Drainage Report

Project Name:

Vagabond Inn Remodel

1325 Scott Street San Diego, CA 92106

APN: 531-345-01

Project Number: 605741

Prepared for:

Vista Investment LLC

2225 Campus Drive El Segundo, CA 90245

(310) 725-8214

Prepared by:

4240 E. Jurupa Street Suite 402 Ontario, CA 91761

Travis P. Vincent Jr.

(909) 467-8940 and tvincent@core-eng.com

August 15, 2019

Table of Contents

Introduction

This Preliminary Drainage Report has been prepared to satisfy requirements generated from a Preliminary Review Assessment, Tracking No. 605471;24007830; Peninsula Community Planning Area.

In accordance to the City of San Diego Transportation and Storm Water Design Manual (January 2017 Edition) this drainage report has been prepared to meet the design standards and design procedures for storm water conveyance and hydrology analysis for flood management and water quality. The basic objectives are to collect, transmit, and discharge drainage in a manner to promote public safety and provide for low maintenance as outlined in section 1.1.1 of the design manual. This report also addresses the proposed drainage conditions as compared to the existing drainage conditions at the time of plan approval.

Existing Drainage Condition

The project site is located at 1325 Scott Street which is located on the northwest corner of Dickens Street and Scott Street. The site currently consists of a 40-unit motel (Vagabond Inn). The gross site size is 27,199 sf which includes existing building, parking lot, and a pool/spa area. Storm runoff generated from the project is collected onsite and diverted onto the existing adjacent public streets via undersidewalk drains. A search of public records indicate there are no storm drain systems within limits of the public streets fronting the project. Additionally, there are no water quality features implemented at the site. There is a catch basin in Scott Street a few hundred feet north of the project. A storm drain system directs flows from this catch basin out into the Harbor.

Proposed Drainage Condition

The proposed project will demolish all existing onsite improvements and construct a new 95 room, 2 story building, underground parking and a pool area. The pool area is a 5,210-sf space comprised of the pool and surrounding deck area which will be relatively flat. The proposed first floor footprint is 17,010-sf. The remaining 4,979-sf will be comprised of landscaping and other drive aisle/hardscaping.

Drainage from the building will be collected in roof drains which will be piped directly to a designated sump location. Drainage from the pool area will sheet flow towards a trench drain surrounding the pool. This trench drain will tie into the same underground piping system directing flows to the same sump location. From the sump location, runoff will be pumped back up to grade level and discharge onto Dickens Street.

Runoff Methodology

The Rational Method which is used for determining maximum runoff rate from a given rainfall was applied to this project. According to Appendix A of the Drainage Design Manual, the Rational Method is recommended for analyzing the runoff response from drainage areas for watersheds less than 0.5 square miles or 320 acres. The Rational Method Formula is shown in Equation A-1 as follows;

Equation A-1. RM Formula Expression

$$Q = C\ I\ A$$

where:

Q	=	peak discharge, in cubic feet per second (cfs)
C	=	runoff coefficient expressed as that percentage of rainfall which becomes surface runoff (no units); Refer to Appendix A.1.2
I	=	average rainfall intensity for a storm duration equal to the time of concetrnatation (T_c) of the contributing draiange area, in inches per hour; Refer to Appendix A.1.3 and Appendix A.1.4
A	=	drainage area contributing to the design location, in acres

The runoff coefficients are based on land use. The city of San Diego requires that soil type "D" be applied for storm conveyance design. Based on Table A-1 for runoff coefficients, a value of 0.85 was selected which corresponds to a Commercial Site.

Table A-1. Runoff Coefficients for Rational Method

Land Use	Runoff Coefficient (C)
	Soil Type [1]
Residential:	
Single Family	0.55
Multi-Units	0.70
Mobile Homes	0.65
Rural (lots greater than ½ acre)	0.45
Commercial [2]	
80% Impervious	0.85
Industrial [2]	
90% Impervious	0.95

Note:

[1] Type D soil to be used for all areas.

[2] Where actual conditions deviate significantly from the tabulated imperviousness values of 80% or 90%, the values given for coefficient C, may be revised by multiplying 80% or 90% by the ratio of actual imperviousness to the tabulated imperviousness. However, in case shall the final coefficient be less than 0.50. For example: Consider commercial property on D soil.

Actual imperviousness	=	50%
Tabulated imperviousness	=	80%
Revised C = (50/80) x 0.85	=	0.53

The values provided in this table are typical for urban areas. The rainfall intensity (I) was determined from the intensity-Duration-Frequency Design Chart provided in Appendix C of this report. For complete runoff calculations, refer to Appendix B of this report.

Clean Water Act 401/404

The project site does not discharge any runoff directly into the US waterways and therefore the requirements of compliance with the Federal Clean Water Act (CWA) as required by the Regional Water Quality Control Board to provide permits under either a 4-1 or 404 permit is not applicable.

