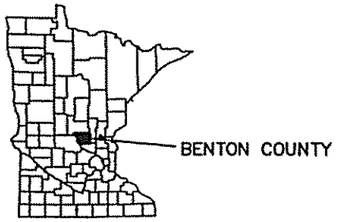
MINNESOTA DEPARTMENT OF TRANSPORTATION
BENTON COUNTY
S.P. 05-605-09

CONSTRUCTION PLAN FOR C.S.A.H. 5. GRADING, BASE, AND BITUMINOUS SURFACE.

LOCATED BETWEEN EAST LIMITS OF GILMAN AND CO. RD. 66

FROM 290' EAST OF THE NE CORNER OF SECTION 4, T37N, R29W, TO 254' WEST OF THE NE CORNER OF SECTION 1, T37N, R29W.

MINNESOTA



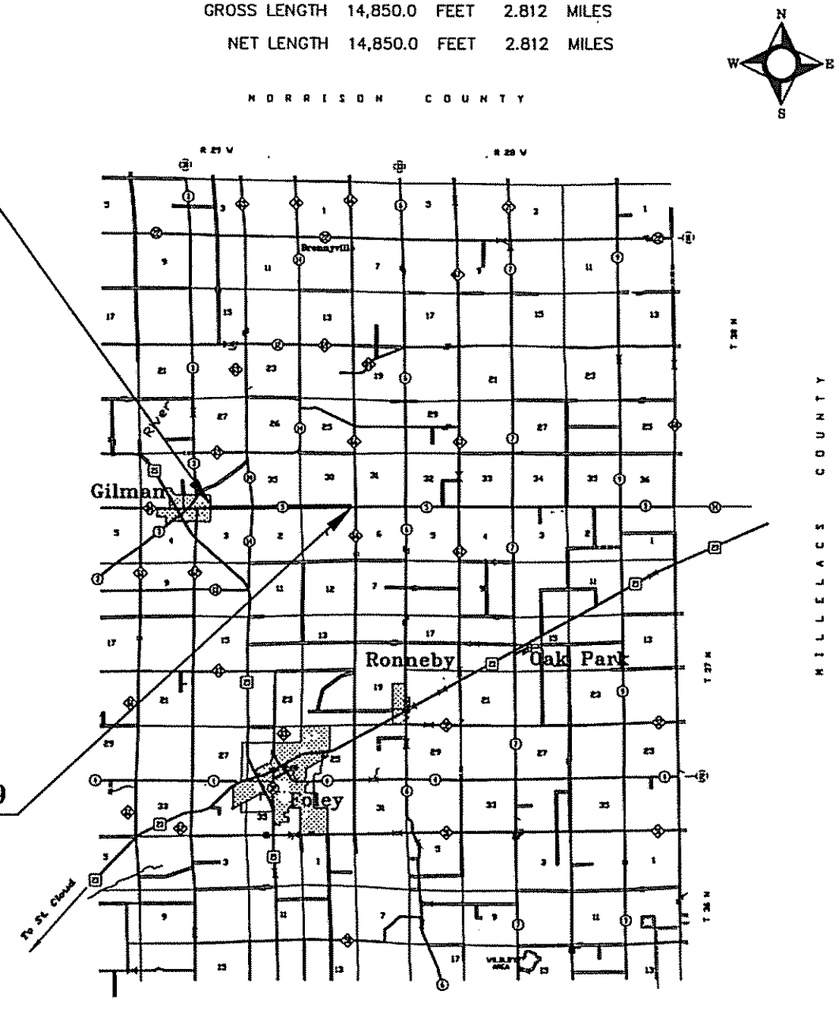
S.P. 05-605-09

GROSS LENGTH 14,850.0 FEET 2.812 MILES

NET LENGTH 14,850.0 FEET 2.812 MILES

BEGIN S.P. 05-605-09
STA. 22+50.0

END S.P. 05-605-09
STA. 171+00.0



UTILITIES SYMBOLS

POWER POLE LINE
TELEPHONE OR TELEGRAPH POLE LINE
ANCHOR
PEDESTAL (TELEPHONE CABLE TERMINAL)
GAS MAIN
TELEPHONE CABLE IN CONDUIT
ELECTRIC CABLE IN CONDUIT
TELEPHONE MANHOLE
ELECTRIC MANHOLE
BURIED TELEPHONE CABLE
BURIED ELECTRIC CABLE

PLANS SYMBOLS

COUNTY LINE
TOWNSHIP OR RANGE LINE
SECTION LINE
QUARTER LINE
RIGHT-OF-WAY LINE
SLOPE EASEMENT
PRESENT RIGHT-OF-WAY LINE
CONTROL OF ACCESS LINE
CORPORATE CITY LIMITS
TRUNK HIGHWAY CENTER LINE
RIVER OR CREEK
DRAINAGE DITCH
CULVERT
DROP INLET
GUARD RAIL
BARBED WIRE FENCE
WOVEN WIRE FENCE
CHAIN LINK FENCE
HEDGE

IRON PIPE OR ROD MONUMENT(STONE, CONCRETE, OR METAL)
GRAVEL PIT

SCALES
INDEX MAP

0 MILES 5

PLAN VIEW SHEETS
0 50 100
FEET

CROSS SECTION SHEETS
0 10 20
FEET

The subsurface utility information in this plan is quality level D. This quality level was determined according to the guidlines of CI/ASCEE 38-02, entitled "Standard Guidlines of the Collection and Deception of Existing Subsurface Utility Data.

MINN PROJ. STPX 0508 (103)

STATE PROJ. S.P.05-605-09

GOVERNING SPECIFICATIONS

THE 2005 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION", SHALL GOVERN.

INDEX

SHEET 1 – TITLE SHEET
SHEET 2 – ESTIMATED QUANTITIES
SHEET 3 – TYPICAL SECTIONS
SHEET 4 – TABULATIONS
SHEET 5 – CULVERT TABULATIONS
SHEET 6 – TRAFFIC CONTROL
SHEET 7 – UTILITY TABULATIONS
SHEET 8 – SWPP PLAN SHEET
SHEET 9 –18 – EROSION CONTROL
SHEET 19–29 – PLAN AND PROFILES
SHEET 30–54 – CROSS-SECTIONS

THIS PLAN CONTAINS 54 SHEETS

DESIGN DESIGNATION

9 Ton Design
≤ N18 = 276,041
R Value = 15
ADT 2008 = 799
Proj. ADT 2028 = 1,198
Proj. HCADT 2025 = 96

Functional Classification–Major Collector, Low Density
2 Traffic Lanes , No Parking Lanes
Shoulder Width 6'

Design speed 55 MPH
Based on STOPPING Sight Distance
Height of Eye 3.5' Height of Object 2'

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

BENTON COUNTY ENGINEER LICENSE NO. 18903 DATE 5/15/08

for DISTRICT STATE AID ENGINEER : REVIEWED FOR COMPLIANCE WITH STATE AID RULES AND POLICY. DATE 5/21/08

for STATE AID ENGINEER: APPROVED FOR STATE AID, AND FEDERAL AID FUNDING. DATE 5/21/08

S.P. 05-605-09

SHEET 1 OF 54 SHEETS.

STANDARD PLATES

THESE STANDARD PLATES, AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION, SHALL APPLY ON THIS PROJECT.

PLATE NO.	DESCRIPTION
3000 L	REINFORCED CONCRETE PIPE
3014 J	REINFORCED CONCRETE PIPE-ARCH
3040 F	CORRUGATED METAL PIPE CULVERT
3100 G	CONCRETE APRON FOR REINFORCED CONCRETE PIPE
3110 G	CONCRETE APRON FOR REINFORCED CONCRETE PIPE-ARCH
3123 J	METAL APRON FOR C.S. PIPE
3133 C	RIPRAP AT RCP OUTLETS
3145 F	CONCRETE PIPE TIES
3148 A	SAFETY SLOPE METAL END SECTION FOR CIRCULAR PIPE
3221 C	CORRUGATED STEEL PIPE COUPLING BANDS
7102 I	CONCRETE CURB AND GUTTER DESIGN S 518
8000 I	STANDARD BARRICADES
9000 D	APPROACHES & ENTRANCES
9102 D	TURF ESTABLISHMENT AREAS

BASIS FOR PLAN QUANTITIES
BASE MATERIAL
1C.Y. (L.V.)=1.4 TON
1C.Y. (C.V.)=1.8225 TON
1C.Y. (C.V.)=1.30 C.Y. (L.V.)
GRADING
1C.Y. (C.V.)=1.3 C.Y. (L.V.)
1C.Y. (L.V.)=0.83 C.Y. (B.M.)

NOTES:

(1) SHOULDERING AT MAINTAINED YARDS

(2) AS NEEDED AND DIRECTED BY THE ENGINEER IN THE FIELD.

(3) USE ON CL.5 BASE CONSTRUCTION DURING COMPACTION. WATER FOR DUST CONTROL IS INCIDENTAL.

(4) QUANTITIES INCLUDED FOR APPROACHES, DRIVEWAYS & PAVED SHOULDERS.

(5) TOP LIFT OF BITUMINOUS IS VIRGIN MIXTURE. BITUMINOUS TACK COAT (2357.502) IS INCIDENTAL. .04 GAL./SQ.YD. 2,490 GAL.

(6) 10' – 40' RATIO

(7) TO BE INSTALLED AND MAINTAINED AT LOCATIONS SHOWN ON SHEET 18, AND AS SHOWN IN SWPPP PLAN, OR AS DIRECTED BY ENGINEER IN FIELD.

(8) ROCK DITCH CHECK TYPE 7

(9) SEED MIXTURE 250 GR 70 LBS. PER ACRE.

(10) SEED MIXTURE 270 RT 120 LBS. PER ACRE.

(11) MULCH MATERIAL– 2 TONS PER ACRE

(12) FERTILIZER ANALYSIS 23 –0– 23, RATE = 250 lbs. PER ACRE.

