

**MEMORANDUM OF UNDERSTANDING
REGARDING CONVOCATION CENTER CONSTRUCTION
by and between
THE CITY OF STEPHENVILLE
and
TARLETON STATE UNIVERSITY**

This Memorandum of Understanding ("MOU") is entered into by and between the CITY OF STEPHENVILLE, hereinafter referred to as "CITY", and TARLETON STATE UNIVERSITY, a member of The Texas A&M University System, an agency of the State of Texas, on behalf of its Division of Finance and Administration, hereinafter referred to as "TARLETON".

WHEREAS, TARLETON is commencing a project to build a Convocation Center between Saint Felix and West Tarleton streets.

WHEREAS, TARLETON and CITY entered into a separate MOU on 08/13/2019 regarding stormwater drainage improvements associated with the Harbin Drive Improvements Project ("PROJECT").

WHEREAS, this MOU is related to, but is separate from, the MOU entered into on 08/13/2019.

NOW THEREFORE, based on the mutual promises set forth herein, and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties hereto, intending to be legally bound, have agreed as follows:

Article I. Overview and Purpose

1.1 TARLETON Responsibilities:

1. Reimburse CITY for cost of all related professional services within 30 days of receipt of invoice, for associated re-design costs not to exceed \$28,000 unless approved in advance by TARLETON.
2. Reimburse CITY for cost of all related construction services for costs as identified in of the Harbin Drive Improvements Project in an amount not to exceed \$534,397.50. Reimburse CITY for project invoices within 30 days of receipt of invoices, based on work completed with appropriate General Contractor documents, that meet PROJECT documents as approved herein by TAMUS/TARLETON.
 - i. The applicable costs are identified Change Order No. 3; attached as Exhibit A herein.
 - ii. Total amount not to exceed \$534,397.50.
3. TARLETON will reimburse CITY an additional \$200,000.00 for the original scope of work.
4. Fund up to an additional \$50,000.00 as a contingency to account for any unforeseen costs of TARLETON-related construction items to be used only as approved by TARLETON prior to performing any additional unforeseen improvements.

1.2 CITY Responsibilities:

1. Provide oversight, communication, and invoices in a timely manner.

Article II. Duration of the MOU:

2.1. Term. This MOU will become effective upon the date of its signing by the last party to sign below and shall have a term of two (2) calendar years from this effective date.

Article III. Modification:

This MOU may be modified by prior mutual written consent of the parties. However, such modifications shall not retroactively alter the terms or conditions in force in such ways as to jeopardize the successful completion of existing activities.

Article IV. Independent Contractor:

For the purposes of this MOU and all services to be provided hereunder, the parties shall be, and shall be deemed to be, independent contractors and not agents or employees of the other party. Neither party shall have authority to make any statements, representations or commitments of any kind, or to take any action which shall be binding on the other party, except as may be explicitly provided for herein or authorized in writing.

Article V. Notices:

Any notices required or permitted under this Agreement must be in writing and will be deemed given: (a) three (3) business days after it is deposited and post-marked with the United States Postal Service, postage prepaid, certified mail, return receipt requested, (b) the next business day after it is sent by overnight carrier, (c) on the date sent by email transmission with electronic confirmation of receipt by the party being notified, or (d) on the date of delivery if delivered personally. TARLETON and CITY can change their respective notice address by sending to the other party a notice of the new address. Notices should be addressed as follows:

TARLETON: Tarleton State University
Box T-0120
Stephenville, Texas 76402
Attention: Finance & Administration
Phone: (254) 968-9877
E-mail: lbeaty@tarleton.edu

CITY: City of Stephenville, Texas
298 West Washington
Stephenville, TX 76401
Attention: Public Works
Phone: (254) 918-1223
E-mail: nwilliams@stephenvilletx.gov

Article VI. Other

Neither party is required to perform any term, condition, or covenant of this MOU, if performance is prevented or delayed by a natural occurrence, a fire, an act of God, an act of terrorism, or other occurrence, the cause of which is not reasonably within the control of such party and which by due diligence it is unable to prevent or overcome.

The validity of this MOU and all matters pertaining to this MOU, including but not limited to, matters of performance, non-performance, breach, remedies, procedures, rights, duties, and interpretation or construction, shall be governed and determined by the Constitution and the laws of the State of Texas. Pursuant to Section 85.18, *Texas Education Code*, venue for any suit filed against TARLETON shall be in Erath County, Texas.

The dispute resolution process provided in Chapter 2260, *Texas Government Code*, and the related rules adopted by the Texas Attorney General pursuant to Chapter 2260, shall be used by TARLETON and CITY to attempt to resolve any claim for breach of contract made by CITY that cannot be resolved in the ordinary course of business. CITY shall submit written notice of a claim of breach of contract under this Chapter to the Vice President for Finance & Administration of TARLETON, who shall examine CITY's claim and any counterclaim and negotiate with CITY in an effort to resolve the claim.

CITY expressly acknowledges that TARLETON is an agency of the State of Texas and nothing in this MOU will be construed as a waiver or relinquishment by TARLETON of its right to claim such exemptions, privileges, and immunities as may be provided by law.

By executing and/or accepting this MOU, CITY and each person signing on behalf of CITY certifies, and each party thereto certifies as to its own organization, under penalty of perjury, that to the best of their knowledge and belief, no member of The Texas A&M University System ("TAMUS") or TAMUS Board of Regents, nor any employee, or person, whose salary is payable in whole or in part by TARLETON, Texas A&M or TAMUS, has direct or indirect financial interest in the approval of this MOU, or in the services to which this MOU relates, or in any of the profits, real or potential, thereof.

Pursuant to Chapter 2270, *Texas Government Code*, CITY certifies CITY (1) does not currently boycott Israel; and (2) will not boycott Israel during the Term of this MOU. CITY acknowledges this MOU may be terminated if this certification is inaccurate.

Pursuant to Subchapter F, Chapter 2252, *Texas Government Code*, CITY certifies CITY is not engaged in business with Iran, Sudan, or a foreign terrorist organization. CITY acknowledges *this* MOU may be terminated if this certification is inaccurate.

If applicable, contracts awarded for this project will be subject to the American Iron and Steel (AIS) requirements of Section 608 of the Federal Water Pollution Control Act.

The undersigned parties bind themselves to the faithful performance of this MOU:

Executed in duplicate originals, effective as of the date of last signature.

City of Stephenville

Tarleton State University

Signature

DocuSigned by:
Lori Beaty
5E7C8B9377C24AA

Signature

Name: Doug Svien

Name: Lori Beaty

Title: Mayor

Title: Vice President / CFO

Date: _____

Date: 12/29/2022

EXHIBIT A – CHANGE ORDER NO. 3



CHANGE ORDER - HARBIN DRIVE IMPROVEMENTS PROJECT

PROJECT:	Harbin Drive Improvements		
OWNER:	City of Stephenville	OWNER PROJ #	ITB 3299
CONTRACTOR:	Jay Mills Contracting, Inc.	CONTRACTOR #	9377
ENGINEER:	Freese and Nichols, Inc.	ENG. PROJ. #	STE19752

CHANGE ORDER NO.	3	CHANGE ORDER DATE:	12/9/2022
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Change Order Description: Reroute Storm Drain and Well Line to Accommodate Proposed TSU Building.
Make following additions/deletions or modifications to work described in the Contract Documents:

	Pay Item	Quantity Change	Unit	Unit Cost	Cost
C-02	42" RCP	95	LF	\$ 157.00	\$ 14,915.00
C-03	36" RCP	-158	LF	\$ 115.00	\$ (18,170.00)
C-04	30" RCP	-91	LF	\$ 100.00	\$ (9,100.00)
C-16	4'x4' Storm Drain Manhole	-1	EA	\$ 4,100.00	\$ (4,100.00)
C1-10	Cut and Plug Storm Drain	4	EA	\$ 500.00	\$ 2,000.00
C1-16	60" RCP	840	LF	\$ 355.00	\$ 298,200.00
C1-17	48" RCP	165	LF	\$ 182.00	\$ 30,030.00
C1-20	24" RCP	75	LF	\$ 71.00	\$ 5,325.00
C1-21	18" RCP	42	LF	\$ 51.00	\$ 2,142.00
C1-27	6'x6' Storm Drain Manhole	1	EA	\$ 8,000.00	\$ 8,000.00
C1-35	7'x7' Junction Box	2	EA	\$ 16,500.00	\$ 33,000.00
C1-38	Trench Safety	968	LF	\$ 1.00	\$ 968.00
C1-54	Asphaltic Pavement Repair	1000	SY	\$ 63.25	\$ 63,250.00
C1-55	Concrete Sidewalks (4")	50	SY	\$ 73.00	\$ 3,650.00
B-09	Remove Concrete (Sidewalks)	50	SY	\$ 15.00	\$ 750.00
NEW	36" RCP Restocking Fee	1	LS	\$ 3,187.50	\$ 3,187.50
NEW	Adjust Junction Boxes/SD Manholes to Match New	1	LS	\$ 5,000.00	\$ 5,000.00
NEW	7'x7' Junction Box at SD-B3 Sta. 10+00.00	1	EA	\$ 43,500.00	\$ 43,500.00
NEW	42" Concrete Collar	2	EA	\$ 1,850.00	\$ 3,700.00
NEW	4" PVC Waterline (Well Line)	290	LF	\$ 90.00	\$ 26,100.00
NEW	4" Gate Valve	1	EA	\$ 1,550.00	\$ 1,550.00
NEW	Connection to Existing 4" Waterline	1	EA	\$ 5,000.00	\$ 5,000.00
NEW	Junction Box Rework	1	EA	\$ 11,500.00	\$ 11,500.00
NEW	Abandon and Grout Existing 42" RCP	1	EA	\$ 4,000.00	\$ 4,000.00

TOTAL COST CHANGE ORDER 3: \$534,397.50

The compensation agreed upon in this change order is full, complete and final payment for all costs the Contractor may incur as a result of or related to this change whether said costs are known, unknown, foreseen or unforeseen at this time, including without limitation, any cost for delay, extended overhead, ripple or impact cost, or any other affect on changed or unchanged work as a result of this Change Order.

Contract Cost and/or Time Impacts:

Original Contract Amount	\$10,097,474.50
Previously Approved Change Order Amount	\$36,590.79
Adjusted Contract Amount	\$10,134,065.29
Proposed Change Order Amount (this change order)	\$534,397.50
Revised Contract Amount	\$10,668,462.79
Previous Contract Time	555
Previous Substantial Completion Date	28-Jul-23
Previous Final Completion Date	26-Sep-23
Proposed Change in Contract Time (this change order)	105
Revised Contract Time	660
Revised Substantial Completion Date	10-Nov-23
Revised Final Completion Date	9-Jan-24

Recommended by:
FRESE AND NICHOLS, INC.

