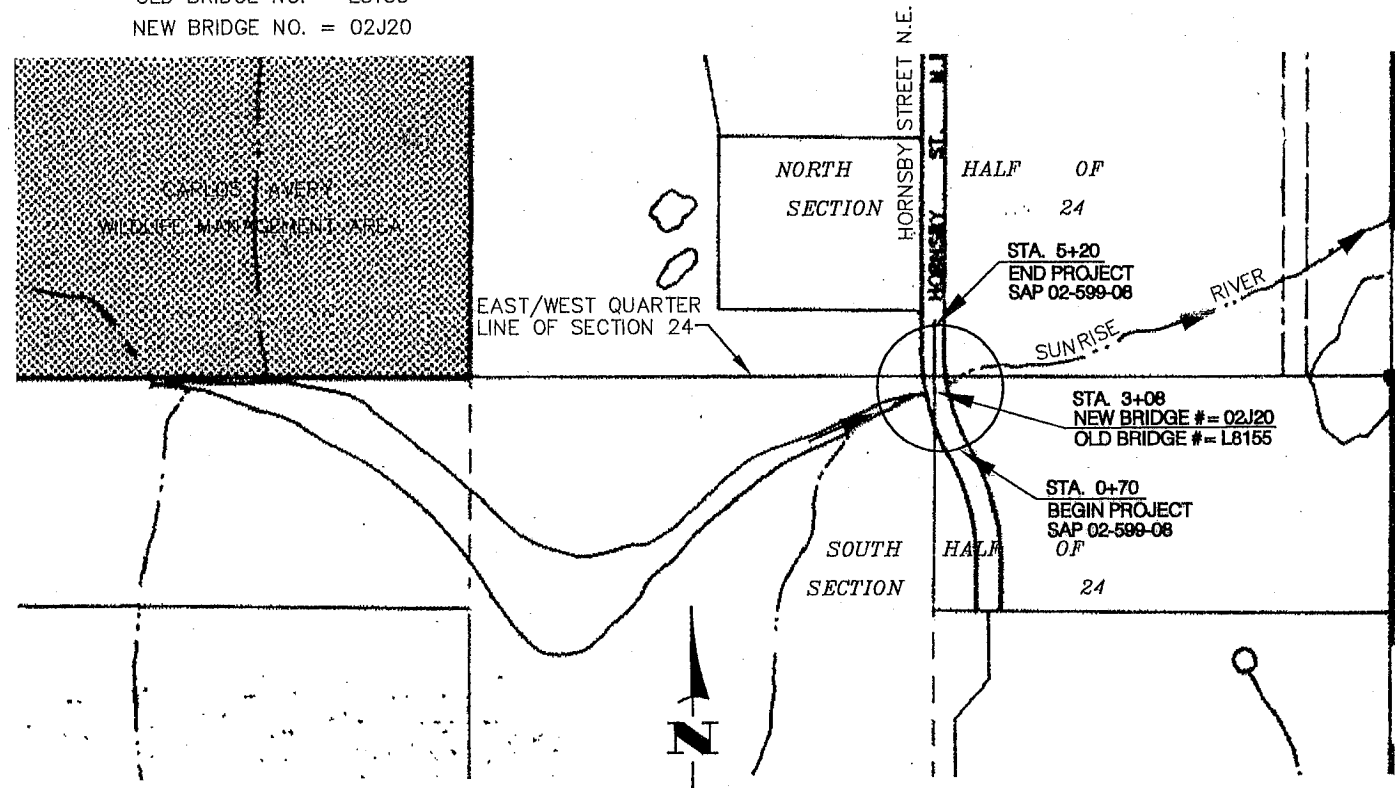


# MINNESOTA DEPARTMENT OF TRANSPORTATION CONSTRUCTION PLANS FOR BRIDGE REPLACEMENT, EASEMENT ACQUISITION AND MISCELLANEOUS CONSTRUCTION

LOCATED ON HORNSBY STREET N.E. APPROXIMATELY 0.5 MILES SOUTH OF 205TH AVENUE N.E.  
 FROM A POINT ABOUT 230 FT. SOUTH OF THE EAST-WEST QUARTER LINE OF SECTION 24,T33N,R22W  
 TO A POINT ABOUT 220 FT. NORTH OF THE EAST-WEST QUARTER LINE OF SECTION 24,T33N,R22W.  
 FOR  
 LINWOOD TOWNSHIP, ANOKA COUNTY, MINNESOTA

**BR. # 02J20**

OLD BRIDGE NO. = L8155  
 NEW BRIDGE NO. = 02J20



### LEGEND

- DENOTES CENTERLINE
- DENOTES ROW LINE
- - - 880 --- DENOTES EXISTING CONTOURS
- - - 880 --- DENOTES PROPOSED CONTOURS
- ● DENOTES EXISTING TREES
- DENOTES EXISTING TREE LINE
- ⊕ DENOTES EXISTING POWER POLE
- ⊕ DENOTES EXISTING POWER POLE ANCHOR
- MB □ DENOTES EXISTING MAILBOX
- TP □ DENOTES EXISTING TELEPHONE PED
- TB □ DENOTES EXISTING TELEPHONE BOX
- TMH □ DENOTES EXISTING TELEPHONE MANHOLE
- ★ DENOTES EXISTING LIGHT POLE
- DENOTES EXISTING FENCES
- DENOTES DRAINAGE FLOW
- DENOTES PROPOSED STORM SEWER MANHOLE
- DENOTES PROPOSED STORM SEWER CATCH BASIN
- DENOTES PROPOSED STORM SEWER
- OHE --- DENOTES OVERHEAD ELECTRIC
- DENOTES SIGNS
- ○ --- DENOTES GAS LINE
- UGT --- DENOTES UNDERGROUND TELEPHONE LINE
- EB □ DENOTES ELECTRICAL BOX
- BH#3 ○ DENOTES SOIL BORING LOCATION
- DENOTES PROPOSED SILT FENCE
- W --- DENOTES LIMITS OF WETLAND
- FO-CABLE --- DENOTES UNDERGROUND FIBER OPTIC CABLE
- ⊕ DENOTES DETAIL
- ⊕ DENOTES SHEET DETAIL LOCATED ON
- DENOTES CONSTRUCTION LIMITS

PROJECT NO.	HORNSBY ROAD
DESIGN DATA	HORNSBY ROAD
GROSS LENGTH	450 FT.
BRIDGE LENGTH	0
EXCEPTION LENGTH	0
NET LENGTH	450 FT.
ADT (2005)	39
DESIGN SPEED	45 mph
SOIL FACTOR	45
R-VALUE	75%
ESAL	4,100
STRUCTURAL DESIGN	7 TON
FUNCTIONAL CLASSIFICATION	LOCAL
NUMBER OF TRAFFIC LANES	2
NUMBER OF PARKING LANES	0
SHOULDER WIDTH	1 FT.
STOPPING SIGHT DISTANCE BASED ON:	3.5 FT. HEIGHT OF EYE 2.0 FT. HEIGHT OF OBJECT
DESIGN SPEED NOT ACHIEVED AT:	STA. 1+81.30 TO 3+10.78 MPH 30



PROJECT LOCATION  
 ANOKA COUNTY  
 DIVISION: METRO

**Hakanson  
 Anderson  
 Assoc., Inc.**  
 Civil Engineers and Land Surveyors  
 3021 Houston Ave., Anoka, Minnesota 55305  
 763-427-5850 FAX 763-427-0520

### GOVERNING SPECIFICATIONS

THE 2000 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL APPLY.  
 ALL FEDERAL, STATE AND LOCAL LAWS, REGULATIONS, AND ORDINANCES SHALL BE COMPLIED WITH IN THE CONSTRUCTION OF THIS PROJECT.  
 ALL TRAFFIC CONTROL DEVICES AND SIGNING SHALL CONFORM TO THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, INCLUDING THE FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS.

### SHEET INDEX

THIS PLAN CONTAINS 13 SHEETS

1. TITLE SHEET
2. RIGHT-OF-WAY AND EASEMENT ACQUISITION PLAN
3. DETAILS AND SCHEDULES
4. INPLACE TOPOGRAPHY, REMOVALS AND UTILITIES PLAN
5. CONSTRUCTION AND DRAINAGE PLAN
6. BARREL DETAILS
- 7-8. PRECAST CONCRETE END SECTION  
TYPE III - SINGLE OR DOUBLE BARREL FOR  
SKEWS 7 1/2' - 45'
9. EMBANKMENT PROTECTION FOR BOX CULVERTS
10. PHASE 1 TRAFFIC CONTROL AND TEMPORARY DRAINAGE PLAN
11. PHASE 2 TRAFFIC CONTROL AND TEMPORARY DRAINAGE PLAN
- 12-13. CROSS SECTIONS

I hereby certify that this plan, specification, or report 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.

*Craig J. Jochem* 23461 2/10/06  
 CRAIG J. JOCHUM, P.E. LIC. NO. DATE  
 HAKANSON ANDERSON ASSOCIATES, INC.  
 DESIGN ENGINEER/LINWOOD TOWNSHIP ENGINEER

APPROVED *[Signature]* DATE 2/23/06  
 ANOKA COUNTY ENGINEER  
*Michael P. Kowalski* DATE 3/1/06  
 DISTRICT STATE AID ENGINEER, REVIEWED FOR COMPLIANCE WITH STATE AID RULES/POLICY  
*Patt J. Simmons* DATE 3/7/06  
 APPROVED FOR STATE AID FUNDING: STATE AID ENGINEER

SAP 02-599-08

SHEET 1 OF 13 SHEETS

LDD2\LW406\LW406TIT.DWG

Sausen Road, Drainage and Utility Easement

A 66.00 foot easement for road purposes over, under and across the Southeast Quarter of the Northeast Quarter of Section 24, Township 33, Range 22, Anoka County, Minnesota, the centerline of which is described as follows:

Commencing at the southwest corner of Southeast Quarter of the Northeast Quarter of Section 24, Township 33, Range 22, Anoka County, Minnesota, thence North 00 degrees 57 minutes 58 seconds West, assumed bearing along the west line of said Southeast Quarter of the Northeast Quarter, 180.00 feet to the point of beginning of the centerline to be described; thence South 00 degrees 57 minutes 58 seconds East, along said west line, 169.22 feet; thence southeasterly along a tangential curve concave to the northeast 129.48 feet, said curve having a central angle of 24 degrees 43 minutes 46 seconds and a radius of 300.00 feet; thence South 25 degrees 41 minutes 44 seconds East 95.42 feet and said centerline there terminating.

Together with an easement for drainage and utility purposes over, under and across the south 60.00 feet of the west 63.00 feet of said Southeast Quarter of the Northeast Quarter lying easterly of the above described 66 foot road easement.

PIN #243322140001  
JOSEPH CARL ETAL SAUSEN  
9658 205TH AVENUE NE  
WYOMING, MN

Southeast 1/4 of Northeast 1/4  
Sec. 24, T. 33, R. 22

Townsend Road, Drainage and Utility Easement

A 66.00 foot easement for road purposes over, under and across the North Half of the Northeast Quarter of the Southeast Quarter of Section 24, Township 33, Range 22, Anoka County, Minnesota, the centerline of which is described as follows:

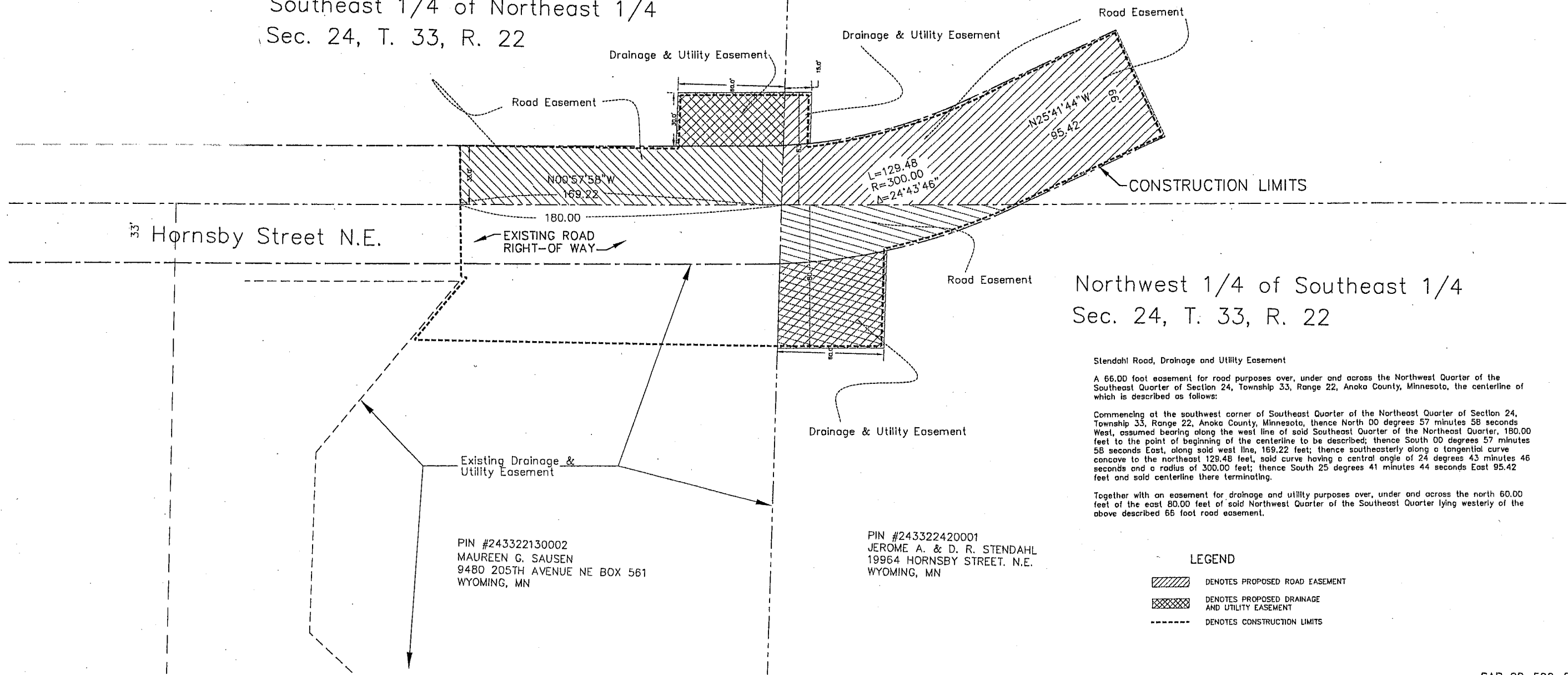
Commencing at the southwest corner of Southeast Quarter of the Northeast Quarter of Section 24, Township 33, Range 22, Anoka County, Minnesota, thence North 00 degrees 57 minutes 58 seconds West, assumed bearing along the west line of said Southeast Quarter of the Northeast Quarter, 180.00 feet to the point of beginning of the centerline to be described; thence South 00 degrees 57 minutes 58 seconds East, along said west line, 169.22 feet; thence southeasterly along a tangential curve concave to the northeast 129.48 feet, said curve having a central angle of 24 degrees 43 minutes 46 seconds and a radius of 300.00 feet; thence South 25 degrees 41 minutes 44 seconds East 95.42 feet and said centerline there terminating.

Together with an easement for drainage and utility purposes over, under and across the north 15.00 feet of the west 63.00 feet of said North Half of the Northeast Quarter of the Southeast Quarter lying easterly of the above described 66 foot road easement.

PIN #243322410001  
RICHARD A. & SHARON TOWNSEND  
20039 HORNSBY STREET N.E.  
WYOMING, MN

Northeast 1/4 of Southeast 1/4  
Sec. 24, T. 33, R. 22

Northwest 1/4 of Southeast 1/4  
Sec. 24, T. 33, R. 22



Stendahl Road, Drainage and Utility Easement

A 66.00 foot easement for road purposes over, under and across the Northwest Quarter of the Southeast Quarter of Section 24, Township 33, Range 22, Anoka County, Minnesota, the centerline of which is described as follows:

Commencing at the southwest corner of Southeast Quarter of the Northeast Quarter of Section 24, Township 33, Range 22, Anoka County, Minnesota, thence North 00 degrees 57 minutes 58 seconds West, assumed bearing along the west line of said Southeast Quarter of the Northeast Quarter, 180.00 feet to the point of beginning of the centerline to be described; thence South 00 degrees 57 minutes 58 seconds East, along said west line, 169.22 feet; thence southeasterly along a tangential curve concave to the northeast 129.48 feet, said curve having a central angle of 24 degrees 43 minutes 46 seconds and a radius of 300.00 feet; thence South 25 degrees 41 minutes 44 seconds East 95.42 feet and said centerline there terminating.

