

Item No.	Description	Unit	Estimated Quantity
2021.501	Mobilization	LS	1
2101.501	Clearing & Grubbing	LS	1
2104.501	Remove Existing Concrete Curb & Gutter	LF	124
2104.501	Remove Sewer Pipe (Storm) (All Sizes)	LF	179
2104.501	Remove Storm Structure (Storm)	EA	2
2104.501	Remove Existing Bituminous Surface	SY	3783
2104.513	Sawcut Existing Bituminous Surface	LF	110
2105.501	Common Excavation, Topsoil Strip (EV) (P)	CY	1100
2105.501	Common Excavation (P)	CY	2566
2105.501	Common Borrow (CV)	CY	1991
2211.503	Aggregate Base, 8" Class 5 (CV) (P)	CY	359
2212.503	Aggregate Base, 6" Class 3 (CV) (P)	CY	268
2360.501	1.5" Type SPWEA340C, Bituminous Wear Course	SY	1340
2360.501	2.5" Type SPNWB330B, Bituminous Non-Wear Course	SY	1340
2511.515	Geotextile Fabric, Type V	SY	1610
2531.501	Concrete Curb & Gutter, Design S418 Modified	LF	704
2531.501	Concrete Curb & Gutter, Design B618	LF	57
2564.515	Sign Post	EA	1
2564.536	Sign Panel, Type Street Sign	EA	1
2564.536	Sign Panel, Type R1-1 Stop Sign	EA	1
2451.507	Granular Pipe Foundation	CY	10
2502.541	6" Perforated PVC Subdrain	LF	703
2502.541	6" PVC Cleanout	EA	3
2502.541	4" PVC Subdrain Stub	LF	79
2502.541	4" PVC Cap	EA	6
2503.511	15" RC Pipe Sewer	LF	208
2503.602	Connect to Existing Storm	EA	1
2506.501	Construct Drainage Structure, Type 3 C.B.	EA	2
2506.501	Construct Drainage Structure, MnDot 4020-48"	LF	4
2506.516	Casting Assembly Neenah R-3067 w/ "Type V" Grate	EA	2
2506.516	Casting Assembly Neenah R-4342	EA	1
2451.507	Granular Pipe Foundation	CY	15
2504.602	Connect to Inplace 8" Watermain	EA	2.0
2504.602	8"x8" Wet Tap	EA	1
2504.602	6" Gate Valve & Box	EA	1
2504.602	8" Gate Valve & Box	EA	1
2504.602	Hydrant	EA	1
2504.603	6" Watermain Pipe	LF	33
2504.603	8" Watermain Pipe	LF	553
2504.603	1" Water Service	LF	215
2504.603	1" Corporation Stop	EA	6
2504.603	1" Curb Stop & Box	EA	6
2504.604	2" Polystyrene Insulation	SY	15.6
2504.604	4" Polystyrene Insulation	SY	23
2504.608	Watermain Fittings (C153)	LBS	198
2451.507	Granular Pipe Foundation	CY	12
2503.602	Connect to Inplace 8" Sanitary	EA	1
2503.602	8"x4" Sanitary Wye	EA	6
2503.603	8" Sanitary Sewer Pipe (SDR-35)	LF	435
2503.603	4" PVC Sanitary Service (SDR-26)	LF	214
2504.602	4" Pipe Plug (SDR-26)	EA	6
2506.602	Chimney Seal	LF	4
2506.602	Casting Assembly MnDot 716 w/ Self Seal Cover	EA	4
2506.603	Sanitary Manhole, MnDot 4007C w/ Mechanical Joint & Seals	LF	44.3
2573.502	Silt Fence, Type Machine Sliced	LF	1,010
2573.530	Storm Drain Inlet Protection	EA	7
2573.535	Stabilized Construction Exit	EA	1
2573.623	Rapid Stabilization, Method 3	MGAL	12.0
2575.505	Sodding, Type Salt Resistant	SY	334
2575.511	Temporary Mulch Material, Type 1 (2 Tons Per Acre)	TON	5
2575.523	Erosion Control Blanket, Category 3 with Seed	SY	2,450
101	Concrete Washout Area	EA	1
2571.601	Plant Installation	LS	1
2572.602	1-Year Plant Maintenance	LS	1
2575.502	Boulevard Tree	EA	19

THE FOLLOWING STANDARD PLATES, APPROVED BY CITY OF MANKATO ENGINEER, SHALL APPLY ON THIS PROJECT http://www.mankato-mn.gov/upload/contents/344/2013_Standard_Plates.pdf	
PLATE NO.	DESCRIPTION
2000A	INLET PROTECTION, TYPE 1
2001A	INLET PROTECTION, TYPE 2
2002A	TEMPORARY MANHOLE INSERTS
2003A	TEMPORARY ROCK CONSTRUCTION ENTRANCE
2100A	GRANULAR BEDDING & ENCASEMENT
2101B	DETAIL OF SANITARY & WATER IN THE SAME TRENCH
2200A	SANITARY SEWER MANHOLE
2203A	INTERNAL RUBBER SLEEVE
2240A	STANDARD SANITARY SERVICE
2321A	GATE VALVE ADAPTOR
2322A	HYDRANT DETAIL
2323A	POLYSTYRENE INSULATION
2340A	WATER SERVICE
2402B	MANKATO STD. CATCH BASIN NUMBER 3
2420A	DRAIN TILE TRENCH DETAIL
2421A	DRAIN TILE CLEANOUT END/THRU BOULDEVAARD CONDITION
2440A	4" SUBDRAIN STUB
2500A	S4-18 MODIFIED CURB & GUTTER

THE FOLLOWING STANDARD PLATES, APPROVED BY THE MINNESOTA DEPARTMENT OF TRANSPORTATION, SHALL APPLY ON THIS PROJECT http://standardplates.dot.state.mn.us/StdPlate.aspx	
PLATE NO.	DESCRIPTION
4007C	PRECAST MECHANICAL JOINT SEWER MANHOLE
4020J	MANHOLE OR CATCH BASIN
4108F	ADJUSTING RINGS FOR CATCH BASINS AND MANHOLES
4110F	COVER CASTING FOR MANHOLE (FOR USE IN ALL TRAFFIC AREAS)



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PROFESSIONAL ENGINEER UNDER THE LAWS OF THE
STATE OF MINNESOTA.

CHARLES J. BRANDEL



DATE 11/07/2014 LIC. NO. 43359

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DATE _____ LIC. NO. _____

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PROJECT _____

IRONWOOD ESTATES

MANKATO MINNESOTA

[illegible]

PROJECT NO.	14-16889
FILE NAME	16889 SCHEDULES-DETAILS
DRAWN BY	RJA
DESIGNED BY	RJA
REVIEWED BY	CJB
ISSUE DATE	11/6/2014
CITY PROJECT NO.	88006

TITLE

**ESTIMATED
QUANTITIES &
STANDARD PLATES**

SHEET

MH/CB TYPES		LENGTH (FT.)
1	TYPE 3 C.B.	9.9
2	MnDOT STRUCTURE 4020-48"	4.0
3	MnDOT 4007C W/ MECHANICAL JOINT & PIPE SLEEVE SEALS	44.3

CASTING TYPES		NO.
C-1	NEENAH R-3067-V	2
C-2	NEENAH R-4342	1
C-3	MnDOT 700-7 RING & SELF SEAL 716 COVER W/ CONCEALED PICK HOLES	4

SANITARY SEWER SCHEDULE

STRUCTURE NO.	ALIGNMENT	STATION	LOCATION	M.H. TYPE	CASTING TYPE	PAY HGT. LN. FT.	TOP OF CASTING ELEV.	OUTLET ELEVATION	PIPE NO.	DRAIN TO	PIPE SLOPE	PIPE OUTLET ELEVATION	8" PVC	PIPE CLASS
S-1	TELEMARK COURT 2	2+36	5' RT	3	C-3	8.1	950.98	942.90	EX 8"	EX MH	1.22%	941.77	-	SDR-35
S-2	TELEMARK COURT 2	1+32	5' RT	3	C-3	11.2	960.62	949.43	SP-1	S-1	6.17%	943.00	104	SDR-35
S-3	TELEMARK COURT	3+26	5' RT	3	C-3	12.5	967.50	955.00	SP-2	S-2	4.31%	949.53	127	SDR-35
S-4	TELEMARK COURT	1+22	5' RT	3	C-3	12.5	974.50	962.00	SP-3	S-3	3.38%	955.10	204	SDR-35
TOTALS						44.3							435	

STORM DRAIN SCHEDULE

STRUCT. NO.	ALIGNMENT	STATION	LOCATION	M.H. TYPE	CASTING TYPE	PAY HGT. LN. FT.	* TOP OF CASTING ELEV.	OUTLET ELEVATION	PIPE NO.	DRAIN TO	PIPE SLOPE	PIPE OUTLET ELEVATION	15" RCP	PIPE CLASS
A-1	TELEMARK COURT	2+88	192' RT	2	C-2	4.04	960.58	956.54	EX 15	EX CB	7.75%	953.60	-	-
A-2	TELEMARK COURT	2+87	16' RT	1	C-1	5.15	967.18	962.03	P-1	A-1	2.99%	956.74	177	V
A-3	TELEMARK COURT	2+87	16' LT	1	C-1	4.75	967.18	962.43	P-2	A-2	0.64%	962.23	31	V
STORM TOTALS						13.94							208	

* TOP OF CASTING ELEVATIONS ON CURB STYLE CATCH BASINS REPRESENT TOP OF CURB BOX, NOT GUTTER ELEVATION.

WATERMAIN SCHEDULE

STATION	LOCATION	6" WATERMAIN	8" WATERMAIN	MJ. GATE VALVE & BOX	TEE'S / CROSSES (lbs)*	8"x8" WET TAP & VALVE	BEND (lbs)*	5"x8'-0" HYDRANT
TELEMARK COURT								
0+19 TO 3+35	5' LT TO CL		310					
0+19	5' LT	CONNECT TO EXISTING 8" WATERMAIN						
0+19	5' LT					1		
3+29	5' LT						8"x45° (59) HORIZ.	
TELEMARK COURT 2								
0+6 TO 2+36	5' LT		243					
0+17	5' LT				8"x6" (80)			
1+30	5' LT						8"x45° (59) HORIZ.	
2+36	5' LT	CONNECT TO EXISTING 8" WATERMAIN						
0+17	5' LT TO 38' LT	33						
0+17	35' LT			6"				
0+17	38' LT							1
TOTALS		33	553	1-6"	80 (lbs)	1	118 (lbs)	1

*ALL FITTING WEIGHTS ARE MECHANICAL JOINT C153 DUCTILE IRON

SUBDRAIN SCHEDULE

STATION	LOCATION	CONNECTION	6" PERF. PVC	PIPE
TELEMARK COURT				
0+34 TO	RT	C.O.	251	D-1
2+87	RT	A-2		
0+43 TO	LT	C.O.	242	D-2
2+87	LT	A-3		
2+87	RT	A-2	105	D-3
3+66 TO	RT	C.O.		
2+87	LT	A-3	105	D-4
3+66	LT	C.O.		
TOTAL			703	



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CHARLES J. BRANDEL
DATE 11/07/2014 LIC. NO. 43359
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PROJECT
IRONWOOD ESTATES
MANKATO MINNESOTA

REVISION SCHEDULE		
NO	DATE	DESCRIPTION

PROJECT NO. 14-16889
FILE NAME 16889 SCHEDULES-DETAILS
DRAWN BY RLJA
DESIGNED BY RLJA
REVIEWED BY CJB
ISSUE DATE 11/6/2014
CITY PROJECT NO. 86006

