



*City of Monroe Department of Public Works*

1000 Holman Avenue  
Monroe, OH 45050

Phone: (513) 727-8953 Fax: (513) 422-7146  
Hours: Monday – Friday, 8:00 a.m. – 5:00 p.m.

**Concrete Sidewalk, Curb and Gutter, and Drive Apron Specifications**  
**Effective Date: 01/15/2020**

To All Contractors and Builders:

The City of Monroe has updated its specifications for construction of concrete sidewalk, curb and gutter, and drive approaches when working within the City of Monroe and its Right-of-Way. If, at any time during the construction process, the contractor infringes upon the City of Monroe's public Right-of-Way these specifications must be followed.

The Public Works Department will perform inspection during the construction of these specific items to ensure the enforcement of these specifications. If any preparation is found to be out of compliance, the builder, contractor, and/or developer will be notified and must correct any, and all, deficiencies. If the builder, contractor, and/or developer fail to notify the City of Monroe prior to the City performing an inspection and pours concrete, the Director of Public Works, or his appointed representative, may require that the concrete be removed and replaced at the owner's expense.

The City of Monroe reserves the right to deny the issuance of a permit for any, and all, deficient preparations.

We understand the extra efforts and costs associated with these new specifications and appreciate your cooperation. Our intent is to work with you in an equitable and fair manner to provide trustworthy products to the City of Monroe and its citizens. If you should have any questions regarding these new details, please contact the City of Monroe Department of Public Works during normal business hours.

Thank you,

William K. Brock, P.E.  
City Manager



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### **Concrete Sidewalk, Curb and Gutter, and Drive Apron Specifications** **Effective Date: 01/15/2020**

At any point, during the construction process, you infringe upon the City of Monroe public right-of-way, it is absolutely necessary to obtain a permit and perform all work according to the standards set forth by the City of Monroe under the direction of the State of Ohio. All work must be inspected prior to placement by a representative of the Engineering Department or the Director of Public Works.

The City of Monroe has adopted a set of specifications and are included herein. During the design and estimating process it would be advantageous to review the standard drawings included and, should any questions arise, a meeting with a representative of this office is recommended prior to proceeding. The attached standard specifications represent the regulations enforced by the City of Monroe. These regulations were prepared in accordance with the standards set by the Ohio Department of Transportation and, in areas of disparity, the City of Monroe shall supersede. The attached standard specifications represent the regulations enforced by the City of Monroe. These regulations were prepared in accordance with the standards set by the Ohio Department of Transportation and, in areas of disparity, the City of Monroe standards shall supersede.

Of particular reference, all concrete used on city infrastructure is to be poured using Class “C” concrete with a strength rating of 4,000 p.s.i. Sidewalks are to be poured at a 4” minimum depth with a compacted 4” crushed, aggregate stone base of type #57, #304, #8’s (65% crushed) or #411 without exception. No slag is permitted for use within the public right of way. If anything other than the aforementioned aggregates is used, the Contractor will be required to remove and replace the aggregate with one of the approved types. The City also requires that sidewalks continue through all drive approaches, where applicable, in which their size and depth will be based upon the regulations applying to the drive approach. Residential drive approaches shall be 6” in depth, while commercial drive approaches shall be 8” in depth placed on compacted 4” crushed, aggregate stone base of type #57, #304, #8’s (65% crushed) or #411. If anything other than the aforementioned aggregates is used, the Contractor will be required to remove and replace the aggregate with one of the approved types. Expansion material used within the R/W shall be vinyl material, without exception. Truncated domes shall be installed at all pedestrian crossings, regardless of previous existence, and shall be constructed according to the latest ADA / Department of Justice regulations accepted by the Ohio Department of Transportation and enforced by the City of Monroe. All work shall be completed in accordance with the Specifications as outlined in the following document. Work shall be complete in every respect including restoration or adjacent areas, clean-up of site, and removal of mud and debris from surrounding areas and haul routes.

Unless preauthorized by the City Engineer or the Director of Public Works, No materials shall be stockpiled on the roadway surface at any point in time. No dumpsters are permitted on the roadway surface.

The contractors shall follow the Ohio Manual of Uniform Traffic Control Devices (OMUTCD) for all construction signage, warning devices etc... Roadway closures are not permitted without written City approval.

Inspections, all inspections are to be performed during normal working hours and must be requested at least 24 hours in advance. Inspections can/shall be provided with shorter notices when workloads permit.