Together with an easement for drainage and utility purposes over, under and across the north 60.00 feet of the east 80.00 feet of said Northwest Quarter of the Southeast Quarter lying westerly of the above described 66 foot road easement.

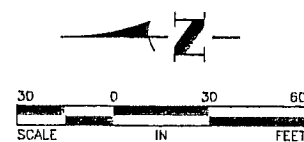
PIN #243322420001  
JEROME A. & D. R. STENDAHL  
19964 HORNSBY STREET N.E.  
WYOMING, MN

PIN #243322130002  
MAUREEN G. SAUSEN  
9480 205TH AVENUE NE BOX 561  
WYOMING, MN

LEGEND

- DENOTES PROPOSED ROAD EASEMENT
- DENOTES PROPOSED DRAINAGE AND UTILITY EASEMENT
- DENOTES CONSTRUCTION LIMITS

Feb 13, 2005 - 11:02am  
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SAP 02-599-08

I hereby certify that this plan, specification, or report 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.  CRAIG J. JOCHUM P.E. Date 2/10/06 Lic. No. 23461	DATE 12/09/04	REVISION Sausen Easement	DESIGNED BY CJJ	<p>Hakanson Anderson Assoc., Inc. Civil Engineers and Land Surveyors 3601 Thurston Ave., Anoka, Minnesota 55303 763-427-5860 FAX 763-427-0520</p>	<p>RIGHT-OF-WAY AND EASEMENT ACQUISITION PLAN HORNSBY STREET N.E. LINWOOD TOWNSHIP</p>	<p>SHEET 2 OF 13 SHEETS</p>
			DRAWN BY SLD			

**ESTIMATED QUANTITIES**

Spec. Ref	Description	Unit	Bridge No. 02J20		Total Units
			Participating Estimated Quantity	Non-Participating Estimated Quantity	
2013.607	Haul & Disposal of Non-Hazardous Waste	CY		20	20
2021.501	Mobilization	LS	0.74	0.26	1
2101.501	Clearing	ACRE		0.09	0.09
2101.506	Grubbing	ACRE		0.09	0.09
2104.501	Remove Pipe Culverts	LF		62	62
2104.509	Remove Sign	EACH		14	14
2104.521	Salvage Fence	LF		116	116
2105.505	Muck Excavation, (EV)	CY		630	630
2105.522	Select Granular Borrow, (LV)	CY	615	710	1325
2105.535	Salvaged Topsoil, (EV)	CY		188	188
2105.601	Temporary Road	LS	1		1
2105.604	Geotextile Fabric Type IV	SY	47		47
2105.607	Haul and Stockpile Excess Material, (LV)	CY		203	203
2211.501	Aggregate Base Class 2	TON	100	330	430
2411.507	Concrete Drop Wall	EACH	2		2
2412.511	14 X 8 Precast Concrete Box Culvert	LF	40		40
2412.512	14 X 8 Precast Concrete Box Culvert End Section	EACH	2		2
2451.511	Coarse Filter Aggregate, (CV)	CY	30		30
2511.501	Random Riprap Class III	CY	24		24
2563.601	Traffic Control	LS		1	1
2564.531	Sign Panels Type C	SF		30.3	30.3
2573.502	Silt Fence, Type Machine Sliced	LF		780	780
2575.523	Erosion Control Blankets Category 3	SY		500	500
2575.605	Turf Establishment	ACRE		0.35	0.35

**SIGN REMOVALS**

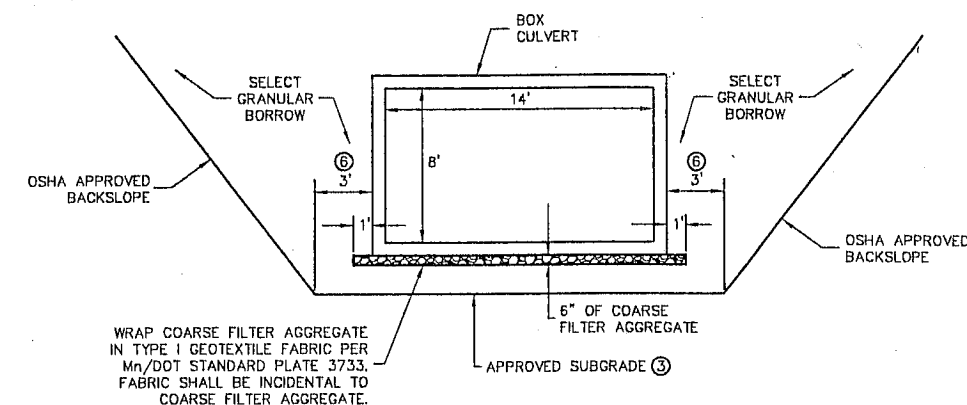
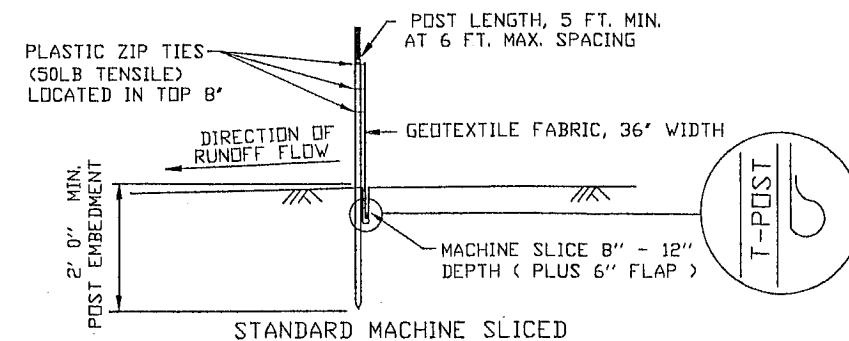
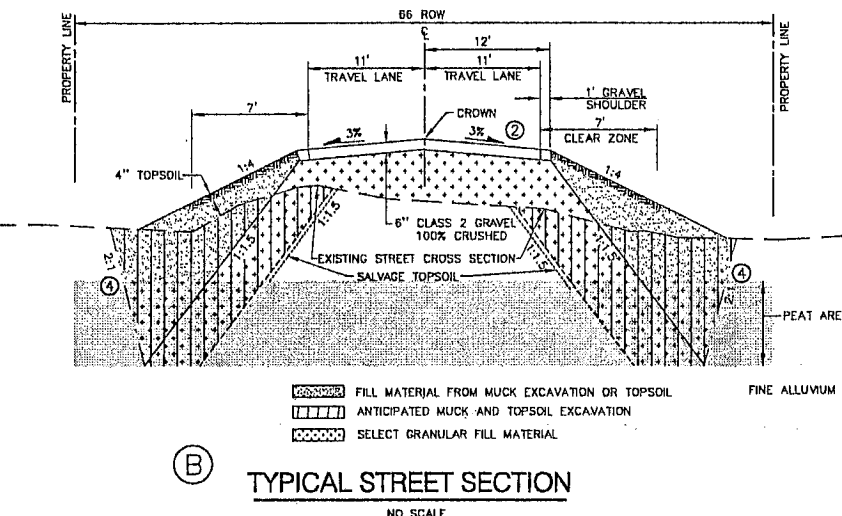
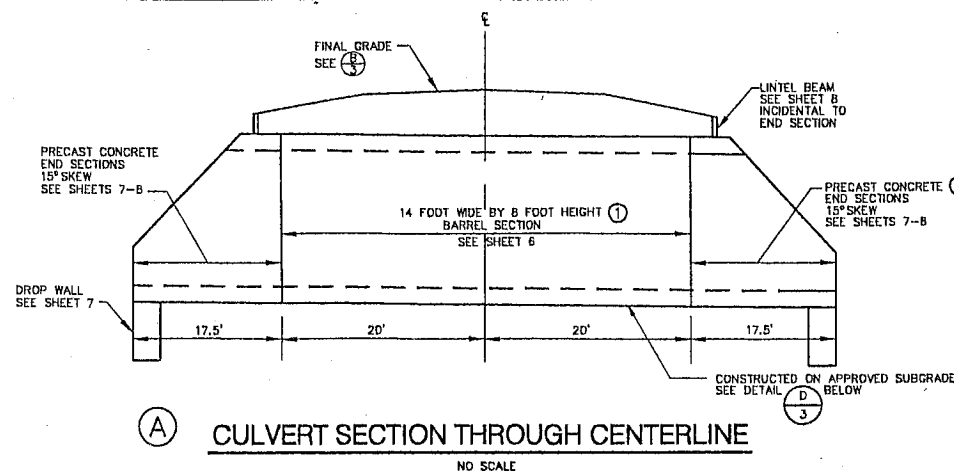
STATION	OFFSET	SIGN #	SIGN TYPE	SIGN NAME	WORK DESCRIPTION
D+10	8' RT	1	C	ONE LANE BRIDGE	REMOVE AND DISPOSE
2+31	8' RT	2	C	OM-3R (TIGER BOARD)	REMOVE AND DISPOSE
2+31	17' LT	3	C	OM-3L (TIGER BOARD)	REMOVE AND DISPOSE
2+60	19' LT	4	C	CHEVRON	REMOVE AND DISPOSE
2+76	4' RT	5	C	OM-3R (TIGER BOARD)	REMOVE AND DISPOSE
2+77	19' LT	6	C	OM-3L (TIGER BOARD)	REMOVE AND DISPOSE
2+81	19' LT	7	C	CHEVRON	REMOVE AND DISPOSE
3+45	4' RT	8	C	OM-3R (TIGER BOARD)	REMOVE AND DISPOSE
3+45	19' LT	9	C	OM-3L (TIGER BOARD)	REMOVE AND DISPOSE
3+74	5' RT	10	C	6"x12" OBJECT MARKER	REMOVE AND DISPOSE
3+74	19' LT	11	C	6"x12" OBJECT MARKER	REMOVE AND DISPOSE
3+90	5' RT	12	C	OM-3R (TIGER BOARD)	REMOVE AND DISPOSE
3+90	19' LT	13	C	OM-3L (TIGER BOARD)	REMOVE AND DISPOSE
5+00	19' LT	14	C	ONE LANE BRIDGE	REMOVE AND DISPOSE

**BASIS OF ESTIMATED QUANTITIES**

Aggregate Base Class 2	100 lbs/yd <sup>2</sup> /in
Seed Mixture 60A Modified	100 lbs/ac
Mulch Material Type 1	2 t/ac
Commercial Fertilizer Analysis 22-5-10	500 lbs/ac

**NOTES:**

- MNDOT REQUIRES THAT ALL BOX CULVERTS AND BOX CULVERT COMPONENTS BE INSPECTED DURING FABRICATION BY A CERTIFIED STATE INSPECTOR. THE CONTRACTOR SHALL COORDINATE ALL INSPECTION WITH THE SUPPLIER AND PROVIDE THE OWNER WITH THE APPROPRIATE INSPECTION DOCUMENTATION.
- SUPERELEVATION NOT SHOWN. SEE TABLE ON SHEET 5.
- CONTRACTOR SHALL EXCAVATE SUBGRADE SOILS AS DIRECTED BY THE GEOTECHNICAL ENGINEER. EXCAVATION SHALL BE FILLED WITH SELECT GRANULAR BORROW.
- CONTRACTOR SHALL PROVIDE OSHA APPROVED SLOPES AS NECESSARY FOR EXCAVATION ENTRANCE.
- PAID AS MUCK EXCAVATION.
- SELECT GRANULAR MATERIAL SHALL BE USED WITHIN 3 FEET OF THE BOX CULVERT AND END SECTIONS.



**EARTHWORK SUMMARY**

TOPSOIL FILL	188 CY
MUCK FILL	427 CY
<b>TOTAL FILL</b>	<b>615 CY</b>

TOPSOIL EXCAVATION	188 CY
MUCK EXCAVATION	510 CY
EXCAVATION UNDER CULVERT	120 CY
<b>TOTAL EXCAVATION</b>	<b>818 CY</b>

**MATERIAL BALANCE**

TOTAL FILL	615 CY
TOTAL EXCAVATION	818 CY
<b>BALANCE</b>	<b>203 CY EXCESS</b>

SAP 02-599-08

I hereby certify that this plan, specification, or report 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.

CRAIG J. JOCHIM, P.E.  
Date: 2/10/06 Lic. No. 23461

DATE	REVISION

DESIGNED BY: CJJ  
DRAWN BY: LKA  
CHECKED BY: CJJ

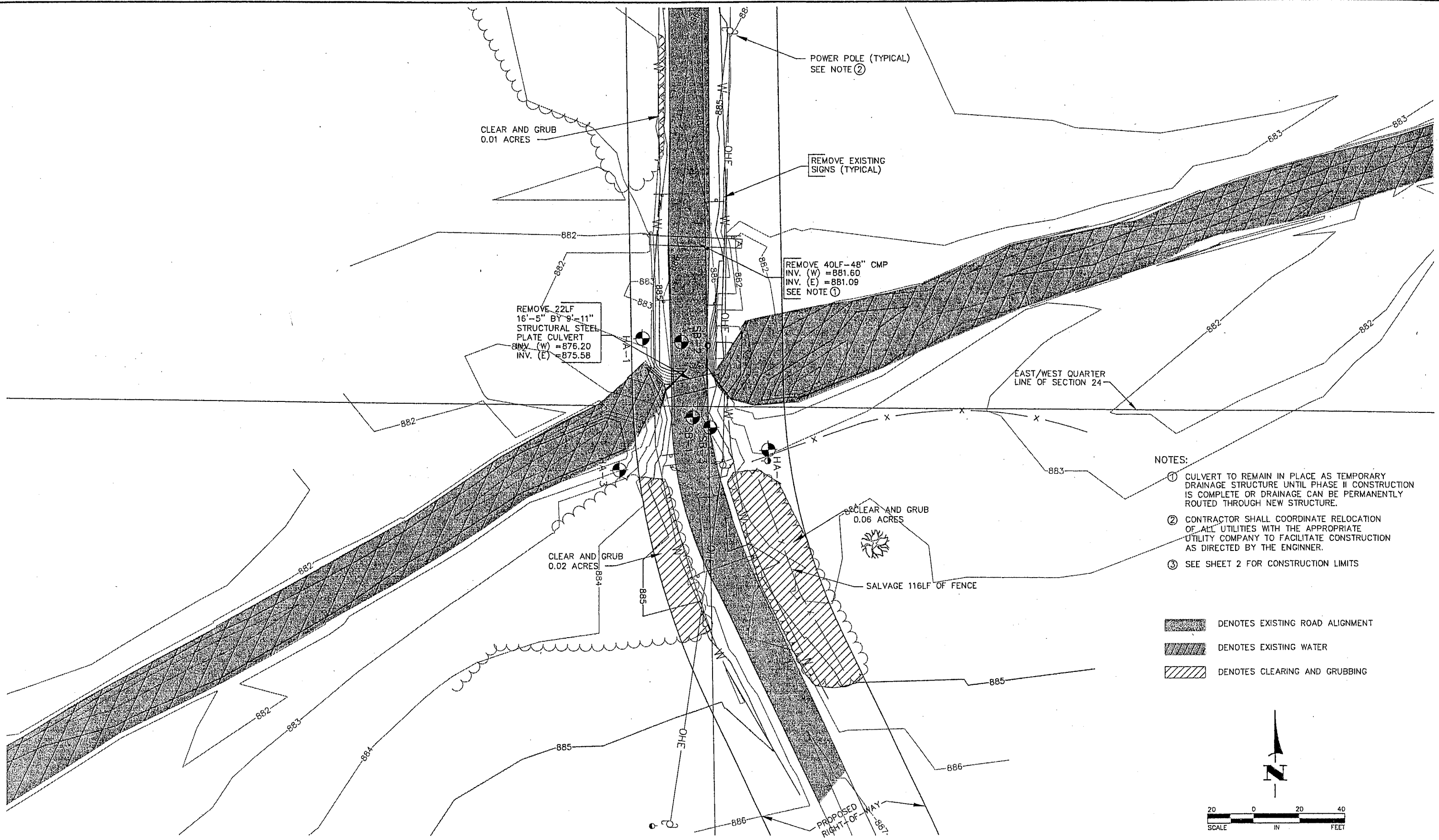
**Hakanson Anderson Assoc., Inc.**  
Civil Engineers and Land Surveyors  
3601 Thurston Ave., Anoka, Minnesota 55303  
763-427-5860 FAX 763-427-0520

