DRAINAGE CALCULATIONS

PID 115792 – FRA-122-0.00

ALUM CREEK DRIVE WIDENING - S.R. 317 TO GROVEPORT ROAD

Stage 1 Submittal Package

Compiled: 04-16-2024

Prepared by:

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APPENDIX A – DITCH CALCULATIONS (CDSS)

DITCH ANALYSIS

PID : 115792 **Date :** 03/26/2024 **Project :** FRA-122.0.00 **Location :** ALUM CREEK DRIVE WIDENING - SR 317 TO GROVEPORT RD

Description : MED DITCH FROM STA 206+44 TO MEDIAN OPENING PIPE AT STA 210+60 **Designer :** N.M. GOODMAN

Rainfall Area : C

Allowable Shears

	Seed:	0.40	**Jute Mat:** 0.45	**Temporary Mat:**	1.00
Permanent Mat	**Type 1:**	3.00	**Type 2:** 4.00	**Type 3:**	5.00
RCP	**Type B:**	6.00			

(*) Warning: Grade is steeper than allowable. If value is parantheses, design parameters have been exceeded. - See user manual.

STATION BEGIN	STATION END	SIDE	LENGTH (ft.)	RADIUS WIDTH (ft.)	IN SLOPE (ft./ft.)	BACK SLOPE (ft./ft.)	GRADE (ft./ft.)	AREA (acres)	AREA SUM (acres)	RUNOFF COEFF.	CA (Sum)	PROTECT TYPE	RAIN INT. (in./hr.)	STORM FREQ. (yrs.)	MANN. COEFF.	TIME FLOW (min.)	VEL. FLOW (fps.)	SHEAR (lbs./ sq.ft.)	DESIGN FLOW (cfs.)	DEPTH FLOW (ft.)	WIDTH FLOW (ft.)
206+44	210+60	C	416.00	4.00	4.00	4.00	0.0048	0.52	0.52	0.90	0.47	Seed	3.32	5	0.030	20.44	1.21	0.08	1.55	0.26	6.04
												Seed	3.69	10	0.040	21.36	1.03	0.09	1.73	0.32	6.54

DITCH ANALYSIS

PID : 115792 **Date :** 03/26/2024 **Project :** FRA-122.0.00 **Location :** ALUM CREEK DRIVE WIDENING - SR 317 TO GROVEPORT RD

Description : MED DITCH FROM PIPE OUTLET 211+61 TO EX. CB2-2B STA 214+96 **Designer :** N.M. GOODMAN

Rainfall Area : C

Allowable Shears

	Seed:	0.40	**Jute Mat:** 0.45	**Temporary Mat:**	1.00
Permanent Mat	**Type 1:**	3.00	**Type 2:** 4.00	**Type 3:**	5.00
RCP	**Type B:**	6.00			

(*) Warning: Grade is steeper than allowable. If value is parantheses, design parameters have been exceeded. - See user manual.

STATION BEGIN	STATION END	SIDE	LENGTH (ft.)	RADIUS WIDTH (ft.)	IN SLOPE (ft./ft.)	BACK SLOPE (ft./ft.)	GRADE (ft./ft.)	AREA (acres)	AREA SUM (acres)	RUNOFF COEFF.	CA (Sum)	PROTECT TYPE	RAIN INT. (in./hr.)	STORM FREQ. (yrs.)	MANN. COEFF.	TIME FLOW (min.)	VEL. FLOW (fps.)	SHEAR (lbs./ sq.ft.)	DESIGN FLOW (cfs.)	DEPTH FLOW (ft.)	WIDTH FLOW (ft.)
211+61	Concent							0.52		0.90	0.47					21.55					
211+61	214+96	C	335.00	4.00	4.00	4.00	0.0025	0.42	0.94	0.90	0.85	Seed	2.88	5	0.030	26.40	1.11	0.06	2.43	0.39	7.14
												Seed	3.20	10	0.040	27.25	0.94	0.08	2.70	0.48	7.88

DITCH ANALYSIS

PID : 115792 **Date :** 03/26/2024 **Project :** FRA-122.0.00 **Location :** ALUM CREEK DRIVE WIDENING - SR 317 TO GROVEPORT RD

Description : MED DITCH FROM EX. CB2-2B STA 214+96 TO EX CB2-2B STA 219+92 **Designer :** N.M. GOODMAN

Rainfall Area : C

Allowable Shears

	Seed:	0.40	**Jute Mat:** 0.45	**Temporary Mat:**	1.00
Permanent Mat	**Type 1:**	3.00	**Type 2:** 4.00	**Type 3:**	5.00
RCP	**Type B:**	6.00			

(*) Warning: Grade is steeper than allowable. If value is parantheses, design parameters have been exceeded. - See user manual.

STATION BEGIN	STATION END	SIDE	LENGTH (ft.)	RADIUS WIDTH (ft.)	IN SLOPE (ft./ft.)	BACK SLOPE (ft./ft.)	GRADE (ft./ft.)	AREA (acres)	AREA SUM (acres)	RUNOFF COEFF.	CA (Sum)	PROTECT TYPE	RAIN INT. (in./hr.)	STORM FREQ. (yrs.)	MANN. COEFF.	TIME FLOW (min.)	VEL. FLOW (fps.)	SHEAR (lbs./ sq.ft.)	DESIGN FLOW (cfs.)	DEPTH FLOW (ft.)	WIDTH FLOW (ft.)
214+96	217+25	C	229.00	4.00	4.00	4.00	0.0013	0.28	0.28	0.90	0.25	Seed	3.29	5	0.030	20.69	0.64	0.02	0.83	0.26	6.06
												Seed	3.65	10	0.040	21.69	0.54	0.03	0.92	0.32	6.58
217+25	219+92	C	267.00	4.00	4.00	4.00	0.0027	0.33	0.61	0.90	0.55	Seed	2.97	5	0.030	24.95	1.01	0.05	1.63	0.31	6.47
												Seed	3.24	10	0.040	26.72	0.85	0.06	1.78	0.38	7.03

DITCH ANALYSIS

PID : 115792 **Date :** 03/26/2024 **Project :** FRA-122.0.00 **Location :** ALUM CREEK DRIVE WIDENING - SR 317 TO GROVEPORT RD

Description : MED DITCH FROM HP STA 224+77 TO EX CB2-2B STA 219+92 **Designer :** N.M. GOODMAN

Rainfall Area : C

Allowable Shears

		Seed:	0.40	**Jute Mat:**	0.45	**Temporary Mat:**	1.00
	Permanent Mat	**Type 1:**	3.00	**Type 2:**	4.00	**Type 3:**	5.00
	RCP	**Type B:**	6.00				

(*) Warning: Grade is steeper than allowable. If value is parantheses, design parameters have been exceeded. - See user manual.

STATION BEGIN	STATION END	SIDE	LENGTH (ft.)	RADIUS WIDTH (ft.)	IN SLOPE (ft./ft.)	BACK SLOPE (ft./ft.)	GRADE (ft./ft.)	AREA (acres)	AREA SUM (acres)	RUNOFF COEFF.	CA (Sum)	PROTECT TYPE	RAIN INT. (in./hr.)	STORM FREQ. (yrs.)	MANN. COEFF.	TIME FLOW (min.)	VEL. FLOW (fps.)	SHEAR (lbs./ sq.ft.)	DESIGN FLOW (cfs.)	DEPTH FLOW (ft.)	WIDTH FLOW (ft.)
224+77	224+00	C	77.00	4.00	4.00	4.00	0.0107	0.10	0.10	0.90	0.09	Seed	3.70	5	0.030	16.38	0.92	0.06	0.33	0.08	4.67
												Seed	4.22	10	0.040	16.57	0.80	0.07	0.38	0.11	4.86
224+00	219+92	C	408.00	4.00	4.00	4.00	0.0021	0.51	0.61	0.90	0.55	Seed	3.09	5	0.030	23.26	0.94	0.04	1.70	0.34	6.71
												Seed	3.40	10	0.040	24.62	0.79	0.05	1.87	0.42	7.33

DITCH ANALYSIS

PID : 115792 **Date :** 03/26/2024 **Project :** FRA-122.0.00 **Location :** ALUM CREEK DRIVE WIDENING - SR 317 TO GROVEPORT RD

Description : MED DITCH STA 231+10 TO CB2-2B AT STA 239+75 **Designer :** N.M. GOODMAN

Rainfall Area : C

Allowable Shears

	Seed:	0.40	**Jute Mat:** 0.45	**Temporary Mat:**	1.00
Permanent Mat	**Type 1:**	3.00	**Type 2:** 4.00	**Type 3:**	5.00
RCP	**Type B:**	6.00			

(*) Warning: Grade is steeper than allowable. If value is parantheses, design parameters have been exceeded. - See user manual.

STATION BEGIN	STATION END	SIDE	LENGTH (ft.)	RADIUS WIDTH (ft.)	IN SLOPE (ft./ft.)	BACK SLOPE (ft./ft.)	GRADE (ft./ft.)	AREA (acres)	AREA SUM (acres)	RUNOFF COEFF.	CA (Sum)	PROTECT TYPE	RAIN INT. (in./hr.)	STORM FREQ. (yrs.)	MANN. COEFF.	TIME FLOW (min.)	VEL. FLOW (fps.)	SHEAR (lbs./ sq.ft.)	DESIGN FLOW (cfs.)	DEPTH FLOW (ft.)	WIDTH FLOW (ft.)
231+10	239+75	C	865.00	4.00	4.00	4.00	0.0015	1.51	1.51	0.90	1.36	Seed	2.81	5	0.030	27.41	1.06	0.05	3.82	0.57	8.58
												Seed	3.03	10	0.040	29.67	0.88	0.06	4.12	0.69	9.52

DITCH ANALYSIS

PID : 115792 **Date :** 03/26/2024 **Project :** FRA-122.0.00 **Location :** ALUM CREEK DRIVE WIDENING - SR 317 TO GROVEPORT RD

Description : MED DITCH AT CB2-2B STA 239+75 TO HP AT 248+50 **Designer :** N.M. GOODMAN

Rainfall Area : C

Allowable Shears

	Seed:	0.40	**Jute Mat:** 0.45	**Temporary Mat:**	1.00
Permanent Mat	**Type 1:**	3.00	**Type 2:** 4.00	**Type 3:**	5.00
RCP	**Type B:**	6.00			

(*) Warning: Grade is steeper than allowable. If value is parantheses, design parameters have been exceeded. - See user manual.

STATION BEGIN	STATION END	SIDE	LENGTH (ft.)	RADIUS WIDTH (ft.)	IN SLOPE (ft./ft.)	BACK SLOPE (ft./ft.)	GRADE (ft./ft.)	AREA (acres)	AREA SUM (acres)	RUNOFF COEFF.	CA (Sum)	PROTECT TYPE	RAIN INT. (in./hr.)	STORM FREQ. (yrs.)	MANN. COEFF.	TIME FLOW (min.)	VEL. FLOW (fps.)	SHEAR (lbs./ sq.ft.)	DESIGN FLOW (cfs.)	DEPTH FLOW (ft.)	WIDTH FLOW (ft.)
248+50	244+00	C	450.00	4.00	4.00	4.00	0.0031	0.68	0.68	0.90	0.61	Seed	3.24	5	0.030	21.30	1.13	0.06	1.99	0.33	6.64
												Seed	3.59	10	0.040	22.38	0.96	0.08	2.20	0.41	7.27
244+00	239+75	C	425.00	4.00	4.00	4.00	0.0015	0.64	1.32	0.90	1.19	Seed	2.78	5	0.030	27.93	1.02	0.05	3.31	0.53	8.24
												Seed	2.99	10	0.040	30.32	0.85	0.06	3.57	0.64	9.12

DITCH ANALYSIS

PID : 115792 **Date :** 03/21/2024 **Project :** FRA-122.0.00 **Location :** ALUM CREEK DRIVE WIDENING - SR 317 TO GROVEPORT RD

Description : Part 1 - STA 237+75 to Pipe Invert at STA 231+36.44 **Designer :** N.M. GOODMAN

Rainfall Area : C

Allowable Shears

		Seed:	0.40	**Jute Mat:**	0.45	**Temporary Mat:**	1.00
	Permanent Mat	**Type 1:**	3.00	**Type 2:**	4.00	**Type 3:**	5.00
	RCP	**Type B:**	6.00				

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STATION BEGIN	STATION END	SIDE	LENGTH (ft.)	RADIUS WIDTH (ft.)	IN SLOPE (ft./ft.)	BACK SLOPE (ft./ft.)	GRADE (ft./ft.)	AREA (acres)	AREA SUM (acres)	RUNOFF COEFF.	CA (Sum)	PROTECT TYPE	RAIN INT. (in./hr.)	STORM FREQ. (yrs.)	MANN. COEFF.	TIME FLOW (min.)	VEL. FLOW (fps.)	SHEAR (lbs./ sq.ft.)	DESIGN FLOW (cfs.)	DEPTH FLOW (ft.)	WIDTH FLOW (ft.)
237+75	Concent							0.17		0.82	0.14					5.00					
237+75	236+00	R	175.00	4.00	3.00	2.00	0.0030	0.17	0.34	0.82	0.28	Seed	3.53	5	0.030	18.03	0.93	0.04	0.98	0.23	5.15
												Seed	3.98	10	0.040	18.51	0.80	0.05	1.11	0.29	5.46
236+00	234+50	R	150.00	4.00	3.00	2.00	0.0030	0.14	0.48	0.82	0.39	Seed	3.32	5	0.030	20.41	1.03	0.05	1.31	0.27	5.36
												Seed	3.69	10	0.040	21.30	0.88	0.06	1.45	0.34	5.71
234+50	233+00	R	150.00	4.00	3.00	2.00	0.0030	0.14	0.62	0.82	0.51	Seed	3.14	5	0.030	22.64	1.09	0.06	1.60	0.31	5.53
												Seed	3.46	10	0.040	23.92	0.93	0.07	1.76	0.38	5.90
233+00	231+36	R	164.00	4.00	3.00	2.00	0.0030	0.16	0.78	0.82	0.64	Seed	2.97	5	0.030	24.95	1.16	0.06	1.90	0.34	5.69
												Seed	3.24	10	0.040	26.64	0.98	0.08	2.07	0.42	6.09

DITCH ANALYSIS

PID : 115792 **Date :** 03/21/2024 **Project :** FRA-122.0.00 **Location :** ALUM CREEK DRIVE WIDENING - SR 317 TO GROVEPORT RD

Description : Part 1 - CB location STA. 239+86.27 from Ditch HP STA 244+50 **Designer :** N.M. GOODMAN

Rainfall Area : C

Allowable Shears

	Seed:	0.40	**Jute Mat:** 0.45	**Temporary Mat:**	1.00
Permanent Mat	**Type 1:**	3.00	**Type 2:** 4.00	**Type 3:**	5.00
RCP	**Type B:**	6.00			

(*) Warning: Grade is steeper than allowable. If value is parantheses, design parameters have been exceeded. - See user manual.

STATION BEGIN	STATION END	SIDE	LENGTH (ft.)	RADIUS WIDTH (ft.)	IN SLOPE (ft./ft.)	BACK SLOPE (ft./ft.)	GRADE (ft./ft.)	AREA (acres)	AREA SUM (acres)	RUNOFF COEFF.	CA (Sum)	PROTECT TYPE	RAIN INT. (in./hr.)	STORM FREQ. (yrs.)	MANN. COEFF.	TIME FLOW (min.)	VEL. FLOW (fps.)	SHEAR (lbs./ sq.ft.)	DESIGN FLOW (cfs.)	DEPTH FLOW (ft.)	WIDTH FLOW (ft.)
244+50	242+00	R	250.00	4.00	3.00	2.00	0.0033	0.24	0.24	0.82	0.20	Seed	3.37	5	0.030	19.77	0.84	0.04	0.66	0.18	4.89
												Seed	3.78	10	0.040	20.45	0.72	0.05	0.74	0.23	5.13
242+00	240+50	R	150.00	4.00	3.00	2.00	0.0033	0.14	0.38	0.82	0.31	Seed	3.16	5	0.030	22.30	0.97	0.05	0.99	0.23	5.13
												Seed	3.50	10	0.040	23.40	0.83	0.06	1.10	0.28	5.41
240+50	239+86	R	64.00	4.00	3.00	2.00	0.0033	0.10	0.48	0.82	0.40	Seed	3.09	5	0.030	23.32	1.03	0.05	1.22	0.26	5.28
												Seed	3.40	10	0.040	24.59	0.89	0.07	1.35	0.32	5.58

DITCH ANALYSIS

PID : 115792 **Date :** 03/21/2024 **Project :** FRA-122.0.00 **Location :** ALUM CREEK DRIVE WIDENING - SR 317 TO GROVEPORT RD

Description : Part 1 - Ditch HP STA 244+50 to Pipe Invert STA 248+18 RT **Designer :** N.M. GOODMAN

Rainfall Area : C

Allowable Shears

	Seed:	0.40	**Jute Mat:** 0.45	**Temporary Mat:**	1.00
Permanent Mat	**Type 1:**	3.00	**Type 2:** 4.00	**Type 3:**	5.00
RCP	**Type B:**	6.00			

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STATION BEGIN	STATION END	SIDE	LENGTH (ft.)	RADIUS WIDTH (ft.)	IN SLOPE (ft./ft.)	BACK SLOPE (ft./ft.)	GRADE (ft./ft.)	AREA (acres)	AREA SUM (acres)	RUNOFF COEFF.	CA (Sum)	PROTECT TYPE	RAIN INT. (in./hr.)	STORM FREQ. (yrs.)	MANN. COEFF.	TIME FLOW (min.)	VEL. FLOW (fps.)	SHEAR (lbs./ sq.ft.)	DESIGN FLOW (cfs.)	DEPTH FLOW (ft.)	WIDTH FLOW (ft.)
244+50	246+00	R	140.00	4.00	3.00	2.00	0.0038	0.14	0.14	0.82	0.11	Seed	3.53	5	0.030	18.08	0.73	0.03	0.40	0.13	4.64
												Seed	3.99	10	0.040	18.49	0.65	0.04	0.46	0.16	4.81
246+00	247+50	R	150.00	4.00	3.00	2.00	0.0038	0.20	0.34	0.85	0.28	Seed	3.31	5	0.030	20.54	0.99	0.05	0.94	0.21	5.05
												Seed	3.69	10	0.040	21.35	0.86	0.06	1.05	0.26	5.32
247+50	248+18	R	68.00	4.00	3.00	2.00	0.0038	0.12	0.46	0.85	0.39	Seed	3.22	5	0.030	21.56	1.09	0.06	1.25	0.25	5.24
												Seed	3.58	10	0.040	22.54	0.94	0.07	1.38	0.31	5.54

DITCH ANALYSIS

PID : 115792 **Date :** 03/26/2024 **Project :** Alum Creek Drive Widening **Location :** Alum Creek Drive South of I-270 and north of 317

Description :LT-DITCH FROM STA. 253+43 TO CB-2-2B AT STA. 256+53.66 **Designer :** N.M. GOODMAN

Rainfall Area : C

Allowable Shears

		Seed:	0.40	**Jute Mat:**	0.45	**Temporary Mat:**	1.00
	Permanent Mat	**Type 1:**	3.00	**Type 2:**	4.00	**Type 3:**	5.00
	RCP	**Type B:**	6.00				

(*) Warning: Grade is steeper than allowable. If value is parantheses, design parameters have been exceeded. - See user manual.

