GUTTER FLOW / INLET COMPUTATIONS: Composite Gutter / Inlet On-grade: 100-year storm

INLET ID	INLET LOCATION	D.A. No.	D.A. Area	C	Time to Inlet	Intensity	Q	CO	Q_T	n	S_L	S_X	a	W	S'_W	S_W	E_o	Se	y	T (100YR)	L_R	L	E	Qi	Q_T-Qi	Bypass Target:	Remarks
			acres		min	in/hr	cfs	cfs	cfs	constant	ft/ft	ft/ft	ft	ft	ft/ft	ft/ft		ft/ft	ft	ft	ft	ft		cfs	cfs		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	24	25	26	27	28	29	30
A-2	10+65.36, 10.5' LT	A-2	0.74	0.90	10	9.80	6.53	0.00	6.53	0.015	0.0220	0.021	0.3333	2.00	0.17	0.19	0.39	0.09	0.25	11.97	22.87	10	0.64	4.21	2.32	A-1	
A-1	2+31.69, 10.5' LT	A-1	0.64	0.90	10	9.80	5.64	2.32	7.96	0.015	0.0085	0.021	0.3333	2.00	0.17	0.19	0.31	0.07	0.32	15.41	20.59	20	1.00	7.95	0.01	-	
A-3	15+21.72	A-3	1.55	0.90	10	9.80	13.67	0.00	13.67	0.015	0.0260	0.021	0.3333	2.00	0.17	0.19	0.31	0.07	0.32	15.30	36.04	15	0.62	8.48	5.19	A-4	
A-4	12+56.18, 34.5' RT	A-4	0.78	0.90	10	9.80	6.88	5.19	12.07	0.015	0.0220	0.021	0.3333	2.00	0.17	0.19	0.32	0.07	0.31	15.07	32.34	15	0.67	8.14	3.93	A-5	
A-5	10+65.36, 34.5' RT	A-5	0.96	0.90	10	9.80	8.47	3.93	12.40	0.015	0.0220	0.021	0.3333	2.00	0.17	0.19	0.31	0.07	0.32	15.22	32.83	15	0.67	8.27	4.13	A-6	
A-6	7+28.69, 34.5' RT	A-6	0.98	0.90	10	9.80	8.64	4.13	12.78	0.015	0.0200	0.021	0.3333	2.00	0.17	0.19	0.31	0.07	0.33	15.67	32.68	10	0.48	6.16	6.62	A-7	
A-7	5+54.56, 34.5' RT	A-7	0.47	0.90	10	9.80	4.15	6.62	10.76	0.015	0.0200	0.021	0.3333	2.00	0.17	0.19	0.32	0.07	0.31	14.70	29.67	10	0.52	5.63	5.14	A-8	
A-8	2+31.69, 34.5' RT	A-8	0.25	0.90	10	9.80	2.21	5.14	7.34	0.015	0.0085	0.021	0.3333	2.00	0.17	0.19	0.32	0.07	0.31	14.95	19.67	20	1.00	7.34	0.00	-	
B-2	6+91.99, 10.5' LT	B-2	0.88	0.66	10	9.80	5.69	0.00	5.69	0.015	0.0050	0.021	0.3333	2.00	0.17	0.19	0.32	0.07	0.31	15.01	15.10	10	0.86	4.89	0.81	B-1	
B-12	3+54.30	B-12	0.71	0.90	10	9.80	6.26	0.00	6.26	0.015	0.0150	0.021	0.3333	2.00	0.17	0.19	0.37	0.08	0.26	12.66	20.47	20	1.00	6.26	0.01	B-11	
B-10	6+91.99, 34.5' RT	B-10	0.37	0.75	10	9.80	2.72	0.00	2.72	0.015	0.0050	0.021	0.3333	2.00	0.17	0.19	0.40	0.09	0.24	11.38	9.95	15	1.00	2.72	0.00	B-11	
B-5	21+14.12, 10.5' LT	B-5	1.00	0.85	10	9.80	8.33	0.00	8.33	0.015	0.0150	0.021	0.3333	2.00	0.17	0.19	0.34	0.08	0.29	14.09	24.05	10	0.62	5.16	3.17	B-4	
B-4	17+89.12, 10.5' LT	B-4	0.24	0.85	10	9.80	2.00	3.17	5.16	0.015	0.0050	0.021	0.3333	2.00	0.17	0.19	0.33	0.08	0.30	14.47	14.29	10	0.89	4.57	0.59	B-3	
B-6	24+23.87	B-6	0.95	0.59	10	9.80	5.49	0.00	5.49	0.015	0.0270	0.021	0.3333	2.00	0.17	0.19	0.42	0.09	0.22	10.79	21.73	15	0.88	4.83	0.67	B-7	
B-7	21+14.12, 34.5' RT	B-7	0.73	0.59	10	9.80	4.22	0.67	4.89	0.015	0.0150	0.021	0.3333	2.00	0.17	0.19	0.40	0.09	0.24	11.54	17.80	10	0.77	3.78	1.11	B-8	
B-8	17+89.12, 34.5' RT	B-8	0.91	0.55	10	9.80	4.90	1.11	6.01	0.015	0.0050	0.021	0.3333	2.00	0.17	0.19	0.31	0.07	0.32	15.32	15.57	10	0.84	5.07	0.94	B-9	