**DETAILS AND SCHEDULES**  
HORNSBY STREET N.E.  
LINWOOD TOWNSHIP

DATE: 7/23/02 FILE NO.: LW406

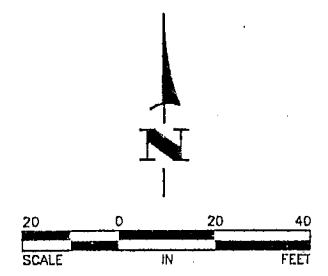
SHEET 3 OF 13 SHEETS

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- NOTES:
- ① CULVERT TO REMAIN IN PLACE AS TEMPORARY DRAINAGE STRUCTURE UNTIL PHASE II CONSTRUCTION IS COMPLETE OR DRAINAGE CAN BE PERMANENTLY ROUTED THROUGH NEW STRUCTURE.
  - ② CONTRACTOR SHALL COORDINATE RELOCATION OF ALL UTILITIES WITH THE APPROPRIATE UTILITY COMPANY TO FACILITATE CONSTRUCTION AS DIRECTED BY THE ENGINEER.
  - ③ SEE SHEET 2 FOR CONSTRUCTION LIMITS

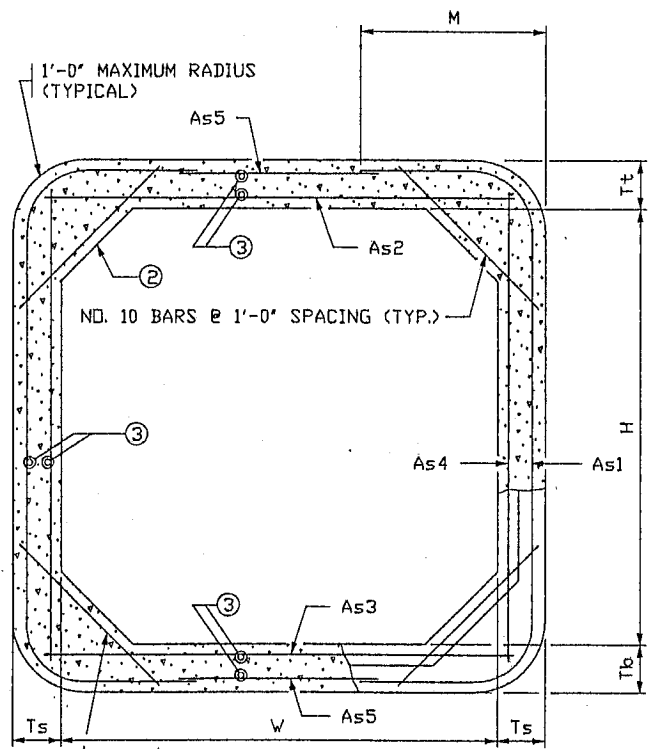
- DENOTES EXISTING ROAD ALIGNMENT
- DENOTES EXISTING WATER
- DENOTES CLEARING AND GRUBBING



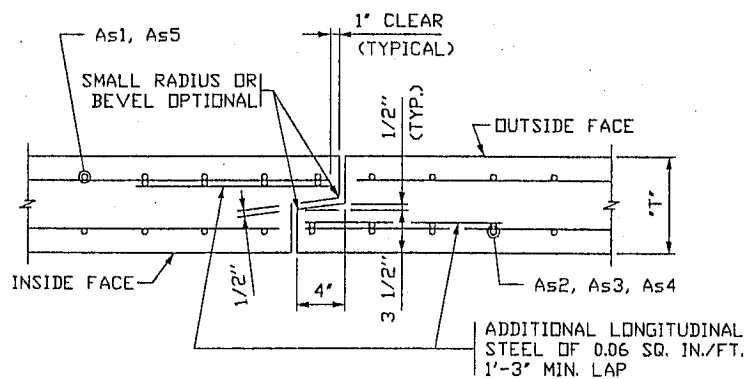
SAP 02-599-08

I hereby certify that this plan, specification, or report 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.  CRAIG J. JOCHUM, P.E. Date 2/10/06 Lic. No. 23461	DATE	REVISION	DESIGNED BY: CJJ	<b>Hakanson Anderson Assoc., Inc.</b> <small>Civil Engineers and Land Surveyors 3601 Thurston Ave., Anoka, Minnesota 55303 763-427-5860 FAX 763-427-0520</small>	<b>INPLACE TOPOGRAPHY, REMOVALS AND UTILITIES PLAN</b>  HORNSBY STREET N.E. LINWOOD TOWNSHIP	SHEET
			DRAWN BY: LKA			4
			CHECKED BY: CJJ			OF
						13
			DATE 7/23/02	FILE NO. LW406	SHEETS	



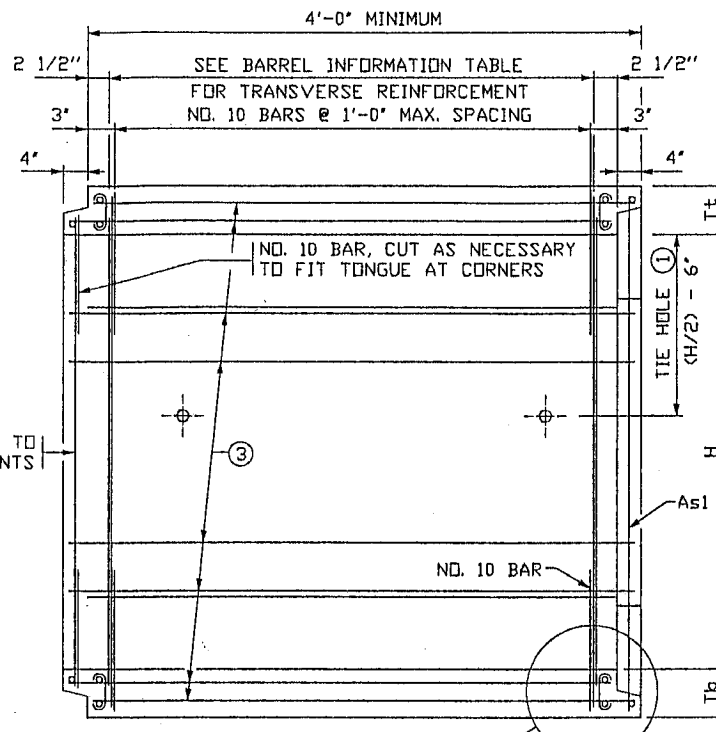


TRANSVERSE BARREL SECTION  
(BAR REINFORCEMENT OPTION SHOWN)

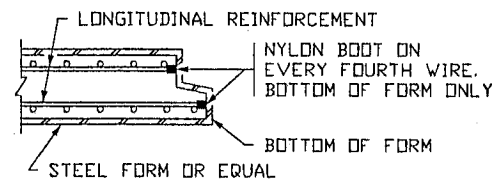
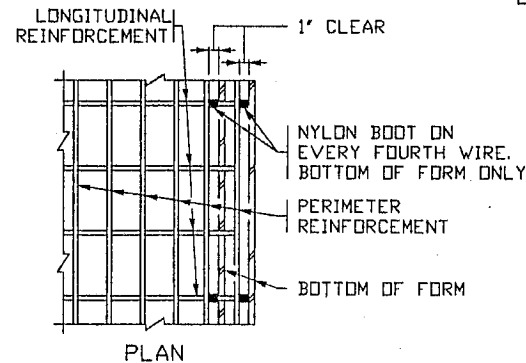


TONGUE AND GROOVE JOINT DETAIL

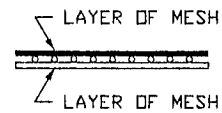
As4, CUT AS NECESSARY TO ACHIEVE COVER REQUIREMENTS



LONGITUDINAL BARREL SECTION  
(BAR REINFORCEMENT OPTION SHOWN)



SECTION FORMING DETAIL



FABRIC LAYER DETAIL

WHEN MORE THAN ONE LAYER OF STEEL FABRIC IS USED TO OBTAIN THE REQUIRED REINFORCEMENT AREAS, THE WIRES OF THE STEEL FABRIC SHALL BE PLACED AS SHOWN

CONSTRUCTION NOTES:

CULVERTS TO BE CONSTRUCTED AS PER Mn/DOT SPEC. 2412 EXCEPT AS NOTED.  
FILL HEIGHTS OF LESS THAN 2'-0\"/>

IF THE DISTANCE BETWEEN DOUBLE BARRELS IS LESS THAN 2'-0\"/>

THE STEEL FABRIC, SHEAR REINFORCEMENT AND REINFORCEMENT BARS SHALL CONFORM TO APPLICABLE REQUIREMENTS OF AASHTO M259.

1 1/2\"/>

ANY OF THE FOLLOWING COMBINATIONS OF STEEL REINFORCEMENT MAY BE USED:

- (a) 1 OR 2 LAYERS OF MESH OR
- (b) 1 LAYER OF MESH AND 1 LAYER OF REINFORCEMENT BARS OR
- (c) 1 LAYER OF REINFORCEMENT BARS.

THE REINFORCEMENT SHALL BE DEVELOPED IN ACCORDANCE WITH AASHTO 'STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES'. IF BAR REINFORCEMENT IS SUBSTITUTED FOR WIRE MESH, THE AREA OF REINFORCEMENT SHALL BE INCREASED BY 8%.

THE MAXIMUM SIZE OF REINFORCEMENT BARS SHALL BE NO. 19. THE MAXIMUM MESH SIZE SHALL BE 1/2\"/>

THE SPACING CENTER TO CENTER OF THE TRANSVERSE WIRES SHALL NOT BE LESS THAN 2 INCHES NOR MORE THAN 4 INCHES. THE SPACING CENTER TO CENTER OF THE LONGITUDINAL WIRES SHALL NOT BE MORE THAN 8 INCHES.

WELDING WILL NOT BE ALLOWED ON REINFORCEMENT BARS OR STEEL FABRIC, EXCEPT THAT THE ORIGINAL WELDING REQUIRED TO MANUFACTURE WIRE FABRIC IS ACCEPTABLE.

WHEN REINFORCEMENT IS CUT, ADDITIONAL REINFORCEMENT SHALL BE ADDED ON BOTH SIDES OF THE CUT MEMBER TO REPLACE OR EXCEED THE CUT STEEL.

CONCRETE SHALL BE MIX NO. 3W36 WITH NO CALCIUM CHLORIDE ALLOWED.

SHOP DRAWING APPROVAL PER Mn/DOT SPEC. 3238.2A IS NOT REQUIRED UNLESS OPENINGS OR ATTACHMENTS ARE PLACED ON A BARREL SEGMENT.

- ① CULVERT TIES ARE TO BE 1\"/>
- ② HAUNCH SIZE AS FOLLOWS:  
6 AND 8 FT. WIDTHS - 6 TO 12 INCHES  
10 FT. WIDTH - 10 TO 12 INCHES  
12 AND 14 FT. WIDTH - 12 INCHES
- ③ MINIMUM LONGITUDINAL STEEL SHALL BE 0.06 SQ. IN./FT.

BARREL INFORMATION

LOCATION	SIZE	CLASS	f'c (P.S.I.)	FILL HEIGHT RANGE (FT.)	DIMENSIONS					WEIGHT (LBS./FT.)	STEEL FABRIC REINFORCEMENT										
					W (FT.)	H (FT.)	Tt (IN.)	Tb (IN.)	Ts (IN.)		As1		As2		As3		As4		As5		
											AREA (IN. <sup>2</sup> /FT.)	LENGTH (FT.)	AREA (IN. <sup>2</sup> /FT.)	LENGTH (FT.)	AREA (IN. <sup>2</sup> /FT.)	LENGTH (FT.)	AREA (IN. <sup>2</sup> /FT.)	LENGTH (FT.)	AREA (IN. <sup>2</sup> /FT.)	LENGTH (FT.)	
STA. 3+08	14X8	2	5,000	2-6	14	8	10	10	8	5,600	0.74	16'-9"	4'-1"	1.17	14'-6"	1.06	14'-6"	0.20	8'-6"	0.06	9'-0"

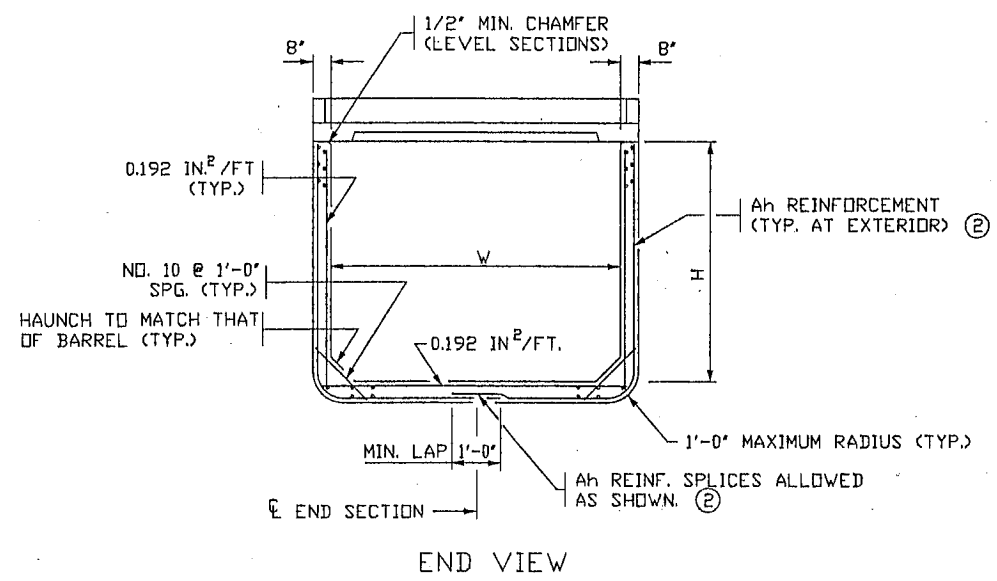
Feb. 13, 2006 - 1:23pm  
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REVISIONS:  
 APPROVED: DECEMBER 11, 2000  
  
 STATE BRIDGE ENGINEER

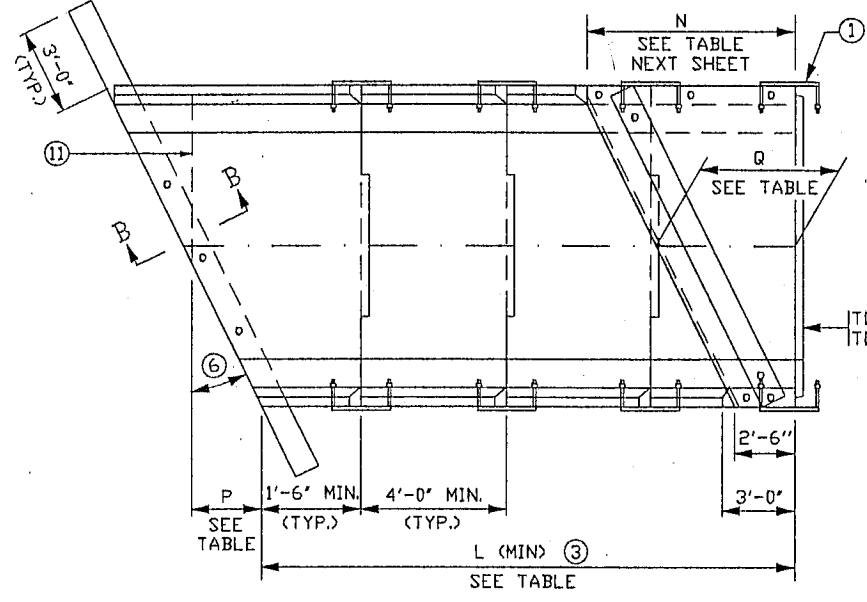
CERTIFIED BY: CRAIG J. JOEHUM		TITLE: BARREL DETAILS		DES. _____ DW. _____ CHK. _____ DES. _____		APPROVED: _____ BRIDGE NO. 02J20	
L.I.C. NO. 23461		DATE: 2/10/06		SHEET 6 OF 13 SHEETS			

