



1'-0" RADIUS SYMBOL SHALL BE 3" WIDE (MIN.) AND

PAINTED ON EACH HANDICAPPED SPACE.

2. HANDICAPPED SPACES SHALL BE 12'0" WIDE.

STRIPING OF CROSSWALK SHALL BE THERMO

—2 " TYPE "C" ASPHALT SURFACE COURSE (INSTALL SURFACE COURSE IN CONJUNCTION WITH OVERLAY SECTION) PROPOSED OVERLAY ← 2 1/2 " TYPE "B" ASPHALT PAVEMENT BINDER COURSE SECTION AREA (G-1) (INSTALL PRIOR TO OVERLAY SECTION) ← 6" GRADED AGGREGATE SUBBASE (INSTALL PRIOR TO OVERLAY SECTION) EXISTING PAVEMENT SURFACE TOP 12" OF SUBGRADE SHALL BE COMPACTED TO 95% OF THE MODIFIED PROCTOR STANDARD DRY DENSITY AS DETERMINED BY THE MODIFIED PROCTOR TEST, ASTM D 1557 (INSTALL PRIOR TO OVERLAY SECTION

PROPOSED 2" " TYPE "C" ASPHALT SURFACE COURSE OVERLAY SECTION - EXISTING PAVEMENT / CONCRETE SURFACE TO BE FREE OF DEBRIS. AND SWEPT PRIOR TO PLACEMENT OF TACK COAT ON ALL EXISTING SURFACES.

HANDICAPPED PARKING SPACE PLAN HANDICAPPED SYMBOL DETAIL PEDESTRIAN CROSSWALK DETAIL FULL DEPTH PATCH SECTION DETAIL

BMG NO.: SW-4B

BMG NO.: SW-4E

BMG NO.: TS-03 NO SCALE

**PAVEMENT OVERLAY SECTION DETAIL** 

## STANDARD SPECIFICATIONS FOR DELDOT (UPDATED 11/24/2014 PER SUPPLEMENTAL SPECIFICATIONS)

SECTION 401 - HOT-MIX, HOT-LAID BITUMINOUS CONCRETE PAVEMENT

401.01 - DESCRIPTION: THIS WORK CONSISTS OF CONSTRUCTING HOT-MIX, HOT-LAID BITUMINOUS CONCRETE BASES AND SURFACE COURSES ON EITHER A PREPARED FOUNDATION OR AN EXISTING SURFACE COURSE. 401.02 - MATERIALS: MATERIALS FOR HOT-MIX, HOT-LAID BITUMINOUS CONCRETE SHALL CONFORM TO SECTION 823. TACK COAT SHALL CONFORM TO SECTION 811. SAND FOR PROTECTION OF TRAFFIC SHALL CONFORM TO SECTION

401.03 - DELIVERY OF MIXTURE: THE MIXTURE SHALL BE DELIVERED AT THE SPREADER WITH A TEMPERATURE LOSS NOT GREATER THAN 20 °F (11 °C) FROM THE

TEMPERATURE MEASURED AT THE PLANT BY THE ENGINEER'S REPRESENTATIVE. A MINIMUM OF 100 TONS (90 METRIĆ TONS) OF HOT-MIX BITUMINOUS CONCRETE PER HOUR SHALL BE DELIVERED TO THE PROJECT SITE UNLESS OTHERWISE DIRECTED.

EQUIPMEN1

**DIVISION 400 - BITUMINOUS PAVEMENTS** 

IO SCALE

401.04 - HAULING EQUIPMENT:

TRUCKS USED FOR HAULING BITUMINOUS CONCRETE SHALL HAVE TIGHT, CLEAN, SMOOTH METAL BEDS WHICH HAVE BEEN THINLY COATED WITH AN EMULSIFIED OIL, SOAP SOLUTION, OR OTHER APPROVED RELEASE AGENT TO PREVENT ADHERENCE OF THE BITUMINOUS MIXTURE TO THE BED OF THE TRUCK. EACH TRUCK SHALL HAVE A SECURELY FASTENED COVER OF CANVAS OR OTHER SUITABLE WATERPROOF MATERIAL THAT COVERS THE BED FROM FRONT TO BACK AND OVER THE SIDES. THE FRONT OF THE TARP SHALL BE SECURELY FASTENED TO THE BODY OR PROTECTED BY AN AIR FOIL. THE COVER SHALL HAVE AT LEAST THREE STRAPS TO A SIDE AND TWO STRAPS ON THE BACK TO PREVENT THE COVER FROM BALLOONING UP, TO PROTECT THE MIXTURE FROM THE WEATHER, AND TO PREVENT HEAT LOSS. NO LOADS SHALL BE SENT OUT SO LATE IN THE DAY THAT SPREADING AND COMPACTING OF THE MIXTURE CANNOT BE COMPLETED BY SUNSET UNLESS APPROVAL FOR NIGHTIME PAVING HAS BEEN GRANTED BY THE

401.05 - PAVERS:

