

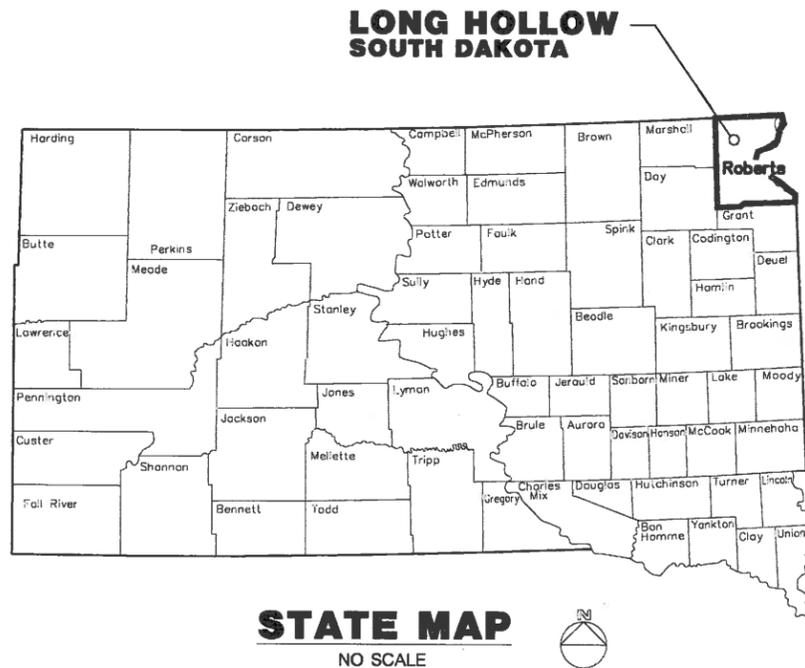
LONG HOLLOW HOUSING DEVELOPMENT LONG HOLLOW, SOUTH DAKOTA

2014 SITE IMPROVEMENTS

SITE GRADING, TOPSOILING, SEEDING, AND EROSION CONTROL

INDEX OF SHEETS

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- 7 SEEDING, FERTILIZING, AND MULCHING PLAN SHEET (EAST)
- 8 EROSION CONTROL LAYOUT SHEET
- 9 MANHOLE RAISING LAYOUT SHEET
- 10-12 DETAIL SHEETS

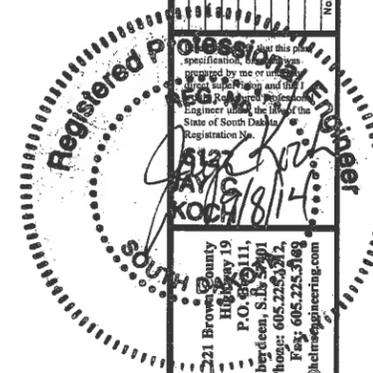


PROJECT DESCRIPTION

This Housing Project shall consist of the grading and topsoiling of home sites, erosion control measures, and seeding of site.

ESTIMATE OF QUANTITIES

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT
1	Mobilization	1	L.S.
2	Adjust Manhole	11	Each
3	Raise Manhole	3	Each
4	Sediment Control Type S Inlets	4	Each
5	Unclassified Excavation	1,098	CuYd
6	Topsoiling from Stockpiles	11,980	CuYd
7	Seeding and Fertilizing	22.5	Acres
8	Mulching	17.9	Acres
9	Type 2 Erosion Control Blanket	21,891	SqYd
10	8" Straw Wattles	560	Ft.

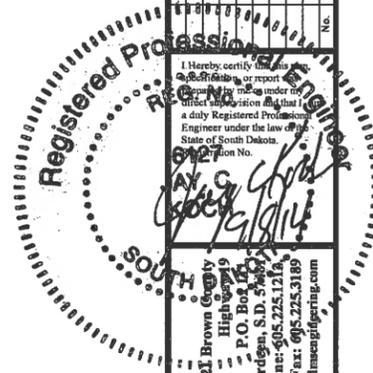
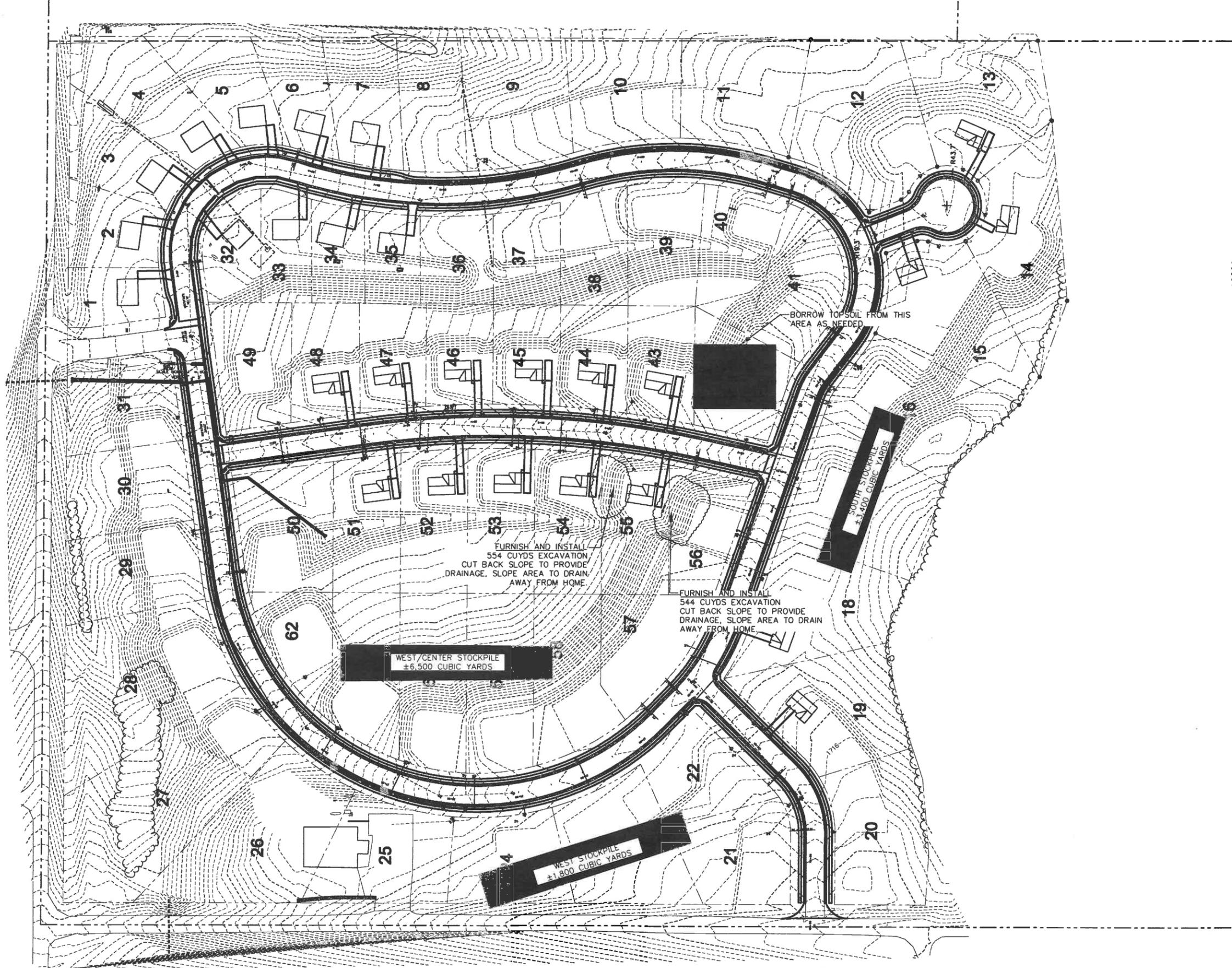


Drawn By: CLB
 Chk. By: JCK
 Proj. No: A-5282
 Dwg. No: 5282-GRAD-VP, No: COVER GRAD.
 Date: 9/14

COVER SHEET GRADING,
 TOPSOIL, AND SEEDING
 LONG HOLLOW HOUSING DEVELOPMENT
 LONG HOLLOW, SOUTH DAKOTA

By: App. I Date: Revisions: No.

