PROJECT SPECIFICATIONS

SPECIFICATIONS - PAVING CONSTRUCTION

The current specifications from the Ohio Department of Transportation (ODOT) are to be used as specifications on all paving projects of the City of Massillon by reference. The items in the proposal will be listed with State Item numbers. By reference to these all the work, kind, and quality of materials and types of equipment specified in detail under each Item Number shall be required just as fully as it the entire text of the ODOT specifications were used herein.

Where alternate methods, classes, or materials are permitted the particular alternate intended to be used will be shown on the plans or in the proposal. If there are matters not properly covered by the General Specifications or which are peculiar to the specific project and in conflict with the General Specifications, these will be covered by special provisions shown on the Plans or in the proposal; and such special provisions will take precedence over anything to the contrary.

A copy of the current ODOT specifications may be consulted by the prospective Bidders at anytime in the Engineer's office. Also the inspector on every paving project will have a copy which will be available to the Contractor for reference.

Where the manhole or catch basin adjustments are called for, the Contractor may adjust with the method as set forth in the plans and specifications only. In the case where adjustments must be made, they will be made **prior** to laying the asphalt.

All edges of the paving process will be sharp clean and sealed by the Contractor in accordance with ODOT specifications to the Engineer's satisfaction.

Upon request of the Engineer the Contractor will supply testing results, at the expense of the Contractor for the asphalt placed on the job. This test will be used to ensure the proper mix and consistency of the asphalt.

The ODOT specification for Asphalt Price Adjustment (Item 401.20) shall not be relevant to any project in the City of Massillon. The City shall not pay an increase nor accept a decrease for asphalt binder price adjustment.

The City reserves the right to retain any or all pavement grindings removed by the Contractor. The Contractor shall notify the City of Massillon Operations Superintendent at (330) 833-5746 with a minimum of 24 -hours advanced notice before milling the roadway, for a site where the grindings may be used, dumped or placed.

Section 1-Description

This item shall consist of surface (448), base (301) and /or intermediate leveling (448) course composed of mineral aggregate and bituminous material mixed in a central mixing plant.

Section-2 Aggregate

Aggregates shall consist of crushed gravel, or crushed stone and sand or other inert finely divided mineral aggregate.

A) *Coarse Aggregate* - Shall conform to the Ohio Department of Transportation Construction and Material Specifications book (latest version), section 703.05, except as follows. All asphalt mixes, designated by ODOT as 301, 448, shall conform to the following revised specifications. The percentage of wear, Los Angeles test maximum shall be 35% (stone or gravel). For #8 material the percent by weight of mechanically crushed pieces, minimum 65%. For #57 or #6 material, the percent by weight of fractured pieces, minimum 65%. The loss, sodium sulfate soundness test:

a) 13.0 percent for all surface courses and any asphalt concrete course directly below an open graded friction course.
b) 13.0 percent for No. 8 aggregate fractions used in intermediate courses that will be exposed to traffic over the winter months.
c) 15.0 percent for all other coarse aggregate used in intermediate courses that will be exposed to traffic over the winter months.

B) *Fine Aggregate* - Shall conform to the Ohio Department of Transportation Construction and Material Specifications book (latest version), section 703.05, except as follows. All asphalt mixes, designated by ODOT as 301, 402, 404, shall conform to following revised specification. The maximum loss for the sodium sulfate soundness test shall not exceed 13%.

C) Sampling. ASTM D75 shall be used when sampling coarse and fine aggregate.

Section 3-Bituminous Material

Bituminous material shall be P.G. 64-22. The requirements of ODOT 702.01 shall be replaced with AASHTO provisional standard. MPI-93 or any superseding AASHTO specification for P.G. binders.

Section 4-Preliminary Material Acceptance

Prior to commencing construction, the contractor shall submit certified test reports to the City of Massillon (the City) for the following materials:

A. Coarse Aggregate.
   1. Gradation
   2. Percent of wear
   3. Soundness
   4. Fracture count
   5. Dry bulk gravity and absorption

B. Fine Aggregate.
   1. Gradation
   2. Soundness
   3. Dry bulk gravity and absorption

The City also may require samples of each aggregate be submitted along with the above test report data. One 50lb bag for each material, to verify aggregate compliance.

