

# CROSSROADS CHAPEL BUILDING ADDITION

**840 Northgate Boulevard**

Colorado Springs, CO

## **DRAINAGE REPORT**

Strategic Land Solutions, Inc. JN: 20-0033-01

Report Date/History: March 29, 2021

### *Prepared for:*

***CROSSROADS CHAPEL, SBC***

*Pastor D.L. Mitchell*

*840 Northgate Boulevard*

*Colorado Springs, CO 80921*

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### *Prepared by:*

Robert J. Palmer, P.E., as President

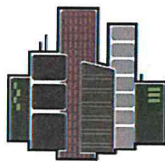
***Strategic Land Solutions, Inc.***

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# Strategic Land Solutions, Inc.

Civil Engineering • Land Planning • Entitlements

Monday – March 29, 2021

Sent Via: ☐ 1<sup>st</sup> Class ☐ FEDEX ☐ Courier ☐ Hand Deliver  
☐ Facsimile to: ☒ Deliver Email  
to:

**EL PASO COUNTY PLANNING & COMMUNITY DEVELOPMENT**

2880 International circle,  
Colorado Springs, CO **80910**

Attention: El Paso County Engineering

Re: Drainage Letter

**CROSSROADS CHAPEL SBC**  
840 North Gate Boulevard  
Colorado Springs, CO

SLS JN: 20-0033-01

To whom it may concern:

Crossroads Chapel SBS is currently planning a 3,200 square foot addition to their existing facility. As part of this project an existing 2,500 S.F. of building space is being removed for a net increase of 700 S.F. of impervious area. Additionally, a small portion of the existing parking lot will be paved as requested by El Paso County Planning.

The proposed addition consists of a new building connected to the existing buildings by an enclosed corridor. The building addition will replace two existing modular buildings, which will be removed exposing unpaved pervious area. The proposed building and the existing modular buildings are located within the same drainage basin, so the net increase in impervious area of the drainage basin is approximately 700 S.F. Furthermore, the existing drainage basins will not be altered beyond what is described in the letter, and the outfall location will not change.

Evaluating the site for the difference in impervious shows that the proposed improvements will increase site runoff 0.89 CFS during the 10-year reoccurring storm, and 1.07 CFS for the 100-year reoccurring storm. That equates to a 6.80% increase in runoff for the 10-year reoccurring storm, and a 4.00% increase for the 100-year reoccurring storm. Furthermore, the increase in runoff is limited to Basin A, which drains to an existing inlet, and Basin B, which drains to Northgate Boulevard. Therefore, there is no expected increase in runoff to the adjacent residences, and the proposed improvements should not have a negative impact on the existing drainage facilities serving the site.

The proposed site meets the four-step process shown in chapter 4.0 of the Drainage Criteria Manual Volume 2 and the Engineering Criteria Manual Appendix I section 1.7.1.A as follows.

## Step 1 (Reduces Pavement Area)

The proposed site only utilizes paved areas in the main sidewalks, ADA parking, the main access aisle, and a few highly used parking spaces. Most of the parking area utilizes a porous surface to allow infiltration of runoff. As shown in the calculations included in the appendix the site overall impervious percentage is only 7.01%.

## Step 2 (Porous Pavement)

As described above, impervious pavement is only used in high traffic area. Being a church, most of the parking and suite uses are only used once or twice a week. Therefore, most of the parking lot, along with several access paths, utilize crushed asphalt and crusher fines as a surface material. The result is a site with an imperviousness of 7.01%.

## Step 3 (Grass Buffers)

The entire site, except for a portion of Basin A, is tributary to native landscaping prior to discharging to the adjacent streets and storm water capture facilities. Furthermore, the site drainage does not simply pass over a small area of landscaping, but rather passes over large areas of native grasses allowing for infiltration.

