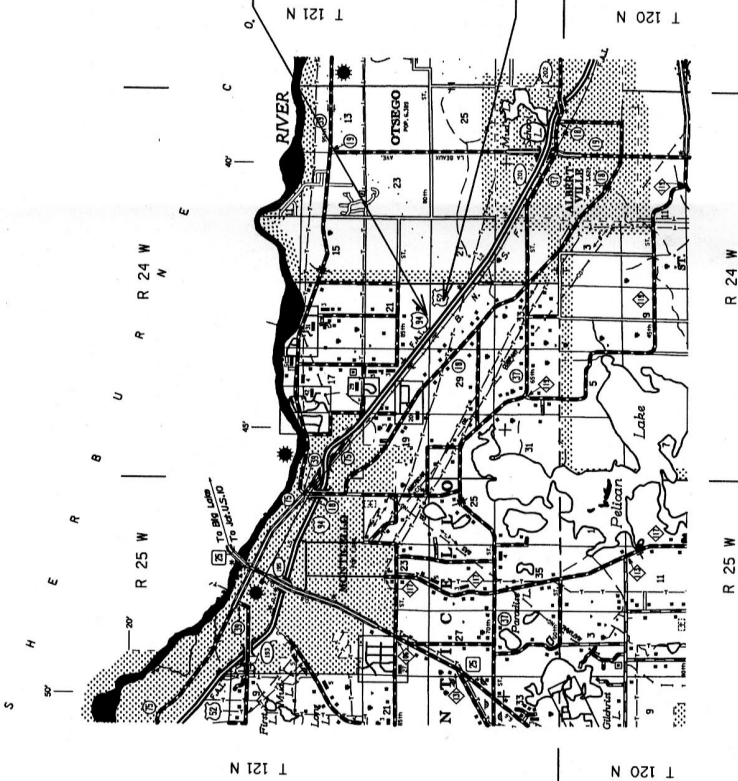


# MINNESOTA DEPARTMENT OF TRANSPORTATION

CONSTRUCTION PLAN FOR RECONSTRUCTION OF MNROAD (LOW VOLUME ROAD & NEW FARM ROAD)  
 LOCATED WITHIN THE MNROAD FACILITY ALONG TH94 FROM MNROAD CELLS 33-35, 77-79, 83, 84, 87

STATE PROJ. NO. 8680-156 (T.H. 94)



PLANNING  
 PROFILE  
 INDEX MAP  
 GENERAL LAYOUT

SCALES  
 HORIZ.  
 VERT.

DESIGN DESIGNATION

Design ESALS	2007
ADT (Current Year) 2007	MPH
ADT (Future Year) 2027	MPH
DIV (Design Hr. Vol.)	MPH
D (Directional Distr.)	MPH
T (Heavy Commercial)	MPH

PROJECT LOCATION  
 COUNTY : WRIGHT  
 DISTRICT : 3, BRAINERD

FOR PLANS AND UTILITIES SYMBOLS SEE TECHNICAL MANUAL  
 STATE PROJ. NO. CHARGE IDENTIFIER  
 8680-156

FED. PROJ. NO. SPR. I.P.F.5 (I48)  
 MNRD. 8607 (I49)

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

## INDEX

- 1 TITLE SHEET
- 2 - 3 GENERAL LAYOUT
- 4 ESTIMATED QUANTITIES
- 5 UTILITY TABULATIONS, GENERAL CONSTRUCTION NOTES, TABULATION SUMMARY
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- 8 - 9 CELL 34
- 10 - 11 CELL 35
- 12 - 13 CELL 77
- 14 - 15 CELL 78
- 16 - 17 CELL 79
- 18 - 20 CELLS 83, 84, FARMROAD
- 21 - 22 PROFILES
- 23 - 25 ALIGNMENT TABULATIONS & STAKING INFORMATION
- X1 - X7 CROSS SECTIONS

THIS PLAN CONTAINS 32 SHEETS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DAILY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.  
 PRINT NAME: TIMOTHY R. CLYNE LICENSE # 43862  
 DATE: 4/5/07 SIGNATURE: *Timothy R. Clyne*  
 DESIGN SQUAD ADAM PITAN, GREG RAMBERG, STEVE DESMITH, TROY GRATKE

