

*Note to designer: Edit for project specific applicable notes.  
Notes – Civil Standard Updated 4/2016*

## **GENERAL NOTES**

1. THE CONTRACTORS SHALL VERIFY LOCATIONS OF ALL U/G UTILITY LINES AND NOTIFY "MISS DIG" 811 PRIOR TO EXCAVATING. THE CONTRACTOR WILL BE RESPONSIBLE TO REPAIR ANY UTILITY LINE DAMAGED BY CONSTRUCTION ACTIVITIES.
2. IF PLAN INFORMATION INDICATES AN EXISTING UNDERGROUND UTILITY IS OR WILL BE OUT OF SERVICE WITHIN THE LIMITS OF THIS CONTRACT, THE CONTRACTOR IS CAUTIONED TO TREAT SUCH A LINE AS IF IT WERE STILL IN SERVICE AND NOTIFY "MISS DIG" WHEN WORKING IN THE AREA OF THE OUT OF SERVICE FACILITY.
3. ALL WORK SHALL BE COMPLETED IN CONFORMANCE WITH CURRENT ADA STANDARDS.
4. ALL MATERIALS, EQUIPMENT AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CURRENT UNIVERSITY OF MICHIGAN STANDARD SPECIFICATIONS FOR CONSTRUCTION AND THE MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION.
5. THE OMISSION OF ANY CURRENT STANDARD DETAIL DOES NOT RELIEVE THE CONTRACTORS OF THEIR OBLIGATION TO CONSTRUCT ITEMS IN COMPLETE ACCORDANCE WITH U-M AND/OR MDOT AND/OR CITY OF ANN ARBOR STANDARD SPECIFICATIONS.
6. ALL WORK WITHIN CITY OF ANN ARBOR R.O.W. SHALL BE IN ACCORDANCE WITH THE CURRENT CITY OF ANN ARBOR STANDARD SPECIFICATIONS FOR CONSTRUCTION.
7. CONTRACTOR IS RESPONSIBLE FOR ALL PERMITS & FEES. ANTICIPATED PERMITS REQUIRED INCLUDE CITY OF ANN ARBOR RIGHT OF WAY, SIDEWALK CLOSURE, AND POTENTIALLY LANE CLOSURE PERMITS.
8. WALKS WITHIN THE CITY ROW SHALL BE INSPECTED BY THE CITY OF ANN ARBOR ACCORDING TO THE CITY STANDARDS.
9. IT IS THE CONTRACTOR'S RESPONSIBILITY FOR INSTALLATION OF SESC CONTROL MATERIALS. THE CONTRACTOR SHALL PROVIDE, INSTALL AND MAINTAIN INLET FILTER BAGS ON ALL STORM WATER INLETS IN THE VICINITY OF THE PROJECT SITE WHICH MAY RECEIVE STORM WATER RUNOFF FROM THE SITE. THE CONTRACTOR SHALL REMOVE THE INLET FILTER BAGS AT THE CONCLUSION OF THE PROJECT WORK.
10. CONTRACTORS SHALL AVOID NOISE GENERATING WORK AROUND CAMPUS BUILDINGS DURING UNIVERSITY SEMESTER EXAM PERIODS. *(ONLY INCLUDE IF APPLICABLE)*
11. ALL BARRICADES AND TRAFFIC CONTROL REQUIRED SHALL BE PROVIDED BY THE CONTRACTOR. ALL BARRICADES SHALL HAVE A BOTTOM RAIL WITHIN 3 TO 6 INCHES ABOVE GRADE WITHIN PEDESTRIAN PATHS OF TRAVEL TO NOTIFY PEDESTRIANS WITH CANES OF THE OBSTRUCTION.
12. CONTRACTOR SHALL PROVIDE A PEDESTRIAN DETOUR IN ALL INSTANCES WHERE A SIDEWALK WIDTH IS CLOSED OR REDUCED TO LESS THAN 5 FEET IN WIDTH. THIS INCLUDES BUT NOT LIMITED TO BARRICADES, SIDEWALK CLOSED, DETOUR ARROWS AS OUTLINED IN THE MMUTCD.
13. MATERIAL TESTING WILL BE PROVIDED BY A 3RD PARTY HIRED BY OWNER. CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF ALL MATERIAL TESTING.