Section 5-Composition of Mixture

The bituminous plant mix shall be composed of a mixture of well-graded aggregate and bituminous material.

Section 6-Job Mix Formula

No bituminous mixture for payment shall be produced until a job mix formula has been approved by the City. The bituminous mixture shall be designed using procedures contained in Chapter V, MARSHALL METHOD OF MIX DESIGN, of the Asphalt Institutes Manual Series No. 2 (MS-2 Sixth Edition), Mix Design Methods of Asphalt Concrete, and shall meet the requirements of Tables 1 and 2.

The job mix formula shall be submitted in writing by the contractor to the City at least 15 days prior to the start of paving operations and shall include as a minimum:

A. Percent passing each sieve size.
B. Percent of asphalt cement.
C. Number of blows of hammer compaction per side of molded specimen.
D. Compaction temperature.
E. Plot of the combined gradation of the FHWA 45 power gradation curve.
F. Graphical plots of stability, flow, air voids, voids in mineral aggregate, and unit weight verses asphalt content.

Table 1

TEST PROPERTY	VALUE
Number of Blows *	50
Stability, pounds minimum	1500
Flow, 0.01 in.	8-16
Mean Air Void Target (percent)	3.5

Table 1 - *This value indicates Medium Traffic values.

Table 2

MIX TYPE	MINIMUM VOIDS IN MINERAL AGGREGATE
301	13
448 Inter	13
448 Surface	16

The gradation of the mixture will be designated in the Ohio Department of Transportation Construction and Material Specifications book (latest version), under 301, 446, 448. Minimum Asphalt percent, (percent of total mix) for 301 shall be 4.7%, for 448 intermediate shall be 5.0%, for 448 surface shall be 6.0%.

The contractor shall submit samples, upon written request of the City, at the contractor's expense, for job mix formula verification testing. The City may require three compacted specimens, and an un-compacted specimen at the proposed optimum AC content as determined by the JMF. At least 2000 grams of un-compacted mix is required. The job mix formula for each mixture shall be in effect until modified in writing by the City. Should a change in sources of materials be made, a new job mix formula must be approved by the City, before the new material is used.

Section 7-Recycled Asphalt Concrete

Reclaimed asphalt pavement (RAP) will not be permitted to be used in any surface courses. RAP may be used with the following guidelines. The stockpile of RAP to be used in the production of the mixture must be sampled and staked prior to use. The City will obtain a sample of the RAP for approval before the pile can be used. No other RAP may be used until it has been tested and staked, and approved by the City. The contractor shall submit a report indicating the gradation of the RAP, the A/C content, and the Absorption Viscosity, along with the proposed mix design data. Reclaimed asphalt pavement (RAP) will not be permitted to be used in any surface courses. On intermediate mixes and base mixes, the amount of RAP is limited to no more than 10%.

Section 8-Field Testing

Job mix control testing shall be performed by the contractor for each day of production. The testing laboratory shall conform to the Ohio Department of Transportation Supplemental Specification 1041. A level II lab is required. At the minimum, two random samples will be taken from trucks at the plant per day. All the required tests shall be performed with material from each sample. A set of laboratory compacted specimens will be prepared using the number of blows as required by Table 1. Each set of lab specimens will consist of three specimens compacted at between 270 and 280 degrees F. The sample specimens shall be tested for the bulk specific gravity of each test specimens and for stability and flow. A theoretical maximum specific gravity test will be performed. The Gradation and Bitumen content shall be tested using and ODOT approved Ignition Oven, following ODOT's Ignition Oven Calibration and testing method.

A sample of each aggregate being used in the production of the mix, may be taken each day from the cold feed bins at the plant and turned over to the City for verification testing. A minimum sample of 4000 grams is required.