TITLE
UTILITY SCHEDULES
SHEET
3 OF 18



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CHARLES J. BRANDEL
CJB

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PROJECT

IRONWOOD ESTATES

MANKATO MINNESOTA

REVISION SCHEDULE		
NO	DATE	DESCRIPTION

PROJECT NO. 14-16889

FILE NAME 16889 SCHEDULES-DETAILS

DRAWN BY RLJA

DESIGNED BY RLJA

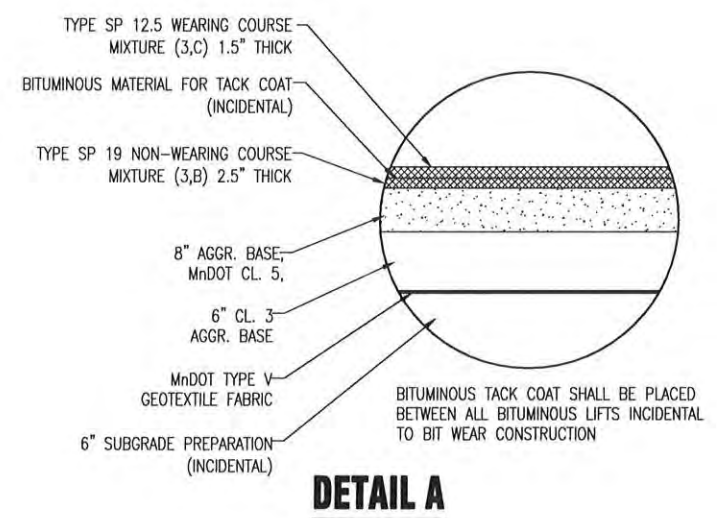
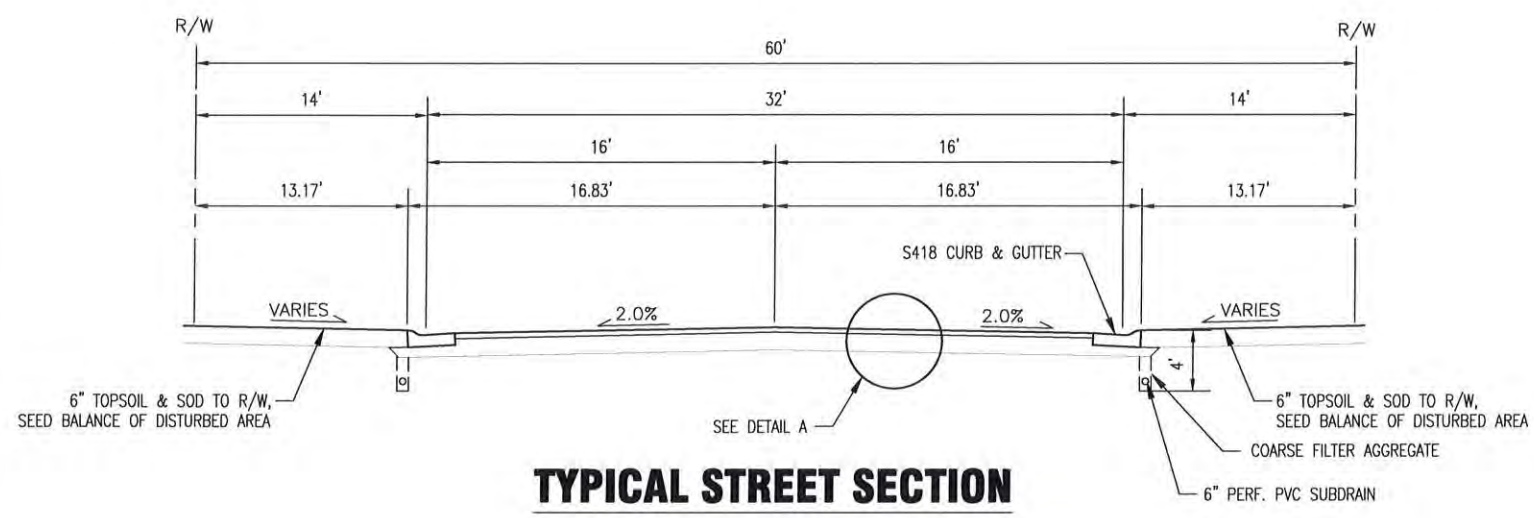
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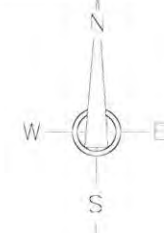
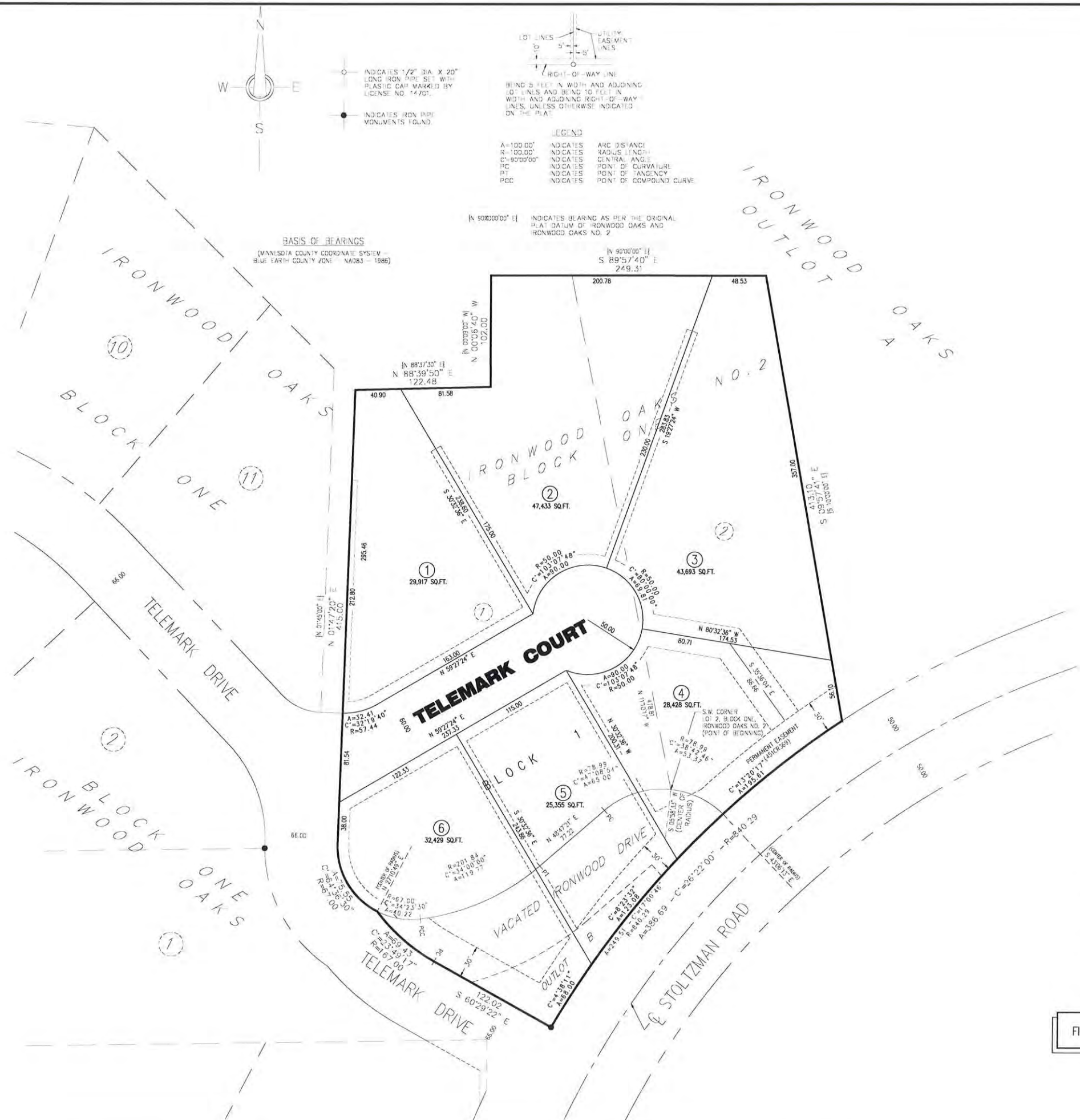
ISSUE DATE 11/6/2014

CITY PROJECT NO. 86006

TITLE

TYPICAL SECTION



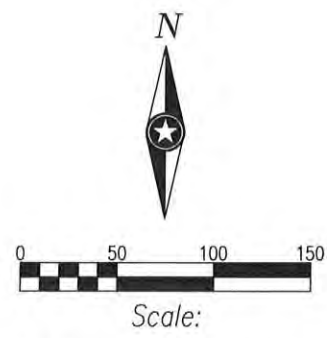


BASIS OF BEARINGS
(MINNESOTA COUNTY COORDINATE SYSTEM -
BLUE EARTH COUNTY ZONE - NAD83 - 1986)



LEGEND
A=100.00' INDICATES ARC DISTANCE
R=100.00' INDICATES RADIUS LENGTH
C=90.00000° INDICATES CENTRAL ANGLE
PC INDICATES POINT OF CURVATURE
PT INDICATES POINT OF TANGENCY
PCC INDICATES POINT OF COMPOUND CURVE

[N 90°00'00" E] INDICATES BEARING AS PER THE ORIGINAL PLAT DATUM OF IRONWOOD OAKS AND IRONWOOD OAKS NO. 2



B.M. ELEVATION=971.10
TOP NUT OF HYDRANT
LOCATED SOUTHEAST OF INTERSECTION OF
TELEMARK DRIVE & STOLTZMAN ROAD

FINAL PLAT PREPARED BY SURVEY SERVICES INC.

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DATE _____ LIC. NO. _____

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PROJECT

IRONWOOD ESTATES

MANKATO MINNESOTA

REVISION SCHEDULE		
NO	DATE	DESCRIPTION

PROJECT NO. 14-16889

FILE NAME 16889 PLAT

DRAWN BY RJA

DESIGNED BY RJA

REVIEWED BY CJB

ISSUE DATE 11/8/2014

CLIENT PROJECT NO. 86006

TITLE

FINAL PLAT

SHEET

5

OF 18



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City of
MANKATO

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PROJECT

IRONWOOD ESTATES

MANKATO MINNESOTA

REVISION SCHEDULE	
NO	DATE DESCRIPTION

PROJECT NO. 14-16889

FILE NAME 16889 SITE-UTL

DRAWN BY RJA

DESIGNED BY RJA

REVIEWED BY CJB

ISSUE DATE 11/8/2014

CITY PROJECT NO. 86006

TITLE

EXISTING SITE & REMOVAL PLAN

SHEET

6

OF 18



SITE BALANCE (PUBLIC):		Clay	Topsoil
Common Excavation	+	358 CY	1166 CY
Street Excavation	+	373 CY	0 CY
Reduction of Fill Space Due to Street Section	+	432 CY	
Fill Material Needed	-	969 CY	2466 CY
Topsoil from Topsoil Strip	+		1100 CY
Fill to Replace Topsoil Strip	-	1100 CY	
Common Excavation for Topsoil Redress	+	669 CY	
Topsoil Redress	-		669 CY
Muck Pit Excavation	+	0 CY	0 CY
Hold Down	Reduction of Fill	+	0 CY
	Additional Cut	+	0 CY
Shrink Losses	Excavations	-	507 CY
	Topsoil	-	183 CY
	Muck	-	0 CY
	Other	-	0 CY
TOTAL:		-744 CY	-1247 CY

GRADING NOTES:

COMMON EXCAVATION: 2,566 CY

COMMON EXCAVATION TOPSOIL STRIP: 1,100 CY

A SHRINKAGE FACTOR OF 1.15 (EMBANKMENT) & 1.20 WAS (TOPSOIL) WERE APPLIED TO ALL EXCAVATION MATERIAL WHEN DETERMINING SITE BALANCE.

NO WARRANTY IS MADE OR IMPLIED AS TO THE ACCURACY, SUFFICIENCY OR RELIABILITY OF SHRINKAGE FACTORS.

24" OF TOPSOIL WAS ASSUMED IN ALL TOPSOIL STRIP AREAS. ALL AREAS SHALL BE DRESSED WITH A MINIMUM OF 6" OF TOPSOIL. A 6" TOPSOIL DRESS WAS UTILIZED IN EARTHWORK CALCULATION ABOVE.

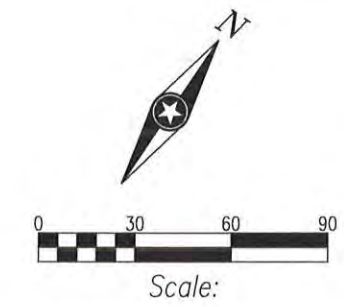
ALL EXCESS MATERIAL SHALL BE HAULED FROM THE SITE AT NO ADDITIONAL COST TO THE OWNER

THE SITE BALANCE PROVIDED ABOVE IS FOR INFORMATIONAL PURPOSES. IT IS THE CONTRACTORS RESPONSIBILITY TO VERIFY ALL QUANTITIES PRIOR TO SUBMITTING A BID FOR THE PROJECT.

