perform professional engineering services as specifically defined in this Contract as Exhibit "A" and as authorized by CITY. Specifically, Engineer shall perform Professional services as requested by CITY and detailed in Exhibit "A".

The Parties by mutual agreement through contract amendments may provide for additional technical and professional services to be performed under the basic general terms and conditions of this Contract. CITY reserves the right to enter into another agreement with other engineering firms to provide the same or similar professional services during the term of this Contract for different projects.

2. Compensation & Term of Agreement

Cost for such services will be based on an as-needed time-and-materials basis and billed as an hourly basis plus costs per rates provided in Exhibit "B". Engineer is not authorized to perform any work without approval by City.

The term of this Agreement shall commence upon execution of this agreement and follow the schedule described in Exhibit "C". In the event of termination, Engineer will assist the CITY in arranging a smooth transition process. However, Engineer's obligation to provide services to the CITY will cease upon the effective date of termination, unless otherwise agreed in writing.

3. Method of Payment

CITY shall pay Engineer its fees based on the presentation by Engineer to CITY of a correct monthly statement for all the amounts earned under the Contract together with reasonable supporting documentation verifying the accuracy of the fees and expenses. CITY shall then pay Engineer its fee within thirty (30) days after presentation of the accurate monthly statement by Engineer to CITY. CITY is a State sales and use tax exempt political subdivision of the State of Texas. All records supporting payment shall be kept in the offices of Engineer for a period of not less than three (3) years and shall be made available to CITY for inspection, audit or copying upon reasonable request.

4. Engineer's Standard of Care

Engineer shall provide its services under this Contract with the same degree of care, skill and diligence as is ordinarily provided by a professional Engineer under similar circumstances for a similar project. Engineer represents that it has the capability, experience, available personnel, and means required to perform the services contemplated by this Contract. Services will be performed using personnel and equipment qualified and/or suitable to perform the work requested by the CITY. CITY retains the right to report to Engineer any unsatisfactory performance of Engineer personnel for appropriate corrective action. Engineer shall comply with applicable federal, state, and local laws in connection with any work performed hereunder.

Engineer will seek written CITY approval to accept any contract or perform any services for any person, entity, or business that has an agreement or is in negotiations of an agreement with CITY. CITY may waive this conflict, but such waiver is at CITY's sole discretion and its decision shall be final.

5. Ownership of Documents

As part of the total compensation which CITY has agreed to pay Engineer for the professional services to be rendered under this Contract, Engineer agrees that hard copies of all finished and unfinished documents, data, studies, surveys, drawings, specifications, field notes, maps, models, photographs, preliminary reports, reports, bid packet/construction contract documents/advertisement for bids incorporating any CITY standard provisions provided by Engineer, will remain the property of the CITY. Engineer will furnish CITY with paper and electronic copies, to the extent they are available, of all of the foregoing to facilitate coordination, however, ownership of the underlying work product shall remain the intellectual property of the Engineer. Engineer shall have the right to use such work products for Engineer's purposes. However, such documents are not intended to be suitable for reuse by CITY or others on extension of the Project or on any other project. Any reuse without the express written consent of the Engineer will be at reuser's sole risk and without liability or legal exposure to the Engineer, and CITY to the extent allowed by law, shall hold harmless the Engineer from all claims, damages, losses, expenses, and costs, including attorneys' fees arising out of or resulting from the reuse of said documents without the Engineer's consent. The granting of such consent will entitle the Engineer to further compensation at rates to be agreed upon by CITY and the Engineer. The above notwithstanding, Engineer shall retain all rights in its standard drawing details, designs, specifications, databases, computer software and any other proprietary and intellectual property information provided pursuant to this Contract, whether or not such proprietary information was modified during the course of providing the services.

6. Insurance

A. Engineer agrees to maintain Worker's Compensation and Employer's Liability Insurance to cover all of its own personnel engaged in performing services for CITY under this Contract in at least the following amounts:

Workmen's Compensation – Statutory
Employer's Liability – \$100,000.00
Bodily Injury by Disease - \$500,000 (policy limits)
Bodily Injury by Disease - \$100,000 (each employee)

B. Engineer also agrees to maintain Commercial General Liability, Business Automobile Liability, and Umbrella Liability Insurance covering claims against Engineer for damages resulting from bodily injury, death or property damages from accidents arising in the course of work performed under this Contract in not less than the following amounts:

\$2,000,000.00 General aggregate limit

\$1,000,000.00 each occurrence sub-limit for all bodily injury or property damage incurred all in one occurrence

\$1,000,000.00 each occurrence sub-limit for Personal Injury and Advertising

C. Engineer shall add CITY, its City Council members and employees, as an additional insureds on all required insurance policies, except worker's compensation, employer's liability and errors and omissions insurance. The Commercial General Liability Policy and Umbrella Liability Policy shall be of an "occurrence" type policy.

D. Engineer shall furnish CITY with an Insurance Certificate on the date this Contract is executed and accepted by CITY, which confirms that all above required insurance policies are in full force and effect.

E. Engineer agrees to maintain errors and omissions professional liability insurance in the amount of not less than one million dollars (\$1,000,000) annual aggregate, on a claims made basis, as long as reasonably available under standard policies.

7. INDEMNIFICATION

ENGINEER SHALL INDEMNIFY AND SAVE HARMLESS THE CITY AND ITS CITY COUNCIL MEMBERS AND EMPLOYEES FROM SUITS, ACTIONS, LOSSES, DAMAGES, CLAIMS, OR LIABILITY, INCLUDING WITHOUT LIMITING THE GENERALITY OF THE FOREGOING, ALL EXPENSES OF LITIGATION, COURT COSTS, AND REASONABLE ATTORNEY'S FEES FOR INJURY OR DEATH TO ANY PERSON, OR INJURY TO ANY PROPERTY, RECEIVED OR SUSTAINED BY ANY PERSON OR PERSONS OR PROPERTY, TO THE EXTENT CAUSED BY THE NEGLIGENT ACTS OF ENGINEER OR ITS AGENTS OR EMPLOYEES, IN THE EXECUTION OF PERFORMANCE OF THIS CONTRACT.

ENGINEER'S TOTAL LIABILITY TO CITY FOR ANY LOSS OR DAMAGES FROM CLAIMS ARISING OUT OF, OR IN CONNECTION WITH, THIS CONTRACT FROM ANY CAUSE INCLUDING ENGINEER'S STRICT LIABILITY, BREACH OF CONTRACT, OR PROFESSIONAL NEGLIGENCE, ERRORS AND OMISSIONS SHALL NOT EXCEED ONE MILLION DOLLARS (\$1,000,000.00). NEITHER PARTY TO THIS AGREEMENT SHALL BE LIABLE TO THE OTHER PARTY OR ANY THIRD PARTY CLAIMING THROUGH THE OTHER RESPECTIVE PARTY, FOR ANY SPECIAL, INCIDENTAL, INDIRECT, PUNITIVE, LIQUIDATED, DELAY OR CONSEQUENTIAL DAMAGES OF ANY KIND INCLUDING BUT NOT LIMITED TO LOST PROFITS OR USE OF PROPERTY, FACILITIES OR RESOURCES, THAT MAY RESULT FROM THIS AGREEMENT, OR OUT OF ANY GOODS OR SERVICES FURNISHED HEREUNDER.

8. Addresses for Notices and Communications

CITY

Richard Crowley
City Manager
City of Rockwall
385 S. Goliad
Rockwall, Texas 75087

Amy Williams, P.E.
Director of Public Works/City Engineer
City of Rockwall
385 S. Goliad
Rockwall, Texas 75087

ENGINEER

Binkley & Barfield, Inc.
Attn: Cameron L. Williams, P.E.
1801 Gateway Boulevard Suite 101
Richardson, Texas 75080

All notices and communications under this Contract shall be mailed or delivered to **CITY** and **Engineer** at the above addresses.

9. Successors and Assigns

CITY and Engineer each binds itself and its successors, executors, administrators and assigns to the other parties of this Contract and to the successors, executors, administrators and assigns of such other parties, in respect to all covenants of this Contract. Except as noted in the first part of this Paragraph, neither CITY nor Engineer shall assign, sublet or transfer its interest in this Contract without the written consent of the other. Nothing herein shall be construed as creating any personal liability on the part of any officer, council member, employee or agent of any public body which is a party hereto.

10. Termination for Convenience of the Parties

Engineer and CITY may terminate this Contract for their convenience at any time by giving at least thirty (30) days notice in writing to each other. If the Contract is terminated by CITY and/or Engineer as provided herein, Engineer will be paid for the Work provided and expenses incurred up to the termination date, if such final compensation is approved by CITY, in its sole discretion. If this Contract is terminated due to the fault of Engineer, Paragraph 10 hereof, relative to Termination for Cause, shall apply.

11. Changes

CITY may, from time to time, request changes in the Scope of Work of Engineer to be performed hereunder. Such changes, including any increase or decrease in the amount of Engineer's compensation, or time for performance, which are mutually agreed upon by and between CITY and Engineer, shall be incorporated in written amendments to this Contract. Any subsequent contract amendments shall be executed by the City Manager or other authorized representative as designated by the City Manager or City Council.

Any alterations, additions or deletions to the terms of this Contract, including the scope of work, shall be by amendment in writing executed by both CITY and Contractor.

13. Reports and Information

Engineer, at such times and in such forms as CITY may reasonably require, and as specified in the Scope of Work or in additional Contract Amendments shall furnish CITY periodic reports pertaining to the Work or services undertaken pursuant to this Contract, the cost and obligations incurred, or to be incurred in connection therewith, and any other matter covered by this Contract.

14. Entire Agreement

This Contract and its Exhibits and any future Contract Amendments constitute the entire agreement, and supersede all prior agreements and understandings between the parties concerning the subject matter of this Contract.

15. Waiver

The failure on the part of either party herein at any time to require the performance by the other party, of any portion of this Contract, shall not be deemed a waiver of, or in any way affect that party's rights to enforce such provision, or any other provision. Any waiver by any party herein of any provision hereof, shall not be taken or held to be a waiver of any other provision hereof, or any other breach hereof.

16. Severability

The invalidity or unenforceability of any provision of this Contract shall not affect the validity or enforceability of any other provision of this Contract.

17. Survival

Any and all representations, conditions and warranties made by Engineer under this Contract are of the essence of this Contract and shall survive the execution, delivery and termination of it.

18. Governing Powers and Law

Both Parties agree and understand that the City does not waive or surrender any of its governmental powers by execution of this Agreement. To that end, the parties further understand that this agreement shall not be considered a contract for goods or services under Texas Local Government Code, Section 271.151 and Contractor waives any right or entitlement granted said provisions. This Contract is governed by the laws of the State of Texas and all obligations of the parties under this Contract are performable in Rockwall County, Texas.

19. Attorney's Fees

If it is necessary for either Party herein to file a cause of action at law or in equity against the other Party due to: (a) a breach of this Contract by the other Party and/or (b) any intentional and/or negligent act or omission by the other Party arising out of this Contract, the non-breaching or non-negligent Party shall be entitled to reasonable attorney's fees and costs, and any necessary disbursements, in addition to any other relief to which it is legally entitled.

20. State or Federal Laws

This Contract is subject to all applicable federal and state laws, statutes, codes, and any applicable permits, ordinances, rules, orders and regulations of any local, state or federal government authority having or asserting jurisdiction, but nothing contained herein shall be construed as a waiver of any right to question or contest any such law, ordinance, order, rule or regulation in any forum having jurisdiction.

EXHIBIT "A"

SCOPE OF SERVICES

The scope of services for this contract is for Binkley & Barfield, Inc. (BBI) to provide miscellaneous consulting services on an as-needed basis for issues related to traffic impact analysis and other traffic engineering matters, which may be requested from time to time by, or approved by, the City of Rockwall's City Engineer/Public Works Director, or by the City Engineer's/Public Works Director's representative(s) or assistant(s). Such services are anticipated to typically consist of the following:

- A. Perform traffic impact analyses for the City as requested.
- B. Perform traffic counts for the City as requested.
- C. Assist in scoping traffic impact analyses for proposed developments which shall include study intersections/limits, required traffic counts, analyses, etc.
- D. Review and provide comments on traffic impact analyses submitted to the City
- E. Provide opinions, advice, recommendations and other miscellaneous assistance to the City regarding traffic impact analyses and traffic operations.
- F. Attendance at developer review meetings, planning and zoning meetings, City Council meetings, and others as required or needed.
- G. Other miscellaneous traffic engineering services as requested by the City and agreed by BBI provided that such services are within the field of expertise of BBI.

Exclusions

The following services are excluded from this scope of services:

- A. PS&E Documents
- B. Construction Inspection
- C. Construction Administration
- D. Surveying

EXHIBIT "B"

COMPENSTATION

Hourly rate schedule

<u>CLASSIFICATION</u>	<u>2019 BILLABLE RATES</u>
Principal (Eng. VII)	\$275.00
Sr. Project Manager (Eng. VI)	\$250.00
Project Manager (Eng. V)	\$194.00
Structural Engineer	\$194.00
Construction Manager (Eng V)	\$194.00
Project Engineer (Eng. IV)	\$163.00
Project Engineer (Eng. III)	\$139.00
Process / Civil / Engineer	\$163.00
Field Engineer	\$150.00
Electrical & Instrumentation Engineer	\$163.00
Engineer Technician	\$136.00
EIT II	\$125.00
Graduate Engineer / EIT I	\$110.00
Crew - 2 person	\$185.00
Construction Observer / Sr. Inspector	\$125.00
Construction Observer / Inspector II	\$116.00
Construction Observer / Inspector I	\$95.00
Sr. Designator	\$105.00
Designator	\$90.00
Sr. Utility Coordinator	\$151.00
Utility Coordinator	\$132.00
Production Manager	\$205.00
Production Technician	\$84.00
Sr. Electrical Designer	\$143.00
Sr. CADD / Designer	\$135.00
CADD / Designer	\$122.00
CADD Technician	\$100.00
Sr. Clerical / Administrator / Document Specialist / Recordkeeper	\$85.00
Clerical / Administrator	\$80.00
3D Modeling (Per day)	\$788.00

Note:

1. For years past 2019, maximum rates can be determined using an annual escalation rate of five percent, or, will be renegotiated.
2. Subconsultant, reproduction, delivery and other associated expenses shall be reimbursed at cost plus 10%.
3. Mileage shall be reimbursed at the current Federal rate as published by the IRS.

Traffic Counts would be considered a subconsultant service and reimbursed at cost plus 10%

EXHIBIT “C”

SCHEDULE

The term of this agreement shall commence upon execution of the agreement by both parties and will extend through September 30, 2020, unless otherwise terminated or extended as agreed in writing. Consulting services listed in Exhibit “A” will be scheduled on an as-needed basis during the term of contract and any extension as agreed. Consulting services will end immediately upon termination of the contract.

BBI will provide services and response on the following time tables for these specific tasks:

- A. Traffic Impact Analyses – Within 3 weeks of NTP.
- B. Traffic Counts – Within 2 weeks of receiving notice to proceed with counts.
- C. Scoping of traffic impact analyses – Within one week of initial NTP from City and available information from the City.
- D. Review of traffic impact analyses – Within two weeks of receiving traffic impact analysis.

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City of Rockwall
The New Horizon

MEMORANDUM

TO: Honorable Mayor and City Council Members
FROM: Rick Crowley, City Manager
DATE: October 4, 2019
SUBJECT: Fire ILA

This is the standard Interlocal Agreement that the City annually enters into with Rockwall County. I or Chief Cullins will be available to answer any questions the Council may have at the meeting Monday evening.

STATE OF TEXAS §
COUNTY OF ROCKWALL §
CITY OF ROCKWALL §

**INTERLOCAL AGREEMENT FOR
FIRE PROTECTION SERVICES**

THIS AGREEMENT is made and entered into by and between the County of Rockwall, Texas, hereinafter referred to as "County" and the City of Rockwall, Texas, hereinafter referred to as "City" or "Rockwall".

WITNESSETH:

WHEREAS, pursuant to §352.001(b)(3) of the Texas Local Government Code, a county is authorized to execute interlocal agreements with any city, town or village within such county to provide fire protection services to the citizens of any such county residing outside the corporate limits of any city, town or village; and

WHEREAS, pursuant to Chapter 791 of the Texas Government Code, the City is authorized to execute interlocal agreements with a county to provide governmental services and functions such as fire protection; and

WHEREAS, the City is the owner of certain trucks and other equipment designed for and capable of being used in the protection of persons and property from and in the suppression and fighting of fires; and

WHEREAS, the County desires to obtain such services for its citizens residing in unincorporated areas of the County, and the City is willing to provide such services as hereinafter set forth and provided.

NOW, THEREFORE, it is mutually agreed by and between the parties hereto as follows:

Section 1. That the recitals set forth above are true and correct and incorporated herein.

Section 2. Definitions. The following words shall have the following meanings when used in this Agreement:

- a) "Call" means each response by the City of Rockwall Fire Department to rescues, auto accidents, actual fire, false alarms, fires to be found extinguished on arrival of the City's fire unit or units, potential fire situations or emergencies.

- b) "Chief Administrative Officer" means the Mayor or City Manager of the City.
- c) "District" means the area within the boundaries of Rockwall County, Texas, for which the City of Rockwall Fire Department has permanent responsibility for first alarm response to fires in such district. This includes Public Protected Classification, outside protected areas, and Fire Districts defined by the Texas Department of Insurance.
- d) "Employed" means a fire fighter who is paid a salary by the City, or volunteer fire fighter.
- e) "Fire Chief" means the Fire Chief of the City or his duly authorized designees.
- f) "Fire Fighter" means a fire fighter of the City.
- g) "Requesting Party" means the entity requesting fire protection assistance from the City for fire services for residents of the County, but not living within any city's incorporated limit.

Section 3. The parties hereto hereby agree that the City will provide fire equipment and services to points in the County which are outside the corporate limits of any city in the County, but inside the boundary limits known as First Alarm County District for the City. Areas outside such boundary shall be known as the Second Alarm County District for the City, and a closer fire department shall be notified for first response.

Section 4. In consideration of such service, the County will pay to the City the sum of Sixty-Eight Thousand Two Hundred and Fifty (68,250.00) dollars for calls outside the corporate limits of any city in the County subject to annual funding approval by the Rockwall County Commissioner's Court during the regular budget process. Said payment shall be made on an annual basis upon written request from the City to the Rockwall County Auditor and will be payable within thirty (30) days after receipt of such, by the Auditor's Office.

Section 5. County hereby gives and grants to the City full and complete authority to operate its fire fighting vehicles on and over public roads, highways, and other thoroughfares of the County and other public places.

Section 6. City shall, at its own cost and expense, purchase and keep in force at all times insurance for the minimum amount of liability under the Texas Tort Claims Act. City agrees to provide copies of such policy or policies of insurance and/or other evidence satisfactory to the County Auditor of Rockwall County, Texas.

Section 7. The Fire Chief shall be the sole judge of the amount and type of equipment and number of personnel dispatched to calls made pursuant to this Agreement. Said Fire Chief, or his designee, shall be in charge of the firefighting techniques used in response to any calls.

For each call made pursuant to this Agreement, the Fire Chief shall prepare a report showing the date, location, and description of the call. True copies of such reports shall be on file with the Fire Chief and available for review by the County Auditor or Commissioner's Court of the County.

Section 8. City hereby agrees to render services to other Fire Districts within the County if backup emergency assistance is requested. The City's fire fighters shall report to the Requesting Party's Officer In Control at the location to which they have been assigned, and shall be under the command of the Requesting Party's Fire Chief and will be released when their services are no longer required.

Calls for assistance may be aborted only by (1) another Fire Department at the scene; (2) an officer of the Sheriff's Department at the scene; (3) a State Department of Public Safety Officer at the scene; (4) the responding department's Fire Chief or designee; (5) or Dispatch.

Section 9. While any fire fighter, regularly employed as such by the City, is in the service of the Requesting Party, such fire fighter shall be a fire fighter of the Requesting Party and be under the command of the Requesting Party's Chief, with all the powers of a regular fire fighter of the Requesting Party, as fully as if such fire fighter were within the territorial limits of the governmental entity where such fire fighter is regularly employed. A fire fighter's qualifications for employment by the governmental entity by which he or she is regularly employed shall constitute such fire fighter's qualifications for such position within the territorial limits of the Requesting Party, and no other oath, bond or compensation need be made.

Section 10. Each party to this Agreement expressly waives the right to recovery from the other party for reimbursement of wages, disability, pension payments, damages to equipment and clothing, medical expenses, travel, food and lodging expenses.