A report of all daily test results shall be delivered to the City within 24 hours, following a production day.

Section 9-Asphalt Plant Requirements

The plant shall be an Ohio Department of Transportation approved plant. Thus for each ticket delivered from a batch plant, the requirements of 750.03 shall be printed. For a drum mix plant, the requirements in 750.03 shall be printed and turned in to the City with the above Field testing report.

The mix arriving at the job site shall be at a minimum 290 degrees F, and a maximum of 325 degrees F. Any loads deviating from this temperature range will not be accepted and sent back to the contractor for disposal.

Section 10-Basis of Payment

The City may instruct the contractor to take random samples at the plant, and the job site, and have an independent laboratory analyze the mixture for gradation and asphalt content using the Ignition method per ODOT. The contractor shall be responsible for the sample type, and delivering the samples to the City. The City will require at least two samples from the job site, and one from the plant, each day. The samples from the job site shall be at least 2000 grams, and the sample from the plant shall be at least 3000 grams. The results will be averaged per day and the basis of payment will be determined by:

ITEM 301 and 448 intermediate....

Sieve	Deviation from the JMF
1 inch	+-10%
#4 Sieve	+- 8%
#8 Sieve	+- 6%
A/C	NO LESS THAN OPTIMUM

ITEM 448 surface....

Sieve	Deviation from the JMF
1 inch	0%
#4 Sieve	+- 8%
#8 Sieve	+- 6%
A/C	NO LESS THAN OPTIMUM

Payment for the daily production not meeting the mix design specification requirement listed above may be penalized ten percent (10%), of that day's production, based on the unit price bid for material in place. The results of the independent laboratory are final.

The City may halt production at any time if from testing the mixture or the aggregate, the test results do not conform to the mix design or the aggregate requirements. The contractor will have to redesign the mix or address the aggregate deficiencies.

Section 11 - ITEM 614 MAINTAINING TRAFFIC

The Contractor shall maintain traffic at all times on the project in accordance with Item 614 as described below.

In addition to the general requirements of Item 614, all traffic control devices necessary to maintain and protect traffic and the work zone shall be furnished, erected, maintained, and removed by the Contractor in conformance with the current revision of the Ohio Manual of Uniform Traffic Control Devices.

The Contractor shall keep himself/herself fully informed of and shall carefully observe and comply with all Federal and State laws and City of Massillon ordinances, permits, and regulations which in any manner affect the conduct of the work, and shall indemnify and save harmless the City and all of its officers, agents, and servants against any claim or liability arising from or based upon the violation of such law, ordinance, permit, requirement, or regulation, whether by himself/herself or his/her employees.

The Contractor shall provide lights, barricades, and watchmen necessary to protect the public or the work and maintain traffic when called for in the proposal, along the project, and also along the detour at the intersecting side streets. The City, at the Contractors written request will supply paper "NO PARKING" signs for which the Contractor will be responsible for posting in plain sight. Signs must be posted no later than 24 hours in advance on each street where work will be performed and City Police Department Traffic officer (330)830-1750 be notified by the Contractor that signs are in place. Signs must be removed and replaced after each phase of performed work. Contractor is responsible for reusing signs. Contractor will notify the City Police Department Traffic officer for removal of vehicles in violation of the "NO PARKING" signs.

All signs required to be installed by the Contractor shall be erected on their own posts. The contractor shall not use any existing signpost to mount a traffic control sign.
The Contractor shall take notice of the requirement of 614.03. Devices using other than Type "G" or Type "H" sheeting are not acceptable.

The Contractor shall maintain the required traffic control devices for a maximum of ten (10) days following the completion of the paving of the wearing surface. The Contractor shall complete the Type 2 pavement markings during this period. The Contractor shall not remove any traffic control devices prior to the completion of this work.

The Contractor shall install temporary yellow centerline markings and temporary white lane line markings where needed to all pavement courses exposed to traffic at the end of each day's operation. Temporary yellow centerlines and temporary white lane lines shall consist of 48" x 4" segments spaced at a maximum forty feet center to center. The markings are to be accurately located in a true line for centerline markings and lane lines.

