

## **Introduction**

Wolverine proposes to drill the Glencove Federal 11-1, approximately 2.4 miles South Southwest of Glenwood (See Appendix for map). The proposed well pad and new access road would be located on both public lands and minerals administered by the Bureau of Land Management, Richfield Field Office (BLM).

## **Need for Proposed Action**

Wolverine Gas and Oil Company has filed an Application for Permit to Drill. The underlying need for the proposed action is for the BLM to respond to the applicant's proposal to exercise their valid right to explore and develop their Federal Lease by drilling the proposed exploratory well, and if successful, to develop and produce commercial quantities of oil or gas under the terms and the stipulations of its Federal oil and gas lease.

## **Site Location**

Oil and gas well - located in the SW/4 NW/4 of section 11, T. 24 S., R. 2W., SLM, Sevier County, Utah

Access - Primary access road is to be an improvement to an existing 2-track road that leaves Sevier County (600 South) road South and West of Glenwood beginning near the NE corner of SE4SE4 Sec 34-T23S-R2W, across private land for about ¼ mile to the lease boundary into the NE4NE4 Section 3-T24S-R2W. A right-of-way will be obtained from the private landowners prior to construction. An encroachment permit will be obtained from Sevier County Road Department for the use of the county road. The Northern part (roughly half) of the on-lease well access road will be an improvement to an existing two-track road. The Southern part of the on-lease well access will be an improvement to a road built by the Glenwood Irrigation Company in conjunction with the installation of an irrigation water line that runs from a head gate just Southwest of the proposed well location to the Water Creek Reservoir. Care will be taken to avoid any damage to the buried irrigation pipe and all air valves and facilities related to that system.

## **Proposed action**

### Access Roads to be Constructed and Reconstructed:

The surface condition of portions of the dirt road will need considerable improvement to be suitable for all-weather oilfield traffic. These improvements will consist of the installation of culverts and water bars for drainage control, low-water crossings, installation of truck turnouts, widening in some places and surfacing with gravel road base.

The proposed primary access road will require the construction of a driveway ramp off the county road that will be addressed in the county road encroachment permit. The road will have a travel surface of about 12' in width. A secondary access road is planned to make a circle drive from the south end of the drill pad to connect back into the primary road. That road will also provide for emergency egress.

See attached drawing sheets for road location and improvements. See Typical Section sheet for road design.

Road construction, operation and maintenance will be in compliance with the terms and conditions of the Conditions of Approval, the American Association of State Highway and Transportation (AASHTO) safety standards, and will meet criteria for the Manual of Uniform Traffic Control Devices (MUTCD) manual for signs.

Energy dissipating structures and silt fences will be utilized to minimize erosion that may result from the road construction.

All existing county roads and the upgraded lease roads will be maintained and kept in good repair during all phases of operation. Vehicle operators will obey posted speed restrictions and observe safe speeds commensurate with road and weather conditions.

#### Location of Existing Wells within a one-mile radius :

There are no wells (oil, gas, water, injection or disposal, producing or being drilled) within a one-mile radius of the proposed location. The Wolverine Federal Glenwood 10-1 well was drilled about ½ mile southwest of this location, about 10 years ago. The well was dry and was plugged and abandoned.

#### Location of Existing and/or Proposed Facilities if Well is Productive:

(a) On well pad –A temporary testing facility may be constructed on this location in the event drilling is successful, consisting of treater/separator, tanks and related components. The facility would be surrounded by a dike of sufficient capacity to contain the storage capacity of the largest tank. All loading lines and valves would be located inside the berm surrounding the tank battery.

(b) Off well pad – It is not possible to know whether an off-well pad production facility would be necessary in the event of a discovery. The Operator will submit this information for approval at such time as production requirements are known.

#### Location and Type of Water Supply (Rivers, Creeks, Lakes, Ponds and Wells):

The Operator intends to purchase water from the City of Richfield. The volume of water required is minimal due to the closed tank circulation system. The source of water is the city wells. Water will be trucked to the reserve tank onsite from a fire hydrant on the East side of town, as directed by the City of Richfield. Should additional water sources be pursued they will be properly permitted through the State of Utah – Division of Water Rights. The BLM will be notified of any changes in water supply.

#### Construction Materials:

Natural earth materials used for fill on the well pad will be taken from cuts made in construction of the pad. Imported granular borrow from an approved source will be applied to the surface of the well pad and access road where deemed necessary. No construction materials will be removed from federal lands.

### Methods for Handling Waste Disposal:

The reserve tank will be used for the disposal of waste mud and drill cuttings. All borehole fluids and salts will be contained in the reserve tank. Upon completion of drilling all fluids and solids will be trucked to the Sevier County Landfill for disposal.

No chemicals subject to reporting under SARA Title III (hazardous materials) in an amount greater than 10,000 pounds will be used, produced, stored, transported, or disposed of in association with the drilling, testing, or completion of the well. Furthermore, no extremely hazardous substances, as defined in 40 CFR 355, in threshold planning quantities, will be used, produced, stored, transported, or disposed of in association with the drilling, testing, or completion of the well.

Wastewater will not be discharged on the surface at this site and the drilling of the well will not require a wastewater management plan.

All rubbish and debris will be kept in containers on the well site, and will be hauled to an approved disposal site upon completion of drilling operations and as needed during such operations. There will be no chemical disposal of any type.

Self-contained, portable toilets will be used for human waste, and the waste will be disposed at an approved human waste disposal facility. Sanitation will comply with local and state regulations.

### Ancillary Facilities:

No ancillary facilities are anticipated at this time.

### Well Site Layout:

Pad Location and Layout Drawings in the APD packet show the proposed well site layout including location of the reserve tank and access road onto the pad, turnaround areas, parking areas, living facilities, soil material stockpiles, and the orientation of the rig with respect to the pad and other facilities. Cross section sheets in said packet show cuts and fills required for construction, and their relationship to topography.

The pad and road designs would be consistent with BLM specifications.

A pre-construction meeting with responsible company representative and contractors will be conducted at the project site prior to commencement of surface-disturbing activities. The pad and road will be construction-staked (centerline and exterior boundaries) prior to this meeting.

All surface disturbing activities will be supervised by a qualified, responsible company representative who is aware of the terms and conditions of approval from the BLM under the APD.

All cut and fill slopes will be such that stability can be maintained for the life of the activity.

The stockpiled topsoil (first 8 inches or maximum available) will be isolated in a berm by the well pad. Topsoil will be stockpiled for reclamation in such a way as to prevent soil loss and contamination.

Water spraying may be implemented if necessary to minimize dust.

#### Plans for Reclamation of the Surface:

Edges of the access road and stockpiled topsoil will be seeded the first fall.

Interim Reclamation: In the event production is achieved the Operator will perform interim reclamation of the site. Interim reclamation will consist of reclamation of that portion of the well pad not needed for ongoing operations. All portions of the pad no longer necessary for well workover, testing or treating will be contoured to match the surrounding terrain to the best extent practicable. Stockpiled topsoil will be evenly distributed thereon, scarified and seeded as per BLM conditions of approval.

Final Reclamation: In the event the well is a dry hole, or at such time that all production ceases and the well has been plugged and abandoned, the Operator will perform final reclamation of the site. Final reclamation will consist of reclamation of the entire well pad and the new-construction portion of the lease road as it crosses BLM land.

Any accumulation of hydrocarbons in the reserve tanks will be removed and recovered for sale unless it is determined by the authorized officer to be waste oil. All waste oil will be disposed of properly at approved facilities.

Road base material used in the construction of the lease road and pad will be removed from the site and disposed in a proper manner. The new construction portion of the access road will be contoured using an excavator or similar equipment, rather than simply ripping the surface.

Subsoil from the portions of the well pad that are fill will be moved onto the cut areas in order to reestablish the original slope to the best extent possible. Topsoil from the stockpile will then be evenly distributed over the entire impacted area, including the new-construction portion of the access road. The entire impacted area will be scarified and seeded in late fall, using the seed mix and methods described in BLM conditions of approval. Final reclamation will take place within 180 days after plugging date of the last well on site, depending on weather, season and other extenuating circumstances.

During the life of the project and until the site is released from liability for reclamation, the project will be inspected at least annually for noxious weeds. If invasive noxious weeds are found, the weeds will be treated to eliminate further reproduction, and treatment shall continue until the weeds have been eradicated. If noxious weeds are found, the BLM will be notified of their occurrence.

### Surface Ownership:

The surface of the proposed well site, the new-built lease road and portions of the access road are federally owned and are administered by the Bureau of Land Management, United States Department of Interior. Portions of the access road are privately owned.

### Other Information:

Wolverine hereby proposes that an H2S Contingency Plan not be included in this application. 43 CFR 3160.I.C. states: "The requirements and minimum standards of this Order do not apply when operating in zones where H2S is presently known not to be present or cannot reasonably be expected to be present in concentrations of 100 parts per million (ppm) or more in the gas stream." We are directly offsetting the Glenwood Federal 10-1 test well. That well was drilled to TD with no hint of H2S from spud to plug. The nearest productive zones or analog wells are located in the Covenant Field directly north of the subject prospect. This prospect proposes a Navajo formation reservoir that is separate from the adjacent Covenant Field Navajo reservoir. Early production from the Covenant Field Navajo reservoir was sweet oil with minimal associated gas. After production from the Covenant Field had continued for a time some H2S has been and continues to be measured in the oil production from the Covenant Field. It is thought that the occurrence of H2S in that reservoir is the result of completion or water disposal operations associated with producing the field. It is thought that bacteria was inadvertently introduced into the reservoir and the H2S is the result of the bacteria that contaminated the reservoir. This prospect's separate Navajo reservoir, whether it does or does not contain oil is expected to be sweet, lacking any bacterial contamination. We therefore respectfully request that this well test be ruled a sweet well, not requiring application of the terms of Onshore Order No. 6. The zone fits the "Definitions" description of 43 CFR 3160.II.W. and is, therefore, a sweet well where no H2S variances are requested.

Heavy equipment used to construct and rehabilitate the well pad and access road will be cleaned and/or sprayed to remove any noxious or invasive weeds and seeds, prior to entering to the project site. Any other equipment and vehicles that have been used in other locations where noxious weeds or seeds could have attached to the equipment will also be sprayed and/or cleaned.

All equipment and vehicles will be confined to the access road, lease road and well pad.

Bighorn Archaeological Consultants, LLC, has conducted a Cultural Resource Inventory and has submitted the report to the appropriate agencies.

Megan Robinson of Rocky Mountain Environmental Research has conducted a Sensitive Plant and Wildlife Study and will submit a report to the BLM Wildlife Conservationist.

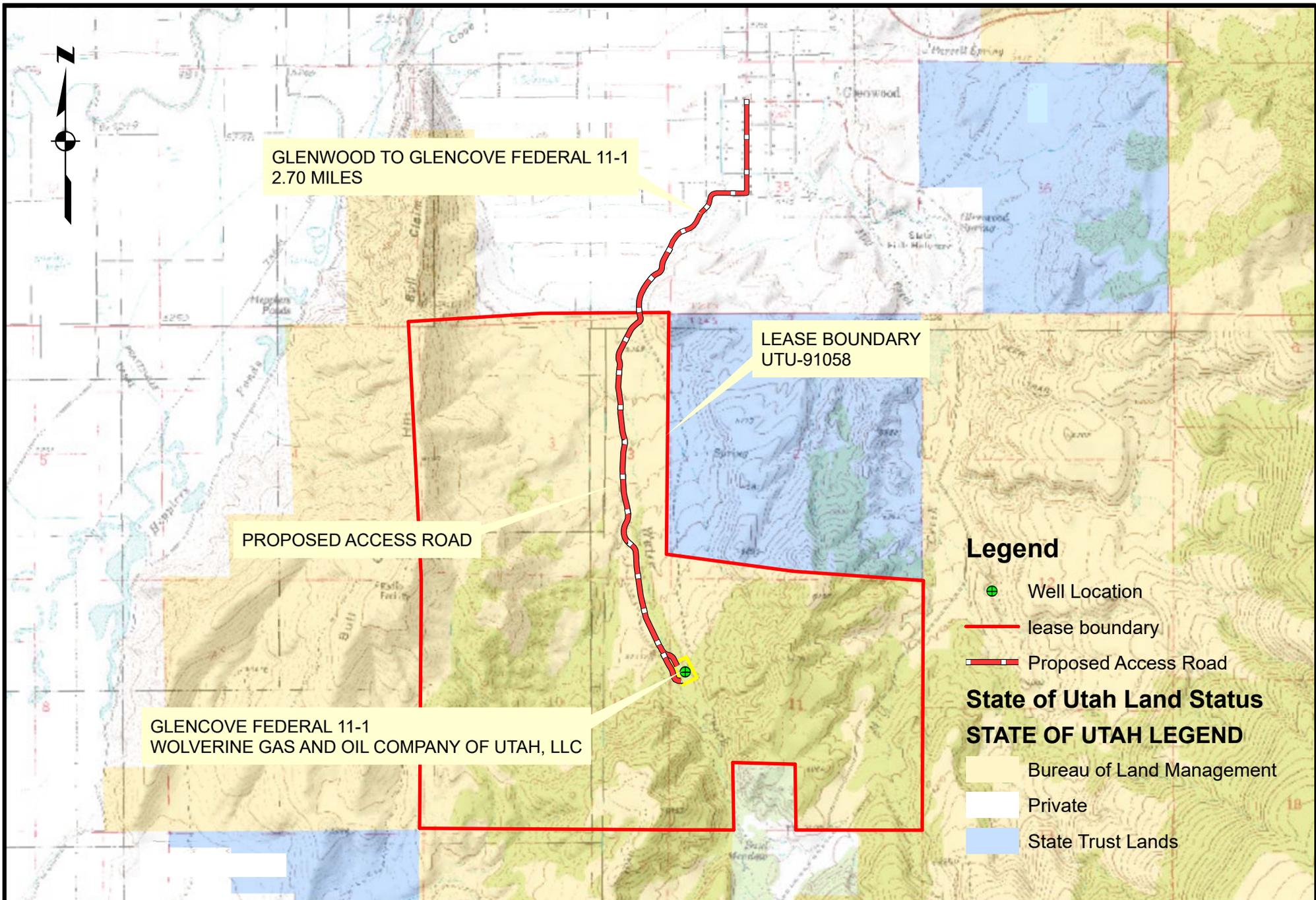
In the event vertebrate fossils are encountered during construction activities the BLM will be notified immediately to determine the appropriate course of action.

Megan Robinson, NEPA Specialist, Rocky Mountain Environmental Research, will prepare an EA for the proposed operations.

No stream alteration or drainage crossings are involved that require additional State or Federal approval.

All permanent structures, including pumping units, constructed or installed will be painted a flat, non-reflective “covert green” color as provided on the BLM Standard Environmental ColorChart.CC-001 (June 2008). Permanent structures are defined as being on location for six months or longer. Facilities required to comply with Occupational Safety and Health Act (OSHA) shall be excluded.