STATION BEGIN	STATION END	SIDE	LENGTH (ft.)	RADIUS WIDTH (ft.)	IN SLOPE (ft./ft.)	BACK SLOPE (ft./ft.)	GRADE (ft./ft.)	AREA (acres)	AREA SUM (acres)	RUNOFF COEFF.	CA (Sum)	PROTECT TYPE	RAIN INT. (in./hr.)	STORM FREQ. (yrs.)	MANN. COEFF.	TIME FLOW (min.)	VEL. FLOW (fps.)	SHEAR (lbs./ sq.ft.)	DESIGN FLOW (cfs.)	DEPTH FLOW (ft.)	WIDTH FLOW (ft.)
253+43	256+54	L	311.00	4.00	3.00	3.00	0.0031	0.92	0.92	0.68	0.63	Seed	3.43	5	0.030	19.17	1.20	0.07	2.14	0.35	6.12
												Seed	3.84	10	0.040	19.86	1.02	0.09	2.40	0.44	6.65

DITCH ANALYSIS

PID : 115792 **Date :** 03/26/2024 **Project :** Alum Creek Drive Widening **Location :** Alum Creek Drive South of I-270 and north of 317

Description :LT-DITCH FROM STA. 258+84 TO CB2-2B AT STA. 263+91 **Designer :** N.M. GOODMAN

Rainfall Area : C

Allowable Shears

		Seed:	0.40	**Jute Mat:**	0.45	**Temporary Mat:**	1.00
	Permanent Mat	**Type 1:**	3.00	**Type 2:**	4.00	**Type 3:**	5.00
	RCP	**Type B:**	6.00				

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STATION BEGIN	STATION END	SIDE	LENGTH (ft.)	RADIUS WIDTH (ft.)	IN SLOPE (ft./ft.)	BACK SLOPE (ft./ft.)	GRADE (ft./ft.)	AREA (acres)	AREA SUM (acres)	RUNOFF COEFF.	CA (Sum)	PROTECT TYPE	RAIN INT. (in./hr.)	STORM FREQ. (yrs.)	MANN. COEFF.	TIME FLOW (min.)	VEL. FLOW (fps.)	SHEAR (lbs./ sq.ft.)	DESIGN FLOW (cfs.)	DEPTH FLOW (ft.)	WIDTH FLOW (ft.)
258+84	263+91	L	514.00	4.00	3.00	3.00	0.0054	1.47	1.47	0.68	1.00	Seed	2.54	5	0.030	32.33	1.53	0.11	2.54	0.33	5.99
												Seed	2.82	10	0.040	33.25	1.30	0.14	2.82	0.41	6.48

DITCH ANALYSIS

PID : 115792 **Date :** 03/26/2024 **Project :** Alum Creek Drive Widening **Location :** Alum Creek Drive South of I-270 and north of 317

Description :LT - DITCH FROM HP STA. 270+63 TO CB2-2B AT STA. 263+91 **Designer :** N.M. GOODMAN

Rainfall Area : C

Allowable Shears

		Seed:	0.40	**Jute Mat:**	0.45	**Temporary Mat:**	1.00
	Permanent Mat	**Type 1:**	3.00	**Type 2:**	4.00	**Type 3:**	5.00
	RCP	**Type B:**	6.00				

(*) Warning: Grade is steeper than allowable. If value is parantheses, design parameters have been exceeded. - See user manual.

STATION BEGIN	STATION END	SIDE	LENGTH (ft.)	RADIUS WIDTH (ft.)	IN SLOPE (ft./ft.)	BACK SLOPE (ft./ft.)	GRADE (ft./ft.)	AREA (acres)	AREA SUM (acres)	RUNOFF COEFF.	CA (Sum)	PROTECT TYPE	RAIN INT. (in./hr.)	STORM FREQ. (yrs.)	MANN. COEFF.	TIME FLOW (min.)	VEL. FLOW (fps.)	SHEAR (lbs./ sq.ft.)	DESIGN FLOW (cfs.)	DEPTH FLOW (ft.)	WIDTH FLOW (ft.)
270+63	269+25	L	138.00	4.00	3.00	3.00	0.0243	0.30	0.30	0.55	0.17	Seed	3.06	5	0.030	23.65	1.43	0.13	0.51	0.08	4.50
												Seed	3.46	10	0.040	23.89	1.23	0.16	0.57	0.11	4.64
269+25	268+50	L	75.00	4.00	3.00	3.00	0.0040	0.13	0.43	0.62	0.25	Seed	2.97	5	0.030	25.01	0.91	0.04	0.73	0.18	5.06
												Seed	3.33	10	0.040	25.46	0.79	0.06	0.82	0.22	5.34
268+50	263+91	L	459.00	4.00	3.00	3.00	0.0051	0.61	1.04	0.68	0.66	Seed	2.63	5	0.030	30.55	1.32	0.09	1.74	0.27	5.64
												Seed	2.89	10	0.040	31.96	1.13	0.11	1.91	0.34	6.03

DITCH ANALYSIS

PID : 115792 **Date :** 03/26/2024 **Project :** Alum Creek Drive Widening **Location :** Alum Creek Drive South of I-270 and north of 317

Description : RT - DITCH FROM 251+50 (ROHR RD) TO CB2-2B AT STA 257+88, OUT TO MED. TRUNK **Designer :** N.M. GOODMAN

Rainfall Area : C

Allowable Shears

		Seed:	0.40	**Jute Mat:**	0.45	**Temporary Mat:**	1.00
	Permanent Mat	**Type 1:**	3.00	**Type 2:**	4.00	**Type 3:**	5.00
	RCP	**Type B:**	6.00				

(*) Warning: Grade is steeper than allowable. If value is parantheses, design parameters have been exceeded. - See user manual.

STATION BEGIN	STATION END	SIDE	LENGTH (ft.)	RADIUS WIDTH (ft.)	IN SLOPE (ft./ft.)	BACK SLOPE (ft./ft.)	GRADE (ft./ft.)	AREA (acres)	AREA SUM (acres)	RUNOFF COEFF.	CA (Sum)	PROTECT TYPE	RAIN INT. (in./hr.)	STORM FREQ. (yrs.)	MANN. COEFF.	TIME FLOW (min.)	VEL. FLOW (fps.)	SHEAR (lbs./ sq.ft.)	DESIGN FLOW (cfs.)	DEPTH FLOW (ft.)	WIDTH FLOW (ft.)
253+24	Concent							0.33		0.90	0.30					7.40					
253+24	257+88	R	464.00	4.00	3.00	3.00	0.0077	0.81	1.14	0.75	0.90	Seed	3.44	5	0.030	19.05	1.84	0.16	3.11	0.34	6.02
												Seed	3.85	10	0.040	19.73	1.57	0.20	3.48	0.42	6.53

DITCH ANALYSIS

PID : 115792 **Date :** 03/26/2024 **Project :** Alum Creek Drive Widening **Location :** Alum Creek Drive South of I-270 and north of 317

Description : RT - DITCH HP AT STA. 262+25 TO CB2-2B AT STA. 257+88, OUT TO MED. TRUNK. **Designer :** N.M. GOODMAN

Rainfall Area : C

Allowable Shears

		Seed:	0.40	**Jute Mat:**	0.45	**Temporary Mat:**	1.00
	Permanent Mat	**Type 1:**	3.00	**Type 2:**	4.00	**Type 3:**	5.00
	RCP	**Type B:**	6.00				

(*) Warning: Grade is steeper than allowable. If value is parantheses, design parameters have been exceeded. - See user manual.

STATION BEGIN	STATION END	SIDE	LENGTH (ft.)	RADIUS WIDTH (ft.)	IN SLOPE (ft./ft.)	BACK SLOPE (ft./ft.)	GRADE (ft./ft.)	AREA (acres)	AREA SUM (acres)	RUNOFF COEFF.	CA (Sum)	PROTECT TYPE	RAIN INT. (in./hr.)	STORM FREQ. (yrs.)	MANN. COEFF.	TIME FLOW (min.)	VEL. FLOW (fps.)	SHEAR (lbs./ sq.ft.)	DESIGN FLOW (cfs.)	DEPTH FLOW (ft.)	WIDTH FLOW (ft.)
262+25	258+50	R	375.00	4.00	3.00	3.00	0.0037	0.71	0.71	0.78	0.55	Seed	3.36	5	0.030	19.93	1.22	0.07	1.86	0.31	5.86
												Seed	3.75	10	0.040	20.72	1.04	0.09	2.08	0.39	6.33
258+50	257+88	R	62.00	4.00	3.00	3.00	0.0123	0.11	0.82	0.78	0.64	Seed	3.31	5	0.030	20.47	1.90	0.18	2.12	0.24	5.42
												Seed	3.69	10	0.040	21.35	1.62	0.23	2.36	0.30	5.78

DITCH ANALYSIS

PID : 115792 **Date :** 03/26/2024 **Project :** Alum Creek Drive Widening **Location :** Alum Creek Drive South of I-270 and north of 317

Description : RT - DITCH HP AT STA. 262+25 TO CB2-2B AT STA. 263+79 **Designer :** N.M. GOODMAN

Rainfall Area : C

Allowable Shears

		Seed:	0.40	**Jute Mat:**	0.45	**Temporary Mat:**	1.00
	Permanent Mat	**Type 1:**	3.00	**Type 2:**	4.00	**Type 3:**	5.00
	RCP	**Type B:**	6.00				

(*) Warning: Grade is steeper than allowable. If value is parantheses, design parameters have been exceeded. - See user manual.

STATION BEGIN	STATION END	SIDE	LENGTH (ft.)	RADIUS WIDTH (ft.)	IN SLOPE (ft./ft.)	BACK SLOPE (ft./ft.)	GRADE (ft./ft.)	AREA (acres)	AREA SUM (acres)	RUNOFF COEFF.	CA (Sum)	PROTECT TYPE	RAIN INT. (in./hr.)	STORM FREQ. (yrs.)	MANN. COEFF.	TIME FLOW (min.)	VEL. FLOW (fps.)	SHEAR (lbs./ sq.ft.)	DESIGN FLOW (cfs.)	DEPTH FLOW (ft.)	WIDTH FLOW (ft.)
262+25	263+79	R	154.00	4.00	3.00	3.00	0.0058	0.27	0.27	0.83	0.22	Seed	3.60	5	0.030	17.35	1.06	0.06	0.81	0.17	5.02
												Seed	4.08	10	0.040	17.73	0.92	0.08	0.91	0.21	5.29

DITCH ANALYSIS

PID : 115792 **Date :** 03/26/2024 **Project :** Alum Creek Drive Widening **Location :** Alum Creek Drive South of I-270 and north of 317

Description : RT - DITCH FROM HP AT STA. 265+25 TO CB2-2B AT STA. 263+78.85, OUT TO MED. TRUNK **Designer :** N.M. GOODMAN

Rainfall Area : C

Allowable Shears

		Seed:	0.40	**Jute Mat:**	0.45	**Temporary Mat:**	1.00
	Permanent Mat	**Type 1:**	3.00	**Type 2:**	4.00	**Type 3:**	5.00
	RCP	**Type B:**	6.00				

(*) Warning: Grade is steeper than allowable. If value is parantheses, design parameters have been exceeded. - See user manual.

STATION BEGIN	STATION END	SIDE	LENGTH (ft.)	RADIUS WIDTH (ft.)	IN SLOPE (ft./ft.)	BACK SLOPE (ft./ft.)	GRADE (ft./ft.)	AREA (acres)	AREA SUM (acres)	RUNOFF COEFF.	CA (Sum)	PROTECT TYPE	RAIN INT. (in./hr.)	STORM FREQ. (yrs.)	MANN. COEFF.	TIME FLOW (min.)	VEL. FLOW (fps.)	SHEAR (lbs./ sq.ft.)	DESIGN FLOW (cfs.)	DEPTH FLOW (ft.)	WIDTH FLOW (ft.)
265+25	263+79	R	146.00	4.00	3.00	3.00	0.0078	0.26	0.26	0.83	0.22	Seed	3.63	5	0.030	17.06	1.16	0.07	0.78	0.15	4.91
												Seed	4.12	10	0.040	17.36	1.00	0.09	0.89	0.19	5.16

DITCH ANALYSIS

PID : 115792 **Date :** 03/26/2024 **Project :** Alum Creek Drive Widening **Location :** Alum Creek Drive South of I-270 and north of 317

Description : RT - DITCH FROM HP STA. 265+25 TO CB2-2B AT STA. 266+50 **Designer :** N.M. GOODMAN

Rainfall Area : C

Allowable Shears

		Seed:	0.40	**Jute Mat:**	0.45	**Temporary Mat:**	1.00
	Permanent Mat	**Type 1:**	3.00	**Type 2:**	4.00	**Type 3:**	5.00
	RCP	**Type B:**	6.00				

(*) Warning: Grade is steeper than allowable. If value is parantheses, design parameters have been exceeded. - See user manual.

STATION BEGIN	STATION END	SIDE	LENGTH (ft.)	RADIUS WIDTH (ft.)	IN SLOPE (ft./ft.)	BACK SLOPE (ft./ft.)	GRADE (ft./ft.)	AREA (acres)	AREA SUM (acres)	RUNOFF COEFF.	CA (Sum)	PROTECT TYPE	RAIN INT. (in./hr.)	STORM FREQ. (yrs.)	MANN. COEFF.	TIME FLOW (min.)	VEL. FLOW (fps.)	SHEAR (lbs./ sq.ft.)	DESIGN FLOW (cfs.)	DEPTH FLOW (ft.)	WIDTH FLOW (ft.)
265+25	266+50	R	125.00	4.00	3.00	3.00	0.0107	0.24	0.24	0.76	0.18	Seed	3.67	5	0.030	16.68	1.21	0.08	0.67	0.13	4.76
												Seed	4.17	10	0.040	16.93	1.05	0.11	0.76	0.16	4.97

DITCH ANALYSIS

PID : 115792 **Date :** 03/26/2024 **Project :** Alum Creek Drive Widening **Location :** Alum Creek Drive South of I-270 and north of 317

Description : RT - DITCH FROM HP STA. 270+58 TO CB2-2B AT STA. 267+33.30 **Designer :** N.M. GOODMAN

Rainfall Area : C

Allowable Shears

		Seed:	0.40	**Jute Mat:**	0.45	**Temporary Mat:**	1.00
	Permanent Mat	**Type 1:**	3.00	**Type 2:**	4.00	**Type 3:**	5.00
	RCP	**Type B:**	6.00				

(*) Warning: Grade is steeper than allowable. If value is parantheses, design parameters have been exceeded. - See user manual.

STATION BEGIN	STATION END	SIDE	LENGTH (ft.)	RADIUS WIDTH (ft.)	IN SLOPE (ft./ft.)	BACK SLOPE (ft./ft.)	GRADE (ft./ft.)	AREA (acres)	AREA SUM (acres)	RUNOFF COEFF.	CA (Sum)	PROTECT TYPE	RAIN INT. (in./hr.)	STORM FREQ. (yrs.)	MANN. COEFF.	TIME FLOW (min.)	VEL. FLOW (fps.)	SHEAR (lbs./ sq.ft.)	DESIGN FLOW (cfs.)	DEPTH FLOW (ft.)	WIDTH FLOW (ft.)
270+58	267+33	R	337.00	4.00	3.00	3.00	0.0066	0.73	0.73	0.83	0.61	Seed	3.48	5	0.030	18.54	1.54	0.12	2.11	0.28	5.69
												Seed	3.92	10	0.040	19.10	1.32	0.15	2.37	0.36	6.14

DITCH ANALYSIS

PID : 115792 **Date :** 03/26/2024 **Project :** FRA-122.0.00 **Location :** ALUM CREEK DRIVE WIDENING - SR 317 TO GROVEPORT RD

Description : MED DITCH STA 257+31 TO CB2-2B AT STA 263+75 **Designer :** N.M. GOODMAN

Rainfall Area : C

Allowable Shears

	Seed:	0.40	**Jute Mat:** 0.45	**Temporary Mat:**	1.00
Permanent Mat	**Type 1:**	3.00	**Type 2:** 4.00	**Type 3:**	5.00
RCP	**Type B:**	6.00			

(*) Warning: Grade is steeper than allowable. If value is parantheses, design parameters have been exceeded. - See user manual.

STATION BEGIN	STATION END	SIDE	LENGTH (ft.)	RADIUS WIDTH (ft.)	IN SLOPE (ft./ft.)	BACK SLOPE (ft./ft.)	GRADE (ft./ft.)	AREA (acres)	AREA SUM (acres)	RUNOFF COEFF.	CA (Sum)	PROTECT TYPE	RAIN INT. (in./hr.)	STORM FREQ. (yrs.)	MANN. COEFF.	TIME FLOW (min.)	VEL. FLOW (fps.)	SHEAR (lbs./ sq.ft.)	DESIGN FLOW (cfs.)	DEPTH FLOW (ft.)	WIDTH FLOW (ft.)
257+31	259+50	C	219.00	4.00	4.00	4.00	0.0057	0.35	0.35	0.90	0.32	Seed	3.53	5	0.030	18.08	1.15	0.07	1.12	0.20	5.61
												Seed	3.98	10	0.040	18.56	0.98	0.09	1.26	0.26	6.04
259+50	263+75	C	425.00	4.00	4.00	4.00	0.0026	0.70	1.06	0.90	0.95	Seed	3.05	5	0.030	23.77	1.19	0.07	2.90	0.43	7.42
												Seed	3.34	10	0.040	25.31	1.00	0.08	3.17	0.52	8.18

DITCH ANALYSIS

PID : 115792 **Date :** 03/26/2024 **Project :** FRA-122.0.00 **Location :** ALUM CREEK DRIVE WIDENING - SR 317 TO GROVEPORT RD

Description : MED DITCH STA 264+85 TO CB2-2B AT STA 263+75 **Designer :** N.M. GOODMAN

Rainfall Area : C

Allowable Shears

	Seed:	0.40	**Jute Mat:** 0.45	**Temporary Mat:**	1.00
Permanent Mat	**Type 1:**	3.00	**Type 2:** 4.00	**Type 3:**	5.00
RCP	**Type B:**	6.00			

(*) Warning: Grade is steeper than allowable. If value is parantheses, design parameters have been exceeded. - See user manual.

STATION BEGIN	STATION END	SIDE	LENGTH (ft.)	RADIUS WIDTH (ft.)	IN SLOPE (ft./ft.)	BACK SLOPE (ft./ft.)	GRADE (ft./ft.)	AREA (acres)	AREA SUM (acres)	RUNOFF COEFF.	CA (Sum)	PROTECT TYPE	RAIN INT. (in./hr.)	STORM FREQ. (yrs.)	MANN. COEFF.	TIME FLOW (min.)	VEL. FLOW (fps.)	SHEAR (lbs./ sq.ft.)	DESIGN FLOW (cfs.)	DEPTH FLOW (ft.)	WIDTH FLOW (ft.)
264+85	263+75	C	110.00	4.00	4.00	4.00	0.0043	0.17	0.17	0.90	0.15	Seed	3.62	5	0.030	17.18	0.83	0.04	0.54	0.14	5.14
												Seed	4.10	10	0.040	17.53	0.70	0.05	0.61	0.18	5.46

DITCH ANALYSIS

PID : 115792 **Date :** 03/26/2024 **Project :** FRA-122.0.00 **Location :** ALUM CREEK DRIVE WIDENING - SR 317 TO GROVEPORT RD

Description : MED DITCH STA 264+85 TO CB2-2B AT STA 266+38 **Designer :** N.M. GOODMAN

Rainfall Area : C

Allowable Shears

	Seed:	0.40	**Jute Mat:** 0.45	**Temporary Mat:**	1.00
Permanent Mat	**Type 1:**	3.00	**Type 2:** 4.00	**Type 3:**	5.00
RCP	**Type B:**	6.00			

(*) Warning: Grade is steeper than allowable. If value is parantheses, design parameters have been exceeded. - See user manual.

STATION BEGIN	STATION END	SIDE	LENGTH (ft.)	RADIUS WIDTH (ft.)	IN SLOPE (ft./ft.)	BACK SLOPE (ft./ft.)	GRADE (ft./ft.)	AREA (acres)	AREA SUM (acres)	RUNOFF COEFF.	CA (Sum)	PROTECT TYPE	RAIN INT. (in./hr.)	STORM FREQ. (yrs.)	MANN. COEFF.	TIME FLOW (min.)	VEL. FLOW (fps.)	SHEAR (lbs./ sq.ft.)	DESIGN FLOW (cfs.)	DEPTH FLOW (ft.)	WIDTH FLOW (ft.)
264+85	266+38	C	153.00	4.00	4.00	4.00	0.0025	0.23	0.23	0.90	0.21	Seed	3.51	5	0.030	18.24	0.76	0.03	0.74	0.20	5.61
												Seed	3.96	10	0.040	18.77	0.66	0.04	0.83	0.25	6.02

DITCH ANALYSIS

PID : 115792 **Date :** 03/28/2024 **Project :** Alum Creek Drive Widening **Location :** Alum Creek Drive South of I-270 and north of 317

Description :LT - DITCH FROM HP AT STA 272+26.41 TO LOW POINT CB2-2B 273+93.26 **Designer :** N.M. GOODMAN

Rainfall Area : C

Allowable Shears

		Seed:	0.40	**Jute Mat:**	0.45	**Temporary Mat:**	1.00
	Permanent Mat	**Type 1:**	3.00	**Type 2:**	4.00	**Type 3:**	5.00
	RCP	**Type B:**	6.00				

(*) Warning: Grade is steeper than allowable. If value is parantheses, design parameters have been exceeded. - See user manual.