Temporary pavement markings may be either 642 paint or 740.06 Type I or Type II preformed material, except that no preformed material containing metal shall be placed on any surface.

Payment for all labor, equipment, and materials shall be included in the lump sum contract price for 614, maintaining traffic, unless separately itemized.

Section 12 - ITEM 642 TRAFFIC PAINT, TYPE 2/ 644 THERMOPLASTIC

The equivalent solid line quantities are provided for the convenience of the Contractor to estimate the approximate quantity of pavement marking materials needed. These equivalent solid line quantities are not to be utilized for pay quantities or as a basis of payment for delivered materials.

The following quantities for equivalent solid line have been calculated by the Engineer:

4" 2-Direction, No-Passing Marking Yellow	**MI.**
4" 1-Direction, No-Passing Marking Yellow	**MI.**
4" White Dashed Lane Line	**MI.**
4" White Parallel Parking	**EA.**
6" White Channel Line	**L.F.**
12" White Stop Line	**L.F.**
6" Transverse line	**L.F.**
White Left Turn Arrow	**EA.**
8" Solid White Crosswalk 6' Apart	**L.F.**
Temporary Striping	**MI.**

These quantities have been tabulated and carried to the Bid Sheet.

The contractor's attention is directed to CMS Section 642.04 to increase the first application of paint to new asphalt pavement surfaces by twenty-five (25%) percent over the specified rate.

SPECIFICATIONS - SANITARY & STORM MANHOLES & CATCH BASINS

Section 1 - Materials

All materials shall be of the size and type specified on the plans and/or proposals (as noted on the latest State of Ohio Department of Transportation (ODOT) construction and materials specifications). Concrete for foundation slabs for manholes and catch basins shall be ODOT Type Class C concrete, 4000# psi @ 28 days, 6 bags minimum to cubic yard and 4" maximum slump Ohio Department of Highways #46 coarse aggregate. Manhole frames and covers, catch basin grates, and wrought iron steps shall be City standard and are furnished by the Contractor.

Section 2 - Construction Methods; General

Manholes and catch basins shall be built according to plans, specifications, and special provisions to line and grade. Adjustment of manholes and catch basins to grade according to the plans shall include all the necessary materials and labor. All connections for lateral sewers, including drops (as noted in sewer specs under Section 10) shall be included under this item. All Manhole and catch basin structures shall be precast concrete structures on 6" of granular bedding. No brick and mortar construction shall be permitted for structures. The invert channel through the manhole shall be either a half pipe or formed in concrete to the cross section of half pipe. Space between the wall and the invert shall be filled with Class C concrete and shall slope to invert. Adequate precautions shall be taken to prevent concrete and mortar from freezing. Manhole castings, catch basin castings, and wrought iron steps shall be City standard as shown on plans. Care must be taken by the Contractor to keep dirt and debris from getting into the sewer lines while structures are being built.

Section 3 - Excavation and Backfill

All the applicable methods, materials, and provisions for excavation and backfill for main line sewers shall apply for manholes and catch basins.

Section 4 - Massillon Manhole Rehabilitation – below the spring line

All materials shall be as specified. Brick shall be laid radially into an 8" wall with a full bed of mortar so that all joint space is filled. Mortar shall be composed of two parts of clean sharp sand to one part of standard Portland Cement to which may be added lime to the extent of 10% of the cement by weight. After five courses laid as headers, the sixth course shall be laid as a stretcher course. Whole brick only shall be used except to affect closures or to chink exterior radical joints. Interior joints must not be more than a quarter of an inch (1/4") wide. Interior and exterior joints shall be pointed on storm manholes and sanitary manholes. Both inside and outside walls shall be plastered with a half inch (½") of mortar with a smooth trowel finish. Special care shall be taken to see that the manhole wall is bonded to the barrel of the sewer. The outside surface of the manhole shall be cured with wet burlap for 48 hours. The upper part of the manhole shall be drawn in uniformly with a precast concrete structure as specified in the plans and specifications.