Section 11. Any fire fighter or other person who is assigned, designated or ordered by the Fire Chief of the party which regularly employs such, to perform duties pursuant to this Agreement, shall receive the same wages, salary, pension, compensation and all other rights for such service, including injury benefits, death benefits, and worker's compensation benefits, as if the service had been rendered within the territorial limits of the party where such fire fighter is regularly employed. Moreover, all wage and disability payments, including worker's compensation benefits, pension payments, damage to equipment and clothing, medical expenses, and expenses of travel, food and lodging, shall be paid by the party which regularly employs such person in the same manner as if the service had been rendered within the territorial limits of the party where such fire fighter is regularly employed.

Section 12. In the event that any person performing fire fighting services pursuant to this Agreement shall be cited as a party to any civil lawsuit, state or federal, arising out of the performance of those services, such fire fighter shall be entitled to the same benefits that he or she would be entitled to receive if such civil action had arisen out of the performance of such person's

duties as a member of the department where and in the jurisdiction of the party where such person is regularly employed.

Section 13. Each party to this Agreement expressly waives all claims against the other party for compensation arising from loss, damage, personal injury or death occurring as a consequence of the performance of this Agreement.

Section 14. Third party claims against parties hereto shall be governed by the Texas Tort Claims Act or other appropriate statutes, charters and ordinances of the parties.

Section 15. It is expressly understood and agreed that by executing this Agreement, neither party waives, nor shall be deemed hereby to waive, any immunity or defense that would otherwise be available to it, against claims arising in the exercise of governmental powers and functions.

Section 16. This Agreement shall be binding upon and inure to the benefit of the parties hereto and their respective heirs, executors, administrators, legal representatives, successors and assigns.

Section 17. This Agreement shall be governed by and constructed in accordance with the laws of the State of Texas. Venue shall be in Rockwall County, Texas.

Section 18. If any one or more of the provisions contained in this Agreement shall, for any reason, be held to be invalid, illegal or unenforceable in any respect, such invalidity or illegality shall be construed as if such invalid, illegal or unenforceable provision had never been contained herein, and shall not render the entire Agreement invalid.

Section 19. This Agreement constitutes the entire Agreement and understanding between parties. Any modification, change or amendment to this Agreement shall be in writing and approved by both parties.

Section 20. This Agreement shall become effective as of October 1, 2019 and shall continue through September 30, 2020.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed under authority of appropriate action taken by their respective governing bodies.

COUNTY OF ROCKWALL, TEXAS



David Sweet
County Judge

CITY OF ROCKWALL, TEXAS

Jim Pruitt, Mayor

Fire Chief

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Downtown Rockwall Association

Re: Shop Small Saturday – Request to use public street/parking area 200 block of North San Jacinto

Representative: Tammy Sharp, Downtown Rockwall Association President

The Downtown Rockwall Association is asking permission to utilize a portion of San Jacinto for a parking valet attendant stand during our Shop Small Saturday event that will be held on Saturday, November 30th. Shop Small Saturday is a nationwide shopping event that is held the Saturday after Thanksgiving.

The Downtown merchants will be opening at 8:00 a.m., therefore valet parking will be available from 8:00 – 5:00. Cars will be parked in the following areas:

- T&T Color Supply parking lot: 202 North Fannin Street
- Certa Pro Painters, 204 North Fannin Street
- Legacy Village, 102 North Fannin Street

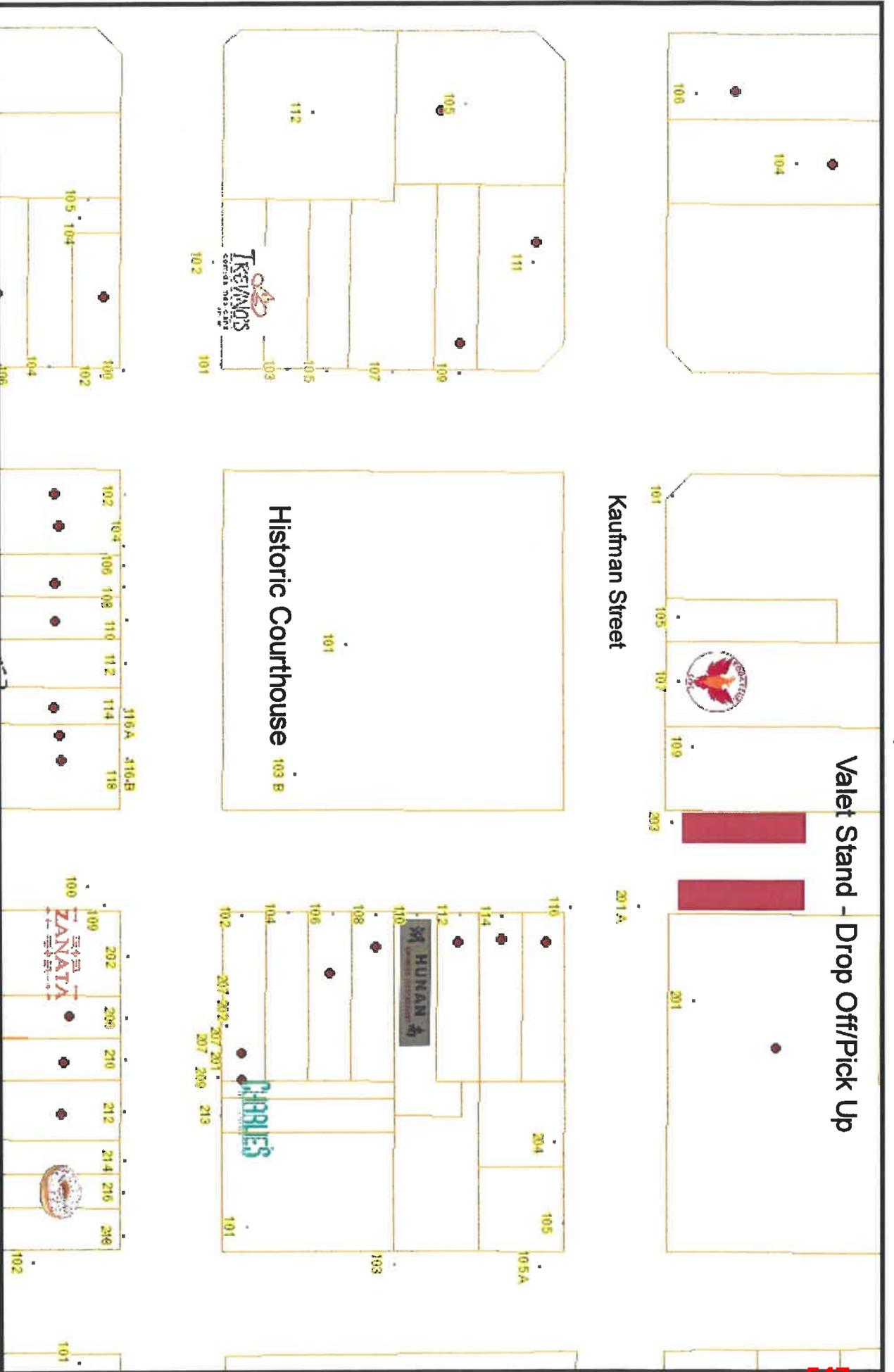
The charge will be \$7.00 per car and will not be subsidized by the Downtown Association. An estimate of up to 60 cars will be able to be parked at once.

Thank you for your continued partnership with Downtown Rockwall!

Respectfully

Tammy Sharp
President
Downtown Rockwall Association

Web Map



Thank you for using the
City of Rockwall
GIS INTERACTIVE MAPPING SITE
The data represented on this map was obtained with the best methods available. Data is supplied from various sources and accuracy may be out of the City of Rockwall's control. The verification of accuracy and / or content lies entirely with the end user. The City of Rockwall does not guarantee the accuracy of contained information. All information is provided 'As Is' with no warranty being made, either expressed or implied.

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Cole, Kristy

Subject: FW: Sideways Beer Sales Request

-----Original Message-----

From: Sideways

Sent: Monday, September 23, 2019 3:13 PM

To: Boyd, Joey <JBoyd@rockwall.com>

Subject: Sideways Beer Sales Request

Joey,

Great talking to you today. I'm officially requesting to be on the next council agenda to sale Band Of Brothers Beer At our Veteran event Nov 9th. We will sale a cup and 2 tickets which gets you 2 beers. The tickets and cup will be taken to a booth where the cup will be filled with Band Of Brothers beer from Woodcreek Brew Company. The money will be 100% donated to a Vet Charity. We will give each person a stamp for 2 tickets. After 2 stamps and 4 beers they will be cut off. Not to mention, but I will be purchasing liquor beer liability insurance for that day to protect all of us. 4 beers that's all! But this money is essential to raising awareness and support for our Vets. Please let me know the next steps that I need to take to move forward. I will be at the council meeting if I need to. Thank you so much!

Josh Deaton

CO-Owner Sideways

972-670-3970

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City of Rockwall
The New Horizon

MEMORANDUM

TO: Mayor and Council Members
FROM: Hotel Occupancy Tax Sub-committee Members
Mary Smith, Assistant City Manager
DATE: October 2, 2019
SUBJECT: Sideways BBQ – Salute to Veterans Event

The City received an application for hotel occupancy taxes for a Veteran Days event to be coordinated by Josh Deaton – the owner of Sideways BBQ. The event will be held on Saturday November 9th at the Harbor and will include food and entertainment. The total request was for \$33,300.

Prior to Council action on the above, the Hotel Occupancy Tax budget is as follows:

Fund Balance carried forward	\$ 363,500
Budgeted Revenues	1,009,000
Previously Allocated Funding	<u>(651,370)</u>
Projected Fund Balance	\$ 721,130

Subcommittee members Kevin Fowler, and Bennie Daniels met to discuss the request and are recommending a \$7,500 award from hotel occupancy tax and the waiver of rental fees at the Harbor for the event. Council is asked to consider approving the funding as recommended by the subcommittee.



City of Rockwall
The New Horizon

Hotel Occupancy Tax

Program Year 2019

Application

MUST BE TYPED or PRINTED

DELIVER TO:

City of Rockwall Finance Office
Attn: Lea Ann Ewing
385 S. Goliad St., Rockwall, TX 75087
972-771-7700 lewing@rockwall.com

Organization Name: Sideways BBQ

Name of Event: Sideways Solute to Vets
Date(s) of Event: Saturday, November 9, 2019
Funding Request \$: \$33,000
Website Address:
Mailing Address: 2067 Summer Lee Drive Suite 105 , Rockwall, TX 75032
Physical Address: 2067 Summer Lee Drive Suite 105 , Rockwall, TX 75032
Telephone: 972-670-3970 Work Cell: 469-769-1551

Primary Contact Name: Josh Deaton
(Project Director)

Mailing Address: 5446 Ranger Drive, Rockwall, Texas 75032
Email Address: sideways@sidewaysbbq.com
Telephone: 972-670-3970 Work Cell: 469-769-1551

Secondary Contact Name: Mark Kipphut
(President/ Board Chairman)
Mailing Address:

Email Address:
Telephone: 520-668-2216 Fax:

- ▶ COMPLETE AN APPLICATION FOR EACH EVENT/PROGRAM/EXHIBIT REQUESTING FUNDS
- ▶ INCOMPLETE APPLICATIONS WILL NOT BE FORWARDED TO THE COUNCIL SUBCOMMITTEE

1. Mark an "X" next to the category or categories that your organization is requesting funds:

Advertising/Tourism Requested funding amount \$
 Conducting solicitation or promotional programs that encourage tourists and delegates to come to the City of Rockwall.

Arts Requested funding amount \$
 Providing encouragement, promotion, improvement and application of the arts as it relates to the presentation, performance execution or exhibition of the major art forms in the City of Rockwall.

Historical Requested funding amount \$
 Providing historical restoration, preservation, programs and encouragement to visit preserved historic sites or museums located in the City of Rockwall.

2. Describe the program or event for the upcoming fiscal year (Oct. 1, 2019 - Sept. 30, 2020) that the requested Hotel funding. What is your event and why are you having it?

This event is being offered to raise money for veteran's charities purposes. The event will support veterans and be an opportunity to show support and celebrate together with our Rockwall area veterans.

3. How does the event/program meet the definition of the categories marked in #1 (promotion of tourism and the hotel industry in Rockwall)?

The event will draw people from around the area in support of veterans charitable causes. We expect around 500 visitors to come and celebrate with us at The Harbor.

4. Is the event/program that the organization is requesting Hotel Tax funds held in/on City-owned property? If no, skip Question #5.

Yes Name location: The Harbor

5. Will your organization provide special event insurance coverage for the event/program if held on City property?

NO Name of Insurance Company:

6. Provide 3 years attendance history for the above listed programs, activities, exhibits or event in #9 above.

This is the 1st year of this event.

Event	Year	Event Duration (in Days)	Audience Size	# of Attendees in hotel rooms

7. What specific market will you target with the event/program's marketing plan?
 We target families between the ages of 35-70 but anyone is welcome. Program is advertised on social media and in local print/digital media outlets.
 Attach up to 3 examples and evidence of marketing area and readership (Label Exhibit C).
 We will market via Local News papers, and online news outlets as well as through business connections.

8. The City of Rockwall must require segregated accounting of its Hotel funds. Organizations must maintain and account for revenue provided from the tax authorized by section 351.101(a) within one of the two options listed below.

- a) Separate checking account without combining with any other revenues or maintained in any other bank account or
- b) Maintain a line item accounting, whereby the Hotel revenues may not be combined with any other revenues or expenditures. The funds may be maintained in the same bank account, provided they are reported as a separate line item in the organization's budget. Interest earned on the Hotel revenues must be used to support the event/program as well.

Will the organization be able to segregate the accounting process in either a) or b) above? Yes (B)

9. Provide all of the following documentation with this application and label each as outlined below.

- Exhibit A Proposed budget for each event/program using attached form
- Exhibit B Letter of determination certifying federal tax exempt 501(c)(3) status
- Exhibit C Examples and evidence of marketing area and readership (limit 3)
- Exhibit D List members of the governing body including name, position, mailing address and phone number

We certify, to the best of our ability, that the information in this application, including all exhibits and supporting documentation is true and correct to the best of our knowledge. It is understood and agreed that any funds awarded as a result of this application will be used for the purpose set for herein and the program guidelines.

President/Board Chairman:

Print Name:

Signature

Date

Event/Program Director:

Print Name: Josh Deaton

Signature

Date: 9/6/19

Both signatures are required for application to be considered complete.

EXHIBIT A

**Hotel Occupancy Tax Funding Request
Event/Program Budget - Program Year 2020**

Financial information (round to the nearest dollar). Include a completed copy of this budget with funding request.

Organization Name:	Sideways BBQ
Event/Program Name:	Sideways Salute to Vets
Requested Funding:	\$ 33,000

Expenses (for this project only)	Funding Request	Cash from all other sources	Total a + b
	a	b	= c
1. Personnel			
Administrative			
Artistic			
Technical			
Other personnel			
2. Fees for outside professional service			
Administrative			
Artistic			
Technical			
3. Space Rental			
4. Equipment Rental			
5. Travel/Transportation			
6. Promotion/Printing			
7. Costumes/Royalties			
8. Other (supplies, postage etc.)			
9. Sub -Totals			
10. Total Expenses			

Revenues (for this project only)			
1. Total Amount of funding request	33,000		
2. Admissions (ticket and concessions)			
3. Donations			
4. Organizational funds budgeted			
5. Grants (State)			
6. Other (list):			
7. Other (list):			
8. Other (list):			
9. Other (list):			
10. Total income and contributions			
11. Total In-Kind			
12. Total Revenues			

Financial Information (for this project only)				
Fiscal Year (Oct 1 st - Sept 30 th)	2016	2017	2018	2019
Total Revenues				
Total Expenses				
Total Prior Year Hotel funds awarded				

ACTION	Costs	Cost+Tax
LOGISTICS		
Golf Carts	1000	1082.5
Musicians	7800	8443.5
Sound System Bobby Clause 214-244-9747	2000	2165
Lighting	1000	1082.5
Music permit/DJ for non live music		
Power/Extension Cords	300	324.75
Permits	359	388.6175
Tents		0
Table/Chairs 1.50/chair 8.00/table	500	541.25
TABC Requirements (WoodCreek)	259	280.3675
Insurance		0
Liability (Special Event Insurance)		0
Weather		0
Land Rental	1515	1639.9875
Police/Security	3000	3247.5
EMT	600	649.5
Porta Johns and any support materials	2720	2944.4
Ropes/Cones for sections	0	0
Food and Accessories	3000	3247.5
Setup Crew	0	0
Tear Down Crew	0	0
Determine Volunteer Reqt & Positions	0	0
Clean up Garbage/bags/cans etc	100	108.25
Parking Areas Approved and Secured		0
Water (500) Bottles	300	324.75
		0
		0
PROMOTIONS/Advertising		
Advertising		0
Newspaper	500	541.25
Social Media	1500	1623.75
		0
FUND RAISING		
Items to Raffle		0
2 Smokers 1 Drum Smoker & 1 Trailer Smoker	3525	3815.8125
Solicit other items to raffle		0
Procure raffle tickets	500	541.25
How much will we sell the raffle tickets for each		0
		0
		0
Misc Items		
Kids Activities?		0
		0
	30478	32992.435
		0
Action Items		
Request 1 Cone Pod which is 50 Cones		
Waiting on Insurance Quotes		

CERTIFICATE OF INTERESTED PARTIES

FORM 1295

1 of 1

Complete Nos. 1 - 4 and 6 if there are interested parties.
 Complete Nos. 1, 2, 3, 5, and 6 if there are no interested parties.

**OFFICE USE ONLY
 CERTIFICATION OF FILING**

1 Name of business entity filing form, and the city, state and country of the business entity's place of business.

Sideways BBQ
 Rockwall, TX United States

Certificate Number:
 2019-537620

Date Filed:
 09/09/2019

2 Name of governmental entity or state agency that is a party to the contract for which the form is being filed.

Sideways BBQ

Date Acknowledged:

3 Provide the identification number used by the governmental entity or state agency to track or identify the contract, and provide a description of the services, goods, or other property to be provided under the contract.

Hot2020
 Festival to raise money for Vet charities and celebrate our Vets

4	Name of Interested Party	City, State, Country (place of business)	Nature of interest (check applicable)	
			Controlling	Intermediary

5 Check only if there is NO Interested Party.

6 UNSWORN DECLARATION

My name is _____, and my date of birth is _____.

My address is _____, _____, _____, _____, _____.
(street) (city) (state) (zip code) (country)

I declare under penalty of perjury that the foregoing is true and correct.

Executed in _____ County, State of _____, on the _____ day of _____, 20____.
(month) (year)

 Signature of authorized agent of contracting business entity
 (Declarant)

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September 4, 2019

City of Rockwall
Rick Crowley
385 S. Goliad
Rockwall, Texas 75087

Texas Property Code Sec. 6.03 (a) The appraisal district is governed by a board of directors. Five directors are appointed by the taxing units that participate in the district as provided by this section... To be eligible to serve on the board of directors, an individual must be a resident of the district and must have resided in the district for at least two years immediately preceding the date the individual takes office.

Texas Property Tax Code 6.03 (d) The voting entitlement of a taxing unit that is entitled to vote for directors is determined by dividing the total dollar amount of property taxes imposed in the district by the taxing unit for the preceding tax year by the sum of the total dollar amount of property taxes imposed in the district for that year by each taxing unit that is entitled to vote, by multiplying the quotient by 1,000, and by rounding the product to the nearest whole number.

Texas Property Tax Code 6.03 (g) Each taxing unit... that is entitled to vote may nominate by resolution adopted by its governing body one candidate for each position to be filled on the board of directors. The presiding officer of the governing body of the unit shall submit the names of the unit's nominees to the chief appraiser before October 15.

Texas Property Tax Code 6.03 (j) Before October 30, the chief appraiser shall prepare a ballot, listing the candidates whose names were timely submitted under Subsection (g)... alphabetically according to the first letter in each candidate's surname, and shall deliver a copy of the ballot to the presiding officer of the governing body of each taxing unit that is entitled to vote.

Attached is a list reflecting each taxing unit's number of votes.

