CORNER UNITS FOR RECTANGULAR CONCRETE BLOCK STRUCTURES MUST BE "L" SHAPED WITH AN INSIDE RETURN SIDE EQUAL TO HALF THE LENGTH OF THE NORMAL UNIT. UNITS SHALL BE DESIGNED SO THAT ONLY FULL LENGTH UNITS ARE REQUIRED TO LAY ANY ONE COURSE. CUT BLOCK WILL NOT BE ALLOWED UNLESS APPROVAL IS

PIPE CONNECTIONS IN STRUCTURES SHALL BE MADE WATERTIGHT.

UNLESS OTHERWISE SPECIFIED, THE INTERIOR SURFACE OF THE WALLS OF MASONRY STRUCTURES SHALL BE PAINTED UPON COMPLETION WITH THREE (3) COATS OF NEAT CEMENT GROUT WITHOUT SAND, APPLIED WITH AN INTERVAL OF AT LEAST 24 HOURS BETWEEN APPLICATIONS. THE EXTERIOR SURFACE OF THE WALLS OF MASONRY STRUCTURES SHALL BE PLASTERED WITH A ONE-HALF (1/2) INCH COAT OF 1:2 CEMENT MORTAR.

CAST-IN-PLACE CONCRETE STRUCTURES - CAST-IN-PLACE CONCRETE STRUCTURES SHALL BE CONSTRUCTED OF CLASS "A" CONCRETE WITH REINFORCING AS SHOWN IN DETAIL ON THE DRAWINGS AND AS SPECIFIED HEREIN.

MATERIAL AND CONSTRUCTION REQUIREMENTS SHALL BE AS SPECIFIED UNDER THE SECTION OF THESE SPECIFICATIONS ENTITLED "SITE CONCRETE".

INVERTS - SMOOTH INVERT CHANNELS SHALL BE CONSTRUCTED IN ALL MANHOLES AND IN ALL DRAIN INLETS AND CATCH BASINS WHICH DO NOT HAVE SUMPS, TO INSURE A SMOOTH FLOW OF WATER THROUGH THE STRUCTURE. CARE SHALL BE TAKEN BY THE CONTRACTOR TO CONSTRUCT INVERT CHANNELS TO THE SHAPE, ELEVATIONS AND DIMENSIONS SHOWN, SPECIFIED OR ORDERED. WHEN PIPES ENTERING AND LEAVING A MANHOLE ARE OF DIFFERENT DIAMETERS, THE INVERT CHANNEL SHALL BE CONSTRUCTED SO AS TO PROVIDE A SMOOTH TRANSITION FROM THE INFLOW PIPE(S) TO THE OUTFLOW PIPE. THE INVERT CHANNEL SHALL BE CARRIED UP TO THE ELEVATIONS SHOWN OR DIRECTED, AND SHALL BE CONSTRUCTED SO THAT THE GRADES OF THE PIPE SHALL CONTINUE TO THE MANHOLE POINT OF INTERSECTION (PI). UNLESS SPECIFIED OTHERWISE, INVERTS GIVEN ON THE UTILITIES PLANS AND PROFILES REFER TO GRADES AT THE MANHOLE PI.

FRAMES AND COVERS/GRATES - FRAMES AND COVERS/GRATES SHALL BE OF THE TYPES AND SIZES INDICATED. FRAMES SHALL BE WELL BEDDED IN MORTAR AND SHALL BE SET ACCURATELY TO THE CORRECT ALIGNMENT AND GRADE. IN AREAS TO BE PAVED, FRAMES SHALL BE SET BY USING FOUR (4) POINTS OF REFERENCE, SET 90 DEGREES APART, TO INSURE ACCURATE SETTING TO PROPOSED PAVEMENT GRADE.

CAST IRON CASTINGS SHALL BE GRAY CAST IRON CONFORMING TO THE REQUIREMENTS OF AASHTO M-105, MINIMUM CLASS 30B AND SHALL BE TRUE TO PATTERN IN FORM AND DIMENSIONS AS SPECIFIED, FREE FROM POURING FAULTS, SPONGINESS, CRACKS, BLOWHOLES AND OTHER DEFECTS THAT AFFECT THEIR STRENGTH AND OTHER CHARACTERISTICS FOR THE INTENDED USE. ALL SURFACES SHALL HAVE A WORKMANLIKE FINISH. FABRICATED STEEL FRAMES AND GRATES SHALL MEET THE REQUIREMENTS OF AASHTO M-183. UNLESS OTHERWISE SPECIFIED, ALL STEEL FRAMES AND GRATES SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M-111.

ALL COMPONENT PARTS SHALL FIT TOGETHER IN A SATISFACTORY MANNER AND FRAMES AND COVERS SHALL BE OF A DESIGN THAT WILL PREVENT ROCKING OR RATTLING UNDER TRAFFIC. FRAMES AND COVERS THAT ARE WARPED OR ROCKING SHALL BE REJECTED AND SHALL BE REMOVED AND REPLACED AT NO COST TO THE OWNER. UNLESS OTHERWISE SPECIFIED, THE WORD "DRAIN" SHALL BE INTEGRALLY CAST ON THE MANHOLE COVERS IN RAISED LETTERS FOR STORM DRAIN CASTINGS AND THE WORD "SEWER" SHALL BE INTEGRALLY CAST ON THE MANHOLE COVERS IN RAISED LETTERS FOR SANITARY SEWER CASTINGS. THE LETTER SIZE SHALL BE TWO (2) INCHES AND THE LETTERS SHALL BE CENTERED.

