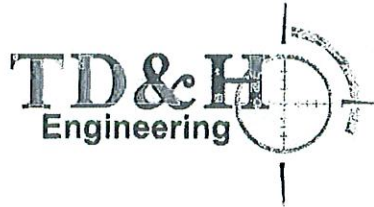


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STORMWATER MANAGEMENT PLAN

FOR

Hotel Ruby – Site Expansion – Building C
282 Piehl Road
Ponderay, Idaho

Date: May 17, 2022
Prepared By: Steven N Marsh, PE

This document were prepared by the undersigned, whose seal as a licensed professional engineer, is affixed below.



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PLANNING
CITY OF PONDERAY

PROJECT DESCRIPTION

GVD Commercial Properties, Inc. owns and operates Hotel Ruby. This proposal includes a 24 unit apartment complex with two, covered parking areas.

SOIL TYPE

The Soil Conservation Service's Soil Survey of the Bonner County Area lists soils in this area as Mission Silt Loam. This soil type is generally mildly sloping with somewhat poorly draining soils.

STORMWATER CRITERIA

Ponderay requires that stormwater not leave any site faster than the pre-development peak flow rate for a 25-year storm event. The first ½" of runoff from new impermeable surfaces must, also, be treated. Existing impermeable surface area is included in pre-development flow rates to accurately model the existing flows.

Grassed Infiltration Areas (GIAs) were initially constructed on site during the building of the Microtel Motel in 1996. The addition of a spa to the hotel in 2014 required the expansion of the GIA to the northeast. Development of the properties will continue to route runoff as it has historically to the existing two most northern GIAs. There is a small area that presently drains to Piehl Road ditches, also. The attached New Site Plans shows the relationship of the new impervious surfaces to the stormwater features.

EROSION/SEDIMENTATION

Temporary erosion and sedimentation control will be accomplished through the use of silt fence. Additional measures, such as straw wattles or construction entrances may be required depending on the amount of moisture in the soil during construction.

All disturbed areas will be vegetated, graveled or paved according to the plans.

OPERATION AND MAINTENANCE PLAN

To keep erosion to a minimum, areas to be vegetated will be seeded and mulched upon final grading. Newly planted areas will be inspected after large storms for erosion until well established. Eroded areas will be replaced.

Inspection schedule and timing: At a minimum, inspection is to take place once every 7 days, within 24 hours of an anticipated storm event of 0.5 inches or greater, and within 24 hours of the end of a storm event of 0.5 inches or greater.

The owner, GVD Commercial Properties, Inc., will be responsible for maintenance of the system.

CONSTRUCTION SCHEDULE

Erosion control measures are to be installed prior to construction commencing in the summer of 2022.

STORMWATER SYSTEM CALCULATIONS SUMMARY

The Rational Method with a 25-year return period was used for calculations in conjunction with the ITD intensity-duration-frequency curve.



Pre-Development Peak Flow (25-year)

Q = CIA

Composite C

Roof Area = 5,687 SF = 0.13 ac Gravel Area = 10,463 SF = 0.24 ac

Natural Vegetation = 45,065 SF = 1.03 ac

$$[(0.13*0.9) + (0.24*0.8) + (1.03*0.25)] / 1.40 = 0.405$$

Intensity

25 year storm event = 1.05 in/hr (37 minute interval)

Area

$$0.13 + 0.24 + 1.03 = 1.40 \text{ acres}$$

$$Q = 0.405 * 1.05 * 1.40$$

$$Q = \underline{0.595 \text{ cfs}}$$

The stormwater system will be built to detain and meter release at a rate no greater than 0.595 cfs.