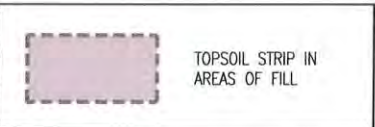
GENERAL GRADING NOTES:

EXCAVATED MATERIAL SHALL BE COMPACTED TO 98% PROCTOR DENSITY IN ALL BUILDING PADS AND 100% PROCTOR DENSITY UNDER ALL STREETS. REFER TO THE QUALITY COMPACTION METHOD IN ALL OTHER AREAS.

PROPOSED CONTOURS SHOW FINISHED GRADE ELEVATIONS. BUILDING PAD HOLD DOWNS ARE NOT INCLUDED. WHEN CONSTRUCTING BUILDING PADS WITH A HOLD DOWN, GRADE AREAS TO ENSURE POSITIVE BUILDING PAD DRAINAGE.



B.M. ELEVATION=971.10
TOP NUT OF HYDRANT
LOCATED SOUTHEAST OF INTERSECTION OF
TELEMARK DRIVE & STOLTZMAN ROAD



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CHARLES J. BRANDEL

DATE **11/07/2014** LIC. NO. **43359**

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PROJECT

IRONWOOD ESTATES

MANKATO MINNESOTA

REVISION SCHEDULE		
NO	DATE	DESCRIPTION

PROJECT NO. **14-16889**

FILE NAME **16889 GRADING PUBLIC**

DRAWN BY **RJA**

DESIGNED BY **RJA**

REVIEWED BY **CJB**

ISSUE DATE **11/6/2014**

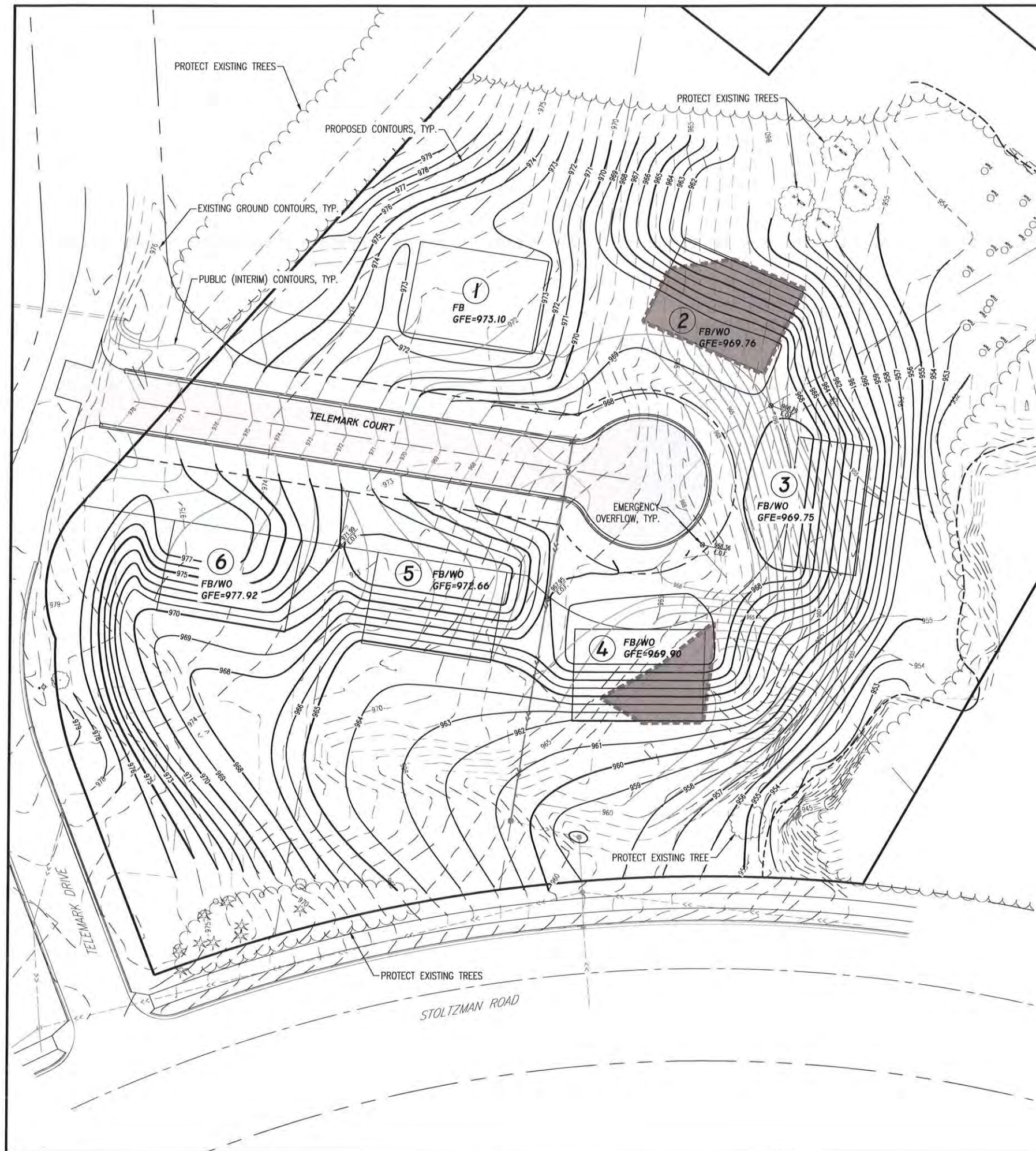
CITY PROJECT NO. **88006**

TITLE

PUBLIC GRADING PLAN (INTERIM)

SHEET

7 OF 18



SITE BALANCE (PRIVATE):		Clay	Topsoil
Common Excavation	+	2493 CY	3211 CY
Street Excavation	+	0 CY	0 CY
Reduction of Fill Space Due to Street Section	+	0 CY	
Fill Material Needed	-	3764 CY	2942 CY
Topsoil from Topsoil Strip	+		369 CY
Fill to Replace Topsoil Strip	-	369 CY	
Common Excavation for Topsoil Redress	+	2033 CY	
Topsoil Redress	-		2033 CY
Muck Pit Excavation	+	0 CY	0 CY
Hold Down	Reduction of Fill	567 CY	0 CY
	Additional Cut	184 CY	0 CY
Shrink Losses	Excavations	590 CY	535 CY
	Topsoil		61 CY
	Muck	0 CY	0 CY
	Other	0 CY	0 CY
TOTAL:		555 CY	-1993 CY

GRADING NOTES:

COMMON EXCAVATION: 7,921 CY

COMMON EXCAVATION TOPSOIL STRIP: 369 CY

A SHRINKAGE FACTOR OF 1.15 (EMBANKMENT) & 1.20 WAS (TOPSOIL) WERE APPLIED TO ALL EXCAVATION MATERIAL WHEN DETERMINING SITE BALANCE.

NO WARRANTY IS MADE OR IMPLIED AS TO THE ACCURACY, SUFFICIENCY OR RELIABILITY OF SHRINKAGE FACTORS.

24" OF TOPSOIL WAS ASSUMED IN ALL TOPSOIL STRIP AREAS. ALL AREAS SHALL BE DRESSED WITH A MINIMUM OF 6" OF TOPSOIL. 18" TOPSOIL DRESS WAS UTILIZED IN EARTHWORK CALCULATION ABOVE.

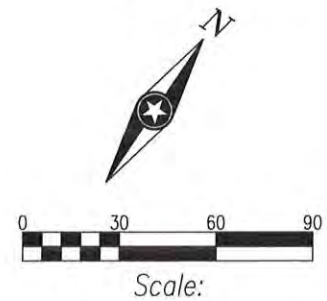
ALL EXCESS MATERIAL SHALL BE HAULED FROM THE SITE AT NO ADDITIONAL COST TO THE OWNER

THE SITE BALANCE PROVIDED ABOVE IS FOR INFORMATIONAL PURPOSES. IT IS THE CONTRACTORS RESPONSIBILITY TO VERIFY ALL QUANTITIES PRIOR TO SUBMITTING A BID FOR THE PROJECT.

GENERAL GRADING NOTES:

EXCAVATED MATERIAL SHALL BE COMPACTED TO 98% PROCTOR DENSITY IN ALL BUILDING PADS AND 100% PROCTOR DENSITY UNDER ALL STREETS. REFER TO THE QUALITY COMPACTION METHOD IN ALL OTHER AREAS.

PROPOSED CONTOURS SHOW FINISHED GRADE ELEVATIONS. BUILDING PAD HOLD DOWNS ARE NOT INCLUDED. WHEN CONSTRUCTING BUILDING PADS WITH A HOLD DOWN, GRADE AREAS TO ENSURE POSITIVE BUILDING PAD DRAINAGE.



B.M. ELEVATION=971.10

TOP NUT OF HYDRANT
LOCATED SOUTHEAST OF INTERSECTION OF
TELEMARK DRIVE & STOLTZMAN ROAD



NOTES:
FB = FULL NON-WALKOUT BASEMENT
FB/WO = FULL WALKOUT BASEMENT
GFE = GARAGE FLOOR ELEVATION

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CHARLES J. BRANDEL

Charles J. Brandel

DATE 11/07/2014 LIC. NO. 43359

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DATE LIC. NO.

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PROJECT

**IRONWOOD
ESTATES**

MANKATO MINNESOTA

REVISION SCHEDULE		
NO	DATE	DESCRIPTION

PROJECT NO. 14-16889

FILE NAME 16889 GRADING PRIVATE

DRAWN BY RJA

DESIGNED BY RJA

REVIEWED BY CJB

ISSUE DATE 11/6/2014

CITY PROJECT NO. 86006

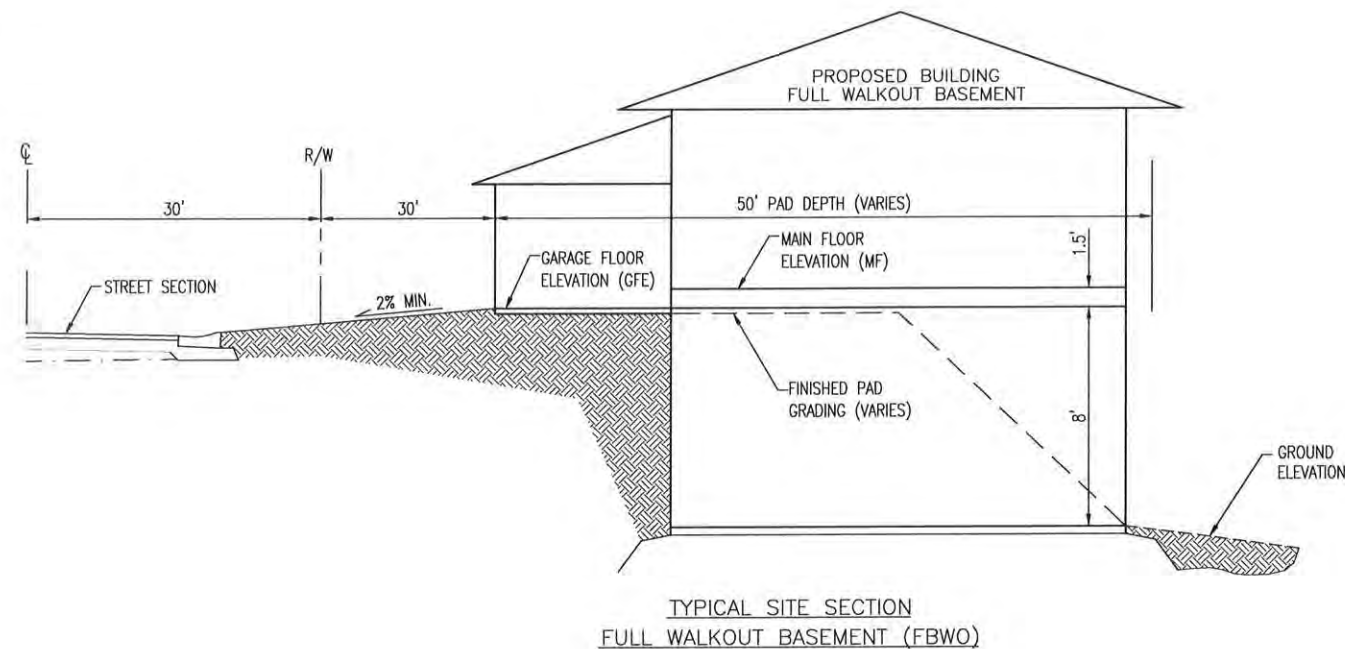
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**PRIVATE
GRADING PLAN
(FULL BUILD-OUT)**