STEPS — STEPS SHALL BE INSTALLED IN MANHOLES. STEPS SHALL ALSO BE INSTALLED IN DRAIN INLETS AND CATCH BASINS GREATER THAN FOUR (4) FEET IN DEPTH UNLESS OTHERWISE SPECIFIED. STEPS SHALL BE SET SECURELY IN PLACE DURING THE CONSTRUCTION OF THE WALL FOR MASONRY STRUCTURES AND DURING FABRICATION OF THE WALL SECTION FOR PRECAST CONCRETE STRUCTURES. SPACING OF STEPS SHALL BE AS SHOWN IN DETAIL ON THE DRAWINGS.

STEPS SHALL BE AS SPECIFIED HEREIN AND ON THE DETAILS OF THE DRAWINGS AND SHALL MEET THE REQUIREMENTS FOR STEPS AND LADDERS AS SPECIFIED UNDER ASTM C-478.

- (a) MALLEABLE OR DUCTILE CAST IRON SHALL BE DESIGNED FOR A MINIMUM DESIGN LIVE LOAD OF A SINGLE CONCENTRATION OF 300 POUNDS. MATERIAL SHALL BE OF IRON, CLASS 25A, IN ACCORDANCE WITH ASTM A-48 OR MALLEABLE IRON, GRADE 35018 IN ACCORDANCE WITH ASTM A-47.
- (b) PLASTIC COATED STEEL SHALL BE NO. 4 DEFORMED REINFORCEMENT BAR MEETING THE REQUIREMENTS OF ASTM A-615, GRADE 60 WHICH SHALL BE COATED WITH POLYPROPYLENE PLASTIC MEETING THE REQUIREMENTS OF ASTM D-2146 FOR TYPE II, GRADE 49108.

ALL STEPS SHALL BE TRUE TO PATTERN, FORM DIMENSIONS, AND FREE FROM DEFECTS WHICH WOULD AFFECT THEIR STRENGTH. STEPS HAVING DEFECTS FILLED WITH PUTTY OR CEMENT OF ANY KIND SHALL BE REJECTED.

## C. CONNECTIONS TO EXISTING FACILITIES

CONNECTIONS MADE INTO EXISTING FACILITIES OWNED BY OTHERS SHALL BE DONE IN ACCORDANCE WITH THE REQUIREMENTS OF THE OWNER OF THE FACILITY. THE CONTRACTOR SHALL BE REQUIRED TO COMPLY WITH ALL SUCH REQUIREMENTS. INCLUDING SECURING OF ALL REQUIRED PERMITS AND PAYING THE COSTS THEREOF.

# D. ALTERATION, RECONSTRUCTION AND/OR CONVERSION OF EXISTING STRUCTURES

ADJUSTMENT TO NEW GRADE - ALL CASTINGS ON EXISTING STRUCTURES THAT ARE TO REMAIN SHALL BE ADJUSTED TO NEW GRADE.

STRUCTURES TO BE CONVERTED - STRUCTURES WHICH ARE TO BE CONVERTED SHALL CONFORM AS CLOSELY AS POSSIBLE TO THE DESIGN OF THE PROPOSED STRUCTURE. SUFFICIENT MASONRY SHALL BE REMOVED FROM THE EXISTING STRUCTURE TO INSURE THAT THE WALLS CAN BE REBUILT TO CONFORM TO THE PROPOSED CONSTRUCTION.

REMOVAL OF PORTIONS OF WALLS OF EXISTING STRUCTURES — IN ALL CASES OF ALTERATION, RECONSTRUCTION AND/OR CONVERSIONS OF EXISTING STRUCTURES, EXISTING WALLS SHALL BE REMOVED TO A POINT WHERE THE EXISTING WALLS WILL PROVIDE SOUND AND ADEQUATE FOUNDATION FOR THE CONSTRUCTION OF THE NEW WALLS AS DIRECTED.

RECONSTRUCTION AND/OR REBUILDING OF EXISTING INVERT - WHERE NEW PIPES ARE TO BE INSTALLED INTO AN EXISTING STRUCTURE, THE EXISTING INVERT SHALL BE RECONSTRUCTED AND/OR REBUILT AS DIRECTED TO ACCOMMODATE INSTALLATION OF THE NEW PIPES AND PROVIDE FOR PROPER TRANSITION OF FLOWS INTO AND OUT OF THE STRUCTURE. DAMAGE TO EXISTING STRUCTURE AND/OR PIPE - THE CONTRACTOR SHALL EXERCISE CARE DURING SUCH ALTERATION, RECONSTRUCTION AND/OR CONVERSIONS SO AS NOT TO DAMAGE ANY PORTIONS OF THE STRUCTURE AND/OR PIPE SHOWN TO REMAIN. ANY SUCH DAMAGE SHALL BE REPAIRED BY THE CONTRACTOR AT HIS OWN EXPENSE.

STRUCTURES TO BE CLEANED — UPON COMPLETION OF ALTERATION, RECONSTRUCTION

AND/OR CONVERSION OF EXISTING STRUCTURES, THE STRUCTURES SHALL BE CLEANED OF ANY ACCUMULATION OF SILT, DEBRIS OR FOREIGN MATTER OF ANY KIND AND SHALL BE KEPT CLEAN OF SUCH ACCUMULATION UNTIL FINAL ACCEPTANCE OF THE WORK.

#### RELOCATION AND/OR ABANDONMENT OF EXISTING FACILITIES

THE CONTRACTOR SHALL NOT ABANDON, DISCONNECT, OBSTRUCT OR IN ANY OTHER WAY INTERFERE WITH THE OPERATION OF AN EXISTING FACILITY UNTIL SUCH TIME AS ADEQUATE PERMANENT OR TEMPORARY SUBSTITUTE FACILITIES HAVE BEEN CONSTRUCTED AND PLACED IN OPERATION.

