

**PAVING NOTES**

**GENERAL NOTES**

- EXISTING TOPSOIL, VEGETATION AND ORGANIC MATERIALS SHALL BE STRIPPED AND REMOVED FROM PROPOSED PAVEMENT AREA PRIOR TO PLACEMENT OF BASE MATERIALS. TREE ROOTS SHALL BE COMPLETELY REMOVED.
- EXCAVATE TO THE DEPTH OF THE FINAL SUBGRADE ELEVATION TO ALLOW FOR GRADE CHANGES AND THE PLACEMENT OF THE RECOMMENDED PAVEMENT SYSTEM.
- THE PAVEMENT SUBGRADE SHALL BE COMPACTED TO 95% OF THE MAXIMUM DRY DENSITY (MODIFIED PROCTOR) PRIOR TO PLACEMENT OF PROPOSED PAVEMENT. THE FINAL SUBGRADE SHALL BE THOROUGHLY PROOF-ROLLED IN THE PRESENCE OF A GEOTECHNICAL/PAVEMENT ENGINEER TO DETERMINE STABILITY. LOOSE OR YIELDING AREAS WHICH CANNOT BE MECHANICALLY STABILIZED SHALL BE REMOVED AND REPLACED WITH CLASS II SAND OR AS DIRECTED BY THE ENGINEER. ALL FILL MATERIAL AND BASE MATERIAL SHALL BE TESTED AND ITS COMPACTION AND SUITABILITY FOR ACCEPTANCE OF THE BASE MATERIAL AND PAVEMENT SHALL BE CERTIFIED BY SAID TESTING FIRM. THE OWNER SHALL SUPPLY THREE COPIES OF GEOTECHNICAL REPORTS TO MACOMB TOWNSHIP.
- IF IN THE OPINION OF THE INSPECTOR/ENGINEER, FIELD CONDITIONS WARRANT ADDITIONAL TESTING, THE DEVELOPER SHALL ARRANGE FOR AND PAY FOR ALL REQUIRED ADDITIONAL TESTING.
- 21AA AGGREGATE BASE SHALL BE LIMESTONE AND COMPACTED TO ACHIEVE A 95% COMPACTION LEVEL (MODIFIED PROCTOR - ASTM D 1557-91) (98% COMPACTION REQUIRED BELOW HMA PAVEMENTS). THE BASE SHALL EXTEND A MINIMUM OF 2 FEET BEYOND THE BACK OF CURB OR THE PAVED EDGE.
- CONCRETE AND ASPHALT PAVEMENT TESTING SHALL BE REQUIRED FOR ALL PROJECTS.
- ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CURRENT STANDARDS AND SPECIFICATIONS OF MACOMB TOWNSHIP, THE MACOMB COUNTY DEPARTMENT OF ROADS (MCDOR), AND THE MICHIGAN DEPARTMENT OF TRANSPORTATION (MDOT) STANDARD SPECIFICATIONS FOR CONSTRUCTION, CURRENT EDITION.