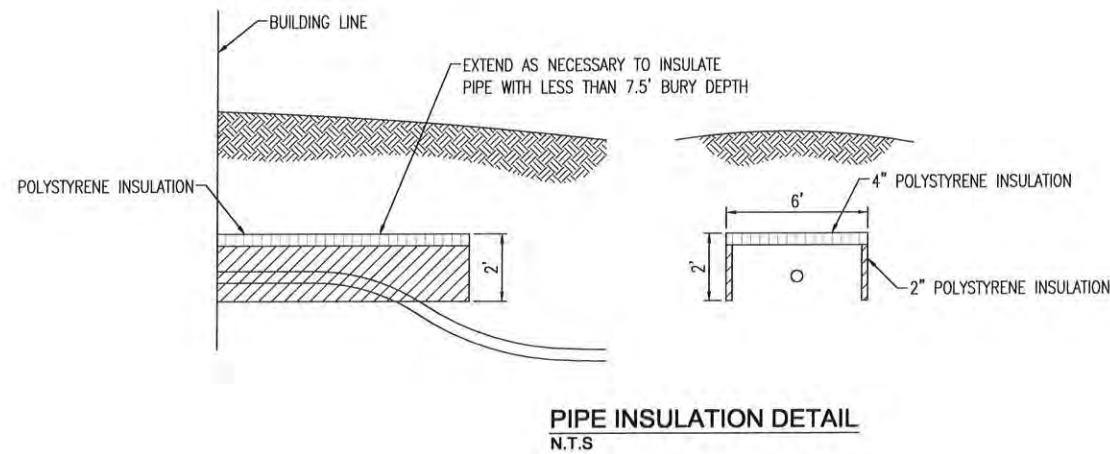
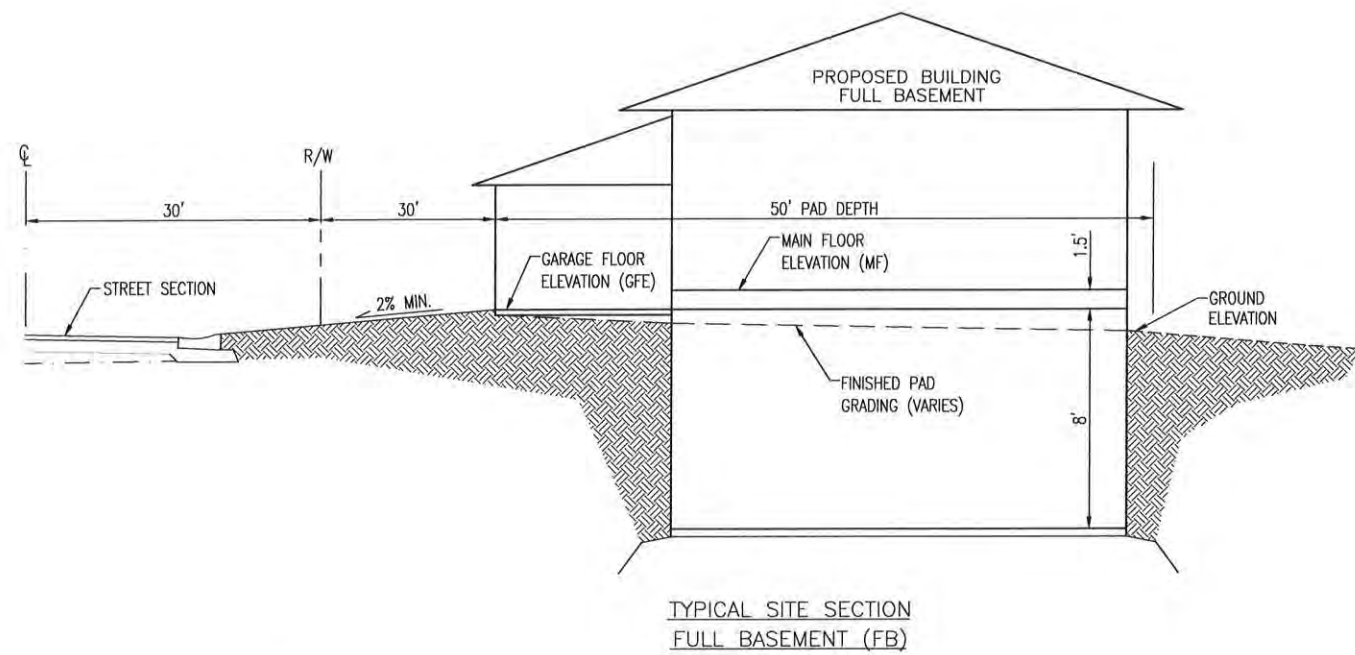
SHEET

8

OF 18

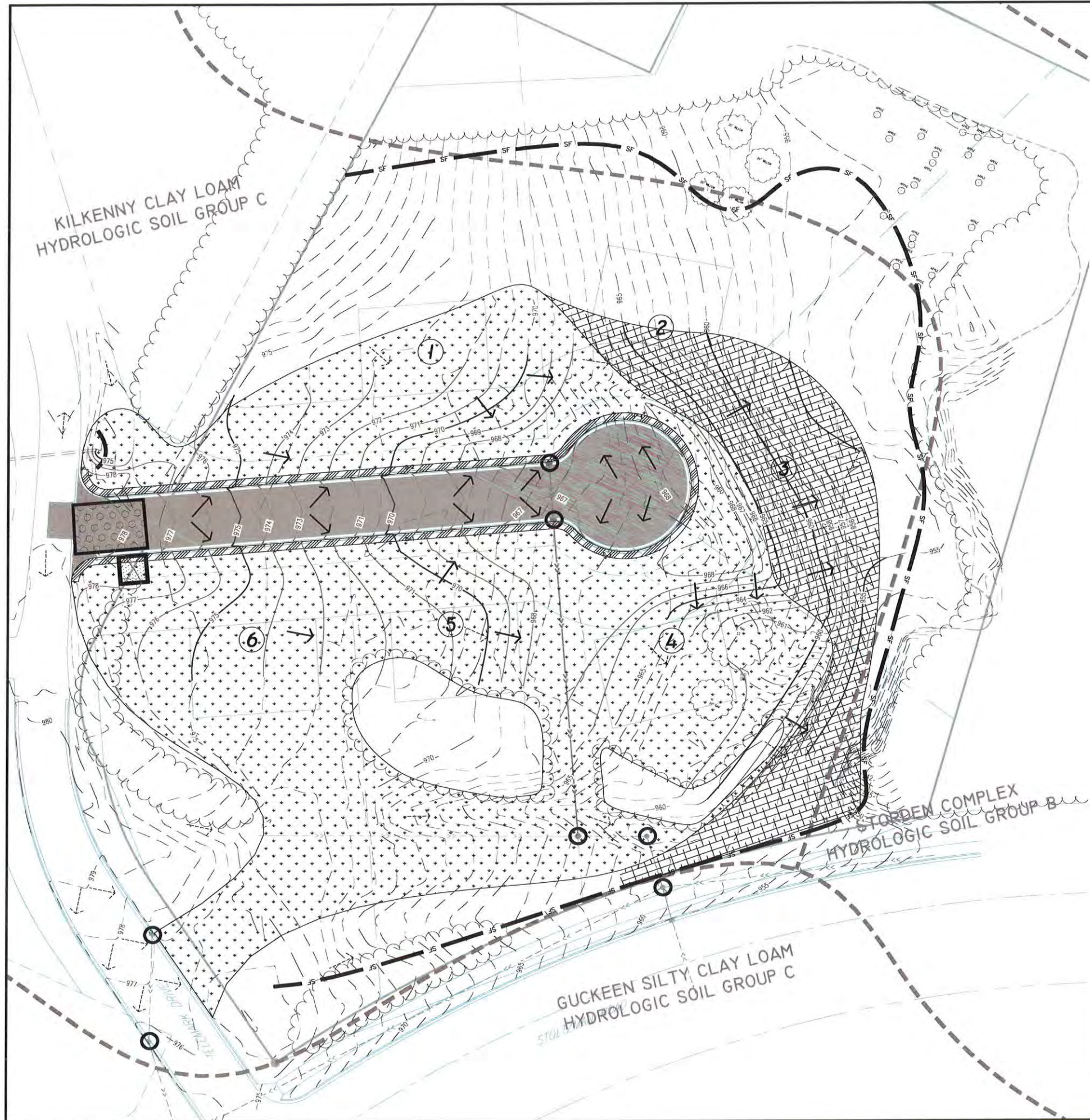


NOTE:
TOP OF FRONT BUILDING FOUNDATION WAS CALCULATED AS 4" ABOVE GFE.
MINIMUM TOP OF FOUNDATION WAS CALCULATED AS 2% GRADE FROM LOWEST BACK OF CURB ELEVATION AT EACH LOT +12".



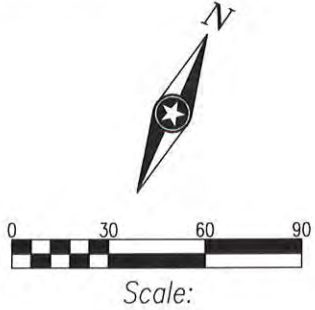
REVISION SCHEDULE		
NO	DATE	DESCRIPTION

PROJECT NO.	14-16889
FILE NAME	16889 SCHEDULES-DETAILS
DRAWN BY	RJA
DESIGNED BY	RJA
REVIEWED BY	CJB
ISSUE DATE	11/8/2014
CITY PROJECT NO.	88008



SWPPP LEGEND	
PROPOSED SILT FENCE	
PROPOSED INLET PROTECTION	
STABILIZED CONSTRUCTION EXIT	
EXISTING SURFACE FLOW DIRECTION	
PROPOSED SURFACE FLOW DIRECTION	
PROPOSED CONCRETE WASHOUT AREA	
PROPOSED SODDING TYPE LAWN & BOULEVARD	
PROPOSED RAPID STABILIZATION, METHOD 3	
MnDOT CATEGORY 3 EROSION CONTROL BLANKET	

NOTE:
ANY DISTURBED AREA WHERE EXCESS MATERIAL IS
PLACED SHALL BE STABILIZED.



B.M. ELEVATION=971.10
TOP NUT OF HYDRANT
LOCATED SOUTHEAST OF INTERSECTION OF
TELEMARK DRIVE & STOLTZMAN ROAD

HYDROLOGIC SOIL GROUP - SUMMARY BY MAP UNIT - BLUE EARTH COUNTY, MINNESOTA (MN013)			
MAP UNIT SYMBOL	MAP UNIT NAME	RATING	PERCENT OF AOI
238C	KILKENNY CLAY LOAM	C	70.2%
961F	STORDEN COMPLEX	B	27.0%
230	GUCKEEN SILTY CLAY LOAM	C	2.8%
TOTAL AREA OF INTEREST			100.0%

EROSION CONTROL QUANTITIES			
ITEM NO.	DESCRIPTION	UNITS	QUANTITY
2573.502	SILT FENCE, TYPE MACHINE SLICED	LIN FT	1,010
2573.530	STORM DRAIN INLET PROTECTION	EACH	7
2573.535	STABILIZED CONSTRUCTION EXIT	EACH	1
2573.623	RAPID STABILIZATION, METHOD 3	MGAL	12.0
2575.505	SODDING, TYPE SALT RESISTANT	SQ YD	334
2575.511	TEMPORARY MULCH MATERIAL, TYPE 1 (2 TONS PER ACRE)	TON	5
2575.523	EROSION CONTROL BLANKET, CATEGORY 3 W/ SEED MIX 25-151	SQ YD	2,450
101	CONCRETE WASHOUT AREA	EA	1

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CHARLES J. BRANDEL

CTED

DATE: 11/07/2014 LIC. NO.: 43359

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DATE: _____ LIC. NO.: _____

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PROJECT

IRONWOOD ESTATES

MANKATO MINNESOTA

REVISION SCHEDULE		
NO	DATE	DESCRIPTION

PROJECT NO. 14-16889

FILE NAME 16889 SWPPP PUBLIC

DRAWN BY RJA

DESIGNED BY RJA

REVIEWED BY CJB

ISSUE DATE 11/8/2014

CITY PROJECT NO. 86006

TITLE

STORM WATER POLLUTION PREVENTION PLAN (SWPPP) PUBLIC

SHEET

10 OF 18

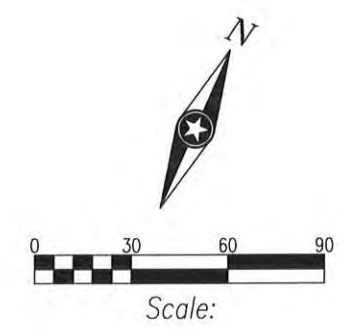


SWPPP LEGEND

PROPOSED SILT FENCE	SF
PROPOSED INLET PROTECTION	○
EXISTING SURFACE FLOW DIRECTION	---
PROPOSED SURFACE FLOW DIRECTION	→
PROPOSED RAPID STABILIZATION, METHOD 3	•••
MnDOT CATEGORY 3 EROSION CONTROL BLANKET	▨

NOTE:
SILT FENCE & INLET PROTECTION TO REMAIN FROM PUBLIC CONTRACT.