#### CLEANING AND REPAIR

THE CONTRACTOR SHALL CLEAN THE ENTIRE SANITARY SEWER AND STORM DRAIN SYSTEM OF ALL DEBRIS AND OBSTRUCTIONS. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO. REMOVAL OF ALL FORMWORK FROM STRUCTURES. CONCRETE AND MORTAR DROPPINGS, CONSTRUCTION DEBRIS AND DIRT. THE SYSTEMS SHALL BE THOROUGHLY FLUSHED CLEAN AND THE CONTRACTOR SHALL FURNISH ALL NECESSARY HOSE, PUMPS, PIPE AND OTHER EQUIPMENT THAT MAY BE REQUIRED FOR THIS PURPOSE. NO DEBRIS SHALL BE FLUSHED INTO EXISTING SANITARY SEWERS, STORM DRAINS OR STREAMS. ALL DEBRIS SHALL BE REMOVED FROM THE SYSTEMS. AFTER THE SYSTEMS HAVE BEEN CLEANED, THE CONTRACTOR SHALL THOROUGHLY INSPECT THE SYSTEMS, AND ALL REPAIRS SHOWN TO BE NECESSARY SHALL BE PROMPTLY MADE BY THE CONTRACTOR. ALL WORK OF CLEANING AND REPAIR AS SPECIFIED HEREIN SHALL BE DONE AT THE CONTRACTOR'S EXPENSE.

#### G. FINAL TESTS AND INSPECTION

UPON COMPLETION OF THE WORK AND BEFORE FINAL ACCEPTANCE BY THE OWNER, THE ENTIRE SANITARY SEWER AND STORM DRAIN SYSTEM SHALL BE SUBJECTED TO AN INSPECTION IN THE PRESENCE OF THE SITE ENGINEER AND/OR OWNER'S FIELD REPRESENTATIVE. THE WORK SHALL NOT BE CONSIDERED COMPLETE UNTIL ALL REQUIREMENTS FOR LINE. GRADE. CLEANLINESS. AND WORKMANSHIP HAVE BEEN MET.

### X.CURBS & SIDEWALKS

THE CONTRACTOR SHALL PROVIDE ALL LABOR, PLANT, MATERIAL, AND EQUIPMENT NECESSARY TO INSTALL THE CURBS AND SIDEWALKS IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. WORK SHALL INCLUDE ALL ASSOCIATED ITEMS AND OPERATIONS REQUIRED TO COMPLETE THE INSTALLATIONS INCLUDING, BUT NOT LIMITED TO, SURFACE PREPARATION, FORMWORK, FINISHING AND CURING.

ALL SECTIONS OF THIS SPECIFICATION BELOW, SHALL HAVE METHODS AND MATERIALS APPROVED BY THE OWNER'S FIELD REPRESENTATIVE OR GEOTECHNICAL ENGINEER, HEREIN REFERRED TO AS THE 'AUTHORITY'. ALL WORK SHALL BE AS APPROVED, AND PERFORMED TO THE SATISFACTION OF THE OWNER, OWNER'S FIELD REPRESENTATIVE, GEOTECHNICAL ENGINEER, OR THE AUTHORITY HAVING JURISDICTION.

## B. <u>CURBS AND SIDEWALKS WITHIN PUBLIC RIGHTS-OF-WAY</u>

THE INSTALLATION SHALL BE IN ACCORDANCE WITH THE RULES AND REQUIREMENTS OF THE PUBLIC AGENCY HAVING CONTROL AND OWNERSHIP OF THE RIGHT-OF-WAY AND SHALL INCLUDE ALL OPERATIONS NECESSARY TO COMPLETE THE WORK TO THE SATISFACTION OF THE AUTHORITIES, INCLUDING MAINTENANCE OF TRAFFIC AND PROTECTION OF PEDESTRIANS.

#### C. <u>GENERAL</u>

THE CONTRACTOR SHALL LAY OUT AND INSTALL CURBS, SIDEWALKS AND RELATED ITEMS SHOWN ON THE DRAWINGS AND/OR IN ACCORDANCE WITH THE DIRECTIONS OF THE AUTHORITY. CURBS, SIDEWALKS, AND RELATED ITEMS WHICH ARE NOT CONSTRUCTED TO THE PROPER SECTION, GRADE OR ALIGNMENT SHALL BE CORRECTED BY REPAIR OR REPLACEMENT BY THE CONTRACTOR AT NO COST TO THE OWNER. IMPROPER FINISHING OR IMPROPER CONSTRUCTION OF JOINTS SHALL ALSO BE CAUSE FOR REJECTING THE CURB OR SIDEWALK.

WHERE NEW CONCRETE CURB IS TO BE INSTALLED ADJACENT TO NEW CONCRETE SIDEWALK ON-SITE, THE CURB AND SIDEWALK SHALL BE POURED MONOLITHICALLY. UNLESS OTHERWISE SPECIFIED, ALL CAST-IN-PLACE CONCRETE ITEMS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE SECTION OF THESE SPECIFICATIONS TITLED "SITE CONCRETE".