Current appointed members are:
Russell Summers
Mark Moeller
John Hohenshelt
Lorne Liechty
Lou Johnson

2020-2021 Rockwall Central Appraisal District Board of Directors Election

Entity	Number of Votes
City of Dallas	0
City of Fate	70
City of Garland	0
City of Heath	130
City of McLendon Chisolm	15
City of Rockwall	450
City of Rowlett	110
City of Royse City	110
City of Wylie	10
Rockwall ISD	2720
Royse City ISD	645
Rockwall County	755

**CITY OF ROCKWALL
RESOLUTION NO. 19-21**

**A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF
ROCKWALL, TEXAS, PROVIDING FOR SUBMISSION OF
NAMES FOR BOARD MEMBER NOMINATIONS TO THE
ROCKWALL CENTRAL APPRAISAL DISTRICT (CAD)
BOARD OF DIRECTORS; PROVIDING FOR AN
EFFECTIVE DATE.**

WHEREAS, Texas Property Code Sec. 6.03 (a) provides that a board of directors governs the central appraisal district (CAD); and

WHEREAS, state law requires board of director appointments to the Rockwall CAD Board every odd numbered year to take office in even numbered years; and

WHEREAS, eligible taxing units participate in the appointment process by nominating up to five candidates for service consideration and submitting those names to the chief appraiser by October 15; and

WHEREAS, the chief appraiser will then prepare a ballot of all nominees and deliver it to the presiding officer of the governing body of each of the taxing units for voting by October 30; and

WHEREAS, a taxing unit's entitlement is determined by dividing the total dollar amount of property taxes imposed in the district by the taxing unit for the preceding tax year by the sum of the total dollar amount of property taxes imposed in the district for that year by each taxing unit entitled to vote, by multiplying the quotient by 1,000 and rounded to the nearest whole number; and

WHEREAS, according to the chart contained within the letter dated September 4, 2019 and mailed to the City of Rockwall by the appraisal district, the City of Rockwall will have 450 votes.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF ROCKWALL, TEXAS, THAT:

Section 1. the Rockwall City Council, as a result of the Executive Session held at its regular city council meeting on the 7th day of October, 2019 hereby nominates and instructs the City Manager to send for submission to the CAD the following individuals:

1. John Hohenshelt
2. Patrick Trowbridge

Section 2. this Resolution shall become effective from and after its adoption and it is so resolved.

PASSED AND APPROVED BY THE CITY COUNCIL OF THE CITY OF ROCKWALL, TEXAS, THIS THE 7th DAY OF October, 2019.

ATTEST:

Jim Pruitt, Mayor

Kristy Cole, City Secretary

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CITY OF ROCKWALL
CITY COUNCIL MEMORANDUM

PLANNING AND ZONING DEPARTMENT
385 S. GOLIAD STREET • ROCKWALL, TX 75087
PHONE: (972) 771-7745 • EMAIL: PLANNING@ROCKWALL.COM

TO: Mayor and City Council
CC: Rick Crowley, *City Manager*
Mary Smith, *Assistant City Manager*
Joey Boyd, *Assistant City Manager*
FROM: Ryan Miller; Director of Planning and Zoning
DATE: October 7, 2019
SUBJECT: SP2019-031; *Appeal for a Variance for 259 Ranch Trail*

On August 16, 2019, the applicant Ryan Moorman of R. D. Moorman Inc. submitted an application requesting approval of a site plan converting an existing single-family home into an office building and proposing to construct a metal office/warehouse building on the subject property at 259 Ranch Trail. In conjunction with the site plan request, the applicant requested an exception to the building articulation requirements for the proposed metal office/warehouse building. Specifically, Subsection 4.01, *General Commercial District Standards*, of Article V, *District Development Standards*, of the Unified Development Code (UDC), states that the maximum wall length shall not exceed more than three (3) times the walls' height without a recess or projection of an architectural element. In this case, the maximum wall length permitted without a projection or off-set on the proposed metal/warehouse building would be ~48-feet. Based on the proposed building elevations submitted by the applicant the north and south façades show a wall length of 110-feet without a projection or off-set. According to Section 9.01, *Exceptions to the General Standards*, of Article XI, *Zoning Related Applications*, of the UDC, the Planning and Zoning Commission has the ability to grant an exception to the building articulation standards where [1] a unique or extraordinary condition exists or [2] where strict adherence to the technical requirements of the UDC would create an undue hardship. In cases where an exception is being requested the applicant is required to provide a letter to staff outlining [1] the reason for the exception being requested, [2] the unique or extraordinary condition that exists, and [3] the proposed compensatory measures (e.g. *increased landscaping, masonry building materials in percentages equal to or greater than the surrounding properties, etc.*). The applicant provided staff with a letter outlining the proposed compensatory measures (i.e. [1] *the provision of a wainscot on the front of the building and [2] 41.25% landscape in lieu of the ten [10%] required*); however, did not provide [1] the reason for the exception being requested or [2] the unique or extraordinary circumstance that exists. On September 10, 2019, the Planning and Zoning Commission reviewed the site plan, building elevations, and the applicant's letter and approved a motion to approve the site plan by a vote of 4-2, with Commissioners Womble and Welch dissenting and Commissioner Moeller absent; however, due to the lack of a supermajority vote (i.e. *three-fourths of the members present*) the exception to the building articulation standards was denied.

In response to this denial, the applicant has submitted a request to appeal the decision to the City Council. According to Section 9.01, *Exceptions to the General Standards*, of Article XI, *Zoning Related Applications*, of the UDC, "(i)f the Planning and Zoning commission denies a request for an exception, the applicant may appeal the decision to the City Council by filing a written appeal to the Director of Planning and Zoning or his/her designee. Approval of any exception ... shall require a supermajority vote (i.e. *a three-fourths vote of those members present*), with a minimum of four (4) votes in the affirmative." Attached to this memorandum is the applicant's appeal letter and the packet provided to the Planning and Zoning Commission. Approval of any appeal relating to an exception is a discretionary decision for the City Council.



R.D. MOORMAN, INC.

September 30, 2019

Mr. Korey Brooks
City of Rockwall, Senior Planner
Planning and Zoning Department Coordinator
385 S. Goliad
Rockwall, TX 75087

Re: 259 Ranch Trail, Rockwall, TX 75032

Dear Mr. Brooks:

We applied to Planning and Zoning for a site plan approval and a variance to the articulation standard. The site plan was approved but the variance was denied. We are appealing the denial based on the below statements.

Justification for appeal:

M. 9 “The building elevations do not meet the horizontal articulation requirements. Facades shall have a maximum wall length of three (3) time the wall height or an exception to the articulation standards is required to be approved by the Planning and Zoning Commission. According to Subsection 9.01 Exceptions to the General Standards, of Article XI, Zoning related applications of the Unified Development Code, of the Unified Development Code (UDC), **in cases where an exception(s) are being requested, the applicant shall provide compensatory measures that directly offset the requested exception.** These may include – but not limited to a masonry wainscot on all four (4) sides of the building, increase landscaping (i.e. additional canopy trees, accent trees, landscape percentage, etc.).”

We are currently providing wainscot on the front of the proposed building and providing 41.25% landscape, which only required (10%).

**259 Ranch Trail,
Rockwall, TX 75032
Office (972) 722-2408; Fax (972) 722-0035; Email: admin@rdmoormaninc.com**

Furthermore, Exhibit A, aerial view shows all the existing buildings do not meet the articulation standard.

In addition to providing the two compensatory measures, our argument is per our exhibit, we are requesting to be consistent with the other businesses on the street, all of which do not meet the articulation standards.

If the City Council does not approve our variance, we would be the only building on the street that meets the articulation standard.

Regards,

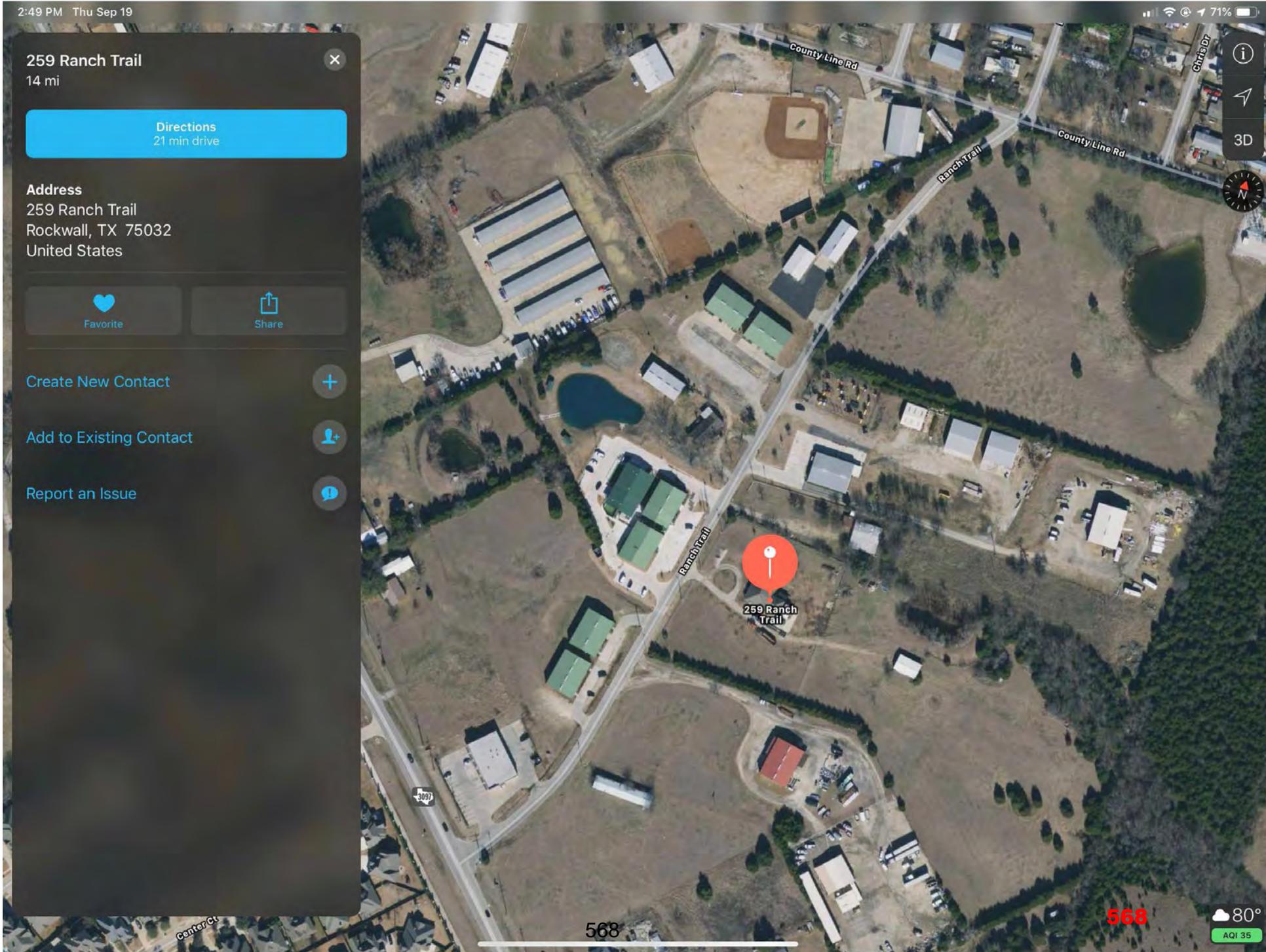
Ryan Moorman

Ryan Moorman

Attached Ex. A

**259 Ranch Trail,
Rockwall, TX 75032
Office (972) 722-2408; Fax (972) 722-0035; Email: admin@rdmoormaninc.com**

Exhibit A





CITY OF ROCKWALL

PLANNING AND ZONING COMMISSION CASE MEMO

PLANNING AND ZONING DEPARTMENT

385 S. GOLIAD STREET • ROCKWALL, TX 75087

PHONE: (972) 771-7745 • EMAIL: PLANNING@ROCKWALL.COM

TO: Planning and Zoning Commission
DATE: September 10, 2019
APPLICANT: Ryan Moorman; *R. D. Moorman, Inc.*
CASE NUMBER: SP2019-031; *Site Plan for 259 Ranch Trail*

SUMMARY

Discuss and consider a request by Ryan Moorman of R. D. Moorman, Inc. for the approval of a site plan for an office building on a 1.244-acre parcel of land identified as Lot 22, Rainbow Acres Addition, City of Rockwall, Rockwall County, Texas, zoned Commercial (C) District, addressed as 259 Ranch Trail, and take any action necessary.

BACKGROUND

The subject property was annexed in 2004 [*Ordinance No. 04-34*] and zoned Commercial (C) District. In 2017, the City Council approved a replat [*Case No. P2017-050*] to subdivide the subject property (*i.e. Lots 22 and 23*) from the adjacent property in order for it to be developed for the construction of a mini-warehouse facility on Lot 23. Currently situated on the subject property is a single-family home that has been converted into an office building. In addition, the subject property has a detached garage and a metal accessory building located behind the primary structure.

PURPOSE

The applicant is requesting to construct a 4,950 SF metal office building in conjunction with and adjacent to the existing office building. The subject property is a 1.244-acre parcel of land that is zoned Commercial (C) District. According to the applicant, the purpose of the building is to provide additional office space and storage.

ADJACENT LAND USES AND ACCESS

The subject property is located at 259 Ranch Trail. The land uses adjacent to the subject property are as follows:

North: Directly north of the subject property are several commercial structures. Beyond this is vacant tract of land adjacent to County Line Road. County Line Road is identified as a *Minor Collector* on the City's Master Thoroughfare Plan. These areas are all zoned Commercial (C) District.

South: Directly south of the subject property several are commercial structures. Beyond this is vacant tract of land that is adjacent to FM-3097. FM-3097 is identified as a *M4D (Major Collector, four [4] lane, divided roadway)* on the City's Master Thoroughfare Plan. These areas are zoned Commercial (C) District.

East: Directly east of the subject property is a 7.489-acre parcel of land where a mini-warehouse facility has been proposed to be constructed. This is followed by a 131.39-acre tract of vacant land (*i.e. Tract 43-01 of the W. W. Ford Survey, Abstract No. 80 – commonly referred to as the Wallace Tract*). These areas are zoned Commercial (C) and Agricultural (AG)

District. Beyond this are two (2) single-family residential subdivisions (*i.e. the Oaks of Buffalo Way and Willowcrest Estates Subdivisions*), which are zoned Single-Family Estates 1.5 (SFE-1.5) District.

West: Directly west of the subject property is Ranch Trail, which is identified as a *Minor Collector* on the City’s Master Thoroughfare Plan. Beyond this are several commercial structures, that are zoned Commercial (C) District.

DENSITY AND DIMENSIONAL REQUIREMENTS

According to Section 1.1, *Land Use and Buildings*, of Article IV, *Permissible Uses*, of the Unified Development Code (UDC), an office building is permitted by-right in a Commercial (C) District and no additional approvals are necessary with regard to the proposed land use. With the exception of the variances being requested the submitted site plan, landscape plan, treescape plan, and building elevations generally conform to the technical requirements contained within the UDC for a property located within a Commercial (C) District. A summary of the density and dimensional requirements for the subject property are as follows:

<i>Ordinance Provisions</i>	<i>Zoning District Standards</i>	<i>Conformance to the Standards</i>
<i>Minimum Lot Area</i>	<i>10,000 SF</i>	<i>X=54,210 SF; In Conformance</i>
<i>Minimum Lot Frontage</i>	<i>60-Feet</i>	<i>X=200-Feet-In Conformance</i>
<i>Minimum Lot Depth</i>	<i>100-Feet</i>	<i>X=227-336-Feet; In Conformance</i>
<i>Minimum Front Yard Setback</i>	<i>15-Feet</i>	<i>X=15-Feet; In Conformance</i>
<i>Minimum Rear Yard Setback</i>	<i>10-Feet</i>	<i>X=10-Feet; In Conformance</i>
<i>Minimum Side Yard Setback</i>	<i>10-Feet</i>	<i>X=10-Feet; In Conformance</i>
<i>Maximum Building Height</i>	<i>60-Feet</i>	<i>X=16-Feet; In Conformance</i>
<i>Max Building/Lot Coverage</i>	<i>60%</i>	<i>X=14%; In Conformance</i>
<i>Minimum Number of Parking Spaces</i>	<i>17 Parking Spaces</i>	<i>X=26 Spaces; In Conformance</i>
<i>Minimum Landscaping Percentage</i>	<i>15%</i>	<i>X=41%; In Conformance</i>
<i>Maximum Impervious Coverage</i>	<i>85-90%</i>	<i>X=41%; In Conformance</i>

The proposed office building will be approximately 4,950 SF, 16-feet in height, and be situated adjacent to the north façade of the existing office building. The structure will be constructed of metal and utilize a four (4) foot brick wainscot, storefront glass, and a roll-up door on the front façade. According to the applicant, the existing metal accessory building will be removed. Staff should note that most of the surrounding buildings are metal and this office building will be located directly in front of a proposed mini-warehouse facility that will consist of 575 units within 19 metal buildings.

TREESCAPE PLAN

The submitted landscape plan identifies that there are no protected trees being removed from the site.

CONFORMANCE WITH THE CITY’S CODES

According to Subsection 4.05, *Commercial (C) District*, of Section 4, *Commercial Districts*, Article V, *District Development Standards*, of the Unified Development Code (UDC), the Commercial (C) District is a district “...intended to provide commercial land uses such as retail, large shopping centers, and restaurants. Commercial (C) Districts are generally situated in close proximity to an arterial or major collector that is capable of carrying the traffic generated by the land uses in the district...” In addition, these areas “...may require increased water, fire protection, and wastewater and drainage capacity. Since the Commercial (C) District is general in nature, development standards are less stringent as lower intensity districts such as Residential-Office (RO), Neighborhood Services (NS), and General Retail (GR) Districts...” In this case, the applicant’s request appears to conform to the requirements of the Unified Development Code (UDC). Specifically, the subject property is adjacent to Ranch Trail

Road -- identified as a Minor Collector on the City's Master Thoroughfare Plan --, and the proposed land use (i.e. office) is not typically a high-volume water/wastewater user. With regard to the land use, an office building is permitted by-right in a Commercial (C) District.

Subsection 5.2, *Screening of Off-Street Loading Docks*, of Section 5, *Mandatory Provisions*, of Article VIII, *Landscape Standards*, of the Unified Development Code (UDC), off-street loading docks in commercial zoning classification must be screened from public streets and any residential district that abuts or is directly across a public street or alley from the lot. In this case, the proposed office building incorporates one (1) roll-up door (i.e. loading dock) that will face Ranch Trail. The applicant is proposing to screen the loading dock by providing additional landscaping directly in front of the roll-up door to limit visibility from Ranch Trail. Additionally, the landscape buffer adjacent to Ranch Trail will also provide screening from the street. Staff should note, although screening is being provided, it is possible that the roll-up door will still have limited visibility from Ranch Trail. In addition, this seems to be similar to other buildings that are located along Ranch Trail. The Planning and Zoning Commission is tasked with reviewing the proposed screening and determining additional screening is necessary. Approval of this request is a discretionary decision for the Planning and Zoning Commission.

EXCEPTIONS REQUESTED BY THE APPLICANT

Based on the information submitted by the applicant, staff has identified the following exceptions to the requirements of the Unified Development Code (UDC):

(1) Building Articulation

- (a) *Maximum Wall Length*. Subsection 4.01, *General Commercial District Standards*, of Section 4, *Commercial District*, of Article V, *District Development Standards*, of the Unified Development Code (UDC), stipulates that the maximum wall length shall not exceed more than three (3) times the wall's height without a recess or projection of an architectural element. In this case the maximum wall length is approximately 48-feet; however, the length of the north and south façade of the proposed metal building will be 110-feet and will not utilize a projection, recess, or architectural element. Since this exceeds the maximum wall length, an exception to the building articulation standards is required to be approved by the Planning and Zoning Commission pending a recommendation from the Architectural Review Board (ARB). Section 9, *Exceptions and Variances*, of Article XI, *Zoning Related Applications*, of the Unified Development Code (UDC), gives the Planning and Zoning Commission the ability to grant an exception to the building articulation standards where unique or extraordinary conditions exists or where strict adherence to the technical requirements of the Unified Development Code (UDC) would create an undue hardship. In cases where an exception is being requested the applicant is required to provide a letter to staff outlining [1] the reason for the exception being requested, [2] the unique or extraordinary conditions that exists, and [3] the proposed compensatory measures (e.g. *increased landscaping, masonry building materials in percentages equal to or greater than the surrounding properties, etc.*). The applicant has provided staff with a letter outlining the proposed compensatory measures; however, did not provide [1] the reason for the exception being requested or [2] the unique or extraordinary circumstance that exists. In this case, the Planning and Zoning Commission is tasked with reviewing the proposed compensatory measures and determining if additional compensatory measures are necessary to offset the exception being requested.

This exception is a discretionary decision for the Planning and Zoning Commission and requires a super-majority vote with a minimum of four (4) votes in the affirmative for approval. In the event that the exception is denied, the applicant has the ability to appeal the Planning and Zoning Commission's decision to the City Council by filing a written request with the Planning and Zoning Department.