(13) 5' – 45' RATIO, BOTH LIFTS

(P) PLAN QUANTITY

ESTIMATED QUANTITIES

NOTE	SPEC. NO.	ITEM	UNIT		TOTAL QUANTITIES	
	2021.501	MOBILIZATION	LUMP SUM		1	
	2101.501	CLEARING	ACRE		4.75	(P)
	2101.502	CLEARING	TREE		14	(P)
	2101.506	GRUBBING	ACRE		4.75	(P)
	2101.507	GRUBBING	TREE		14	(P)
	2104.501	REMOVE PIPE CULVERTS	LIN. FT.		794	
	2104.501	REMOVE FENCE	LIN .FT.		11,280	
	2104.513	SAWING BITUMINOUS PAVEMENT	LIN. FT.		96	
	2104.521	SALVAGE METAL CULVERT	LIN. FT.		170	
	2104.523	SALVAGE METAL APRON	EACH		4	
	2104.604	SALVAGE BITUMINOUS PAVEMENT	SQ .YD.		40,631	(P)
	2105.501	COMMON EXCAVATION	CU. YD.		113,519	(P)
	2105.505	MUCK EXCAVATION	CU. YD.		5,488	
	2105.521	GRANULAR BORROW (LV)	CU. YD.		38,800	
	2105.522	SELECT GRANULAR BORROW (LV)	CU. YD.		7,134	
	2105.523	COMMON BORROW (EV)	CU. YD.		6,000	
	2105.523	COMMON BORROW (LV)	CU. YD.		18,000	
(1)	2105.525	TOPSOIL BORROW (LV)	CU. YD.		100	
(2)	2105.604	GEOTEXTILE FABRIC TYPE VI	SQ YD.		1500	
(2)	2123.509	DOZER	HOUR		10	
(2)	2123.610	STREET SWEEPER (WITH PICKUP BROOM)	HOUR		12	
(3)	2130.501	WATER	(M) GAL.		440	
(4)	2211.501	AGGREGATE BASE CLASS 5 MOD	TON		46,100	
	2221.501	AGGREGATE SHOULDERING CLASS 1	TON		2310	
(4,5)	2360.501	TYPE SP 12.5 WEARING COURSE MIXTURE (2,B)	TON		6,900	
(4)	2360.501	TYPE SP 12.5 WEARING COURSE MIXTURE (2,B)	TON		7,000	
	2501.511	15" C.S. PIPE CULVERT	LIN .FT.		464	
	2501.511	18" C.S. PIPE CULVERT	LIN .FT.		276	
	2501.511	24" C.S. PIPE CULVERT	LIN .FT.		48	
	2501.511	36" C.S. PIPE CULVERT	LIN .FT.		38	
	2501.511	18" R.C. PIPE CULVERT CL III	LIN. FT.		112	
	2501.511	24" R.C. PIPE CULVERT CL III	LIN. FT.		196	
	2501.511	36" R.C. PIPE CULVERT CL III	LIN. FT.		184	
	2501.515	15" G.S. PIPE APRON	EACH		18	
	2501.515	18" R.C. PIPE APRON	EACH		4	
	2501.515	24" R.C. PIPE APRON	EACH		6	
	2501.515	36" R.C. PIPE APRON	EACH		6	
	2501.521	51" SPAN R.C. PIPE-ARCH CULVERT CL II A	LIN .FT.		68	
	2501.521	58" SPAN R.C. PIPE-ARCH CULVERT CL II A	LIN .FT.		68	
	2501.525	51" SPAN R.C. PIPE-ARCH APRON	EACH		2	
	2501.525	58" SPAN R.C. PIPE-ARCH APRON	EACH		2	
	2501.567	18" G.S. SAFTEY APRON & GRATE DESIGN 3148	EACH		12	
	2501.567	24" G.S. SAFTEY APRON & GRATE DESIGN 3148	EACH		2	
	2501.567	36" G.S. SAFTEY APRON & GRATE DESIGN 3148	EACH		2	
	2501.571	INSTALL METAL CULVERT	LIN. FT.		110	
	2501.573	INSTALL METAL APRON	EACH		2	
	2511.503	QUARRY RUN RIPRAP CLASS II	CU .YD.		85	
	2531.501	CONCRETE CURB AND GUTTER DESIGN S 518	LIN .FT.		100	
	2563.601	TRAFFIC CONTROL	LUMP SUM		1	
	2564.603	4" SOLID LINE WHITE – PAINT	LIN .FT.		30,030	
(6)	2564.603	4" BROKEN LINE YELLOW – PAINT	LIN .FT.		2,970	
(7)	2573.502	SILT FENCE, TYPE– MACHINE SLICED	LIN .FT.		2,350	
(7)	2573.512	TEMPORARY DITCH CHECK, TYPE 2	LIN. FT.		750	
	2573.601	EROSION CONTROL SUPERVISOR	LUMP SUM		1	
	2573.604	STABILIZED CONSTRUCTION ENTRANCE	SQ.YD.		705	
(7)(8)	2573.607	ROCK DITCH CHECK	CU. YD.		75	
	2575.501	SEEDING	ACRE		27	(P)
(9)	2575.502	SEED MIXTURE 250 GR	POUND		1,800	
(10)	2575.502	SEED MIXTURE 270 RT	POUND		200	
(11)	2575.511	MULCH MATERIAL TYPE I	TON		54	
	2575.519	DISK ANCHORING	ACRE		27	(P)
(9)	2575.523	EROSION CONTROL BLANKET CATEGORY 3 (MAINT.)	SQ. YD.		1,666	
(12)	2575.531	COMMERCIAL FERTILIZER ANALYSIS 23–0–23	TON		3.4	
(7)	2575.572	RAPID STABILIZATION METHOD 4	SQ.YD.		7,720	
(13)	2580.603	INTERIM PAVEMENT MARKING	LIN. FT.		2,970	

CERTIFIED BY _____ LIC. 18903 DATE 5/15/08

C.S.A.H. 5
BENTON COUNTY, MINNESOTA

STATE PROJECT 05-605-09

PROJECT DESCRIPTION

S.P. 05-605-09 is a rural highway. Construction will consist of grading, base and bituminous surfacing. The segment is 2.8 miles (total net length) of CSAH 5, from Gilman to Co. Rd. 66.

ENVIRONMENTALLY SENSITIVE AREAS

Local wetlands exist adjacent to this project. Widening the road will place fill material in the wetlands. Wetland replacement will be accomplished through BWSR road replacement program. Construction will have minimal effect using appropriate BMP's for temporary and permanent sediment and erosion control.

LAND FEATURE CHANGES

Total project area disturbed= 30.67 Acres.

Total existing impervious surfaces= 8.1 Acres.
Add all existing pavement being removed.

Total proposed impervious surface= 12.2 Acres.
Add all areas being paved.

TIMING OF BMP INSTALLATION

The erosion prevention and sediment control BMP's shall be installed as necessary to minimize erosion from disturbed surfaces and capture sediment on site, and shall meet the NPDES permit part IV construction activity requirements.

DRAINAGE COMPUTATIONS

Computations are kept on file with the Benton County Highway Department.

PROJECT CONTACTS

The Project Engineer and the Contractor are responsible for implementation of the SWPPP and the installation, inspection, and maintenance of the erosion prevention and sediment control BMP's before and during construction.
PROJECT CONTACTS:

Bob Kozel	Gerry Hovde
County Engineer	Assn. County Engineer
7752 Hwy 25 N	7752 Hwy 25 N
Foley, MN 56329	Foley, MN 56329
(320) 968-5051	(320) 968-5051

Contractor _____
Contact _____
Address _____
City, State, Zip Code _____
Phone _____

TIMING OF EROSION CONTROL

Silt fence will be installed prior to construction.
Riprap and filter blanket will be placed at the outlets within 24 hours of the outlet placement.
Inlet protection will be installed immediately after the structure has been installed.
Street sweeping will be done as needed throughout the project as directed by the engineer. The contrator shall utilize a pick up type sweeper.
Disturbed soils will be seeded/blanketed within the time allotment given by the NPDES permit.
Slopes steeper than 1:3 (7 days)
Slopes of 1:10 to 1:3 (14 days)
Slopes of 1:10 or flatter (21 days)
The contrator is responsible to maintain the disturbed area until vegetation in established.
Once vegetation is established and construction is complete, the silt fence and any other temporary erosion control that is not biodegradable will be removed.

EROSION CONTROL PRACTICES

A list of best management procedures(BMP's) has been developed and the locations of these BMP's are shown in the project plans, labeled Erosion Control/Final Restoration. A number of the BMP's included in the erosion control plan sheets have been developed to serve as post-construction storm water controls.

-BMP's to be placed during construction are shown on the tabulation, sheet 8, detail, sheets 9-15, and the erosion control/final restoratoin, sheets 22-24, of the construction plans.
-Fertilizers will be applied only in the minimum amounts recommended by the manufacturer and will be worked into the soil to limit exposure to storm water.
-All vehicles on site will be monitored for leaks and receive regular preventive maintenace to reduce the chance of leakage.
-Any asphalt substances used onsite will be applied according the manufacture's recommendation.
-Sanitary waste will be collected from portable units a minimum of biweekly to avoid overfilling.
-All hazardous material spills will be cleaned up immediately upon discovery. Spills will be reported to the appropriate state and local goverment agency, regardless of the size of the spill.
-Concrete trucks will not be allowed to wash out or discharge surplus concrete or drum wash water on the site, except in designated areas as directed by the project engineer.
-Top soil stock piles will be stabilized with temporary seed and mulch no later than fourteen days from the last consruction activities in that area.
-All trash and construction debris from the site will be deposited in a dumpster. No cunstruction materials will be buried on-site. All personnel will be instructed regarding the correct procedure for waste disposal. Good housekeeping and spill control practices will be followed during construction to minimize storm water contamination from petroleum products, fertilizers, paints, and concrete.