SAP 02-599-08

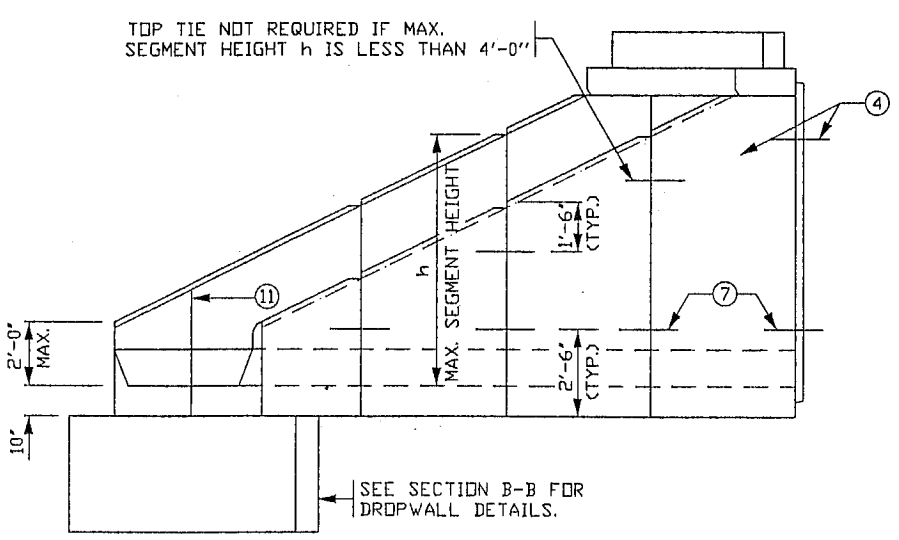
FIG. 5-395.101(A)



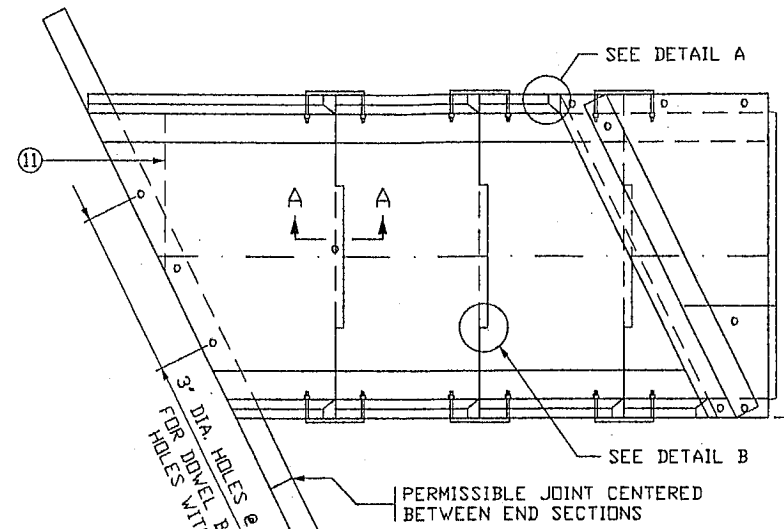
END VIEW



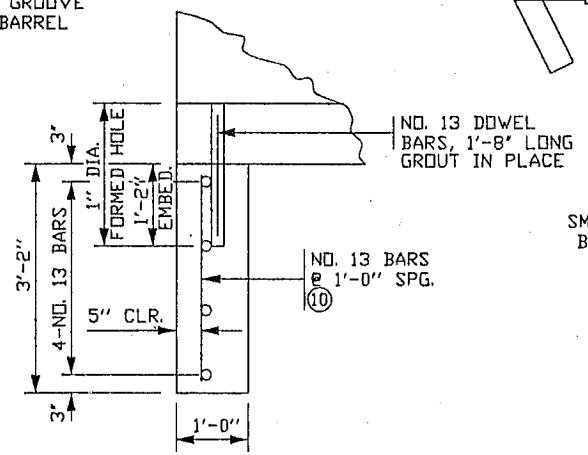
PLAN VIEW SINGLE BARREL OPTION



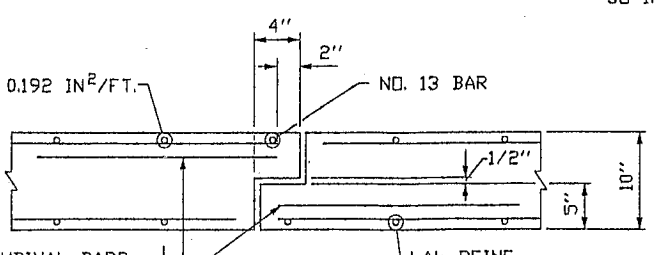
ELEVATION



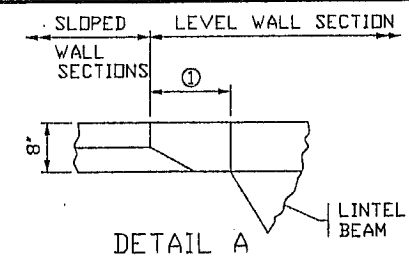
PLAN VIEW DOUBLE-BARREL OPTION



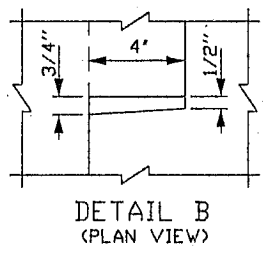
SECTION B-B



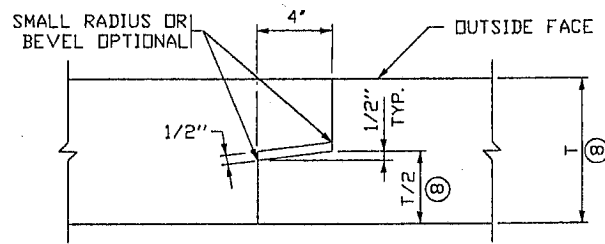
SECTION A-A



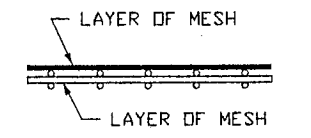
DETAIL A



DETAIL B (PLAN VIEW)



TONGUE AND GROOVE JOINT MAKE DIMENSION OF TONGUE OR GROOVE ON ADJACENT PRECAST BARREL SECTIONS SO INSIDE WALLS ARE FLUSH.



FABRIC LAYER DETAIL WHEN MORE THAN ONE LAYER OF STEEL FABRIC IS USED TO OBTAIN THE REQUIRED REINFORCEMENT AREAS, THE WIRES OF THE STEEL FABRIC SHALL BE PLACED AS SHOWN

- NOTES:
- SEE 5-395.101(A) AND FIG. 5-393.101(B) FOR ADDITIONAL DIMENSIONS AND CONSTRUCTION NOTES.
  - ON ALL END SECTIONS FOR WATERWAYS, USE DROPWALLS ON INLET AND OUTLET ENDS.
  - FINISH ALL EXPOSED EDGES OF CONCRETE WITH 1/2" DR 3/4" CHAMFER OR RADIUS UNLESS OTHERWISE NOTED.
  - PRECAST CONCRETE SHALL BE MIX 3W36 WITH NO CALCIUM CHLORIDE ALLOWED.
  - DROPWALL CONCRETE SHALL BE MIX 1A43 OR 3Y43. LIMITS FOR DROPWALL EXCAVATION TO BE APPROXIMATELY THE SAME AS DROPWALL DIMENSIONS. FURNISHING AND INSTALLATION OF DROPWALL TO BE INCLUDED IN PRICE BID FOR END SECTIONS.
  - LONGITUDINAL REINFORCEMENT SHALL BE A MINIMUM OF 0.06 SQ. IN. PER FT. ON BOTH FACES.
  - NO TONGUE OR GROOVE REQUIRED IN WALLS BETWEEN END SECTIONS.
  - SEE 5-395.115 FOR EMBANKMENT PROTECTION.
  - GROUT SHALL CONSIST OF 1 PART CEMENT AND 2 PARTS SAND. USE TYPE IA AIR ENTRAINED PORTLAND CEMENT. GROUT MIX SHALL HAVE A MAXIMUM SLUMP OF 4".
  - 8 1/8" @ 15"; 10 5/8" @ 30"; 1'-2" @ 45"
  - SEE 5-395.110(B) FOR REINFORCEMENT TABLES.
  - NUMBER OF SECTIONS VARIES WITH 'H' DIMENSION.
  - EXCEPT AS NOTED, CULVERT TIES ARE TO BE 1" DIA RODS. SEE STANDARD PLATE NO. 3145 FOR DETAILS.
  - 3'-6" TONGUE AND 3'-7" GROOVE FOR 6'-0" WIDE CULVERTS. 5'-0" TONGUE AND 5'-1" GROOVE FOR CULVERTS OVER 6'-0" WIDE. CENTER TONGUE AND GROOVE ON CENTERLINE OF EACH APRON JOINT.
  - FOR SKEW ANGLES OVER 7 1/2° UP TO 22 1/2°, USE A 15° SKEW END SECTION. FOR SKEW ANGLES OVER 22 1/2° UP TO 37 1/2°, USE A 30° SKEW END SECTION. FOR SKEW ANGLES OVER 37 1/2° UP TO 45°, USE A 45° SKEW END SECTION.
  - PROVIDE EXTRA STRONG CONNECTION AT LOCATION SHOWN, REQUIRED ONLY ON HIGH FILL SIDE FOR 45° SKEW END SECTIONS OVER 6'-0" HIGH. SEE FIG. 5-395.110(B) FOR DETAILS.
  - DIMENSION "T" IS EQUAL TO Tt, Tb OR Ts.
  - IF THE DISTANCE BETWEEN DOUBLE BARRELS IS LESS THAN 2'-0" USE EITHER PEA ROCK OR LEAN MIX BACKFILL (Mn/DOT SPEC. 2520) BETWEEN THE CULVERTS AS APPROVED BY THE ENGINEER. (ALSO, PROVIDE APPROVED GROUT SEEPAGE CORE, MINIMUM 12" THICK, BETWEEN THE CULVERT'S TWO ENDS.) MINIMUM DISTANCE REQUIRED BETWEEN DOUBLE BARRELS IS 6".
  - AS AN ALTERNATE TO THE ONE LAYER MESH CONTRACTOR MAY PROVIDE TWO LAYERS OF REBAR OR WIRE MESH WITH THE STEEL AREA EQUAL TO HALF OF THE TEMPERATURE STEEL PER CODE REQUIREMENTS IN EACH FACE OF THE DROPWALL.
  - ON THE LAST SEGMENT OF THE 45° SKEWED APRONS, A TRANSVERSE JOINT IN THE BOTTOM IS PERMITTED. A SPECIAL TIE, SIMILAR TO THE SIDE TIE, MUST BE PROVIDED. THE TIE SHALL BE INSET AND THE SPACE FILLED WITH AN APPROVED GROUT.

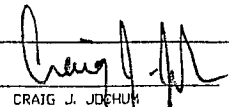
HEIGHT H (FT.)	MIN. LENGTH L		
	15° SKEW	30° SKEW	45° SKEW
4	7'-1 3/4"	7'-7 3/8"	8'-7 7/8"
5	9'-2 1/2"	9'-11 1/8"	11'-5 7/8"
6	11'-3 3/8"	12'-2 7/8"	14'-3 3/4"
7	13'-4 1/4"	14'-6 5/8"	17'-1 3/4"
8	15'-5 1/8"	16'-10 1/4"	19'-11 5/8"
9	17'-5 7/8"	19'-2"	22'-9 5/8"
10	19'-6 3/4"	21'-5 3/4"	25'-7 1/2"
11	21'-7 5/8"	23'-9 3/8"	28'-5 1/2"
12	23'-8 1/2"	26'-1 1/8"	31'-3 3/8"
13	25'-9 3/8"	28'-4 7/8"	34'-1 3/8"
14	27'-10 1/8"	30'-8 1/2"	36'-11 1/4"

WIDTH W (FT.)	LENGTH P		
	15° SKEW	30° SKEW	45° SKEW
6	0'-11 3/4"	2'-1 3/8"	3'-8"
8	1'-3"	2'-8 3/8"	4'-8"
10	1'-6 1/4"	3'-3 1/4"	5'-8"
12	1'-9 3/8"	3'-10 1/4"	6'-8"
14	2'-0 5/8"	4'-5 1/8"	7'-8"

WIDTH W (FT.)	LENGTH Q		
	15° SKEW	30° SKEW	45° SKEW
6	3'-5 3/4"	4'-7 3/8"	6'-2"
8	3'-9"	5'-2 3/8"	7'-2"
10	4'-0"	5'-9 1/4"	8'-2"
12	4'-3 3/8"	6'-4 1/8"	9'-2"
14	4'-6 5/8"	6'-11 1/8"	10'-2"

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FIG. 5-395.110(A)

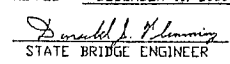
CERTIFIED BY:  CRAIG J. JOHNSON	TITLE: PRECAST CONCRETE END SECTION TYPE III - SINGLE OR DOUBLE BARREL FOR SKEWS 7 1/2° TO 45°	DES.	DW.	APPROVED:	BRIDGE NO. 02J20
		CHK.	DES.		
		SHEET 7 OF 13 SHEETS			

LIC. NO. 23461 DATE: 2/10/06

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REVISIONS:

APPROVED: DECEMBER 11, 2000

  
STATE BRIDGE ENGINEER

HEIGHT h (FT.)	Ah (IN <sup>2</sup> /FT.)	
	15° & 30° SKEW	45° SKEW
7 OR LESS	0.192	0.192
8	0.20	0.24
9	0.29	0.36
10	0.42	0.53
11	0.60	0.75
12	0.78	0.98
13	1.03	1.36
14	1.38	1.85

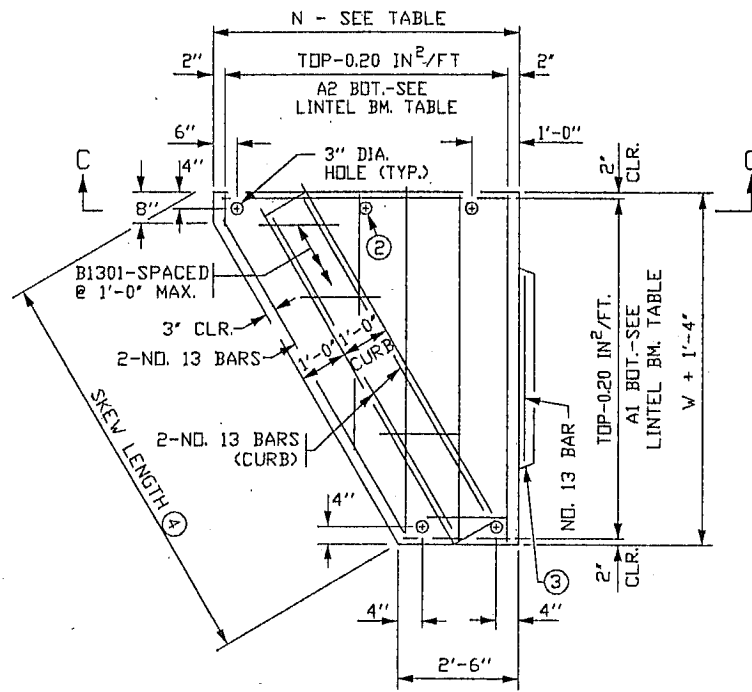
NOTE: h IS THE LARGEST VERTICAL DIMENSION OF THE SEGMENT.