By _____ Date _____

Approved by:
(Contractor)

By _____ Date _____

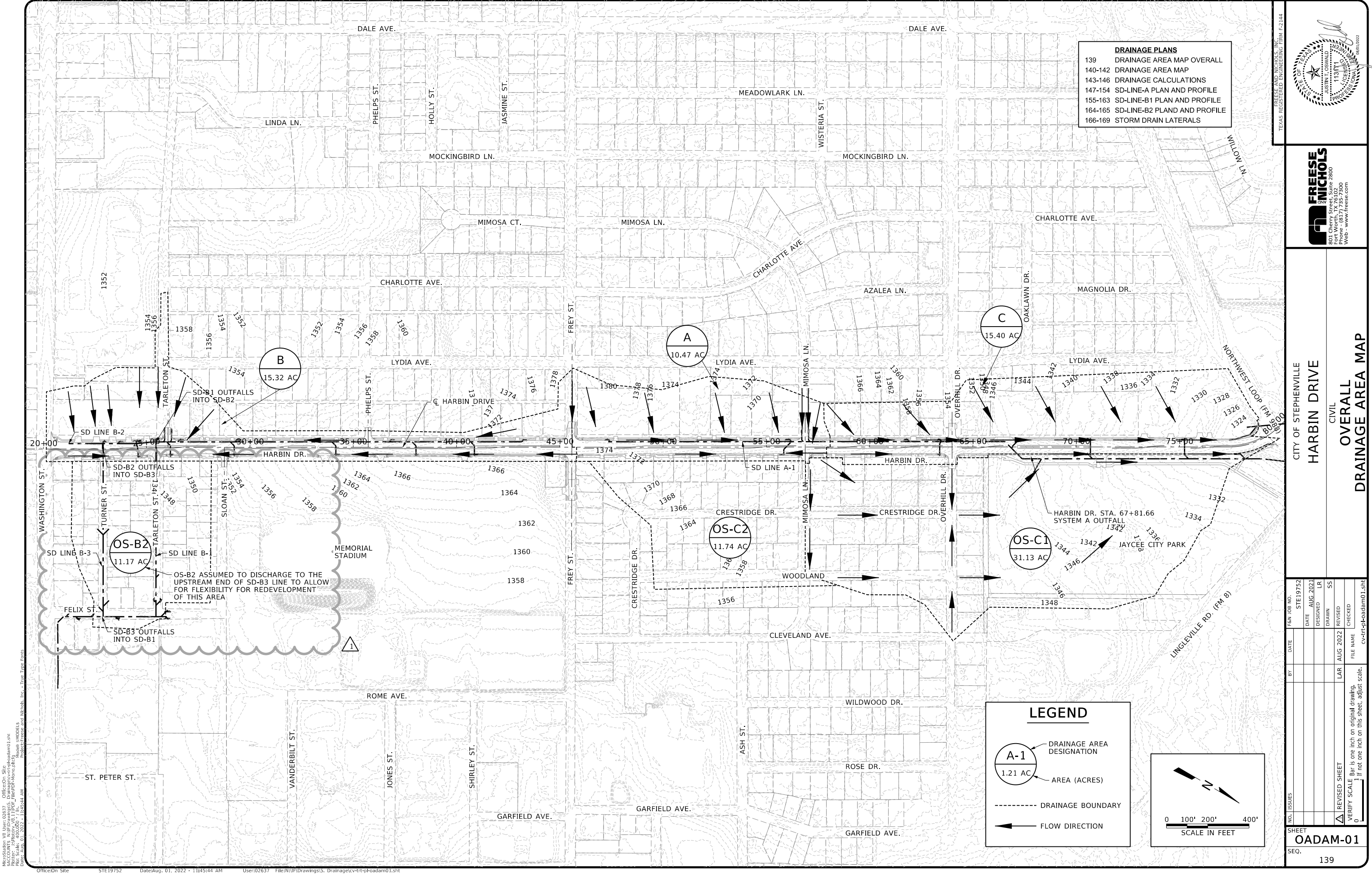
Approved by:
(Owner)

By _____ Date _____

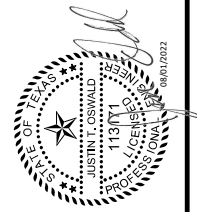
Approved by:
(Tarleton State University)

By _____ Date _____

Tarleton State University agrees to reimburse the City of Stephenville for project invoices based on work completed related to this change order.



- DRAINAGE PLANS**
- 139 DRAINAGE AREA MAP OVERALL
 - 140-142 DRAINAGE AREA MAP
 - 143-146 DRAINAGE CALCULATIONS
 - 147-154 SD-LINE-A PLAN AND PROFILE
 - 155-163 SD-LINE-B1 PLAN AND PROFILE
 - 164-165 SD-LINE-B2 PLAND AND PROFILE
 - 166-169 STORM DRAIN LATERALS

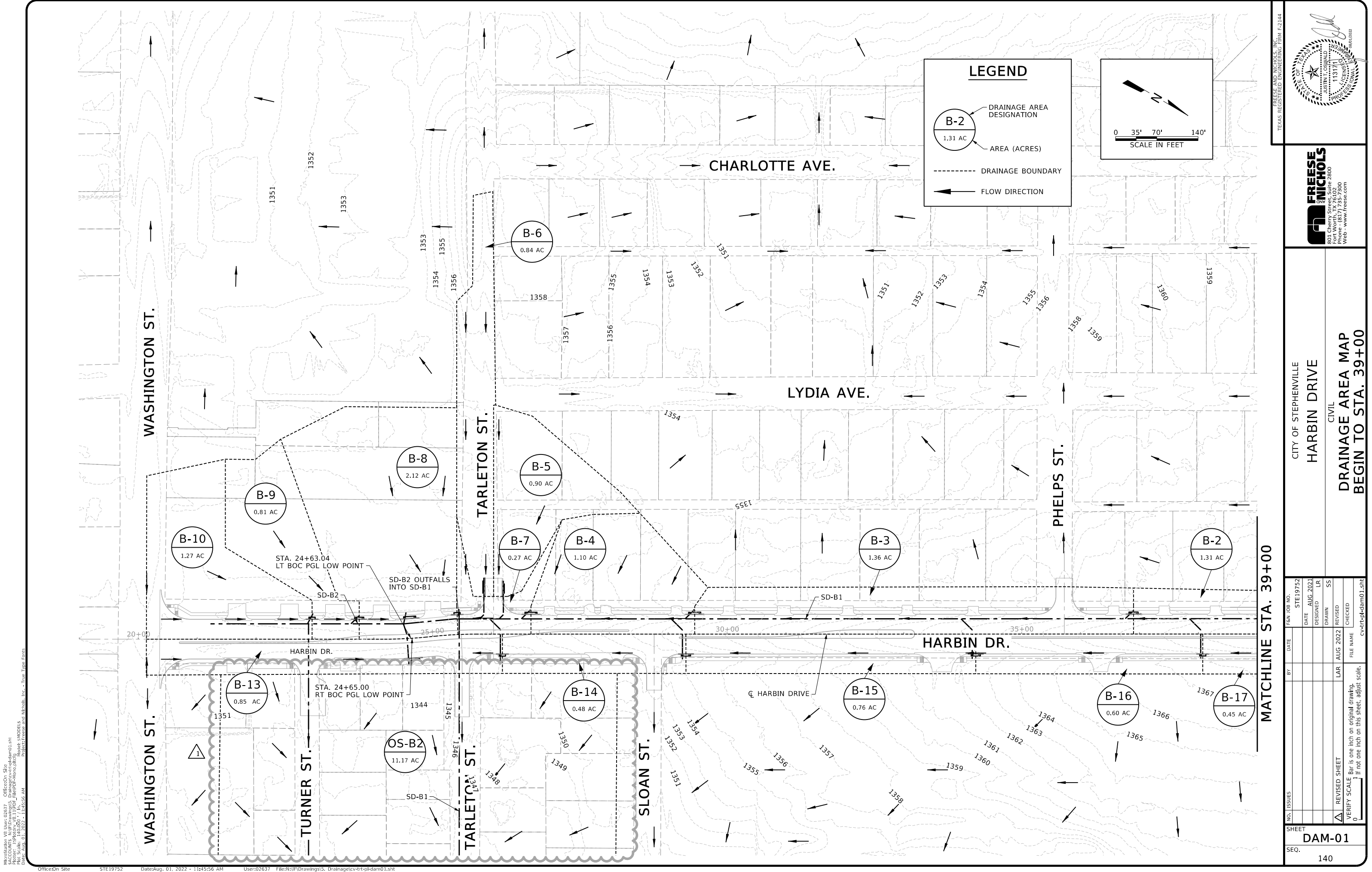


FREESIE NICHOLS
801 Cherry Street, Suite 2800
Fort Worth, TX 76102
Phone - (817) 735-7300
Web - www.freesie.com

CITY OF STEPHENVILLE
HARBIN DRIVE
CIVIL
**OVERALL
DRAINAGE AREA MAP**

NO.	ISSUES	BY	DATE	FAN JOB NO.	STE19752
				DATE	AUG 2021
				DESIGNED	LR
				DRAWN	SS
				REVISED	SS
				CHECKED	
				FILE NAME	cv-trt-pl-oadam01.sht
				REVISION SHEET	
				VERIFY SCALE	Bar is one inch on original drawing.
					If not one inch on this sheet, adjust scale.

SHEET
OADAM-01
SEQ.



MicroStation V8 User 02637 OfficeOn Site
sac\counties\N\Drawings\5 Drainage\cv-trt-pl-dam01.sht
Plot Scale: 1"=140.00' / In. - 11/10/2022 - 11:45:56 AM
Date: Aug 01, 2022 - 11:45:56 AM Project:Freeze and Nichols, Inc. - True Type Fonts

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F2144

JUSTIN T. OSWALD
License No. 113171
Professional Engineer
Mechanical Engineering
State of Texas

FREESE & NICHOLS
801 Charlotte Street, Suite 2800
Fort Worth, TX 76102
Phone - (817) 735-7300
Web - www.freeze.com

CITY OF STEPHENVILLE
HARBIN DRIVE
CIVIL
DRAINAGE AREA MAP
BEGIN TO STA. 39+00

NO.	ISSUES	BY	DATE	F&N JOB NO.	STE19752
				DATE	AUG 2021
				DESIGNED	LR
				DRAWN	SS
				REVISED	
				CHECKED	
				FILE NAME	cv-trt-pl-dam01.sht

REVISOR SHEET

VERIFY SCALE Bar is one inch on original drawing.
If not one inch on this sheet, adjust scale.

SHEET

DAM-01

SEQ.

140

AREA CALCULATIONS

DESIGN POINT	DRAINAGE AREA (ac)	TOTAL Tc (min)	RUNOFF COEF."C"	5 YEAR INTENSITY I (in/hr)	100 YEAR INTENSITY I (in/hr)	5 YEAR PEAK FLOW Q (cfs)	100 YEAR PEAK FLOW Q (cfs)
1	2	3	4	7	11	14	18
A-1	1.13	25.00	0.77	3.60	6.17	3.11	5.33
A-2	2.01	25.00	0.78	3.60	6.17	5.62	9.64
A-3	2.01	25.00	0.77	3.60	6.17	5.58	9.56
A-4	2.97	25.00	0.78	3.60	6.17	8.32	14.27
A-5	0.13	10.00	0.90	5.57	9.03	0.66	1.08
A-6	0.08	10.00	0.90	5.57	9.03	0.38	0.61
A-7	1.78	10.00	0.90	5.57	9.03	8.91	14.46
B-1	1.44	13.38	0.83	4.93	8.15	5.90	9.75
B-2	1.31	17.58	0.83	4.34	7.28	4.71	7.91
B-3	1.36	14.24	0.84	4.80	7.95	5.50	9.11
B-4	1.10	10.00	0.79	5.57	9.03	4.86	7.89
B-5	0.90	25.00	0.77	3.60	6.17	2.49	4.28
B-6	0.84	10.00	0.90	5.57	9.03	4.22	6.85
B-7	0.27	25.00	0.87	3.60	6.17	0.85	1.45
B-8	2.12	10.00	0.90	5.57	9.03	10.62	17.23
B-9	0.81	10.00	0.90	5.57	9.03	4.05	6.58
B-10	1.27	10.00	0.90	5.57	9.03	6.36	10.32
B-13	0.85	10.00	0.90	5.57	9.03	4.26	6.91
B-14	0.48	10.00	0.90	5.57	9.03	2.39	3.88
B-15	0.76	10.00	0.90	5.57	9.03	3.80	6.16
B-16	0.60	10.00	0.90	5.57	9.03	3.00	4.87
B-17	0.45	10.00	0.90	5.57	9.03	2.24	3.63
B-18	0.77	10.00	0.90	5.57	9.03	3.85	6.25
C-1	1.88	25.00	0.78	3.60	6.17	5.30	9.09
C-2	0.82	25.00	0.78	3.60	6.17	2.32	3.97
C-3	2.58	25.00	0.82	3.60	6.17	7.63	13.09
C-4	2.76	25.00	0.77	3.60	6.17	7.65	13.12
C-5	3.06	25.00	0.80	3.60	6.17	8.80	15.10
C-6	1.85	25.00	0.83	3.60	6.17	5.55	9.51
C-7	1.09	10.00	0.85	5.57	9.03	5.19	8.41
C-8	0.73	10.00	0.89	5.57	9.03	3.61	5.86
C-9	0.71	10.00	0.90	5.57	9.03	3.57	5.80
OS-C1	31.13	25.00	0.52	3.60	6.17	58.63	100.55
OS-C2	11.74	25.00	0.75	3.60	6.17	31.71	54.38
OS-C3	1.57	23.16	0.83	3.76	6.41	4.89	8.35
OS-B2	11.17	10.00	0.80	5.57	9.03	49.73	85.43

