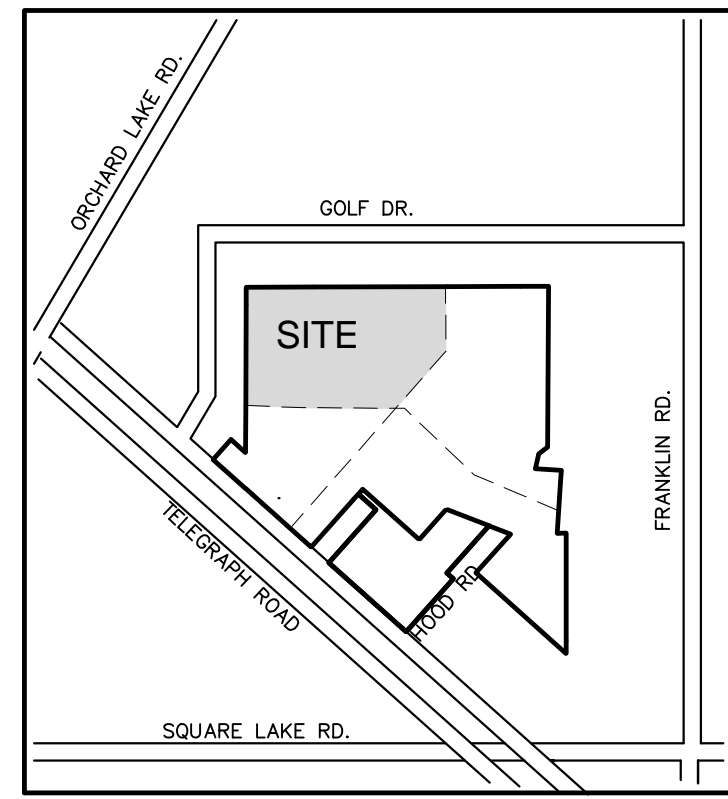


**MENARDS**



**NF**  
**ENGINEERS**  
CIVIL ENGINEERS  
LAND SURVEYORS  
LAND PLANNERS

NOWAK & FRAUS ENGINEERS  
46777 WOODWARD AVE.  
PONTIAC, MI 48342-5032  
TEL. (248) 332-7931  
FAX. (248) 332-8257

**LEGEND**

CLEAN-OUT	MANHOLE	EXISTING SANITARY SEWER
HYDRANT	GATE VALVE	EXISTING WATER MAIN
INLET	RYCB	EXISTING STORM SEWER
		EXISTING BURIED CABLES
		EXISTING GAS MAIN
UTILITY POLE	GUY POLE	EXISTING OVERHEAD LINES
EXISTING LIGHT POLE	EXISTING SIGN	
C.O.	MANHOLE	PR. SANITARY SEWER
HYDRANT	GATE VALVE	PROPOSED WATER MAIN
INLET	RYCB	PROPOSED STORM SEWER
COMPACT TO 95% MAX. DENSITY		
A		PR. SAND BACKFILL
TC 600.00		PR. TOP OF CURB ELEVATION
SU 600.00		PROPOSED GUTTER ELEVATION
TW 600.00		PR. TOP OF WALK ELEVATION
TP 600.00		PR. TOP OF PAVEMENT ELEV.
FG 600.00		PROPOSED FINISH GRADE
600		PROPOSED CONTOUR
		PROPOSED SWALE
		PR. DRAINAGE DIRECTION
		PROPOSED INLET FILTER
		DRAINAGE AREA LIMITS
		PROPOSED SILT FENCE
		LIMITS OF SOIL DISRUPTION

**LEGEND**

	LIMITS OF MENARDS DEVELOPMENT ZONE
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**ESTIMATED QUANTITIES**

**STORM SEWER**

DESCRIPTION	QUANTITY	UNITS
30" C-76 CLASS IV SEWER PIPE	178	L.F.
27" C-76 CLASS IV SEWER PIPE	383	L.F.
24" C-76 CLASS IV SEWER PIPE	204	L.F.
21" C-76 CLASS IV SEWER PIPE	235	L.F.
18" C-76 CLASS IV SEWER PIPE	93	L.F.
15" C-76 CLASS IV SEWER PIPE	143	L.F.
12" C-76 CLASS IV SEWER PIPE	579	L.F.
16" PVC SCHEDULE 40 SEWER PIPE	288	L.F.
10" PVC SCHEDULE 40 SEWER PIPE	85	L.F.
5" DIA. MANHOLE	2	EA.
4" DIA. MANHOLE	2	EA.
5" DIA. CATCH BASIN W/ 2' SUMP	1	EA.
4" DIA. CATCH BASIN W/ 2' SUMP	7	EA.
3" DIA. REAR YARD CATCH BASIN	4	EA.
2" DIA. INLET	1	EA.