- FOR ANY WORK WITHIN THE PUBLIC RIGHT-OF-WAY, THE CONTRACTOR SHALL PAY FOR AND SECURE ALL NECESSARY PERMITS AND LIKEWISE ARRANGE FOR ALL INSPECTION.
- 1.0 INCH AND 2.0 INCH EXPANSION JOINTS SHALL BE INSTALLED PER MACOMB COUNTY DEPARTMENT OF ROADS STANDARDS.
- FILL AREAS SHALL BE MACHINE COMPACTED IN UNIFORM LIFTS NOT EXCEEDING 9 INCHES THICK TO 95% OF THE MAXIMUM DRY DENSITY (MODIFIED PROCTOR) PRIOR TO PLACEMENT OF PROPOSED PAVEMENT.
- 6" UNDER DRAIN WRAPPED IN GEOTEXTILE FABRIC FILTER SHALL BE INSTALLED ON BOTH SIDES OF ALL ROADWAYS. ALSO, PLACE UNDER DRAINS AT ALL DRAINAGE STRUCTURES WITHIN PARKING AREAS (SEE UNDERDRAIN DETAILS SHEET 2 OF 2).
- CONSTRUCTION TRAFFIC SHALL BE MINIMIZED ON THE NEW BITUMINOUS PAVEMENT. IF CONSTRUCTION TRAFFIC IS ANTICIPATED ON THE PAVEMENT STRUCTURE, SUBJECT TO MACOMB TOWNSHIP AND MACOMB COUNTY DEPARTMENT OF ROADS APPROVAL, THE PLACEMENT OF THE FINAL LIFT SHALL BE DELAYED UNTIL THE MAJORITY OF THE CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED BY THE DEVELOPER. PAVEMENT SHALL BE OF THE TYPE, THICKNESS AND CROSS SECTION AS INDICATED ON THE PLANS.
- THESE DETAILS ARE SUPPLEMENTAL TO THE MACOMB COUNTY DEPARTMENT OF ROADS (MCDOR) ROAD PAVING STANDARD DETAILS SHEETS 1, 2 & 3.
- ALL ROAD PAVING WITHIN THE TOWNSHIP SHALL COMPLY WITH THE MACOMB COUNTY DEPARTMENT OF ROADS PAVING STANDARD DETAILS UNLESS OTHERWISE NOTED ON THE PLANS OR ON THIS SUPPLEMENTAL DETAIL SHEET.
- NO BITUMINOUS PAVEMENT IS PERMITTED FOR ROADS WITHIN PLATTED SUBDIVISIONS OR SITE CONDOMINIUMS (MACOMB COUNTY DEPARTMENT OF ROADS PAVING STANDARD DETAILS 1B & 2B).