NOTE:
ANY DISTURBED AREA WHERE EXCESS MATERIAL IS PLACED SHALL BE STABILIZED.



B.M. ELEVATION=971.10
TOP NUT OF HYDRANT
LOCATED SOUTHEAST OF INTERSECTION OF
TELEMARK DRIVE & STOLTZMAN ROAD

HYDROLOGIC SOIL GROUP - SUMMARY BY MAP UNIT - BLUE EARTH COUNTY, MINNESOTA (MN013)

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961F	STORDEN COMPLEX	B	27.0%
230	GUCKEEN SILTY CLAY LOAM	C	2.8%
TOTAL AREA OF INTEREST			100.0%

EROSION CONTROL QUANTITIES

ITEM NO.	DESCRIPTION	UNITS	QUANTITY
2573.623	RAPID STABILIZATION, METHOD 3	MGAL	15.3
2575.523	EROSION CONTROL BLANKET, CATEGORY 3 W/ SEED MIX 25-151	SQ YD	3,356

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PROJECT

IRONWOOD ESTATES

MANKATO MINNESOTA

REVISION SCHEDULE		
NO	DATE	DESCRIPTION

PROJECT NO. 14-16889
FILE NAME 16889 SWPPP
DRAWN BY RJA
DESIGNED BY RJA
REVIEWED BY CJB
ISSUE DATE 11/6/2014
CITY PROJECT NO. 86006

TITLE

STORM WATER POLLUTION PREVENTION PLAN (SWPPP) PRIVATE

SHEET

11 OF 18

STORM WATER POLLUTION PREVENTION PLAN NOTES:

GENERAL PROJECT INFORMATION:

PROJECT NARRATIVE:

This project consists of the construction of a 6 lot residential development.

PROJECT PHASING:

This project consists of the construction of sanitary sewer, storm drain, watermain, surfacing & grading.

RESPONSIBLE PARTIES:

Contractor and Owner are required to apply for and receive a National Pollution Discharge Elimination System (NPDES) Stormwater Construction Permit from the MPCA at least 7 days prior to beginning work.

Contractor and owner shall identify a person knowledgeable and experienced in the application of erosion prevention and sediment control BMP's who will oversee the implementation of the SWPPP.

Company: Contact Person: Phone:

Company: Contact Person: Phone:

Owner shall identify the entity responsible for the long term Operation and Maintenance of the storm water management system.

Company: Contact Person: Phone:

PROJECT AREAS:

Total project size (disturbed area) = 3.67 acres

Minimum area requiring MPCA permit = 1.00 acres

****PROJECT DOES REQUIRE AN MPCA NPDES PERMIT****

Existing area of impervious surface = 1.10 acres

Post construction area of impervious surface = -0.79 acres

Total new impervious surface area created = 0.31 acres

Ultimate area of impervious surface created = 0.93 acres (incl. residential homes)

Minimum area of new impervious surface created requiring permanent storm water management = 1.00 acres

RECEIVING WATERS:

Surface waters which will receive storm water from the site within 1 mile (aerial radius measurement) of project boundary. Include waters shown on USGS 7.5 minute quad and all waters identified in appendix A of the permit.

Name of Water Body	Type (ditch, pond, wetland, lake, etc.)	Appendix A Special or Impaired Water?
UNNAMED	STREAM	YES
UNNAMED	STREAM	NO

Additional BMPs together with enhanced runoff controls are required for discharges to Special or Impaired waters within 1 mile of the site. (See Appendix A)

SOIL TYPES:

Particle sizes on site will range from 0.001 mm to 2 mm. See Hydrologic Soils Goup table, sheet 10 and 11.

CONSTRUCTION ACTIVITY NOTES:

EROSION PREVENTION:

Construction of silt fence and all other erosion control measures shall be complete before other construction activity occurs. Use phased construction wherever practical and establish turf as soon as possible to minimize sediment transport.

Turf establishment or temporary seeding or mulching of all exposed soil not being actively worked should be practiced following the table below:

Type of Slope or Disturbance Area	Time Area can Remain Open Without Being Actively Worked	
	Normal Water	IMPAIRED
Steeper than 3:1	14 days	7 days
10:1 to 3:1	14 days	7 days
Flatter 10:1	14 days	7 days
Ditches	1 day	1 day
Pipe Ends	1 day	1 day
Within 200 Feet of Surface Water	1 day	1 day

Temporary cover during construction is incidental.

Pipe outlets must be provided with temporary or permanent energy dissipation within 24 hours after connection to a surface water.

All exposed soils shall be seeded or sodded at the earliest possible time to prevent/reduce erosion.

A. Seed shall be MnDOT mixture 25-151 and shall be placed in accordance with MnDOT 2575. Seed shall meet MnDOT Specification 3876. Seed shall be applied utilizing MnDot Rapid Stabilization, Method 3.

B. Sod shall meet MnDOT Specification 3878.2A, Type Lawn & Boulevard Sod. Sodding shall be in accordance with MnDOT 2575.

C. Temporary mulching shall be applied at a rate of 2 tons/acre. Mulch shall be disc anchored.

Additional erosion prevention measures may be found in the permit and MPCA's Best Management Practices.

SEDIMENT CONTROL PRACTICES:

Construction of silt fence and all other erosion control measures shall be complete prior to land disturbing activities occur.

A rock construction entrance or other approved alternative must be constructed at the entry point to the project site. Rock construction entrance must be 40'x25' (min.) of 2" - 4" crushed rock, 8" deep.

Inlet erosion protection shall be installed and maintained until turf or pavement has been established.

The contractor shall be responsible to control erosion from leaving the construction zone. All eroded material that leaves the construction zone shall be collected by the contractor and returned to the site at the contractor's expense.

Contractor shall maintain a 50-foot natural buffer or use redundant sediment controls near surface waters if a buffer is not feasible.

Contractor shall take the necessary steps to minimize soil compaction and preserve topsoil on site.

All streets must be swept within 24 hours when any tracking occurs.

Silt fence or other effective erosion control measures must be installed around the perimeter of any soil stockpiled, including temporary stockpiles, at this location or any other on the project site. Stockpiles cannot be placed in surface waters, including storm water conveyances such as curb and gutter systems, or conduits and ditches.

Perimeter control shall be installed along the back of curb immediately following curb installation at all locations with positive drainage to parking lot and/or streets, and remaining until stabilization is achieved. This shall be accomplished through the use of silt fence. (Biorolls, Rock logs, or other methods approved by the engineer prior to installation shall also be placed acceptable)

CONSTRUCTION ACTIVITY NOTES:

DEWATERING AND BASIN DRAINING:

Dewater sediment-laden water to sedimentation basins if possible, or use other BMP's to prevent erosion when discharging to surface waters. Use appropriate energy dissipation measures on all discharges.

Dewatering practices cannot cause nuisance conditions, erosion or in receiving channels or inundation of wetlands resulting in adverse impacts.

POLLUTION PREVENTION:

All solid waste collected from the construction site must be disposed in accordance with all applicable regulations.

All hazardous materials (oil, gasoline, fuel, paint, etc) must be properly stored to prevent spills, leaks, or other discharge. Storage areas shall provide secondary containment and a hazardous materials spill kit. Equipment fueling and maintenance shall occur in a designated, contained area. Storage and disposal of hazardous waste must be in compliance with all applicable regulations. All runoff containing any hazardous material must be properly collected and disposed. No engine degreasing shall be allowed on site.

All sanitary wastes must be collected from portable units on site by a licensed sanitary waste management contractor. The units must be secured and shall be maintained on a regular basis as needed to prevent overflowing.

Emergency Spill Plan - The Contractor is responsible for all construction personnel to be informed of the manufacturers' recommended spill cleanup methods, and the location of that information and cleanup supplies. The Contractor shall modify the SWPPP as required within seven calendar days of knowledge of the release to: provide a description of the release, the circumstances leading to the release, and the date of the release. Plans must identify measures to prevent the reoccurrence of such releases. If a spill occurs, the following steps shall be followed:

1. Observe the safety precautions associated with the spilled material. Stop the source of the spill, if you can do so safely. Call 911 if fire or public safety hazards are created.
2. Contain the spilled material. Dirt, sand, or any semi-impermeable material may be used to create a containment structure to prevent the material from flowing.
3. Report the spill to the Minnesota Duty Officer at (651) 649-5451.
4. Clean up the spilled material and dispose of the wastes properly. With the exception of used oil, waste generated from petroleum spills that have been reported and cleaned up immediately are exempt from Minnesota's Hazardous Waste Rules. Waste generated from used oil spills must be sent to a facility for energy recovery.

The contractor is responsible for monitoring air pollution and ensuring it does not exceed levels set by local, state, or federal regulations. This includes dust created by work being performed on the site. Air pollution and dust control correction is considered incidental to the unit bid prices for which work is being performed. Additional dust control measures may be required by the Engineer.

Concrete washout onsite: All liquid and solid wastes generated by concrete washout operations must be contained in a leak-proof containment facility or impermeable liner. A compacted clay liner that does not allow washout liquids to enter ground water is considered an impermeable liner. The liquid and solid wastes must not contact the ground, and there must not be runoff from the concrete washout operations or areas. Liquid and solid wastes must be disposed of properly and in compliance with MPCA regulations. A sign must be installed adjacent to each washout facility to inform concrete equipment operators to utilize the proper facilities.

INSPECTION AND MAINTENANCE:

The Permittees must routinely inspect the construction site once every seven (7) days during active construction and within 24 hours of a rainfall event greater than 0.5 inches in a 24 hour period.

All inspections performed during construction must be recorded and records retained with the SWPPP in accordance with the Stormwater Permit. Contractor is responsible for keeping a record of all rainfall data & erosion control maintenance until final establishment of turf.

All silt fences must be repaired, replaced, or supplemented when they become nonfunctional or the sediment reaches $\frac{1}{2}$ of the height of the fence. Erosion control and other BMP's must be replaced, repaired, or supplemented when they reach 33% design load.

See MPCA website for example of SWPPP inspection and maintenance forms.
<http://www.pca.state.mn.us/index.php/view=document.html?gid=7409>

FINAL STABILIZATION:

The Permittees must ensure final stabilization of the site. The Permittees must submit a Notice of Termination within 30 days after final stabilization is complete or control has been passed to another owner. All temporary erosion control measures and BMP's must be removed as part of the final site stabilization.

The storm water permit further defines final stabilization and its requirements.

