ORCHARD HILLS WATER MAIN EXTENSION

PERMITS REQUIRED TO BE OBTAINED BY THE CONTRACTOR PRIOR TO THE BEGINNING OF CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR THESE PERMIT FEES.

ISSUING AUTHORITY GRADING/SOIL EROSION & CITY OF ANN ARBOR SEDIMENTATION CONTROL PERMIT CUSTOMER SERVICE

CITY OF ANN ARBOR RIGHT OF WAY PERMIT **CUSTOMER SERVICE**

PERMITS REQUIRED TO BE OBTAINED BY THE CITY OF ANN ARBOR PRIOR TO THE BEGINNING OF CONSTRUCTION. THE CITY IS RESPONSIBLE FOR THESE PERMIT FEES.

ISSUING AUTHORITY MICHIGAN DEPARTMENT OF MDEQ WATER MAIN CONSTRUCTION **ENVIRONMENTAL QUALITY**

THE FOLLOWING UTILITIES ARE LOCATED IN OR NEAR THE

PROJECT PUBLIC UTILITIES	OWNER	CONTACT
WATER	O WINELL	DAN WOODEN
SEWER	CITY OF ANN ARBOR FIELD OPERATIONS SERVICE UNIT W.R. WHEELER SERVICE CENTER	MARK COZART
STORM	4251 STONE SCHOOL ROAD	MATT WALDSMITH
	ANN ARBOR, MI 48108	(734) 794-6350
SIGNS SIGNALS STREET LIGHTS		CHUCK FOJTIK (734) 794-6361
PRIVATE UTILITIES	OWNER	CONTACT
GAS	DTE ENERGY 3150 E. MICHIGAN AVE YPSILANTI, MI 48198	ROBERT CZAPIEWSK (734) 544-7818
ELECTRIC	DTE ENERGY WESTERN WAYNE SERVICE CENTER 8001 HAGGERTY ROAD BELLEVILLE, MI 48111	CLAY COMBEE (734) 397-4112
CABLE	COMCAST 27800 FRANLKIN ROAD	RON SUTHERLAND (313) 999-8300
	SOUTHFIELD, MI 48034	