BITUMINOUS PAVERS SHALL BE SELF-CONTAINED UNITS, PROVIDED WITH AN ACTIVATED SCREED OR STRIKE-OFF ASSEMBLY, HEATED, AND CAPABLE OF SPREADING AND FINISHING ASPHALTIC CONCRETE IN LANE WIDTHS OF THE SPECIFIED TYPICAL SECTION AND THICKNESS SHOWN ON THE PLANS. THE PAVER SHALL BE EQUIPPED WITH A RECEIVING HOPPER HAVING SUFFICIENT CAPACITY FOR A UNIFORM SPREADING OPERATION. THE FRONT OF THE SCREED OR STRIKE-OFF ASSEMBLY SHALL BE EQUIPPED WITH AN AUTOMATIC CONTROL DEVICE THAT PRODUCES A FINISHED SURFACE OF THE REQUIRED. EVENNESS AND TEXTURE WITHOUT SEGREGATION, TEARING, SHOVING, OR GOUGING THE MIXTURE. THE PAVER SHALL BE CAPABLE OF OPERATION AT FORWARD SPEEDS CONSISTENT WITH SATISFACTORY LAYING OF THE MIXTURE. STOP AND GO OPERATIONS OF THE PAVER SHALL BE AVOIDED. EQUIPMENT USED FOR SHOULDERS AND SIMILAR CONSTRUCTION SHALL BE CAPABLE OF SPREADING AND FINISHING THE COURSES IN WIDTHS SHOWN ON THE PLANS. THE SCREED OF THE PAVER SHALL BE REGULATED BY AN AUTOMATICALLY CONTROLLED GRADE LEVELING AND SLOPE CONTROL DEVICE. THE DEVICE SHALL BE ADAPTED TO THE TYPE OF PAVER USED. AND SHALL PROVIDE CONTROL FOR PRODUCING A UNIFORM SURFACE TO THE ESTABLISHED GRADE AND A CROSS SLOPE CONFORMING TO THE REQUIREMENTS ( THE TYPICAL SECTION. THE DEVICE SHALL ALSO BE EQUIPPED WITH THE NECESSARY CONTROLS TO PERMIT THE OPERATOR TO ADJUST OR VARY THE SLOPE THROUGHOUT SUPERELEVATED CURVES. GRADE CONTROL SHALL BE ACCOMPLISHED USING A SENSOR FOLLOWING A TRAVELING REFERENCE PLANE NOT LESS THAN 30' (9 M) IN LENGTH, IF DEEMED NECESSARY BY THE ENGINEER, A JOINT MATCHING SHOE REFERENCING TO AN ADJACENT MAT SHALL BE USED. IF THE AUTOMATIC CONTROLS FAIL OR MALFUNCTION. THE EQUIPMENT MAY BE OPERATED MANUALLY FOR THE REMAINDER OF THE NORMAL WORKING DAY PROVIDED SPECIFIED RESULTS ARE OBTAINED, MANUAL OPERATION WILL BE PERMITTED FOR CONSTRUCTING IRREGULARLY SHAPED AND OTHER AREAS AS APPROVED BY THE ENGINEER JE THE CONTRACTOR FAILS TO OBTAIN AND MAINTAIN THE SPECIFIED SURFACE TOLERANCE, THE PAVING OPERATION SHALL BE SUSPENDED UNTIL SATISFACTORY CORRECTIONS, REPAIR, OR EQUIPMENT REPLACEMENTS ARE MADE.

401.06 - ROLLERS:

ROLLERS SHALL BE SELF PROPELLED, STATIC OR VIBRATORY STEEL WHEEL TYPE OR A COMBINATION THEREOF, OR THE PNEUMATIC-TIRE TYPE. ALL ROLLERS SHALL BE CAPABLE OF REVERSING WITHOUT BACKLASH, AND SHALL BE OPERATED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS. STEEL WHEEL ROLLERS SHALL BE EQUIPPED WITH SCRAPERS, PNEUMATIC-TIRE ROLLERS SHALL BE OF THE OSCILLATING TYPE, EQUIPPED WITH SMOOTH TIRES OF EQUAL SIZE, DIAMETER, AND PLY RATING, ALL MAINTAINED AT THE SAME INFLATION PRESSURE. ROLLERS SHALL HAVE A SYSTEM FOR MOISTENING EACH WHEEL OR ROLLER. THE NUMBER AND WEIGHT OF THE ROLLERS SHALL BE SUFFICIENT TO COMPACT THE MIXTURE TO THE REQUIRED DENSITY WHILE IT IS STILL IN A WORKABLE CONDITION. USING EQUIPMENT WHICH RESULTS IN EXCESSIVE CRUSHING OF THE AGGREGATE OR MARRING OF THE PAVEMENT SURFACE WILL NOT BE PERMITTED. ALL ROLLERS SHALL BE APPROVED PRIOR TO USE. THE ROLLERS SHALL BE MAINTAINED IN A SATISFACTORY WORKING CONDITION, AND SHALL BEAR THE MANUFACTURER'S NAME PLATE STAMPED WITH THE MODEL NUMBER AND THE WEIGHT WITHOUT BALLAST.

CONSTRUCTION METHODS:

401.07 APPLICATION OF TACK COAT:

A TACK COAT DILUTED WITH 50% WATER SHALL BE APPLIED ON ALL DRY AND BROOM CLEANED PORTLAND CEMENT CONCRETE AND BITUMINOUS PAVEMENT SURFACES. TACK COAT SHALL BE APPLIED AT A RATE OF 0.05 TO 0.15 GAL/YD² (0.23 TO 0.68 L/M2), AT A TEMPERATURE OF 70 TO 160 °F (21 TO 71 °C). THE APPLICATION RATE APPROPRIATE FOR THE SURFACE BEING OVERLAID SHALL HAVE PRIOR APPROVAL OF THE ENGINEER. THE TACK COAT SHOULD BE A THIN, UNIFORM COATING SUFFICIENT TO BOND THE OVERLAY TO THE UNDERLYING PAVEMENT. TACK COAT SHALL BE APPLIED USING PRESSURIZED DISTRIBUTING EQUIPMENT WITH A SPRAY BAR OR OTHER APPROVED DISTRIBUTION SYSTEM. TACK COAT SHALL BE APPLIED IN ADVANCE OF THE HOT-MIX OPERATION, BUT NO FURTHER THAN IS ANTICIPATED FOR THE CURRENT DAY'S HOT-MIX OPERATION. ALL CONTACT SURFACES OF CURBING, GUTTERS, MANHOLES, AND OTHER FACILITIES SHALL BE COATED WITH A UNIFORM COAT OF HOT ASPHALT CEMENT (TACK) OR OTHER APPROVED BITUMINOUS MATERIAL JUST BEFORE THE MIXTURE IS PLACED.