Summary

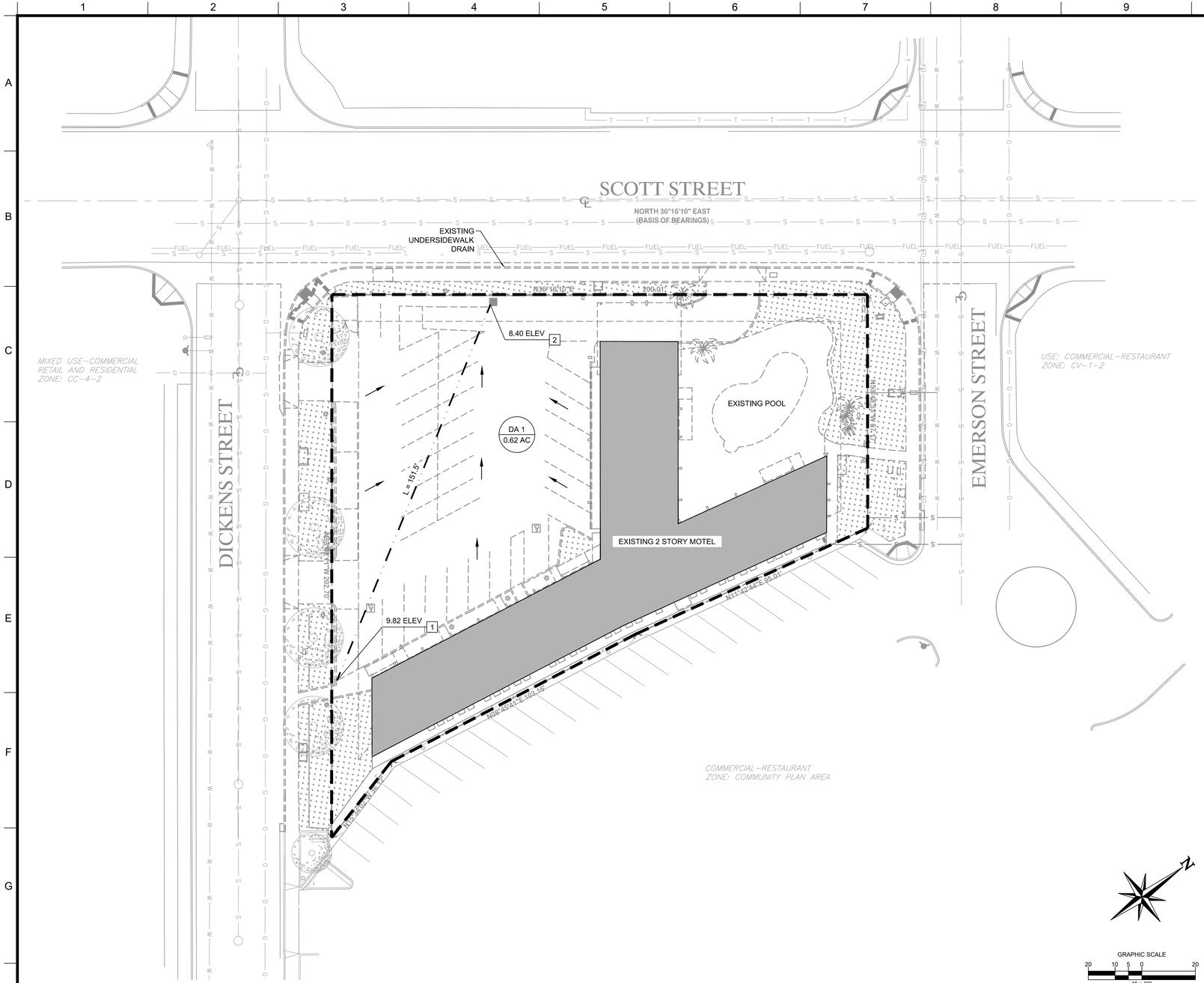
In comparing peak flows generated under existing conditions versus post-development conditions, the results generally show a slight increase in runoff under post-development conditions. The storm recurrence intervals analyzed include the 10-year, 50-year, and 100-year storm design. The following table summarizes the peak flows for both pre and post development conditions.

Drainage Summary Table		
Storm Recurrence Interval	Pre-Development Peak Flows	Post-Development Peak Flows
10-Year	1.75 cfs	1.80 cfs
50-Year	2.12 cfs	2.25 cfs
100-Year	2.28 cfs	2.38 cfs

In all cases, the runoff generated under post-development conditions increases by approximately 2.8%. Given that there are no existing storm drain systems fronting the project, it is the opinion of the engineer that the increased runoff is negligible and should create no adverse effects on neighboring properties or to the public streets. This is based both on the minimal increase in runoff as well as the small total runoff coming off this 27,000+ square foot site. Additionally, the insignificant increase in runoff will not require the need to check for runoff capacity corresponding to the existing public system receiving runoff at a downstream location.