ANN ARBOR, MI 48103

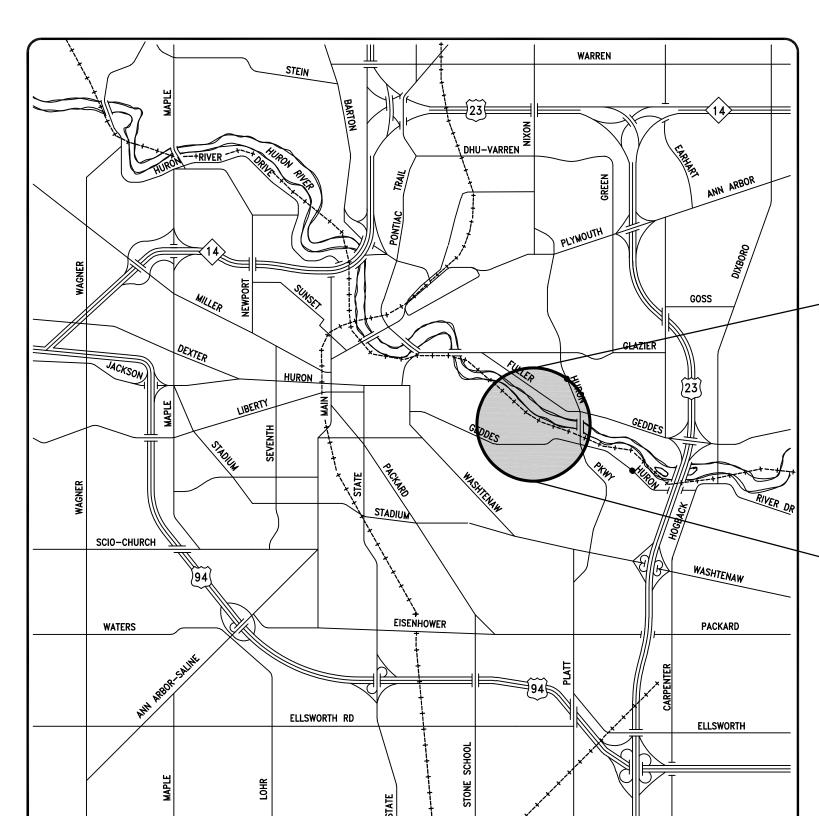
2800 N. GLENFILLE ROAD

RICHARDSON, TX 75082

DEAN BOYERS

(972) 729-6016

BID No. 4439 STANTEC FILE No. 2075136300



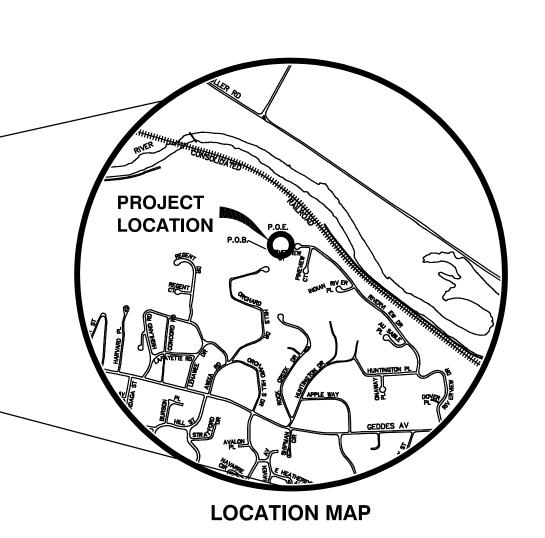
VICINITY MAP

THE CONSTRUCTION COVERED BY THESE PLANS SHALL CONFORM TO THE 1994 EDITION OF THE CITY OF ANN ARBOR PUBLIC SERVICES DEPARTMENT STANDARD SPECIFICATIONS AND IT'S DETAILS WHICH ARE INCLUDED BY REFERENCE.

THE OMISSION OF ANY CURRENT STANDARD DETAIL DOES NOT RELIEVE THE CONTRACTOR FROM THIS REQUIREMENT. THE WORK SHALL BE PERFORMED IN COMPLETE CONFORMANCE WITH THE CURRENT PUBLIC SERVICES STANDARD SPECIFICATIONS AND DETAILS UNLESS NOTED OTHERWISE.

FOR PROTECTION OF UNDERGROUND UTILITIES AND IN CONFORMANCE WITH PUBLIC ACT 53, THE CONTRACTOR SHALL CALL 811 OR 1-800-482-7171 A MINIMUM OF THREE FULL WORKING DAYS, EXCLUDING SATURDAYS, SUNDAYS, AND HOLIDAYS PRIOR TO BEGINNING EACH EXCAVATION IN AREAS WHERE PUBLIC UTILITIES HAVE NOT BEEN PREVIOUSLY LOCATED. MEMBERS WILL THUS BE ROUTINELY NOTIFIED. THIS DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF NOTIFYING UTILITY OWNERS WHO MAY NOT BE A PART OF THE "MISS DIG" ALERT SYSTEM.

SHEET INDEX				
SHEET	DRAWING No.	TITLE		
1	G-01	COVER SHEET		
2	G-02	GENERAL NOTES AND LEGEND		
3	G-03	STANDARD DETAILS SHEET I		
4	C-01	WATER MAIN PLAN		
5	C-02	WATER MAIN PROFILE		



PREPARED BY:



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PREPARED UNDER THE SUPERVISION OF THEODORE U. WARROW, P.E., - MI LICENSE No. 49958 STANTEC, PROJECT ENGINEER DATE

RAWING No.

