

Subdivision Construction

City of Steubenville - Public Works

I. GENERAL

1. Reference Specifications

State of Ohio Department of Transportation, hereinafter referred to as "ODOT", Construction and Material Specifications, Standard Construction Drawings and Supplemental Specifications, latest editions, with the modifications as set forth here or on the drawings.

City of Steubenville Development Design Standards and Drawings

City of Steubenville Specification for Fibrous Concrete

City of Steubenville General Specification for Asphalt Plant Mix Pavements Using Contractor Mix Design

2. Inspection/Quality Assurance

The work as performed will at all times be subject to the inspection and approval of the City of Steubenville, through its appointed representative.

The contractor will be responsible for notifying the City of Steubenville City Engineer, at least, 48 hours in advance of any construction.

The developer will provide an independent test lab technician on-site during at least the following operations:

- Earthwork including embankment and subbase construction
- Portland Cement Concrete placement
- Asphalt Concrete placement
- Sewer/Water Line trench backfill under pavement
- Any other operation determined by the City Engineer & Developer

The developer will pay for all independent test lab inspection and testing costs.

Certification of all materials for public improvements shall be furnished to the Steubenville City Engineer prior to the start of work.

Project horizontal and vertical location staking will be provided by the developer. The contractor will be responsible for the cost of any restaking required due to his negligence.

A. Submittals

Five (5) copies of material catalog cuts, shop drawings, details, etc. shall be submitted to the City Engineer for approval sufficiently in advance of requirements to afford ample time for checking, including time for correcting, resubmitting and rechecking if necessary. The contractor may proceed only at his risk, with manufacture or installation of any materials, equipment or work covered by said shop drawings, etc. until they are approved.

3. Permits

The contractor will be responsible for obtaining all necessary permits and licenses required for this work.

4. Existing Utilities

It shall be the responsibility of the contractor to maintain flow in all sewers, waterlines, drain pipes, and water courses encountered during construction at his own expense. Any drains destroyed or disturbed during construction shall be restored to the satisfaction of the engineer at the contractor's expense.

The locations of the underground utilities shown on the plans have been obtained by diligent field checks and searches of available records. It is believed that they are essentially correct, but the developer does not guarantee their accuracy or completeness. It shall be the contractor's responsibility to determine the exact location and elevation of said utilities prior to construction and agrees to be fully responsible for any and all damages which might be occasioned by the contractor's failure to exactly locate and preserve any and all underground utilities.

It is also the responsibility of the contractor to negotiate such utility relocation as may be necessary with the utility company(ies). All negotiations and work shall be performed at no extra cost to the developer and must have the City of Steubenville Engineer's approval where the utility is in City right of way.

Notification shall be given to the following utility companies at least two working days prior to any construction:

Ohio Utilities Protection Service	(800) 362-2764
American Electric Power	(800) 672-2231

5. Proposed Utilities

Locations of all manholes, waterline bends and fittings are approximate. Manholes, water line bends and fittings shown in both the plan and profile provide a suggested method of accomplishing the intended horizontal and vertical alignment. However, the contractor has the option of using alternate branches to satisfy the alignment shown on the plans. Any changes shall be recorded and placed on a set of "as-built" plans which shall be delivered to the City Engineer prior to acceptance.

Changes in water line grade and alignment obtained by deflections at pipe joints shall be no greater than recommended by the manufacturer of the pipe. Distances shown from existing topographic features to the utility line centerline take precedence over all other horizontal control characteristics.

The minimum horizontal separation between water lines and sewer lines shall be 10 feet. The minimum vertical separation between water lines and sewer lines shall be 18 inches with the water line above the sewer. Pipes shall be laid so that joints are equidistant from either side of the crossing.

It shall be the contractor's responsibility to maintain 48 inch minimum cover above the crown of all water mains and service connections unless otherwise noted on the plans.

No service connection will be provided water if they have an auxiliary water system.

No private booster pumps will be permitted.

6. Elevation Datum

All elevations shown in this plan are based on U.S.G.S. data.

