Post Office Box 9010 Addison, Texas
75001-9010
5300 Belt Line Road
(972) 450-7000 Fax: (972) 450-7043

AGENDA

REGULAR MEETING OF THE CITY COUNCIL

AND / OR

WORK SESSION OF THE CITY COUNCIL

6:00 PM

JULY 12, 2011

TOWN HALL

ADDISON TOWN HALL, 5300 BELT LINE, DALLAS, TX 75254

WORK SESSION

Item #WS1 -	Utility Fund presentation and discussion regarding proposed 2011-2012 budget.

REGULAR MEETING

Pledge of Allegiance

Item #R1-	Consideration of Old Business
	Introduction of Employees
	Discussion of Events/Meetings

Announcements and acknowledgments regarding Town and Council events and activities.

Item #R2- Consent Agenda.

#2a- Approval of Minutes for the June 28, 2011 Regular Council Meeting.

#2b- Approval of a change order totaling $27,158.00 for additional excavation and landscaping by Elite Landscape related to the Redding Trail Extension and George H.W. Bush Elementry School site improvements.

Item #R3 - Acknowledgement of the Government Finance Officers Association Distinguished Budget Presentation Award to the Town of Addison for the fiscal year beginning October 1, 2010.

Item #R4 - **PUBLIC HEARING** Discussion and consideration of approval regarding an resolution affirming the Town's participation in the Texas Enterprise Zone Program and nominating Mary Kay Inc., as an Enterprise Project.

Attachment(s):

1. 2010 Mary Kay Ordinance
2. 2011 Mary Kay Letter
3. Texas Enterprise Zone Overview
4. 2011 Mary Kay Resolution

Recommendation:

Staff recommends approval.

Item #R5 - Discussion regarding Metrocrest Leadership Class XXIII.

Attachment(s):

1. Leadership Metrocrest Application

Item #R6 - Presentation, discussion and consideration of approval of an Ordinance amending the Town's Code of Ordinances by amending section 70-33 of the said code relating to standard specifications for paving and drainage construction and drainage criteria governing the construction, paving and drainage aspects of all streets, roads and alleys in the town, subject to final review by the City Attorney.

Attachment(s):

1. Ordinance Amending 70-33 of the Code of Ordinances
2. Drainage Criteria Manual

Recommendation:

Staff recommends approval subject to final review by the City Attorney.

Item #R7 - Presentation, discussion and consideration of approval to authorize the City Manager to execute Change Order No. 1.2 with North Texas Contracting, Inc., in the amount of $55,935.50 and a deduction of two (2) calendar days for the construction of Spring Valley Road (a portion of the Spring Valley Road/Vitruvian Way Extension project).

Attachment(s):

1. Change Order 1.2

Recommendation:

Staff recommends approval.

Item #R8 - Presentation, discussion and consideration of approval to authorize the City Manager to execute Change Order No. 2.2 with North Texas Contracting, Inc., in the amount of $10,107.59 for the construction of certain public infrastructure (including streets and water lines, and other public infrastructure improvements) within that area of the Town generally known as Vitruvian Park (Vitruvian Park Public Infrastructure Phase 1E, and a portion of the Spring Valley Road/Vitruvian Way Extension project).

Attachment(s):

1. Change Order 2.2
2. Cost Analysis
3. Vitruvian Signage Packet

Recommendation:

Staff recommends approval.

Item #R9 - Presentation, discussion and consideration of approval to authorize the City Manager to execute a Supplemental Agreement to the Agreement for Professional Services with Icon Consulting Engineers, Inc. for an amount not to exceed $109,500 for additional services related to the design of certain public infrastructure (including park, streetscape and other public infrastructure improvements) within that area of the Town generally known as Vitruvian Park (Vitruvian Park Public Infrastructure Phase 1C).

Attachment(s):

1. Proposal from Icon Consulting Engineers, Inc.
2. Cost Analysis

3. Cost Analysis for Phase 1C

Recommendation:

Staff recommends approval.

Adjourn Meeting

Posted:
Lea Dunn, 7/8/2011, 5:00 pm

THE TOWN OF ADDISON IS ACCESSIBLE TO PERSONS WITH DISABILITIES. PLEASE CALL (972) 450-2819 AT LEAST 48 HOURS IN ADVANCE IF YOU NEED ASSISTANCE.

Council Agenda Item: #WS1

AGENDA CAPTION:

Utility Fund presentation and discussion regarding proposed 2011-2012 budget.

FINANCIAL IMPACT:

N/A

BACKGROUND:

N/A

RECOMMENDATION:

N/A

COUNCIL GOALS:

N/A

ATTACHMENTS:

Description:	Type:
No Attachments Available	

Council Agenda Item: #R1

AGENDA CAPTION:

Announcements and acknowledgments regarding Town and Council events and activities.

FINANCIAL IMPACT:

n/a

BACKGROUND:

n/a

RECOMMENDATION:

n/a

COUNCIL GOALS:

N/A

ATTACHMENTS:

Description:	Type:
No Attachments Available	

Council Agenda Item: #R 2a

AGENDA CAPTION:

Approval of Minutes for the June 28, 2011 Regular Council Meeting.

FINANCIAL IMPACT:

N/A

BACKGROUND:

N/A

RECOMMENDATION:

N/A

COUNCIL GOALS:

N/A

ATTACHMENTS:

Description:	Type:
☐ June 28 minutes	Cover Memo

OFFICIAL ACTIONS OF THE ADDISON CITY COUNCIL
WORK SESSION

June 28, 2011
6:00 PM - Town Hall
Addison Town Hall, 5300 Belt Line, Dallas, TX 75254
Upstairs Conference Room

Council Members Present:

Arfsten, Clemens, DeFrancisco, Lay, Meier, Mellow, Resnik

Absent:

None

Work Session

Item #WS1 - Discussion regarding economic development priorities and incentive policy review.

Item #WS2 - Presentation and discussion of the Town of Addison's Storm Water Management Program.

_____

Mayor-Todd Meier

Attest:

_____

City Secretary-Lea Dunn

OFFICIAL ACTIONS OF THE ADDISON CITY COUNCIL
REGULAR MEETING

June 28, 2011
6:00 PM - Town Hall
Addison Town Hall, 5300 Belt Line, Dallas, TX 75254
Lea Dunn, 6/24/2011, 5:00 pm

Council Members Present:

Arfsten, Clemens, DeFrancisco, Lay, Meier, Mellow, Resnik

Absent:

None

REGULAR MEETING

Item #R1 - Consideration of Old Business

Item #R2 - Consent Agenda

#2a - Approval of Minutes for the June 14, 2011 Regular Council Meeting.

A motion to Approve was made by Councilmember Blake Clemens.
The motion was seconded by Councilmember Kimberly Lay.
The motion result was: Passed
Voting Aye: Arfsten, Clemens, DeFrancisco, Lay, Meier, Mellow, Resnik
Voting Nay: None

#2b - Approval of a professional services agreement with Edward B. Peacock, CPA in an amount not to exceed $38,000 for financial staff support and audit preparation, subject to final review and approval of the City Attorney.

A motion to Approve was made by Councilmember Blake Clemens.
The motion was seconded by Councilmember Kimberly Lay.

The motion result was: Passed
Voting Aye: Arfsten, Clemens, DeFrancisco, Lay, Meier, Mellow, Resnik
Voting Nay: None

#2c - Approval to purchase, install and monitor security cameras at the Service Center facility by Stealth Monitoring Inc.

A motion to Approve was made by Councilmember Blake Clemens. The motion was seconded by Councilmember Kimberly Lay.
The motion result was: Passed
Voting Aye: Arfsten, Clemens, DeFrancisco, Lay, Meier, Mellow, Resnik
Voting Nay: None

Item #R3 - PUBLIC HEARING Case 1634-SUP/The Hub Sports Bar and Grill. Public hearing on, and discussion and consideration of approval of a change in zoning by approval of a Special Use Permit for a restaurant, a Special Use Permit for the sale of alcoholic beverages for on-premises consumption, a Special Use Permit for a billiard parlor, and a Special Use Permit for an arcade, on property located at 4145 Belt Line Road, Suite 200, on application from the Hub Sports Bar and Grill, represented by Mr. Bill Hidell of Hidell and Associates, Architects. COMMISSION FINDINGS: The Addison Planning and Zoning Commission, meeting in regular session on June 16, 2011, voted to recommend approval of a Special Use Permit for a restaurant, a Special Use Permit for the sale of alcoholic beverages for on-premises consumption only, a Special Use Permit for a billiard parlot, and a Special Use Permit for an arcade, located at 4145 Belt Line Road, Suite 200, on application from the Hub Sports Bar and Grill, subject to the following conditions: -Prior to the development of the exterior patio, the applicant shall replace 624 square feet of landscaping in a location approved by the Parks Director, -The applicant shall not use any terms or graphic depictions that denote alcoholic beverages in exterior signs. Voting Aye: Doherty, Groce,

Gunther, Hewitt, Oliver, Wheeler,Voting Nay: noneAbsent: Angell

Bill Hidell of Hidell and Associates, Architects and Carmen Moran spoke regarding this item.

A motion to Approve was made by Councilmember Neil Resnik.
The motion was seconded by Councilmember Bruce Arfsten.
The motion result was: Passed
Voting Aye: Arfsten, Clemens, DeFrancisco, Lay, Meier, Mellow, Resnik
Voting Nay: None

Item #R4 - Discussion and consideration of approval of an agreement with Coban and Research Technologies Inc., for the removal of existing in-car video and related systems and purchase, installation and configuration of sixteen (16) new In-Car Video Cameras.

Hamid Khaleghipour spoke regarding this item.

A motion to Approve was made by Councilmember Blake Clemens.
The motion was seconded by Councilmember Chris DeFrancisco.
The motion result was: Passed
Voting Aye: Arfsten, Clemens, DeFrancisco, Lay, Meier, Mellow, Resnik
Voting Nay: None

Item #R5 - Discussion and consideration of approval of an agreement with PCS Mobile for the purchase, installation and configuration of sixteen (16) new rugged laptops.

Hamid Khaleghipour spoke regarding this item.

A motion to Approve was made by Councilmember Blake Clemens.
The motion was seconded by Councilmember Kimberly Lay.
The motion result was: Passed

Voting Aye: Arfsten, Clemens, DeFrancisco, Lay, Meier, Mellow, Resnik
Voting Nay: None

Item #R6 - Presentation, discussion and consideration of approval of a Major Capital Improvement Program Master Interlocal Agreement between the Town of Addison and Dallas County and authorizing the City Manager to execute the Agreement.

Lea Dunn spoke regarding this item.

A motion to Approve was made by Councilmember Kimberly Lay.
The motion was seconded by Councilmember Bruce Arfsten.
The motion result was: Passed
Voting Aye: Arfsten, Clemens, DeFrancisco, Lay, Meier, Mellow, Resnik
Voting Nay: None

Item #R7 - Discussion and consideration of approval of a contract with Global Technology Solutions, Inc., for design and deployment of an Online Automation System for Addison Special Events.

Hamid Khaleghipour spoke regarding this item.

A motion to Approve was made by Councilmember Bruce Arfsten.
The motion was seconded by Councilmember Blake Clemens.
The motion result was: Passed
Voting Aye: Arfsten, Clemens, DeFrancisco, Lay, Meier, Mellow, Resnik
Voting Nay: None

Item #R8 - Presentation, discussion and consideration of approval of a Professional Services Agreement with Nathan D. Maier Consulting Engineers, Inc. for an amount not to exceed $33,853.00 for the design

of certain public infrastructure (including channel improvements and other public infrastructure improvements) within that area of the Town generally known as Vitruvian Park (Vitruvian Park Public Infrastructure Phase 1D), and authorizing the City Manager to execute the Agreement.

Clay Barnett spoke regarding this item.

A motion to Approve was made by Councilmember Kimberly Lay.
The motion was seconded by Councilmember Bruce Arfsten.
The motion result was: Passed
Voting Aye: Arfsten, Clemens, DeFrancisco, Lay, Meier, Mellow, Resnik
Voting Nay: None

_____

Mayor-Todd Meier

Attest:

_____

City Secretary-Lea Dunn

Council Agenda Item: #R 2b

AGENDA CAPTION:

Approval of a change order totaling $27,158.00 for additional excavation and landscaping by Elite Landscape related to the Redding Trail Extension and George H.W. Bush Elementry School site improvements.

FINANCIAL IMPACT:

The financial impact is summarized on the attached Project Cost Summary. The unit costs for the sod and the hydroseed are consistent with the unit costs submitted on the base bid for this contract.

BACKGROUND:

This project involves construction of the Redding Trail and the outdoor George H.W. Bush Elementary landscape, playground and learning garden improvements. The purpose for requesting this change order is for removal of unforseen rock encountered during the excavation of the Redding Trail, and changing out the grass planting on the Bush Elementary site from hydroseeded grass to solid sod.

During the excavation of the Redding Trail on the Greenhill School site, Elite Landscaping uncovered a significant amount of rock spoil material that was covered up with soil many years ago from Greenhill School construction activities. This will require additonal haul off that the contractor had no way of knowing about when he prepared his initial bid.

Due to delays with the completion of the school building construction, Elite Landscape was held up for four months before landscape work could commence on the school site. Since there is a very narrow timeframe to complete grass establishment before school starts, staff recommends changing the grass planting method from seeding to laying sod, so there will be a solid stand of grass when school begins in late August.

RECOMMENDATION:

Staff requested review of the proposed change order by Kent Price with the Town's Programs and Project Management consultant,

R.H. Shackelford. Based on his review, staff and Shackelford recommend approval.

COUNCIL GOALS:

Conduct the Business of the Town in a Fiscally Responsible Manner, Take actions to make Addison a leader in sustainable development and operations that protect and enhance the Town's quality of life

ATTACHMENTS:

Description:	Type:
☐ Project Cost Summary	Backup Material
☐ Site Plan Improvements	Exhibit

Redding Trail Extension - George H.W. Bush Elementary Site Improvements

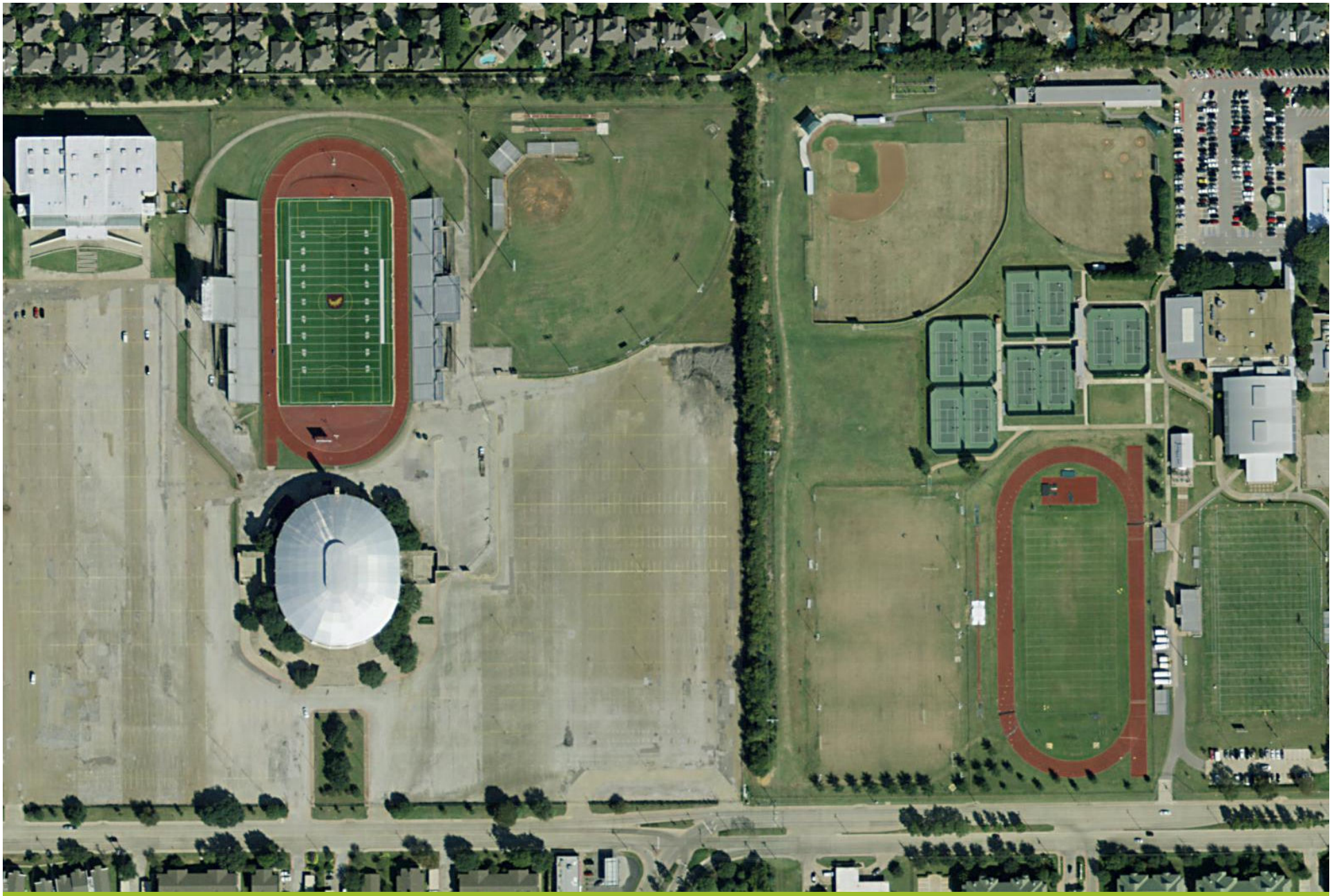
Project Cost Summary - July 2011

Total Construction Budget	$945,018.00
Construction Contract Amount	$828,871.00
Change Orders To Date - #1 and #2	$16,278.00
Proposed Change Order - #3	$27,158.00
Total Construction Sum With Change orders	$872,307.00
Remaining Funds	$72,711.00

Total Change Orders Represent 5.2 Percent of Base Contract.

Funding Sources

Parks Capital Improvements Projects	$222,273.00
DISD Interlocal Agreement Contribution	$241,321.00
Dallas County Grant	$106,224.00
NCTCOG Sustainable Development Grant	$350,000.00
Other Donations - Addison Mid-Day Rotary and Addison Arbor Foundation	$25,200.00
	$945,018.00

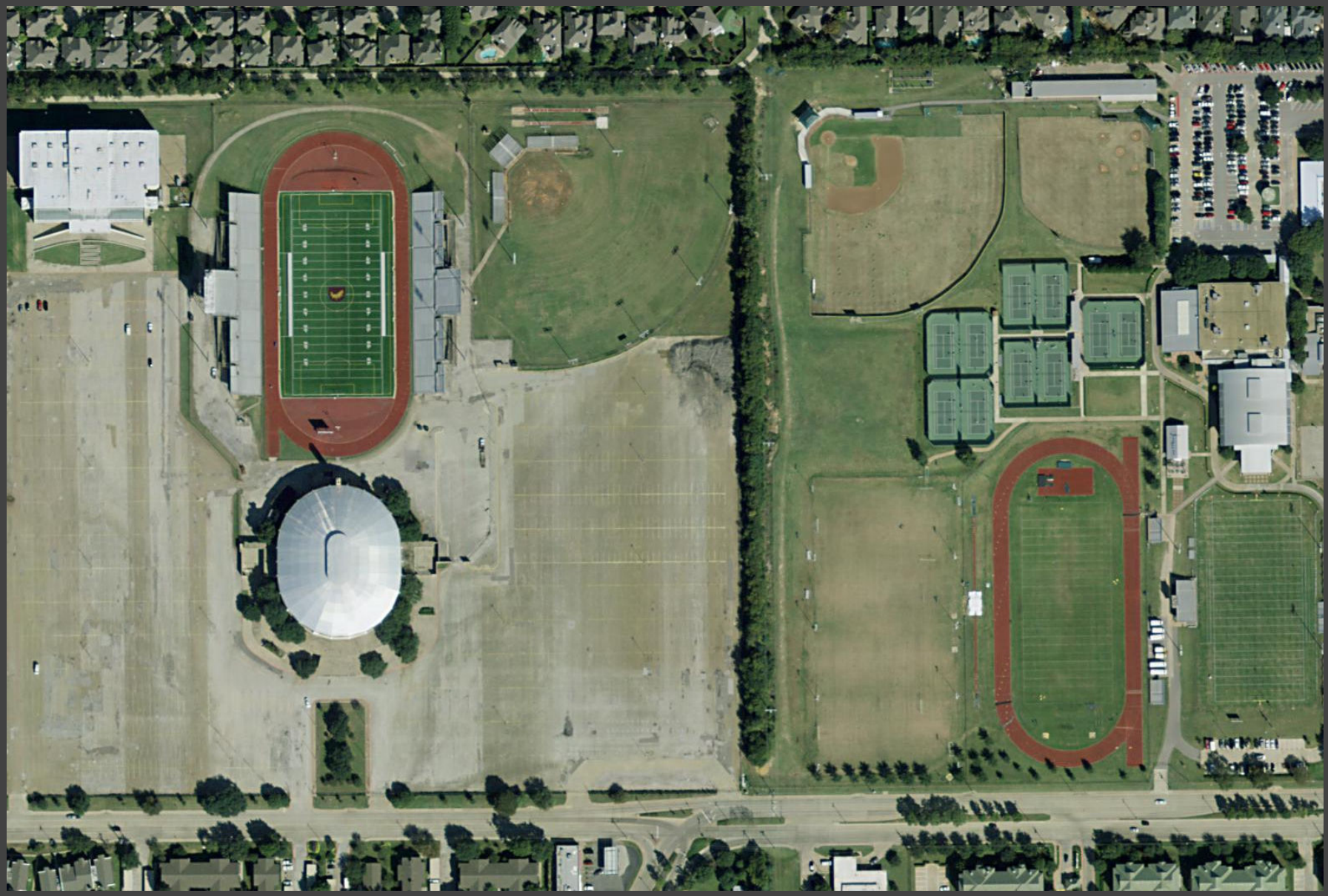


TOWN OF ADDISON: GEORGE HERBERT WALKER BUSH ELEMENTARY SCHOOL & REDDING TRAIL

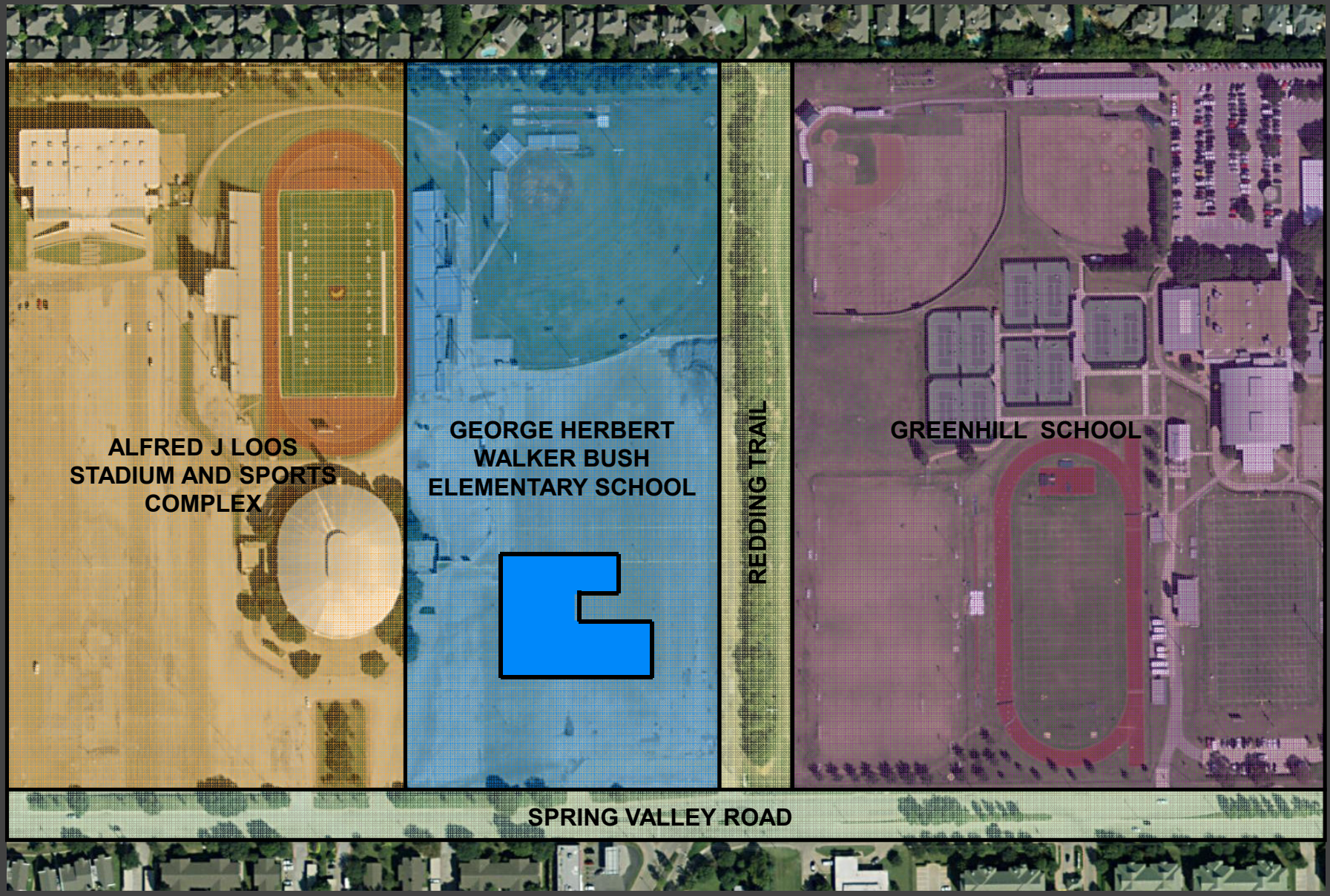
August 10, 2010

Addison!®

TBG



PROJECT AERIAL



PROJECT AERIAL

SITE PHOTOS

SITE PHOTOS

OVERALL MASTERPLAN

REDDING TRAIL MASTERPLAN

BALANCE OF SCHOOL MASTERPLAN

SCHOOL PLAYGROUND MASTERPLAN

SCHOOL PLAYGROUND ENLARGEMENT

George H.W. Bush Elementary - Redding Trail Extension

Estimated Construction Cost Summary

Redding Trail Extension - Construction Cost Estimate		
Base Bid - Concrete Trail, Benches, Turf and Fencing		$228,006.00
Redding Trail Extension Additive Alternates		
1 - Overlook Plazas/Trail Lighting		$173,125.00
	Total:	**$401,131.00**
Redding Trail Funding Sources		
Dallas County		$200,000.00
NCTCOG Sustainable Development Grant		$300,000.00
TPWD Trail Grant (Pending Award)		$200,000.00
	Total:	**$700,000.00**

George H.W. Bush Elementary Construction Cost Estimate		
Base Bid - Landscaping, Irrigation, Enhanced Plaza and Playgrounds		$521,668.00
George H.W. Bush Elementary Additive Alternates		
1 - Playground Shade Structure/Learning Garden/Trees		$81,800.00
	Total:	**$603,468.00**
George H.W. Bush Elementary Funding Sources		
Parks Capital Improvement Project Funds		$292,138.00
DISD Interlocal Agreement Contribution		$241,320.00
	Total:	**$533,458.00**

Council Agenda Item: #R3

AGENDA CAPTION:

Acknowledgement of the Government Finance Officers Association Distinguished Budget Presentation Award to the Town of Addison for the fiscal year beginning October 1, 2010.

FINANCIAL IMPACT:

The cost associated with the review of the Town's annual budget document by a committee of financial professionals is $425.

BACKGROUND:

This is the 24th consecutive year the Town has received the Distinguished Budget Presentation Award. According to the Government Finance Officers Association, the award represents a significant achievement by the recipient and "reflects the commitment of the governing body and staff to meeting the highest principles of governmental budgeting." To receive the award, the Town's 2010-11 budget document had to satisfy 27 criteria in four major categories of the budget as a policy document, financial plan, operations guide, and communications device.

Comments from the reviewers of the Town's document include: "The budget document is very well done and has an overall appearance of a professional publication. The quality of the graphics is superb and the layout is a cut above other documents I have seen over the years." "The document is outstanding as a communications device." "The creativity and professionalism in this document is impressive."

RECOMMENDATION:

COUNCIL GOALS:

Conduct the Business of the Town in a Fiscally Responsible Manner

ATTACHMENTS:

Description:	Type:
No Attachments Available	

Council Agenda Item: #R4

AGENDA CAPTION:

PUBLIC HEARING Discussion and consideration of approval regarding an resolution affirming the Town's participation in the Texas Enterprise Zone Program and nominating Mary Kay Inc., as an Enterprise Project.

FINANCIAL IMPACT:

N/A

BACKGROUND:

Staff received a request from Mr. Michael Lunceford, Senior V.P. of Governmental Relations with Mary Kay Inc., to have the City Council consider endorsing Mary Kay Inc.'s application and nominating the corporation to participate in the Texas Enterprise Zone Program (EZP) offered by the State of Texas Office of the Governor – Economic Development & Tourism Division. This program is a State sales and use taxes refund economic incentive based on job creation and retention over a five year designation period. The EZP process requires the nominating local government to pass an Ordinance authorizing the establishment of an EZP within its jurisdiction.

Mary Kay Inc. has hired the firm of Price Waterhouse to prepare the EZP application for them.

Project Managers: Orlando Campos and John Hill

RECOMMENDATION:

Staff recommends approval.

COUNCIL GOALS:

N/A

ATTACHMENTS:

Description:	Type:
☐ 2010 Mary Kay Ordinance	Ordinance
☐ 2011 Mary Kay Letter	Cover Memo
☐ Texas Enterprise Zone Overview	Backup Material
☐ 2011 Mary Kay Resolution	Resolution Letter

TOWN OF ADDISON, TEXAS

ORDINANCE NO. 010-021

AN ORDINANCE OF THE CITY COUNCIL OF THE TOWN OF ADDISON, TEXAS ORDAINING THE CITY'S PARTICIPATION IN THE TEXAS ENTERPRISE ZONE PROGRAM PURSUANT TO THE TEXAS ENTERPRISE ZONE ACT, CHAPTER 2303, TEXAS GOVERNMENT CODE; DESCRIBING POTENTIAL INCENTIVES; DESIGNATING A LIAISON FOR COMMUNICATION WITH INTERESTED PARTIES; NOMINATING MARY KAY INC. TO THE OFFICE OF THE GOVERNOR ECONOMIC DEVELOPMENT & TOURISM THROUGH THE TEXAS ECONOMIC DEVELOPMENT BANK AS AN ENTERPRISE PROJECT; PROVIDING A SAVINGS CLAUSE; PROVIDING A SEVERABILITY CLAUSE; PROVIDING ANEFFECTIVE DATE.

WHEREAS, the City Council of the Town of Addison, Texas (the "City") has received an application from Mary Kay Inc. located at 16251 Dallas Parkway, Addison, Texas 75001 requesting that the City Council apply to the Texas Economic Development Bank for the designation of a project or activity of Mary Kay Inc. as an enterprise project pursuant to Chapter 2303, Tex. Gov. Code (the "Act"); and

WHEREAS, the project or activity as described herein is not located in an area designated as an enterprise zone; and

WHEREAS, a public hearing to consider this Ordinance was held by the City Council on August 10, 2010.

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE TOWN OF ADDISON, TEXAS:

Section 1: The Town of Addison, Texas nominates Mary Kay Inc. for enterprise project status.

Section 2: The following local incentives, at the sole discretion and election of the City Council and subject to law, are or will be made available, or may be made available, to the said nominated project or activity of the qualified business:

(a) The City may abate taxes on the increase in value of real property improvements and eligible personal property that locate in a designated enterprise zone; may provide for tax increment financing, and may provide a freeport exemption.