**Replacement Criteria / Final Acceptance of product:**

The objectives for replacement or acceptance of sidewalk, curb and gutter and driveway aprons are as follows:

**Sidewalks:**

1. Any block having a crack or cracks.
2. Adjoining blocks whose edges differ vertically by more than one-half inch (1/2") or creates a tripping hazard.
3. Blocks that have holes in them of one (1) inch or more in diameter or have missing or loose pieces.
4. Sidewalk that has a twenty-five (25) percent or larger area that is generally deteriorated by evidence of spalling, popping or raveling.
5. Sidewalks that have settled due to a utility installation.

**Curb and Gutter:**

1. Any section with horizontal cracks.
2. Any sections having vertical cracks.
3. Any section in which the concrete has been damaged or has deteriorated leaving aggregate exposed.
4. Any section which impedes normal flow.

**Driveway Aprons:**

1. Driveway apron sections having a crack or cracks.
2. Driveway apron sections whose edges differ vertically by more than one-half inch (1/2") or creates a tripping hazard.
3. Driveway apron sections that has a twenty-five (25) percent or larger area that is generally deteriorated by evidence of spalling, popping or raveling.
4. Abandoned driveway aprons shall be removed and curbing replaced.

Unless specifically excluded herein, the contractor and his representative shall adhere to all laws of the City of Monroe and the State of Ohio Construction and Materials Specifications. Our intent is to work with you in an equitable and fair manner to provide a reputable product to the City of Monroe and its' citizens.

## **DETAILED MATERIAL AND CONSTRUCTION SPECIFICATIONS**

Wherever in these Detailed Specifications, Special Provisions, or on the plans, the letters and word "***ODOT SPECIFICATIONS***" are found, they shall be understood to mean the "***State of Ohio, Department of Transportation, Construction and Material Specifications,***" latest edition.

Wherever in the Sections of the Detailed Specifications that follow, or in the Special Provisions or on the plans, reference is made to the divisions, sections, items and paragraphs as found in the "***State of Ohio Department of Transportation, Construction and Material Specifications,***" the provisions of that part of the specification referred to are made a part of this contract by reference as if they were fully set out; subject to changes in wording, deletions, and additions as may be detailed herein or on the plans.

Wherever in these specifications, or in any documents or instruments where reference is made to the ODOT Specifications, the following terms used in the ODOT Specifications shall be revised and their intent and meaning shall be interpreted as follows:

***State of Ohio*** shall be revised to ***City of Monroe***, meaning the City of Monroe, Ohio, acting through its City Manager or his properly authorized agents, such agents acting severally within the scope of the particular duties entrusted to them.

***Department*** shall be revised to mean the ***City Engineer*** or the ***Department of Public Works*** of the City of Monroe, Ohio.

***Laboratory*** shall be revised to mean a reputable testing laboratory that is delegated by, or acceptable to the City Engineer or the Director of Public Works of the City of Monroe, Ohio

Wherever in the Detailed Specifications, Special Provisions, or Construction Plans, a discrepancy occurs between them, the plans shall govern over the specifications, and the Special Provisions shall govern over both the specifications and plans. The Engineer shall be permitted to make such corrections and interpretations as may be deemed necessary for the fulfillment of the intent of the plans and specifications and the Contractor shall take no advantage of any apparent error or omission in the plans or specifications.

## ***MATERIAL DETAILS***

**General.** The kind or grade of material specifically mentioned in the estimate or in the plans or any part of the work shall be used. When no such designation is made, the use of any of the materials permitted by these specifications, for that distinctive part of the work, will be optional with the Contractor.

The kind, grade or type of a specific material used in a given construction project shall be the same throughout the entire project except with special permission of the City Engineer or Public Works Director.

**Quality of Materials.** It is the intent of the specifications that first-class materials shall be used throughout the work and that they shall be incorporated in the work in such a manner as to produce completed construction which is workmanlike and acceptable in every detail. Only materials which conform to the requirements of these specifications shall be incorporated in the work.

**Material Guaranty.** Before any contract is awarded, or during the life of any contract, the Bidder or Contractor may be required to furnish a complete statement of the origin, composition, or manufacturer of any or all materials proposed to be used or used in the construction of the work, together with samples, which may be subjected to such tests as may be found necessary by the Engineer to determine their quality and fitness for the work.