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PROJECT

IRONWOOD ESTATES

MANKATO

MINNESOTA

REVISION SCHEDULE		
NO	DATE	DESCRIPTION

PROJECT NO. 14-16889

FILE NAME 16889 SWPPP

DRAWN BY RJA

DESIGNED BY RJA

REVIEWED BY CJB

ISSUE DATE 11/6/2014

CITY PROJECT NO. 86006

TITLE

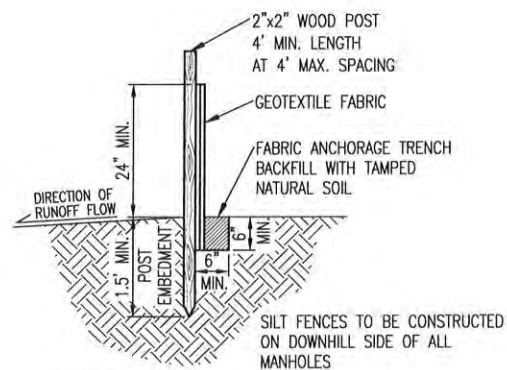
STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

SHEET

12

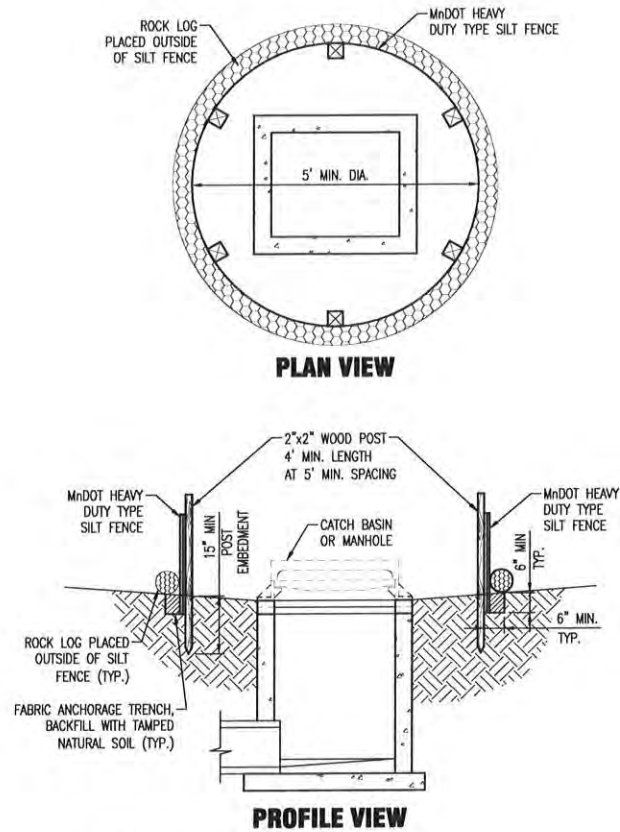
OF 18

THE FOLLOWING STANDARD PLATES, APPROVED BY CITY OF MANKATO ENGINEER, SHALL APPLY ON THIS PROJECT http://www.mankato-mn.gov/upload/contents/344/2011 Standard Plates.pdf	
PLATE NO.	DESCRIPTION
2000A	INLET PROTECTION, TYPE 1
2001A	INLET PROTECTION, TYPE 2
2002A	TEMPORARY MANHOLE INSERTS
2003A	TEMPORARY ROCK CONSTRUCTION ENTRANCE



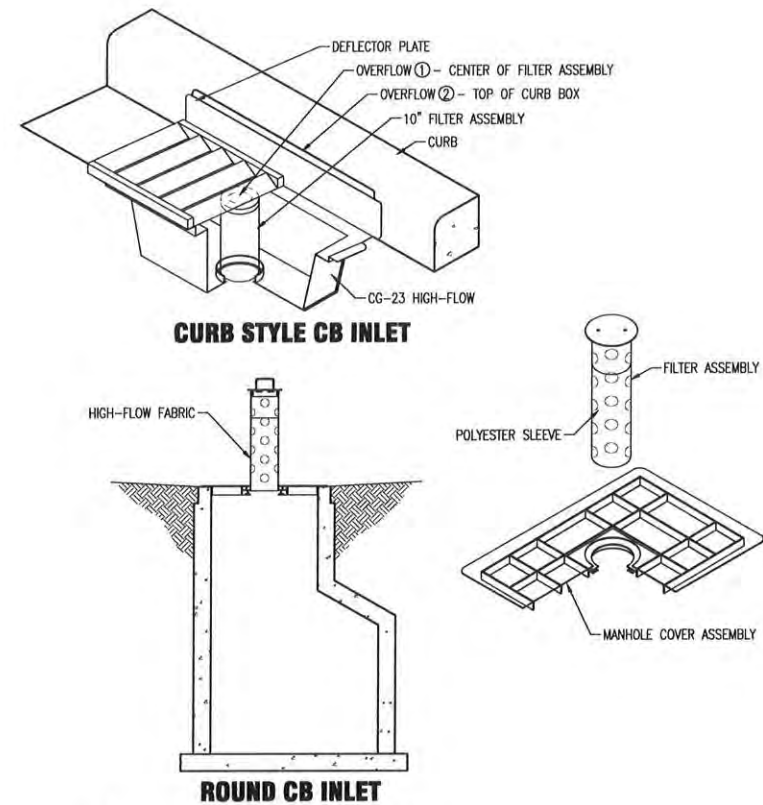
**MACHINE SLICED
SILT FENCE DETAIL**

N.T.S.



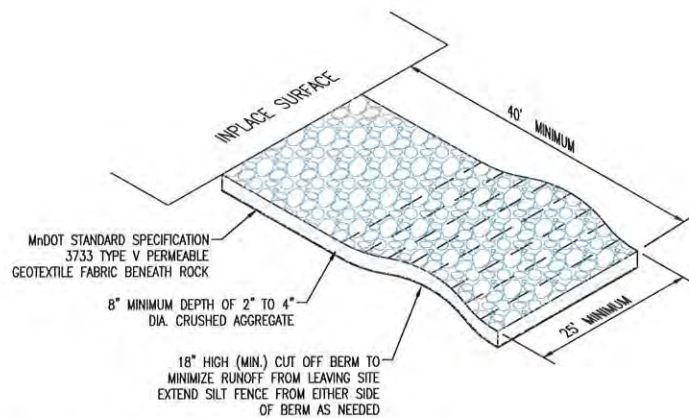
**INLET PROTECTION DETAIL
(SILT FENCE AROUND CATCH BASIN)**

N.T.S.



**INLET PROTECTION DETAIL
(CATCH BASIN IN STREET)**

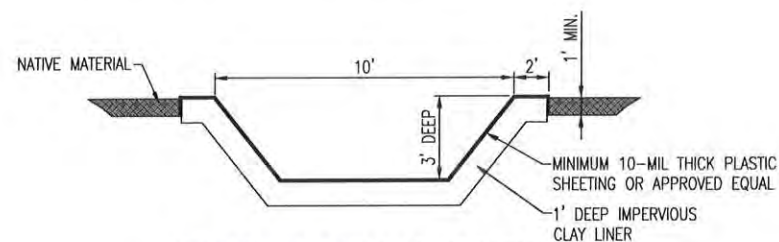
N.T.S.



ROCK CONSTRUCTION ENTRANCE

N.T.S.

NOTES:
CONTRACTOR SHALL INSTALL A SIGN INDICATING THE CONCRETE WASHOUT AREA.
CONTRACTOR SHALL MAINTAIN WASHOUT AREA TO REMOVE MATERIALS BEYOND 75% CAPACITY.
WASHOUT AREA SHALL NOT BE PLACED WITHIN 50' OF STORM DRAINS, OPEN DITCHES OR BODIES OF WATER.
CONTRACTOR SHALL INSPECT WASHOUT AREA AS NECESSARY TO PREVENT LEAKS AND OVER TOPPING.
WASHOUT AREA SHALL BE REMOVED AFTER CONSTRUCTION IS COMPLETE.



CONCRETE WASHOUT DETAIL

N.T.S.