401.08 PLACING BITUMINOUS MIXTURES:

PRIOR TO THE DELIVERY OF THE MIXTURES ON THE JOB, THE UNDERLYING COURSE SHALL HAVE BEEN BROUGHT TO LINE, GRADE, AND CROSS-SECTION, AND ALL EXCESS PATCHING MATERIAL, JOINT MATERIAL DIRT, AND FOREIGN MATERIAL SHALL BE REMOVED. THE MIXTURES SHALL BE PLACED ONLY UPON A SURFACE THAT IS DRY, AND ONLY WHEN WEATHER CONDITIONS ARE SUITABLE. UPON ARRIVAL, THE MIXTURE SHALL BE DUMPED INTO THE APPROVED MECHANICAL SPREADER, AND IMMEDIATELY SPREAD AND STRUCK OFF IN A UNIFORM LAYER TO THE FULL WIDTH REQUIRED. THE PLACED MIXTURE SHALL BE OF SUCH DEPTH THAT WHEN THE WORK IS COMPLETED, IT WILL HAVE THE THICKNESS SHOWN ON THE PLANS OR AS SPECIFIED IN THE CONTRACT AND WILL CONFORM TO THE GRADE AND SURFACE CONTOUR REQUIRED MACHINE METHODS OF SPREADING AND SEEDING ARE REQUIRED UNLESS OTHERWISE PERMITTED. TYPE B HOT-MIX SHALL BE PLACED IN SINGLE INDIVIDUAL LIFTS FROM 2.25" TO 4" IN DEPTH. TYPE C HOT-MIX SHALL BE PLACED IN SINGLE INDIVIDUAL LIFTS FROM 1.25" TO 2" IN DEPTH. SHOULD UNEVENNESS OF TEXTURE, TEARING, OR SHOVING OCCUR DURING THE PAVING OPERATION DUE TO UNSATISFACTORY MATERIAL, METHODS, OR EQUIPMENT, THE CONTRACTOR SHALL IMMEDIATELY TAKE ACTION TO CORRECT SUCH UNSATISFACTORY WORK. THE OUTSIDE EDGES OF THE PAVEMENT SHALL BE IN TRUE ALIGNMENT, PARALLEL TO THE CENTERLINE OF THE ROADWAY. ON CONTRACTS REQUIRING MULTIPLE LIFTS OR COURSES, THE WIDTH OF THE INDIVIDUAL LIFTS SHALL BE ARRANGED SUCH THAT THE LONGITUDINAL JOINTS OF EACH SUCCESSIVE LIFT ARE OFFSET FROM THE PREVIOUS LIFT APPROXIMATELY 6" (150 MM). THE LONGITUDINAL JOINT IN THE SURFACE COURSE SHALL BE AT THE LANE LINE THE PLACEMENT OF ROADWAY BITUMINOUS CONCRETE SHALL BE AS CONTINUOUS AS POSSIBLE. INTERSECTIONS AND IRREGULAR AREAS SHALL BE PAVED AFTER THE ADJACENT ROADWAY HAS BEEN PAVED. HAND SPREADING WITH LUTES WILL BE PERMITTED WHERE IRREGULARITIES OR OBSTACLES MAKE THE USE OF PAVERS IMPRACTICAL. THE USE OF GARDEN RAKES WILL NOT BE PERMITTED. CAREFULLY PLAN THE PLACEMENT OF THE SURFACE COURSE TO ENSURE THAT THE JOINTS IN THE SURFACE COURSE WILL CORRESPOND WITH THE PROPOSED TRAFFIC LANES AND WILL NOT BE LOCATED IN THE WHEEL PATH OF VEHICLES USING THE ROADWAY. LOCATE LONGITUDINAL JOINTS AT THE LANE LINE (CENTER AND EDGE). LONGITUDINAL JOINTS MUST ALSO BE PARALLEL TO THE CENTERLINE UNLESS OTHERWISE SHOWN ON THE PLANS. PLACE THE LONGITUDINAL JOINT BETWEEN THE TRAVEL WAY AND SHOULDER ON THE SHOULDER SIDE OF THE LANE LINE. ESTABLISH AND FOLLOW REFERENCE LINES OR OTHER APPROVED MARKINGS TO CONTROL THE TRUE ALIGNMENT OF THE LONGITUDINAL JOINTS. NO BITUMINOUS CONCRETE SHALL BE PLACED WHEN THE AMBIENT AIR TEMPERATURE AT THE LOCATION OF THE PAVING

TABLE 401-A

MINIMUM AMBIENT AIR TEMPERATURE FOR PLACEMENT OF TYPES OF BITUMINOUS MATERIAL			
MATERIAL TYPE	1" (25 MM) LIFT OR LESS	1.25" TO 2" (32 MM TO 50 MM) LIFT	GREATER THAN 2.25" TO 3" (56 MM TO 75) LIFT
В	50 °F (10 °C)	40 °F (4 °C)	32 °F (0 °C)
С	50 °F (10 °C)	40 °F (4 °C)	N/A

THE RATE OF APPROXIMATELY 0.15 GAL/YD2 (0.70 L/M2).