WIDTH W (FT.)	BOTTOM REINFORCEMENT	
	A1	A2
6	NO. 13 @ 1'-6"	NO. 13 @ 1'-4"
8	NO. 13 @ 1'-1"	NO. 13 @ 9"
10	NO. 13 @ 9"	NO. 13 @ 6"
12	NO. 16 @ 9"	NO. 16 @ 6"
14	NO. 19 @ 9"	NO. 22 @ 6"

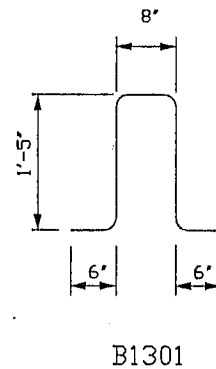
WIDTH W (FT.)	LENGTH N		
	15° SKEW	30° SKEW	45° SKEW
6	4'-3 3/8"	6'-4 1/4"	9'-2"
8	4'-9 7/8"	7'-6"	11'-2"
10	5'-4 1/4"	8'-7 7/8"	13'-2"
12	5'-10 3/4"	9'-9 3/4"	15'-2"
14	6'-5 1/8"	10'-11 5/8"	17'-2"

CONSTRUCTION NOTES:

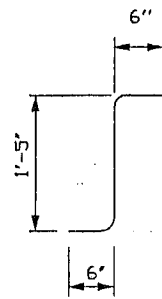
- ALL END SECTIONS REQUIRE CURB ON LINTEL BEAM.
- GROUT SHALL CONSIST OF 1 PART CEMENT AND 2 PARTS SAND. USE TYPE 1A AIR ENTRAINED PORTLAND CEMENT. GROUT MIX SHALL HAVE A MAXIMUM SLUMP OF 4".
- STRUCTURAL STEEL PER Mn/DDOT SPEC. 3306.
- WELDING PER Mn/DDOT SPEC. 2471.
- GALVANIZE STRUCTURAL STEEL PER Mn/DDOT SPEC. 3394.
- GALVANIZE BOLTS, NUTS AND WASHERS PER Mn/DDOT SPEC. 3392.
- ① NO. 25 DWEL, 1'-0" LONG, 2" DIA. HOLE IN THE TOP OF THE WALL SECTION AND 3" DIA. HOLE IN THE LINTEL BEAM. FILL HOLE WITH GROUT.
- ② PROVIDE ADDITIONAL 3" HOLES AT 4'-0" MAXIMUM SPACING WHEN SIDE OF LINTEL BEAM IS OVER 6 FT.
- ③ CHECK THE LOCATION TO DETERMINE WHETHER A TONGUE OR A GROOVE IS USED. TONGUE AND GROOVE TO TERMINATE AT CULVERT RADIUS.
- ④ FOR SKEW LENGTH UNDER 10' USE NO. 25 BARS. FOR SKEW LENGTH OF 10' TO 14' USE NO. 29 BARS. FOR SKEW LENGTH OVER 14' TO 18' USE NO. 32 BARS. FOR SKEW LENGTH OVER 18' TO 22' USE NO. 36 BARS, OR EQUAL. SKEW LENGTH IS DISTANCE BETWEEN OUTSIDE FACES OF END SECTION ALONG LINTEL BEAM.
- ⑤ FOR CULVERTS LESS THAN 14' WIDE USE 9" LINTEL BEAM THICKNESS WITH 5,000 P.S.I. CONCRETE. FOR 14' WIDE CULVERTS, WITH A 15° SKEW, USE 9" LINTEL BEAM THICKNESS WITH 5,000 P.S.I. CONCRETE. FOR 14' WIDE CULVERTS, WITH 30° OR 45° SKEW, USE 10" LINTEL BEAM THICKNESS WITH 5,000 P.S.I. CONCRETE (OR USE 9" LINTEL BEAM THICKNESS WITH 6,500 P.S.I. CONCRETE).
- ⑥ ALTERNATE BAR BEND MAY BE USED FOR B1301.



PLAN VIEW  
(LINTEL BEAM WITH INTEGRAL CURB)

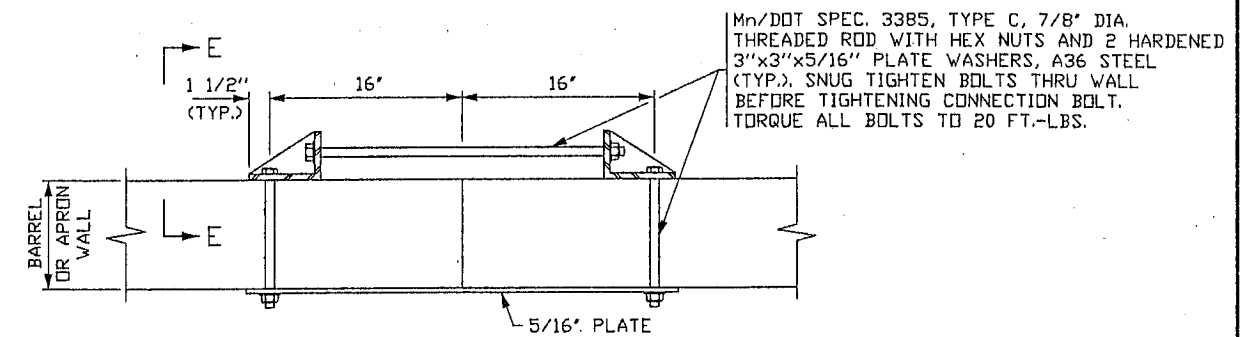


B1301

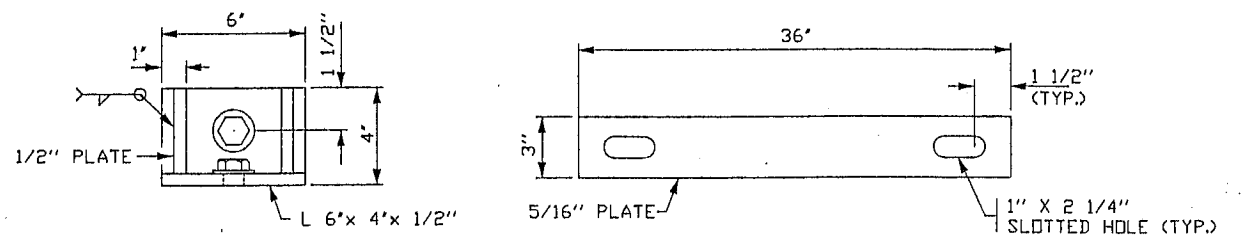


B1301  
ALTERNATE

⑥  
2 REQUIRED



PLAN VIEW



SECTION E-E

PLATE DETAIL

EXTRA STRONG CONNECTION DETAILS

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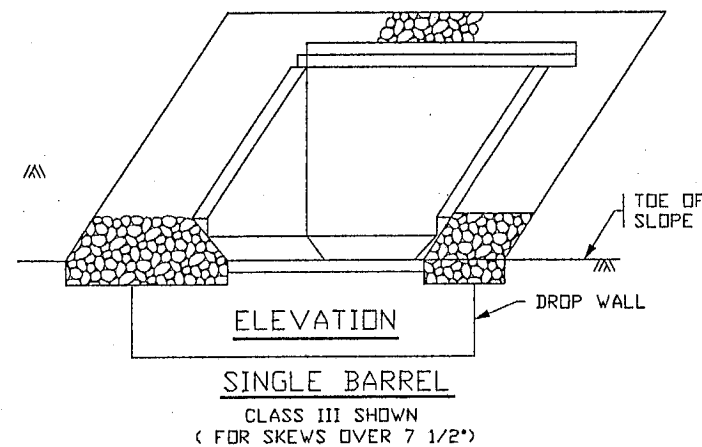
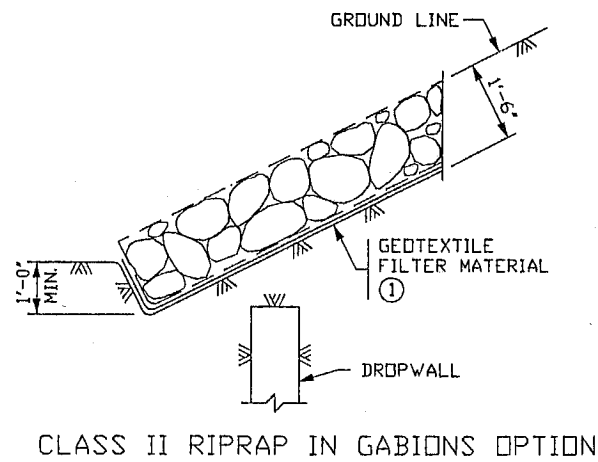
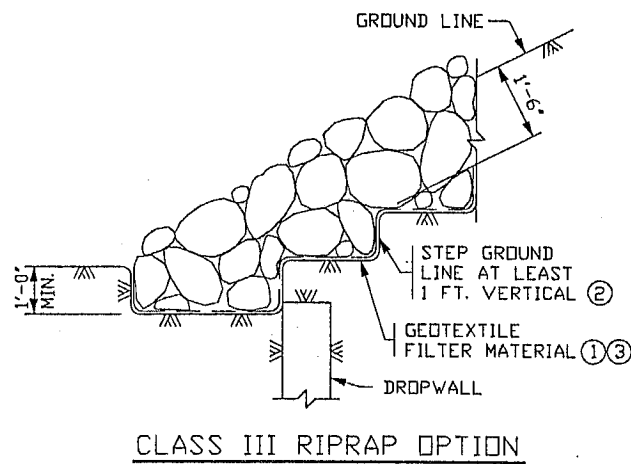
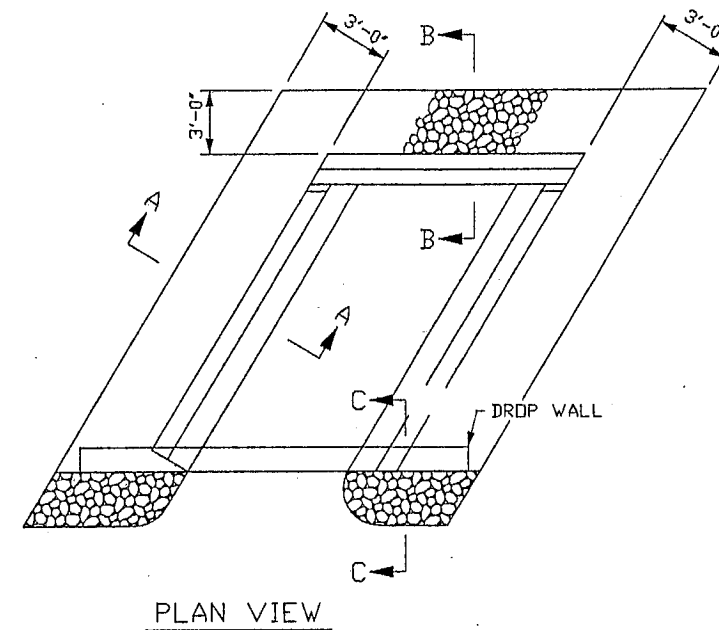
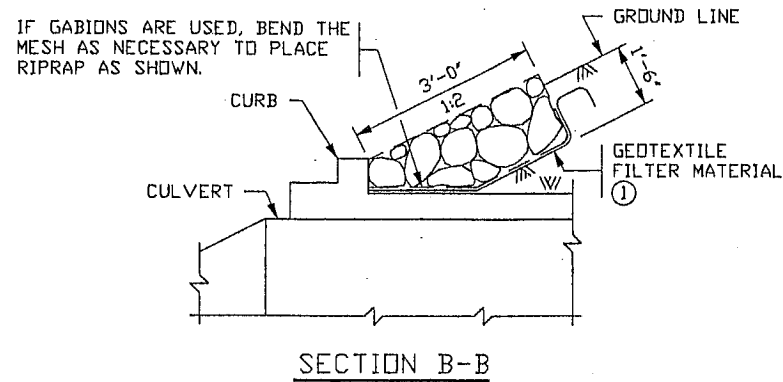
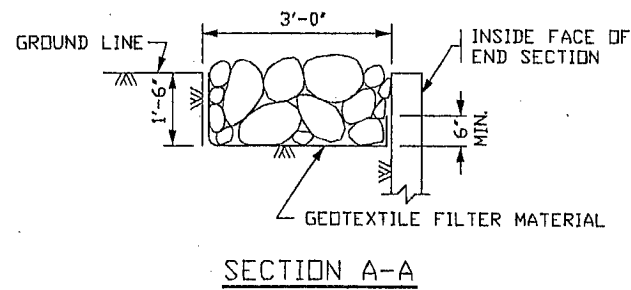
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REVISIONS:
APPROVED: DECEMBER 11, 2000 <i>Donald L. Manning</i> STATE BRIDGE ENGINEER

CERTIFIED BY: <i>Craig J. Lechum</i> CRAIG J. LECHUM		TITLE: PRECAST CONCRETE END SECTION TYPE III - SINGLE OR DOUBLE BARREL FOR SKEWS 7 1/2° TO 45°		DES.	DW.	APPROVED:	BRIDGE NO.
L.I.C. NO. 23461	DATE: 2/10/06	CHK.	DES.	SHEET 8 OF 13 SHEETS		02J20	

FIG. 5-395.110(B)





SECTION C-C

NOTES:

RIPRAP SHALL COMPLY WITH Mn/DOT SPECS. 2511 AND 3601. THE CONTRACTOR MAY USE EITHER CLASS III, WITH GEOTEXTILE FILTER MATERIAL, OR CLASS II ENCLOSED IN GABIONS, WITH GEOTEXTILE FILTER MATERIAL 4" TO 8" DIA. ROCK MAY BE USED IN GABIONS, IF THE MESH OPENINGS ARE 4" OR LESS. GABIONS SHALL BE RIVER TYPE, CODE "D", 3 FT. WIDE X 1.5 FT. DEEP.

- ① FOR TYPE OF GEOTEXTILE FILTER MATERIAL REQUIRED, SEE Mn/DOT SPEC. 3733. GEOTEXTILE STRIPS SHOULD BE CONTINUOUS WITHOUT OVERLAPS, EXCEPT FOR THE TOP STRIP, WHICH SHOULD SHINGLE VERTICAL STRIPS. THE TOP EDGE SHOULD BE BURIED TO PREVENT UNDERMINING (Mn/DOT SPEC. 2511.3B).
- ② SLOPES 1:2 TO 1:3 MUST BE STEPPED TO MINIMIZE SLIDING POTENTIAL.
- ③ IF SLOPES ARE NOT STEPPED, GRANULAR FILTER SHOULD BE USED.