2075|36300 - G-0|

PHONE

EXISTING	EXISTING	EXISTING
WATER SYMBOLS	MISC. SYMBOLS	UTILITY LINETYPES
+ + FIRE HYDRANT	? UNKNOWN MANHOLE	w — WATER MAIN
GATE VALVE IN BOX		r STORM SEWER
GATE VALVE IN WELL	(p) TELEPHONE MANHOLE	SANITARY SEWER
STOP BOX	T TELEPHONE RISER	g GAS MAIN
WATER VAULT		MISC. LINETYPES
WELL WELL	G GAS VALVE	BOUNDARY
STORM SYMBOLS	GAS VENT	BUILDING
		CENTERLINE OF DITCH
CATCH BASIN (SQ)	GAS BOX	CENTERLINE OF ROAD
CATCH BASIN (RD)	X X	EDGE OF WATER
storm manhole	E ELECTRICAL RISER	
NON-CURB CATCH BASIN (SQ)	TRANSFORMER	R.O.W.
SANITARY SYMBOLS	TRANSFORMER	WETLAND
S SANITARY MANHOLE	UTILITY POLE	HATCHING
©0 CLEAN-OUT	/ LAMP POLE	ASPHALT
VEGETATION SYMBOLS	2.000	CONCRETE
	GUY ANCHOR	GRAVEL
TREE (DECIDUOUS)	GUY POLE	WETLAND
TREE (CONIFEROUS)	MW) MONITORING WELL	
2m2	MAIL MAILBOX	
STUMP	SOIL BORING	
SHRUB (DECIDUOUS)		
TRAFFIC SYMBOLS	SURVEY SYMBOLS	
POST	TDAVEDOE POINT	
PEDESTRIAN SIGNAL	TRAVERSE POINT	
SIGN	BENCH MARK	
HAND HOLE	IRON PIPE	
ORNAMENTAL LIGHT	O MON BOX	
FLOOD LIGHT		

EXISTING

EXISTING

	PROPOSED	PROPOSED
WATE	ER SYMBOLS	UTILITY LINETYPES
	HYDRANT (PROFILE)	——————————————————————————————————————
	HYDRANT (PLAN)	— — STORM SEWER
\otimes	WATER GATE WELL	SANITARY SEWER
	WATER GATE VALVE	MISC. LINETYPES
W	WATER STOP BOX	BUILDING
W	WATER VAULT	—————— CENTERLINE OF DITCH
STOR	M SYMBOLS	—-—-—- CENTERLINE OF ROAD
01014	W O TIMBOLO	
	INLET	SILT FENCE
	DOUBLE INLET	LOT/UNIT
		PHASE LINE
	INLET JUNCTION CHAMBER	CURB
	ROUND CATCH BASIN	TEMPORARY GRADING PERMIT
(R)	STORM MANHOLE	WATER EASMENT
	DRAIN ARROW	STORM EASEMENT
	FLARED END SECTION (PLAN)	SANITARY EASEMENT
	FLARED END SECTION (PROFILE)	
		HATCHING
SANIT	ARY SYMBOLS	ASPHALT
	SANITARY MANHOLE	CONCRETE
	CLEAN-OUT	SIDEWALK
VEGET	TATION SYMBOLS	[:::t*]a/a.]
	TREE (DECIDUOUS)	GRAVEL PAVEMENT/WALK REMOVAL
	TREE (CONIFEROUS)	-1444444444-144- CURB REMOVAL
TRAF	FIC SYMBOLS	
	BARREL	
	SIGN	
	PUSH BUTTON	
	DETECTABLE WARNING	

CONSTRUCTION NOTES:

- 1. DRIVEWAYS AND ENTRANCES TO BUILDINGS, REAL PROPERTY, AND THE LIKE SHALL NOT BE BLOCKED EXCEPT FOR SHORT DURATIONS AND ONLY WHEN APPROVED BY THE ENGINEER. VEHICULAR AND PEDESTRIAN ACCESS SHALL BE MAINTAINED AT ALL TIMES. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE ALL NECESSARY DRIVEWAY CLOSURES WITH THE PROPERTY OWNER(S) AND RESIDENT(S) IN THE AREAS OF CONSTRUCTION.
- 2. THE LOCATION AND DEPTH OF ALL EXISTING UTILITIES AND SERVICE LEADS ARE TO BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION.
- 3. LOCATION AND DEPTH OF EXISTING UTILITIES AS DEPICTED ON THE PLANS IS APPROXIMATE AND SHOWN ACCORDING TO THE BEST INFORMATION AVAILABLE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO EXCAVATE AHEAD AND ADJUST DEPTH OF CONFLICT UTILITIES ACCORDINGLY. ANY DAMAGE TO UTILITIES IS THE CONTRACTOR'S RESPONSIBILITY TO AVOID AND/OR REPAIR AS NECESSARY.
- 4. THE CONTRACTOR IS TO TAKE SPECIAL CARE TO PROTECT THE EXISTING WATER MAIN AND BE RESPONSIBLE FOR MAINTAINING CONSISTENT WATER SERVICE.
- 5. DURING NON-WORKING HOURS NO TRENCH SHALL REMAIN OPEN; ANY OPEN TRENCH SHALL BE PROPERTY SECURED WITH PROTECTIVE FENCING. THIS WORK SHALL BE INCLUDED IN THE ITEM OF WORK "GENERAL CONDITIONS".
- 6. THE CONTRACTOR SHALL BACKFILL TRENCHES IN ACCORDANCE WITH TRENCH DETAIL SPECIFIED ON PLANS. ALL CONCRETE REMOVALS AND REPLACEMENTS REQUIRED FOR THIS WORK WILL BE PAID SEPARATELY.
- 7. POSTAL DELIVERY AND REFUSE PICKUP SERVICE SHALL BE MAINTAINED AT ALL TIMES BY THE CONTRACTOR.
- 8. WHERE STREET CURBS ARE UNDERMINED DUE TO CONSTRUCTION ACTIVITIES, THEY SHALL BE REMOVED AND REPLACED AS DIRECTED BY THE ENGINEER.
- 9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONTINUOUS MAINTENANCE OF THE TEMPORARY ROAD SURFACE AND SOIL EROSION CONTROL MEASURES WITHIN THE CONSTRUCTION AREA UNTIL THE FULL COMPLETION OF THE PROJECT. THIS WORK SHALL BE INCLUDED IN THE ITEM OF WORK "GENERAL CONDITIONS".
- 10. ALL CURB, SIDEWALK, DRIVEWAY APPROACH REMOVALS SHALL BE APPROVED BY ENGINEER BEFORE THE WORK IS DONE.
- 11. THE LOCATION OF MATERIAL STOCK PILES AND ON-SITE STAGING AREAS TO BE APPROVED BY THE ENGINEER.
- 12. EXISTING STREET NAME, GUIDE, AND REGULATOR SIGNS, AND MAILBOXES WHICH CONFLICT WITH THE PROPOSED CONSTRUCTION SHALL BE REMOVED PRIOR TO CONSTRUCTION, STORED IN A MANNER WHICH WILL PREVENT DAMAGE, AND RE-SET IN LOCATIONS AS DIRECTED BY THE ENGINEER. THIS WORK WILL NOT BE PAID SEPARATELY, BUT SHALL BE INCLUDED IN "GENERAL CONDITIONS".
- 13. ALL WORK AND MATERIALS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF ANN ARBOR PUBLIC SERVICES DEPARTMENT STANDARD SPECIFICATIONS.
- 14. IN THE WOODLAND AREA, CONTRACTOR MAY REMOVE/CLEAR DOWNED TREES AND BRANCHES AND TREES 3' CALIPER OR LESS AS NEEDED. ALL OTHER TREES ARE TO REMAIN AND BE PROTECTED.
- 15. TRAIL THROUGH NICHOLS ARBORETUM THAT IS DISTURBED BY CONSTRUCTION ACTIVITIES (SEE HATCHED AREA ON C-01) SHALL BE RESTORED FULL WIDTH WITH MINIMUM OF 6" MDOT 23A AGGREGATE COMPACTED TO 95% MARSHALL DENSITY.
- 16. THE ASPHALT AND ASPHALT CURB AROUND THE RIVERVIEW COURT CUL-DE-SAC IS TO REMAIN AND BE PROTECTED DURING CONSTRUCTION OF WATERMAIN AND HYDRANT LEAD. THE CONTRACTOR WILL BE RESPONSIBLE TO PAY FOR ANY DAMAGE OR REPLACEMENT OF EXISTING ASPHALT PAVEMENT OR CURBING THAT OCCURS DUE TO THEIR CONSTRUCTION ACTIVITY.