7. Maintenance of Traffic

It shall be the responsibility of the contractor to maintain safe and satisfactory local access, vehicular and pedestrian, to all abutting properties within the project. Maintaining traffic shall be in accordance with ODOT Item 614 and the Ohio Manual of Uniform Traffic Control Devices. In order to maintain local and driveway access, the contractor shall furnish and install traffic compacted surface, Type A or B in accordance with ODOT Item 410 including necessary water and calcium chloride in accordance with ODOT Item 616 and provide dust control as directed by the engineer.

8. Site Preparation

The contractor shall provide all labor, materials, and equipment required to accomplish in good workmanlike manner the clearing and grubbing required to complete this project. Clearing and grubbing shall consist of the removal and disposal, outside the limits of the subdivision, of all trees, shrubs, plants, and other objects. The developer's engineer shall exercise control over clearing and grubbing and shall designate all trees, shrubs, plants, and other objects to be removed.

The contractor shall exercise diligent care to protect trees, shrubs, and plants not designated for removal. The contractor shall replace, to the satisfaction of the developer's engineer and at no cost to the developer, any trees, shrubs, plants and other objects removed, destroyed, disfigured, or damaged due to the contractor's negligence.

9. Protection of Fresh Concrete

It shall be the responsibility of the contractor to provide sufficient security measures and/or personnel to protect all new concrete work from vandalism until such time as the concrete has set. Any vandalized concrete shall be replaced.

II. ROADWAY

All roadway work shall be in accordance with ODOT requirements and as specified herein.

It shall be the responsibility of the contractor to notify the City Engineer's Office forty-eight (48) hours in advance of beginning work which requires compaction testing, pre-placement inspection prior to installation base or pavement and placement of pavement. Work will not begin until testing and/or

inspection has been completed and approved by the City Engineer.

A minimum of two (2) proof rollings will be required as directed by the City Engineer before paving. The first proof rolling shall be performed after the installation of all underground improvements and rough grading has been completed. After fine grading, just prior to paving, the subgrade shall be proof rolled again. A proof rolling shall consist of traveling the entire area of the prepared subgrade. The maximum spacing between passes shall not exceed six (6) feet.

The minimum equipment shall consist of a single unit, tandem axle dump truck capable of being loaded to 30,000 pound axle load, 60,000 pound GVW. Tire pressure shall be maintained at 90 psi or as specified under ODOT 203.14.

Any area permitting tires to leave a groove of one (1) inch or more shall be unacceptable for paving.

Any area permitting the test vehicle tires to leave a groove of zero (0) to one-half (½) inch deep shall be acceptable.

Any area permitting the test vehicle tires to leave a groove of one-half (½) inch to one (1) inch deep shall be at the City Engineer's discretion.

Curb ramps shall be installed at all locations where walk meets curb so as to create a barrier free walk system.

Crack and joint sealer shall meet the requirements of ODOT 705.04 (ASTM D3405). A double boiler crack sealing kettle shall be used.

Asphalt Pavement Sections - Top Course Placement - The surface course of asphalt concrete shall be placed at least nine (9) months after placement of the leveling course. Prior to placing the top course, the City Engineer shall be contacted for an inspection of the pavement. Any deteriorated pavement including soft base and soft subbase shall be removed and replaced to the satisfaction of the City Engineer prior to placement of the top course of asphalt concrete.

III. SEWER LINES

All storm and sanitary sewer lines shall be installed in accordance with the requirements of ODOT 603 and 604 and as specified herein.

Bedding of sewer lines and trench backfill shall meet the requirements of ODOT 638 and the City of Steubenville detail drawings. Full bedding (6 inches minimum all sides) shall be required for all PVC or plastic based pipe.

Slag products will not be permitted for bedding or backfill material. AASHTO number 57 size stone or gravel shall be used for bedding.

1. Sewer Acceptance Testing

The mainline sanitary and storm sewers shall be visually inspected by means of televising and recording on VHS format videotape along with audio commentary at the developer's expense. The televising and videotape recording shall be performed before pavement or walk is in place.