SCALE HORIZ: 1" = 150'



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Dwg. No: 5282-GRAD
VP. No: PROJLAY
Date: 9/14

PROJECT LAYOUT SHEET
LONG HOLLOW HOUSING DEVELOPMENT
LONG HOLLOW, SOUTH DAKOTA

The manufacturer's certified analysis and delivery tickets for all commercial fertilizer shall be submitted stating quantity, source, and date of delivery.

Contractor shall submit a representative sample to the Engineer for acceptance prior to placement of mulch.

GRASS SEED

Provide fresh, clean, new crop seed, complying with the tolerances for purity and germination established by the Official Seed Analysis of North America and the South Dakota Seed Law. Seed shall not exceed 1% weed content. Provide seed of the grass species and proportions as follows for all areas:

All Lawn Areas:

Grass Variety	Bulk Seed (Pounds/1000 SqFt)
Kentucky Bluegrass (Alene, Avalanche)	2.0
Perennial Ryegrass (Turf Type)	1.0
Creeping Red Fescue (Epic)	1.5
Chewings Fescue (Ambrose)	1.5
Alkali Grass (Fults, Fults II, Quill, Salty)	1.5
Total	7.5

Temporary Seeding – Lawn Areas:

Temporary Seed Mixture	Bulk Seed (Pounds/1000 SqFt)
Annual Rye Grass	1.0

Seed Mixtures shall meet the following minimum requirements

1. Purity 97% and Minimum Germination 85%
2. Maximum Other Crop Content 0.10% and Maximum Weed Content 0.10%

COMMERCIAL FERTILIZER

Apply 24-5-10 Fertilizer 50% SCU with Prospect® at 150 lbs per acre.

All fertilizer shall conform to the South Dakota Fertilizer Laws and shall be registered with the South Dakota Department of Agriculture.

STRAW MULCH

Mulch material shall be grass or straw mulch. Material shall be substantially free from noxious weed seeds and objectionable foreign matter. Materials having characteristics making them unsuitable for the purpose intended shall be rejected.

Mulch shall be applied and secured in accordance with the South Dakota Department of Transportation, Standard Specifications for Roads and Bridges, Section 732 at an approximate rate of two (2) tons per acre to provide a loose depth of not less than 1 ½-inches nor more than 3-inches.

EROSION CONTROL FABRIC

Erosion Control Blankets shall be installed at locations provided in the plans, and at locations determined by the Engineer during construction. The approved product list for erosion control blankets

is provided below or Engineer approved equal. Erosion Blankets will be Type 2 or 3 unless called out on plans.

PREPARATION FOR PLANTING

Before seeding or fertilizing, remove stones, sticks, roots, rubbish, and other extraneous matter over one (1) inch in any dimensions.

If weeds are a problem, apply a glyphosate herbicide (Roundup®) and allow weeds to burn down for at least 7 days. The soil shall be tilled to a depth of at least four (4) inches by disking, harrowing, by the use of roto-tillage machinery or other approved operation until a finely pulverized seed bed is obtained.

Grade areas to smooth, even surface with loose, uniformly fine texture. Firm up the seedbed by dragging and/or roll packing. When walked on, you should not sink more than 1".

FERTILIZING

Apply fertilizer at 150 lbs per acre or per manufacturer's recommendation.

Fertilizer shall be incorporated into the soil to a depth of at least two (2) inches and may be incorporated as a part of the tillage operation.

PLANTING AND SEEDING

Apply grass seed mixture at a rate of application. Seeding shall be done with a press drill equipped with a seed box with positive feed seeding mechanism with agitator, individually mounted double disk furrow openers and packer wheels spaced approximately three (3) inches apart (or two passes with equipment having a six (6) inch spacing), and a separate box for small seeded grasses ("Brillion") mechanical seeder or equal). Each drill shall be equipped with an accurate meter to measure the area covered by the drill.

Seed shall be sown ½ in one direction and ½ at right angles to the direction of the first sowing. The direction of the final sowing shall be at right angles to the direction of the slope or parallel to the direction of the contour lines. Seed shall be sown at a final compacted depth of approximately three-fourths (3/4) to one (1) inch.

Seeding shall be completed during the following times:

- Spring: April - June
- Fall: August – Early September
- Dormant: November – Freeze Up

MULCHING

Mulching will be required on all sedimentation pond embankments, roadway embankments, drainage channels, and other areas designated on the plans or as directed by the Engineer in the field. Mulch shall be applied and secured in accordance with the South Dakota Department of Transportation, Standard Specifications for Roads and Bridges, Section 732 at an approximate rate of 2-tons per acre to provide a loose depth of not less than 1 ½-inches nor more than 3-inches.

Mulch shall be secured with equipment that is specifically designed for mulch punching and/or securing. See South Dakota

Department of Transportation, Standard Specifications for Roads and Bridges, Section 732.

Fiber Mulch shall be applied at a rate of 2,000 pounds per acre (2,250 kilograms per hectare) unless otherwise specified by the Engineer. Excessive thickness of mulch, which will smother grass seedlings, shall be avoided. Mulch shall be placed on a given area as soon as possible, or within 48 hours after seeding.

EROSION CONTROL BLANKETS

Install erosion control blankets as indicated and in accordance with manufacturer's recommendations. The extent of erosion control blankets shall be as shown on drawings.

Orient erosion control blankets in vertical strips and anchored with staples, as indicated. Abut adjacent strips to allow for installation of a common row of staples. Overlap horizontal joints between erosion control blankets sufficiently to accommodate a common row of staples with the uphill end on top.

Where exposed to overland sheet flow, locate a trench at the uphill termination. Staple the erosion control blanket to the bottom of the trench. Backfill and compact the trench as required.

Where terminating in a channel containing an installed blanket, the erosion control blanket shall overlap installed blanket sufficiently to accommodate a common row of staples.

The erosion control blanket provided shall be from the approved product list. The approved product list for erosion control blanket may be viewed at the following internet site:

<http://sddot.com/business/certification/products/Default.aspx>

TEMPORARY EROSION CONTROL

Contractor shall be required to place temporary erosion control when permanent seeding cannot be completed within 14 days of final grading, or between the dates allowed for seeding, temporary seeding will be required to be installed in disturbed areas. Temporary seeding will be completed utilizing the Temporary Seed Mixture specified.