OPERATION IS BELOW THE TEMPERATURES INDICATED FOR THE VARIOUS TYPES OF BITUMINOUS CONCRETE MIXTURES IN THE FOLLOWING TABLE:

NOTE: TYPE B - DENSE GRADED BASE AND BINDER COURSE TYPE C - DENSE GRADED SURFACE COURSE

NO BITUMINOUS CONCRETE SHALL BE PLACED ON ANY FROZEN SURFACE OR WHEN, IN THE OPINION OF THE ENGINEER, WEATHER CONDITIONS, SUCH AS WIND AND LOW TEMPERATURES, PREVENT PROPER SPREADING, FINISHING, AND COMPACTION OF THE MIXTURE. SUBSEQUENT LIFTS OR COURSES SHALL NOT BE PLACED OVER ANOTHER LIFT OR COURSE PLACED ON THE SAME DAY WHILE THE TEMPERATURE OF THE PREVIOUSLY PLACED MIX IS 140 °F (60 °C) OR GREATER. TRAFFIC SHALL BE KEPT OFF THE BITUMINOUS CONCRETE UNTIL THE MAT TEMPERATURE IS LESS THAN 140 °F (60 °C). THE CONTRACTOR SHALL FILL LOW PLACES IN THE BASE WITH A LEVELING MATERIAL CONSISTING OF HOT-MIX BITUMINOUS CONCRETE BASE COURSE OR SURFACE COURSE MATERIAL. THE LOCATIONS ALONG THE BASE COURSE TO RECEIVE THIS LEVELING COURSE MATERIAL, THE TYPE OF MATERIAL TO BE USED, AND THE METHOD TO BE EMPLOYED IN EACH CASE SHALL BE AS DIRECTED. HOT-MIX BITUMINOUS CONCRETE MATERIAL SHALL BE PLACED AS DIRECTED AROUND ALL MANHOLES, DRAINAGE INLETS, VALVES, OR SIMILAR FEATURES (WITH SLOPES 20:1 OR FLATTER) WHEN THEY ARE ADJUSTED TO THE PROPOSED GRADE. THIS MATERIAL MAY BE TEMPORARILY PLACED AND SHALL BE REMOVED IF DIRECTED AFTER THE HOT-MIX BITUMINOUS CONCRETE BASE COURSE IS PLACED, IT SHALL NOT LAY EXPOSED FOR A PERIOD LONGER THAN TEN DAYS. IF, DUE TO CONDITIONS OF EMERGENCY, MORE THAN TEN DAYS ELAPSE, A FOG COAT OF RS-1 OR CSS-L-H SHALL BE SPRAYED UNIFORMLY ON THE EXPOSED BASE COURSE BEFORE PLACING THE WEARING COURSE OF HOT-MIX BITUMINOUS CONCRETE. IN ADDITION, THE CONTRACTOR SHALL PLAN THE PAVING OPERATION SO THAT NO BITUMINOUS BASE COURSES REMAIN UNSURFACED AFTER THE "WINTER SHUT-DOWN" UNLESS AUTHORIZED BY THE ENGINEER. THE PAVING OPERATION SHALL BE CONDUCTED TO MINIMIZE INCONVENIENCE TO TRAFFIC AND TO PROTECT EXISTING AND FINISHED SURFACES. UNLESS OTHERWISE PERMITTED, NO SINGLE LANE OF ANY COURSE SHALL BE CONSTRUCTED TO A LENGTH WHICH CANNOT BE COMPLETED TO A FULL WIDTH OF THE PAVEMENT THE FOLLOWING DAY. ALL HOT-MIX RESURFACING OPERATIONS SHALL BE PROPERLY SIGNED AT THE CONTRACTOR'S EXPENSE WITH NOTICE OF "PAVEMENT DROP-OFF" OR "UNEVEN PAVEMENT" IN ACCORDANCE WITH THE APPROVED TRAFFIC CONTROL PLANS. AT LOCATIONS WHERE THE HOT-MIX IS TAPERED TO MEET AN EXISTING ROADWAY, A TACK COAT OF BITUMINOUS MATERIAL SHALL BE UNIFORMLY APPLIED ON THE TAPERED AREA AT

401.09 DEEP LIFT BASE COURSE:

- IN ADDITION TO OTHER TOLERANCES SPECIFIED IN THIS SECTION, DEEP LIFT BITUMINOUS CONCRETE BASE COURSE SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING REQUIREMENTS A. THE BASE COURSE SHALL BE PLACED WITH AN APPROVED PAVER OR SPREADER IN APPROXIMATELY EQUAL LAYERS OF NOT LESS THAN 3" AND NOT TO EXCEED 6" IN DEPTH AFTER COMPACTION. WHEN THE CONTRACTOR REQUESTS TO USE TYPE B HOT-MIX IN LIEU OF BCBC, THE CONTRACTOR SHALL REQUEST APPROVAL FROM THE ENGINEER FOR THIS CHANGE. IF APPROVED BY THE ENGINEER, THE TYPE B HOT-MIX MAY BE PLACED IN LIFTS OF NOT LESS THAN 3" AND NOT TO EXCEED 6" IN DEPTH AFTER COMPACTION. THE TYPE B HOT-MIX PLACED IN LIEU OF BCBC WILL BE
  - BASE COURSE PLACED IN IRREGULAR SHAPED AREAS OF PAVEMENT, SUCH AS TRANSITIONS, CROSSOVERS, AND ENTRANCES, MAY BE PLACED USING A GRADER MIX SEGREGATION WILL NOT BE PERMITTED REGARDLESS OF METHOD OF PLACEMENT. SHOULD SEGREGATION OCCUR, PAVING OPERATIONS SHALL BE STOPPED IMMEDIATELY AND NOT RESUMED UNTIL THE CAUSE IS DETERMINED AND CORRECTED.

