# GATEWAY CANYONS RESORT

## OFFSITE BERM AND DIVERSION CHANNEL

### BUREAU OF LAND MANAGEMENT PROPERTY

JUNE 2015

**PREPARED FOR:**

HENDRICKS REAL ESTATE HOLDINGS, LLC
8484 GEORGIA AVENUE, SUITE 700
SILVER SPRINGS, MD 20910

**PREPARED BY:**

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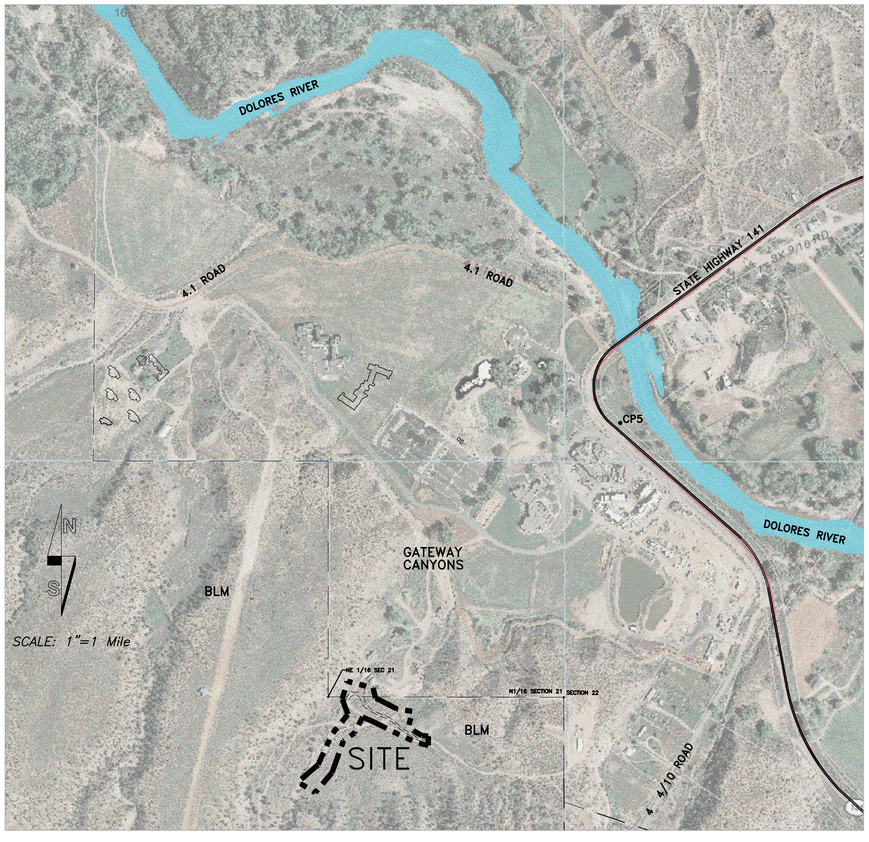
405 RIDGES BLVD.
GRAND JUNCTION, CO 81507

VICINITY MAP

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38160
6-11-15


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GATEWAY CANYONS RESORT
OFFSITE BERM
AND DIVERSION CHANNEL
COVER SHEET

| Drawn | Designed | Checked | Proj# | Rv: | |
|---|---|---|---|---|---|
| ESS | ESS | KTS | A4204 | 6/11/15 | B1 |
| File Name: C:\A4204\A4204–BLM–CivilCover.dwg | | | | Date 6/24/14 | |

