

- LEGEND**
- OP OUTLET PROTECTION
 - VTC VEHICLE TRACKING CONTROL (MAY BE RELOCATED)
 - W SEDIMENT CONTROL WATTLE 8" DIA. COMPOST SOCK
 - EB EROSION CONTROL BLANKET (CATEGORY 2)

ESCP (EROSION AND SEDIMENT CONTROL PLAN):
 EROSION CONTROL MEASURES SHOWN ON THIS SHEET SHALL BE TAKEN AS THE MINIMUM REQUIRED. IT IS THE CONTRACTOR'S RESPONSIBILITY TO AUGMENT THESE MINIMUM REQUIREMENTS AS NEEDED TO PREVENT SEDIMENT/CONTAMINANTS FROM LEAVING THE BOUNDS OF THE PROJECT. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO PREVENT SEDIMENT FROM LEAVING THE SITE, AND TO PRESERVE THE CONSTRUCTED CUTS AND FILLS. CONTRACTOR MAY USE THIS PLAN SHEET AS A STARTING POINT IN THE CONTRACTOR'S ESCP.

IN-PROCESS EROSION CONTROL:
 DURING THE COURSE OF CONSTRUCTION, RUNOFF DIVERSIONS, TEMPORARY SILT DAMS, SILT FENCE, ETC. MAY BE NEEDED TO CONTROL SILT MIGRATION DURING THE WORK. CONTRACTOR SHALL APPLY BMPs AS NEEDED.

WATTLE INSTALLATION TIMING:
 TEMPORARY WATTLES MAY NEED TO BE USED AS AN INTERIM EROSION CONTROL BMP DURING THE COURSE OF THE GRADING OPERATION. SOME LOCATIONS MAY NEED A SECOND INSTALLATION TO KEEP EROSION FROM STARTING, DEPENDING ON WEATHER CONDITIONS AND CONTRACTOR'S PHASING OF THE WORK.

WATTLE REMOVAL:
 CONTRACTOR TO REMOVE AND DISPOSE ALL WATTLES UPON RE-ESTABLISHMENT OF TURF.

SLOPES:
 SLOPES CONSISTS OF 3:1 AND 2:1 FILLS. CONTRACTOR ACKNOWLEDGES THAT SIGNIFICANT EFFORT WILL BE NEEDED TO KEEP EROSION IN CHECK.

INSTALL CATEGORY 2 EROSION CONTROL BLANKET ON ALL 3:1 AND 2:1 SLOPES IMMEDIATELY AFTER INSTALLING TOPSOIL, SEEDING, AND FERTILIZING. CATEGORY 2 EROSION CONTROL BLANKET PER SECTION 146 OF THE CITY OF RAPID CITY SPECIFICATIONS.

RIPRAP:
 SEE DETAIL SHEET FOR RIPRAP CONSTRUCTION REQUIREMENTS. SEE GRADING PLAN SHEET FOR DIMENSIONS AND LOCATIONS.

RENNER ASSOCIATES, LLC
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 RAPID CITY, SD 57701
 P: 605.791.7310
 F: 605.791.7310
 WWW.RENNERASSOCIATES.COM



Scale:	Scale: 1:20
Designed By:	JRO
Drawn By:	JRO
Design Date:	3/21/2017
Print Date:	3/21/2017
Surveyed By:	JRO
Survey Date:	5/2016
Reviewed:	

SCHAD DRIVEWAY
 LOCATED IN THE SW1/4 OF THE SW1/4, LESS LOT A,
 SECTION 32, T2N, R7E, B1M,
 RAPID CITY, PENNINGTON COUNTY, SOUTH DAKOTA