(b) The City may provide a program, including a program for making loans and grants of public money and providing personnel and services of the City, to promote state or local economic development and to stimulate business and commercial activity in the City pursuant to Chapter 380, Tex. Loc. Gov. Code.

(c) The City may provide regulatory relief or modification to businesses, including:

(i) zoning changes or variances;

(ii) exemptions from unnecessary building code requirements, impact fees, or inspection fees; or
(iii) streamlined permitting.

(d) The City may provide enhanced municipal services to businesses, including:

(i) improved police and/or fire protection;
(ii) institution of community crime prevention programs.

(e) The City may provide improvements in community (public) facilities, including:

(i) capital improvements in water and sewer facilities;
(ii) road repair; or
(iii) creation or improvement of parks.

(f) The City may provide business and industrial development services, including:

(i) provision of publicly owned land for development purposes, including residential, commercial, or industrial development;
(ii) creation of special one-stop permitting and problem resolution centers or ombudsmen; or
(iii) promotion and marketing services.

Section 3. The City Council of the Town of Addison, Texas directs and designates its City Manager (or the City Manager's designee), as the City's liaison, to oversee, communicate and negotiate with the Office of the Governor Economic Development and Tourism ("EDT") through the Texas Economic Development Bank, and with Mary Kay Inc. and any other qualified business nominated to be enterprise projects.

Section 4. The City finds that Mary Kay Inc. meets the criteria for designation as an enterprise project under Chapter 2303, Subchapter F of the Act on the following grounds:

(a) Mary Kay Inc. is a "qualified business" under Section 2303.402 of the Act since it will be engaged in the active conduct of a trade or business at a qualified business site within the City, located outside of an enterprise zone and at least thirty-five percent (35%) of Mary Kay Inc.'s new employees will be residents of an enterprise zone or economically disadvantaged individuals, and

(i) there has been and will continue to be a high level of cooperation between public, private, and neighborhood entities in the area; and

(ii) the designation of Mary Kay Inc. as an enterprise project will contribute significantly to the achievement of the plans of the City for development and revitalization of the area.

Section 5. The enterprise project shall take effect on the date of designation of the enterprise project by EDT and terminate on September 2, 2015.

Section 6 This Ordinance shall be cumulative of all other ordinances of the City and shall not repeal any of the provisions of those ordinances except in those instances where the provisions of those ordinances are in direct conflict with the provisions of this Ordinance.

Section 7. The provisions of this Ordinance are severable, and if any section or provision of this Ordinance or the application of any section or provision to any person, firm, corporation, entity, situation or circumstance is for any reason adjudged invalid or held unconstitutional by a court of competent jurisdiction, the same shall not affect the validity of any other section or provision of this Ordinance or the application of any other section or provision to any other person, firm, corporation, entity, situation or circumstance, and the City Council declares that it would have adopted the valid portions of this Ordinance adopted herein without the invalid or unconstitutional parts and to this end the provisions of this Ordinance adopted herein shall remain in full force and effect.

Section 8. The above and foregoing recitals are true and correct are incorporated into and made a part of this Ordinance.

Section 9. This Ordinance shall take effect from and after its passage as the law and Charter in such case provides.

PASSED AND APPROVED by the City Council of the Town of Addison, Texas this 10th day of August, 2010.

Joe Chow, Mayor

ATTEST:

By: _____
Lea Dunn, City Secretary

APPROVED AS TO FORM:

By: _____
John Hill, City Attorney

patrick m. cargo cpa
vice president
corporate tax

July 7, 2011

Mr. Ron Whitehead
City Manager
Town of Addison
5300 Belt Line Road
Addison, TX 75001

Re: Addison Project Description

Dear Mr. Whitehead:

As you know, Mary Kay Inc. ("Mary Kay") has been working with City of Addison officials regarding current and new investments over the next five years. The investments are expected to exceed $5 million in new purchases of information technology equipment, upgrades to the Addison headquarters facility, and climate control equipment upgrades. Other investments will also include ongoing workspace improvements for the approximately 1,070 employees at the business site. These investments will allow us to improve and successfully sustain operations at our Addison facility. In addition, Mary Kay expects to maintain the existing jobs of approximately 1070 and expects no potential layoffs.

Mary Kay respectfully requests the City of Addison to nominate this project as an Enterprise Zone Project for job retention to be designated by the Governor's Office of Economic Development. This designation allows Mary Kay to utilize rebates on state sales and use taxes paid on certain items associated with the project. This letter is intended to describe the proposed Addison project per instructions in the Enterprise Zone application.

Mary Kay is located at 16251 Dallas Parkway, Addison, TX 75001 and currently employs approximately 1,070 people at this site and approximately 1,860 people in Texas. Mary Kay began operations in Addison in 1995. The Addison facility is Mary Kay's global headquarters site for services in the following areas: financial management, sales, marketing, brand development, accounting, procurement, legal, facility management, transportation management, Mary Kay Museum and archives, research & development, human resources, and information services & technology.

Mary Kay's transportation requirements with respect to this Texas location include automobile and major airport infrastructure. Mary Kay's other Texas locations (located outside of Addison) such as their manufacturing facility, corporate warehouse and distribution center utilize all forms of transportation including air, rail, and sea.

mary kay inc. corporate office
p.o. box 799045
dallas, tx 75379-9045
t 972.687.4572
f 972.687.1662
e patrick.cargo@mkcorp.com
www.marykay.com

Mary Kay Ash founded Mary Kay Cosmetics on Sept. 13, 1963. Today, Mary Kay Inc. (a subsidiary of Mary Kay Holding Corporation a Delaware company, operating in Texas) is one of the largest direct sellers of skin care and color cosmetics in the world, achieving wholesale sales worldwide of $2.5 billion in 2010. Mary Kay® products are sold in more than 35 markets worldwide and the global Mary Kay independent sales force exceeds 2 million. Mary Kay produces more than 200 premium products in its state-of-the-art Manufacturing facilities in Dallas, Texas. Mary Kay's employees and independent sales force members worldwide continue to fulfill Mary Kay Ash's mission of enriching women's lives.

Mary Kay continually strives to make the necessary capital investment to ensure the company possesses are current and the most up-to-date equipment and plant facilities are in place to produce the product Mary Kay customers have come to expect around the world.

Mary Kay's five year investment plan will begin in September of 2011 and result in industry competitiveness and efficiencies and retain the existing workforce. The existing workforce (consisting of approximately 1,070 people located in Addison) is involved in the planning, training, selling, and designing many products within the Mary Kay portfolio that are shipped throughout the world. This investment will affect not only the Addison economy but result in positive economic impacts for the State of Texas. Mary Kay will incur property taxes, sales and use taxes on machinery, equipment, building materials and repetitive purchases, as well as make routine annual purchases locally in order to maintain the operations. Mary Kay's Addison facility will maintain separate payroll and tax records of the business activity conducted at the qualified business site.

Please accept this project description as a request for your approval and assistance in applying for this designation. Enterprise Project Designation requires City Council approval and a state review of an Enterprise Project application.

Please do not hesitate to contact me with any questions or comments.

Best regards,

Patrick Cargo
Vice President, Corporate Tax
Mary Kay Inc.

Texas Enterprise Zone Program

The Enterprise Zone Program (EZP) was created to help companies grow and expand their business in Texas. It is an economic development sales tax incentive partnering the state and local government to help local employment and support business investment. As a company grows, they are eligible to apply for a state sales tax refund. During these tough economic times, EZP has supported more jobs than any other state incentive program.

Performance-Based Incentive

The EZP is performance-based and allows qualified businesses to receive a refund of state sales and use taxes, ranging from $2,500–$7,500 per job created and/or retained during a five-year designation period, up to a maximum of $1.25–$3.75 million. The level and amount of refund is related to the capital investment and jobs at the qualified business site.

Two Strong Economic Development Incentives

While the Texas Enterprise Fund (TEF) is an economic development tool used to assist in the state's recruitment endeavors, the EZP can also assist with job retention efforts.

	Texas Enterprise Zone	Texas Enterprise Fund
Jobs	147,646 (new & retained)	54,259 (new)
Capital Investment	$29.3 Billion	$14.6 Billion
Funded Projects	282	71

Sept. 1, 2003 – Aug. 31, 2010

Program Requirements

Communities may nominate projects for a designation period up to five years, non-inclusive of a 90-day window prior to the application deadline. Employment and capital investment commitments must be incurred and met within this window.

Projects may be physically located in or outside of an enterprise zone. In a zone, a company commits that 25 percent of its new employees will meet economically disadvantaged or enterprise zone residency requisites. Outside of a zone, a company commits that 35 percent of its new employees will meet economically disadvantaged or enterprise zone residency requisites. Under statutory provisions, an enterprise project designation may be granted for job retention.

Jobs must accumulate at least 1,820 hours during a 12-month period. Jobs must exist through the end of the designated period, or at least three years after the date on which a state benefit is received, whichever is later. Communities with a population of less than 250,000 may nominate up to six projects per state biennium while those with a population of 250,000 or more may nominate up to nine projects per state biennium.

(Continued)

Texas Enterprise Zone Program - Projects Approved State FY 2010

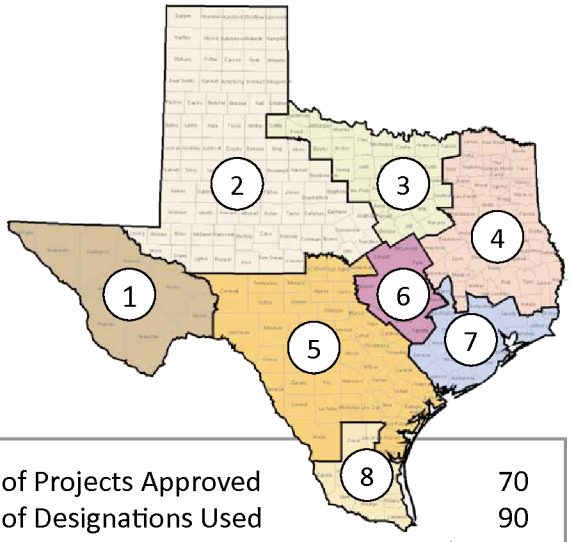
1 - Upper Rio Grande ($18.8M)
El Paso – Eagle Family Foods, Inc., $4.9M
El Paso – Helen of Troy, $7.9M
El Paso – Redcats USA, $1M
El Paso – The Boeing Company, $5M

2 - West Texas ($216M)
Lubbock – 1859 Management Partners, $6M
Lubbock – Buffet Partners, $5M
Midland – Plains All American Pipeline, $5M
Moore County – Diamond Shamrock Refining, $200M

3 - North Texas ($870.6M)
Allen – Jack Henry & Associates, $6.1M
Farmers Branch – Tuesday Morning, $5M
Fort Worth – Alcon Laboratories, Inc., $61.5M
Fort Worth – Alcon Research, Ltd., $151M
Garland – Kraft Foods Global, $5M
Garland – Sears Logistics Services, $5M
Irving – Aviall Services, Inc., $53.3M
Irving – NCH Corporation, $15M
McKinney – Raytheon Company, $50M
Mesquite – Agape Home Healthcare, $1.5M
North Richland Hills – Columbia North Hills, $6.4M
Plano – Rent-A-Center, $20M
Richardson – TriQuint Semiconductor Texas, $151M
Southlake – Sabre, Inc., $5M
Southlake – Travelocity.com, $5M
Tarrant County – Bell Helicopter Textron, $256M
Waco – Mars Chocolate North America, $20M
Waco – Owens-Brockway Glass Container, $30M
Wichita Falls – Natura World USA, $23.8M

4 - East Texas ($446.5M)
Jasper County – MeadWestvaco Texas, $196M
Lufkin – Lufkin Industries, Inc., $10.5M
Marshall – Norit Americas, Inc., $215M
Tyler – Brookshire Grocery Company, $5M
Tyler – Tyler Pipe, $20M

5 - South Texas ($1.5B)
Bexar County – NuStar Energy, $150M
Bexar County – Toyota Motor Mfg., $54.7M
Calhoun County – INEOS USA LLC, $36M
Corpus Christi – CITGO Refining, $316.8M
Corpus Christi – Valero Refining, $298M
Kingsville – Celanese Corporation, $5M
San Antonio – ACS State & Local Solutions, $5M
San Antonio – Allstate Insurance Company, $11.6M
San Antonio – Kelly Aviation Center, $20.1M
San Antonio – Toyota Motor Manufacturing, $42.8M
San Antonio – Toyota Motor Manufacturing, $18.7M
Three Rivers – Diamond Shamrock Refining, $175M
Victoria County – INVISTA S.a.r.l., $453.1M



Number of Projects Approved	70
Number of Designations Used	90
Projected Capitol Investment (rounded)	$13.6B
Projected New Jobs	6,167
Projected Retained Jobs	41,398

6 - Central Texas ($18.5M)
Cedar Park – ETS-Lindgren, $6M
Round Rock – Dresser, Inc., $7.5M
Round Rock – Sears, Roebuck & Co., $5M

7 - Gulf Coast ($10B)
Baytown – Bayer MaterialScience, $413.3M
Brazoria County – INEOS USA, $219M
Brenham – Blue Bell Creameries, $5.4M
Deer Park – The Lubrizol Corporation, $112M
Houston – Alcon Research, Ltd., $31.5M
Houston – NRG Energy, $36.8M
Houston – Reliant Energy, $13.1M
Houston – Sysco Corporation, $99.5M
Houston – Tyson Refrigerated Meats, $10M
Jefferson County – Motiva Enterprises, $7.9B
La Porte – INVISTA S.a.r.l., $37.4M
Lake Jackson – BASF Corporation, $250M
Liberty – Boomerang Tube, $150M
Mont Belvieu – Cedar Bayou Fractionators, $40M
Orange – E.I. du Pont de Nemours, $280M
Port Arthur – BASF Corporation, $70.3M
Texas City – NuStar Energy, $50M
Texas City – Valero Refining – Texas, $400M
Waller County – Igloo Products Corp., $5M

8 - Valley ($204.7M)
Edinburg – Santana Textiles, $180M
Harlingen – Tyco Valves & Controls, $5.7M
McAllen – Columbia Rio Grande Healthcare, $19M

For more information visit the governor's web site at http://governor.state.tx.us/ecodevo/financial_resources/tax_incentives

TEXAS
WIDE OPEN FOR BUSINESS

12.10

TOWN OF ADDISON, TEXAS

RESOLUTION NO. _____

A RESOLUTION OF THE CITY COUNCIL OF THE TOWN OF ADDISON, TEXAS NOMINATING MARY KAY INC. TO THE OFFICE OF THE GOVERNOR ECONOMIC DEVELOPMENT & TOURISM THROUGH THE TEXAS ECONOMIC DEVELOPMENT BANK AS AN ENTERPRISE PROJECT; PROVIDING A SAVINGS CLAUSE; PROVIDING A SEVERABILITY CLAUSE; PROVIDING ANEFFECTIVE DATE.

WHEREAS, the City Council of the Town of Addison, Texas (the "City") has previously passed Ordinance No. 010-021 electing to participate in the Texas Enterprise Zone Program, and the local incentives offered under this Resolution are the same on this date as were outlined in Ordinance No. 010-021;

WHEREAS, the Office of the Governor Economic Development and Tourism ("EDT") through the Economic Development Bank ("Bank") will consider Mary Kay Inc. as an enterprise project pursuant to a nomination and an application made by the City;

WHEREAS, the City desires to pursue the creation of the proper economic and social environment in order to induce the investment of private resources in productive business enterprises located in the City and to provide employment to residents of enterprise zones or economically disadvantaged individuals;

WHEREAS, pursuant to Subchapter F of Chapter 2303 (the Texas Enterprise Zone Act) of the Texas Government Code (the "Act"), Mary Kay Inc. has applied to the City for designation as an enterprise project;

WHEREAS, the City finds that Mary Kay Inc. meets the criteria for designation as an enterprise project under Chapter 2303, Subchapter F of the Act on the following grounds:

1. Mary Kay Inc. is a "qualified business" under Section 2303.402 of the Act since it will be engaged in the active conduct of a trade or business at a qualified business site within the City, located outside of an enterprise zone and at least thirty-five percent (35%) of Mary Kay Inc.'s new employees will be residents of an enterprise zone or economically disadvantaged individuals;

2. There has been and will continue to be a high level of cooperation between public, private, and neighborhood entities within the area; and

3. The designation of Mary Kay Inc. as an enterprise project will contribute significantly to the achievement of the plans of the City for development and revitalization of the area; and

WHEREAS, the City finds that Mary Kay Inc. meets the criteria for tax relief and other incentives adopted by the City and nominates Mary Kay Inc. for enterprise project status on the

grounds that it is located at the qualified business site and will create a higher level of employment, economic activity and stability in the area; and

WHEREAS, the City finds that it is in the best interest of the City to nominate Mary Kay Inc. as an enterprise project pursuant to the Act.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE TOWN OF ADDISON, TEXAS:

Section 1. That the findings of the City and its actions approving this Resolution taken at the Council meeting are hereby approved and adopted.

Section 2. That Mary Kay Inc. is a "qualified business," as defined in Section 2303.402 of the Act, and meets the criteria for designation as an enterprise project, as set forth in Subchapter F of the Act.

Section 3. That the enterprise project shall take effect on the date of designation of the enterprise project by the Bank and terminate five (5) years after the date on which the designation is made.

Section 4. This Resolution shall take effect upon its passage and approval.

PASSED AND APPROVED by the City Council of the Town of Addison, Texas this the 12th day of July, 2011.

_____
Todd Meier, Mayor

ATTEST:

By:_____
Lea Dunn, City Secretary

APPROVED AS TO FORM:

By:_____
John Hill, City Attorney

Council Agenda Item: #R5

AGENDA CAPTION:

Discussion regarding Metrocrest Leadership Class XXIII.

FINANCIAL IMPACT:

The cost for an individual to participate in the program is $1,000.

BACKGROUND:

Historically City Council has sponsored individuals participation in the Metorcrest Leadership program.

RECOMMENDATION:

COUNCIL GOALS:

Work to instill a "Sense of Community" in Addison's residents

ATTACHMENTS:

Description:	Type:
☐ Leadership Metrocrest Application	Cover Memo

LEADERSHIP
METROCREST

CLASS XXIII APPLICATION FOR ENROLLMENT

DEADLINE: Friday, August 19, 2011

This application will not be processed until the $10.00 non-refundable enrollment fee has been received. You may send a check payable to Metrocrest Chamber of Commerce, or pay by Credit Card over the phone or at www.metrocrestchamber.com.

Date of Application _____

Full Name _____

Company _____ Title _____

Position/Responsibilities _____

Company Address _____

City/St/Zip _____ Phone _____

E-Mail _____ Fax _____

Home Address _____

City/State/Zip _____ Phone _____

E-Mail _____ Cell _____

Birthday (mm/dd)_____ ☐ Male ☐ Female

Contact preference ☐ Home ☐ Work

Do you have full support of your employer for the time required to participate in this program?
☐ YES ☐ NO

The tuition for the program is $1,000 for Chamber members (or individuals sponsored by Chamber members), and $1,200 for non-members. The tuition is due by Friday, September 7, 2011. Is your employer paying the tuition?
☐ YES ☐ NO

What specific leadership competencies do you hope to enhance through your participation in Leadership Metrocrest?

_____

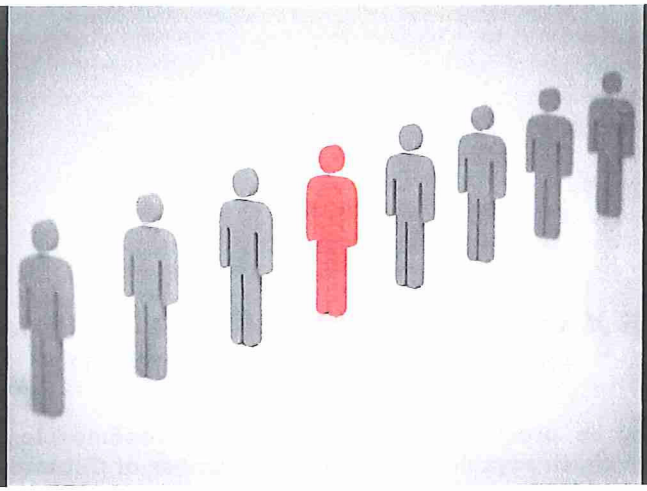
_____

It is my understanding the Leadership Metrocrest program is to be a learning experience and requires attendance at the monthly meetings. I also understand that I will be automatically dropped from the program if I miss more than 16 hours from the remaining class.

_____ _____
Name Date

Return to: **Metrocrest Chamber of Commerce; 5100 Belt Line Rd. #430; Dallas, TX 75254**
Fax: 469-587-0428; info@metrocrestchamber.com

LEADERSHIP METROCREST



Community.
Friendship.
Leadership.

CLASS XXIII - September 2011

Leadership Metrocrest is a program of the Metrocrest Chamber of Commerce which identifies, educates, and motivates future community leaders. The goal is to provide an extensive knowledge base of understanding and communication links that allow graduates to take leadership roles in Metrocrest civic, business and non-profit organizations.

Leadership Metrocrest offers...

- Participants an increased knowledge, understanding and sensitivity to community issues.
- Businesses an increased insight into the community and access to community leaders and resources.
- The community a pool of well-trained and energized leaders ready to serve.

Leadership Metrocrest is a nine month course that begins with a mandatory two day class. For the remaining eight months, participants meet one day per month to study the various aspects of the Metrocrest's inner workings.

There are many ways to support Leadership Metrocrest. From attending the class to sponsoring sessions and the Graduate lunch, you can help this program and your Chamber, our chamber, The Metrocrest Chamber of Commerce.

Interested in...
...Learning more about your community?
...Building lifetime friendships?
...Being equipped to be the best leader possible?

Call 469.587.0420 or e-mail info@metrocrestchamber.com for more information on our next Leadership Metrocrest class.

Metrocrest Chamber of Commerce • 5100 Belt Line Road, Suite 430 • Dallas, TX 75254
469.587.0420 • www.MetrocrestChamber.com

Council Agenda Item: #R6

AGENDA CAPTION:

Presentation, discussion and consideration of approval of an Ordinance amending the Town's Code of Ordinances by amending section 70-33 of the said code relating to standard specifications for paving and drainage construction and drainage criteria governing the construction, paving and drainage aspects of all streets, roads and alleys in the town, subject to final review by the City Attorney.

FINANCIAL IMPACT:

None

Project Manager: Clay Barnett

BACKGROUND:

On June 28, 2011, Town of Addison staff, in conjunction with Teague, Nall and Perkins, presented a work session item to Council on the details of the upcoming items needed for the Storm Water Management Phase II compliance. Part of the Town's commitment included passing an ordinance for year four of the five year plan. This ordinance, called a post construction ordinance in the permit, governs development once construction is complete. The focus of this ordinance is to design projects prior to construction so that once constructed they will have minimal impact on water quality.

In lieu of passing a new ordinance containing an additional stand alone provision governing development drainage design, staff pursued incorporating these standards within an existing section of the code that pertains to development drainage design, namely the Drainage Criteria Manual. Since the Drainage Criteria Manual had not been updated since 1990, this was an opportunity to update an old section of the code while incorporating the standards needed to comply with the Storm Water Management Phase II program.

RECOMMENDATION:

Staff recommends approval subject to final review by the City

Attorney.

COUNCIL GOALS:

Take actions to make Addison a leader in sustainable development and operations that protect and enhance the Town's quality of life

ATTACHMENTS:

Description:	Type:
☐ Ordinance Amending 70-33 of the Code of Ordinances	Ordinance
☐ Drainage Criteria Manual	Backup Material

TOWN OF ADDISON, TEXAS

ORDINANCE NO. _____

AN ORDINANCE OF THE TOWN OF ADDISON, TEXAS, ADOPTING THE 2011 DRAINAGE CRITERIA MANUAL APPLICABLE TO PUBLIC OR PRIVATE DRAINAGE IMPROVEMENTS; AMENDING THE CODE OF ORDINANCES OF THE CITY TO REFLECT THE ADOPTION OF THE SAID DRAINAGE CRITERIA MANUAL BY AMENDING SECTION 70-33 OF THE SAID CODE RELATING TO STANDARD SPECIFICATIONS FOR PAVING AND DRAINAGE CONSTRUCTION AND DRAINAGE CRITERIA GOVERNING THE CONSTRUCTION, PAVING AND DRAINAGE ASPECTS OF ALL STREETS, ROADS AND ALLEYS IN THE TOWN; PROVIDING A SAVINGS CLAUSE AND REPEALING ALL ORDINANCES IN CONFLICT HEREWITH; PROVIDING A PENALTY NOT TO EXCEED THE SUM OF $500.00 FOR EACH OFFENSE AND A SEPARATE OFFENSE SHALL BE DEEMED COMMITTED EACH DAY DURING OR ON WHICH A VIOLATION OCCURS OR CONTINUES; PROVIDING A SEVERABILITY CLAUSE; PROVIDING AN EFFECTIVE DATE.

WHEREAS, the Town of Addison, Texas (the "Town") desires, by the adoption of the Drainage Criteria Manual attached hereto, to update minimum design criteria for public or private drainage improvements proposed to be installed, and to regulate development within the Town necessary to provide and maintain a safe, efficient, and effective drainage system and to provide various public and private responsibilities regarding the same; and

WHEREAS, the Town's drainage criteria manual was last amended in 1990 and stormwater management standards have changed substantially since 1990 and provide for improved protection of the quality of surface and ground waters; and

WHEREAS, the attached Drainage Criteria Manual regulates new development and redevelopment projects that discharge storm water into the Town's Municipal Separate Storm Sewer System (MS4), as required by State storm water regulations.

NOW THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE TOWN OF ADDISON, TEXAS:

Section 1. Incorporation of Recitals. The above and foregoing recitals are true and correct and are incorporated herein and made a part hereof.

Section 2. Adoption of Standard Specifications for Paving and Drainage Construction, the Drainage Criteria Manual, and Traffic Details; Amendment to Code of Ordinances.

A. Attached to this Ordinance are (i) Standard Specifications for Paving and Drainage Construction ("Standard Specifications"), (ii) the 2011 Drainage Criteria Manual (the "2011 Drainage Criteria Manual"), and (iii) Traffic Details ("Traffic Details"). The Standard

Specifications, the 2011 Drainage Criteria Manual, and the Traffic Details are all adopted and approved hereby and shall be and serve as standards, rules and regulations for the construction, paving, drainage and traffic details of streets, roads and alleys in the Town of Addison, Texas (the "Town").

B. In accordance therewith, the Code of Ordinances (the "Code") of the Town is hereby amended by amending Section 70-33 (Adopted standards) of the Code, being a part of Article II (Paving and Drainage) of Chapter 70 (Streets, Sidewalks and Other Public Places). to reflect the adoption of the Standard Specifications, the 2011 Drainage Criterial Manual, and the Traffic Details, to read as follows:

Section 70-33. – Adopted standards.

There are hereby adopted standard specifications for paving and drainage construction and drainage criteria, as the rules and regulations governing the construction, paving and drainage aspects of all streets, roads and alleys in the town. There are also adopted the traffic details regarding streets, roads and alleys in the town. The said specifications, criteria, and traffic details adopted hereby are adopted~~attached~~ by~~to~~ ~~the~~ O~~o~~rdinance No. _____ of the town~~from which this section is derived as exhibit "A"~~ and are made a part hereof for all purposes. The original copy of the standard specifications, criteria, and traffic details shall be kept with such ordinance and with the other ordinances of the town at the town hall and shall be made available for public inspection during regular business hours of the town.

Section 3. Savings; Repealer. This Ordinance shall be cumulative of all other ordinances (including, without limitation, Ordinance No. 16-26 of the Town) of the Town and shall not repeal any of the provisions of those ordinances except in those instances where the provisions of those ordinances (including, without limitation, provisions of the said Ordinance No. 16-26) are in direct conflict with the provisions of this Ordinance are repealed. Provided, however, that the repeal of such ordinances or parts of such ordinances, and the amendments and changes made by this Ordinance, shall not affect any right, property or claim which was or is vested in the Town, or any act done, or right accruing or accrued, or established, or any suit, action or proceeding had or commenced before the time when this Ordinance shall take effect; nor shall said repeals, amendments or changes affect any offense committed, or any penalty or forfeiture incurred, or any suit or prosecution pending at the time when this Ordinance shall take effect, under any of the ordinances or sections thereof so repealed, amended or changed; and to that extent and for that purpose the provisions of such ordinances or parts of such ordinances shall be deemed to remain and continue in full force and effect.

Section 4. Penalty. It shall be unlawful for any person, firm, corporation, or other business entity to violate any provision of this Ordinance, and any person, firm, corporation, or other business entity violating or failing to comply with any provision hereof shall be fined, upon conviction, in an amount of not more than Five Hundred and No/100 Dollars ($500.00), and a separate offense shall be deemed committed each day during or on which a violation or failure occurs or continues.

Section 5. Severability. The provisions of this Ordinance are severable, and if any section or provision of this Ordinance or the application of any section or provision to any person, firm, corporation, entity, situation or circumstance is for any reason adjudged invalid or held unconstitutional by a court of competent jurisdiction, the same shall not affect the validity of any other section or provision of this Ordinance or the application of any other section or provision to any other person, firm, corporation, entity, situation or circumstance, and the City Council declares that it would have adopted the valid portions of this Ordinance adopted herein without the invalid or unconstitutional parts and to this end the provisions of this Ordinance adopted herein shall remain in full force and effect.

Section 6. Effective Date. This Ordinance shall become effective upon the date of its passage and approval and its publication as may be required by law.

PASSED AND APPROVED by the City Council of the Town of Addison, Texas this the ____ day of _____, 2011.

_____
Todd Meier, Mayor

ATTEST:

By:_____
Lea Dunn, City Secretary

APPROVED AS TO FORM:

By:_____
John Hill, City Attorney

DRAFT

DRAINAGE CRITERIA MANUAL

THE TOWN OF

Addison!®
WE'RE GLAD YOU'RE HERE

Public Works Department
6801 Westgrove Road
Addison, TX 75001

Approved by City Council
August XX, 2011

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1 INTRODUCTION

1.1 Objectives and Purpose

The quality of life for the citizens of Addison depends in part upon adequate drainage facilities. As such the Town of Addison is dedicated to the protection of local water resources. Land development and redevelopment projects and associated increases in impervious cover can increase storm water runoff rates and volumes and can negatively affect the water quality of receiving water bodies. This Manual establishes criteria, procedures and data for drainage evaluation to ensure the adequacy of new drainage facilities. This Manual also establishes post-construction runoff control objectives for new development and redevelopment projects to protect water quality and mitigate potential negative impacts caused by development.

The use of this Manual will provide a consistent approach to analyzing drainage and constructing drainage improvements and structural controls within the Town of Addison. Because many engineering methods for analyzing drainage exist, these criteria for analyzing drainage are established to provide continuity of drainage design throughout the Town.

1.2 Manual Development

This Manual has been developed using certain guiding criteria or assumptions. These guidelines will assist the user in utilizing the Manual. The guidelines are as follows:

1. The user of this Manual is expected to be a registered professional civil engineer who is skilled in the appropriate disciplines necessary to evaluate drainage problems. Therefore, the terms used and the methods discussed in the Manual should be familiar to the user.

2. This Manual does not contain the solution for drainage problems. It establishes criteria and procedures to be used in designing drainage facilities in the Town of Addison.

3. The criteria required by this Manual are the minimum requirements. More stringent criteria may be required if the Director of Public Works determines it is necessary in the interest of the Town. Such determination will be made on a case-by-case basis.

4. The design engineer bears total responsibility for the adequacy of his design. Approval of plans or calculations by the Town does not relieve the engineer of this responsibility.

5. This Manual is not intended to limit creativity in developing solutions for drainage problems. Evaluation of the applicability of innovative solutions and new products

is encouraged. The intent is to encourage use of currently accepted procedures and the most current data and technology.