**Requirements for Sampling Materials.** The Contractor shall afford such facilities as the Engineer may require for collecting samples and making inspections of materials. All samples shall be furnished without a charge to the City.

When samples are requested by the Engineer or the Director of Public Works, the size of sample, quantity represented, and kind of container used, shall conform to the minimum requirements for sampling materials as set forth in Section 700 – Material Details of the ODOT CMS Specifications.

**Requirements for Concrete.** All concrete used in a given construction project covered by these specifications shall conform to all requirements of Item 499 for Class “C” Concrete as set forth in the ODOT specifications and in the following chart. All other requirements pertaining to cement, fine and coarse aggregates, water, storage and transportation of materials, proportions, measurement and mixing of materials, and slump and strength requirements shall govern the concrete used on construction projects covered by these specifications unless otherwise stated in the Detailed Specifications, Special Provisions or in the Plans. No calcium chloride shall be used to obtain “high early” or for winter construction. All cold weather placement must conform to ODOT CMS. Any cold weather additives must be approved by the City.

**Expansion Filler Material.** All expansion filler material must be 1/2" vinyl material, without exception. No fiber materials are permitted for use within the public right of way.

**ADA Truncated Domes.** All truncated domes shall be “wet set” replaceable tactile warning surface units. ADA panels shall be manufactured by ADA Solutions, Inc. or another manufacturer approved by the City. Truncated domes in residential areas shall be “red” in color. Truncated domes in commercial or industrial areas may be “red” or “yellow” in color. All units must mount flush with the surrounding concrete.

The class of concrete to be used for the specific items of work shall be as shown on the plans or stated in the Detailed Specifications or Special Provisions. Where a specific class of concrete is not given, the following table shall govern the class of concrete to be used.

**CLASS OF CONCRETE TO USE FOR SPECIFIC ITEMS OF WORK**

<u>Class of Concrete</u>	<u>Item of Work</u>
	-Concrete Pavement and Base Courses
Class "C"	-Concrete culverts, headwalls and retaining walls -Poured concrete walls for manholes, catch basins and inlets -Concrete bases for manholes, catch basins, and inlets -Concrete for slab tops and covers on manholes, catch basins and inlets -Concrete for drive approaches and driveways -Concrete sidewalks and steps -Concrete for curb, gutter, and combination curb & gutter. -Concrete for light pole foundations & monument encasement -Concrete for channel or slope protection -Paved gutters and aprons outside of pavement -Concrete anchors for wood posts or fence posts -Concrete for encasement of cradle of sewer pipe

**CONCRETE GUTTER, CURB AND COMBINATION CURB AND GUTTER  
(ODOT ITEM 609)**

**Work Included.** This work shall consist of cast-in-place concrete curb, concrete gutter and combination concrete curb and gutter of the type called for on the plans, and constructed in accordance with the specifications and the lines, grades, dimensions and cross sections shown on the plans, and as required by the Engineer.

**Materials.** Concrete for gutter, curb and combination curb and gutter shall be Class "C" concrete meeting the requirements set forth in these specifications, with no exceptions.

Expansion joint filler shall be vinyl material, without exception and shall be place parallel (or perpendicular) to all:

- a) Retaining and building walls
- b) Catch basins, gas and water boxes, manholes and poles
- c) Every 100 running feet or as determined by the Engineer
- d) When a curb, sidewalk or step form a continuous point of contact
- e) Whenever a gutter forms a continuous point of contact with a separately poured curb or separately poured concrete street
- f) Whenever new concrete is placed adjacent to existing concrete.

Membrane curing material shall meet the requirements of Section 705.07 of the ODOT Specifications.

Steel for dowel bars shall meet the requirements of Section 709 of the ODOT Specifications. The bars shall be straight and free from flattening or burring at the ends.

**Construction.**

- (a) **Concrete.** When subjected to the slump test, the concrete for curb forms shall have a slump no greater than three (3) inches or less than two (2) inches.

All requirements for handling measurement and mixing of materials shall meet the applicable requirements of Item 499 and 511 of the ODOT Specifications unless otherwise directed by the Engineer.