RECOMMENDED FOR APPROVAL  
 DISTRICT TRANSPORTATION ENGINEER  
*Rob B. Bush* 3/30/07

RECOMMENDED FOR APPROVAL  
 STATE PROJECT ENGINEER  
*Timothy R. Clyne* 5/3/07

OFFICE OF LAND MANAGEMENT APPROVAL  
 DIRECTOR, LAND MANAGEMENT  
*M. J. Strubing* 5/7/07

APPROVED  
 STATE DESIGN ENGINEER  
*M. J. Strubing* 5/7/07

I HEREBY CERTIFY THAT THE FINAL FIELD REVISIONS, IF ANY, WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DAILY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.  
 PRINT NAME: \_\_\_\_\_ LICENSE # \_\_\_\_\_  
 DATE: \_\_\_\_\_ SIGNATURE: \_\_\_\_\_

STATE PROJ. NO. 8680-156 (T.H. 94-392) SHEET NO. 1 OF 25 SHEETS

**CELL 77 SPECIFIC SOILS AND CONSTRUCTION NOTES**

**GRADING**

TOPSOIL - THE TOPSOIL SHALL BE SALVAGED, PULVERIZED AND SUBSEQUENTLY PLACED ON THE DISTURBED AREAS AS SHOWN IN THE TYPICAL SECTIONS.

GRADING GRADE IS DEFINED AS THE BOTTOM OF THE CLASS 4 AGGREGATE BASE. SELECT GRADING MATERIAL SHALL BE ANY GRANULAR SOIL ENCOUNTERED IN EXCAVATION OR BORROW AREAS MEETING THE REQUIREMENTS OF SELECT GRANULAR BORROW, SPEC. 3145.2B2.

SUITABLE GRADING MATERIAL IS ANY MINERAL SOIL ENCOUNTERED IN THE EXCAVATION OR BORROW AREAS MATCHING THE TEXTURAL CLASS IN THE AREAS OF CONSTRUCTION NOT DEFINED AS UNSUITABLE.

UNSUITABLE MATERIAL IS DEFINED AS DEBRIS, PEAT, MUCK, TOPSOIL, SILT, LOAM, MARL OR OTHER ORGANIC MATERIAL.

THE BOTTOM OF THE SUBGUT SHALL BE SHAPED AND COMPACTED BY THE QUALITY COMPACTION METHOD WITH A MINIMUM OF 4 PASSES OF AN APPROVED ROLLER.

EXCESS MATERIALS AND ALL MATERIALS NOT DESIGNATED FOR SALVAGE AND ALL DEBRIS SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND BE DISPOSED OF OFF THE R/W IN ACCORDANCE WITH MN/DOT SPEC. 2104. UNSUITABLE MATERIAL MAY NOT BE PLACED WITHIN THE 14:1 SLOPE OUTWARD AND DOWN FROM THE GRADING SHOULDER P.I. OR WITHIN THE UPPER 4' OF THE SUBGRADE.

**TEST EQUIPMENT**

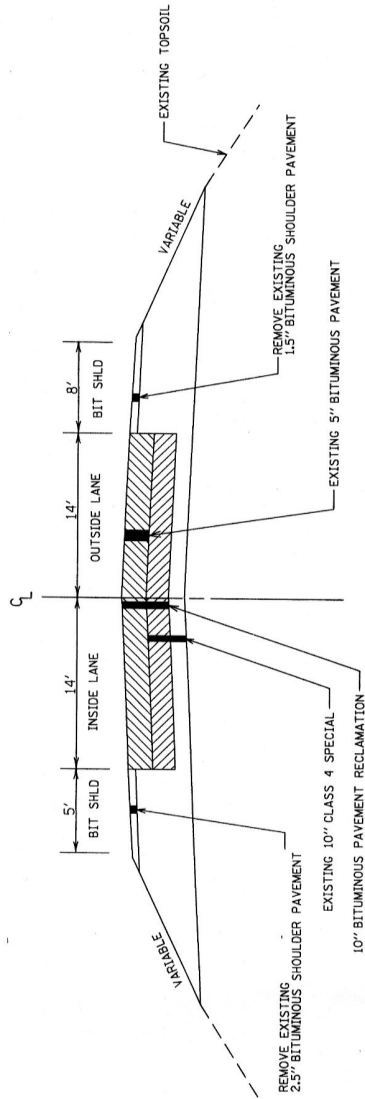
MN ROAD OPERATIONS REQUIRES 6 WORKING DAYS ON THE FINISHED SUBGRADE OF CELL 77.78.79 FOR INSTALLATION OF CONDUIT, INSTRUMENTATION, AND LY-SIMETERS. ANOTHER 4 WORKING DAYS ARE REQUIRED ON THE FINISHED BASE FOR INSTALLATION OF INSTRUMENTATION.