If seeding cannot be completed prior to November 1, the disturbed areas will be required to be mulched at the rate specified to stabilize the areas until seeding can be completed as specified.

MAINTENANCE AND RESEEDING

Maintenance of seeding will begin immediately after each area is planted and will continue until completion of the one (1) year warranty period required under the Contract. Maintenance shall consist of the repair of all eroded areas, the repair or replacement and restapling of loose or undermined erosion control fabric/blanket, and reseeding of eroded areas.

Any area that fails to show a "catch" or uniform stand, for any reason whatsoever shall be reseeded with the original mixture one additional time at no additional cost to the Owner.

The Contractor shall properly mow, control weeds, and otherwise maintain all areas to be seeded until the areas are properly seeded,

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a Registered Professional Engineer under the laws of the State of South Dakota.
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Drawn By: JCK
 Chk'd by: JCK
 PROJ. #: A-5282
 DWG. #: 5282 NOTES
 DATE: 09/2014

LONG HOLLOW SITE GRADING AND EROSION CONTROL NOTES
 LONG HOLLOW HOUSING DEVELOPMENT
 LONG HOLLOW, SOUTH DAKOTA

fertilized, and mulched. Once the area is properly seeded, fertilized, and mulched to the acceptance of the Engineer, the Contractor will not be required to provide additional maintenance except as identified above.

METHOD OF MEASUREMENT

Seeding, fertilizing, and mulching will be measured on the basis of area, in acres, actually seeded for each type of seeding as shown on the Bid Form. Measurements will be to the nearest 0.1 acre.

Temporary Seeding will not be measured for payment and shall be included as part of the site grading.

Temporary erosion controls shall be measured in the field on the basis of length or area for each control item installed as shown on the plans or as modified in the field. Measurements shall be to the nearest whole number.

BASIS OF PAYMENT

Payment for Seeding, Fertilizing, and Mulching shall be paid at the Contract Unit Price per 0.1 acre for the seed mixture listed above.

Payment for straw wattles, silt fence, and erosion control mats shall be on the basis of length or area actually placed as shown on the Bid Form or as modified in the field.

EROSION CONTROL WATTLES

Erosion control wattles for restraining the flow of runoff and sediment shall be installed at locations noted in the table and at locations determined by the Engineer during construction. Erosion control wattles shall be minimum nine (9) inch diameter. Refer to detail sheets.

The Contractor shall provide certification that the erosion control wattles do not contain noxious weed seeds.

Erosion control wattles shall remain on the project until vegetation has been established and then they shall be removed in accordance with the Engineer.

The erosion control wattle provided shall be from the approved product list. The approved product list for erosion control wattle may be viewed at the following internet site:

<http://sddot.com/business/certification/products/Default.aspx>

Erosion control wattles may be removed and reset as necessary as work progresses. The erosion control wattles removed and reset shall be in useable condition. All costs for removing and resetting the erosion control wattles shall be incidental to the contract unit price per foot for "Erosion Control Wattle".

HIGH FLOW SILT FENCE

The high flow silt fence fabric provided shall be from the approved product list. The approved product list for high flow silt fence may be viewed at the following internet site:

<http://sddot.com/business/certification/products/Default.aspx>

High flow silt fence shall be placed at the locations noted in the table and at locations that will minimize siltation of adjacent streams, lakes, dams, or drainage areas as determined by the Engineer during construction. Refer to detail sheets.

Mucking silt fence shall consist of removing muck trapped by the silt fence and spreading the material evenly over the adjacent area to conform to the existing grade.

Silt fence shall be removed when vegetation is established. Some or all of the silt fence may be left on the project until vegetation is established.

ADJUSTMENT OF EXISTING MANHOLES AND WATER VALVES

The Contractor is encouraged to examine all sanitary manholes and water valves, within the limits of the construction of the project, to determine the means necessary to adjust the manholes to proper height. This item could entail removing or adding adjustment rings when the adjustment is less than 12". The work may include the removal of the cone section and placement of a manhole section when the adjustment is greater than 12".

Measurement and payment will be as follows:

- Adjust manhole <12" per each.
- Adjust manhole >12" per foot.

SEDIMENT CONTROL AT TYPE S REINFORCED CONCRETE DROP INLETS

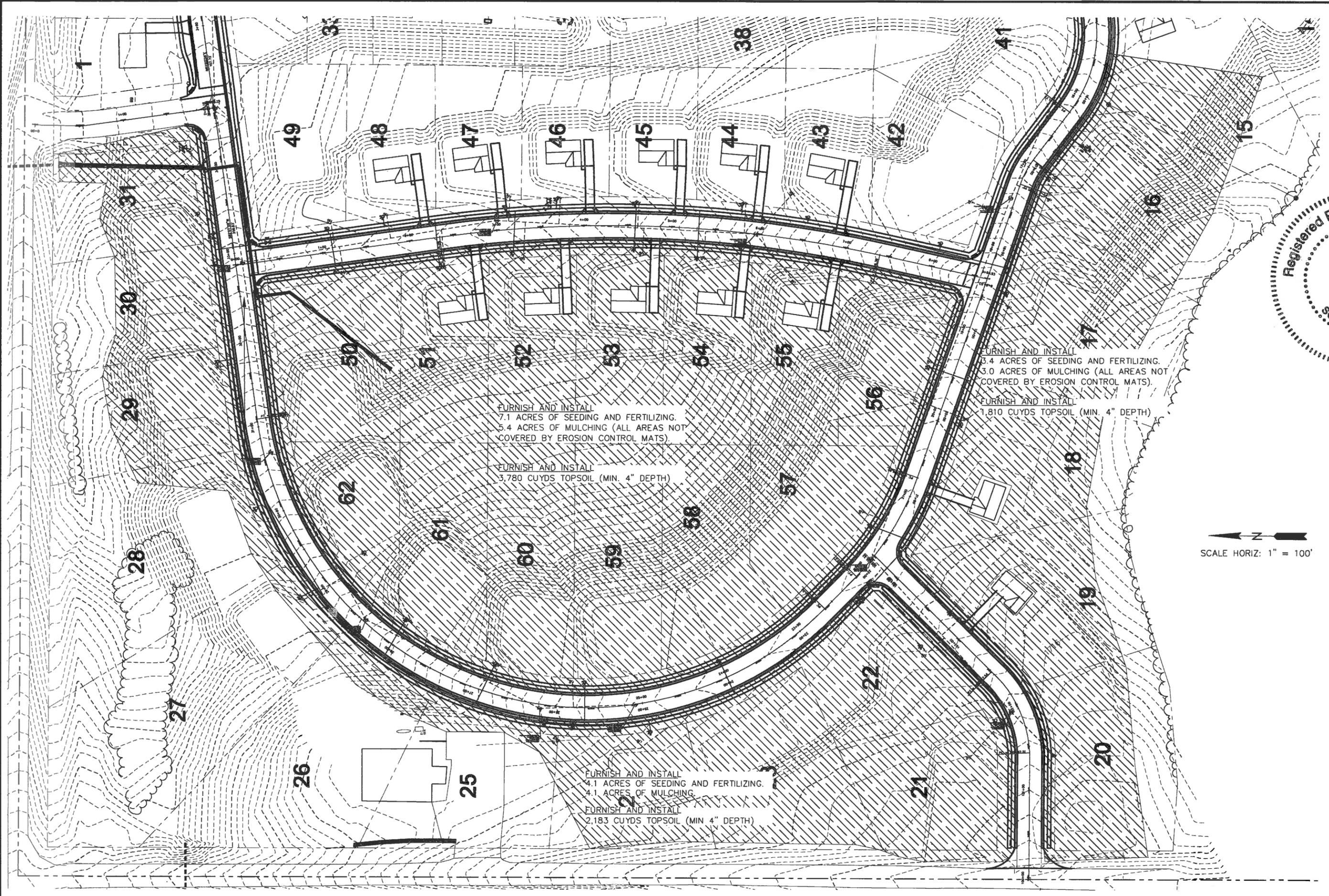
The sediment control device provided shall be from the list shown below. Refer to detail sheets.

