CULVERT ANALYSIS

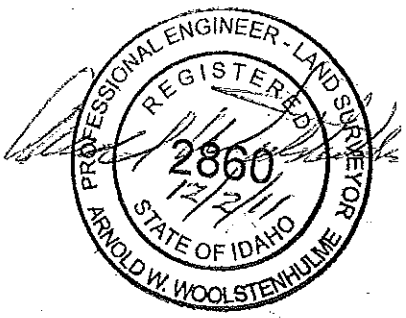
LDS Church, Driggs, Idaho, Stake

Near Victor, Teton County, Idaho

Prepared For:
NBW architects
Idaho Falls, Idaho

Property Blackfoot Farms
500 Huntsman Way
Salt Lake City, Utah
801- 584- 5700

Prepared by:
A-W Engineering
Box 139
Victor, ID 83455
208-787-2952



Nov 24, 2011

reports/ Culvert Pipe, LDS Church.wpd

TABLE OF CONTENTS

APPENDIX INDEX

I. GENERAL PROJECT INFORMATION

LOCATION:

Part of SE 1/4 SW 1/4 Sec 35, Twp. 4 N, Rng. 45 E.,B.M. Teton County, Idaho.
(see Map M : 1 & 2 in appendix)

DEVELOPER:

LDS Church, Salt Lake City, Utah

PROPERTY OWNER

Blackfoot Farms,
500 Huntsman Way
Salt Lake, City Utah 84108

Client

NPW Architects Phone 208-522 8779, fax 8785
P.O. Box 2212
990 John Adams Parkway
Idaho Falls, Idaho 83403
email

ENGINEER / SURVEYOR:

Arnold W. Woolstenhulme, A-W Engineering, 4 North Main, Victor, Id. 83455.
208-787-2952 email aweng@ida.net

PROPOSAL : The LDS Church of Driggs, Idaho Stake is proposing to construct a new two ward chapel in the Victor, Idaho area. The church has proposed developing a 5.5 acre site with building and parking on it. The plan at this time is to connect the two entrances from the parking lot onto 7000 South County road. This would place all of the traffic onto on County road that accesses onto the State Highway 33 at the 7000's intersection.

No storm water system exists in this rural area. The farm area has natural runoff slope of 1 percent to the north west that would eventually drain into Teton River.
No evidence of drainage is present on the site or through this property. No erosion or channeling exists. The county roads do not have any culverts under them and have not shown previous runoff or water collection in the borrow pits. The county is requiring that culverts be installed in new approaches onto the county roads.

This report discusses and supports the placing of a 18" standard drainage culvert across each approach onto the county road.

II. BACKGROUND AND GUIDELINES

The 5.5 acres have been used by the owners for farm ground for the last 100 years to raise hay, grain and for horse and cattle pasture land. This property is surrounded on three sides by farm land and on the east by the Frontage road, Rails for trails and State Highway 33. Then on to the east side of State Highway 33 is more farm land.

Easements that cross the property are:

1. The prescriptive rights Easement for County Road 7000 South.
2. Power and Telephone prescriptive Rights Easements.

A. PROPOSED PLANNED SITE DEVELOPMENT

Total acres in project::	5.5 acres
Roads in project County Road R-O-W	0.30 acres
Acres improved or hardened surface	3.13 acres
Acres in Farm Parcel Lot Split from	80.0 acres

B. EXISTING CONDITIONS AT BUILDING SITE.

1- Soil is classified as Driggs Gravelly Loam D ra Permeability of 2.5-10"/hr.
2- Percolation of 2.0 to 10 Inches per hour SCS soil Survey
3- Soil tests by AW Engineering in Area. Percolation Rate of 3.0 " / hr
4- Existing Farm ground good condition - No runoff and good ground cover.

III. DESIGN CRITERIA AND DATA

No culverts exist under the county roads or State Highway. Therefore no runoff or drainage from of site areas is channelized into the county borrow pits that the new approaches will cross. The 350 feet of property just east of this proposed new church property is presently farm land and there is no indication of storm water overflow from this property.

A. STORM WATER PRESENT RUNOFF

There is no indication of any storm water run off down the borrow pits at this time. Calculations from the area of borrow pit show that the natural percolation of 1" per 3 minutes would dissipate most rain fall events. With the 100 year storm and a 2 hour rain event in this area of Teton County a rainstorm may produce less than 5 " of rain. This area of pervious and inpervious is at 50 percent for the borrow pit area and therefore this rain storm would be percolated into the ground with in 30 minutes of time.

The adjacent property will not contribute any significant runoff into the culvert area because it is downhill from the approach points. If runoff was to occur is will flow around the curb at the parking area an run to the north west away from the approaches .

B. DEVELOPED SITE :

The developed site calculated runoff would add some improved county road way and the paved approaches to the drainage under the new approaches .

Q = CI A

A 1 = .30 acres paved
C (asphalt) = 0.95
I = 0.80.

A 2 = .30 acres borrow pit area
C grd 0.20

Q asp. = (0.95) x 0.80 x 0.25 = 0. 20 cfs
Q grd = (0.20) x 0.80 x 0.35 = 0.06 cfs
Total of 0.26 cfs flow at 100 yr storm

C. STORM WATER SYSTEM FOR DEVELOPED PROPERTY

The calculated 18" cmp at 3 ft per sec would carry 5.3 cfs of water
Percolation in borrow bit of 1" in 3 minutes = .35 ac x .33 /60 = 6.6 cfs water.

More percolation in Borrow pit than runoff.

Design Culvert pipe at 18" size minimun county size.

IV. IMPACTS ON ADJACENT PROPERTIES

The developed 5.5 acres with 18" culvert in borrow pit would have no effect on neighbor property.