

REVISIONS		
#	REVISION	DATE

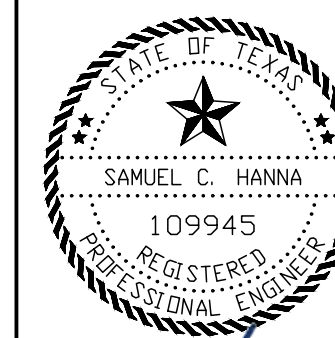
DEVELOPER/OWNER:
ROBERT TATE
2824 W. 7TH
STREET, SUITE 100
FORT WORTH, TX 76107

OFFSITE
DRAINAGE AREA
MAP

1.535 ACRES COMMERCIAL
DEVELOPMENT OUT OF THE
DAVIS ADDITION
LOT 32R1, BLOCK 5
802 E. CRINER STREET
CITY OF GRANDVIEW
JOHNSON COUNTY, TEXAS

HSE HANNA
SURVEYING
& ENGINEERING LLC.

HANNA SURVEYING AND ENGINEERING, LLC.
11729 E FM 917
ALVARADO, TX 76009
ENGINEERING FIRM NUMBER F-22119
SURVEYING FIRM NUMBER 10194633
SAM@HANNA-SE.COM



AUGUST 14, 2024

ISSUE DATE:
JUNE 14, 2024

PROJECT NO.:

SHEET NUMBER

C-3.2

6 OF 21

ZONE OF INFLUENCE		Q100 (cfs)	VELOCITY 100 - YEAR (ft/s)	WSEL 100-YEAR (ft)
ZOI-3	PRE-DEVELOPMENT	214.84	10.16	665.27
	POST-DEVELOPMENT	221.31	10.33	665.44
	DELTA	6.46	0.17	0.17
	% Increase	3.01%	1.67%	0.03%

* NOTES *

1. ALL COORDINATES ARE REFERENCED TO THE TEXAS COORDINATE SYSTEM, NAD-83, NORTH CENTRAL ZONE 4202, AS DERIVED FROM GPS VECTORS OBTAINED FROM WESTERN DATA SYSTEMS RTK NETWORK. ALL POINTS IN THIS SURVEY ARE SHOWN ON GRID COORDINATES.
2. ALL EXISTING CONTOURS FROM THIS SURVEY ARE FROM TNRS
3. THIS PROPERTY DOESN'T LIE WITHIN THE FLOODPLAIN AS SHOWN ON FEMA MAP NUMBER 48251C03501, EFFECTIVE DATE DECEMBER 4, 2012
4. ALL CALCULATIONS, FORMULAS & ASSUMPTIONS DERIVED FROM THE NCTCOG ISWM HYDRAULIC & HYDROLOGIC TECHNICAL MANUAL, APRIL 2010, REVISED 9/2014.
5. RAINFALL STORM FREQUENCY OBTAINED FROM CITY OF GRANDVIEW DRAINAGE STANDARDS.
6. HSE CONDUCTED THIS DOWNSTREAM ASSESSMENT TO DETERMINE THE INCREASE IN RUNOFF FROM THE PROPOSED DEVELOPMENTS IMPACT ON THE EXISTING DOWNSTREAM INFRASTRUCTURE, BASED ON THE RESULTS FROM THE HYDROLOGIC AND HYDRAULIC ANALYSIS THE PROPOSED DEVELOPMENT RESULTS IN MINIMAL INCREASE IN RUNOFF AND DOES NOT CREATE ANY ADVERSE CONDITIONS FOR DOWNSTREAM INFRASTRUCTURE OR PROPERTY OWNERS.
7. THIS MINIMAL INCREASE WILL NOT CAUSE ANY ADVERSE IMPACTS TO ADJACENT PROPERTY AND THAT THE DOWNSTREAM CULVERT HAS SUFFICIENT CAPACITY TO ACCEPT THE RUNOFF FROM THE PROPOSED DEVELOPMENT.

PRE-DEVELOPMENT DOWNSTREAM DRAINAGE CALCULATIONS

										Ca					Notes
										1.00	1.00	1.10	1.20	1.25	
AREA NO.	ACRES	RUNOFF COEFF.	CA	TC (min)	I5 (in/hr)	I10 (in/hr)	I25 (in/hr)	I50 (in/hr)	I100 (in/hr)	Q5 (cfs)	Q10 (cfs)	Q25 (cfs)	Q50 (cfs)	Q100 (cfs)	
A-1	8.72	0.61	5.31	20.52	4.75	5.29	6.09	6.77	7.34	25.23	28.08	35.57	43.20	48.74	
A-2	0.98	0.70	0.68	15.79	4.46	5.73	6.53	7.31	7.91	3.05	3.92	4.91	6.00	6.76	
A-3	44.52	0.47	20.75	30.90	3.76	4.36	5.15	5.64	6.14	77.98	90.37	117.53	140.52	159.35	
Total	54.22									106.27	122.37	158.01	189.72	214.84	

POST-DEVELOPMENT DOWNSTREAM DRAINAGE CALCULATIONS

										1.00	1.00	1.10	1.20	1.25	
AREA NO.	ACRES	RUNOFF COEFF.	CA	TC (min)	I5 (in/hr)	I10 (in/hr)	I25 (in/hr)	I50 (in/hr)	I100 (in/hr)	Q5 (cfs)	Q10 (cfs)	Q25 (cfs)	Q50 (cfs)	Q100 (cfs)	Notes
A-1	8.72	0.61	5.31	20.52	4.75	5.29	6.09	6.77	7.34	25.23	28.08	35.57	43.20	48.74	
A-2	0.98	0.70	0.68	15.79	4.46	5.73	6.53	7.31	7.91	3.05	3.92	4.91	6.00	6.76	
A-3	44.52	0.49	21.59	30.90	3.76	4.36	5.15	5.64	6.14	81.15	94.04	122.30	146.22	165.81	
Total	54.22									109.43	126.04	162.78	195.42	221.31	

TIME OF CONCENTRATION CALCULATIONS

Time of Concentration Calculations																			
	Sheet Flow					Shallow Concentrated Flow-Unpaved						Channelized						Totals	
	Mannings n	Flow Length (ft)	i 2 yr 24 hr	Land Slope	Time (min)	Top Elev	Bottom Elev	Land Slope	V (fps)	Flow Length (ft)	Time (min)	Mannings n	Flow Length (ft)	Flow Area	Wp	Land Slope	V (fps)	Time (min)	Total Time (min)
A-1	0.41	50	3.6	0.010	15.65	702.20	690.10	0.0292	2.76	413.85	2.50	0.03	1216.11	27.55	14.74	0.0130	8.57	2.37	20.52
A-2	0.41	50	3.6	0.011	15.06					0		0.03	329.18	115.66	30.7	0.0040	7.59	0.72	15.79
A-3	0.41	50	3.6	0.013	14.09	692.98	667.05	0.0139	1.90	1863.59	16.32	0.03	178.82	206.87	38.38	0.0130	6.20	0.48	30.90