Prepared For:
 TYLER SCHAD
 4802 EDGEWOOD DR.
 RAPID CITY, SD 57702

Internal Job No:
 2780

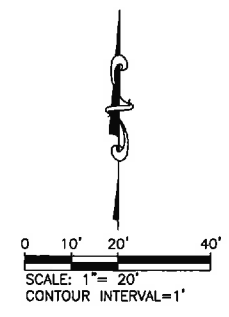
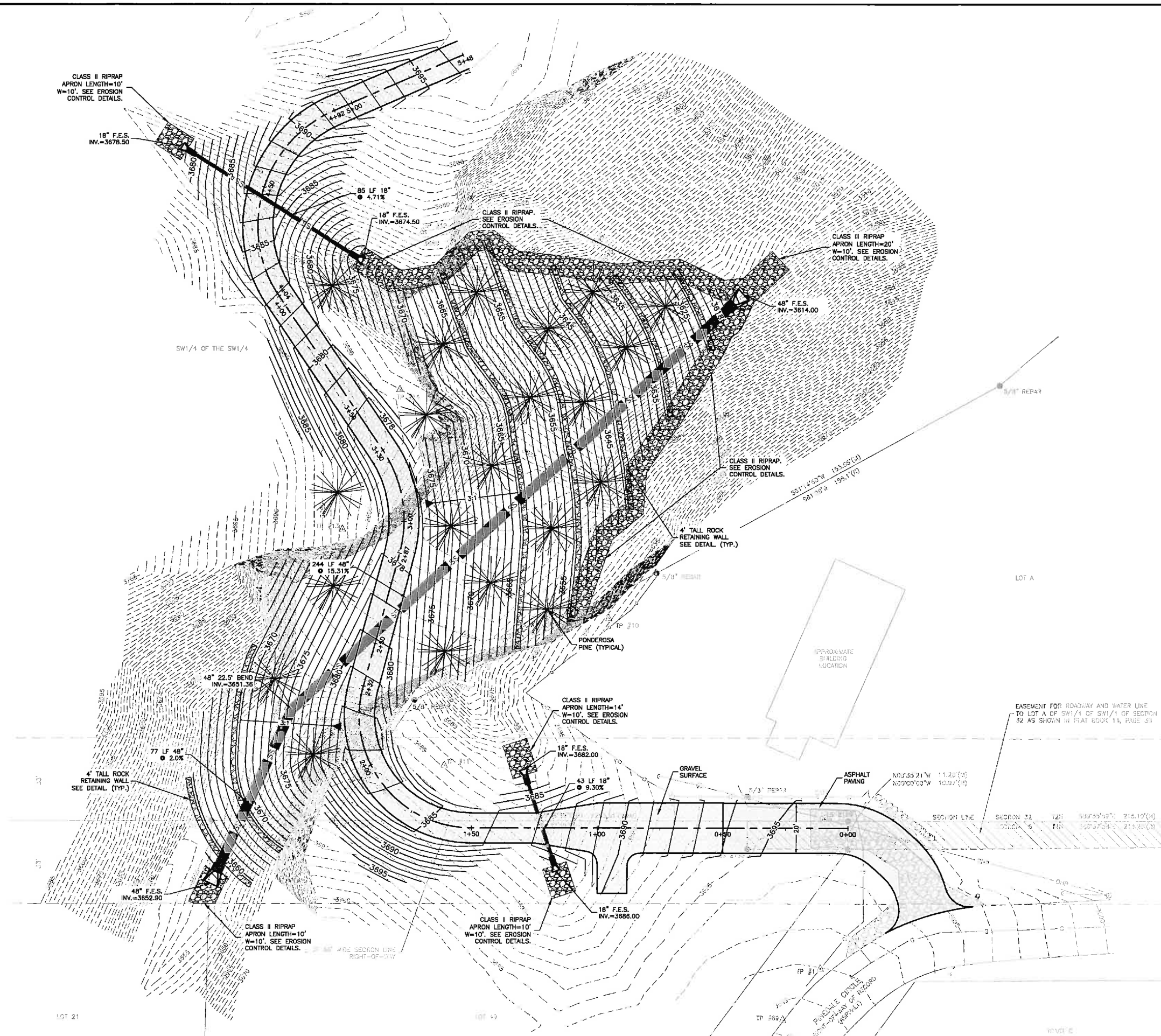
Sheet Title:
 EROSION CONTROL
 MINIMUM
 REQUIREMENTS

C-2

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MAR 22 2017

ENGINEERING SERVICES



EXCAVATION QUANTITIES:
 CUT VOLUME: 700 C.Y.
 FILL VOLUME: 20,000 C.Y.