## GENERAL NOTES:

1. THE CONTRACTOR SHALL WORK IN A MANNER AS TO MINIMIZE GROUND DISTURBANCE OUTSIDE THE PHYSICAL GRADING AREA.
2. ALL MATERIALS AND WORKMANSHIP SHALL BE SUBJECT TO INSPECTION BY THE ENGINEER. THE ENGINEER RESERVES THE RIGHT TO ACCEPT OR REJECT ANY MATERIAL AND WORKMANSHIP THAT DOES NOT CONFORM TO THE PLANS.
3. CONTRACTOR SHALL REPAIR OR REPLACE ANY DRAINAGE, FENCING, ASPHALT, CONCRETE OR OTHER IMPROVEMENTS DAMAGED DURING CONSTRUCTION.
4. USE OF IMPORTED FILL MATERIAL SHALL BE LIMITED TO THE "SELECT BACKFILL" COMPONENT OF THE MECHANICALLY STABILIZED EARTH BERM.
5. TOPSOIL SHALL BE STRIPED TO A DEPTH OF 4" OVER ALL AREAS TO BE GRADED. VEGETATION ON THE SITES TO BE DISTURBED SHOULD BE CHOPPED IN PLACE AND INCORPORATED INTO THE TOPSOIL AT THE TIME THE TOPSOIL IS REMOVED FOR TEMPORARY STORAGE. TOPSOIL SHALL BE STOCK PILED ON HENDRICKS REAL ESTATE HOLDINGS LLC'S PROPERTY. TOPSOIL SHALL BE EVENLY SPREAD OVER FINAL GRADED AREAS WITH EXCEPTION OF THE ROADWAY.
6. ALL DISTURBED AREAS BEYOND GRAVEL ROAD SURFACES AND ROCK LINED CHANNEL SHALL RECEIVE BLM APPROVED NATIVE SEED MIX. THE SEEDED AREA WILL REQUIRE PERIODIC WATERING TO ENSURE ESTABLISHED GROWTH.
7. SEE SHEET B3 FOR GREATER GRADING DETAIL.

## DRAINAGE ANALYSIS:

IN A MEMORANDUM FROM WRIGHT WATER ENGINEERS, INC (WWE), TITLED "HYDROLOGY AND DEBRIS FLOW ASSESSMENT FOR LITTLE CANYON, GATEWAY, COLORADO", DATED FEBRUARY 27, 2014, WWE CONCLUDED "THE GEOLOGY AND SOILS IN THE WATERSHED WOULD LEND THEMSELVES TO SEDIMENT TRANSPORT, BUT NOT TRUE MUD AND DEBRIS FLOW." WWE ESTIMATED THE 100-YEAR RETURN FREQUENCY PEAK FLOW AT A POINT ABOUT 1200 FEET DOWNSTREAM IN THE BASIN WITH 20% SEDIMENT ALLOWANCE TO BE 330 CFS. USING PROPORTIONAL AREAS, IT CAN BE ESTIMATED THAT THE 100-YEAR RETURN FREQUENCY PEAK FLOW WITH 20% SEDIMENT ALLOWANCE AT THE BLM FENCE AND GATE NEAR THE PROPERTY BOUNDARY WOULD BE ABOUT 295 CFS. THE CULVERT UNDER THE ACCESS ROAD TO THE BLM GATE HAS A CAPACITY OF ABOUT 170 CFS (OR ABOUT THE 25-YEAR STORM FREQUENCY) BEFORE OVERTOPPING THE ROAD. THE UPSTREAM AND DOWNSTREAM SLOPES OF THE ROAD WILL BE ARMORED WITH RIP RAP TO LIMIT THE EROSION WHEN HIGH FLOWS occur.

## LANDSCAPE NARRATIVE:

THE INTENT OF THE REVEGETATION ON BUREAU OF LAND MANAGEMENT LAND WILL BE TO RE-ESTABLISH A DRY LAND NATIVE SEED AND FORB MIX. THE DRAINAGE SWALES AND BERMS WILL EITHER BE RIP RAP AS SHOWN OR LOWLAND NATIVE GRASS SEED. SEED MIX SHALL BE SPECIFIED BY THE BUREAU OF LAND MANAGEMENT.

0' 50' 100' 150'

SCALE: 1" = 50'

## LEGEND

EXISTING:
- PARCEL LINE
- PAVED ROAD
- UNPAVED ROAD
- FENCE
- DITCH
- 4565 INDEX COUNTOUR
- INDEX CONT. DEP
- INTER CONTOUR
- INTER CONT. DEP
- TREE
- BUSH
- CULVERT
- TREE OUTLINE

PROPOSED:
- 4598 INTER CONTOUR
- 4600 INDEX COUNTOUR
- TURF REINFORCEMENT
- RIP RAP
- CULVERT

HENDRICKS REAL ESTATE HOLDINGS LLC

BUREAU OF LAND MANAGEMENT

NE 1/16 SEC 21 REBAR & CAP L.S. 10871

N 00°00'54" E 1318.86'