Appendix A

Hydrology Exhibits



LOCATION MAP
N.T.S.

LEGEND:

DA 1 / 1.00 AC	WATERSHED ID AREA IN ACRES
	DRAINAGE BOUNDARY
	DIRECTION OF FLOW
	LONGEST FLOW PATH
10.0 ELEV — 1	ELEVATION AND NODE
	EXISTING BUILDING
	EXISTING LANDSCAPE

GRAPHIC SCALE
20 10 5 0 20
1" = 20'

PRE-PROJECT DRAINAGE DATA

SITE ADDRESS: 1325 SCOTT ST., SAN DIEGO, CA 92106
LOT SIZE: 0.624 AC
PERCENT IMPERVIOUS = 94.2%
TIME OF CONCENTRATION = 5.54 MIN

STORM RECURRENCE INTERVAL	INTENSITY (IN/HR)	PEAK FLOWS (CFS)
10-YEAR	3.30	1.75
50-YEAR	4.00	2.12
100-YEAR	4.30	2.28

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PREPARED FOR:
VISTA INVESTMENTS
2225 CAMPUS DRIVE
EL SEGUNDO, CA 90245
T [310] 725-8200

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

THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON DESIGN PLANS AND/OR FIELD SURVEY INFORMATION AND MAY NOT REFLECT ACTUAL FIELD MEASUREMENTS TAKEN IN THE FIELD. CORE STATES, INC. DOES NOT GUARANTEE THAT LOCATIONS SHOWN ARE EXACT. THE CONTRACTOR MUST CONTACT THE APPROPRIATE UTILITY COMPANIES PRIOR TO THE COMMENCEMENT OF WORK TO REQUEST EXACT FIELD LOCATIONS OF UTILITIES.

REV	DATE	COMMENT	BY

DOCUMENT
VISTA INVESTMENT PLANNING DOCUMENTS

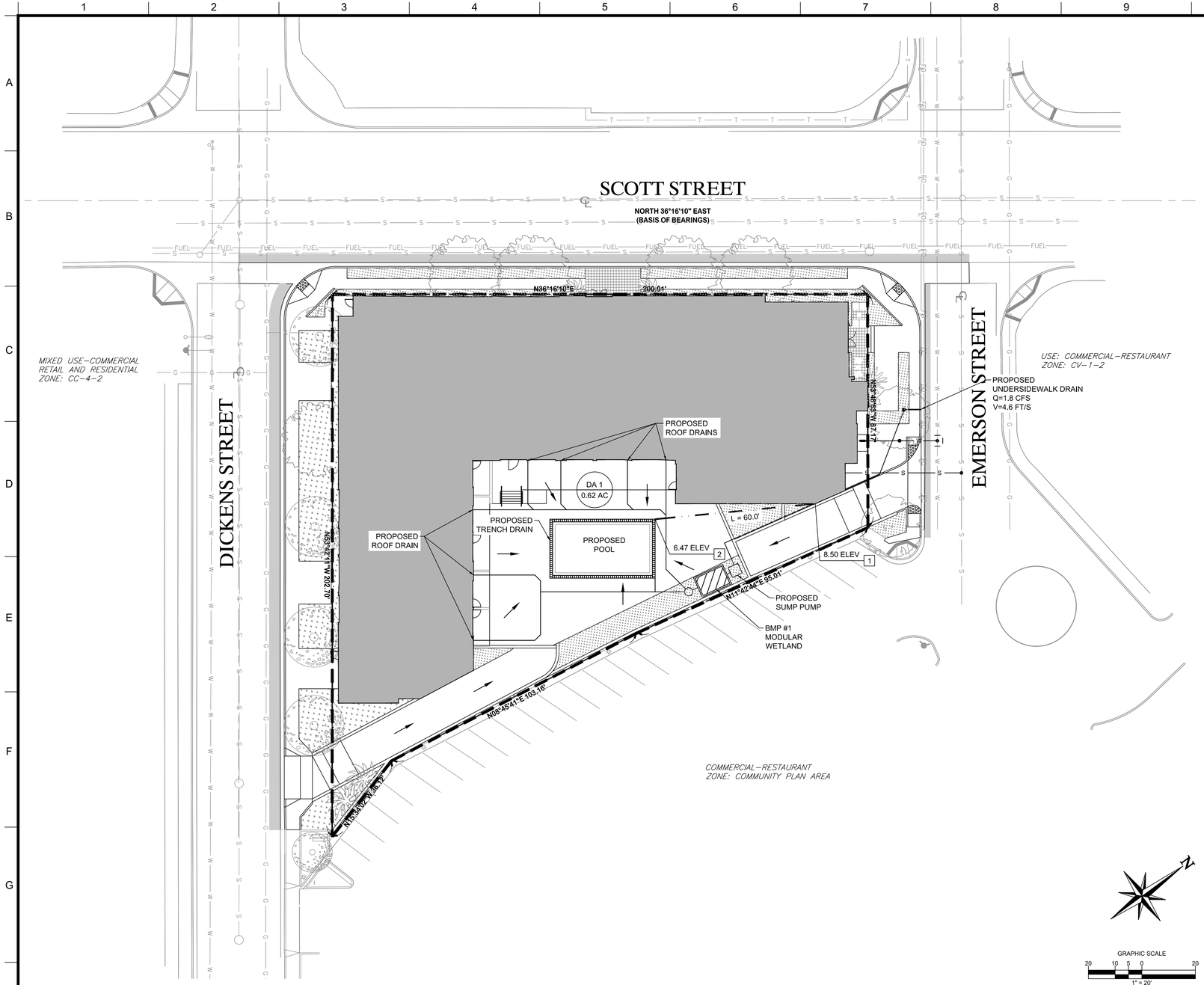
SITE LOCATION
1325 SCOTT ST.,
SAN DIEGO,
CA 92106