6. This Manual recommends procedures, but does not present the theory on which the procedures are based. The user should be familiar with the published sources that set forth this information.

7. Design aids published elsewhere and commonly available may be referenced, but are not reproduced in this Manual.

1.3 Warning and Disclaimer of Liability

The degree of flood protection established in this Manual is considered economically reasonable, and is based on scientific and engineering considerations. However, runoff that exceeds that from the design storm can occur, and flood heights greater than the design height can occur. This Manual does not imply that land outside right-of-ways or easements will be free from flooding or flood damages.

The criteria set forth in this Manual shall not create liability on the part of the Town of Addison, Texas, or any official, employee or consultant thereof, for any flood damages that result from reliance on this Manual or any administrative decision lawfully made.

2 GENERAL POLICY

2.1 Drainage

The owner or developer of the property to be developed shall be responsible for the design and construction of all storm drainage facilities on and through the subject property. This responsibility includes all existing and proposed on-site drainage, the drainage directed to that property by prior development, and upstream, offsite drainage areas. The general storm drainage design policy for conveyance of upstream, offsite drainage areas for private land development projects and for public or capital improvement projects shall be as follows:

Private Land Developments: Drainage systems shall be designed to convey existing flows from upstream offsite drainage areas.

Public or Capital Improvement Projects: Drainage systems shall be designed to convey future fully developed flows from upstream offsite drainage areas.

Provisions shall be made to allow for connection to the on-site storm drainage system from upstream, off-site drainage areas.

The post-construction storm water protection policies provided within this manual establish baseline criteria for the minimization of impacts to water quality. The owner or developer is responsible for mitigating water quality impacts from the development or redevelopment project.

A preliminary planning conference should be initiated by the developer's engineer with the Director of Public Works prior to the submittal of any development or redevelopment plan to determine the developer's responsibility in the design of drainage improvements and/or any required permitting.

No increase or concentration of storm water may be conveyed off-site without easements and/or downstream drainage improvements. Increased storm water runoff attributable to new development must not exceed the capacity of the downstream drainage system in accordance with the Ten Percent Rule, as defined below. If no downstream drainage system exists, increased storm water runoff must not adversely affect adjoining property.

Ten Percent Rule:
Where proposed improvements will result in increased discharge offsite, a downstream assessment will be required. The minimum downstream distance for assessment is defined by the point where the proposed project area constitutes no more than ten percent (10%) of the overall contributing watershed to that point.

Example 1: A 10 acre development proposes to increase discharge offsite by 30 cfs. A downstream assessment reveals that the existing drainage

system has sufficient capacity to the discharge point into a creek that drains 150 acres. No detention is required.

Example 2: A 1 acre development proposes to increase discharge offsite by 8 cfs, into an earthen swale. A downstream assessment reveals that the swale has capacity but only drains 7 acres (1÷7 = 14%). Further downstream the receiving drop inlet drains 10 acres (10% rule) but does not meet current design criteria. Detention will be required.

In cases where the proposed runoff would exceed the capacity of downstream facilities, the developer will be required to either provide detention or downstream improvements. Multi-phase developments will be considered as a single entity in determining the requirement for detention.

In all new developments where storm water runoff has been collected or concentrated, discharge shall be conveyed off-site by creeks, channels or storm sewer systems. Easements shall be provided by the developer to the Town for all on-site and off-site drainage facilities. All flows shall be discharged in a non-erosive manner, and shall meet the established regulations governing storm water quality as described in Section 4.1, Land Development Post-Construction Runoff Controls.

The developer shall pay for the cost of all drainage improvements required, including any necessary off-site channels or storm sewers and acquisition of the required easements. The Town of Addison's Stormwater Master Drainage Study evaluates the degree of flooding that may occur during a major storm event for the Town's eight (8) major drainage basins. The Master Drainage Study should be reviewed by developers and engineers to determine flood prone areas and recommended drainage improvements. Land developments will be required to incorporate the recommendations of the Town's Stormwater Master Drainage Study. The map on Figure 1 shows the Town of Addison's major drainage basins, which are as follows:

Town of Addison Major Drainage Basins:

- Hall Branch Basin
- Hutton Branch Basin
- Keller Springs Branch Basin
- Rawhide Creek Basin
- Addison Circle Basin
- Farmers Branch Creek Basin
- South Addison Basin
- White Rock Creek Basin

2.2 Platting/Dedication of Easements for Drainage Facilities

Property developments containing Floodway Easements, Detention Easements, or Drainage Easements shall include on the face of the plat standard language addressing

these easements as provided in the Subdivision Ordinance.

Placement of any fill or property development is prohibited in the 100-year floodplain (whether so designated by FEMA or as determined locally) except as allowed in accordance with FEMA regulations and the Town of Addison ordinances.

Easements for drainage facilities shall be designated as follows:

B. Drainage Easements
Drainage Easements shall be used for floodplains, natural drainage ways, improved open channels, man-made storm drain systems and drainage structures, including certain post-construction storm water runoff controls.

C. Detention Area Easements
Detention basins shall be maintained in Detention Area Easements. Detention basins shall be maintained by the property owner or neighborhood association. The standard Detention Easement language to be provided on all plats is provided within the Appendix.

2.3 Drainage Facility Easements

The owner or developer shall provide all necessary drainage facility easements as defined above and as required for drainage structures, including storm drains, channels and streams. Easements shall be required in all upstream and downstream off-site locations where construction of drainage improvements is proposed or required. All easements shall be identified on the Final Plat.

Minimum drainage easement widths for storm drain pipe shall be as follows:

Storm Drain Diameter	Min. Easement Width
≤48”	20’
>48”	Outside Diameter + 15’ (7.5’ on either side, rounded up)

Storm drains deeper than ten (10) feet as measured from flowline to ground surface shall add an additional two (2) feet of easement width for each foot of depth greater than ten (10) feet.

Reinforced concrete box pipe shall be used in lieu of circular pipes when sizes are 60” diameter or larger. Box pipe shall have a minimum easement width equal to the width of the box plus fifteen (15) feet (7.5’ on either side).

Drainage easement widths for natural drainage ways and improved open channels shall be based on the actual channel top-width or the following minimum criteria, whichever is wider. Drainage easements shall be a minimum of fifteen (15) feet wider than the top of the channel , with a minimum of ten (10) feet being on one side to serve as access along the channel for maintenance purposes. Where steep natural channel banks are to remain, the easement shall be based on a 3:1 projected slope from the flowline to natural ground. Maintenance access ramps shall be provided on improved channels at logical locations, and contained within the easement.

Drainage easements shall extend a minimum of twenty-five (25) feet downstream of the outfall headwall or the end of the energy dissipation structure if applicable (i.e. rock riprap, gabions, etc.). Drainage easements shall be provided where grading is required to establish positive slope from storm drainage system discharges to natural grade.

Drainage easements shall be dedicated to encompass the limits of the 100-year fully developed floodplain.

Any required offsite drainage easements shall be obtained and a filed copy provided to the Town of Addison prior to the approval of the development plans. The offsite drainage easements shall be included in the record drawings submittal and identified on the Final Plat, prior to acceptance of the subdivision.

Drainage easements are required to allow access for maintenance and repairs, and to prevent property owners from making modifications that would compromise the function of the system. However, the property owner is responsible for all necessary maintenance of the easement.

2.4 Development in Floodplains

It is the policy of the Town of Addison to regulate development and fill in the 100-year floodplain areas as designated by FEMA Flood Insurance Rate Maps and/or the Storm Drainage Master Study, whichever is more restrictive.. Development or fill within a floodplain will require engineering analysis that shows the development or fill causes no rise in the 100-year water surface elevation upstream or downstream, except as allowed by current FEMA and Town of Addison regulations. A Floodplain Development Permit shall be obtained prior to beginning any construction activities within a designated floodplain. Refer to the Town of Addison's floodplain ordinance (Code of Ordinances, Chapter 42 – Floods) for further information.

Valley storage consists of the volume of water that can be contained by a creek during periods of flooding. The amount of valley storage affects the peak discharge in the creek as the flood wave moves downstream. Loss of valley storage due to an encroachment must be offset by excavating an equal volume from the floodplain area, resulting in a net balance of valley storage.

3 DRAINAGE DESIGN STANDARDS

3.1 Design Storm Frequency

All drainage facilities shall be designed based on runoff from a 100-year storm event, assuming the entire contributing drainage area is fully developed. The Town of Addison Zoning Map shall be used to identify the anticipated makeup of full development.

All open and closed drainage systems shall be designed to provide positive overflow and protection of all public and private property during a storm event having a 100-year recurrence interval, regardless of the design storm frequency of a particular drainage facility.

The design storm frequency to be analyzed for runoff calculations and design of drainage facilities shall be as follows.

DRAINAGE FACILITY	DESIGN STORM FREQUENCY
Closed Storm Sewer Systems	10-year contained in storm drain system, 100-year contained in right-of-way
Streets	10-year below top of curb, 100-year contained in right-of-way
Closed Systems at Street Low Point or Sag system w/positive overflow	100-year contained in storm drain
Culverts	100-year, 1’ (ft) freeboard to pavement edge or gutter
Bridges	100-year, 2’ (ft) freeboard to bridge low-chord
Channels	100-year, 1’ (ft) freeboard to top of bank

A storm sewer system shall be designed to pick up flow from a street when the runoff from a ten (10) year frequency storm exceeds the capacity of the street to its top of curb, or the spread of water on a collector street does not leave one (1) traffic lane dry, or the spread of water on an arterial street does not leave at least two (2) traffic lanes dry, whichever is more restrictive. Residential streets and parking lots must not direct flow into a collector or larger street in excess of the capacity stated above.

3.2 Runoff Calculations

Design flow of storm water runoff is to be calculated using the Rational Method for storm drainage systems serving a watershed area less than two hundred (200) acres. This method will primarily be used for the design of storm drainage systems and small channels. A unit hydrograph method shall be used to determine runoff from watershed areas larger than two hundred (200) acres and for more complex applications where the Rational Method is not appropriate, per the Director of Public Works. Refer to Figure 12 for standard reporting format of hydrologic calculations required to support hydraulic gradient calculations of closed storm drain systems.

3.2.1 Rational Method

The Rational Method is based on the direct relationship between rainfall and runoff, and the method is expressed by the following equation:

$$Q = CIA$$

where:

- Q = the storm flow at a given point in cubic feet per second (cfs)
- C = a coefficient of runoff representing the ratio of rainfall to peak runoff. (Typical values for C in the Town of Addison can be found in Table 1)
- I = rainfall intensity in inches per hour for a period equal to the time of flow from the uppermost point of the drainage area to the point under consideration. Refer to Figure 2 in the Appendix for the Town of Addison rainfall intensity curves.
- A = the area contributing to the point of design, in acres.

Runoff coefficients, as shown in Table 1 shall be the minimum used, based on full development. Larger coefficients may be used if considered appropriate to the project by the Director of Public Works. For small drainage areas, roadways, land uses other than those listed in Table 1, and miscellaneous land uses like parks, schools, planned developments, etc., where the designated runoff coefficient is not representative, a composite runoff coefficient shall be calculated using the appropriate factor for undeveloped land given in Table 1 and 1.00 for impervious areas.

The size and shape of the watershed and sub-areas shall be determined for each design point through the use of planimetric-topographic maps, and supplemented by field surveys in areas where topographic data has changed or where the contour interval is insufficient to adequately determine the direction of flow. Offsite drainage areas shall be delineated using a minimum of 2-foot topographic contours. Drainage area maps shall identify the source of offsite topography. Note that NCTCOG topography is recommended for any offsite drainage area delineations. Drainage areas within the development will be delineated based on field-surveyed topo. The outline of the drainage area contributing to the system being designed and an outline of the sub-drainage area contributing to each inlet point shall be determined and shown on the drainage area map.

TABLE 1 RUNOFF COEFFICIENTS		
Zoning District Name*	Runoff Coefficient "C"	Minimum Inlet Time in Minutes**
Undeveloped Land/Open Space	--	--
▪ 0% - 3% Slope	0.25	--
▪ 3% - 5% Slope	0.30	--
▪ Greater than 5% Slope	0.35	--
Single Family Residential	0.60	15
Multi-Family Residential	0.90	10
Commercial	0.90	10
Industrial	0.85	10
Roadway Right-of-Way	0.85	10
Water Body	1.00	--

* For any land use not listed, the runoff coefficient shall be calculated based on a weighted percentage of pervious (C=0.30) and impervious (C=1.00) surface.

** Inlet time may vary from Time of Concentration. See Section 3.2.1.1 for more information. Inlet time should be confirmed prior to using the minimum value.

Drainage areas shall conform to the natural topography of the watershed contributing to the proposed storm drainage facilities. Where discharge toward off-site adjacent property is relocated, such relocation must be acknowledged by the downstream property owner or any other property owner who may be adversely affected. No diversion of drainage from one watershed to another shall be permitted without the express written approval of the Director of Public Works.

When calculating the quantity of storm water runoff, rainfall intensity will be determined from the rainfall intensity data provided on Figure 2 of the Appendix.

3.2.1.1 Time of Concentration

The time of concentration is defined as the longest time, without unreasonable delay, that will be required for a drop of water to flow from the upper limit of a drainage area to the design point under consideration. 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 drain. The inlet time is the time for water to flow overland to the first storm drain inlet in the proposed drainage system.

The time attributable to overland flow may be calculated using the graphical method shown on Figure 3. The maximum length allowed for overland flow shall not be more than 100 feet.

Shallow concentrated flow can occur on unpaved areas such as yards, parks, and open space, or on paved areas such as parking lots, and street gutters. These three cases are represented in Figure 4 that can be used to determine the average flow velocity. This velocity can be used with the length of flow to determine the time of flow. The maximum allowable length of shallow concentrated flow is one thousand (1,000) feet. Beyond this distance, the velocity of flow should be calculated for the specific pipe or channel that conveys the flow.

For purposes of calculating inlet capacity, inlet times may be calculated as described above, but in no case shall the inlet time used be less than the time shown in Table 1. Except in unusual cases, the inlet times shown in Table 1 should be used, as they will be shorter than the inlet time calculated as described above. Inlet locations shall be determined as described below.

3.2.2 Unit Hydrograph Methods

Runoff from drainage areas larger than two hundred (200) acres will be determined using a Unit Hydrograph method. Various methods can be implemented using the U.S. Army Corp's of Engineers' HEC-HMS computer program, or other software (i.e. XPSWMM, or InfoWorks) with approval by the Director of Public Works.

A 24-hour rainfall duration should be appropriate for most applications. An alternate duration may be utilized with approval of the Director of Public Works. The duration must be large enough to capture all excess rainfall as well as provide reasonable runoff volumes when performing storage analyses. Computation intervals should be tested for sensitivity to the hydrograph peak, and shall not be greater than 15 minutes.

The effects of urbanization should be reflected in the precipitation loss rates. The Soil Conservation Service (SCS) curve number method may be used in this way. Suitable curve numbers for various urban land uses have been published in TR-55.

Routing, when appropriate, shall use the Modified Puls methodology. Reach lengths shorter than the computation interval should not incorporate routing.

3.3 Street and Alley Capacities

Street and alley capacities shall be calculated as open channels using the continuity equation and Manning's equation.

$$Q = VA \quad \text{and}$$

$$Q = \frac{1.486\, A R^{2/3} S_f^{1/2}}{n}$$

where:
Q = flow (cfs)
A = cross sectional area of conduit or channel (sq. ft.)
V = velocity of flow in conduit (fps)
n = roughness coefficient of the conduit or channel (see Table 2)
R = hydraulic radius, the area of flow divided by the wetted perimeter. (R = A/P)
Sf = friction slope (ft./ft.)
P = wetted perimeter

Figure 5 provides a graphical solution for the capacity of triangular gutters, while Figure 6 may be used to determine the capacity of a gutter in a street with a parabolic crown. Streets and alleys must contain runoff from the 100-year storm within the right-of-way or dedicated easement, or where no curbs exist, within the roadside ditches. Grate inlets or combination curb and grate inlets shall be placed at those locations where the alley right-of-way capacity is exceeded by runoff from the 100-year storm.

100-year discharge from alleys and driveways into streets shall not exceed four (4) cfs or the available street capacity at the next downstream inlet, whichever is less.

Special attention is required at turns and intersections of alleys to determine whether superelevation or curbs are necessary to contain the required flow. Superelevation calculations will be required at all turns and bends in alleys where the velocity in the alley exceeds 3 feet per second. The minimum radius for the invert at alley turns (at bends, intersections or tees) will be thirty-five feet (35'). Figure 7 may be used for determination of alley capacity and velocity. Superelevation shall be calculated using the following formula:

$$\Delta y = V^2W / gr$$

where:
Δy = rise in water surface between theoretical centerline and outside edge of curve (ft)
V = mean velocity (fps)
W = alley width (ft)
g = acceleration due to gravity (32.2 ft/sec^2)
r = radius of centerline curve

Alley turns and intersections shall be graded to provide no less than 0.2' of freeboard above superelevation as calculated above. Note that curbs may be necessary at the outside of some turns in order to direct water around the turn. In such cases, no driveways will be permitted where such curbs are required.

3.4 Valley Gutters

The use of valley gutters to convey storm water across a street intersection is subject to the following criteria:

A. A major street (thoroughfare) shall not be crossed with a valley gutter.

B. A collector street shall not be crossed with a valley gutter unless approved by the Director of Public Works.

3.5 Flow in Gutters and Inlet Locations

Storm drain conduit and inlets shall begin at the point where the depth of flow based on the 10-year storm frequency reaches the height of the top of curb. Inlets are then to be located as necessary to maintain that maximum depth of flow. If, in the judgment of the Director of Public Works, the flow in the gutter would be excessive under these conditions, consideration should be given to extending the storm sewer to a point where the gutter flow can be intercepted by more reasonable inlet locations. Multiple inlets at a single location are permitted in extenuating circumstances, to a maximum of twenty (20) feet. Where possible, inlets should be placed upstream from an intersection to prevent large amounts of water from running through intersections.

Inlets should also be located on the lower traffic volume street at an intersection and in alleys where necessary to prevent water from entering these intersections in amounts that would cause the allowed street capacity to be exceeded at the next downstream inlet. In the case of parking lots, the preferred practice will be to intercept the water before it enters the street gutter, subject to the limitations of Section 3.3. Inlets shall be placed at intersections such that the beginning of the inlet transition does not fall within the curb return radius.

Recessed curb inlets shall be used on all thoroughfares. Recessed brick top curb inlets (per the Town's standard detail) should be used within the Urban Center District. Standard (non-recessed) curb inlets shall be used on collectors, residential streets and alleys.

Where water is conveyed from a street directly into an open channel, it shall be conveyed through an approved type of curb inlet or flume, and not through a curb cut.

Curb inlets and drop inlets can be used to divert runoff to the storm sewer system. Selection of the type of inlet depends on the location and conditions, and is at the discretion of the design engineer, subject to approval by the Director of Public Works.

Combination inlets (curb and grate) may be used in alleys, but may not be used in streets. The flowline of the alley must transition to direct flow into the inlet. Combination inlets shall be provided at all alley low points. Because of the tendency for clogging, combination inlets at alley low points shall be designed as curb inlets, neglecting any grate inlet capacity. Capacity of grate inlets on grade is a function of the number, size and orientation of the grate openings, in addition to the depth of flow in the gutter. Calculation of the capacity of combination inlets must be based on these factors, and may be as provided by grate inlet manufacturers.

Positive overflow shall be provided at all low points. Positive overflow shall refer to a means for safely conveying excess flow overland when underground storm drainage systems do not function properly or their capacity is exceeded. Such overflow shall be in a public right-of-way or dedicated easement. Calculations will be required to demonstrate the capacity of the overflow provisions. Minimum finish floor elevations adjacent to such overflows shall be no less than 12" above the overland flow water surface elevation.

3.6 Inlet Sizing

Under normal conditions, the minimum curb inlet size shall be four (4) feet. Standard inlet sizes will be in increments of two (2) feet to a maximum of twenty (20) feet. The minimum criteria for the sizing and placement of curb inlets is as follows:

Inlet calculations shall be provided by the design engineer to verify the capacity of the inlet and bypass flow.

The capacity of a depressed curb inlet on grade will be based on the following equation:

$$\mathbf{Q_1 = 0.7\ [1 / (H_1 - H_2)]\ \ [H_1^{5/2} - H_2^{5/2}]}$$

Q_1 = discharge into inlet per foot of inlet opening in cfs/ft
$H_1 = a + y_0$
$H_2 = a$ = gutter depression
y_0 = depth of flow in approach gutter in feet

Figure 8 may also be used to determine on grade inlet capacity.

The capacity of low point or drop inlets will be determined based on the broad-crested weir formula where the depth of flow does not exceed the height of the inlet opening.

$$\mathbf{Q_1 = 3.0\ (H_1)^{3/2}}$$

Figure 9 may also be used to determine capacity of sump inlets based on the weir and orifice formulas. The orifice equation should be used to determine the capacity of an inlet where the depth exceeds the inlet opening height.

3.7 Hydraulic Design of Closed Conduits

After completing the computations of the quantity of storm runoff entering each inlet, the size and gradient of pipe required to carry the design storm are to be determined. All hydraulic gradient calculations are required to begin at the outfall of the system. Computer software can be used to aid in the design process, however, hydraulic gradient calculations must be provided for review in the standard table format provided in Figure 12. The following shall apply for establishing the starting elevation of the

hydraulic gradient:

A. The 100-year water surface elevation of the receiving creek, stream, or other open channel shall be used as the starting elevation (tailwater) for the hydraulic gradient.

B. When a proposed storm sewer is connected to an existing storm sewer system, the hydraulic gradient for the proposed storm sewer should start at the elevation of the existing storm sewer's hydraulic gradient.

C. When a proposed storm sewer is connected to a creek or stream and the drainage area of the stream is substantially larger than the system area, the elevation of the coincident storm frequency discharges may be used as the starting hydraulic gradient in accordance with the Texas Department of Transportation Hydraulic Design Manual guideline.

All closed conduits shall be hydraulically designed for full flow through the use of the continuity equation and Manning's equation (below or from Figure 10):

$$\mathbf{Q = VA} \quad \text{and}$$

$$\mathbf{Q = \frac{1.486\ AR^{2/3}\ S_f^{1/2}}{n}}$$

where:
Q = flow (cfs)
A = cross sectional area of conduit or channel (sq. ft.)
V = velocity of flow in conduit (fps)
n = roughness coefficient of the conduit or channel (Table 2)
R = hydraulic radius, the area of flow divided by the wetted perimeter. (R = A/P)
Sf = friction slope (ft./ft.)
P = wetted perimeter

TABLE 2	
MANNING'S ROUGHNESS COEFFICIENTS "n" FOR STORM DRAINS	
Materials of Construction	Manning's Coefficient "n"
Monolithic Concrete Structure	0.015
Concrete Pipe	
Good alignment, smooth joints	0.013
Fair alignment, ordinary joints	0.015
Poor alignment, poor joints	0.017
High Density Polyethylene Pipe (HDPE)	0.012

The hydraulic grade line (HGL) shall be designed to be at least one (1) foot below the

top of curb elevation. Where this is not possible, the hydraulic gradient shall be at least 1.5 $V^2/2g$ below the gutter line, where V is the velocity in the lateral. Once the HGL is set, the depth and slope of the pipe may be determined. The pipe shall be located so that the inside top of the pipe is at or below the HGL and at or above the minimum slope shown in Table 3. In some situations, generally at the upstream end of a pipe system, the inside top of the pipe may be above the HGL, which results in partial flow. In such cases, the pipe capacity and velocity shall be calculated at normal depth, neglecting minor losses. The HGL shall be shown in the profile on the plans for all storm drain lines, including inlet leads. In all cases the HGL elevation, including entrance headloss, shall be below the designed inlet throat elevation.

Any proposed drainage system conduit in public right-of-way or easement shall be reinforced concrete pipe (RCP) or reinforced concrete box sections, including detention pond piping. High density polyethylene pipe (HDPE) is not permitted. The minimum slope of a pipe or box section should be capable of producing a velocity of at least 2.5 feet per second when flowing full. Table 3 gives the minimum slopes for storm drain pipes based on this criterion.

TABLE 3
MINIMUM GRADES FOR STORM DRAINS

Pipe Size (inches)	Concrete Pipe Slope Ft./Ft. (n = 0.013)
18	0.00177
21	0.00144
24	0.00121
27	0.00103
30	0.00090
33	0.00079
36	0.00070
39	0.00063
42	0.00057
45	0.00052
48	0.00048
54	0.00041
60	0.00036
66	0.00031
72	0.00028
78	0.00025

From the time storm water first enters the storm drainage system at the upstream inlet until it discharges at the outlet, it will encounter a variety of structures such as inlets, manholes, junctions, bends, and enlargements that will cause minor head losses. In general, these

minor losses can be expressed as a function of velocity head. Figure 11 shows the various cases and the method of computing the associated minor head loss. The minimum storm sewer pipe diameter shall be 18-inches. Pipe sizes shall not decrease in the downstream direction unless otherwise approved by the Director of Public Works.

The junction of in-line pipes of different diameters shall be made such that the crowns (inside tops or soffits) are at the same elevation. When lateral pipes connect to trunk mains, they shall be connected with the center of the lateral matching the center of the trunk main.

Where a storm sewer system discharges into a pond or lake, the outside top of the pipe shall be set below the normal pool of the lake. The impact on tailwater from fluctuations in the pond or lake level should be considered in designing the pipe system. Where storm sewers discharge into channels or streams, adequate measures must be taken to control erosion using concrete headwalls, rock riprap, gabions, and/or other means as necessary.

Storm drain junction boxes are needed for access to underground storm sewers for inspection and cleanout. Junction boxes should be located at junctions of large storm drain main lines, and at abrupt changes in alignment or grade. For pipes larger than 24-inches, junction boxes or other access points shall be located at intervals not to exceed eight hundred (800) feet. They shall be located at intervals not to exceed four hundred (400) feet for pipes 24-inches in diameter or smaller. Junction boxes shall be constructed in accordance with the Town's standard details.

The invert of the junction box should be rounded to match the inverts of the pipes entering the junction box in order to reduce eddying and resultant head losses. The junction box floor shall be provided with a minimum of 0.1' fall from upstream to downstream pipe flowlines. The invert should be rounded to a minimum depth equal to the design flow depth. At junctions with other storm drain main lines, the maximum interior angle of intersection of pipes in the junction box shall be ninety degrees (90°).

Storm sewers will typically be located in the center of the roadway. Reinforced concrete box pipe shall be used in lieu of circular pipes when sizes are 60" diameter or larger. Storm sewers should be straight between junction boxes where possible. Where curves are necessary to conform to street layout, the radius of curvature should not be less than sixty-five (65) feet. Short radius bends at junction boxes should rarely be necessary because pipe alignments usually follow street alignments. The minimum radius of curvature should not be less than the pipe manufacturer's recommendation, which must be provided as documentation. Head losses must be calculated for bends and curves as shown on Figure 11.

A headwall shall be constructed at the outfall of any storm drainage system. If the outlet velocity exceeds the maximum permissible velocity for the channel (see Table 4), erosion protection or energy dissipation is required. Erosion protection shall consist of concrete and/or gabion channel improvements, or an apron of grouted rock riprap between the

storm sewer headwall and the channel. The apron shall be a length equal to 8 times the diameter of the discharge pipe. The width of the apron shall vary from a width of three times the diameter of the discharge pipe at the discharge point to a width equal to the diameter plus half the length of the apron or the width of the channel, whichever is greater. Other methods may be used to calculate apron dimensions if approved by the Director of Public Works.

TABLE 4

CHANNEL ROUGHNESS AND MAXIMUM VELOCITY

Channel Description	"n"	Maximum Velocity (fps)
Manicured grass, clay soil	0.035	8
Manicured grass, sand/silt soil	0.035	6
Bare earth, stiff clay	0.025	4
Bare earth, sandy loam	0.020	2
Rock rip-rap, D_{50}=12"	0.040	12
Grouted rock rip-rap, D_{50}=12"	0.035	14
Smooth-finished concrete	0.018	18
Gabions, min. 1' thick	0.030	14

3.8 Open Channels

Concrete drainage channels will not be allowed within the Town of Addison unless written approval is received from the Director of Public Works. Open channels shall be designed to carry the 100-year frequency storm event with one (1) foot of freeboard to the top of bank. A 10-foot wide access ramp shall be included for channel maintenance purposes. If the outlet velocity of an improved channel discharging into an existing channel exceeds the maximum permissible velocity for the existing channel, erosion protection is required. This protection shall consist of a channel reach of rock riprap or other energy dissipation measures between the end of the improved channel and the existing channel. The dimensions and median stone diameter of the energy dissipation reach shall be specified as required to protect the channel from erosion. Alternate erosion protection measures that promote sustainability and water quality are allowed and encouraged.

Freeboard is the height of the improved channel above the designed water surface. Minimum freeboard shall be one (1) foot, and additional freeboard must be provided to accommodate superelevation or other factors causing a rise in the water surface. Superelevation of the water surface must be determined at horizontal curves in order to properly specify freeboard. The minimum radius of curvature shall be not less than three

times the top width for improved channels in a sub-critical flow regime, unless detailed calculations indicate a smaller radius can be used without causing excessive velocities, shear stresses, or waves on the outside of the channel.

For waterways included in the Flood Insurance Study (FIS), flood elevations shall be determined by the same methodology as used in the FIS, unless other methods are approved by the Director of Public Works. Should other methods be approved, the results of the modeling must be compared with and reconciled with the FIS results. For any computer model used, the techniques specified in the most recent version of the appropriate user's manual should be followed.

The composite roughness coefficient should account for the sediment, debris, and vegetation that can reasonably be expected in the channel environment. The roughness coefficients given in this Manual are minimum and should be increased at the discretion of the design engineer to account for expected conditions. If the possibility exists that high bed loads or debris can accumulate in the channel, the 'n' factor should be adjusted or other measures taken to ensure that flow shifts from super-critical to sub-critical will not cause flooding.

All channels shall be designed to operate in sub-critical conditions except at hydraulic jumps, such as at culverts, bridges and drop structures, and shall be designed for stable flow (Froude number less than 0.90). All instances of super-critical flow, or locations where flow passes through critical depth, shall be lined to prevent scour and erosion. Channels shall be designed to convey the 100-year storm, assuming fully developed watershed conditions, with one (1) foot of freeboard to the top of channel bank. Maximum allowable channel velocities shall be as shown in Table 4; however, good engineering judgment may indicate that lower velocities are necessary in specific situations. The values provided in Table 4 above and Table 5, Roughness Coefficients for Open Channels, shall be used as a guide; actual conditions may require deviation from these values and shall be approved by the Director of Public Works. Drop structures, if needed to provide grade control and maintain sub-critical flow, must be constructed of reinforced concrete lining or gabion structures.

3.9 Roadside Ditches

Roadside ditches, where permitted, shall be designed to convey runoff from a 100-year storm below the edge of pavement. All roadside ditches shall be protected with sod, back sloping, and/or other bank protection designed and constructed to control erosion. Any earthen slopes shall have proper vegetative cover and shall be no steeper than three horizontal to one vertical (3:1).

TABLE 5				
ROUGHNESS COEFFICIENTS FOR OPEN CHANNELS				
	Roughness Coefficient			
Channel Description	Minimum	Normal	Maximum	Maximum Velocity
MINOR NATURAL STREAMS				
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	0.060	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	0.042	8
Weeds, Heavy Brush on Banks	0.042	0.060	0.072	8
Weeds, Dense Willows on Banks	0.048	0.072	0.085	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	
Mature Crops	0.030	0.040	0.050	
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 Stage below Branches	0.080	0.100	0.120	8
MAJOR NATURAL STREAMS				
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
UNLINED VEGETATED CHANNELS				
Mowed Grass, Clay Soil	0.025	0.030	0.035	8
Mowed Grass, Sandy Soil	0.025	0.030	0.035	6
UNLINED NON-VEGETATED CHANNELS				
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
LINED CHANNELS				
Smooth Finished Concrete	0.013	0.015	0.020	15
Rip-rap (Rubble)	0.030	0.040	0.050	10
PAVEMENTS				
Concrete Pavement	0.015	0.017	0.020	
Asphalt Pavement	0.015	0.015	0.017	

3.10 Culverts

A culvert is used to convey surface runoff through roadway embankments. Culverts shall be designed to convey the 100-year frequency storm. A minimum of one (1) foot of freeboard is required between the 100-year headwater and either the top of curb or edge of pavement, whichever is applicable. The allowable headwater is the depth of water that can be ponded at the upstream end of the culvert. The headwater shall be based on the design storm, and shall not increase the flood hazard of adjacent property.