**COMPACTION REQUIREMENTS**

GRADING MATERIALS  
AGG. SHLD. MATERIALS

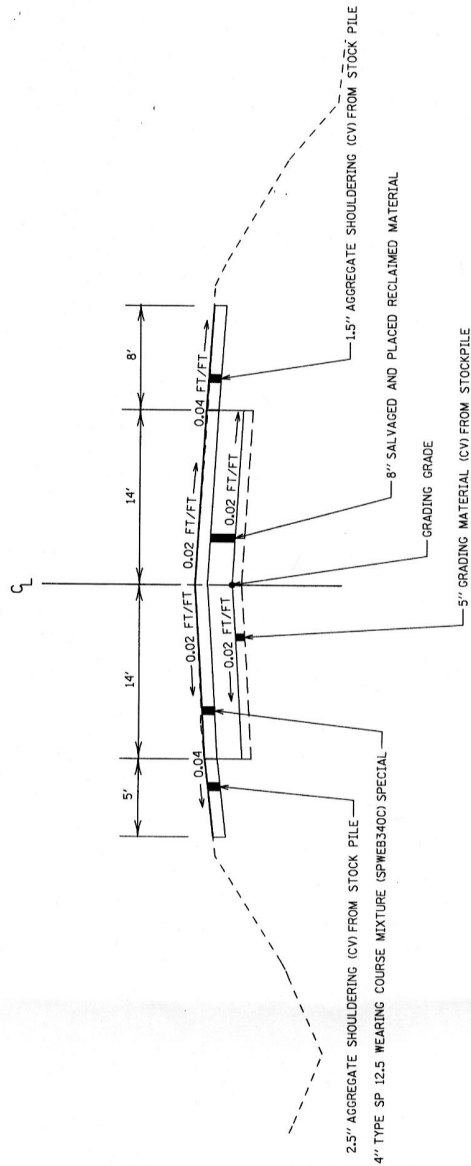
QUALITY COMPACTION METHOD  
PENETRATION INDEX COMPACTION METHOD  
QUALITY COMPACTION METHOD

**EXISTING/REMOVAL CELL 29**  
STA. 186+45 TO STA. 191+95



**PROPOSED CELL 77**

STA. 186+45 TO STA. 190+22



NOTE:  
TRANSITION FROM CELL TO CELL WILL BE VARIABLE. SEE PROFILE SHEETS.

**TYPICAL SECTIONS (CELL 77)**

4/25/2007

FILE NAME: S:\D71\941\8680156\0683\001\8680156\_L06177.dwg

STATE PROJ. NO. 8680-156 (T.H. 94)

CERTIFIED BY *Timothy R. Clume* LIC. NO. 433662  
LICENSED PROFESSIONAL ENGINEER

SHEET NO. 12 OF 25 SHEETS

TABULATED QUANTITIES FOR CELL 77 (STATION 186+45 TO STATION 190+22)

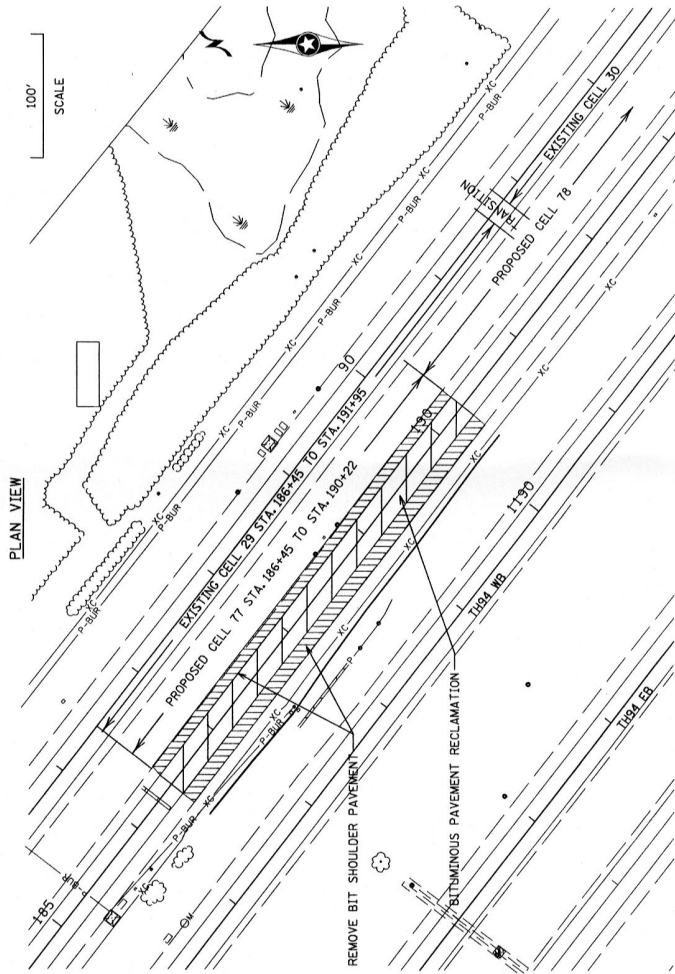
ITEM DESCRIPTION	UNIT	TOTAL
COMMON EXCAVATION	CU YD	228
GRADING MATERIAL (CV) FROM STOCKPILE	CU YD	163
AGGREGATE SHOULDERING (CV) FROM STOCKPILE	CU YD	29
BITUMINOUS PAVEMENT RECLAMATION	SO YD	1173
BITUMINOUS MATERIAL FOR TACK COAT	GALLON	59
TYPE SP 12.5 WEARING COURSE MIXTURE (3.C) SPECIAL	TON	258