SOILS

Soil type for the project site are on file with the Benton County Highway Department, with soil borings logs found on the Plan & Profile Sheets

INSPECTORS LOG/MAINTENANCE

The inspectors log and maintenance needed will be completed according to the NPDES II rules. Benton County Highway Department is responsible for maintaining the inspection log and the long term maintenance within the county right of way.
Visual inspections of all cleared and graded areas of the construction site will be preformed every week and within 24 hours of the end of a storm with rainfall amounts greater than 0.5 inch. The inspection will be conducted by the SWPPP coordinator or a designated storm water team member. The inspection will verify that the structural BMP's are in good condition and are minimizing erosion. The inspection will also verify that the procedures used to prevent storm water contamination from construction materials and petroleum products are effective. The following inspection and maintenance practices will be used to maintain erosion and sediment controls:

-Built up sediment will be removed from silt fence, bale barriers, and super duty silt fence when it has reached one-third of the height.
-Silt fences will be inspected for depth of sediment, for tears, to see that the fence posts are firmly in the ground.
-Sediment traps will be inspected for depth of sediment and built up sediment will be removed when it reaches on foot in depth from bottom of basin.
-Temporary and permanet seeding will be inspected for bare spots, washouts, and healthy growth.
-The maintenance inspection report will be filled out after each inspection, and will be maintained on-site during the entire construction project. Following construction, the completed forms will be retained at the Benton County Highway Department for a minimum of three years.

If construction activities or design modifications are made to the site plan which could impact storm water, this SWPPP will be amended appropriately. A copy of a SWPPP change form is available at the Benton County Highway Department. This change form must state the changes required, reason for the changes, and must be signed, to be complete.

LOCATION OF SWPPP REQUIREMENTS IN PROJECT PLAN

DESCRIPTION	TITLE	LOCATION
Erosion Control Tabulations	Tabulations	Sheet 18
Erosion Control Details	Details	Sheet 9–12
Erosion Control Sheets	Erosion Control/ Final Restoration	Sheet 13–18
Final Restoration	Erosion Control/ Final Restoration	Sheet 13–18

24 HOUR MPCA EMERGENCY NOTIFICATION

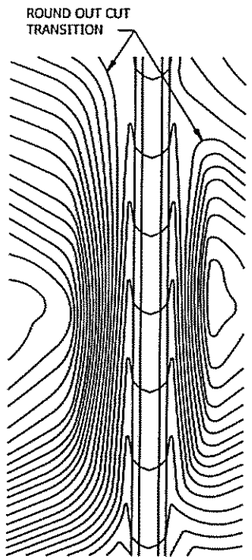
Telephone Numbers: 651–649–5451
800–422–0798

S.W.P.P. PLAN

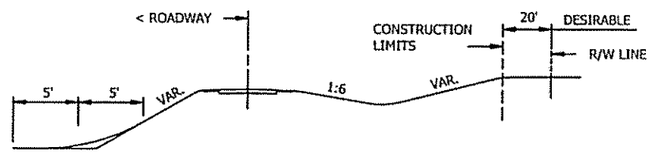
CERTIFY BY _____ LIC. 18903 DATE 5/15/08

CSAH 5 SWPPP
BENTON COUNTY, MINNESOTA

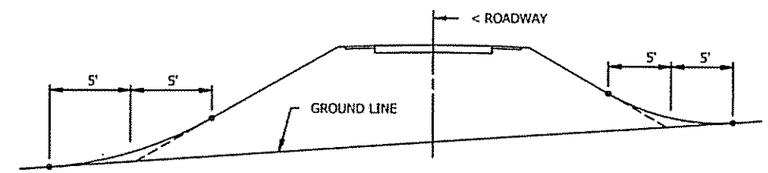
STATE PROJECT 05-605-09



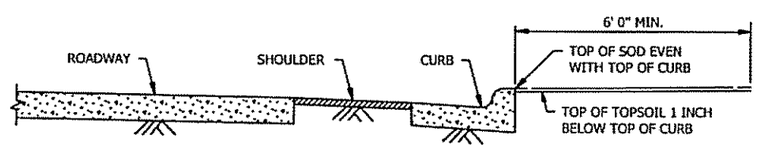
CONTOURING ROAD CUTS



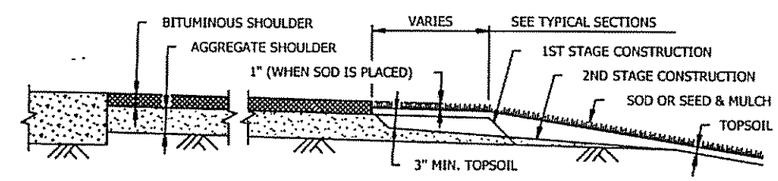
ROUNDING SHOULDERS AND BACKSLOPES



SHAPING FOR DRAINAGE ALONG THE TOE OF FILL SLOPES



SHAPING ADJACENT TO CURBS WHEN SOD IS PLACED



SHAPING AND TOPSOILING INSLOPES

NOTES:
SEE SPEC. 2575.3 FOR ADDITIONAL INFORMATION.
(1) CONSTRUCT TAPER AS DIRECTED BY THE ENGINEER.

NOTE: THIS SHEET HAS BEEN MODIFIED

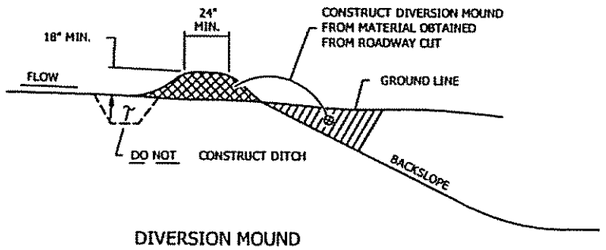
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

DATE 5/15/08

BENTON COUNTY ENGINEER LICENSE NO. 18903

STANDARD SHEET NO. (MODIFIED) 5-297.404	TITLE: EROSION CONTROL
STANDARD APPROVED: NOVEMBER 20, 2002	ALONG ROADWAYS, DITCHES AND FLUMES

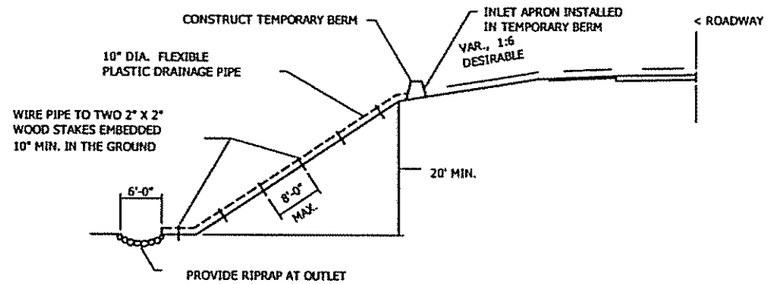
STATE PROJECT 05-605-10 C.S.A.H. 5 SHEET 9 OF 54 SHEETS



DIVERSION MOUND

DESIGN GUIDELINES:

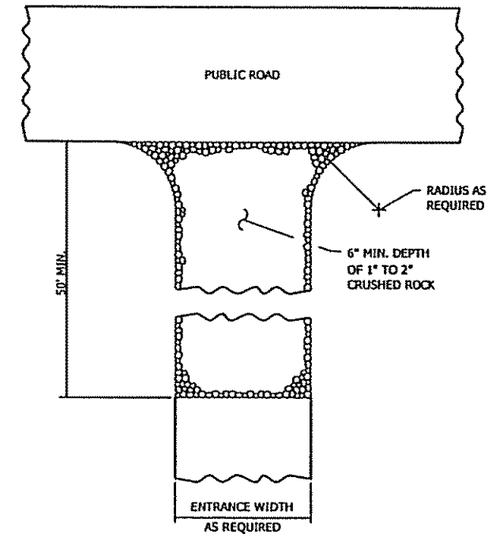
STORM FREQUENCY: 10 YEAR - 24 HOUR
MAXIMUM DRAINAGE AREA: 5 ACRES
MAXIMUM DIVERSION: GRADE 5%



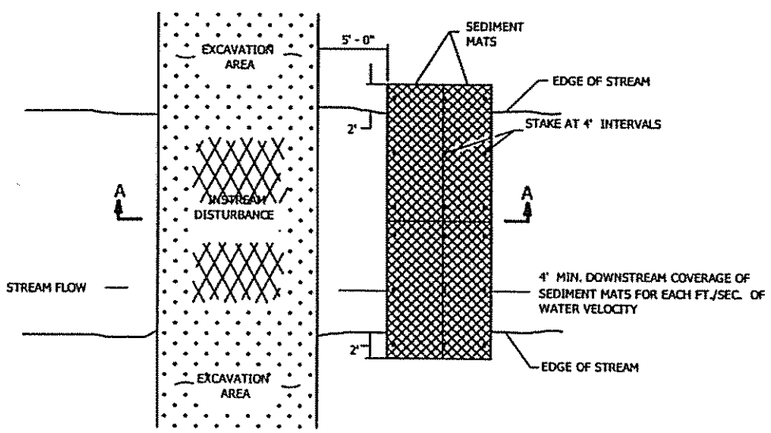
TEMPORARY DOWN DRAIN ON FILL SLOPE

DESIGN GUIDELINES:

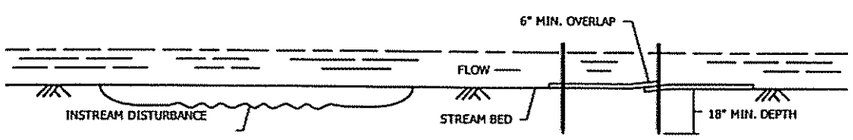
STORM FREQUENCY: 2 YEAR - 24 HOUR
MAXIMUM DRAINAGE AREA: 3 ACRES



ROCK CONSTRUCTION ENTRANCE ①



PLAN VIEW



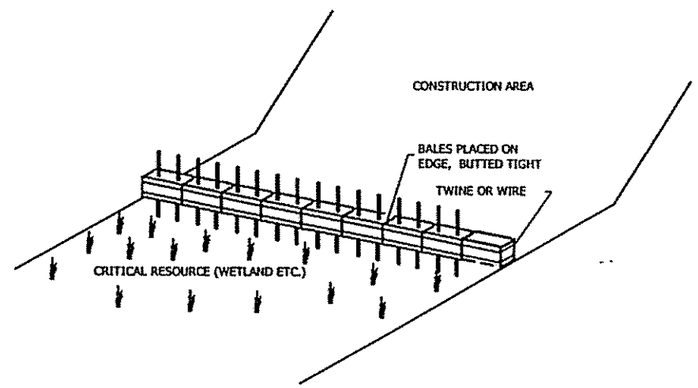
SECTION A-A

SEDIMENT MAT ⑥

TYPICAL STREAM BED INSTALLATION

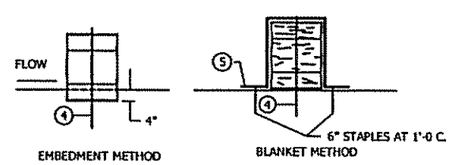
DESIGN GUIDELINES:

MAXIMUM FLOW VELOCITY: 5 FT./SEC.
MAXIMUM FLOW DEPTH: 2 FT.