## D. <u>CURBS & SIDEWALKS</u>

FORMS - FORMS SHALL BE METAL OR ACCEPTABLE PLANED AND MATCHED LUMBER. STRAIGHT AND FREE FROM WARP OR OTHER IRREGULARITIES. FORMS SHALL CONFORM TO THE CURB CROSS-SECTION SHOWN ON THE DRAWINGS AND SHALL BE SET TO LINE AND GRADE AND BRACED AND SECURED IN PLACE SO THAT THERE WILL BE NO DISPLACEMENT DURING PLACING OF THE CONCRETE. ON CURVES, ALL FORMS MUST BE BENT TO MEET THE REQUIRED CURVATURE: THE USE OF SHORT CHORDS WILL NOT BE PERMITTED. ALL FORMS SHALL BE THOROUGHLY CLEANED PRIOR TO REUSE, AND JUST PRIOR TO PLACEMENT OF THE CONCRETE, THE PORTION OF THE FORMS IN CONTACT WITH THE CONCRETE SHALL BE GIVEN A LIGHT COAT OF OIL THAT WILL NOT DISCOLOR THE CONCRETE. FORMS WHICH HAVE BECOME WORN, BENT, OR BROKEN SHALL NOT BE USED.

CURING - AFTER FINISHING, THE CURB OR SIDEWALK SHALL BE CURED IN ACCORDANCE WITH THE REQUIREMENTS AS SPECIFIED UNDER THE SECTION OF THESE SPECIFICATIONS ENTITLED "SITE CONCRETE".

## . <u>CONCRETE CURB (CAST IN PLACE)</u>

GENERAL REQUIREMENTS - CONCRETE CURB SHALL BE CONSTRUCTED OF CLASS "A" CONCRETE AND SHALL BE CAST IN PLACE TO PROPER SIZE AND SHAPE AND TO THE LINE AND GRADE SHOWN ON THE DRAWINGS. THE CURBING SHALL BE CONSTRUCTED USING CONVENTIONAL FORMS AND IN SEGMENTS SEPARATED BY CONSTRUCTION JOINTS AND EXPANSION JOINTS AS SPECIFIED.

PLACING OF CONCRETE - CONCRETE SHALL BE PLACED IN THE FORM AS NEAR TO ITS FINAL POSITION AS PRACTICABLE, STRUCK OFF WITH A TEMPLATE, VIBRATED OR SPADED TO PREVENT "ROCK-POCKETS" OR "HONEY-COMBING" ADJACENT TO THE FORMS AND FINISHED TO A SMOOTH EVEN SURFACE.

EXPANSION JOINTS - VERTICAL EXPANSION JOINTS SHALL BE LOCATED APPROXIMATELY EVERY TWENTY (20) FEET AND SHALL BE SO ARRANGED THAT THEY SHALL MATCH EXPANSION JOINTS IN ADJACENT CONCRETE PAVEMENTS AND SIDEWALKS. EXPANSION JOINTS SHALL ALSO BE INSTALLED AT THE PC AND PT OF ALL RADIUS CURB. EXPANSION JOINTS SHALL BE CONSTRUCTED VERTICAL, PLUMB AND AT RIGHT ANGLES TO THE FACE OF THE CURB. THEY SHALL BE ONE-HALF (1/2) INCH IN WIDTH AND FORMED WITH PREMOLDED BITUMINOUS JOINT FILLER. IN ACCORDANCE WITH ASTM D-1751, AND CUT TO CONFORM TO THE CROSS-SECTION OF THE CURB.

CONSTRUCTION JOINTS - VERTICAL CONSTRUCTION JOINTS SHALL BE LOCATED APPROXIMATELY EVERY TEN (10) FEET BEING EQUALLY SPACED BETWEEN EXPANSION JOINTS. THE LENGTH OF THESE CURB SEGMENTS MAY BE VARIED SLIGHTLY FOR CLOSURES BUT IN NO CASE SHALL THEY BE LESS THAN FOUR (4) FEET. CONSTRUCTION JOINTS SHALL BE VERTICAL, PLUMB, AND RIGHT ANGLES TO THE FACE OF THE CURB AND SHALL BE FORMED BY APPROVED METHOD THAT WILL PROVIDE COMPLETE SEPARATION OF THE CURB SEGMENTS DURING PLACING OF THE CONCRETE.

FINISHING - FORMS SHALL BE LEFT IN PLACE FOR 24 HOURS OR UNTIL THE CONCRETE HAS SUFFICIENTLY HARDENED, SO THAT THEY CAN BE REMOVED WITHOUT INJURY TO THE CURB. UPON REMOVAL OF THE FORMS, THE EXPOSED FACES OF THE CURB SHALL BE IMMEDIATELY RUBBED TO A UNIFORM SURFACE. RUBBING SHALL BE DONE BY EXPERIENCED AND COMPETENT CONCRETE FINISHERS. NO PLASTERING WILL

BE PERMITTED.

#### CONCRETE SIDEWALK

GENERAL REQUIREMENTS - CONCRETE SIDEWALKS SHALL BE CONSTRUCTED OF CLASS "A" CONCRETE IN THE LOCATIONS, AND TO THE DIMENSIONS AND CROSS-SECTIONS SHOWN ON THE DRAWINGS. THE SLOPE OF THE SIDEWALKS SHALL BE GENERALLY AS SHOWN, BUT IN THE CASE OF TRANSITIONS OR WARP SECTIONS, THE SIDEWALK SHALL BE CONSTRUCTED TO GIVE AN EFFECTIVE COMBINATION OF PROPER DRAINAGE AND GOOD APPEARANCE. IN THE EVENT OF DOUBT REGARDING THE SLOPE OF ANY SIDEWALK, THE CONTRACTOR SHALL SET APPROPRIATE GRADE STAKES AND VERIFY THE SLOPE WITH THE AUTHORITY BEFORE SIDEWALK IS PLACED.