STATION BEGIN	STATION END	SIDE	LENGTH (ft.)	RADIUS WIDTH (ft.)	IN SLOPE (ft./ft.)	BACK SLOPE (ft./ft.)	GRADE (ft./ft.)	AREA (acres)	AREA SUM (acres)	RUNOFF COEFF.	CA (Sum)	PROTECT TYPE	RAIN INT. (in./hr.)	STORM FREQ. (yrs.)	MANN. COEFF.	TIME FLOW (min.)	VEL. FLOW (fps.)	SHEAR (lbs./ sq.ft.)	DESIGN FLOW (cfs.)	DEPTH FLOW (ft.)	WIDTH FLOW (ft.)
272+26	273+93	L	167.00	4.00	3.00	3.00	0.0124	0.24	0.24	0.67	0.16	Seed	3.61	5	0.030	17.27	1.20	0.09	0.57	0.11	4.66
												Seed	4.09	10	0.040	17.61	1.05	0.11	0.65	0.14	4.84

DITCH ANALYSIS

PID : 115792 **Date :** 03/28/2024 **Project :** Alum Creek Drive Widening **Location :** Alum Creek Drive South of I-270 and north of 317

Description : RT - DITCH FROM HP 272+00 TO LOW POINT CB2-2B AT STA. 273+92.95 **Designer :** N.M. GOODMAN

Rainfall Area : C

Allowable Shears

		Seed:	0.40	**Jute Mat:**	0.45	**Temporary Mat:**	1.00
	Permanent Mat	**Type 1:**	3.00	**Type 2:**	4.00	**Type 3:**	5.00
	RCP	**Type B:**	6.00				

(*) Warning: Grade is steeper than allowable. If value is parantheses, design parameters have been exceeded. - See user manual.

STATION BEGIN	STATION END	SIDE	LENGTH (ft.)	RADIUS WIDTH (ft.)	IN SLOPE (ft./ft.)	BACK SLOPE (ft./ft.)	GRADE (ft./ft.)	AREA (acres)	AREA SUM (acres)	RUNOFF COEFF.	CA (Sum)	PROTECT TYPE	RAIN INT. (in./hr.)	STORM FREQ. (yrs.)	MANN. COEFF.	TIME FLOW (min.)	VEL. FLOW (fps.)	SHEAR (lbs./ sq.ft.)	DESIGN FLOW (cfs.)	DEPTH FLOW (ft.)	WIDTH FLOW (ft.)
272+68	Concent							0.18		0.82	0.14					17.00					
272+68	273+92	R	124.00	4.00	3.00	3.00	0.0127	0.35	0.53	0.69	0.39	Seed	3.51	5	0.030	18.25	1.64	0.14	1.35	0.18	5.09
												Seed	3.99	10	0.040	18.43	1.42	0.18	1.54	0.23	5.39

DITCH ANALYSIS

PID : 115792 **Date :** 03/28/2024 **Project :** Alum Creek Drive Widening **Location :** Alum Creek Drive South of I-270 and north of 317

Description :LT - DITCH FROM UPSTREAM CB2-2B AT STA 280+36.48 TO LOW POINT CB2-2B 273+93.26 **Designer :** N.M. GOODMAN

Rainfall Area : C

Allowable Shears

		Seed:	0.40	**Jute Mat:**	0.45	**Temporary Mat:**	1.00
	Permanent Mat	**Type 1:**	3.00	**Type 2:**	4.00	**Type 3:**	5.00
	RCP	**Type B:**	6.00				

(*) Warning: Grade is steeper than allowable. If value is parantheses, design parameters have been exceeded. - See user manual.

STATION BEGIN	STATION END	SIDE	LENGTH (ft.)	RADIUS WIDTH (ft.)	IN SLOPE (ft./ft.)	BACK SLOPE (ft./ft.)	GRADE (ft./ft.)	AREA (acres)	AREA SUM (acres)	RUNOFF COEFF.	CA (Sum)	PROTECT TYPE	RAIN INT. (in./hr.)	STORM FREQ. (yrs.)	MANN. COEFF.	TIME FLOW (min.)	VEL. FLOW (fps.)	SHEAR (lbs./ sq.ft.)	DESIGN FLOW (cfs.)	DEPTH FLOW (ft.)	WIDTH FLOW (ft.)
280+36	273+93	L	643.00	4.00	3.00	3.00	0.0050	1.00	1.00	0.69	0.69	Seed	3.18	5	0.030	22.11	1.42	0.10	2.18	0.31	5.87
												Seed	3.51	10	0.040	23.28	1.20	0.12	2.41	0.39	6.33

DITCH ANALYSIS

PID : 115792 **Date :** 03/28/2024 **Project :** Alum Creek Drive Widening **Location :** Alum Creek Drive South of I-270 and north of 317

Description :LT - DITCH FROM HP 281+40 TO CB-2-2B AT STA 280+36.48 **Designer :** N.M. GOODMAN

Rainfall Area : C

Allowable Shears

		Seed:	0.40	**Jute Mat:**	0.45	**Temporary Mat:**	1.00
	Permanent Mat	**Type 1:**	3.00	**Type 2:**	4.00	**Type 3:**	5.00
	RCP	**Type B:**	6.00				

(*) Warning: Grade is steeper than allowable. If value is parantheses, design parameters have been exceeded. - See user manual.

STATION BEGIN	STATION END	SIDE	LENGTH (ft.)	RADIUS WIDTH (ft.)	IN SLOPE (ft./ft.)	BACK SLOPE (ft./ft.)	GRADE (ft./ft.)	AREA (acres)	AREA SUM (acres)	RUNOFF COEFF.	CA (Sum)	PROTECT TYPE	RAIN INT. (in./hr.)	STORM FREQ. (yrs.)	MANN. COEFF.	TIME FLOW (min.)	VEL. FLOW (fps.)	SHEAR (lbs./ sq.ft.)	DESIGN FLOW (cfs.)	DEPTH FLOW (ft.)	WIDTH FLOW (ft.)
281+09	Concent							0.05		0.75	0.04					6.50					
281+09	280+36	L	73.00	4.00	3.00	3.00	0.0050	0.11	0.16	0.68	0.11	Seed	3.68	5	0.030	16.51	0.81	0.04	0.42	0.12	4.71
												Seed	4.20	10	0.040	16.69	0.70	0.05	0.48	0.15	4.92

DITCH ANALYSIS

PID : 115792 **Date :** 03/28/2024 **Project :** Alum Creek Drive Widening **Location :** Alum Creek Drive South of I-270 and north of 317

Description :LT - DITCH FROM HP STA 281+40 TO CB2-2B AT STA 281+78. **Designer :** N.M. GOODMAN

Rainfall Area : C

Allowable Shears

		Seed:	0.40	**Jute Mat:**	0.45	**Temporary Mat:**	1.00
	Permanent Mat	**Type 1:**	3.00	**Type 2:**	4.00	**Type 3:**	5.00
	RCP	**Type B:**	6.00				

(*) Warning: Grade is steeper than allowable. If value is parantheses, design parameters have been exceeded. - See user manual.

STATION BEGIN	STATION END	SIDE	LENGTH (ft.)	RADIUS WIDTH (ft.)	IN SLOPE (ft./ft.)	BACK SLOPE (ft./ft.)	GRADE (ft./ft.)	AREA (acres)	AREA SUM (acres)	RUNOFF COEFF.	CA (Sum)	PROTECT TYPE	RAIN INT. (in./hr.)	STORM FREQ. (yrs.)	MANN. COEFF.	TIME FLOW (min.)	VEL. FLOW (fps.)	SHEAR (lbs./ sq.ft.)	DESIGN FLOW (cfs.)	DEPTH FLOW (ft.)	WIDTH FLOW (ft.)
281+60	Concent							0.07		0.72	0.05					17.15					
281+60	281+78	L	18.00	4.00	3.00	3.00	0.0124	0.07	0.14	0.67	0.10	Seed	3.59	5	0.030	17.45	0.99	0.06	0.35	0.08	4.50
												Seed	4.10	10	0.040	17.50	0.88	0.08	0.40	0.10	4.63

DITCH ANALYSIS

PID : 115792 **Date :** 03/28/2024 **Project :** Alum Creek Drive Widening **Location :** Alum Creek Drive South of I-270 and north of 317

Description :LT - DITCH FROM HP STA 283+00 TO CB2-2B AT STA 281+78. **Designer :** N.M. GOODMAN

Rainfall Area : C

Allowable Shears

		Seed:	0.40	**Jute Mat:**	0.45	**Temporary Mat:**	1.00
	Permanent Mat	**Type 1:**	3.00	**Type 2:**	4.00	**Type 3:**	5.00
	RCP	**Type B:**	6.00				

(*) Warning: Grade is steeper than allowable. If value is parantheses, design parameters have been exceeded. - See user manual.

STATION BEGIN	STATION END	SIDE	LENGTH (ft.)	RADIUS WIDTH (ft.)	IN SLOPE (ft./ft.)	BACK SLOPE (ft./ft.)	GRADE (ft./ft.)	AREA (acres)	AREA SUM (acres)	RUNOFF COEFF.	CA (Sum)	PROTECT TYPE	RAIN INT. (in./hr.)	STORM FREQ. (yrs.)	MANN. COEFF.	TIME FLOW (min.)	VEL. FLOW (fps.)	SHEAR (lbs./ sq.ft.)	DESIGN FLOW (cfs.)	DEPTH FLOW (ft.)	WIDTH FLOW (ft.)
283+00	Concent							0.12		0.58	0.07					17.15					
282+32	281+78	L	54.00	4.00	3.00	3.00	0.0050	0.17	0.29	0.68	0.18	Seed	3.52	5	0.030	18.11	0.93	0.05	0.65	0.16	4.93
												Seed	4.02	10	0.040	18.24	0.81	0.06	0.74	0.20	5.19

DITCH ANALYSIS

PID : 115792 **Date :** 04/04/2024 **Project :** FRA-122.0.00 **Location :** ALUM CREEK DRIVE WIDENING - SR 317 TO GROVEPORT RD

Description : MED DITCH STA 291+70 TO EX. CB STA 295+50 **Designer :** N.M. GOODMAN

Rainfall Area : C

Allowable Shears

	Seed:	0.40	**Jute Mat:** 0.45	**Temporary Mat:**	1.00
Permanent Mat	**Type 1:**	3.00	**Type 2:** 4.00	**Type 3:**	5.00
RCP	**Type B:**	6.00			

(*) Warning: Grade is steeper than allowable. If value is parantheses, design parameters have been exceeded. - See user manual.

STATION BEGIN	STATION END	SIDE	LENGTH (ft.)	RADIUS WIDTH (ft.)	IN SLOPE (ft./ft.)	BACK SLOPE (ft./ft.)	GRADE (ft./ft.)	AREA (acres)	AREA SUM (acres)	RUNOFF COEFF.	CA (Sum)	PROTECT TYPE	RAIN INT. (in./hr.)	STORM FREQ. (yrs.)	MANN. COEFF.	TIME FLOW (min.)	VEL. FLOW (fps.)	SHEAR (lbs./ sq.ft.)	DESIGN FLOW (cfs.)	DEPTH FLOW (ft.)	WIDTH FLOW (ft.)
291+70	295+50	C	380.00	4.00	4.00	4.00	0.0112	0.47	0.47	0.90	0.42	Seed	3.45	5	0.030	18.89	1.58	0.14	1.46	0.19	5.55
												Seed	3.88	10	0.040	19.49	1.35	0.17	1.64	0.24	5.96

DITCH ANALYSIS

PID : 115792 **Date :** 04/04/2024 **Project :** Alum Creek Drive Widening **Location :** Alum Creek Drive South of I-270 and north of 317

Description : RT - DITCH FROM 300+48 TO HP STA 305+00, SHEET FLOW SOUTH TO BIG WALNUT CREEK **Designer :** N.M. GOODMAN

Rainfall Area : C

Allowable Shears

		Seed:	0.40	**Jute Mat:**	0.45	**Temporary Mat:**	1.00
	Permanent Mat	**Type 1:**	3.00	**Type 2:**	4.00	**Type 3:**	5.00
	RCP	**Type B:**	6.00				

(*) Warning: Grade is steeper than allowable. If value is parantheses, design parameters have been exceeded. - See user manual.

STATION BEGIN	STATION END	SIDE	LENGTH (ft.)	RADIUS WIDTH (ft.)	IN SLOPE (ft./ft.)	BACK SLOPE (ft./ft.)	GRADE (ft./ft.)	AREA (acres)	AREA SUM (acres)	RUNOFF COEFF.	CA (Sum)	PROTECT TYPE	RAIN INT. (in./hr.)	STORM FREQ. (yrs.)	MANN. COEFF.	TIME FLOW (min.)	VEL. FLOW (fps.)	SHEAR (lbs./ sq.ft.)	DESIGN FLOW (cfs.)	DEPTH FLOW (ft.)	WIDTH FLOW (ft.)
305+00	301+25	R	375.00	4.00	2.00	2.00	0.0050	1.27	1.27	0.63	0.80	Seed	3.46	5	0.030	18.78	1.60	0.11	2.77	0.37	5.47
												Seed	3.89	10	0.040	19.39	1.37	0.14	3.11	0.46	5.85
301+25	300+48	R	77.00	4.00	2.00	2.00	0.0100	0.21	1.48	0.69	0.94	Seed	3.41	5	0.030	19.38	2.11	0.20	3.22	0.33	5.31
												Seed	3.81	10	0.040	20.09	1.81	0.26	3.60	0.41	5.65

DITCH ANALYSIS

PID : 115792 **Date :** 04/04/2024 **Project :** Alum Creek Drive Widening **Location :** Alum Creek Drive South of I-270 and north of 317

Description : RT - DITCH FROM HP 305+00 TO SHEET FLOW OUT, STA 310+54 **Designer :** N.M. GOODMAN

Rainfall Area : C

Allowable Shears

		Seed:	0.40	**Jute Mat:**	0.45	**Temporary Mat:**	1.00
	Permanent Mat	**Type 1:**	3.00	**Type 2:**	4.00	**Type 3:**	5.00
	RCP	**Type B:**	6.00				

(*) Warning: Grade is steeper than allowable. If value is parantheses, design parameters have been exceeded. - See user manual.

STATION BEGIN	STATION END	SIDE	LENGTH (ft.)	RADIUS WIDTH (ft.)	IN SLOPE (ft./ft.)	BACK SLOPE (ft./ft.)	GRADE (ft./ft.)	AREA (acres)	AREA SUM (acres)	RUNOFF COEFF.	CA (Sum)	PROTECT TYPE	RAIN INT. (in./hr.)	STORM FREQ. (yrs.)	MANN. COEFF.	TIME FLOW (min.)	VEL. FLOW (fps.)	SHEAR (lbs./ sq.ft.)	DESIGN FLOW (cfs.)	DEPTH FLOW (ft.)	WIDTH FLOW (ft.)
305+00	310+54	R	554.00	4.00	2.00	2.00	0.0035	1.41	1.41	0.62	0.88	Seed	2.75	5	0.030	28.50	1.35	0.08	2.41	0.37	5.50
												Seed	3.04	10	0.040	29.58	1.15	0.10	2.66	0.47	5.87

DITCH ANALYSIS

PID : 115792 **Date :** 04/04/2024 **Project :** Alum Creek Drive Widening **Location :** Alum Creek Drive South of I-270 and north of 317

Description :RT - DITCH FROM HP 323+00 TO SHEET FLOW OUT, STA 310+54 **Designer :** N.M. GOODMAN

Rainfall Area : C

Allowable Shears

	Seed:	0.40	**Jute Mat:** 0.45	**Temporary Mat:**	1.00
Permanent Mat	**Type 1:**	3.00	**Type 2:** 4.00	**Type 3:**	5.00
RCP	**Type B:**	6.00			

(*) Warning: Grade is steeper than allowable. If value is parantheses, design parameters have been exceeded. - See user manual.

STATION BEGIN	STATION END	SIDE	LENGTH (ft.)	RADIUS WIDTH (ft.)	IN SLOPE (ft./ft.)	BACK SLOPE (ft./ft.)	GRADE (ft./ft.)	AREA (acres)	AREA SUM (acres)	RUNOFF COEFF.	CA (Sum)	PROTECT TYPE	RAIN INT. (in./hr.)	STORM FREQ. (yrs.)	MANN. COEFF.	TIME FLOW (min.)	VEL. FLOW (fps.)	SHEAR (lbs./ sq.ft.)	DESIGN FLOW (cfs.)	DEPTH FLOW (ft.)	WIDTH FLOW (ft.)
323+00	319+50	R	350.00	4.00	3.00	2.00	0.0050	1.26	1.26	0.72	0.91	Seed	3.49	5	0.030	18.47	1.63	0.12	3.17	0.39	5.95
												Seed	3.93	10	0.040	19.03	1.39	0.15	3.56	0.49	6.45
319+50	319+00	R	50.00	4.00	3.00	2.00	0.0250	0.15	1.41	0.72	1.02	Seed	3.46	5	0.030	18.75	2.89	0.41	3.52	0.26	5.31
												Jute Mat	3.46	5	0.040	18.81	2.39	0.48	3.52	0.31	5.54
												Temp. Mat	3.46	5	0.040	18.81	2.39	0.48	3.52	0.31	5.54
												Temp. Mat	3.89	10	0.040	19.37	2.48	0.52	3.96	0.33	5.65
319+00	313+00	R	600.00	4.00	2.00	2.00	0.0030	1.10	2.51	0.72	1.81	Seed	3.00	5	0.030	24.56	1.66	0.12	5.43	0.62	6.49
												Seed	3.28	10	0.040	26.15	1.40	0.14	5.93	0.77	7.06
313+00	310+54	R	246.00	4.00	2.00	2.00	0.0239	0.65	3.17	0.72	2.28	Seed	2.92	5	0.030	25.69	3.60	0.58	6.66	0.39	5.55
												Jute Mat	2.91	5	0.040	25.93	2.96	0.68	6.62	0.46	5.82
												Temp. Mat	2.91	5	0.040	25.93	2.96	0.68	6.62	0.46	5.82
												Temp. Mat	3.18	10	0.040	27.48	3.05	0.71	7.25	0.48	5.92

DITCH ANALYSIS

PID : 115792 **Date :** 04/04/2024 **Project :** Alum Creek Drive Widening **Location :** Alum Creek Drive South of I-270 and north of 317

Description :LT - DITCH FROM HP AT STA 322+50 TO EX SHEET FLOW OUT STA 318+50 **Designer :** N.M. GOODMAN

Rainfall Area : C

Allowable Shears

	Seed:	0.40	**Jute Mat:** 0.45	**Temporary Mat:**	1.00
Permanent Mat	**Type 1:**	3.00	**Type 2:** 4.00	**Type 3:**	5.00
RCP	**Type B:**	6.00			

(*) Warning: Grade is steeper than allowable. If value is parantheses, design parameters have been exceeded. - See user manual.

STATION BEGIN	STATION END	SIDE	LENGTH (ft.)	RADIUS WIDTH (ft.)	IN SLOPE (ft./ft.)	BACK SLOPE (ft./ft.)	GRADE (ft./ft.)	AREA (acres)	AREA SUM (acres)	RUNOFF COEFF.	CA (Sum)	PROTECT TYPE	RAIN INT. (in./hr.)	STORM FREQ. (yrs.)	MANN. COEFF.	TIME FLOW (min.)	VEL. FLOW (fps.)	SHEAR (lbs./ sq.ft.)	DESIGN FLOW (cfs.)	DEPTH FLOW (ft.)	WIDTH FLOW (ft.)
322+50	321+50	L	100.00	4.00	4.00	2.00	0.0100	0.46	0.46	0.68	0.31	Seed	3.72	5	0.030	16.14	1.43	0.11	1.15	0.18	5.06
												Seed	4.25	10	0.040	16.32	1.25	0.14	1.32	0.23	5.35
321+50	318+50	L	300.00	4.00	2.00	2.00	0.0025	0.61	1.06	0.68	0.72	Seed	3.34	5	0.030	20.14	1.21	0.06	2.41	0.41	5.65
												Seed	3.72	10	0.040	20.97	1.03	0.08	2.69	0.52	6.07

DITCH ANALYSIS

PID : 115792 **Date :** 04/04/2024 **Project :** FRA-122.0.00 **Location :** ALUM CREEK DRIVE WIDENING - SR 317 TO GROVEPORT RD

Description : MED DITCH STA 300+50 TO EX. CB STA 311+38 **Designer :** N.M. GOODMAN

Rainfall Area : C

Allowable Shears

		Seed:	0.40	**Jute Mat:**	0.45	**Temporary Mat:**	1.00
	Permanent Mat	**Type 1:**	3.00	**Type 2:**	4.00	**Type 3:**	5.00
	RCP	**Type B:**	6.00				

(*) Warning: Grade is steeper than allowable. If value is parantheses, design parameters have been exceeded. - See user manual.