ENGINEER SEAL
REGISTERED PROFESSIONAL ENGINEER
TRAVIS P. VINCENT
C37356
CIVIL
STATE OF CALIFORNIA

SHEET TITLE
EXISTING CONDITION HYDROLOGY EXHIBIT

JOB #:	VST. 25085
DATE:	8/5/19
SCALE:	SCALE
DRAWN BY:	RM
CHECKED BY:	TV

SHEET NO.



LOCATION MAP
N.T.S.

LEGEND:

DA 1 / 1.00 AC	WATERSHED ID / AREA IN ACRES
	DRAINAGE BOUNDARY
	DIRECTION OF FLOW
	LONGEST FLOW PATH
10.0 ELEV — 1	ELEVATION AND NODE
	PROPOSED BUILDING
	BMP MODULAR WETLAND
	PROPOSED LANDSCAPE
	PROPOSED CONCRETE

GRAPHIC SCALE
20 10 5 0 20
1" = 20'

POST-PROJECT DRAINAGE DATA

SITE ADDRESS: 1325 SCOTT ST., SAN DIEGO, CA 92106
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STORM RECURRENCE INTERVAL	INTENSITY (IN/HR)	PEAK FLOWS (CFS)
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REGISTERED PROFESSIONAL ENGINEER
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CIVIL
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SHEET TITLE
PROPOSED CONDITION HYDROLOGY EXHIBIT

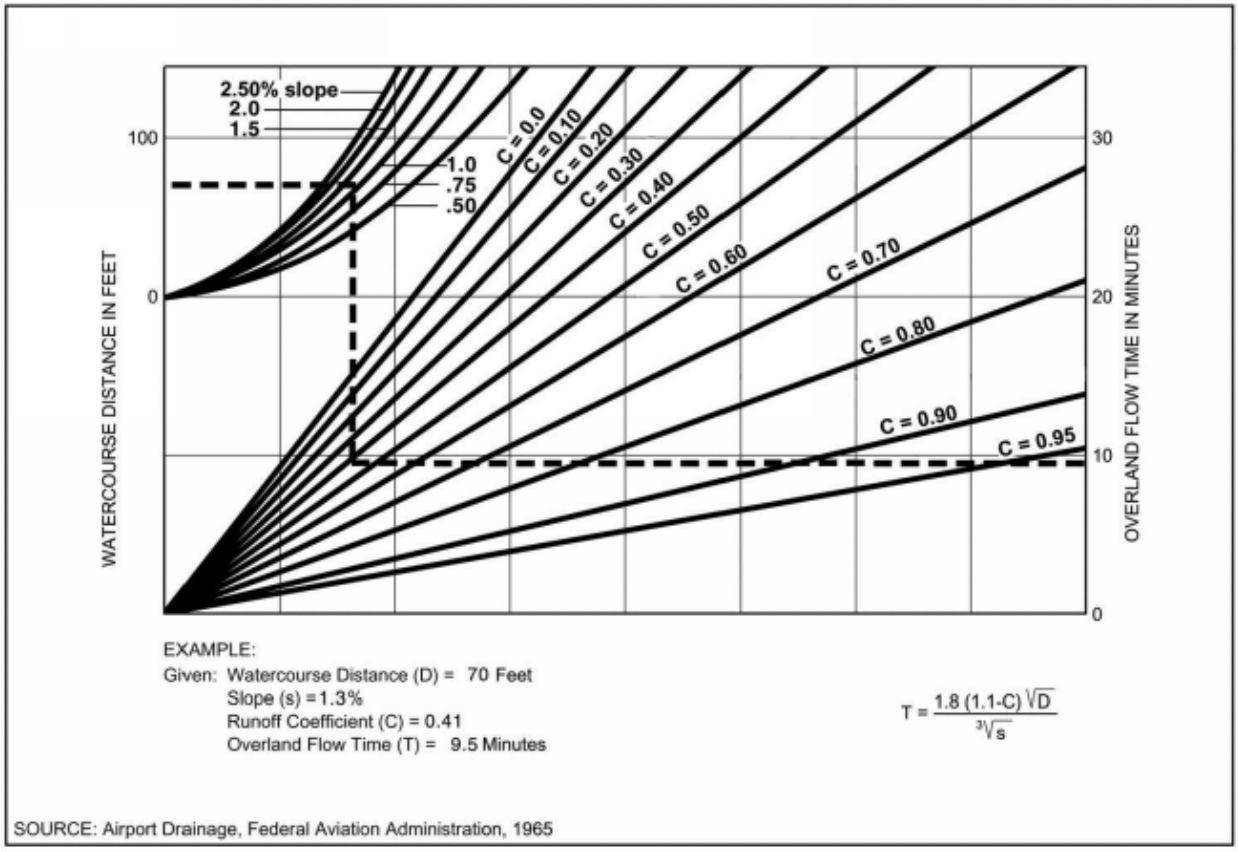
JOB #:	VST. 25085
DATE:	8/5/19
SCALE:	SCALE
DRAWN BY:	RM
CHECKED BY:	TV