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PROJECT

**IRONWOOD
ESTATES**

MANKATO

MINNESOTA

REVISION SCHEDULE		
NO	DATE	DESCRIPTION

PROJECT NO. 14-16889

FILE NAME 16889 SWPPP

DRAWN BY RJA

DESIGNED BY RJA

REVIEWED BY CJB

ISSUE DATE 11/6/2014

CITY PROJECT NO. 86006

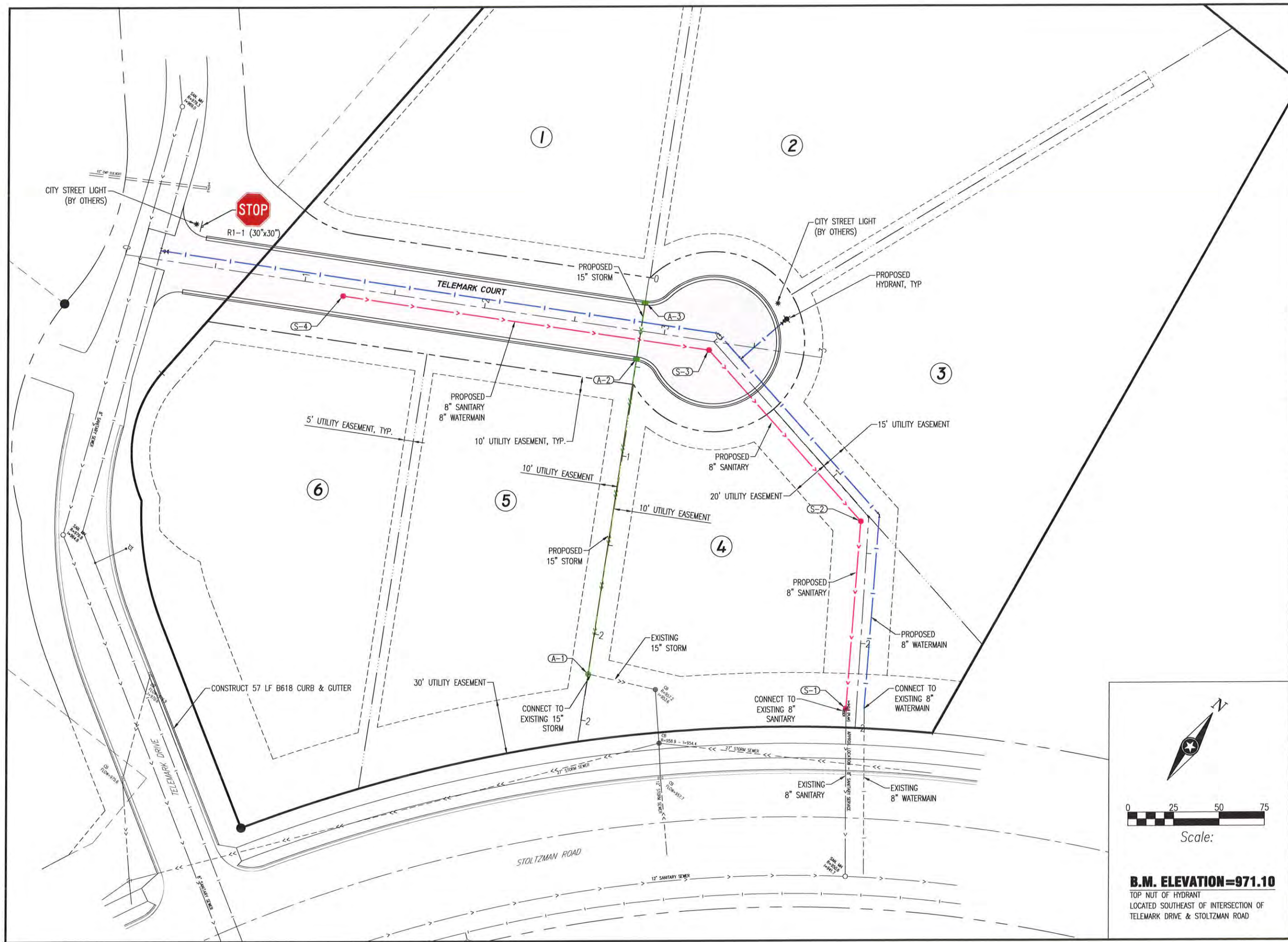
TITLE

**STORM WATER
POLLUTION
PREVENTION PLAN
(SWPPP)**

SHEET

13

OF 18



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CJB

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PROJECT

IRONWOOD ESTATES

MANKATO MINNESOTA

REVISION SCHEDULE		
NO	DATE	DESCRIPTION

PROJECT NO. 14-16889

FILE NAME 16889 SITE-UTL

DRAWN BY RJA

DESIGNED BY RJA

REVIEWED BY CJB

ISSUE DATE 11/6/2014

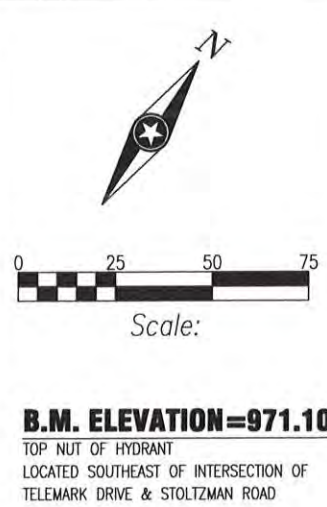
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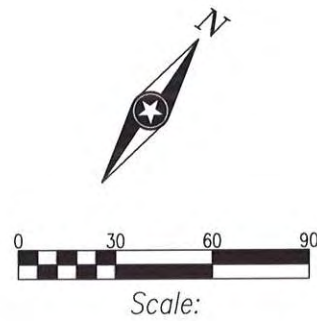
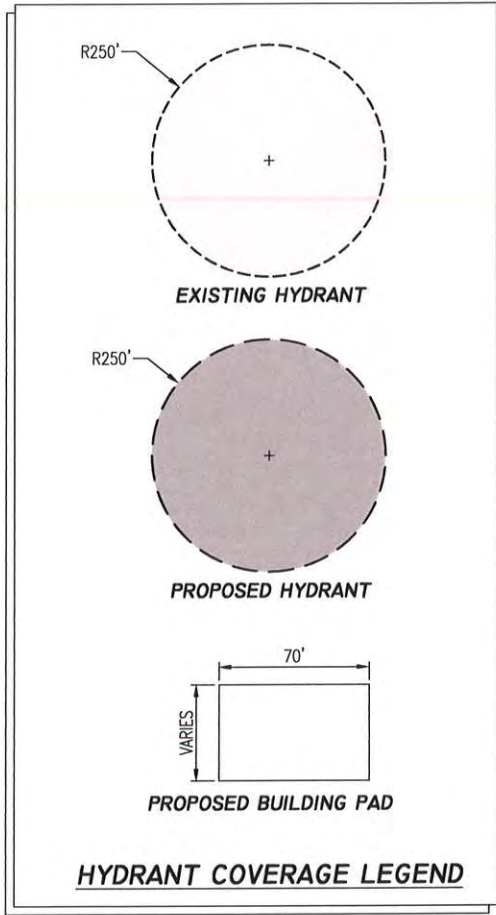
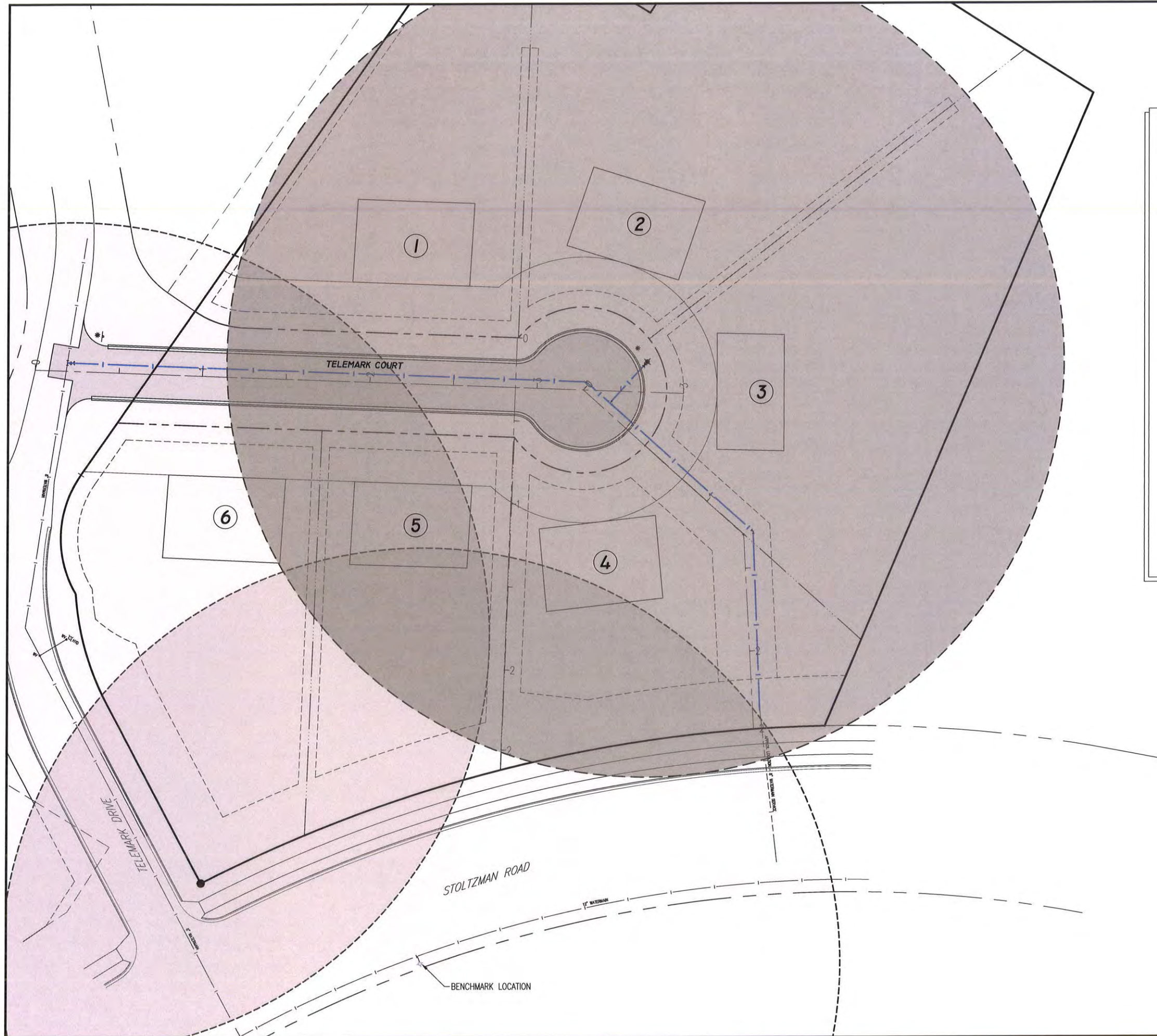
TITLE

OVERALL SITE & UTILITY PLAN

SHEET

14 OF 18





B.M. ELEVATION=971.10
TOP NUT OF HYDRANT
LOCATED SOUTHEAST OF INTERSECTION OF
TELEMARK DRIVE & STOLTZMAN ROAD

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CHARLES J. BRANDEL
[Signature]

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PROJECT

IRONWOOD ESTATES

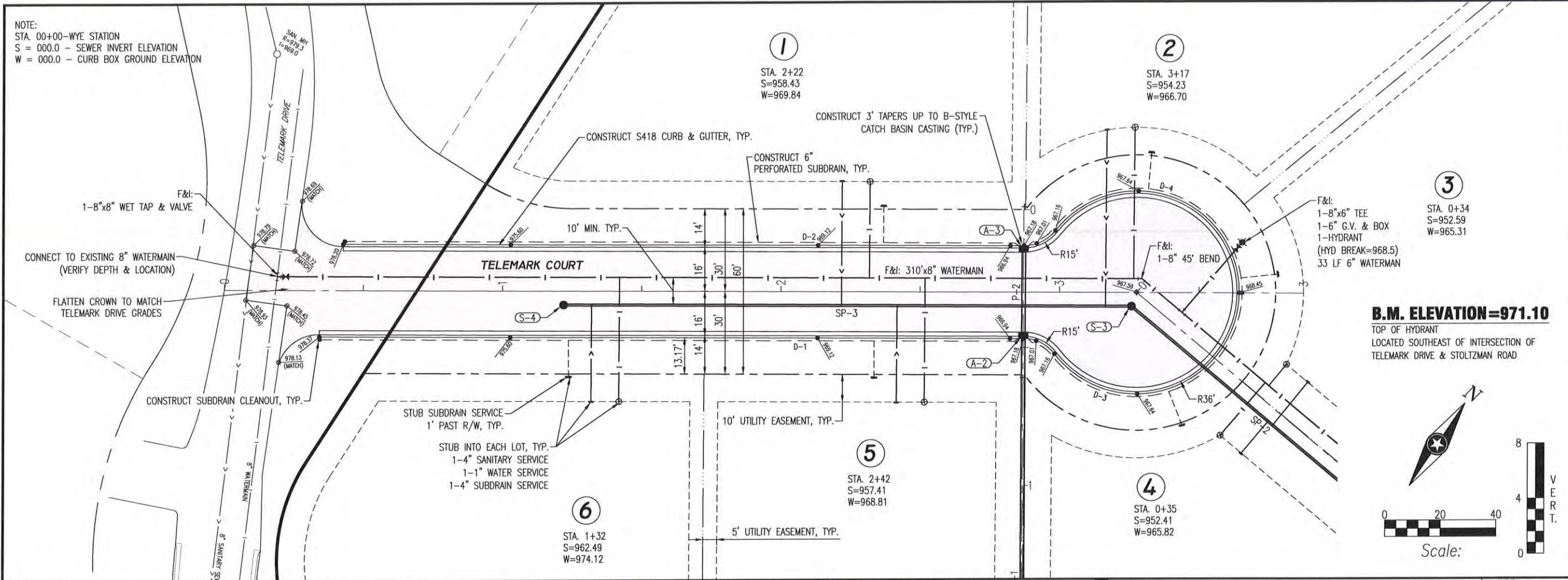
MANKATO MINNESOTA

REVISION SCHEDULE		
NO	DATE	DESCRIPTION

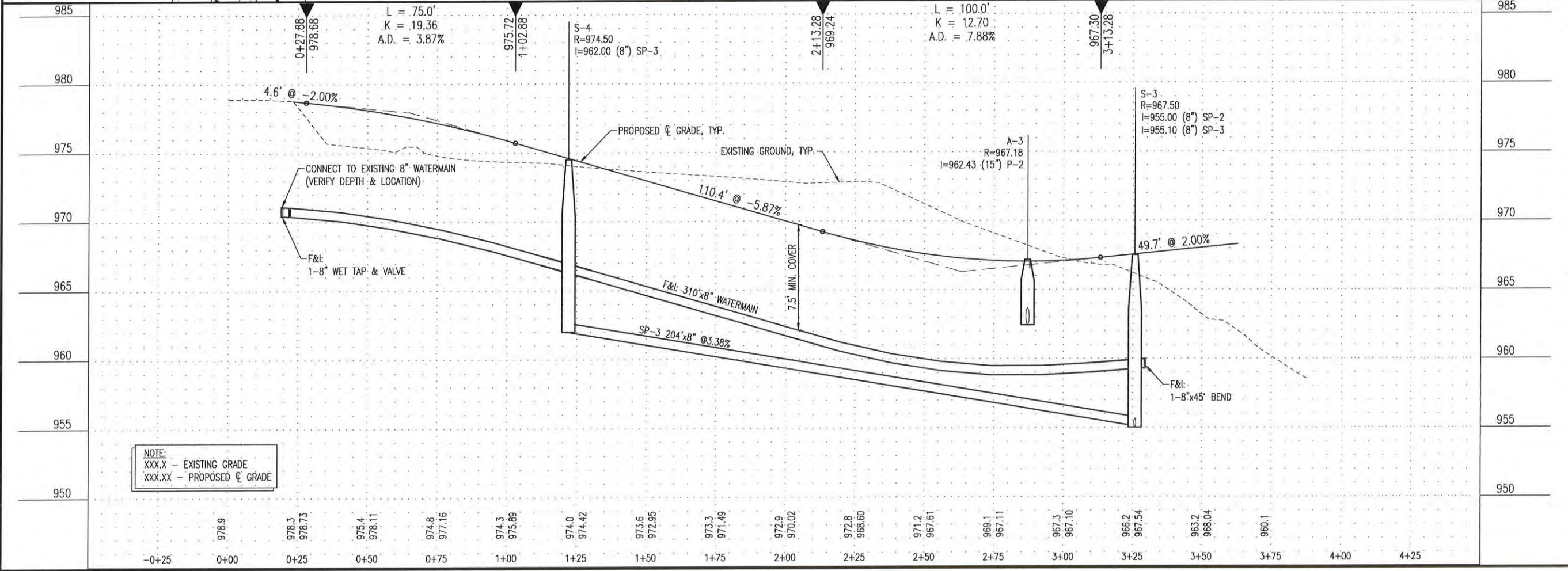
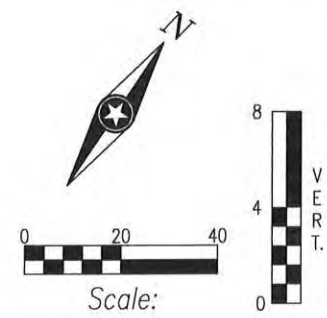
PROJECT NO. 14-16889
FILE NAME 16889 SITE-UTL
DRAWN BY RJA
DESIGNED BY RJA
REVIEWED BY CJB
ISSUE DATE 11/8/2014
CITY PROJECT NO. 66006