STATION BEGIN	STATION END	SIDE	LENGTH (ft.)	RADIUS WIDTH (ft.)	IN SLOPE (ft./ft.)	BACK SLOPE (ft./ft.)	GRADE (ft./ft.)	AREA (acres)	AREA SUM (acres)	RUNOFF COEFF.	CA (Sum)	PROTECT TYPE	RAIN INT. (in./hr.)	STORM FREQ. (yrs.)	MANN. COEFF.	TIME FLOW (min.)	VEL. FLOW (fps.)	SHEAR (lbs./ sq.ft.)	DESIGN FLOW (cfs.)	DEPTH FLOW (ft.)	WIDTH FLOW (ft.)
300+50	306+00	C	550.00	4.00	4.00	4.00	0.0065	0.68	0.68	0.90	0.61	Seed	3.27	5	0.030	20.96	1.46	0.11	2.00	0.27	6.16
												Seed	3.63	10	0.040	21.96	1.24	0.14	2.22	0.34	6.69
306+00	311+00	C	500.00	4.00	4.00	4.00	0.0038	0.65	1.33	0.90	1.20	Seed	2.87	5	0.030	26.56	1.43	0.10	3.43	0.42	7.37
												Seed	3.10	10	0.040	28.62	1.20	0.12	3.71	0.51	8.10
311+00	311+38	C	38.00	4.00	4.00	4.00	0.0159	0.06	1.39	0.90	1.25	Seed	2.85	5	0.030	26.82	2.38	0.29	3.56	0.29	6.32
												Seed	3.08	10	0.040	28.94	1.99	0.35	3.85	0.36	6.85

DITCH ANALYSIS

PID : 115792 **Date :** 04/04/2024 **Project :** FRA-122.0.00 **Location :** ALUM CREEK DRIVE WIDENING - SR 317 TO GROVEPORT RD

Description : MED DITCH STA 312+00 TO EX CB STA 322+46 **Designer :** N.M. GOODMAN

Rainfall Area : C

Allowable Shears

		Seed:	0.40	**Jute Mat:**	0.45	**Temporary Mat:**	1.00
	Permanent Mat	**Type 1:**	3.00	**Type 2:**	4.00	**Type 3:**	5.00
	RCP	**Type B:**	6.00				

(*) Warning: Grade is steeper than allowable. If value is parantheses, design parameters have been exceeded. - See user manual.

STATION BEGIN	STATION END	SIDE	LENGTH (ft.)	RADIUS WIDTH (ft.)	IN SLOPE (ft./ft.)	BACK SLOPE (ft./ft.)	GRADE (ft./ft.)	AREA (acres)	AREA SUM (acres)	RUNOFF COEFF.	CA (Sum)	PROTECT TYPE	RAIN INT. (in./hr.)	STORM FREQ. (yrs.)	MANN. COEFF.	TIME FLOW (min.)	VEL. FLOW (fps.)	SHEAR (lbs./ sq.ft.)	DESIGN FLOW (cfs.)	DEPTH FLOW (ft.)	WIDTH FLOW (ft.)
312+00	317+00	C	500.00	4.00	4.00	4.00	0.0030	0.74	0.74	0.90	0.67	Seed	3.19	5	0.030	21.92	1.14	0.06	2.13	0.35	6.77
												Seed	3.53	10	0.040	23.10	0.96	0.08	2.35	0.43	7.42
317+00	322+00	C	500.00	4.00	4.00	4.00	0.0032	0.74	1.48	0.90	1.33	Seed	2.79	5	0.030	27.72	1.38	0.09	3.72	0.46	7.70
												Seed	3.01	10	0.040	30.02	1.15	0.11	4.01	0.56	8.47
322+00	322+46	C	46.00	4.00	4.00	4.00	0.0126	0.06	1.54	0.90	1.39	Seed	2.77	5	0.030	28.06	2.24	0.25	3.84	0.32	6.59
												Seed	2.99	10	0.040	30.42	1.88	0.31	4.14	0.39	7.16

DITCH ANALYSIS

PID : 115792 **Date :** 04/04/2024 **Project :** FRA-122.0.00 **Location :** ALUM CREEK DRIVE WIDENING - SR 317 TO GROVEPORT RD

Description : MED DITCH STA 312+00 TO EX CB STA 322+46 **Designer :** N.M. GOODMAN

Rainfall Area : C

Allowable Shears

	Seed:	0.40	**Jute Mat:** 0.45	**Temporary Mat:**	1.00
Permanent Mat	**Type 1:**	3.00	**Type 2:** 4.00	**Type 3:**	5.00
RCP	**Type B:**	6.00			

(*) Warning: Grade is steeper than allowable. If value is parantheses, design parameters have been exceeded. - See user manual.

STATION BEGIN	STATION END	SIDE	LENGTH (ft.)	RADIUS WIDTH (ft.)	IN SLOPE (ft./ft.)	BACK SLOPE (ft./ft.)	GRADE (ft./ft.)	AREA (acres)	AREA SUM (acres)	RUNOFF COEFF.	CA (Sum)	PROTECT TYPE	RAIN INT. (in./hr.)	STORM FREQ. (yrs.)	MANN. COEFF.	TIME FLOW (min.)	VEL. FLOW (fps.)	SHEAR (lbs./ sq.ft.)	DESIGN FLOW (cfs.)	DEPTH FLOW (ft.)	WIDTH FLOW (ft.)
312+00	322+46	C	1046.0	4.00	4.00	4.00	0.0040	1.48	1.48	0.90	1.34	Seed	2.93	5	0.030	25.61	1.52	0.11	3.91	0.45	7.57
												Seed	3.18	10	0.040	27.52	1.26	0.14	4.24	0.54	8.35

DITCH ANALYSIS

PID : 115792 **Date :** 04/04/2024 **Project :** FRA-122.0.00 **Location :** ALUM CREEK DRIVE WIDENING - SR 317 TO GROVEPORT RD

Description : MED DITCH STA 323+27 TO EX CB STA 322+46 **Designer :** N.M. GOODMAN

Rainfall Area : C

Allowable Shears

	Seed:	0.40	**Jute Mat:** 0.45	**Temporary Mat:**	1.00
Permanent Mat	**Type 1:**	3.00	**Type 2:** 4.00	**Type 3:**	5.00
RCP	**Type B:**	6.00			

(*) Warning: Grade is steeper than allowable. If value is parantheses, design parameters have been exceeded. - See user manual.

STATION BEGIN	STATION END	SIDE	LENGTH (ft.)	RADIUS WIDTH (ft.)	IN SLOPE (ft./ft.)	BACK SLOPE (ft./ft.)	GRADE (ft./ft.)	AREA (acres)	AREA SUM (acres)	RUNOFF COEFF.	CA (Sum)	PROTECT TYPE	RAIN INT. (in./hr.)	STORM FREQ. (yrs.)	MANN. COEFF.	TIME FLOW (min.)	VEL. FLOW (fps.)	SHEAR (lbs./ sq.ft.)	DESIGN FLOW (cfs.)	DEPTH FLOW (ft.)	WIDTH FLOW (ft.)
323+27	322+46	C	81.00	4.00	4.00	4.00	0.0118	0.10	0.10	0.90	0.09	Seed	3.70	5	0.030	16.39	0.96	0.06	0.34	0.08	4.64
												Seed	4.22	10	0.040	16.59	0.83	0.08	0.38	0.10	4.84

DITCH ANALYSIS

PID : 115792 **Date :** 04/05/2024 **Project :** FRA-122.0.00 **Location :** ALUM CREEK DRIVE WIDENING - SR 317 TO GROVEPORT RD

Description : MED DITCH STA 336+88 TO EX CB STA 324+69 **Designer :** N.M. GOODMAN

Rainfall Area : C

Allowable Shears

	Seed:	0.40	**Jute Mat:** 0.45	**Temporary Mat:**	1.00
Permanent Mat	**Type 1:**	3.00	**Type 2:** 4.00	**Type 3:**	5.00
RCP	**Type B:**	6.00			

(*) Warning: Grade is steeper than allowable. If value is parantheses, design parameters have been exceeded. - See user manual.

STATION BEGIN	STATION END	SIDE	LENGTH (ft.)	RADIUS WIDTH (ft.)	IN SLOPE (ft./ft.)	BACK SLOPE (ft./ft.)	GRADE (ft./ft.)	AREA (acres)	AREA SUM (acres)	RUNOFF COEFF.	CA (Sum)	PROTECT TYPE	RAIN INT. (in./hr.)	STORM FREQ. (yrs.)	MANN. COEFF.	TIME FLOW (min.)	VEL. FLOW (fps.)	SHEAR (lbs./ sq.ft.)	DESIGN FLOW (cfs.)	DEPTH FLOW (ft.)	WIDTH FLOW (ft.)
336+88	Concent							0.10		0.72	0.07					15.00					
336+88	329+00	C	788.00	4.00	4.00	4.00	0.0065	0.98	1.08	0.72	0.78	Seed	3.11	5	0.030	22.95	1.55	0.12	2.42	0.30	6.41
												Seed	3.42	10	0.040	24.29	1.31	0.15	2.66	0.37	6.96
329+00	324+69	C	431.00	4.00	4.00	4.00	0.0038	0.53	1.61	0.72	1.16	Seed	2.78	5	0.030	27.90	1.40	0.10	3.22	0.41	7.27
												Seed	3.00	10	0.040	30.18	1.17	0.12	3.48	0.50	7.96

DITCH ANALYSIS

PID : 115792 **Date :** 04/05/2024 **Project :** Alum Creek Drive Widening **Location :** Alum Creek Drive South of I-270 and north of 317

Description : RT - DITCH FROM HP 331+00 FLOWING SOUTH TO OPEN-ENDED PIPE STA 325+05 **Designer :** N.M. GOODMAN

Rainfall Area : C

Allowable Shears

		Seed:	0.40	**Jute Mat:**	0.45	**Temporary Mat:**	1.00
	Permanent Mat	**Type 1:**	3.00	**Type 2:**	4.00	**Type 3:**	5.00
	RCP	**Type B:**	6.00				

(*) Warning: Grade is steeper than allowable. If value is parantheses, design parameters have been exceeded. - See user manual.

STATION BEGIN	STATION END	SIDE	LENGTH (ft.)	RADIUS WIDTH (ft.)	IN SLOPE (ft./ft.)	BACK SLOPE (ft./ft.)	GRADE (ft./ft.)	AREA (acres)	AREA SUM (acres)	RUNOFF COEFF.	CA (Sum)	PROTECT TYPE	RAIN INT. (in./hr.)	STORM FREQ. (yrs.)	MANN. COEFF.	TIME FLOW (min.)	VEL. FLOW (fps.)	SHEAR (lbs./ sq.ft.)	DESIGN FLOW (cfs.)	DEPTH FLOW (ft.)	WIDTH FLOW (ft.)
331+00	Concent							0.83		0.72	0.59					24.40					
331+00	325+05	R	595.00	4.00	4.00	4.00	0.0050	1.15	1.98	0.78	1.49	Seed	2.65	5	0.030	30.21	1.64	0.13	3.95	0.42	7.38
												Seed	2.94	10	0.040	31.27	1.38	0.16	4.38	0.52	8.17

APPENDIX B – SPREAD CALCULATIONS (CDSS)

INLET SPACING DESIGN

PID : 115792 **Date :** 03/18/2024 **Project :** FRA-122-0.00 **Location :** ALUM CREEK DRIVE - SR 317 TO GROVEPORT RD.

Description :SPREAD CALCS FROM S.R. 317 TO SPIEGEL DRIVE, LEFT-SIDE. **Designer :** N.M. GOODMAN

Rainfall Area: C **Storm Frequency (yr.) :** 10 **Total Allow. Spread (ft.) :** 14.00 * **Allowable Depth (ft.)** 0.42

	STATION	C.B. Type	GUTTER LENGTH (ft.)	RUNOFF COEF	AREA (acres)	CONC. TIME (min.)	GUTTER TIME (min.)	TIME USED (min.)	LONG. SLOPE (ft./ft.)	GUTT. SLOPE (ft./ft.)	PAVT. SLOPE (ft./ft.)	GUTT. WIDTH (ft.)	LOCAL DEPRESS. (ft.)	RAIN FALL (in./hrs.)	INTERCPTD FLOW (cfs.)	BYPASS FLOW (cfs.)	TOTAL FLOW (cfs.)	DEPTH FLOW (ft.)	PAVT. SPREAD (ft.)	
	200+50	Begin																		
1D2	203+50	CB-3A	300.00	0.90	0.63	10.00	3.85	13.85	0.0020	0.0833	0.0400	2.00	0.0000	4.60	1.80	0.81	2.61	0.424	8.43	
1D3	205+25	CB-3A	175.00	0.90	0.35	10.00	2.30	12.30	0.0020	0.0833	0.0400	2.00	0.0000	4.86	1.67	0.67	2.34	0.409	8.05	
1D4	207+00	CB-3A	175.00	0.83	0.55	10.00	2.19	12.19	0.0020	0.0833	0.0400	2.00	0.0000	4.88	1.93	0.96	2.89	0.438	8.79	
1D6	209+00	CB-3A	200.00	0.90	0.34	10.00	2.61	12.61	0.0020	0.0833	0.0400	2.00	0.0000	4.81	1.72	0.71	2.43	0.414	8.18	
1D7	211+50	CB-3A	250.00	0.90	0.39	10.00	3.28	13.28	0.0020	0.0833	0.0400	2.00	0.0000	4.69	1.68	0.68	2.36	0.410	8.09	
1D8	213+50	CB-3A	200.00	0.90	0.32	10.00	2.71	12.71	0.0020	0.0833	0.0400	2.00	0.0000	4.79	1.53	0.53	2.06	0.392	7.63	
1D9	214+96	CB-3A	146.00	0.90	0.23	10.00	2.10	12.10	0.0020	0.0833	0.0400	2.00	0.0000	4.89	1.24	0.30	1.54	0.357	6.75	
3D1	217+00	CB-3A	205.00	0.90	0.32	10.00	2.90	12.90	0.0020	0.0833	0.0400	2.00	0.0000	4.76	1.32	0.35	1.67	0.366	6.98	
3D2	219+90	CB-3	290.00	0.90	0.49	10.00	3.80	13.80	0.0020	0.0833	0.0400	2.00	0.0000	4.61	******	******	2.38	0.411	8.12	Sag
	226+25	Begin																		
5D2	224+86	CB-3A	140.00	0.90	0.33	10.00	1.16	11.16	0.0080	0.0833	0.0400	2.00	0.0000	5.06	1.28	0.22	1.50	0.282	4.88	
3D3	221+00	CB-3A	386.00	0.90	0.72	10.00	2.73	12.73	0.0080	0.0833	0.0400	2.00	0.0000	4.78	2.24	1.08	3.33	0.366	6.97	
3D2	219+90	CB-3	110.00	0.90	0.20	10.00	0.87	10.87	0.0080	0.0833	0.0400	2.00	0.0000	5.12	******	******	1.98	0.309	5.55	End

SUMP DATA

Total Flow (cfs) : 4.37 **Ponded Depth (ft.) :** 0.295 **Spread on Pavement (ft.) :** 8.12

* 8' PAVED SHDR AT 4.00% + 2' GUTTER + 4' TRAVELWAY ALLOWABLE.

INLET SPACING DESIGN

PID : 115792 **Date :** 02/28/2024 **Project :** FRA-122-0.00 **Location :** ALUM CREEK DRIVE - SR 317 TO GROVEPORT RD.

Description :SPREAD CALCS FROM S.R. 317 TO SPIEGEL DRIVE, RIGHT-SIDE. **Designer :** N.M. GOODMAN

Rainfall Area: C **Storm Frequency (yr.) :** 10 **Total Allow. Spread (ft.) :** 14.00* **Allowable Depth (ft.)** 0.42

	STATION	C.B. Type	GUTTER LENGTH (ft.)	RUNOFF COEF	AREA (acres)	CONC. TIME (min.)	GUTTER TIME (min.)	TIME USED (min.)	LONG. SLOPE (ft./ft.)	GUTT. SLOPE (ft./ft.)	PAVT. SLOPE (ft./ft.)	GUTT. WIDTH (ft.)	LOCAL DEPRESS. (ft.)	RAIN FALL (in./hrs.)	INTERCPTD FLOW (cfs.)	BYPASS FLOW (cfs.)	TOTAL FLOW (cfs.)	DEPTH FLOW (ft.)	PAVT. SPREAD (ft.)	
	200+50	Begin																		
2D1	201+80	CB-3	180.00	0.90	0.27	10.00	2.75	12.75	0.0020	0.0833	0.0400	2.00	0.0000	4.78	******	******	1.16	0.325	5.96	Sag
	202+30	Begin																		
2D1	201+80	CB-3	50.00	0.90	0.10	10.00	0.91	10.95	0.0020	0.0833	0.0400	2.00	0.0000	5.11	******	******	0.46	0.239	3.81	End
	202+30	Begin																		
2D2	205+25	CB-3A	295.00	0.83	0.68	10.00	2.87	12.87	0.0040	0.0833	0.0400	2.00	0.0000	4.76	1.87	0.81	2.69	0.382	7.38	
2D3	207+75	CB-3A	250.00	0.73	0.50	10.00	3.23	13.23	0.0020	0.0833	0.0400	2.00	0.0000	4.70	1.77	0.77	2.53	0.420	8.32	
2D4	210+00	CB-3A	225.00	0.68	0.56	10.00	2.74	12.74	0.0023	0.0833	0.0400	2.00	0.0000	4.78	1.80	0.79	2.59	0.413	8.16	
2D5	211+50	CB-3A	150.00	0.65	0.47	10.00	1.81	11.81	0.0025	0.0833	0.0400	2.00	0.0000	4.94	1.66	0.64	2.30	0.392	7.64	
2D6	213+50	CB-3A	200.00	0.68	0.51	10.00	2.42	12.42	0.0025	0.0833	0.0400	2.00	0.0000	4.84	1.67	0.65	2.32	0.393	7.66	
2D7	214+96	CB-3	146.00	0.70	0.36	10.00	1.84	11.84	0.0025	0.0833	0.0400	2.00	0.0000	4.94	1.73	0.17	1.90	0.368	7.03	
4D1	217+50	CB-3	254.00	0.68	0.68	10.00	3.34	13.34	0.0020	0.0833	0.0400	2.00	0.0000	4.68	******	******	2.33	0.409	8.05	Sag
	226+25	Begin																		
6D1	224+00	CB-3A	225.00	0.68	0.76	10.00	2.93	12.93	0.0020	0.0833	0.0400	2.00	0.0000	4.75	1.73	0.73	2.46	0.415	8.22	
4D3	222+00	CB-3A	200.00	0.68	0.38	10.00	2.73	12.73	0.0020	0.0833	0.0400	2.00	0.0000	4.78	1.48	0.48	1.96	0.386	7.49	
4D2	219+90	CB-3A	210.00	0.68	0.38	10.00	2.96	12.96	0.0020	0.0833	0.0400	2.00	0.0000	4.75	1.34	0.37	1.71	0.369	7.06	

* 8' PAVED SHDR AT 4.00% + 2' GUTTER + 4' TRAVELWAY ALLOWABLE.