The culvert length shall be chosen to provide minimum 3:1 embankment slopes. The culvert flowline shall be aligned with the channel bottom and the skew angle of the stream. The culvert skew shall not exceed forty-five degrees (45˚) as measured from a line perpendicular to the roadway centerline without the approval of the Director of Public Works.

Depending on the type of hydraulic operation, a culvert may function either under inlet control or outlet control. Inlet control exists when the barrel capacity exceeds the culvert inlet capacity and the tailwater is not high enough to control culvert operation. Headwater depth and entrance conditions control the culvert capacity. Outlet control exists when the culvert inlet capacity exceeds the barrel capacity, or the tailwater elevation is high enough to create a backwater condition through the culvert. The tailwater elevation and the slope, length and roughness of the culvert determine the culvert capacity. Both types of operation must be considered, and the culvert capacity will be based on the type of operation that yields the higher headwater of the two. Inlet control must not be assumed without the prior approval of the Director of Public Works.

Nomographs and hydraulic calculation tables for the solution of various inlet and outlet control problems for pipe culverts are included as Figures 13 through 15, although a backwater analysis is encouraged. The Director of Public Works may require submittal of documentation on any such program used. If the culvert is being analyzed as part of a stream or waterway, which is being modeled using a water surface profile program such as HEC-2 or HEC-RAS, then the water surface profile model may be used to analyze the culvert.

The tailwater shall be determined for the design discharge, based on the hydraulic conditions of the downstream channel. Open channel flow methods should be used for this analysis.

A headwall or wingwalls and apron shall be constructed at both ends of all culverts. For small culverts (30" in diameter or less), a sloped end section or a sloped headwall may be specified. The headwall and wingwall design depends largely on hydraulic characteristics of the flow, the site conditions and potential for erosion and scour. The most current TxDOT details for headwalls and wingwalls are acceptable for use in construction of end treatments.

If the outlet velocity exceeds the maximum permissible velocity for the channel (see Table 4) it may be mitigated with either channel improvements for erosion protection or energy dissipation. Erosion protection may consist of an apron of rock riprap between the storm sewer headwall and the channel. The apron length, width, and median stone diameter shall be specified as required to protect the channel from erosion. Alternate erosion protection measures that promote sustainability and water quality are allowed and encouraged.

The minimum velocity in the culvert barrel shall be 2.5 feet per second in a 5-year storm. Maximum allowable velocity in the culvert is 15 feet per second in a 100-year storm. However, downstream conditions will generally impose more stringent limits.

The minimum culvert diameter shall be eighteen (18) inches. Culvert material shall be limited to reinforced concrete unless approval is obtained from the Director of Public Works for alternate materials.

3.11 Bridges

Bridges shall be designed to span the entire stream or channel without restricting flow. To the extent possible, bridges will span streams and channels at a ninety-degree (90°) angle.

Flow hydraulics through the bridge shall be modeled using HEC-2 or HEC-RAS. Bridges shall be designed so that the lowest point of the bridge, the low chord, will be a minimum of two (2) feet above the 100-year water surface elevation, assuming fully developed upstream conditions.

3.12 Detention Facilities

Proposed developments must provide detention or downstream drainage system improvements if the downstream drainage system is inadequate. A downstream assessment must be performed to a point that meets the Ten Percent Rule, or to a recognized water course (See Section 2.1 and Figure 1) to verify the adequacy of the downstream system. Increased storm water runoff must not adversely affect adjoining property. Permanent impoundments of water shall be constructed in such a way that negative effects on aesthetics, function, flooding, health, and safety are minimized.

Detention storage facilities serving drainage areas smaller than fifty (50) acres may use the Modified Rational Method for storage calculations. If the Modified Rational Method is used, computations must be provided for review and approval in the format provided in the Appendix, and summaries of methods and results shall be provided in the construction plans.

All storage facilities serving drainage areas greater than fifty (50) acres, or where the Modified Rational Method is not applicable shall be analyzed using HEC-HMS or other

approved software for reservoir routing of an inflow hydrograph. The software program or computational method must be approved by the Director of Public Works. The analysis should consist of comparing the design flows at a point or points downstream of the proposed storage site with and without storage. Design calculations shall show the effects of the detention facility in each of the 2-, 10,-and 100-year storm events. This may require the use of multi-stage control structures. The detention facility shall be designed to provide the required detention for all of the above-listed frequencies.

The potential for the impact of sedimentation on the detention facility should be evaluated. A means of access for maintenance of the facility shall be provided.

The outlet control structures for storage facilities typically include a principal outlet and an emergency overflow. The principal outlet functions to restrict the outflow and cause the runoff to use the available storage volume. The principal outlet shall be designed to accommodate the 2, 10, and 100-year frequency storms while maintaining a minimum freeboard of one (1) foot to the top of the pond embankment. The emergency overflow shall include erosion control measures and provide positive overflow.

The outlet control structure may be drop inlets, pipes, culverts, weirs, or orifices. Checks should be made to determine if the outlet structure is controlled by weir or orifice flow. The tailwater on the structure could significantly affect its capacity. The engineer should carefully evaluate potential tailwater effects of the downstream system, whether it be a ditch, pipe, road, or creek.

All TCEQ requirements for impoundment and dam safety shall apply. These requirements relate to both the size and the hazard classification of the embankment. Copies of all materials submitted to TCEQ for permitting, along with the TCEQ permits, must be submitted to the Director of Public Works.

4 STORM WATER QUALITY DESIGN STANDARDS

The Town of Addison has been issued a storm water discharge permit from the Texas Commission of Environmental Quality (TCEQ) and is required under the Clean Water Act to implement a storm water management program with an overall goal of improving water quality of receiving water bodies. In compliance with the Town's TCEQ storm water permit and in an effort to improve the storm water quality of our local water resources the Town of Addison has established the following regulations for land development projects and construction sites. It is the responsibility of the Developer, Owner and Contractor to ensure they are in compliance with the most current state or federal storm water regulations including the Clean Water Act, EPA National Pollutant Discharge Elimination System, and TCEQ Texas Pollutant Discharge Elimination System.

4.1 Land Development Post-Construction Runoff Controls

Post-construction runoff controls shall be used to minimize increases in storm water runoff rates and volumes, soil and stream channel erosion, sediment transport and the discharge of pollutants to the Town's municipal separate storm sewer system. The Town of Addison has adopted these standards for the purpose of protecting local water resources from degradation and to protect the general health, safety and welfare of the public residing in affected watersheds.

All new development and re-development projects, one acre or larger, or less than one acre if part of a larger common plan of development or sale, shall implement Best Management Practices (BMP's) to minimize water quality impacts from development after construction is complete (post-construction). Examples of various long-term post-construction BMPs are provided below.

- Floodplain and channel buffers
- Storm water treatment ponds and wetlands
- Grassed swales and channels
- Detention and retention facilities
- Energy dissipators and velocity control structures
- Infiltration trenches
- Rain gardens
- Green roofs
- Open spaces
- Native landscaping and
- Porous parking surfaces
- Storm water re-use and rainwater harvesting
- Tree preservation and tree planting
- Storm water treatment systems

It is the responsibility of the design engineer to verify the adequacy of the post-construction BMP for mitigating the runoff effects from the proposed project. Guidelines for the selection and design of post-construction BMPs may be found on the North Central Texas Council of Government's (NCTCOG) integrated Storm Water Management (iSWM) Design Manual and are acceptable for design of storm water controls within this section, however the design of detention facilities shall be provided within this manual.

It is recommended that the owner, developer and/or design engineer consult with the Director of Public Works prior to design of any post-construction BMPs to discuss and evaluate the intended BMP performance criteria (e.g. water quality, channel protection, runoff volume reduction, etc.) and related long term maintenance requirements. All post-construction BMP's shall be submitted to the Director of Public Works for review and approval prior to construction of the proposed project.

All post-construction BMPs shall have an enforceable long term operation and maintenance agreement to ensure the system functions as designed. This agreement will include any and all maintenance easements as required to access and inspect the storm water practices, and to perform routine maintenance as necessary to ensure proper functioning of the storm water practice. Unless otherwise agreed upon by the Town of Addison, the long term operation and maintenance of any post-construction BMPs shall be the responsibility of the property owner.

4.2 Construction Site Storm Water Pollution Prevention

All construction activity, regardless of size, shall have storm water pollution prevention BMP's installed prior to any land disturbing activities to prevent the discharge of pollutants to the Town's municipal separate storm sewer system. It is the responsibility of owners, developers and contractors to maintain compliance with the (TCEQ) storm water construction permit TXR150000. All storm water BMP's shall be provided, constructed and maintained per the Town of Addison's Erosion Control Details, or the standards set forth in the NCTCOG iSWM guidelines, current edition.

The developer or owner is responsible for providing the Director of Public Works with a copy of the TCEQ Construction Site Notice for projects between 1 and 5 acres or the TCEQ Notice of Intent (NOI) for projects larger than 5 acres prior to any land disturbing activities. Reference the TCEQ general permit TXR150000 for further information. Figure 16 provides a TCEQ Construction Permit Flow Chart and may be used to help determine whether a construction site is regulated under the permitting program.

It is the intent of the Town of Addison that sediment from construction sites be contained on the site. Sediment ponds must be provided for construction sites as required by the TCEQ TDPES Construction Permit. Accordingly, Storm Water Pollution Prevention Plans (SWPPP) must address two stages. No construction is permitted until Stage 1 erosion controls are installed and the Town has received a copy of the NOI or

Construction Site Notice. Stage I refers to the initial grading and infrastructure construction phase of the development. Sediment ponds, boundary silt fence or other approved mass grading erosion control controls must be in installed. Inlet erosion protection devices shall be installed until streets and alleys have been paved. Immediately after paving, an erosion control blanket (or other erosion control method as approved by the Director of Public Works) shall be installed adjacent to paved surfaces such as alleys, streets, flumes, etc., in addition to the placement of silt fence along the downslope boundaries of the site.

Stage 2 refers to the period of time after acceptance of the subdivision by the Town and prior to completion of homes or other buildings. During this stage, an erosion control blanket (or other erosion control method as approved by the Director of Public Works) shall be placed adjacent to all streets and alleys and at the project perimeter to contain sediment within the block and prevent transport to the pavement. The maintenance of this perimeter erosion control system becomes the builder's responsibility once a building permit is issued. Otherwise, the developer is responsible for the perimeter erosion control until the subdivision or phase is 95% built out.

Erosion control devices shall be installed and maintained in accordance with the Town of Addison Erosion Control Details and construction standards or most current edition of the NCTCOG details if not provided within the Addison details.

5 CONSTRUCTION PLAN REQUIREMENTS

All construction plans prepared for construction of public works or private development drainage facilities shall be prepared and sealed by a Professional Engineer who is registered in the State of Texas and is experienced in civil engineering work.

Plans shall be submitted in 22"x34" size to allow accurately scaled half-size (11"x17") reproduction. Plans shall include the following information.

5.1 Drainage Area Maps

Generally, a map having a scale of one (1) inch equals one hundred (100) feet is suitable unless dealing with large off-site drainage areas. Off-site drainage areas may be shown at a smaller scale. The Director of Public Works may require a larger scale if necessary to depict the necessary information in a readable format. The drainage area map shall show the boundary of all drainage areas contributing runoff into the proposed system. The area shall be further divided into sub-areas to determine flow concentration points or inlet locations. Drainage area maps shall show streets, existing ground on one (1) or two (2) foot contours (show proposed contours within the limits of the site) and a hydrologic summary table showing drainage area calculations for both existing and proposed conditions. The Drainage Design Standards section of this document provides maximum inlet times in Table 1. The Time of Concentration (Tc) path shall be shown on the drawing along with detailed calculations indicating how the total Tc was determined.

Direction of flow within streets, alleys, natural and man-made drainage ways, and at all system intersections shall be clearly shown on the drainage area map or paving plans. This includes sags, crests and corners. All existing and proposed drainage facilities shall be clearly shown and differentiated on the drainage area map. All existing structures and improvements, such as streets, parking lots, buildings, etc. shall be shown on the drainage area map.

The means provided for accommodating any increase in runoff due to the development shall be clearly depicted, along with the means for handling runoff that is conveyed to or through the site from upstream.

The appendix includes sample calculation forms that depict the information required and the format in which it is to be displayed. While the format shown is not required, use of such format will expedite review by the Town of Addison. Additional information not included on the sample forms may be necessary to adequately address the particular conditions of a given project. Calculations shall be provided showing the capacity of all inlets, pipes and other drainage structures. All calculations must be shown on the construction plans.

5.2 Grading Plans

Grading and drainage plans shall be prepared for all proposed developments, and shall show in detail the proposed grading and the proposed drainage patterns. Existing and proposed contours at one (1) foot intervals shall be shown on all commercial and industrial developments. Grading plans for residential developments shall show existing contours at one (1) foot intervals, and shall depict proposed grading by the use of spot elevations and flow arrows. Spot elevations shall be shown at the top of the curb adjacent to each lot line, and adjacent to each building corner as well as the upper end of each swale. The grading plan shall clearly show swales, ditches and other means of conveying storm water runoff across the proposed site. Finish floor elevations shall be shown, and flow arrows used to indicate flow patterns.

In residential developments, storm water may not cross more than one lot before being discharged to a street, alley, channel or other public storm drainage facility. In all other developments, concentrated storm water may not be discharged to an adjacent property (other than a recognized watercourse) except in a dedicated easement and an approved storm drainage system. Runoff from adjacent lots or properties must be collected and conveyed in an easement rather than across lots.

Positive overflow shall be provided at sump or low point inlets. Minimum finish floor elevations adjacent to such overflows shall be no less than 12” above the overland flow water surface elevation, with positive drainage provided away from the building. Minimum finish floor elevations shall be set at least two (2) feet above the 100-year base flood elevation of any adjacent stream for which base flood elevations have been set as depicted on the most current Flood Insurance Rate Map.

5.3 Storm Drainage Plans

Storm drain plans shall include the following:

- Plan and profile sheets at a scale not greater than 1"=50' horizontally, and 1"=5' vertically. The storm drainage system shall be shown on separate sheets from the paving plans.
- All property lines, right-of-way lines, and easements shall be shown, and the storm drainage facilities tied to these as appropriate.
- Detailed geometry to facilitate construction, including stations at all junctions, structures, pipe size changes, inlets, and all changes in direction, including PC's, PT's, and PI's, along with complete curve data.
- Surface flow arrows shall be shown at all intersections and high points.
- Storm drain pipes shall generally be located in the center of the roadway.
- Reinforced concrete box pipe shall be used in lieu of circular pipes when sizes are 60” diameter or larger.

- Junction boxes or in-line structures shall be spaced a maximum of 400' apart for pipe 24-inches or smaller in diameter, and a maximum of 800' apart for pipe 27-inches or greater in diameter.
- Storm drain pipe shall be reinforced concrete pipe (RCP) in all public right-of-ways. Other pipe materials may only be used with the approval of the Director of Public Works.
- Where multiple inlet leads intersect the main at the same station, a junction box shall be constructed.
- All property lines, right-of-way lines, and easements shall be shown, and the storm drain facilities tied to these as appropriate.
- All existing and proposed utilities shall be shown in the plan view, and in the profile view where such information is available.
- Profiles shall include existing ground line at the center of the proposed storm drain, proposed ground line at the center of the proposed storm drain, 100-year hydraulic grade line (HGL) with HGL elevations at each junction, end of pipe, and pipe size change. Pipe flowline elevations shall be shown at fifty (50) foot intervals along the pipe. The profiles should identify the class of concrete pipe, size, length and slope of each pipe, along with the design flow (Q_{10} or Q_{100} depending on the design event), the full flow capacity of the pipe ($Q_{capacity}$), design velocity (V_{10} or V_{100}), the friction slope (S_f), and the velocity head (H_V).
- The hydraulic grade line shown shall include all minor losses at appurtenances.
- The starting (downstream) elevation of the hydraulic grade line shall be based on downstream conditions. Determination of this starting elevation must be documented.
- In the plan view, indicate the size and type of inlet, top of curb elevation, hydraulic grade elevation, flowline elevation, and lead line length, size and slope for each inlet. All inlet laterals shall be shown in profile in the plans and shall show the HGL.
- All storm drain pipe connections shall match at the crowns of the pipe. Laterals shall connect to the main such that the center of the lateral matches the center of the main.
- Hydraulic calculations provided in tabular format as shown in Figure 12.
- Identify erosion protection measures for storm drain outfall structures, where required.
- Identify benchmarks, including any Town of Addison benchmarks if available.
- 60° Inlet leads are preferred. Inlet leads shall connect to the main at a thirty-degree (30°) angle or greater (no connections greater than sixty degrees (60°) shall be permitted without a junction box. No connections greater than ninety degree (90°) will be permitted.
- All storm drain fittings including pipe bends and wyes shall be prefabricated, unless connecting to an existing system whereas the Town's standard connection detail shall be used.

- Applicable Town of Addison Standard Construction details shall be included in the construction plans. Modifications to these standard details shall not be made without prior approval of the Director of Public Works.
- Identify all proposed post-construction storm water quality BMPs. Include appropriate design calculations and other information in accordance with Town or NCTCOG iSWM design guidelines.

5.4 Channel Plans

- Plan and profile sheets at a scale not greater than 1"=50' horizontally, and 1"=5' vertically. Detailed geometry to facilitate construction, including stations at all junctions, structures, and all changes in direction, including PC's, PT's, and PI's, along with complete curve data.
- All property lines, right-of-way lines, and easements shall be shown, and the channel facilities tied to these as appropriate.
- All existing and proposed utilities shall be shown in the plan view, and in the profile view where such information is available.
- Profiles shall include existing ground line at the center of the proposed channel, proposed ground line at the center of the proposed channel, channel slope, proposed right and left top of bank, 100-year water surface elevation, and flowline elevations at each structure, grade change, etc., as well as at 50-foot intervals along the channel.
- The runoff to be conveyed (Q_{100}), the capacity of the channel at full flow (Q provided), and the velocity at Q_{100} shall be shown.
- Identify erosion protection measures for storm drain outfall structures.
- A typical section(s) shall be depicted on the plans, showing bottom width, side slopes, lining (if applicable), depth, etc.
- Earthen channels shall have side slopes no steeper than 3:1.
- Actual cross sections shall be shown at no less than 100-foot intervals.
- Specify compaction requirements where fill must be placed.

5.5 Detention/Retention Facilities

- Show all hydrologic, routing, storage and outlet calculations. The Modified Rational method must be used for drainage areas less than fifty (50) acres for all systems where it applies. Refer to the Appendix – MRM Detention Basin Design Example for methodology. For larger drainage areas and more complex smaller areas, a unit hydrograph method that employs reservoir routing calculations must be used.
- Retention Ponds shall have a 5' (ft) wide safety shelf two feet below the normal pool elevation, then slope 6:1 (H:V) to the bottom of the pond. Minimum depth of a retention pond is 6' (ft).
- Provide detailed plans showing all aspects of the outlet structure(s), along with hydraulic calculations of the outlet(s).

- Pond routing summary, including return event, peak flow in, peak flow out, critical duration, max water surface, and max storage volume.
- Outfall rating curve showing the total pond discharge at all critical elevations from the flowline to the top of pond, in increments of 1' (ft) or less.
- Grading plans must be provided for the facility. A concrete pilot channel shall be provided unless the pond bottom maintains a 2% slope to the outfall.
- Show downstream conditions and provide information that shows the effect of the discharge on downstream properties and/or structures.
- Show adequate erosion control measures at outlet structure(s).
- Show inundation areas for the 2-year, 10-year, and 100-year storm events, as well as any overflow facilities.
- Show existing and proposed contours to depict slopes of embankments. The maximum slope of embankments shall be 3:1, without the use of retaining walls
- Show emergency overflow provisions.

5.6 Erosion Control Plans

- Erosion Control Plans shall be prepared and sealed by a registered professional engineer.
- Contours or other indication of flow direction shall be shown on the plan.
- Show the location of all structural sediment control measures, including sediment pond locations (when required).
- Sediment pond (when required) calculations must be shown on the erosion control plan.
- Stabilization measures must be identified.
- Required SWPPP maintenance and inspection procedures must be outlined.
- Project sequencing and/or phasing must be identified.
- Both construction (Stage 1) and post-construction (Stage 2) conditions shall be shown.

6 REGULATORY ISSUES

The Developer is responsible for obtaining approvals and maintaining compliance with any State or Federal regulations, permits, and programs including TCEQ, EPA, U.S. Army Corps of Engineers (USACE), FEMA or other agencies. The Developer is required to provide the Town with copies of all approved permits and associated submittals required by any State or Federal agency for developments within the Town of Addison.

6.1 U.S. Army Corps of Engineers 404 Permits

The U.S. Army Corps of Engineers (USACE) has been directed by Congress under Section 404 of the Clean Water Act (33 USC 1344) to regulate activities impacting all waters of the United States, including wetlands and other jurisdictional waters. The USACE has developed a permitting process to ensure compliance with the Clean Water Act. Developers will be expected to ensure that all requirements of the Clean Water Act are met. The Town of Addison assumes no responsibility for the compliance of the Developer with this or any other Federal regulations.

However, the Developer should be aware that under current regulations, most of the streams within the Town of Addison are likely to be considered jurisdictional waters by the USACE. As a result, permitting will likely be required for any projects impacting these streams by fill, excavation, utility crossings or roadway crossings. In many cases, these permits carry significant compensatory mitigation requirements to offset losses of jurisdictional waters and their associated habitat.

6.2 National Flood Insurance Program

The Town of Addison is a participant in the National Flood Insurance Program administered by the Federal Emergency Management Agency (FEMA). Copies of the Flood Insurance Rate Maps (FIRM) are available from the Town, for a fee, depicting the 100-year floodplain developed for insurance rating purposes. Floodplain management in the Town of Addison is under the direction of the Director of Public Works, who also functions as the Floodplain Administrator. Refer to the Town of Addison's floodplain ordinance (Code of Ordinances, Chapter 42 – Floods) for further information.

REFERENCES

City of Allen Code of Ordinances, Post-Construction Runoff Control.

City of Carrollton Ordinance 2581, "Stormwater and Flood Protection Ordinance," December 2000.

City of Desoto, Drainage Design and Storm Water Pollution Prevention Manual, 1990.

City of North Richland Hills, Public Works Design Manual, July 2009.

City of Plano, Storm Drainage Design Manual, August 1993.

Federal Emergency Management Agency, "FIS Guidelines and Specifications for Study Contractors," 1993.

Federal Highway Administration, Hydraulic Design of Highway Culverts, Hydraulic Design Series No. 5, Washington: September 2001.

North Central Texas Council of Governments, iSWM™ (Integrated Storm Water Management) Criteria Manual for Site Development and Construction, December 2009.

North Central Texas Council of Governments, iSWM™ (Integrated Storm Water Management) Design Manual, January 2006.

Texas State Department of Highways and Public Transportation, Bridge Division, Hydraulic Manual, 3rd Ed., Austin: 1985.

Texas Commission on Environmental Quality, Texas Pollutant Discharge Elimination System General Permit for Construction Sites, TXR150000.

Texas Department of Transportation, Bridge Division, Culvert and Drainage Standards.

Town of Addison Code of Ordinances, Flood Damage and Prevention Ordinance.

Town of Addison Standard Construction Details, Paving, Storm Drainage, Erosion Control, August 2010.

Town of Addison Drainage Criteria Manual, March 1990.

Town of Addison Stormwater Master Drainage Study.

Town of Trophy Club Design Standards and Construction Specifications, 2005.

U.S. Army Corps of Engineers, Hydrologic Engineering Center, Hydrologic Modeling Software, HEC-HMS.

U.S. Army Corps of Engineers, Hydrologic Engineering Center, River Analysis System, HEC-RAS.

U.S. Department of Agriculture, Soil Conservation Service, "Urban Hydrology for Small Watersheds," Technical Release 55, June 1986.

APPENDIX

MODIFIED RATIONAL METHOD
DETENTION BASIN DESIGN
EXAMPLE

GIVEN: A 25-acre site, currently open space, is to be developed for retail use. The entire site is the drainage area of the proposed detention basin.

DETERMINE: The maximum release rate and required detention storage, detention basin size and shape, and outlet structure configuration for the 2-, 10-, and 100-year events (sample calculations for the 100 year storm are provided below)

SOLUTION:

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

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

NOTE: Incrementally increase durations 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.

Present Conditions Q = CIA

C	=	0.30
Tc	=	20 min.
I_{100}	=	7.05 in./hr.
Q_{100}	=	0.30 X 7.05 X 25 = 52.9 cfs (Maximum release rate)

Future Conditions (Retail)

C	=	0.90
Tc	=	15 min. (calculated)
I_{100}	=	7.99 in./hr.
Q_{100}	=	0.90 X 7.78 X 25 = 179.8 cfs

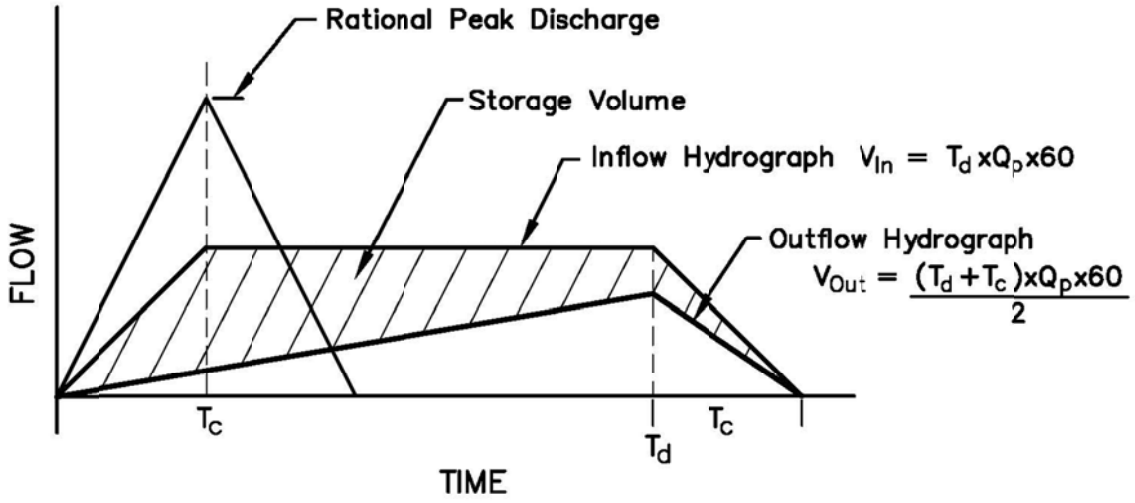
Check various duration storms: $Q_p = C \times I \times A$

15 min.	I = 7.99	$Q_p = 0.90 \times 7.99 \times 25 = 179.8$ cfs
20 min.	I = 7.05	$Q_p = 0.90 \times 7.05 \times 25 = 158.6$ cfs
30 min.	I = 5.77	$Q_p = 0.90 \times 5.77 \times 25 = 129.8$ cfs
40 min.	I = 4.92	$Q_p = 0.90 \times 4.92 \times 25 = 110.7$ cfs
50 min.	I = 4.32	$Q_p = 0.90 \times 4.32 \times 25 = 97.2$ cfs
60 min.	I = 3.86	$Q_p = 0.90 \times 3.86 \times 25 = 85.9$ cfs
70 min.	I = 3.50	$Q_p = 0.90 \times 3.50 \times 25 = 78.8$ cfs
80 min.	I = 3.21	$Q_p = 0.90 \times 3.21 \times 25 = 72.2$ cfs
90 min.	I = 2.97	$Q_p = 0.90 \times 2.97 \times 25 = 66.8$ cfs

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

Inflow = Storm duration x respective peak discharge x 60 sec./min.

Outflow = Half of inflow time ($T_d + T_c$) x control release discharge x 60 sec./min.



15 min. Storm	Inflow	15 x 179.8 x 60 sec./min	= 161,820 cf
	Outflow	0.5 x 30 x 52.9 x 60 sec./min	= 53,958 cf
	Storage		125,646 cf

20 min. Storm	Inflow	20 x 158.6 x 60 sec./min	= 190,320 cf
	Outflow	0.5 x 35 x 52.9 x 60 sec./min	= 55,545 cf
	Storage		134,775 cf
30 min. Storm	Inflow	30 x 129.8 x 60 sec./min	= 233,640 cf
	Outflow	0.5 x 45 x 52.9 x 60 sec./min	= 71,415 cf
	Storage		162,225 cf
40 min. Storm	Inflow	40 x 110.7 x 60 sec./min	= 265,680 cf
	Outflow	0.5 x 55 x 52.9 x 60 sec./min	= 87,285 cf
	Storage		178,395 cf
50 min. Storm	Inflow	50 x 97.2 x 60 sec./min	= 291,600 cf
	Outflow	0.5 x 65 x 52.9 x 60 sec./min	= 103,155 cf
	Storage		188,445 cf
60 min. Storm	Inflow	60 x 85.9 x 60 sec./min	= 309,240 cf
	Outflow	0.5 x 75 x 52.9 x 60 sec./min	= 119,025 cf
	Storage		190,215 cf
70 min. Storm	Inflow	70 x 78.8 x 60 sec./min	= 330,960 cf
	Outflow	0.5 x 85 x 52.5 x 60 sec./min	= 134,889 cf
	Storage		196,085 cf
80 min. Storm	Inflow	80 x 72.2 x 60 sec./min	= 346,560 cf
	Outflow	0.5 x 95 x 52.9 x 60 sec./min	= 150,765 cf
	Storage		195,795 cf
90 min. Storm	Inflow	90 x 66.8 x 60 sec./min	= 360,720 cf
	Outflow	0.5 x 105 x 52.9 x 60 sec./min	= 166,635 cf
	Storage		194,085 cf

Maximum volume required is 196,085 cf and the critical storm duration is 70 minutes for the 100-year storm.

Step 3.
Size the basin to contain the required volume for the 100-year storm while maintaining minimum slope and freeboard requirements.

Step 4.
Using the selected geometry of the basin as determined above and the storage volumes

required for each storm event, determine the maximum depth in the basin for each storm. To design the outlet structure for the required multiple frequencies, the calculations shown above may be repeated for each frequency in tabular form as shown below. For each storm event, the highest storage value calculated, along with the selected basin size and shape, determines the maximum depth for each event. This depth is the head used in outlet structure design.

Step 5.
A trial outlet structure is selected, and may be a weir, an orifice (pipe), a V-notch weir, or a combination of outlets.

The outlet structure is designed using the head calculated above, to provide a peak discharge that is no greater than 2% above existing (undeveloped) peak runoff for each of the 2-, 10-, and 100-year storm events.

Several iterations may be necessary to balance discharge from the outlet structure, pond geometry and head. If the discharge is significantly different (either higher or lower) than the discharge assumed in Step 2, the actual operation of the pond will not correspond to the calculations. Discharge for any given event may not exceed the allowable discharge determined in Step 1 by more than 2% nor may actual discharge be more than 10% below the allowable discharge.

STANDARD EASEMENT DEDICATION STATEMENTS

The following "Detention Area Easement" statement shall be placed on the Final Plat for all detention structures. Consult with the Town of Addison concerning easement statements that may be required for a Final Plat for long term operation and maintenance of other storm drainage structures or storm water quality structures.