PREPARATION OF SUBGRADE - THE SUBGRADE FOR SIDEWALKS SHALL BE PREPARED BY REMOVAL OF UNDESIRABLE MATERIAL AND REPLACED WITH SUITABLE COMPACTED GRANULAR MATERIAL. THE SUBGRADE SURFACE SHALL BE FINE GRADED AND COMPACTED PRIOR TO PLACEMENT OF THE AGGREGATE BASE COURSE. AFTER THE SUBGRADE IS PREPARED, A LAYER OF CRUSHED STONE SHALL BE PLACED UPON THE SUBGRADE AND COMPACTED TO THE COMPRESSED THICKNESS SHOWN IN DETAIL ON

PLACING OF CONCRETE - CONCRETE SHALL BE PLACED IN THE FORMS AS NEAR TO ITS FINAL POSITION AS PRACTICABLE AND SHALL BE VIBRATED OR SPADED JUST ENOUGH TO COMPACT IT FIRMLY . PRECAUTIONS SHALL BE TAKEN NOT TO OVERWORK THE CONCRETE WHILE IT IS STILL PLASTIC. SIDEWALK SHALL NOT BE PLACED ON FROZEN SUBGRADE OR FROZEN BASE COURSE, AND MATERIALS CONTAINING FROST OR ICE SHALL BE REJECTED.

EXPANSION JOINTS - EXPANSION JOINTS, CONSISTING OF PREMOLDED BITUMINOUS JOINT FILLER, IN ACCORDANCE WITH ASTM D-1751, ONE-HALF (1/2) INCH THICK AND AS DEEP AS THE FULL DEPTH OF THE WALK, SHALL BE PLACED AT INTERVALS OF TWENTY (20) FEET LONGITUDINALLY ALONG WALKS OR AS DIRECTED BY THE AUTHORITY. EXPANSION JOINTS SHALL ALSO BE PLACED WHEREVER THE WALK ABUTS A BUILDING, EXISTING CONCRETE CURB, LIGHTING STANDARDS OR ANY OTHER RIGID OBJECT. THE JOINT FILLER SHALL BE SET ONE-QUARTER (1/4) INCH BELOW THE FINISHED SURFACE OF THE CONCRETE.

CONTRACTION JOINTS - CONTRACTION JOINTS SHALL BE PLACED IN ALL WALKS AT FIVE (5) FOOT INTERVALS OR AS DIRECTED BY THE AUTHORITY. THESE JOINTS SHALL BE FORMED BY SCORING A SLOT IN THE SLAB ABOUT ONE (1) INCH DEEP, EDGED WITH A DOUBLE EDGER HELD AGAINST A STRAIGHT EDGE BEFORE THE CONCRETE HAS HARDENED AND DURING THE FINISHING PROCESS.

FINISHING - AFTER THE CONCRETE HAS BEEN STRUCK OFF, IT SHALL BE SMOOTHED WITH A WOOD FLOAT OR DARBY, LEVELING ANY RAISED SPOTS AND FILLING ALL DEPRESSIONS. WALKS SHALL BE FINISHED WITH A WOOD FLOAT AND THEN BY A HAIR BROOM DRAWN LIGHTLY OVER THE CONCRETE. THE METHOD AND TYPE OF FINISH SHALL BE SUBJECT TO THE APPROVAL OF THE AUTHORITY.

### XI.PAVEMENTS & PADS

#### A. <u>SCOPE</u>

THE CONTRACTOR SHALL PROVIDE ALL LABOR, PLANT, MATERIAL, AND EQUIPMENT NECESSARY TO INSTALL THE PAVEMENTS IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. WORK SHALL INCLUDE, BUT NOT BE LIMITED TO, LINE CUTTING OF EXISTING PAVEMENTS; PREPARATION OF SUBGRADE TO INCLUDE FINE GRADING, COMPACTION AND PROOF-ROLLING; AND INSTALLATION OF PAVEMENTS INCLUDING ALL ITEMS AND OPERATIONS NECESSARY TO COMPLETE THE PAVEMENT INSTALLATION.

WORK SHALL ALSO INCLUDE THE INSTALLATION OF TEMPORARY ASPHALT CONCRETE PAVEMENTS OVER TRENCHES AND/OR EXCAVATIONS IN EXISTING PAVED AREAS AND THE PERMANENT PAVEMENT REPLACEMENT OVER THESE TRENCHES AND/OR EXCAVATIONS. RESURFACING AND OR MILLING OF PAVEMENTS. AND THE INSTALLATION OF CONCRETE PADS. ALL SECTIONS OF THIS SPECIFICATION BELOW, SHALL HAVE METHODS AND MATERIALS APPROVED BY THE OWNER'S FIELD REPRESENTATIVE OR GEOTECHNICAL ENGINEER, HEREIN REFERRED TO AS THE 'AUTHORITY'. ALL WORK SHALL BE AS APPROVED, AND PERFORMED TO THE SATISFACTION OF THE OWNER, OWNER'S FIELD REPRESENTATIVE, GEOTECHNICAL ENGINEER, OR THE AUTHORITY HAVING JURISDICTION.

## B. PAVEMENTS WITHIN PUBLIC RIGHTS-OF-WAY

THE INSTALLATION OF ALL PAVEMENTS WITHIN PUBLIC RIGHTS-OF-WAY SHALL BE IN ACCORDANCE WITH THE RULES AND REQUIREMENTS OF THE PUBLIC AGENCY HAVING CONTROL AND OWNERSHIP OF THE RIGHTS-OF-WAY.