INLET SPACING DESIGN

	STATION	C.B. Type	GUTTER LENGTH (ft.)	RUNOFF COEF	RUNOFF AREA (acres)	CONC. TIME (min.)	GUTTER TIME (min.)	TIME USED (min.)	LONG. SLOPE (ft./ft.)	GUTT. SLOPE (ft./ft.)	PAVT. SLOPE (ft./ft.)	GUTT. WIDTH (ft.)	LOCAL DEPRESS. (ft.)	RAIN FALL (in./hrs.)	INTERCPTD FLOW (cfs.)	BYPASS FLOW (cfs.)	TOTAL FLOW (cfs.)	DEPTH FLOW (ft.)	PAVT. SPREAD (ft.)	
4D1	217+50	CB-3	240.00	0.68	0.60	10.00	3.17	13.17	0.0020	0.0833	0.0400	2.00	0.0000	4.71	******	******	2.29	0.406	7.99	End

SUMP DATA

Total Flow (cfs) : 4.63 **Ponded Depth (ft.) :** 0.308 **Spread on Pavement (ft.) :** 8.44

INLET SPACING DESIGN

PID : 115792 **Date :** 03/19/2024 **Project :** FRA-122-0.00 **Location :** ALUM CREEK DRIVE - SPIEGEL TO ROHR

Description :SPREAD CALCS FROM SPIEGEL DRIVE TO ROHR ROAD, LEFT-SIDE. **Designer :** N.M. GOODMAN

Rainfall Area: C **Storm Frequency (yr.) :** 10 **Total Allow. Spread (ft.) :** 14.00 **Allowable Depth (ft.)** 0.42

	STATION	C.B. Type	GUTTER LENGTH (ft.)	RUNOFF COEF	AREA (acres)	CONC. TIME (min.)	GUTTER TIME (min.)	TIME USED (min.)	LONG. SLOPE (ft./ft.)	GUTT. SLOPE (ft./ft.)	PAVT. SLOPE (ft./ft.)	GUTT. WIDTH (ft.)	LOCAL DEPRESS. (ft.)	RAIN FALL (in./hrs.)	INTERCPTD FLOW (cfs.)	BYPASS FLOW (cfs.)	TOTAL FLOW (cfs.)	DEPTH FLOW (ft.)	PAVT. SPREAD (ft.)	
	247+50	Begin																		
9D10	246+00	CB-3A	150.00	0.90	0.21	10.00	3.49	13.49	0.0008	0.0833	0.0400	2.00	0.0000	4.66	0.81	0.07	0.88	0.345	6.46	
9D8	244+50	CB-3A	150.00	0.90	0.22	10.00	3.40	13.40	0.0008	0.0833	0.0400	2.00	0.0000	4.68	0.89	0.10	1.00	0.359	6.81	
9D6	242+00	CB-3A	250.00	0.90	0.36	10.00	5.16	15.16	0.0008	0.0833	0.0400	2.00	0.0000	4.41	1.24	0.29	1.53	0.413	8.16	
9D3	239+85	CB-3A	215.00	0.90	0.31	10.00	4.43	14.43	0.0008	0.0833	0.0400	2.00	0.0000	4.52	1.25	0.30	1.55	0.415	8.21	
9D2	238+00	CB-3A	185.00	0.85	0.33	10.00	3.79	13.79	0.0008	0.0833	0.0400	2.00	0.0000	4.61	1.28	0.31	1.59	0.419	8.30	
9D1	237+00	CB-3A	100.00	0.83	0.19	10.00	2.23	12.23	0.0008	0.0833	0.0400	2.00	0.0000	4.87	0.96	0.13	1.08	0.369	7.06	
7D6	235+50	CB-3A	150.00	0.79	0.33	10.00	3.18	13.18	0.0008	0.0833	0.0400	2.00	0.0000	4.71	1.13	0.22	1.35	0.397	7.76	
7D5	233+75	CB-3A	175.00	0.79	0.38	10.00	3.57	13.57	0.0008	0.0833	0.0400	2.00	0.0000	4.65	1.29	0.32	1.62	0.421	8.35	
7D4	232+50	CB-3A	125.00	0.79	0.28	10.00	2.64	12.64	0.0008	0.0833	0.0400	2.00	0.0000	4.80	1.15	0.23	1.39	0.400	7.84	
7D3	231+00	CB-3	150.00	0.79	0.37	10.00	3.06	13.06	0.0008	0.0833	0.0400	2.00	0.0000	4.73	1.56	0.06	1.62	0.421	8.35	
7D2	229+89	CB-3	111.00	0.83	0.33	10.00	2.34	12.34	0.0008	0.0833	0.0400	2.00	0.0000	4.85	1.36	0.03	1.39	0.400	7.84	
7D1	228+50	CB-3	139.00	0.78	0.40	10.00	2.88	12.88	0.0008	0.0833	0.0400	2.00	0.0000	4.76	******	******	1.51	0.412	8.13	End
	247+50	Begin																		
11D1	249+89	CB-3	239.00	0.90	0.16	10.00	2.83	12.83	0.0048	0.0833	0.0400	2.00	0.0000	4.77	******	******	0.69	0.236	3.72	Sag
	252+35	Begin																		

INLET SPACING DESIGN

	STATION	C.B. Type	GUTTER LENGTH (ft.)	RUNOFF COEF	RUNOFF AREA (acres)	CONC. TIME (min.)	GUTTER TIME (min.)	TIME USED (min.)	LONG. SLOPE (ft./ft.)	GUTT. SLOPE (ft./ft.)	PAVT. SLOPE (ft./ft.)	GUTT. WIDTH (ft.)	LOCAL DEPRESS. (ft.)	RAIN FALL (in./hrs.)	INTERCPTD FLOW (cfs.)	BYPASS FLOW (cfs.)	TOTAL FLOW (cfs.)	DEPTH FLOW (ft.)	PAVT. SPREAD (ft.)	
11D1	249+89	CB-3	246.00	0.90	0.36	10.00	5.16	15.16	0.0008	0.0833	0.0400	2.00	0.0000	4.41	******	******	1.43	0.404	7.94	End

SUMP DATA

Total Flow (cfs) : 2.12 **Ponded Depth (ft.) :** 0.169 **Spread on Pavement (ft.) :** 4.97

INLET SPACING DESIGN

PID : 115792 **Date :** 03/21/2024 **Project :** FRA-122-0.00 **Location :** ALUM CREEK DRIVE - SPIEGEL TO ROHR

Description :SPREAD CALCS FROM SPIEGEL DRIVE TO ROHR ROAD, RIGHT-SIDE. **Designer :** N.M. GOODMAN

Rainfall Area: C **Storm Frequency (yr.) :** 10 **Total Allow. Spread (ft.) :** 14.00 **Allowable Depth (ft.)** 0.42

	STATION	C.B. Type	GUTTER LENGTH (ft.)	RUNOFF COEF	AREA (acres)	CONC. TIME (min.)	GUTTER TIME (min.)	TIME USED (min.)	LONG. SLOPE (ft./ft.)	GUTT. SLOPE (ft./ft.)	PAVT. SLOPE (ft./ft.)	GUTT. WIDTH (ft.)	LOCAL DEPRESS. (ft.)	RAIN FALL (in./hrs.)	INTERCPTD FLOW (cfs.)	BYPASS FLOW (cfs.)	TOTAL FLOW (cfs.)	DEPTH FLOW (ft.)	PAVT. SPREAD (ft.)	
	231+10	Begin																		
8D4	229+89	CB-3	121.00	0.90	0.11	10.00	3.20	13.20	0.0008	0.0833	0.0400	2.00	0.0000	4.71	0.47	0.00	0.47	0.279	4.81	
8D2	228+50	CB-3	139.00	0.90	0.14	10.00	3.51	13.51	0.0008	0.0833	0.0400	2.00	0.0000	4.66	0.59	0.00	0.59	0.302	5.39	
8D1	227+50	CB-3	100.00	0.90	0.15	10.00	2.47	12.47	0.0008	0.0833	0.0400	2.00	0.0000	4.83	******	******	0.65	0.313	5.65	Sag
	226+79	Begin																		
8D1	227+50	CB-3	80.00	0.90	0.12	10.00	2.06	12.06	0.0008	0.0833	0.0400	2.00	0.0000	4.90	******	******	0.53	0.291	5.12	End

SUMP DATA

Total Flow (cfs) : 1.18 **Ponded Depth (ft.) :** 0.102 **Spread on Pavement (ft.) :** 3.31

INLET SPACING DESIGN

PID : 115792 **Date :** 03/28/2024 **Project :** FRA-122-0.00 **Location :** ALUM CREEK DRIVE - SPIEGEL TO ROHR

Description : SPREAD CALCS FROM GLOBAL TO TOY, RIGHT-SIDE **Designer :** N.M. GOODMAN

Rainfall Area: C **Storm Frequency (yr.) :** 10 **Total Allow. Spread (ft.) :** 14.00 * **Allowable Depth (ft.)** 0.42

STATION	C.B. Type	GUTTER LENGTH (ft.)	RUNOFF COEF	AREA (acres)	CONC. TIME (min.)	GUTTER TIME (min.)	TIME USED (min.)	LONG. SLOPE (ft./ft.)	GUTT. SLOPE (ft./ft.)	PAVT. SLOPE (ft./ft.)	GUTT. WIDTH (ft.)	LOCAL DEPRESS. (ft.)	RAIN FALL (in./hrs.)	INTERCPTD FLOW (cfs.)	BYPASS FLOW (cfs.)	TOTAL FLOW (cfs.)	DEPTH FLOW (ft.)	PAVT. SPREAD (ft.)	
283+20	Begin																		
281+00	CB-3A	220.00	0.82	0.53	15.00	4.07	19.07	0.0010	0.0833	0.0400	2.00	0.0000	3.92	1.34	0.37	1.70	0.413	8.15	
279+75	CB-3A	125.00	0.90	0.27	15.00	2.42	17.42	0.0010	0.0833	0.0400	2.00	0.0000	4.11	1.14	0.23	1.37	0.384	7.44	
278+75	CB-3A	100.00	0.82	0.22	15.00	2.08	17.08	0.0010	0.0833	0.0400	2.00	0.0000	4.16	0.88	0.10	0.98	0.344	6.44	
277+00	CB-3A	175.00	0.82	0.38	15.00	3.41	18.41	0.0010	0.0833	0.0400	2.00	0.0000	4.00	1.12	0.22	1.34	0.382	7.38	
275+36	CB-3	164.00	0.82	0.46	15.00	3.02	18.02	0.0010	0.0833	0.0400	2.00	0.0000	4.04	******	******	1.73	0.415	8.21	End

* 8' PAVED SHDR AT 4.00% + 2' GUTTER + 4' TRAVELWAY ALLOWABLE.

INLET SPACING DESIGN

PID : 115792 **Date :** 03/29/2024 **Project :** FRA-122-0.00 **Location :** Alum Creek Drive Widening - SR 317 to Groveport RD

Description : SPREAD CALCS FROM TOY TO BIXBY, LT SIDE **Designer :** N.M. GOODMAN

Rainfall Area: C **Storm Frequency (yr.) :** 10 **Total Allow. Spread (ft.) :** 14.00 * **Allowable Depth (ft.)** 0.42

STATION	C.B. Type	GUTTER LENGTH (ft.)	RUNOFF COEF	AREA (acres)	CONC. TIME (min.)	GUTTER TIME (min.)	TIME USED (min.)	LONG. SLOPE (ft./ft.)	GUTT. SLOPE (ft./ft.)	PAVT. SLOPE (ft./ft.)	GUTT. WIDTH (ft.)	LOCAL DEPRESS. (ft.)	RAIN FALL (in./hrs.)	INTERCPTD FLOW (cfs.)	BYPASS FLOW (cfs.)	TOTAL FLOW (cfs.)	DEPTH FLOW (ft.)	PAVT. SPREAD (ft.)	
290+50	Begin																		
288+00	CB-3A	250.00	0.80	0.58	15.00	3.47	18.47	0.0020	0.0833	0.0400	2.00	0.0000	3.99	1.41	0.42	1.84	0.378	7.27	
286+00	CB-3A	200.00	0.78	0.44	15.00	2.78	17.78	0.0020	0.0833	0.0400	2.00	0.0000	4.07	1.40	0.42	1.82	0.377	7.25	
284+30	CB-3	170.00	0.78	0.34	15.00	2.46	17.46	0.0020	0.0833	0.0400	2.00	0.0000	4.11	******	******	1.51	0.354	6.69	End
290+50	Begin																		
293+00	CB-3A	250.00	0.78	0.58	15.00	1.99	16.99	0.0080	0.0833	0.0400	2.00	0.0000	4.17	1.51	0.37	1.88	0.304	5.42	
295+50	CB-3A	250.00	0.78	0.42	15.00	2.03	17.03	0.0080	0.0833	0.0400	2.00	0.0000	4.16	1.42	0.31	1.72	0.295	5.21	
296+54	CB-3A	104.00	0.90	0.18	15.00	0.93	15.98	0.0080	0.0833	0.0400	2.00	0.0000	4.30	******	******	1.00	0.246	3.99	End

* 8' PAVED SHDR AT 4.00% + 2' GUTTER + 4' TRAVELWAY ALLOWABLE.

INLET SPACING DESIGN

PID : 115792 **Date :** 04/01/2024 **Project :** FRA-122-0.00 **Location :** Alum Creek Drive Widening - SR 317 to Groveport RD

Description :SPREAD CALCS FROM TOY TO BIXBY, RT SIDE **Designer :** N.M. GOODMAN

Rainfall Area: C **Storm Frequency (yr.) :** 10 **Total Allow. Spread (ft.) :** 14.00* **Allowable Depth (ft.)** 0.42

STATION	C.B. Type	GUTTER LENGTH (ft.)	RUNOFF COEF	AREA (acres)	CONC. TIME (min.)	GUTTER TIME (min.)	TIME USED (min.)	LONG. SLOPE (ft./ft.)	GUTT. SLOPE (ft./ft.)	PAVT. SLOPE (ft./ft.)	GUTT. WIDTH (ft.)	LOCAL DEPRESS. (ft.)	RAIN FALL (in./hrs.)	INTERCPTD FLOW (cfs.)	BYPASS FLOW (cfs.)	TOTAL FLOW (cfs.)	DEPTH FLOW (ft.)	PAVT. SPREAD (ft.)	
290+50	Begin																		
288+15	CB-3	235.00	0.80	0.46	15.00	3.42	18.42	0.0020	0.0833	0.0400	2.00	0.0000	4.00	1.40	0.07	1.47	0.351	6.61	
287+34	CB-3	81.00	0.78	0.16	15.00	1.41	16.50	0.0020	0.0833	0.0400	2.00	0.0000	4.23	0.59	0.00	0.59	0.260	4.34	
286+54	CB-3	170.00	0.78	0.15	15.00	3.08	18.21	0.0020	0.0833	0.0400	2.00	0.0000	4.02	0.47	0.00	0.47	0.241	3.85	
284+60	CB-3A	194.00	0.78	0.37	15.00	2.96	17.96	0.0020	0.0833	0.0400	2.00	0.0000	4.05	******	******	1.17	0.326	5.98	End
290+50	Begin																		
293+00	CB-3A	250.00	0.78	0.41	15.00	2.13	17.13	0.0080	0.0833	0.0400	2.00	0.0000	4.15	1.17	0.17	1.33	0.271	4.60	
295+50	CB-3A	250.00	0.82	0.33	15.00	2.14	17.14	0.0080	0.0833	0.0400	2.00	0.0000	4.15	1.14	0.15	1.29	0.268	4.53	
296+64	CB-3	114.00	0.78	0.19	15.00	1.07	16.09	0.0080	0.0833	0.0400	2.00	0.0000	4.28	******	******	0.79	0.226	3.49	End

* 8' PAVED SHDR AT 4.00% + 2' GUTTER + 4' TRAVELWAY ALLOWABLE.

APPENDIX C – STORM CALCULATIONS (CDSS)

STORM SEWER SYSTEM

PID : 115792 **Date :** 03/18/2024 **Project :** FRA-122-0.00 **Location :** ALUM CREEK DRIVE - S.R. 317 TO GROVEPORT ROAD.

Description :STORM SYSTEM - STA. 200+00 TO 214+96, OUTLET INTO MEDIAN TRUNK LINE. **Designer :** N.M. GOODMAN

Rainfall Area: C **Just Full Capacity Frequency (yrs.) :** 10 **Hydraulic Gradient Frequency (yrs.) :** 25

Minimum Pipe Size : 12.00 **Tailwater Elevation (ft.):** 729.18

JUNCTION From	To	STATION From To	ΔAREA ΣAREA (acres)	ΔCA ΣCA	BEGIN TIME (min.)	RAINFALL INTENSITY (10 yrs.)	(25 yrs.)	DISCHARGE (cfs.) (10 yrs.)	(25 yrs.)	PIPE DIAM. (in.)	LENGTH (ft.)	SLOPE (ft./ft.)	F/L PIPE IN / OUT (ft.)	MEAN VEL (fps.)	JUST FULL CAPACITY (cfs.)	FRICT SLOPE (ft./ft.)	HYGR EL. IN / OUT (ft.)	COVER IN / OUT (ft.)	COVER MINUS HY GR	COVER MINUS CROWN	INLET TYPE MANNING'S 'n'
1D2	1D1	203+50	0.63	0.57	13.85	4.60	4.38	2.6	2.5	12	22.0	0.0195	736.40	5.75	4.64	0.0065	737.55	739.39	1.84	1.99	CB 3A
begin		203+50	0.63	0.57									735.97				737.41	739.60			0.015
1D1	1D5	203+50	0.57	0.35	15.00	4.43	4.38	4.1	4.0	15	175.0	0.0065	735.97	4.17	4.86	0.0052	737.41	739.60	2.19	2.38	CB 2-2B
		205+25	1.20	0.92									734.83				736.50	738.75			0.015
1D5	1D3	205+25	0.74	0.37	15.70	4.34	4.38	5.6	5.6	15	21.0	0.0157	734.83	6.35	7.55	0.0102	736.50	738.75	2.25	2.67	CB 2-2B
		205+25	1.94	1.29									734.50				736.29	738.85			0.015
1D3	1D4	205+25	0.35	0.32	15.75	4.33	4.38	6.9	7.0	18	175.0	0.0057	734.50	4.44	7.40	0.0059	736.29	738.85	2.56	2.85	CB 3A
		207+00	2.29	1.60									733.50				735.25	738.12			0.015
1D4	1D6	207+00	0.55	0.50	16.41	4.24	4.38	8.9	9.2	21	200.0	0.0038	733.50	3.95	9.05	0.0045	735.25	738.37	3.12	3.12	CB 3A
		209+00	2.84	2.10									732.75				734.30	737.82			0.015
1D6	1D7	209+00	0.34	0.31	17.26	4.13	4.38	9.9	10.5	24	250.0	0.0032	732.50	4.00	11.93	0.0029	734.30	737.82	3.52	3.32	CB 3A
		211+50	3.18	2.40									731.70				733.58	737.32			0.015
1D7	1D8	211+50	0.39	0.35	18.30	4.01	4.38	11.0	12.1	24	200.0	0.0035	731.70	4.20	12.48	0.0038	733.58	737.32	3.74	3.62	CB 3A
		213+50	3.57	2.76									731.00				732.82	736.92			0.015
1D8	1D9	213+50	0.32	0.29	19.09	3.92	4.38	11.9	13.3	24	146.0	0.0068	731.00	5.65	17.45	0.0046	732.82	736.92	4.10	3.92	CB 3A
		214+96	3.89	3.04									730.00				732.15	736.62			0.015

STORM SEWER SYSTEM

JUNCTION From	To	STATION From	To	ΔAREA ΣAREA (acres)	ΔCA ΣCA	BEGIN TIME (min.)	RAINFALL INTENSITY (10 yrs.)	(25 yrs.)	DISCHARGE (cfs.) (10 yrs.)	(25 yrs.)	PIPE DIAM. (in.)	LENGTH (ft.)	SLOPE (ft./ft.)	F/L PIPE IN / OUT (ft.)	MEAN VEL (fps.)	JUST FULL CAPACITY (cfs.)	FRICT SLOPE (ft./ft.)	HYGR EL. IN / OUT (ft.)	COVER IN / OUT (ft.)	COVER MINUS HY GR	COVER MINUS CROWN	INLET TYPE MANNING'S 'n'
1D10	1D9	214+96		2.00	1.00	15.00	4.43	4.38	4.4	4.4	12	18.0	0.0556	732.00	9.72	7.83	0.0201	732.56	737.72	5.16	4.72	CB 2-2B
begin		214+96		5.89	4.04									731.00				732.15	736.62			0.015
1D9	1MH1	214+96		0.23	0.21	19.52	3.87	4.38	16.5	18.6	24	59.0	0.0066	730.00	5.77	17.15	0.0090	732.15	736.43	4.28	4.43	CB 3A
		214+96		6.12	4.25									729.61				731.62	733.68			0.015
2D1	2D2	201+80		0.37	0.33	12.75	4.78	5.27	1.6	1.8	12	345.0	0.0024	736.79	2.18	1.63	0.0032	737.86	739.50	1.64	1.71	CB 3
begin		205+25		6.49	4.58									735.96				736.74	738.85			0.015
2HW1	2D2	205+30		0.80	0.36	15.00	4.43	4.87	1.6	1.8	15	34.0	0.0329	736.83	6.03	10.93	0.0010	737.18	738.08	0.90	0.00	HW Half He
begin		205+25		7.29	4.94									735.71				736.67	738.85			0.015
2D2	2D3	205+25		0.68	0.56	15.38	4.38	4.87	5.5	6.1	18	250.0	0.0058	735.46	4.36	7.48	0.0045	736.67	738.85	2.18	1.89	CB 3A
		207+75		7.97	5.51									734.00				735.54	738.16			0.015
2D3	2D4	207+75		0.50	0.37	16.34	4.25	4.87	6.9	7.9	21	225.0	0.0042	734.00	4.10	9.60	0.0033	735.54	738.16	2.62	2.41	CB 3A
		210+00		8.47	5.87									733.05				734.80	737.62			0.015
2D4	2D5	210+00		0.56	0.38	17.25	4.13	4.87	8.3	9.8	21	150.0	0.0040	733.05	4.11	9.34	0.0050	734.80	737.62	2.82	2.82	CB 3A
		211+50		9.03	6.25									732.45				733.91	737.32			0.015
2D5	2D6	211+50		0.47	0.31	17.86	4.06	4.76	9.4	11.0	24	200.0	0.0040	732.20	4.34	13.34	0.0031	733.66	737.32	3.66	3.12	CB 3A
		213+50		9.50	6.56									731.40				732.99	737.02			0.015
2D6	2D7	213+50		0.51	0.35	18.63	3.97	4.70	10.5	12.5	24	146.0	0.0062	731.40	5.28	16.56	0.0040	732.77	737.02	4.25	3.62	CB 3A
		214+96		10.01	6.91									730.50				732.13	736.62			0.015
2D7	1MH1	214+96		0.36	0.25	19.09	3.92	4.38	11.4	12.7	24	59.0	0.0320	730.50	9.98	37.75	0.0042	731.87	736.62	4.75	4.12	CB 3A
		214+96		10.37	7.16									728.61				731.62	733.68			0.015
1MH1	1MH2	214+96		1.04	0.73	19.69	3.85	4.38	30.4	34.5	36	492.0	0.0024	728.61	4.30	30.71	0.0036	731.62	733.68	2.06	2.07	CB 2-4
final		219+90		11.41	7.89									727.41				729.86	733.68			0.015

STORM SEWER SYSTEM

PID : 115792 **Date :** 03/04/2024 **Project :** FRA-122-0.00 **Location :** ALUM CREEK DRIVE - S.R. 317 TO GROVEPORT ROAD.