Post Development Peak Flow (25-year event)

Q = CIA

Composite C

Impervious Area (Roof, HMA, and concrete) = 35,051 SF = 0.80 ac

Landscaping = 26,164 SF = 0.600 ac

$$[(0.80*0.9) + (0.60*0.3)] / 1.40 = 0.643$$

Intensity

25 year storm event = 1.05 in/hr

Area

$$0.80 + 0.60 = 1.40 \text{ acres (see above)}$$

$$Q = 0.643 * 1.05 * 1.40$$

$$Q = \underline{0.945 \text{ cfs}}$$

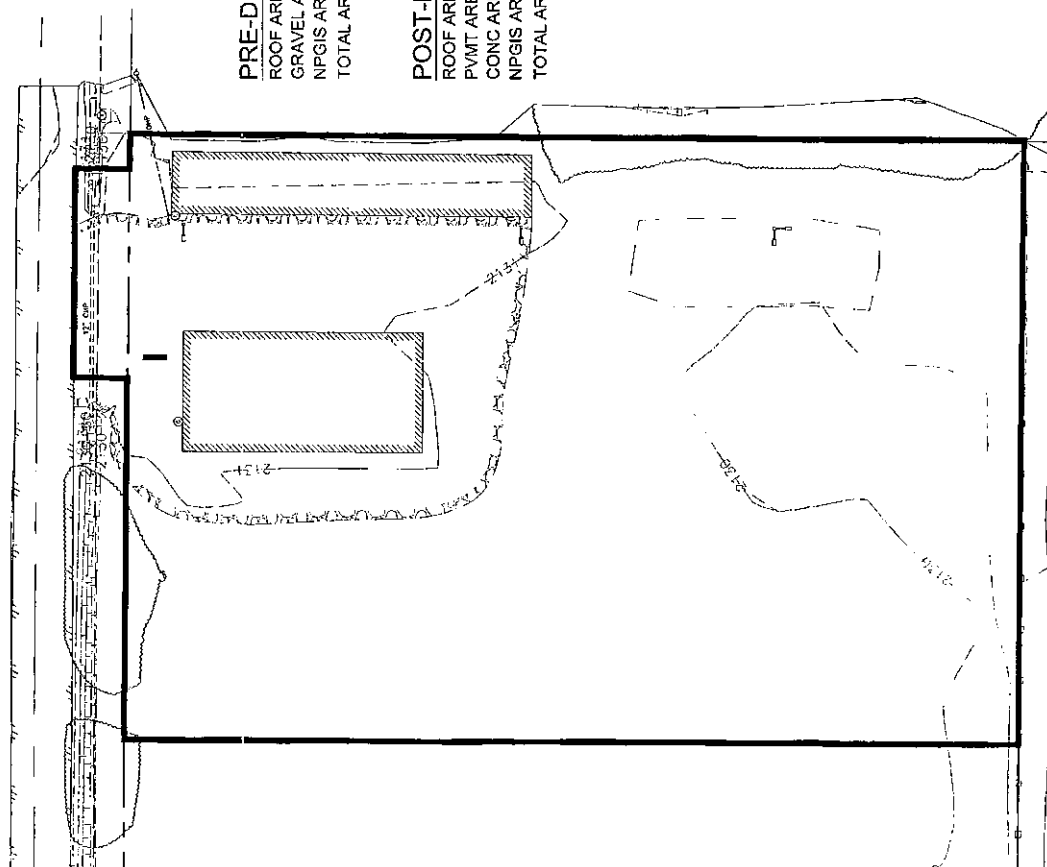
Required Detention

$$\text{Delta in peak flows} = 0.945 - 0.595 = 0.35 \text{ cfs}$$

$$\text{Detention volume} = 0.35 \text{ cfs} * 37 \text{ min} * (60 \text{ sec/min}) = \underline{777 \text{ CF}}$$

Stormwater Treatment (first 0.5 inch from impervious surface)

$$\text{Treatment Volume} = [0.5 \text{ in} * (1 \text{ foot}/12 \text{ in})] * 35,051 \text{ SF} = \underline{1,460 \text{ CF}}$$