STORM SEWER PIPE:
 CONTACT PIPE MANUFACTURER TO ENSURE MAXIMUM BURY DEPTHS OF PIPE ARE NOT EXCEEDED.

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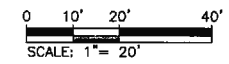
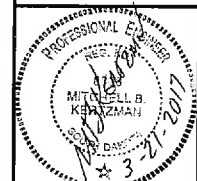
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Sheet Title:
 GRADING PLAN

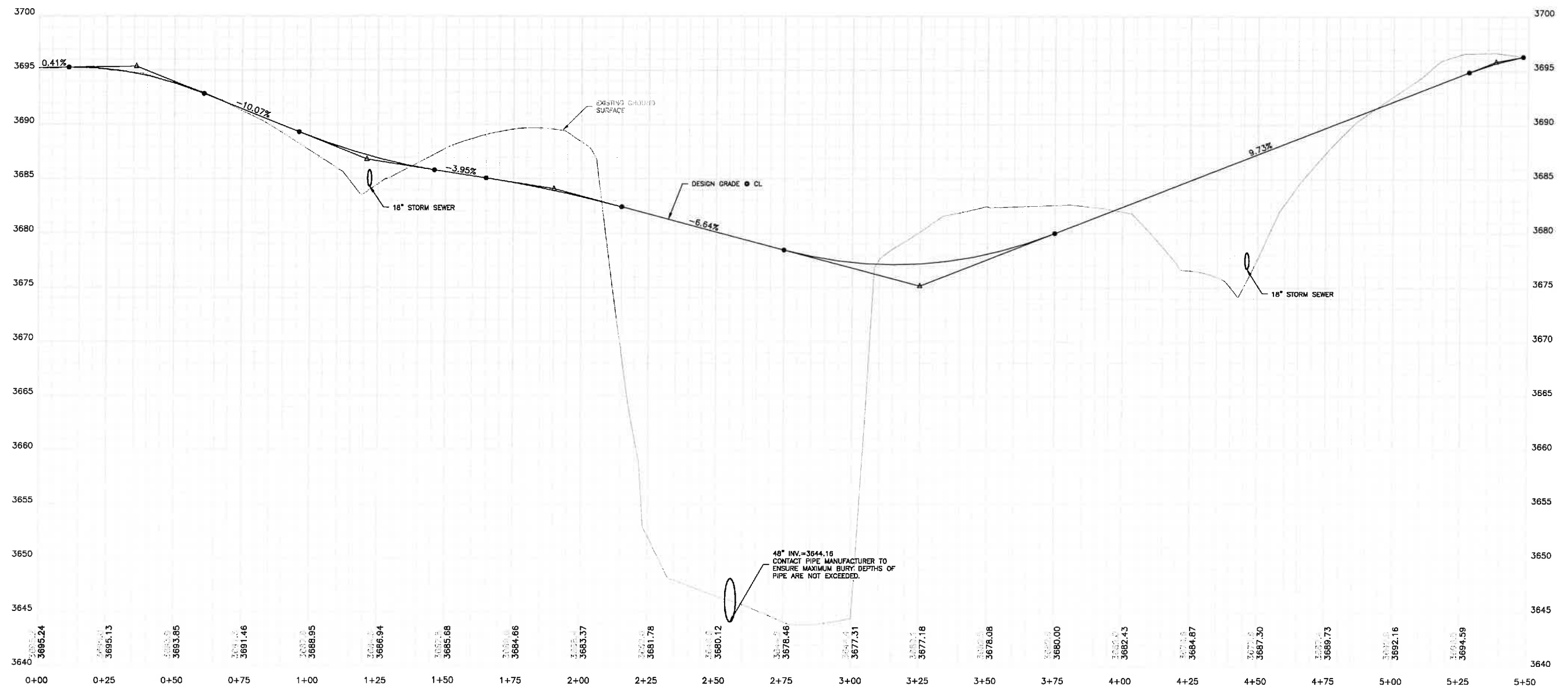
C-3



SCALES:
 1" = 20' HOR
 1" = 5' VER

PVC STA. 5+26.00
 PVC ELEV. 3694.88
 PVI STA. 5+38.00
 PVI ELEV. 3695.86
 — 20.00VC —
 9.73% 142.42SD 4.71%

PVC STA. 0+11.00
 PVC ELEV. 3695.28
 PVI STA. 0+36.00
 PVI ELEV. 3695.39
 PVT STA. 0+61.00
 PVT ELEV. 3692.87
 50.00VC
 88.38SD
 -10.07%
 -10.07%
 PVC STA. 0+96.00