DETENTION AREA EASEMENT STATEMENT

This plat is approved by the Town of Addison and accepted by the owner(s), subject to the following conditions which shall be binding upon the owner(s), his heirs, grantees and successors, and assigns:

The proposed detention area easement(s) within the limits of this addition, will remain as detention area(s) to the line and grade shown on the plans at all times and will be maintained by the individual owner(s) of the lot or lots that are traversed by or adjacent to the detention area(s). The Town of Addison will not be responsible for the maintenance and operation of said detention area(s) or any damage or injury to private property or person that results from the flow of water along, into or out of said detention area(s), or for the control of erosion.

No obstruction to the natural flow of storm water run-off shall be permitted by filling or construction of any type of dam, building, bridge, fence, walkway or any other structure within the designated detention area(s) unless approved by the Director of Public Works, provided; however, it is understood that in the event it becomes necessary for the Town of Addison to erect any type of drainage structure in order to improve the storm drainage that may be occasioned by the streets and alleys in or adjacent to the subdivisions, then, in such event, the Town of Addison shall have the right to enter upon the detention area(s) at any point, or points, to erect, construct and maintain any drainage facility deemed necessary for drainage purposes. Each property owner shall keep the detention area(s) traversing or adjacent to his property clean and free of debris, silt and any substance which would result in unsanitary conditions or blockage of the drainage. The Town of Addison shall have the right of ingress and egress for the purpose of inspection and supervision of maintenance work by the property owner(s), or to alleviate any undesirable conditions, which may occur.

The detention area(s) as in the case of all detention areas are subject to storm water overflow(s) to an extent which cannot be clearly defined. The Town of Addison shall not be held liable for any damages of any nature resulting from the occurrences of these natural phenomena, nor resulting from the failure of any structure or structures, within the detention area(s) or subdivision storm drainage system.

The detention area easement line identified on this plat shows the detention area(s) serving this addition.

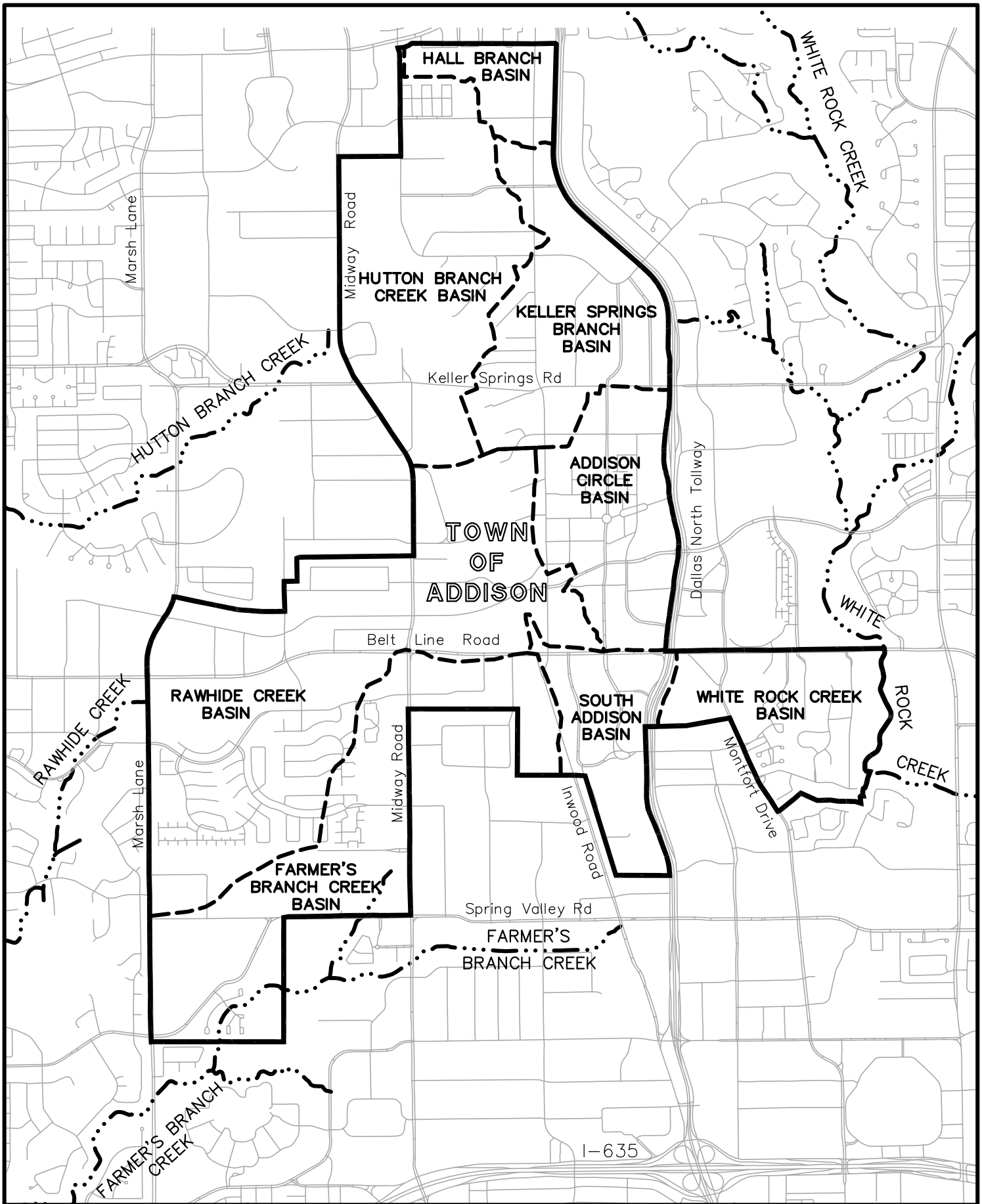


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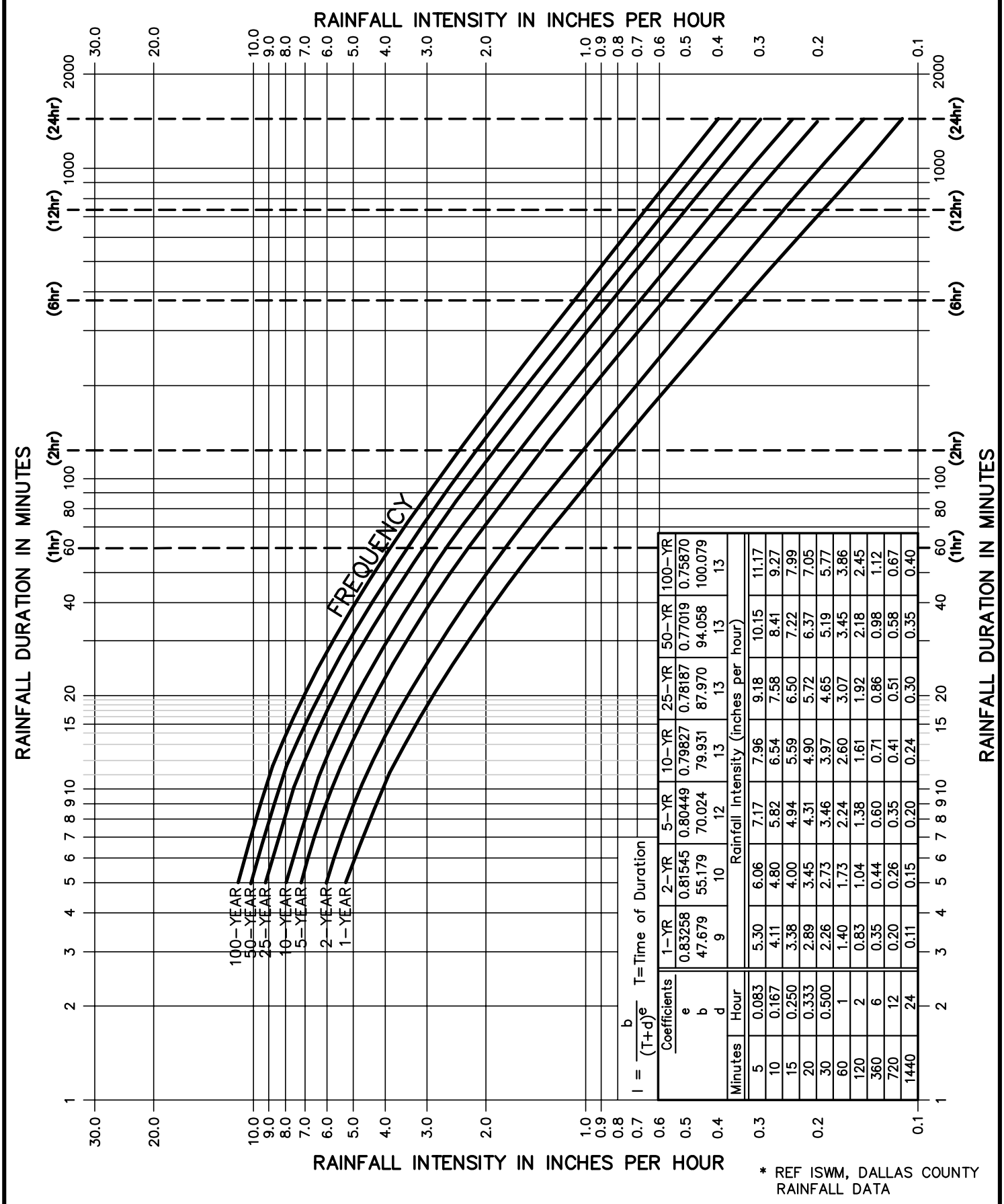
FIGURE 1

MAJOR DRAINAGE BASINS

Town of ADDISON
DRAINAGE CRITERIA MANUAL



Coefficients	1-YR	2-YR	5-YR	10-YR	25-YR	50-YR	100-YR
e	0.83258	0.81545	0.80449	0.79827	0.78187	0.77019	0.75870
b	47.679	55.179	70.024	79.931	87.970	94.058	100.079
d	9	10	12	13	13	13	13

Minutes	Hour	Rainfall Intensity (inches per hour)						
5	0.083	5.30	6.06	7.17	7.96	9.18	10.15	11.17
10	0.167	4.11	4.80	5.82	6.54	7.58	8.41	9.27
15	0.250	3.38	4.00	4.94	5.59	6.50	7.22	7.99
20	0.333	2.89	3.45	4.31	4.90	5.72	6.37	7.05
30	0.500	2.26	2.73	3.46	3.97	4.65	5.19	5.77
60	1	1.40	1.73	2.24	2.60	3.07	3.45	3.86
120	2	0.83	1.04	1.38	1.61	1.92	2.18	2.45
360	6	0.35	0.44	0.60	0.71	0.86	0.98	1.12
720	12	0.20	0.26	0.35	0.41	0.51	0.58	0.67
1440	24	0.11	0.15	0.20	0.24	0.30	0.35	0.40

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FIGURE 2

RAINFALL INTENSITY–DURATION–FREQUENCY CURVES

Town of ADDISON
DRAINAGE CRITERIA MANUAL

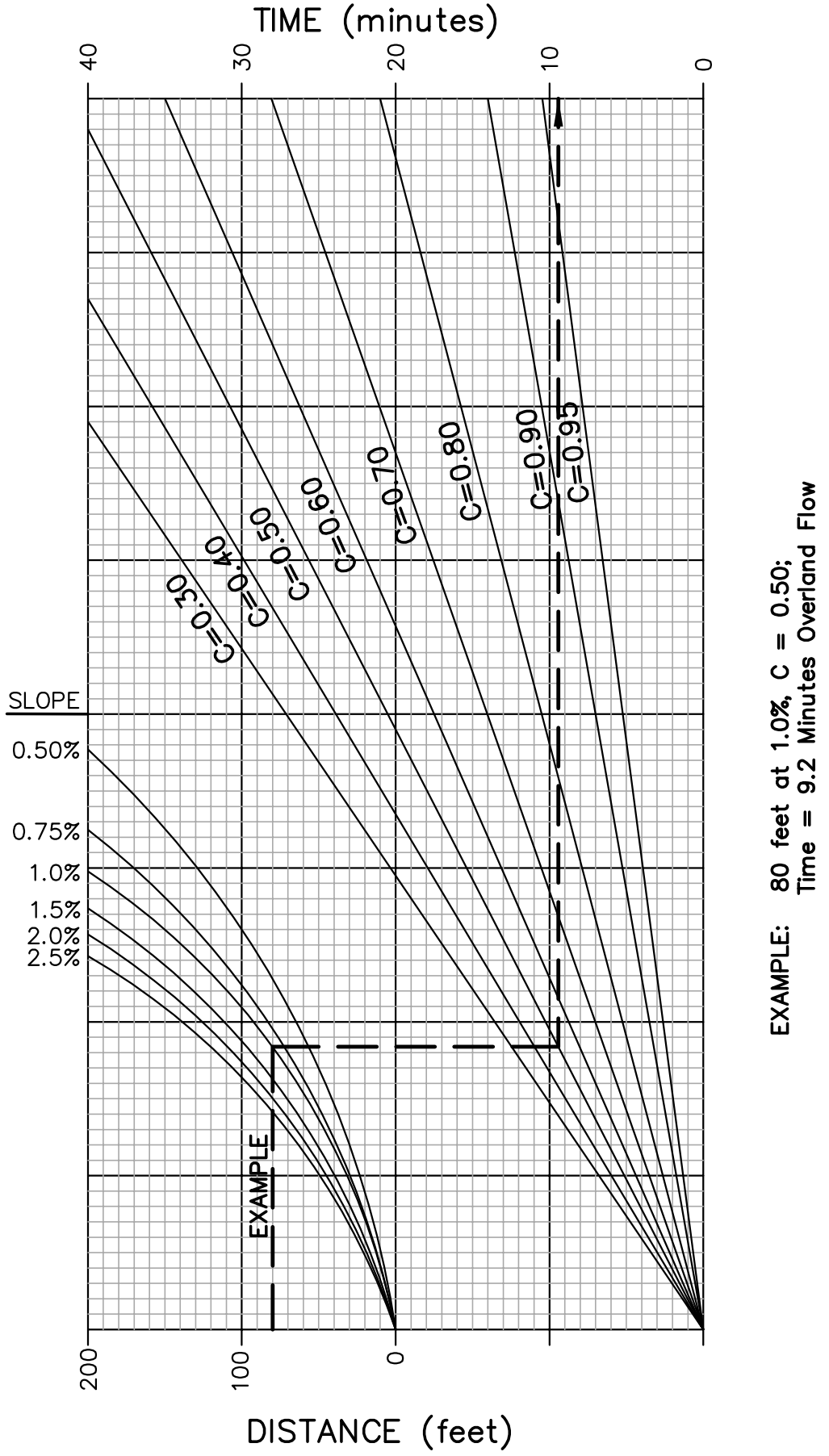

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FIGURE 3

OVERLAND
TIME OF FLOW

Town of ADDISON
DRAINAGE CRITERIA
MANUAL

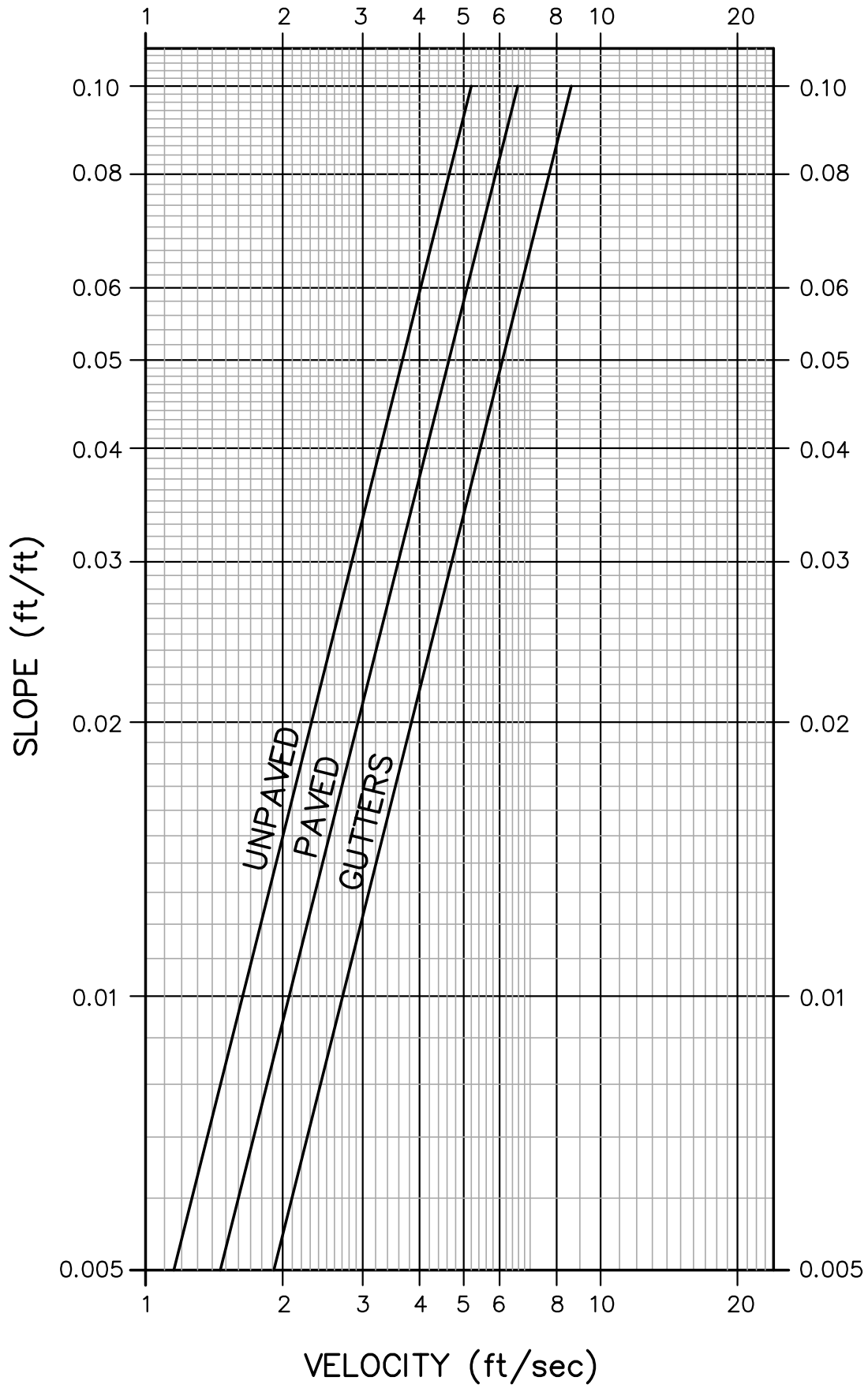

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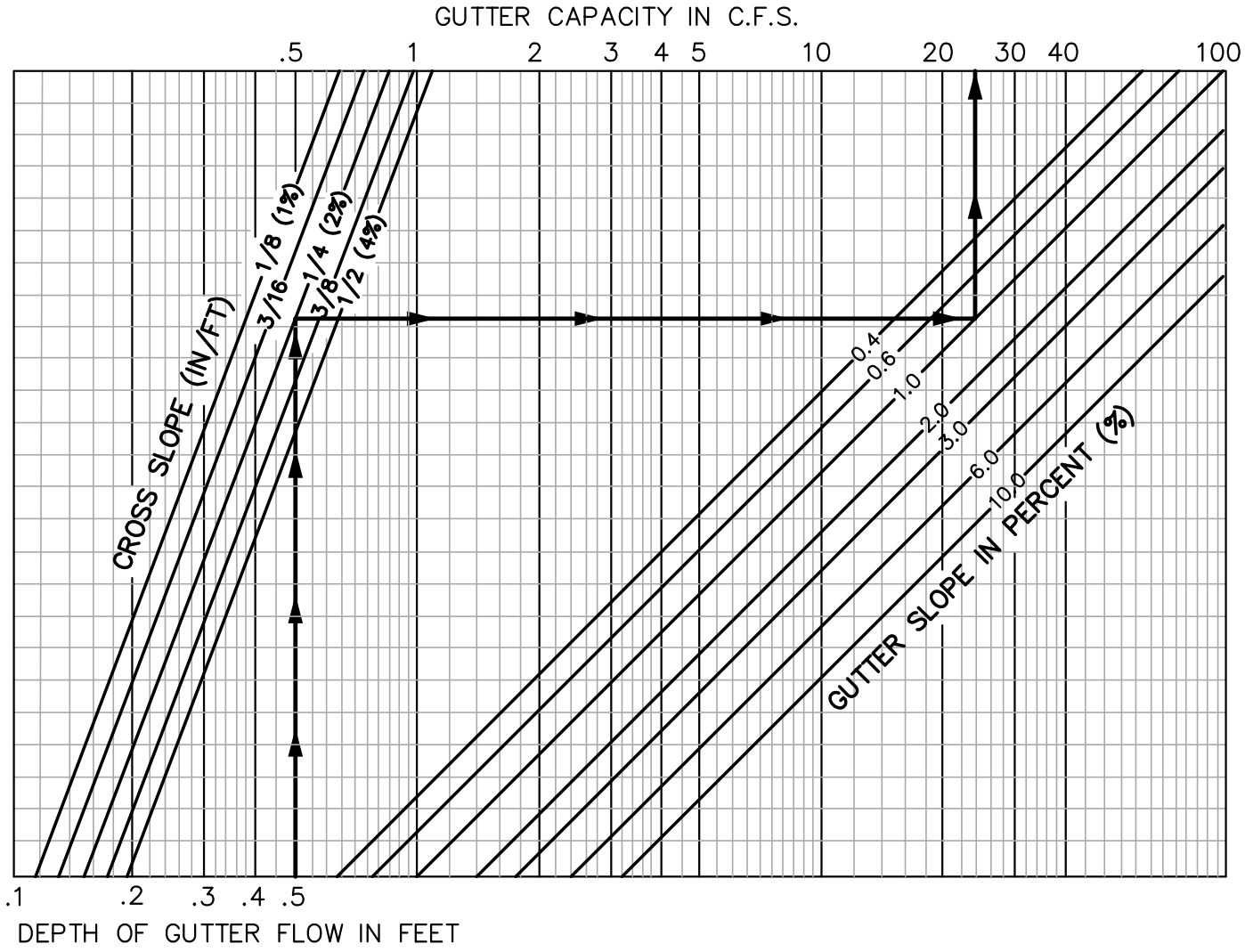
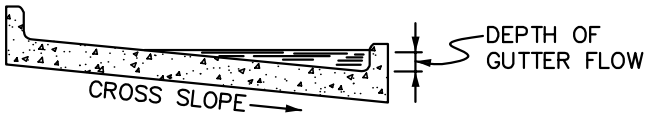
FIGURE 4

SHALLOW CONCENTRATED FLOW VELOCITY

Town of ADDISON
DRAINAGE CRITERIA MANUAL





(Roughness Coefficient "n" = .0175)

EXAMPLE

Known:
- Gutter Slope = 1.0%
- Pavement Cross Slope = 1/4"per ft.
- Depth of Gutter Flow = 0.5'

Find:
- Gutter Capacity

Solution:
- Enter Graph at 0.5'
- Intersect Cross Slope = 1/4"per ft.
- Intersect Gutter Slope = 1.0%
- Read Gutter Capacity = 24 c.f.s.

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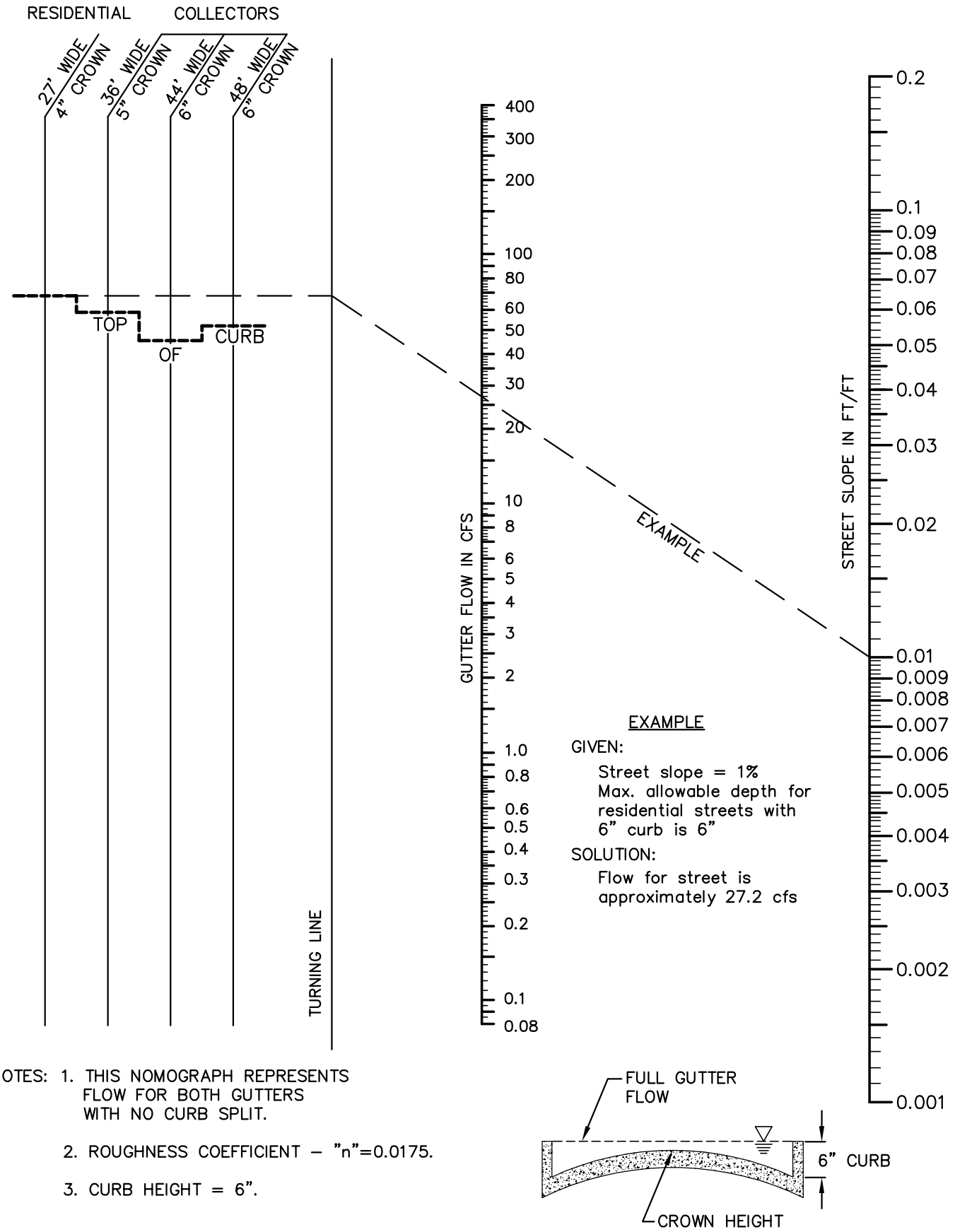
FIGURE 5

CAPACITY OF TRIANGULAR GUTTERS

Town of ADDISON
DRAINAGE CRITERIA MANUAL



EXAMPLE

GIVEN:

Street slope = 1%
Max. allowable depth for residential streets with 6" curb is 6"

SOLUTION:

Flow for street is approximately 27.2 cfs

NOTES:
1. THIS NOMOGRAPH REPRESENTS FLOW FOR BOTH GUTTERS WITH NO CURB SPLIT.
2. ROUGHNESS COEFFICIENT – "n"=0.0175.
3. CURB HEIGHT = 6".

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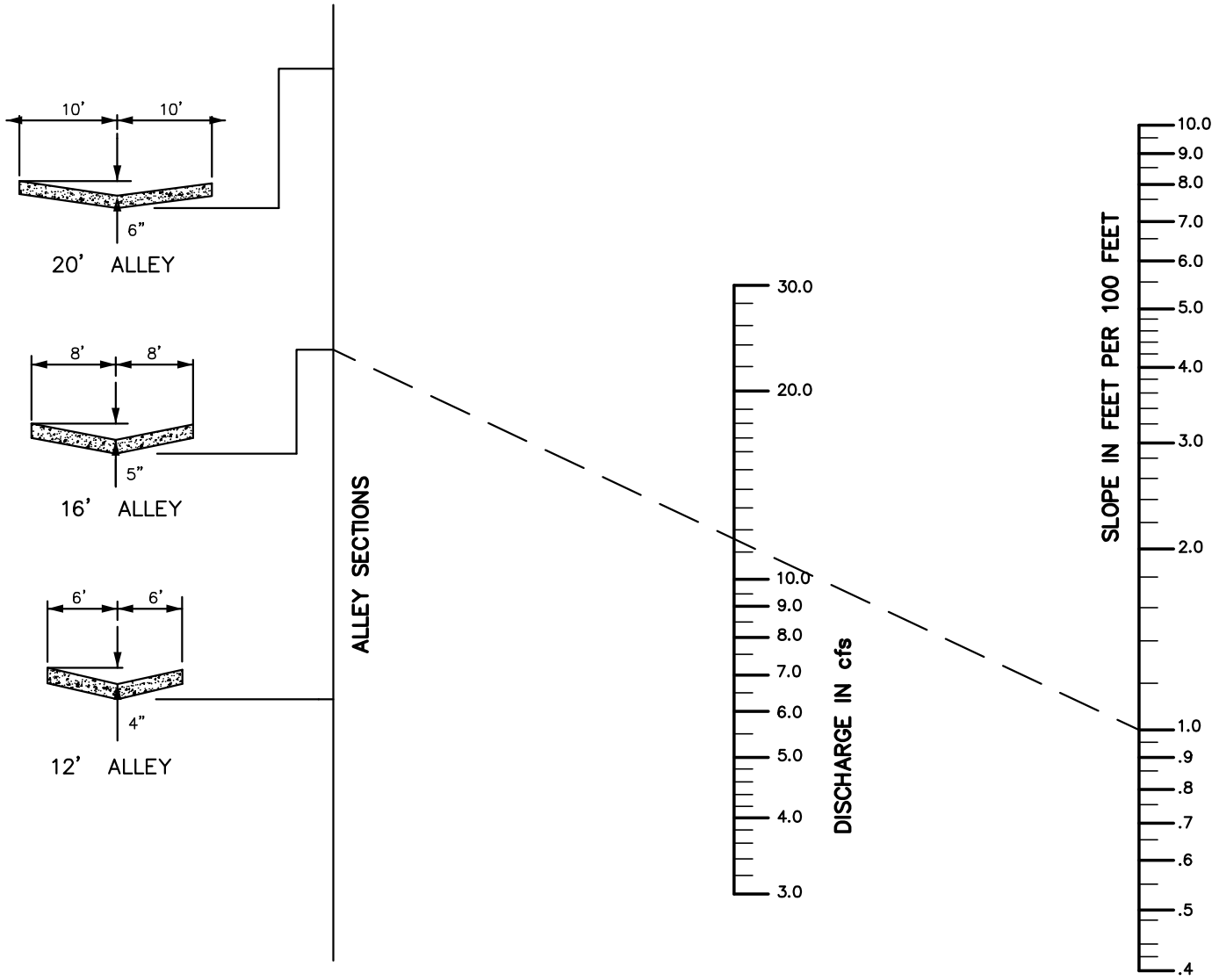
FIGURE 6

FULL GUTTER FLOW CAPACITY OF PARABOLIC CROWNS

Town of ADDISON
DRAINAGE CRITERIA MANUAL



NOTE:

- All alley capacities are to paving edge.
- The Capacities obtained from this Nomograph are based on a Straight Horizontal Alignment. Curved Alignments may result in Reduced Capacity.
- Capacities are for alleys without curbs.

EXAMPLE

KNOWN:
Alley width = 16'
Alley depression = 5"
Gutter slope = 1.0%
"n" = 0.015

FIND:
Gutter Flow (Q)

SOLUTION:
Connect the 16' alley section with slope = 1.0%. Read Q = 11.6 c.f.s.