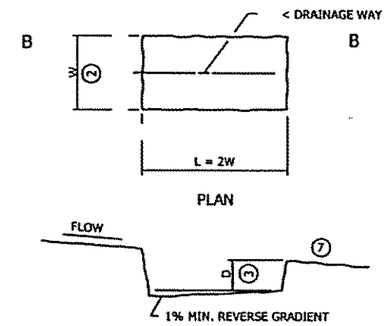
BALE BARRIERS

TO BE USED FOR CRITICAL PERIMETER CONTROL AREAS



BALE BARRIER DETAIL

APPROX. BALE SIZE: 14" X 18" X 36" LONG



SECTION B-B

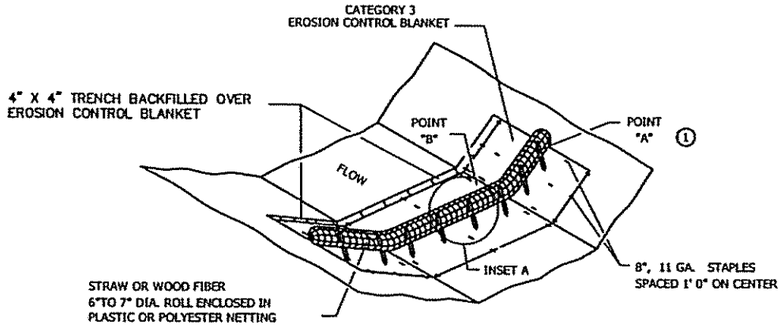
SEDIMENT TRAP DETAIL

NOTES:

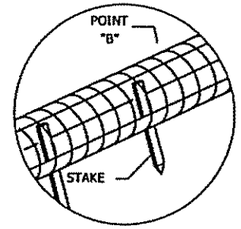
SEE SPECS. 2573, 3892, & 3894.

1. ROCKS AT ENTRANCE CLEAN WORKSITE MUD OFF OF TRUCK TIRES BEFORE TRUCKS ENTER MAIN ROAD. KEEPING MUD OFF THE ROAD WILL PREVENT AUTO DAMAGE AND KEEP CONSTRUCTION SEDIMENT OUT OF DRAINAGE SYSTEMS AND WETLANDS. GEOTEXTILE MAY BE PLACED UNDER THE ROCK TO KEEP ROCKS SEPARATE FROM SOIL.
2. W = 10 FT. MIN., 20 FT. MAX.
3. D = 2 FT.
4. TWO 2 IN. X 2 IN. WOOD STAKES OR REINFORCING BARS IN EACH BALE EMBEDDED 10 INCHES MINIMUM IN THE GROUND.
5. PLACE A CATEGORY 3 EROSION CONTROL BLANKET, 6 FT. WIDE MINIMUM, OVER THE BALE INSTEAD OF TRENCHING.
6. THIS DETAIL MAY NOT BE ACCEPTABLE FOR WORK ON PUBLIC WATERS, SEE GENERAL PUBLIC WATERS PERMIT (GP) 2004-0001.
7. LOCATION OF DOWNSTREAM TEMPORARY SEDIMENT CONTROL DEVICE.

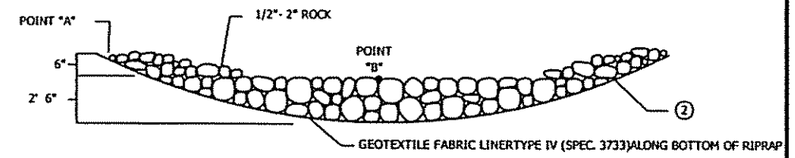
STANDARD SHEET NO.	TITLE:
5-297.405 (2 OF 4)	TEMPORARY SEDIMENT CONTROL
STANDARD APPROVED: SEPTEMBER 27, 2006	MISCELLANEOUS DETAILS



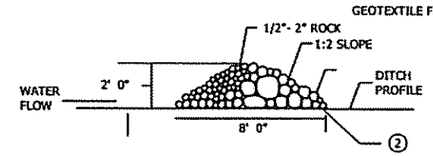
TYPE 3: BIOROLL BLANKET SYSTEM DITCH CHECK



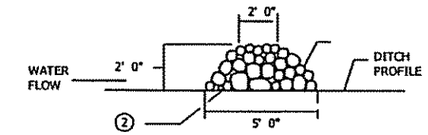
INSET A



CROSS SECTION (ROCK WEEPER AND ROCK CHECK) ④



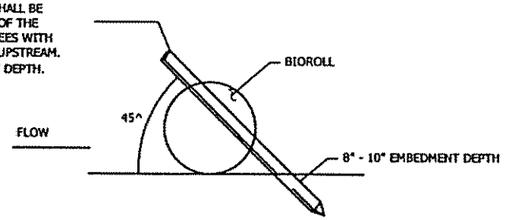
③ TYPE 5: ROCK WEEPER
PROFILE VIEW



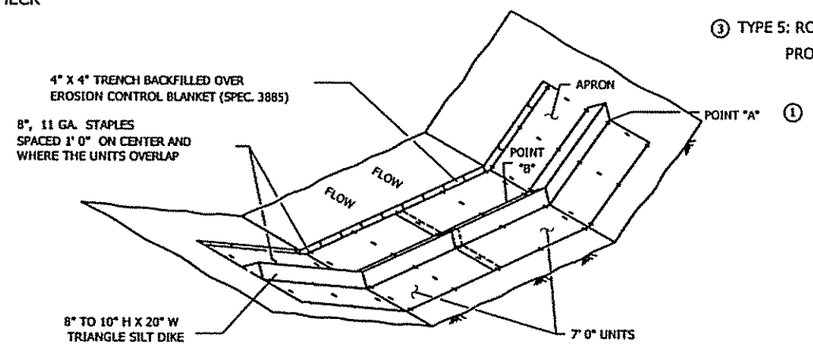
TYPE 7: ROCK CHECK ④
PROFILE VIEW

TYPE 5: ROCK WEEPER AND
TYPE 7: ROCK CHECK DITCH CHECKS
USE ON ROUGH GRADED AREAS

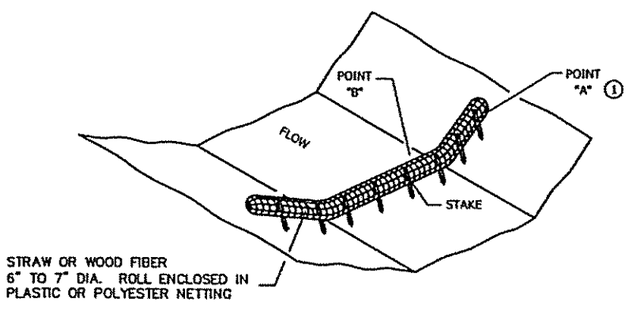
1" X 2" X 18" LONG WOODEN STAKES AT 1' 0" SPACING MAXIMUM. STAKES SHALL BE DRIVEN THROUGH THE BACK HALF OF THE BIOROLL AT AN ANGLE OF 45 DEGREES WITH THE TOP OF THE STAKE POINTING UPSTREAM. PROVIDE 8" TO 10" OF EMBEDMENT DEPTH.



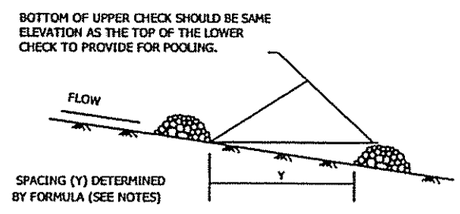
BIOROLL STAKING DETAIL



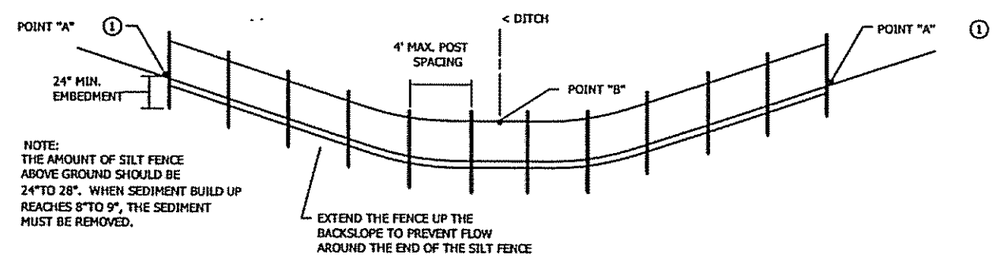
TYPE 6: GEOTEXTILE TRIANGULAR DIKE DITCH CHECK



TYPE 2: BIOROLL DITCH CHECK
USE ON ROUGH GRADED AREAS



DITCH CHECK SPACING ④



TYPE 1: SLICED IN SILT FENCE DITCH CHECK

NOTES:

SEE SPECS. 2573, 3601, 3733, 3885, 3886 & 3889.

APPROXIMATE SPACING BETWEEN EACH DITCH CHECK SHOULD BE DETERMINED FROM THE FOLLOWING SPACING FORMULA:

$$\text{APPROXIMATE SPACING OF DITCH CHECKS (FT.)} = Y = \frac{\text{DITCH CHECK HEIGHT (FT)}}{\text{\% CHANNEL SLOPE}} \times 100$$

① POINT "A" MUST BE A MINIMUM OF 6 INCHES HIGHER THAN POINT "B" TO ENSURE THAT WATER FLOWS OVER THE DIKE AND NOT AROUND THE ENDS.

② CLASS I - IV RIPRAP (SPEC. 3601) WITH GEOTEXTILE FABRIC LINER, TYPE IV (SPEC. 3733).