 PVC ELEV. 3689.34
 PVI STA. 1+21.00
 PVI ELEV. 3686.83
 PVT STA. 1+46.00
 PVT ELEV. 3685.84
 50.00VC
 80.78SD
 -3.95%
 -3.95%
 PVC STA. 1+65.00
 PVC ELEV. 3685.09
 PVI STA. 1+90.00
 PVI ELEV. 3684.10
 PVT STA. 2+15.00
 PVT ELEV. 3682.44
 50.00VC
 272.44SD
 -6.64%
 -6.64%
 PVC STA. 2+75.00
 PVC ELEV. 3678.46
 PVI STA. 3+25.00
 PVI ELEV. 3675.14
 PVT STA. 3+75.00
 PVT ELEV. 3680.00
 100.00VC
 61.28SD
 9.73%
 9.73%



48" INV.=3644.16
 CONTACT PIPE MANUFACTURER TO
 ENSURE MAXIMUM BURY DEPTHS OF
 PIPE ARE NOT EXCEEDED.

Scale: 1:20

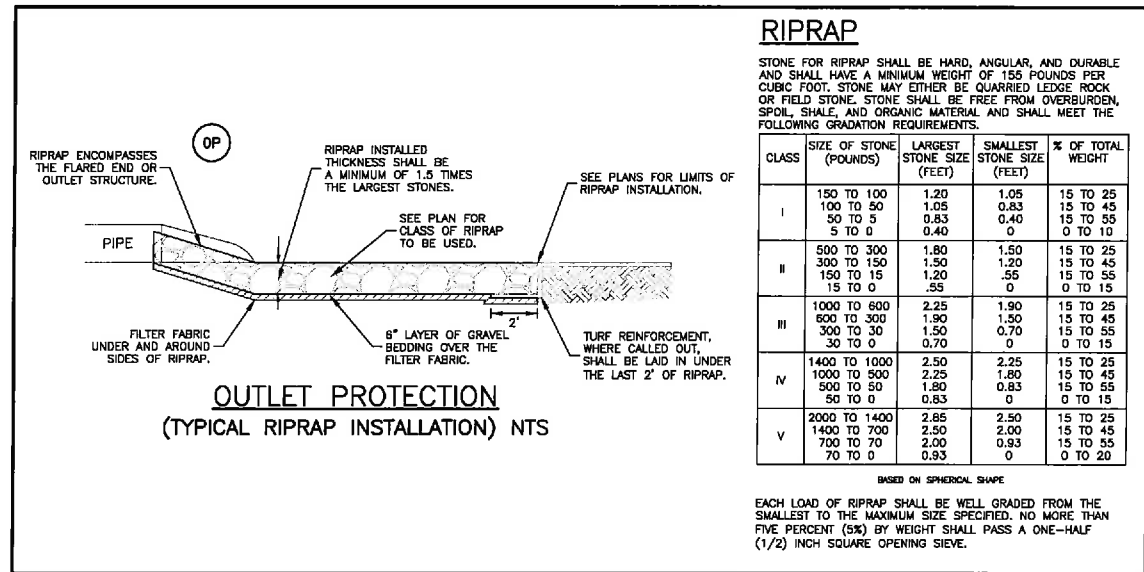
Designed By:	Drawn By:
MBK	JRO
Design Date:	Plot Date:
3/2017	3/21/2017
Submitted By:	Survey Date:
RENNER	5/2016