Description :STORM SYSTEM - STA. 214+96 TO 219+90, OUTLET INTO MEDIAN TRUNK LINE. **Designer :** N.M. GOODMAN

Rainfall Area: C **Just Full Capacity Frequency (yrs.) :** 10 **Hydraulic Gradient Frequency (yrs.) :** 25

Minimum Pipe Size : 12.00 **Tailwater Elevation (ft.):** 728.62

JUNCTION From	To	STATION From	To	ΔAREA ΣAREA (acres)	ΔCA ΣCA	BEGIN TIME (min.)	RAINFALL INTENSITY (10 yrs.)	(25 yrs.)	DISCHARGE (cfs.) (10 yrs.)	(25 yrs.)	PIPE DIAM. (in.)	LENGTH (ft.)	SLOPE (ft./ft.)	F/L PIPE IN / OUT (ft.)	MEAN VEL (fps.)	JUST FULL CAPACITY (cfs.)	FRICT SLOPE (ft./ft.)	HYGR EL. IN / OUT (ft.)	COVER IN / OUT (ft.)	COVER MINUS HY GR	COVER MINUS CROWN	INLET TYPE MANNING'S 'n'
3D1	3D2	217+00		0.32	0.29	12.90	4.76	4.24	1.4	1.2	12	290.0	0.0077	733.24	3.46	2.92	0.0016	733.71	736.22	2.51	1.98	CB 3A
begin		219+90		0.32	0.29									731.00				732.78	735.02			0.015
3D4	3D2	219+90		2.00	1.00	15.00	4.43	4.24	4.4	4.2	12	33.0	0.0303	732.00	7.64	5.78	0.0188	733.40	738.71	5.31	5.71	CB 2-2B
begin		219+90		2.32	1.29									731.00				732.78	735.02			0.015
3D3	3D2	221+00		0.72	0.65	12.73	4.79	4.24	3.1	2.7	12	110.0	0.0091	732.00	4.24	3.17	0.0079	733.65	734.81	1.16	1.81	CB 3A
begin		219+90		3.04	1.94									731.00				732.78	735.02			0.015
3D2	1MH2	219+90		0.69	0.62	15.07	4.42	4.24	11.3	10.8	15	59.0	0.0381	731.00	10.13	11.76	0.0374	732.78	735.02	2.24	2.77	CB 3
		219+90		3.73	2.56									728.75				730.58	733.68			0.015
1MH1	1MH2	214+96		11.40	7.81	19.18	3.91	4.24	30.5	33.1	36	492.0	0.0024	728.61	4.32	30.71	0.0033	732.19	733.68	1.49	2.07	CB 2-2B
begin		219+90		15.13	10.37									727.41				730.58	733.68			0.015
4D1	4D2	217+50		1.28	0.87	13.08	4.73	5.49	4.1	4.8	15	265.0	0.0057	733.25	3.91	4.53	0.0073	734.75	736.17	1.42	1.67	CB 3
begin		219+90		16.41	11.24									731.75				732.82	736.74			0.015
4D3	4D2	222+00		0.38	0.26	12.73	4.79	5.71	1.2	1.5	12	110.0	0.0159	733.50	4.39	4.19	0.0023	733.93	736.61	2.68	2.11	CB 3A
begin		219+90		16.79	11.49									731.75				732.51	736.74			0.015
4D2	1MH2	219+90		0.38	0.26	14.21	4.55	4.24	6.3	5.9	15	59.0	0.0508	731.75	10.30	13.58	0.0110	732.35	736.74	4.39	3.74	CB 3A
		219+90		17.17	11.75									728.75				730.58	733.68			0.015

STORM SEWER SYSTEM

JUNCTION From	JUNCTION To	STATION From	STATION To	ΔAREA ΣAREA (acres)	ΔCA ΣCA	BEGIN TIME (min.)	RAINFALL INTENSITY (10 yrs.)	RAINFALL INTENSITY (25 yrs.)	DISCHARGE (cfs.) (10 yrs.)	DISCHARGE (cfs.) (25 yrs.)	PIPE DIAM. (in.)	PIPE LENGTH (ft.)	PIPE SLOPE (ft./ft.)	F/L PIPE IN / OUT (ft.)	MEAN VEL (fps.)	JUST FULL CAPACITY (cfs.)	FRICT SLOPE (ft./ft.)	HYGR EL. IN / OUT (ft.)	COVER IN / OUT (ft.)	COVER MINUS HY GR	COVER MINUS CROWN	INLET TYPE MANNING'S 'n'
1MH2	1MH3	219+90		0.58	0.41	21.08	3.71	4.24	45.2	51.5	42	508.0	0.0023	727.08	4.69	45.32	0.0035	730.58	733.68	3.10	3.10	CB 2-2B
final		224+98		17.75	12.16						EX. PIPE			725.89				728.77	736.52			0.015

STORM SEWER SYSTEM

PID : 115792 **Date :** 03/18/2024 **Project :** FRA-122-0.00 **Location :** ALUM CREEK DRIVE - S.R. 317 TO GROVEPORT ROAD.

Description :STORM SYSTEM - STA. 219+90 225+00, OUTLET INTO MEDIAN TRUNK LINE. **Designer :** N.M. GOODMAN

Rainfall Area: C **Just Full Capacity Frequency (yrs.) :** 10 **Hydraulic Gradient Frequency (yrs.) :** 25

Minimum Pipe Size : 12.00 **Tailwater Elevation (ft.):** 728.33

JUNCTION From	To	STATION From	To	ΔAREA ΣAREA (acres)	ΔCA ΣCA	BEGIN TIME (min.)	RAINFALL INTENSITY (10 yrs.)	(25 yrs.)	DISCHARGE (cfs.) (10 yrs.)	(25 yrs.)	PIPE DIAM. (in.)	LENGTH (ft.)	SLOPE (ft./ft.)	F/L PIPE IN / OUT (ft.)	MEAN VEL (fps.)	JUST FULL CAPACITY (cfs.)	FRICT SLOPE (ft./ft.)	HYGR EL. IN / OUT (ft.)	COVER IN / OUT (ft.)	COVER MINUS HY GR	COVER MINUS CROWN	INLET TYPE MANNING'S 'n'
5D4	5D2	224+87		2.42	1.21	15.00	4.43	5.33	5.4	6.4	12	47.0	0.0638	735.00	10.72	8.39	0.0436	735.69	737.75	2.06	1.75	CB 2-2B
begin		224+90		2.42	1.21									732.00				732.98	735.35			0.015
5D2	1MH3	224+90		0.33	0.30	15.07	4.42	4.94	6.7	7.4	12	59.0	0.0442	731.00	9.42	6.99	0.0580	732.81	735.35	2.54	3.35	CB 3A
		225+00		2.75	1.51									728.39				729.39	736.52			0.015
6D1	6D3	224+00		0.76	0.52	12.93	4.75	5.69	2.5	2.9	12	99.0	0.0165	734.13	5.32	4.26	0.0091	734.77	736.99	2.22	1.86	CB 3A
begin		225+00		3.51	2.02									732.50				733.37	737.44			0.015
6D3	1MH3	225+00		0.00	0.00	13.24	4.70	4.94	2.4	2.6	12	52.0	0.0790	732.50	9.46	9.34	0.0068	732.87	737.44	4.57	3.94	MH 3
		224+98		3.51	2.02									728.39				729.39	736.52			0.015
1MH2	1MH3	219+90		17.31	11.77	15.00	4.43	4.94	52.2	58.1	48	508.0	0.0020	726.58	5.04	59.89	0.0022	730.50	733.68	3.18	3.10	CB 2-2B
begin		224+98		20.82	13.79									725.56				729.39	736.52			0.015
1MH3	1MH4	225+00		0.63	0.57	16.68	4.21	4.94	60.4	70.9	48	212.0	0.0020	725.39	4.81	59.89	0.0032	729.39	736.52	7.13	7.13	MH 3
final		227+11		21.45	14.36						Warning *			724.97				728.33	736.93			0.015

* NOTE - HGL REMAINS CONTAINED WITHIN THE SYSTEM.

STORM SEWER SYSTEM

PID : 115792 **Date :** 03/21/2024 **Project :** FRA-122-0.00 **Location :** ALUM CREEK DRIVE - S.R. 317 TO GROVEPORT ROAD.

Description :STORM SYSTEM - FROM 235+50 TO 227+00, OUTLET INTO MEDIAN TRUNK LINE 229+89. **Designer :** N.M. GOODMAN

Rainfall Area: C **Just Full Capacity Frequency (yrs.) :** 10 **Hydraulic Gradient Frequency (yrs.) :** 25

Minimum Pipe Size : 12.00 **Tailwater Elevation (ft.):** 725.50

JUNCTION From	To	STATION From / To	ΔAREA / ΣAREA (acres)	ΔCA / ΣCA	BEGIN TIME (min.)	RAINFALL INTENSITY (10 yrs.)	(25 yrs.)	DISCHARGE (cfs.) (10 yrs.)	(25 yrs.)	PIPE DIAM. (in.)	LENGTH (ft.)	SLOPE (ft./ft.)	F/L PIPE IN / OUT (ft.)	MEAN VEL (fps.)	JUST FULL CAPACITY (cfs.)	FRICT SLOPE (ft./ft.)	HYGR EL. IN / OUT (ft.)	COVER IN / OUT (ft.)	COVER MINUS HY GR	COVER MINUS CROWN	INLET TYPE MANNING'S 'n'
7D6	7D5	235+50	0.33	0.26	15.00	4.43	3.53	1.2	0.9	12	175.0	0.0057	733.00	2.97	2.51	0.0009	734.37	736.23	1.86	2.23	CB 3A
begin		233+75	0.33	0.26									732.00				734.21	736.09			0.015
7D5	7D4	233+75	0.38	0.30	15.98	4.30	3.53	2.4	2.0	12	125.0	0.0080	732.00	3.96	2.97	0.0041	734.21	736.09	1.88	3.09	CB 3A
		232+50	0.71	0.56									731.00				733.70	735.99			0.015
7D4	7D3	232+50	0.28	0.22	16.51	4.23	3.53	3.3	2.8	12	150.0	0.0133	731.00	5.16	3.84	0.0080	733.70	735.99	2.29	3.99	CB 3A
		231+00	0.99	0.78									729.00				732.50	735.78			0.015
7D3	7D2	231+00	0.37	0.29	16.99	4.17	3.53	4.5	3.8	15	111.0	0.0090	729.00	4.85	5.72	0.0046	732.50	735.87	3.37	5.62	CB 3
		229+89	1.36	1.07									728.00				732.00	735.78			0.015
7D1	7D2	228+50	0.40	0.31	12.88	4.76	3.53	1.5	1.1	12	139.0	0.0072	729.00	3.43	2.82	0.0013	732.17	735.67	3.50	5.67	CB 3
begin		229+89	1.76	1.39									728.00				732.00	735.78			0.015
7D2	1MH5	229+89	0.33	0.27	17.38	4.12	3.53	6.8	5.9	15	57.0	0.0195	728.00	7.18	8.40	0.0109	732.00	735.78	3.78	6.53	CB 3
		229+89	2.09	1.66									726.89				731.37	737.39			0.015
8D1	8D2	227+50	0.27	0.24	12.47	4.83	5.46	1.2	1.3	12	100.0	0.0050	734.50	2.83	2.35	0.0018	735.18	737.31	2.13	1.81	CB 3
begin		228+50	2.36	1.90									734.00				735.00	737.39			0.015
8D2	8D3	228+50	0.14	0.13	13.51	4.66	5.46	1.7	2.0	12	139.0	0.0036	734.00	2.68	1.99	0.0043	735.00	737.39	2.39	2.39	CB 3
		229+89	2.50	2.03									733.50				734.30	739.00			0.015

STORM SEWER SYSTEM

JUNCTION From	JUNCTION To	STATION From	STATION To	ΔAREA ΣAREA (acres)	ΔCA ΣCA	BEGIN TIME (min.)	RAINFALL INTENSITY (10 yrs.)	RAINFALL INTENSITY (25 yrs.)	DISCHARGE (cfs.) (10 yrs.)	DISCHARGE (cfs.) (25 yrs.)	PIPE DIAM. (in.)	PIPE LENGTH (ft.)	PIPE SLOPE (ft./ft.)	F/L PIPE IN / OUT (ft.)	MEAN VEL (fps.)	JUST FULL CAPACITY (cfs.)	FRICT SLOPE (ft./ft.)	HYGR EL. IN / OUT (ft.)	COVER IN / OUT (ft.)	COVER MINUS HY GR	COVER MINUS CROWN	INLET TYPE MANNING'S 'n'
8HW1	8D3	231+36		0.78	0.64	26.64	3.24	3.82	2.1	2.4	12	148.0	0.0088	734.80	4.01	3.11	0.0062	735.50	735.80	0.30	0.00	HW Half He
begin		229+89		3.28	2.67									733.50				734.33	739.00			0.015
8D3	8D4	229+89		0.00	0.00	27.26	3.20	3.82	3.2	3.8	12	6.0	0.0500	733.50	8.66	7.43	0.0155	734.21	739.00	4.79	4.50	MH 3
		229+89		3.28	2.67									733.20				734.12	737.50			0.015
8D4	1MH5	229+89		0.11	0.10	27.27	3.20	3.53	3.5	3.9	12	61.0	0.0526	730.80	9.04	7.62	0.0160	732.35	737.50	5.15	5.70	CB 3
		229+89		3.39	2.77									727.59				731.37	737.39			0.015
1MH4	1MH5	227+11		21.45	14.35	16.57	4.22	3.53	60.6	50.6	42	492.0	0.0019	725.53	6.29	41.00	0.0034	733.03	736.93	3.90	7.90	MH 3
begin		229+89		24.84	17.12						Warning	*		724.59				731.37	737.39			0.015
1MH5	1MH6	229+89		0.00	0.00	27.38	3.19	3.53	54.6	60.4	42	1226.0	0.0020	724.59	5.67	41.95	0.0048	731.37	737.39	6.02	9.30	MH 3
final		239+86		24.84	17.12						Warning	*		722.14				725.50	735.05			0.015

* NOTE - HGL REMAINS CONTAINED WITHIN THE SYSTEM.

STORM SEWER SYSTEM

PID : 115792 **Date :** 03/22/2024 **Project :** FRA-122-0.00 **Location :** ALUM CREEK DRIVE - S.R. 317 TO GROVEPORT ROAD.

Description :STORM SYSTEM - FROM 237+00 TO 246+00, OUTLET INTO MEDIAN TRUNK LINE AT 239+86. **Designer :** N.M. GOODMAN

Rainfall Area: C **Just Full Capacity Frequency (yrs.) :** 10 **Hydraulic Gradient Frequency (yrs.) :** 25

Minimum Pipe Size : 12.00 **Tailwater Elevation (ft.):** 723.94

JUNCTION From	To	STATION From / To	ΔAREA / ΣAREA (acres)	ΔCA / ΣCA	BEGIN TIME (min.)	RAINFALL INTENSITY (10 yrs.)	(25 yrs.)	DISCHARGE (cfs.) (10 yrs.)	(25 yrs.)	PIPE DIAM. (in.)	LENGTH (ft.)	SLOPE (ft./ft.)	F/L PIPE IN / OUT (ft.)	MEAN VEL (fps.)	JUST FULL CAPACITY (cfs.)	FRICT SLOPE (ft./ft.)	HYGR EL. IN / OUT (ft.)	COVER IN / OUT (ft.)	COVER MINUS HY GR	COVER MINUS CROWN	INLET TYPE MANNING'S 'n'
9D10	9D9	246+00	0.21	0.19	13.49	4.66	5.62	0.9	1.1	12	22.0	0.0091	734.00	3.26	3.17	0.0012	734.54	737.07	2.53	2.07	CB 3A
begin		246+00	0.21	0.19									733.80				734.52	737.50			0.015
9D9	9D7	246+00	0.06	0.03	15.00	4.43	4.93	1.0	1.1	12	146.0	0.0055	733.80	2.80	2.46	0.0012	734.28	737.50	3.22	2.70	CB 2-2B
		244+50	0.27	0.22									733.00				733.83	736.50			0.015
9D8	9D7	244+50	0.22	0.20	13.40	4.68	4.93	0.9	1.0	12	21.0	0.0238	733.50	4.72	5.13	0.0010	733.85	736.95	3.10	2.45	CB 3A
begin		244+50	0.49	0.42									733.00				733.83	736.50			0.015
9D7	9D5	244+50	0.08	0.04	15.87	4.31	4.93	2.0	2.2	15	245.0	0.0027	733.00	2.53	3.10	0.0016	733.83	736.50	2.67	2.25	CB 2-2B
		242+00	0.57	0.46									732.35				733.27	736.00			0.015
9D6	9D5	242+00	0.36	0.32	15.16	4.41	4.80	1.4	1.6	12	24.0	0.0437	733.40	6.61	6.95	0.0025	733.73	736.75	3.02	2.35	CB 3A
begin		242+00	0.93	0.78									732.35				733.20	736.00			0.015
9D5	9D4	242+00	0.08	0.04	17.48	4.11	4.80	3.4	3.9	15	212.0	0.0075	732.35	4.28	5.23	0.0049	733.20	736.00	2.80	2.40	CB 2-2B
		239+85	1.01	0.82									730.75				731.78	735.50			0.015
9D4	9D3	239+85	0.08	0.04	18.31	4.01	4.80	3.4	4.1	15	20.0	0.0720	730.75	9.94	16.16	0.0054	731.20	735.50	4.30	3.50	CB 2-2B
		239+85	1.09	0.86									729.31				730.35	736.58			0.015
9D1	9D2	237+00	0.19	0.16	12.23	4.87	5.82	0.8	0.9	12	100.0	0.0150	733.00	3.78	4.07	0.0009	733.33	736.35	3.02	2.35	CB 3A
begin		238+00	1.28	1.02									731.50				732.20	736.43			0.015

STORM SEWER SYSTEM

JUNCTION From	JUNCTION To	STATION From	STATION To	ΔAREA ΣAREA (acres)	ΔCA ΣCA	BEGIN TIME (min.)	RAINFALL INTENSITY (10 yrs.)	RAINFALL INTENSITY (25 yrs.)	DISCHARGE (cfs.) (10 yrs.)	DISCHARGE (cfs.) (25 yrs.)	PIPE DIAM. (in.)	PIPE LENGTH (ft.)	PIPE SLOPE (ft./ft.)	F/L PIPE IN / OUT (ft.)	MEAN VEL (fps.)	JUST FULL CAPACITY (cfs.)	FRICT SLOPE (ft./ft.)	HYGR EL. IN / OUT (ft.)	COVER IN / OUT (ft.)	COVER MINUS HY GR	COVER MINUS CROWN	INLET TYPE MANNING'S 'n'
9D2	9D3	238+00	239+85	0.33 1.61	0.28 1.30	13.79	4.61	4.79	2.0	2.1	12	185.0	0.0132	731.50 729.06	4.67	3.81	0.0046	732.05 730.09	736.43 736.58	4.38	3.93	CB 3A 0.015
9D3	1MH6	239+85	239+86	0.31 1.92	0.28 1.58	18.34	4.00	4.79	6.3	7.5	15	57.0	0.0361	729.31 727.25	9.05	11.45	0.0181	730.09 728.42	736.43 735.05	6.34	5.87	CB 3A 0.015
10D1 begin	1MH6	239+86	239+86	0.48 2.40	0.39 1.97	24.59	3.40	4.04	1.3	1.6	12	73.0	0.0342	730.00 727.50	5.94	6.15	0.0026	730.36 728.27	735.50 735.05	5.14	4.50	CB 2-2B 0.015
9EX1 begin	1MH6	240+12	239+86	5.00 7.40	3.25 5.22	15.00	4.43	3.02	14.4	9.8	24	64.0	0.0064	724.91 724.50	5.67	16.88	0.0025	727.32 727.16	732.11 735.05	4.79	5.20	CB 2-2B 0.015
1EX6 begin	1MH6	239+74	239+86	2.58 9.98	2.32 7.54	36.66	2.65	3.17	6.1	7.4	18	10.0	0.1670	731.52 729.85	15.58	40.02	0.0065	731.97 731.13	734.22 735.05	2.25	1.20	CB 2-2B 0.015
1MH5 begin	1MH6	229+89	239+86	24.84 34.82	17.12 24.67	27.38	3.19	3.02	54.6	51.7	42 **Warning** *	1226.0	0.0020	724.59 722.14	5.67	41.95	0.0035	731.46 727.16	737.39 735.05	5.93	9.30	MH 3 0.015
1MH6 final	1MH8	239+86	248+85	0.00 34.82	0.00 24.67	36.67	2.65	3.02	65.3	74.5	48 **Warning** *	900.0	0.0020	722.14 720.34	5.20	59.89	0.0036	727.16 723.94	735.05 738.49	7.89	8.91	MH 3 0.015

* NOTE - HGL REMAINS CONTAINED WITHIN THE SYSTEM.