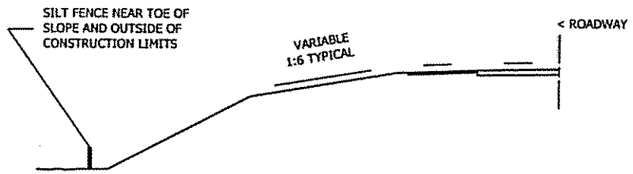
③ THE ROCK WEEPER FILTERS SEDIMENT OUT OF THE WATER BETTER THAN THE OTHER DITCH CHECKS. THE ROCK WEEPER COULD BE USED AS A PERMANENT WATER FILTERING FEATURE.

④ PERMANENT ROCK DITCH CHECKS PLACED WITHIN THE CLEAR ZONE WILL NEED TO BE 18" OR LESS IN HEIGHT. A 1:6 APPROACH AND DEPARTURE SLOPE SHALL BE PROVIDED.

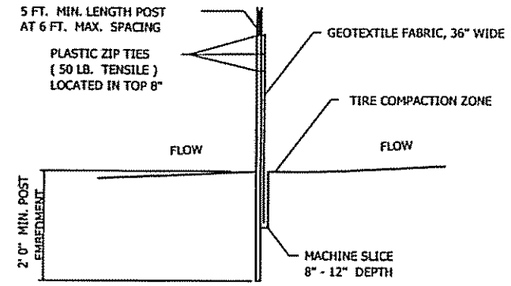
GENERAL DESIGN GUIDELINES						
DITCH CHECK TYPE	SILT FENCE	BIOROLL	BIOROLL BLANKET	TRIANGULAR DIKE	ROCK WEEPER	ROCK CHECK
STORM FREQUENCY:	2 YR. - 24 HR.	2 YR. - 24 HR.	2 YR. - 24 HR.	2 YR. - 24 HR.	5 YR. - 24 HR.	5 YR. - 24 HR.
MAX. FLOW VELOCITY:	< 1 FT./SECOND	1.5 FT./SECOND	4.5 FT./SECOND	1.5 FT./SECOND	12 FT./SECOND	12 FT./SECOND
MAX. DITCH GRADE:	0% - 0.5%	1.5% - 3%	1.5% - 3%	1.5% - 2.0%	3% - 5%	3% - 5%
MAX. DRAINAGE AREA:	1 ACRE	2 ACRE	2 ACRE	4 ACRE	4+ ACRE	4+ ACRE

STANDARD SHEET NO.
5-297.405 (3 OF 4)
STANDARD APPROVED:
SEPTEMBER 27, 2006

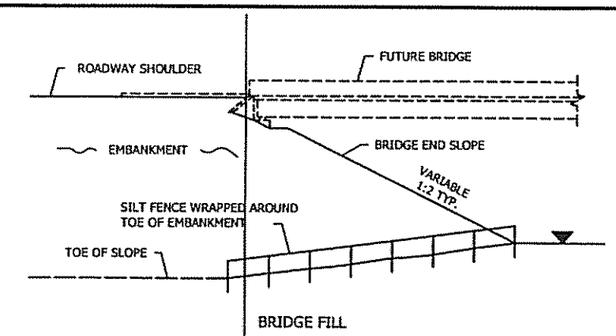
TEMPORARY SEDIMENT CONTROL
DITCH CHECK / BARRIER



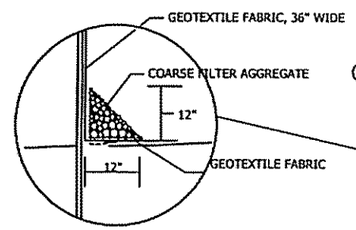
LOCATION OF SILT FENCE
AT TOE OF ROADWAY EMBANKMENT



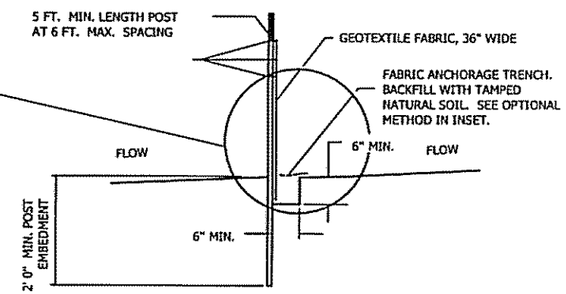
SILT FENCE, MACHINE SLICED
DESIGN GUIDELINES:
TO PROTECT AREAS FROM SHEET FLOW.
MAXIMUM CONTRIBUTING AREA: 1 ACRE.



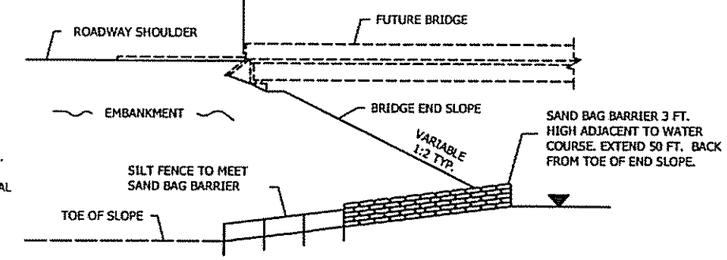
DESIGN GUIDELINES:
WATER COURSE FLOW VELOCITY: STAGNANT
CONTRIBUTING SLOPE AREA: 1/2 ACRE



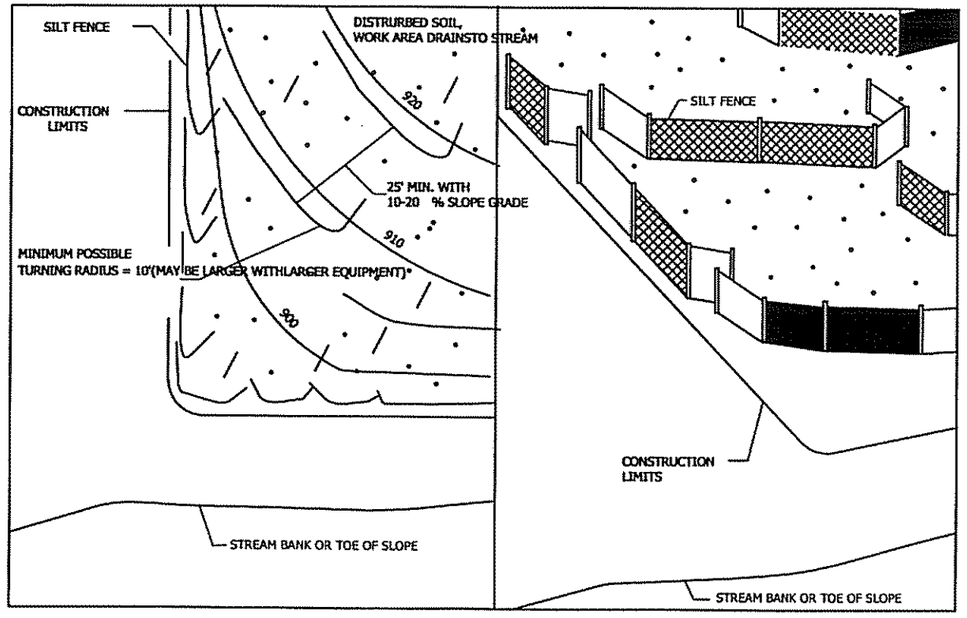
OPTIONAL METHOD
FOR SILT FENCE, HEAVY DUTY



SILT FENCE, HEAVY DUTY
(HAND INSTALLED)
DESIGN GUIDELINES:
TO PROTECT AREAS FROM SHEET FLOW.
MAXIMUM CONTRIBUTING AREA: 1 ACRE.



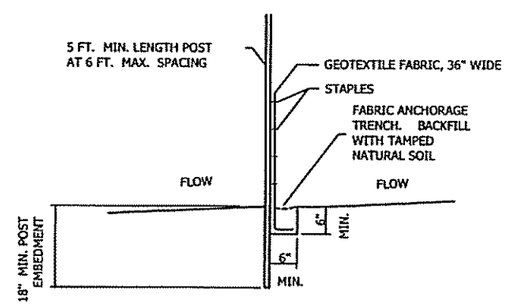
DESIGN GUIDELINES:
WATER COURSE FLOW VELOCITY: 1 TO 7 FT./SEC.
CONTRIBUTING SLOPE AREA: 1 ACRE



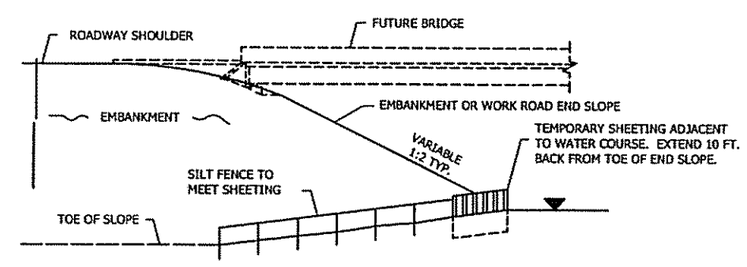
PLAN VIEW

SIDE VIEW

SILT FENCE, J-HOOK INSTALLATION



SILT FENCE, PREASSEMBLED
DESIGN GUIDELINES:
TO PROTECT AREAS FROM SHEET FLOW.
MAXIMUM CONTRIBUTING AREA: 1 ACRE.