Fire suppression equipment will be available to suppress any wildfires caused by construction or related activities. In the event of a wildfire the Richfield Interagency Fire Center (435) 896-8404 will be notified.



GLENWOOD TO GLENCOVE FEDERAL 11-1  
2.70 MILES

LEASE BOUNDARY  
UTU-91058

PROPOSED ACCESS ROAD

GLENCOVE FEDERAL 11-1  
WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC

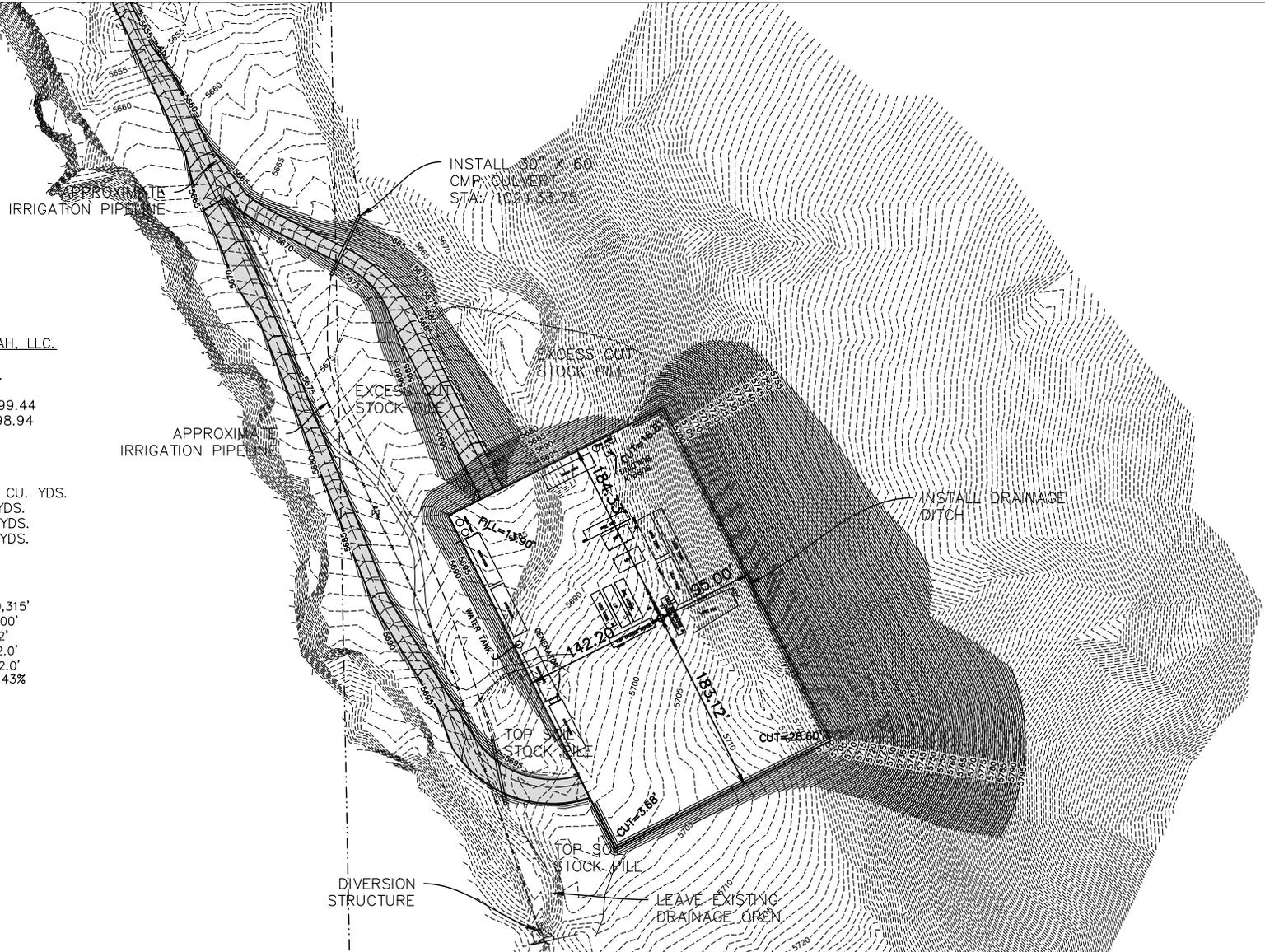
**Legend**

- Well Location
  - lease boundary
  - - - Proposed Access Road
- State of Utah Land Status**
- STATE OF UTAH LEGEND**
- Bureau of Land Management
  - Private
  - State Trust Lands



**GLENCOVE FEDERAL 11-1 VICINITY MAP  
WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC**

SCALE: NO SCALE	DRAWN BY: D.G.
PROJECT#: 1511-011S	CHECKED BY: R.W.S.
DATE: 04/13/16	SHEET# V-1



WOLVERINE OPERATING COMPANY OF UTAH, LLC.  
 GLENCOVE FEDERAL 11-1  
 SECTION 11, T.24 S., R.2 W., S.L.B. & M.

ELEV. UNGRADED GROUND AT WELL = 5699.44  
 ELEV. GRADED GROUND AT WELL = 5698.94

**APPROXIMATE YARDAGE**

(6") UPPER TOPSOIL STRIPPING = 3,406 CU. YDS.  
 REMAINING LOCATION = 88,956 CU. YDS.  
 TOTAL CUT = 95,362 CU. YDS.  
 TOTAL FILL = 34,468 CU. YDS.  
 \*FILL IS UNADJUSTED

**ROAD DATA:**

LENGTH OF NEW ACCESS ROAD = 10,315'  
 LENGTH OF UPGRADED EXISTING ROAD = 0.00'  
 MAX TOTAL DISTURBED WIDTH = 112'  
 MAX TRAVEL SURFACE WIDTH = 12.0'  
 MAX TRAVEL SURFACE WIDTH (TURNOUT) = 22.0'  
 MAXIMUM GRADES = 7.43%  
 NUMBER OF TURNOUTS = 15

**DISTURBANCE AREAS:**

ROAD AREA = 7.57 ACRES  
 PAD AREA = 4.22 ACRES

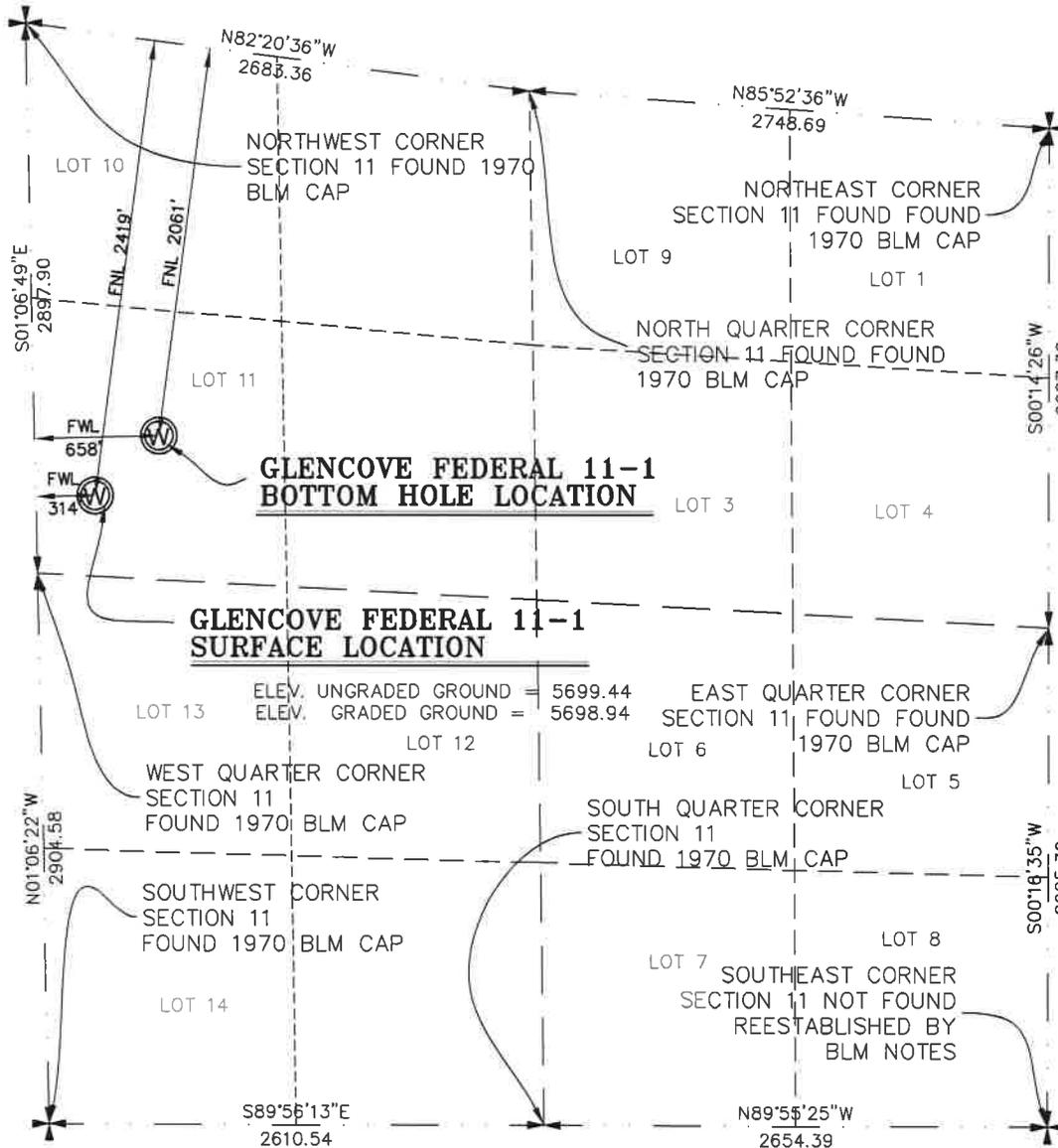
Savage Surveying, Inc.

1925 South Industrial park Rd.  
 Richfield, UT 84701  
 Office: 435-881-3335  
 Fax: 435-881-0330



**GLENCOVE FEDERAL 11-1  
 WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC**

ENGINEER J.A.	SCALE 1" = 100'	SHEET NO.
CHECKED R.W.S.	PROJ# 1511-011S DWG.NM:1511-011S	<b>PAD-EX</b>
DRAWN D.G.	DATE 03/22/16	



**PROJECT**  
**WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC.**

SURFACE WELL LOCATION, LOCATED AS SHOWN IN LOT 11 (SW4NW4) SECTION 11, T.24 S., R.2 W., S.L.B. & M., SEVIER COUNTY, UTAH.  
 BOTTOM HOLE LOCATION, LOCATED AS SHOWN IN LOT 11 (SW4NW4) SECTION 11, T.24 S., R.2 W., S.L.B. & M., SEVIER COUNTY, UTAH.

**LEGEND**



SECTION CORNER AS NOTED  
 QUARTER CORNER AS NOTED  
 PROPOSED WELL LOCATION

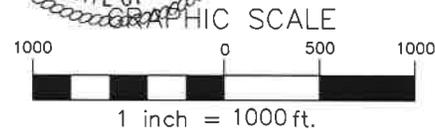
**NOTE:**  
 THE PURPOSE OF THIS SURVEY WAS TO PLAT THE SURFACE LOCATION OF THE GLENCOVE FEDERAL 11-1 WELL BEING LOCATED IN LOT 11 (SW4NW4) AND THE BOTTOM HOLE LOCATION BEING IN LOT 11 (SW4NW4) SECTION 11, T. 24 S., R.2 W., S.L.B. & M., SEVIER COUNTY, UTAH.

**BASIS OF ELEVATION**

ELEVATION BASED ON AN OPUS SOLUTION ON CP #1 LOCATED IN THE NW ¼ OF SECTION 3, T.24 S., R.2 W., S.L.B. & M.  
 ELEVATION USED 5355.29

**CERTIFICATE**

THIS IS TO CERTIFY THAT THIS PLAT WAS PREPARED FROM FIELD NOTES OF ACTUAL SURVEYS MADE BY ME UNDER MY SUPERVISION, AND THAT THE SAME ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.



**BASIS OF BEARING**

BASIS OF BEARING USED WAS SOUTH 01°06'49" EAST BETWEEN THE NORTHWEST CORNER AND THE WEST QUARTER CORNER OF SECTION 11 T.24 S. R.2 W., S.L.B. & M.  
 SURFACE LOCATION LATITUDE: 38°43'48.158" OR 38.730044  
 SURFACE LOCATION LONGITUDE: -111°59'41.219" OR -111.994783  
 BOTTOM HOLE LATITUDE: 38°43'51.292" OR 38.730914  
 BOTTOM HOLE LONGITUDE: -111°59'36.973" OR -111.993604

COORDINATES SHOWN ARE NAD83

**Savage Surveying, Inc.**

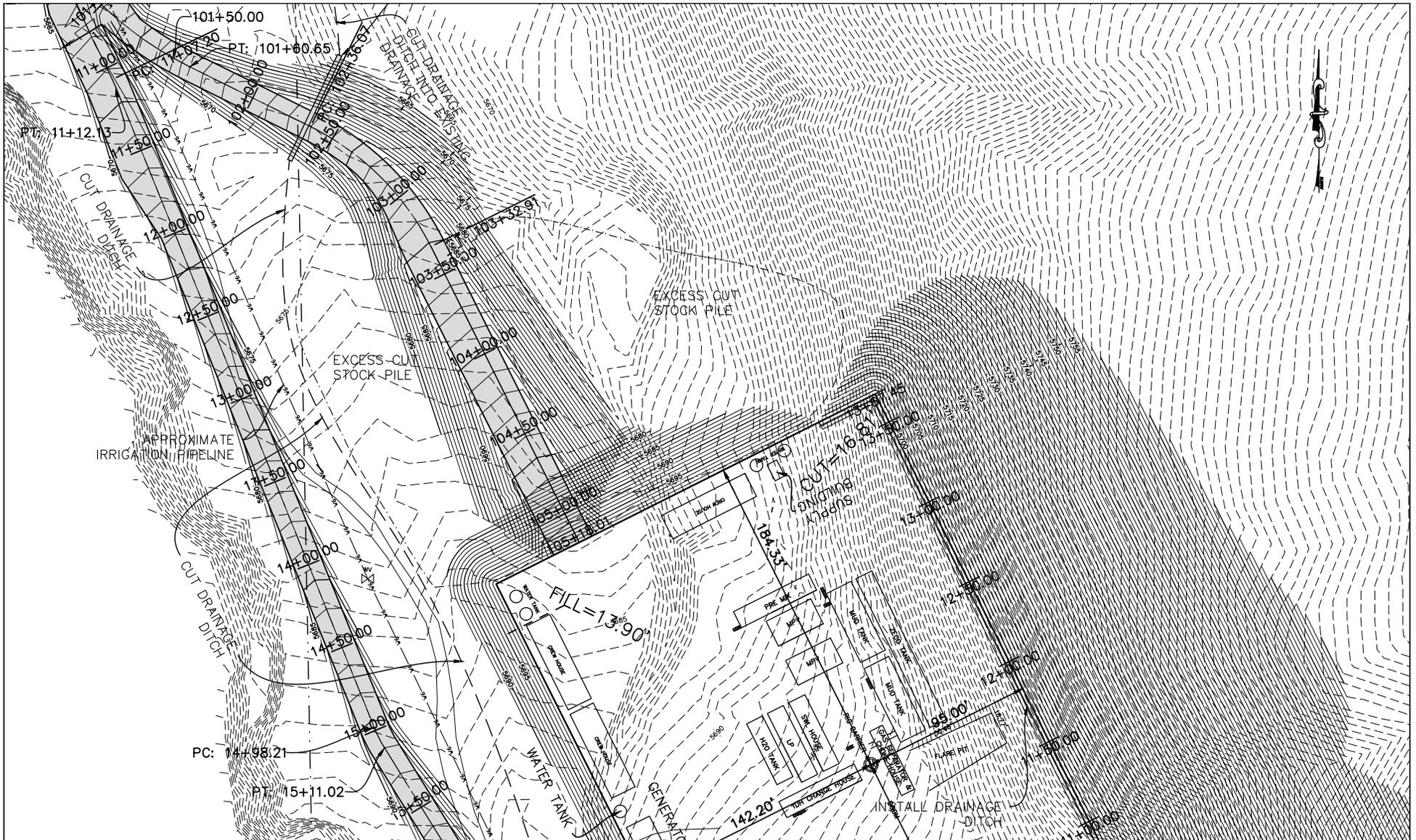
1925 South Industrial Park Rd.  
 Richfield, UT 84701  
 Office: 435-896-6635  
 Fax: 435-896-0200



**GLENCOVE FEDERAL 11-1**

**WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC.**

DESIGN BY:	SURVEY BY:	SCALE	DATE	PROJECT NUMBER	SHEET NUMBER
---	N.S.	1" = 1000'	3/22/16	1511-011S	1 of 1
		CHECKED BY:	DRAWN BY:		
		R.W.S.	DG		



Savage Surveying, Inc.