S89°54'06"E 1316.84

N1/16 SECTION 21 REBAR & CAP L.S. 10871

SECTION 22

LIMIT OF DISTURBANCE

EX. ROAD

CULVERT

MECHANICALLY STABILIZED EARTH BERM

BERM

DRAINAGE CHANNEL

RELOCATED GRAVEL ROAD

EX. DIRT ROAD

550'

LIMITS OF DISTURBANCE

EX. DRAINAGE PATH

DIVERSION BERM

GATE

## SHRUB SEED MIX

| Common Name | Scientific Name | Variety | PLS lbs/acre* | # PLS seeds/lb | # PLS seeds/ac @ mix rate | # PLS seeds/sqft |
|---|---|---|---|---|---|---|
| Fourwing Saltbush | Atriplex canescens | VNS** | 2.5 | 52000 | 130000 | 2.98 |
| Rubber Rabbitbrush | Ericameria nauseosa | VNS | 0.2 | 400000 | 80000 | 1.84 |
| Winterfat | Krascheninnikovia lanata | VNS | 0.5 | 123000 | 61500 | 1.41 |
| Indian Ricegrass | Achnatherum hymenoides | Rimrock | 1.1 | 141000 | 155100 | 3.56 |
| Needle-and-thread Grass | Hesperostipa [Stipa] comata | VNS | 2.2 | 115000 | 253000 | 5.81 |
| Bottlebrush Squirreltail | Elymus elymoides, | VNS | 1.4 | 192000 | 268800 | 6.17 |
| Blue Grama | Bouteloua gracilis | VNS | 0.7 | 825000 | 577500 | 13.26 |
| Sand Dropseed | Sporobolus cryptandrus | VNS | 0.1 | 5298000 | 529800 | 12.16 |
| Purple Three-awn | Aristida purpurea | VNS | 0.8 | 250000 | 200000 | 4.59 |
| Annual Sunflower | Helianthus annuus | VNS | 1.5 | 58500 | 87750 | 2.01 |
| Rocky Mountain Beeplant | Cleome serrulata | VNS | 1 | 65900 | 65900 | 1.51 |
| Scarlet Globemallow | Sphaeralcea coccinea | VNS | 0.5 | 500000 | 250000 | 5.74 |
| | | TOTAL | 12.5 | | | 61.05 |

*Seeding rates shown are for drilled seeding. If broadcast seeding rate must be doubled.

** VNS: Variety not specified

## BERM SEED MIX

| Common Name | Scientific Name | Variety | PLS lbs/acre * | # PLS seeds/lb | # PLS seeds/ac @ mix rate | # PLS seeds/sqft |
|---|---|---|---|---|---|---|
| Indian Ricegrass | Achnatherum hymenoides | Paloma | 1.9 | 141000 | 267900 | 6.15 |
| Needle-and-thread Grass | Hesperostipa [Stipa] comata | VNS** | 2.2 | 115000 | 253000 | 5.81 |
| Bottlebrush Squirreltail | Elymus elymoides, | | 1.4 | 192000 | 268800 | 6.17 |
| Blue Grama | Bouteloua gracilis | VNS | 0.7 | 825000 | 577500 | 13.26 |
| Sand Dropseed | Sporobolus cryptandrus | VNS | 0.1 | 5298000 | 529800 | 12.16 |
| Purple Three-awn | Aristida purpurea | VNS | 0.8 | 250000 | 200000 | 4.59 |
| Galleta*** | Pleuraphis [Hilaria] jamesii | VNS | 0.96 | 159000 | 152640 | 3.50 |
| Annual Sunflower | Helianthus annuus | VNS | 1 | 58500 | 58500 | 1.34 |
| Sulphur Buckwheat | Eriogonum umbellatum | VNS | 0.5 | 209000 | 104500 | 2.40 |
| Scarlet Globemallow | Sphaeralcea coccinea | VNS | 0.5 | 500000 | 250000 | 5.74 |
| | | TOTAL | 10.06 | | | 61.13 |

* Seeding rates shown are for drilled seeding. If broadcast seeding rate must be doubled.

** VNS: Variety not specified

*** Galleta seeding rate is for florets. If planting using the caryopsis rather than the floret the seeding rate would be lower; 0.23 lb/ac based on NRCS data.

