

Drainage Submittal

for

Smith's #485 - Fuel Center

6941 Montgomery Boulevard
Albuquerque, NM
July 8, 2014

Prepared for:
Smith's Food & Drug Stores
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Table of Contents

Introduction	2
Background	2
Flood Hazard Certification	2
Hydrologic Analysis	3
Proposed Condition	4
Water Block Design	4
Conclusion	5

Appendix

- Vicinity Map
- FEMA Flood Insurance Rate Map
- Conceptual Demolition Plan
- Conceptual Grading & Drainage Plan
- Conceptual Utility Plan
- Peak Runoff Calculations per City of Albuquerque Development Process Manual (DPM)

Introduction

Smith's Food & Drug is proposing the addition of a fuel center at the northwest corner of Montgomery and Louisiana Boulevard, more particularly located at 6941 Montgomery Boulevard. The purpose of this report is to:

- Determine the peak flows that will be result by developing the proposed site.
- Describe on-site surface and right-of-way improvements that will convey flows to Montgomery Boulevard.

Background

The proposed site and re-development plan will occupy two existing parcels. The southern parcel currently developed as an existing car wash structure, and the northern parcel currently developed as a cabinet retail showroom building. The site is bordered by an existing building (Studio Pizazz Dance Studio) to the north, Louisiana Boulevard to the east, Montgomery Boulevard to the south and an existing building and parking lot (Optic Expressions Eyewear) to the west. Neither parcel in its current developed condition has storm water facilities that are piped directly to the existing public storm drain system in Louisiana Boulevard. No storm drain piping exists within the fronting portion of Montgomery Boulevard.

The existing properties, proposed to be combined, are comprised of impervious surface improvements covering roughly 91 percent of the site area. The remaining 9 percent of the primarily car wash site is landscaped with rock mulch, small trees and shrubs around the perimeter. The existing cabinet shop does not currently maintain landscaped areas.

Both properties direct storm water runoff generated on-site to the southwest into the existing Montgomery Boulevard curb and gutter via an existing vehicle access point and the Optic Expressions Eyewear parking lot. Storm water discharges from the subject site into Montgomery Boulevard combine with existing street runoff and adjacent private property discharge and are conveyed via the gutter system for approximately 1,530 lineal feet to the west. Montgomery Boulevard curb flows enter an existing storm drain catch basin at this western location.

Flood Hazard Certification

Floodplain information published for the site in the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) for Bernalillo County, New Mexico and Incorporated Areas, Community Panel Number 35001C0139G, dated September 26, 2008 (See Appendix) provides flood zone designation information. The subject site is located in Zone X (not shaded) which is defined as, "Areas determined to be outside the 0.2% annual chance floodplain." The site does not lie within a Flood Hazard Area as shown on the Federal Emergency Management Agency (FEMA) maps requiring no further flood-proofing or other flood mitigation.

Hydrologic Analysis

Design Storm: The site is located within Precipitation Zone 3 being in the area lying north of Interstate 40; between San Mateo and Eubank Boulevard as specified in Chapter 22, Section 2(A.1 & A.2) of the City of Albuquerque Development Process Manual (DPM). The principal design storm is the 100-year 6 hour event defined by the National Oceanic and Atmospheric Administration (NOAA) Atlas 2, Precipitation-Frequency Atlas of the Western United States, Vol. IV – New Mexico. Detention basin/retention basin designs are not proposed and therefore longer duration design storms are not considered in this analysis. Accordingly, the rainfall depths of interest for design purposes are the 10-Year, 6-Hour storm with a design depth of 1.73 inches and the 100-Year, 6-Hour storm with a design depth of 2.60 inches.

Land Treatments: The existing site contains 37,389 square feet (0.858 acres) of commercial designated land uses constructed with a small portion of pervious surface being primarily landscape rock mulch with some trees and shrubs upon 3,262 square feet (0.0749 acres) with the remainder of the site being impervious concrete and asphalt paved surfaces over 34,127 square feet (0.783 acres). On-site existing Land Treatments defined in Chapter 22, Section 2(A.3) of the City of Albuquerque DPM are Land Treatment Type C for pervious rock-mulch areas and Type D for impervious areas, pavement and roof. Existing site conditions are nine percent Type C and 91 percent Type D Land Treatment Types. The proposed site conditions will consist of roughly 11 percent pervious landscaped areas (Land Treatment Type C) and 89 percent impervious surfaces (Land Treatment Type D).