GUTTER FLOW / INLET COMPUTATIONS: Composite Inlet/In-Sag: 100-year storm

INLET ID	INLET LOCATION	D.A. No.	D.A. Area	C	Time to Inlet	Intensity	Q	CO	Q_T	n	S_L	S_X	a	W	S'_W	S_W	E_o	Se	y	Weir Check	T (100YR)	L_R	L	E	Qi	Q_T-Qi	Bypass Target:	Remarks
			acres		min	in/hr	cfs	cfs	cfs	constant	ft/ft	ft/ft	ft	ft	ft/ft	ft/ft		ft/ft	ft		ft	ft	ft		cfs	cfs		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	25	26	27	28	29	30	31
B-1	1+43.36, 10.5' LT	B-1	0.65	0.90	10	9.80	5.73	0.81	6.54	0.015	0.0050	0.021	0.33	2.00	0.17	0.19	0.36	0.08	0.28	**0.70**	13.16	------	15	1.00	6.54	0.00	sag	
B-11	1+43.36, 34.5' RT	B-11	1.36	0.90	10	9.80	12.00	0.01	12.00	0.015	0.0050	0.021	0.33	2.00	0.17	0.19	0.30	0.07	0.34	**0.70**	16.29	------	20	1.00	12.00	0.00	sag	
B-3	13+68.44, 10.5' LT	B-3	1.01	0.66	10	9.80	6.53	0.59	7.13	0.015	0.0050	0.021	0.33	2.00	0.17	0.19	0.34	0.08	0.29	**0.70**	13.94	------	15	1.00	7.13	0.00	sag	
B-9	13+68.44, 34.5' RT	B-9	0.48	0.77	10	9.80	3.62	0.94	4.57	0.015	0.0050	0.021	0.33	2.00	0.17	0.19	0.35	0.08	0.29	**0.70**	13.58	------	10	1.00	4.57	0.00	sag	
B-13	8+09.67, 26.5' LT	B-13	0.56	0.50	10	9.80	2.74	0.00	2.74	-	-	-	-	-	-	-	-	-	0.24	**0.70**	-	-	8	1.00	2.74	0.00	2' Drop Inlet	
B-14	10+88.87, 26.5' LT	B-14	0.58	0.50	10	9.80	2.84	0.00	2.84	-	-	-	-	-	-	-	-	-	0.24	**0.70**	-	-	8	1.00	2.84	0.00	2' Drop Inlet	
C-1	2+09.89	C-1	0.27	0.83	10	9.80	2.20	0.00	2.20	0.015	0.0050	0.021	0.33	2.00	0.17	0.19	0.52	0.11	0.17	**0.70**	8.33	------	10	1.00	2.20	0.00	sag	
C-2	1+88.70, 46.5' RT	C-2	1.35	0.56	10	9.80	7.41	0.00	7.41	0.015	0.0050	0.021	0.33	2.00	0.17	0.19	0.33	0.08	0.30	**0.70**	14.30	------	15	1.00	7.41	0.00	sag	
C-3	2+09.89, 8.27' LT	C-3	0.18	0.5	10	9.80	0.88	0.00	0.88	-	-	-	-	-	-	-	-	-	0.28	**0.70**	-	-	2	1.00	0.88	0.00	2' Drop Inlet	

LEGEND:

- Q - Discharge Calculated for D.A.
- CO - Carryover from upstream inlet
- Q_T - Actual Discharge = Q+CO
- n - Manning's roughness coefficient
- S_L - Longitudinal slope of roadway
- S_X - Cross-slope or Gutter Slope
- a - depth of depression
- W - Width of gutter conveying flow
- S'w - the cross slope of the gutter measured from the cross slope of the pavement
- Sw - the cross slope of gutter upstream of the inlet
- Eo - the ratio of flow in the depressed section to total gutter flow
- Se - the equivalent cross slope for depressed gutters
- y - Gutter depth of flow
- T - spread
- T_{allow} - Allowable spread based on design criteria
- Lr - Required inlet for 100% interception
- L - Actual inlet length
- E - the efficiency of the proposed inlet
- Q_i - Actual inlet interception
- Q_T-Q_i - by-pass flow

This Record Drawing is a combination of the sealed engineering contract drawings for this project, modified by information furnished by the contractor reflecting changes in the Project made during construction. The original sealed drawings are on file at the offices of
FREESE AND NICHOLS, INC.
4055 INTERNATIONAL PLAZA, SUITE 200
FORT WORTH, TEXAS 76109-4895
(817) 735-7300 RECORD DRAWINGS
PREPARED ON:
1/18/2013

THE SEAL THAT ORIGINALLY APPEARED ON THIS DOCUMENT WAS AUTHORIZED BY Kevin R. Johnson
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CITY OF ROCKWALL, TEXAS

AIRPORT ROAD RECONSTRUCTION

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HYDRAULIC CALCULATIONS

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DATE 05/15/12
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FILE NAME cv-trt-gn-stdcalcs01.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale. 0 1

SHEET DA-2

SEQ. 36 OF 79

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Date: Jan. 25, 2013 - 10:17:05 AM Project: Freese and Nichols, Inc.