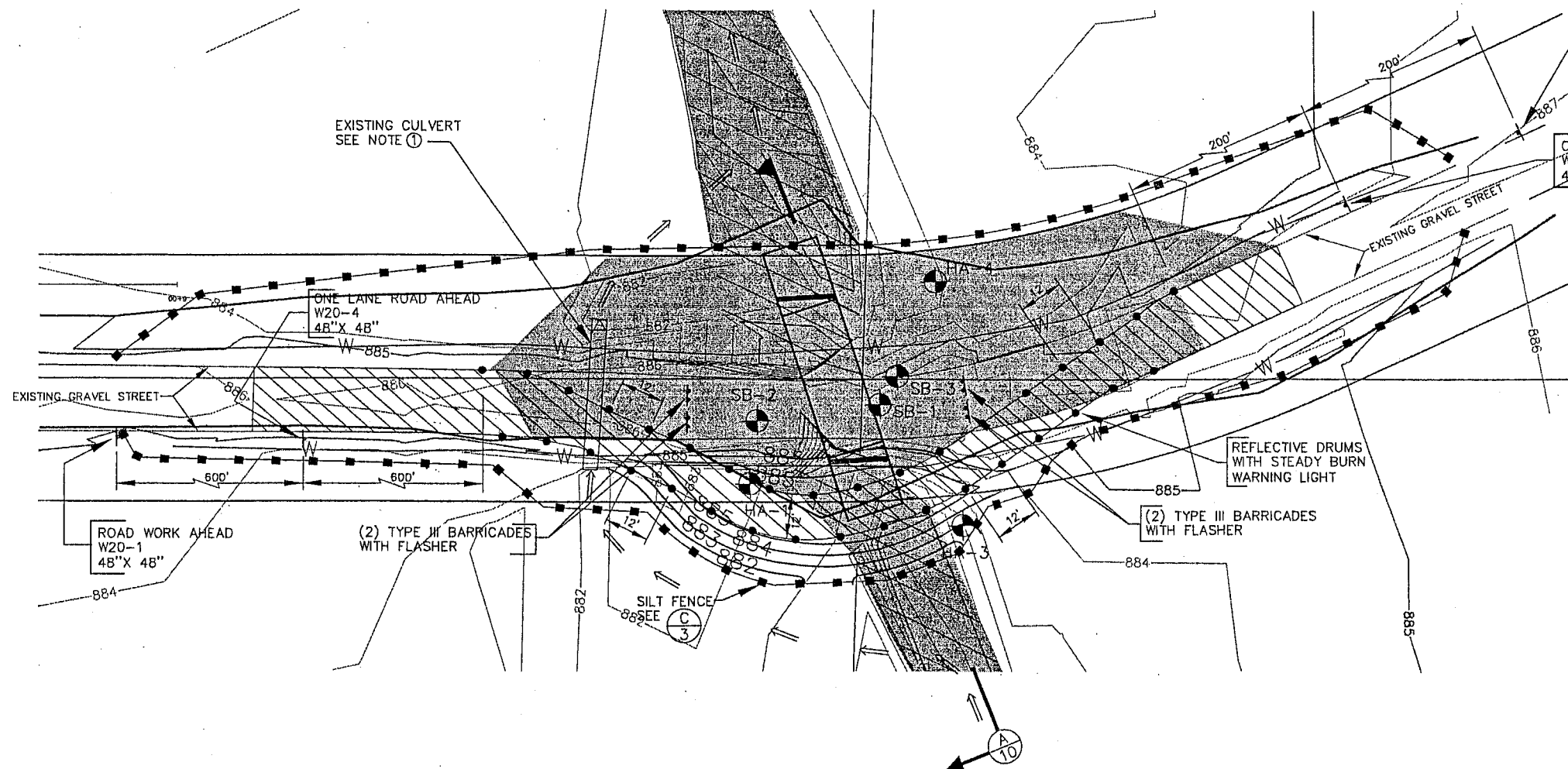
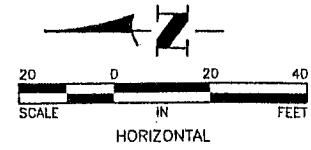
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REVISIONS:
APPROVED: DECEMBER 11, 2000
<i>Darrell B. Manning</i> STATE BRIDGE ENGINEER

CERTIFIED BY: <i>Craig J. Jochim</i> CRAIG J. JOCHIM		TITLE: EMBANKMENT PROTECTION FOR BOX CULVERTS		DES. DW. APPROVED: BRIDGE NO. 02J20	
LIC. NO. 23461 DATE: 2/10/06		CHK. DES.		SHEET 9 OF 13 SHEETS	

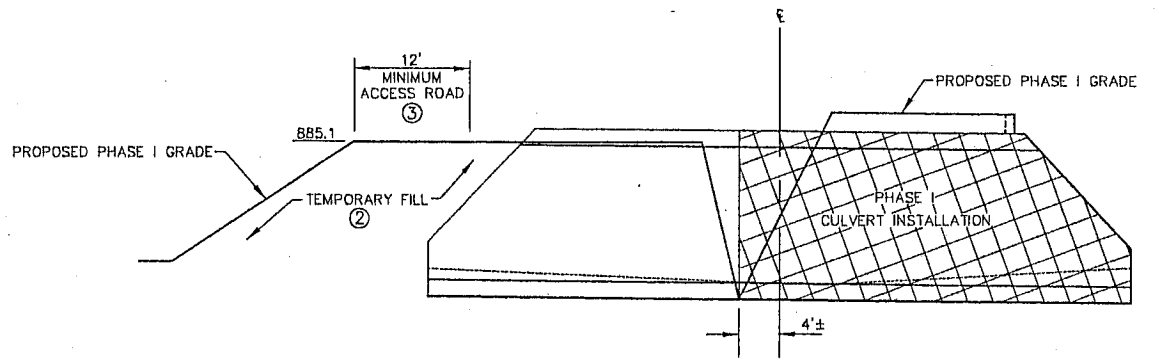
SAP 02-599-08

FIG. 5-395.115



**LEGEND**

- 8 FOOT TYPE III BARRICADE WITH FLASHER
- ROAD WORK AHEAD W20-1 48" X 48"
- ONE LANE ROAD AHEAD W20-4 48" X 48"
- REFLECTIVE BARRELS W/ STEADY BURN WARNING LIGHT
- DENOTES TEMPORARY ROAD ACCESS
- DENOTES THE WORK ZONE
- DENOTES EXISTING WATER
- TEMPORARY DRAINAGE DIRECTION
- REFLECTIVE DRUMS WITH STEADY BURN WARNING LIGHT
- (2) TYPE III BARRICADES WITH FLASHER
- ROAD WORK AHEAD W20-1 48" X 48"
- ONE LANE ROAD AHEAD W20-4 48" X 48"
- REFLECTIVE BARRELS W/ STEADY BURN WARNING LIGHT
- DENOTES TEMPORARY ROAD ACCESS
- DENOTES THE WORK ZONE
- DENOTES EXISTING WATER
- TEMPORARY DRAINAGE DIRECTION



**PHASE I CROSS SECTION**  
NTS

**NOTES:**

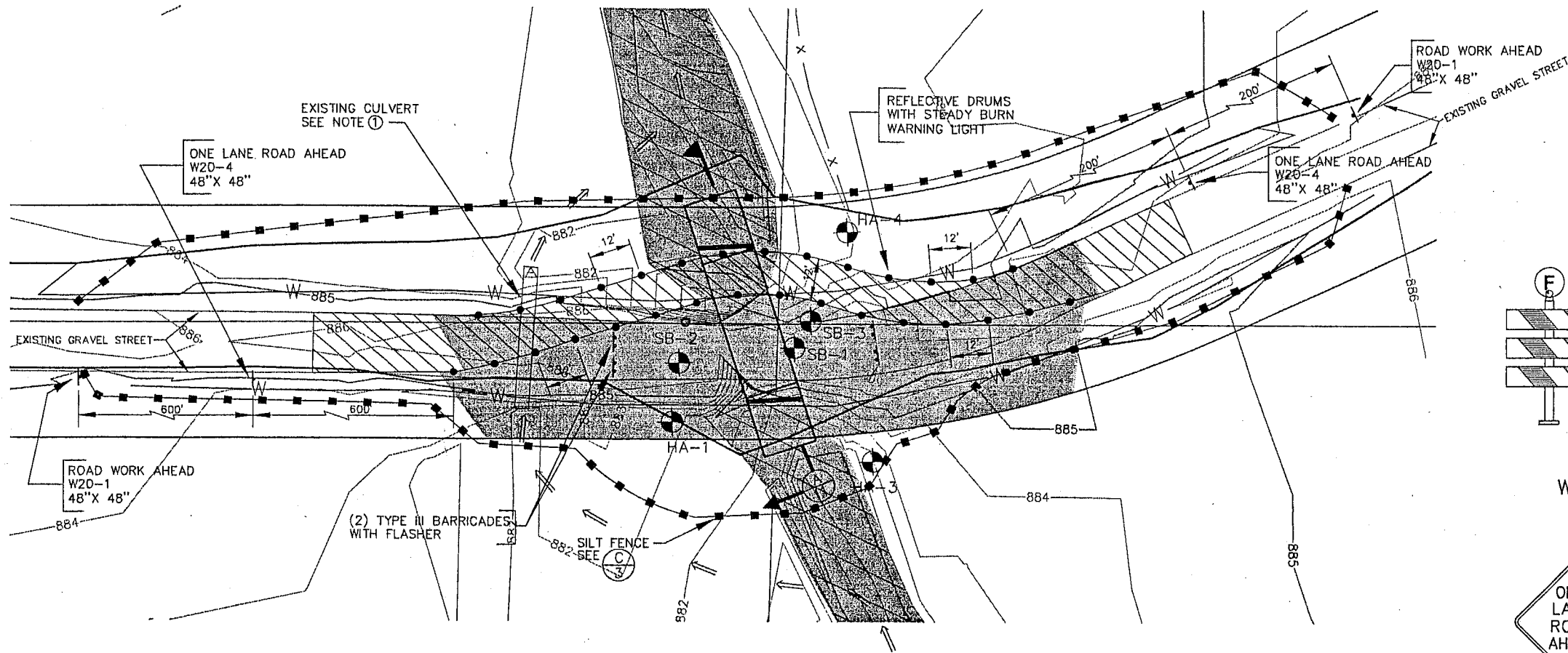
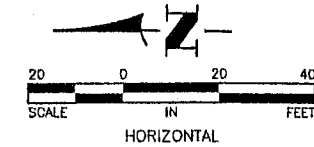
- ① EXISTING CULVERT TO REMAIN IN PLACE UNTIL FLOW CAN BE PERMANENTLY ROUTED THROUGH NEW BOX CULVERT.
- ② MATERIAL USED FOR TEMPORARY FILL SHALL MEET THE SPECIFICATIONS AND BE PAID FOR AS SELECT GRANULAR BORROW, L.V. THIS MATERIAL WILL BE RE-USED AS SELECT GRANULAR FILL WITHIN THE ROAD BED. ALL PLACEMENT, COMPACTION OR DOUBLE HANDLING OF TEMPORARY FILL MATERIAL SHALL BE INCIDENTAL TO "2105.601 TEMPORARY ROAD".
- ③ SALVAGE EXISTING GRAVEL AND PLACE A MINIMUM OF 2 INCHES FOR A SURFACE ON THE ACCESS ROAD.

← TEMPORARY DRAINAGE DIRECTION

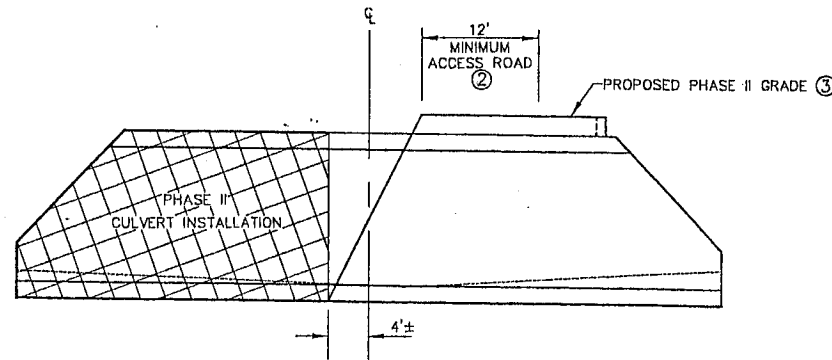
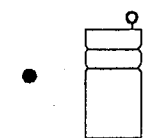
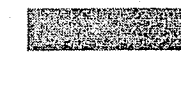
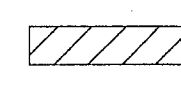
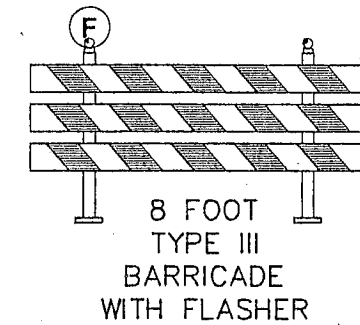
SAP 02-599-08

I hereby certify that this plan, specification, or report 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.  CRAIG J. JOCHUM, P.E. Date 2/10/06 Lic No. 23461	DATE	REVISION	DESIGNED BY: CJJ	<b>Hakanson Anderson Assoc., Inc.</b> Civil Engineers and Land Surveyors 3601 Thurston Ave., Anoka, Minnesota 55303 763-427-5880 FAX 763-427-0520	TRAFFIC CONTROL AND TEMPORARY DRAINAGE PLAN PHASE 1 HORNSBY STREET N.E. LINWOOD TOWNSHIP	SHEET
			DRAWN BY: LKA			10
			CHECKED BY: CJJ			OF
						13
					DATE 7/23/02 FILE NO. LW406	SHEETS