WATER MAIN, DIRECTIONAL DRILL CONSTRUCTION NOTES

- 1. ALL HDPE PIPE, FITTINGS AND MECHANICAL JOINTS SHALL MEET THE REQUIREMENTS OF AWWA C906 AND BE APPROVED FOR USE WITH HDPE PIPE AND POTABLE WATER UNDER ANSI/NSF STANDARD 14/16.
- 2. ALL HDPE PIPE SHALL BE MANUFACTURED FROM HIGH DENSITY PE 4710 RESIN HAVING A DIMENSION RATIO (DR) OF 11 AND A MINIMUM WORKING PRESSURE OF 200 PSI.
- 3. ALL HDPE PIPE SHALL HAVE A DUCTILE IRON PIPE SIZED (DIPS) OUTSIDE DIAMETER (OD). THE AWWA C906 AND NSF IDENTIFICATIONS (BLUE LINE) MUST APPEAR ON THE EXTERIOR WALL OF ANY HDPE PIPE USED FOR POTABLE WATER USE AND INSTALLATION.
- 4. A DETECTABLE TRACER WIRE SHALL BE INSTALLED ALONG THE ENTIRE LENGTH OF THE PIPELINE AND SHALL TERMINATE AT THE GATE VALVE WELLS AND BOTH ENDS OF THE PROJECT, OR AS DIRECTED BY THE ENGINEER. THE TRACER WIRE SHALL BE COPPERHEAD 12 AWG CCS EXTRA STRENGTH HARD DRAWN 1150# WIRE WITH A BLUE JACKET, OR AN APPROVED EQUAL.
- 5. ALL HDPE PIPE JOINTS AND THE HDPE MECHANICAL JOINT ADAPTOR SHALL BE FUSION WELDED BUTT JOINTS.
- 6. THE NEW WATER MAIN SHALL NOT BE CONNECTED TO THE EXISTING WATER MAIN UNTIL THE SUCCESSFUL COMPLETION AND ACCEPTANCE OF THE HYDROSTATIC PRESSURE TESTING AND THE DISINFECTION AND BACTERIOLOGICAL TESTING PER THE CITY OF ANN ARBOR STANDARD SPECIFICATIONS.
- 7. RESTRAINED CONNECTIONS TO CONVENTIONAL DUCTILE IRON WATER MAINS, VALVES OR APPURTENANCES SHALL BE MADE USING A BUTT FUSED MECHANICAL JOINT ADAPTOR. THE MECHANICAL JOINTS SHALL BE IN ACCORDANCE WITH AWWA/ANSI C111/A21.11 AND INCLUDE THE MEGA LUG JOINT RESTRAINT SYSTEM MANUFACTURED BY EBAA IRON SALES, INC WITH CORE BLUE BOLTS, OR AN APPROVED EQUAL
- 8. A DRILLING FLUID OF WATER AND BENTONITE OR A POLYMER MUST BE USED TO LUBRICATE AND LINE THE DRILLED HOLE.
- 9. CONTRACTOR SHOULD COORDINATE INSTALLATION OF 1" CORPORATIONS ON EXISTING WATERMAIN INSIDE THE UPSTREAM GATE VALVE WELL WITH CITY PERSONNEL PRIOR TO THE START OF CONSTRUCTION.