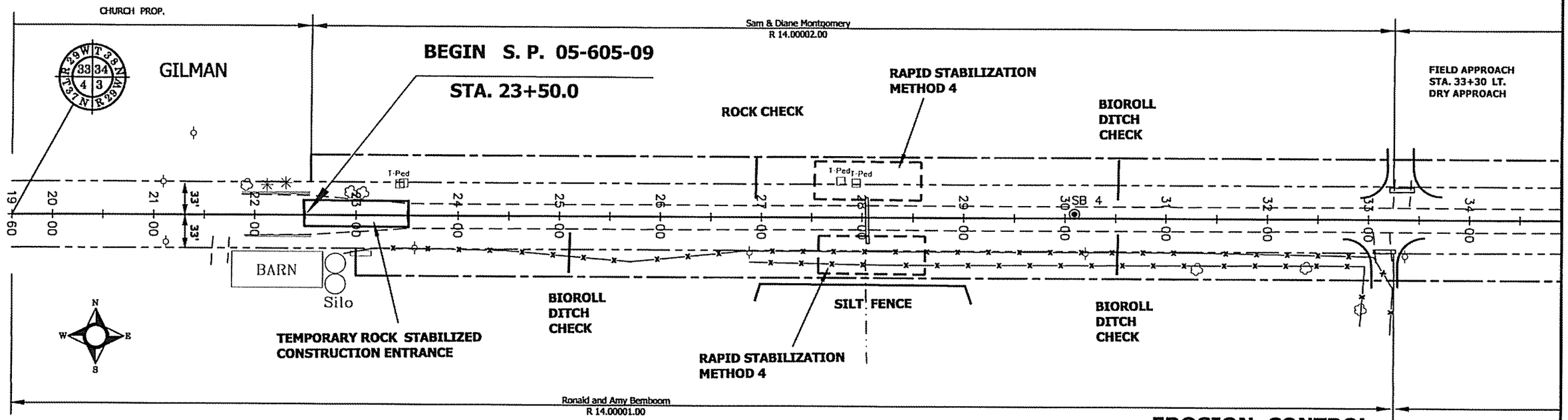
DESIGN GUIDELINES:
WATER COURSE FLOW VELOCITY: 8 TO 15 FT./SEC.
CONTRIBUTING SLOPE AREA: 3 ACRES

SILT FENCE AT BRIDGE EMBANKMENT ADJACENT TO WATER

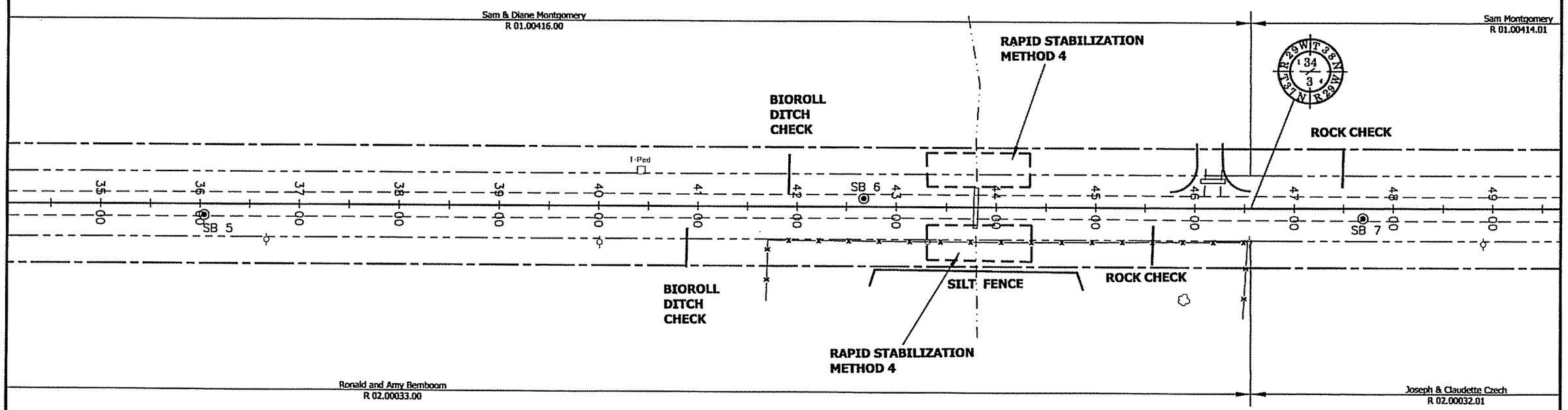
NOTES:
SEE SPECS. 2573, 3149 & 3886.
1 COARSE FILTER AGGREGATE (SPEC. 3149) SHALL BE INCIDENTAL.

STANDARD SHEET NO. 5-297.408 (1 OF 2)	TITLE: TEMPORARY SEDIMENT CONTROL SILT FENCE
STANDARD APPROVED: SEPTEMBER 27, 2006	

STATE PROJECT 05-605-09 C.S.A.H. 5 SHEET 12 OF 54 SHEETS



EROSION CONTROL



EROSION CONTROL

CERTIFIED BY _____ LIC. 18903 DATE 5/15/08

C.S.A.H. 5
BENTON COUNTY, MINNESOTA

S.P. 05-605-09

SHEET 13 OF 54 SHEETS

Sam Montgomery
R 01.00414.01

Sam Montgomery
R 01.00414.00

RAPID STABILIZATION METHOD 4

BIOROLL DITCH CHECK

ROCK CHECK

ROCK CHECK

WOODS

Flower Garden

SB 8

SB 9

SB 10

Arbor Bush

WOODS

HOUSE

BIOROLL DITCH CHECK

SILT FENCE

ROCK CHECK

RAPID STABILIZATION METHOD 4

Joseph & Claudette Czech
R 02.00032.01

Edward & Patricia Luikens
R 02.00032.00

EROSION CONTROL

Sam Montgomery
R 01.00414.01

RAPID STABILIZATION METHOD 4

CSAH 14

RAPID STABILIZATION METHOD 4

BRUSH / WOODS

ROCK CHECK

ROCK CHECK

ROCK CHECK

SB 10

SB 11

SB 12

BIOROLL DITCH CHECK

TEMPORARY ROCK STABILIZED CONSTRUCTION ENTRANCE

CSAH 14

ROCK CHECK

RAPID STABILIZATION METHOD 4

Daryel Leezer
R 02.00031.00

Ronald & Linda Lefler
R 02.00024.00

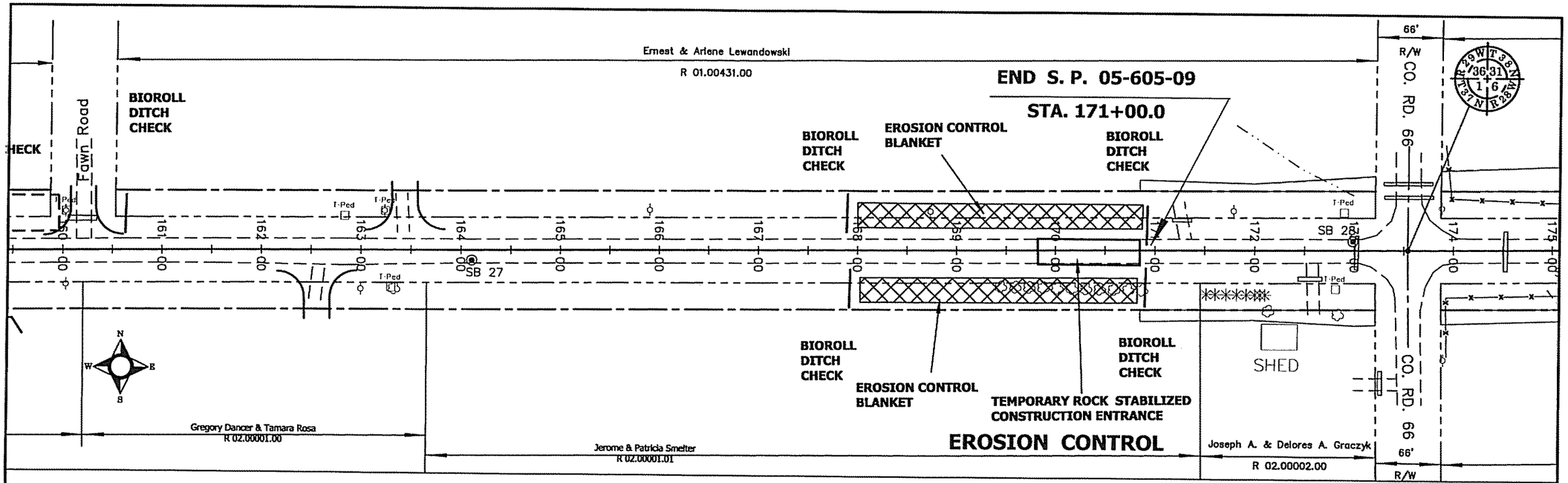
EROSION CONTROL

CERTIFIED BY _____ LIC. 18903 DATE 5/15/08

C.S.A.H. 5
BENTON COUNTY, MINNESOTA

S.P. 05-605-09

SHEET 14 OF 54 SHEETS



EROSION CONTROL QUANTITIES

STABILIZED ROCK CONST. ENTRANCE
SPEC. NO. 2573.607

STATION	SQ. YD.
27+50 TO 28+50	220
73+25 LT. TO RT.	265
170+00 TO 171+00	220
TOTAL	705

DITCH CHECK TYPE 2 6" BIOROLL
SPEC. NO. 2573.512

STATION	LOCATION	LIN. FT.
25+00	RT. DITCH	25
30+50	LT. DITCH	25
30+50	RT. DITCH	25
41+00	RT. DITCH	25
42+00	LT. DITCH	25
56+50	LT. DITCH	25
56+50	RT. DITCH	25
67+00	LT. DITCH	25
67+00	RT. DITCH	25
80+50	RT. DITCH	25
87+50	LT. DITCH	25
87+50	RT. DITCH	25
102+50	LT. DITCH	25
102+50	RT. DITCH	25
107+50	RT. DITCH	25
109+00	LT. DITCH	25
121+50	RT. DITCH	25
123+00	LT. DITCH	25
130+50	LT. DITCH	25
134+00	LT. DITCH	25
146+50	RT. DITCH	25
152+50	LT. DITCH	25
152+50	RT. DITCH	25
154+25	RT. DITCH	25
156+00	LT. DITCH	25
160+50	LT. DITCH	25
168+00	LT. DITCH	25
168+00	RT. DITCH	25
171+00	LT. DITCH	25
171+00	RT. DITCH	25
	TOTAL	750

DITCH CHECK TYPE 7 ROCK CHECK
SPEC. NO. 2573.607

STATION	LOCATION	CU. YD.
27+00	LT. DITCH	5
45+50	RT. DITCH	5
47+50	LT. DITCH	5
59+00	LT. DITCH	5
59+00	RT. DITCH	5
62+00	LT. DITCH	5
67+00	LT. DITCH	5
71+50	LT. DITCH	5
74+00	LT. DITCH	5
76+00	RT. DITCH	5
80+50	LT. DITCH	5
119+00	LT. DITCH	5
119+00	RT. DITCH	5
130+50	RT. DITCH	5
159+00	LT. DITCH	5
	TOTAL	75