SUMP INLETS

Inlet No.	Gutter Slope S (ft/ft)	Crown Slope of Pavement θ (ft/ft)	100-Year Gutter Flow Q (cfs)	100-Year Carryover Flow (cfs)	100-Year Total Gutter Flow Q (cfs)	100-Year Depth of Gutter Flow Y (ft)	Depth of Depression a (ft)	Depth of Flow at Opening Y (ft)	Capacity of Inlet per Foot of Length (Q/L) (cfs/ft)	Length of Inlet Opening L (ft)	Capacity of Inlet Q (cfs)	Bypass into Overflow (cfs)	Percent Q100 Captured By Inlet	NOTES
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
A-4	0.005	0.02	14.27	1.40	15.67	0.45	0.33	0.78	1.88	20	37.61	0.00	100%	
A-7	0.006	0.02	14.46	0.00	14.46	0.42	0.33	0.76	1.78	20	35.61	0.00	100%	
B-8	0.005	0.02	17.23	2.42	19.65	0.48	0.33	0.82	2.00	20	40.00	0.00	100%	
B-13	0.005	0.02	6.91	1.49	8.40	0.36	0.33	0.69	1.55	20	31.06	0.00	100%	
C-6	0.005	0.02	9.51	7.32	16.83	0.46	0.33	0.79	1.92	20	38.37	0.00	100%	
C-9	0.005	0.02	5.80	0.77	6.57	0.32	0.33	0.66	1.67	10	16.69	0.00	100%	

NOTES:

1. ON GRADE INLETS DESIGNED FOR 5 YEAR STORM.
2. SUMP INLETS DESIGN FOR 100 YEAR STORM.

ON GRADE INLETS

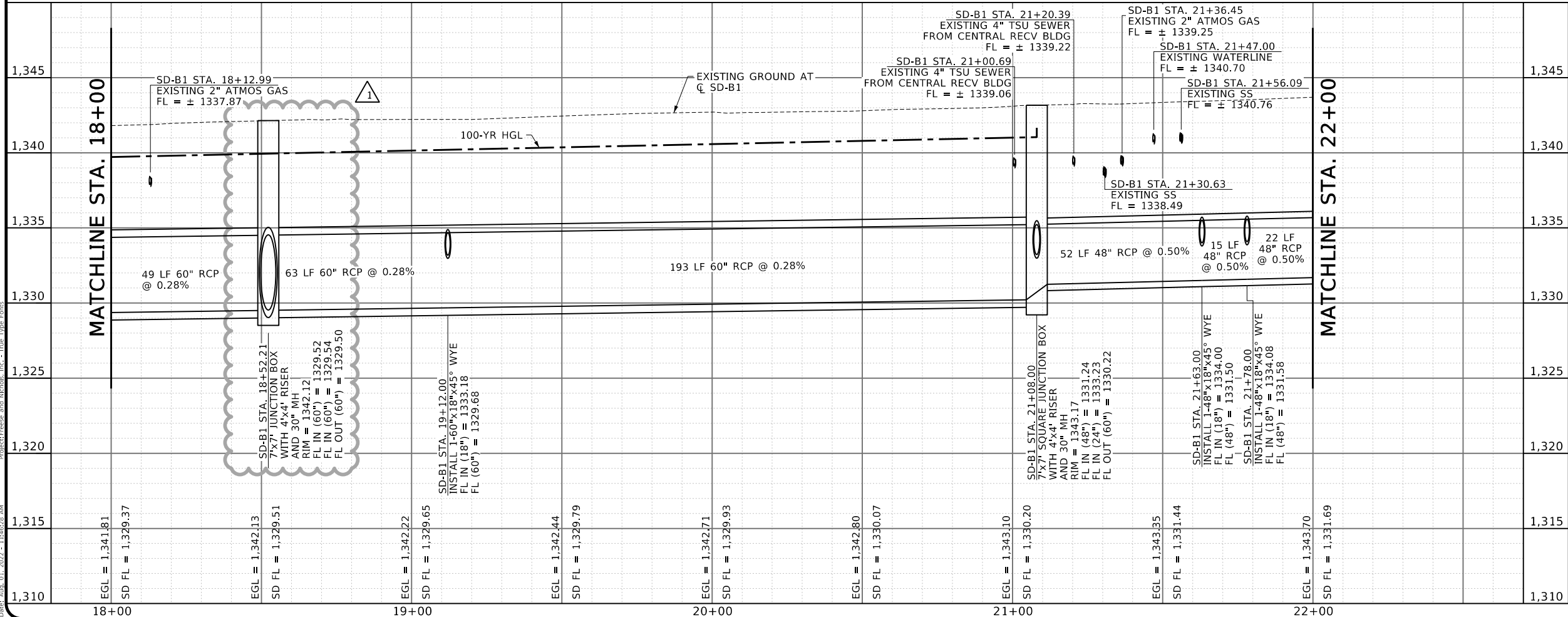
INLET			DRAINAGE AREA NO.				Cross Slope of Pavement "S" (ft/ft)	Long Slope "S" (ft/ft)	Cross Slope of Gutter "S'w" (ft/ft)	Depth of Flow "y" (ft)	Spread of Flow "T" (ft)	Equivalent Cross Slope "S" (ft/ft)	Street Section (type)	Manning's coefficient pavement "n"	5-year Intensity (in/hr)	5-year Runoff (cfs)	5-year Carryover Flow	5-year Total Gutter Q (cfs)	100-year Intensity (in/hr)	100-year Runoff (cfs)	100-year Carryover Flow (cfs)	100-year Total Gutter Q (cfs)	Right-of -Way Capacity (cfs)	Design Storm	Length Required "L" (ft)	Actual Provided Length L (ft)	L/L	Efficiency "E"	Inlet Capacity (cfs)	Bypass Target	5-year Bypass Flow "q" (cfs)	100-year Bypass Flow "q" (cfs)	COMMENTS
Design Point	Inlet No.	STATION	Area No.	Area (acres)	Runoff "C"	Conc. Time (min)																											
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	30	31	32	33	34
A-1	A-1		A-1	1.13	0.77	25.00	0.020	0.0110	0.250	0.21	10.58	0.127	Straight	0.015	3.60	3.11	0.00	3.11	6.17	5.33	0.00	5.33	37.58	5-yr	10.70	15	1.00	1.00	3.11	A-2	0.00	0.00	
A-2	A-2		A-2	2.01	0.78	25.00	0.020	0.0132	0.250	0.26	12.76	0.111	Straight	0.015	3.60	5.62	0.00	5.62	6.17	9.64	0.00	9.64	41.17	5-yr	15.68	15	0.96	1.00	5.60	A-3	0.02	1.10	
A-3	A-3		A-3	2.01	0.77	25.00	0.020	0.0118	0.250	0.26	13.01	0.110	Straight	0.015	3.60	5.58	0.02	5.60	6.17	9.56	1.10	10.67	38.92	5-yr	15.26	15	0.98	1.00	5.59	A-4	0.00	1.40	
A-5	A-5		A-5	0.13	0.90	10.00	0.020	0.0300	0.250	0.10	4.91	0.208	Straight	0.015	5.57	0.66	0.00	0.66	9.03	1.08	0.00	1.08	62.07	5-yr	5.63	10	1.00	1.00	0.66	A-4	0.00	0.00	
A-6	A-6		A-6	0.08	0.90	10.00	0.020	0.0300	0.250	0.08	3.97	0.232	Straight	0.015	5.57	0.38	0.00	0.38	9.03	0.61	0.00	0.61	62.07	5-yr	4.16	10	1.00	1.00	0.38	A-4	0.00	0.00	
B-1	B-1		B-1	1.44	0.83	13.38	0.020	0.0140	0.250	0.26	12.86	0.111	Straight	0.015	4.93	5.90	0.00	5.90	8.15	9.75	0.00	9.75	42.40	5-yr	16.35	15	0.92	0.99	5.84	B-2	0.07	3.91	
B-2	B-2		B-2	1.31	0.83	17.58	0.020	0.0112	0.250	0.25	12.38	0.114	Straight	0.015	4.34	4.71	0.07	4.77	7.28	7.91	3.91	11.82	37.92	5-yr	13.76	15	1.00	1.00	4.77	B-3	0.00	3.13	
B-3	B-3		B-3	1.36	0.84	14.24	0.020	0.0181	0.250	0.24	11.93	0.117	Straight	0.015	4.80	5.50	0.00	5.50	7.95	9.11	3.13	12.24	48.21	5-yr	16.60	20	1.00	1.00	5.50	B-4	0.00	3.61	
B-4	B-4		B-4	1.10	0.79	10.00	0.020	0.0230	0.250	0.22	10.89	0.125	Straight	0.015	5.57	4.86	0.00	4.86	9.03	7.89	3.61	11.51	54.34	5-yr	16.31	20	1.00	1.00	4.86	B-7	0.00	3.03	
B-5	B-5		B-5	0.90	0.77	25.00	0.020	0.0400	0.250	0.15	7.64	0.159	Straight	0.015	3.60	2.49	0.00	2.49	6.17	4.28	0.00	4.28	71.67	5-yr	12.57	15	1.00	1.00	2.49	B-7	0.00	1.78	
B-6	B-6		B-6	0.84	0.90	10.00	0.020	0.0400	0.250	0.19	9.31	0.139	Straight	0.015	5.57	4.22	0.00	4.22	9.03	6.85	0.00	6.85	71.67	5-yr	16.98	20	1.00	1.00	4.22	B-7	0.00	2.63	
B-7	B-7		B-7	0.27	0.87	25.00	0.020	0.0054	0.250	0.15	7.42	0.162	Straight	0.015	3.60	0.85	0.00	0.85	6.17	1.45	7.44	8.89	26.33	5-yr	4.33	10	1.00	1.00	0.85	B-8	0.00	0.61	
B-9	B-9		B-9	0.81	0.90	10.00	0.020	0.0061	0.250	0.28	13.86	0.105	Straight	0.015	5.57	4.05	0.71	4.77	9.03	6.58	4.67	11.25	27.99	5-yr	12.02	15	1.00	1.00	4.77	B-8	0.00	1.81	
B-10	B-10		B-10	1.27	0.90	10.00	0.020	0.0061	0.250	0.31	15.45	0.097	Straight	0.015	5.57	6.36	0.00	6.36	9.03	10.32	0.00	10.32	27.99	5-yr	14.21	10	0.70	0.89	5.65	B-9	0.71	4.67	
B-14	B-14		B-14	0.48	0.90	10.00	0.020	0.0142	0.250	0.18	9.13	0.141	Straight	0.015	5.57	2.39	0.00	2.39	9.03	3.88	2.36	6.24	42.70	5-yr	9.73	10	1.00	1.00	2.39	B-13	0.00	1.49	
B-15	B-15		B-15	0.76	0.90	10.00	0.020	0.0160	0.250	0.21	10.62	0.127	Straight	0.015	5.57	3.80	0.00	3.80	9.03	6.16	1.87	8.03	45.33	5-yr	13.04	15	1.00	1.00	3.80	B-14	0.00	2.36	
B-16	B-16		B-16	0.60	0.90	10.00	0.020	0.0262	0.250	0.18	8.87	0.144	Straight	0.015	5.57	3.00	0.00	3.00	9.03	4.87	1.39	6.26	58.00	5-yr	12.70	15	1.00	1.00	3.00	B-15	0.00	1.87	
B-17	B-17		B-17	0.45	0.90	10.00	0.020	0.0089	0.250	0.19	9.72	0.135	Straight	0.015	5.57	2.24	0.00	2.24	9.03	3.63	2.40	6.03	33.81	5-yr	8.44	10	1.00	1.00	2.24	B-16	0.00	1.39	
B-18	B-18		B-18	0.77	0.90	10.00	0.020	0.0152	0.250	0.22	10.79	0.125	Straight	0.015	5.57	3.85	0.00	3.85	9.03	6.25	0.00	6.25	44.18	5-yr	13.00	15	1.00	1.00	3.85	B-17	0.00	2.40	
C-1	C-1		C-1	1.88	0.78	25.00	0.020	0.0344	0.250	0.21	10.43	0.128	Straight	0.015	3.60	5.30	0.00	5.30	6.17	9.09	0.00	9.09	66.46	5-yr	18.73	15	0.80	0.95	5.01	C-2	0.29	4.08	
C-2	C-2		C-2	0.82	0.78	25.00	0.020	0.0459	0.250	0.15	7.57	0.160	Straight	0.015	3.60	2.32	0.29	2.61	6.17	3.97	4.08	8.06	76.77	5-yr	13.30	10	0.75	0.92	2.40	C-3	0.21	1.58	
C-3	C-3		C-3	2.58	0.82	25.00	0.020	0.0198	0.250	0.27	13.40	0.108	Straight	0.015	3.60	7.63	0.21	7.84	6.17	13.09	1.58	14.67	50.42	5-yr	20.80	15	0.72	0.90	7.06	C-4	0.79	6.03	
C-4	C-4		C-4	2.76	0.77	25.00	0.020	0.0050	0.250	0.36	17.83	0.088	Straight	0.015	3.60	7.65	0.79	8.44	6.17	13.12	6.03	19.15	25.34	5-yr	16.01	20	1.00	1.00	8.44	C-5	0.00	4.68	
C-5	C-5		C-5	3.06	0.80	25.00	0.020	0.0170	0.250	0.29	14.40	0.102	Straight	0.015	3.60	8.80	0.00	8.80	6.17	15.10	4.68	19.78	46.72	5-yr	21.50	15	0.70	0.88	7.78	C-6	1.02	7.32	
C-7	C-7		C-7	1.09	0.85	10.00	0.020	0.0482	0.250	0.19	9.71	0.135	Straight	0.015	5.57	5.19	0.00	5.19	9.03	8.41	0.00	8.41	78.67	5-yr	19.93	10	0.50	0.71	3.71	C-8	1.48	4.71	
C-8	C-8		C-8	0.73	0.89	10.00	0.020	0.0113	0.250	0.25	12.66	0.112	Straight	0.015	5.57	3.61	1.48	5.09	9.03	5.86	4.71	10.57	38.09	5-yr	14.31	15	1.00	1.00	5.09	C-9	0.00	0.77	