SOIL EROSION CONTROL NOTES

1. THE CONTRACTOR SHALL IMPLEMENT AND MAINTAIN THE SOIL EROSION CONTROL MEASURES AS SHOWN ON THE PLANS AT ALL TIMES DURING CONSTRUCTION ON THIS PROJECT. ANY MODIFICATIONS OR ADDITIONS TO THE SOIL EROSION CONTROL MEASURES DUE TO CONSTRUCTION OR CHANGED CONDITIONS SHALL BE COMPLIED WITH AS REQUIRED OR DIRECTED BY THE OWNER, PROJECT ENGINEER, OR THE CITY OF ANN ARBOR. THE CONTRACTOR IS REQUIRED TO OBTAIN A SOIL EROSION CONTROL PERMIT ANYTIME THE DISTURBED AREA EXCEEDS 1 ACRE.

- 2. ALL SOIL EROSION AND SEDIMENTATION CONTROL WORK SHALL CONFORM TO THE PERMIT REQUIREMENTS OF THE CITY OF ANN ARBOR, CHAPTER 63, AND THE LAWS OF THE STATE OF MICHIGAN.
- 3. DAILY OR AFTER STORM EVENTS INSPECTIONS SHALL BE MADE BY THE CONTRACTOR. PERIODIC INSPECTIONS MAY BE MADE BY THE OWNER/PROJECT ENGINEER TO DETERMINE THE EFFECTIVENESS OF EROSION AND SEDIMENTATION CONTROL MEASURES. ANY NECESSARY CORRECTIONS SHALL BE MADE WITHOUT DELAY AND WITHOUT ADDITIONAL COST TO THE OWNER.
- 4. EROSION AND SEDIMENTATION FORM WORK ON THE SITE SHALL BE CONTAINED ON THE SITE AND NOT BE ALLOWED TO COLLECT ON ANY OFF-SITE AREAS OR WATERWAYS.
- 5. ALL MUD/DIRT TRACKED ONTO ROADS FROM THE SITE DUE TO CONSTRUCTION, SHALL BE PROPERTY REMOVED BY THE CONTRACTOR. IF SO ORDERED, THE CONTRACTOR SHALL EMPLOYEE A MECHANICAL STREET SWEEPER AT NO ADDITIONAL COST TO THE OWNER.
- 6. RESTORATION OF ALL DISTURBED AREAS, INCLUDING PLACEMENT OF TOPSOIL, SEED, FERTILIZER AND MULCH AND/OR SOD SHALL BE DONE WITHIN 5 DAYS OF THE COMPLETION OF FINAL GRADE.
- 7. CONSTRUCTION OPERATIONS SHALL BE SCHEDULED AND PERFORMED SO THAT PREVENTATIVE SOIL EROSION CONTROL MEASURES AS IN PLACE PRIOR TO EXCAVATION IN CRITICAL AREAS AND TEMPORARY STABILIZATION MEASURES ARE IN PLACE IMMEDIATELY FOLLOWING BACKFILLING OPERATIONS.
- 8. SPECIAL PRECAUTIONS WILL BE TAKEN IN USE OF CONSTRUCTION EQUIPMENT TO PREVENT SITUATIONS THAT PROMOTE EROSION.
- 9. PROPER DUST CONTROL SHALL BE MAINTAINED DURING CONSTRUCTION BY USE OF WATER TRUCKS AND/OR CHLORIDE AS REQUIRED OR AS DIRECTED BY ENGINEER.
- 10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL TEMPORARY SOIL EROSION CONTROL MEASURES AND REMOVAL OF SOME UPON AUTHORIZED COMPLETION OF THE PROJECT. COMPLETION OF PROJECT WILL NOT BE AUTHORIZED UNTIL ALL SITE WORK AND UTILITY CONSTRUCTION IS COMPLETE AND ALL SOILS ARE STABILIZED.
- 11. THE CONTRACTOR SHALL NOT GRADE INTO ADJACENT PROPERTIES. SILT FENCE SHALL BE INSTALLED AND MAINTAINED TO PREVENT GRADING, EROSION AND SEDIMENTATION INTO THEM.
- 12. TREE PROTECTION FENCING MUST REMAIN INTACT UNTIL RESTORATION OF THE SITE IS COMPLETE.