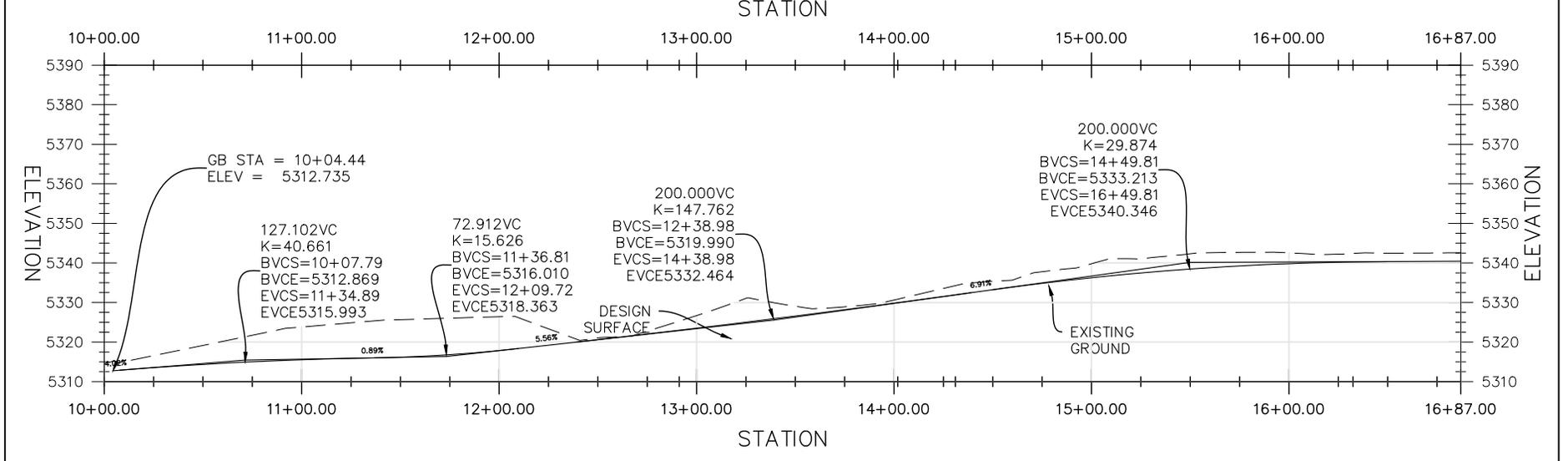
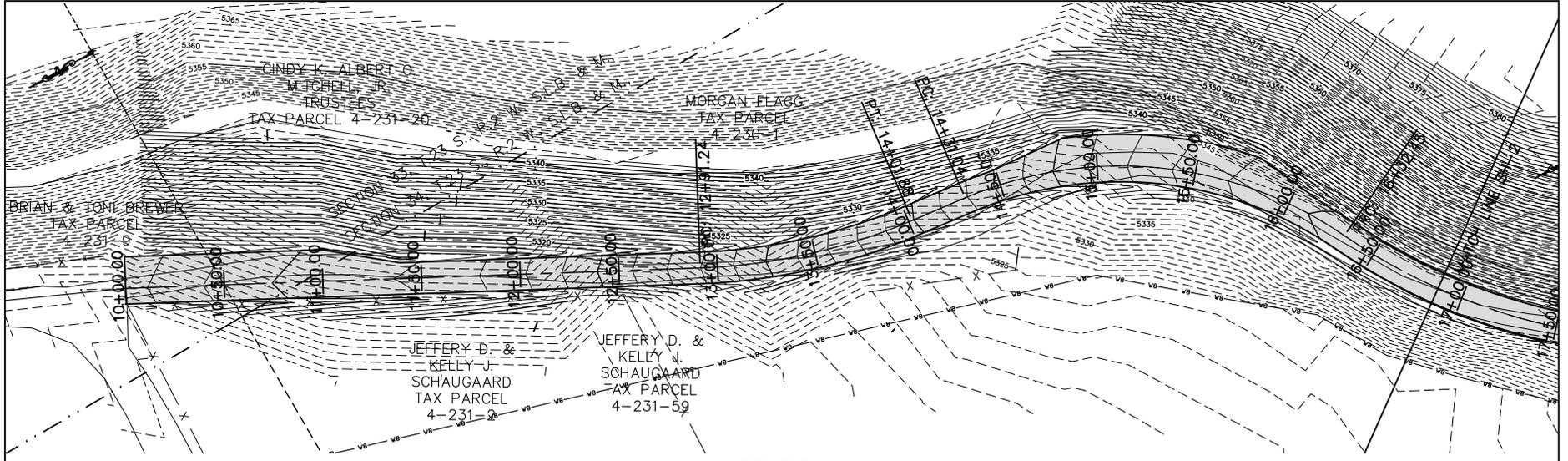
1925 South Industrial park Rd.  
 Plainfield, UT 84051  
 Office: 435-881-0335  
 Fax: 435-881-0330



GLENCOVE FEDERAL 11-1  
 WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC

ENGINEER J.A.	SCALE 1"= 50'	SHEET NO.
CHECKED R.W.S.	PROJ# 1511-011S DWG.NM:1511-011S	PAD-1
DRAWN D.G.	DATE 01/27/16	

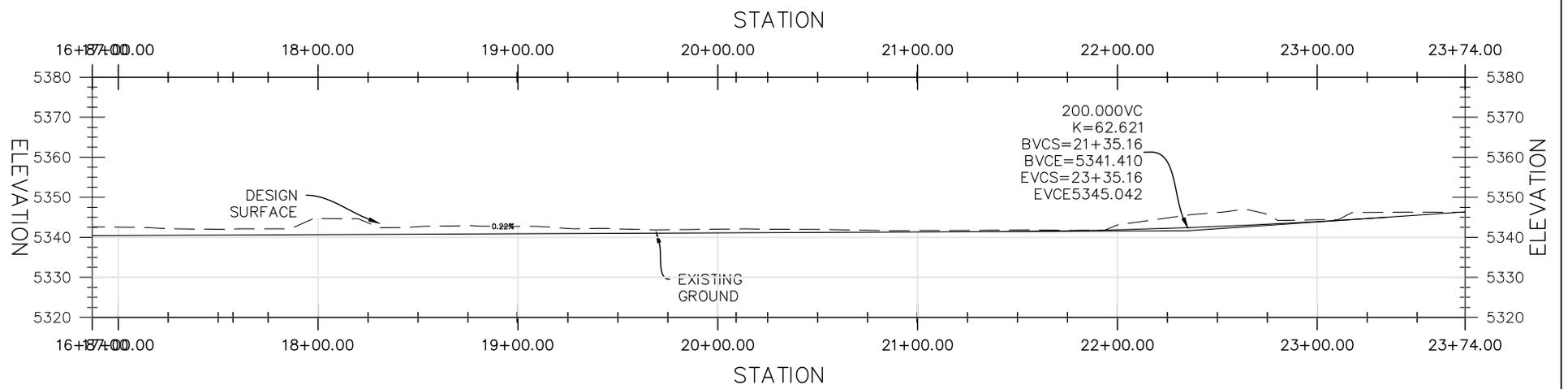
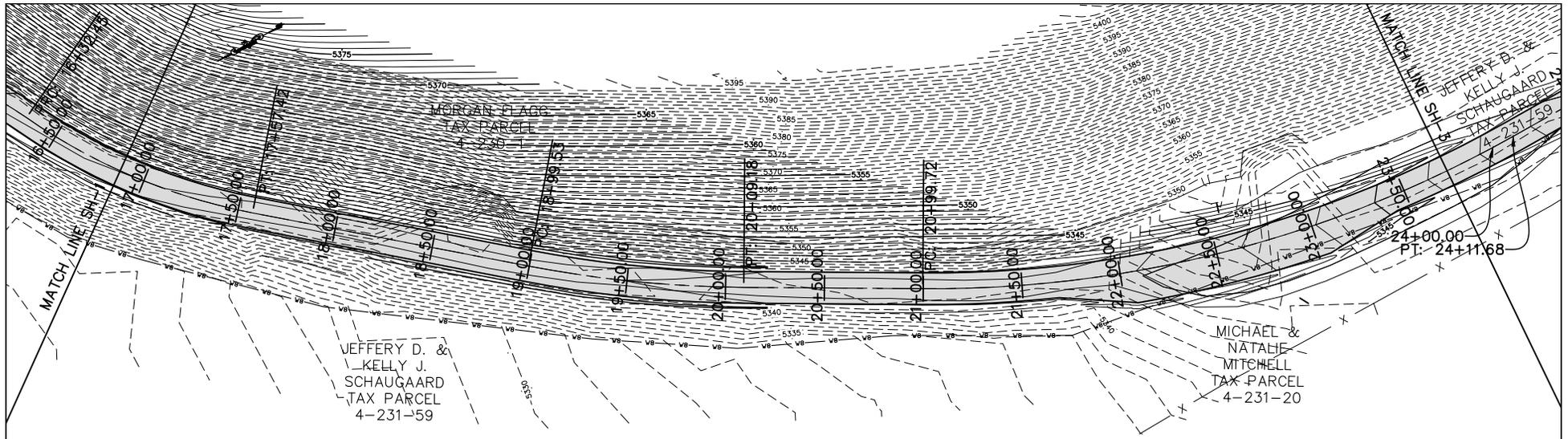




Savage Surveying, Inc.  
 1925 Central park Rd  
 Richfield, UT 84701  
 Office: 801-894-6635  
 Fax: 801-894-2230

**GLENCOVE FEDERAL 11-1**  
**WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC**

ENGINEER J.A.	SCALE 1" = 50'	SHEET NO. <b>RD-1</b>
CHECKED R.W.S.	PROJ#: 1511-011S DWG.NM: 1511-011S	
DRAWN D.G.	DATE 01/27/16	



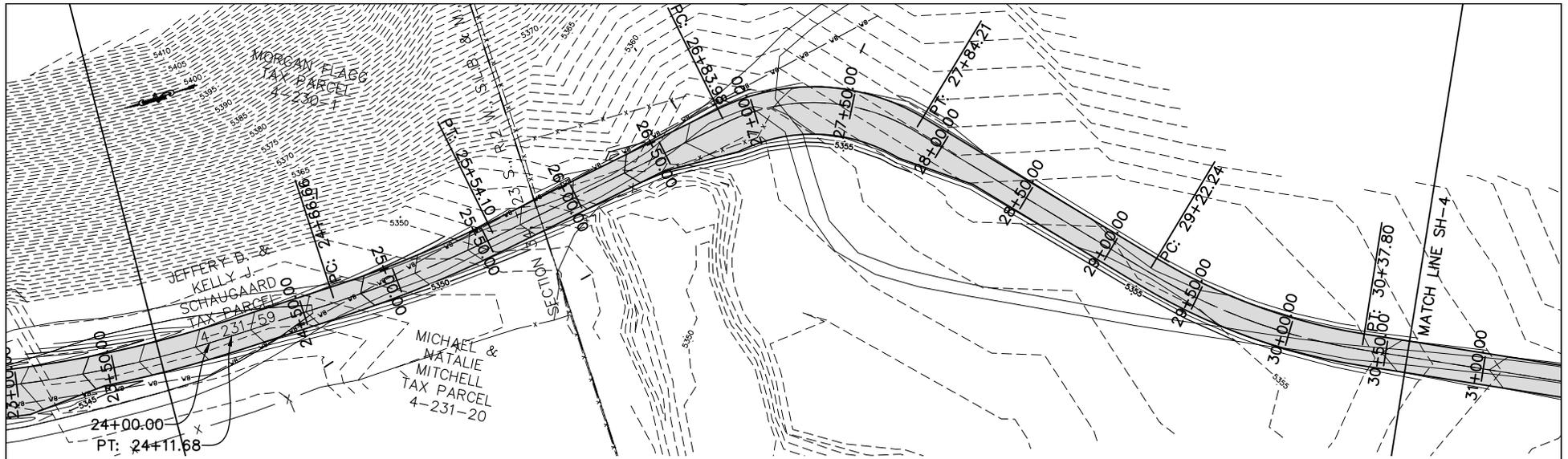
Savage Surveying, Inc.