MATERIALS, METHODS OF CONSTRUCTION, AND TYPE AND THICKNESS OF PAVEMENT COURSES SHALL BE AS SHOWN ON THE DRAWINGS AND AS SPECIFIED HEREIN. MATERIALS AND METHODS FOR CONSTRUCTION OF ASPHALT CONCRETE PAVEMENTS, BASES AND SUBBASES SHALL CONFORM TO THE STATE DEPARTMENT OF TRANSPORTATION SPECIFICATIONS.

IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE A MATERIAL FOR BASE AND SUBBASE COURSES WHICH MEETS THIS SPECIFICATION AND IS WITHIN THE CAPABILITIES TO FINE GRADE TO THE REQUIRED TOLERANCES. SHOULD THE BASE AND/OR SUBBASE COURSE BECOME UNSTABLE AT ANY TIME PRIOR TO PLACEMENT OF THE OVERLYING COURSE DUE TO THE GRADATION OF THE MATERIAL FURNISHED, THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, CORRECT THE UNSTABLE CONDITION.

THE CONTRACTOR SHALL LAY OUT AND INSTALL ALL PAVEMENTS IN THE CORRECT LOCATIONS AND TO THE PROPER CROSS SECTIONS AND IN ACCORDANCE WITH THE LINES AND GRADES. PAVEMENTS WHICH ARE NOT CONSTRUCTED TO THE PROPER SECTION, GRADE AND/OR ALIGNMENT SHALL BE CORRECTED BY REPAIR OR REPLACEMENT BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.

## D. <u>PREPARATION OF SUBGRADE</u>

PRIOR TO THE START OF PAVING OPERATIONS, THE SUBGRADE SURFACE SHALL BE PREPARED BY FILLING IN WHEEL RUTS, EROSIONS AND ALL OTHER GROUND DISTURBANCES, REGARDLESS OF CAUSE, AND THE GROUND SURFACE SHALL BE FINE GRADED SO THAT AFTER COMPACTION THE SUBGRADE SURFACE WILL BE AT THE PROPER ELEVATION TO ACCOMMODATE THE PAVEMENT STRUCTURE.

FINE GRADING - FINE GRADING OF THE SUBGRADE SHALL BE PERFORMED IN SECTIONS, WORKING THE EQUIPMENT PERPENDICULAR TO THE CONTOURS AND CONSTRUCTING THE RESPECTIVE VALLEYS AND RIDGES IN ACCORDANCE WITH THE DRAWINGS. PARTICULAR CARE SHALL BE EXERCISED WITH THE GRADES OF THE VALLEYS WHICH LEAD TO DRAIN INLETS AND CATCH BASINS. FINE GRADING SHALL NOT BE DONE WHEN THE GROUND IS EXCESSIVELY WET OR FROZEN.

COMPACTION - FINE GRADING OF THE SUBGRADE SHALL BE ACCOMPANIED BY PROPER COMPACTION TO THE EXTENT THAT THE UPPER TWELVE (12) INCHES OF SUBGRADE SHALL HAVE A DENSITY NOT LESS THAN 95% MAXIMUM MODIFIED DENSITY IN ACCORDANCE WITH ASTM DESIGNATION D-1557. COMPACTION SHALL BE DONE BY MEANS OF A ROLLER WEIGHING NOT LESS THAN TEN (10) TONS OR OTHER APPROVED COMPACTION EQUIPMENT.

PROOF-ROLLING - IMMEDIATELY PRIOR TO THE START OF PAVING OPERATIONS, THE CONTRACTOR SHALL PROOF-ROLL THE SUBGRADE IN THE PRESENCE OF THE AUTHORITY. IF THE SUBGRADE IS NOT SUITABLE FOR SUPPORT OF THE PAVEMENT STRUCTURE, MEASURES SHALL BE TAKEN BY THE CONTRACTOR TO CORRECT THE SUBGRADE DEFICIENCIES AT NO ADDITIONAL COST TO THE OWNER.

SUBGRADE APPROVAL - THE AUTHORITY MUST APPROVE THE SUBGRADE PRIOR TO PLACEMENT OF THE INITIAL PAVEMENT COURSE. INSTALLATION OF ALL OR ANY PORTION OF THE PAVEMENT WITHOUT SUBGRADE APPROVAL BY THE AUTHORITY IS DONE AT THE CONTRACTOR'S RISK. APPROVAL OF THE SUBGRADE BY THE

AUTHORITY SHALL NOT RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITY TO PROTECT THE SUBGRADE FROM DAMAGE CAUSED FROM EXCESSIVE MOISTURE RUTTING FROM TRUCKS OR HEAVY EQUIPMENT OR FROM ANY OTHER CAUSE, AND ANY DAMAGE OCCURRING TO THE SUBGRADE EITHER BEFORE OR DURING THE PAVING OPERATIONS SHALL BE CORRECTED BY THE CONTRACTOR AT HIS OWN EXPENSE.

#### E. PREPARATION FOR PAVEMENT INSTALLATION

UTILITY STRUCTURES AND APPURTENANCES — AFTER THE SUBGRADE AND/OR EXISTING PAVEMENT SURFACES HAVE BEEN PREPARED, THE CONTRACTOR SHALL CHECK ALL FRAMES, COVERS, GRATES, WATER VALVE BOXES AND ALL OTHER MISCELLANEOUS CASTINGS THAT ARE LOCATED IN THE PROPOSED PAVEMENT AREAS TO ENSURE THAT ALL SUCH ITEMS HAVE BEEN ACCURATELY POSITIONED AND SET TO THE PROPER SLOPE AND ELEVATION. ALL COVERS AND GRATES ARE TO BE SET FLUSH WITH THE REQUIRED FINISHED PAVEMENT SURFACE. NO DEPRESSIONS OR MOUNDS WILL BE PERMITTED IN THE PAVEMENT TO ACCOMMODATE INACCURACIES IN THE SETTING OF THESE APPURTENANCES. ALL CORRECTIVE WORK AS MAY BE NECESSARY SHALL BE DONE BY THE CONTRACTOR AT HIS OWN EXPENSE.