<u>Product</u>	<u>Manufacturer</u>
Dandy Curb	Dandy Products Inc. Dublin, OH Phone: 1-800-591-2284 www.dandyproducts.com
Gutterbuddy	ACF Environmental Richmond, VA Phone: 1-800-448-3636 www.acfenvironmental.com
SS-300	Silt-Saver, Inc. Conyers, GA Phone: 1-888-382-7458 www.siltsaver.com
Curb Inlet Guard	ECTEC Environmental Systems LLC Alameda, CA Phone: 1-866-521-0724 www.ertecsystems.com

Drawn By: JCK	Chk'd by: JCK	PROJ. #: A-5282	DWG: 5282 NOTES	DATE: 09/2014
LONG HOLLOW SITE GRADING AND EROSION CONTROL NOTES		LONG HOLLOW HOUSING DEVELOPMENT		
LONG HOLLOW HOUSING DEVELOPMENT		LONG HOLLOW, SOUTH DAKOTA		
5 OF 12				

Helm's ASSOCIATES
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FURNISH AND INSTALL
 7.1 ACRES OF SEEDING AND FERTILIZING.
 5.4 ACRES OF MULCHING (ALL AREAS NOT
 COVERED BY EROSION CONTROL MATS).

FURNISH AND INSTALL
 3,780 CUYDS TOPSOIL (MIN. 4" DEPTH)

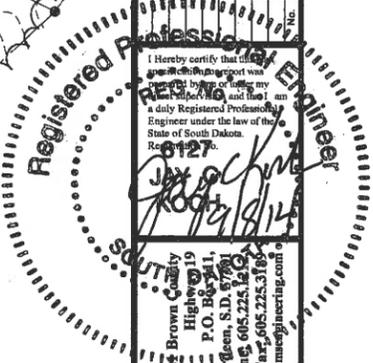
FURNISH AND INSTALL
 3.4 ACRES OF SEEDING AND FERTILIZING.
 3.0 ACRES OF MULCHING (ALL AREAS NOT
 COVERED BY EROSION CONTROL MATS).

FURNISH AND INSTALL
 1,810 CUYDS TOPSOIL (MIN. 4" DEPTH)

FURNISH AND INSTALL
 4.1 ACRES OF SEEDING AND FERTILIZING.
 4.1 ACRES OF MULCHING.

FURNISH AND INSTALL
 2,183 CUYDS TOPSOIL (MIN 4" DEPTH)

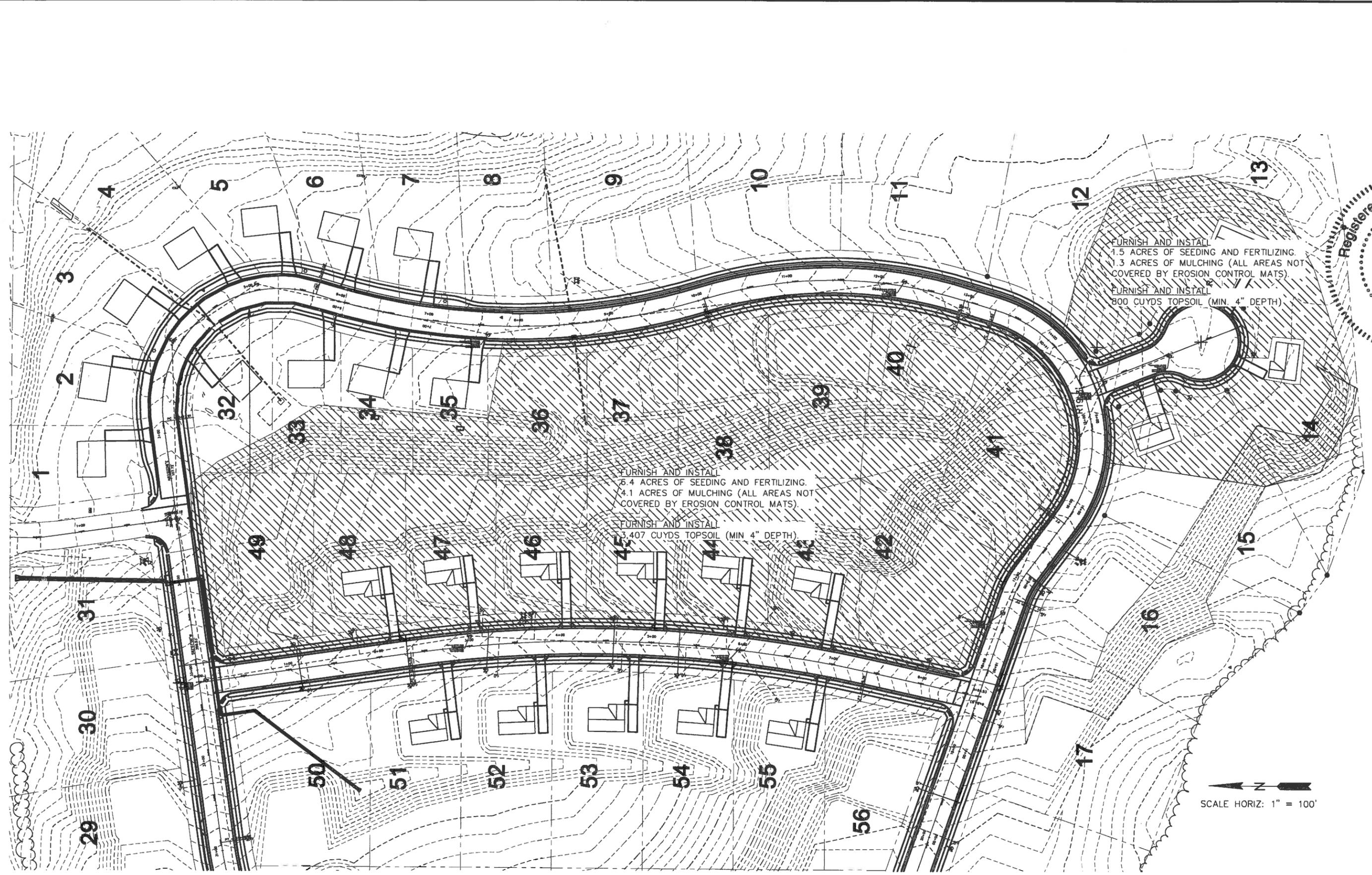
SCALE HORIZ: 1" = 100'