1925 South Industrial park Rd.  
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Office: 435-551-5355  
Fax: 435-551-0330

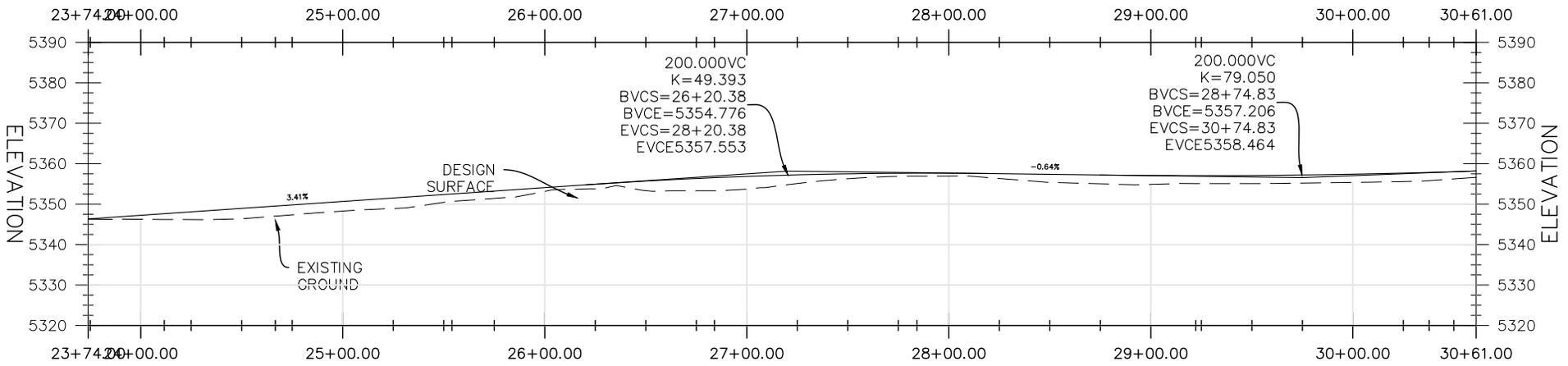


**GLENCOVE FEDERAL 11-1**  
**WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC**

ENGINEER J.T.A.	SCALE 1"= 50'	SHEET NO. <b>RD-2</b>
CHECKED R.W.S.	PROJ# 1511-011S DWG.NM:1511-011S	
DRAWN D.G.	DATE 01/27/16	



STATION



STATION

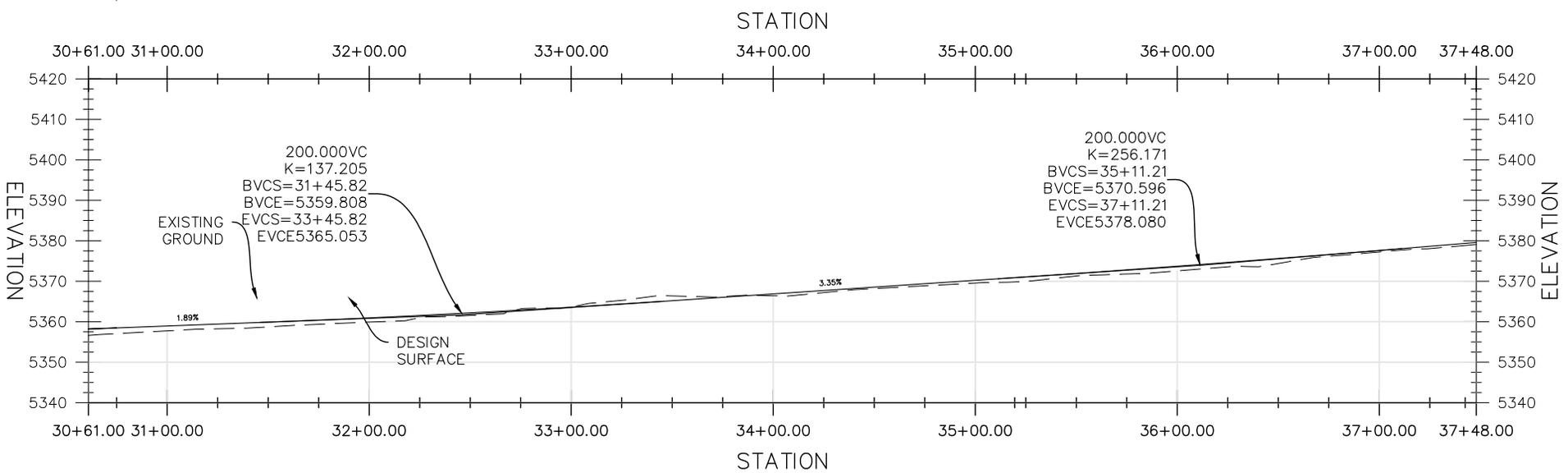
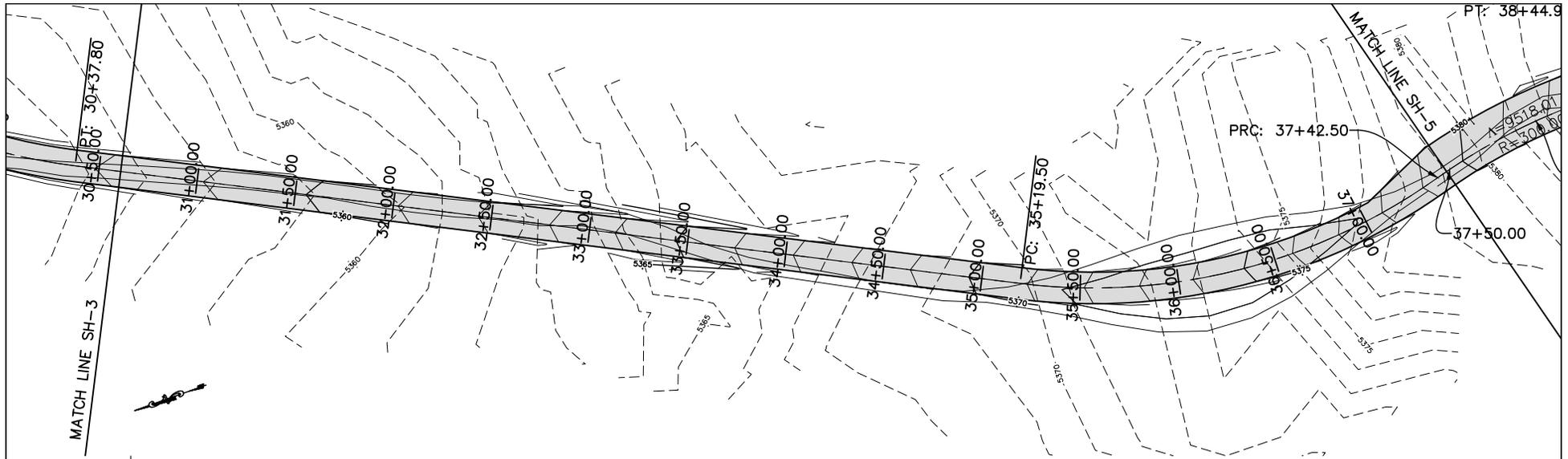
Savage Surveying, Inc.

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Fax: 801-933-0330



GLENCOVE FEDERAL 11-1  
WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC

ENGINEER J.T.A.	SCALE 1"= 50'	SHEET NO.  <b>RD-3</b>
CHECKED R.W.S.	PROJ# 1511-011S DWG.NM:1511-011S	
DRAWN D.G.	DATE 01/27/16	



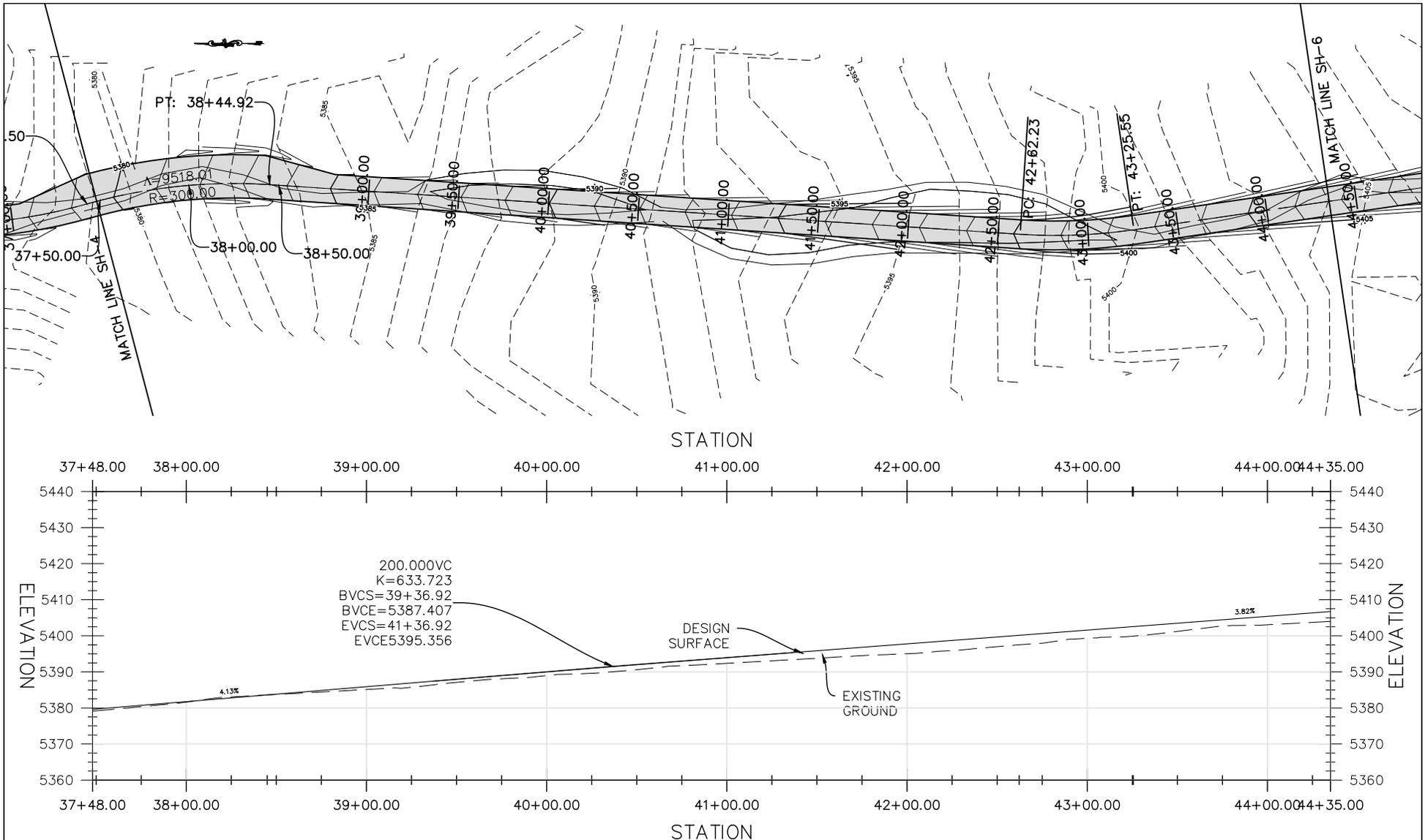
Savage Surveying, Inc.

1925 South Industrial park Rd.  
 Plainfield, UT 84051  
 Office: 435-253-6335  
 Fax: 435-253-0330



**GLENCOVE FEDERAL 11-1**  
**WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC**

ENGINEER J.T.A.	SCALE 1"= 50'	SHEET NO.  <b>RD-4</b>
CHECKED R.W.S.	PROJ#: 1511-011S DWG.NM:1511-011S	
DRAWN D.G.	DATE 01/27/16	



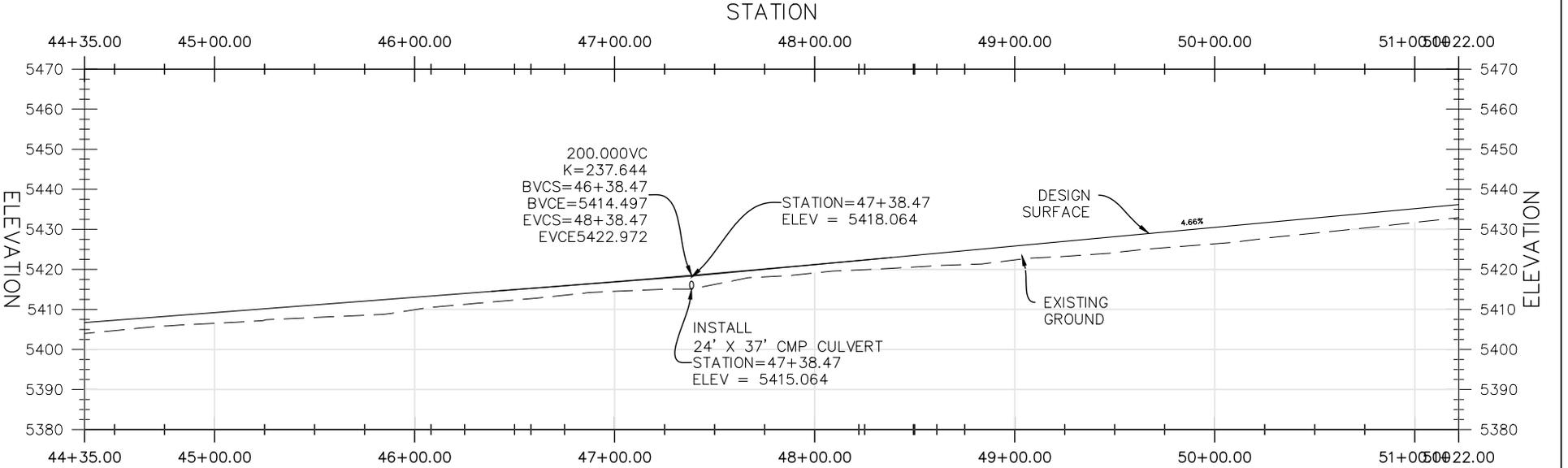
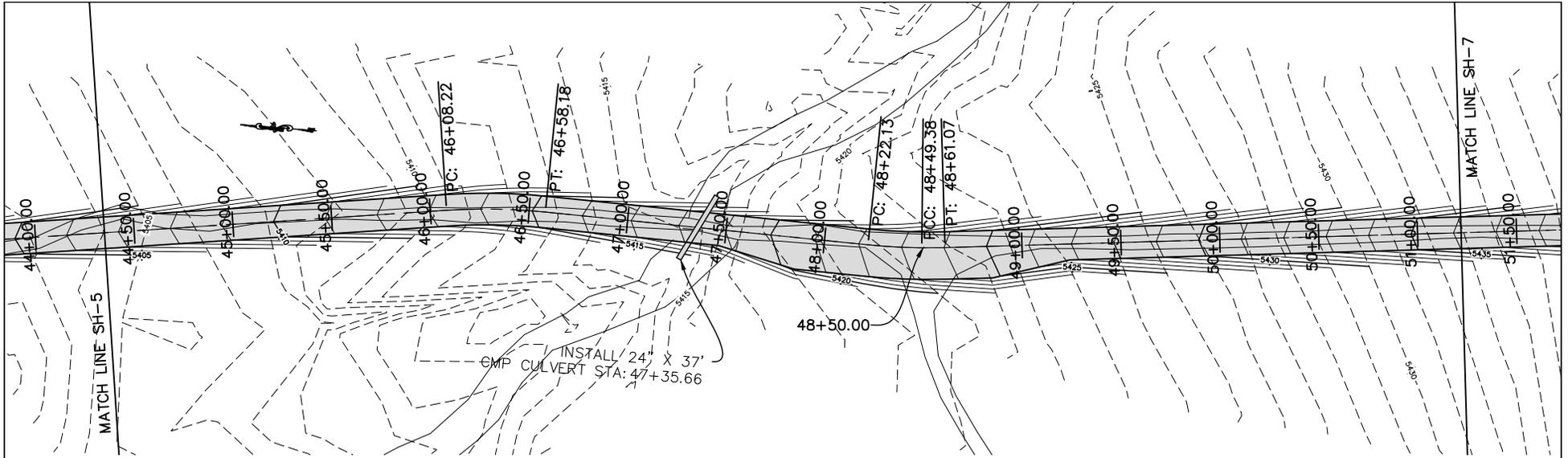
Savage Surveying, Inc.