PAID AT THE LINIT PRICE FOR BCRC AND THE ASPHALT CEMENT COST ADJUSTMENT WILL BE BASED ON THE VIRGIN ASPHALT OF BCRC. NOT THE TYPE B HOT-MIX

401.10 COMPACTION:

IMMEDIATELY AFTER THE BITUMINOUS MIXTURE HAS BEEN SPREAD AND STRUCK OFF, AND SURFACE IRREGULARITIES ADJUSTED, IT SHALL BE THOROUGHLY AND UNIFORMLY COMPACTED BY ROLLING. THE SURFACE SHALL BE ROLLED WHEN THE MIXTURE IS IN THE PROPER CONDITION, AND WHEN THE ROLLING DOES NOT CAUSE UNDUE DISPLACEMENT, CRACKING, OR SHOVING. DELAYS IN ROLLING FRESHLY SPREAD MIXTURES WILL NOT BE PERMITTED. THE NUMBER, WEIGHT, AND TYPE OF ROLLERS FURNISHED SHALL BE SUFFICIENT TO OBTAIN THE REQUIRED COMPACTION WHILE THE MIXTURE IS IN A WORKABLE CONDITION. THE SEQUENCE OF ROLLING OPERATIONS AND THE SELECTION OF ROLLER TYPES SHALL PROVIDE THE SPECIFIED PAVEMENT DENSITY. THE ROLLERS SHALL BE OPERATED WITH THE DRIVE WHEELS POSITIONED TOWARD THE PAVER, AT SPEEDS SLOW ENOUGH TO AVOID DISPLACEMENT OF THE MIXTURE. ROLLING SHALL START LONGITUDINALLY AT THE SIDES, PARALLEL TO THE CENTERLINE OF THE WORK, AND PROGRESS TOWARDS THE CENTER, OVERLAPPING ON SUCCESSIVE TRIPS BY AT LEAST ONE-HALF THE WIDTH OF THE ROLLER. ALTERNATE TRIPS OF THE ROLLER SHALL BE OF SLIGHTLY DIFFERENT LENGTHS. WHEN PAVING IN ECHELON OR PAVING A LANE WHICH ABUTS A PREVIOUSLY PLACED LANE. THE LONGITUDINAL JOINT SHALL BE ROLLED FIRST, FOLLOWED BY THE REGULAR ROLLING PROCEDURE, ON SUPERELEVATED CURVES. THE ROLLING SHALL BEGIN AT THE LOW SIDE AND PROGRESS TOWARDS THE HIGH SIDE BY OVERLAPPING, LONGITUDINAL TRIPS, PARALLEL TO THE CENTER LINE, ALL ROLLER MARKS SHALL BE ROLLED OUT. THE MOTION OF THE ROLLER AT ALL TIMES SHALL BE SLOW. ENOUGH TO AVOID DISPLACEMENT OF THE HOT MIXTURES. ALL DISPLACEMENT OCCURRING AS A RESULT OF THE REVERSING OF THE DIRECTION OF THE ROLLER. OR FROM ANY OTHER CAUSE SHALL BE CORRECTED TO THE SATISFACTION OF THE ENGINEER. TO PREVENT ADHESION OF THE MIXTURE TO THE WHEELS OF THE ROLLER, THEY SHALL BE KEPT PROPERLY MOISTENED, BUT EXCESS WATER WILL NOT BE PERMITTED. ALONG CURB, HEADERS, MANHOLES, RAILROAD CROSSINGS, AND SIMILAR STRUCTURES, AND AT ALL PLACES NOT ACCESSIBLE TO THE ROLLER, THOROUGH COMPACTION SHALL BE OBTAINED USING APPROVED TAMPERS. AT ALL CONTACTS OF THIS CHARACTER THE JOINTS BETWEEN THESE STRUCTURES AND THE MIXTURE SHALL BE EFFECTIVELY SEALED. ALL MIXTURES WHICH BECOME LOOSE AND BROKEN, MIXED WITH DIRT, OR IN ANY WAY DEFECTIVE, SHALL BE REMOVED AND REPLACED WITH FRESH, HOT MIXTURE. THE REPLACEMENT MIXTURE SHALL BE IMMEDIATELY COMPACTED TO CONFORM WITH THE SURROUNDING AREA. AREAS SHOWING AN EXCESS OF ASPHALT CEMENT, AS DETERMINED BY THE ENGINEER. SHALL BE REMOVED AND REPLACED.