EARTHWORK SUMMARY

CELL 77 STATION	COMMON EXC.	GRADING MATERIAL (CV)	SUIT HAUL
186+45 - 190+22	CU YD	CU YD	CU YD
TOTAL	228	163	296

THE FOLLOWING SHRINKAGE FACTOR WERE USED:  
SUITABLE 130%.

- NOTES:
- ① ALL MATERIAL COMES FROM STOCKPILES ON SITE TO BE DESIGNATED BY THE PROJECT ENGINEER
  - ② MNDOT 200 FUNDS.



TABULATED QUANTITIES, PLAN VIEW (CELL 77)

STATE PROJ. NO. 8680-156 (T.H. 94)

CERTIFIED BY *James R. Olyne* L.I.C. NO. 43862  
LICENSED PROFESSIONAL ENGINEER

FILE NAME: S:\VOT\194\8680-156\Des\Top\8680156\_cel177.dgn  
4/25/2007  
SHEET NO. 13 OF 25 SHEETS

**CELL 78 SPECIFIC SOILS AND CONSTRUCTION NOTES**

**GRADING**

TOPSOIL - THE TOPSOIL SHALL BE SALVAGED, PULVERIZED AND SUBSEQUENTLY PLACED ON THE DISTURBED AREAS AS SHOWN IN THE TYPICAL SECTIONS.

GRADING GRADE IS DEFINED AS THE BOTTOM OF THE CLASS 4 AGGREGATE BASE.

SELECT GRADING MATERIAL SHALL BE ANY GRANULAR SOIL ENCOUNTERED IN EXCAVATION OR BORROW AREAS MEETING THE REQUIREMENTS OF SELECT GRANULAR BORROW, SPEC. 3149.282.

SUITABLE GRADING MATERIAL IS ANY MINERAL SOIL ENCOUNTERED IN THE EXCAVATION OR BORROW AREAS MATCHING THE TEXTURAL CLASS IN THE AREAS OF CONSTRUCTION NOT DEFINED AS UNSUITABLE.

UNUSABLE MATERIAL IS DEFINED AS DEBRIS, PEAT, MUCK, TOPSOIL, SILT, LOAM, MARL OR OTHER ORGANIC MATERIAL.

THE BOTTOM OF THE SUBCUT SHALL BE SHAPED AND COMPACTED BY THE QUALITY COMPACTION METHOD WITH A MINIMUM OF 4 PASSES OF AN APPROVED ROLLER.

EXCESS MATERIALS AND ALL MATERIALS NOT DESIGNATED FOR SALVAGE AND ALL DEBRIS SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND BE DISPOSED OF OFF THE R/W IN ACCORDANCE WITH MN/DOT SPEC. 2104.

UNUSABLE MATERIAL MAY NOT BE PLACED WITHIN THE 1:1.5 SLOPE OUTWARD AND DOWN FROM THE GRADING SHOULDER P.L. OR WITHIN THE UPPER 4' OF THE SUBGRADE.

