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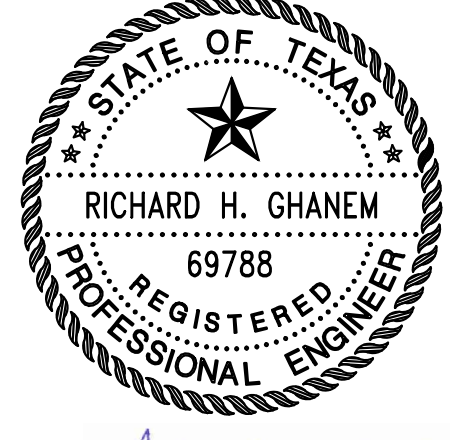
22 Oct 2017 4:42PM CIV02 P:\MVA Projects\Catholic Church Projects\CHRIST THE GOOD SHEPHERD\PARKING\DRAWINGS\CUS-SHEET 15 DRAINAGE CALCULATIONS\SHEET 1 OF 2.dwg

at Up-stream Node	at Down-stream Node	Desc & Drainage Area	Area [Acres]	Accumul. Acreage	Runoff Coeff.	Accumul. Sum of [AI x C]	2-Year Intensity [In/Hr]	2-Year Sum of Flows Q [cfs]	Initial Time of Concentration [Min.]	Reach Length [Ft.]	Chnl Depth [Ft.]	Open Channel Section	Chnl Top Width [Ft.]	Chnl "HR / Froude No" RCP=	Chnl= CGMP=	0.040 RCP=	Chnl Vel Design Velocity [fps]	Chnl Flow Design Capacity [cfs]	Chnl Vel Actual Velocity [fps]	Hydraulic Gradient [%]	Change in Head [Ft.]	Hydraulic Gradeline at Up-stream [Elev]	Hydraulic Gradeline at Down-stream [Elev]	TP/NG TG/RIM at Up-stream [Elev]	pipe CROWN at Up-stream [Elev]	Cover Depth above crown [ft]	Depth of HGL(+D) above RIM/NG D [Ft]				
No.	No.	No.	[Acres]	[Acres]	C	[AI x C]	[In/Hr]	[cfs]	[Min.]	[Ft.]	[Inch]	Description [SF]	[Ft]	[Ft]	[%]	"n"	[fps]	[cfs]	[Ft]	[Elev]	[Elev]	[Elev]	[Elev]	[Elev]	[+d][Ft]	[Ft]					
DRAINAGE SYSTEM A COMPUTATIONS																															
A1-1	A2-1	DA-1	0.20	0.20	0.80	0.16	0.16	3.59	0.57	22.53	64.00	24	3.14	6.2832	0.5000	0.17%	0.013	2.98	9.35	0.11	124.17	124.07	3.62	0.17%	0.11	126.17	126.07	128.25	126.17	2.08	-2.08
A2-1	A4-1	DA-2	0.40	0.60	0.80	0.48	0.48	3.51	1.69	23.52	117.00	24	3.14	6.2832	0.5000	0.17%	0.013	2.98	9.35	0.20	124.07	123.87	4.13	0.17%	0.20	126.07	125.87	127.46	126.07	1.39	-1.39
A4-1	A5-1	DA-4	0.20	1.09	0.80	0.87	0.87	3.46	3.02	24.17	64.00	24	3.14	6.2832	0.5000	0.17%	0.013	2.98	9.35	0.11	123.87	123.76	3.95	0.17%	0.11	125.87	125.76	127.60	125.87	1.73	-1.73
A5-1	A7-1	DA-5	0.12	1.21	0.80	0.96	0.96	3.44	3.32	24.53	93.00	24	3.14	6.2832	0.5000	0.17%	0.013	2.98	9.35	0.16	123.76	123.60	4.49	0.17%	0.16	125.76	125.60	127.28	125.76	1.52	-1.52
A3-1	A4-1	DA-3	0.29	0.29	0.80	0.23	0.23	3.55	0.82	23.04	64.00	24	3.14	6.2832	0.5000	0.17%	0.013	2.98	9.35	0.11	123.98	123.87	0.26	0.17%	0.11	125.98	125.87	127.28	125.98	1.30	-1.30
A6-1	A7-1	DA-6	0.19	0.19	0.80	0.15	0.15	3.59	0.54	22.46	64.00	24	3.14	6.2832	0.5000	0.17%	0.013	2.98	9.35	0.11	123.71	123.60	0.17	0.17%	0.11	125.71	125.60	126.45	125.71	0.74	-0.74
A8-1	A9-1	DA-8	0.40	0.40	0.80	0.32	0.32	3.51	1.13	23.52	41.60	24	3.14	6.2832	0.5000	0.17%	0.013	2.98	9.35	0.07	123.63	123.56	0.36	0.17%	0.07	125.63	125.56	127.00	125.63	1.37	-1.37
A9-1	A10-1	DA-9	0.17	0.57	0.80	0.46	0.46	3.50	1.60	23.75	64.00	24	3.14	6.2832	0.5000	0.17%	0.013	2.98	9.35	0.11	123.56	123.45	0.51	0.17%	0.11	125.56	125.45	126.55	125.56	0.99	-0.99