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# GATEWAY CANYONS RESORT OFFSITE BERM AND DIVERSION CHANNEL SITE PLAN-1"=50'

| Drawn | Designed | Checked | Proj# | Rv: | |
|---|---|---|---|---|---|
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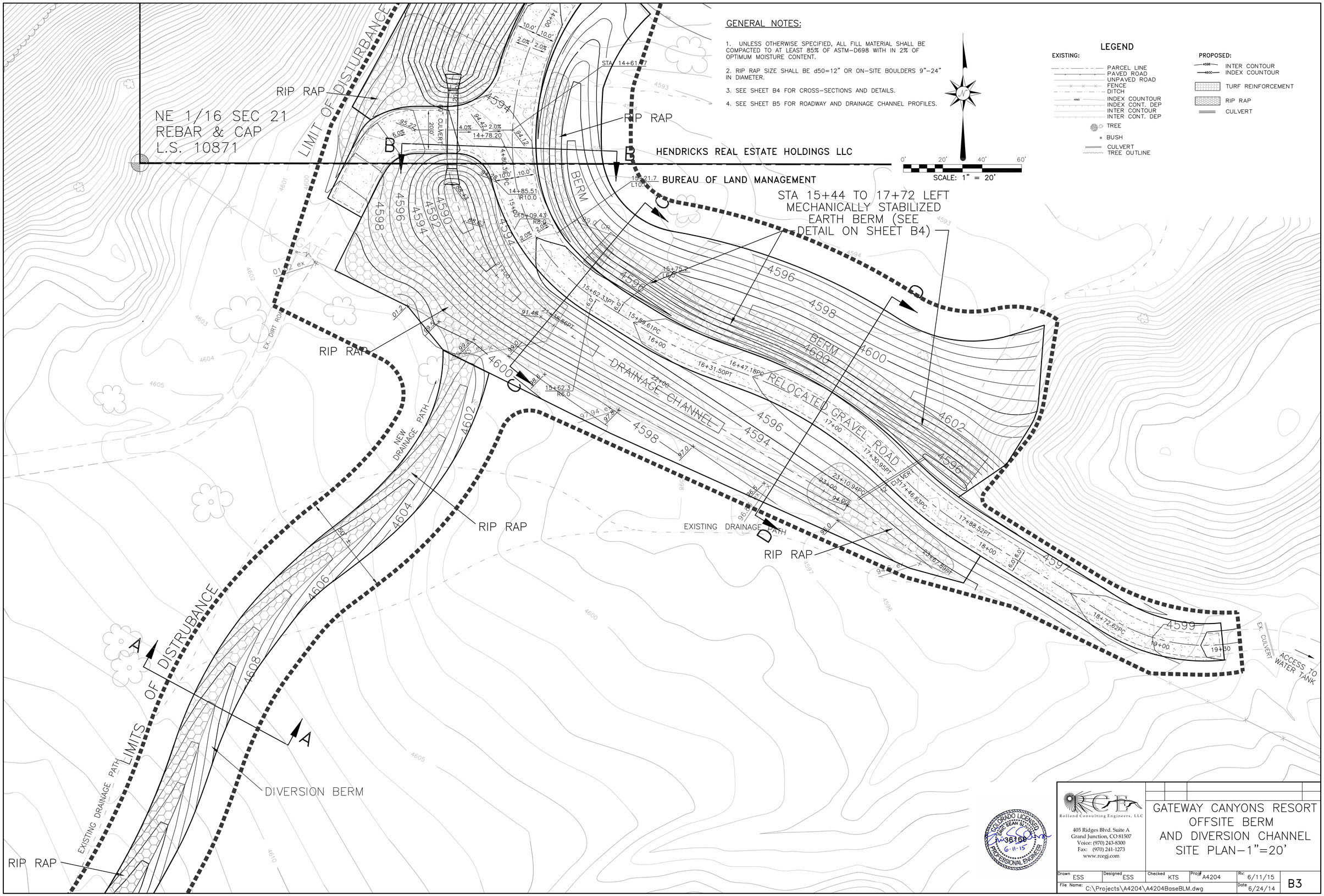


GENERAL NOTES:

1. UNLESS OTHERWISE SPECIFIED, ALL FILL MATERIAL SHALL BE COMPACTED TO AT LEAST 85% OF ASTM-D698 WITH IN 2% OF OPTIMUM MOISTURE CONTENT.
2. RIP RAP SIZE SHALL BE d50=12" OR ON-SITE BOULDERS 9"-24" IN DIAMETER.
3. SEE SHEET B4 FOR CROSS-SECTIONS AND DETAILS.
4. SEE SHEET B5 FOR ROADWAY AND DRAINAGE CHANNEL PROFILES.