- (b) **Excavation.** The subgrade shall be excavated to the required depth below the finished surface in accordance with the cross section shown on the plans. All soft and yielding spots or other unsuitable material shall be removed and replaced with suitable material, and the subgrade shall be compacted and finished to a firm, smooth surface.
- (c) **Subbase.** A 4" crushed and compacted, aggregate stone base of type #57, #304, #8's (65% crushed) or #411 material shall be placed under gutter, curb or combination curb and gutter without exception. Porous material (such as slag) which may entrap moisture in the subgrade will not be allowed. The subgrade or subbase and forms shall be checked and approved by the Engineer or designee before the concrete is placed.

- (d) Construction Staking. Staking for elevations and offsets shall be provided at not less than every 25' stations, all PC's, PT's, Radius points, low points, high points, changes in grade and alignment. Staking shall be maintained and remain in place through the placement of curb for inspection purposed
- (e) Rebar. 2 - #4 epoxy coated rebar may be required in new curb construction where curbs are placed in areas of more than 12" of fill.

**Forms.** The forms shall be of wood or metal, straight and free from warp, and of sufficient strength to resist springing during the process of depositing concrete against them. On curbs of 275 feet radius or less, the Contractor shall use flexible steel or wood forms to conform to the curve specified.

The forms shall be of a depth equal to the depth of the curbing, and so designed as to permit secure fastening together at the tops. They shall be securely staked, braced, held firmly to the required line and grade, and shall be sufficiently tight to prevent leakage of mortar.

- (a) Placing Concrete. The subgrade or subbase and forms shall be checked and approved by the Engineer or designee before the concrete is placed. The concrete shall be placed on a moist base, deposited to the proper depth, after which it shall be finished smooth and even by means of a wooden float. Before the concrete is given the final finishing, the surface of the curb, gutter or combination curb and gutter shall be checked with a ten (10) foot straightedge and any irregularities of more than 1/8" in ten feet shall be eliminated.
- (b) Finishing. The exposed surfaces of concrete curb and/or gutter shall be finished smooth and even while the concrete is still green. The edges shall be rounded with approved finishing tools have the radii shown on the plans. The exposed surface shall be given a broom finish. The broom shall be drawn from edge to edge with adjacent strokes slightly overlapping. Corrugations produced in the surface shall be uniform in appearance and not more than 1/16" in depth. Brooming shall be completed before the concrete is in such condition that the surface will be torn or unduly roughened by the operation. Forms shall be removed within 24 hours after the concrete has been placed. Minor defects shall be filled with mortar composed of one part of Portland cement and two parts of sand.
- (c) Contraction Joints. If joints are specified, the curb and/or gutter shall be constructed in uniform sections of the length specified on the plans. The joints between sections shall be formed by templates 1/8" in thickness, of a length equal to the width of the curb and/or gutter section, and of such depth to extend through the curb and into the gutter section a distance of one-half the thickness of the gutter plate. These templates shall be left in place until the concrete has set sufficiently to hold its shape, but shall be removed while the forms are still in place.
- (d) Tangent Joints. Concrete curb, gutter or combination curb and/or gutter where specified on the plans or by the Engineer shall be tied to concrete pavement with deformed tie bars of a diameter and length and at the spacing shown on the plans. Only structural grade billet steel or axle steel shall be used for the tie bars.

- (e) Transverse Expansion Joints. Expansion joints, one inch in thickness, shall be placed in the curb and/or gutter at intervals called for on the plans. They shall be placed so as to completely fill the joint to within  $\frac{1}{4}$  of the surface of the curb and/or gutter. Dowel bars with expansion sleeves shall be placed at all transverse expansion joints when specified. The size of dowel and the location shall be as shown on the plans.

Where curb and/or gutter is constructed adjacent to pavement having expansion joints in the proposed curb and/or gutter shall be placed opposite the existing expansion joints in the pavement and the joints shall be similar to the type of expansion joint used in the existing pavement.

- (f) Longitudinal Curb Expansion Joints. At points where the proposed or existing sidewalks or driveway pavement occupies the entire space between the proposed curb and an adjacent building or permanent structure, a one (1) inch premoulded expansion joint shall be placed between the sidewalk or driveway pavement and the new curb. The expansion joint material shall extend the entire depth of the sidewalk or driveway pavement or to such depth as will allow one inch expansion between the proposed curb and adjacent sidewalk or driveway pavement.
- (g) Other Joints. Joints in addition to those specified herein, when called for on the plans, shall be placed as specified and shall conform to the locations and types called for.