MEETING EXISTING PAVEMENT - WHERE NEW PAVEMENTS ARE TO MEET EXISTING PAVEMENTS, THE CONTRACTOR SHALL LINE CUT THE EXISTING PAVEMENT WITH AN APPROVED SAW CUTTING MACHINE AS DIRECTED SO THAT THERE WILL BE A VERTICAL BUTTING SURFACE BETWEEN THE OLD AND NEW PAVEMENTS.

PAVEMENT REPLACEMENT IN EXISTING ASPHALT CONCRETE PAVEMENTS - LINE CUTTING FOR PAVEMENT REPLACEMENT OVER TRENCHES SHALL BE PARALLEL TO THE CENTERLINE OF THE TRENCH; LINE CUTTING FOR PAVEMENT REPLACEMENT AT MANHOLES. DRAIN INLETS. CATCH BASINS OR OTHER UNDERGROUND STRUCTURES. TEST HOLES, ETC., SHALL BE IN A SQUARE OR RECTANGULAR CONFIGURATION AS DIRECTED. FOR ALL TYPES OF PAVEMENT REPLACEMENT. THE LINE CUTTING SHALL ENCOMPASS THE DISTURBED AREA AND INCLUDE THE REQUIRED UNDISTURBED PAVEMENT SHELF AREA AS SPECIFIED HEREIN OR AS DIRECTED.

VERTICAL SURFACES IN CONTACT WITH ASPHALT CONCRETE MIXTURES - ALL VERTICAL SURFACES OF CURBS, STRUCTURES, GUTTERS AND EXISTING PAVEMENT IN CONTACT WITH NEW ASPHALT CONCRETE MIXTURES SHALL BE PAINTED WITH A UNIFORM COATING OF AN APPROVED ASPHALT EMULSION OR PRIMING MATERIAL. CARE SHALL BE EXERCISED IN THE APPLICATION OF THIS MATERIAL TO PREVENT SPLATTERING OR STAINING OF SURFACES THAT ARE TO BE EXPOSED. SURFACES THAT ARE STAINED AS A RESULT OF THE CONTRACTOR'S OPERATION SHALL BE REPAIRED AND/OR REPLACED AT THE CONTRACTOR'S EXPENSE.

#### F. ASPHALT CONCRETE OVERLAYS

CLEANING EXISTING PAVEMENT - THE EXISTING PAVEMENT SHALL BE CLEANED BY THE USE OF HAND BROOMS OR MECHANICAL SWEEPERS IN A MANNER SATISFACTORY TO THE AUTHORITY UNTIL THE SURFACE IS FREE OF ALL MATERIAL WHICH MIGHT INTERFERE WITH THE BOND BETWEEN THE OLD AND NEW SURFACES. ALL LOOSE MATERIAL REMOVED FROM THE PAVEMENT SURFACE SHALL BE DISPOSED OF OFF-SITE.

CRACKS IN EXISTING PAVEMENT - CRACKS (1/4" WIDE OR LARGER) SHALL BE THOROUGHLY CLEANED OF ALL DIRT AND LOOSE MATERIAL BY MEANS OF A JET OF COMPRESSED AIR. CRACKS FROM 1/4" TO 1" WIDE SHALL BE SEALED WITH A HOT ASPHALT JOINT FILLER; CRACKS GREATER THAN 1" WIDE SHALL BE FILLED WITH A SHEET ASPHALT OR SAND ASPHALT GROUT, AS DIRECTED. CRACKS LESS THAN 1/4" WIDE NEED NOT BE CLEANED OR SEALED.

CASTINGS - CASTINGS LOCATED WITHIN THE AREA TO BE RESURFACED SHALL BE SET TO PROPER GRADE TO ACCOMMODATE THE NEW PAVEMENT INSTALLATION AS PREPARATION FOR PAVEMENT INSTALLATION. WHERE CASTINGS ON INLETS AND CATCH BASINS CANNOT BE RESET BECAUSE OF GRADE CONSIDERATIONS. AS DETERMINED BY THE AUTHORITY, THE EXISTING PAVEMENT SURFACE ADJACENT TO THE CASTING SHALL BE CUT BACK AND REMOVED ALL AROUND THE CASTING FOR A MINIMUM WIDTH OF TWO (2) FEET AND TO A DEPTH OF ONE AND ONE HALF (1-1/2)INCHES SO AS TO PROVIDE A SMOOTH TRANSITION OF THE NEW PAVEMENT SURFACE AT THE DRAIN INLETS AND CATCH BASINS.

TACK COAT - THE EXISTING PAVEMENT SURFACE SHALL BE TREATED WITH AN APPLICATION OF ASPHALT MATERIAL TO SATISFACTORILY BOND THE OLD AND NEW SURFACES. WHEN FEATHERED EDGES ARE PERMITTED, AT THE DISCRETION OF THE AUTHORITY. CARE SHALL BE EXERCISED TO ASSURE THAT THE TACK COAT, IN THE AREAS WHERE THE NEW ASPHALT CONCRETE SURFACE IS BEING FEATHERED TO MEET THE ADJOINING SURFACE, HAS BEEN COATED EVENLY AND UNIFORMLY. MATERIAL AND METHOD OF APPLICATION SHALL BE IN ACCORDANCE WITH THE APPLICABLE STATE SPECIFICATIONS.