SD LINE HYDRAULICS

STORM DRAIN HYDRAULIC CALCULATIONS TABLE																																		
FROM	TO	PIPE LENGTH	Drainage Area			Runoff "c"	Incr. cA	Total cA	Time of Concentration			5-yr Intensity	100-yr Intensity	Q5 Runoff	Q100 Runoff	100-yr Inlet Bypass	Q pipe	Pipe Size	No. of Barrels	n	Sf	HGL		HEAD LOSS CALCULATIONS								Design U/S HGL	T/C ELEV.	DESCRIPTION
			Incremental	Area	Total Area				Inlet	Travel	Total											D/S	U/S	V1 (in)	V2 (out)	V1/2G	V2/2G	Kj	KjV1/2G	Hk				
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	30	31	32	35	36	
LINE SD-A1 PROPOSED																																		
10+00.00	11+00.00	100.00	A-1	1.13	1.13	0.77	0.86	0.86	25.00	0.55	25.00	3.60	6.17	3.11	5.33	0.00	5.33	18	1	0.013	0.0026	1370.02	1370.28	3.02	3.02	0.141	0.141	1.25	0.18	0.18	1370.46	1374.23	Inlet at Beg. of Line	
11+00.00	13+19.00	219.00		0.00	1.13			0.86	0.00	1.22	25.55	3.56	6.11	3.07	5.28	0.00	5.28	18	1	0.013	0.0025	1369.37	1369.92	2.99	2.99	0.138	0.138	0.50	0.07	0.10	1370.02	1373.48	MH on Trunk Line w/45º Branch Lat	
13+19.00	15+87.00	268.00	A-2	2.01	3.14	0.78	1.56	2.42	25.00	0.59	26.77	3.46	5.96	8.40	14.46	1.10	13.36	18	1	0.013	0.0162	1364.60	1368.93	7.56	7.56	0.887	0.887	0.50	0.44	0.44	1369.37	1371.95	MH on Trunk Line w/45º Branch Lat	
15+87.00	18+85.50	298.50	A-3	2.01	5.15	0.77	1.55	3.97	25.00	0.71	27.37	3.42	5.90	13.59	23.43	1.40	22.03	24	1	0.013	0.0095	1361.38	1364.21	7.01	7.01	0.764	0.764	0.50	0.38	0.38	1364.60	1368.71	MH on Trunk Line w/45º Branch Lat	
18+85.50	19+45.04	59.54	A-4 & A-7	4.75	9.89	0.82	3.91	7.88	25.00	0.11	28.08	3.37	5.82	26.57	45.88	0.00	45.88	30	1	0.013	0.0125	1359.96	1360.70	9.35	9.35	1.356	1.356	0.50	0.68	0.68	1361.38	1366.06	MH on Trunk Line w/45º Branch Lat	
19+45.04	19+76.04	31.00	A-5	0.13	10.03	0.90	0.12	8.00	10.00	0.05	28.18	3.36	5.81	26.91	46.48	0.00	46.48	30	1	0.013	0.0128	1359.21	1359.61	9.47	9.47	1.392	1.392	0.75	1.04	0.35	1359.96	1366.38	45º Wye connection	
19+76.04	22+00.00	223.96	A-6	0.08	10.10	0.90	0.07	8.07	10.00	0.39	28.24	3.36	5.80	27.11	46.82	0.00	46.82	30	1	0.013	0.0130	1355.59	1358.51	9.54	9.54	1.413	1.413	0.50	0.71	0.71	1359.21	1366.73	MH on Trunk Line w/45º Branch Lat	
22+00.00	24+56.00	256.00		0.00	10.10			8.07	0.00	0.45	28.63	3.33	5.76	26.89	46.49	0.00	46.49	30	1	0.013	0.0128	1351.60	1354.89	9.47	9.47	1.393	1.393	0.50	0.70	0.70	1355.59	1366.34	MH on Trunk Line w/45º Branch Lat	
24+56.00	26+12.00	156.00	C-1	1.88	11.98	0.78	1.47	9.54	25.00	0.25	29.08	3.30	5.71	31.51	54.52	4.08	50.43	30	1	0.013	0.0151	1348.42	1350.78	10.27	10.27	1.639	1.639	0.50	0.82	0.82	1351.60	1360.91	MH on Trunk Line w/45º Branch Lat	
26+12.00	29+21.51	309.51	C-2 & C-7	1.92	13.90	0.82	1.57	11.12	25.00	0.44	29.33	3.28	5.69	36.52	63.22	6.29	56.94	30	1	0.013	0.0193	1341.42	1347.38	11.60	11.60	2.089	2.089	0.50	1.04	1.04	1348.42	1354.56	MH on Trunk Line w/45º Branch Lat	
29+21.51	29+71.92	50.41		0.00	13.90			11.12	0.00	0.14	29.78	3.26	5.64	36.20	62.72	6.03	56.68	42	1	0.013	0.0032	1340.58	1340.74	5.89	5.89	0.539	0.539	1.25	0.67	0.67	1341.42	1343.89	MH at Beg. of Line	
29+71.92	30+39.13	67.21	C-3	2.58	16.49	0.82	2.12	13.24	25.00	0.15	29.92	3.25	5.63	42.97	74.48	4.68	69.80	42	1	0.013	0.0048	1340.05	1340.38	7.25	7.25	0.817	0.817	0.75	0.61	0.20	1340.58	1342.80	45º Wye connection	
30+39.13	30+85.00	45.87		0.00	16.49			13.24	0.00	0.10	30.07	3.24	5.61	42.84	74.28	0.00	74.28	42	1	0.013	0.0055	1339.48	1339.73	7.25	7.72	0.817	0.926	0.35	0.29	0.32	1340.05	1342.21	Bends where radius = diam, 45º Bend	
LINE SD-B1 PROPOSED																																		
47+36.36	47+25.05	11.31	B-1	1.44	1.44	0.83	1.20	1.20	13.38	0.06	13.38	4.93	8.15	5.90	9.75	3.91	5.84	18	1	0.013	0.0031	1369.22	1369.25	3.30	3.30	0.169	0.169	1.25	0.21	0.21	1369.46	1371.93	Inlet at Beg. of Line	
47+25.05	45+50.00	175.05		0.00	1.44			1.20	0.00	0.53	13.44	4.93	8.13	5.89	9.73	0.00	9.73	18	1	0.013	0.0086	1367.48	1368.98	5.51	5.51	0.471	0.471	0.50	0.24	0.24	1369.22	1371.84	MH on Trunk Line w/45º Branch Lat	
45+50.00	44+77.03	72.97		0.00	1.44			1.20	0.00	0.22	13.97	4.84	8.01	5.79	9.59	0.00	9.59	18	1	0.013	0.0083	1366.64	1367.25	5.43	5.43	0.457	0.457	0.50	0.23	0.23	1367.48	1370.41	MH on Trunk Line w/45º Branch Lat	
44+77.03	43+50.00	127.03	B-18	0.77	2.21	0.90	0.69	1.89	10.00	0.30	14.19	4.81	7.96	9.07	15.04	2.40	12.64	18	1	0.013	0.0145	1364.60	1366.44	7.15	7.15	0.794	0.794	0.75	0.60	0.20	1366.64	1369.79	45º Wye connection	
43+50.00	41+94.05	155.95		0.00	2.21			1.89	0.00	0.50	14.49	4.76	7.90	8.99	14.92	2.40	12.52	21	1	0.013	0.0062	1363.42	1364.39	5.20	5.20	0.420	0.420	0.50	0.21	0.21	1364.60	1368.38	MH on Trunk Line w/45º Branch Lat	
41+94.05	40+86.55	107.50	B-17	0.45	2.66	0.90	0.40	2.29	10.00	0.26	14.99	4.69	7.79	10.73	17.84	1.39	16.45	21	1	0.013	0.0108	1362.08	1363.24	6.84	6.84	0.726	0.726	0.75	0.54	0.18	1363.42	1365.95	45º Wye connection	
40+86.55	39+50.00	136.55	B-2	1.31	3.96	0.83	1.09	3.38	17.58	0.36	17.58	4.34	7.28	14.64	24.59	4.52	20.07	24	1	0.013	0.0079	1360.69	1361.76	6.39	6.39	0.633	0.633	0.50	0.32	0.32	1362.08	1364.64	MH on Trunk Line w/45º Branch Lat	
39+50.00	38+06.14	143.86		0.00	3.96			3.38	0.00	0.31	17.94	4.30	7.22	14.50	24.37	0.00	24.37	24	1	0.013	0.0116	1358.55	1360.22	7.76	7.76	0.935	0.935	0.50	0.47	0.47	1360.69	1362.73	MH on Trunk Line w/45º Branch Lat	
38+06.14	36+50.00	156.14	B-16	0.60	4.56	0.90	0.54	3.91	10.00	0.31	18.25	4.26	7.17	16.67	28.05	1.87	26.18	24	1	0.013	0.0134	1356.19	1358.28	8.33	8.33	1.079	1.079	0.75	0.81	0.27	1358.55	1360.85	45º Wye connection	
36+50.00	34+50.00	200.00		0.00	4.56			3.91	0.00	0.40	18.56	4.22	7.11	16.53	27.84	1.87	25.97	24	1	0.013	0.0132	1353.02	1355.66	8.27	8.27	1.061	1.061	0.50	0.53	0.53	1356.19	1358.94	MH on Trunk Line w/45º Branch Lat	
34+50.00	33+39.55	110.45		0.00	4.56			3.91	0.00	0.21	18.96	4.18	7.04	16.35	27.57	0.00	27.57	24	1	0.013	0.0149	1350.78	1352.42	8.78	8.78	1.196	1.196	0.50	0.60	0.60	1353.02	1356.79	MH on Trunk Line w/45º Branch Lat	
33+39.55	33+14.07	25.48	B-3	1.36	5.92	0.84	1.15	5.06	14.24	0.07	19.17	4.15	7.01	21.01	35.47	3.61	31.85	30	1	0.013	0.0060	1350.30	1350.46	6.49	6.49	0.654	0.654	0.50	0.33	0.33	1350.78	1354.68	MH on Trunk Line w/45º Branch Lat	
33+14.07	30+59.56	254.51	B-15	0.76	6.68	0.90	0.68	5.74	10.00	0.55	19.24	4.15	7.00	23.80	40.18	2.36	37.82	30	1	0.013	0.0085	1347.91	1350.07	7.70	7.70	0.922	0.922	0.75	0.69	0.23	1350.30	1354.21	45º Wye connection	
30+59.56	30+22.06	37.50	B-4	1.10	7.78	0.79	0.87	6.62	10.00	0.08	19.79	4.09	6.91	27.03	45.71	5.39	40.31	30	1	0.013	0.0097	1347.28	1347.65	8.21	8.21	1.047	1.047	0.75	0.79	0.26	1347.91	1349.70	45º Wye connection	
30+22.06	30+06.00	16.06	B-5	0.90	8.68	0.77	0.69	7.31	25.00	0.03	25.00	3.60	6.17	26.31	45.13	1.78	43.34	30	1	0.013	0.0112	1346.80	1346.98	8.83	8.83	1.211	1.211	0.75	0.91	0.30	1347.28	1348.90	45º Wye connection	
30+06.00	29+89.06	16.94	B-14	0.48	9.15	0.90	0.43	7.74	10.00	0.03	25.03	3.60	6.17	27.84	47.75	1.49	46.26	30	1	0.013	0.0127	1346.24	1346.46	9.42	9.42	1.379	1.379	0.75	1.03	0.34	1346.80	1348.41	45º Wye connection	
29+89.06	29+54.27	34.79	B-6	0.84	10.00	0.90	0.76	8.50	10.00	0.06	25.06	3.60	6.17	30.54	52.39	4.12	48.28	30	1	0.013	0.0139	1345.29	1345.77	9.42	9.83	1.379	1.502	0.75	1.03	0.47	1346.24	1348.40	45º Wye connection	
LINE SD-B2 & SD-B3 PROPOSED																																		
14+22.83	14+14.92	7.91	B-7	0.27	10.27	0.87	0.24	8.73	25.00	0.02	25.00	3.60	6.17	31.43	53.91	0.61	53.30	42	1	0.013	0.0028	1345.03	1345.05	5.54	5.54	0.477	0.477	0.50	0.24	0.24	1345.29	1348.49	MH on Trunk Line w/45º Branch Lat	
14+14.92	13+28.59	86.33		0.00	10.27			8.73	0.00	0.26	25.02	3.60	6.17	31.42	53.89	0.00	53.89	42	1	0.013	0.0029													