**Slip Form Construction Method.** If the Contractor elects, and with the permission of the Engineer, the curb, gutter, or combination curb and gutter section may be constructed without the use of fixed forms, but shall conform to all other requirements of this section, with the following exceptions:

- (a) Subbase. When the slip form method is used to construct the curb, gutter, or combination curb and gutter, and if specified on the plans or directed by the Engineer in writing, ODOT, Item 304 – Aggregate Base of Item 304 shall be placed under the curb, gutter, or combination curb and gutter, to the limits as shown on the plans. No slag is permitted for use within the public right of way. Staking for elevations and offsets shall be provided at not less than every 25' stations, all PC's, PT's, Radius points, low points, high points, changes in grade and alignment.
- (b) Placing Concrete. The stringline alignment shall be checked and approved by the Engineer or designee before the concrete is placed. The concrete shall be placed with an approved slip form paver designed to spread, consolidate, screen, and float-finish the freshly placed concrete in one complete pass of the machine in such a manner that a minimum of hand finish will be necessary to provide a dense and homogeneous pavement in conformance with the plans and specifications. The machine shall vibrate the concrete for the full width and depth of the strip of curb, gutter or combination curb and gutter being placed.

The concrete shall be held at a uniform consistency, the slip form paver shall be operated with as nearly a continuous forward movement as possible and all operations of mixing, delivering, and spreading concrete shall be coordinated as to provide uniform progress with stopping and starting of the paver held to a minimum. If for any reason, it is necessary to stop the forward movement of the paver, the vibratory and tamping elements shall also be stopped immediately. No tractive force shall be applied to the machine, except that which is controlled from the machine.

- (c) Finishing. The exposed surfaces of concrete curb and/or gutter shall be given a broom finish conforming to the specifications of cast-in-place, formed construction.
- (d) Contraction Joints. All curb, gutter, or combination curb and gutter shall have a minimum of 1/8" wide contraction joints constructed at right angles or radial lines to the back of curb and at 10' intervals. The joints may be constructed by the use of a grooving tool, or sawed with equipment approved by the Engineer. Contraction Joints shall have a minimum depth of 2". The joints shall be filled with ODOT Item 705.01 or 705.02 joint sealer, if noted on the plans, or directed by the Engineer in writing. The sawing operation shall take place as soon as the saw can be operated without damaging the concrete. Saws shall be equipped with adequate guides, blade guards, and a method of controlling the depth of cut.
- (e) Transverse Expansion Joints in slip formed construction shall conform to all requirements of this section for formed curb, and generally will be placed at all points of curvature and tangent at intersections, at block outs for catch basins, and for the full depth of the curb, gutter, or combination curb and gutter section whenever it becomes necessary to suspend the work for 30 minutes or more.

**Curing and Protection.** After the concrete has attained its set so that it is not readily marred, it shall be sealed by spraying, as a fine mist, a uniform application of waterproof membrane curing compound, in such manner as to provide a continuous uniform water impermeable film without marring the surface of the concrete. The membrane curing shall be applied in one or more separate coats at the rate of at least one (1) gallon per 200 square feet of surface.

The newly placed concrete shall be protected for a period of at least seven (7) days. This period may be less when high early strength cement concrete is used as specified by the Engineer or the Director of Public Works.

No load shall be applied or other work conducted that will damage new concrete or interfere with its curing.

**Backfill.** After the concrete has set sufficiently, the spaces in front and back of the gutter, curb, and combination curb and gutter shall be refilled to the required elevation with approved material which shall be compacted until firm, solid and neatly graded.

Where new pavement is to be constructed, the curb shall be backfilled as stated above before pavement work is started.

**Measurement.** The footage to be paid for shall be the actual number of linear feet of concrete gutter, curb or combination curb and gutter, of the type specified and placed, measured along the face of the curb for concrete curb, and along the flow line of the gutter for concrete gutter and combination curb and gutter, completed and accepted. No deduction in length will be made at inlets or catch basins.

**Payment.** This work will be paid for at the contract unit prices per linear foot for "Concrete Curb", "Concrete Gutter", and "Concrete Curb and Gutter" of the type specified. These prices shall constitute full compensation for furnishing, hauling, preparing and placing all material, finishing, excavation, backfill, removal and disposal of all surplus excavation and for all labor, equipment, tools and incidentals necessary to complete this item. No deduction or addition will be made in price for depressed curb at driveways when required by the plans or by the Engineer in the field.