Helm & Associates
 CIVIL ENGINEERS & LAND SURVEYORS

Drawn By: CLB
 Chk By: JCK
 Proj. No: A-5282
 Dwg. No: 5282-GRAD
 VP. No: PROJLAY1
 Date: 9/14

SEEDING, FERTILIZING, AND
 MULCHING PLAN SHEET (WEST)
 LONG HOLLOW HOUSING DEVELOPMENT
 LONG HOLLOW, SOUTH DAKOTA



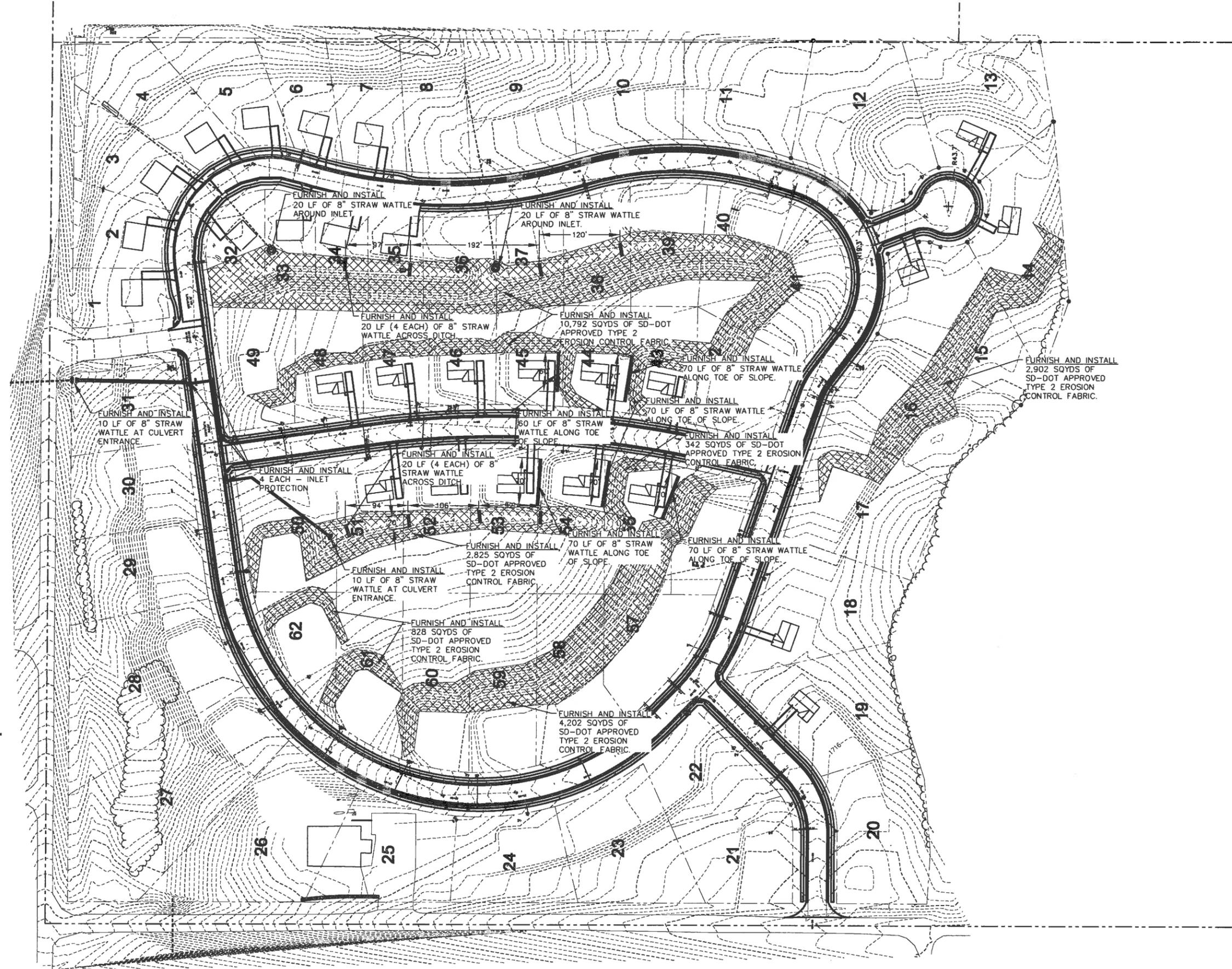
FURNISH AND INSTALL
1.5 ACRES OF SEEDING AND FERTILIZING.
1.3 ACRES OF MULCHING (ALL AREAS NOT
COVERED BY EROSION CONTROL MATS).
FURNISH AND INSTALL
800 CUYDS TOPSOIL (MIN. 4" DEPTH)

FURNISH AND INSTALL
6.4 ACRES OF SEEDING AND FERTILIZING.
4.1 ACRES OF MULCHING (ALL AREAS NOT
COVERED BY EROSION CONTROL MATS).
FURNISH AND INSTALL
3,407 CUYDS TOPSOIL (MIN. 4" DEPTH)

SCALE HORIZ: 1" = 100'

<p>Helm & Associates CIVIL ENGINEERS & LAND SURVEYORS</p>		<p>221 Brown County Highway 19 P.O. Box 111, Aberdeen, SD 57401 Phone: 605.225.1212, Fax: 605.225.3189 Email: terryl@helmsengr.com</p>
<p>Drawn By: CLB Chk' By: JCK Proj. No: A-5282 Dwg. No: 5282-GRAD VP. No: PROJLAY 2 Date: 9/14</p>	<p>SEEDING, FERTILIZING, AND MULCHING PLAN SHEET (EAST) LONG HOLLOW HOUSING DEVELOPMENT LONG HOLLOW, SOUTH DAKOTA</p>	
<p>7 OF 12</p>		<p>Register Professional Engineer</p>