**TEST EQUIPMENT**

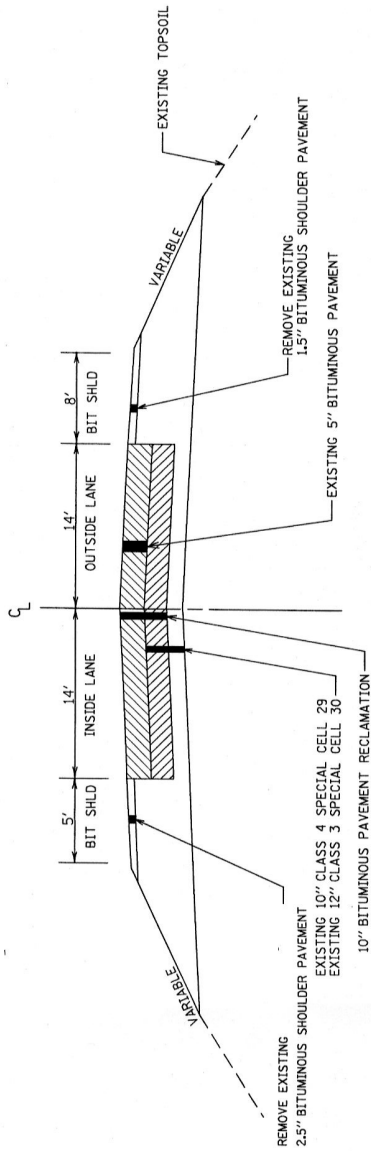
MN ROAD OPERATIONS REQUIRES 6 WORKING DAYS ON THE FINISHED SUBGRADE OF CELL 77, 78 FOR INSTALLATION OF CONDUIT, INSTRUMENTATION, AND LY'SIMETERS. ANOTHER 4 WORKING DAYS ARE REQUIRED ON THE FINISHED BASE FOR INSTALLATION OF INSTRUMENTATION.

**COMPACTION REQUIREMENTS**

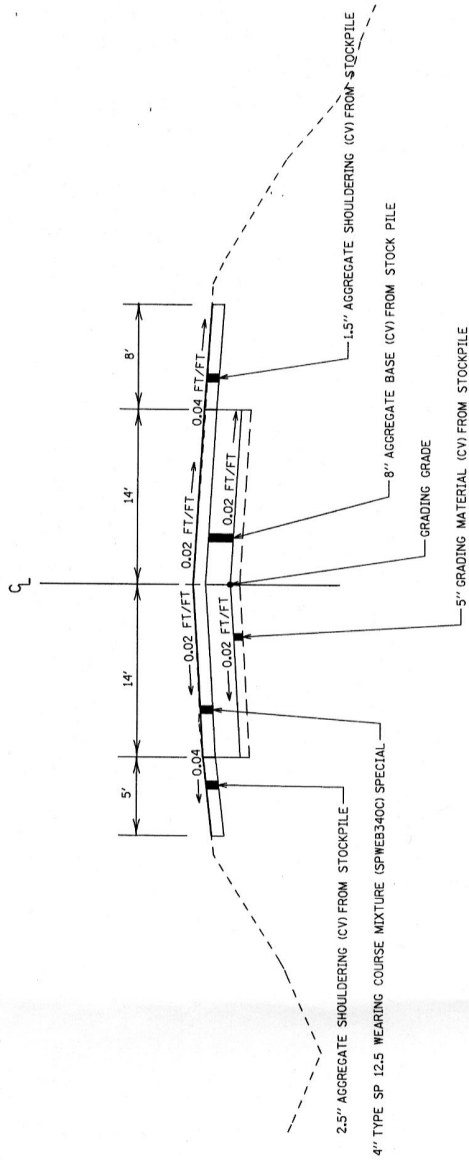
GRADING MATERIALS  
 AGG. BASE MATERIALS  
 AGG. SHLD. MATERIALS

QUALITY COMPACTION METHOD  
 PENETRATION INDEX COMPACTION METHOD  
 QUALITY COMPACTION METHOD

**EXISTING/REMOVAL CELL 29**  
 STA. 190+22 TO STA. 191+95  
 TRANSITION AREA  
 STA. 191+95 TO STA. 192+15  
**EXISTING/REMOVAL CELL 30**  
 STA. 192+15 TO STA. 193+87



**PROPOSED CELL 78**  
 STA. 190+22 TO STA. 193+87



**TYPICAL SECTIONS (CELL 78)**  
 4/25/2007

STATE PROJ. NO. 8680-156 (T.H. 94)