TITLE

HYDRANT COVERAGE PLAN



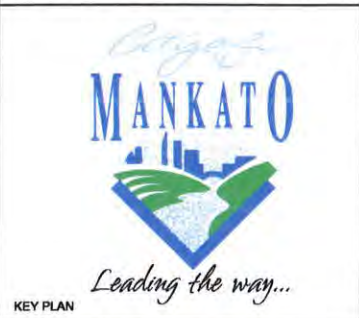
B.M. ELEVATION=971.10
TOP OF HYDRANT
LOCATED SOUTHEAST OF INTERSECTION OF
TELEMARK DRIVE & STOLTZMAN ROAD



NOTE:
XXX.X - EXISTING GRADE
XXX.XX - PROPOSED G. GRADE



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CHARLES J. BRANDEL
DATE 11/07/2014 LIC. NO. 43359
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 ARCHITECT UNDER THE LAWS OF THE STATE OF MINNESOTA.

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PROJECT
IRONWOOD ESTATES

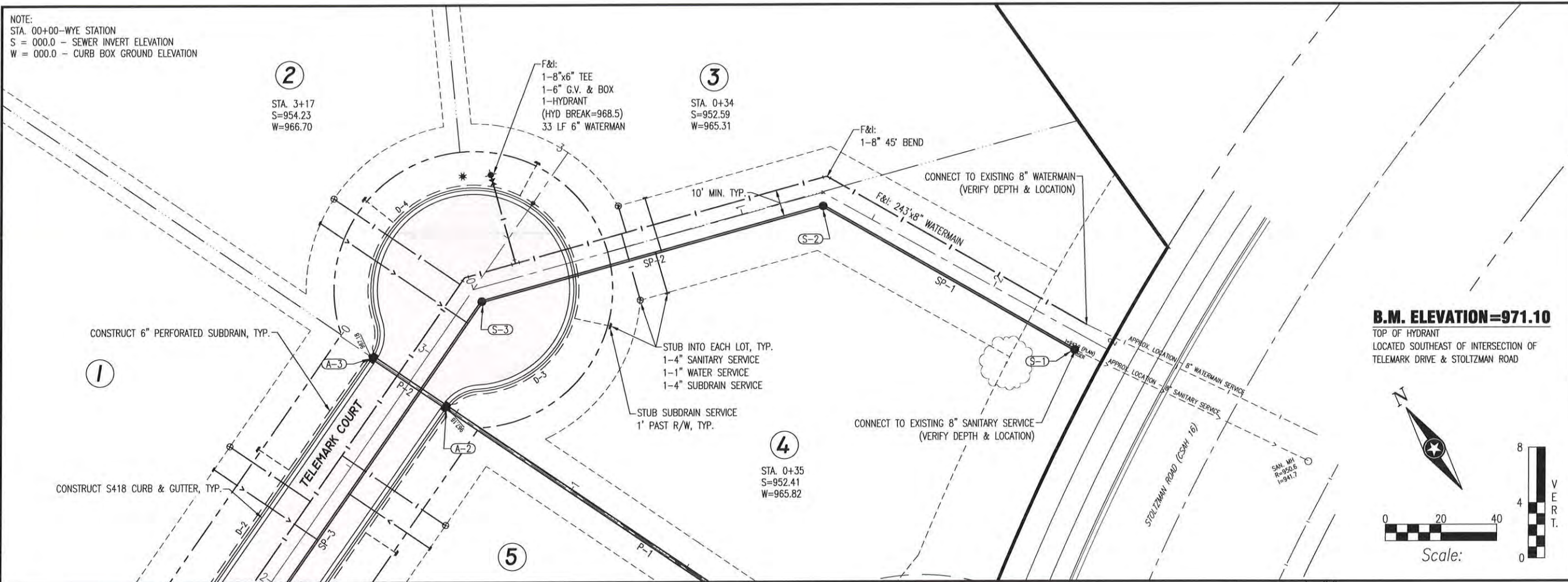
MANKATO MINNESOTA

REVISION SCHEDULE		
NO	DATE	DESCRIPTION

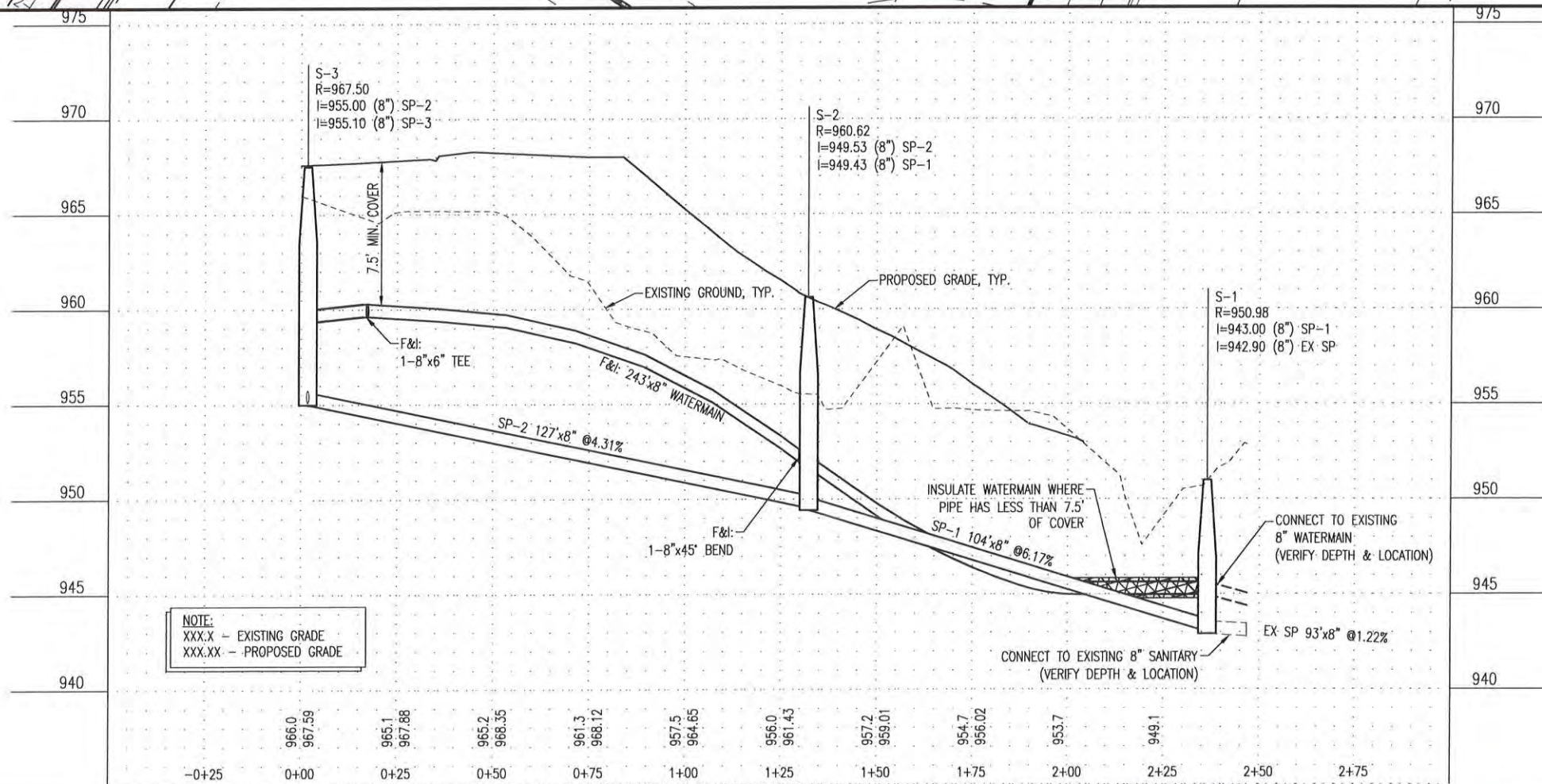
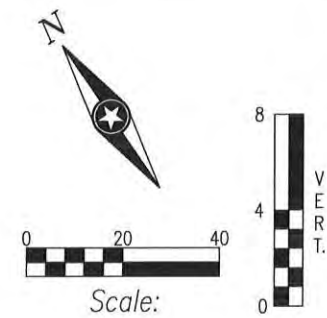
PROJECT NO. 14-16889
FILE NAME 16889 PROFILES
DRAWN BY RJA
DESIGNED BY RJA
REVIEWED BY CJB
ISSUE DATE 11/6/2014
CITY PROJECT NO. 86006

TITLE
PLANNED UTILITY CONSTRUCTION - TELEMARK COURT

NOTE:
STA. 00+00-WYE STATION
S = 000.0 - SEWER INVERT ELEVATION
W = 000.0 - CURB BOX GROUND ELEVATION



B.M. ELEVATION=971.10
TOP OF HYDRANT
LOCATED SOUTHEAST OF INTERSECTION OF
TELEMARK DRIVE & STOLTZMAN ROAD



NOTE:
XXX.X - EXISTING GRADE
XXX.XX - PROPOSED GRADE

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.

CHARLES J. BRANDEL
[Signature]

DATE 11/07/2014 LIC. NO. 43359

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DATE _____ LIC. NO. _____

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PROJECT

IRONWOOD ESTATES

MANKATO MINNESOTA

REVISION SCHEDULE		
NO	DATE	DESCRIPTION

PROJECT NO. 14-16889
FILE NAME 16889 PROFILES
DRAWN BY RJA
DESIGNED BY RJA
REVIEWED BY CJB
ISSUE DATE 11/6/2014
CITY PROJECT NO. 86006

TITLE
**PLANNED UTILITY CONSTRUCTION -
SANITARY &
WATERMAIN**

NOTE:
STA. 00+00-WYE STATION
S = 000.0 - SEWER INVERT ELEVATION
W = 000.0 - CURB BOX GROUND ELEVATION

F&I:-
1-8"x6" TEE
1-6" G.V. & BOX
1-HYDRANT
(HYD BREAK=968.5)
33 LF 6" WATERMAN

CONSTRUCT 6" PERFORATED SUBDRAIN, TYP.

STUB SUBDRAIN SERVICE
1' PAST R/W, TYP.

CONSTRUCT S418 CURB & GUTTER, TYP.

10' MIN. TYP.

CONNECT TO EXISTING 15" STORM SEWER
(VERIFY DEPTH & LOCATION)

—STUB INTO EACH LOT, TYP.
1-4" SANITARY SERVICE
1-1" WATER SERVICE
1-4" SUBDRAIN SERVICE

B.M. ELEVATION=971.10

TOP OF HYDRANT
LOCATED SOUTHEAST OF INTERSECTION OF
TELEMARK DRIVE & STOLTZMAN ROAD



Scale:

VERT.

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KEY PLAN

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.

CHARLES J. BRANDEL

DATE 11/07/2014 LIC. NO. 43359

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PROJECT

IRONWOOD ESTATES

MANKATO MINNESOTA

[illegible]

PROJECT NO.	14-16889
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FILE NAME	16889 PROFILES
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DRAWN BY RJA

DESIGNED BY RJA

REVIEWED BY	CJB
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ISSUE DATE	11/6/2014
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TITLE

PLANNED UTILITY CONSTRUCTION - STORM DRAIN

SHEET

18

OF 18