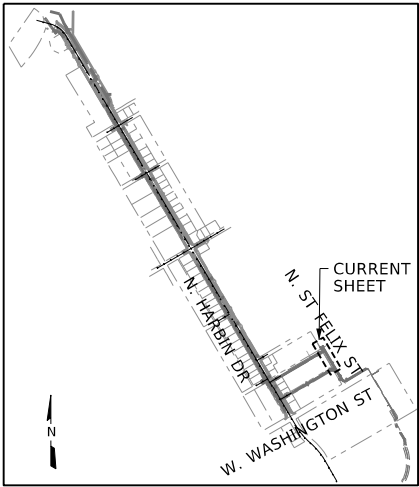
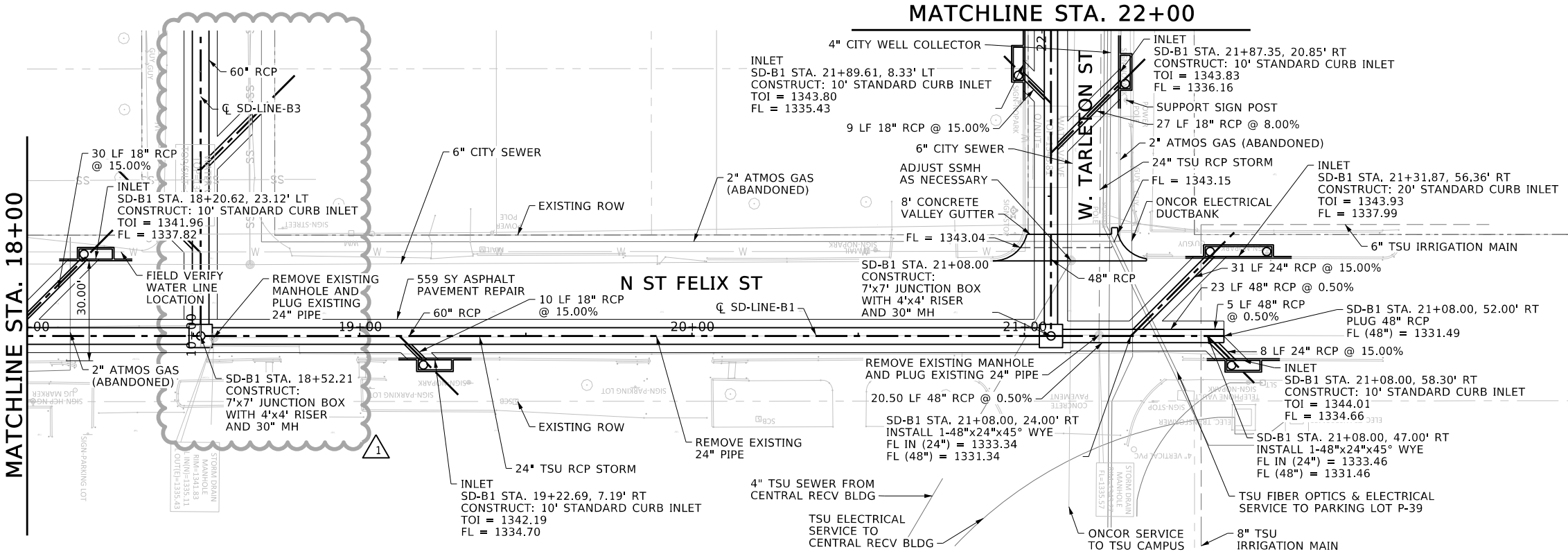
LATERAL HYDRAULICS