CONFORMANCE WITH OUR HOMETOWN VISION 2040 COMPREHENSIVE PLAN

The Future Land Use Plan adopted with the OurHometown Vision 2040 Comprehensive Plan indicates that the subject property is located in the Southwest Residential District and is situated within an area that is identified as a *Transitional Area*. According to the district, the *Transitional Area* is defined as, "...currently transitioning from interim land uses and building types to more permanent structures with conforming land uses. These areas should be given special consideration with regard to requests that further the establishment of uses and structures that will improve the property values of the adjacent properties..." In this case, this use and the proposed metal buildings are similar to the existing buildings in the area, and the proposed improvements are similar to other buildings that have been approved along Ranch Trail since this area was annexed by the City in 2004.

The Comprehensive Plan aims to encourage quality commercial development throughout the city by ensuring that industrial/office uses are adequately buffered and/or screening from residential land uses. Roadways and open space serve as a natural separation between non-residential areas and residential subdivisions. Landscape buffers utilizing a combination of berms and mature landscaping should be utilized for non-residential properties that area adjacent to residential or agricultural land. In this case, the subject property is largely surrounded by commercial/industrial uses. The applicant is also providing a landscape buffer adjacent to Ranch Trail. Due to these reasons, this request seems to generally conform to the policies of the Comprehensive Plan regarding screening of non-residential properties.

ARCHITECTURAL REVIEW BOARD (ARB):

On August 28, 2019, the Architectural Review Board (ARB) reviewed the proposed building elevations and passed a motion to recommend approval of the site plan by a vote of 3-1 with Board Member Neill dissenting and Board Members Meyrat, Wacker, and Johnson absent.

CONDITIONS OF APPROVAL

If the Planning and Zoning Commission chooses to recommend approval of the applicant's site plan then staff would propose the following conditions of approval:

- (1) The existing metal accessory building shall be removed prior to issuance of a Certificate of Occupancy (CO). This requirement is due to the change of use on the property and the non-conforming nature of the structure.
- (2) Any construction resulting from the approval of this site plan shall conform to the requirements set forth by the Unified Development Code (UDC), the International Building Code (IBC), the Rockwall Municipal Code of Ordinances, city adopted engineering and fire codes and with all other applicable regulatory requirements administered and/or enforced by the state and federal government.

0 25 50 100 150 200 Feet

SP2019-031 - SITE PLAN FOR 259 RANCH TRAIL
SITE PLAN - LOCATION MAP = 



City of Rockwall

Planning & Zoning Department
385 S. Goliad Street
Rockwall, Texas 75032
(P): (972) 771-7745
(W): www.rockwall.com

The City of Rockwall GIS maps are continually under development and therefore subject to change without notice. While we endeavor to provide timely and accurate information, we make no guarantees. The City of Rockwall makes no warranty, express or implied, including warranties of merchantability and fitness for a particular purpose. Use of the information is the sole responsibility of the user.



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CITY OF ROCKWALL
CITY COUNCIL MEMORANDUM

PLANNING AND ZONING DEPARTMENT
385 S. GOLIAD STREET • ROCKWALL, TX 75087
PHONE: (972) 771-7745 • EMAIL: PLANNING@ROCKWALL.COM

TO: Mayor and City Council
CC: Rick Crowley, *City Manager*
Mary Smith, *Assistant City Manager*
Joey Boyd, *Assistant City Manager*
FROM: Ryan Miller, *Director of Planning and Zoning*
DATE: October 7, 2019
SUBJECT: Comprehensive Plan Advisory Committee (CPAC)

On December 3, 2018, the City Council approved *Ordinance No. 18-48*, which adopted the OURHometown Vision 2040 Comprehensive Plan. This document was the result of a two (2) year collaboration between the Comprehensive Plan Advisory Committee (CPAC), the City's boards and commissions, City staff, and the general public. The original resolution that established the CPAC in 2016 (*i.e. Resolution No. 16-17*) contained a sunset clause dissolving the committee upon the adoption of the Comprehensive Plan; however, one of the adopted implementation strategies approved with the plan calls for a standing CPAC committee that can assist staff with the required annual updates.

In response to this implementation strategy staff is requesting that the City Council appoint a standing CPAC that will function similar to the City's other advisory boards. To assist the City Council, staff has included the memorandum and guidelines presented to the City Council in 2016, and a list of the previous members of the CPAC. Staff should point out that while the previous CPAC consisted of seven (7) members, the City Council may establish a larger committee at their discretion. Staff anticipates that this committee will only meet two (2) to three (3) times a year during the annual update process, and potentially more during the five (5) and ten (10) year update process. Once the City Council has provided staff with direction concerning the committee and the number of members, staff will prepare a resolution outlining the responsibilities of the committee. Staff is currently preparing the annual update to the OURHometown Vision 2040 Comprehensive Plan for the committee's review. Should the City Council have any questions concerning this request, staff will be available at the October 7, 2019 City Council meeting.

2016 CPAC Members:

- 1) **Donna Dorman**
Personal: *Unknown*
Boards/Committees: Rockwall Summer Musicals Member, Keep John King a Boulevard,
Friends of Raymond Cameron Lake
Address: 1093 Shady Lane Drive (Caruth Lakes, Phase 6)
Phone: (972) 571-9855
Email: donnadorman@swbell.net

- 2) **Johnny Lyons**
Personal: Lyons Heating and Air (108 Interruban Street)
Boards/Committees: Planning and Zoning Commission
Address: 101 Becky Lane
Phone: (214) 808-9029
Email: jlyons@lyonsairandheat.com

- 3) **Jerry Welch**
Personal: Ebby Halliday Realtors
Boards/Committees: Architectural Review Board (ARB)
Address: 1509 S. Lakeshore Drive
Phone: (972) 800-3915
Email: jerry@thewelchteam.com

- 4) **Bob Wacker**
Personal: Retired
Boards/Committees: N/A
Address: 806 Miramar Drive (Stone Creek)
Phone: (214) 801-9377
Email: bobwacker@att.net

- 5) **Shannon Nerren**
Personal: Civil Engineer
Boards/Committees: N/A
Address: 401 Forest Trace (599 Trout Street -- LRE)
Phone: (409) 504-8769
Email: sw@azb-engrs.com

- 6) **Mike Larriviere**
Personal: Keystone Insurance & Bonds
Volunteer: YMCA, Carter BloodCare, RISD, Lake Pointe Church
Address: 1425 E. Quail Run Road
Phone: (214) 649-3699
Email: mike@kswins.com

- 7) **Dale Cherry**
Personal: Civil Engineer
Boards/Committees: REDC
Address: 508 Highview Lane
Phone: 972-978-3650
Email: jdalecherry@gmail.com



CITY OF ROCKWALL, TEXAS

MEMORANDUM

TO: Mayor and City Council

CC: Rick Crowley, *City Manager*
Brad Griggs, *Assistant City Manager*

FROM: Ryan Miller, *Director of Planning and Zoning*

DATE: October 3, 2016

SUBJECT: Comprehensive Plan Advisory Committee (CPAC) Resolution

As will be discussed in the work session on October 3, 2016, the City Council will need to appoint a citizen steering committee to assist staff through the proposed Comprehensive Plan update. In order to give the City Council the option of approving the resolution and/or appointing members at the October 3, 2016 meeting staff has placed this as an action item on the agenda; however, this item can be postponed to a future meeting date and does not require the Council to take action. Staff has attached the proposed resolution and a list of suggested criteria for selecting members that was provided to the City Council during the 2010 Comprehensive Plan update (*see Exhibits 'A'*). Should the City Council have any questions staff will be available at the meeting to discuss.

Exhibit 'A'
Guidelines for CPAC Members

Suggestions for Comprehensive Plan Advisory Committee

- Former Planning and Zoning Commissioners;
- Current or past REDC Board Members;
- Former or Current County Commissioners;
- Independent local businessmen with interest in community;
- Representatives from the R.I.S.D. (could be a teacher);
- Real Estate individual involved in residential and commercial development;
- Local Corporate Business owner or CEO;
- Local Builder/Developer;
- Banking/Financial Investment representative involved in local development and business investment;
- Individuals that represent large neighborhoods/subdivisions or H.O.A. within the city;
- Local Civil Engineers involved in land use and development;
- Citizens that are large land owners or representatives of large land owners within the City; and,
- Representatives from non-profit organizations that affect large areas of the City.

The potential participants on the Committee should generally be individuals that:

- are interested in the growth of the City
- may have been involved in land use planning
- may have been involved in a land use conflict
- may have a considerable influence on land use planning
- may be affected by the outcome of land use planning

CITY OF ROCKWALL

RESOLUTION NO. 16-17

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ROCKWALL, TEXAS, ESTABLISHING THE COMPREHENSIVE PLAN ADVISORY COMMITTEE AND PROVIDING FOR AN EFFECTIVE DATE.

WHEREAS, a City's Comprehensive Plan -- *also known as a general plan or master plan* -- is a document intended to layout a 20-year vision for a city and guide a City Council's actions on policy decisions relating to land use and development regulations, and expenditures for capital improvements; and,

WHEREAS, the City Charter for the City of Rockwall states that "(t)he existing master plan [*Comprehensive Plan*] for the physical development of the City contains recommendations for the growth, development and beautification of the City and its extraterritorial jurisdiction ... "; and,

WHEREAS, the City of Rockwall's Comprehensive Plan was originally drafted in 1966 with major updates being approved in 1986, 1995, and 2001; and,

WHEREAS, the City of Rockwall's last Comprehensive Plan update was adopted on March 5, 2012 by *Resolution No. 12-07*; and,

WHEREAS, the City Council of the City of Rockwall acknowledges that the Comprehensive Plan needs to be updated from *time-to-time* to account for changes to the physical development of the City and to provide a clear vision for the future growth of the community; and,

WHEREAS, in an effort to ensure transparency and to further citizen involvement in the planning process, the City Council hereby establishes an appointed board of Rockwall citizens to serve as the Comprehensive Plan Advisory Committee (CPAC); and,

WHEREAS, the Comprehensive Plan Advisory Committee (CPAC) shall serve as an advisory and recommending body to ensure that the findings, recommendations and strategies identified by City staff are in alignment with the goals and vision of the community and the City Council;

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF ROCKWALL, TEXAS:

SECTION 1. Purpose. The Comprehensive Plan Advisory Committee (CPAC) serves in an advisory role overseeing the preparation of the Comprehensive Plan update to achieve the following:

- 1) To provide advisory recommendations to City Staff, the City Council Development Review Committee (CCDC), and the City Council; and,
- 2) To ensure that all findings, recommendations and strategies prepared for the Comprehensive Plan update are in alignment with the goals and vision of the Community and the City Council.

SECTION 2. Members. The Comprehensive Plan Advisory Committee (CPAC) shall consist of seven (7) members that are appointed by the City Council. These members should be representative of the community and may consist of members of the City's other boards and commissions, community leaders, stakeholder groups and development experts; however, all

appointees shall be citizens of the City of Rockwall.

SECTION 3. Officers. At the first Comprehensive Plan Advisory Committee (CPAC) meeting, the committee shall elect a Chairman and Vice-Chairman. These positions will serve for the duration of the committee [i.e. until the dissolution date].

SECTION 4. Voting. All recommendations and decisions of the Comprehensive Plan Advisory Committee (CPAC) shall be decided by a simple majority vote.

SECTION 5. Meetings. The Comprehensive Plan Advisory Committee (CPAC) shall meet on an as needed basis. Since the CPAC is an advisory board and not a regulatory board, its meetings shall not be subject to the requirements of the Texas Open Meetings Act as stipulated by Chapter 551 of the *Texas Local Government Code*; however, the agenda for each meeting shall be posted on the City's bulletin board, in front of City Hall, a minimum of 24-hours prior to the meeting. The agenda shall indicate the time and place of each meeting. All CPAC meetings shall be open to the general public.

SECTION 6. Dissolution Date [Sunset Clause]. Upon the completion and adoption of the 2017 Comprehensive Plan Update, the Comprehensive Plan Advisory Committee (CPAC) shall be dissolved and its members shall be released from any further obligations with respect to the Committee.

SECTION 7. Effective Date. This resolution shall take effect immediately from and after its adoption and it is so resolved.

PASSED AND APPROVED BY THE CITY COUNCIL OF THE CITY OF ROCKWALL, TEXAS, ON THIS THE 3RD DAY OF OCTOBER, 2016.

APPROVED:



Jim Pruitt, Mayor

ATTEST:



Kristy Cole, City Secretary



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MEMORANDUM

TO: Honorable Mayor and City Council Members
FROM: Kristy Cole, City Secretary / Assistant to the City Manager
DATE: October 2, 2019
SUBJECT: Boards & Commissions (re)Appointments

Council is asked to consider the following reappointments and vacancies, terms of which expired last month. The Council liaison(s) assigned to each board is listed next to the board title. Unless otherwise noted, each person listed below who is eligible for reappointment has given staff indication that he or she does wish to be reappointed.

Airport Advisory Board (Pruitt, Fowler and Macalik)

- Mike Potter
- Tim Wolf
- Tom Woodruff
- VACANCY TO BE FILLED

Board of Adjustments (full Council)

- David Lowrey
- Stuart Smith
- Shannon Bennett
- Peter Flores does NOT wish to be reappointed – VACANCY TO BE FILLED
- Todd White is termed out - – VACANCY TO BE FILLED

Historic Preservation Advisory Board (Trowbridge)

- Carolyn Francisco
- Jay Odom
- Daniel Nichols
- VACANCY TO BE FILLED

Main Street Advisory Board (Trowbridge)

- Terry Gregory resigned - VACANCY TO BE FILLED

Park Board (Johannesen)

- Fran Webb does NOT wish to be reappointed – VACANCY TO BE FILLED
- Ray Harton termed out - VACANCY TO BE FILLED

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City of Rockwall
The New Horizon

MEMORANDUM

TO: Honorable Mayor and City Council Members
FROM: Kristy Cole, City Secretary / Assistant to the City Manager
DATE: October 4, 2019
SUBJECT: 2020 Census Complete Count Committee

The U.S. Census has asked the City of Rockwall to consider establishing a “Complete Count Committee” to assist in securing an accurate population count associated with the 2020 Census. City Manager Rick Crowley and Councilman Bennie Daniels have discussed the matter, and Councilman Daniels has expressed a willingness to take on this task.

A resolution related to this matter is included on the agenda / in the packet for Council consideration at the meeting Monday evening.

Mr. Crowley will be available to answer any questions the Council may have.

**CITY OF ROCKWALL
RESOLUTION NO. 19-22**

**A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF
ROCKWALL, TEXAS, PROVIDING FOR THE
ESTABLISHMENT OF A COMPLETE COUNT COMMITTEE
AND RELATED MATTERS FOR THE 2020 U.S. CENSUS;
PROVIDING FOR AN EFFECTIVE DATE.**

WHEREAS, the City of Rockwall (“the City”) recognizes the importance of the Decennial U.S. Census; and

WHEREAS, the City recognizes that Census data collection is used for such matters as apportionment to the states of Federal elected officials; and

WHEREAS, the City recognizes that the data collected by the Census is used throughout the decade in many ways, including contributing to allocation determinations of Federal dollars to transportation and a number of grants to state and local entities; and

WHEREAS, the Rockwall City Council acknowledges the importance of achieving a “complete count” in the City of Rockwall.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF ROCKWALL, TEXAS, THAT:

Section 1. a Complete Count Committee for the 2020 Census is hereby established;

Section 2. Councilman Bennie Daniels is hereby appointed as the Chairman of said committee and is authorized to secure such assistance as he may deem necessary, including appointments of committee members;

Section 3. the City Manager is hereby authorized to provide staff assistance to the Complete Count Committee.

Section 4. this Resolution shall become effective immediately from and after its adoption, and it is so resolved.

**PASSED AND APPROVED BY THE CITY COUNCIL OF THE CITY OF
ROCKWALL, TEXAS, THIS THE 7th DAY OF October, 2019.**

ATTEST:

Jim Pruitt, Mayor

Kristy Cole, City Secretary

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City of Rockwall
The New Horizons

Building Inspections Department Monthly Report

August 2019

Permits

Total Permits Issued: 324

Building Permits: 59

Contractor Permits: 265

Total Commercial Permit Values: \$ 11,442,117.39

Building Permits: \$10,462,450.00 Contractor Permits: \$959,727.39

Total Fees Collected: \$254,601.49

Building Permits: \$224,620.00

Contractor Permits: \$29,981.49

Board of Adjustment

Board of Adjustment Cases 0

PERMITS ISSUED - Summary by Type and Subtype
For the Period 8/1/2019 thru 8/31/2019

Type / SubType	# of Permits Issued	Valuation of Work	Fees Charged
BANNER	3	\$0.00	\$151.50
30 DAY BANNER	3	\$0.00	\$151.50
CO	8	\$0.00	\$609.00
BUSINESS	4	\$0.00	\$303.00
INTERIOR	1	\$0.00	\$76.50
NEW CONSTRUCTION	3	\$0.00	\$229.50
COMM	48	\$11,422,177.39	\$114,837.37
ACC BLDG	1	\$10,000.00	\$192.75
CONCRETE	3	\$131,200.00	\$1,279.16
CONST TRAILER	2	\$11,049.31	\$204.00
DEMO	1	\$45,000.00	\$51.00
ELECTRICAL	12	\$617,807.08	\$7,027.21
FENCE	1	\$4,800.00	\$50.00
IRRIGATION	1	\$4,000.00	\$76.50
MECHANICAL	1	\$7,903.00	\$168.05
MISCELLANEOUS	1	\$0.00	\$51.00
NEW	2	\$9,736,987.00	\$97,364.03
PLUMBING	4	\$20,500.00	\$594.96
REMODEL	8	\$725,463.00	\$6,938.71
ROOF	11	\$107,468.00	\$840.00
SIGNAGE	10	\$57,550.00	\$987.00
MONUMENT	1	\$8,000.00	\$76.50
POLE	1	\$33,500.00	\$75.00
TEMP REAL ESTATE	1	\$450.00	\$75.00
WALL	7	\$15,600.00	\$760.50
SINGLE FAMILY	238		\$136,855.62
ACC BLDG	7	\$0.00	\$610.17
BALCONY	1	\$0.00	\$161.77
CONCRETE	3	\$0.00	\$151.00
DECK	1	\$0.00	\$76.50
DEMO	1	\$0.00	\$51.00
ELECTRICAL	8	\$0.00	\$1,596.26
FENCE	43	\$0.00	\$2,185.00
IRRIGATION	24	\$0.00	\$1,833.00
MECHANICAL	26	\$0.00	\$3,157.00
MISCELLANEOUS	5	\$0.00	\$254.00
NEW	21		\$116,477.60
PATIO COVER	7	\$0.00	\$788.52
PERGOLA	2	\$0.00	\$151.50
PLUMBING	38	\$0.00	\$3,207.50
REMODEL	5	\$0.00	\$1,822.70
RETAINING WALL	3	\$0.00	\$202.00
ROOF	28		\$2,009.10
SWIM POOL	12	\$0.00	\$1,968.00
WINDOWS	3	\$0.00	\$153.00
SPECIAL EVENT	15	\$0.00	\$778.50
	15	\$0.00	\$778.50
TCO	2	\$0.00	\$382.50
	2	\$0.00	\$382.50

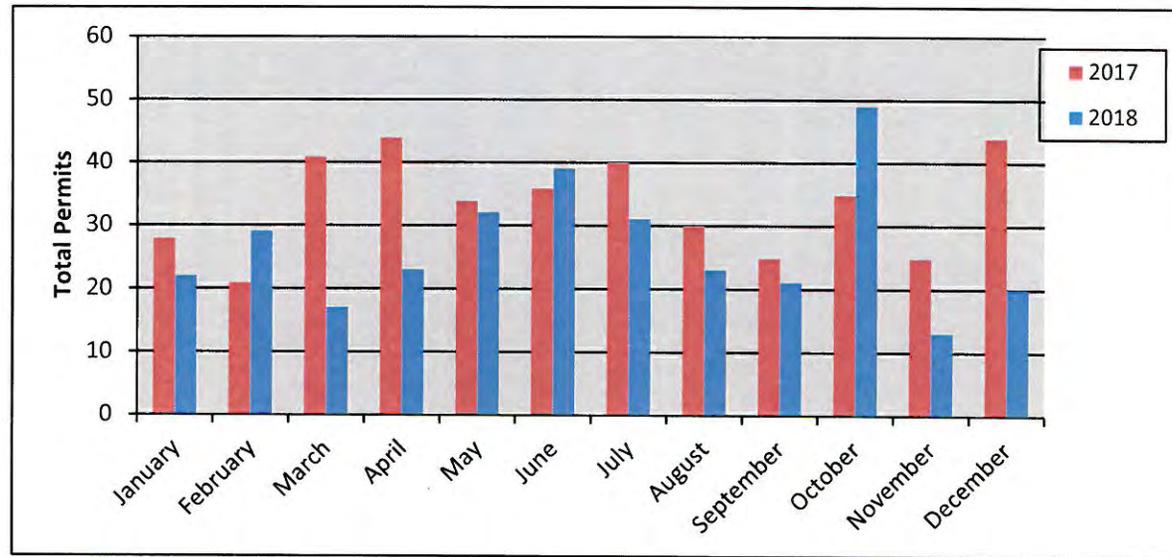
PERMITS ISSUED - Summary by Type and Subtype
For the Period 8/1/2019 thru 8/31/2019