**CONCRETE PAVEMENT**

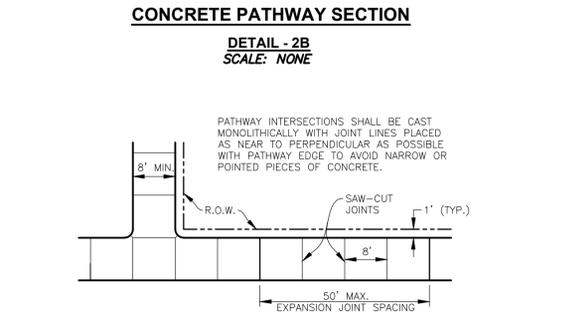
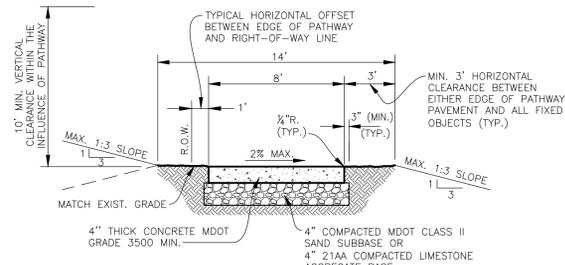
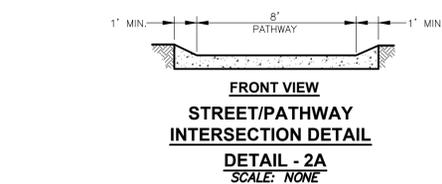
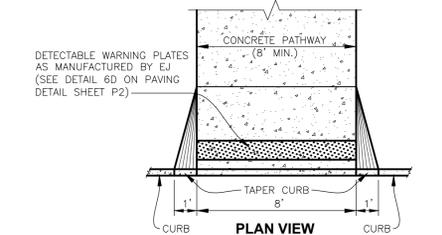
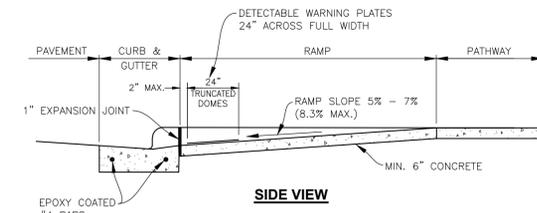
- CONCRETE PAVING MIXTURES SHALL MEET ALL PROVISIONS OF SECTION 1004 OF THE MICHIGAN DEPARTMENT OF TRANSPORTATION 2020 STANDARD SPECIFICATIONS FOR CONSTRUCTION. PAVEMENT SHALL CONFORM TO MDOT GRADE 3500. PAVEMENT SHALL MEET MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3500 PSI AND A SLUMP OF 1 1/2 TO 3 INCHES. PAVEMENT SHALL CONFORM TO MDOT P1.
- ALL CONCRETE PAVEMENT, DRIVEWAYS, CURB & GUTTER, ETC., SHALL BE SPRAY CURED WITH WHITE MEMBRANE CURING COMPOUND IMMEDIATELY FOLLOWING FINISHING OPERATION.
- THE CONCRETE BATCH PLANT SHALL BE NRMCA CERTIFIED WITH LOCATION APPROVED BY THE TOWNSHIP BOARD AND MACOMB COUNTY DEPARTMENT OF ROADS.
- NO CONCRETE PAVING SHALL BE ALLOWED PRIOR TO MAY 1, OR AFTER NOVEMBER 1 (UNLESS APPROVED BY MDOT, MACOMB COUNTY DEPARTMENT OF ROADS OR MACOMB TOWNSHIP).
- AIR TEMPERATURE AT POINT OF PLACEMENT, AWAY FROM ARTIFICIAL HEAT SHALL BE MINIMUM 25° F AND RISING.
- TEMPERATURE OF CONCRETE AT TIME OF PLACEMENT SHALL BE BETWEEN 45° F AND 90° F.
- AGGREGATES FOR CONCRETE PAVEMENTS SHALL MEET ALL PROVISIONS OF THE MICHIGAN DEPARTMENT OF TRANSPORTATION 2020 STANDARD SPECIFICATION FOR CONSTRUCTION SECTION 902. OBTAIN THE COARSE AGGREGATE FOR CONCRETE MIXTURES FROM GEOLOGICALLY NATURAL SOURCES. THE ABSORPTION DETERMINED IN ACCORDANCE WITH ASTM C127 SHALL NOT EXCEED 2.5%.