STORM DRAIN HYDRAULIC CALCULATIONS TABLE																																		
FROM	TO	PIPE LENGTH feet	Drainage Area			Runoff "c"	Incr. cA	Total cA	Time of Concentration			5-yr Intensity in/hr.	100-yr Intensity in/hr.	Q5 Runoff cfs	Q100 Runoff cfs	100-yr Inlet Bypass cfs	Q pipe cfs	Pipe Size in.	No. of Barrels	n	Sf ft/ft	HGL		HEAD LOSS CALCULATIONS								Design U/S HGL Elev.	T/C ELEV. Ft.	DESCRIPTION
			Incremental No.	Area	Total Area				Inlet min.	Travel min.	Total min.											D/S Elev.	U/S Elev.	V1 (in) ft/sec	V2 (out) ft/sec	V1/2G ft.	V2/2G ft.	Kj	KjV1/2G ft.	Hk ft.				
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	30	31	32	35	36	
LAT A-1																																		
01+11.31	01+00.00	11.31	A-1	1.13	1.13	0.77	0.86	0.86	25.00	0.06	25.00	3.60	6.17	3.11	5.33	0.00	5.33	18	1	0.013	0.0026	1370.46	1370.49	0.00	3.02	0.000	0.141	1.25	0.00	0.18	1370.66	1374.34	Inlet at Beg. of Line	
LAT A-2																																		
01+11.31	01+00.00	11.31	A-2	2.01	2.01	0.78	1.56	1.56	25.00	0.03	25.00	3.60	6.17	5.62	9.64	0.00	9.64	18	1	0.013	0.0084	1369.37	1369.47	0.00	5.45	0.000	0.462	1.25	0.00	0.58	1370.04	1372.68	Inlet at Beg. of Line	
LAT A-3																																		
01+11.31	01+00.00	11.31	A-3	2.01	2.01	0.77	1.55	1.55	25.00	0.03	25.00	3.60	6.17	5.58	9.56	0.00	9.56	18	1	0.013	0.0083	1364.60	1364.69	0.00	5.41	0.000	0.455	1.25	0.00	0.57	1365.26	1368.49	Inlet at Beg. of Line	
LAT A-4																																		
01+11.31	01+00.00	11.31	A-4	2.97	2.97	0.78	2.31	2.31	25.00	0.02	25.00	3.60	6.17	8.32	14.27	0.00	14.27	18	1	0.013	0.0185	1361.38	1361.59	0.00	8.07	0.000	1.012	1.25	0.00	1.27	1362.86	1366.05	Inlet at Beg. of Line	
LAT A-5																																		
01+46.93	01+10.00	36.93	A-5	0.13	0.13	0.90	0.12	0.12	10.00	1.01	10.00	5.57	9.03	0.66	1.08	0.00	1.08	18	1	0.013	0.0001	1360.06	1360.06	0.00	0.61	0.000	0.006	1.25	0.00	0.10	1360.16	1367.15	Inlet at Beg. of Line	
01+10.00	01+00.00	10.00		0.00	0.13			0.12	0.00	0.28	11.01	5.36	8.75	0.64	1.04	0.00	1.04	18	1	0.013	0.0001	1359.96	1359.96	0.61	0.59	0.006	0.005	0.35	0.00	0.10	1360.06	1366.32	Bends where radius = diam, 45º Bend	
LAT A-6																																		
01+46.93	01+10.00	36.93	A-6	0.08	0.08	0.90	0.07	0.07	10.00	1.78	10.00	5.57	9.03	0.38	0.61	0.00	0.61	18	1	0.013	0.0000	1359.31	1359.31	0.00	0.35	0.000	0.002	1.25	0.00	0.10	1359.41	1367.15	Inlet at Beg. of Line	
01+10.00	01+00.00	10.00		0.00	0.08			0.07	0.00	0.51	11.78	5.21	8.54	0.35	0.58	0.00	0.58	18	1	0.013	0.0000	1359.21	1359.21	0.35	0.33	0.002	0.002	0.35	0.00	0.10	1359.31	1366.65	Bends where radius = diam, 45º Bend	
LAT A-7																																		
01+75.33	01+52.33	23.00	A-7	1.78	1.78	0.90	1.60	1.60	10.00	0.05	10.00	5.57	9.03	8.91	14.46	0.00	14.46	18	1	0.013	0.0190	1362.73	1363.17	0.00	8.18	0.000	1.040	1.25	0.00	1.30	1364.47	1365.05	Inlet at Beg. of Line	
01+52.33	01+00.00	52.33		0.00	1.78			1.60	0.00	0.11	10.05	5.56	9.02	8.90	14.44	0.00	14.44	18	1	0.013	0.0189	1361.38	1362.37	8.18	8.17	1.040	1.037	0.35	0.36	0.36	1362.73	1365.08	Bends where radius = diam, 45º Bend	
LAT B-2																																		
01+11.31	01+00.00	11.31	B-2	1.31	1.31	0.83	1.09	1.09	17.58	0.04	17.58	4.34	7.28	4.71	7.91	0.00	7.91	18	1	0.013	0.0057	1362.08	1362.14	0.00	4.47	0.000	0.311	1.25	0.00	0.39	1362.53	1364.37	Inlet at Beg. of Line	
LAT B-3																																		
01+11.31	01+00.00	11.31	B-3	1.36	1.36	0.84	1.15	1.15	14.24	0.04	14.24	4.80	7.95	5.50	9.11	0.00	9.11	18	1	0.013	0.0075	1350.78	1350.87	0.00	5.16	0.000	0.413	1.25	0.00	0.52	1351.38	1354.43	Inlet at Beg. of Line	
LAT B-4																																		
01+11.31	01+00.00	11.31	B-4	1.10	1.10	0.79	0.87	0.87	10.00	0.06	10.00	5.57	9.03	4.86	7.89	0.00	7.89	21	1	0.013	0.0025	1347.91	1347.94	0.00	3.28	0.000	0.167	1.25	0.00	0.21	1348.14	1349.53	Inlet at Beg. of Line	
LAT B-5																																		
01+46.93	01+10.00	36.93	B-5	0.90	0.90	0.77	0.69	0.69	25.00	0.35	25.00	3.60	6.17	2.49	4.28	0.00	4.28	21	1	0.013	0.0007	1347.39	1347.42	0.00	1.78	0.000	0.049	1.25	0.00	0.10	1347.52	1349.62	Inlet at Beg. of Line	
01+10.00	01+00.00	10.00		0.00	0.90			0.69	0.00	0.09	25.35	3.57	6.13	2.47	4.25	0.00	4.25	21	1	0.013	0.0007	1347.28	1347.29	1.78	1.77	0.049	0.048	0.35	0.02	0.10	1347.39	1348.68	Bends where radius = diam, 45º Bend	
LAT B-6																																		
01+46.93	01+10.00	36.93	B-6	0.84	0.84	0.90	0.76	0.76	10.00	0.16	10.00	5.57	9.03	4.22	6.85	0.00	6.85	18	1	0.013	0.0042	1346.38	1346.54	0.00	3.87	0.000	0.233	1.25	0.00	0.29	1346.83	1349.62	Inlet at Beg. of Line	
01+10.00	01+00.00	10.00		0.00	0.84			0.76	0.00	0.04	10.16	5.53	8.99	4.19	6.81	0.00	6.81	18	1	0.013	0.0042	1346.24	1346.28	3.87	3.85	0.233	0.231	0.35	0.08	0.10	1346.38	1348.04	Bends where radius = diam, 45º Bend	
LAT B-7																																		
01+10.26	01+00.00	10.26	B-7	0.27	0.27	0.87	0.24	0.24	25.00	0.21	25.00	3.60	6.17	0.85	1.45	0.00	1.45	18	1	0.013	0.0002	1345.29	1345.29	0.00	0.82	0.000	0.011	1.25	0.00	0.10	1345.39	1348.05	Inlet at Beg. of Line	
LAT B-8																																		
01+09.04	01+00.00	9.04	B-8	2.12	2.12	0.90	1.91	1.91	10.00	0.03	10.00	5.57	9.03	10.62	17.23	0.00	17.23	27	1	0.013	0.0031	1344.68	1344.71	0.00	4.33	0.000	0.292	1.25	0.00	0.36	1345.08	1347.76	Inlet at Beg. of Line	
LAT B-9																																		
01+11.31	01+00.00	11.31	B-9	0.81	0.81	0.90	0.73	0.73	10.00	0.07	10.00	5.57	9.03	4.05	6.58	0.00	6.58	21	1	0.013	0.0017	1344.23	1344.25	0.00	2.74	0.000	0.116	1.25	0.00	0.15	1344.39	1347.74	Inlet at Beg. of Line	
LAT B-10																																		
01+09.05	01+00.00	9.05	B-10	1.27	1.27	0.90	1.14	1.14	10.00	0.04	10.00	5.57	9.03	6.36	10.32	0.00	10.32	21	1	0.013	0.0042	1343.92	1343.96	0.00	4.29	0.000	0.286	1.25	0.00	0.36	1344.31	1348.24	Inlet at Beg. of Line	
LAT B-13																																		
01+59.92	01+19.52	40.40	B-13	0.85	0.85	0.90	0.76	0.76	10.00	0.17	10.00	5.57	9.03	4.26	6.91	0.00	6.91	18	1	0.013	0.0043	1344.87	1345.04	0.00	3.91	0.000	0.237	1.25	0.00	0.30	1345.34	1347.99	Inlet at Beg. of Line	
01+19.52	01+00.00	19.52		0.00	0.85			0.76	0.00	0.08	10.17	5.53	8.98	4.23	6.87	0.00	6.87	18	1	0.013	0.0043	1344.68	1344.77	3.91	3.89	0.237	0.235	0.35	0.08	0.10	1344.87	1348.41	Bends where radius = diam, 45º Bend	
LAT B-14																																		
01+67.44	01+25.42	42.02	B-14	0.48	0.48	0.90	0.43	0.43	10.00	0.32	10.00	5.57	9.03	2.39	3.88	0.00	3.88	18	1	0.013	0.0014	1346.94	1346.99	0.00	2.20	0.000	0.075	1.25	0.00	0.10	1347.09	1348.77	Inlet at Beg. of Line	
01+25.42	01+00.00	25.42		0.00	0.48			0.43	0.00	0.20	10.32	5.50	8.94	2.36	3.84	0.00	3.84	18	1	0.013	0.0013	1346.80	1346.84	2.20	2.17	0.075	0.073	0.35	0.03	0.10	1346.94	1349.45	Bends where radius = diam, 45º Bend	
LAT B-15																																		
01+67.87	01+26.87	41.00	B-15	0.76	0.76	0.90	0.68	0.68	10.00	0.20	10.00	5.57	9.03	3.80	6.16	0.00	6.16	18	1	0.013	0.0034	1350.49	1350.63	0.00	3.49	0.000	0.189	1.25	0.00	0.24	1350.87	1354.01	Inlet at Beg. of Line	
01+26.87	01+00.00	26.87		0.00	0.76			0.68	0.00	0.13	10.20	5.53	8.98	3.77	6.12	0.00	6.12	18	1	0.013	0.0034	1350.30	1350.39	3.49	3.46	0.189	0.186	0.35	0.07	0.10	1350.49	1354.72	Bends where radius = diam, 45º Bend	
LAT B-16																																		
01+67.87	01+26.87	41.00	B-16	0.60	0.60	0.90	0.54	0.54	10.00	0.25	10.00	5.57	9.03	3.00	4.87	0.00	4.87	18	1	0.013	0.0021	1358.71	1358.80	0.00	2.75	0.000	0.118	1.25	0.00	0.15	1358.94	1361.25	Inlet at Beg. of Line	
01+26.87	01+00.00	26.87		0.00	0.60			0.54	0.00	0.16	10.25	5.51	8.96	2.97	4.83	0.00	4.83	18	1	0.013	0.0021	1358.55	1358.61	2.75	2.73	0.118	0.116	0.35	0.04	0.10	1358.71	1361.88	Bends where radius = diam, 45º Bend	
LAT B-17																																		
01+67.87	01+26.87	41.00	B-17	0.45	0.45	0.90	0.40	0.40	10.00	0.33	10.00	5.57	9.03	2.24	3.63	0.00	3.63	18	1	0.013	0.0012	1363.55	1363.60	0.00	2.05	0.000	0.065	1.25	0.00	0.10	1363.70	1367.31	Inlet at Beg. of Line	
01+26.87	01+00.00	26.87		0.00	0.45			0.40	0.00	0.22	10.33	5.50	8.94	2.21	3.59	0.00	3.59	18	1	0.013	0.0012	1363.42	1363.45	2.05	2.03	0.065	0.064	0.35	0.02	0.10	1363.55	1367.83	Bends where radius = diam, 45º Bend	
LAT B-18																																		
01+67.87	01+26.87	41.00	B-18	0.77	0.77	0.90	0.69	0.69	10.00	0.19	10.00	5.57	9.03	3.85	6.25	0.00	6.25	18	1	0.013	0.0035	1366.83	1366.98	0.00	3.54	0.000	0.194	1.25	0.00	0.24	1367.22	1369.40	Inlet at Beg. of Line	
01+26.87	01+00.00	26.87		0.00	0.77			0.69	0.00	0.13	10.19	5.53	8.98	3.82	6.21	0.00	6.21	18	1	0.013	0.0035	1366.64	1366.73	3.54	3.52	0.194	0.192	0.35	0.07	0.10	1366.83	1370.29	Bends where radius = diam, 45º Bend	



PROFILE LEGEND

---	EXISTING GRADE @ SD CL
---	PROPOSED GRADE @ SD CL
---	100-YR HGL
---	PROPOSED DITCH @ SD CL
---	PROPOSED TOP OF CURB LINE



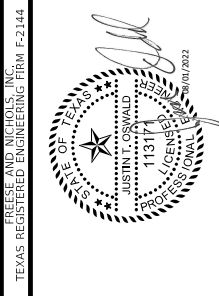
NO.	ISSUES	BY	DATE	FAK JOB NO.	STE19752
SHEET				DATE	AUG 2021
DESIGNED	LR			DESIGNED	LR
DRAWN	EB			DRAWN	EB
REVIS	FILE NAME	LAR	AUG 2022	REVISED	CHECKED
0	VERIFY SCALE				
1	If not one inch on original drawing, Bar is one inch on this sheet, adjust scale.				

SD-11

SEQ.

CITY OF STEPHENVILLE
HARBIN DRIVE
CIVIL
STORM DRAIN SD-B1 PLAN AND PROFILE
STA. 18+00 TO STA. 22+00

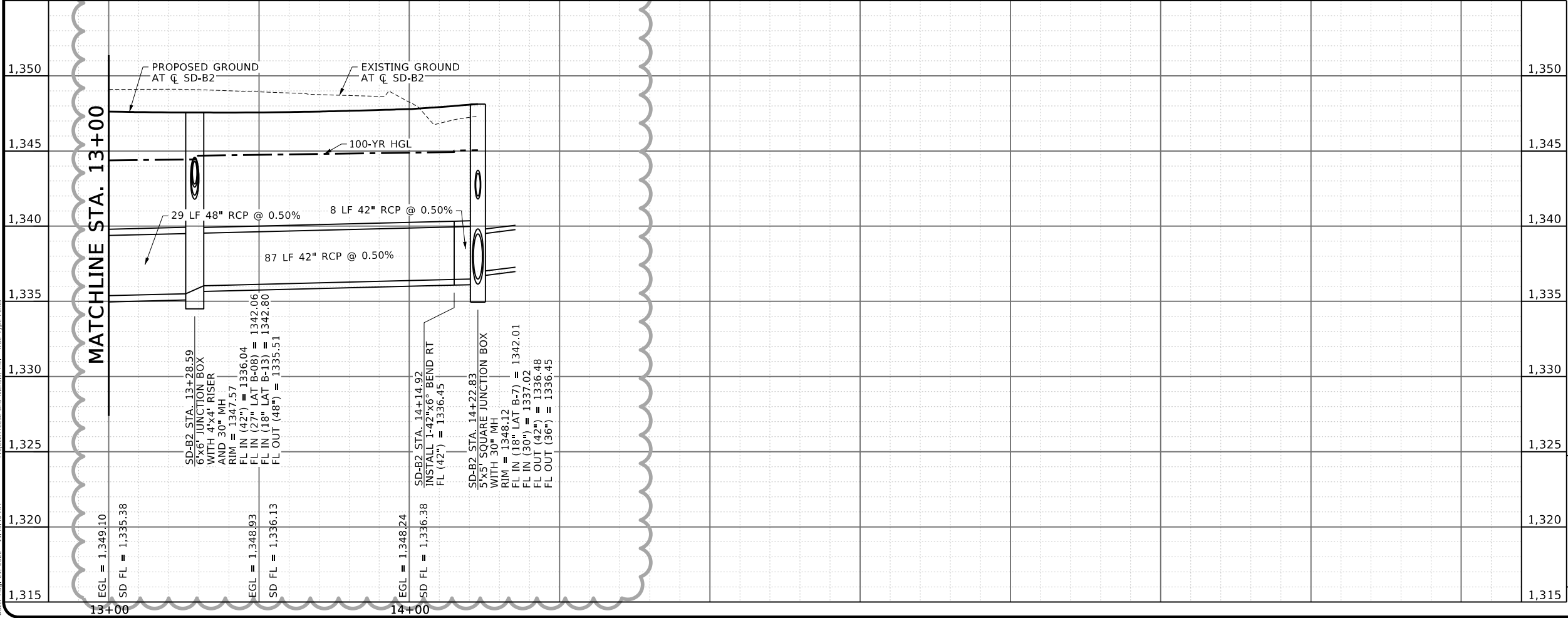
FREES & NICHOLS
801 CHURCH ST., SUITE 2600
FORT WORTH, TX 76102
Phone - (817) 735-7300
Web - www.freese.com