LEGEND

EXISTING:
- PARCEL LINE
- PAVED ROAD
- UNPAVED ROAD
- FENCE
- DITCH
- INDEX COUNTOUR
- INDEX CONT. DEP
- INTER CONTOUR
- INTER CONT. DEP
- TREE
- BUSH
- CULVERT
- TREE OUTLINE

PROPOSED:
- INTER CONTOUR
- INDEX COUNTOUR
- TURF REINFORCEMENT
- RIP RAP
- CULVERT


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GATEWAY CANYONS RESORT
OFFSITE BERM
AND DIVERSION CHANNEL
SITE PLAN-1"=20'

| Drawn | Designed | Checked | Proj# | Rv: | |
|---|---|---|---|---|---|
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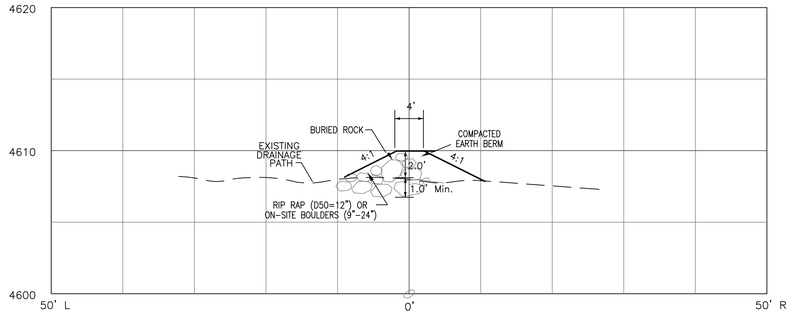
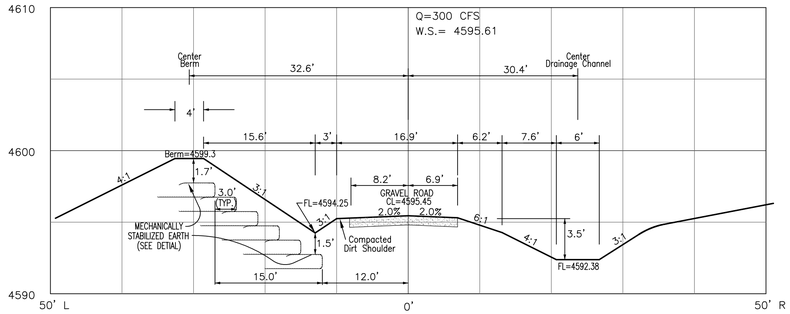



HORIZONTAL SCALE: 1" = 10'
VERTICAL SCALE: 1" = 5'

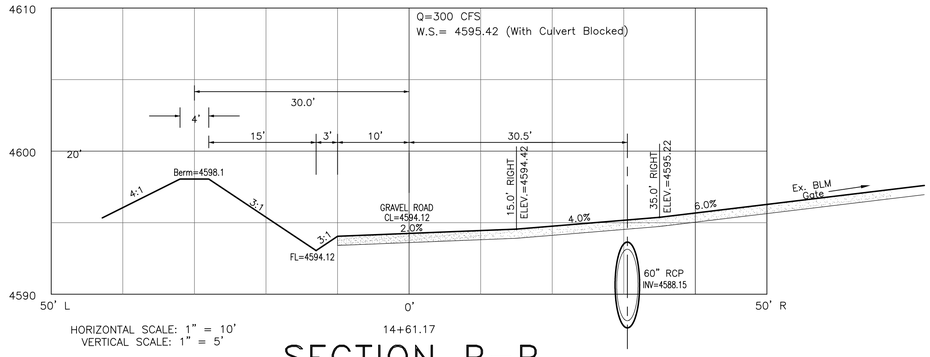
# SECTION A–A




HORIZONTAL SCALE: 1" = 10'
VERTICAL SCALE: 1" = 5'