SHEET NO.

Appendix B

Runoff Calculations

Ed Time of Concentration



Note: Time of concentration can be found using the given chart or by applying the given formula.

Time of Concentration for Pre-Development Conditions

$$T = (1.8\,(1.1 - C)\sqrt{D})/(\sqrt[3]{s})$$

$Where, \quad C = 0.85$

$D = 151.5'$

$s = 1.00\%$

$Therefore, \quad T = 5.54\ min$

Time of Concentration for Post-Development Conditions

$$T = (1.8\,(1.1 - C)\sqrt{D})/(\sqrt[3]{s})$$

$Where, \quad C = 0.85$

$D = 60'$

$s = 3.38\%$

$T = 1.17$ min $\qquad Therefore, \quad T = 5.00\ min$

Peak Runoff Values

Equation A-1. RM Formula Expression

$$Q = C\ I\ A$$

where:

Q	=	peak discharge, in cubic feet per second (cfs)
C	=	runoff coefficient expressed as that percentage of rainfall which becomes surface runoff (no units); Refer to Appendix A.1.2
I	=	average rainfall intensity for a storm duration equal to the time of concetrnatation (T_c) of the contributing draiange area, in inches per hour; Refer to Appendix A.1.3 and Appendix A.1.4
A	=	drainage area contributing to the design location, in acres

Peak Runoff for Pre-Development Conditions

$$Q = C * I * A$$

$Where,$ $C = 0.85$
$I_{10} = 3.30\ in/hr$
$I_{50} = 4.00\ in/hr$
$I_{100} = 4.30\ in/hr$
$A = 0.624\ acres$

$Therefore,$ $Q_{10} = 1.75\ cfs$
$Q_{50} = 2.12\ cfs$
$Q_{100} = 2.28\ cfs$

Peak Runoff for Post-Development Conditions

$$Q = C * I * A$$

$Where,$ $C = 0.85$
$I_{10} = 3.40\ in/hr$
$I_{50} = 4.25\ in/hr$
$I_{100} = 4.50\ in/hr$
$A = 0.624\ acres$