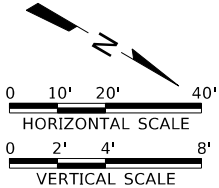
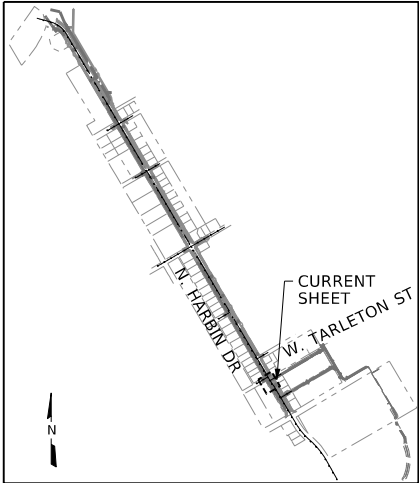
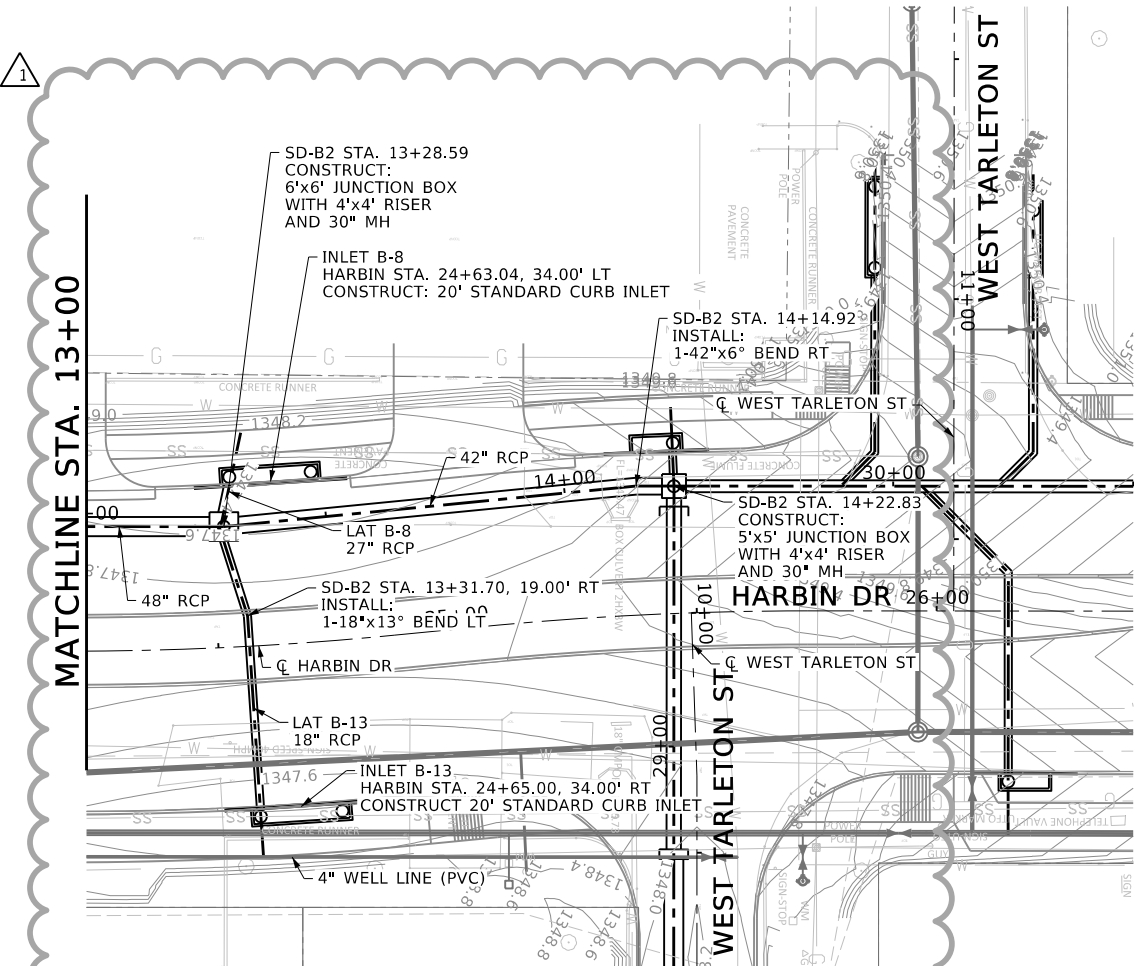
MicroStation V8 User 02637
s:\accounts\m\p\Drawings\5_Drainage\cv-rtt-pp-sd18.dgn
Plot Scale: 1"=40.00' / 1"=10.00' / 1"=20.00' / 1"=40.00' / 1"=80.00' / 1"=160.00' / 1"=320.00' / 1"=640.00' / 1"=1280.00' / 1"=2560.00' / 1"=5120.00' / 1"=10240.00' / 1"=20480.00' / 1"=40960.00' / 1"=81920.00' / 1"=163840.00' / 1"=327680.00' / 1"=655360.00' / 1"=1310720.00' / 1"=2621440.00' / 1"=5242880.00' / 1"=10485760.00' / 1"=20971520.00' / 1"=41943040.00' / 1"=83886080.00' / 1"=167772160.00' / 1"=335544320.00' / 1"=671088640.00' / 1"=1342177280.00' / 1"=2684354560.00' / 1"=5368709120.00' / 1"=10737418240.00' / 1"=21474836480.00' / 1"=42949672960.00' / 1"=85899345920.00' / 1"=171798691840.00' / 1"=343597383680.00' / 1"=687194767360.00' / 1"=1374389534720.00' / 1"=2748779069440.00' / 1"=5497558138880.00' / 1"=10995116277760.00' / 1"=21990232555520.00' / 1"=43980465111040.00' / 1"=87960930222080.00' / 1"=175921860444160.00' / 1"=351843720888320.00' / 1"=703687441776640.00' / 1"=1407374883553280.00' / 1"=2814749767106560.00' / 1"=5629499534213120.00' / 1"=11258999068426240.00' / 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- PROFILE LEGEND**
- EXISTING GRADE @ SD $\bar{C}$
 - PROPOSED GRADE @ SD $\bar{C}$
 - - - - 100-YR HGL
 - - - - PROPOSED DITCH @ SD $\bar{C}$
 - - - - PROPOSED TOP OF CURB LINE



FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

JUSTIN T. OSWALD
13171
MECHANICAL ENGINEERING
STATE OF TEXAS
PROFESSIONAL ENGINEER

FREESE AND NICHOLS
881 Cherry Street, Suite 2800
Fort Worth, TX 76102
Phone - (817) 735-7300
Web - www.freese.com