Type / SubType	# of Permits Issued	Valuation of Work	Fees Charged
Totals:	324		\$254,601.49

New Residential Permits

Calendar Year

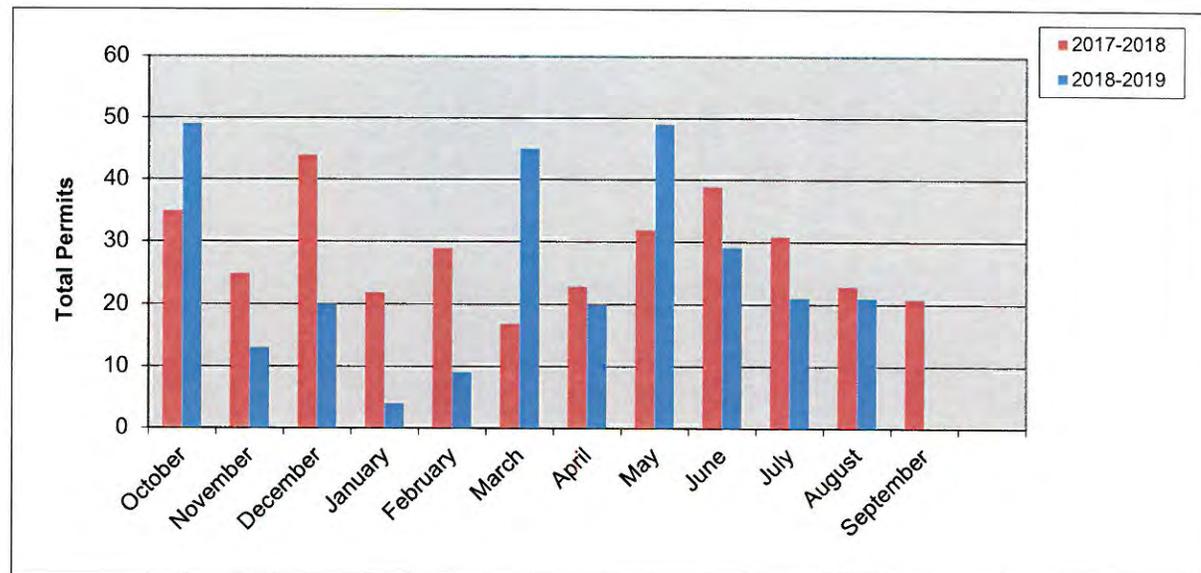
Year		
	2017	2018
January	28	22
February	21	29
March	41	17
April	44	23
May	34	32
June	36	39
July	40	31
August	30	23
September	25	21
October	35	49
November	25	13
December	44	20
Totals	403	319



New Residential Permits

Fiscal Year

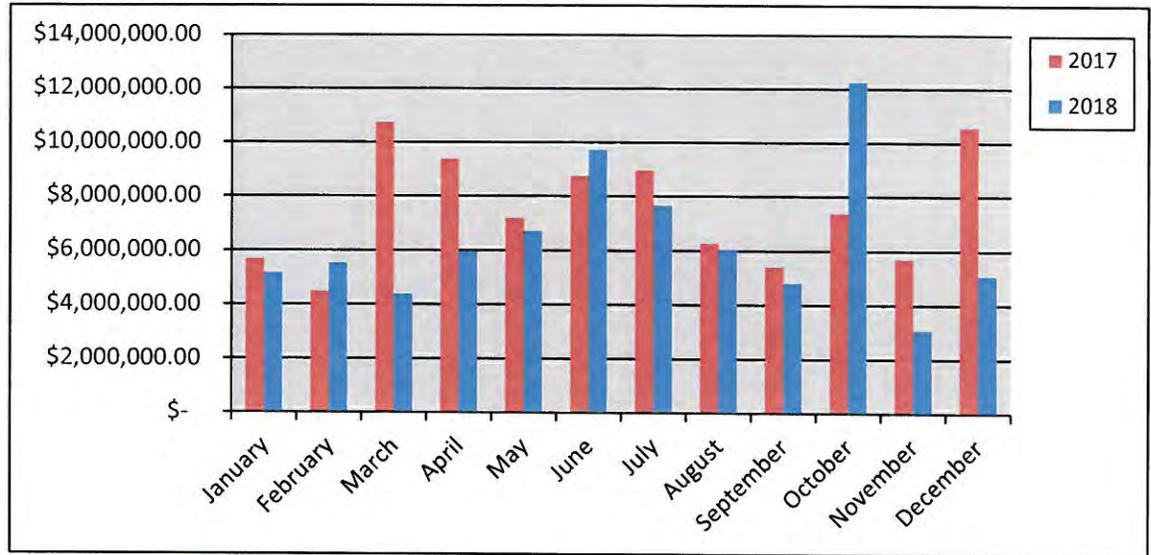
Year		
	2017-2018	2018-2019
October	35	49
November	25	13
December	44	20
January	22	4
February	29	9
March	17	45
April	23	20
May	32	49
June	39	29
July	31	21
August	23	21
September	21	
Totals	341	280



New Residential Value

Calendar Year

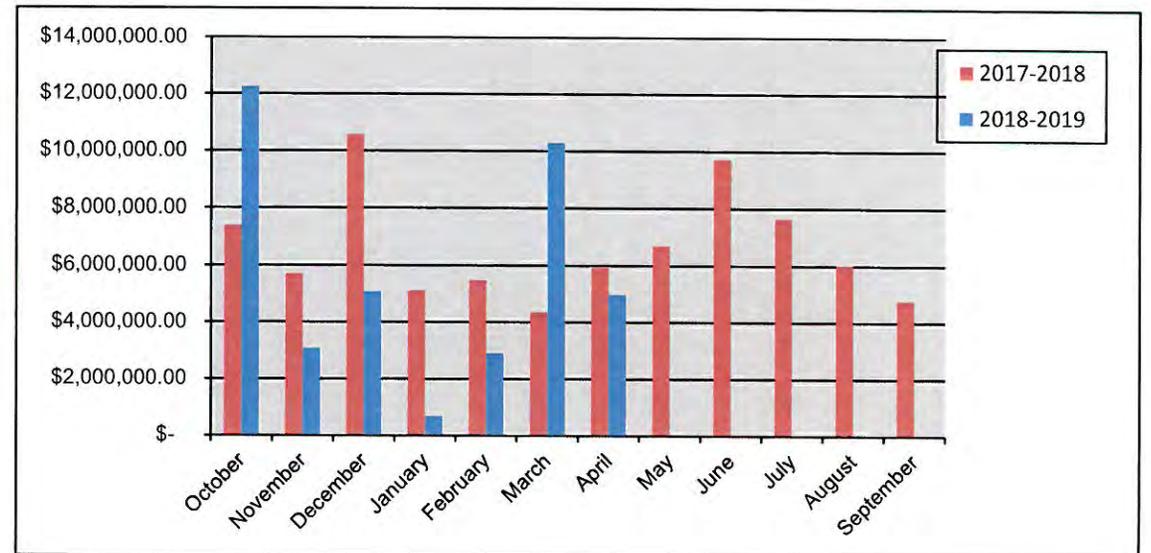
Year		
	2017	2018
January	\$ 5,698,431.00	\$ 5,145,624.00
February	\$ 4,497,500.00	\$ 5,505,704.00
March	\$ 10,740,233.00	\$ 4,374,886.00
April	\$ 9,394,785.27	\$ 5,946,813.00
May	\$ 7,210,632.79	\$ 6,706,301.00
June	\$ 8,782,481.00	\$ 9,728,069.00
July	\$ 8,983,999.47	\$ 7,660,917.00
August	\$ 6,295,770.00	\$ 6,049,208.00
September	\$ 5,443,098.00	\$ 4,799,404.00
October	\$ 7,402,565.06	\$ 12,263,973.00
November	\$ 5,722,063.00	\$ 3,064,499.00
December	\$ 10,576,719.30	\$ 5,072,758.00
Totals	\$ 90,748,277.89	\$ 76,318,156.00



New Residential Value

Fiscal Year

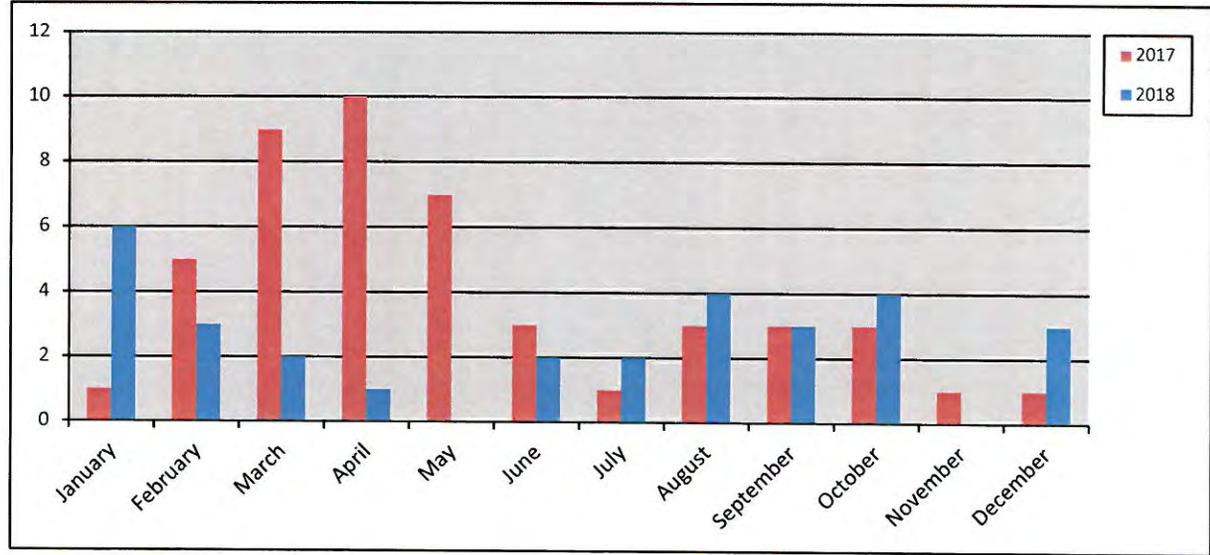
Year		
	2017-2018	2018-2019
October	\$ 7,402,565.06	\$ 12,263,973.00
November	\$ 5,722,063.00	\$ 3,064,499.00
December	\$ 10,576,719.30	\$ 5,072,758.00
January	\$ 5,145,624.00	\$ 681,618.00
February	\$ 5,505,704.00	\$ 2,897,344.85
March	\$ 4,374,886.00	\$ 10,294,717.00
April	\$ 5,946,813.00	\$ 4,977,668.00
May	\$ 6,706,301.00	-
June	\$ 9,728,069.00	-
July	\$ 7,660,917.00	-
August	\$ 6,049,208.00	-
September	\$ 4,799,404.00	-
Totals	\$79,618,273.36	\$ 39,252,577.85



Residential Remodel Permits

Calendar Year

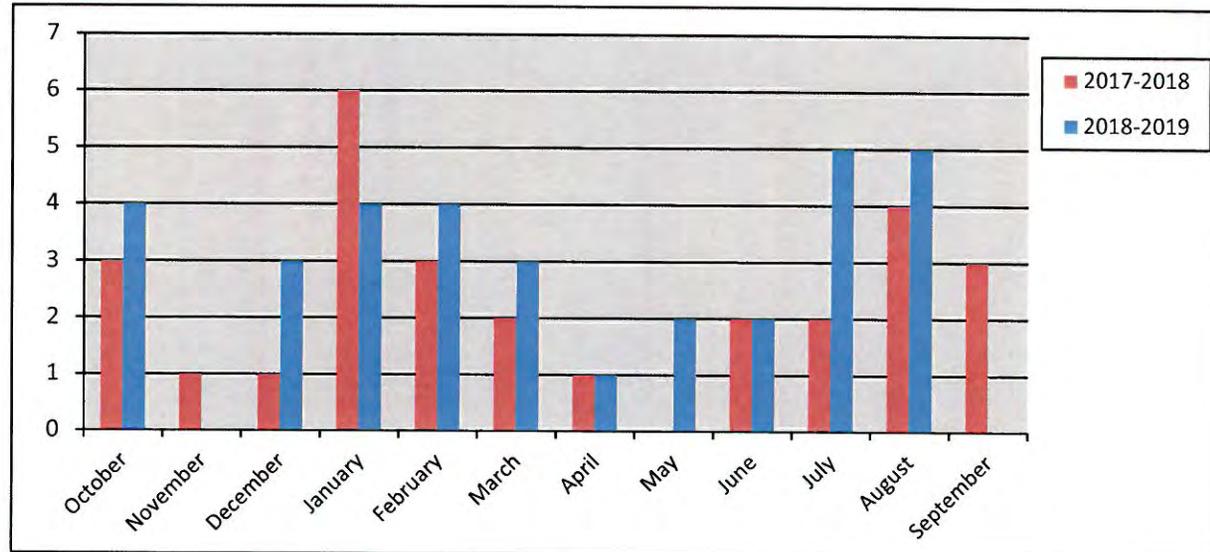
	Year	
	2017	2018
January	1	6
February	5	3
March	9	2
April	10	1
May	7	0
June	3	2
July	1	2
August	3	4
September	3	3
October	3	4
November	1	0
December	1	3
Totals	47	30



Residential Remodel Permits

Fiscal Year

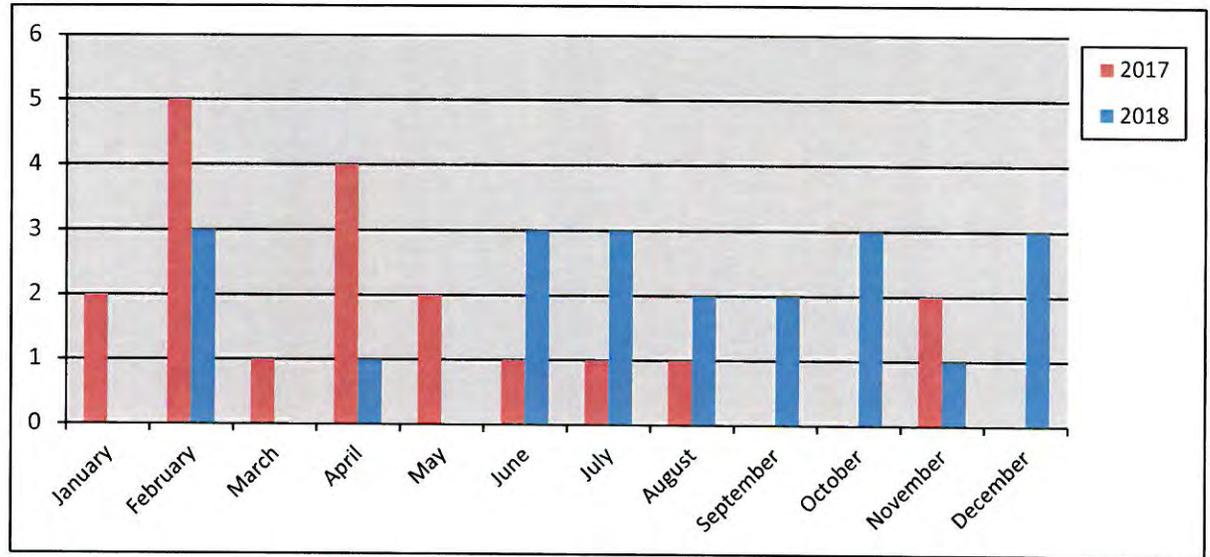
	Year	
	2017-2018	2018-2019
October	3	4
November	1	0
December	1	3
January	6	4
February	3	4
March	2	3
April	1	1
May	0	2
June	2	2
July	2	5
August	4	5
September	3	
Totals	28	33



New Commercial Permits

Calendar Year

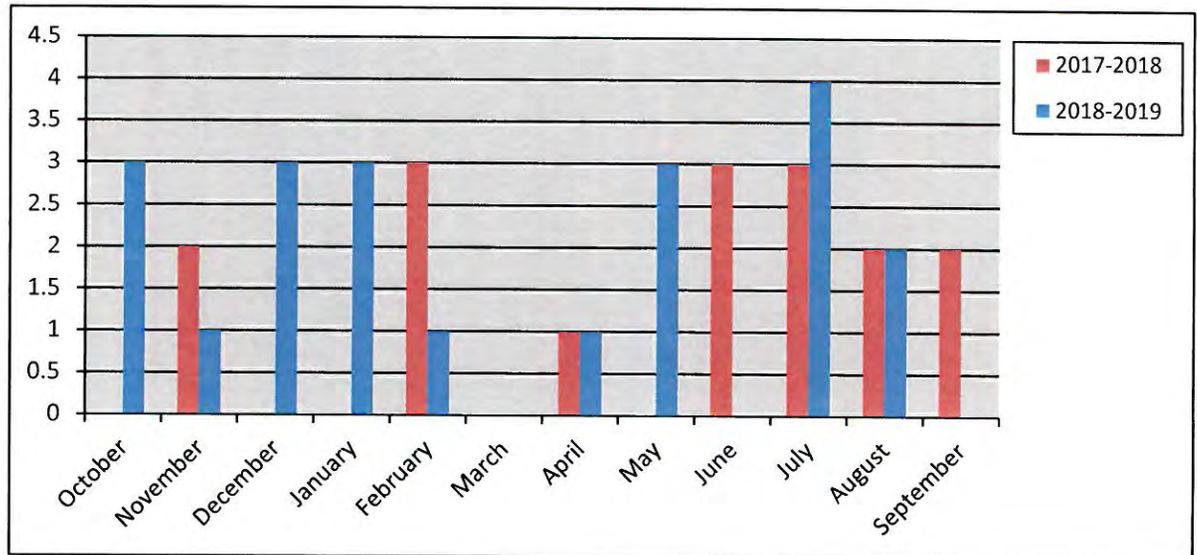
Year		
	2017	2018
January	2	0
February	5	3
March	1	0
April	4	1
May	2	0
June	1	3
July	1	3
August	1	2
September	0	2
October	0	3
November	2	1
December	0	3
Totals	19	21



New Commercial Permits

Fiscal Year

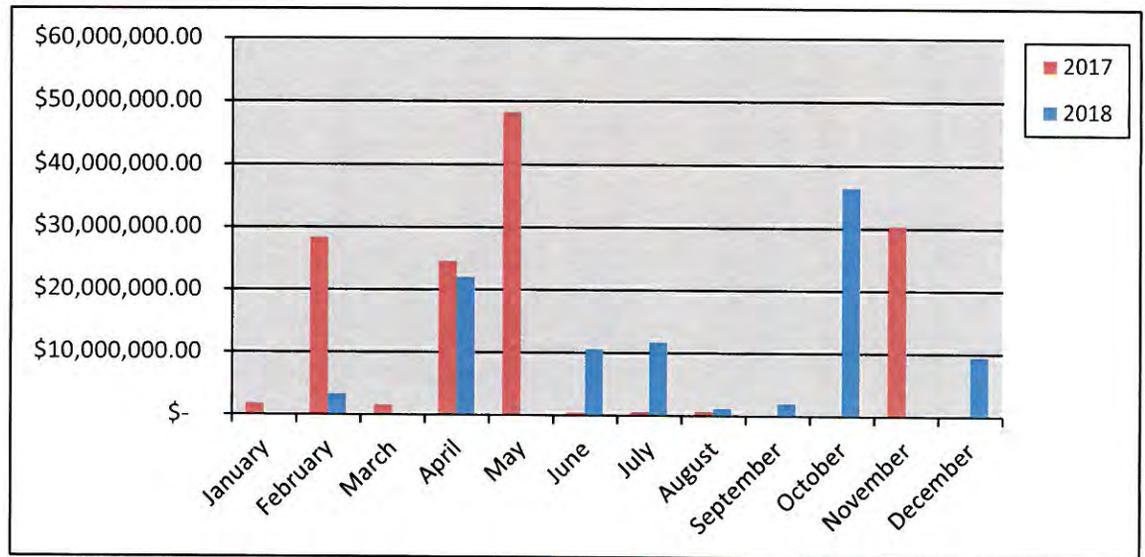
Year		
	2017-2018	2018-2019
October	0	3
November	2	1
December	0	3
January	0	3
February	3	1
March	0	0
April	1	1
May	0	3
June	3	0
July	3	4
August	2	2
September	2	0
Totals	16	21