### ***REMOVAL AND REPLACEMENT OF CONCRETE CURB AND GUTTER IN THE CITY OF MONROE***

The following information is provided to clarify some questions raised concerning regulations of the Director of Public Works applying to removal and replacement of concrete curb and gutter in City streets.

When asphalt pavement is disturbed by the removal of existing curb and gutter, full restoration shall be made by the Contractor. Reasonable efforts shall be made to minimize damaging the abutting pavement. Reasonable efforts are defined as exercising care so as to remove the existing curb and gutter without pushing, heaving or gouging the abutting pavement. Removal of the curb portion first after jack-hammering so as to allow the flat portion to be pulled back from the asphalt before it is lifted is a suggested method. It may be necessary to saw cut parallel to and along the edge of the existing plate to prevent heaving the pavement or breaking back the pavement, leaving a ragged edge.

Where the condition of the existing pavement abutting the curb is such that loose sections of pavement "pop" out inadvertently, an acceptable method of restoration shall be performed by the Contractor. Such "popped out" sections shall be considered excessive if larger than six inches in width as measured off the edge of the gutter plate. The Contractor shall saw-cut the pavement to provide a straight edge to repair any and all asphalt areas that are disturbed during removal and replacement.

Replacement of the curb and gutter can be accomplished by two methods. One method would be to replace the curb and gutter first. When this method of repair is used, a front form having a width equal to the depth of the gutter plate shall be used when forming the gutter plate prior to the placement of concrete. Restoration of the disturbed section of pavement shall be made after placement of the new concrete curb and gutter.

Restoration of the disturbed pavement shall be by:

1. Removal of all material under the disturbed pavement to a depth equal to the thickness of the adjacent gutter plate.

2. Filling the void with hot asphalt cement which shall be hand tamped to obtain suitable compaction. If approved by the Director of Public Works or a designee, Class "C" concrete may be used instead of the asphalt mix, using a hand tool to round the edges.

An alternate method for repair of disturbed pavement may be used on a case by case basis when approved by the City Inspector. This method shall consist of:

1. Removal of all material under the disturbed asphalt pavement to a depth equal to the thickness of the gutter plate prior to the placement of the new gutter plate.
2. Pouring the new curb and gutter and filling in the void in the pavement all in one pour. Fill in the void in the pavement until the concrete is at least 1.5" below the existing adjacent pavement and hot mix asphalt is applied/placed to a depth to meet the top of the new gutter plate.
3. Using an approved jointing tool, construct a tooled joint in the concrete to separate the front edge of the gutter plate and the paved street. The joint must be constructed in a workman-like manner, clean and straight and parallel with the back of curb. The edges shall be rounded with a finishing tool having an approved radius. The joint may be saw-cut provided a "walk behind" saw is used after prior approval is granted by the inspector. Approval for this alternate method of repairing damaged pavement is predicated on the Contractor's ability to produce a consistently reliable and professional looking product.

All work for which a permit has been obtained must be inspected and approved after the forms have been set and **PRIOR** to the placement of the concrete unless specific prior approval has been granted by the Director of Public Works or a representative of his office.

Violations of the above listed regulations may result in our refusal to issue further permits and the revoking of license to do concrete work in the public right-of-way. If City infrastructure is not installed properly and/or without an inspection the Contractor or Owner of the property may also be required to remove and replace it correctly, with an inspection, at their expense.

**4" CONCRETE SIDEWALK (6" Through Drive Apron)  
(ODOT ITEM 608)**

**Work Included.** This item shall consist of sidewalks composed of portland cement concrete, asphalt concrete, cinders, crushed stone, gravel or slag as called for on the plans, or in the Special Provision or Proposal, constructed on the accepted prepared subgrade in accordance with these specifications and in conformity with the lines, grades and dimensions shown on the plans.

**Materials.** Concrete for sidewalks shall be Class "C" concrete as described under Section 1, Materials. Expansion joint material shall consist of 1/2" vinyl material with no exceptions. Reinforcing steel, if required, shall meet the requirements of Item 709 of the ODOT Specifications. Waterproof membrane curing compound shall conform to the requirements of Section 705.07 of the ODOT Specifications. Deformed steel bars shall be used except for transfer dowels. Welded wire fabric shall be used when called for on the plans or in the proposal.