14. NO EQUIPMENT OR VEHICLES MAY BE PARKED IN LAWN OR LANDSCAPED AREAS WITHOUT PRIOR APPROVAL BY UM PROJECT MANAGER.
15. NO STORAGE OF MATERIALS, PARKING, OR DRIVING IS ALLOWED WITHIN THE LIMITS OF TREE CANOPIES.
16. CONTRACTOR SHALL CONTACT REPUBLIC PARKING (734-761-7235) TO COORDINATE ANY NECESSARY CLOSURE OF CITY OF ANN ARBOR ON-STREET PARKING AND SHALL PAY ANY ASSOCIATED FEES.
17. EGRESS TO BUILDINGS SHALL BE MAINTAINED AT ALL TIMES - WORK WITH U-M PROJECT MANAGER TO COORDINATE ANY LOCATIONS WHERE WORK WILL CUT OFF BUILDING ACCESS.
18. MAINTAIN VISIBILITY AND ACCESSIBILITY TO FIRE HYDRANTS AND BUILDING FIRE DEPARTMENT CONNECTION LOCATIONS.
19. GOOD HOUSEKEEPING PRACTICES MUST BE EMPLOYED AT THE JOB SITE. MINIMIZE DUST.
20. ALL DISTURBED LANDSCAPE/GRASS AREAS SHALL BE RESTORED BY THE CONTRACTOR BY INSTALLING A MINIMUM OF 4" OF TOP SOIL, SEED AND MULCH OR HYDROSEED.
21. ALL BROKEN ASPHALT, CONCRETE, & DEBRIS SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE PROPERLY REMOVED FROM THE SITE PRIOR TO THE COMPLETION OF THE CONTRACT. NO STOCK PILING WILL BE ALLOWED ON SITE.
22. SEQUENCING OF WORK IS TO BE APPROVED BY PROJECT MANAGER PRIOR TO STARTING CONSTRUCTION.
23. PARKING LOT LIGHTING WORK WILL BE CARRIED OUT BY U-M PLANT POWER AND LIGHTING SHOP. CONTRACTOR SHALL COORDINATE GRADING & U/G WORK WITH DAVE LAMMERS AT 734-647-2049.  
*(Select one option as applicable – either prior or following note.)* COORDINATE SITE LIGHTING WORK AND PANEL ACCESS FOR SHUTDOWNS WITH U-M POWER AND LIGHTING, DAVE LAMMERS AT 734-647-2049.

#### **CONCRETE NOTES**

1. ALL CONCRETE SHALL BE 4000 PSI MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS AND CONSIST OF AIR ENTRAINED PORTLAND CEMENT WITH A TOTAL AIR CONTENT OF NOT LESS THAN 5% AND NOT MORE THAN 8%. CEMENT CONTENT SHALL BE MINIMUM OF SIX BAGS PER CUBIC YARD. THE SLUMP SHALL NOT BE MORE THAN 4 INCHES NOR LESS THAN 1- 1/2" AS DETERMINED BY THE SLUMP CONE TEST ASTM-143. SLUMP GREATER THAN 5" WITH USE OF AN ADMIXTURE REQUIRES ENGINEER AND U-M PROJECT MANAGER APPROVAL. CONC. WALKS AND PAVEMENT SHALL INCLUDE POLYPROPYLENE FIBRILLATED FIBERS WITH A VOLUME OF 1.5 LBS/CY.
2. CONCRETE CURING COMPOUND SHALL BE CLEAR MEMBRANE CONFORMING TO ASTM C-309, TYPE I OR ID, CLASS A AND B AND APPLIED AT A RATE OF NOT LESS THAN ONE GALLON PER 200 SQ. FT. OF CONCRETE SURFACE IMMEDIATELY AFTER FINISHING OPERATIONS ARE COMPLETE. CURING COMPOUND USED WITHIN CLOSE PROXIMITY OF BUILDING DOORS, WINDOWS OR AIR INTAKES SHALL BE WATER BASED.

3. GRANULAR MATERIAL SHALL BE A MINIMUM OF MDOT CLASS II COMPACTED TO 98% ASTM 1557 VALUE. GRANULAR MATERIAL WITHIN THE ROW SHALL MEET CITY OF ANN ARBOR CLASS II REQUIREMENTS.