SCHAD DRIVEWAY
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 RAPID CITY, PENNINGTON COUNTY, SOUTH DAKOTA

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Internal Job No:
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Sheet Title:
 DRIVEWAY PROFILE

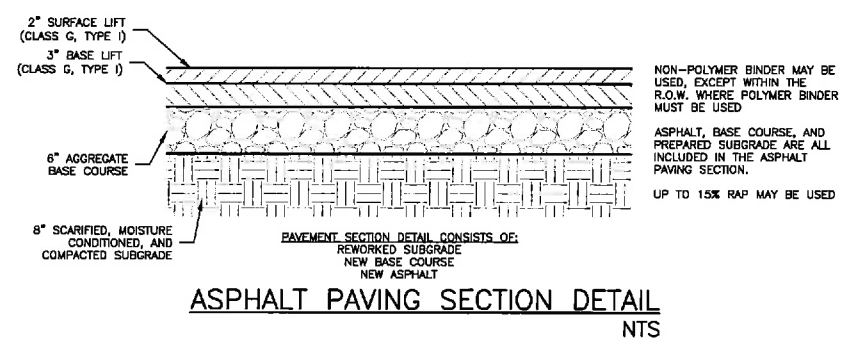


RIPRAP

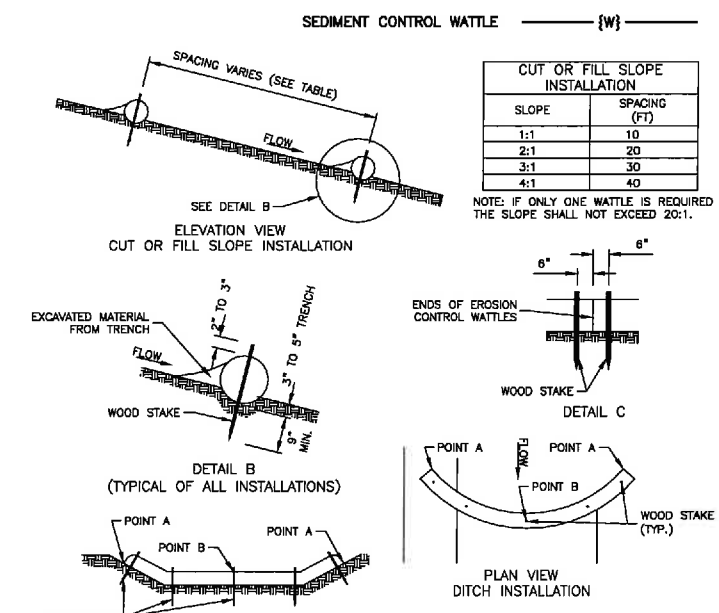
STONE FOR RIPRAP SHALL BE HARD, ANGULAR, AND DURABLE AND SHALL HAVE A MINIMUM WEIGHT OF 155 POUNDS PER CUBIC FOOT. STONE MAY EITHER BE QUARRIED LEDGE ROCK OR FIELD STONE. STONE SHALL BE FREE FROM OVERBURDEN, SPOIL, SHALE, AND ORGANIC MATERIAL AND SHALL MEET THE FOLLOWING GRADATION REQUIREMENTS.