New Commercial Value

Calendar Year

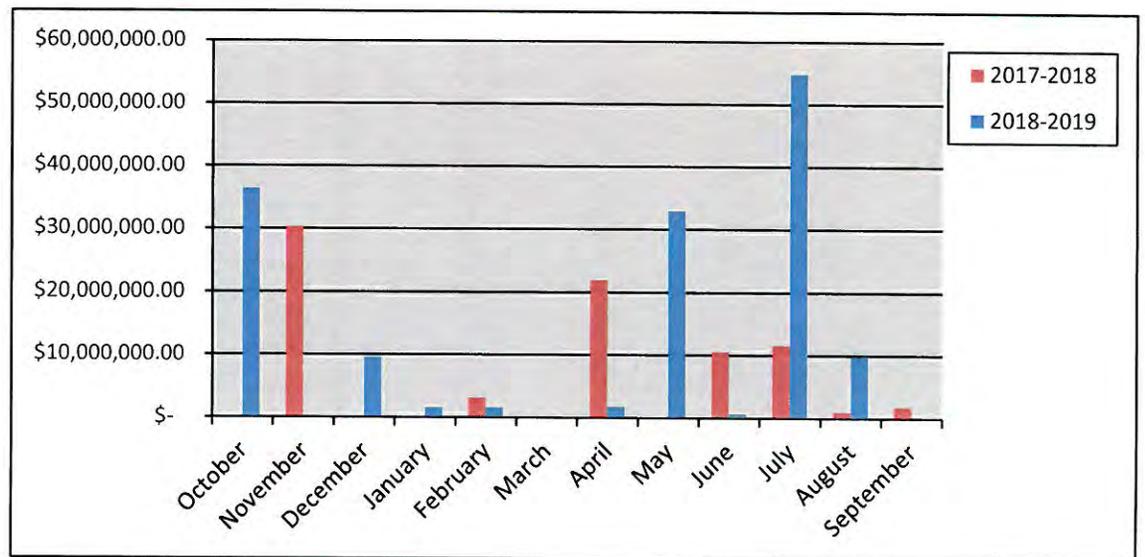
Year		
	2017	2018
January	\$ 1,800,000.00	-
February	\$ 28,400,000.00	\$ 3,221,771.00
March	\$ 1,599,026.00	-
April	\$ 24,650,000.00	\$ 22,000,000.00
May	\$ 48,300,000.00	-
June	\$ 569,400.00	\$ 10,602,430.88
July	\$ 700,000.00	\$ 11,712,500.00
August	\$ 726,506.00	\$ 1,111,950.00
September	-	\$ 1,930,813.00
October	-	\$ 36,425,000.00
November	\$ 30,390,000.00	\$ 180,000.00
December	-	\$ 9,427,800.00
Totals	\$ 137,134,932.00	\$ 96,612,264.88



New Commercial Value

Fiscal Year

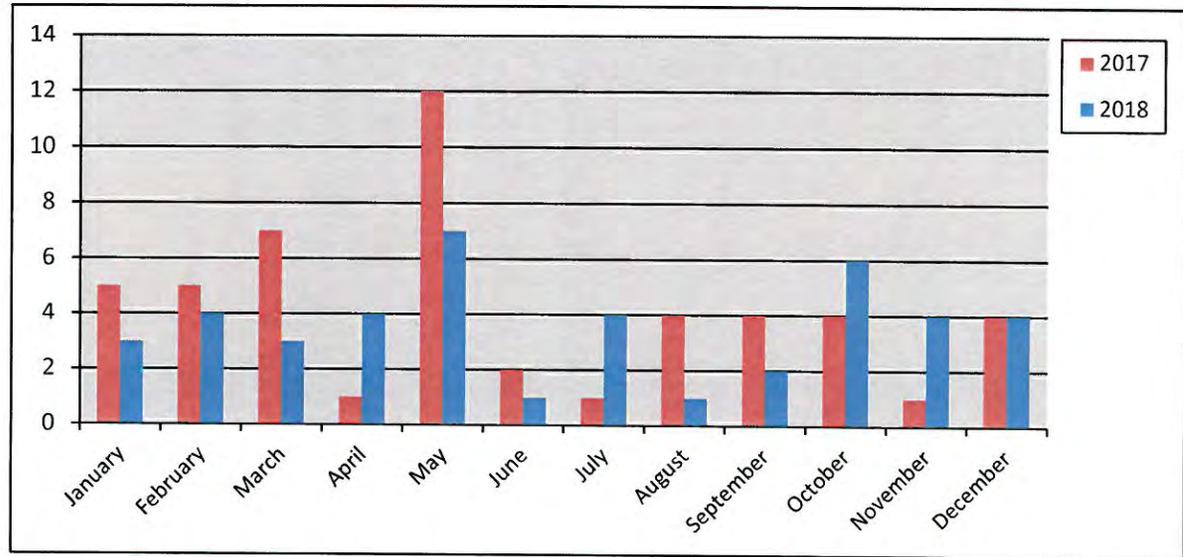
Year		
	2017-2018	2018-2019
October	-	\$ 36,425,000.00
November	\$ 30,390,000.00	\$ 180,000.00
December	-	\$ 9,427,800.00
January	-	\$ 1,530,000.00
February	\$ 3,221,771.00	\$ 1,500,000.00
March	-	-
April	\$ 22,000,000.00	\$ 1,700,000.00
May	-	\$ 32,969,700.00
June	\$ 10,602,430.88	\$ 629,975.28
July	\$ 11,712,500.00	\$ 54,900,000.00
August	\$ 1,111,950.00	\$ 9,736,987.00
September	\$ 1,930,813.00	-
Totals	\$ 80,969,464.88	\$ 148,999,462.28



Commercial Remodel Permits

Calendar Year

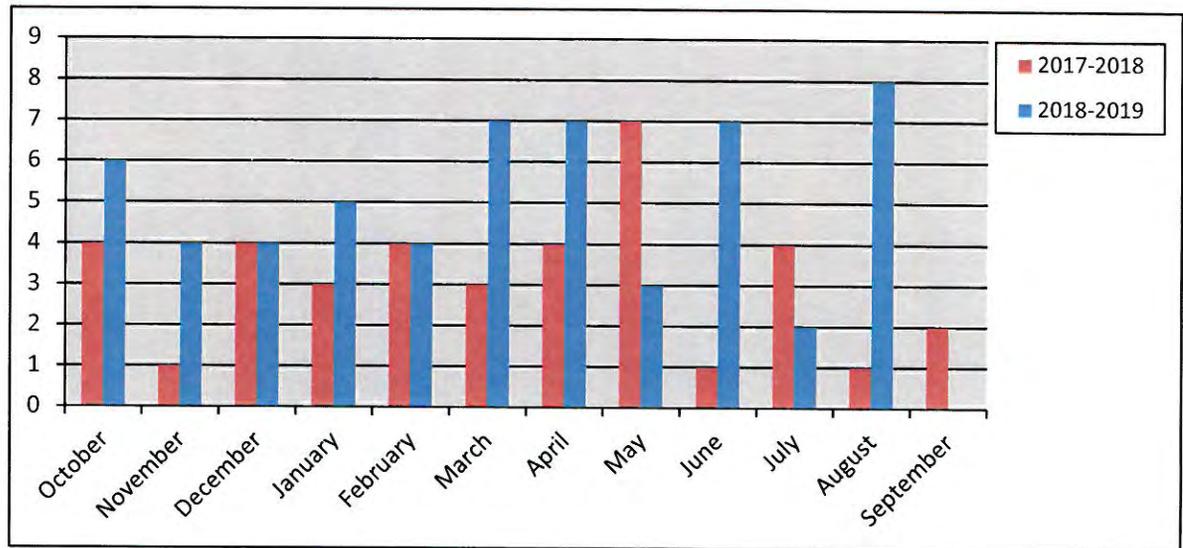
	Year	
	2017	2018
January	5	3
February	5	4
March	7	3
April	1	4
May	12	7
June	2	1
July	1	4
August	4	1
September	4	2
October	4	6
November	1	4
December	4	4
Totals	50	43



Commercial Remodel Permits

Fiscal Year

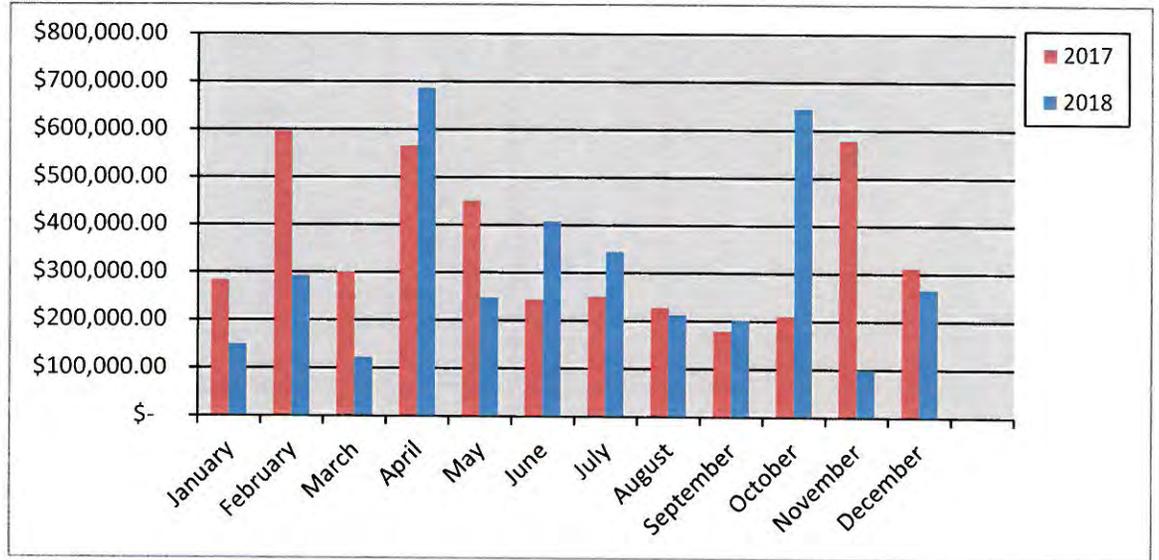
	Year	
	2017-2018	2018-2019
October	4	6
November	1	4
December	4	4
January	3	5
February	4	4
March	3	7
April	4	7
May	7	3
June	1	7
July	4	2
August	1	8
September	2	
Totals	38	57



Total Fees Collected

Calendar Year

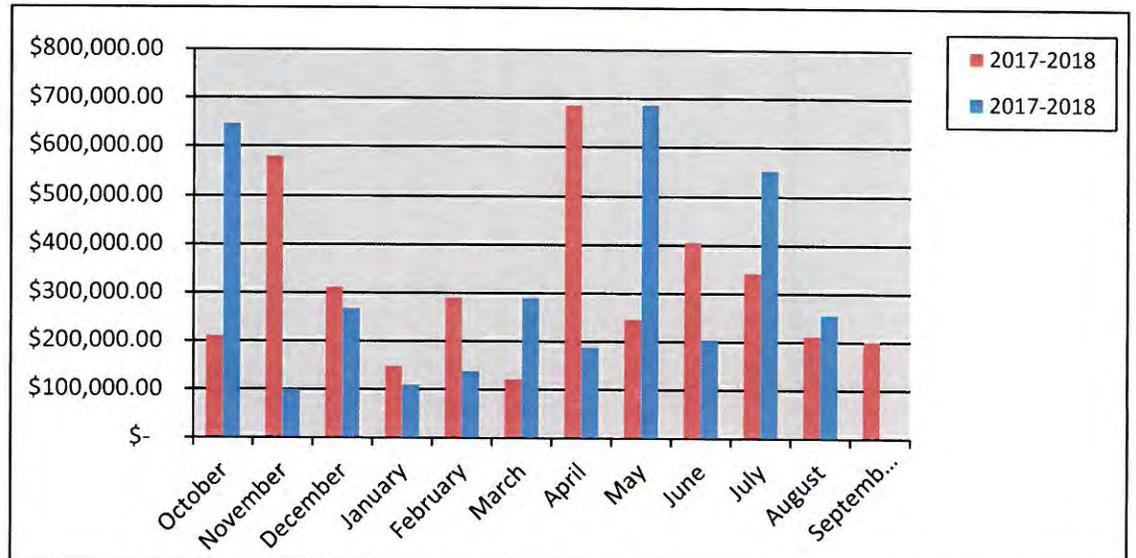
Year		
	2017	2018
January	\$ 284,774.34	\$ 149,088.54
February	\$ 595,848.26	\$ 291,324.78
March	\$ 302,406.79	\$ 122,271.28
April	\$ 566,291.24	\$ 686,154.89
May	\$ 451,389.66	\$ 247,465.55
June	\$ 244,930.08	\$ 406,799.91
July	\$ 252,374.52	\$ 343,682.23
August	\$ 229,266.56	\$ 212,643.16
September	\$ 180,561.41	\$ 201,855.47
October	\$ 212,560.59	\$ 645,511.95
November	\$ 579,208.80	\$ 99,983.92
December	\$ 313,423.19	\$ 266,328.43
Totals	\$ 4,213,035.44	\$ 3,673,110.11



Total Fees Collected

Fiscal Year

Year		
	2017-2018	2017-2018
October	\$ 212,560.59	\$ 645,511.95
November	\$ 579,208.80	\$ 99,983.92
December	\$ 313,423.19	\$ 266,328.43
January	\$ 149,088.54	\$ 108,325.23
February	\$ 291,324.78	\$ 137,260.79
March	\$ 122,271.28	\$ 288,576.03
April	\$ 686,154.89	\$ 186,555.47
May	\$ 247,465.55	\$ 685,938.85
June	\$ 406,799.91	\$ 203,335.14
July	\$ 343,682.23	\$ 551,248.76
August	\$ 212,643.16	\$ 254,601.49
September	\$ 201,855.47	
Totals	\$ 3,766,478.39	\$ 3,427,666.06



City of Rockwall
PERMITS ISSUED
For the Period 8/1/2019 thru 8/31/2019

Permit Number	Permit Type	Site Address	Valuation	Total Fees	Fees Paid
Application Date	Subtype	Parcel Number			
Issue Date	Status of Permit	Subdivision Name			
CO2019-0085	CO	925 N Goliad St	0.00	76.50	76.50
08/07/2019	BUSINESS	4048-000A-0001-00-0R			
08/30/2019	Active	GARNER			
<u>Contact Type</u>	<u>Contact Name</u>	<u>Contact Address</u>		<u>Phone Number</u>	
APPLICANT	Cari Foote	1411 Red Tip Rd, Allen, TX 75002		(830) 798-5884	
BUS OWNER	Cari Foote	1411 Red Tip Rd, Allen, TX 75002		(830) 798-5884	
BUSINESS OWNER	Cari Foote, MA, LPC, LMFT	925 N. Goliad St, ROCKWALL, TX 75087		(830) 798-5884	
	CFPC Investments, LLC - Ca	P.O. Box 1731, Marble Falls, TX 78654			
CO2019-0056	CO	950 Sids Rd Bldg C	0.00	76.50	76.50
05/13/2019	NEW CONSTRUCTION	4733-000A-0002-00-0R			
08/27/2019	Active	RAYBURN COUNTRY ADDITION			
<u>Contact Type</u>	<u>Contact Name</u>	<u>Contact Address</u>		<u>Phone Number</u>	
APPLICANT	Rayburn Country Electric Co	950 Sids Rd, Rockwall, TX 75032		(469) 402-2100	
BUS OWNER	David Naylor	950 Sids Rd, Rockwall, TX 75032		(469) 402-2100	
BUSINESS	Rayburn Country Electric Co	950 Sids Rd, Rockwall, TX 75032		(469) 402-2100	
CONSULTANT	STEPHEN GEIGER	CALL FOR INSPECTION, ,		(469) 402-2112	
OWNER	Rayburn Country Electric Co	950 Sids Rd, Rockwall, TX 75032		(469) 402-2100	
CO2019-0055	CO	950 Sids Rd Bldg B	0.00	76.50	76.50
05/13/2019	NEW CONSTRUCTION	4733-000A-0002-00-0R			
08/27/2019	Active	RAYBURN COUNTRY ADDITION			
<u>Contact Type</u>	<u>Contact Name</u>	<u>Contact Address</u>		<u>Phone Number</u>	
APPLICANT	Rayburn Country Electric Co	950 Sids Rd. Building B, Rockwall, TX 75032		(469) 402-2100	
BUS OWNER	David Naylor	950 Sids Rd. Building B, Rockwall, TX 75032		(469) 402-2100	
BUSINESS	Rayburn Country Electric Co	950 Sids Rd. Building B, Rockwall, TX 75032		(469) 402-2100	
CONSULTANT	STEPHEN GEIGER	CALL FOR INSPECTION, ,		(469) 402-2112	
OWNER	Rayburn Country Electric Co	950 Sids Rd. Building B, Rockwall, TX 75032		(469) 402-2100	
CO2019-0088	CO	3014 RIDGE RD	0.00	75.00	75.00
08/21/2019	BUSINESS	5266-000A-0001-00-0R			
08/23/2019	Active	WILLIS-SEALOCK ADDITION			
<u>Contact Type</u>	<u>Contact Name</u>	<u>Contact Address</u>		<u>Phone Number</u>	
APPLICANT	Ketan P. Parekh DDS	3014 Ridge Rd, Rockwall, TX 75032		(469) 338-2397	
BUS OWNER	Ketan P. Parekh DDS	3014 Ridge Rd, Rockwall, TX 75032		(469) 338-2397	
BUSINESS	Ketan P. Parekh DDS	3014 Ridge Rd, Rockwall, TX 75032		(469) 338-2397	
OWNER	Ketan P. Parekh DDS	3014 Ridge Rd, Rockwall, TX 75032		(469) 338-2397	
PROP OWNER	C. Real Estate LLC	5 Terrabella Ln, Heath, TX 75032			
CO2019-0081	CO	615 Highland Dr	0.00	76.50	76.50
07/22/2019	NEW CONSTRUCTION	4849-000A-0001-00-0R			
08/19/2019	Active	NORTHSHORE PH 1			
<u>Contact Type</u>	<u>Contact Name</u>	<u>Contact Address</u>		<u>Phone Number</u>	
BUS OWNER	Rockwall ISD	1050 Williams Dr., ROCKWALL, TX 75087		(979) 574-9491	
BUSINESS	Reinhardt Elementary	615 Highland Dr., ROCKWALL, TX 75087		(979) 574-9497	
OWNER	Rockwall ISD	1050 Williams Dr., ROCKWALL, TX 75087		(979) 574-9491	
CO2019-0071	CO	627 National Dr.	0.00	76.50	76.50
06/05/2019	BUSINESS	0128-0000-0002-17-0R			