CITY OF STEPHENVILLE
HARBIN DRIVE
CIVIL

STORM DRAIN SD-B2 PLAN AND PROFILE
STA. 13+00 TO END

NO.	ISSUES	BY	DATE	F&N JOB NO.	STE19752
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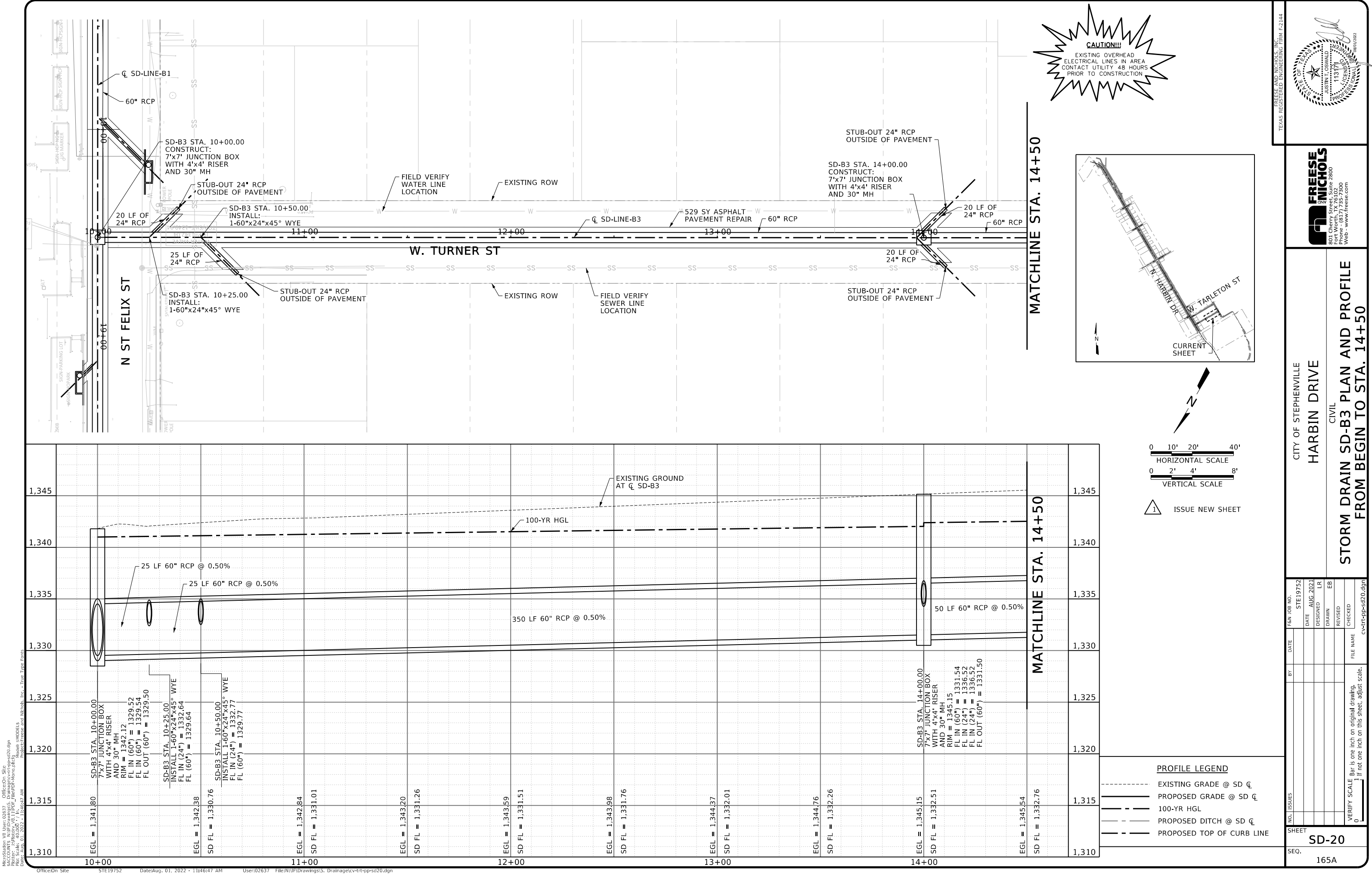
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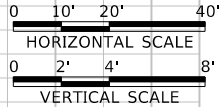
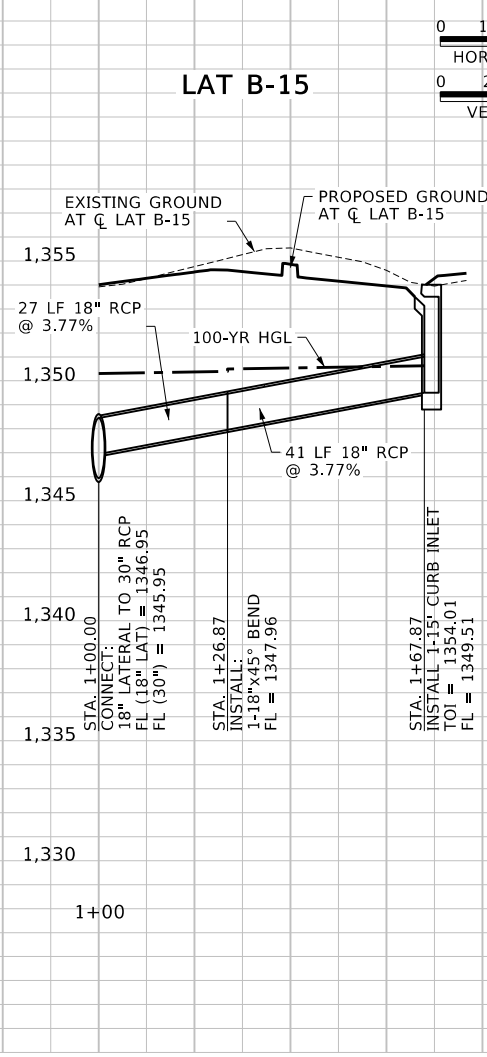
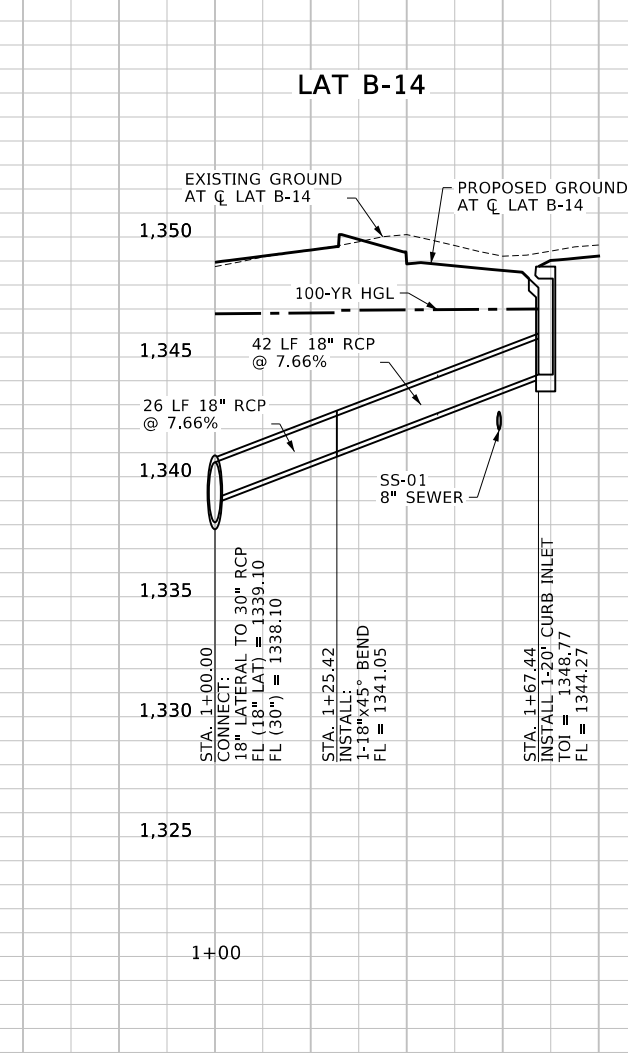
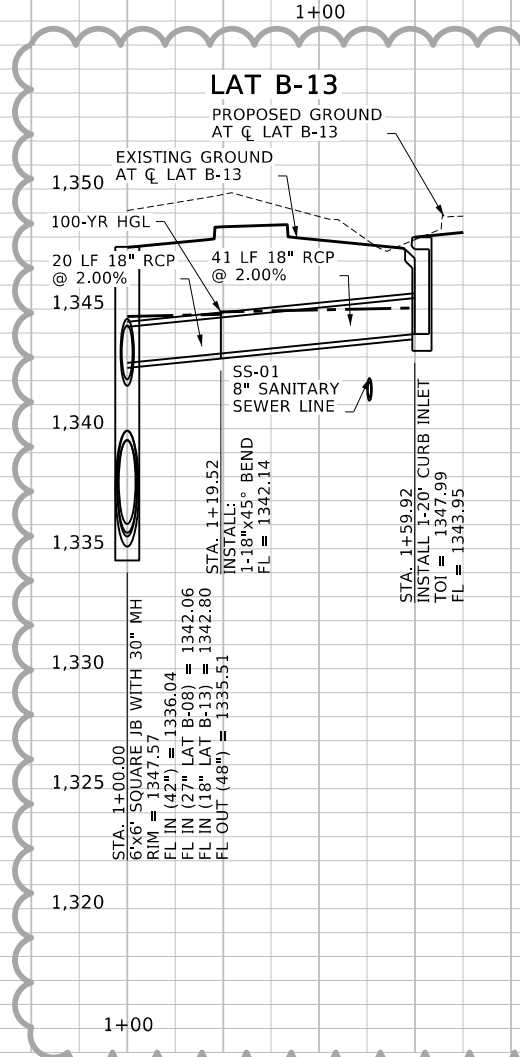
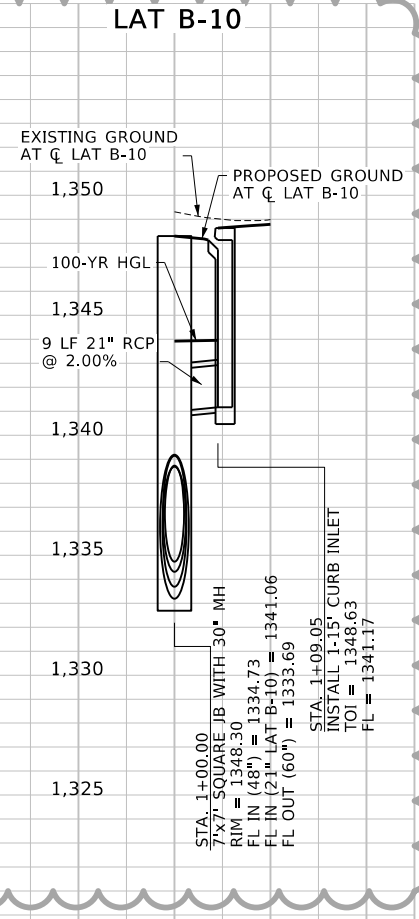
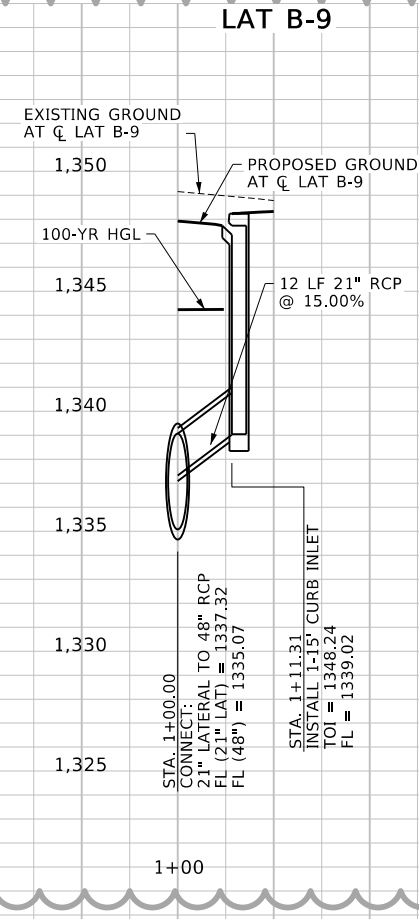
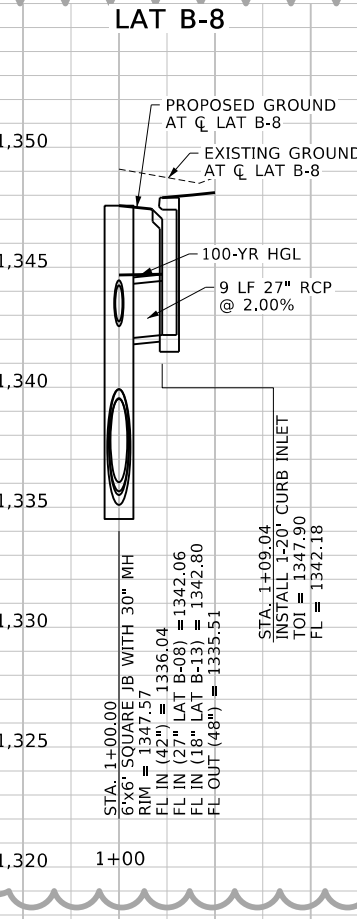
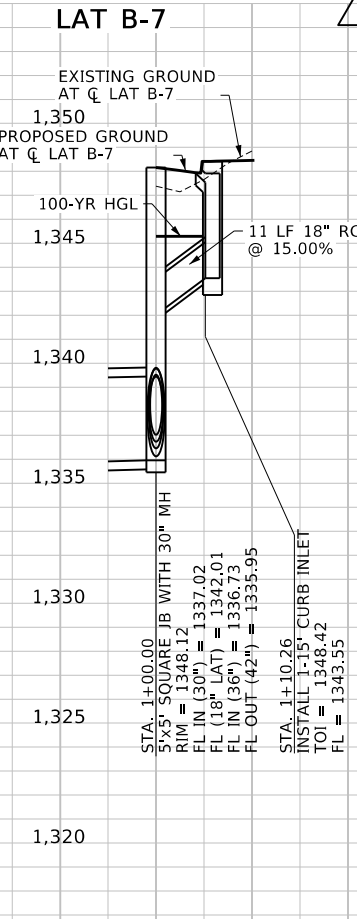
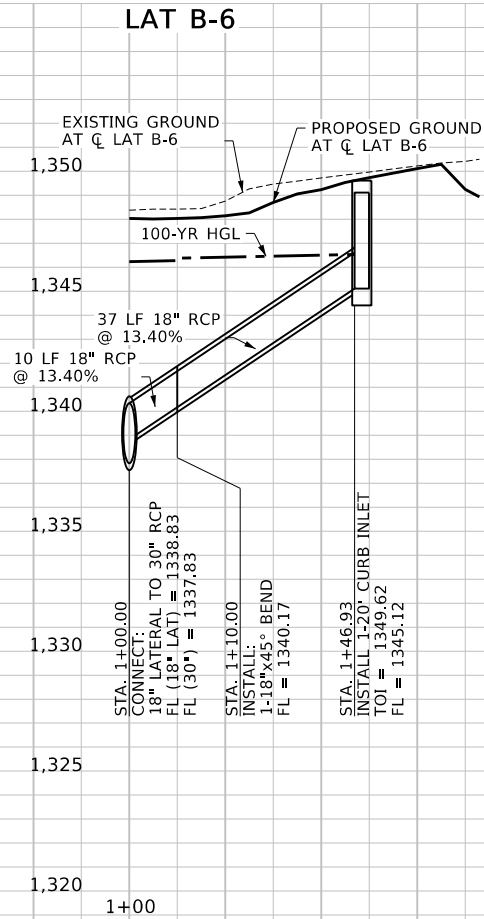
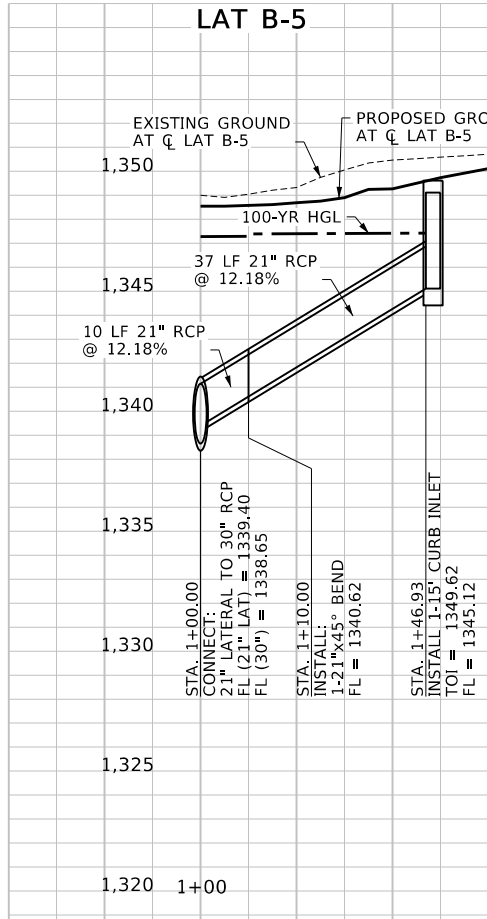
VERIFY SCALE

Bar is one inch on original drawings.
If not one inch on this sheet, adjust scale.

SD-19

165





FRESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F2144



CITY OF STEPHENVILLE
HARBIN DRIVE
CIVIL
STORM DRAIN LATERALS
B-5 THRU B-10 AND B-13 THRU B-15

NO.	ISSUES	BY	DATE	F&N JOB NO.	STE19752
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				CHECKED	
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0	Bar is one inch on original drawing.				
0	If not one inch on this sheet, adjust scale.				