Section 5 - Precast Concrete Ring Manholes

The concrete in this type of manhole shall conform to the applicable provisions of ODOT #706.13. Joints shall be "O" ring, water tight. Openings for inlet and outlet pipes shall be cast in the rings. Openings 18" or smaller entering the manhole above the outlet may be cut in the field. Openings over 18" entering the manhole above the outlet shall be connected by a tee connection precast with the barrel. Additional details not covered here will be shown on the plans.

Section 6 - Catch Basins and Inlets

Catch basins and inlets shall be constructed in accordance with the design and dimensions and to line and grade as shown on the plans. All materials are to conform to as stated. No Brick shall be laid. The catch basin grade shall be set in accordance to the Massillon Casting Set specification as shown on the plans.

Section 7 - Adjusting Manholes and Catch Basins to Grade

This item shall include excavation, backfill, masonry, concrete, resetting of castings and/or steps, resetting of up to two courses of brick, and any other labor and material incidental to the proper adjustment to the new grade as specified with the City of Massillon specifications. Solid Cast iron ring risers may be considered only with written permission by the Engineer. If a solid cast iron riser ring is used to adjust a manhole to a new grade then a new manhole lid conforming to the casting size shall be supplied by the Contractor. Also see Sanitary/Storm Manhole Rehabilitation and Massillon Catch Basin Rehabilitation.

Section 8 - Manholes

Manholes shall be bid per each unless otherwise stated. This unit price is full compensation for all labor and materials incidental to the construction of the completed manhole in accordance with the plans including excavation, backfill, construction of masonry, and furnishing and placing of the casting, unless otherwise noted. Payment for manholes shall be per vertical foot measured from the invert to the top of the casting for all manholes without sumps; those with

sumps shall be measured from top of floor of sump to top of casting. Drop manholes shall be paid the same method used in measuring standard manholes. Payment for manholes shall be full compensation for all the labor and materials incidental to the completed manhole with the same exceptions covered by separate pay items as noted in main line sewer. This item shall include all excavation, backfill, masonry, concrete, placing of all connections, furnishing and setting of castings and conforming of City standards as shown on the plans, protecting against cave-ins, and dewatering, and any other labor incidental to completion of the manhole according to the plans.

Section 9 - Catch Basins

The price bid per catch basins is a unit price for each catch basin and is full compensation for all labor and materials incidental to the construction of the completed catch basin in accordance with the plans including excavation, backfill, masonry, concrete, furnishing and placing of the casting, and restoration of the gutter and street surface in accordance with Massillon Catch Basin Rehabilitation.

Section 10 - Drop Attachments

Drop attachments shall be built of the same type of material as the pipe it is to receive encased in concrete as shown on the plans. The size of all drops shall be as shown. The tee at the upper end of the drop pipe shall have the same diameter as the incoming sewer unless shown otherwise. The tee, drop pipe, 90^0 elbow, and encasing concrete are considered the drop attachment, and payment shall be included to the unit price bid for manholes. A channel for the drop inlet pipe shall be formed to a depth below the top of the bench equal to one-half the inlet pipe diameter, and a width equal to the inlet pipe diameter. Bench height to be determined as Engineer deems. The drop is to be on the outside of the manhole only. Any inside drop must be approved in writing by the Engineer.

Section 11 –Massillon Catch Basin Rehabilitation

This work will consist of removing the existing casting and grate, reconstructing per the Engineer, Plans and Specifications, and placing at the proper grade a new casting and grate conforming to Section 14. The rehabilitation work will consist of tearing the existing brick structure down to a stable/suitable level and rebuilt per these specifications, including precast concrete grade rings. If the structure is of a precast material all cracks and joints shall be cleaned and plastered with proper material as to adhere, increase the structural stability, and seal the existing structure from any water infiltration. The existing precast structure may need to be modified/cut to place the new casting and grate to the proper grade, including concrete box out, to be included in the unit price cost. The price bid per catch basin is a unit price for each catch basin and is full compensation for all labor and materials incidental to the construction of the completed catch basin in accordance with the plans and specifications including excavation, bituminous or aggregate backfill, masonry, concrete, concrete box out, furnishing and placing of the casting to the proper grade, and restoration of the gutter and street surface. All existing castings and grates are to be carefully removed and stored by the Contractor for salvage by the City of Massillon. All work shall be completed before final paving.