401.11 - COMPACTING TESTING:

COMPACTION SHALL BE CONTROLLED BY THE FOLLOWING METHODS AT THE DISCRETION OF THE ENGINEER:

BMG NO.: SW--- NO SCALE

A. BITUMINOUS MIXTURES SHALL BE COMPACTED TO A DEGREE OF COMPACTION OF NOT LESS THAN 92% OF THE THEORETICAL VOIDLESS DENSITY OBTAINED BY LABORATORY CALCULATION FOR SURFACE COURSES AND NOT LESS THAN 90% OF THE THEORETICAL VOIDLESS DENSITY OBTAINED BY LABORATORY CALCULATION FOR BASE AND BINDER COURSES. LABORATORY COMPACTION IS THE AVERAGE DENSITY OBTAINED BY THE MAXIMUM SPECIFIC GRAVITY IN ACCORDANCE WITH AASHTO T 209 FOR THE MIXTURES BEING PRODUCED AND BEING PLACED. THE DEGREE OF COMPACTION SHALL BE DETERMINED THROUGH MEASUREMENT OF ACTUAL PAVEMENT DENSITY USING A NUCLEAR DENSITY GAUGE IN ACCORDANCE WITH ASTM D 2950 AND A LABORATORY COMPACTED SPECIMEN DENSITY USING THE MAXIMUM SPECIFIC GRAVITY AND SHALL BE EXPRESSED AS A PERCENTAGE:

DEGREE OF COMPACTION = (PAVEMENT DENSITY / THEORETICAL VOIDLESS DENSITY) X 100

- B. AT THE OPTION OF THE ENGINEER, 4" (100 MM) DIAMETER, DIAMOND-BIT DRILLED ROADWAY CORES SHALL BE OBTAINED FROM THE CONSTRUCTED PAVEMENT MIXTURES FOR LABORATORY PAVEMENT DENSITY DETERMINATION IN LIEU OF THE NUCLEAR METHOD.
- C. WHEN THEORETICAL VOIDLESS DENSITY VALUES ARE NOT IMMEDIATELY AVAILABLE, OR AT THE OPTION OF THE ENGINEER, PAVEMENT COMPACTION MAY BE MONITORED BY MEASURING THE IN-PLACE DENSITY USING A NUCLEAR DENSITY GAUGE AND COMPARING IT TO A CONTROL STRIP TARGET DENSITY. THE MEAN PAVEMENT COMPACTION SHALL BE AT LEAST 98% OF THE CONTROL STRIP TARGET DENSITY AND SUFFICIENTLY UNIFORM THAT INDIVIDUAL TEST RESULTS ARE AT LEAST 96% OF THE CONTROL STRIP TARGET DENSITY. IF ANY INDIVIDUAL TEST RESULT FALLS BELOW 96% OF TARGET DENSITY, THE MIXTURE REPRESENTED BY THE TEST WILL BE CONSIDERED DEFECTIVE AND THE CONTRACTOR SHALL FURTHER COMPACT THE SUBLOT. AFTER FURTHER COMPACTION, THE ORIGINAL TEST SITE AND ONE OTHER RANDOMLY SELECTED SITE WITHIN THE SUBLOT WILL BE TESTED. THE AVERAGE OF THE TWO TEST RESULTS TEST SITE AND ONE OTHER RANDOMLY SELECTED SITE WITHIN THE SUBLOT WILL BE TESTED. THE AVERAGE OF THE TWO TEST RESULTS WILL BE INCLUDED IN THE MEAN DENSITY FOR THAT DAY'S PRODUCTION. THE ORIGINAL TEST WILL NOT BE INCLUDED. TO DETERMINE THE CONTROL STRIP TARGET DENSITY, A CONTROL STRIP WITH A MINIMUM LENGTH OF 300' (90 M) SHALL BE CONSTRUCTED AT THE BEGINNING OF WORK ON EACH PAVEMENT COURSE. EACH CONTROL STRIP IS TO REMAIN IN PLACE AND BECOME A SECTION OF THE COMPLETED ROADWAY. A CONTROL STRIP SHALL HAVE AN AREA OF APPROXIMATELY 400 YD2 (325 M2) AND SHALL BE THE SAME DEPTH SPECIFIED FOR THE PAVEMENT COURSE WHICH IT REPRESENTS. THE MATERIALS USED IN THE CONSTRUCTION OF THE CONTROL STRIP SHALL CONFORM TO THE REQUIREMENTS OF THE APPROVED JOB MIX FORMULA. THEY SHALL BE FURNISHED FROM THE SAME SOURCE AND SHALL BE OF THE SAME TYPE USED IN THE REMAINDER OF THE PAVEMENT COURSE REPRESENTED BY THE CONTROL STRIP. THE PREPARED BASE UPON WHICH A CONTROL STRIP IS TO BE CONSTRUCTED SHALL HAVE THE PRIOR APPROVAL OF THE ENGINEER. THE EQUIPMENT USED IN THE CONSTRUCTION OF THE CONTROL STRIP SHALL BE APPROVED BY THE ENGINEER. IT SHALL BE OF THE SAME TYPE AND WEIGHT TO BE USED ON THE REMAINDER OF THE PAVEMENT COURSE REPRESENTED BY THE CONTROL STRIP. COMPACTION OF THE CONTROL STRIP SHALL COMMENCE AS SOON AS POSSIBLE AFTER THE MIXTURE HAS BEEN SPREAD TO THE DESIRED THICKNESS, AND SHALL BE CONTINUOUS AND UNIFORM OVER THE ENTIRE SURFACE. COMPACTION OF THE CONTROL STRIP SHALL BE CONTINUED UNTIL NO APPRECIABLE INCREASE IN DENSITY CAN BE OBTAINED BY ADDITIONAL ROLLER PASSES. UPON COMPLETION OF THE ROLLING, THE MEAN DENSITY OF THE CONTROL STRIP WILL BE DETERMINED BY AVERAGING THE RESULTS OF TEN NUCLEAR DENSITY TESTS TAKEN AT RANDOMLY SELECTED SITES WITHIN THE CONTROL STRIP. THE MEAN DENSITY OF THE CONTROL STRIP SHALL BE THE TARGET DENSITY FOR THE REMAINDER OF THE PAVEMENT COURSE WHICH IT REPRESENTS. COMPACTION SHALL BE EXPRESSED AS A PERCENTAGE OF THE TARGET DENSITY:

PERCENT COMPACTION = (NUCLEAR PAVEMENT DENSITY / CONTROL STRIP TARGET DENSITY) X 100

IF THE MEAN DENSITY OF THE CONTROL STRIP, AS DETERMINED BY CORED SAMPLES TAKEN IN ACCORDANCE WITH AASHTO T 230 METHOD B IS LESS THAN 95% OF THE DENSITY OF LABORATORY COMPACTED SPECIMENS FOR SURFACE MIXTURES, OR 90% FOR BASE MIXTURES, THE ENGINEER MAY ORDER THE CONSTRUCTION OF ANOTHER CONTROL STRIP. A NEW CONTROL STRIP MAY ALSO BE ORDERED BY THE ENGINEER IF REQUESTED BY THE CONTRACTOR WHEN:

IF THE DENSITIES ARE NOT OBTAINED, ADDITIONAL ROLLING OR THE USE OF MORE APPROVED ROLLERS WILL BE REQUIRED. ALL ROLLER MARKS SHALL BE ROLLED OUT.

1 A CHANGE IN JOB MIX FORMULA IS MADE 2. A CHANGE IN THE MATERIAL FROM THE SAME SOURCE IS OBSERVED

3. THERE IS REASON TO BELIEVE THAT A CONTROL STRIP DENSITY IS NOT REPRESENTATIVE OF THE BITUMINOUS MIXTURE BEING PLACED.

PLACING OF BITUMINOUS CONCRETE SHALL BE AS NEARLY CONTINUOUS AS POSSIBLE. THE ROLLER SHALL NOT PASS OVER THE UNPROTECTED END OF THE FRESHLY LAID MIXTURE EXCEPT WHEN NECESSARY TO FORM A TRANSVERSE JOINT. WHEN NECESSARY TO FORM A TRANSVERSE JOINT BETWEEN OLD AND NEW PAVEMENT OR BETWEEN SUCCESSIVE DAYS' WORK, THE JOINT SHALL BE MADE BY PLACING A BULKHEAD OR TAPERING THE COURSE. IF THE COURSE IS TAPERED, THE EDGE SHALL BE CUT BACK TO ITS FULL DEPTH AND WIDTH ON A STRAIGHT LINE TO EXPOSE A VERTICAL SURFACE TO REMOVE THE TAPER PRIOR TO PLACING THE NEXT SECTION. IT IS NOT THE INTENT OF THIS SECTION TO REQUIRE AN EXISTING (OLD) PAVEMENT TO BE CUT BACK FULL DEPTH TRANSVERSELY WHEN THE PAVING WORK BEING PERFORMED IS AN OVERLAY TIE-IN UNLESS SUCH IS DESIGNATED IN THE SPECIAL PROVISIONS OR ON THE PLANS. WITH EITHER METHOD, ALL CONTACT SURFACES SHALL BE COATED WITH AN APPROVED TACK MATERIAL BEFORE PLACING ANY FRESH MIXTURE AGAINST THE JOINT LONGITUDINAL JOINTS SHALL BE ROLLED DIRECTLY BEHIND THE LAYING OPERATIONS. THE FIRST LANE SHALL BE TRUE TO LINE AND GRADE AND HAVE A VERTICAL FACE. THE MATERIAL BEING PLACED IN THE ABUTTING LANE SHALL BE TIGHTLY COMPACTED AGAINST THE VERTICAL FACE OF THE PREVIOUSLY PLACED LANE. THE FINISHING MACHINE SHALL BE POSITIONED SO THAT THE SPREAD MATERIAL OVERLAPS THE EDGE OF THE LANE

DEPOSITED ADJACENT TO THE JOINT OF THE UNROLLED LANE WITH A LUTE. WHEN THE ABUTTING LANE IS NOT PLACED THE SAME DAY, OR THE JOINT IS DISTORTED BY TRAFFIC OR OTHER MEANS, THE EDGE SHALL BE CAREFULLY TRIMMED TO LINE AND COATED UNIFORMLY WITH TACK MATERIAL. THE LONGITUDINAL JOINT IN ANY LAYER SHALL OFFSET THAT IN THE LAYER IMMEDIATELY BELOW BY APPROXIMATELY 6" (150 MM). HOWEVER, THE JOINTS IN THE COMPLETED SURFACING SHALL BE AT THE LANE LINE.

AFTER FINAL ROLLING, THE SURFACE WILL BE TESTED LONGITUDINALLY AND TRANSVERSELY BY THE ENGINEER USING A 10' (3.048 M) ROLLING STRAIGHTEDGE OR STRAIGHTEDGE AT LOCATIONS SELECTED BY THE ENGINEER. THE DISTANCE BETWEEN THE SURFACE AND THE TESTING EDGE OF THE STRAIGHTEDGE BETWEEN ANY TWO CONTACT POINTS SHALL NOT EXCEED THE FOLLOWING LIMITS:

±3/8" (±10 MM)

PREVIOUSLY PLACED BY 1 TO 2" (25 TO 50 MM), AND IS LEFT SUFFICIENTLY HIGH TO ALLOW FOR COMPACTION. BEFORE ROLLING, THE MATERIAL OVERLAPPING THE JOINT SHALL BE CAREFULLY

A. FOR BASE COURSES: LOWER COURSES: TOP COURSES:

±1/4" (±6 MM) B. FOR SURFACE COURSES:

1. MULTIPLE AND SINGLE COURSE CONSTRUCTION: ±1/4" (±6 MM) AREAS FOUND TO EXCEED THESE TOLERANCES SHALL BE CORRECTED, OR REMOVED AND REPLACED BY THE CONTRACTOR, AS DIRECTED, TO CONFORM TO THE REQUIRED SURFACE TOLERANCES.