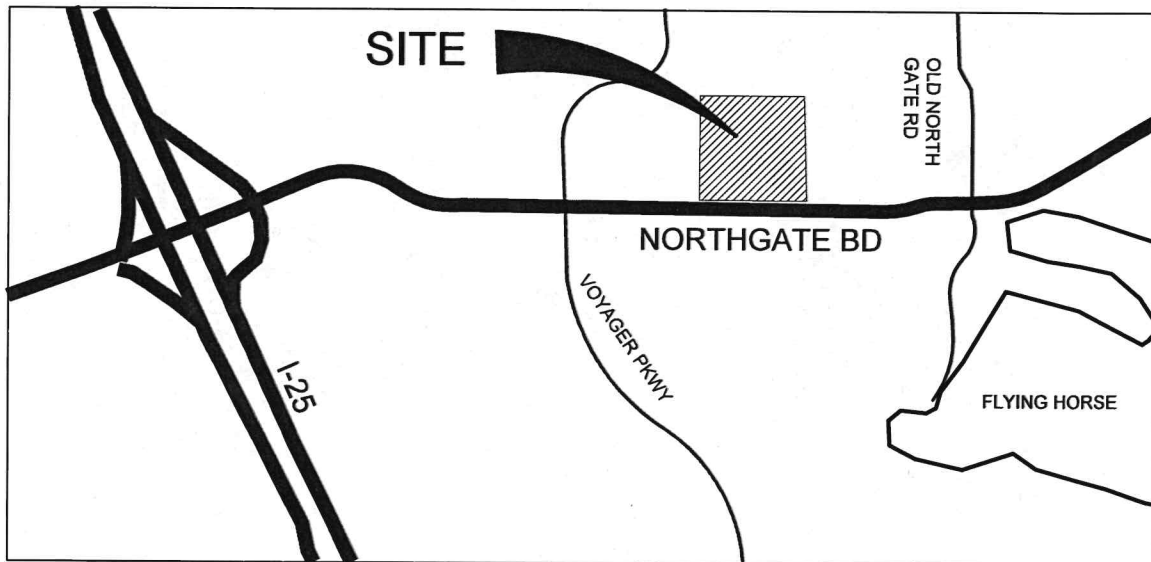
## Step 4 (Grass Swales)

As described above, the entire site except for a portion of Basin A, is tributary to native landscaping prior to discharging to the adjacent streets and storm water capture facilities. Furthermore, the existing native areas contain stabilized swales, which further allows for infiltration prior to discharging. The result

**2595 Ponderosa Road – Franktown, CO 80116**

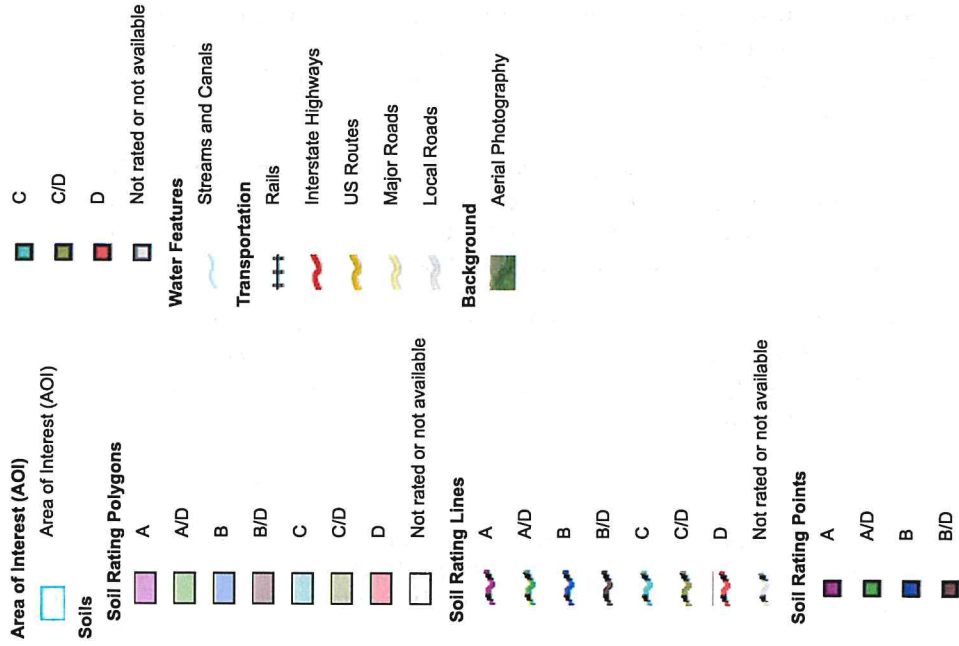
ROBERT PALMER, PE: 720.384.7661 phone • rpalmer@strategicls.com • WEBSITE: <http://www.strategicls.net>

file: c:\s\projects\2020-projects\church\docs\drainage\2021-03-26-drainage letter-scb church.doc