Section 12 – Sanitary/Drainage Sewer Manhole Rehabilitation

This work will consist of removing the existing casting and lid, reconstructing per the Engineer, Plans and Specifications, and placing at the proper grade a new casting and lid conforming to Section 14. The rehabilitation work will consist of tearing the existing brick structure down to a stable/suitable level and rebuilt per these specifications, including precast concrete grade rings. If the structure is of a precast material all cracks and joints shall be cleaned and plastered with proper material as to adhere, increase the structural stability, and seal the existing structure from any water infiltration. The existing precast structure may need to be modified/cut to place the new casting and lid to the proper grade, including concrete box out, to be included in the unit price cost. The price bid per manhole is a unit price for each manhole and is full compensation for all labor and materials incidental to the construction of the completed manhole in accordance with the plans and specifications including excavation, bituminous or aggregate backfill, masonry, concrete, concrete box out, furnishing and placing of the casting to the proper grade, and restoration of the street surface. All existing castings and lids are to be carefully removed and stored by the Contractor for salvage by the City of Massillon. All work shall be completed before final paving.

Section 13 – Utility Manhole Adjust to Grade

This item will consist of coordinating with the Utility Company, the removing the existing casting, reconstructing per the specific utility, and placing at the proper grade the existing or new casting as supplied by the Utility and/or their Contractor. This item is for coordinating the work between the Contractor, Utility Contractor and the Utility Company only as these manholes are not maintained or owned by the City. This work shall be completed before any asphalt surface course pavement is placed.

Section 14 - Castings

Sanitary sewer castings shall have gasket seal lids. The new castings will be of the following or other approved equal castings by the Engineer in writing, or designated by the plans:

		East Jordon	
Sanitary Manhole Casting		MASS1048- High	MASS1046-Short
Drainage Manhole Casting		MASS1048- High	MASS1046-Short
Manhole Cover-Massillon Logo Sanitary		MASS 1040AGS-solid	
Manhole Cover- Massillon Logo Storm		MASS 1040A-solid	
Catch basin Type	"B" Single	V-5630	
Catch basin Type	"A" Single	7030	
Catch basin Type	"A" Double	7031	
Catch basin Type	"A" Triple	7032	
Catch basin Type	"A" Grate	M2	
Catch basin Type	"A" Back	T4	

SPECIFICATIONS – SIDEWALK, CURB, COMBINED CURB & GUTTER CONSTRUCTION

Section 1 – Grading

The quantity of the grading item includes all the excavating incidentals to the construction of the job in accordance with the plans/specifications except the excavating for the sidewalk, curb or combined curb and gutter to the extra width needed for the forms and to the extra depth for the subbase. This excavating for sidewalk, curb or combined curb and gutter is part of the work to be done under the price bid per lineal foot or square foot as delineated. The bid price for this item shall include clearing and grubbing of brush and removal of trees and stumps under 12". Trees over 12" are covered in Section 11. Suitable topsoil, if any, shall be salvaged to be used as a backfill behind the curb, and walk.

Section 2 - Excavation

The excavation for the sidewalk, curb or combined curb and gutter including subbase is part of the work to be done under the price bid per lineal foot of curb or combined curb and gutter and square foot of sidewalk. As noted in Section 1 suitable topsoil, if any, shall be used for backfill behind the curb and walk. Where in the opinion of the Engineer the subgrade is unsuitable for foundation, it shall be removed as directed by the Engineer and replaced with suitable material as required in Section 3 for subbase.