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**LEGEND**



**PHASE II CROSS SECTION**  
NTS

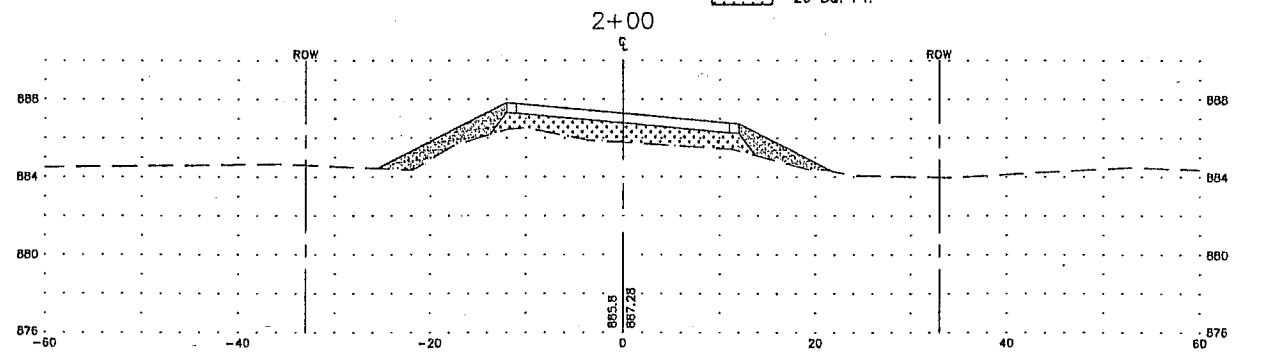
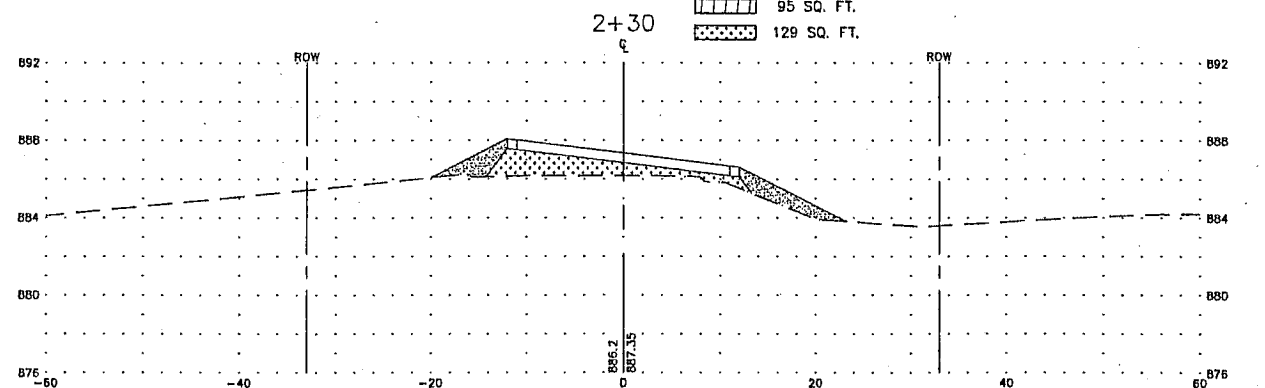
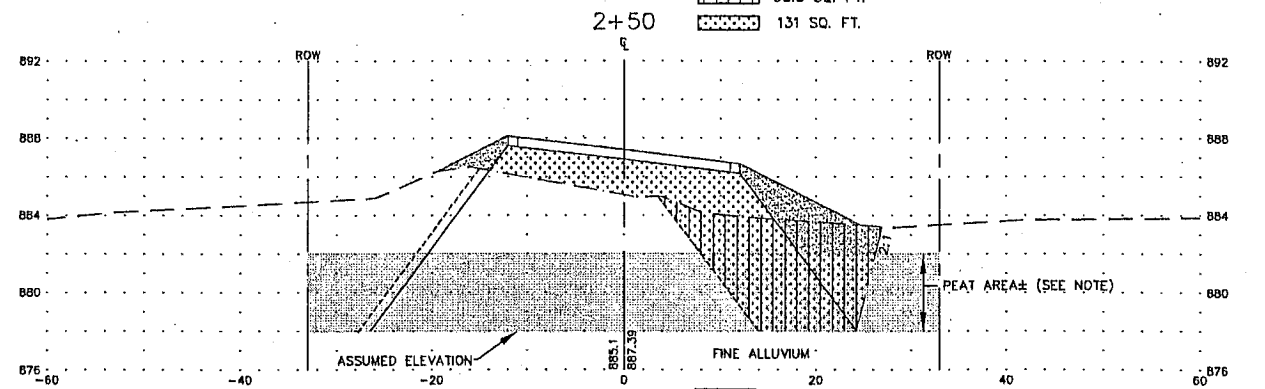
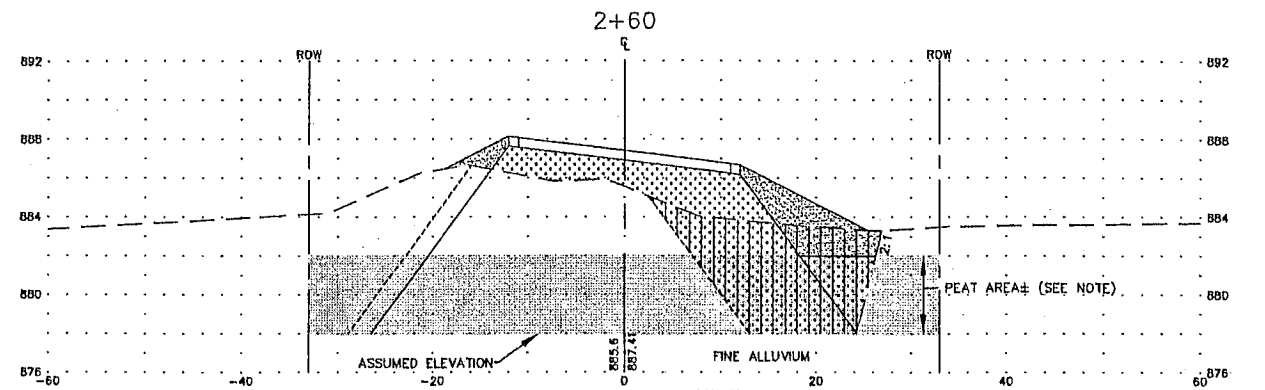
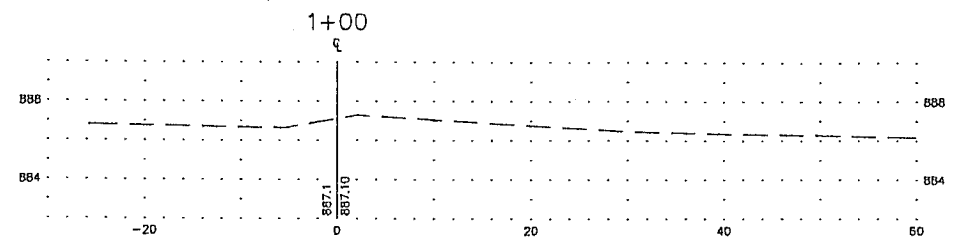
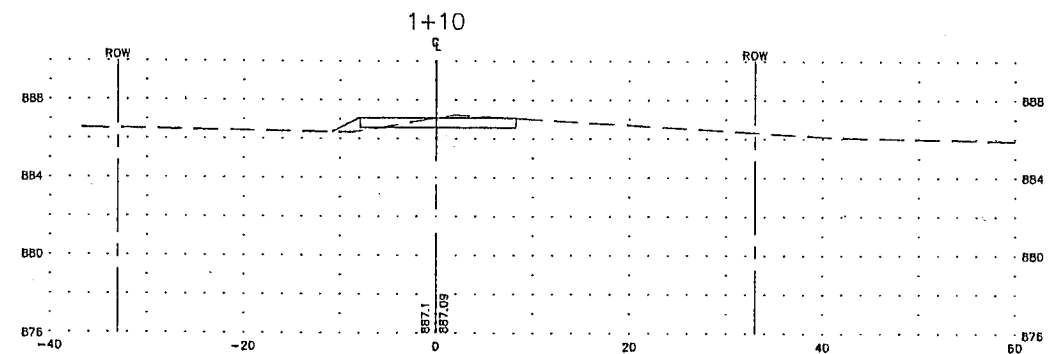
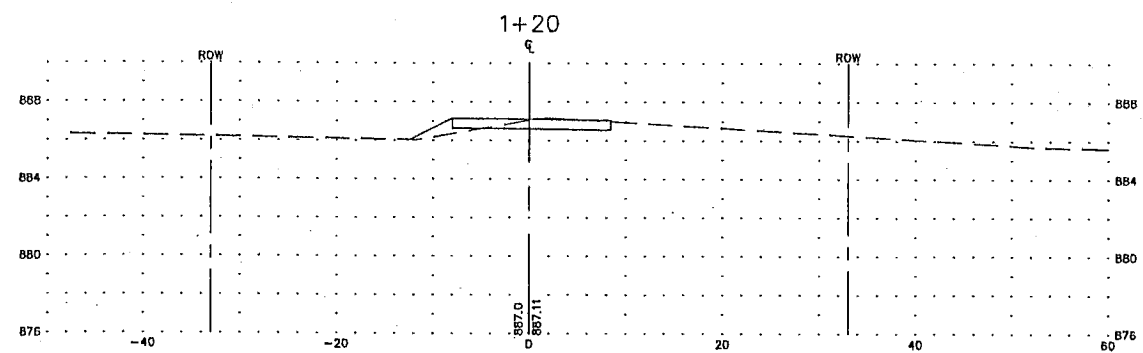
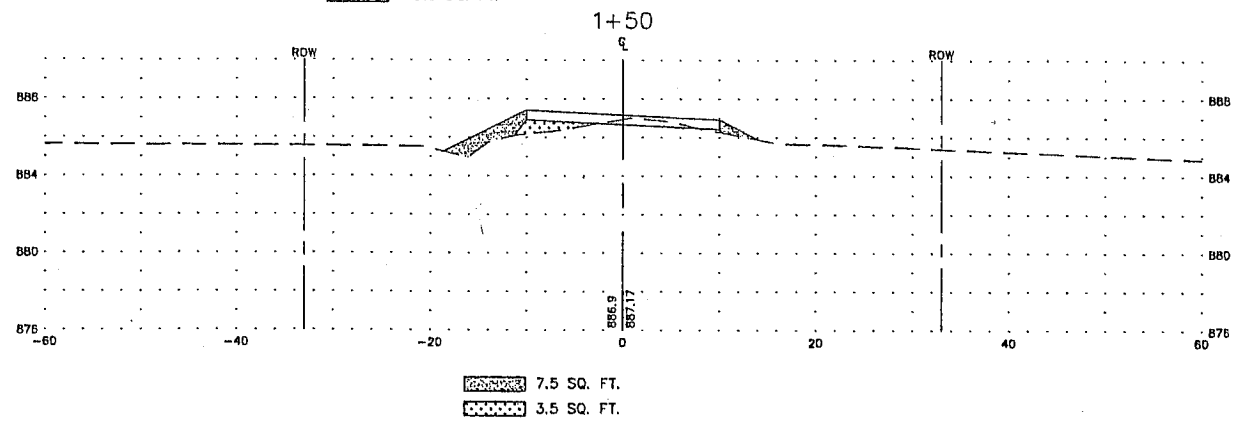
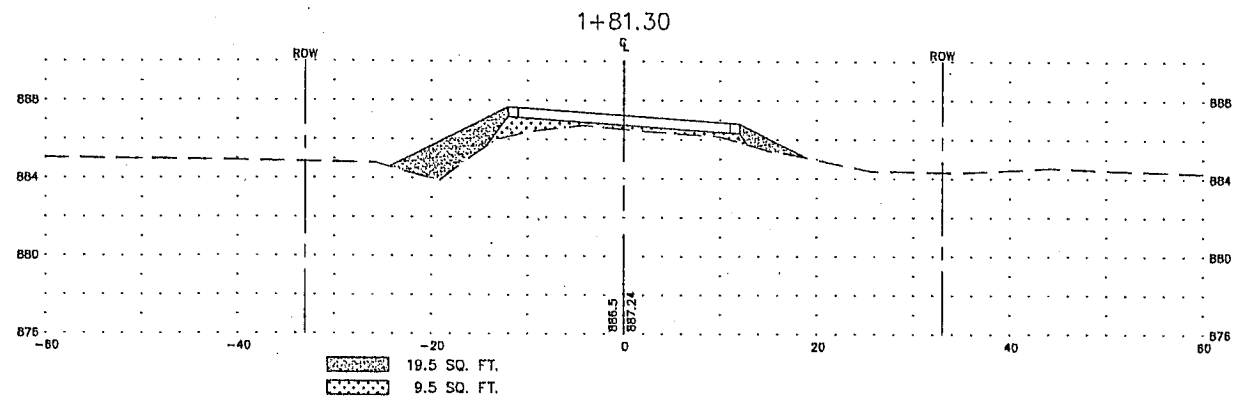
- NOTE:**
- ① EXISTING CULVERTS TO REMAIN IN PLACE UNTIL FLOW CAN BE PERMANENTLY ROUTED THROUGH NEW BOX CULVERT.
  - ② MATERIAL USED FOR TEMPORARY FILL SHALL MEET THE SPECIFICATIONS AND BE PAID FOR AS SELECT GRANULAR BORROW, LV. THIS MATERIAL WILL BE RE-USED AS SELECT GRANULAR FILL WITHIN THE ROAD BED. ALL PLACEMENT, COMPACTION OR DOUBLE HANDLING OF TEMPORARY FILL MATERIAL SHALL BE INCIDENTAL TO "2105.601 TEMPORARY ROAD".
  - ③ SALVAGE EXISTING GRAVEL AND PLACE A MINIMUM OF 2 INCHES FOR A SURFACE ON THE ACCESS ROAD.
- ← TEMPORARY DRAINAGE DIRECTION

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Feb 17, 2005 - 9:58am  
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I hereby certify that this plan, specification, or report 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.  CRAIG J. JOCHUM, P.E. Date 2/10/05 Lic. No. 23461	DATE	REVISION	DESIGNED BY: CJJ	Hakanson Anderson Assoc., Inc. Civil Engineers and Land Surveyors 3601 Thurston Ave., Anoka, Minnesota 55303 763-427-5860 FAX 763-427-0520	<b>TRAFFIC CONTROL AND TEMPORARY DRAINAGE PLAN PHASE 2</b> HORNSBY STREET N.E. LINWOOD TOWNSHIP DATE 7/23/02 FILE NO. LW406	SHEET
			DRAWN BY: LKA			11
			CHECKED BY: CJJ			OF
						13
						SHEETS