**ESTIMATED QUANTITIES**

**STORM SEWER**

DESCRIPTION	QUANTITY	UNITS
36" C-76 CLASS IV SEWER PIPE	411	L.F.
30" C-76 CLASS IV SEWER PIPE	8	L.F.
24" C-76 CLASS IV SEWER PIPE	680	L.F.
18" C-76 CLASS IV SEWER PIPE	45	L.F.
12" C-76 CLASS IV SEWER PIPE	154	L.F.
4" PVC SCHEDULE 40 SEWER PIPE	91	L.F.
JUNCTION CHAMBER	1	EA.
6" DIA. MANHOLE	1	EA.
5" DIA. MANHOLE	2	EA.
4" DIA. MANHOLE	1	EA.
4" DIA. CATCH BASIN W/ 2' SUMP	4	EA.
2" DIA. INLET	1	EA.

**STORM SEWER NOTES**

ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CURRENT STANDARDS AND SPECIFICATIONS OF THE MUNICIPALITY. THE MUNICIPALITY STANDARD NOTES, DETAILS AND SPECIFICATIONS SHALL BE INCORPORATED AS PART OF THEIR PLANS.

ALL STORM SEWER TRENCHES UNDER OR WITHIN THREE (3) FEET OF EXISTING OR PROPOSED PAVEMENT SHOULD BE BACKFILLED WITH MDOT CLASS II MATERIAL (SAND) AND BE MACHINE COMPACTED TO A MINIMUM OF 95% OF THE MATERIAL'S MAXIMUM DENSITY. PAVEMENT SHALL INCLUDE PARKING LOTS, DRIVE APPROACHES, CURB & GUTTER AND ADJACENT WALLS.

ALL STORM SEWER PIPE SHALL BE INSTALLED ON CLASS "B" BEDDING OR BETTER UNLESS OTHERWISE INDICATED ON THE PLANS.

STORM SEWER SHALL BE OF THE TYPE, SIZE & CLASS DESIGNATION INDICATED ON THE PLANS AND SHALL BE INSTALLED AT THE PROPOSED LINE AND GRADE INDICATED.

ALL STORM SEWER PIPE SHALL BE REINFORCED CONCRETE PIPE CONFORMING TO ASTM SPECIFICATION C-76, CL. IV.

ALL MANHOLE, CATCH BASIN, INLET, REAR YARD DRAIN FRAMES AND COVERS SHALL BE AS INDICATED ON THE PLANS IN ACCORDANCE WITH MUNICIPALITY STANDARDS.

THE CONTRACTOR SHALL NOTIFY MISS DIG (1-800-482-7171) A MINIMUM OF THREE (3) WORKING DAYS PRIOR TO THE START OF CONSTRUCTION.

EXACT GRADES AND INVERTS OF PROPOSED STORM SEWER ARE TO BE CHECKED WITH THE FIELD ENGINEER PRIOR AND DURING INSTALLATION. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE DESIGN ENGINEER OF ANY PLAN INCONSISTENCY AND/OR UTILITY CONFLICTS.

ALL STORM SEWER PIPE JOINTS SHALL BE "PREMIUM JOINT" MODIFIED GROOVED TONGUE, (M.G.T.) WITH SYNTHETIC RUBBER GASKETS CONFORMING TO ASTM SPECIFICATION C-443 & C-361 UNLESS OTHERWISE INDICATED ON THE PLANS. ALTERNATE JOINT CONNECTION MAYBE STANDARD GROOVED TONGUE WITH COLD MASTIC (DEWITT #10 JOINT COMPOUND OR EQUAL).

FACTORY MANUFACTURED PRECAST TEE SECTIONS SHALL BE USED FOR ROOF DRAINS AND/OR SUMP PUMP LEADS AND LATERALS WHERE INDICATED ON THE PLANS. BLIND TAP CONNECTIONS INTO STORM SEWER WILL NOT BE PERMITTED BY BREAKING PIPE WALL.