Section 3 – Subbase

Four inches of subbase shall be placed on the subgrade which has been excavated 4" below the bottom of the sidewalk, curb or combined curb and gutter. This subbase shall be composed of ODOT Item 304. The sub base shall be compacted by wetting and rolling or tamping. Where existing soil is of suitable granular quality in the opinion of the Engineer it may be used for subbase. Payment for subbase is to be included in the price bid per lineal foot of curb or combined curb and gutter or square foot for sidewalk.

Section 4 – Concrete

Concrete shall be ODOT Type Class C concrete mix with air entrained Portland Cement, clean sharp sand, and Ohio Department of Highways #46 course aggregate to give a maximum compressive strength of 4000# psi @ 28 days, 4" maximum slump and with a maximum of 6 bags of cement to the cubic yard.

Section 5 - Forms and Templates

Forms shall be of heavy enough gauge steel to resist deformation and displacement. They shall be of the full depth of the curb or combined curb and gutter. They shall be firmly supported so that they will remain true to line and grade during the placing and finishing of the concrete. Flexible steel or plywood strips may be used for curves or radii. Templates for dividing the curb into sections shall be of 3/16" steel plate for the full depth of the curb or combined curb and gutter. Forms and templates must be thoroughly cleaned and oiled after each time used.

Section 6 - Joints

The curb shall be cut by templates into uniform blocks of 10' except when closures make it necessary to slightly increase or decrease this length. Templates shall be set at right angles to line and normal to grade. These joints may also be saw cut as described above within 24 hours after the curb is poured. The sidewalk shall be cut into uniform blocks of 5'.

Section 7 - Downspouts

The Contractor shall provide circular-openings through the curb wherever needed for the 3" downspout drain. The Contractor shall determine with the Engineer placement of downspout drains.

Section 8 - Placing and Finishing Concrete, Protecting, Curing

The concrete for the sidewalk, curb or combined curb and gutter shall comply with Section 4. No concrete shall be placed which has had its initial set. Concrete shall not be placed during freezing weather, and if frost is apt to occur the Contractor must protect the concrete against damage. As the concrete is being placed in the-forms it shall be tamped or spaded to close up the voids and bring the mortar to the face of the forms and make a dense impervious surface. As soon as the concrete has sufficiently set to avoid damage the templates and forms shall be removed and the joints cut clean. The top of the curb, the face of the curb 12" down and the back of the curb 6" down shall immediately be worked with a wood or magnesium float to a smooth finished surface true to profile and cross section. If the construction is combined curb and gutter then the apron will be worked and finished in the same manner as described above. The top front edge of the curb shall be finished with a 1-1/4" radius, the back of the curb, and also the front of the apron with a 1/4" radius. Where the curb meets the apron a cove of 2" radius shall be formed. The Contractor shall so arrange his work that the pouring of the concrete, removal of the forms, and the finishing of the curb will be completed on the same day. The Contractor shall provide sufficient forms so that the rotation of trenching, setting forms, pouring of concrete, removal of the forms, and finishing can be carried on without delay. In rainy

weather the concrete must be protected as soon as it is finished. Concrete must be cured by keeping it moist for three days or by the waterproof membrane method or any other method approved by the Engineer.

Section 9 - Finish Grading and Cleanup

As soon as the forms have been removed and the concrete finished, the space behind the curb or walk shall be backfilled with bank run gravel and tamped to within 4" of finished grade. The remaining 4" shall be filled with topsoil salvaged from the grading operation (Section 1) or excavation (Section 2) after it has been raked free of stones over 3/4" in size, lumps of subsoil, roots, grass, and other debris. This topsoil shall then be lightly rolled and smoothed off and finished neatly to cross section and seeded with grass comparable to original. The entire construction area shall be cleaned up, and all excess excavation and construction waste shall be disposed of off the project. If insufficient topsoil is salvaged from grading and excavation, then topsoil meeting the approval of the Engineer shall be furnished by the Contractor, to be included in the cost for construction. (See Section 14 - Topsoil).