A7-1	A10-1	DA-7	0.13	1.53	0.80	1.22	1.22	3.35	4.10	25.77	90.00	24	3.14	6.2832	0.5000	0.17%	0.013	2.98	9.35	0.15	123.60	123.45	1.30	0.17%	0.15	125.60	125.45	126.55	125.60	0.95	-0.95
A10-1	A11-1	DA-10	0.15	2.25	0.80	1.80	1.80	3.32	5.98	26.28	75.00	24	3.14	6.2832	0.5000	0.17%	0.013	2.98	9.35	0.63	123.45	122.82	1.90	0.17%	0.13	125.45	125.32	126.55	125.45	1.10	-1.10
A11-1	A13-1	DA-11	0.81	3.06	0.80	2.45	2.45	3.29	8.07	26.70	60.00	30	4.91	7.8540	0.6250	0.13%	0.013	3.02	14.83	0.08	122.32	122.24	1.64	0.13%	0.08	124.82	124.74	127.00	124.82	2.18	-2.18
A12-1	A13-1	DA-12	0.21	0.21	0.80	0.17	0.17	3.58	0.59	22.58	48.00	24	3.14	6.2832	0.5000	0.17%	0.013	2.98	9.35	0.08	122.82	122.74	0.19	0.17%	0.08	124.82	124.74	126.73	124.82	1.91	-1.91
A13-1	A15-1	DA-13	0.39	3.66	0.80	2.93	2.93	3.27	9.58	27.03	99.00	30	4.91	7.8540	0.6250	0.13%	0.013	3.02	14.83	0.13	122.24	122.11	1.95	0.13%	0.13	124.74	124.61	127.00	124.74	2.26	-2.26
A14-1	A15-1	DA-14	0.29	0.29	0.80	0.23	0.23	3.55	0.83	23.05	54.00	24	3.14	6.2832	0.5000	0.17%	0.013	2.98	9.35	0.09	122.70	122.61	0.26	0.17%	0.09	124.70	124.61	127.40	124.70	2.70	-2.70
A15-1	A16-1	DA-15	0.18	4.13	0.80	3.30	3.30	3.24	10.70	27.57	75.00	30	4.91	7.8540	0.6250	0.13%	0.013	3.02	14.83	0.10	122.11	122.02	2.18	0.13%	0.10	124.61	124.52	127.50	124.61	2.89	-2.89
A16-1	A18-1	DA-16	0.13	4.26	0.80	3.40	3.40	3.21	10.94	27.99	104.00	30	4.91	7.8540	0.6250	0.13%	0.013	3.02	14.83	0.14	122.02	121.88	2.23	0.13%	0.14	124.52	124.38	127.00	124.52	2.48	-2.48
A18-1	A18-2	DA-18	0.25	4.50	0.80	3.60	3.60	3.18	11.45	28.56	54.00	30	4.91	7.8540	0.6250	0.13%	0.013	3.02	14.83	0.07	121.88	121.81	2.33	0.13%	0.07	124.38	124.31	127.00	124.38	2.62	-2.62
A17-1	A18-2	DA-17	0.46	0.46	0.80	0.36	0.36	3.50	1.28	23.71	61.00	24	3.14	6.2832	0.5000	0.17%	0.013	2.98	9.35	0.10	122.41	122.31	0.41	0.17%	0.10	124.41	124.31	127.25	124.41	2.84	-2.84
A18-2	A19-1	DA-18	0.46	4.96	0.80	3.97	3.97	3.16	12.54	28.86	108.00	30	4.91	7.8540	0.6250	0.13%	0.013	3.02	14.83	0.14	121.81	121.67	2.56	0.13%	0.14	124.31	124.17	127.00	124.31	2.69	-2.69
A19-1	OUT	DA-19	0.19	5.15	0.80	4.12	4.12	3.13	12.89	29.46	18.00	36	7.07	9.4248	0.7500	0.33%	0.024	2.94	20.81	0.06	121.17	121.11	1.82	0.33%	0.06	124.17	124.11	126.50	124.17	2.33	-2.33

PROJECT:
Proposed Pavement Replacement
Christ the Good Shepherd
18511 Klein Church Road
Spring, Texas 77379

OWNER:
Christ the Good Shepherd
Archdiocese of Galveston-Houston
18511 Klein Church Road
Spring, Texas 77379
Rev. James Burkart, Pastor

ENGINEER:
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 RICHARD H. GHANEM
 69788
 REGISTERED PROFESSIONAL ENGINEER
 10/22/17
Richard Ghanem

NO.	REVISIONS	DATE	NAME

**DRAINAGE AREA
 CALCULATIONS
 SHEET 1 OF 2**

SURVEYOR:	DESIGNED BY: LG
SCALE: NTS	DRAWN BY: LG
DATE: 10/22/17	CHECKED BY: RHG
EFC PN: CIV-389-15	SHEET NO: C15 OF 38