SILT FENCE MACHINE SLICED
SPEC. NO. 2573.502

LOCATION		LIN. FT.
27+00 TO 29+00	RT.	200
42+80 TO 44+80	RT.	200
56+50 TO 58+50	RT.	200
81+25 TO 87+00	LT.	575
81+25 TO 87+00	RT.	575
122+00 TO 124+00	RT.	200
130+40 TO 132+40	RT.	200
157+50 TO 159+50	RT.	200
TOTAL		2,350

RAPID STABLIZATION METHOD 4
SPEC. NO. 2573.604
AT DITCH BOTTOMS

STATION–STATION	LOCATION	WIDTH	SQ.YARD
27+50 TO 28+50	LT.	25	280
27+50 TO 28+50	RT.	25	280
43+30 TO 44+30	LT.	25	280
43+30 TO 44+30	RT.	25	280
56+90 TO 57+90	LT.	25	280
56+90 TO 57+90	RT.	25	280
72+00 TO 73+00	LT.	25	280
73+40 TO 73+80	LT.	25	110
74+50 TO 75+50	LT.	25	280
74+75 TO 75+50	RT.	25	210
81+25 TO 87+00	LT.	25	1,600
81+25 TO 87+00	RT.	25	1,600
122+00 TO 123+00	LT.	25	280
122+25 TO 123+25	RT.	25	280
130+75 TO 131+75	LT.	25	280
130+75 TO 131+75	RT.	25	280
147+25 TO 147+75	RT.	25	140
157+75 TO 157+75	LT.	25	280
157+75 TO 157+75	RT.	25	280
159+25 TO 159+75	LT.	25	140
		TOTAL	7,720

EROSION CONTROL BLANKET CAT. 3 (MAINT)
SPEC. NO. 2575.523
AT DITCH BOTTOMS

STATION–STATION	LOCATION	WIDTH	SQ.YARD
168+00 TO 171+00	DITCH LT.	25'	833
168+00 TO 171+00	DITCH RT.	25'	833
		TOTAL	1,666