CERTIFIED BY *James R. Dyer* LIC. NO. 43552  
 LICENSED PROFESSIONAL ENGINEER

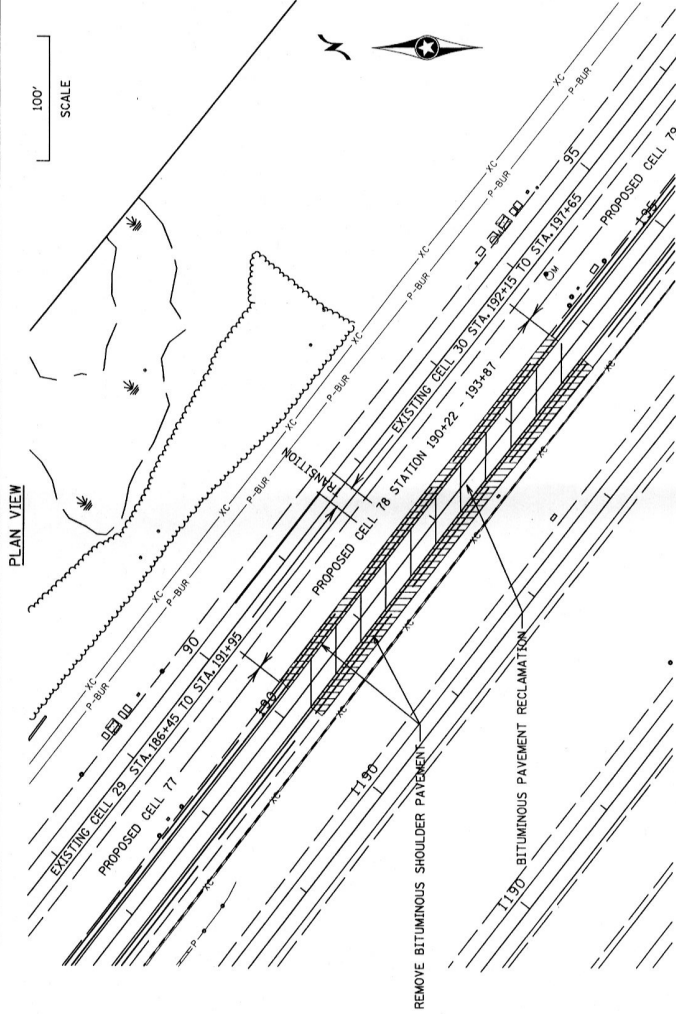
**SHEET NO. 14 OF 25 SHEETS**

TABULATED QUANTITIES FOR CELL 78 (STATION 190+22 TO STATION 193+87)		
ITEM DESCRIPTION	UNIT	TOTAL
REMOVE BITUMINOUS SHOULDER PAVEMENT	SO YD	527
COMMON EXCAVATION	CU YD	221
GRADING MATERIAL (CV) FROM STOCKPILE	CU YD	158
AGGREGATE BASE (CV) FROM STOCKPILE	CU YD	252
AGGREGATE SHOULDERING (CV) FROM STOCKPILE	CU YD	28
BITUMINOUS PAVEMENT RECLAMATION	SO YD	1136
BITUMINOUS MATERIAL FOR TACK COAT	GALLON	57
TYPE SP 12.5 WEARING COURSE MIXTURE (3.C) SPECIAL	TON	250

EARTHWORK SUMMARY			
CELL 78 STATION	COMMON EXC	GRADING MATERIAL (CV) (C)	SUIT HAUL
190+22 - 193+87	CU YD	CU YD	CU YD
TOTAL	221	158	287

THE FOLLOWING SHRINKAGE FACTORS WERE USED:  
130%

- NOTES:  
 (1) ALL MATERIAL COMES FROM STOCKPILES ON SITE TO DESIGNATED BY THE PROJECT ENGINEER  
 (2) MNDOT 200 FUNDS.



TABULATED QUANTITIES, PLAN VIEW (CELL 78)  
4/25/2007

STATE PROJ. NO. 9680-156 (T.H. 94)

CERTIFIED BY: *Jessie R. Dyer* LIC. NO. 43552  
LICENSED PROFESSIONAL ENGINEER

SHEET NO. 15 OF 25 SHEETS

**CELL 79 SPECIFIC SOILS AND CONSTRUCTION NOTES**

**GRADING**

TOPSOIL - THE TOPSOIL SHALL BE SALVAGED, PULVERIZED AND SUBSEQUENTLY PLACED ON THE DISTURBED AREAS AS SHOWN IN THE TYPICAL SECTIONS.  
 GRADING GRADE IS DEFINED AS THE BOTTOM OF THE CLASS 6 AGGREGATE BASE.  
 SELECT GRADING MATERIAL SHALL BE ANY GRANULAR SOIL ENCOUNTERED IN EXCAVATION OR BORROW AREAS MEETING THE REQUIREMENTS OF SELECT GRANULAR BORROW, SPEC. 3149.2B2.  
 SUITABLE GRADING MATERIAL IS ANY MINERAL SOIL ENCOUNTERED IN THE EXCAVATION OR BORROW AREAS MATCHING THE TEXTURAL CLASS IN THE AREAS OF CONSTRUCTION NOT DEFINED AS UNSUITABLE.  
 UNSUITABLE MATERIAL IS DEFINED AS DEBRIS, PEAT, MUCK, TOPSOIL, SILT, LOAM, MARL OR OTHER ORGANIC MATERIAL.