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 Fax: 435-881-0330



GLENCOVE FEDERAL 11-1  
 WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC

ENGINEER J.T.A.	SCALE 1"= 50'	SHEET NO. <b>RD-5</b>
CHECKED R.W.S.	PROJ# 1511-011S DWG.NM:1511-011S	
DRAWN D.G.	DATE 01/27/16	



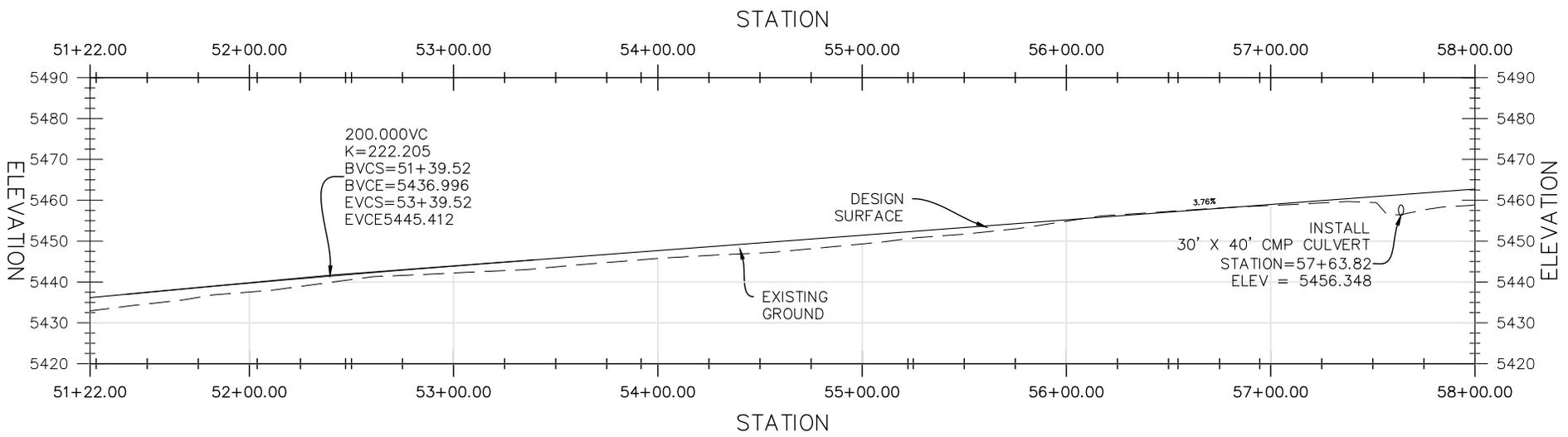
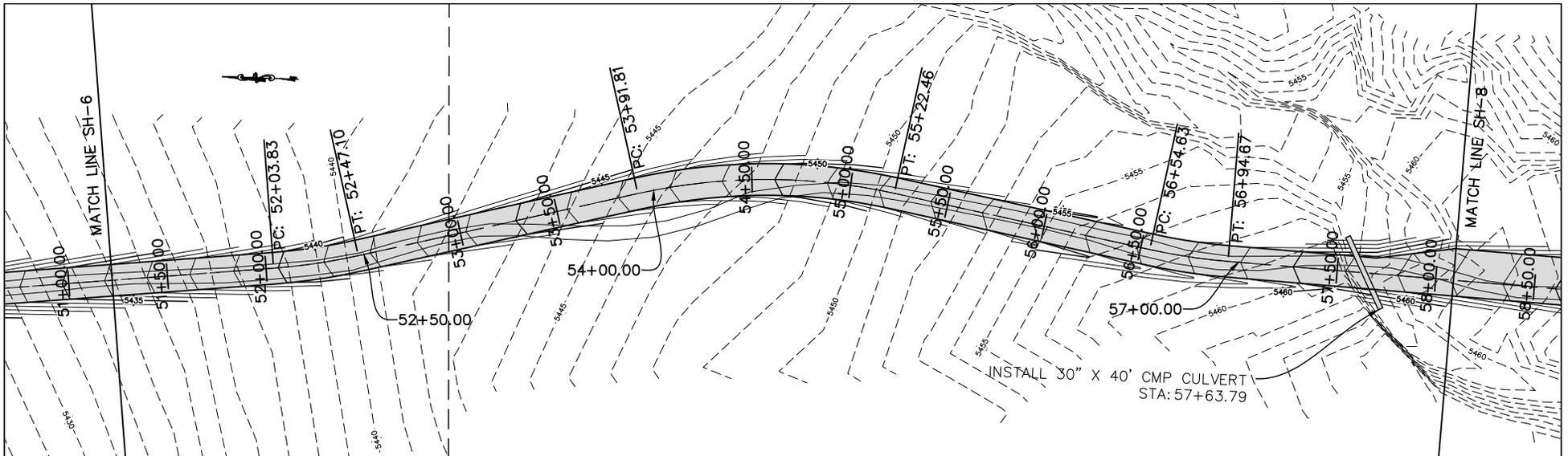
Savage Surveying, Inc.

1925 South Industrial park Rd.  
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**GLENCOVE FEDERAL 11-1**  
**WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC**

ENGINEER J.T.A.	SCALE 1"= 50'	SHEET NO. <b>RD-6</b>
CHECKED R.W.S.	PROJ# 1511-011S DWG.NM:1511-011S	
DRAWN D.G.	DATE 01/27/16	



200.000VC  
 K=222.205  
 BVCS=51+39.52  
 BVCE=5436.996  
 EVCS=53+39.52  
 EVCE=5445.412

INSTALL  
 30' X 40' CMP CULVERT  
 STATION=57+63.82  
 ELEV = 5456.348

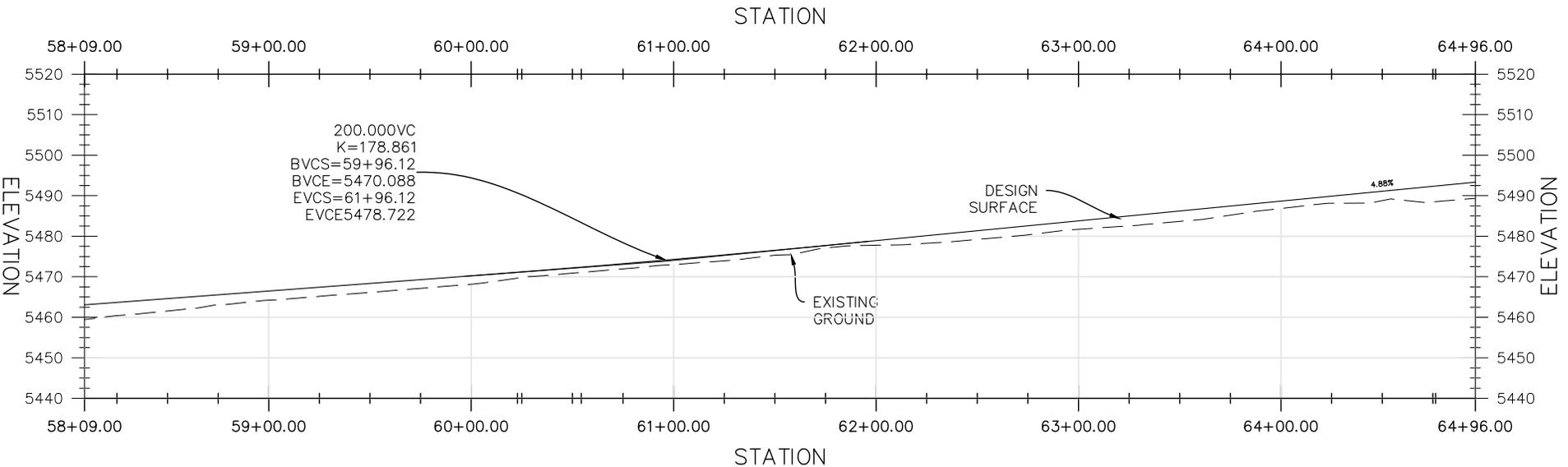
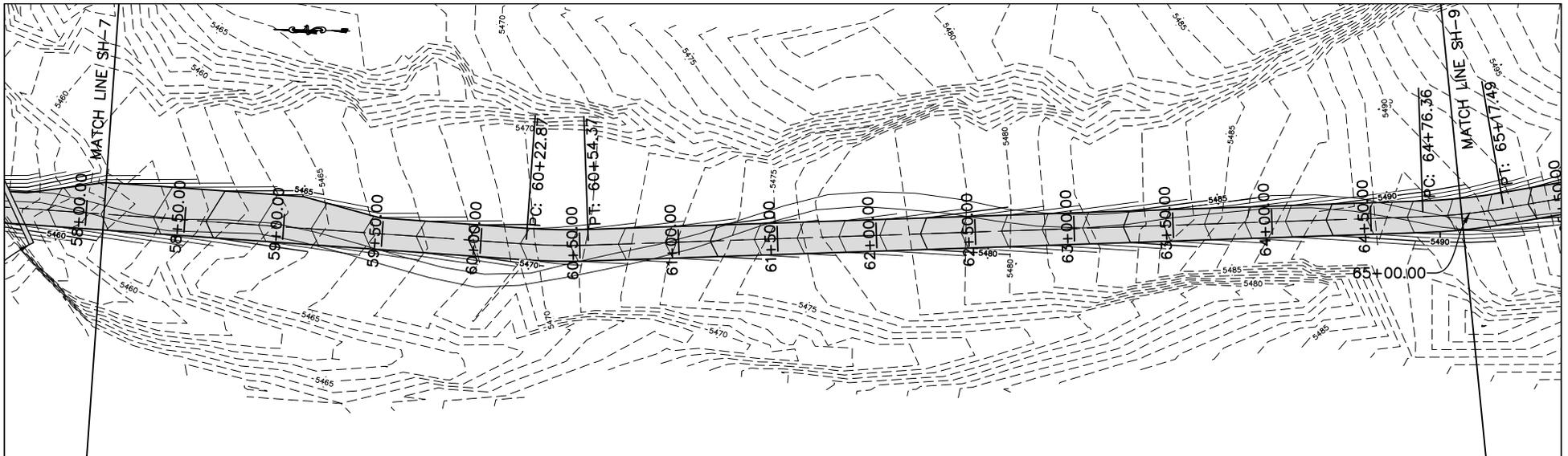
Savage Surveying, Inc.

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**GLENCOVE FEDERAL 11-1**  
**WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC**

ENGINEER J.T.A.	SCALE 1"= 50'	SHEET NO.  <b>RD-7</b>
CHECKED R.W.S.	PROJ# 1511-011S DWG.NM:1511-011S	
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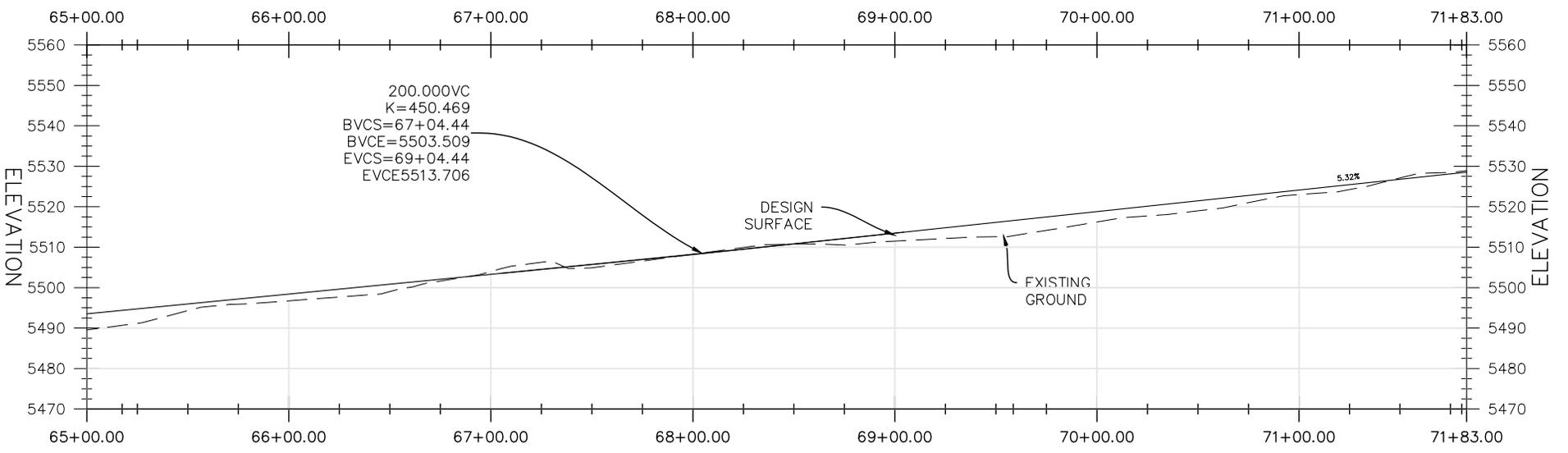
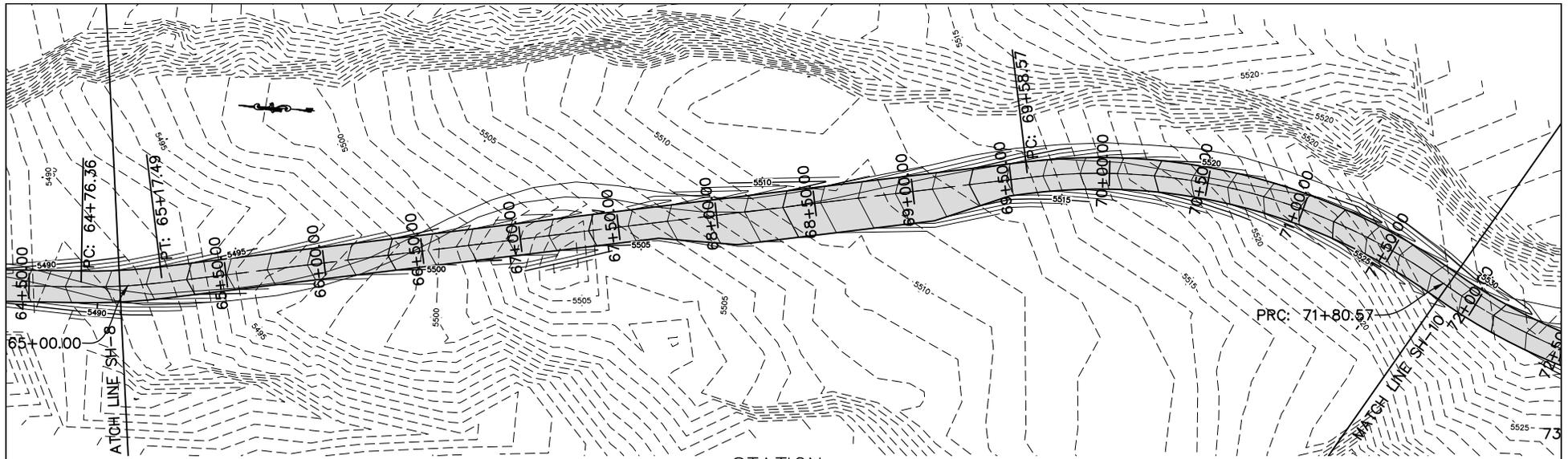
Savage Surveying, Inc.