City of Rockwall
PERMITS ISSUED
For the Period 8/1/2019 thru 8/31/2019

Permit Number	Permit Type	Site Address	Valuation	Total Fees	Fees Paid
Application Date	Subtype	Parcel Number			
Issue Date	Status of Permit	Subdivision Name			
08/19/2019	Active				
	<u>Contact Type</u>	<u>Contact Name</u>	<u>Contact Address</u>		<u>Phone Number</u>
	BUS OWNER	Scott Tatum	627 National Dr., Rockwall, TX 75032		(214) 862-4711
	BUSINESS OWNER	Oasis Construction	627 National Dr., Rockwall, TX 75032		(214) 862-4711
		D & A Real Estate Partners	PO Box 850, Rockwall, TX 75087		(214) 862-7890
CO2019-0084	CO	955 W RALPH HALL 105 & 107	0.00	75.00	75.00
08/07/2019	BUSINESS	4009-000B-0006-09-0R			
08/08/2019	Active	HORIZON RIDGE ADDITION			
	<u>Contact Type</u>	<u>Contact Name</u>	<u>Contact Address</u>		<u>Phone Number</u>
	APPLICANT	Cheryl LeClaire	955 W. Ralph Hall Pkwy. # 105&107, Rockwall, TX 75032		(903) 495-2935
	BUS OWNER	Cheryl LeClaire	955 W. Ralph Hall Pkwy. # 105&107, Rockwall, TX 75032		(903) 495-2935
	BUSINESS OWNER	Melange Beauty LLC	955 W. Ralph Hall Pkwy. #105&107, Rockwall, TX 75032		(214) 734-0024
		Kris Sharp	3021 Ridge Road #160, Rockwall, TX 75032		(972) 772-7411
CO2019-0072	CO	3201 Capital Blvd 200	0.00	76.50	76.50
06/05/2019	INTERIOR	4876-000A-0002-00-0R			
08/02/2019	Active	ROCKWALL TECHNOLOGY PARK, PHASE			
	<u>Contact Type</u>	<u>Contact Name</u>	<u>Contact Address</u>		<u>Phone Number</u>
	APPLICANT	Michael Shao	3201 Capial Blvd, Suite 200, Rockwall, TX 75032		(626) 991-9858
	BUS OWNER	Michael Shao	3201 Capial Blvd, Suite 200, Rockwall, TX 75032		(626) 991-9858
	BUSINESS OWNER	Atosa Catering Equipment	3201 Capial Blvd, Suite 200, Rockwall, TX 75032		(626) 991-9858
		Michael Shao	3201 Capial Blvd, Suite 200, Rockwall, TX 75032		(626) 991-9858
Total Valuation:				0.00	
Total Fees:				609.00	
Total Fees Paid:				609.00	

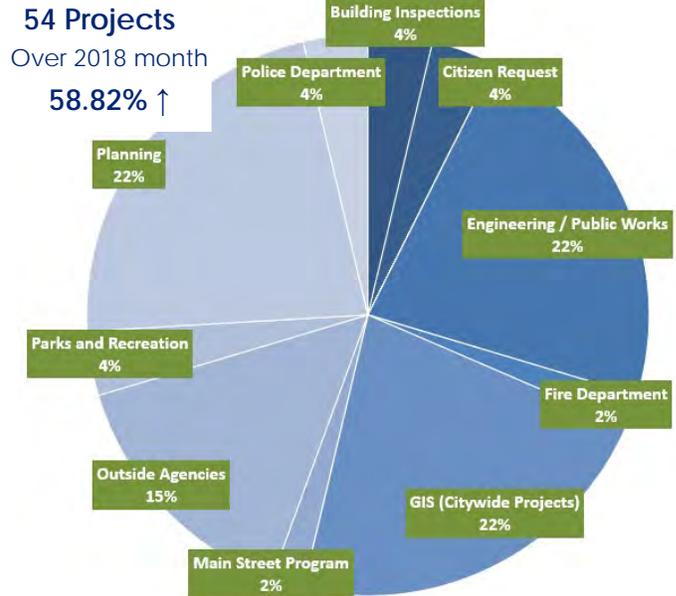
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Key Projects:

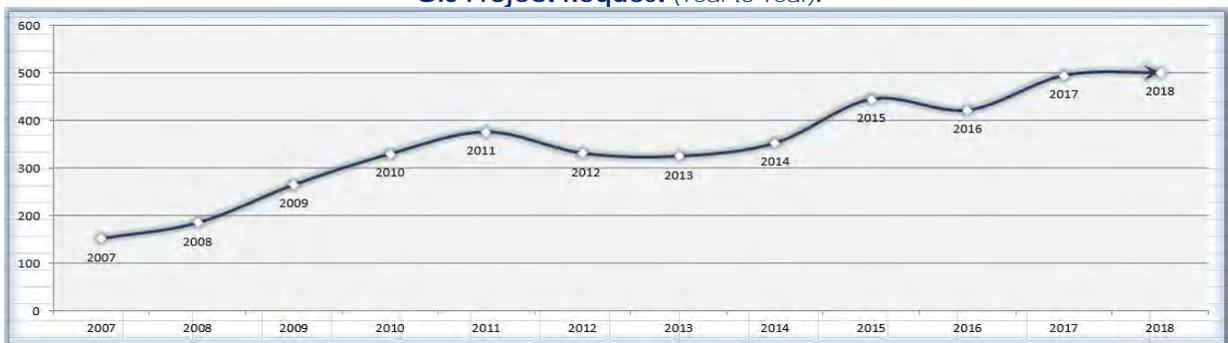
- (1) **Outside Agencies / Citizens.** Census LUCA Feedback, Zonability Data Request, NG911 Data / Syncs, Farmers Electric (Annexation Information Request), NCTCOG 911 Imagery Services, County Hazmat Layer review, NCTCOG (Local Review of Demographics Data), Kimley Horn Data Request, Citizen Address Issues w/ RCAD & Oncor (X2)
- (2) **Engineering / Public Works.** Sidewalk Research, Fire Hydrants Query (Replaced/Removed), Training Guide, CCN Map, Cityworks Reports, Historic District Street Names, Cityworks Employee-Vehicle Updates, Aluminum Plant Water Lines, GPS Unit Training, RISD Bus Stops Locations, Rockwall Commons Storm Sewer, GraniteNet Project Closeout
- (3) **Planning Department.** UDC – (Street Lamps, Pipe Fencing, Commercial Signage, Monotony Standards Exhibit, Backyard Fencing Exhibits), Zoning Hyperlinks, COGO Planning Cases, P&Z Labels, PD5 Legal Description and Exhibit, Masterfile Plat Cabinet Order, PD and Overlay Calculations, Bear Creek Population and Demographics
- (4) **GIS.** 911 Addressing, Restaurant Brochure, City Limits & ETJ Brochure, Lift Station Readdressing (Mims Rd), Parcel Fabric Completion, GIS Annual Performance Reviews, GPS Technician Training, Subdivision Addressing / New Street Name Verifications, Cityworks PLL Preparation Task, GPS Utilities and Grease Traps, GIS Day Prep
- (5) **Police.** Events (3) Maps, Rapid SOS Layer Request
- (6) **Fire.** Fire Hydrant Inspection Meeting
- (7) **Building Inspections.** Street index listing, 302 N. Goliad Map and Mail out Labels
- (8) **Parks and Rec.** Founders Day Parking, Parks Hay Maze
- (9) **Main Street.** Courthouse Valet Map

Monthly Project Request by Department:



Admin / HR / Internal Ops	0
Building Inspections	2
Citizen Request	2
City Council	0
City Manager's Office	0
Neighborhood Improvement Services	0
Engineering / Public Works	12
Finance / Utility Billing	0
Fire Department	1
GIS (Citywide Projects)	12
IT	0
Main Street Program	1
Outside Agencies	8
Parks and Recreation	2
Planning	12
Police Department	2
REDC	0
Total	54

GIS Project Request (Year to Year):



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CITY OF ROCKWALL
INTERNAL OPERATIONS DEPARTMENT
FACILITY MAINTENANCE REQUESTS FOR SERVICE
AUGUST 2019

DEPARTMENT	# FMR REQUESTS	# FMR REQUESTS RESPONDED TO W / IN 24 HOURS	# FMR REQUESTS NOT RESPONDED TO W / IN 24 HOURS	% ON TIME
ADMINISTRATION	5	5	0	100%
ADMINISTRATIVE SERVICES	4	4	0	100%
AIRPORT	2	2	0	100%
ANIMAL SERVICES	4	4	0	100%
BUILDING INSPECTIONS / NEIGHBORHOOD IMPROVEMENT	1	1	0	100%
ENGINEERING	2	2	0	100%
FINANCE	5	5	0	100%
FIRE DEPARTMENT	33	33	0	100%
INTERNAL OPERATIONS	108	108	0	100%
MUNICIPAL COURT	19	19	0	100%
PARKS & RECREATION	10	10	0	100%
PLANNING & ZONING	1	1	0	100%
POLICE DEPARTMENT	31	31	0	100%
PUBLIC WORKS	4	4	0	100%
UTILITY BILLING	0	0	0	0%
TOTAL	229	229	0	100%

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AUGUST 2019 MONTHLY REPORT



**ROCKWALL PARKS
& RECREATION**

PARTICIPATION



CONCERT BY THE LAKE:
APPROXIMATELY 1000 PEOPLE



ANIMAL SHOT CLINIC WITH FREE CITY
REGISTRATION: APPROXIMATELY 100 PETS
REGISTERED



LAST OPEN SWIM DAY AT THE HARRY MYERS
PARK POOL

MONTHLY OVERVIEW

AUG '19

Part Time Labor Hours	16.5
Program Offerings	9
Program Participants	1344
Resident Participants	682
Non-Resident Participants	682
Programs that Made	7
Cancelled Programs	2
% of Programs Cancelled	22%

FEE BASED RESIDENT VS NON-RESIDENT

7 programs



ANIMAL SERVICES



AUGUST SHOT CLINIC

TOTAL # OF DOGS SEEN

# OF DOGS SEEN	142
# OF CITY REGISTRATIONS	100

142



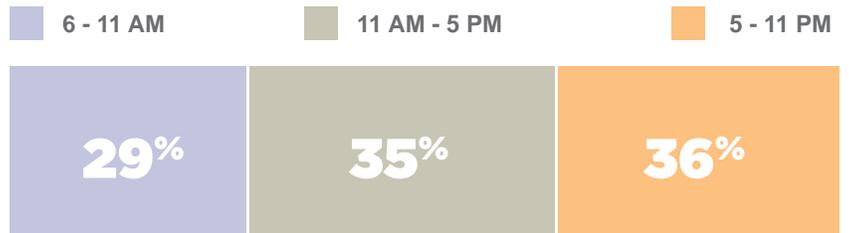
HMCC

AUG '19

Time Blocks Rented	66
Monthly Revenue	\$1320

HMCC RENTAL ACTIVITY BY TIME BLOCK

66 Rentals



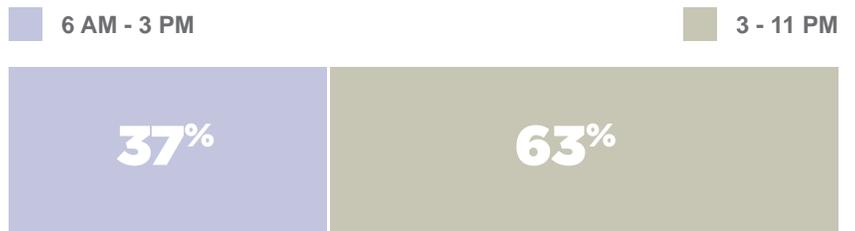
PAVILIONS

AUG '19

Time Blocks Rented	27
Monthly Revenue	\$960

PAVILION RENTAL ACTIVITY BY TIME BLOCK

27 Rentals



PARKS



FACILITY MANAGEMENT:

Tuttle mini renovation for 2019 Fall Season



FACILITY UPGRADES:

New dugout covers at Leon Tuttle 5-8.



FACILITY MAINTENANCE:

Pecan tree injection treatments at Myers Dog Park.



MARKETING

FACEBOOK PAGE LIKES



JUL

GAIN OR LOSS

+182

AUG

+60

TOTAL LIKES THRU 8/31/2019



13,703

ONLINE REGISTRATION ACCOUNTS THROUGH ACTIVE

JUL

ACCOUNTS

8857

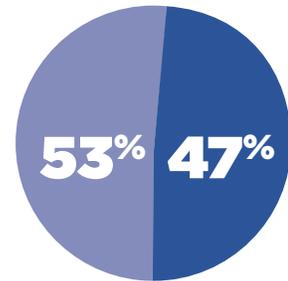
GAIN OR LOSS

+103

AUG

8891

+34



RESIDENT VS NON-RESIDENT ACCOUNTS

PLAYROCKWALL.COM PERFORMANCE METRICS

PLAYROCKWALL.COM

PAGEVIEWS

Pageviews represent the total individual pages viewed by visitors to playrockwall.com within the month of August 2019.

90,612

SESSIONS

Sessions represent an individual collection of a user's visit while viewing pages on playrockwall.com

17,492

USERS

Visitors to playrockwall.com

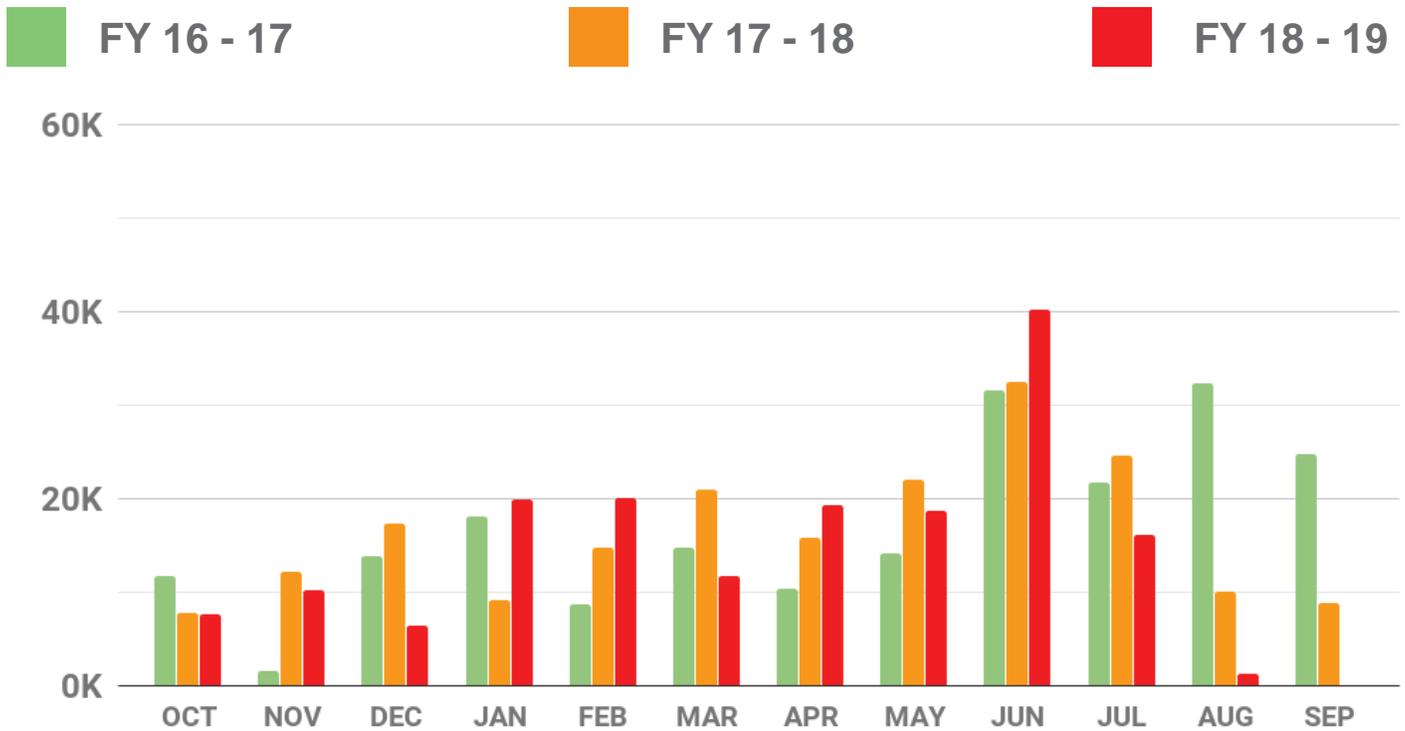
11,840

612

REVENUE

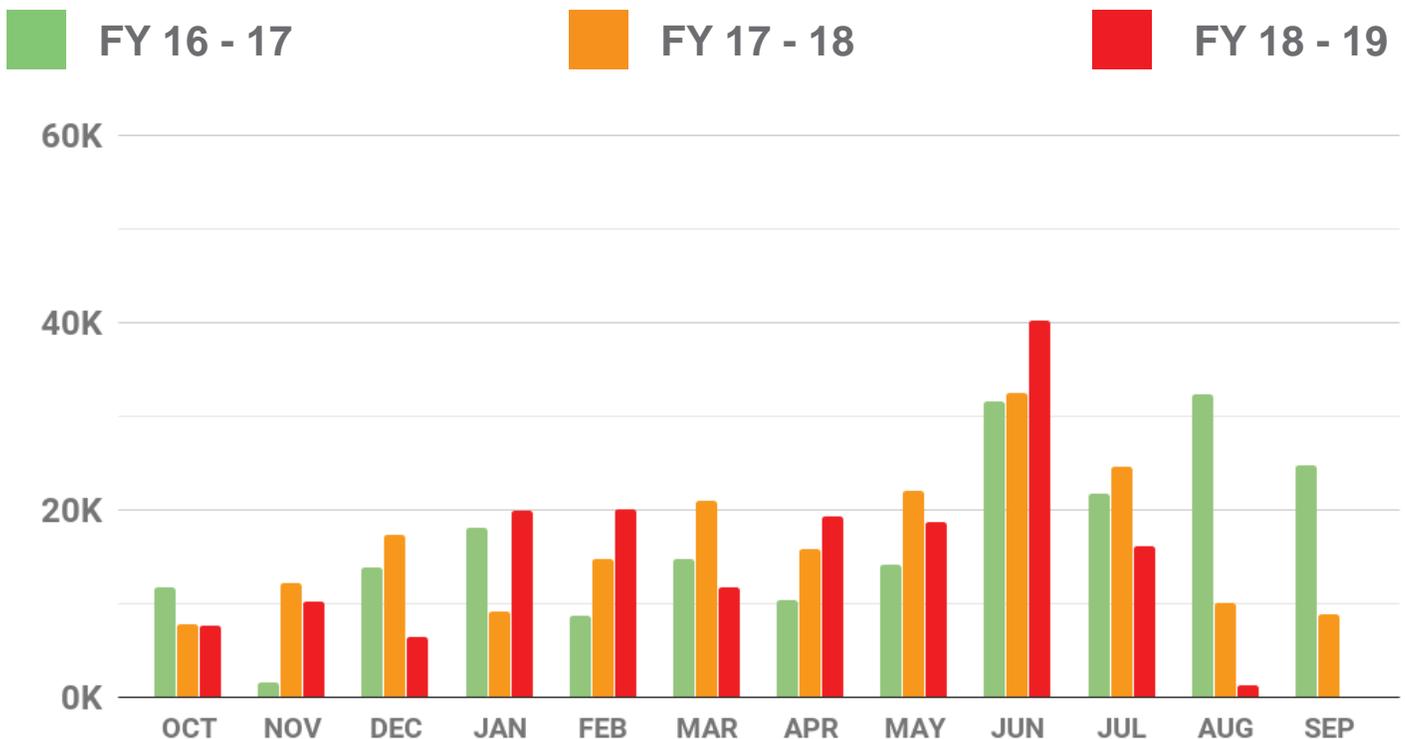
FEE BASED PROGRAM REVENUE BY MONTH

3 fiscal years



FACILITY REVENUE BY MONTH

3 fiscal years



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Rockwall Adoption Center

2019 Animal Statistics

	ADOPTIONS	RESCUED	RETURN TO OWNER	EUTHANIZED	1045*	INTAKES	DISPOSITIONS	LIVE
	Total—Average	Total-Average	Total—Average	Total—Average	Total-Average			OUTCOME
Jan '19	57-58%	12-12%	26-27%	3-3%	0-0%	100	98	97%
Feb '19	59-63%	3-3%	28-30%	1-1%	0-0%	113	91	96%
March '19	63-68%	8-9%	22-24%	0-0%	0-0%	86	93	100%
April '19	38-56%	5-7%	22-32%	1-1%	2-3%	76	68	95%
May '19	74-65%	14-12%	18-16%	6-5%	3-3%	135	115	92%
June '19	69-60%	18-16%	26-25%	1-1%	1-1%	109	115	99%
July '19	62-60%	18-17%	21-20%	2-2%	1-1%	97	104	97%
August '19	64-65%	10-10%	24-24%	1-1%	0-0%	114	99	99%
September '19								
October '19								
November '19								
December '19								

Rockwall Animal Adoption Center

PROFIT AND LOSS

August 2019

	TOTAL
Income	
4000 City of Rockwall	97,617.86
4100 Adoption Fee	
4111 Adoption Fee - Dog	4,095.00
4112 Adoption Fee - Cat	1,785.00
Total 4100 Adoption Fee	5,880.00
4200 Impound Fee	770.00
4300 Owner Surrender	1,545.00
4400 Direct Public Support	
4410 Corporate Contributions	70.42
Total 4400 Direct Public Support	70.42
4650 Medical	1,355.00
4700 General Donations	5,931.45
47200 Program Income	
47230 Membership Dues	125.00
Total 47200 Program Income	125.00
Total Income	\$113,294.73
GROSS PROFIT	\$113,294.73
Expenses	
5200 - Shelter Expense	
5203 Medication	6,711.54
5209 - Shelter Supplies	414.70
5220 - Truck Maintenance	221.81
5230 - Misc	34.05
Total 5200 - Shelter Expense	7,382.10
5300 - Veterinary Expense	4,990.26
5400 - Professional Services	2,083.34
65000 5000 - Administrative Expense	
5002 - Website	333.79
5004 - Paypal/Intuit fee	289.89
5005 - Postage	33.20
5006 - Bank Fees	-201.00
5040 - Retirement srvs - 401K	264.50
5050 - Payroll	24,971.34
5055 - Payroll Tax	1,843.30
5056 - 401K Employer/Healthcare	1,125.44
65040 5001 - Supplies	88.17
65050 5060 -Telephone, Telecomm	240.00
Total 65000 5000 - Administrative Expense	28,988.63
Total Expenses	\$43,444.33
NET OPERATING INCOME	\$69,850.40
NET INCOME	\$69,850.40