THE BOTTOM OF THE SUBCUT SHALL BE SHAPED AND COMPACTED BY THE QUALITY COMPACTION METHOD WITH A MINIMUM OF 4 PASSES OF AN APPROVED ROLLER.

EXCESS MATERIALS AND ALL MATERIALS NOT DESIGNATED FOR SALVAGE AND ALL DEBRIS SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND BE DISPOSED OF OFF THE R/W IN ACCORDANCE WITH MN/DOT SPEC. 2104. UNSUITABLE MATERIAL MAY NOT BE PLACED WITHIN THE 1:1.5 SLOPE OUTWARD AND DOWN FROM THE GRADING SHOULDER P.L.L OR WITHIN THE UPPER 4" OF THE SUBGRADE.

**COMPACTION REQUIREMENTS**

GRADING MATERIALS QUALITY COMPACTION METHOD  
 AGG. BASE MATERIALS PENETRATION INDEX COMPACTION METHOD  
 AGG. SHLD. MATERIALS QUALITY COMPACTION METHOD

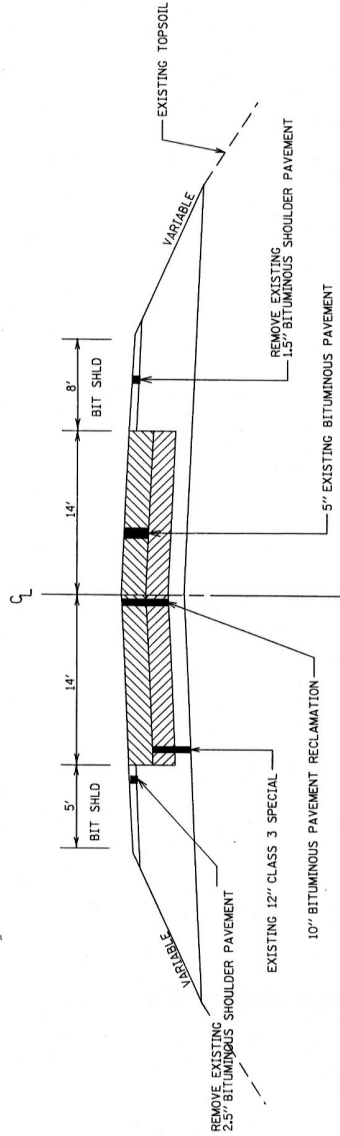
**ADDITIVES**

FLY ASH  
 FLY ASH IS ADDED AT A RATE OF 4% BY DRY WEIGHT OF RECLAIMED BASE.  
 FORMULA = (DEPTH 0.667' X WIDTH 28' X LENGTH 378' X 140 LB PER CU FT. / 2000 LB X 142)

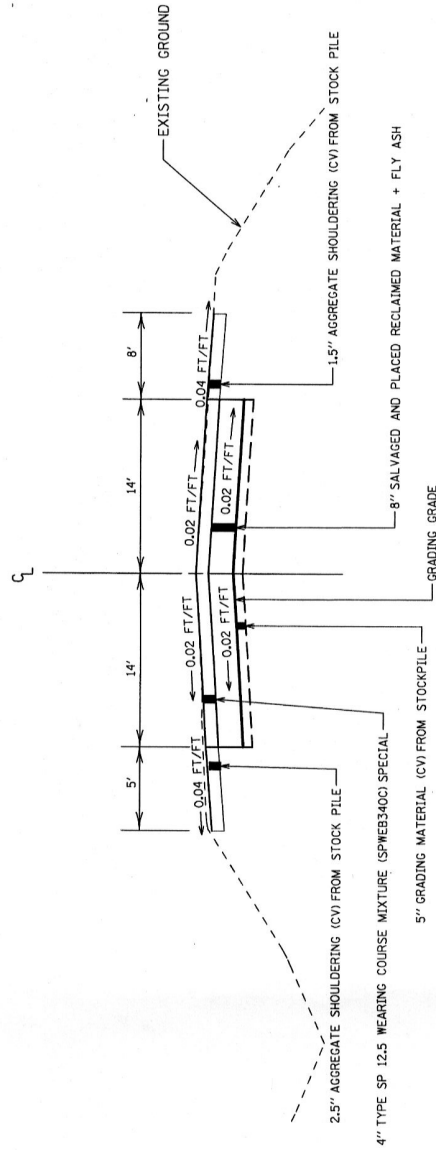
**TEST EQUIPMENT**

MN ROAD OPERATIONS REQUIRES 6 WORKING DAYS ON THE FINISHED SUBGRADE OF CELL 77,78,79 FOR INSTALLATION OF CONDUIT, INSTRUMENTATION, AND LYCHMETERS. ANOTHER 4 WORKING DAYS ARE REQUIRED ON THE FINISHED BASE FOR INSTALLATION OF INSTRUMENTATION.