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FIGURE 7

CAPACITY OF ALLEY SECTIONS

Town of ADDISON
DRAINAGE CRITERIA MANUAL

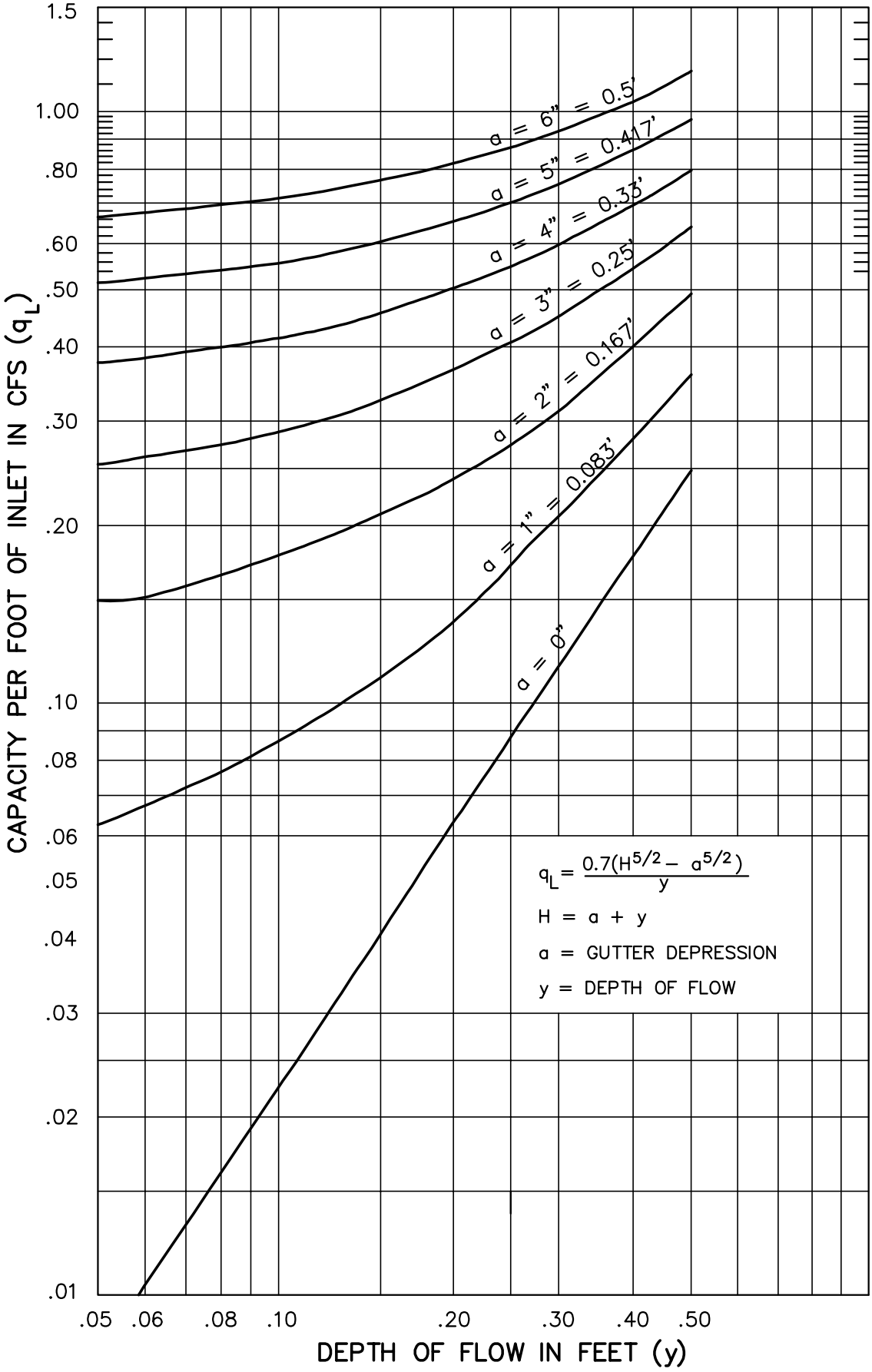

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FIGURE 8

CAPACITY OF CURB INLETS ON GRADE

Town of ADDISON
DRAINAGE CRITERIA MANUAL

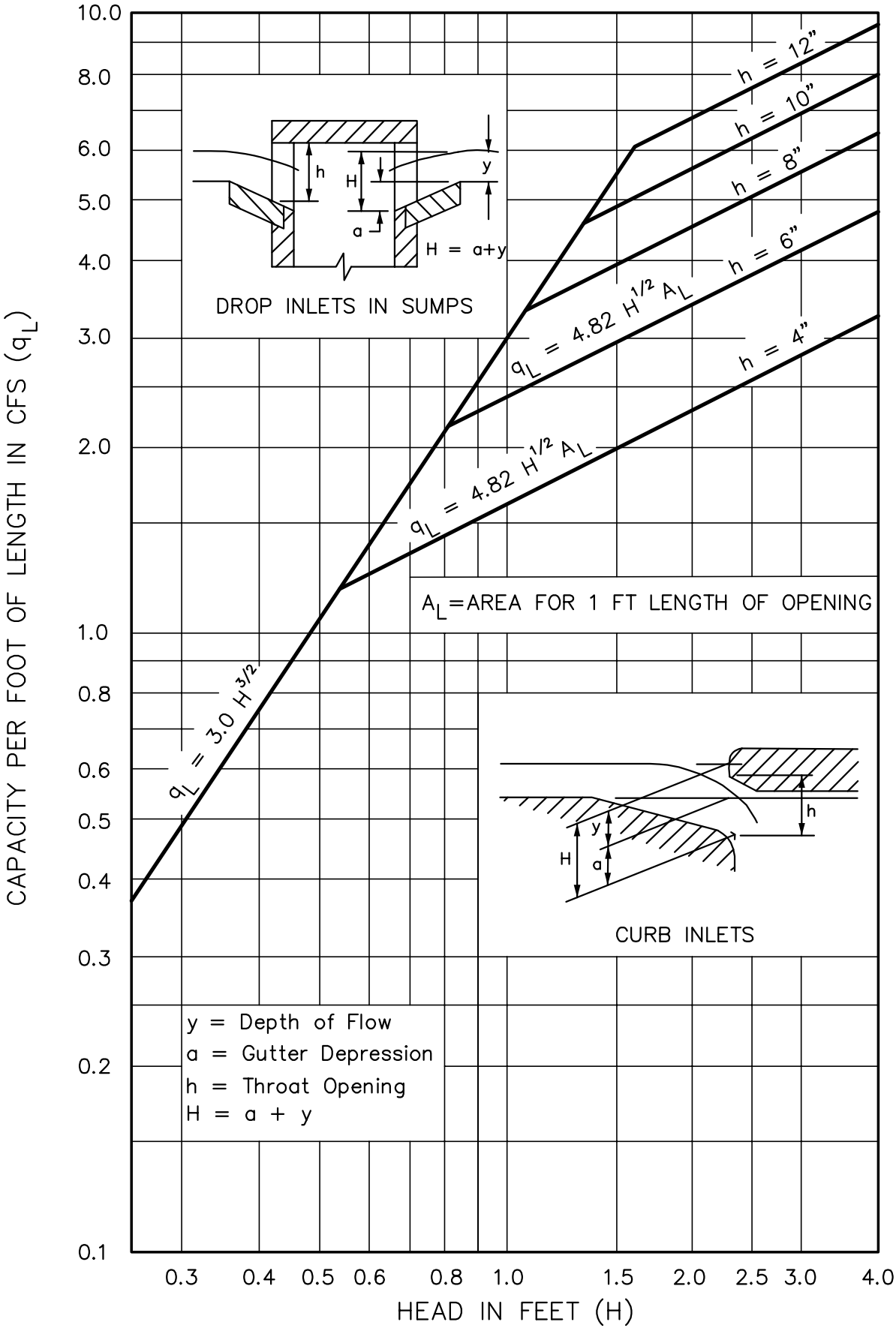

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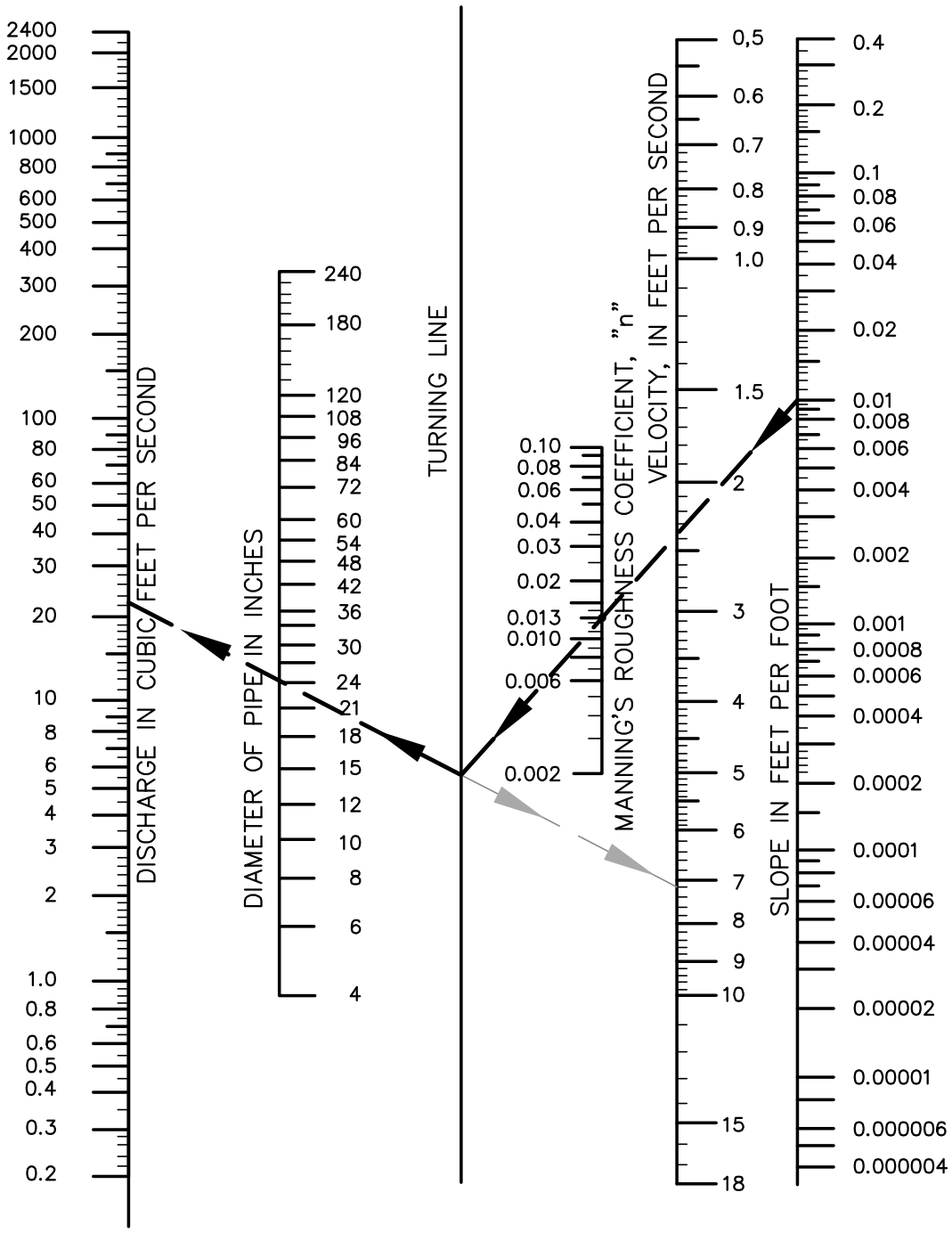
FIGURE 9

CAPACITY OF DROP INLETS AND CURB INLETS IN SUMPS

Town of ADDISON
DRAINAGE CRITERIA MANUAL



EXAMPLE

KNOWN:
"n" = 0.013
Slope(s) = 1.0%
Pipe Diameter = 24"

FIND:
Capacity (Q)
Velocity (V)

SOLUTION:
Connect Slope thru "n" Turning Line,
Connect to Pipe Size
Q=22.6 V=7.2

NOTE:
Solutions are for pipes flowing full depth.

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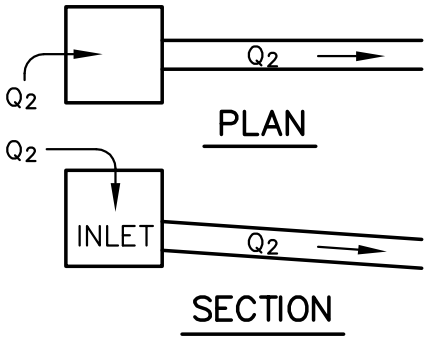
FIGURE 10

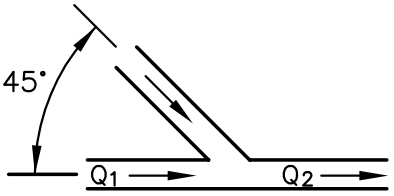
MANNING'S FORMULA FOR FLOW IN STORM SEWERS

Town of ADDISON
DRAINAGE CRITERIA MANUAL



$$H_j = 1.25 \frac{V_2^2}{2g}$$

INLET AT BEGINNING OF LINE



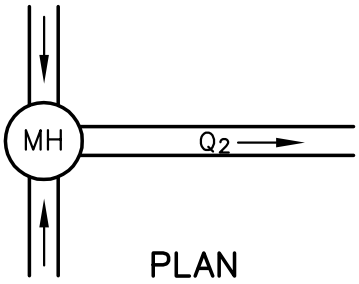
PLAN

$$H_j = \frac{V_2^2}{2g} - \frac{K\ V_1^2}{2g}$$

$$H_j = \frac{V_2^2}{2g} - \frac{0.75\ V_1^2}{2g}$$

FOR 60°, USE K=0.43
(K=COEFFICIENT OF HEAD LOSS)

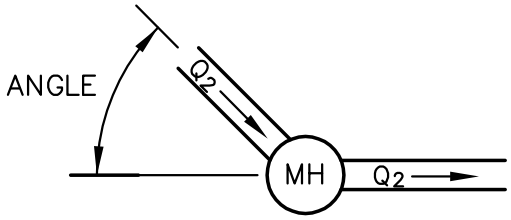
45° WYE CONNECTION



PLAN

$$H_j = \frac{V_2^2}{2g}$$

INCOMING OPPOSING FLOWS AT MANHOLE



PLAN

ANGLE	K
0	0.15
15	0.19
30	0.35
45	0.47
60	0.56
75	0.64
90	0.70

$$H_j = K \frac{V_2^2}{2g}$$

CHANGE IN DIRECTION AT MANHOLE

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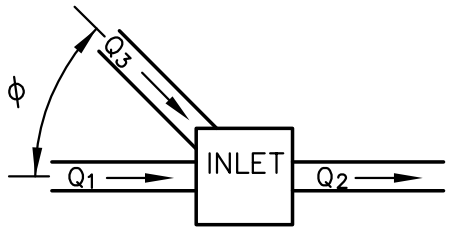
FIGURE 11
MINOR HEAD LOSSES
(1 OF 2)

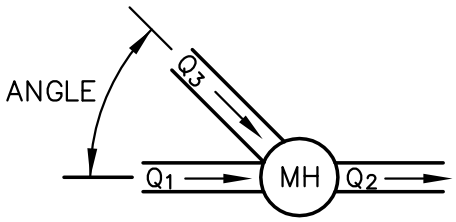
Town of ADDISON
DRAINAGE CRITERIA MANUAL



PLAN

$$H_j = \frac{Q_2 V_2^2 - Q_1 V_1^2 - \cos\phi\, Q_3 V_3^2}{2gQ_2}$$

INLET WITH MULTIPLE ENTERING FLOWS

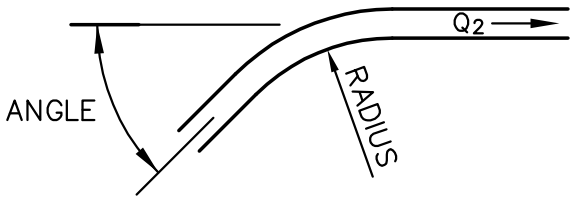


PLAN

ANGLE	K
15	0.81
30	0.65
45	0.53
60	0.44
75	0.36
90	0.30

$$H_j = \frac{V_2^2}{2g} - K\frac{V_1^2}{2g}$$

MANHOLE WITH LATERAL

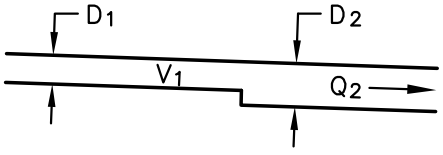


PLAN

	K		
ANGLE	RADIUS (# DIA's)		
	1	2–8	8–20
90	0.50	0.45	0.40
60	0.43	0.38	0.34
45	0.35	0.32	0.28
22½	0.20	0.18	0.16

$$H_j = K\frac{V_2^2}{2g}$$

CONDUIT ON CURVE



SECTION

$\frac{D_2}{D_1}$	K
1.2	0.10
1.4	0.23
1.5	0.29
1.6	0.35
1.8	0.44
2.0	0.52
2.5	0.65

$$H_j = K\frac{V_1^2}{2g}$$

PIPE ENLARGEMENT

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FIGURE 11

MINOR HEAD LOSSES
(2 OF 2)

Town of ADDISON
DRAINAGE CRITERIA MANUAL

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FIGURE 12
HYDRAULIC COMPUTATIONS
TABLES

Town of ADDISON
DRAINAGE CRITERIA
MANUAL

DRAINAGE AREA COMPUTATIONS

AREA	ACRES	'C'	T_c	I_{10}	Q_{10}	I_{100}	Q_{100}	COMMENTS

INLET COMPUTATIONS

DESIGN POINT NUMBER	INLET LOCATION	CONTRIB DRNG AREA(S)	RUNOFF COEF. "C"	SIZE (AC.)	Tc (MIN)	RAIN INTENSITY (IN/HR)	Q (CFS)	UPSTREAM BYPASS	STREET SLOPE (%)	STREET WIDTH (FT)	INLET DEPRESSION (FT)	INLET CAPACITY (CFS/FT)	INLET LENGTH (FT)	INLET CAPACITY (CFS)

HYDRAULIC COMPUTATIONS FOR STORM DRAINS

RUNOFF COLLECTION POINT (Inlet or Manhole) UPSTREAM STATION	DOWNSTREAM STATION	Distance Between Collection Points	INCREMENTAL DRAINAGE AREA Area No.	Drainage Area "A" (Acres)	Runoff Coeff. "C"	Incremental "CA"	Accum-ulated "CA"	Time at Upstream Station (minutes)	Intensity "I" (in./hr.)	Storm Water Runoff "Q" (c.f.s.)	Slope of Hydraulic Gradient "Sf" (ft./ft.)	Number of Boxes or Pipes	Width of Box (ft.) or Pipe Diameter (inches)	Height of Box (ft.)	Velocity In Sewer Between Collection Points "V" (f.p.s.)	Velocity Head at Upstream Station (feet)	Flow Time in Sewer (minutes)	Time at Downstream Station (minutes)	Hydraulic Grade Line Elevation Downstream (elev)	Hydraulic Grade Line Elevation Upstream (elev)	REMARKS

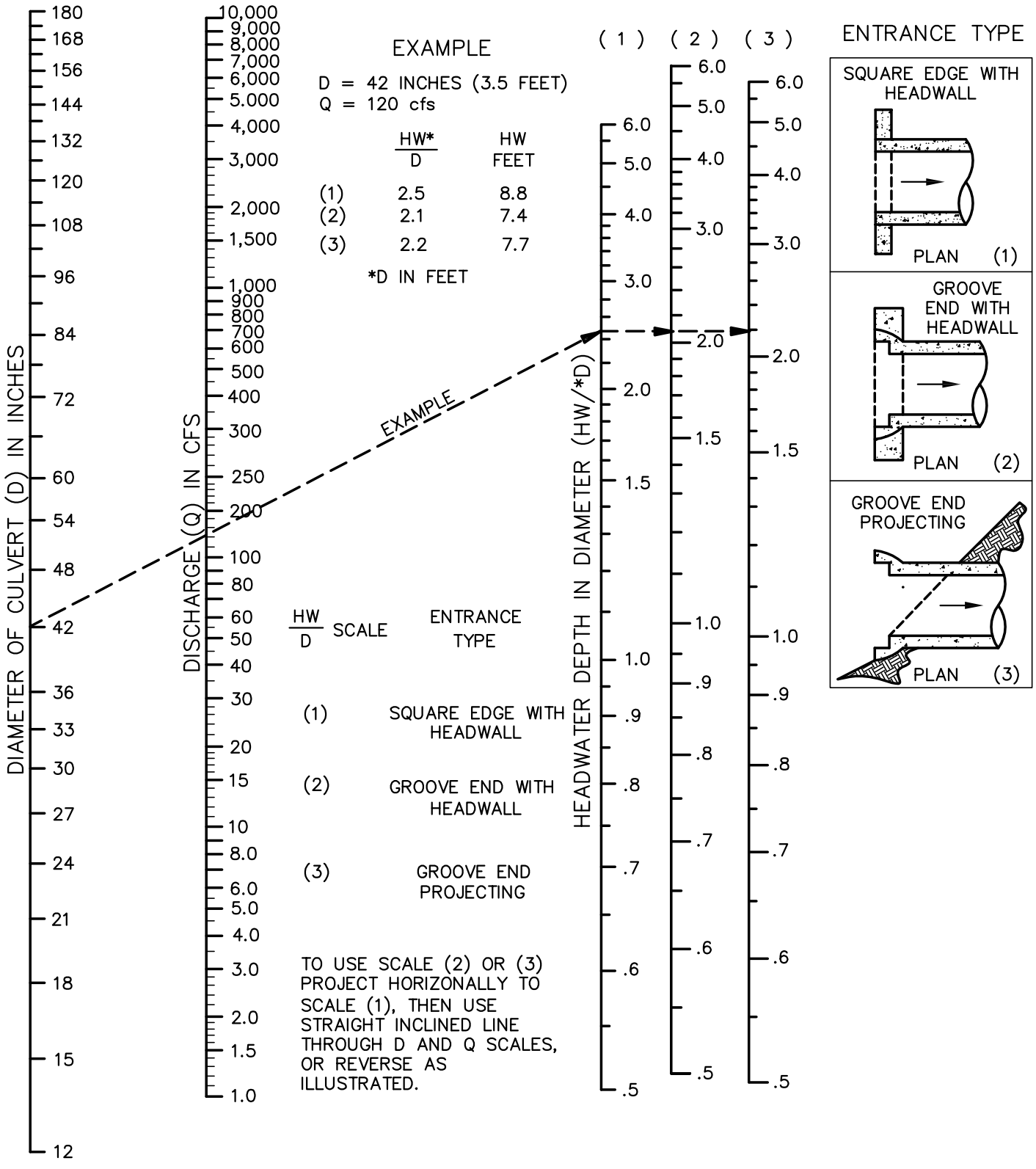

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FIGURE 13

HEADWATER DEPTH FOR PIPE CULVERTS WITH INLET CONTROL

Town of ADDISON
DRAINAGE CRITERIA MANUAL

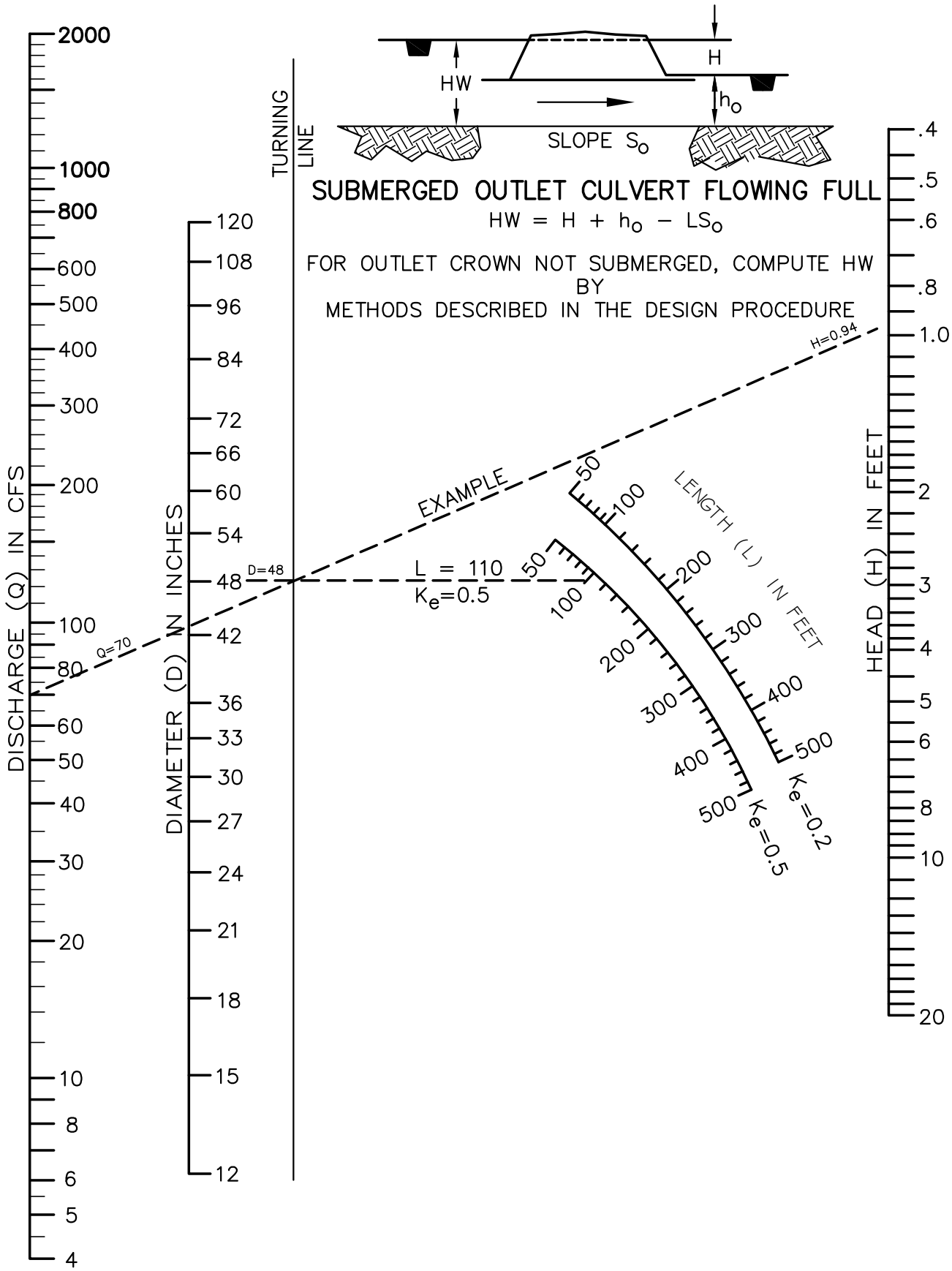

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FIGURE 14

HEADWATER DEPTH FOR PIPE CULVERTS FLOWING FULL WITH OUTLET CONTROL

Town of ADDISON
DRAINAGE CRITERIA MANUAL

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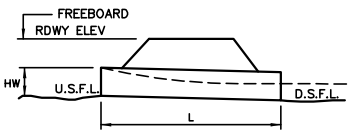
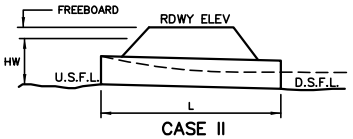
FIGURE 15
CULVERT DESIGN
CALCULATION TABLE

Town of ADDISON
DRAINAGE CRITERIA
MANUAL

INLET CONTROL

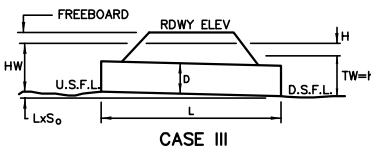


CASE I
INLET NOT SUBMERGED

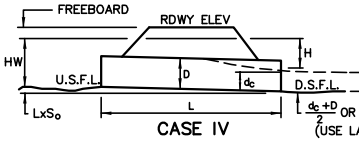


CASE II
INLET SUBMERGED

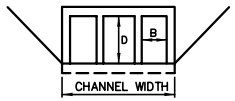
OUTLET CONTROL



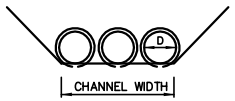
CASE III
OUTLET SUBMERGED



CASE IV
OUTLET NOT SUBMERGED



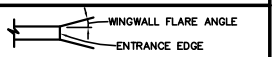
TYPICAL BOX CULVERT



TYPICAL PIPE CULVERT

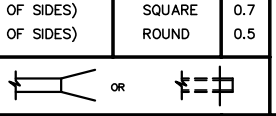
CULVERT ENTRANCE DATA

CONCRETE BOX CULVERT



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	0.5
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 DESIGN CALCULATIONS
TOWN OF ADDISON, TEXAS

BY _____ DATE _____

PROJECT _____ FILE NO. _____

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. F.L. _____

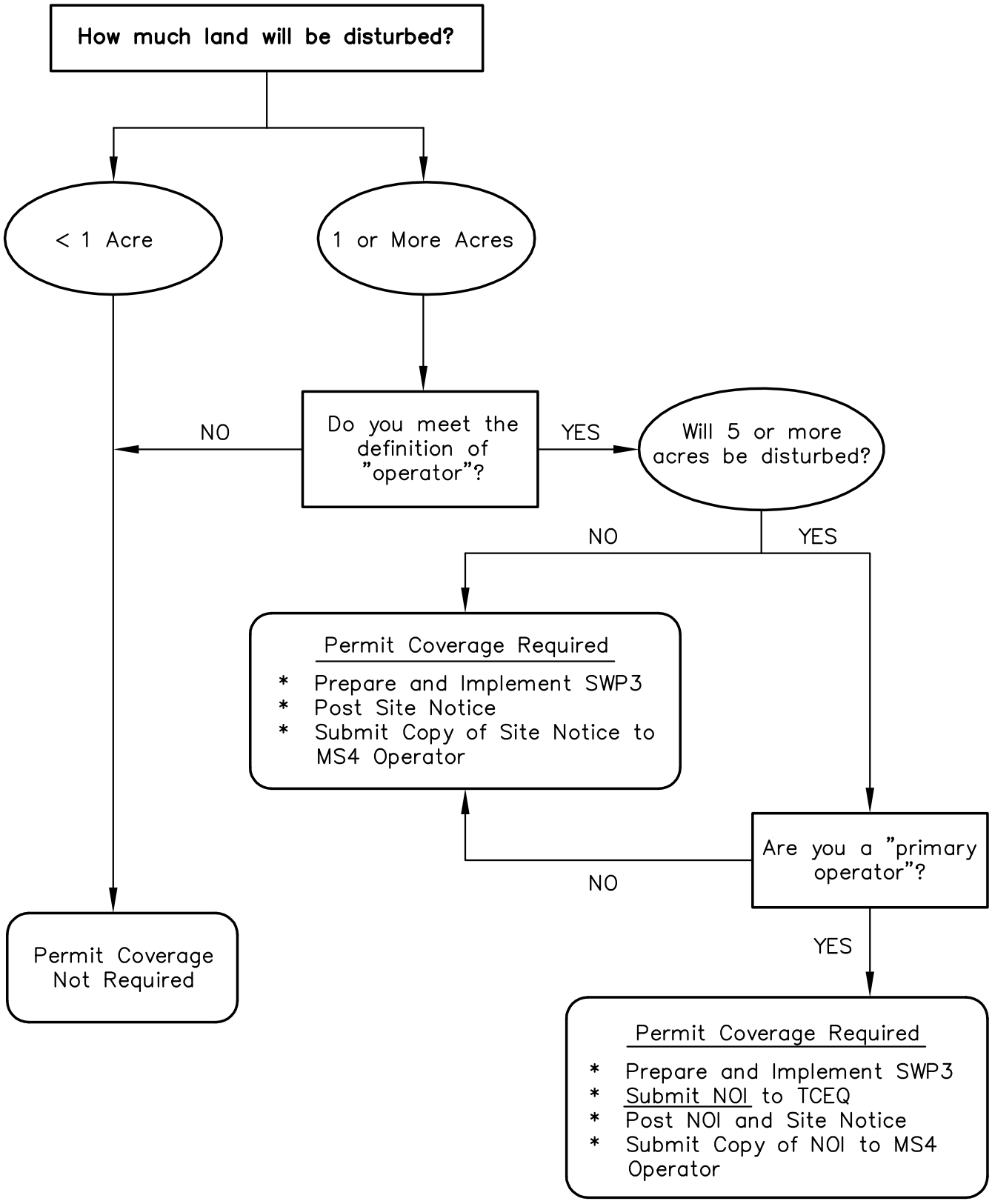
U.S. CULV. F.L. _____ D.S. CULV. F.L. _____

DIFFERENCE _____ DIFFERENCE _____

REQ'D FREEBOARD _____ FT. CULV. SLOPE, $S_o = \frac{\text{DIFF. FT.}}{\text{LENGTH FT.}}$

ALLOW. HEADWATER _____ FT. S_o = _____

TRIAL CULVERT										HEADWATER CALCULATION																				
		DEPTH RANGE D.R.			POSSIBLE CULVERT SIZES					INLET CONTROL					OUTLET CONTROL															
																CASE III HW = H + TW − L x S_o (feet)					CASE IV HW = H + h_o − L x S_o (feet)									
TRIAL AREA OF OPENING $A=\frac{Q}{V_{max}}$ (sq.ft.)	CHANNEL WIDTH "W" (feet)	$\frac{A}{W}$ (feet)	AHW (feet)	TRY DEPTH "D" (feet)	NO. OPENINGS	WIDTH OF BOX "B" (feet)	BOX DEPTH OR PIPE DIA. "D" (feet)	TOTAL CULVERT AREA "A" (sq.ft.)	"Q" EACH OPENING (c.f.s.)	ENTRANCE TYPE	CASE NO.	$\frac{Q}{B}$ (c.f.s.)	$\frac{HW}{D}$	HW	ENTRANCE COEFF. K_e	"H" (feet)	"TW" (feet)	L x S_o (feet)	"HW" (feet)	"H" (feet)	$h_o=\frac{d_c+D}{2}$ OR h_o=TW (USE LARGER) d_c (feet)	$\frac{d_c+D}{2}$ (feet)	TW (feet)	h_o (feet)	L x S_o (feet)	"HW" (feet)	THE GREATER CONTROLLING HEAD WATER (INLET OR OUTLET) (feet)	SELECTED CONDUIT SIZE
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29		



Addison!
WE'RE GLAD YOU'RE HERE

FIGURE 16

TCEQ CONSTRUCTION PERMIT FLOW CHART

Town of ADDISON
DRAINAGE CRITERIA MANUAL

Council Agenda Item: #R7

AGENDA CAPTION:

Presentation, discussion and consideration of approval to authorize the City Manager to execute Change Order No. 1.2 with North Texas Contracting, Inc., in the amount of $55,935.50 and a deduction of two (2) calendar days for the construction of Spring Valley Road (a portion of the Spring Valley Road/Vitruvian Way Extension project).