Any defect in material or workmanship revealed by the visual aid inspection must be corrected by the contractor and to the full satisfaction of the City Engineer. A recheck of the line using the televising and videotape equipment shall be performed after the line is corrected. The contractor shall be responsible for the total cost of cleaning all sewers prior to visual inspection.

A. Mandrel Test

After backfill and compaction, all PVC or plastic based gravity sewer pipe must pass a deflection test prior to acceptance. This test must use a mandrel device of a size required to limit pipe deflection to 5%. the mandrel must have a line attached to both ends to facilitate removal if the device gets stuck, and the line shall be marked such that the location of the obstruction can be identified. The pipe shall be clean and free of debris that might cause the mandrel to jam, (a hydro washing is recommended). The mandrel must be hand pulled thru the pipe without snagging or binding to meet line acceptance requirements.

B. Air or Hydro-Static Test

After backfilling the sanitary sewer line, including the service sewers constructed to the property line, the contractor shall, at his expense, conduct a line acceptance test using low pressure air on vitrified clay and plastic based pipe and a hydrostatic test on reinforced concrete pipe.

Low Pressure Air Test

The test shall be performed according to the stated procedures and under the supervision of the City Engineer or his designated representative. Equipment used shall meet the following minimum requirements and be approved by the City of Steubenville:

- a. Pneumatic plugs shall have a sealing length of 8" or greater.
- b. Pneumatic plugs shall resist internal test pressures without requiring external bracing or blocking.
- c. All air used shall pass through a single control panel.
- d. Three individual hoses shall be used for the following connections: control panel to pneumatic plugs for inflation, control panel to sealed line for air supply, and from sealed line to control panel for continuous monitoring of air pressure in the sealed line. Testing shall be accomplished by seal testing the plugs before the test. This is to be accomplished by laying one length of pipe on the ground and sealed at both ends with the plugs to be tested. The sealed pipe will be pressurized to 5 psig and the plugs must hold against this

pressure without requiring external bracing or blocking. After the manhole to manhole reach has been installed and cleaned and the plugs are tested, the plugs shall be placed in the lines at the manholes. Low pressure air shall be slowly introduced into the line until the pressure in the pipe reached approximately 4 psig. At least two minutes shall be allowed for the pressure to stabilize. When the pressure has stabilized and is at or above 3.5 psig, the air hose between the control panel to the air supply should be disconnected. The portion of the line being tested shall be termed acceptable if the time required for the pressure to decrease from 3.5 to 2.5 psig (greater than the average back pressure of any ground water that may be over the pipe) shall not be less than the test time (test time determined by table below). If a line acceptability test is being conducted on more than one manhole reach of pipe, the entire section being tested shall meet the line acceptability requirements as if only one of the manhole reaches in the section were being tested.

Nominal Pipe Size, in.	Test Time (minutes/100 feet)
6	0.7
8	1.2
10	1.5
12	1.8
15	2.1
18	2.4
21	3.0
24	3.6
27	4.2
30	4.8

Hydro-Static Test

The hydro-static test shall be performed in accordance with ASTM C969 for reinforced concrete pipe.

3. Sewer Service Connections

The contractor shall install 6 inch sewer house connections for each lot as indicated on the drawings. The house connections will be installed per the specifications and according to the regulations of the City of Steubenville. In addition to the above, each sanitary house connection shall be extended as shown in the details, and shall end with an approved 6 inch premium pipe stopper and a 2 inch x 2 inch wood marker placed at least 24 inches above the finished grade elevation. Also, the contractor shall record all connection locations for all 6 inch sanitary house connections. Said locations to be located from the nearest downstream sanitary manhole and shall be placed on a set of "as-built" plans which shall be delivered to the City Engineer prior to acceptance.