4. ALL PREPARED GRANULAR FILL BASE SHALL MEET COMPACTION REQUIREMENTS PRIOR TO THE SCHEDULING OF CONCRETE/PAVING MATERIAL DELIVERY. CONTRACTOR IS RESPONSIBLE FOR ALL COORDINATION OF REQUIRED MATERIAL TESTING.

5. PROVIDE 1/2" THICK SEALED EXPANSION JOINTS AT ALL POINTS OF CONTACT WITH FIXED OBJECTS SUCH AS BUILDING, CURBS, PAVING, POLES, SIGNS AND HYDRANTS. EXPANSION JOINTS SHALL BE INCIDENTAL TO CONCRETE INSTALLATION.

6. PLACE CONCRETE ON A MOIST COMPACT BASE.

7. PROVIDE HAND TOOLED CONTROL JOINTS IN CONCRETE WALKS TO FORM PANELS OF SIZES INDICATED OR MATCH EXISTING PATTERN. HAND TOOL 1/2" WIDE CONTROL JOINTS TO A MINIMUM DEPTH OF ONE (1) INCH. TOTAL DEPTH OF CONTROL JOINT SHALL BE 1/4 OF SLAB THICKNESS. FOR SLAB THICKNESS GREATER THAN 8", SAWCUTTING, IN ADDITION TO AND AFTER HAND TOOLING JOINTS, IS REQUIRED TO MEET A FINAL DEPTH OF 1/4 THICKNESS OF THE SLAB. SAWCUTTING SHALL OCCUR AS SOON AS POSSIBLE AND WITHIN 24 HOURS OF CONCRETE INSTALLATION. INITIAL SURFACE SAWCUT CONTROL JOINTS (SAWCUT ONLY) ARE PROHIBITED UNLESS APPROVED BY OWNER.

8. SAWCUT & GRINDING TOOLS MUST BE ATTACHED TO A WATER SOURCE OR A VACUUM DEVICE TO MINIMIZE DUST EXPOSURE.

9. SAWCUTTING FOR REMOVALS SHALL BE INCIDENTAL TO REMOVAL.

## **UTILITY NOTES**

### **SANITARY SEWER**

1. ALL SANITARY SEWER SPECIFIED AS PVC SHALL BE SDR26 POLYVINYL CHLORIDE (PVC) CONFORMING TO CURRENT ASTM DESIGNATION D3034-94, OR CURRENT REFERENCE FOR SDR 26, "STANDARD SPECIFICATIONS FOR TYPE PSM POLYVINYL CHLORIDE (PVC) SEWER PIPE AND FITTINGS. PIPE SHALL HAVE AN INTEGRAL WALL, SDR26 BELL & SPIGOT RUBBER O-RING GASKET JOINTS, UNLESS NOTED OTHERWISE.

2. CONTRACTOR TO FOLLOW MDOT REQUIREMENTS FOR VIDEO INSPECTION OF SEWER PIPE. ALL PVC SANITARY SEWER MAINS SHALL BE MANDREL TESTED FOR DEFLECTION BY THE CONTRACTOR. NO PIPE SHALL EXCEED A DEFLECTION OF 5 PERCENT. IF DEFLECTION EXCEEDS 5 PERCENT, THE PIPE SHALL BE EXCAVATED AND REPLACED IN ACCORDANCE WITH REQUIREMENTS OF APPROVED SPECIFICATIONS. THE RIGID BALL OR MANDREL USED FOR THE DEFLECTION TEST SHALL HAVE A DIAMETER NOT LESS THAN 95 PERCENT OF THE BASE INSIDE DIAMETER OR AVERAGE INSIDE DIAMETER OF THE PIPE PER ASTM SPECIFICATION. THE TEST SHALL BE PERFORMED WITHOUT MANUAL PULLING DEVICES. SANITARY SEWER AIR TESTING SHALL BE BASED ON THE AUTHORITY HAVING JURISDICTION. THE CONTRACTOR SHALL FURNISH ALL LABOR, EQUIPMENT AND MATERIALS NECESSARY FOR TESTING AS INCIDENTAL TO THE SANITARY SEWER INSTALLATION.