CLASS	SIZE OF STONE (POUNDS)	LARGEST STONE SIZE (FEET)	SMALLEST STONE SIZE (FEET)	% OF TOTAL WEIGHT
I	150 TO 100	1.20	1.05	15 TO 25
	100 TO 50	1.05	0.83	15 TO 45
	50 TO 0	0.83	0.40	15 TO 55
II	500 TO 300	1.80	1.50	15 TO 25
	300 TO 150	1.50	1.20	15 TO 45
	150 TO 0	1.20	.55	15 TO 55
III	1000 TO 600	2.25	1.90	15 TO 25
	600 TO 300	1.90	1.50	15 TO 45
	300 TO 0	1.50	0.70	15 TO 55
IV	1400 TO 1000	2.50	2.25	15 TO 25
	1000 TO 500	2.25	1.80	15 TO 45
	500 TO 0	1.80	0.83	15 TO 55
V	2000 TO 1400	2.85	2.50	15 TO 25
	1400 TO 700	2.50	2.00	15 TO 45
	700 TO 0	2.00	0.93	15 TO 55

BASED ON SPHERICAL SHAPE
EACH LOAD OF RIPRAP SHALL BE WELL GRADED FROM THE SMALLEST TO THE MAXIMUM SIZE SPECIFIED. NO MORE THAN FIVE PERCENT (5%) BY WEIGHT SHALL PASS A ONE-HALF (1/2) INCH SQUARE OPENING SIEVE.



ASPHALT PAVING SECTION DETAIL
NTS



CUT OR FILL SLOPE INSTALLATION

SLOPE	SPACING (FT)
1:1	10
2:1	20
3:1	30
4:1	40

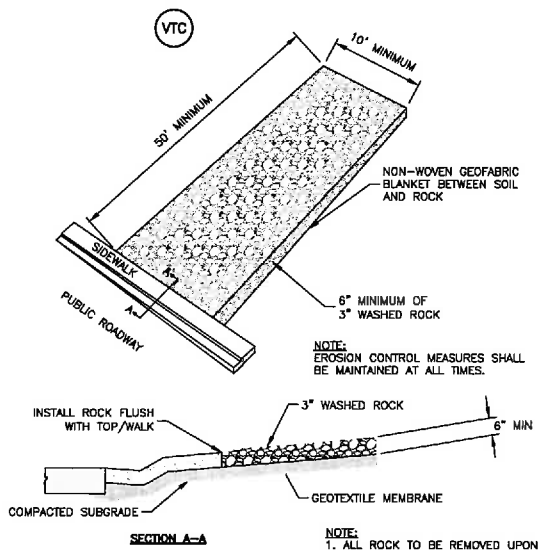
NOTE: IF ONLY ONE WATTLE IS REQUIRED THE SLOPE SHALL NOT EXCEED 20:1.

DITCH INSTALLATION

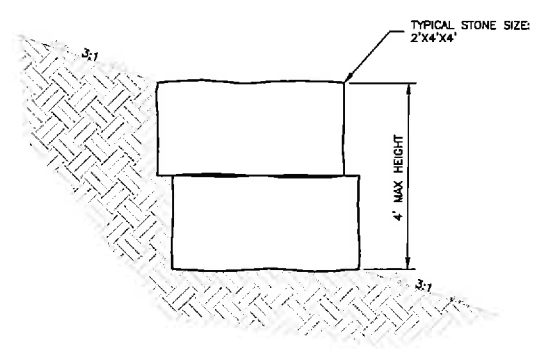
GRADE	SPACING (FT)
2%	150
3%	100
4%	75
5%	50

GENERAL NOTES:
AT CUT OR FILL SLOPE INSTALLATIONS, WATTLES SHALL BE INSTALLED ALONG THE CONTOUR AND PERPENDICULAR TO THE WATER FLOW.
AT DITCH INSTALLATIONS, POINT "A" MUST BE HIGHER THAN POINT "B" TO ENSURE THAT WATER FLOWS OVER THE WATTLE AND NOT AROUND THE ENDS.
THE CONTRACTOR SHALL DIG A 3" TO 6" TRENCH, INSTALL THE WATTLE TIGHTLY IN THE TRENCH SO THAT DAYLIGHT CAN NOT BE SEEN UNDER THE WATTLE, AND THEN COMPACT THE SOIL EXCAVATED FROM THE TRENCH AGAINST THE WATTLE ON THE UPHILL SIDE. SEE DETAIL B.
THE STAKES SHALL BE 1"x2" OR 2"x2" WOOD STAKES. HOWEVER, OTHER TYPES OF STAKES SUCH AS REBAR MAY BE USED ONLY IF APPROVED BY THE ENGINEER. THE STAKES SHALL BE PLACED 6" FROM THE ENDS OF THE WATTLES AND THE SPACING OF THE STAKES ALONG THE WATTLES SHALL BE 3' TO 4'.
WHERE INSTALLING RUNNING LENGTHS OF WATTLES, THE CONTRACTOR SHALL PLACE THE SECOND WATTLE TIGHTLY AGAINST THE FIRST AND SHALL NOT OVERLAP THE ENDS. SEE DETAIL C.