EXISTING/REMOVAL CELL 30  
 STA. 192+15 TO STA. 197+65



PROPOSED CELL 79  
 STA. 193+87 TO STA. 197+65



TYPICAL SECTIONS (CELL 79)

4/25/2007

STATE PROJ. NO. 8680-156 (T.H. 94)

SHEET NO. 16 OF 25 SHEETS

CERTIFIED BY *J. Anthony R. Chyne* L.I.C. NO. 43562  
 LICENSED PROFESSIONAL ENGINEER

TABULATED QUANTITIES FOR CELL 79 (STATION 193+87 TO STATION 197+65)

ITEM DESCRIPTION	UNIT	TOTAL
REMOVE BITUMINOUS SHOULDER PAVEMENT	SO YD	546
COMMON EXCAVATION	CU YD	229
GRADING MATERIAL (CV) FROM STOCKPILE	CU YD	163
AGGREGATE SHOULDERING (CV) FROM STOCKPILE	CU YD	93
BITUMINOUS PAVEMENT RECLAMATION	CU YD	93
BITUMINOUS MATERIAL FOR TACK COAT	SO YD	176
TYPE SP 12.5 WEARING COURSE MIXTURE (B,C) SPECIAL	GALLON	53
	TON	259

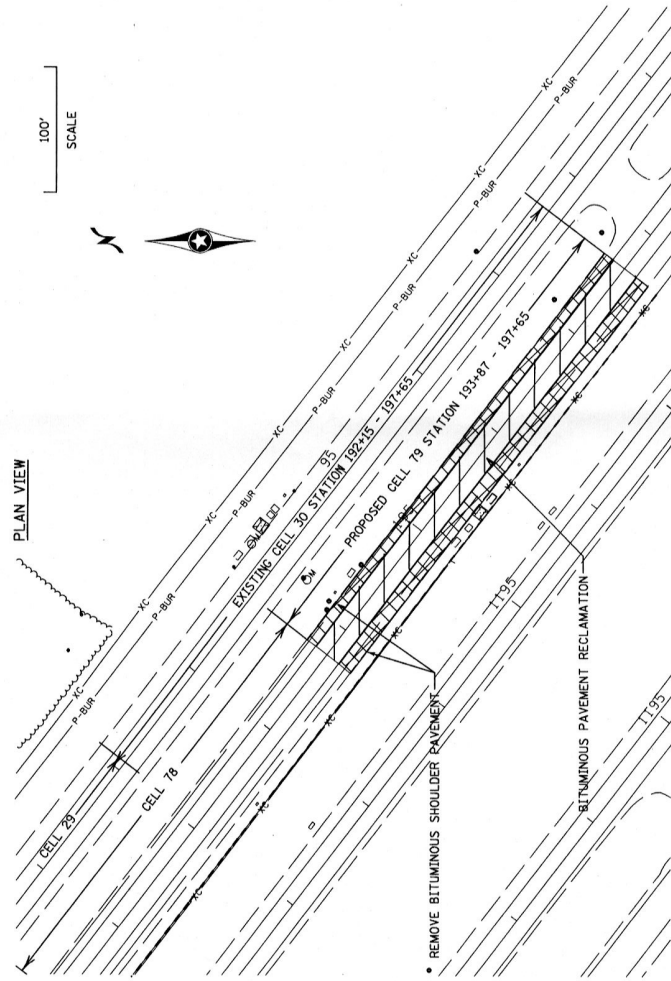
EARTHWORK SUMMARY

CELL 79 STATION	COMMON EXC	GRADING MATERIAL (CV)	SUIT HAUL
193+87 - 197+65	CU YD	CU YD	CU YD
TOTAL	229	163	293

THE FOLLOWING SHRINKAGE FACTORS WERE USED:  
SUITABLE 130%

NOTES:

- ① ALL MATERIAL COMES FROM STOCKPILES ON SITE TO BE DESIGNATED BY THE PROJECT ENGINEER.
- ② MNDOT 200 FUNDS.



TABULATED QUANTITIES, PLAN VIEW (CELL 79)  
4/30/2007

STATE PROJ. NO. 8680-156 (I.H. 94)

CERTIFIED BY: *James H. R. Joyce* L.L.C. NO. 43362  
LICENSED PROFESSIONAL ENGINEER

SHEET NO. 17 OF 25 SHEETS