$Therefore,$ $Q_{10} = 1.80\ cfs$
$Q_{50} = 2.25\ cfs$
$Q_{100} = 2.38\ cfs$

Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Monday, Aug 5 2019

8-inch Storm Drain Pipe

Circular

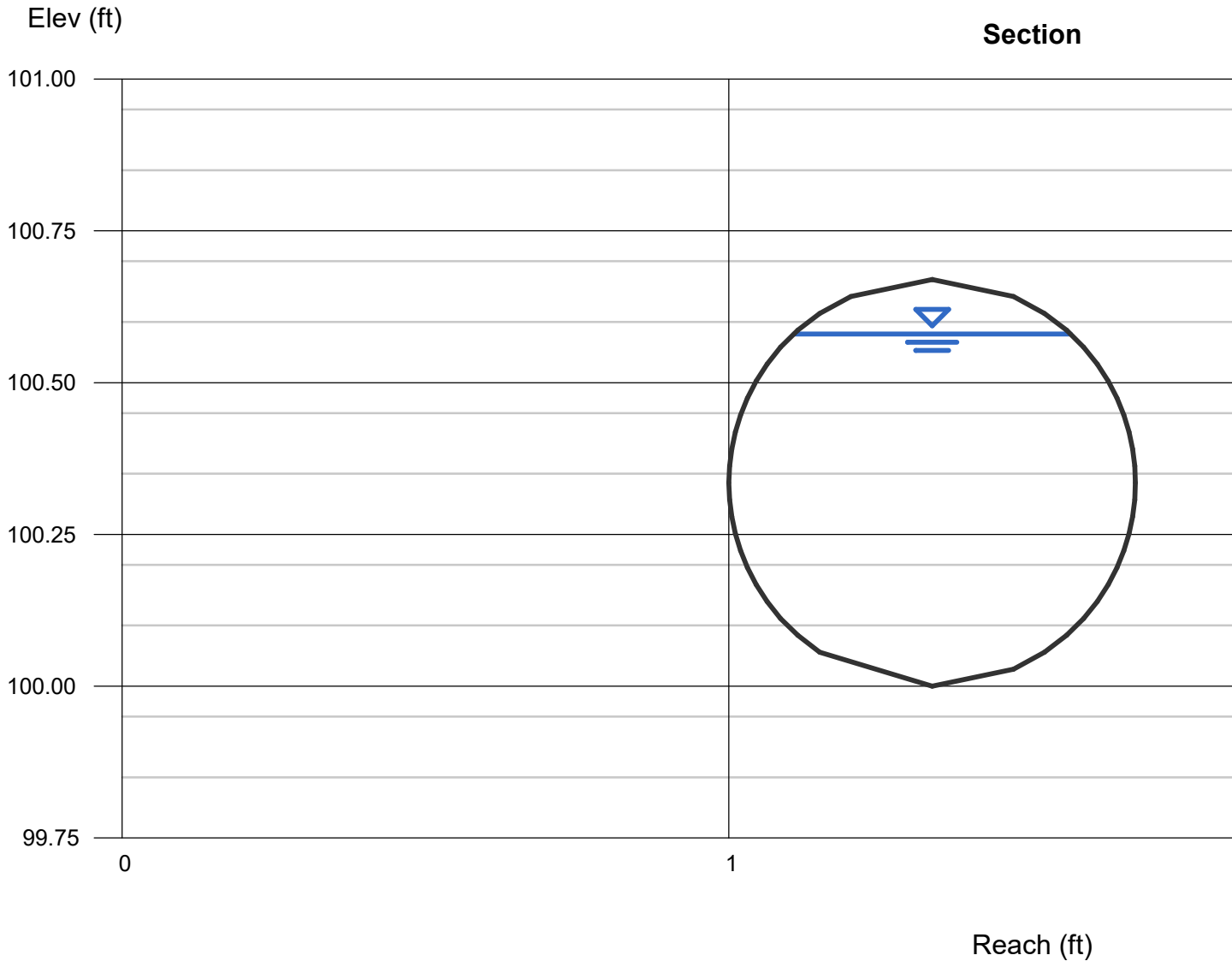
Diameter (ft)	= 0.67
Invert Elev (ft)	= 100.00
Slope (%)	= 2.00
N-Value	= 0.013

Calculations

Compute by:	Known Q
Known Q (cfs)	= 1.80

Highlighted

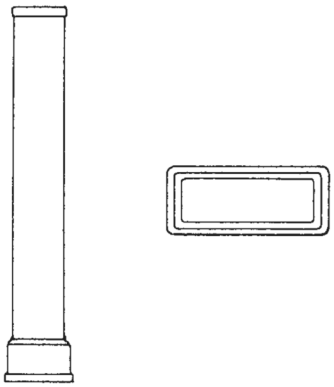
Depth (ft)	= 0.58
Q (cfs)	= 1.800
Area (sqft)	= 0.32
Velocity (ft/s)	= 5.54
Wetted Perim (ft)	= 1.60
Crit Depth, Yc (ft)	= 0.62
Top Width (ft)	= 0.46
EGL (ft)	= 1.06



A-470 — RECTANGULAR CAST IRON PIPE
FOR USE UNDER SIDEWALKS OR OTHER NARROW SPACES

OUTSIDE PIPE	OUTSIDE HUBS	TRANSVERSE AREA — NET	LAYING LENGTH	WEIGHT
★ 3″ x 5″	4¼″x6¼″	11.25 Sq. In.	5′0″	85
★ 3″ x 5″	4¼″x6¼″	11.25 Sq. In.	2′6″	50
★ 3″ x 9″	4¼″x10¼″	21.20 Sq. In.	5′0″	150
★ 3″ x 12½″	4¼″x14″	30.00 Sq. In.	5′0″	200
★ 4″ x 14″	5¼″x15¼″	47.50 Sq. In.	5′0″	220
★ 4″ x 14″	5¼″x15¼″	47.50 Sq. In.	2′6″	115

Note: All Pipe Designed with Bell and Spigot Ends.