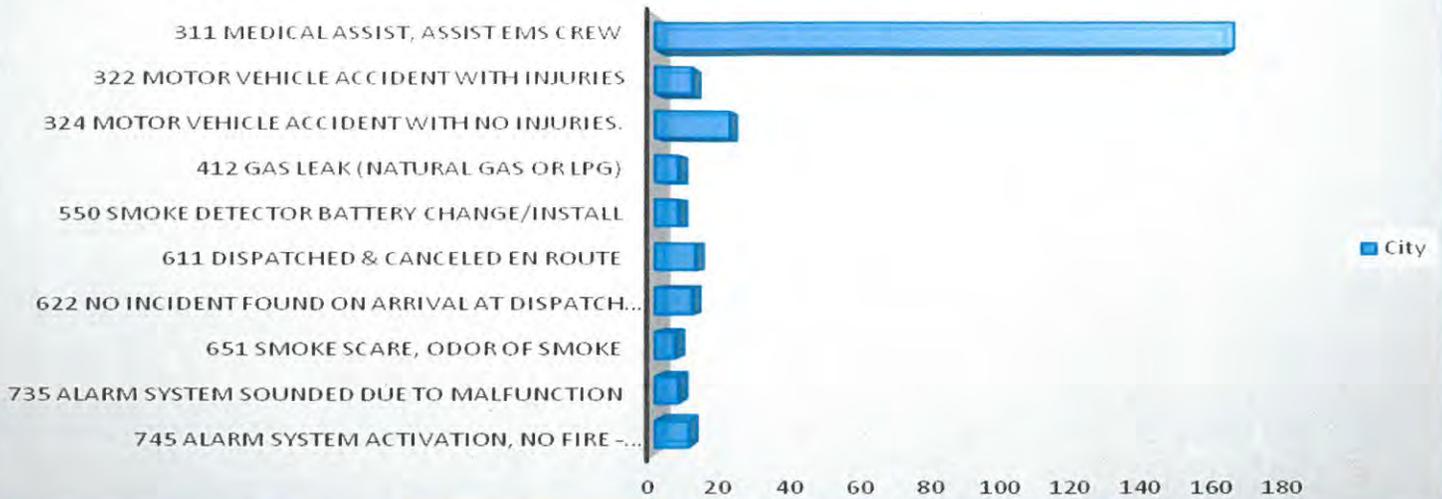
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**ROCKWALL FIRE
DEPARTMENT**

Monthly Report
August 2019

August 2019 Top Ten Calls



August 2019- All Calls

Situation Type	City
311 Medical assist, assist EMS crew	168
324 Motor vehicle accident with no injuries.	22
611 Dispatched & canceled en route	12
622 No incident found on arrival at dispatch address	11
322 Motor vehicle accident with injuries	11
745 Alarm system activation, no fire - unintentional	10
735 Alarm system sounded due to malfunction	7
412 Gas leak (natural gas or LPG)	7
550 Smoke Detector Battery Change/Install	7
651 Smoke scare, odor of smoke	6
743 Smoke detector activation, no fire - unintentional	5
652 Steam, vapor, fog or dust thought to be smoke	5
733 Smoke detector activation due to malfunction	4
131 Passenger vehicle fire (cars, pickups, SUV's)	3
160 Special outside fire, other	3
365 Watercraft rescue	2
740 Unintentional transmission of alarm, other	2
736 CO detector activation due to malfunction	2
555 Defective elevator, no occupants	2
342 Search for person in water	2
142 Brush or brush-and-grass mixture fire	2
671 HazMat release investigation w/no HazMat	2
444 Power line down	2
111 Building fire	1
113 Cooking fire, confined to container	1
510 Person in distress, other	1
150 OTHER Outside rubbish fire	1
424 Carbon monoxide incident	1
553 Public service	1
463 Vehicle accident, general cleanup	1
554 Assist invalid	1
700 False alarm or false call, other	1
151 Outside rubbish, trash or waste fire	1
413 Oil or other combustible liquid spill	1
132 Road freight or transport vehicle fire (Commercial Vehicles)	1
814 Lightning strike (no fire)	1
360 Water & ice-related rescue, other	1
744 Detector activation, no fire - unintentional	1
361 Swimming/recreational water areas rescue	1
746 Carbon monoxide detector activation, no CO	1
162 Outside equipment fire	1
411 Gasoline or other flammable liquid spill	1
462 Aircraft standby	1
Totals	619

619

317

August 2019 Travel Times

90% of calls per District- Travel Times

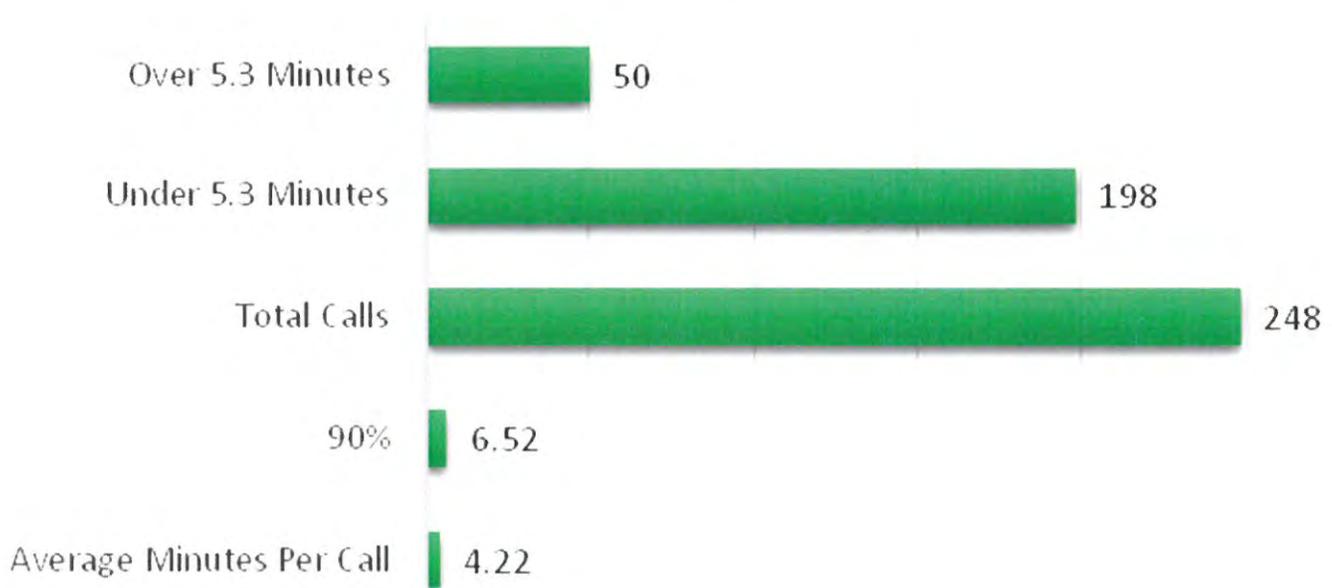


Travel Time Analysis- <i>By District</i> ALL CALLS- (No Mutual Aid)				Total Number of Calls	Average Travel Time Minutes	Percent of Runs per District
% in 4 min or less	All Code 3 Calls-No Cancelled enroute calls					
<u>100s</u>	89%	On Scene in	4.0 minutes or less	81	2.40	33.06%
<u>200s</u>	77%	On Scene in	4.0 minutes or less	70	2.96	28.57%
<u>300s</u>	89%	On Scene in	4.0 minutes or less	18	2.68	7.35%
<u>400s</u>	75%	On Scene in	4.0 minutes or less	55	3.27	22.45%
500s	30%	On Scene in	4.0 minutes or less	7	6.92	2.86%
600s	50%	On Scene in	4.0 minutes or less	4	3.85	1.63%
700s	11%	On Scene in	4.0 minutes or less	9	4.92	3.67%
800s	0%	On Scene in	4.0 minutes or less	0		
900s	0%	On Scene in	4.0 minutes or less	1	11.55	0.41%
Total Calls				245		

August 2019 Dispatch to Arrival Analysis

<u><i>Dispatch to Arrival Analysis-(No Mutual Aid)</i></u>				Total Calls
78%	On Scene in	5.3	minutes or less	198
84%	On Scene in	6.0	minutes or less	209
92%	On Scene in	7.0	minutes or less	229
97%	On Scene in	8.0	minutes or less	241
98%	On Scene in	9.0	minutes or less	244
100%	On Scene in	13.0	minutes or less	248
Total Calls				248

Dispatch to Arrival Analysis All Calls (No Mutual Aid)





Total Dollar Losses

August 2019



City of Rockwall
The New Horizon

Rockwall Fire Department

Print Date/Time: 09/20/2019 16:30
Login ID: rck\sdean
Layer: All
Areas: All

ORI Number: TX504
Incident Type: All
Station: All

	Current Month	Last Month	Same Month Last Year	Year To Date	Last Year To Date
Total Property Loss:	\$0.00	\$10,500.00	\$95,876.00	\$136,215.00	\$522,248.00
Total Content Loss:	\$0.00	\$5,500.00	\$12,281.40	\$50,500.00	\$169,216.80
Total Property Pre-Incident Value:	\$0.00	\$450,450.00	\$811,930.00	\$5,164,756.92	\$1,853,230.00
Total Contents Pre-Incident Value	\$0.00	\$108,660.00	\$256,005.00	\$636,576.35	\$695,573.00
Total Losses:	\$0.00	\$16,000.00	\$108,157.40	\$186,715.00	\$0.00
Total Value:	\$0.00	\$559,110.00	\$1,067,935.00	\$5,801,333.27	\$2,548,803.00



Fire Marshal Division

Monthly Report - August 2019

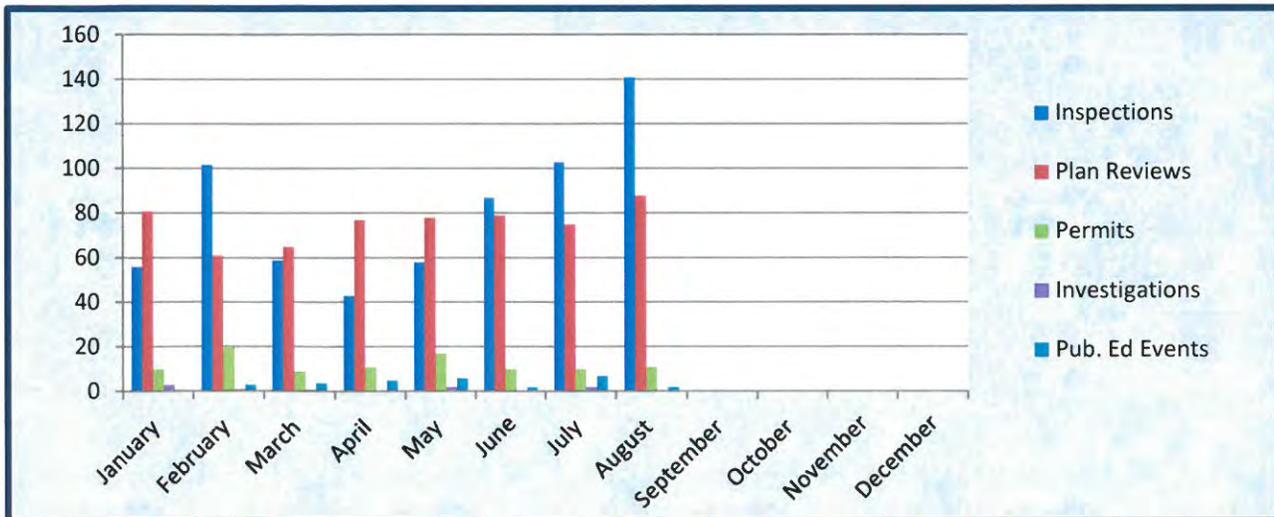
Inspection Status Report	
Total for the Month	141

Public Education Events	
Total for the Month	2

Fire Permit Report	
Doors - Access Control	2
Fire Alarm	2
Fire Sprinkler	4
Fireworks	1
Kitchen Suppression	1
Underground Sprinkler	1
Total for the Month	11

Fire Investigations Status Report	
Active Investigations	0
Closed Investigations	0
Total for the Month	0

Plan Review Report	
CO	12
COMM	46
Engineering	6
Plat	6
Site Plan	6
Single Family	2
Special Event	5
TCO	2
Zoning	3
Total for the Month	88



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Rockwall Police Department

Monthly Activity Report

August-2019

ACTIVITY	CURRENT MONTH AUGUST	PREVIOUS MONTH JULY	YTD 2019	YTD 2018	YTD % CHANGE
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PART 1 OFFENSES

Homicide / Manslaughter	0	0	0	1	-100.00%
Sexual Assault	0	2	11	7	57.14%
Robbery	0	1	7	5	40.00%
Aggravated Assault	3	5	19	13	46.15%
Burglary	6	5	38	22	72.73%
Larceny	60	75	425	457	-7.00%
Motor Vehicle Theft	11	8	39	36	8.33%
TOTAL PART I	80	96	539	541	-0.37%
TOTAL PART II	122	108	1065	1195	-10.88%
TOTAL OFFENSES	202	204	1604	1736	-7.60%

ADDITIONAL STATISTICS

FAMILY VIOLENCE	22	10	137	132	3.79%
D.W.I.	22	8	132	174	-24.14%

ARRESTS

FELONY	30	25	254	238	6.72%
MISDEMEANOR	67	50	496	582	-14.78%
WARRANT ARREST	12	9	84	104	-19.23%
JUVENILE	5	3	29	37	-21.62%
TOTAL ARRESTS	114	87	863	961	-10.20%

DISPATCH

CALLS FOR SERVICE	1696	1635	12168	11037	10.25%
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ACCIDENTS

INJURY	8	7	85	102	-16.67%
NON-INJURY	68	55	495	424	16.75%
FATALITY	0	0	0	2	-200.00%
TOTAL	76	62	580	528	9.85%

FALSE ALARMS

RESIDENT ALARMS	47	64	446	531	-16.01%
BUSINESS ALARMS	145	144	1064	1026	3.70%
TOTAL FALSE ALARMS	192	208	1510	1557	-3.02%
Estimated Lost Hours	126.72	137.28	996.6	1027.62	-3.02%
Estimated Cost	\$3,014.40	\$3,265.60	\$23,707.00	\$24,444.90	-3.02%

ROCKWALL NARCOTICS UNIT

Number of Cases	6
Arrests	3
Arrest Warrants	1
Search Warrants	
Seized	
Cocaine	12.5 kg
Heroin	6.7 kg
Marijuana	2 lbs
Methamphetamine	106 kg

Rockwall Police Department

Dispatch and Response Times

August 2019

Police Department

	Average Response Time	
Priority 1		Number of Calls 116
Call to Dispatch	0:01:41	
Call to Arrival	0:05:40	
% over 7 minutes	22%	
	Average Response Time	
Priority 2		Number of Calls 298
Call to Dispatch	0:03:44	
Call to Arrival	0:10:32	
% over 7 minutes	60%	
	Average Response Time	
Priority 3		Number of Calls 63
Call to Dispatch	0:04:59	
Call to Arrival	0:14:08	
% over 7 minutes	62%	

Average dispatch response time goals are as follows:

Priority 1: 1 Minute

Priority 2: 1 Minute, 30 Seconds

Priority 3: 3 Minutes

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September 9, 2019

To: City of Rockwall

From: Ashley Berryhill, Grant Director

Re: August 2019 Demand and Response Ridership Report

TRIP INFORMATION:

MONTH	NO. OF SERVICE DAYS	TRIPS
AUGUST	22	1,855

Non-Service Days: None

NO. OF TRIPS	PURPOSE
1,120	Contract Service
8	Education
0	Government
12	Medicaid
315	Medical
14	Nutrition (Senior Center)
133	Other (adult-day care, beauty salon, friend's homes, etc.)
103	Shopping
150	Work

AUGUST UNDUPLICATED PASSENGERS
84
YEAR TO DATE UNDUPLICATED PASSENGERS
273

Adjusted Trip Total	723
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*Trip Totals without Contracts or Medicaid

> = 60	533
DIS >60	111
	644
% E & D Trip Total	89%

FY 2019 TOTAL DEMAND AND RESPONSE TRIPS TO DATE: 19,003

(FY 2019-SEPTEMBER 1, 2018 -AUGUST 31, 2019)

PRIOR YEAR: AUGUST 2018 TRIP TOTAL= 1,409 (32% INCREASE)



ROCKWALL CITY CONTRACT	1Q	2Q	3Q	4Q	PURPOSE TOTALS
EDU	14	2	24	8	48
GOV	6	2	2	4	14
MDE	215	254	249	180	898
MED	752	489	782	755	2,778
NUT	152	71	89	104	416
OTH	961	902	742	589	3,194
SHP	405	161	514	332	1,412
WORK	576	413	446	464	1,899
	5,703	3,754	5,706	4,305	19,468

ROCKWALL CITY	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	TOTALS
(UPT) Unlinked Passenger Trips	1,970	2,146	1,587	1,145	1,335	1,274	2,060	1,762	1,884	1,489	1,545	1,409	19,606
CONTRACT	894	1,052	676	417	550	493	1,166	818	874	625	711	533	8,809
EDU	7	6	1	0	2	0	8	13	3	4	2	2	48
GOV	4	0	2	2	0	0	2	0	0	2	2	0	14
MDE	69	78	68	91	71	92	72	68	109	78	59	43	898
MED	267	267	218	139	174	176	242	258	282	286	220	249	2,778
NUT	33	74	45	22	26	23	26	40	23	37	35	32	416
OTH	311	313	337	282	313	307	299	247	196	178	147	264	3,194
SHP	159	162	84	72	46	43	117	172	225	131	86	115	1,412
WORK	226	194	156	120	153	140	128	146	172	148	145	171	1,899
TOTAL DR TRIPS	1,970	2,146	1,587	1,145	1,335	1,274	2,060	1,762	1,884	1,489	1,407	1,409	19,468

	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	TOTALS
Medicaid	69	78	68	91	71	92	72	68	109	78	59	43	898
Lakepointe Church Contract	894	1,052	676	417	550	493	1,166	818	874	625	711	533	8,809
Nursing Home Contracts	0	0	0	0	0	0	0	0	0	0	0	0	0
Charters	0	0	0	0	0	0	0	0	0	0	0	0	0
	963	1,130	744	508	621	585	1,238	886	983	703	770	576	9,707

	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	TOTALS
Adjusted Trip Total	1,007	1,016	843	637	714	689	822	876	901	786	775	833	9,899

*Trip Totals without Contracts or Medicaid

	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	TOTALS
>= 60	550	645	491	309	338	350	457	480	502	462	390	421	5,395
DIS <60	231	256	214	181	229	170	169	201	164	141	144	143	2,243
% of Adjusted Trip Total	78%	89%	84%	77%	79%	75%	76%	78%	74%	77%	69%	68%	

	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	TOTALS
GENERAL PUBLIC	226	115	138	147	147	169	196	195	235	183	241	269	2,261
% of Adjusted Total	22%	11%	16%	23%	21%	25%	24%	22%	26%	23%	31%	32%	

	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-17	TOTALS
DOS	20	22	20	19	22	19	21	21	22	21	21	23	251

NoShow/Cancel	504	600	709	565	673	519	566	585	617	577	602	565	7082
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UNDUPLICATED M2M	122	132	115	98	101	114	116	111	120	104	115	88	1336
UNDUPLICATED YTD	-	168	195	227	254	280	308	333	364	385	413	427	3354

	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-17	TOTALS
Subscription Trips	394	449	354	372	430	404	397	462	495	376	420	342	4895
Percent Subs of Total Trips	20%	21%	22%	32%	32%	32%	19%	26%	26%	25%	30%	24%	
SUBS Can/NoShow	104	101	187	209	229	12	201	165	193	249	240	178	2068

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