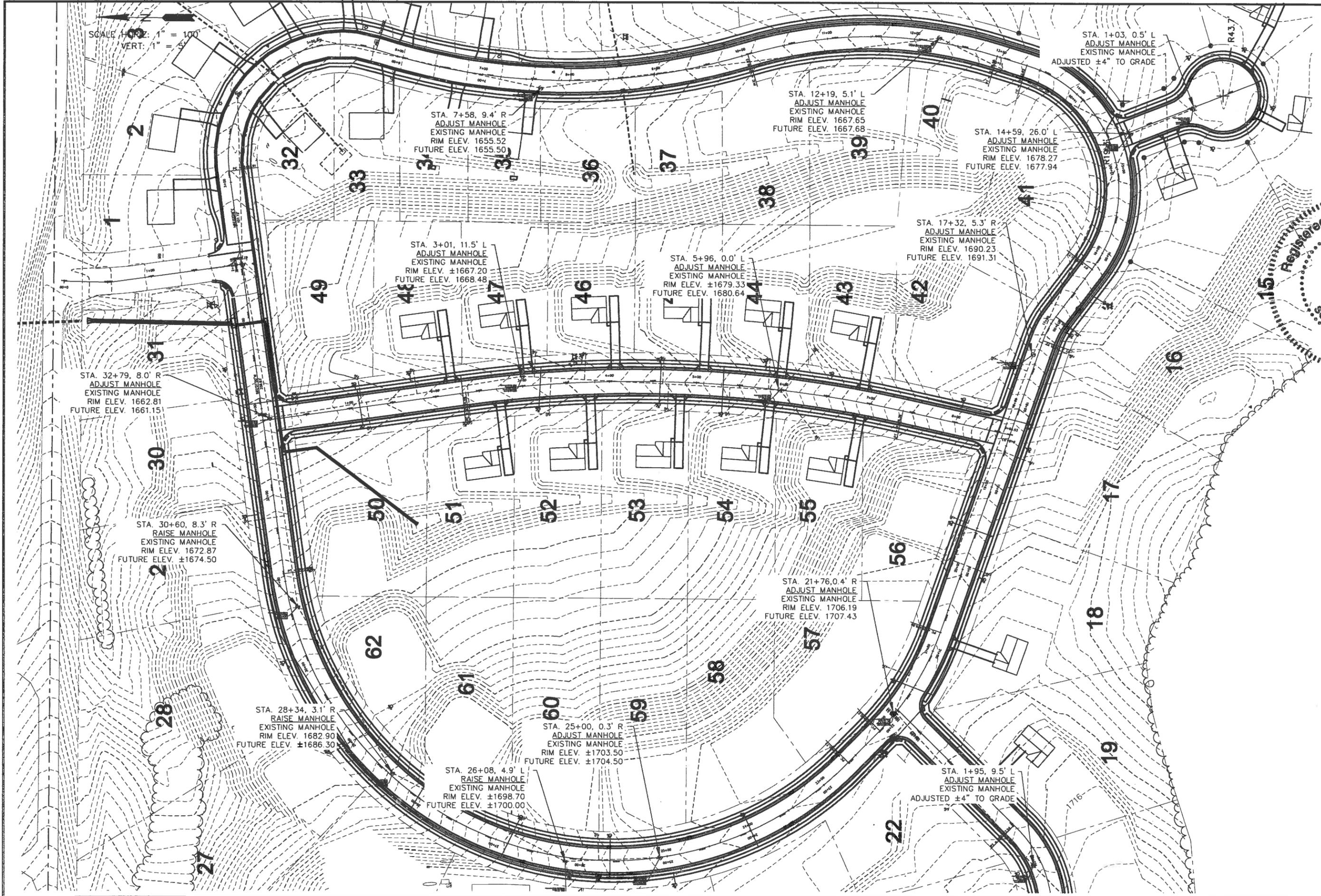
SCALE HORIZ: 1" = 150'



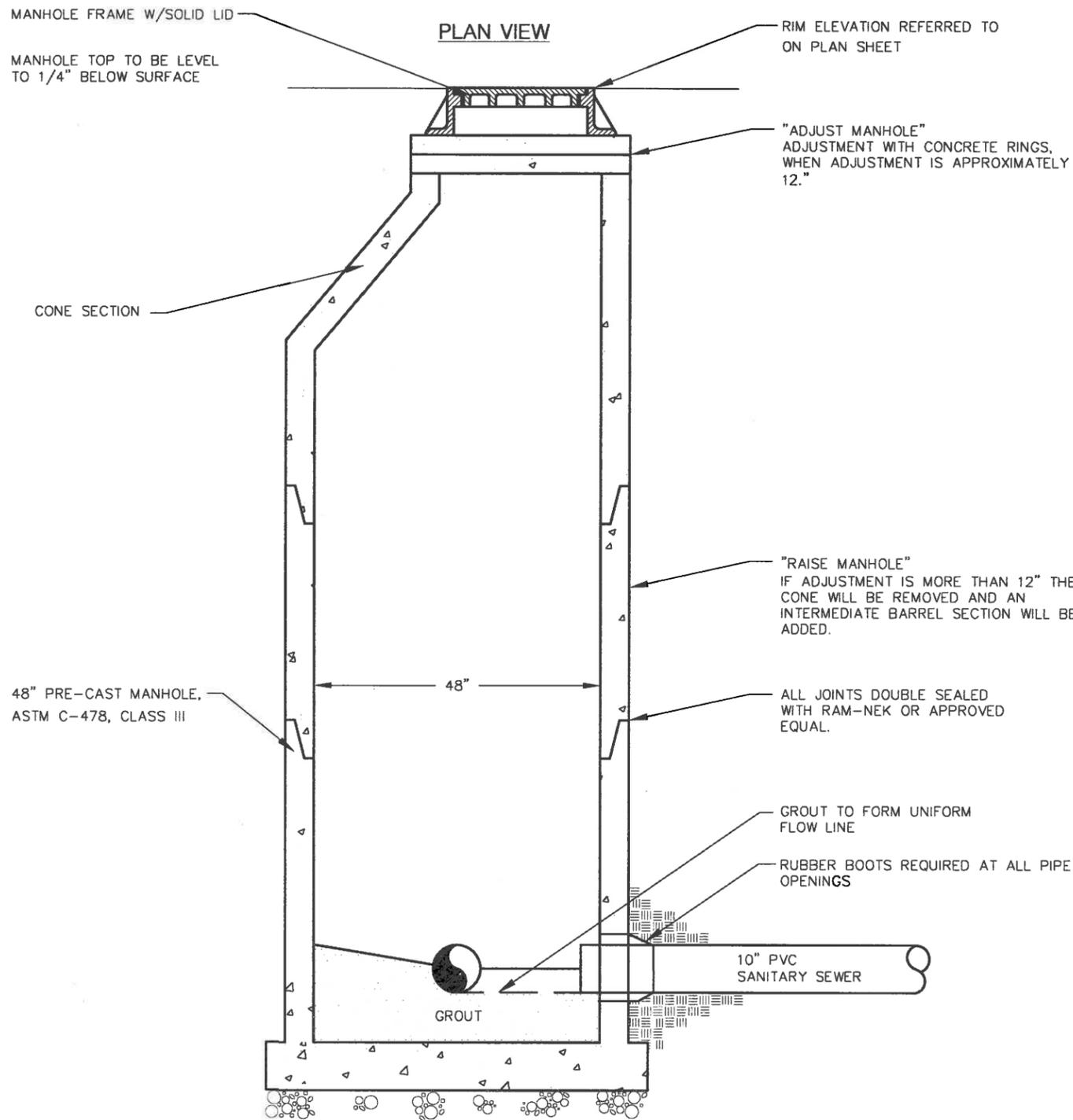
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 Chk' By: JCK
 Proj. No: A-5282
 Dwg. No: 5282-GRAD.
 VP. No: ER. CONTROL
 Date: 9/14