**BITUMINOUS PAVEMENT**

- BITUMINOUS MIXTURE FOR INDUSTRIAL PARKING LOTS SHALL CONSIST OF: BASE COURSE - MDOT BITUMINOUS MIXTURE NO. 2C OR 3C; LEVELING COURSE - MDOT BITUMINOUS MIXTURE NO. 3C OR 4EML; WEARING COURSE - MDOT BITUMINOUS MIXTURE NO. 4C, 4EML OR 5EML; ASPHALT PERFORMANCE GRADE PG 64-22 RECLAIMED. ASPHALT PAVEMENT (RAP) SHALL NOT BE ALLOWED IN THE TOP COURSE.
- BITUMINOUS MIXTURE FOR COMMERCIAL PARKING LOTS SHALL CONSIST OF: BASE COURSE - MDOT BITUMINOUS MIXTURE NO. 13A OR 4EML; WEARING COURSE - MDOT BITUMINOUS MIXTURE 36A OR 5EML. MDOT BITUMINOUS MIXTURE; ASPHALT PERFORMANCE GRADE PG 64-22.1 RECLAIMED. ASPHALT PAVEMENT (RAP) SHALL NOT BE ALLOWED IN THE TOP COURSE.
- FOR PRIVATE RESIDENTIAL ROADWAYS MDOT BITUMINOUS MIXTURES 3EML/4EML/5EML OR LVSP MAY BE USED, WITH THE APPROVAL FROM THE TOWNSHIP ENGINEER.
- ALL BITUMINOUS MATERIAL SHALL BE COMPACTED TO A DENSITY OF 97% OF THE FIELD CONTROL DENSITY AS DETERMINED BY THE MARSHALL METHOD.
- A BOND COAT OF SS-1H EMULSION IS REQUIRED BETWEEN THE BASE COURSE AND LEVELING COURSE AND BETWEEN THE LEVELING COURSE AND WEARING COURSE WHEN EITHER 48 HOURS HAVE ELAPSED BETWEEN PLACEMENT OF THE BITUMINOUS COURSES OR THE SURFACE OF THE PAVEMENT HAS BEEN CONTAMINATED WITH DIRT, DUST, OR FOREIGN MATERIAL. THE BOND COAT SHALL BE APPLIED IN A UNIFORM MANNER OVER THE SURFACE AT A RATE OF 0.10 GALLON/S.Y. (BETWEEN LEVELING COURSE AND BASE COURSE & 0.05 GALLON/SY BETWEEN WEARING COURSE AND LEVELING COURSE) THE COATS MAY DIFFER. IN THE EVENT A BOND COAT IS NOT REQUIRED, THE LEVELING COURSE MAY REQUIRE LOCALIZED BROOM CLEANING.
- UNLESS OTHERWISE APPROVED BY THE TOWNSHIP ENGINEER AND/OR MCDOR DIRECTOR OF ROADS, TEMPERATURE AND SEASONAL REQUIREMENTS FOR PLACING HMA WILL BE ACCORDING TO CURRENT MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION. TARGET PLACEMENT TEMPERATURES FOR CONSTRUCTION, MACOMB TOWNSHIP WILL NOT ALLOW PAVING BELOW THESE MINIMUM TEMPERATURES, NOR WHEN FROST IS ON OR IN THE GRADE OR ON THE EXISTING SURFACE.
- PLACEMENT OF HMA OR APPLICATION OF BOND COAT IS PROHIBITED WHEN PRECIPITATION IS IMMINENT OR WHEN MOISTURE ON THE EXISTING SURFACE WILL PREVENT SATISFACTORY CURING.
- RECYCLED HOT MIX ASPHALT MIXTURE: LIMITS RECYCLED ASPHALT MATERIAL (RAP) TO A MAXIMUM OF 15% BINDER BY WEIGHT OF THE TOTAL BINDER IN THE MIXTURE. ASPHALT SHINGLES ARE NOT ALLOWED.

