CROSSROADS CHAPEL BUILDING ADDITION

840 Northgate Boulevard
Colorado Springs, CO

PPR2135

DRAINAGE REPORT

Strategic Land Solutions, Inc. JN: 20-0033-01
Report Date/History: March 29, 2021
Revised: February 02, 2022

Prepared for:
CROSSROADS CHAPEL, SBC
Pastor D.L. Mitchell
840 Northgate Boulevard
Colorado Springs, CO 80921
Phone (719) 495-3200
Email office@crossroadssbc.com

Prepared by:
Robert J. Palmer, P.E., as President
Strategic Land Solutions, Inc.
2595 Ponderosa Road
Franktown, CO 80116
Phone (720) 384-7661
Email rpalmer@strategicls.net

Design Engineer's Statement:

The attached drainage plan and report were prepared under my direction and supervision and are correct to the best of my knowledge and belief. Said drainage report has been prepared according to the criteria established by the County for drainage reports and said report is in conformity with the applicable master plan of the drainage basin. I accept responsibility for any liability caused by any negligent acts, errors or omissions on my part in preparing this report.

Robert J. Palmer Colorado P.E. 36320

COLORADO REGISTERED ROBERT J. PALMER 36320 PROFESSIONAL ENGINEER

02/03/2022

Date

Owner/Developer's Statement:

I, the owner/developer have read and will comply with all of the requirements specified in this drainage report and plan.

D. L. Mitchell - Pastor

Mar 2 2022

Date

Crossroads Chapel, SBC
840 Northgate Boulevard
Colorado Springs, CO 80921

El Paso County:

Filed in accordance with the requirements of the Drainage Criteria Manual, Volumes 1 and 2, El Paso County Engineering Criteria Manual and Land Development Code as amended.

Approved
by Jeff Rice
El Paso County Planning and Community Development
on behalf of Elizabeth Nijkamp, Engineering Review Manager
03/04/2022 8:31:08 AM

Jennifer Irvine, P.E.
County Engineer / ECM Administrator

Date

Conditions:

Strategic Land Solutions, Inc.
Civil Engineering • Land Planning • Entitlements

Wednesday – February 02, 2022

Sent Via: ☐ 1st 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 (PPR2135)
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 pf 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

Strategic Land Solutions, Inc.
Civil Engineering • Land Planning • Entitlements

is a site with an average 10-year runoff coefficient of 0.30, and an average 100-year runoff coefficient of 0.39. A completely undeveloped site would have a an average 10-year runoff coefficient of 0.25, and an average 100-year runoff coefficient of 0.35, so the proposed site runoff coefficients are only slightly higher than an undeveloped site.

As described in this drainage letter, The Crossroads Chapel SBS is planning to remove two modular buildings and replace them with a new building connected to the existing buildings by an enclosed corridor. As part of this project none of the existing drainage patterns will be modified, and the expected increase in runoff is statistically insignificant. Therefore, the project will have no measurable adverse effects on the downstream drainage facilities nor the surrounding developments.

If you have questions regarding what is proposed, please feel free to call me. Thank you!

Sincerely,

STRATEGIC LAND SOLUTIONS, INC.

Robert J. Palmer, PE *(CO, NM, AZ, WY, MT)*
President for SLS, Inc. A Colorado Corporation

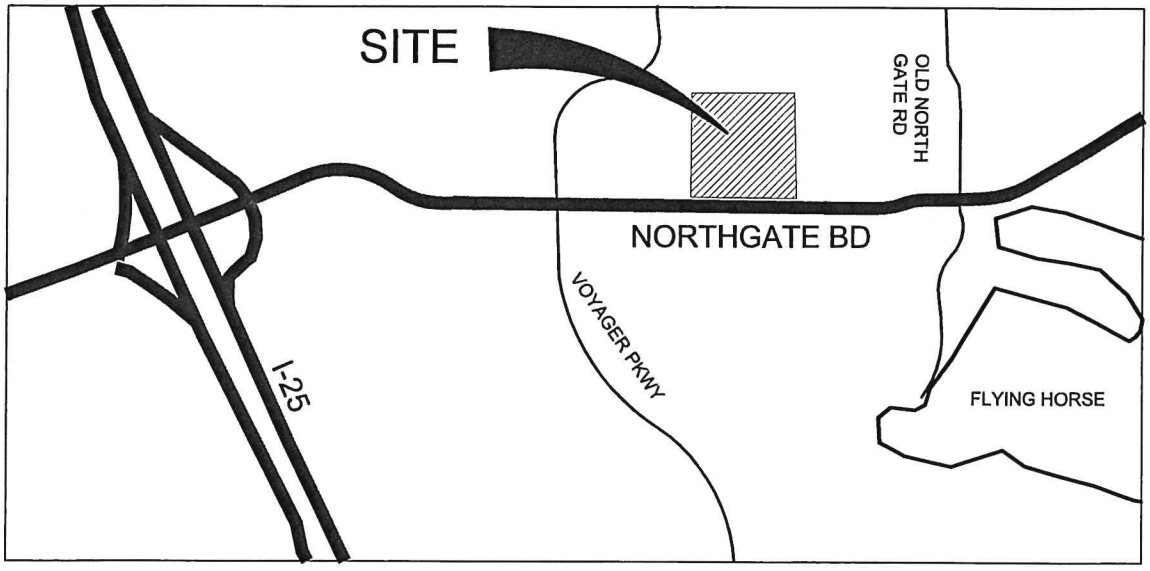
Attachments: As noted above.

cc: Pastor DL Mitchell via: office@crossroadssbc.com

PREPARED UNDER THE DIRECT SUPERVISION OF:

SEAL: COLORADO REGISTERED ROBERT J. PALMER 36320 PROFESSIONAL ENGINEER

BY Robert J. Palmer, PE
Licensed Professional Engineer (CO PE #36320),
AS PRESIDENT FOR STRATEGIC LAND SOLUTIONS, INC.



VICINITY MAP

NOT TO SCALE

Hydrologic Soil Group—El Paso County Area, Colorado

Map Scale: 1:1,470 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 20 40 80 120

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

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.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
71	Pring coarse sandy loam, 3 to 8 percent slopes	B	1.4	13.7%
93	Tomah-Crowfoot complex, 8 to 15 percent slopes	B	8.5	86.3%
Totals for Area of Interest			**9.9**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.