EROSION CONTROL LAYOUT
 SHEET
 LONG HOLLOW HOUSING DEVELOPMENT
 LONG HOLLOW, SOUTH DAKOTA

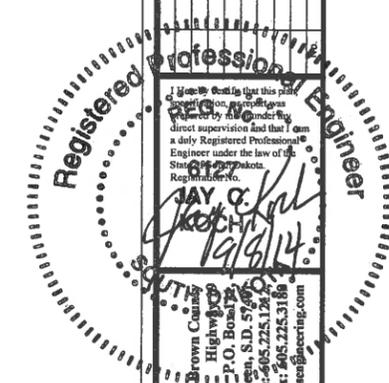
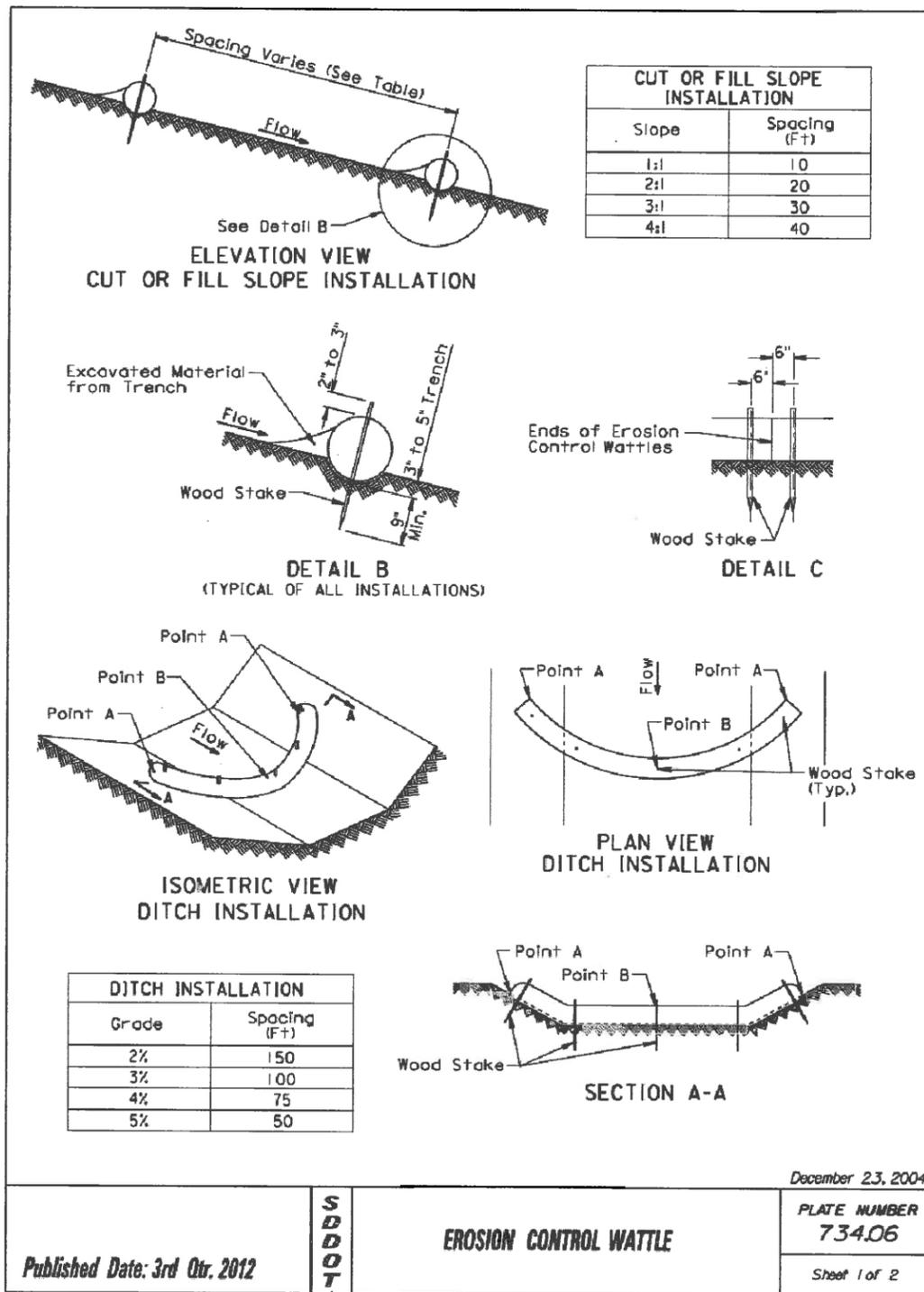


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Drawn By: CLB CK'd By: JCK Proj. No: A-5282 Dwg. No: 5282-GRAD VP. No: MH RAISING Date: 9/14	221 Brown St. Huron, SD 57439 P.O. Box 401 Aberdeen, SD 57401 Phone: 605.224.2727 Fax: 605.225.3199 Email: terryl@helmsengineering.com
Registered Professional Engineer Registered Professional Surveyor 0127 Terry L. Helm 10/18/14	
MANHOLE RAISING LAYOUT SHEET LONG HOLLOW HOUSING DEVELOPMENT LONG HOLLOW, SOUTH DAKOTA	
9 OF 12	



ELEVATION VIEW
48" SANITARY SEWER MANHOLE ADJUSTMENT DETAIL

NO SCALE



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Drawn By: CLB
Ck'd By: JCK
Proj. No: A-5282
Dwg. No: 5282-GRAD.
VP. No: DETAIL.1
Date: 9/14

DETAIL SHEETS
LONG HOLLOW HOUSING DEVELOPMENT
LONG HOLLOW, SOUTH DAKOTA

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 5" 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'.

When installing running lengths of wattles, the Contractor shall butt the second wattle tightly against the first and shall not overlap the ends. See Detail C.

The Contractor and Engineer shall inspect the erosion control wattles once every week and within 24 hours after every rainfall event greater than 1/2". The Contractor shall remove, dispose, or reshape the accumulated sediment when necessary as determined by the Engineer.

Sediment removal, disposal, or necessary shaping shall be as directed by the Engineer. All costs for removing accumulated sediment, disposal of sediment, and necessary shaping shall be incidental to the contract unit price per cubic yard for "Remove Sediment".

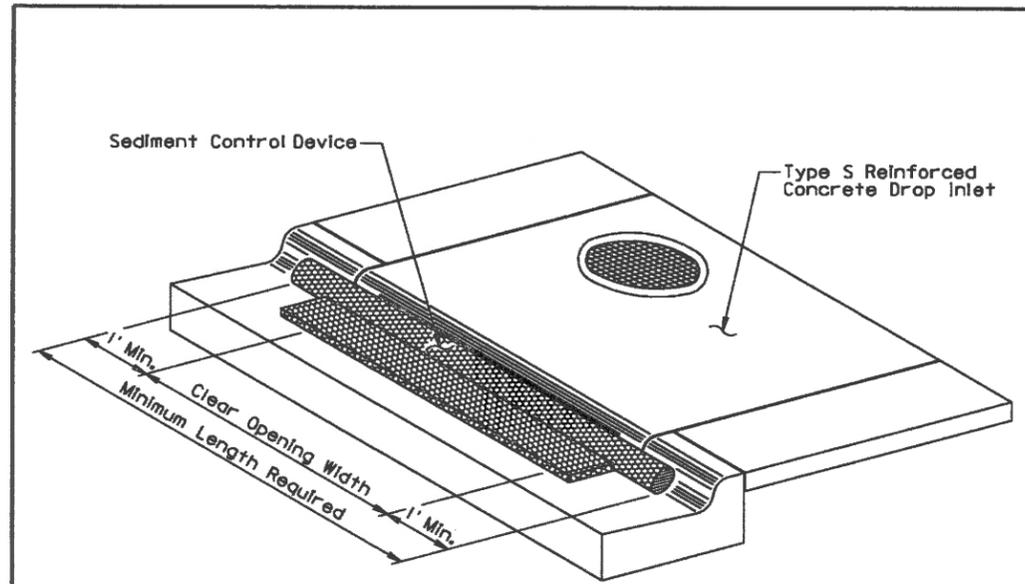
All costs for furnishing and installing the erosion control wattles including labor, equipment, and materials shall be incidental to the contract unit price per foot for the corresponding erosion control wattle bid item.