Feb 16, 2006 - 4:46pm  
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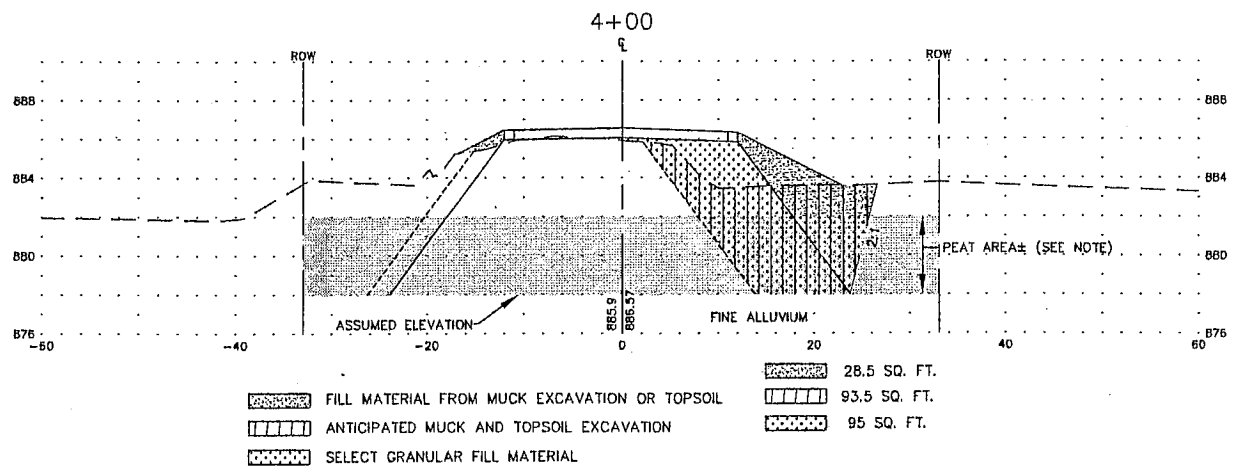
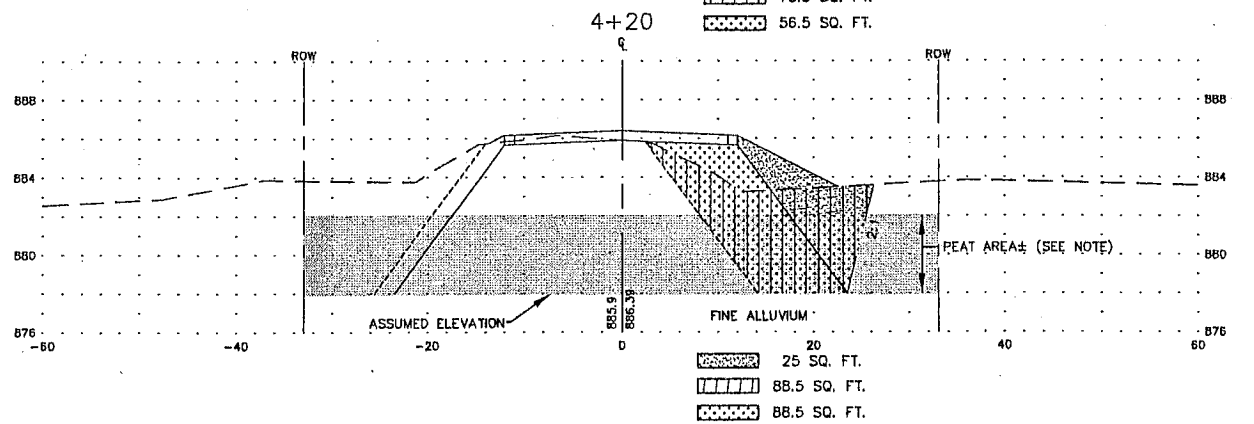
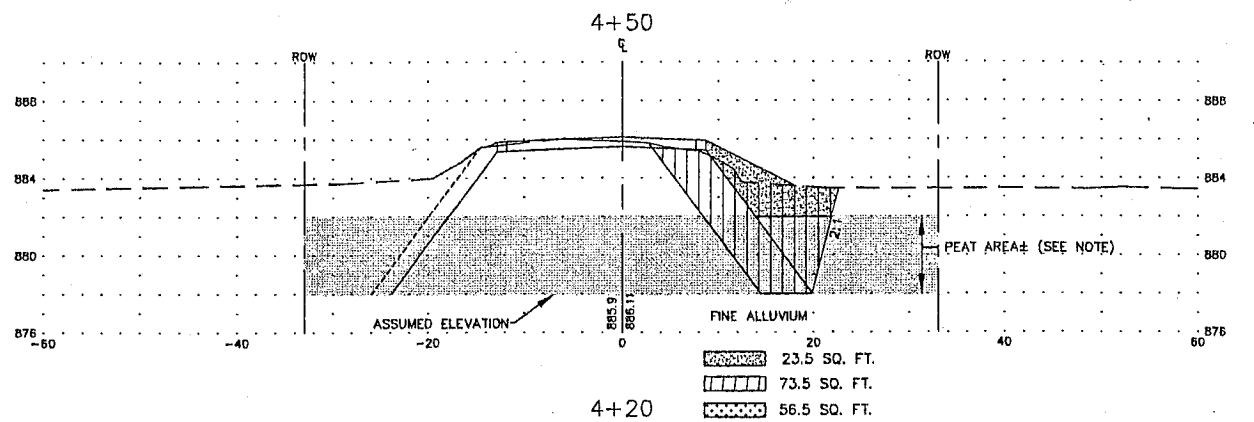
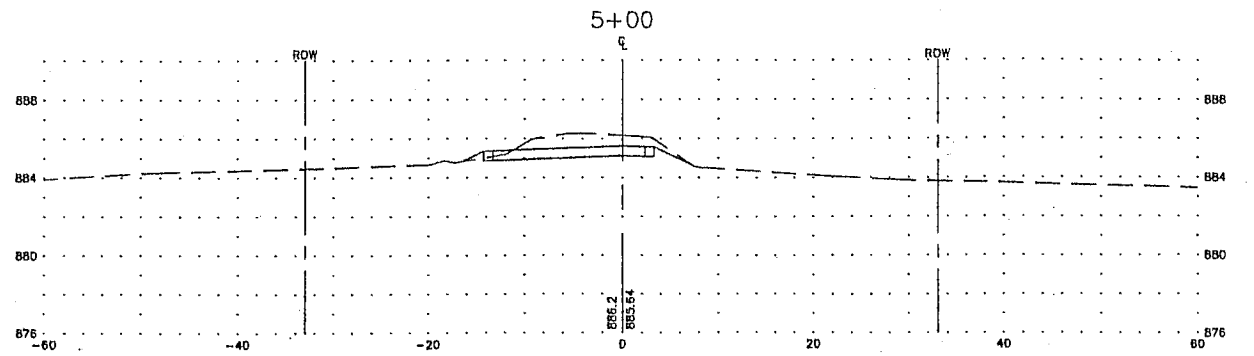
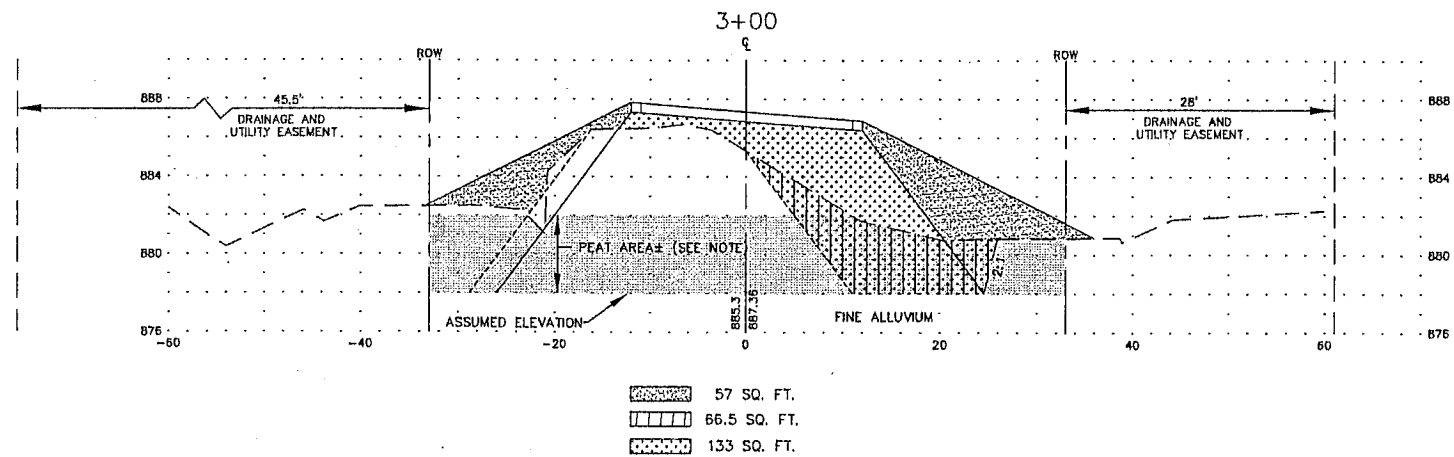
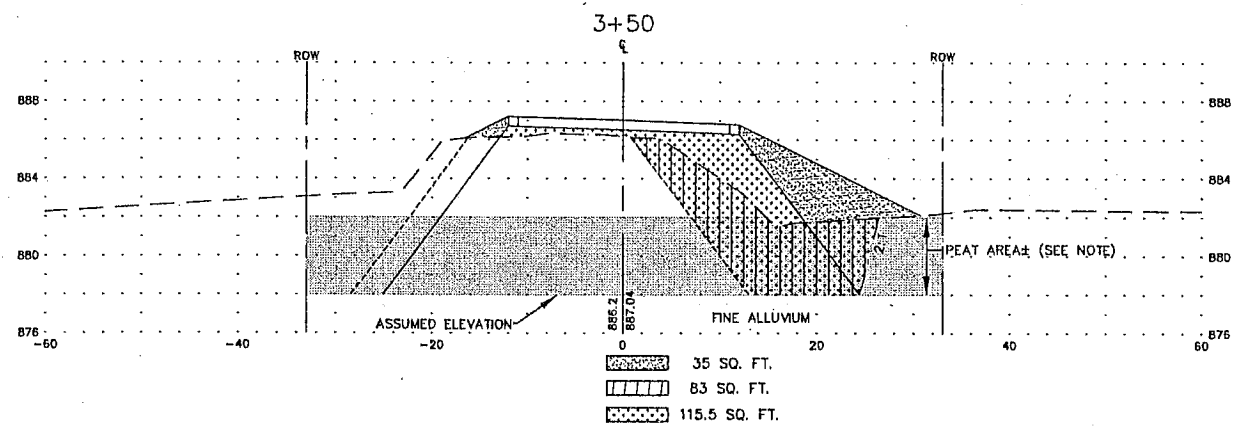
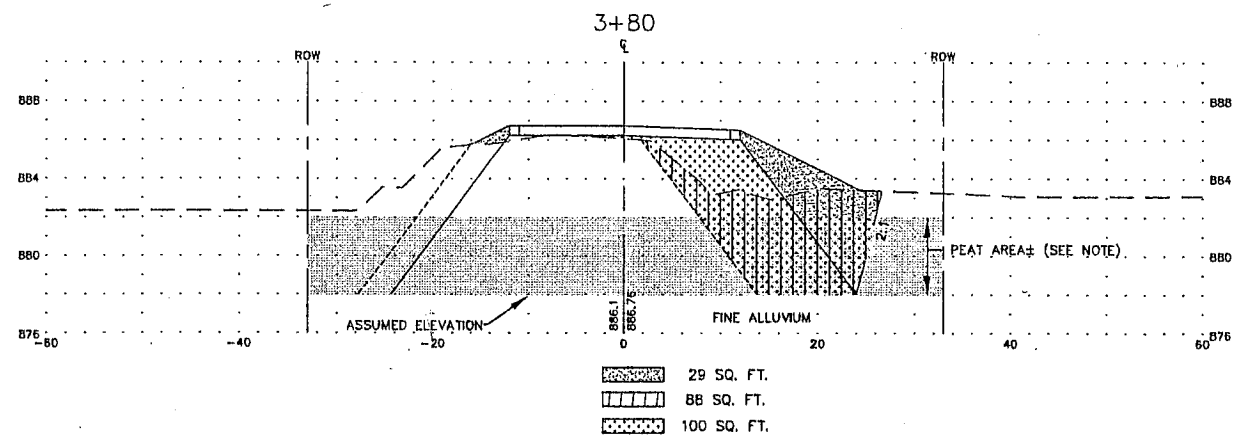


- FILL MATERIAL FROM MUCK EXCAVATION OR TOPSOIL
- ANTICIPATED MUCK AND TOPSOIL EXCAVATION
- SELECT GRANULAR FILL MATERIAL
- 18 SQ. FT.
- 23.5 SQ. FT.

NOTE:  
 BASED ON SOIL BORINGS PEAT IS ASSUMED TO EXIST BETWEEN ELEVATIONS 878 AND 882 TO SHOW INTENT AND BASIS OF QUANTITY FOR MUCK EXCAVATION.

DATE	REVISION	DESIGNED BY:	 Hakanson Anderson Assoc., Inc. <small>Civil Engineers and Land Surveyors            3601 Thurston Ave., Anoka, Minnesota 55303            763-427-5860 FAX 763-427-0520</small>	CROSS SECTIONS		SHEET 12 OF 13 SHEETS
		CJJ		HORNSBY STREET N.E.		
		LKA		LINWOOD TOWNSHIP		
		CJJ	DATE	7/23/02	FILE NO.	LW406

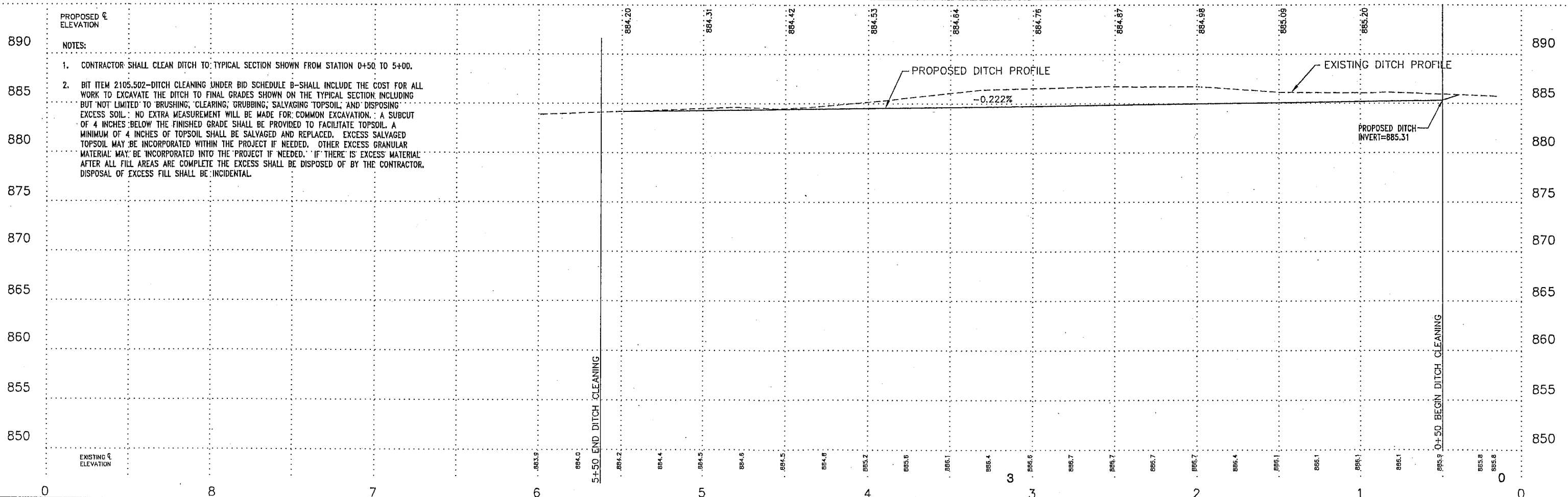
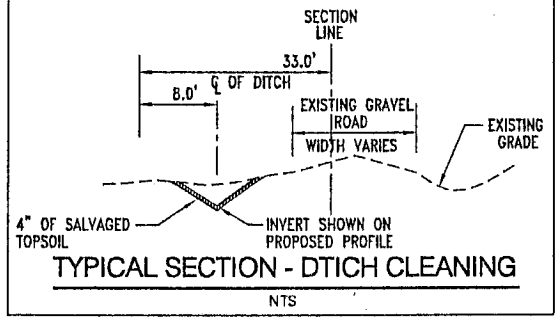
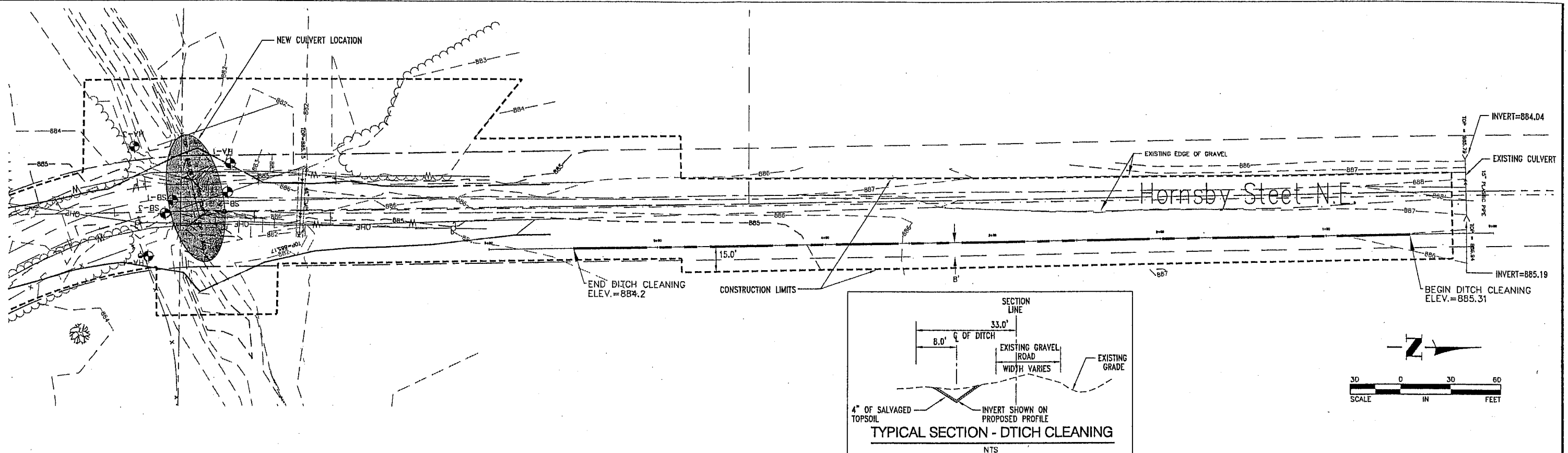
SAP 02-599-08



NOTE:

BASED ON SOIL BORINGS PEAT IS ASSUMED TO EXIST BETWEEN ELEVATIONS 878 AND 882 TO SHOW INTENT AND BASIS OF QUANTITY FOR MUCK EXCAVATION.

DATE	REVISION	DESIGNED BY:	 <b>Hakanson Anderson Assoc., Inc.</b> Civil Engineers and Land Surveyors 3801 Thurston Ave., Anoka, Minnesota 55303 763-427-5860 FAX 763-427-0520	CROSS SECTIONS		SHEET 13 OF 13 SHEETS
		CJJ		HORNSBY STREET N.E.		
		LKA		LINWOOD TOWNSHIP		
		CJJ		DATE 7/23/02	FILE NO. LW406	



PROPOSED & ELEVATION

- NOTES:
1. CONTRACTOR SHALL CLEAN DITCH TO: TYPICAL SECTION SHOWN FROM STATION 0+50 TO 5+00.
  2. BIT ITEM 2105.502-DITCH CLEANING UNDER BID SCHEDULE B-SHALL INCLUDE THE COST FOR ALL WORK TO EXCAVATE THE DITCH TO FINAL GRADES SHOWN ON THE TYPICAL SECTION INCLUDING BUT NOT LIMITED TO BRUSHING, CLEARING, GRUBBING, SALVAGING TOPSOIL, AND DISPOSING EXCESS SOIL. NO EXTRA MEASUREMENT WILL BE MADE FOR COMMON EXCAVATION. A SUBCUT OF 4 INCHES BELOW THE FINISHED GRADE SHALL BE PROVIDED TO FACILITATE TOPSOIL. A MINIMUM OF 4 INCHES OF TOPSOIL SHALL BE SALVAGED AND REPLACED. EXCESS SALVAGED TOPSOIL MAY BE INCORPORATED WITHIN THE PROJECT IF NEEDED. OTHER EXCESS GRANULAR MATERIAL MAY BE INCORPORATED INTO THE PROJECT IF NEEDED. IF THERE IS EXCESS MATERIAL AFTER ALL FILL AREAS ARE COMPLETE THE EXCESS SHALL BE DISPOSED OF BY THE CONTRACTOR. DISPOSAL OF EXCESS FILL SHALL BE INCIDENTAL.

DATE	REVISION	I hereby certify that this plan, specification, or report 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.  CRAIG J. JOCHIM, P.E. Date 5/1/06 Lic. No. 23461	DESIGNED BY: CJJ	 <b>Hakanson Anderson Assoc., Inc.</b> Civil Engineers and Land Surveyors 3601 Thurston Ave., Anoka, Minnesota 55303 763-427-5860 FAX 763-427-0520 www.hakanson-anderson.com	<b>HORNSBY STREET</b> <b>LINWOOD TOWNSHIP</b>	<b>DITCH CLEANING</b> <b>BID SCHEDULE B</b>	SHEET <b>C1</b> OF <b>C1</b> SHEETS
			CHECKED BY: LKA/CKJ				

May 11, 2006 - 10:34am  
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