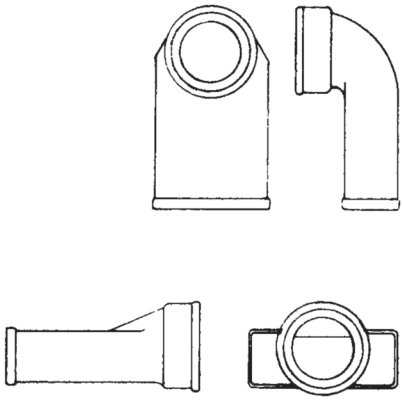
A-470

A-480 ADAPTORS — ROUND TO RECTANGULAR PIPE

ROUND PIPE	RECT. PIPE	LAYING LENGTH	WT.
★4″	3″x5″	1′0″	20
★5″	3″x9″	1′0″	45
★6″	3″x12½″	1′0″	35
★8″	4″x14″	1′0″	65

Note: All Adaptors Supplied with Bell and Spigot Ends Except for 6″. 6″ Adaptor Is No Hub Design.

V=Q/A=(1.8)/(4"/12x14"/12)=4.62 ft/sec

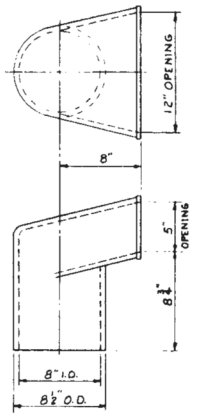


A-480

E

CAST IRON WALL DRAIN
FOR USE IN WALLS OR PLANTERS IN MALLS
APPROX. WT. = 50 Lbs.

Can be Furnished With Horizontal Bars Across Opening on Special Order.