STORM SEWER SYSTEM

PID : 115792 **Date :** 03/25/2024 **Project :** FRA-122-0.00 **Location :** ALUM CREEK DRIVE - S.R. 317 TO GROVEPORT ROAD.

Description :STORM SYSTEM - FROM 246+00 TO ROHR RD, OUTLET INTO MEDIAN TRUNK LINE AT 248+85. **Designer :** N.M. GOODMAN

Rainfall Area: C **Just Full Capacity Frequency (yrs.) :** 10 **Hydraulic Gradient Frequency (yrs.) :** 25

Minimum Pipe Size : 12.00 **Tailwater Elevation (ft.):** 723.31

JUNCTION From	To	STATION From / To	ΔAREA / ΣAREA (acres)	ΔCA / ΣCA	BEGIN TIME (min.)	RAINFALL INTENSITY (10 yrs.)	(25 yrs.)	DISCHARGE (cfs.) (10 yrs.)	(25 yrs.)	PIPE DIAM. (in.)	LENGTH (ft.)	SLOPE (ft./ft.)	F/L PIPE IN / OUT (ft.)	MEAN VEL (fps.)	JUST FULL CAPACITY (cfs.)	FRICT SLOPE (ft./ft.)	HYGR EL. IN / OUT (ft.)	COVER IN / OUT (ft.)	COVER MINUS HY GR	COVER MINUS CROWN	INLET TYPE MANNING'S 'n'
11D2	11D1	248+85	0.22	0.15	15.00	4.43	5.33	0.7	0.8	12	23.0	0.0217	732.00	4.14	4.90	0.0007	732.28	736.20	3.92	3.20	CB 2-2B
begin		248+85	0.22	0.15									731.50				732.19	737.36			0.015
11D1	1MH8	248+85	0.52	0.47	15.16	4.41	5.29	2.7	3.3	15	57.0	0.0263	731.50	6.46	9.77	0.0034	732.02	737.36	5.34	4.61	CB 3
		248+85	0.74	0.62						¥			730.00				730.99	738.49			0.015
12HW	12D1	248+18	0.87	0.76	22.54	3.58	4.25	2.7	3.2	12	69.0	0.0257	735.77	6.45	5.32	0.0108	736.36	736.77	0.41	0.00	HW Half He
begin		248+86	1.61	1.37									734.00				734.88	737.34			0.015
12D1	12MH	248+86	0.00	0.00	22.72	3.56	4.25	2.7	3.2	12	12.0	0.0417	734.00	7.71	6.78	0.0108	734.51	737.34	2.83	2.34	MH 3
		248+85	1.61	1.37									733.50				734.38	738.17			0.015
12MH	1MH8	248+85	0.00	0.00	22.74	3.56	4.23	2.7	3.2	15	57.0	0.0175	731.75	5.56	7.98	0.0033	732.32	738.17	5.85	5.17	MH 3
		248+85	1.61	1.37						¥			730.75				731.73	738.49			0.015
1MH6	1MH8	239+86	34.82	24.67	36.67	2.65	2.97	65.3	73.3	EX. 48	900.0	0.0020	722.14	5.20	59.89	0.0035	727.68	735.05	7.37	8.91	MH 3
begin		248+85	36.43	26.04						Warning *			720.34				724.56	738.49			0.015
1MH8	2MH1	248+85	0.35	0.32	39.56	2.52	2.97	66.3	78.3	EX. 48	317.0	0.0020	720.34	5.28	59.89	0.0040	724.56	738.49	13.93	14.15	CB 2-2B
final		252+03	36.78	26.36						Warning *			719.71				723.31	738.73			0.015

¥ EX. PIPE CROSSING. VERIFY/MAINTAIN SLOPE AND DOWNSTREAM INVERT.

* NOTE - HGL REMAINS CONTAINED WITHIN THE SYSTEM.

STORM SEWER SYSTEM

PID : 115792 **Date :** 03/27/2024 **Project :** FRA-122-0.00 **Location :** ALUM CREEK DRIVE - S.R. 317 TO GROVEPORT ROAD.

Description :STORM SYSTEM - FROM ROHR RD TO OUTLET INTO MEDIAN TRUNK LINE AT 257+85 **Designer :** N.M. GOODMAN

Rainfall Area: C **Just Full Capacity Frequency (yrs.) :** 10 **Hydraulic Gradient Frequency (yrs.) :** 25

Minimum Pipe Size : 12.00 **Tailwater Elevation (ft.):** 724.96

JUNCTION From	To	STATION From To	ΔAREA ΣAREA (acres)	ΔCA ΣCA	BEGIN TIME (min.)	RAINFALL INTENSITY (10 yrs.)	(25 yrs.)	DISCHARGE (cfs.) (10 yrs.)	(25 yrs.)	PIPE DIAM. (in.)	LENGTH (ft.)	SLOPE (ft./ft.)	F/L PIPE IN / OUT (ft.)	MEAN VEL (fps.)	JUST FULL CAPACITY (cfs.)	FRICT SLOPE (ft./ft.)	HYGR EL. IN / OUT (ft.)	COVER IN / OUT (ft.)	COVER MINUS HY GR	COVER MINUS CROWN	INLET TYPE MANNING'S 'n'
13D1	13MH	256+54	1.02	0.71	19.86	3.84	4.52	2.7	3.2	12	128.0	0.0129	731.00	4.93	3.77	0.0106	733.16	735.88	2.72	3.88	CB 2-2B
begin		257+82	1.02	0.71									729.35				731.80	737.57			0.015
13D2	13MH	258+06	0.71	0.53	15.00	4.43	4.52	2.4	2.4	12	27.0	0.0204	729.90	5.71	4.74	0.0061	731.96	734.70	2.74	3.80	CB 2-2B
begin		257+82	1.73	1.24									729.35				731.80	737.57			0.015
13MH	2MH3	257+82	1.00	0.90	20.29	3.79	4.52	8.1	9.7	15	59.0	0.0046	729.10	6.61	4.07	0.0297	731.80	737.57	5.77	7.22	MH 3
		257+85	2.73	2.14						EX. PIPE CROSSING			728.83				730.04	738.63			0.015
										Warning *											
14D1	2MH3	257+88	1.96	1.54	20.47	3.77	4.49	5.8	6.9	15	67.0	0.0182	729.01	6.79	8.13	0.0153	729.97	732.34	2.37	2.08	CB 2-2B
begin		257+85	4.69	3.68						EX. PIPE CROSSING			727.79				728.94	737.59			0.015
										ADD CONC. COLLAR											
1MH8	2MH1	248+85	34.82	24.67	36.67	2.65	2.95	65.3	72.8	48	317.0	0.0020	720.34	5.20	59.89	0.0034	731.62	738.49	6.87	14.15	CB 2-2B
begin		252+03	39.51	28.34						Warning *			719.71				730.54	738.73			0.015
2MH1	2MH2	252+03	0.00	0.00	37.69	2.60	2.95	64.1	72.8	48	10.0	0.0020	719.71	5.10	59.89	0.0034	730.54	738.73	8.19	15.02	MH 3
		252+16	39.51	28.34						Warning *			719.69				730.50	738.63			0.015
2EX1	2MH2	253+04	1.50	1.17	18.00	4.04	2.95	4.7	3.5	36	170.0	0.0212	727.30	6.43	90.61	0.0000	730.51	739.60	9.09	9.30	MH 3
begin		252+16	41.01	29.51						EX. PIPE			723.69				730.50	738.63			0.015
2EX2	2MH2	251+59	1.50	1.08	22.00	3.63	2.95	3.9	3.2	18	86.0	0.0335	731.01	7.71	17.92	0.0012	731.45	738.31	6.86	5.80	MH 3
begin		252+16	42.51	30.59						EX. PIPE			728.13				730.50	738.36			0.015

* NOTE - HGL REMAINS CONTAINED WITHIN THE SYSTEM.

STORM SEWER SYSTEM

JUNCTION From	To	STATION From	To	ΔAREA ΣAREA (acres)	ΔCA ΣCA	BEGIN TIME (min.)	RAINFALL INTENSITY (10 yrs.)	(25 yrs.)	DISCHARGE (cfs.) (10 yrs.)	(25 yrs.)	PIPE DIAM. (in.)	LENGTH (ft.)	SLOPE (ft./ft.)	F/L PIPE IN / OUT (ft.)	MEAN VEL (fps.)	JUST FULL CAPACITY (cfs.)	FRICT SLOPE (ft./ft.)	HYGR EL. IN / OUT (ft.)	COVER IN / OUT (ft.)	COVER MINUS HY GR	COVER MINUS CROWN	INLET TYPE MANNING'S 'n'
2MH2	2MH3	252+16		0.00	0.00	37.72	2.60	2.95	69.9	79.4	48	566.0	0.0020	719.69	5.57	59.89	0.0041	730.50	738.63	8.13	14.94	MH 3
		257+85		42.51	30.59						Warning *			718.56				728.20	737.59			0.015
13EX	2MH3	257+31		0.51	0.46	15.00	4.43	5.32	2.0	2.4	18	52.0	0.0342	733.97	6.43	18.12	0.0007	734.36	737.57	3.21	2.10	CB 2-2B
begin		257+85		43.02	31.05						EX. PIPE			732.19				733.24	737.59			0.015
2MH3	2MH4	257+85		0.00	0.00	39.41	2.52	2.95	78.4	91.6	48	600.0	0.0020	718.56	6.24	59.89	0.0054	728.20	737.59	9.39	15.03	MH 3
final		263+86		43.02	31.05						Warning *			717.36				724.96	735.31			0.015

* NOTE - HGL REMAINS CONTAINED WITHIN THE SYSTEM.

STORM SEWER SYSTEM

PID : 115792 **Date :** 03/27/2024 **Project :** FRA-122-0.00 **Location :** ALUM CREEK DRIVE - S.R. 317 TO GROVEPORT ROAD.

Description :STORM SYSTEM - FROM CONTRIBUTING FLOWS FROM GLOBAL TO OUTLET AT STA 263+86 X-ING **Designer :** N.M. GOODMAN

Rainfall Area: C **Just Full Capacity Frequency (yrs.) :** 10 **Hydraulic Gradient Frequency (yrs.) :** 25

Minimum Pipe Size : 12.00 **Tailwater Elevation (ft.):** 719.34

JUNCTION From	To	STATION From	To	ΔAREA ΣAREA (acres)	ΔCA ΣCA	BEGIN TIME (min.)	RAINFALL INTENSITY (10 yrs.)	(25 yrs.)	DISCHARGE (cfs.) (10 yrs.)	(25 yrs.)	PIPE DIAM. (in.)	LENGTH (ft.)	SLOPE (ft./ft.)	F/L PIPE IN / OUT (ft.)	MEAN VEL (fps.)	JUST FULL CAPACITY (cfs.)	FRICT SLOPE (ft./ft.)	HYGR EL. IN / OUT (ft.)	COVER IN / OUT (ft.)	COVER MINUS HY GR	COVER MINUS CROWN	INLET TYPE MANNING'S 'n'
15D1	2MH4	263+91		2.51	1.66	33.25	2.82	3.37	4.7	5.6	18	64.0	0.0243	728.17	7.22	15.27	0.0038	728.82	733.00	4.18	3.33	CB 2-2B
begin		257+82		2.51	1.66						EX. PIPE CROSSING			726.61				727.82	735.31			0.015
											ADD CONC. COLLAR											
16D3	16D2	267+33		0.73	0.61	19.10	3.92	4.52	2.4	2.7	12	81.0	0.0093	731.75	4.20	3.20	0.0078	732.51	733.94	1.43	1.19	CB 2-2B
begin		266+50		3.24	2.27									731.00				731.86	733.36			0.015
16D2	16D1	266+50		0.34	0.27	19.42	3.88	4.52	3.4	4.0	15	266.0	0.0075	731.00	4.29	5.22	0.0050	731.86	733.36	1.50	1.11	CB 2-2B
		263+78		3.58	2.54									729.00				730.03	733.55			0.015
16D1	2MH4	263+78		0.53	0.44	20.46	3.78	4.49	5.0	5.9	15	73.0	0.0118	728.71	5.53	6.54	0.0112	729.78	733.55	3.77	3.59	CB 2-2B
		263+86		4.11	2.98									727.85				728.97	735.31			0.015
15EX	2MH4	263+76		1.23	1.11	22.50	3.58	4.28	4.0	4.7	18	8.0	0.0500	725.90	8.91	21.90	0.0027	726.69	733.90	7.21	6.50	CB 2-2B
begin		263+86		5.34	4.09						EX. PIPE			725.50				726.67	735.31			0.015
2MH3	2MH4	257+85		43.02	31.05	39.41	2.52	2.84	78.4	88.2	EX. PIPE 48	600.0	0.0020	718.56	6.24	59.89	0.0050	728.82	737.59	8.77	15.03	MH 3
begin		263+86		48.36	35.14						Warning *			717.36				725.82	735.31			0.015
2MH4	2MH5	263+86		0.00	0.00	41.01	2.46	2.84	86.3	99.8	EX. PIPE 48	1010.0	0.0020	717.36	6.87	59.89	0.0064	725.82	735.31	9.49	13.95	MH 3
final		273+93		48.36	35.14						Warning *			715.34				719.34	738.78			0.015

* NOTE - HGL REMAINS CONTAINED WITHIN THE SYSTEM.

STORM SEWER SYSTEM

PID : 115792 **Date :** 03/27/2024 **Project :** FRA-122-0.00 **Location :** ALUM CREEK DRIVE - S.R. 317 TO GROVEPORT ROAD.

Description :RIGHT-SIDE STORM SYSTEM - FROM HP CB-3A AT 281+00 TO HW OUTLET AT 275+35.69 **Designer :** N.M. GOODMAN

Rainfall Area: C **Just Full Capacity Frequency (yrs.) :** 10 **Hydraulic Gradient Frequency (yrs.) :** 25

Minimum Pipe Size : 12.00 **Tailwater Elevation (ft.):** 719.83

JUNCTION From	To	STATION From / To	ΔAREA / ΣAREA (acres)	ΔCA / ΣCA	BEGIN TIME (min.)	RAINFALL INTENSITY (10 yrs.)	(25 yrs.)	DISCHARGE (cfs.) (10 yrs.)	(25 yrs.)	PIPE DIAM. (in.)	LENGTH (ft.)	SLOPE (ft./ft.)	F/L PIPE IN / OUT (ft.)	MEAN VEL (fps.)	JUST FULL CAPACITY (cfs.)	FRICT SLOPE (ft./ft.)	HYGR EL. IN / OUT (ft.)	COVER IN / OUT (ft.)	COVER MINUS HY GR	COVER MINUS CROWN	INLET TYPE MANNING'S 'n'
18D8	18D9	281+00	0.53	0.43	19.07	3.92	4.70	1.7	2.0	12	7.0	0.0286	736.00	5.94	5.61	0.0044	736.64	738.62	1.98	1.62	CB 3A
begin		281+00	0.53	0.43									735.80				736.61	740.00			0.015
18D9	18D7	281+00	0.00	0.00	19.09	3.92	4.58	1.7	2.0	12	120.0	0.0083	735.80	3.75	3.03	0.0041	736.42	740.00	3.58	3.20	MH 3
		279+75	0.53	0.43									734.80				735.65	741.00			0.015
18D6	18D7	279+75	0.27	0.24	17.42	4.11	4.58	1.0	1.1	12	7.0	0.0286	735.00	5.14	5.61	0.0013	735.66	738.37	2.71	2.37	CB 3A
begin		279+75	0.80	0.68									734.80				735.65	741.00			0.015
18D7	18D5	279+75	0.00	0.00	19.62	3.86	4.58	2.6	3.1	12	97.0	0.0103	734.80	4.47	3.37	0.0101	735.65	741.00	5.35	5.20	MH 3
		278+73	0.80	0.68									733.80				734.68	740.30			0.015
18D4	18D5	278+75	0.22	0.18	17.08	4.16	4.36	0.7	0.8	12	7.0	0.0286	734.00	4.70	5.61	0.0006	734.66	738.17	3.51	3.17	CB 3A
begin		278+73	1.02	0.86									733.80				734.66	740.30			0.015
18D5	18D3	287+73	0.00	0.00	19.98	3.82	4.36	3.3	3.7	15	166.0	0.0075	733.80	4.25	5.23	0.0045	734.66	740.30	5.64	5.25	MH 3
		277+00	1.02	0.86									732.55				733.92	739.55			0.015
18D2	18D3	277+00	0.38	0.31	18.41	4.00	4.36	1.2	1.4	12	7.0	0.0643	733.00	7.26	8.42	0.0019	733.93	738.11	4.18	4.11	CB 3A
begin		277+00	1.40	1.17									732.55				733.92	739.55			0.015
18D3	18DA	277+00	0.00	0.00	20.64	3.76	4.36	4.4	5.1	15	160.0	0.0066	732.55	4.21	4.88	0.0083	733.92	739.55	5.63	5.75	MH 3
		275+36	1.40	1.17									731.50				732.59	736.44			0.015

STORM SEWER SYSTEM

JUNCTION From	To	STATION From	To	ΔAREA ΣAREA (acres)	ΔCA ΣCA	BEGIN TIME (min.)	RAINFALL INTENSITY (10 yrs.)	(25 yrs.)	DISCHARGE (cfs.) (10 yrs.)	(25 yrs.)	PIPE DIAM. (in.)	LENGTH (ft.)	SLOPE (ft./ft.)	F/L PIPE IN / OUT (ft.)	MEAN VEL (fps.)	JUST FULL CAPACITY (cfs.)	FRICT SLOPE (ft./ft.)	HYGR EL. IN / OUT (ft.)	COVER IN / OUT (ft.)	COVER MINUS HY GR	COVER MINUS CROWN	INLET TYPE MANNING'S 'n'
18DA	18D1	275+36		0.46	0.38	21.27	3.69	4.36	5.7	6.7	18	140.0	0.0071	731.50	4.77	8.28	0.0055	732.59	736.44	3.85	3.44	CB 2-2B
		273+92		1.86	1.55									730.50				731.75	735.74			0.015
18D1	2MH5	273+92		0.92	0.67	21.76	3.65	4.34	8.1	9.6	18	69.0	0.0145	730.50	6.79	11.79	0.0112	731.62	735.74	4.12	3.74	CB 2-2B
		273+92		2.78	2.22									729.50				730.85	738.78			0.015
17D1	2MH5	273+93		1.24	0.85	23.28	3.51	4.16	3.0	3.5	EX. PIPE 15	67.0	0.0070	733.75	4.05	5.04	0.0040	734.56	736.50	1.94	1.50	CB 2-2B
begin		273+92		4.02	3.07						MAINTAIN EX. SLOPE AND USE CONC. COLLAR			733.28				734.28	738.78			0.015
2MH4	2MH5	263+86		48.36	35.14	41.01	2.46	2.79	86.3	98.1	EX. PIPE 48	1010.0	0.0020	717.36	6.87	59.89	0.0062	729.78	735.31	5.53	13.95	MH 3
begin		273+92		52.38	38.21						Warning *			715.34				723.52	738.87			0.015
2MH5	2MH6	273+92		0.41	0.37	43.46	2.36	2.79	91.1	107.7	EX. PIPE 48	494.0	0.0020	715.34	7.25	59.89	0.0075	723.52	738.78	15.26	19.44	CB 2-2B
final		278+86		52.79	38.58						Warning *			714.35				719.83	740.13			0.015

CONC. LOADS ADDED FOR MEDIAN CURB INLETS THAT DRAIN TO 2MH5

* NOTE - HGL REMAINS CONTAINED WITHIN THE SYSTEM.