SEDIMENT CONTROL WATTLE
(8" DIA. MINIMUM COMPOSITE SOCK)
NTS



STABILIZED ROCK CONSTRUCTION ENTRANCE
(VEHICLE TRACKING CONTROL) NTS



4' ROCK RETAINING WALL
NTS



Designed By: MBK	Drawn By: JRO
Design Date: 3/2017	Print Date: 3/21/2017
Surveyed By: RENNER	Survey Date: 5/2018

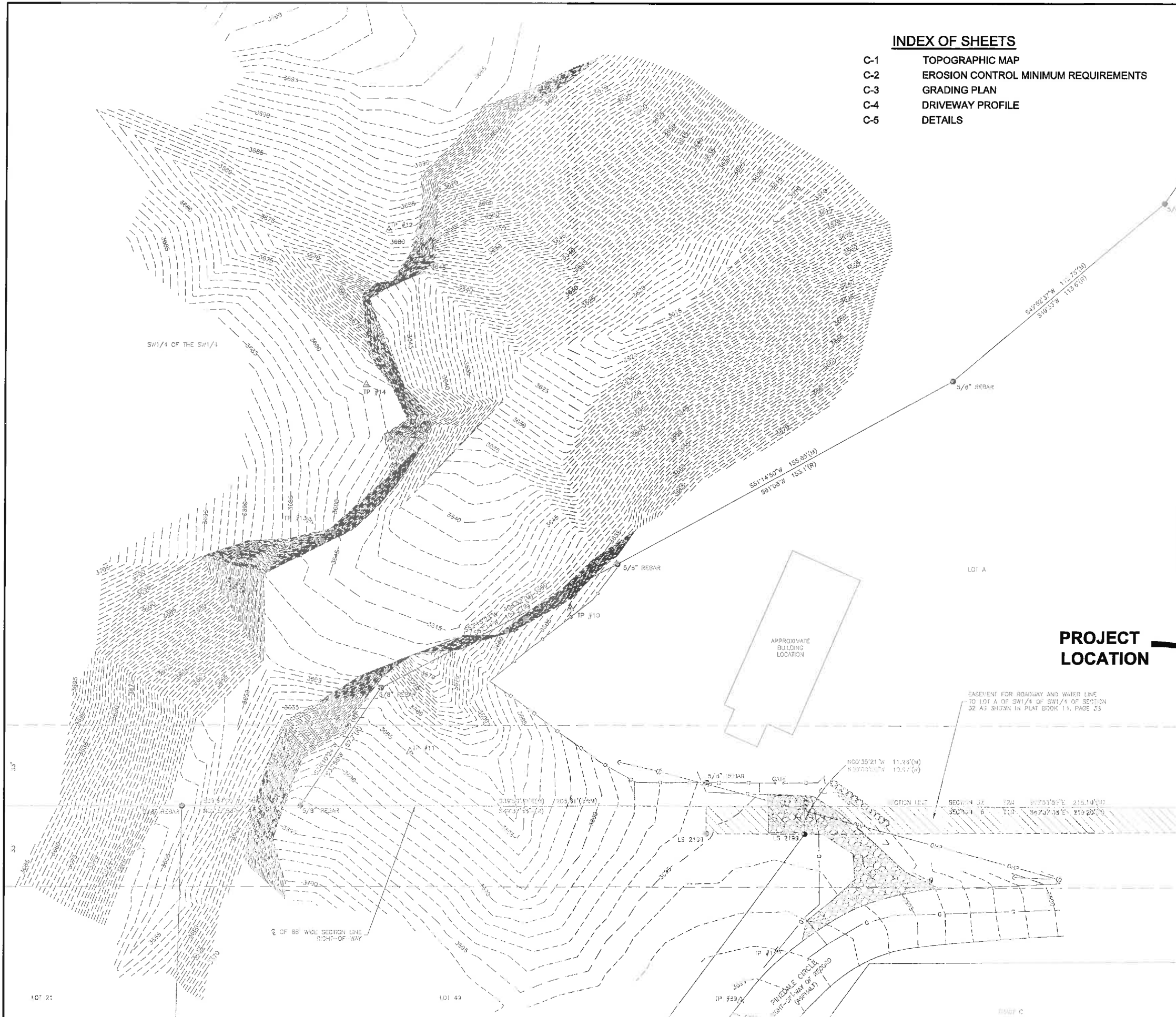
Revisions:

LOCATION
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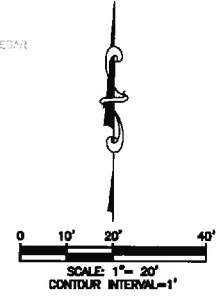
Internal Job No:
2780

Sheet Title:
DETAILS



INDEX OF SHEETS

- C-1 TOPOGRAPHIC MAP
- C-2 EROSION CONTROL MINIMUM REQUIREMENTS
- C-3 GRADING PLAN
- C-4 DRIVEWAY PROFILE
- C-5 DETAILS



LEGEND

- ▲ CONTROL POINT
- GUY WIRE ANCHOR
- ⊙ POWER POLE
- ⊙ UTILITY STUB
- ⊙ MAILBOX
- ⊙ DECIDUOUS BUSH
- PROPERTY LINE
- CHAIN LINK FENCE
- WOOD FENCE
- OVER HEAD POWER
- GAS LINE
- MINOR CONTOUR (1')
- MAJOR CONTOUR (5')
- ▨ GRAVEL SURFACE

● Denotes Found Survey Monument marked as noted
 (R) Denotes Recorded in previous plot or description.
 (M) Denotes Measured in this survey.

BENCH MARK:
 ELEVATIONS ARE BASED ON CITY OF RAPID CITY BENCH MARK SYSTEM (NGVD 29)

BASIS OF BEARINGS:
 GEODETIC NORTH AS DETERMINED BY GLOBAL POSITIONING SYSTEM (GPS) WCS 84.

SURVEY CONTROL

Point	Northing	Easting	Elevation	Description
1	5000.0000	5000.0000	3698.12	TP 1
10	5139.8670	4914.9500	3686.83	TP 10
11	5081.2730	4849.8410	3685.03	TP 11
12	5254.2420	4840.1450	3682.83	TP 12
13	5175.4580	4808.7180	3683.81	TP 13
14	5231.1340	4831.3370	3680.27	TP 14

PROJECT LOCATION



VICINITY MAP
NTS

UTILITIES
 SOUTH DAKOTA ONE CALL NOTIFICATION CENTER
 11880 GREENVILLE AVENUE
 DALLAS, TX 75243
 1-800-781-7474

The locations of existing underground utilities are shown in an approximate way only and have not been independently verified by the owners or its representative. It is always possible that an underground utility was not located during the One Call Locate for design and, as a result, not shown on this Topographical Map. The contractor shall confirm the exact location of all existing utilities before commencing work, and agree to be fully responsible for any and all damages which might be occasioned by the contractor's failure to exactly locate and preserve any and all underground utilities.

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Scale: 1:20

Designed By: MBK	Drawn By: JRO
Design Date: 3/20/17	Plot Date: 3/21/2017
Surveyed By: RENNER	Survey Date: 5/2016

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TOPOGRAPHIC MAP

C-1