4. Material Requirements

Sanitary Sewer	ODOT 707.42 Corrugated Smooth Interior PVC Pipe ConTech A-2000 PVC Pipe or approved equal ODOT Type B Conduit Requirements
Storm Sewer	ODOT 706.02 Reinforced Concrete Pipe ODOT 707.33 HDPE Pipe ODOT Type B Conduit under Pavement ODOT Type C Conduit not under Pavement
Manholes	ODOT 706.13 Precast Type with O-ring Joints per ASTM C443 Steps - ODOT 711.31 Reinforced Poly Lid & Ring: Neenah R-1772-B w/ concealed pick hole And self-sealing lid
Catch Basins/Inlets	CITY Type A Catch Basins/Inlets shall be constructed of precast or cast-in-place concrete. Sumps (24 inches deep) shall be provided

IV. WATER LINES & FORCE MAINS

All water lines and force mains shall be installed in accordance with the requirements of ODOT 638 and as specified herein.

Bedding of water lines and trench backfill shall meet the requirements of ODOT 638 and the City of Steubenville detail drawings.

Slag products will not be permitted for bedding or backfill material. AASHTO number 57 size stone or gravel shall be used for bedding.

It shall be the contractor's responsibility to maintain 48 inch minimum cover above the crown of all water lines, force mains and service connections unless otherwise noted on the plans.

Each valve or cluster of valves at intersections shall be field located by means of a valve marker. The targets shall be set at the roadway right-of-way line perpendicular to the edge of pavement in the direction of the valve. Posts shall be installed so that the markers face the near traveled lane of traffic.

Completed water line working pressure shall be in the 45-75 psi range, and shall not be less than 35 psi. No service connection will be provided in an area having less than 35 psi working pressure.

No private service connection booster pumps shall be permitted.

All lines shall be left free of dirt and foreign material. The contractor shall protect the lines against freezing until accepted or put into service.

1. Water Line Acceptance Testing

A. Hydrostatic Test

Hydrostatic leakage tests shall be applied to all water lines and force mains in accordance with the requirements of ODOT 638.09 (AWWA C600) and the following:

The leakage test pressure shall be 150% of the maximum operating pressure, but not less than one hundred (100) pounds per square inch at the highest elevation, but shall not exceed the maximum pressure rating of the pipe. The duration of the leakage test shall be two (2) hours.

B. Disinfection

After completion of the installation and testing of potable water lines, the pipe shall be flushed of the test water and disinfected in accordance with ODOT 638.10 (AWWA C-651). The contractor shall be responsible for disinfection, sampling and bacteriological testing of the waterlines. The disinfection and sampling will be supervised by a representative of the City of Steubenville. Following disinfection, the pipe shall be thoroughly flushed and refilled with potable water, and samples obtained and sent to an OhioEPA approved independent testing lab for bacteriological analysis. The water line shall not be placed into service until negative test results are obtained.

C. Water Service Connections

All service connections shall be 3/4" nominal size unless otherwise noted on the plans.

The locations shown on the plan are approximate and subject to adjustment to a location preferred by the property owner. It shall be the contractor's responsibility to obtain the preferred locations from the property owners prior to construction. Location of all service taps shall be recorded and furnished to the City Engineer on an "as-built" plan prior to acceptance.

All water service connections, shall terminate with a "curb stop" at the street right-of-way line, unless otherwise shown. Said curb stop shall be identified with a 2 inch x 2 inch wood marker placed at least 24 inches above the finished grade elevation.

All water service taps shall be installed prior to testing the main line.

2. Material Requirements

Water Line	ODOT 748.01 (AWWA C150/C151), Ductile Iron Class 55 under pavement, Class 52 elsewhere
Water Line Restraints	EBBA Iron "Mega-Lug" Romac Ind., Inc. "GripRing" Thrust blocks per Standard Drawings
Valves	ODOT 748.08, Gate Type, AWWA C509 (CCW - Open) with stainless steel bolts and nuts
Valve Box	Cast Iron
Fire Hydrant	ODOT 748.15, Clow F2500 (AWWA C502) Pentagon Operating & Cap Nuts 1.75 inches flat to point Pittsburgh Threads per Steubenville Drawings Two coats of high quality yellow paint
Service Line	ODOT 748.05, Type K Copper, Soft Curb Stop - flare fitting type Curb Box - cast iron buffalo type Corp Tap and Ell - Mueller 15000 and 15069 with flare fitting connection

All mechanical joint(pipe/fittings/valves) bolts and nuts shall be fitted with zinc anode caps.