VICINITY MAP  
NOT TO SCALE

## MAP LEGEND



## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
 Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: El Paso County Area, Colorado  
 Survey Area Data: Version 18, Jun 5, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 19, 2018—Sep 23, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Crossroads Chapel SBC - 840 North Gate Boulevard - Colorado Springs, CO

LAND USAGE FOR EACH SUB-BASIN

LAND USAGE	PERCENT IMPERVIOUS (%)	10-YR RUNOFF COEFF. C <sub>10</sub>	100-YR RUNOFF COEFF. C <sub>100</sub>	AREA				SUM OF AREA (ACRE)
				A	B	C	D	
LANDSCAPE	0	0.25	0.35	6.136	1.346	0.254	1.564	9.300
ROOF	90	0.90	0.95	0.177	0.049			0.226
DRIVES AND WALKS (IMPERVIOUS)	100	0.90	0.95	0.203	0.296			0.499
Total				6.516	1.691	0.254	1.5640	10.0250

9.350
0.226
0.450
10.026

COMPOSITE % IMPERVIOUSNESS AND RUNOFF COEFFICIENTS

SUB-BASIN	EFFECTIVE % IMPERVIOUS	COMPOSITE C <sub>10</sub>	COMPOSITE C <sub>100</sub>	AREA acres
BASIN A	5.56	0.29	0.38	6.516
BASIN B	20.11	0.38	0.47	1.691
BASIN C	0.00	0.25	0.35	0.254
BASIN D	0.00	0.25	0.35	1.564
TOTAL PROPOSED	7.01	0.30	0.39	10.03



**SUBDIVISION:** Crossroads Chapel SBC - 840 North Gate Boulevard - Colorado Springs, CO

**CALCULATED BY:** Robert Palmer      **DATE:** 03/29/21

[illegible]

## STORM DRAINAGE DESIGN AND TECHNICAL CRITERIA

# STANDARD FORM SF-3

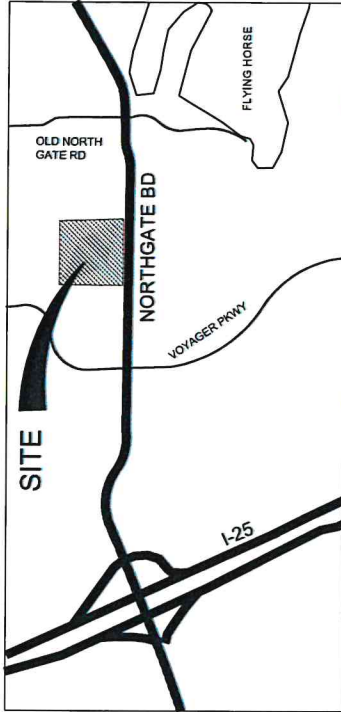
**SUBDIVISION: 840 North Gate Boulevard - Colorado Springs, CO**