FINANCIAL IMPACT:

Funding established by 2008 Certificates of Obligation for Spring Valley Road.

BACKGROUND:

This change order includes several items needed for continuing construction of Spring Valley Road. The change order is attached to the agenda item for review.

RECOMMENDATION:

Staff recommends approval.

COUNCIL GOALS:

Promote Quality Transportation Services

ATTACHMENTS:

Description:	Type:
☐ Change Order 1.2	Exhibit

Change Order #1.2
Spring Valley Road Widening - Schedule 1
Town of Addison, Texas
Prepared by Halff Associates, Inc.
July 1, 2011

ITEM NO.	DESCRIPTION	QTY	UNIT	Engineer's Estimate	
				UNIT PRICE	EXTENDED PRICE
1.3	Temporary Asphalt Pavement 8"	-1208	SY	$70.00	-$84,560.00
1.4	Project Signs	1	EA	$400.00	$400.00
1.10	Remove Existing Concrete Pavement	772	SY	$8.00	$6,176.00
1.11	Remove Existing Concrete Sidewalk	900	SY	$3.00	$2,700.00
1.22	6" Lime Stabilized Subgrade	772	SY	$2.50	$1,930.00
1.23	Hydrated Lime (6%)	11.5	TON	$160.00	$1,840.00
1.24	10" Concrete Pavement (4200 psi)	772	SY	$34.00	$26,248.00
1.25	6" Reinforced Monolithic Concrete Curb	238	LF	$1.00	$238.00
1.26	Pedestrian Pavers @ Vitruvian Intersection	4167	SF	$6.00	$25,002.00
1.27	Median Nose Pavers	1170	SF	$7.00	$8,190.00
1.30	4" Conceret Sidewalk	82	SY	$30.00	$2,460.00
1.32	Directional ADA Curb Ramp	2	EA	$1,000.00	$2,000.00
1.72	Cap Existing Inlet	1	EA	$1,500.00	$1,500.00
1.79	6" Gate Valve With C.I. Valve Box and Cover	1	EA	$1,100.00	$1,100.00
1.86	Water Line Lowering Section	-10	EA	$1,000.00	-$10,000.00
1.139	Drinking Fountain	-1	EA	$4,000.00	-$4,000.00
1.144	Urbinite Ash, 4" Caliper	-2	EA	$300.00	-$600.00
1.145	Crape Myrtle 'Natchez', 4.5" Caliper, Single Trunk	-4	EA	$900.00	-$3,600.00
1.146	Gulf Muhly, 3 Gal.	-35	EA	$18.00	-$630.00
1.147	Mexican Feather Grass, 1 Gal.	-530	EA	$2.00	-$1,060.00
1.150	3/16" Steel Edging	-23	LF	$5.00	-$115.00
1.154	Remove Existing Tree	9	EA	$200.00	$1,800.00
CO1.2-1	Drinking Fountain and Associated Connection	1	EA	$5,000.00	$5,000.00
CO1.2-2	Pour Top on Existing Drainage Box w/Ring & Cover	1	EA	$845.00	$845.00
CO1.2-3	Additional Saw Cut for Slip Form Paver	1785	LF	$4.90	$8,746.50
CO1.2-4	Flagmen For Paving Operation	1	LS	$5,000.00	$5,000.00
CO1.2-5	Storm Lateral Tie Ins To Main	6	EA	$1,500.00	$9,000.00
CO1.2-6	Added Move In for Slip Form Paver	1	LS	$6,000.00	$6,000.00
CO1.2-7	Added Move In For HMAC	1	LS	$9,505.00	$9,505.00
CO1.2-8	Temporary Flex Base	262	TON	$30.00	$7,860.00
CO1.2-9	12" AC Water Line Lowering	2.5	EA	$6,300.00	$15,750.00
CO1.2-10	Remove Existing Fire Hydrant & Valve	1	EA	$1,000.00	$1,000.00
CO1.2-11	Install 6" Cap w/2" NPT Tap	1	EA	$500.00	$500.00
CO1.2-12	Install 2" Blow Off w/2" Type K Copper	1	EA	$1,250.00	$1,250.00
CO1.2-13	Add Valve Stem Extension	3	EA	$350.00	$1,050.00
CO1.2-14	Raise Valve Box & Install Concrete Collar	3	EA	$550.00	$1,650.00
CO1.2-15	Domestic Water Vault Bilco Lid and Riser	1	EA	$5,760.00	$5,760.00
	Subtotal				***$55,935.50***
	Original Contract Amount				**$2,477,827.40**
	Total for Change Order #1.1				**$26,388.00**
	Total for Change Order #1.2				**$55,935.50**
	Revised Contract Amount				**$2,560,150.90**
	Original Contract Time				**271 Days**
	Additional Days Requested for Change Order #1.1				**6 Days**
	Additional Days Requested for Change Order #1.2				**-2 Days**
	Revised Contract Time				**275 Days**

AGREEMENT: By the signatures below, duly authorized agent of the Town of Addison, Texas and North Texas Contracting, Inc. do herby agree to append this **Change Order No. 1.2** to the original contract between themselves, dated November 11, 2010.

TOWN OF ADDISON, TEXAS

By: _____
Ron Whitehead, City Manager

ATTEST:

By: _____
Lea Dunn, City Secretary

NORTH TEXAS CONTRACTING, INC.

By: _____

ATTEST:

By:_____

Council Agenda Item: #R8

AGENDA CAPTION:

Presentation, discussion and consideration of approval to authorize the City Manager to execute Change Order No. 2.2 with North Texas Contracting, Inc., in the amount of $10,107.59 for the construction of certain public infrastructure (including streets and water lines, and other public infrastructure improvements) within that area of the Town generally known as Vitruvian Park (Vitruvian Park Public Infrastructure Phase 1E, and a portion of the Spring Valley Road/Vitruvian Way Extension project).

FINANCIAL IMPACT:

Funding established by Certificates of Obligation for Vitruvian Park (from the $1,301,699 Allocated for Phase 1E by the Master Facilities Agreement, Revised Exhibit “C1”).

BACKGROUND:

UDR, Inc. is currently designing a monument sign to be placed in the center median of Vitruvian Way just south of the intersection of Spring Valley. As part of the monument design, UDR, Inc. requested that the Town revise the design of the median in this location to accommodate the sign. This change order includes the revisions necessary to accommodate the sign once it is ready to be constructed and consists of revisions to the landscaping and providing lighting for the sign. The change order is attached to the agenda item for review.

RECOMMENDATION:

Staff recommends approval.

COUNCIL GOALS:

Promote Quality Transportation Services

ATTACHMENTS:

Description:	Type:
☐ Change Order 2.2	Exhibit
☐ Cost Analysis	Exhibit
☐ Vitruvian Signage Packet	Cover Memo

Change Order #2.2
Vitruvian Park Public Infrastructure - Phase 1E
Schedule 2 - Vitruvian Way Extension
Town of Addison, Texas
Prepared by Halff Associates, Inc.
July 1, 2011

ITEM NO.	DESCRIPTION	QTY	UNIT	Engineer's Estimate	
				UNIT PRICE	EXTENDED PRICE
2.3	Project Signs	1	EA	$400.00	$400.00
2.7	Silt Fence	114	LF	$2.00	$228.00
CO2.2-1	2" Schedule 40 Street Light Conduit	150	LF	$5.00	$750.00
CO2.2-2	#6 AWG XHHW Wire	160	LF	$1.00	$160.00
CO2.2-3	#6 AWG XHHW Neutral Wire	160	LF	$1.00	$160.00
CO2.2-4	#12 AWG THHN Wire	100	LF	$1.00	$100.00
CO2.2-5	#8 AWG Bare Wire	160	LF	$1.00	$160.00
CO2.2-6	Seasonal Color, 4" pots and 1 Gal.	340	EA	$1.00	$340.00
CO2.2-7	Vitruvian Park Sign Lighting	6	EA	$910.00	$5,460.00
CO2.2-8	Big Blue Liriope, 1 Gal.	335	EA	$4.37	$1,463.95
CO2.2-9	Purple Diamond Loropethalum, 5 Gal.	28	EA	$31.63	$885.64
	Subtotal				***$10,107.59***
	Original Contract Amount				**$1,000,569.50**
	Total for Change Order #2.1				**$60,851.50**
	Total for Change Order #2.2				**$10,107.59**
	Revised Contract Amount				**$1,071,528.59**
	Original Contract Time				**271 Days**
	Additional Days Requested for Change Order #2.1				**14 Days**
	Additional Days Requested for Change Order #2.2				**0 Days**
	Revised Contract Time				**285 Days**

AGREEMENT: By the signatures below, duly authorized agent of the Town of Addison, Texas and North Texas Contracting, Inc. do herby agree to append this **Change Order No. 2.2** to the original contract between themselves, dated November 11, 2010.

TOWN OF ADDISON, TEXAS

By: _____
Ron Whitehead, City Manager

ATTEST:

By: _____
Lea Dunn, City Secretary

NORTH TEXAS CONTRACTING, INC.

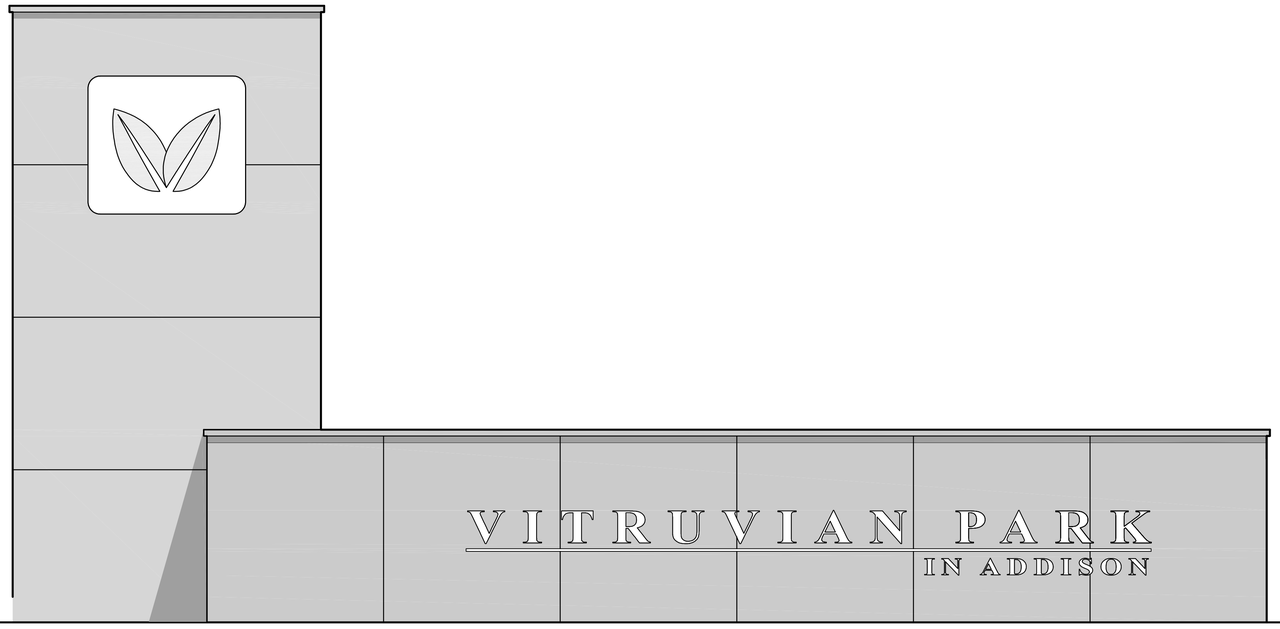
By: _____

ATTEST:

By:_____

PHASE 1E COST ANALYSIS
6/30/2011

Phase 1E Design & Construction Costs		$ 1,301,699.00
Professional Services Fees		
Icon Consulting Engineers, Inc. (Allocated)	$ (10,252.70)	
Icon Consulting Engineers, Inc.	$ (118,775.00)	
TBG Partners	$ (3,000.00)	
Total Professional Services Fees		$ (132,027.70)
Construction		
Original Contract	$ (1,000,569.50)	
Change Order 2.1	$ (60,851.50)	
Change Order 2.2	$ (10,107.59)	
Total Construction		$ (1,071,528.59)
Construction Phase Services		
Kleinfelder (4%)	$ (42,861.14)	
UDR (8%)	$ (85,722.29)	
Total Construction Phase Services		$ (128,583.43)
Revenue		
AT&T	$ 35,000.00	
UDR, Inc. (Funds for the Duct Bank)	$ 52,000.00	
Total Revenue		$ 87,000.00
Remaining Funds		$ 56,559.28



VITRUVIAN PARK
SPRING VALLEY SIGNAGE

ADDISON, TEXAS

UDR
5430 LBJ FREEWAY, SUITE 1250
DALLAS, TX 75240
972.763.3510 PH/ 972.866.0163 F

LINDA TYCHER & ASSOCIATES
LINDA TYCHER & ASSOCIATES, INC.
11411 N. CENTRAL EXPRESSWAY- SUITE V
DALLAS, TEXAS 75243
(214)750 - 1210

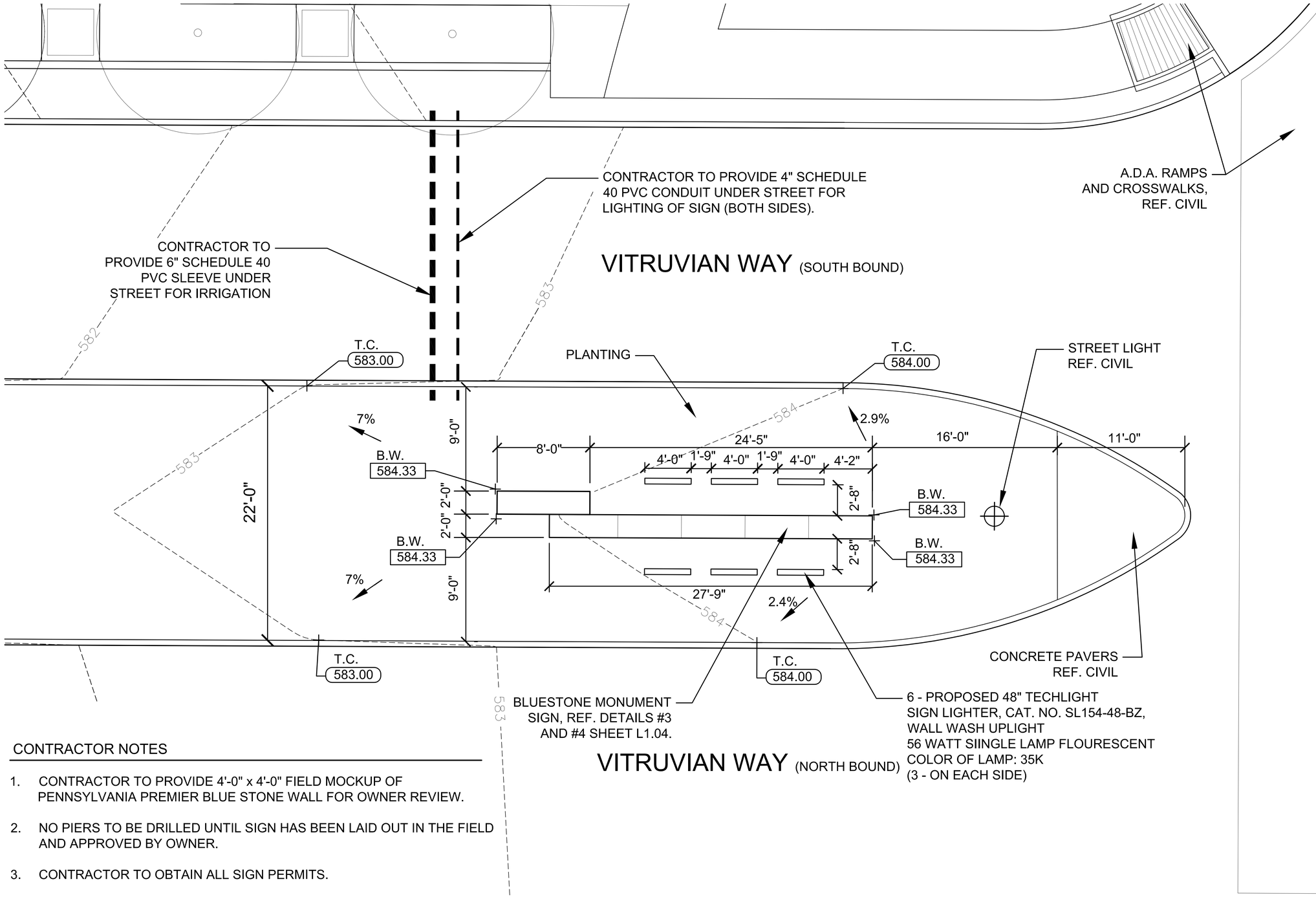
PREPARED BY:

LANDSCAPE ARCHITECT
LINDA TYCHER & ASSOCIATES, INC.
11411 N. CENTRAL EXPRESSWAY, SUITE V
DALLAS, TX. 75243

STRUCTURAL ENGINEER
VIEWTECH, INC.
4205 BELTWAY DR.
ADDISON, TX. 75001

CIVIL ENGINEER
ICON, CONSULTING ENGINEERS, INC.
BICENTENNIAL FINANCIAL CENTER
250 W. SOUTHLAKE BLVD., SUITE 117
SOUTHLAKE, TX.76092

GRAPHICS CONSULTANT
LRK
175 TOYOTA PLAZA, SUITE 600
MEMPHIS, TN 38103



CONTRACTOR NOTES

1. CONTRACTOR TO PROVIDE 4'-0" x 4'-0" FIELD MOCKUP OF PENNSYLVANIA PREMIER BLUE STONE WALL FOR OWNER REVIEW.
2. NO PIERS TO BE DRILLED UNTIL SIGN HAS BEEN LAID OUT IN THE FIELD AND APPROVED BY OWNER.
3. CONTRACTOR TO OBTAIN ALL SIGN PERMITS.
4. CONTRACTOR TO FURNISH ELECTRICAL CONDUIT/S WITHIN 16' HT. SIGN IN ACCORDANCE WITH POWER REQUIREMENTS SUPPLIED BY GRAPHIC CONSULTANT. (LIGHTING ON BOTH SIDES OF SIGN)
5. CONTRACTOR TO FURNISH ELECTRICAL CONDUIT/S WITHIN VITRUVIAN PARK SIGN IN ACCORDANCE WITH POWER REQUIREMENTS SUPPLIED BY GRAPHIC CONSULTANT. (LIGHTING ON BOTH SIDES OF SIGN)

LEGEND

T.C. 584.00	EXISTING CIVIL ENGINEER'S GRADE
B.W. 584.33	PROPOSED GRADE
---583---	EXISTING CONTOUR

SPRING VALLEY ROAD

LAYOUT, MATERIALS, AND GRADING PLAN

SCALE: 1/4"=1'-0"

4' 2' 0' 2' 4' 8'

LINDA TYCHER & ASSOCIATES
LINDA TYCHER & ASSOCIATES, INC.
13414 N. CENTRAL EXPRESSWAY, SUITE V
DALLAS, TEXAS 75243 (214)750-1210

UDR
5430 LBJ FREEWAY, SUITE 1250
DALLAS, TX 75240
972.763.3510 PH/ 972.866.0163 F

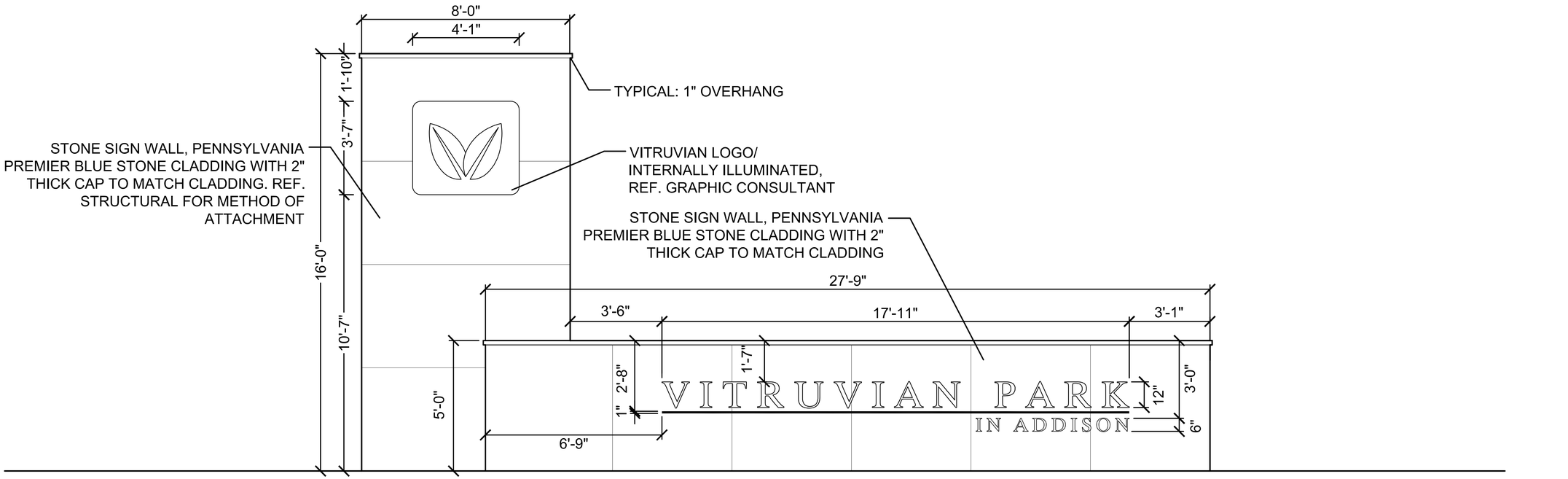
VITRUVIAN PARK
SPRING VALLEY SIGNAGE
ADDISON, TEXAS

REVISIONS

ISSUE
DATE 05-18-11
JOB NUMBER
DRAWN BY TG
CHECKED BY LT

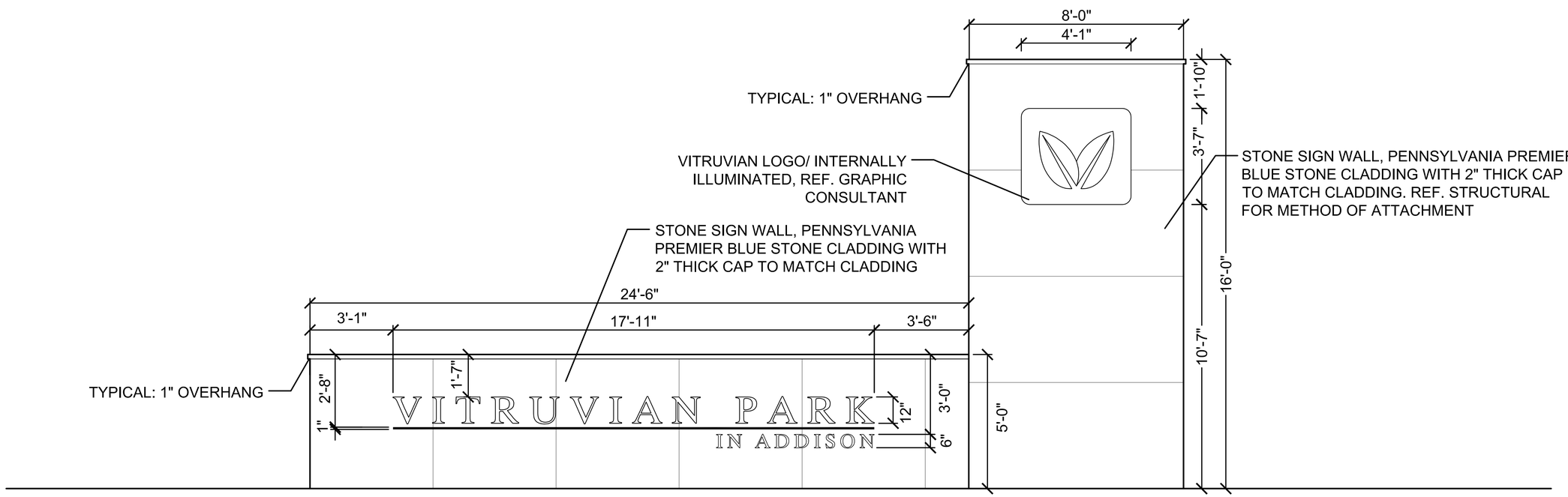
SHEET TITLE
LAYOUT, MATERIALS, AND GRADING PLAN

SHEET NUMBER
L1.01



EAST SIGN ELEVATION

SCALE: 1/2"=1'-0"



WEST SIGN ELEVATION

SCALE: 1/2"=1'-0"

LINDA TYCHER & ASSOCIATES
LINDA TYCHER & ASSOCIATES, INC.
1411 N. CENTRAL EXPRESSWAY, SUITE V
DALLAS, TEXAS 75243 (214)750-1210

UDR
5430 LBJ FREEWAY, SUITE 1250
DALLAS, TX 75240
972.763.3510 PH/ 972.866.0163 F

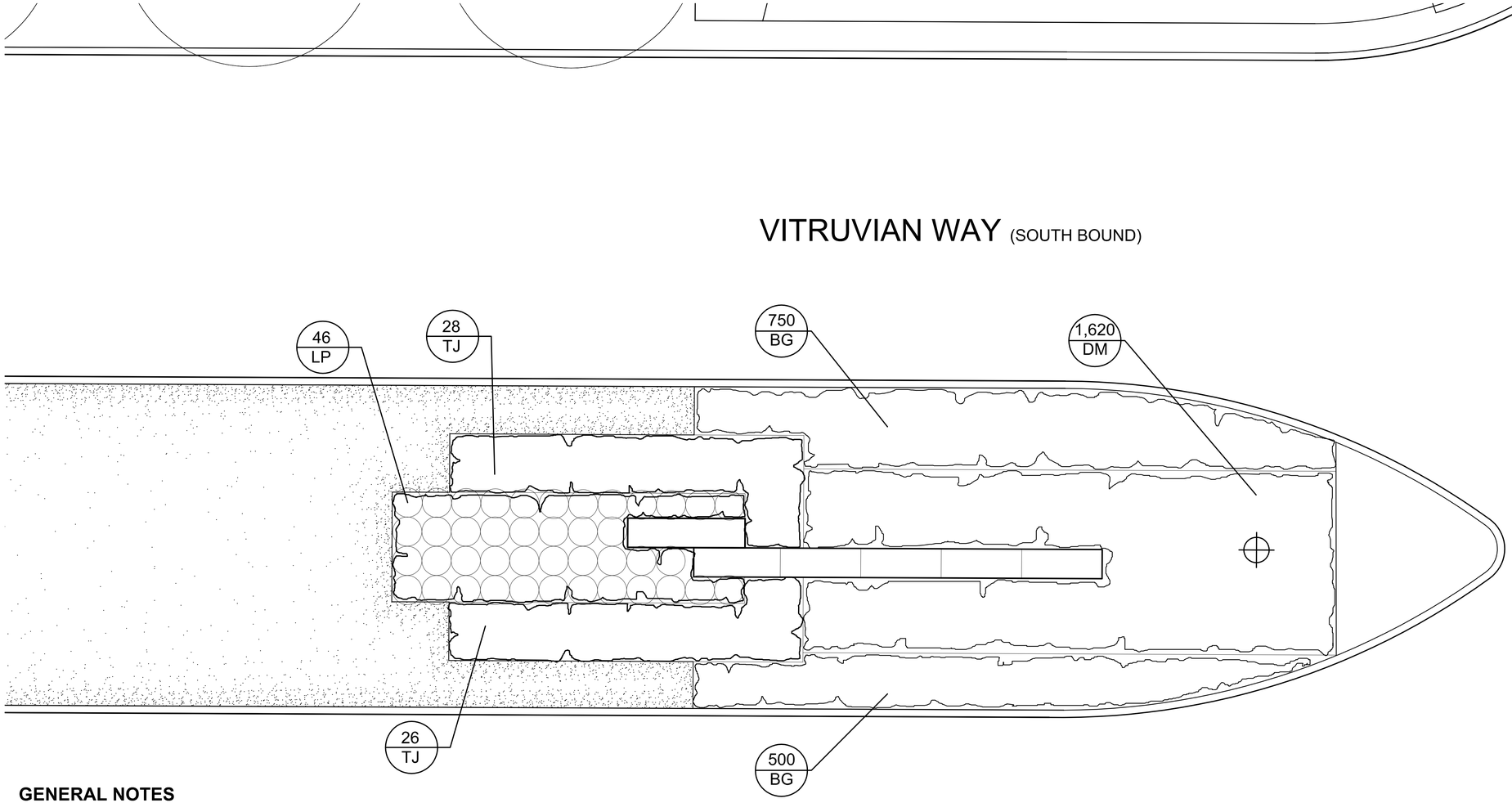
VITRUVIAN PARK
SPRING VALLEY SIGNAGE
ADDISON, TEXAS

REVISIONS

ISSUE
DATE 05-18-11
JOB NUMBER
DRAWN BY TG
CHECKED BY LT

SHEET TITLE
SIGN ELEVATIONS

SHEET NUMBER
L1.02



VITRUVIAN WAY (NORTH BOUND)

SPRING VALLEY ROAD

GENERAL NOTES

CONTRACTOR TO LOCATE ALL UTILITIES.