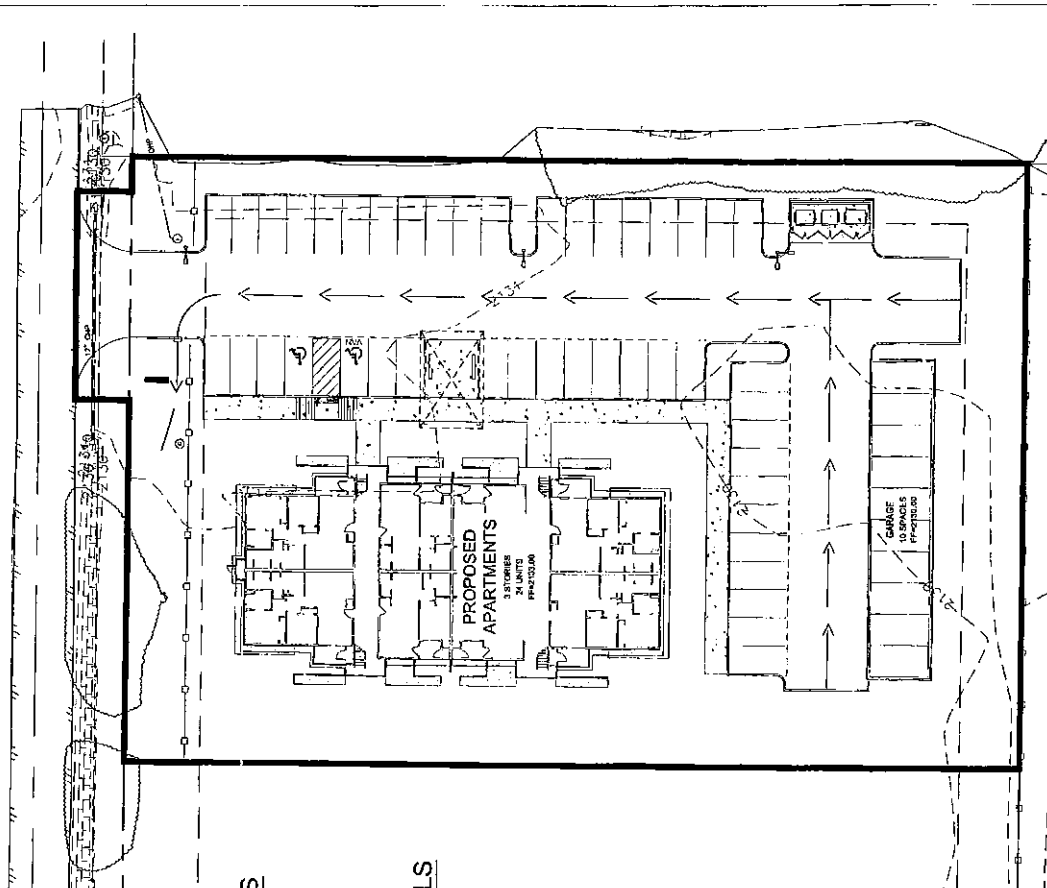
EXISTING CONDITIONS

PRE-DEVELOPED TOTALS

ROOF AREA= 5,687 SF
 GRAVEL AREA= 10,463 SF
 NP/GIS AREA= 45,065 SF
 TOTAL AREA= 61,215 SF

POST-DEVELOPED TOTALS

ROOF AREA= 11,012 SF
 PV/MT AREA= 19,937 SF
 CONC AREA= 4,102 SF
 NP/GIS AREA= 26,164 SF
 TOTAL AREA= 61,215 SF



PROPOSED SITE

<p>TD&K Engineering</p> <p>REGISTERED PROFESSIONAL ENGINEER STATE OF IDAHO LICENSE NO. 10000 1000 W. BROADWAY, SUITE 200 BOZEMAN, IDAHO 83725</p>		<p>DESIGNED BY: [Blank]</p> <p>QUALITY CHECK: [Blank]</p> <p>DATE: [Blank]</p> <p>JOB NO.: 588-09</p> <p>LAND NO.: 822000000000000000</p>	<p>SHEET 1 OF 1</p>
<p>HOTEL RUBY BLDG C PONDERAY, IDAHO</p>		<p>PRE- AND POST-DEVELOPED BASIN MAPS</p>	