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**GLENCOVE FEDERAL 11-1**  
**WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC**

ENGINEER J.T.A.	SCALE 1" = 50'	SHEET NO.  <b>RD-8</b>
CHECKED R.W.S.	PROJ#: 1511-011S DWG.NM:1511-011S	
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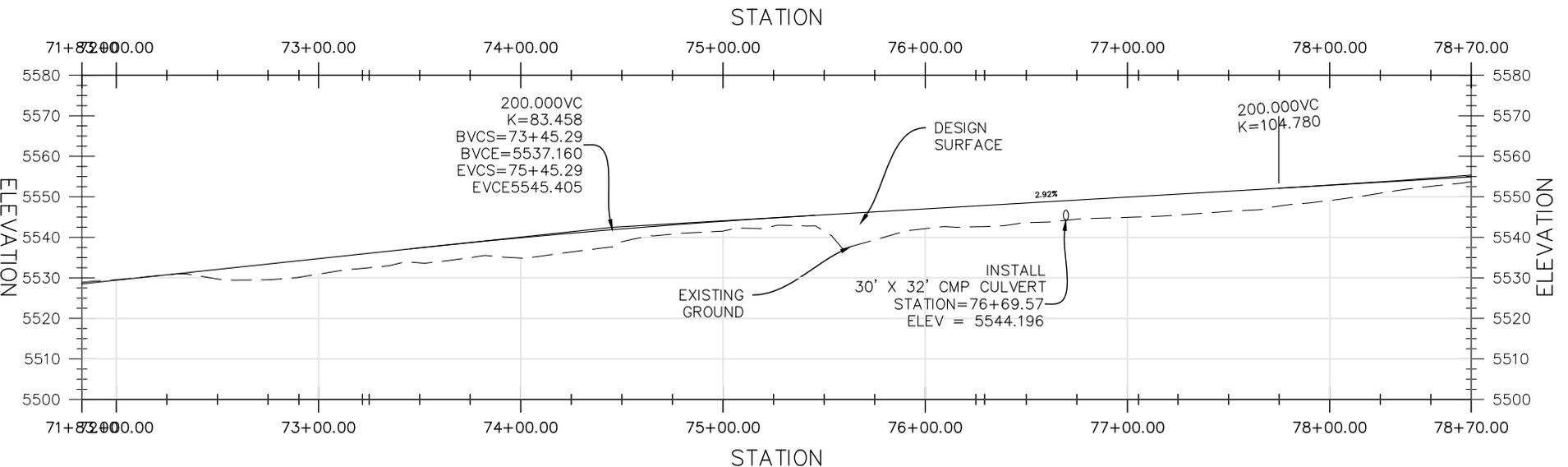
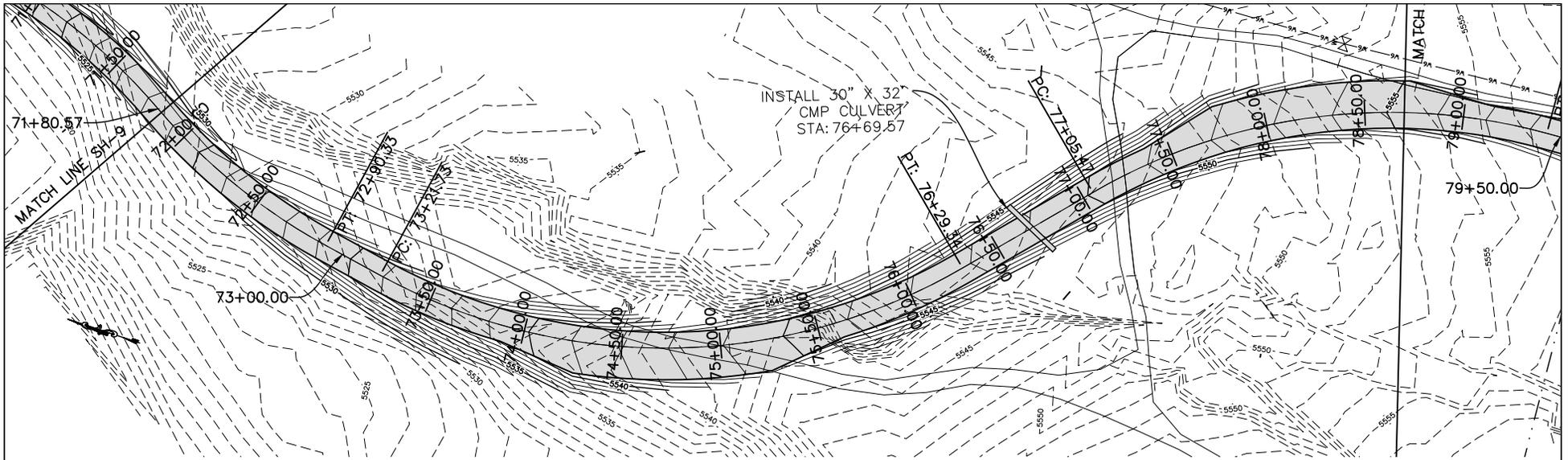
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Blairfield, UT 84301  
Office: 435-633-5335  
Fax: 435-633-0330



**GLENCOVE FEDERAL 11-1**  
**WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC**

ENGINEER J.T.A.	SCALE 1"= 50'	SHEET NO.  <b>RD-9</b>
CHECKED R.W.S.	PROJ#: 1511-011S DWG.NM:1511-011S	
DRAWN D.G.	DATE 01/27/16	



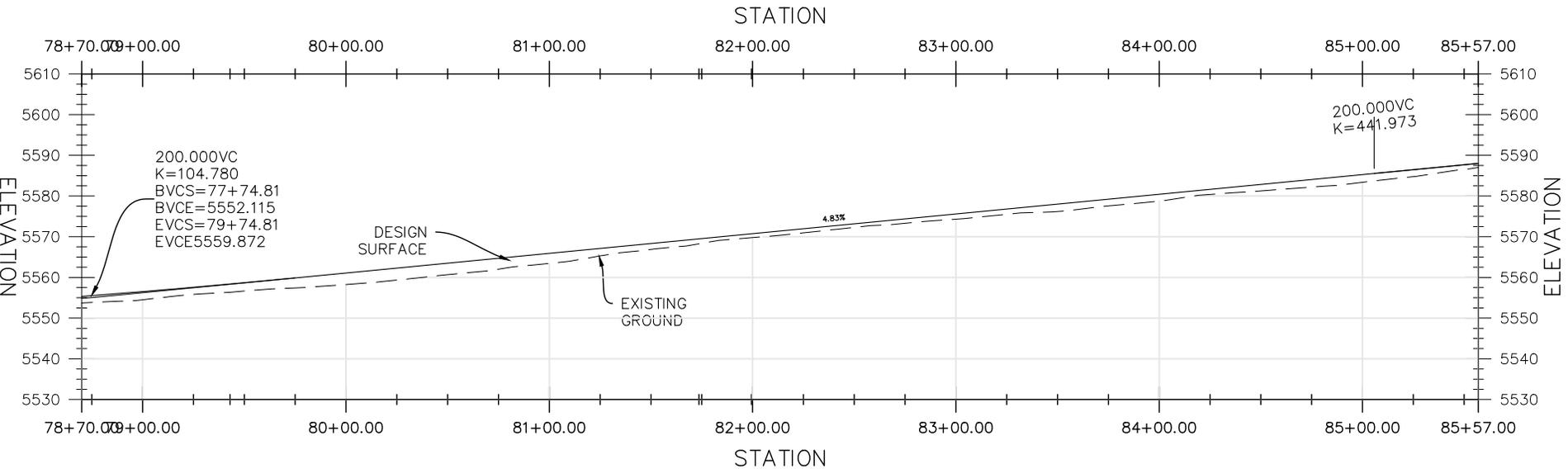
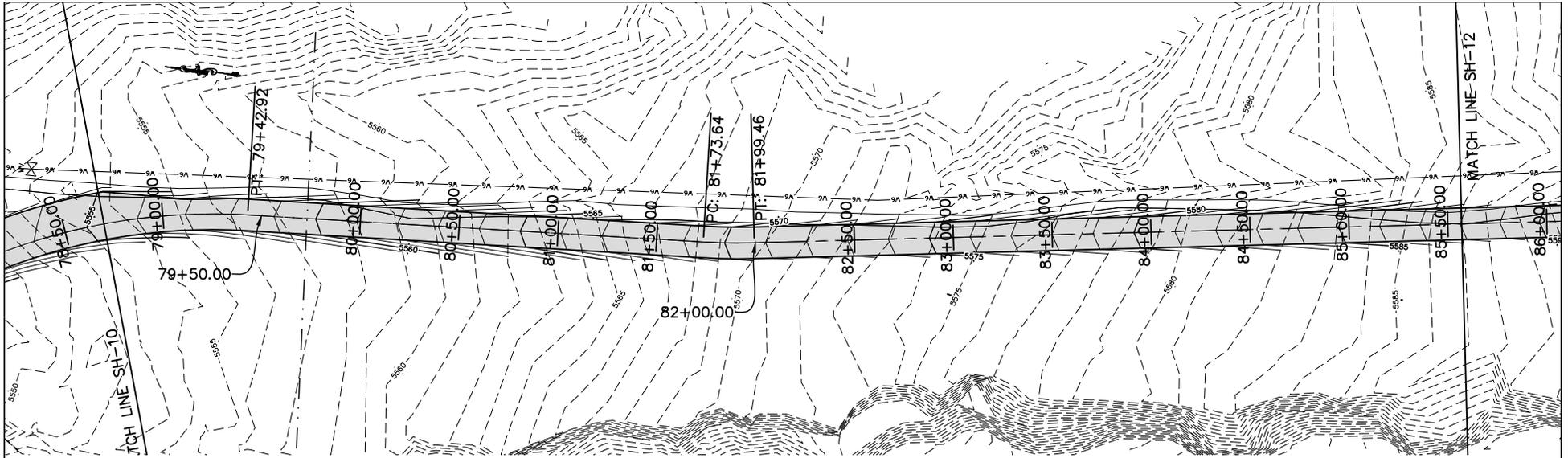
Savage Surveying, Inc.

1925 South Industrial park Rd.  
Blairfield, UT 84301  
Office: 435-533-5335  
Fax: 435-533-0330



**GLENCOVE FEDERAL 11-1**  
**WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC**

ENGINEER J.T.A.	SCALE 1" = 50'	SHEET NO. <b>RD-10</b>
CHECKED R.W.S.	PROJ# 1511-011S DWG.NM:1511-011S	
DRAWN D.G.	DATE 01/27/16	



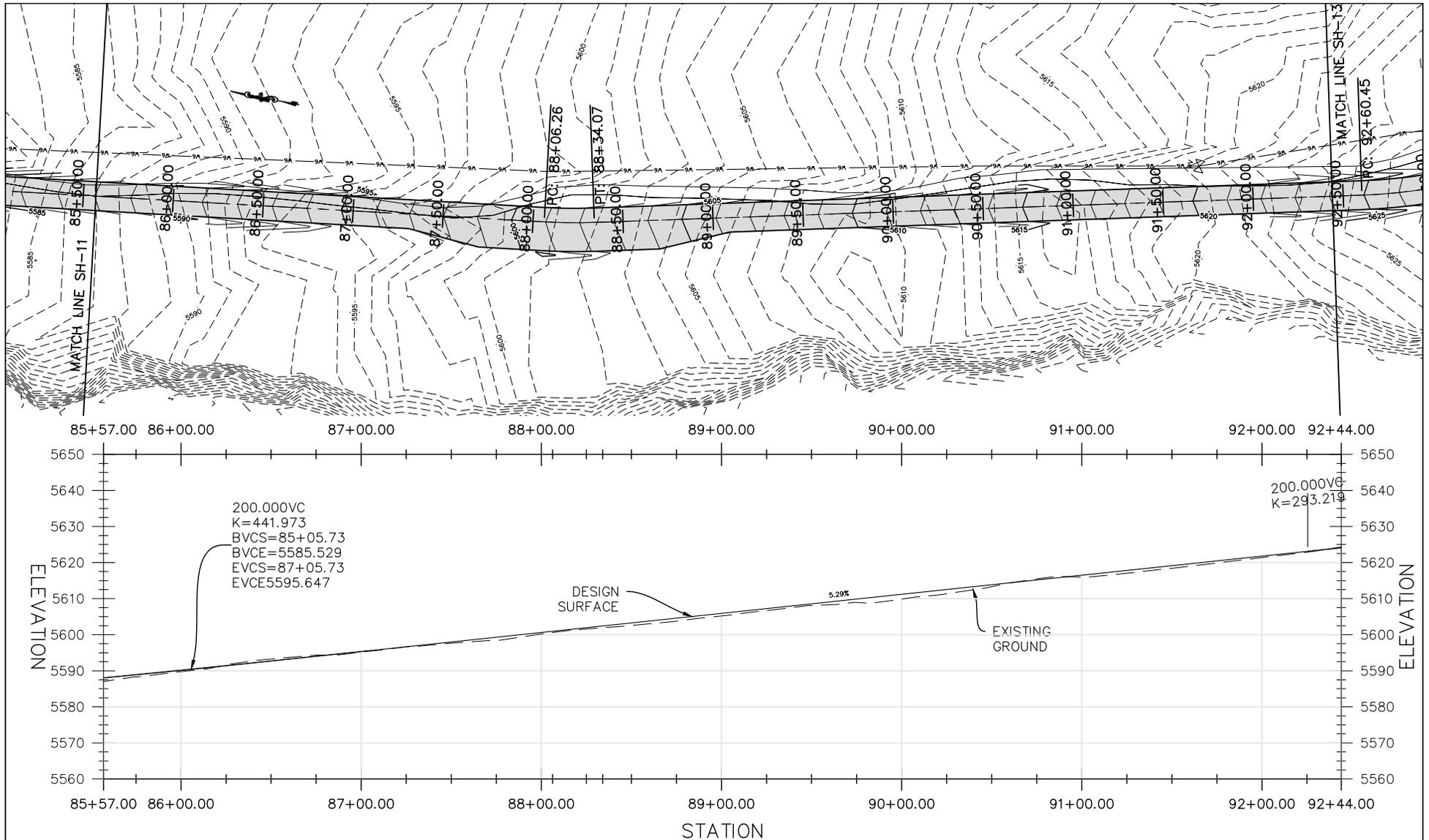
Savage Surveying, Inc.