15+50

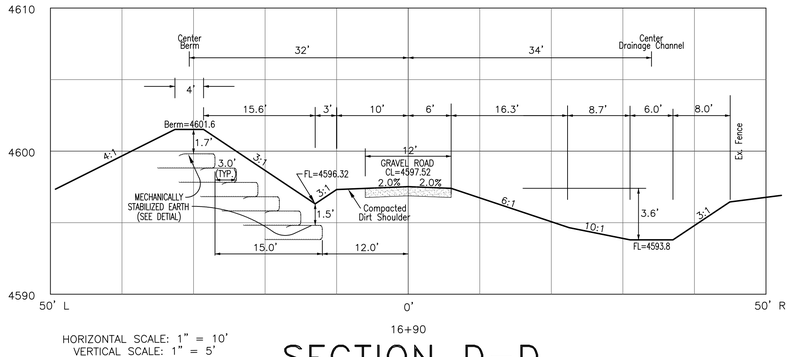
# SECTION C–C




HORIZONTAL SCALE: 1" = 10'
VERTICAL SCALE: 1" = 5'

14+61.17

# SECTION B–B

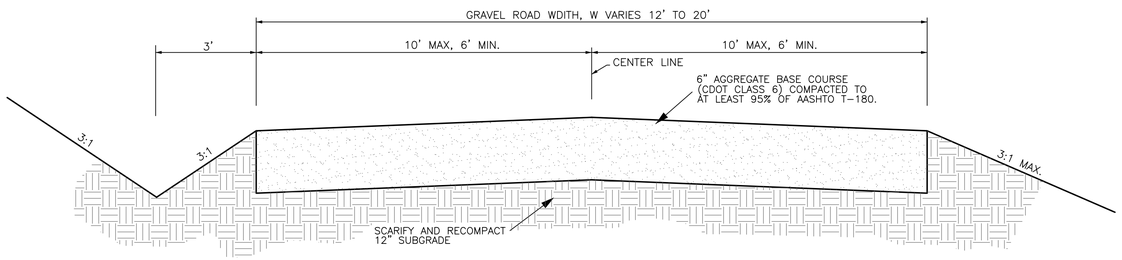



HORIZONTAL SCALE: 1" = 10'
VERTICAL SCALE: 1" = 5'

16+90

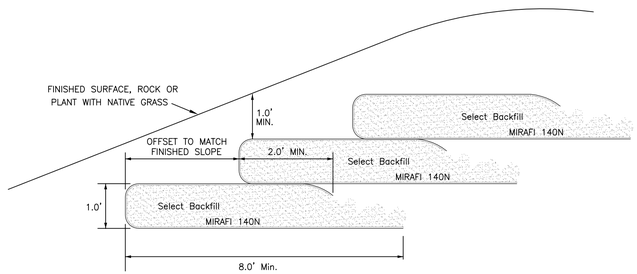
# SECTION D–D

STATION <14+00 TO 15+21.7, W=20'
STATION 15+21.7 TO 15+75.2, TRANSITION WIDTH
STATION 15+75.2 TO 19+30, W=12'




# TYPICAL ROAD SECTION

N.T.S.




NOTES:
1. Native Gravelly Sand can be used as Slect Backfill.
2. Backfill to be Mechanically Compacted to 90% of ASTM D–1557.
3. Construct 6 Layers at a 3 ft. offset for this application.

# MECHANICALLY STABILIZED EARTH BERM

N.T.S.