## **STORM**

1. STORM SEWER SHALL MEET MDOT MATERIAL LOADING REQUIREMENTS. STORM SEWER IN THE CITY ROW SHALL MEET CITY OF ANN ARBOR REQUIREMENTS.
2. STORM SEWER SPECIFIED AS HIGH DENSITY POLYETHYLENE (HDPE) SHALL MEET THE REQUIREMENTS OF AASHTO M294. THE PIPE SHALL BE CORRUGATED WITH AN INTEGRALLY FORMED SMOOTH INTERIOR. JOINTS SHALL BE GASKETED WATER TIGHT JOINTS USING WATERTIGHT SLEEVES. SLEEVES SHALL BE FACTORY INSTALLED ON ONE END OF THE PIPE WITH A FACTORY INSTALLED GASKET ON THE OPPOSITE END OF THE PIPE.
3. AFTER TRENCH BACKFILL AND COMPACTION IS COMPLETE, ENGINEER WILL SELECT AT LEAST 50% OF THE INSTALLED LENGTH OF EACH SIZE OF STORM SEWER HDPE PIPE FOR THE CONTRACTOR TO MANDREL TEST FOR DEFORMATION. UNLESS APPROVED OTHERWISE, CONTRACTOR TO PERFORM THE MANDREL TESTING FROM 5 TO 10 DAYS BEFORE PAVEMENT SURFACING OR COMPLETION OF FINAL GRADE. ALLOW TIME FOR CORRECTIVE ACTION. FOLLOW MDOT TESTING REQUIREMENTS FOR MANDREL TESTING OF HDPE STORM SEWERS. MANDREL TESTING IS INCIDENTAL TO HDPE STORM SEWER INSTALLATION.
4. CONTRACTOR TO FOLLOW MDOT REQUIREMENTS FOR VIDEO INSPECTION OF SEWER PIPE. VIDEO INSPECTION IS NOT REQUIRED FOR EXTENSIONS OF EXISTING CATCH BASIN LEADS LESS THAN 20 FEET. ALLOW TIME FOR CORRECTIVE ACTION. OPTIONS: TEST PLASTIC PIPING ACCORDING TO ASTM F 1714 AND TEST CONCRETE PIPING ACCORDING TO ASTM C924. STORM SEWER AIR TESTING SHALL BE BASED ON THE AUTHORITY HAVING JURISDICTION. IN THE EVENT OF FAILURE TO PASS AN AIR TEST, THE SEWER LINE SHOULD BE SUBJECTED TO A WATER INFILTRATION TEST AS PRESCRIBED BY ASTM C696 BEFORE RECONSTRUCTION IS CONSIDERED. THE CONTRACTOR SHALL FURNISH ALL LABOR, EQUIPMENT AND MATERIALS NECESSARY FOR ALL TESTING AND IS INCIDENTAL TO THE STORM SEWER INSTALLATION.

## **WATERMAIN**

1. ALL MATERIALS, EQUIPMENT AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CURRENT CITY OF ANN ARBOR STANDARD SPECIFICATIONS AND DETAILS. THE OMISSION OF ANY CURRENT STANDARD DETAIL DOES NOT RELIEVE THE CONTRACTOR FROM THIS REQUIREMENT.
2. CONTRACTOR SHALL COORDINATE CITY OF ANN ARBOR INSPECTION PRIOR TO IMPACTING WATER MAINS.
3. DUCTILE IRON PIPE SHALL BE A MINIMUM THICKNESS OF CLASS 52 WITH POLYETHYLENE WRAP AND PUSH-ON JOINTS, UNLESS OTHERWISE NOTED.
4. GATE VALVES SHALL BE RESILIENT SEAT NON-RISING STEM PUSH-ON GATE VALVE WITH 2" SQUARE OPERATING NUT, OPENING RIGHT, COMPLETE WITH ACCESSORIES. GATE VALVE SHALL MEET AWWA SPECIFICATION C509 OR C515 AND CURRENT CITY OF ANN ARBOR STANDARDS. SEE CITY OF ANN ARBOR [DIVISION III MATERIAL STANDARDS](#).
5. ALL HORIZONTAL BENDS, TEES AND FITTINGS SHALL INCLUDE THRUST BLOCKS. RESTRAINED JOINT GASKETS RATED FOR 350 PSI ARE REQUIRED FOR VERTICAL BENDS.