1925 South Industrial park Rd.  
 Richfield, UT 84701  
 Office: 435-883-3335  
 Fax: 435-883-0330



**GLENCOVE FEDERAL 11-1**  
**WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC**

ENGINEER J.T.A.	SCALE 1"= 50'	SHEET NO.  <b>RD-11</b>
CHECKED R.W.S.	PROJ# 1511-011S DWG.NM:1511-011S	
DRAWN D.G.	DATE 01/27/16	



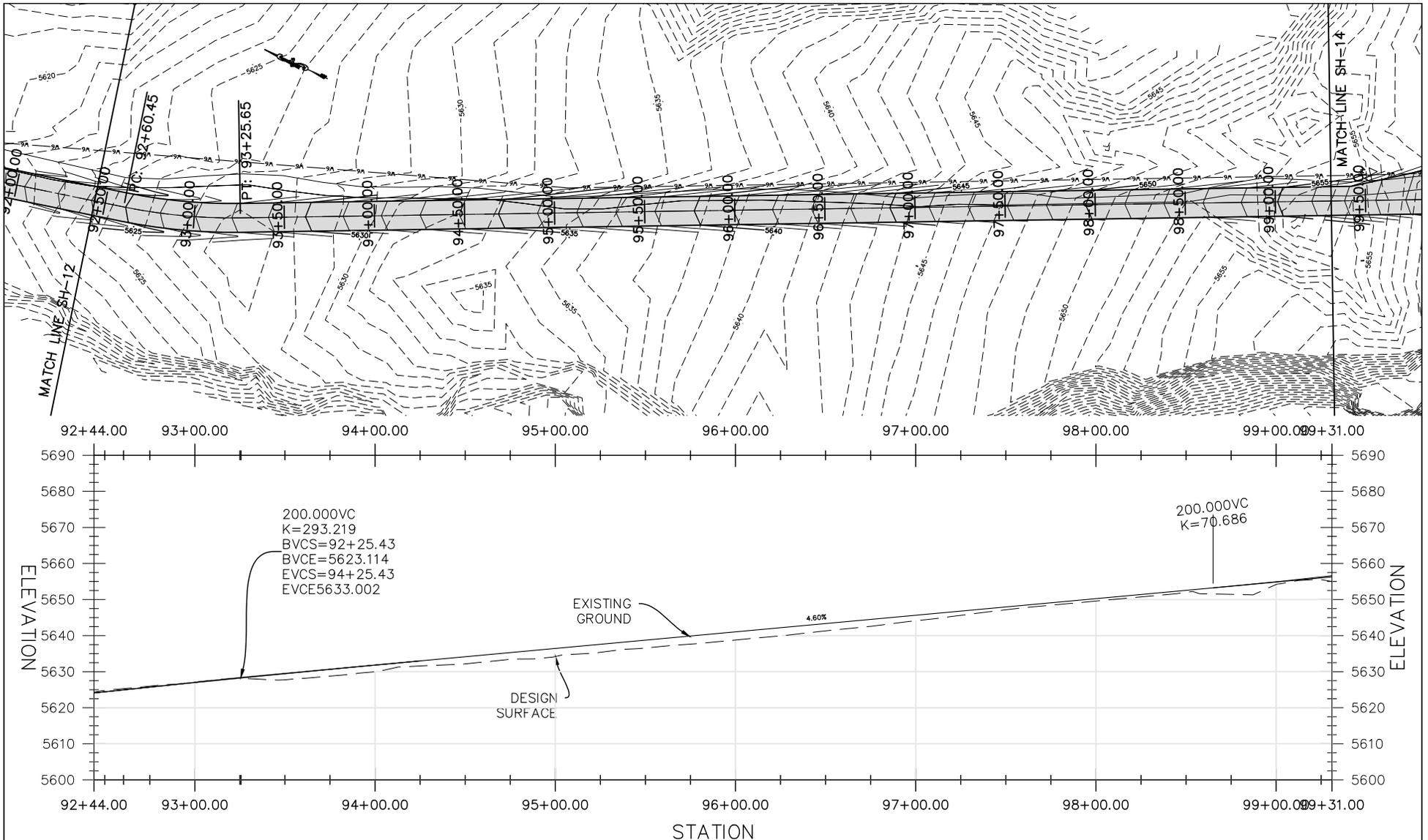
Savage Surveying, Inc.

1925 South Industrial park Rd.  
 Plainfield, UT 84051  
 Office: 435-253-5335  
 Fax: 435-253-0330



**GLENCOVE FEDERAL 11-1**  
**WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC**

ENGINEER J.T.A.	SCALE 1"= 50'	SHEET NO.  <b>RD-12</b>
CHECKED R.W.S.	PROJ# 1511-011S DWG.NM:1511-011S	
DRAWN D.G.	DATE 01/27/16	



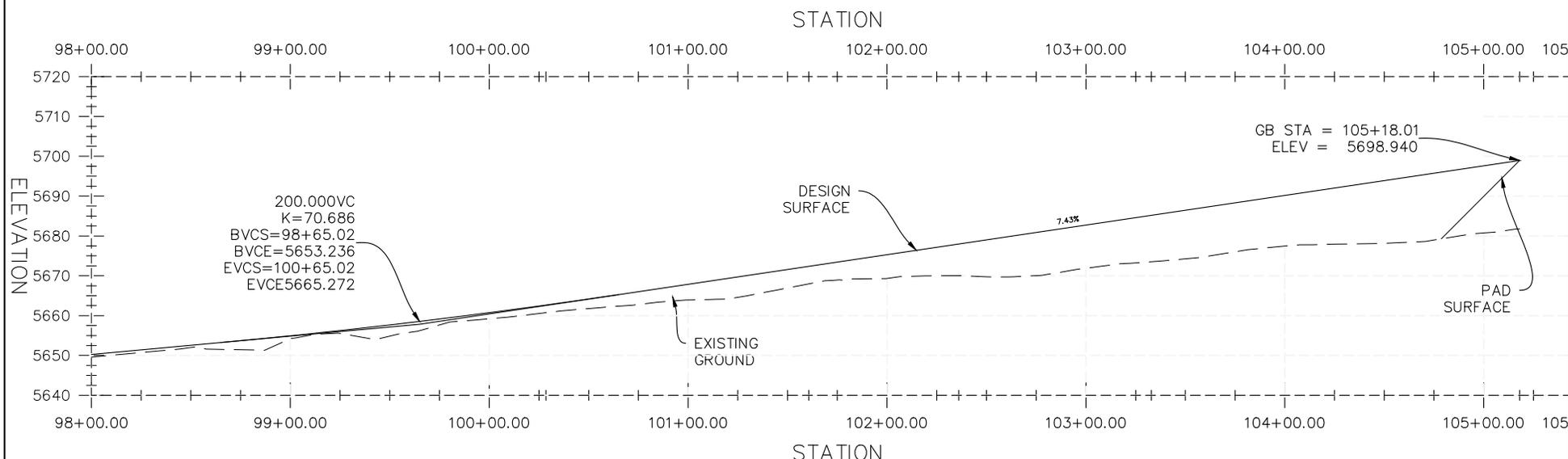
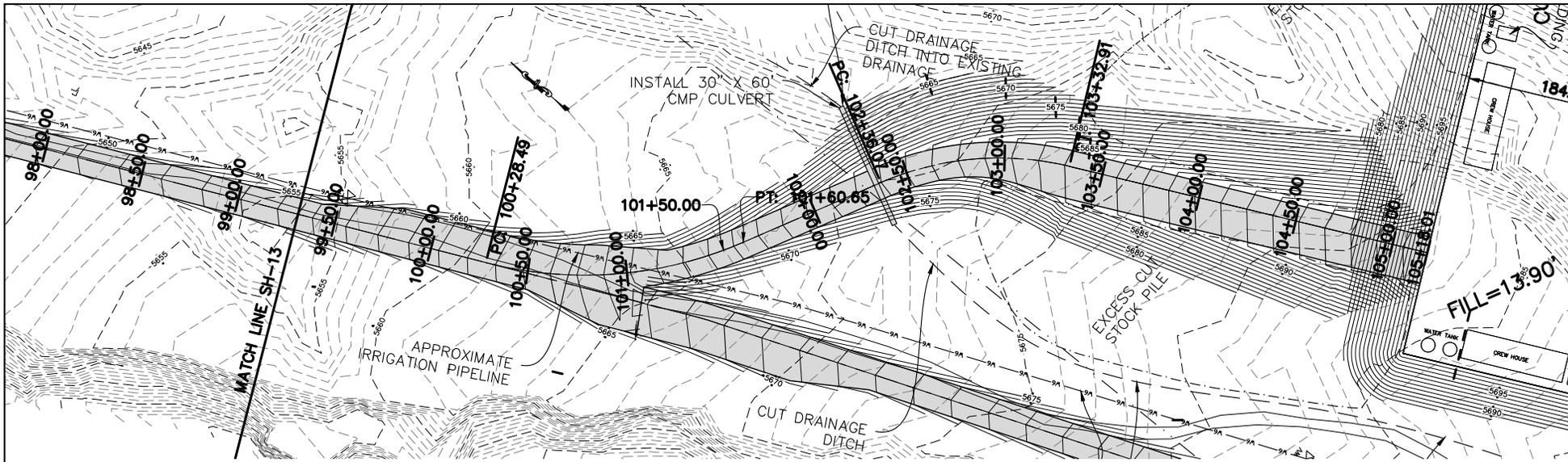
Savage Surveying, Inc.

1925 South Industrial park Rd.  
 Bldg 100, Suite 101  
 Office: 409-851-6335  
 Fax: 409-851-0330



**GLENCOVE FEDERAL 11-1**  
**WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC**

ENGINEER J.T.A.	SCALE 1"= 50'	SHEET NO.  <b>RD-13</b>
CHECKED R.W.S.	PROJ# 1511-011S DWG.NM:1511-011S	
DRAWN D.G.	DATE 01/27/16	

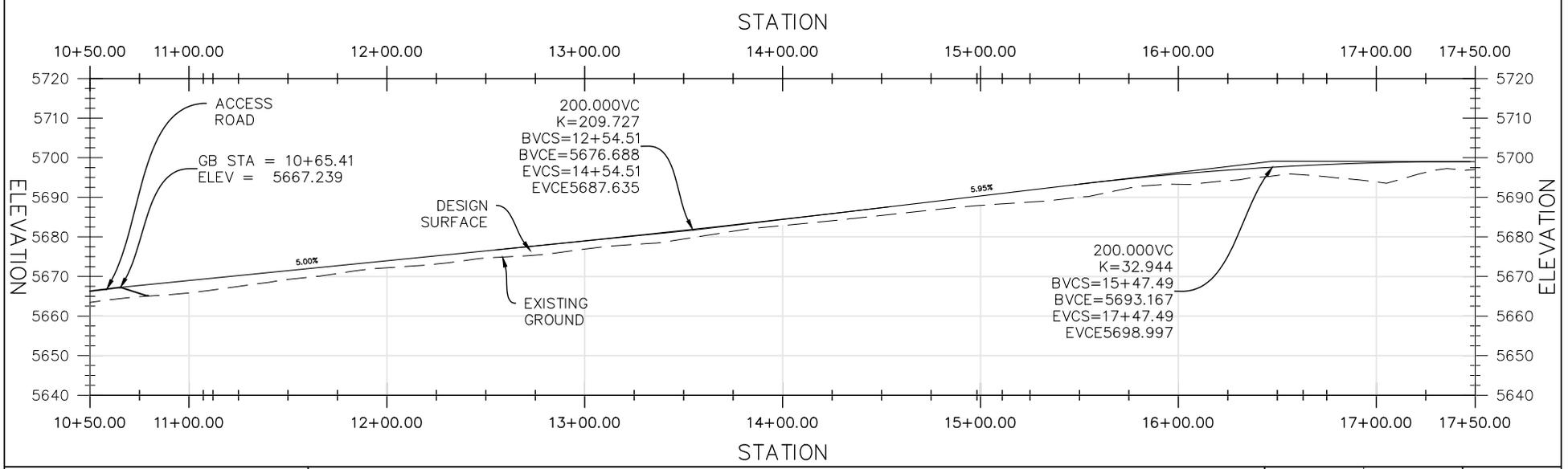
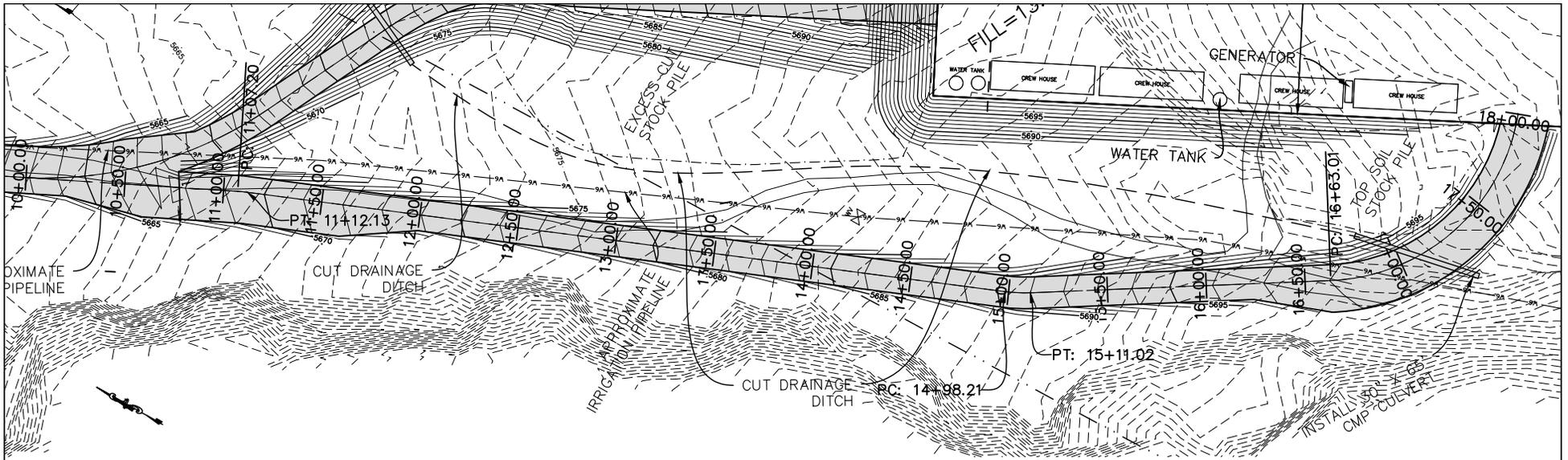


Savage Surveying, Inc.  
 1925 South Industrial park Rd.  
 Richfield, UT 84701  
 Office: 435-896-8335  
 Fax: 435-898-0220