Section 10 - Grading

This item shall include the excavation incidentals to the construction of the project in accordance with the plans/specifications except that for the sidewalk, curb or combined curb and gutter together with subbase which is a part of the work to be done under the price bid per lineal foot of curb or combined curb and gutter or square foot for walk.

Section 11 - Trees 12" and Over

This item shall include only trees 12" and over in diameter, either as a lump sum or per each as shown on the proposal. All trees below this size, along with clearing and grubbing of brush, are included in the price bid per cubic yard for grading (Section 1).

Section 12 - Replacing Unsatisfactory Subgrade

This item includes the removal of unsatisfactory material and replacing with bank run gravel, tamped, as specified for subbase. (Section 3)

Section 13 - Curb or Combined Curb and Gutter

The price bid per lineal foot of curb or combined curb and gutter or square foot for walk, shall be full compensation for all labor and materials incidental to the construction of completed concrete in accordance with the plans, specifications, and special provisions, including the excavation plus the extra depth for the subbase, furnishing and placing the-subbase, setting the forms, furnishing, placing, finishing, protection and curing of the concrete, furnishing and placing of roof drain extensions, backfilling along the sidewalk, curb or combined curb and gutter with gravel and topsoil, and cleanup and disposal of all excess excavation and construction debris leaving the project in a neat and orderly condition.

Section 14 - Topsoil

This item shall consist of furnishing topsoil meeting the approval of the Engineer and placing and seeding the same as specified in Section 9.

Section 15 – ADA Curb Ramp

This Item 608, CURB RAMP, EACH, shall include the cost of furnishing and installing all materials (including truncated domes), excavating, grading, forming and finishing of the curb (6 L.F.) and walk (30 S.F.) of the curb ramp and removal of any existing material. Additional walk and curb shall be included in their own specific pay items.

TRUNCATED DOMES: Install detectable warnings (truncated domes) for a distance of 24" from the back of curb for the entire width of the ramp opening.
An appropriate ODOT approved Truncated dome system may be acceptable with authorization from the City Engineer. Detectable warning products shall contrast visually with adjacent gutter, street or highway, or walkway surface, either light-on-dark or dark-on-light. Detectable warning products that are black in color are not allowed.

ACCEPTABLE PRODUCTS ARE AS FOLLOWS:
1.) Engineered Plastics/Polymer Composites
2.) Brick Pavers
3.) Cast Iron Products (authorization from the City Engineer)

Pavers will meet ASTM C 902 Class SX, Type 1, or C 936, or C 1272 Type R.
Pavers will be laid on top of a 4" unreinforced concrete base. Setting bed and joints to be mortared in accordance with manufacturer's instruction, or with a maximum 1/2" thick bed of latex modified cement mortar. Mortar joints to a width not greater than 5/32" and not less that 1/16". Pavers shall not be directly touching each other unless they have spacing bars. Mortared joints are to be flush with top surface and struck so as to give a smooth surface. Pavers shall be laid such that joints are level with adjoining joints so as to provide a smooth transition from brick to brick and brick to concrete surface. The surface of any two adjacent units should not differ by more than 1/8" in height. Bricks shall be placed in a running bond pattern. Face of all brick shall be clean of cement and protected so as to avoid chipping during construction.

RELIEF JOINTS: must be provided at all points of continuous slope changes in Curb Type A and Type C.

EXPANSION JOINTS: shall be provided in the curb ramp as extensions of walk joints and consistent with item 608.03 requirements for a new concrete walk.
A 1/2" Item 705.03 expansion joint filler shall be provided around the edge of ramps built in existing concrete walk. Lines shown on this drawing indicate the ramp edge and slope changes and are not necessarily joint lines.

SURFACE TEXTURE: Texture of concrete surfaces shall be obtained by coarse brooming transverse to the ramp slopes and shall be rougher than the adjacent walk

SUBMITTAL: Contractor shall submit detectable warning system being used, for approval prior to installation.

End Section