CONTRACTOR TO NOTIFY OWNER OF ANY CONFLICTS.

CONTRACTOR RESPONSIBLE FOR OBTAINING ALL PERMITS.

NO PLANT SUBSTITUATIONS, SIZE OR SPECIES, SHALL BE PERMITTED WITHOUT THE WRITTEN PERMISSION OF THE LANDSCAPE ARCHITECT.

ALL LAWN AREA TO BE SOLID SOD COMMON BERMUDA.

ALL PLANTING BEDS TO BE SEPARATED FROM LAWN WITH PRO STEEL EDGING - BLACK.

CONTRACTOR RESPONSIBLE FOR CONTACTING THE LANDSCAPE ARCHITECT PRIOR TO PLANTING FOR BED LAYOUT APPROVAL.

ALL PLANT MATERIAL TO BE WATERED BY A FULLY AUTOMATIC IRRIGATION SYSTEM WITH RAIN AND FREEZE SENSORS. SYSTEM TO BE INSTALLED BY A LICENSED IRRIGATOR

CONTRACTOR RESPONSIBLE FOR SUPPLYING DIGITAL PHOTOGRAPHS OF ALL PLANT MATERIAL FOR LANDSCAPE ARCHITECT'S APPROVAL PRIOR TO PURCHASE.

IT IS THE CONTRACTOR'S RESPONSIBILITY FOR OBTAINING WRITTEN VERIFICATION FROM THE LANDSCAPE ARCHITECT THAT THEY ARE PROCEEDING WITH THE MOST CURRENT CONSTRUCTION DOCUMENTS PRIOR TO STARTING ANY WORK OR PURCHASING ANY MATERIAL FOR THE PROJECT.

PLANT LIST

SHRUBS/ GRASSES

CODE	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	COMMENTS
DLP	LOROPETALUM 'PURPLE DIAMOND'	'PURPLE DIAMOND' LOROPETALUM	5 GAL	2'-0" O.C.	FULL PLANT, 24" HT. MIN.
TJ	JUNIPERUS SABINA 'TAMARISCIFOLIA'	TAM JUNIPER	5 GAL	2'-0" O.C.	FULL PLANT, 24" HT. MIN.

GROUND COVER

CODE	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	COMMENTS
DM	DUSTY MILLER	DUSTY MILLER	4" POT	6" O.C.	FULL PLANT
BG	BEGONIAS 'SUN TOLERANT' - PINK	SUN TOLERANT BEGONIAS - PINK	4" POT	6" O.C.	FULL PLANT

ALL LAWN TO BE SOLID SOD COMMON BERMUDA.

LANDSCAPE PLANTING PLAN

SCALE: 1/4"=1'-0"

4' 2' 0' 2' 4' 8'

LINDA TYCHER & ASSOCIATES
LINDA TYCHER & ASSOCIATES, INC.
13411 N. CENTRAL EXPRESSWAY, SUITE V
DALLAS, TEXAS 75243 (214)750-1210

UDR
5430 LBJ FREEWAY, SUITE 1250
DALLAS, TX 75240
972.763.3510 PH/ 972.866.0163 F

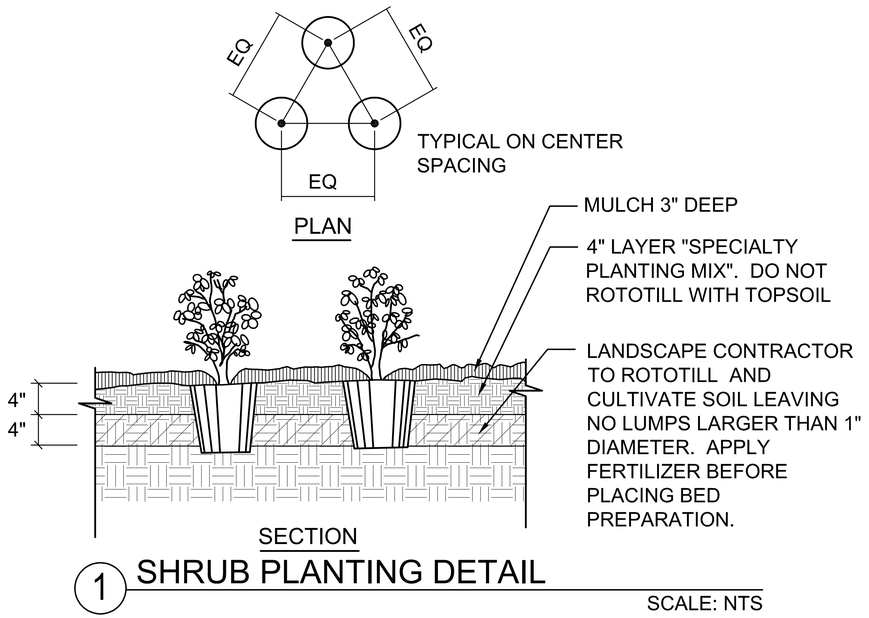
VITRUVIAN PARK
SPRING VALLEY SIGNAGE
ADDISON, TEXAS

REVISIONS

ISSUE
DATE 05-18-11
JOB NUMBER
DRAWN BY TG
CHECKED BY LT

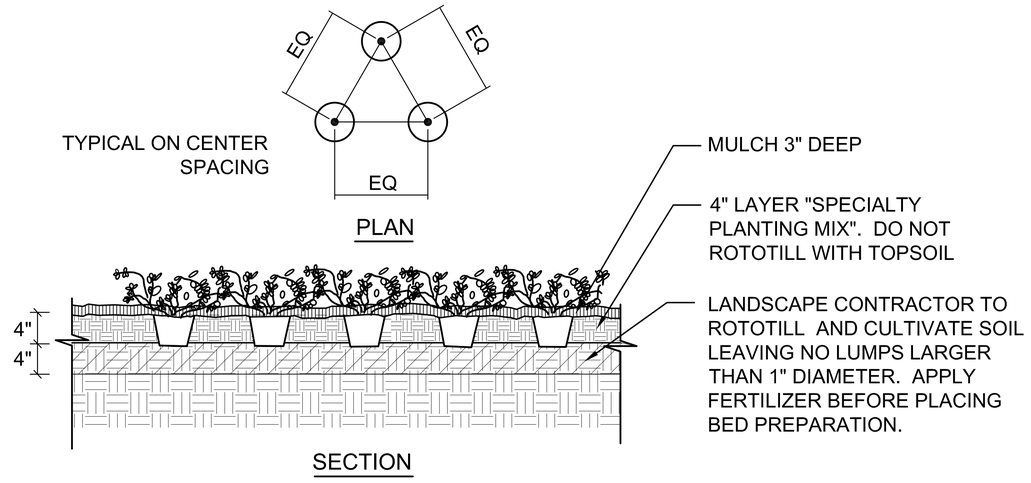
SHEET TITLE
LANDSCAPE PLANTING PLAN

SHEET NUMBER
L1.03



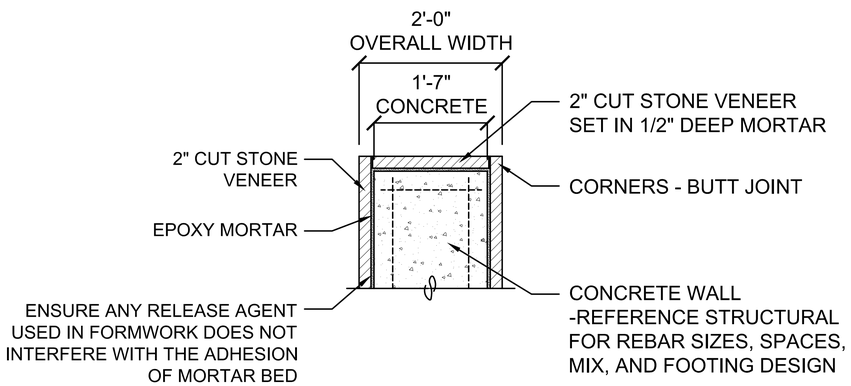
1 SHRUB PLANTING DETAIL

SCALE: NTS



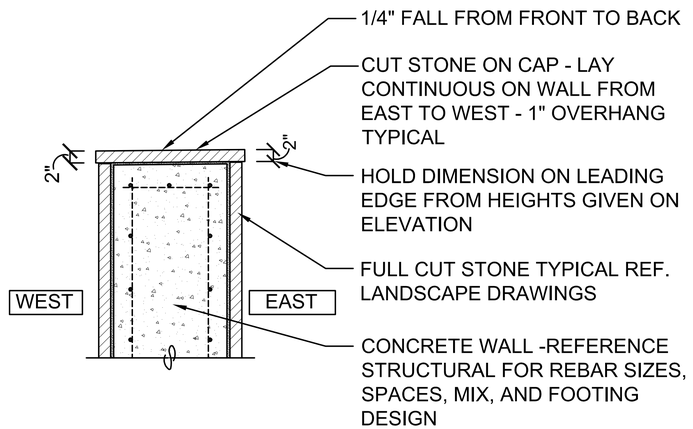
2 GROUNDCOVER PLANTING DETAIL

SCALE: NTS



3 LOW MONUMENT STONE WALL PLAN DETAIL

SCALE:1"=1'-0"



4 LOW MONUMENT STONE WALL DESIGN SECTION

SCALE:1"=1'-0"

CONSTRUCTION DETAILS

SCALE: AS NOTED

LINDA TYCHER & ASSOCIATES, INC.
1411 N. CENTRAL EXPRESSWAY- SUITE V
DALLAS, TEXAS 75243 (214)750 - 1210
LINDA TYCHER & ASSOCIATES

UDR
5430 LBJ FREEWAY, SUITE 1250
DALLAS, TX 75240
972.763.3510 PH/ 972.866.0163 F

VITRUVIAN PARK
SPRING VALLEY SIGNAGE
ADDISON, TEXAS

REVISIONS

ISSUE
DATE 05-18-11
JOB NUMBER
DRAWN BY TS
CHECKED BY LT

SHEET TITLE
CONSTRUCTION DETAILS

SHEET NUMBER
L1.04

GENERAL NOTES: FABRICATION AND INSTALLATION

1. The Signage Contractor is the entity who is responsible for the completed signage products described by these documents including but not limited to Fabrication and Installation. The General Contractor is the entity responsible for the **VITRUVIAN PARK MONUMENT SIGN** Construction Project.

2. The Signage Contractor is responsible for the structural engineering design of the signage and supporting structure to comply with the graphic design described by these documents. The Signage Contractor shall submit structural engineering shop drawings signed and sealed by Professional Engineers registered in Project State for the respective disciplines.

3. The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Signage Contractor in accordance with the highest standards of trade practice. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all.

4. The Signage Contractor shall carefully study and compare the various Drawings and other Design Documents relative to that portion of the work, as well as the information furnished by the Owner (including existing and proposed conditions). The Signage Contractor shall take field measurements of any existing conditions related to that portion of the Work and shall observe any conditions at the site affecting it. Also, the Signage Contractor is responsible for reviewing these document for compliance with all building and zoning regulations. Theses obligations are for the purpose of facilitating construction by the Signage Contractor and are not for the purpose of discovering errors, omissions or inconsistencies in the Contract Documents; however, any errors, omissions or inconsistencies discovered by the Signage Contractor shall be reported promptly to the Environmental Graphic Designer as a request for information in such form as the Environmental Graphic Designer may require. If the Signage Contractor fails to perform the review of the existing conditions and the coordination of the Construction Documents, the Signage Contractor shall pay such costs and damages to the Owner as would have been avoided if the Signage Contractor had performed these obligations.

5. The Signage Contractor shall be responsible to the Owner for acts and omissions of the Signage Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for or on behalf of the Signage Contractor or any of its Subcontractors.

6. The Signage Contractor may make substitutions only with the consent of the Owner, after evaluation by the Environmental Graphic Designer and in accordance with a Change Order.

7. The Signage Contractor warrants to the Owner and Environmental Graphic Designer that materials and equipment furnished under the Contract will be of good quality and new unless otherwise required or permitted by the Contract Documents, that the Work will be free from defects not inherent in the quality required or permitted, and that the Work will conform to the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. The Signage Contractor's warranty excludes remedy for damage or defect caused by abuse, modifications not executed by the Signage Contractor, improper or insufficient maintenance, or normal wear and tear caused by normal usage. If Required by the Environmental Graphic Designer, the Signage Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment. In addition, the Signage Contractor shall warrantee to the Owner to replace or repair any portion of the Work that fails to conform with the requirements of the Construction Documents within a one (1) year period from date of final acceptance of the Work.

8. Unless otherwise provided in the Contract Documents, the Signage Contractor shall secure and pay for the signage permit and other permits and governmental fees, licenses and inspections necessary for proper execution and completion of the Work which are customarily secured after execution of the Contract and which are legally required when bids are received or negotiations concluded. The Signage Contractor shall comply with and give notices required by laws, ordinances, rules, regulations and lawful orders of public authorities applicable to performance of the work.

9. The Signage Contractor shall comply with and give notices required by laws, ordinances, rules, regulations and lawful orders of public authorities applicable to performance of the Work.

10. The Signage Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Signage Contractor, and communications given to the superintendent shall be as binding as if given to the Signage Contractor. Important communications shall be confirmed in writing. Other communications shall be similarly confirmed on written request in each case.

11. The Signage Contractor, promptly after being awarded the Contract, shall prepare and submit for the Owner's and Environmental Graphic Designer's information a construction schedule of the Work. The schedule shall not exceed time limits current under the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work and the Project, shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practical execution of the Work. The Signage Contractor shall prepare and keep current, of the Environmental Graphic Designer's approval, a schedule of submittals which is coordinated with the Signage Contractor's construction schedule and allows the Environmental Graphic Designer reasonable time to review submittals. The Signage Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Environmental Graphic Designer.

12. The Signage Contractor shall perform no portion of the Work unless Shop Drawings, Product Data, Samples, Mock-Ups (where indicated) or similar submittals have been reviewed by the Environmental Graphic Designer and accepted for inclusion in the Work. Graphic artwork shall be provided by the Environmental Graphic Designer to the Signage Contractor via computer disk, email or FTP site to facilitate the production of the Shop Drawing submittals. The Signage Contractor shall notify the Environmental Graphic Designer of any discrepancies in the submittal documents immediately and shall not proceed or allow any work in those areas until discrepancies are resolved.

13. The Work shall be in accordance with approved submittals except that the Signage Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Environmental Graphic Designer's approval of Shop Drawings, Product Data, Samples, Mock-Ups or similar submittals unless the Contractor has specifically informed the Environmental Graphic Designer in writing of such deviation at the time of submittal and (1) the Environmental Graphic Designer has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order of Construction Change Directive has been issued authorizing the deviation. The Signage Contractor shall not be relieved of responsibility for error or omissions in Shop Drawings, Product Data, Samples, Mock-Ups or similar submittals by the Environmental Graphic Designer's acceptance thereof.

14. The Signage Contractor shall be responsible for cutting, fitting or patching required to complete the Work or to make its parts fit together properly. The Signage Contractor shall not damage or endanger a portion of the Work or fully or partially completed construciton of the Owner or separate contractors by cutting, patching or otherwise altering such construction, or by excavation. The Signage Contractor shall not cut or otherwise alter such construction by the Owner or a separate contractor except with written consent of the Owner and of such separate contractor; such consent shall not be unreasonably withheld. The Signage Contractor shall not unreasonably withhold from the Owner or a separate contractor the Contractor's consent to cutting or otherwise altering the Work.

15. The Signage Contractor shall keep the premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under the Contract. At completion of the Work, the Signage Contractor shall remove from and about the Project waste materials, rubbish, the Signage Contractor's tools, construction equipment, machinery and surplus materials. If the Signage Contractor fails to clean up as specified above, the Owner may do so and the cost thereof shall be charged to the Signage Contractor.

DRAWINGS

1. Do not scale the drawings. All sign copy and graphics should be considered to be representative and are subject to change. Refer to final message schedule for final copy on all signs. Refer to location plans for final locations of all signs.

2. All dimensions are to the exterior face of the finished material unless otherwise noted. All elevations are noted from finish grade elevations.

3. All graphics and colors provided must conform to scale, specifications and PMS numbers where provided.

MATERIALS AND FABRICATION

1. All materials shall be of new stock, free from defects impairing strength, durability, or appearance.

2. All aluminum fabrication shall be per the Contract Documents and all joints shall be welded, filled, ground, and sanded smooth prior to painting to ensure a uniform surface.

3. When dissimilar metals are in contact, the contacting surfaces shall be coated with asphaltic paint to prevent oxidation and electrolysis. Aluminum and steel are not to come in contact with each other.

4. Sign faces must be left clean and free of glue or other foreign material. Edges are to be routed smooth and straight.

5. All corners shall be 90° with crisp, clean edges unless otherwise specified.

6. All interior finish and trim materials are to meet Class III flame spread ratings of 76 to 200, or per applicable code.

PAINTING AND FINISHING

1. All aluminum materials shall be thoroughly sanded to remove oxidation and primed prior to painting and anodizing process. In the case of painting the aluminum, this is done to ensure maximum paint adhesion.

2. Primer coats or other surface pretreatment, where recommended by the manufacturer for paints, shall be included as part of the finished surface work at no extra cost to the owner.

3. All paints shall be evenly applied without pinholes, scratches, orange-peeling, application marks and other imperfections. Workmanship, finishes and formation of letters shall conform to the highest standards of the trade.

4. All baselines shall be horizontal on the sign face. Margins must be maintained as specified in the drawings.

5. Anchoring devices are to be adequate types of non-corrosive materials for securing signs to in-place structures.

INSTALLATION

1. Signage Contractor to supply General Contractor with mounting/ structural requirements for all exterior signage. All connections from sign to structure to be paid for by Signage Contractor and designed by a licensed structural engineer.

2. All installations are to be level and plumb or will be deemed unacceptable.

3. Immediately after fabrication, Signage Contractor shall touch-up paint all field welds, bolted connections and abased areas of shop paint. If marred areas cannot be adequately touched up on site, the sign(s) will be returned to the shop for controlled refinishing.

4. The Signage Contractor shall provide all engineering required for exterior signage guaranteed for local conditions and codes.

QUALIFIERS

1. All design arrangements or plans indicated or represented by these drawings are instruments of service of LRK, and remain the sole property of LRK.

2. No ideas, designs, arrangements, or plans shall be disclosed to any other person, firm, or corporation for any purpose whatsoever without the express written consent of LRK.

3. All Artwork and Drawings are not to be reproduced or circulated for use outside the scope of this contract without written consent of LRK.

COLOR PALETTE

P1	P2 / V2	P3 / V3

PAINT[1]

P1 Sherwin Williams Paint 6076 Turkish Coffee

For color selection only- Logo and letters to be Powder-Coated

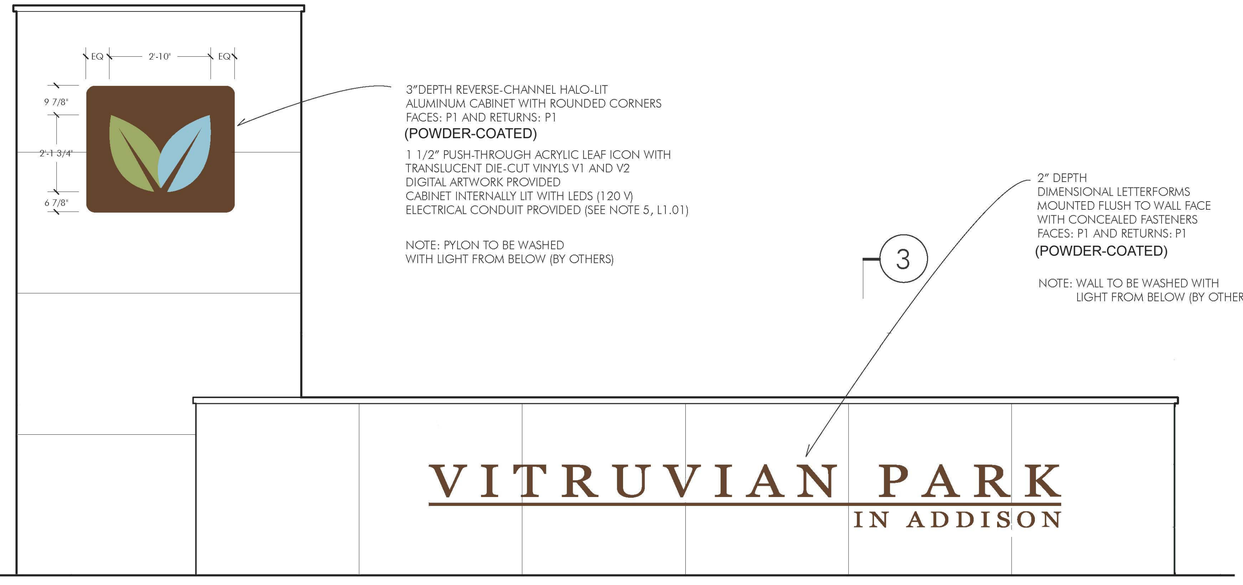
VINYL[1,2]

V1 Printed to match PMS 7495 (Green)

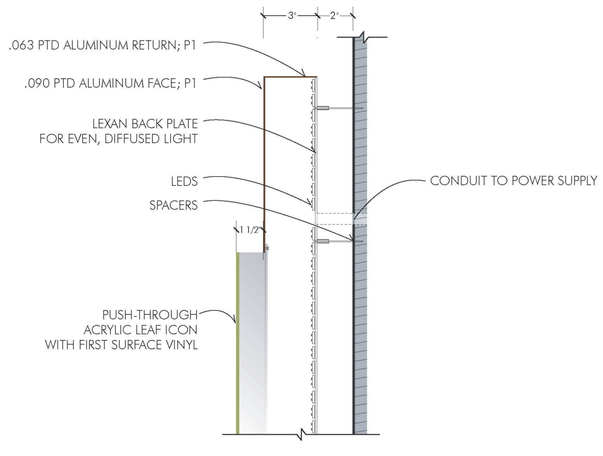
V2 Printed to Match PMS 5503 (Blue)

[1] Samples required for paint and vinyl specifications.
[2] 10 yr+ durability required for printed vinyls.

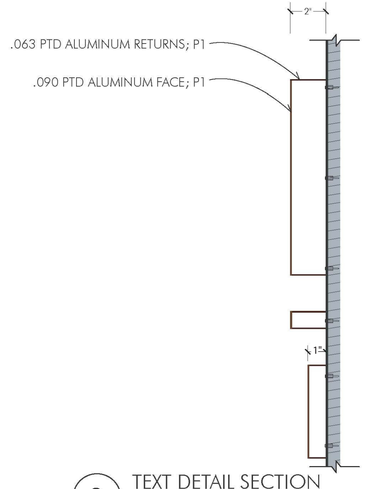
2



1 MONUMENT SIGN GRAPHICS: CONTEXT
Scale: 1/2"=1'-0"



2 ICON DETAIL SECTION
Scale: 3"=1'-0"



3 TEXT DETAIL SECTION
Scale: 3"=1'-0"

NOTE: CHANGES MADE TO THIS DRAWING ON 5/18/11 REFLECT FIELD CONDITIONS OF COMPANION VITRUVIAN PARK SIGNAGE AT MARSH LANE. REFERENCE SHEET L1.01- L1.04 FOR HEIGHT OF VITRUVIAN LOGO SIGN, LOCATION AND HEIGHT OF LETTERS, AND THICKNESS OF RULE.

Looney Ricks Kiss
175 Toyota Plaza, Suite 600
Memphis, TN 38103
901 521 1440
www.lrk.com

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LRK

UDR
5430 LBJ FREEWAY, SUITE 1250
DALLAS, TX 75240
972.763.3510 PH/ 972.866.0163 F

VITRUVIAN PARK
CORNER SIGNAGE
ADDISON, TEXAS

REVISIONS

ISSUE ISSUE FOR CONSTRUCTION
DATE 09.15.10
JOB NUMBER 01.09013.00
DRAWN BY LR

SHEET TITLE
MONUMENT
SIGN GRAPHICS

SHEET NUMBER
EG.100

Council Agenda Item: #R9

AGENDA CAPTION:

Presentation, discussion and consideration of approval to authorize the City Manager to execute a Supplemental Agreement to the Agreement for Professional Services with Icon Consulting Engineers, Inc. for an amount not to exceed $109,500 for additional services related to the design of certain public infrastructure (including park, streetscape and other public infrastructure improvements) within that area of the Town generally known as Vitruvian Park (Vitruvian Park Public Infrastructure Phase 1C).

FINANCIAL IMPACT:

Funding established by Certificates of Obligation for Vitruvian Park (From the $9,204,467 Allocated for Phase 1C by the Master Facilities Agreement, Revised Exhibit “C1”). The current design contract amount is $2,202,000. The additional design costs are $109,500.

BACKGROUND:

The Agreement for Professional Services for the Vitruvian Park Phase 1 Infrastructure with Icon Consulting Engineers, Inc. in the amount not to exceed $1,997,200.00 was authorized by the City Council on April 8, 2008. A Supplemental Agreement to the Agreement for Professional Service for the design of the four bridges in the amount not to exceed $58,500.00 was authorized by the City Council on February 24, 2009. A second Supplemental Agreement for Professional Service for the design of the structural design elements associated with the park package in the amount not to exceed $107,550.00 was authorized by the City Council on April 14, 2009. A third Supplemental Agreement for Professional Service for the design of some additional park elements in the amount not to exceed $38,750.00 was authorized by the City Council on August 11, 2009.

During the design and construction of Phases 1A, 1B and 1C, there were several items that were not included in the engineer's original scope of work. Such items include:

1)Bidding the projects as three separate projects as opposed to a

single project as anticipated,

2)Providing assistance in negotiations with AT&T in regards to constructing and installing a duct bank system,

3)Meetings with Dallas County and preparation of exhibits to assist staff in obtaining additional funding.

In order to continue progress on these items, the post construction fee portion of the contract was utilized. This Supplemental Agreement includes all of the funds needed to provide post construction services for the remainder of construction. Such items include RFIs and change orders.

RECOMMENDATION:

Staff recommends approval.

COUNCIL GOALS:

Take actions to make Addison a leader in sustainable development and operations that protect and enhance the Town's quality of life

ATTACHMENTS:

Description:	Type:
☐ Proposal from Icon Consulting Engineers, Inc.	Exhibit
☐ Cost Analysis	Exhibit
☐ Cost Analysis for Phase 1C	Exhibit

icon Consulting Engineers, Inc.
Civil Engineers - Designers - Planners

CHANGE IN SCOPE & FEES FORM

June 28, 2011 **CSF No. 5**

Mr. Clay Barnett, P.E.
Town of Addison
16801 Westgrove Drive
Addison, Texas 75001-9010

Re: Proposal for Additional Professional Engineering Services
Vitruvian Park Public Infrastructure Improvements
Addison, Texas

Dear Mr. Barnett:

This is our proposal to provide additional professional engineering services for the Town of Addison for the above referenced project.

CONSTRUCTION PHASE SERVICES

Additional construction phase services will be provided that are outside of the original scope of services for this project. The services to be provided cover work involved with the completion of the Park, the extension of Vitruvian Way to Spring Valley Road, and the extension of Ponte Avenue across the bridge. This proposal assumes that this work will be completed by the scheduled completion date of 9/10/11 and includes the following general scope of services:

1. Review request for information (FRI), shop drawings, material submittals, and change orders related to the work.
2. Provide periodic on-site construction observations.
3. Provide a final walk-through complete with punch lists.

FEES

These services as described above will be performed on an hourly fee basis. The estimated breakdown of fees by project discipline is outlined below:

Civil	$ 64,500.
Landscape	$ 25,000.
Structural	$ 7,500.
Electrical	$ 7,500.
Reimbursables	$ 5,000.
Total Estimated Fees	$109,500.

These Additional Services will be performed on an hourly basis at our established hourly rates with a **not to exceed fee of $109,500** and will be billed under Icon Consulting Engineers, Inc. project number 5029-01. This fee is based on the assumption that no additional changes will be added to the original scope of services outlined in our proposal. Should additional services be required, a separate proposal will be submitted to the Town of Addison for approval.

These services will be performed as a Supplemental Agreement to the Agreement for Professional Services with Icon Consulting Engineers, Inc. currently in place for this project. If this proposal is acceptable, please sign in the space provided below and return one (1) copy to our office.

Upon your review of the proposal, please call if you have any questions.

Sincerely,

Bruce F. Dunne, P.E.

Agreed and Accepted:
Town of Addison

Signature: _____
(Authorized Representative)

Printed Name: _____

Title: _____

Date: _____

F:\5029-01\Admin\Coresp\Change in Scope & Fees (5).doc

Vitruvian Allocations - Funding No. 1 Revised as of June 30, 2011

Infrastructure Improvements	Amount Allocated	Additional Funds	Total	Amount Authorized	Amount Remaining
Phase 1A - Utility improvements in creek	$ 428,228	$ -	$ 428,228	$ 428,227	$ 1
Phase 1B - Paving and Utility improvements for Vitruvian Way	$ 6,923,837	$ 315,970	$ 7,239,807	$ 7,239,324	$ 483
Phase 1C - Park & Streetscape Improvements	$ 9,531,404	$ 1,834,527	$ 11,365,931	$ 11,561,010	$ (195,079)
Phase 1D - Bridge Improvements	$ 3,630,056	$ 1,950,786	$ 5,580,842	$ 5,555,083	$ 25,759
Phase 1E - Vitruvian Realignment at Spring Valley	$ 1,301,699	$ 87,000	$ 1,388,699	$ 1,332,140	$ 56,559
Phase 2 - Bella Lane	$ 1,474,783	$ -	$ 1,474,783	$ 975,493	$ 499,290
TOTAL	$ 23,290,007	$ 4,188,282	$ 27,478,289	$ 27,091,277	$ 387,012

PHASE 1C COST ANALYSIS
6/30/2011

Phase 1C Allocation from Master Facilities Agreement		$ 9,531,404.00
Professional Services Fees		
Icon Consulting Engineers, Inc. (Allocated)	$ (1,267,100.00)	
Icon Consulting Engineers, Inc.	$ (109,500.00)	
LRK (Sign Design for Park Package)	$ (9,550.00)	
Kleinfelder (Global Slope Stability Analysis)	$ (13,800.00)	
Kleinfelder (Water Well Design)	$ (87,000.00)	
Total Professional Fees		$ (1,486,950.00)
Construction		
Original Contract	$ (9,140,815.30)	
Change Order #1	$ 679,683.76	
Change Order #2	$ (232,939.76)	
Change Order #3	$ (190,786.00)	
Change Order #4	$ (217,812.30)	
Change Order #5	$ (57,262.73)	
Change Order #6 (Pending)	$ 90,900.24	
Total Construction		$ (9,069,032.09)
Construction Phase Services		
Kleinfelder (4%)	$ (362,761.28)	
UDR (8%)	$ (563,154.08)	
Total Construction Phase Services		$ (925,915.37)
Park Electical for Oncor		$ (77,779.21)
Dallas Morning News		$ (1,333.40)
Revenue		
Dallas County	$ 1,000,000.00	
AT&T	$ 21,840.50	
UDR, Inc. (Funding #1)	$ 750,000.00	
UDR, Inc. (Funding #2)	$ 62,686.24	
Unfunded Portion	$ 195,079.33	
Total Revenue		$ 2,029,606.07
Remaining Funds		$ -