**Forms.** Forms for portland cement concrete sidewalks shall be wood, not less than two (2) inches nominal thickness, or of steel of equal rigidity. Flexible strips may be used on curbs. They shall be held securely in place by stakes or braces, with the top edges true to line and grade. The forms for the concrete sidewalks shall be so set that the slab will have a fall of one (1) inch vertical to four (4) feet horizontal from the edge nearest the property line toward the edge farthest from the property line. Forms for sidewalks and aprons shall be so set that the slab will have a uniform fall between the sidewalk proper and the curb grade. The fall between the sidewalk proper and the proposed or existing top of curb grade shall be as shown on the plans, but in no case less than one (1) inch vertical to two (2) feet horizontal. Forms shall be cleaned and oiled before concrete is placed against them.

**Subgrade.** Concrete sidewalks shall be placed on a 4" crushed and compacted, aggregate stone base of type #57, #304, #8's (65% crushed) or #411. If anything other than the aforementioned aggregates is used, the Contractor will be required to remove and replace the aggregate with one of the approved types. No slag is permitted.

**Expansion Joints – Concrete Sidewalk.** Expansion joints of the thickness specified shall be placed to within 1/4" of the surface of the concrete. Transverse expansion joints shall be 1/2" thick and shall be placed at intervals of 100 feet in the sidewalk. Expansion joints 1/2" thick shall also be placed between the sidewalk and driveway approaches, intersecting sidewalks, and buildings; between the sidewalk and all structures such as hydrants, light standards, and poles which extend through the sidewalk; at all points of curve in the walk; and where new sidewalk abuts existing sidewalk. Expansion joints shall be filled with 1/2" vinyl expansion material.

Expansion joints, one inch thick, shall be placed between sidewalk and curbs where the sidewalk covers the entire parkway area. Where sidewalk is constructed adjacent to curb having expansion joints, the expansion joints in the sidewalk shall be placed opposite the existing expansion joints as nearly as practicable.

**Contraction Joints – Concrete Sidewalk.** The surface of the sidewalk shall be divided by grooves constructed at right angles to the centerline of the sidewalk. These grooves shall extend to 1/4 the depth of the sidewalk, shall be not less than 1/8" nor more than 1/4" in width, and shall be edged with an edging tool having a 3/8" radius. No slab shall be longer than five (5) feet nor

less than four (4) feet on any one side, unless otherwise ordered by the Engineer. The edges of the slab shall be edged as described above.

**Placing and Finishing.**

(a) **Concrete Sidewalks.** Sidewalks may be cast-in-place or slip-formed. If slip-formed, provisions of 609.04 shall apply. The subgrade and forms shall be checked and approved by the Engineer before the concrete is placed. The subgrade shall be adequately moistened just before the concrete is placed. The concrete shall be placed in successive batches for the entire width of the slab, struck off from 1/4 to 1/2" higher than the finished slab, tamped until all voids are removed and free mortar appears on the surface, thoroughly spaded along the edges, struck off to the true grade, and finished to a true and even surface with a wood float. The surface shall be given a final finish with a wood float or steel trowel to produce a sandy texture so as to obtain a surface that is not slippery after hardening. The final finish and texture obtained shall be subject to the approval of the Engineer. Sidewalk forms shall not be removed within 24 hours after the concrete is placed. Sidewalks shall be cured with a waterproof membrane curing compound applied at a minimum rate of one (1) gallon of material to be used for each 200 square feet of surface treated. Other methods of curing the slab shall be subject to the approval of the Engineer. After the forms are removed, minor defects shall be filled with mortar. After the concrete has set, the edges shall be backfilled, compacted till firm and neatly graded.

**Protection.** No heavy loads will be permitted on sidewalks at any time. The Contractor shall at all times protect the sidewalk from damage and shall remove and replace all such sidewalk damaged at his expense.

**Measurement.** The footage of sidewalk to be paid for shall be the actual number of square feet of sidewalk of the specified thickness, in place, completed and accepted.

**Payment.** The footage of sidewalk, measured as described above, shall be paid for at the contract unit price per square foot or square yard for 4" Concrete Sidewalk".

These unit prices and payment shall constitute full compensation for necessary excavation and backfill, the removal and disposal of all surplus excavation, furnishing, preparing and placing all material, including expansion joints, reinforcing steel, subgrade material, and for all labor, equipment, tools and incidentals necessary to complete this item.