**CONCRETE PATHWAY NOTES**

- FOR CONCRETE PATHWAY PROVIDE TRANSVERSE PLANE OF WEAKNESS SAW CUT JOINTS AT APPROXIMATELY 8' INTERVALS. SAW 1/2" WIDE x 1" DEEP JOINTS AND DO NOT SEAL THE JOINTS. TOOLED JOINTS ARE NOT ACCEPTABLE.
- PROVIDE FULL DEPTH TRANSVERSE EXPANSION JOINTS, BY INSTALLING 1/2" THICK PREMOULDED JOINT FILLER SET 1/2" BELOW THE SURFACE OF THE CONCRETE IN THE JOINTS AT 50' INTERVALS (MAX.).
- PLACE 1/2" FIBER EXPANSION JOINT FILLERS AT EACH SIDE OF DRIVE.
- PROVIDE 1" FIBER EXPANSION JOINT FILLERS AT CURB AND BUILDING OR R.O.W. LINE.
- AT DRIVEWAYS WITH CURB & GUTTER, PROVIDE CURB DROP PER MDOT STANDARDS.
- AT UNPAVED DRIVE OR PAVED DRIVE WITH POOR CONDITION, INCREASE THE SLAB THICKNESS TO 6" OR EXISTING SLAB THICKNESS WHICHEVER IS GREATER.
- PROVIDE 10' BETWEEN EDGE OF PATHWAY TO TOP OF BANK FOR DETENTION BASINS, OPEN DRAINS, ETC.
- ADJACENT FINISHED GRADE SHALL BE SET 2" BELOW TO ACCOMMODATE SOD.
- THE MAXIMUM GRADE ALONG PATHWAY SHALL NOT EXCEED 1 ON 12.
- PROVIDE 2% MAXIMUM CROSS SLOPE FOR DRAINAGE OFF AND AWAY FROM PATHWAY AND GRADED SHOULDERS.
- PROVIDE 95' MINIMUM CENTER LINE RADII FOR PATHWAY HORIZONTAL ALIGNMENT.
- PROVIDE A MINIMUM OF 3' HORIZONTAL CLEARANCE AND 10' VERTICAL CLEARANCE FROM ALL FIXED OBJECTS AND THE EDGE OF PATHWAY SURFACE. RELOCATE EXISTING OBJECTS (I.E. MAIL BOXES, SIGNS, ETC.), IF REQUIRED.
- PROVIDE HANDICAP ACCESSIBLE RAMPS AT EXISTING PAVED DRIVEWAYS IN GOOD CONDITION AND AT STREET INTERSECTIONS.
- PATHWAY RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE WITH MDOT STANDARDS AND SHALL BE A MINIMUM OF 8' WIDE.
- A CLEAN SAW CUT JOINT SHALL BE PROVIDED WHEREVER NEW PAVEMENT MATCHES EXISTING PAVEMENT.
- UTILITY STRUCTURES SHALL BE ADJUSTED IN ACCORDANCE WITH MACOMB TOWNSHIP STANDARDS AND SHALL MATCH THE PROPOSED GRADE OF THE PATHWAY.

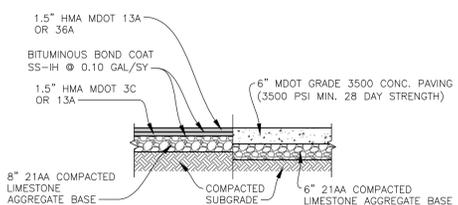


- NOTES:**
- SIGNS SHALL BE 18"x18" AND CONSTRUCTED OF 0.63 ENGINEERING GRADE REFLECTIVE ALUMINUM WITH 1/2" RADIUS AT CORNERS.
  - SIGNS SHALL HAVE A YELLOW BACKGROUND WITH BLACK COPY AND BLACK OUTLINE.
  - SIGN POST AND FASTENERS SHALL BE LOCATED PER M.M.U.T.C.D. (MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES) STANDARDS.