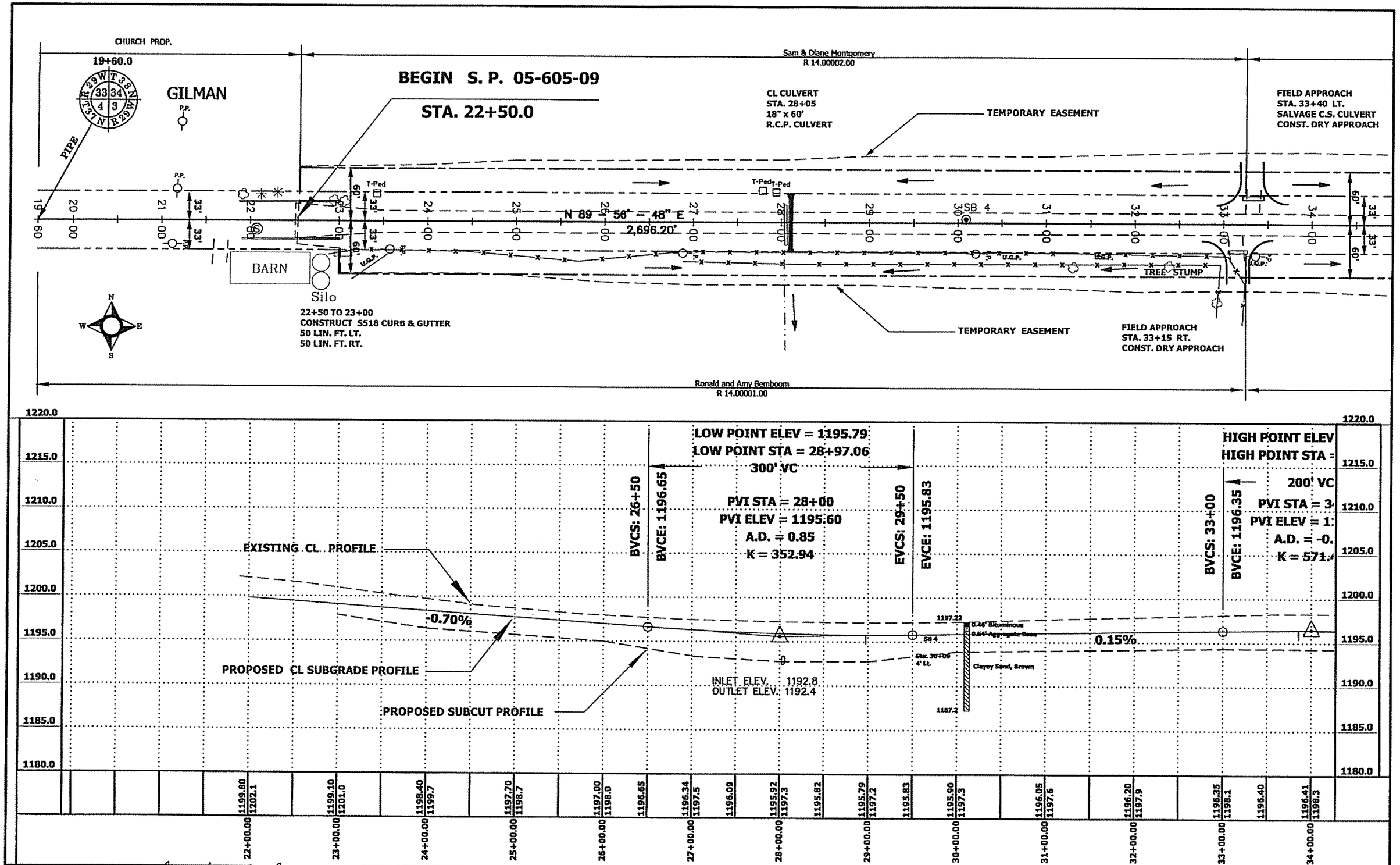
EROSION CONTROL

CERTIFIED BY [signature] LIC. 18903 DATE 5/15/08

C.S.A.H. 5
BENTON COUNTY, MINNESOTA

S.P. 05-605-09

SHEET 18 OF 54 SHEETS

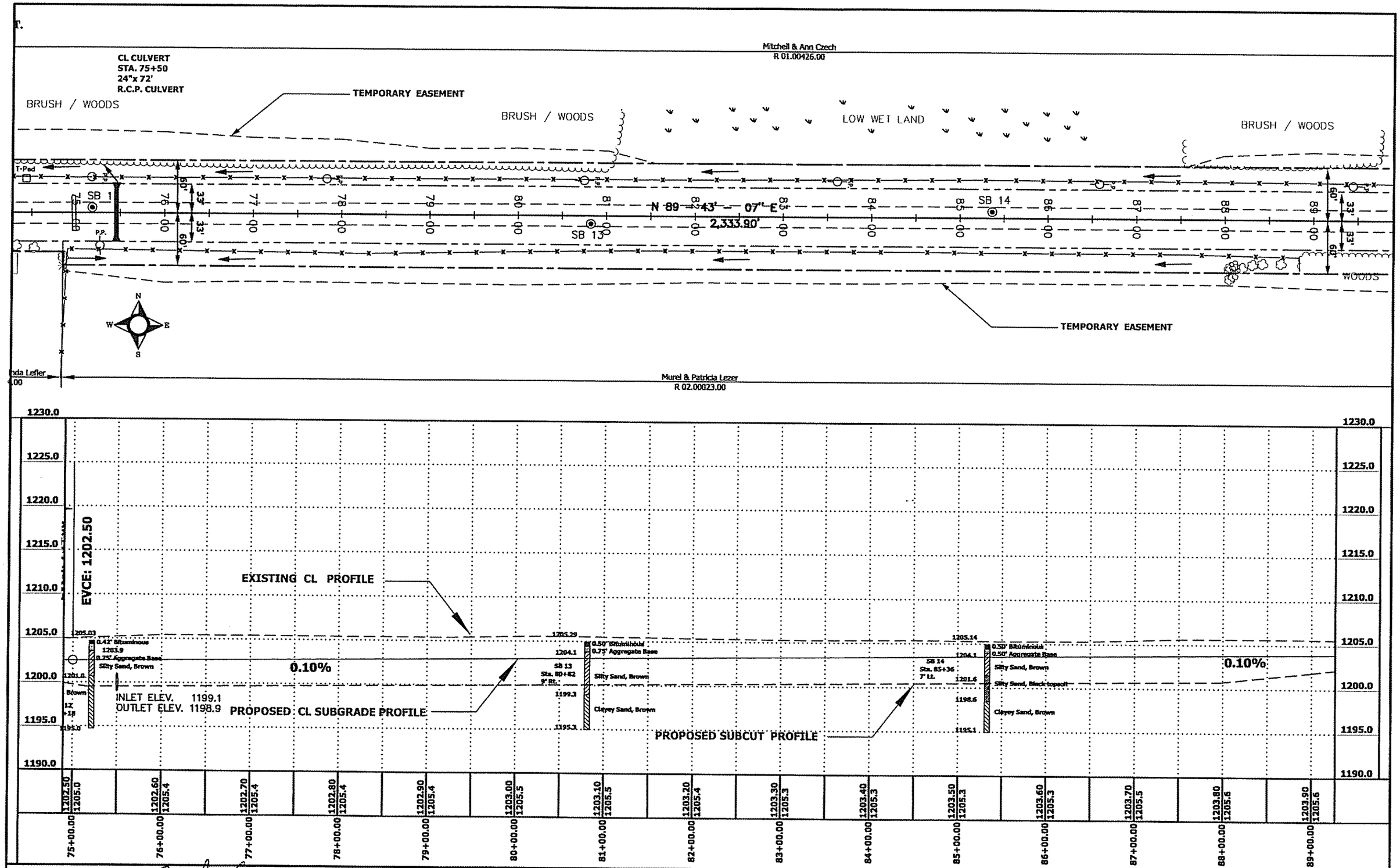


CERTIFIED BY _____ LIC. 18903 DATE 5/15/08

C.S.A.H. 5
BENTON COUNTY, MINNESOTA

S.P. 05-605-09

SHEET 19 OF 54 SHEETS

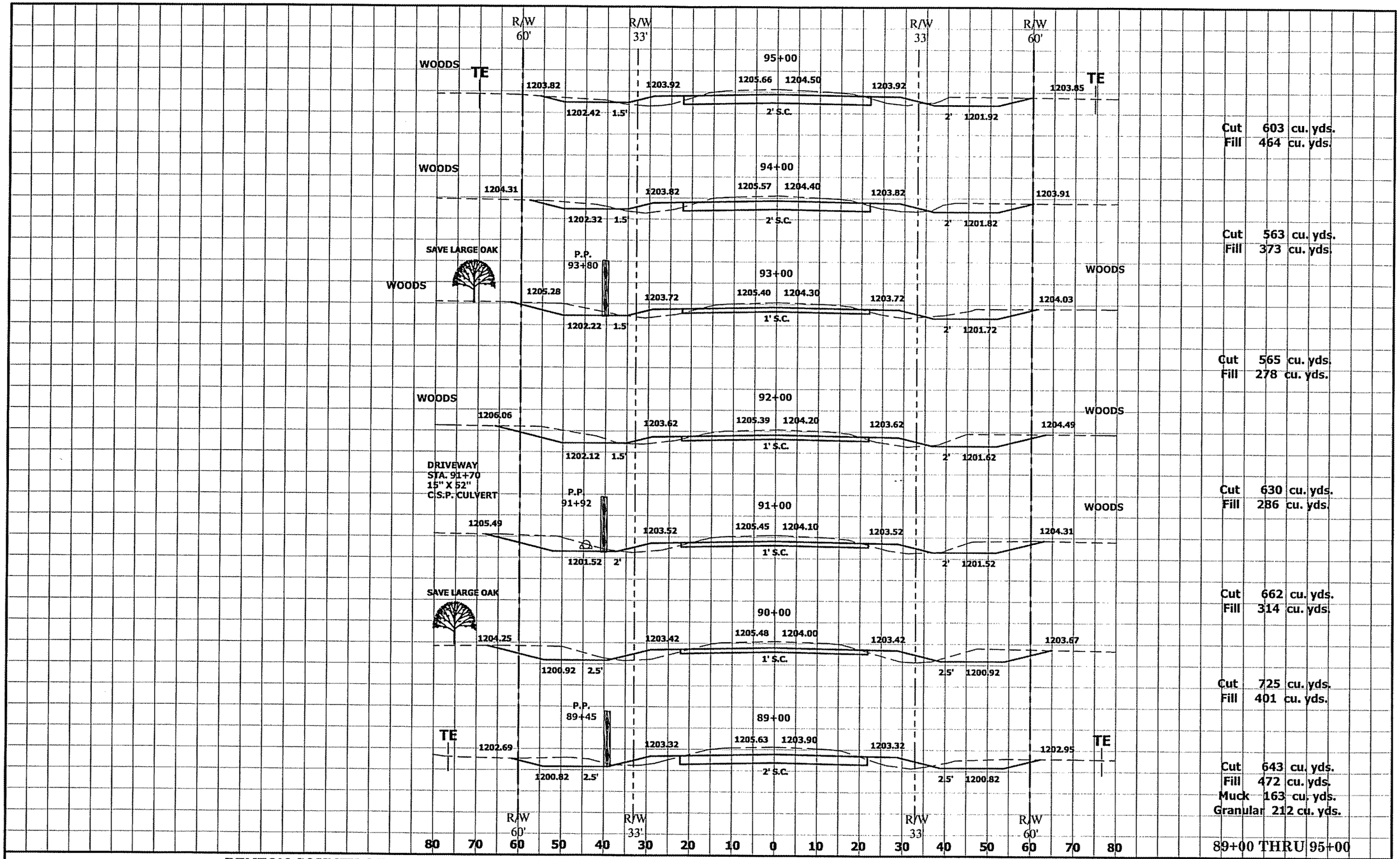


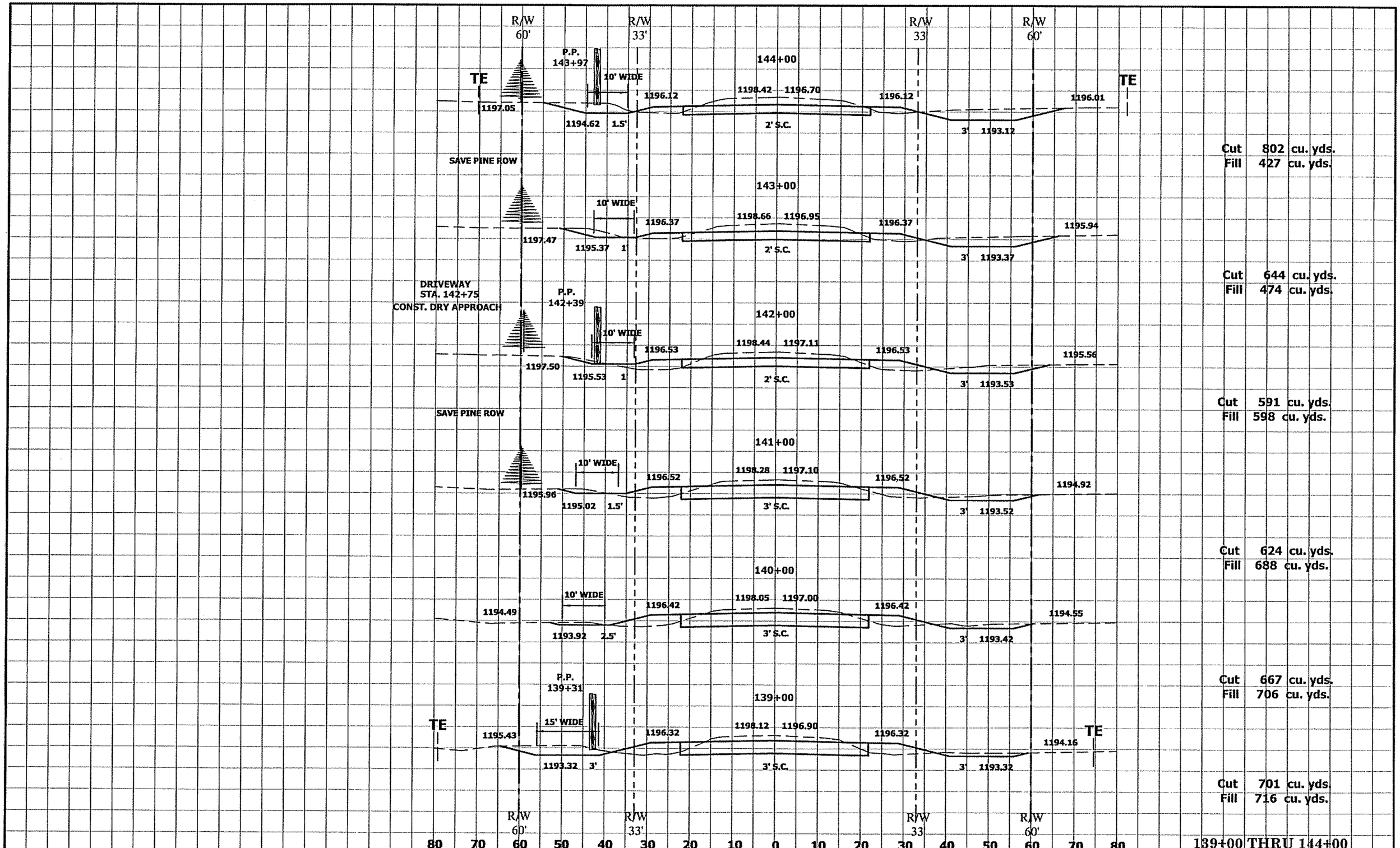
CERTIFIED BY _____ LIC. 18903 DATE 5/15/08

C.S.A.H. 5
BENTON COUNTY, MINNESOTA

S.P. 05-605-09

SHEET 23 OF 54 SHEETS


R/W 60'
R/W 33'
R/W 33
R/W 60'
WOODS
TE
95+00
1203.82
1203.92
1205.66
1204.50
1203.92
1203.85
TE
1202.42
1.5'
2' S.C.
2'
1201.92
Cut 603 cu. yds.
Fill 464 cu. yds.
WOODS
94+00
1204.31
1203.82
1205.57
1204.40
1203.82
1203.91
1202.32
1.5'
2' S.C.
2'
1201.82
Cut 563 cu. yds.
Fill 373 cu. yds.
SAVE LARGE OAK
P.P.
93+80
WOODS
93+00
WOODS
1205.28
1203.72
1205.40
1204.30
1203.72
1204.03
1202.22
1.5'
1' S.C.
2'
1201.72
Cut 565 cu. yds.
Fill 278 cu. yds.
WOODS
92+00
WOODS
1206.06
1203.62
1205.39
1204.20
1203.62
1204.49
1202.12
1.5'
1' S.C.
2'
1201.62
DRIVEWAY
STA. 91+70
15" X 52"
C.S.P. CULVERT
P.P.
91+92
91+00
WOODS
1205.49
1203.52
1205.45
1204.10
1203.52
1204.31
1201.52
2'
1' S.C.
2'
1201.52
Cut 630 cu. yds.
Fill 286 cu. yds.
SAVE LARGE OAK
90+00
1204.25
1203.42
1205.48
1204.00
1203.42
1203.67
1200.92
2.5'
1' S.C.
2.5'
1200.92
Cut 662 cu. yds.
Fill 314 cu. yds.
P.P.
89+45
89+00
TE
1202.69
1203.32
1205.63
1203.90
1203.32
1202.95
TE
1200.82
2.5'
2' S.C.
2.5'
1200.82
Cut 725 cu. yds.
Fill 401 cu. yds.
Cut 643 cu. yds.
Fill 472 cu. yds.
Muck 163 cu. yds.
Granular 212 cu. yds.
R/W 60'
R/W 33'
R/W 33
R/W 60'
80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80
89+00 THRU 95+00



Cut 802 cu. yds.
Fill 427 cu. yds.

Cut 644 cu. yds.
Fill 474 cu. yds.

Cut 591 cu. yds.
Fill 598 cu. yds.

Cut 624 cu. yds.
Fill 688 cu. yds.

Cut 667 cu. yds.
Fill 706 cu. yds.

Cut 701 cu. yds.
Fill 716 cu. yds.

139+00 THRU 144+00