All costs for removing the erosion control wattle from the project including labor, equipment, and materials shall be incidental to the contract unit price per foot for "Remove Erosion Control Wattle".

December 23, 2004

S D D O T	EROSION CONTROL WATTLE	PLATE NUMBER 734.06
		Sheet 2 of 2

Published Date: 3rd Qtr. 2012



ISOMETRIC VIEW

GENERAL NOTES:

The type of sediment control device shown is for illustrative purposes only.

The type of sediment control device used shall be one of the types as specified in the plans.

The sediment control device shall be placed at the drop inlets according to the manufacturers' installation instructions.

The sediment control at inlet for type S reinforced concrete drop inlet shall be placed at locations stated in the plans or at locations determined by the Engineer.

The Contractor shall inspect and maintain the sediment control device once every week and within 24 hours after every rainfall event. The Contractor shall maintain the sediment control device by removing the device, removing accumulated sediment, and resetting the device.

The removed sediment shall be placed at a location away from the drop inlet where the sediment will not be washed back into the drop inlet or other storm sewer system.

Payment for the "Sediment Control at Type S Drop Inlet" shall be based on the minimum length required at the drop inlets. Some of the sediment control devices specified in the plans will have to be longer due to available length.

All costs for furnishing, installing, inspecting, maintaining, removing, and resetting the sediment control device at the drop inlet including labor, equipment, and materials shall be incidental to the contract unit price per foot for "Sediment Control at Type S Reinforced Concrete Drop Inlet".

September 14, 2005

S D D O T	SEDIMENT CONTROL AT INLETS FOR TYPE S REINFORCED CONCRETE DROP INLETS	PLATE NUMBER 734.11
		Sheet 1 of 1

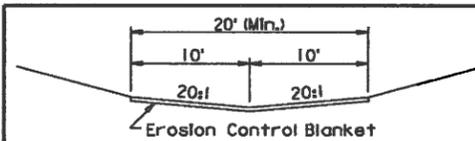
Published Date: 3rd Qtr. 2013



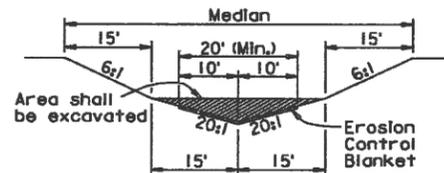
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Drawn By: CLB
 CK'd By: JCK
 Proj. No: A-5282
 Dwg. No: 5282-GRAD
 VP. No: DETAIL 2
 Date: 9/14

DETAIL SHEETS
 LONG HOLLOW HOUSING DEVELOPMENT
 LONG HOLLOW, SOUTH DAKOTA

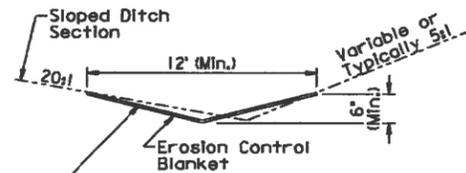


STANDARD DITCH SECTION



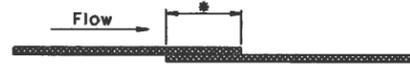
The median shall be shaped to the limits shown in this detail where the erosion control blanket will be placed.

MEDIAN SECTION



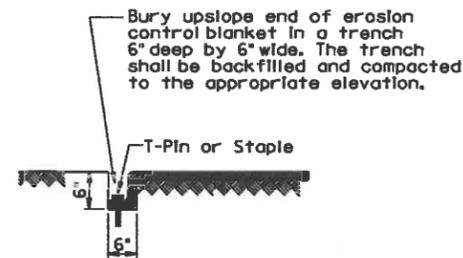
This ditch section shall be constructed when installing erosion control blanket.

SLOPED DITCH SECTION

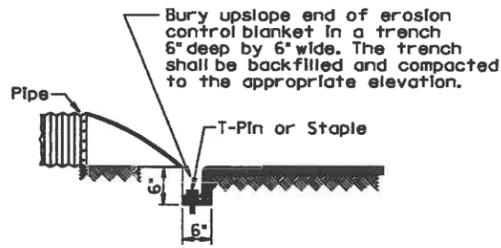


- * Use a 4" (Min.) overlap wherever two widths of erosion control blanket are applied side by side.
- * Use a 6" (Min.) overlap wherever one roll of erosion control blanket ends and another begins.

OVERLAP DETAIL



TRENCH DETAIL



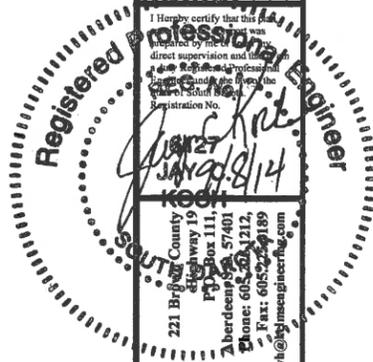
PIPE END DETAIL

GENERAL NOTES:

- Prior to placement of the erosion control blanket, the areas shall be properly prepared, shaped, seeded, and fertilized.
- Erosion control blanket shall be unrolled in the direction of the flow of water when placed in ditches and on slopes. The upslope end of the erosion control blanket shall be buried in a trench 6" wide by 6" deep. There shall be at least a 6" overlap wherever one roll of erosion control blanket ends and another begins, with the upslope erosion control blanket placed on top of the downslope erosion control blanket.
- The erosion control blanket shall be pinned to the ground according to the manufacturer's installation recommendations.
- After the placement of the erosion control blanket, the Contractor shall fine grade along all edges of the blanket to maintain a uniform slope adjacent to the blanket and level any low spots which might prevent uniform and unrestricted flow of side drainage directly onto the erosion control blanket.
- All ditch sections shall be shaped when installing the erosion control blanket. All costs for shaping the ditches shall be incidental to the contract unit price per foot for "Shaping for Erosion Control Blanket".

December 23, 2004

Published Date: 3rd Qtr. 2012	S D D O T	EROSION CONTROL BLANKET	PLATE NUMBER 734.01
			Sheet 1 of 1



Drawn By: CLB	Checked By: JCK	Project No: A-5282	Dwg. No: 5282-GRAD	VP. No: DETAIL 3	Date: 9/14
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DETAIL SHEETS
LONG HOLLOW HOUSING DEVELOPMENT
LONG HOLLOW, SOUTH DAKOTA