**CALCULATED BY:** Robert Palmer

DATE: 03/29/21

**DESIGN STORM: 100-Yr**

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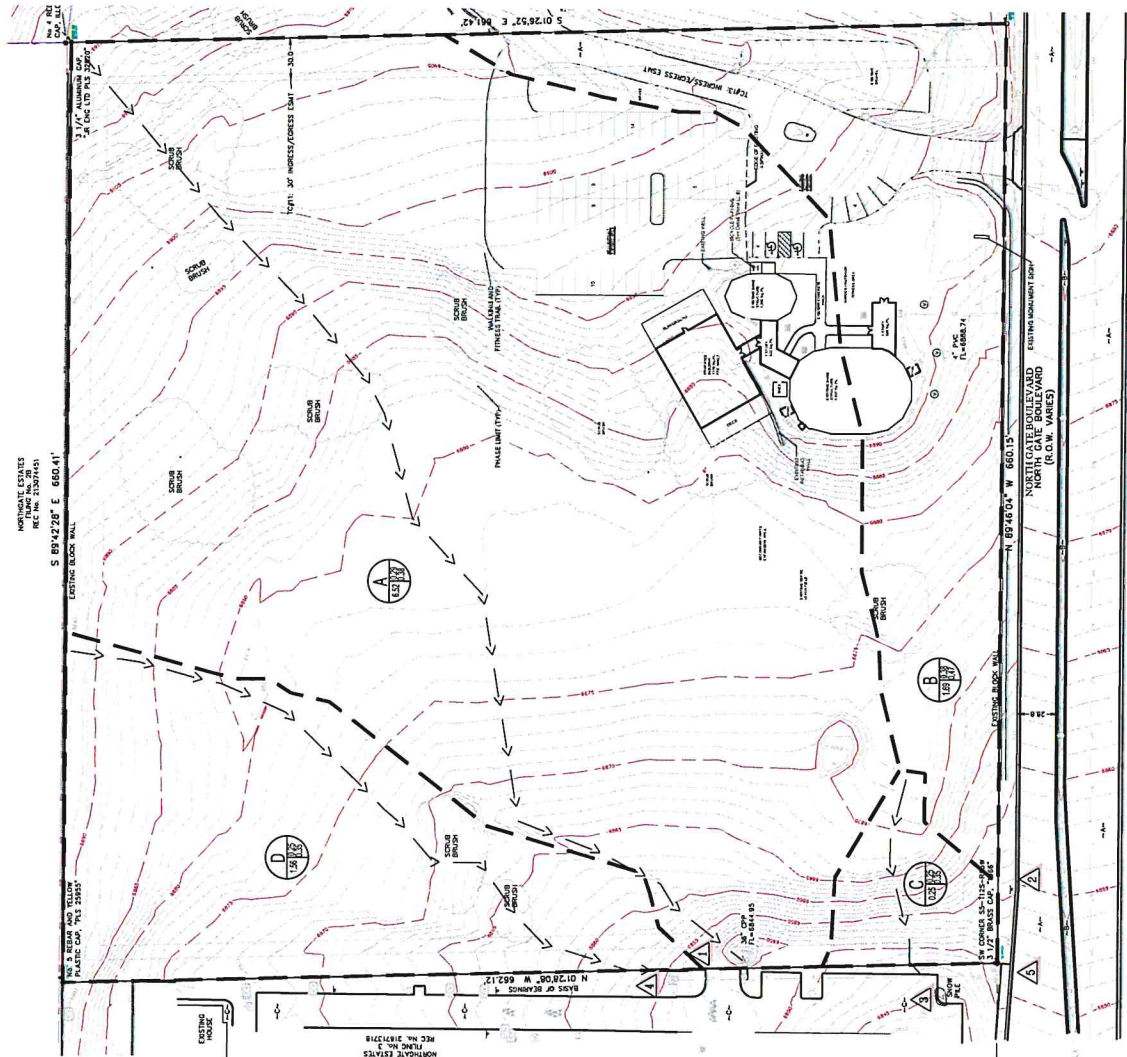
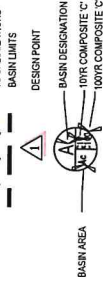


**VICINITY MAP**  
**NOT TO SCALE**

DESIGN FRT		10-YEAR RAINFALL (in/hr)	100-YEAR RAINFALL (in/hr)	100-YEAR INCREASED RAINFALL (in/hr)
1	A6.516	8.63	17.56	0.82
2	B1.691	3.01	5.87	0.10
3	C0.254	0.37	0.80	0.00
4	D1.154	1.96	4.19	0.00
5	TOTAL SITE/10.02	13.97	27.80	1.07

**LEGEND**

← TC CALCULATIONS



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PCD File No PPR2039