6. CITY CONNECTION CHARGES/METER FEES AND CITY CONSTRUCTION INSPECTION ESCROW FEE WILL BE PAID BY THE UNIVERSITY OF MICHIGAN. ANY INSPECTION FOR REWORK INCLUDING REPEAT BACTERIA TESTING WILL BE PAID BY THE UNIVERSITY AND BACK-CHARGED TO THE CONTRACTOR BY THE UNIVERSITY. TEMPORARY HYDRANT METER/WATER FEES AND/OR TESTING CORPORATIONS ARE TO BE PAID BY THE CONTRACTOR.

7. ALL WATER MAIN SHALL HAVE A TYPICAL 5.5 FT. COVER. MAINTAIN A MINIMUM OF 18 INCHES VERTICAL CLEARANCE FOR STORM AND SANITARY CROSSINGS AND A MINIMUM OF 12 INCHES VERTICAL CLEARANCE WITH ALL OTHER UTILITIES.

8. UNLESS OTHERWISE NOTED, THE CONTRACTOR SHALL UTILIZE STANDARD ALLOWABLE PIPE DEFLECTIONS FOR THE PROPOSED ALIGNMENT.

9. FIRE HYDRANT ASSEMBLIES SHALL INCLUDE ALL NECESSARY THRUST BLOCKS, BENDS, PIPE AND FITTINGS, INCLUDING ADJUSTMENT OF THE STOP BOX. FIRE HYDRANT ASSEMBLY INCLUDES 6 INCH STOP BOX LOCATED 3 FEET FROM HYDRANT.

10. LINE STOPS SHALL BE INSTALLED WHERE EXISTING WATER MAINS CANNOT BE SUFFICIENTLY ISOLATED TO COMPLETE THE WORK. THE CITY OF ANN ARBOR IS NOT RESPONSIBLE FOR THE COST OF INSTALLING LINE STOPS.

11. WATER MAIN FITTINGS SUCH AS BLOW-OFF ASSEMBLIES, CONCRETE THRUST BLOCKS, SOLID SLEEVES AND MECHANICAL PLUGS WHICH ARE REQUIRED TO COMPLETE THE WORK, OTHER THAN THOSE SPECIFICALLY LISTED AS SEPARATE PAY ITEMS, SHALL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE PIPE PAY ITEMS. *(NOTE to designer: Include this for unit price water main work.)*

12. THE CONTRACTOR SHALL CONSTRUCT, FLUSH, AND BACTERIOLOGICALLY TEST THE WATERMAIN PER CITY OF ANN ARBOR SPECIFICATIONS. ALL CHLORINATED WATER SHALL BE DISCHARGED DIRECTLY INTO AN APPROVED SANITARY SEWER. THE CONTRACTOR SHALL SUPPLY ALL NECESSARY PERSONNEL, HOSES, FITTINGS, AND THE LIKE TO ACCOMPLISH THIS WORK AND IS INCIDENTAL TO THE INSTALLATION OF WATER MAIN.

13. HYDROSTATIC TESTING MUST BE PERFORMED IN ACCORDANCE WITH ANSI/AWWA C600. DISINFECTION AND BACTERIOLOGICAL TESTING MUST BE PERFORMED IN ACCORDANCE WITH ANSI/AWWA C651. ALL TESTING MUST BE COORDINATED WITH THE CITY OF ANN ARBOR AND BE PER CITY OF ANN ARBOR SPECIFICATIONS.

14. CONNECTIONS TO EXISTING WATER MAIN SHALL NOT BE MADE UNTIL THE NEW WATER MAIN HAS BEEN SUCCESSFULLY PRESSURE TESTED AND HAS PASSED BACTERIOLOGICAL TESTING. FINAL CONNECTIONS SHALL BE COORDINATED WITH THE ENGINEER. THE CONTRACTOR SHALL COORDINATE ALL WATER SYSTEM SHUT DOWNS WITH THE UNIVERSITY OF MICHIGAN AND THE CITY OF ANN ARBOR AFTER APPROPRIATE NOTIFICATIONS HAVE BEEN PROVIDED TO THOSE AFFECTED. CONTRACTORS SHALL NOT OPERATE VALVES OWNED BY THE CITY OF ANN ARBOR.

15. GATE WELL STRUCTURES FRAME AND COVERS SHALL BE EJIW 1040 WITH TYPE "C" LIDS LETTERED "WATER."