A-485

★ — signifies more favorable stock and volume production

Appendix C

Reference Charts

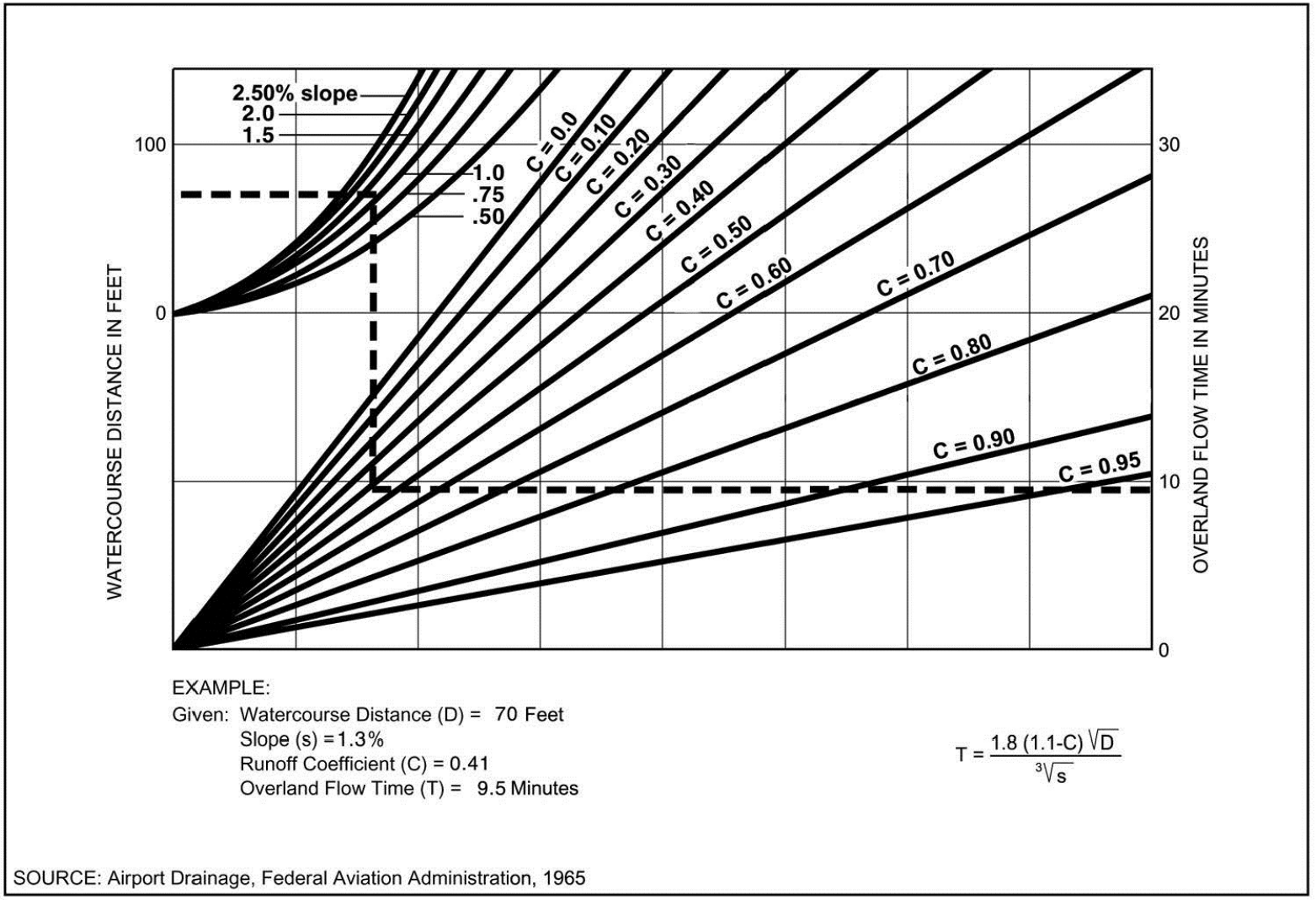


Figure A-4. Rational Formula – Overland Time of Flow Nomograph

Note: Use formula for watercourse distances in excess of 100 feet.

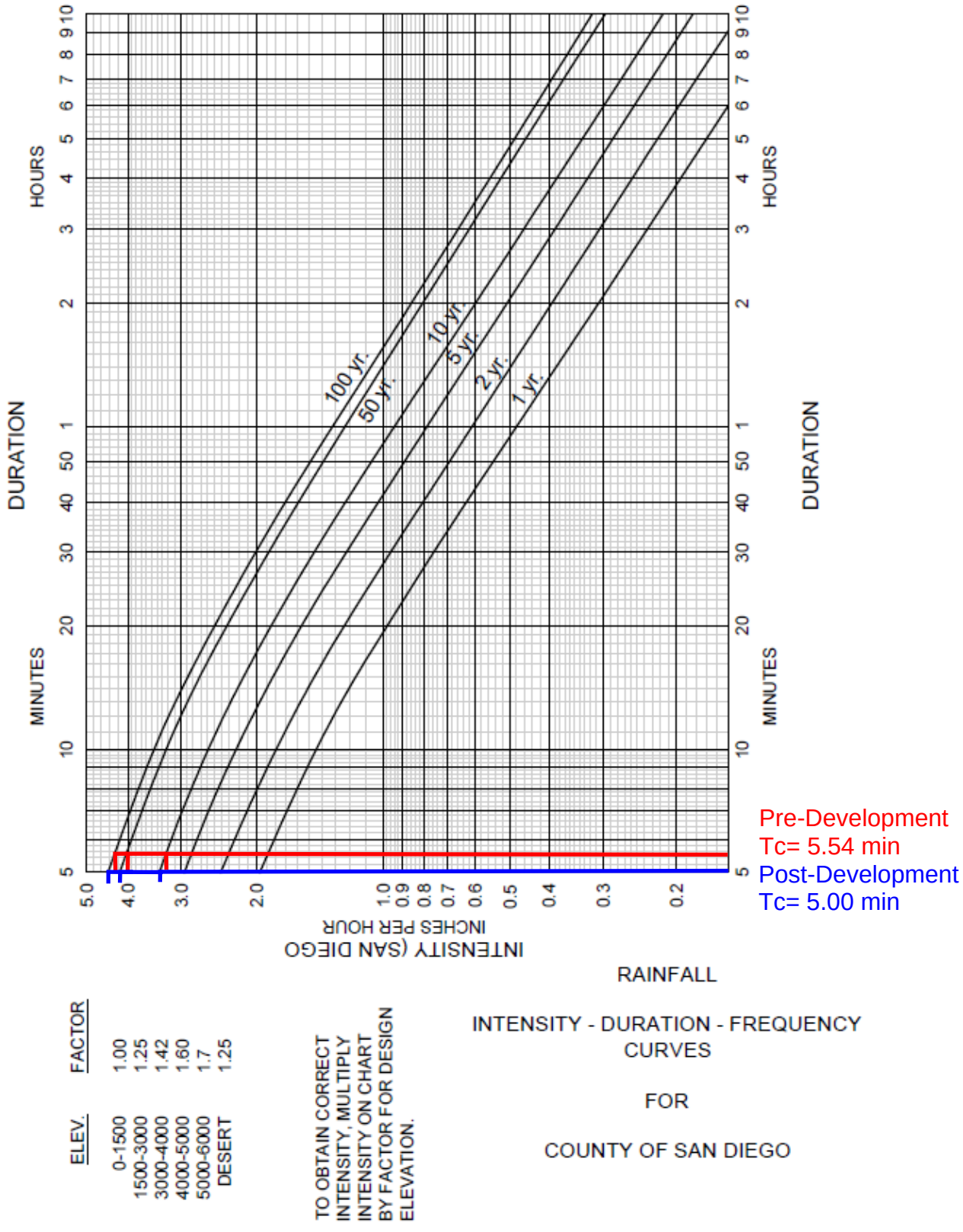


Figure A-1. Intensity-Duration-Frequency Design Chart