SEQUENCE OF EROSION CONTROL:

1. INSTALL SILT FENCE, TREE PROTECTION FENCING AND INLET FILTERS ON EXISTING STORM INLETS PRIOR TO ANY CLEARING OR EARTH MOVING OPERATION.

- 2. CONTRACTOR TO CONTINUALLY MAINTAIN EROSION AND SEDIMENTATION CONTROL MEASURES, AS REQUIRED TO ALLOW DRAINAGE AND SEDIMENT REMOVAL. REMOVE ANY ACCUMULATED
- 3. STRIP AND CLEAR MAINTAIN EROSION CONTROL MEASURES AROUND TEMPORARY STOCK PILES.
- 4. ROUGH GRADE.
- 5. ENSURE ALL SOIL IS STABILIZED. REMOVE ALL TEMPORARY SOIL EROSION CONTROL MEASURES.

TEMPORARY AND PERMANENT SEEDING:

- 1. SEED IN ACCORDANCE WITH PROJECT DRAWINGS AND SPECIFICATIONS.
- 2. ANY DISTURBED AREA NOT PAVED, SEEDED, MULCHED, SODDED OR BUILT UPON BY NOVEMBER 15TH OR JUNE 30TH IS TO BE TEMPORARILY STABILIZED PER SPECIFICATIONS.
- 3. ALL DISTURBED AREAS IN THE UNIVERSITY OF MICHIGAN (UM) NICHOLS ARBORETUM UPLAND PRAIRIE AREA SHALL BE PERMANENTLY STABILIZED/RESTORED USING THE CARDNO BASIC PRAIRIE SEED MIX, OR AN APPROVED EQUAL.
- 4. ALL DISTURBED AREAS IN THE UM NICHOLS ARBORETUM WOODLAND AND THE RESIDENTIAL WOODLAND SHALL BE PERMANENTLY STABILIZED/RESTORED USING A BASIC TEMPORARY STABILIZING SEED MIX, OR AN APPROVED EQUAL.
- 5. ALL SEED MIXES SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND APPLICATION RATE.

- 1. DURING CONSTRUCTION, ALL ROADS SHALL BE PROTECTED FROM UNVEGETATED AREAS WASHING ONTO ROAD SURFACE BY PLACEMENT OF SILT FENCE BEHIND CURB OR A 10 FOOT WIDE STRAW MULCH BANK BEHIND CURB OR OTHER APPROVED METHOD AND/OR AS SHOWN ON THE
- 2. DURING CONSTRUCTION OF ANY PORTION OF THE PROJECT, ADJOINING ROADS SHALL BE MAINTAINED FREE OF DIRT, SILT AND CONSTRUCTION DEBRIS. CONTRACTOR REQUIRED TO USE VACUUM SWEEPER EQUIPMENT FOR CLEANING CONSTRUCTION SITE AND ADJOINING ROADS. THE USE OF BROOM SWEEPER IS NOT PERMITTED.

CATCH BASIN/MANHOLE PROTECTION:

1. PROTECT STORM SEWER CATCH BASINS WITH APPROVED INLET FILTERS.



2 OF 5