THE CONTRACTOR SHALL HAVE AVAILABLE AT ALL TIMES AN APPROVED 10' (3.048 M) STRAIGHTEDGE FOR USE BY THE ENGINEER. THE QUANTITY OF HOT-MIX. HOT-LAID BITUMINOUS CONCRETE WILL BE MEASURED AS THE ACTUAL NUMBER OF TONS (METRIC TONS) FOR HOT-MIX BITUMINOUS CONCRETE PLACED AND ACCEPTED. THE WEIGHT SHALL BE CALCULATED AS SPECIFIED IN SUBSECTION 109.01. ACTUAL MEASUREMENT OF THE QUANTITY OF TACK COAT APPLIED WILL NOT BE REQUIRED

THE QUANTITY OF HOT-MIX, HOT-LAID BITUMINOUS CONCRETE WILL BE MEASURED AS THE ACTUAL NUMBER OF TONS (METRIC TONS) FOR HOT-MIX BITUMINOUS CONCRETE PLACED AND ACCEPTED.

401.14 - METHOD OF MEASUREMENT: 401.15 - BASIS OF PAYMENT:

760.02 - CONSTRUCTION METHODS:

760.03 - METHOD OF MEASUREMENT:

760.04 - BASIS OF PAYMENT:

401.13 - SURFACE REQUIREMENTS:

THE WEIGHT SHALL BE CALCULATED AS SPECIFIED IN SUBSECTION 109.01. ACTUAL MEASUREMENT OF THE QUANTITY OF TACK COAT APPLIED WILL NOT BE REQUIRED. THE QUANTITY OF HOT-MIX, HOT-LAID BITUMINOUS CONCRETE WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER TON (METRIC TON). PRICE AND PAYMENT WILL CONSTITUTE FULL COMPENSATION FOR FURNISHING, PREPARING, HAULING, AND PLACING ALL MATERIALS, INCLUDING ASPHALT FOR TACK COAT; FOR REMOVING HOT-MIX BITUMINOUS CONCRETE FROM AROUND

MANHOLES. DRAINAGE INLETS. VALVES, AND SIMILAR FEATURES: FOR REMOVING AND REPLACING EXCESS ASPHALT CEMENT, AS DETERMINED BY THE ENGINEER; FOR APPLYING A FOG COAT; AND FOR ALL LABOR, EQUIPMENT, TOOLS, AND INCIDENTALS REQUIRED TO COMPLETE THE WORK, INCLUDING THE CORRECTION OF DEFECTIVE WORK.

**DIVISION 760 - PAVEMENT MILLING** 

401.12 - JOINTS:

THIS WORK CONSISTS OF MILLING OR PLANING EXISTING BITUMINOUS CONCRETE AND PORTLAND CEMENT CONCRETE PAVEMENT. 760.01 - DESCRIPTION:

> THE PAVEMENT MILLING MACHINE SHALL BE ONE WHICH IS SUITABLE FOR THE USE IN MILLING AND PLANING BITUMINOUS AND PORTLAND CEMENT CONCRETE PAVEMENTS. MILLED MATERIALS SHALL BE REUSED OR OTHERWISE DISPOSED OF AS SPECIFIED IN SUBSECTION 106.09.

THE QUANTITY OF PAVEMENT-MILLING WILL BE MEASURED AS THE NUMBER OF SQUARE YARDS PER INCH OF DEPTH (SQUARE METERS PER 25 MILLIMETERS OF DEPTH) SHOWN ON THE PLANS OR AS THE NUMBER OF SQUARE YARDS (SQUARE METERS). ANY ADDITIONAL DEPTH, NOT APPROVED BY THE ENGINEER IN WRITING, WILL NOT BE MEASURED.

THE QUANTITY OF PAVEMENT-MILLING WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER SQUARE YARD PER INCH OF DEPTH (SQUARE METER PER 25 MILLIMETERS OF DEPTH) OR AT THE CONTRACT UNIT PRICE PER SQUARE YARD (SQUARE METER). PRICE AND PAYMENT WILL CONSTITUTE FULL COMPENSATION FOR MILLING OR PLANING THE EXISTING PAVEMENT; FOR THE CLEANUP OF THE HOT MIX OR CONCRETE RESIDUE WEDGE LEFT FROM THE MILLING OPERATION INCLUDING BUT NOT LIMITED TO ALONG THE CURB LINE, ADJACENT TO SPEED HUMPS, ACROSS INTERSECTING STREETS, AROUND MANHOLES, AND AT THE BEGINNING AND ENDING POINTS OF THE MILLING OPERATION, FOR REMOVING AND DISPOSING OF THE MILLED MATERIAL; AND FOR ALL LABOR, TOOLS, EQUIPMENT, AND INCIDENTALS REQUIRED TO COMPLETE THE WORK.

PROJECT TITLE

## EAST DOVER

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SHEET TITLE

**ROTOMILL 8 OVERLAY PLAN** 

12/17/15 ISSUE FOR BID 12/07/15 REVISED PER CAPITAL SCHOOL DISTRICT COMMENTS (DATED: 12/06) 1. | 12/03/15 | REVISED PER CAPITAL SCHOOL DISTRICT COMMENTS (DATED: 11/24 MARK DATE DESCRIPTION PROJECT NO.: 2015199.00 10/26/1 SCALE: N.T.S

DRAWN BY: S.L.G. PROJ. MGR.: S.L.G.

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