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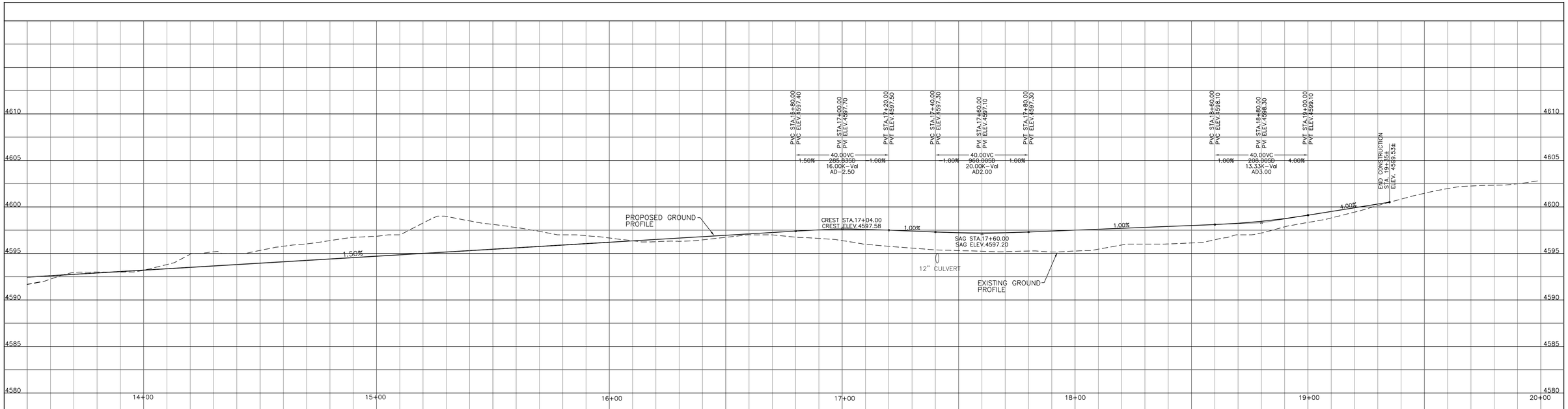
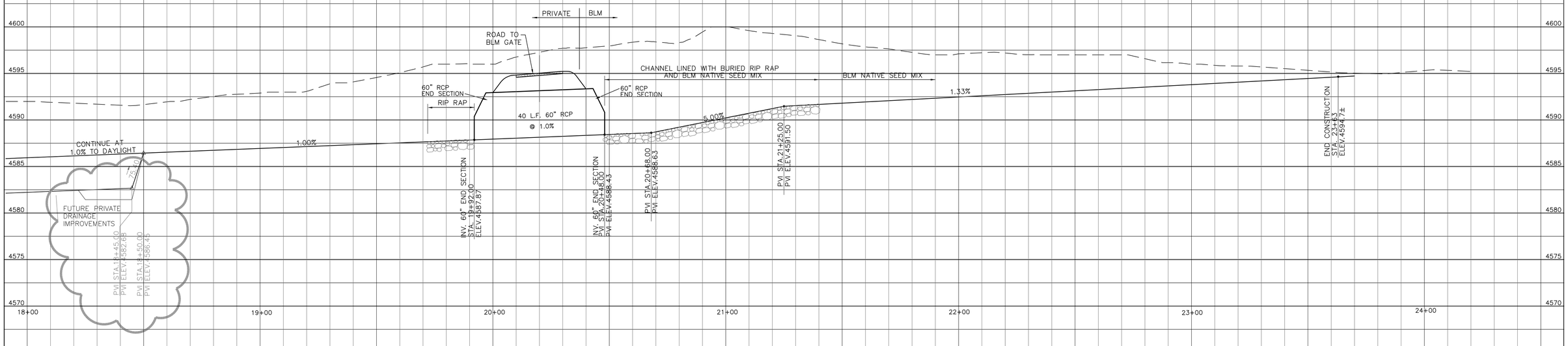
GATEWAY CANYONS RESORT
OFFSITE BERM
AND DIVERSION CHANNEL
CROSS SECTIONS

| Drawn | Designed | Checked | Proj# | Rv: | |
|---|---|---|---|---|---|
| ESS | ESS | KTS | A4204 | 6/11/15 | B4 |
| File Name: C:\Projects\A4204\A4204BaseBLM.dwg | | | | Date 6/24/14 | |




# GRAVEL ROAD PROFILE




# DRAINAGE CHANNEL PROFILE

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GATEWAY CANYONS RESORT
OFFSITE BERM
AND DIVERSION CHANNEL
GRAVEL ROAD PROFILE AND
DRAINAGE CHANNEL PROFILE

| Drawn | Designed | Checked | Proj# | Rv: |
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| ESS | ESS | ESS | A4204 | 6/11/15 |

File Name: C:\PROJECTS\A4204\A4204BaseBLM.dwg
Date 6/24/14

B5