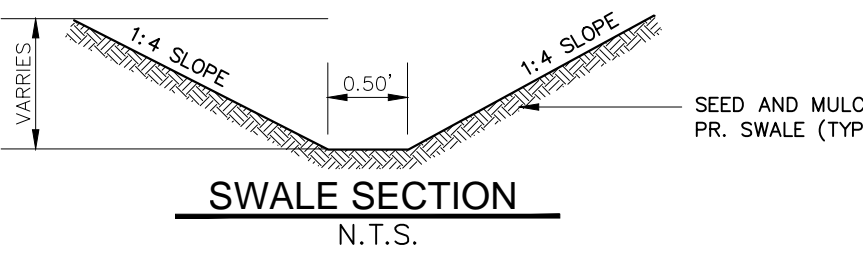
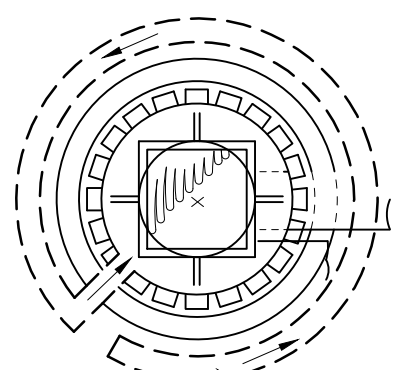
THE UNDERGROUND SITE CONTRACTOR SHALL INSTALL ALL STORM SEWER BUILDING LEADS TO WITHIN FIVE (5) FEET OF PROPOSED BUILDING.

GROUTED RIP RAP SHALL BE INSTALLED AT THE ENDS OF ALL CULVERTS AND END SECTIONS. GROUTED RIP RAP SHALL LIKEWISE BE INSTALLED AT OUTLET POINTS IN DETENTION AND SEDIMENTATION FACILITY. THE MINIMUM WIDTH OF THE RIP RAP SHALL BE TWICE THE OUTSIDE DIAMETER OF THE PIPE. THE RIP RAP SHALL EXTEND FROM THE BOTTOM OF THE SLOPE TO THE PIPE INVERT.

THE CONTRACTOR SHALL PAY FOR AND SECURE ALL NECESSARY PERMITS AND LIKEWISE ARRANGE FOR ALL SITE INSPECTION.

**STORM WATER MANAGEMENT NOTE**

FOR THE PROPOSED REDEVELOPMENT OF THIS SITE, THE EXISTING APPROVED DETENTION AND SEDIMENTATION CONTROL SYSTEMS WILL NOT BE AFFECTED. ALL DRAINAGE DISTRICT AREAS WILL BE MAINTAINED AND RUNOFF COEFFICIENTS WILL BE AT OR BELOW PREVIOUSLY APPROVED LEVELS. NO CHANGES ARE PROPOSED TO THE SEDIMENTATION CONTROL STRUCTURES OR OUTLET PIPES.



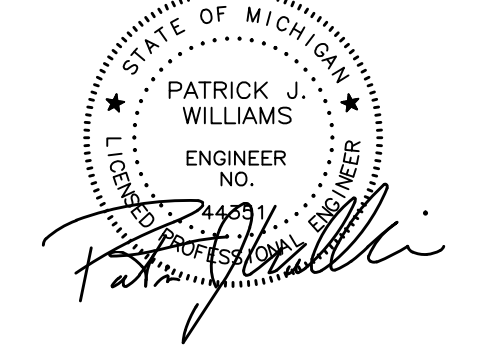
MATCHLINE SEE SHEET C24

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SEAL



PROJECT  
Village at Bloomfield

CLIENT  
REDICO  
One Towne Square,  
Suite 1600  
Southfield, MI 48076

Contact:  
Phone: (248) 784-6486

PROJECT LOCATION  
Part of the W. 1/2 of Section 5,  
T. 2N., R. 10E., and part of the  
NE 1/4 of Section 6, T. 2N., R.  
10E., Bloomfield Township, The  
City of Pontiac and Bloomfield  
Township (conditionally  
transferred to The City of  
Pontiac) Oakland County,  
Michigan

SHEET  
Storm Sewer Plan



Know what's below  
Call before you dig.

DATE ISSUED / REVISED  
05-12-17 Bids / Permits

DRAWN BY:  
A. Wiseman  
DESIGNED BY:  
A. Wiseman  
APPROVED BY:  
P. Williams  
DATE:

April 3, 2017  
SCALE: 1" = 40'

NFE JOB NO. SHEET NO.  
A116-21 C-22