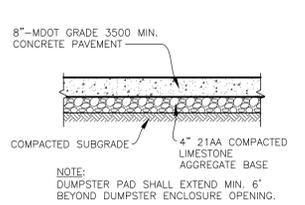
**CONCRETE PATHWAY SIGNAGE**

**DETAIL - 2C**  
SCALE: NONE

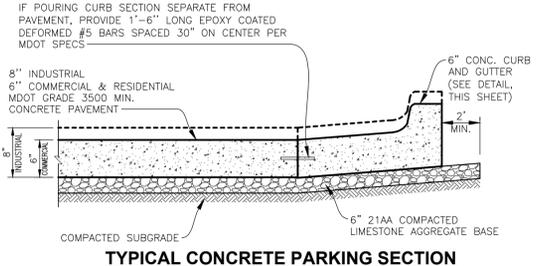
**CONCRETE PATHWAY DETAILS - 2**



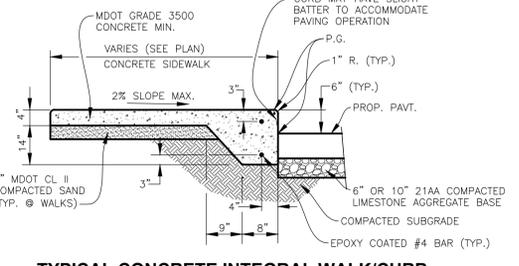
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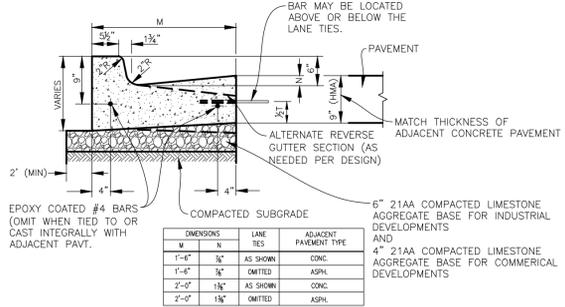
**SCALE: NONE**



**DETAIL - 1A**  
SCALE: NONE

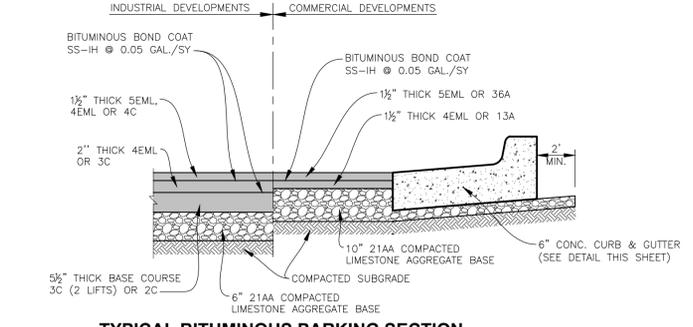


**DETAIL - 1B**  
SCALE: NONE



**(FOR RESIDENTIAL, COMMERCIAL & INDUSTRIAL PARKING AREAS)**

**DETAIL - 1D**  
SCALE: NONE



**DETAIL - 1C**  
SCALE: NONE

**TYPICAL PARKING AREA PAVEMENT & CURB DETAILS - 1**



**MACOMB TOWNSHIP**  
5411 BROUGHTON ROAD  
MACOMB, MI 48042  
586-992-0710



NOTE: UTILITY INFORMATION ON THIS DRAWING MAY BE FROM INFORMATION DISCLOSED TO THIS FIRM BY THE VARIOUS UTILITY COMPANIES, CITY/COUNTY AGENCIES AND OTHER VARIOUS SOURCES. UNDERGROUND UTILITIES WHICH ARE ON PRIVATE PROPERTY ARE USUALLY NOT DELINEATED UPON A UTILITY COMPANY'S PUBLISHED PLANS. THEIR LOCATION, IF SHOWN UPON THIS SURVEY, ARE APPROXIMATED FROM FOUND PAINT MARKS/STAKES, ETC. AS LOCATED BY THIS FIRM FROM SOURCES WHICH ARE UNKNOWN. NO GUARANTEE IS GIVEN AS TO THE COMPLETENESS OR ACCURACY THEREOF.

PRIOR TO CONSTRUCTION, ALL LOCATIONS AND DEPTHS OF EXISTING UTILITIES (IN CONFLICT WITH PROPOSED IMPROVEMENTS) SHALL BE VERIFIED IN THE FIELD. CALL MISS DIG 3 WORKING DAYS PRIOR TO CONSTRUCTION.

**TOWNSHIP OF MACOMB**

**PAVING STANDARD DETAILS (1 OF 2)**

TOWN 3 NORTH RANGE 13 EAST  
MACOMB TOWNSHIP  
MACOMB COUNTY

NO.	DATE	REVISION
1	10-15-14	SHEET UPDATE
2	11-06-15	SHEET UPDATE
3	03-28-16	SHEET UPDATE
4	10-14-16	SHEET UPDATE
5	01-24-17	SHEET UPDATE
6	08-20-18	SHEET UPDATE
7	11-05-25	SHEET UPDATE

VERIFY SCALES	
BAR IS ONE INCH ON ORIGINAL DRAWING	
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	
JOB NO.	DRAWING NO.
SCALE:	SHEET NO.
N.T.S.	P1