**GLENCOVE FEDERAL 11-1**  
**WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC**

ENGINEER J.T.A.	SCALE 1"= 50'	SHEET NO. <b>RD-14</b>
CHECKED R.W.S.	PROJ# 1511-011S DWG.NM:1511-011S	
DRAWN D.G.	DATE 01/27/16	



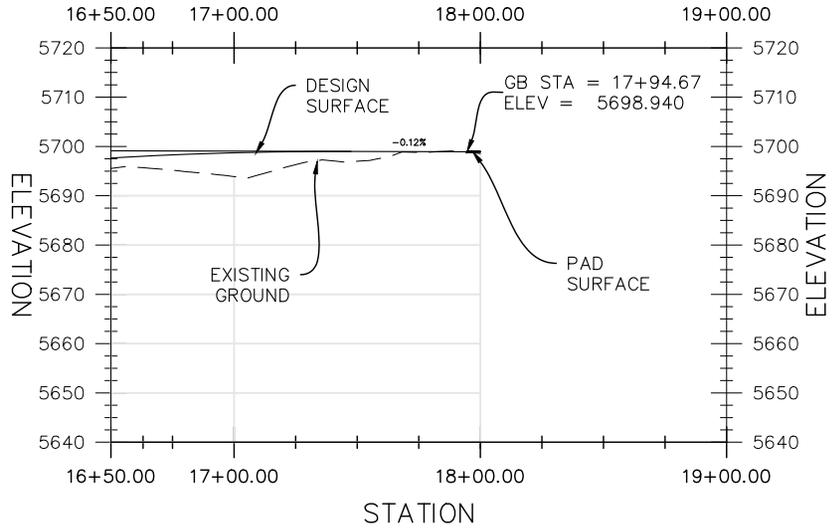
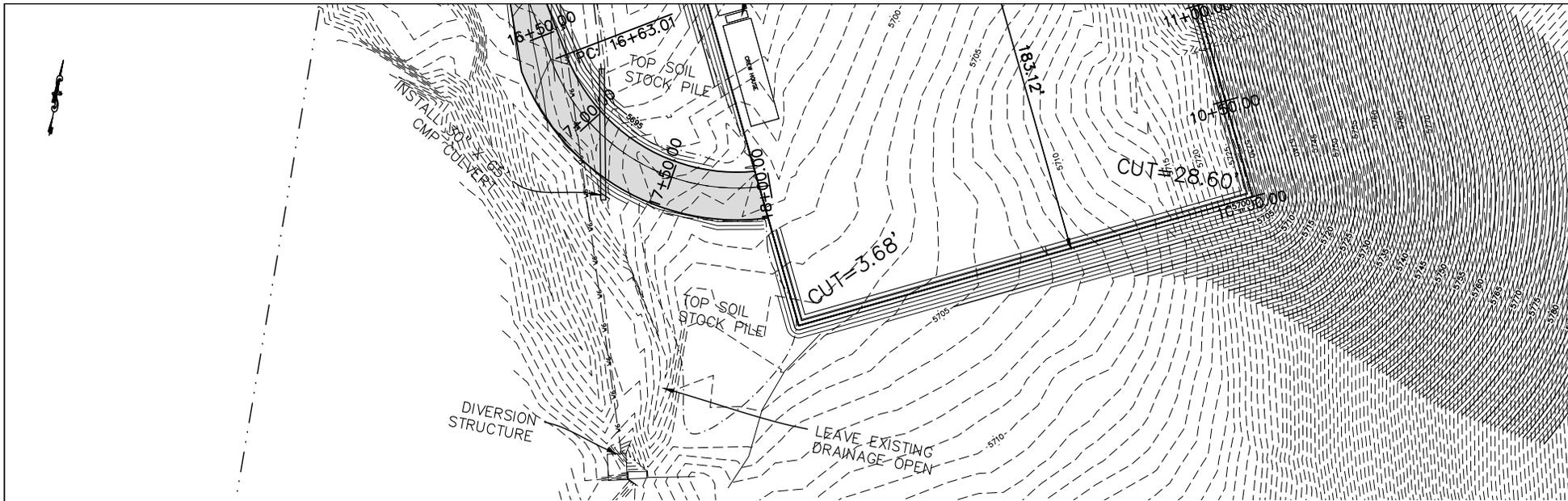
Savage Surveying, Inc.

1925 South Industrial Park Rd.  
Blairfield, UT 84301  
Office: 435-633-5335  
Fax: 435-633-0330



**GLENCOVE REDERAL 11-1  
WOLVERINEE GAS AND OIL COMPANY OF UTAH, LLC**

ENGINEER J.T.A.	SCALE 1"= 50'	SHEET NO. <b>RD-15</b>
CHECKED R.W.S.	PROJ# 1511-011S DWG.NM:1511-011S	
DRAWN D.G.	DATE 02/24/16	



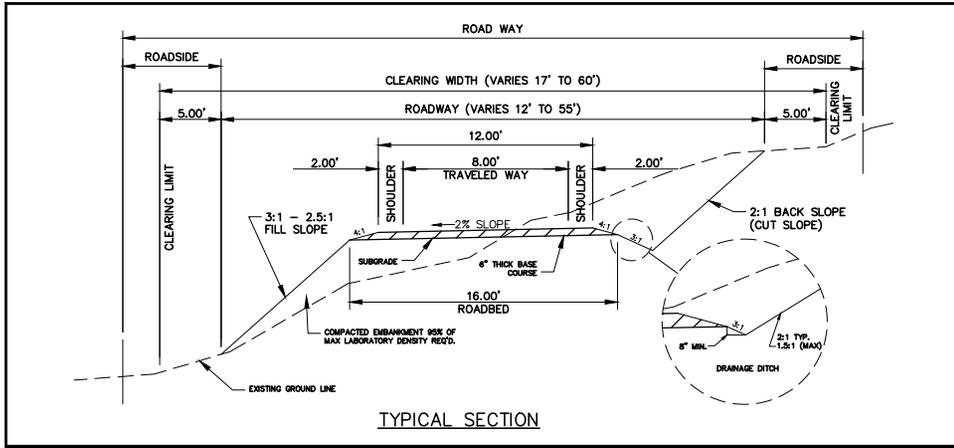
Savage Surveying, Inc.

1925 South Industrial Park Rd.  
 Richfield, UT 84701  
 Office: 801-333-1535  
 Fax: 801-333-0330

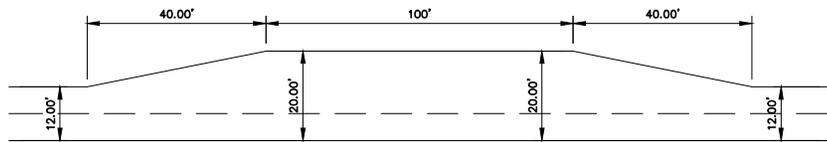


**GLENCOVE FEDERAL 11-1**  
**WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC**

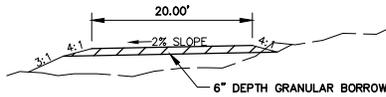
ENGINEER J.T.A.	SCALE 1"= 50'	SHEET NO. <b>RD-16</b>
CHECKED R.W.S.	PROJ# 1511-011S DWG.NM:1511-011S	
DRAWN D.G.	DATE 02/24/16	



TYPICAL SECTION



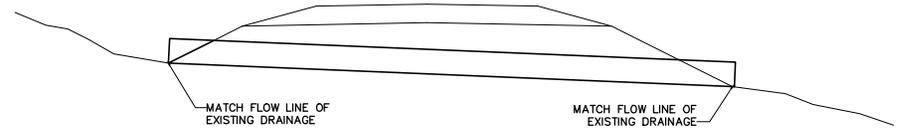
PLAN VIEW



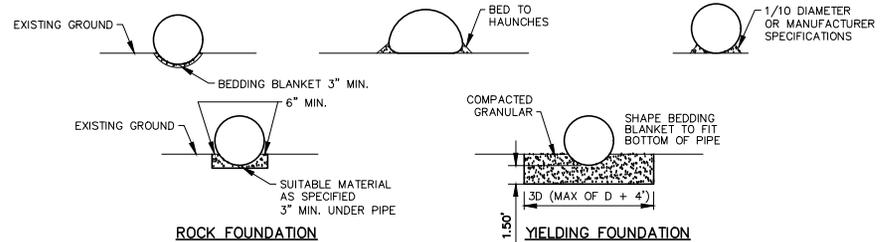
SECTION VIEW

TRUCK TURN-OUT TYPICAL

NOTE: 2% CROSS SLOPE UNLESS OTHERWISE NOTED ON PLANS.



TYPICAL CULVERT CROSS SECTION



**GENERAL NOTES**

ALL MATERIALS FOR CONSTRUCTION OF THE COMPLETE PROJECT INCLUDING BUT NOT LIMITED TO WATER FOR DUST CONTROL AND COMPACTION, CULVERTS, BEDDING MATERIALS FOR CULVERTS, GRANULAR BORROW, UNTREATED BASE COURSE, ECT. ARE TO BE PROVIDED BY THE CONTRACTOR AT HIS BID PRICE UNLESS OTHER ARRANGEMENTS ARE MADE.  
 SAVAGE SURVEYING, INC. ASSUMES NO LIABILITY WRITTEN OR IMPLIED AS TO THE LOCATION OF PIPELINES OR CABLE LINES IN THE VICINITY OF THIS ROAD AND PAD DESIGN. BLUE STAKES (PUBLIC LINES) AND OR THE OWNER OF THE TRANSPORTATION LINE (PRIVATE/CORPORATE LINES) MUST BE CONTACTED FOR IDENTIFICATION AND LOCATION BEFORE CONSTRUCTION BEGINS. TRANSPORTATION LINES THAT MAY BE IDENTIFIED ON THESE PLANS MAY NOT BE THE ONLY TRANSPORTATION LINES. EXTREME CAUTION SHALL BE USED WHEN CONSTRUCTING THE ROAD AND PAD NEAR OR OVER TRANSPORTATION LINES.

**EXPLANATIONS:**

PLAN & PROFILE SHEETS  
 PLAN & PROFILE SHEETS SHOW THE HORIZONTAL ALIGNMENT OF THE ROAD, SIGN PLACEMENT IF ANY, TURNOUT PLACEMENT IF ANY, ESTIMATED CULVERT PLACEMENTS AND SIZES, ESTIMATED WING DITCHES, HORIZONTAL AND VERTICAL CURVE DATA, AND THE PERCENT OF SUPER FOR CONSTRUCTION OF HORIZONTAL CURVES.

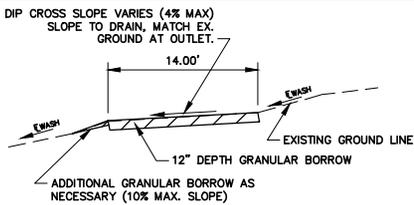
**SCOPE OF WORK:**

SHAPING THE ROADWAY  
 THE ROADWAY IS TO BE SHAPED TO THE DIMENSIONS SHOWN ON THE TYPICAL CROSS SECTION INCLUDED IN THIS DOCUMENT. CARE SHALL BE GIVEN TO INSURE THAT THE TRAVELWAY WIDTH IS NOT LESS OR SIGNIFICANTLY MORE THAN THE DIMENSIONS GIVEN ON THE TYPICAL CROSS SECTION. WHERE TURNOUTS ARE INDICATED, THE TYPICAL SECTION WIDTHS SHOWN ON THE TYPICAL CROSS SECTION WILL NEED TO BE MODIFIED BY THE AMOUNTS SHOWN ON THE TYPICAL TURN-OUT DETAIL. WHERE THERE ARE HORIZONTAL CURVES, SUPER-ELEVATIONS WILL BE CONSTRUCTED TO THE PERCENTAGES SHOWN ON THE PLAN AND PROFILE SHEETS. ONE-THIRD OF THE SUPER TRANSITION OCCURS ON THE CURVE AND TWO-THIRDS ON THE TANGENT.  
 TOPSOIL WILL BE HANDLED IN THE MANNER AGREED UPON AND STATED WITHIN THE APD AND THE CONDITIONS OF APPROVAL. IF TOPSOIL IS TO BE MOVED.  
 THE ROAD SHALL HAVE A CROWN AS SHOWN ON THE TYPICAL CROSS SECTION TO INSURE THAT THE WATER WILL DRAIN OFF OF THE TRAVEL SURFACE.

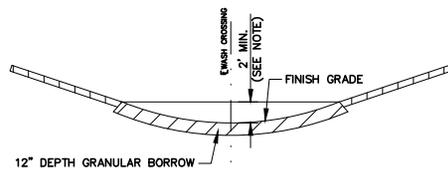
**CULVERT CONSTRUCTION DETAILS**

THE PLANS SHOW AN ESTIMATE OF THE NUMBER AND THE SIZE OF THE CULVERTS TO BE PLACED ON THE ROAD. THERE MAY NEED TO BE SOME FIELD ADJUSTMENTS MADE BY THE CONTRACTOR, BLM, AND/OR INSPECTOR/ENGINEER TO THE PLACEMENT AND LENGTH OF THE CULVERTS AND WING DITCHES. CULVERT INGRESS AND EGRESS DITCH LENGTHS ARE TO BE DETERMINED DURING CONSTRUCTION. ALL DITCHES ARE TO BE CONSTRUCTED WITH SUFFICIENT SLOPE SO THAT WATER WILL EXIT THE DOWNSTREAM SIDE AND NOT POND IN THE DITCH.

ALL CULVERTS SHALL BE OF SUFFICIENT STRENGTH TO SUPPORT AN HS-20 LOADING OR HEAVIER. CHECK WITH MANUFACTURER FOR INFORMATION ABOUT MINIMUM COVER AND LOAD RATINGS. IN NO CASE SHALL COVER OVER CULVERTS BE LESS THAN 1'. CULVERT LENGTHS ARE ESTIMATED ON THE PLANS BUT THERE MAY NEED TO BE SOME ADJUSTMENTS MADE TO THE LENGTH OF THE CULVERTS DURING CONSTRUCTION.



CROSS SECTION



LONGITUDINAL SECTION

**TYPICAL #3 (DRAINAGE DIP)**

- NOTES:  
 1. WHERE DRAINAGE DIP IS LESS THAN 2-FEET DEEP, 12" DEPTH GRANULAR BORROW REQ'D THROUGH ENTIRE DIP TO GRADE BREAK(S)  
 2. CONSTRUCT DRAINAGE DITCH AS NECESSARY TO PROVIDE POSITIVE DRAINAGE AWAY FROM ALL DRAINAGE DIPS.

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 278 E. 1300 W  
 Riverton, UT 84701  
 PH: 801-896-9635  
 FAX: 801-896-8635  
 Cell: 435-299-1345



**TYPICAL SECTIONS FOR GLENCOVE FEDERAL 11-1 WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC**

ENGINEER J.T.A.	SCALE N.T.S.	SHEET NO.  <b>T-1</b>
CHECKED R.W.S.	PROJ# 1511-011S DWG.#M:TYP_DWG	
DRAWN D.G.	DATE 01/28/16	