**DRIVEWAYS / DRIVE APRONS**  
**(DRIVE APRONS - 6" RESIDENTIAL / 8" COMMERCIAL)**

**Work Included.** This item shall consist of driveways composed of portland cement concrete, asphalt concrete, crushed stone or gravel or combination of these materials as called on the plans, or in the Special Provisions or Proposal, constructed on the accepted prepared subgrade in accordance with these specifications, and in conformity with the lines, grades and dimensions shown on the plans.

**Materials.** Concrete for driveways shall be Class "C" concrete as described in the Materials section of this specification. Expansion joint shall consist of 1/2" vinyl expansion material without exception within the R/W. Reinforcing steel, if required, shall meet the requirements of Item 709 of the OSHD Specifications. The type of reinforcing shall be as shown in the plans or the proposal.

Waterproof membrane curing compound shall conform to the requirements of Section 705.07 of the ODOT Specifications.

**Forms.** Forms for portland cement concrete driveways and aprons shall be wood not less than two (2) inches nominal thickness or of steel or equal rigidity. Flexible strips may be used on curves. They shall be held securely in place by stakes or braces, with the top edges true to the line and grade indicated on the plans or as directed by the Engineer. The forms shall be cleaned and oiled before concrete is placed against them.

**Subgrade.** Residential drive approaches shall be 6" in depth, while commercial drive approaches shall be 8" in depth placed on a compacted 4" crushed, aggregate stone base of type #57, #304, #8's (65% crushed) or #411. If anything other than the aforementioned aggregates is used, the Contractor will be required to remove and replace the aggregate with one of the approved types. No slag is permitted.

**Joints – Concrete Driveways.** Expansion joints of the thickness specified shall be placed to within 1/4" of the surface of the concrete. Transverse expansion joints shall be 1/2" thick and shall be placed at intervals of 30 feet in the driveway. Expansion joints 1/2" thick shall also be placed between the driveway apron and the curb, and between driveway and sidewalks.

Expansion joints one inch thick, and of vinyl material, shall be placed between driveway pavement and adjacent buildings or permanent structures.

Contraction joints shall be constructed by placing grooves at right angles to the centerline of the driveway pavement at intervals of 15 feet or less. These grooves shall extend to 1/4 the depth of the concrete, shall be not less than 1/8" nor more than 1/4" in width, and shall be edged with an edging tool having a 3/8" radius. The edge of the slab shall also be edged as described.

**Placing and Finishing.**

- (a) **Concrete Driveways.** The subgrade and forms shall be checked and approved by the Engineer before the concrete is placed. The subgrade shall be adequately moistened just before the concrete is placed. The concrete shall be placed in successive batches of the entire width of the slab, struck off from 1/4 to 1/2" higher than the finished slab, tamped

until all voids are removed and free mortar appears on the surface, thoroughly spaded along the edges, struck off to the true grade, and finished to a true and even surface with a wood float. The surface shall be given a final finish with a wood float or steel trowel to produce a sandy texture so as to obtain a surface that is not slippery after hardening. Forms shall not be removed within 24 hours after the concrete is placed. The driveway shall be cured with a waterproof membrane curing compound applied at a minimum rate of one (1) gallon of material to be used for each 200 square feet of surface treated. Other methods of curing the slab shall be subject to the approval of the Engineer. After the forms are removed, minor defects shall be filled with mortar. After the concrete has set, the edges shall be backfilled, compacted till firm and neatly graded.

Concrete driveways shall be protected for a period of five (5) days from any loads and at no time will heavy construction equipment be allowed on concrete driveways.

- (b) Drive Aprons. Residential drive aprons are to be a minimum of 6 inches in depth. Commercial drive aprons are to be a minimum of 8 inches in depth.

**Measurement**. The amount of driveway pavement to be paid for shall be the actual number of square yards for concrete driveways.

**Payment**. The amount of driveway pavement, measured as described above, shall be paid for at the contract unit price per square yard for 6" concrete driveway pavement or 8" concrete driveway pavement.

Where crushed stone or gravel is used as a base for surface courses on driveways, the cost of such base material shall be included in the cost of new work items.

These unit prices and payment shall constitute full compensation for necessary excavation and backfill, the removal and disposal of all surplus excavation, furnishing, preparing and placing of all materials, including expansion joints, reinforcing steel, subgrade or base materials, and for all labor, equipment, tools and incidentals necessary to complete this item.