STORM SEWER SYSTEM

PID : 115792 **Date :** 03/28/2024 **Project :** FRA-122-0.00 **Location :** ALUM CREEK DRIVE - S.R. 317 TO GROVEPORT ROAD.

Description :CLOSED SYSTEM OUTLETTING TO EX. TRUNK MH-3 STA. 278+86. **Designer :** N.M. GOODMAN

Rainfall Area: C **Just Full Capacity Frequency (yrs.) :** 10 **Hydraulic Gradient Frequency (yrs.) :** 25

Minimum Pipe Size : 12.00 **Tailwater Elevation (ft.):** 717.76

JUNCTION From	To	STATION From To	ΔAREA ΣAREA (acres)	ΔCA ΣCA	BEGIN TIME (min.)	RAINFALL INTENSITY (10 yrs.)	(25 yrs.)	DISCHARGE (cfs.) (10 yrs.)	(25 yrs.)	PIPE DIAM. (in.)	LENGTH (ft.)	SLOPE (ft./ft.)	F/L PIPE IN / OUT (ft.)	MEAN VEL (fps.)	JUST FULL CAPACITY (cfs.)	FRICT SLOPE (ft./ft.)	HYGR EL. IN / OUT (ft.)	COVER IN / OUT (ft.)	COVER MINUS HY GR	COVER MINUS CROWN	INLET TYPE MANNING'S 'n'
19D2	19D1	281+78	0.36	0.26	18.24	4.02	4.57	1.0	1.2	12	142.0	0.0070	737.25	3.12	2.79	0.0014	737.72	738.92	1.20	0.67	CB 2-2B
begin		280+37	0.36	0.26									736.25				737.09	739.64			0.015
19D1	19EX	280+37	0.16	0.11	19.00	3.93	4.57	1.5	1.7	12	69.0	0.0029	736.25	2.39	1.79	0.0030	737.09	739.64	2.55	2.39	CB 2-2B
		280+37	0.52	0.37									736.05				736.84	739.95			0.015
19EX	2MH6	280+37	0.30	0.27	19.48	3.88	4.57	2.5	2.9	EX. PIPE 12	147.0	0.0097	736.05	4.31	3.26	0.0090	736.84	739.95	3.11	2.90	CB 2-2B
		278+86	0.82	0.64									734.63				735.50	740.13			0.015
2MH5	2MH6	273+92	52.79	38.58	43.46	2.36	2.74	91.1	105.7	EX. PIPE 48	494.0	0.0020	715.34	7.25	59.89	0.0072	725.41	738.78	13.37	19.44	CB 2-2B
begin		278+86	53.61	39.22						**Warning** *			714.35				721.85	740.13			0.015
2MH6	3MH1	278+86	0.16	0.14	44.60	2.32	2.74	91.3	107.9	EX. PIPE 48	545.0	0.0020	714.35	7.26	59.89	0.0075	721.85	740.13	18.28	21.78	MH 3
final		284+28	53.77	39.37						**Warning** *			713.26				717.76	740.74			0.015

CONC. LOADS ADDED
FOR MEDIAN CURB
INLETS THAT DRAIN TO
2MH5

* NOTE - HGL REMAINS CONTAINED WITHIN THE SYSTEM.

STORM SEWER SYSTEM

PID : 115792 **Date :** 04/01/2024 **Project :** FRA-122-0.00 **Location :** ALUM CREEK DRIVE - S.R. 317 TO GROVEPORT ROAD.

Description :CLOSED SYSTEM OUTLETTING TO EX. TRUNK MH-3 STA. 284+28.48 FROM HP STA 290+50 **Designer :** N.M. GOODMAN

Rainfall Area: C **Just Full Capacity Frequency (yrs.) :** 10 **Hydraulic Gradient Frequency (yrs.) :** 25

Minimum Pipe Size : 12.00 **Tailwater Elevation (ft.):** 718.12

JUNCTION From	To	STATION From / To	ΔAREA / ΣAREA (acres)	ΔCA / ΣCA	BEGIN TIME (min.)	RAINFALL INTENSITY (10 yrs.)	(25 yrs.)	DISCHARGE (cfs.) (10 yrs.)	(25 yrs.)	PIPE DIAM. (in.)	LENGTH (ft.)	SLOPE (ft./ft.)	F/L PIPE IN / OUT (ft.)	MEAN VEL (fps.)	JUST FULL CAPACITY (cfs.)	FRICT SLOPE (ft./ft.)	HYGR EL. IN / OUT (ft.)	COVER IN / OUT (ft.)	COVER MINUS HY GR	COVER MINUS CROWN	INLET TYPE MANNING'S 'n'
20D5	20D4	288+00	0.58	0.46	18.47	3.99	4.78	1.9	2.2	12	5.0	0.0400	738.00	6.86	6.64	0.0052	738.64	740.80	2.16	1.80	CB 3A
begin		288+00	0.58	0.46									737.80				738.62	742.80			0.015
20D4	20D2	288+00	0.00	0.00	18.48	3.99	4.64	1.9	2.2	12	196.0	0.0051	737.80	3.15	2.37	0.0049	738.60	742.80	4.20	4.00	MH 3
		286+00	0.58	0.46									736.80				737.61	742.76			0.015
20D3	20D2	286+00	0.44	0.34	17.78	4.07	4.88	1.4	1.7	12	5.0	0.0400	737.00	6.36	6.64	0.0029	737.59	740.27	2.68	2.27	CB 3A
begin		286+00	1.02	0.81									736.80				737.57	742.80			0.015
20D2	20D1	286+00	0.00	0.00	19.52	3.87	4.54	3.1	3.7	15	167.0	0.0060	736.55	3.84	4.66	0.0043	737.43	742.80	5.37	5.00	MH 3
		284+30	1.02	0.81									735.55				736.56	741.30			0.015
20D1	3MH1	284+30	0.34	0.27	20.24	3.80	4.52	4.1	4.9	15	69.0 ¥	0.0241	735.25	6.96	9.35	0.0075	735.92	741.30	5.38	4.80	CB 3
		284+29	1.36	1.07									733.59				734.66	740.74			0.015
21D7	21D6	288+15	0.46	0.37	18.42	4.00	4.79	1.5	1.8	12	7.0	0.0286	738.00	5.73	5.61	0.0032	738.61	740.83	2.22	1.83	CB 3
begin		288+15	1.82	1.44									737.80				738.58	741.15			0.015
21D6	21D4	288+15	0.00	0.00	18.44	3.99	4.74	1.5	1.7	12	78.0	0.0128	737.80	4.26	3.76	0.0032	738.30	741.15	2.85	2.35	MH 3
		287+34	1.82	1.44									736.80				737.58	740.96			0.015
21D5	21D4	287+34	0.16	0.12	16.50	4.23	5.08	0.5	0.6	12	6.0	0.0333	737.00	4.52	6.06	0.0004	737.47	740.67	3.20	2.67	CB 3
begin		287+34	1.98	1.57									736.80				737.47	740.96			0.015

¥ 10' PROP. PIPE, WITH CONC. COLLAR EXT.

STORM SEWER SYSTEM

JUNCTION From	To	STATION From	To	ΔAREA ΣAREA (acres)	ΔCA ΣCA	BEGIN TIME (min.)	RAINFALL INTENSITY (10 yrs.)	(25 yrs.)	DISCHARGE (cfs.) (10 yrs.)	(25 yrs.)	PIPE DIAM. (in.)	LENGTH (ft.)	SLOPE (ft./ft.)	F/L PIPE IN / OUT (ft.)	MEAN VEL (fps.)	JUST FULL CAPACITY (cfs.)	FRICT SLOPE (ft./ft.)	HYGR EL. IN / OUT (ft.)	COVER IN / OUT (ft.)	COVER MINUS HY GR	COVER MINUS CROWN	INLET TYPE MANNING'S 'n'
21D4	21D3	287+34		0.00	0.00	18.75	3.96	4.71	2.0	2.3	12	76.0	0.0132	736.80	4.61	3.81	0.0056	737.39	740.96	3.57	3.16	MH 3
		286+54		1.98	1.57									735.80				736.63	740.78			0.015
21D2	21D3	286+54		0.15	0.12	18.21	4.02	4.82	0.5	0.6	12	6.0	0.0333	736.00	4.38	6.06	0.0003	736.46	740.49	4.03	3.49	CB 3
begin		286+54		2.13	1.68									735.80				736.46	740.78			0.015
21D3	21D1	286+54		0.00	0.00	19.02	3.93	4.58	2.4	2.8	15	194.0	0.0051	735.55	3.40	4.30	0.0025	736.32	740.78	4.46	3.98	CB 3
		284+60		2.13	1.68									734.56				735.52	740.50			0.015
21D1	21EX	284+60		0.37	0.29	19.97	3.83	3.87	3.4	3.5	15	31.0 ¥	0.0216	734.56	6.40	8.85	0.0039	735.32	740.50	5.18	4.69	CB 3A
		284+27		2.50	1.97						EX. PIPE			733.89				735.20	740.09			0.015
21EX	3MH1	284+27		±1.00	0.60	26.40	3.26	3.87	4.9	5.8	15	51.0	0.0069	733.89	4.28	4.99	0.0107	735.20	740.09	4.89	4.95	MH 3
		284+29		3.50	2.57						EX. PIPE CROSSING			733.54				734.65	740.74			0.015
2MH6	3MH1	278+86		53.77	39.37	44.60	2.32	2.68	91.3	105.5	EX. PIPE 48	545.0	0.0020	714.35	7.26	59.89	0.0072	724.59	740.13	15.54	21.78	MH 3
begin		284+28		57.27	41.94						**Warning** *			713.26				720.68	740.74			0.015
3MH1	3MH2	284+29		±0.76	0.69	45.85	2.27	2.68	97.0	114.3	EX. PIPE 54	570.0	0.0020	712.76	6.10	81.99	0.0045	720.68	740.74	20.06	23.48	MH 3
final		289+98		58.03	42.63						**Warning** *			711.62				718.12	741.76			0.015

¥ 10' PROP. PIPE, WITH CONC. COLLAR EXT.

± CONC. LOADS ADDED FROM MEDIAN DITCH FLOW, INCOMING 15" PIPE. AND FROM TOY RD. CLOSED SYSTEM/SHEETZ.

* NOTE - HGL REMAINS CONTAINED WITHIN THE SYSTEM.

STORM SEWER SYSTEM

PID : 115792 **Date :** 04/01/2024 **Project :** FRA-122-0.00 **Location :** ALUM CREEK DRIVE - S.R. 317 TO GROVEPORT ROAD.

Description :CLOSED SYSTEM OUTLETTING TO EX. MED. CB AT STA. 295+50 FROM HP STA 290+50 **Designer :** N.M. GOODMAN

Rainfall Area: C **Just Full Capacity Frequency (yrs.) :** 10 **Hydraulic Gradient Frequency (yrs.) :** 25

Minimum Pipe Size : 12.00 **Tailwater Elevation (ft.):** 716.45

JUNCTION From	To	STATION From To	ΔAREA ΣAREA (acres)	ΔCA ΣCA	BEGIN TIME (min.)	RAINFALL INTENSITY (10 yrs.)	(25 yrs.)	DISCHARGE (cfs.) (10 yrs.)	(25 yrs.)	PIPE DIAM. (in.)	LENGTH (ft.)	SLOPE (ft./ft.)	F/L PIPE IN / OUT (ft.)	MEAN VEL (fps.)	JUST FULL CAPACITY (cfs.)	FRICT SLOPE (ft./ft.)	HYGR EL. IN / OUT (ft.)	COVER IN / OUT (ft.)	COVER MINUS HY GR	COVER MINUS CROWN	INLET TYPE MANNING'S 'n'
20D7	20D6	293+00	0.58	0.45	16.99	4.17	5.00	1.9	2.3	12	5.0	0.0400	737.00	6.89	6.64	0.0054	737.65	739.98	2.33	1.98	CB 3A
begin		293+00	0.58	0.45									736.80				737.62	741.65			0.015
20D6	20D8	293+00	0.00	0.00	17.00	4.17	4.83	1.9	2.2	12	244.0	0.0066	736.80	3.50	2.69	0.0050	737.52	741.65	4.13	3.85	MH 3
		295+50	0.58	0.45									735.20				736.02	740.24			0.015
20D8	20D9	295+48	0.00	0.00	18.16	4.02	4.82	1.8	2.2	12	5.0	0.0400	735.20	6.84	6.64	0.0050	735.84	740.24	4.40	4.04	MH 3
		295+49	0.58	0.45									735.00				735.82	737.98			0.015
20D9	20EX	295+49	0.42	0.33	18.18	4.02	4.74	3.1	3.7	15	54.0	0.0139	732.17	5.31	7.10	0.0044	733.32	737.98	4.66	4.56	CB 3A
		295+50	1.00	0.78						EX. PIPE	¥		731.42				733.08	736.22			0.015
21D8	21D9	293+00	0.41	0.32	17.13	4.15	4.98	1.3	1.6	12	5.0	0.0400	737.00	6.25	6.64	0.0027	737.58	739.98	2.40	1.98	CB 3A
begin		293+00	1.41	1.10									736.80				737.57	741.35			0.015
21D9	21D11	293+00	0.00	0.00	17.14	4.15	4.82	1.3	1.5	12	248.0	0.0113	736.80	3.96	3.53	0.0025	737.28	741.35	4.07	3.55	MH 3
		295+49	1.41	1.10									734.00				734.76	739.65			0.015
21D11	21D10	295+49	0.00	0.00	18.19	4.02	4.82	1.3	1.5	12	5.0	0.0400	734.00	6.21	6.64	0.0025	734.58	739.65	5.07	4.65	MH 3
		295+49	1.41	1.10									733.80				734.56	737.98			0.015
21D10	20EX	295+49	0.33	0.27	18.20	4.02	4.74	2.4	2.8	15	64.0	0.0139	729.81	4.94	7.10	0.0025	733.24	737.98	4.74	6.92	CB 3A
		295+49	1.74	1.37						EX. PIPE	¥		728.92				733.08	736.22			0.015

¥ 10' PROP. PIPE, WITH CONC. COLLAR EXT.

STORM SEWER SYSTEM

JUNCTION From	JUNCTION To	STATION From	STATION To	ΔAREA ΣAREA (acres)	ΔCA ΣCA	BEGIN TIME (min.)	RAINFALL INTENSITY (10 yrs.)	RAINFALL INTENSITY (25 yrs.)	DISCHARGE (cfs.) (10 yrs.)	DISCHARGE (cfs.) (25 yrs.)	PIPE DIAM. (in.)	PIPE LENGTH (ft.)	PIPE SLOPE (ft./ft.)	F/L PIPE IN / OUT (ft.)	MEAN VEL (fps.)	JUST FULL CAPACITY (cfs.)	FRICT SLOPE (ft./ft.)	HYGR EL. IN / OUT (ft.)	COVER IN / OUT (ft.)	COVER MINUS HY GR	COVER MINUS CROWN	INLET TYPE MANNING'S 'n'
20EX1	22EX2	295+50	296+79	0.63 2.37	0.57 1.94	18.42	4.00	4.74	7.7	9.2	15 Warning	127.0	0.0154	730.42 728.46	6.31	7.48	0.0269	733.08 729.67	736.22 736.49	3.14	4.55	CB 2-2B 0.015
22EX1	22D1	296+38	296+53	0.35 2.72	0.26 2.20	15.00	4.43	5.32	1.1	1.4	12	35.0	0.0276	732.22 731.25	5.27	5.52	0.0020	732.57 732.00	736.72 737.16	4.15	3.50	CB 2-2B 0.015
begin																						
22D1	22EX2	296+53	296+79	0.18 2.90	0.16 2.36	15.98	4.30	5.14	1.8	2.2	12 EX. PIPE	61.0 ¥	0.0276	731.25 729.57	5.98	5.52	0.0049	731.70 730.38	737.16 736.66	5.46	4.91	CB 3A 0.015
23EX1	23D2	296+15	296+60	0.26 3.16	0.23 2.59	15.00	4.43	5.31	1.0	1.2	12	45.0	0.0182	732.82 732.00	4.39	4.48	0.0016	733.19 732.73	735.02 735.40	1.83	1.20	CB 2-2B 0.015
begin																						
23D2	23D1	296+60	296+65	0.26 3.42	0.23 2.83	15.17	4.41	5.30	2.1	2.5	15	25.0	0.0136	731.75 731.41	4.72	7.02	0.0020	732.40 732.35	735.40 737.06	3.00	2.40	CB 2-2B 0.015
23D1	22EX2	296+64	296+79	0.19 3.61	0.15 2.97	16.09	4.28	5.13	2.6	3.2	15 EX. PIPE	67.0 ¥	0.0357	731.41 729.02	7.16	11.37	0.0032	731.88 730.00	735.40 736.22	3.52	2.74	CB 3 0.015
22EX2	OUTLET	296+79	297+55	±58.18 61.79	42.76 45.74	45.85	2.27	2.73	104.0	125.0	EX. PIPE 54 Warning *	85.0	0.0020	712.12 711.95	6.54	81.99	0.0054	716.91 716.45	736.66 716.45	19.75	20.04	CB 2-2B 0.015
final																						

¥ 10' PROP. PIPE, WITH CONC. COLLAR EXT.

± CONC. LOADS ADDED FROM ENTIRE TRUNK LINE.

* NOTE - HGL REMAINS CONTAINED WITHIN THE SYSTEM.

STORM SEWER SYSTEM

PID : 115792 **Date :** 04/05/2024 **Project :** FRA-122-0.00 **Location :** ALUM CREEK DRIVE - S.R. 317 TO GROVEPORT ROAD.

Description :CLOSED SYSTEM OUTLETTING TO EX. MED. MH AT STA. 324+69 **Designer :** N.M. GOODMAN

Rainfall Area: C **Just Full Capacity Frequency (yrs.) :** 10 **Hydraulic Gradient Frequency (yrs.) :** 25

Minimum Pipe Size : 12.00 **Tailwater Elevation (ft.):** 713.79

JUNCTION From	To	STATION From	To	ΔAREA ΣAREA (acres)	ΔCA ΣCA	BEGIN TIME (min.)	RAINFALL INTENSITY (10 yrs.)	(25 yrs.)	DISCHARGE (cfs.) (10 yrs.)	(25 yrs.)	PIPE DIAM. (in.)	LENGTH (ft.)	SLOPE (ft./ft.)	F/L PIPE IN / OUT (ft.)	MEAN VEL (fps.)	JUST FULL CAPACITY (cfs.)	FRICT SLOPE (ft./ft.)	HYGR EL. IN / OUT (ft.)	COVER IN / OUT (ft.)	COVER MINUS HY GR	COVER MINUS CROWN	INLET TYPE MANNING'S 'n'
24HW	24D1	325+05		2.10	1.60	31.27	2.94	3.50	4.7	5.6	12	52.0	0.0542	723.82	9.77	7.73	0.0329	724.48	724.82	0.34	0.00	HW Half He
begin		324+52		2.10	1.60									721.00				721.97	725.00			0.015
24D1	24EX1	324+52		0.00	0.00	31.36	2.93	3.48	4.7	5.6	18	67.0	0.0070	713.17	4.54	8.20	0.0037	714.16	725.00	10.84	10.33	MH 3
		324+58		2.10	1.60						EX. PIPE			712.70				713.91	725.34			0.015
24D2	24EX1	324+36		1.27	0.84	15.00	4.43	5.29	3.7	4.4	15	76.0	0.0066	715.95	4.13	4.88	0.0062	716.98	725.13	8.15	7.93	MH 3
begin		324+58		3.37	2.44						EX. PIPE			715.45				716.50	725.34			0.015
24EX2	24EX1	324+69		1.79	1.32	30.18	3.00	3.58	4.0	4.7	15	9.0	0.0556	721.22	9.39	14.19	0.0071	721.85	724.63	2.78	2.16	CB 2-2B
begin		324+58		5.16	3.75						EX. PIPE			720.72				721.79	725.34			0.015
24EX1	24EX3	324+58		0.00	0.00	31.60	2.92	3.42	10.9	12.8	36	200.0	0.0020	712.09	3.50	27.81	0.0005	713.89	725.34	11.45	10.25	MH 3
final		322+58		5.16	3.75						EX. PIPE			711.69				713.79	723.99			0.015