Excess Precipitation & Volumetric Runoff: Excess precipitation (runoff) is the depth of precipitation discharged after the initial volume of rainfall retained on the ground surface as depression storage and infiltration have been subtracted from the design storm unit hydrograph. The majority of the existing site is covered by impervious surfaces designated Land Treatment D. Land Treatment C (rock mulch landscape) is projected to generate 0.62 inches of excess precipitation for a 10-Year, 6-Hour Storm and 1.29 inches of excess precipitation for a 100-Year, 6-Hour Storm within Precipitation Zone 3. Land Treatment D (impervious surfaces) are anticipated to generate 1.50 inches excess precipitation for a 10-Year, 6-Hour Storm and 2.36 inches of excess precipitation for a 100-Year, 6-Hour Storm within the same Precipitation Zone.

The volume of runoff or excess precipitation has been calculated by summing the depth of rainfall over the two established land treatment types. The excess precipitation depth, volume and peak discharge generated by the existing developed and proposed developed site conditions are summarized in Table 1.

Table 1 - Existing Developed and Proposed Developed Excess Precipitation Volumes & Peak Discharge Rates.

	Excess Precipitation (Inches)	Volumetric Run-off (Acre-Feet)	Peak Discharge (cfs)
Existing Developed			
10-Year, 6-Hour	1.42	0.102	2.81
100-Year, 6-Hour	2.27	0.162	4.19
Proposed Developed			
10-Year, 6-Hour	1.40	0.100	2.77
100-Year, 6-Hour	2.24	0.160	4.16

A Conceptual Demolition, Grading & Drainage and Utility Plan for the subject site have been provided for further review and consideration in the Appendix.

Proposed Conditions

Proposed site conditions involve combining the two parcels (car wash & cabinet showroom) into one developed site with slightly more landscaped area than the previous developed condition by removing portions of the existing drive approaches, walls separating the properties, and other impervious surfaces. This proposed slight increase in pervious surface area results in a direct reduction existing site precipitation depth, volume of runoff and peak discharge as depicted in Table 1.

Roof drains will collect runoff from the proposed fuel center canopy/roof system. Roof drain flows will combine with under canopy pre-treated oil/water separator flows and discharged to two four inch pipes that will convey storm water flows through the back of the existing curb into the Montgomery Boulevard gutter pan (See Appendix – Utility Plan). All other site runoff will be conveyed as surface flow to on-site curb and gutters. On-site curb and gutter flows will be directed to Montgomery Boulevard via the proposed drive approach located in the same location as the existing Montgomery Boulevard drive approach. Existing low back curb and gutter remaining from previously abandoned drive approaches on Louisiana Boulevard will be removed and replaced with new curb, gutter and contiguous sidewalk fronting the proposed site.

Water Block Design

Proposed drive approach locations will be constructed with modified water blocks. The existing drive approach onto Montgomery Boulevard will remain essential unchanged from existing conditions to maintain the existing clearance heights for vehicles passing under the existing overhead, billboard sign. The topography of the site is such that finished elevations at the right-of-way/property line along Montgomery Boulevard are greater than 10.5 inches.

The proposed drive approach into the site from Louisiana Boulevard will utilize the existing drive approach into the “Studio Pizazz” dance studio site. Cross access has been established by agreement. The existing access point is not developed with a 10.5 inch water block. Existing site grading constraints and existing building elevations limit the ability to propose major elevation changes necessary for full height water block at the lowest point of the access. Proposed grading plans provide for a 4.5 inch water block based upon the following:

- a. Gutter flow height along the west side of Louisiana Boulevard substantially reduced by the existing catch basin inlet immediately north of the subject site access point (See Appendix – Demolition & Utility Plans). The presence of the catch basin immediately adjacent decreases tributary gutter flow depths immediately upstream;
- b. Site topography and grading constraints associated with the existing, cantilevered, overhead billboard sign, not owned/controlled by the Applicant, limits raising the overall site elevations. Raising the site reduces overhead clearance for the billboard sign and forces the access point closer to the Montgomery & Louisiana Boulevard intersection, and creates access approach slope not conducive to the intended use;
- c. Moving the access point further south to a lower elevation reduces access spacing from the intersection and reduces vehicle storage available to the proposed median modifications necessary for safe and effective full movement access from Louisiana Boulevard.

Depth of flow calculations for Montgomery & Louisiana Boulevard may be determined upon request. Due to the quantification of tributary flows from other adjacent developments being beyond the scope of this analysis, a gutter depth of flow analysis has not been completed for Montgomery or Louisiana Boulevard at this time.

Conclusion

This analysis has been prepared in accordance with the requirements and specifications of Section 22.2 of the DPM. Existing developed conditions at the site generate a historical flow to the storm drain system in Montgomery Boulevard that will not be exceeded by the proposed development. Historic excess precipitation and the accompanying volume of excess precipitation and peak flow rates are slightly reduced as a result of increased landscape areas not currently present on the site. Treatment of runoff from under the fuel center canopy will occur by passing these flows through an oil/water separator as shown on the Concept Utility Plan (See Appendix).