THE EXISTING PAVEMENT SURFACE SHALL BE SAW CUT ALONG BOTH SIDES OF THE CUT BACK AREA WHERE THE NEW PAVEMENT IS TO MEET THE EXISTING PAVEMENT. MINIMUM WIDTH OF CUT BACK AREA SHALL BE THREE (3) FEET. THE EXISTING ASPHALT CONCRETE SURFACE SHALL BE CUT TO A DEPTH EQUAL TO THE THICKNESS OF THE OVERLAY COURSE WITH 11/8" MINIMUM. TO PROVIDE NEAT TRUE LINES WITH STRAIGHT VERTICAL EDGES FREE OF IRREGULARITIES. THE PAVEMENT SURFACE SHALL BE REMOVED FROM THE CUT BACK AREA BY MILLING OR OTHER APPROVED METHOD TO PROVIDE A MINIMUM OF ONE AND ONE-HALF (1-1/2) INCH THICKNESS OF ASPHALT CONCRETE OVERLAY IN THE CUT BACK AREA WHERE THE ASPHALT CONCRETE OVERLAY IS TO ABUT THE EXISTING PAVEMENT. IMMEDIATELY PRIOR TO PLACEMENT OF THE ASPHALT CONCRETE OVERLAY THE TRIMMED EDGES OF THE EXISTING PAVEMENT SHALL BE TREATED WITH A LIGHT COATING OF ASPHALT CEMENT OR ASPHALT EMULSION TO BOND THE NEW PAVEMENT TO THE OLD PAVEMENT. THE NEW PAVEMENT SURFACE SHALL BE FINISHED FLUSH WITH THE ADJACENT PAVEMENT.

## G. <u>DELAY IN ASPHALT CONCRETE SURFACE COURSE INSTALLATION</u>

WHEN THERE IS A DELAY IN THE INSTALLATION OF THE ASPHALT CONCRETE SURFACE COURSE AFTER THE BINDER AND/OR INTERMEDIATE COURSE IS PLACED, WHICH REQUIRES THAT TRAFFIC BE MAINTAINED OR PARKING PROVIDED ON THE BINDER AND/OR INTERMEDIATE COURSE FOR A PERIOD IN EXCESS OF FOUR (4) WEEKS, JUST PRIOR TO PLACEMENT OF THE SURFACE COURSE THE CONTRACTOR WILL BE REQUIRED TO THOROUGHLY CLEAN, REPAIR AND TACK COAT THE BINDER AND/OR INTERMEDIATE SURFACE. COMPENSATION FOR THIS WORK SHALL BE CONSIDERED AS INCLUDED IN THE CONTRACT SUM.

## H. <u>TEMPORARY PAVEMENT</u>

UNLESS DIRECTED OTHERWISE, THE CONTRACTOR SHALL INSTALL TEMPORARY PAVEMENT IN AREAS WHERE EXISTING PAVEMENT HAS BEEN DISTURBED DUE TO HIS OPERATIONS. THIS PAVEMENT SHALL BE CONSTRUCTED AFTER THE EXCAVATION HAS BEEN BACKFILLED AND PROPERLY COMPACTED. UNLESS OTHERWISE REQUIRED, THE CONSTRUCTION OF THE TEMPORARY PAVEMENT SHALL CONSIST OF TWO (2) INCHES COMPACTED MEASURE HOT-MIX ASPHALT CONCRETE ON FOUR (4) INCHES COMPACTED MEASURE AGGREGATE BASE OR APPROVED EQUAL.

ROLLING - AFTER SPREADING, THE MATERIAL SHALL BE ROLLED BY MEANS OF A ROLLER WEIGHING NOT LESS THAN TEN (10) TONS. IN ALL PLACES NOT ACCESSIBLE TO THE ROLLER, THE MATERIAL SHALL BE COMPACTED THOROUGHLY BY APPROVED MECHANICAL TAMPERS. THE FINISHED SURFACE OF THE TEMPORARY PAVEMENT SHALL BE FLUSH WITH THE ADJACENT PAVEMENT SURFACE.

MAINTENANCE - THE TEMPORARY PAVEMENT SHALL BE MAINTAINED BY THE CONTRACTOR UNTIL SUCH TIME THAT THE FINAL SETTLEMENT OF THE TRENCH SHALL HAVE TAKEN PLACE IN THE OPINION OF THE AUTHORITY. ANY SETTLEMENT TAKING PLACE SHALL BE MAINTAINED BY THE CONTRACTOR AT HIS EXPENSE BY FURNISHING, SPREADING, AND ROLLING ADDITIONAL MATERIAL OVER THAT PREVIOUSLY LAID. THE CONTRACTOR SHALL CONTINUE THIS MAINTENANCE UNTIL SUCH TIME THAT THE AUTHORITY CONSIDERS THAT FINAL SETTLEMENT OF THE TRENCH HAS OCCURRED AND THAT THE TRENCH IS IN READINESS FOR THE REPLACEMENT OF THE PERMANENT SURFACE.

PUBLIC RIGHTS-OF-WAY - IN PUBLIC RIGHTS-OF-WAY THE CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.

**ARCHITECT** 

di Domenico + Partners LLP

Landscape Architecture Planning

3743 Crescent Street, 3rd Floor Long Island City, New York 11101 Tel 212-337-0400 Fax 212-337-3567

### CIVIL PLANNING ENGINEER



JMC Planning Engineering Landscape Architecture & Land Surveying, PLLC 120 Bedford Road Armonk, New York 10504 Tel 914-273-5225 Fax 914-273-2102

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