

## SECTION 1 – INTRODUCTION

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### 1.1. PURPOSE

- 1.1.1. The purpose of this Manual is to provide procedural information and define material specifications for the construction of pavement and roadway improvements, water, sanitary sewer and storm sewer mains and all appurtenances that are to become a part of or to be connected to the City of Lebanon’s Water, Wastewater, and Stormwater utilities. The requirements contained herein are to be followed by any person, firm, partnership or corporation in the construction of residential, industrial commercial subdivisions and/or developments in which water, sanitary and/or storm sewer utilities, sidewalks, curb and gutter, and/or roadway and pavement will be constructed. The goal of this Manual is to insure the protection of the health and welfare of the City of Lebanon.
- 1.1.2. It is not the intent of this Manual to take away from the Design Engineer any responsibility for the technical adequacy of the Design Engineer’s design or freedom to use engineering judgment and discretion in the practice of the Design Engineer’s profession. It is recognized that matters of engineering design cannot be set out in writing to cover all situations. Design methods or criteria different than that listed will receive consideration for approval, provided the proposed variances and the reasons for its use are submitted, in writing, to the City of Lebanon.
- 1.1.3. The City engineer has the authority to modify or waive any requirements in this manual on a case-by-case basis if the change is in coordination with the City of Lebanon Water and Sewer Master Plans, the City of Lebanon Comprehensive Plan, the City of Lebanon Thoroughfare Plan, and/or in the best interest of the public safety, health, and welfare.
- 1.1.4. All development within the City is provided with electric service from the City of Lebanon Electric utility. Telecommunication services are provided by a variety of area service providers. Sections 908 and 909 of the Lebanon Codified Ordinances provide direction as to the planning and construction of utilities in the public right of way and/or utility easements. The City requires these utilities to be designed and constructed in a manner that promotes cooperation and joint planning among providers in order to minimize public inconvenience and eliminate wasteful, unnecessary, or unsightly duplication of facilities. Unless otherwise approved in writing by the Service Director, new development electric and telecommunication utility infrastructure shall be constructed underground and reconstruction/replacement of electric and telecommunication utility infrastructure will be reviewed on a case by case basis for construction underground. For standards specific to electric infrastructure, please reference the City of

Lebanon Municipal Electric System General Service Rules & Regulations that are on file in the office of the Director of Electric.

## 1.2. DEFINITIONS

- 1.2.1. For the purpose of these specifications, the following terms, phrases, and definitions shall apply. Words used in the singular shall include the plural, and the plural, the singular. Words used in the present tense shall include the future tense. **The word “shall” is mandatory and not discretionary.** The word “may” is permissive. Words not defined herein shall have the meaning given by common and ordinary use as defined by the latest edition of Webster's Dictionary.

**ACCELERATED WATER EROSION** - The wearing away of the land surface by stormwater runoff, or snow melt water, occurring at a much more rapid rate than geologic or normal erosion, primarily as a result of denuding the land and/or altering its slope.

**ACRE** - a measurement of area equaling 43,560 square feet.

**ADT** - Average daily traffic – defined as the average number of vehicles per day which travel on a particular roadway as determined by conducting traffic counts over a stated length of time.

**AGRICULTURAL LANDS** - Those lands utilized for any agricultural use, including forestry.

**ALLEY** – Minor way which is used primarily for vehicular service access to the back or side of properties otherwise abutting on a street.

**AMERICAN WATER WORKS ASSOCIATION (AWWA)** - An organization that develops, adopts and publishes standards for the construction, operation and maintenance of improvements to water systems.

**APPLICANT** - Any person, or a duly designated representative, applying for a permit or other type of city, federal, or state regulatory approval to proceed with a project.

**APPROVED** - Material, equipment, workmanship, process or method that has been accepted by the City of Lebanon as suitable for the proposed use.

**APPROVING AGENCY** - The approving agency shall be the City Engineer of the City of Lebanon, Ohio.

**AQUIFER** - An underground formation, group of formations, or part of a formation that is permeable enough to transmit, store, or yield usable quantities of water.

**AS-BUILT PLANS** - The final plans amended to include all locations, dimensions, elevations, capacities, features and capabilities, as actually constructed and installed as compared with the locations, dimensions, elevations, capacities, features and capabilities, as shown on the approved pre-construction drawings.

**BMP OR BEST MANAGEMENT PRACTICES** - Programs, technologies, processes, site layout techniques and criteria, operating methods, measures, or devices that control, prevent, remove, or reduce pollution.

**BRIDGE** - Any structure, including supports, of 10 feet or more clear span or 10 feet or more in diameter on, above, or below a highway. The span of all bridges will be measured along the centerline of the highway.

**CBR** - California Bearing Ratio - The ratio of the force per unit area required to penetrate a soil mass with a 3 in<sup>2</sup> circular piston at the rate of 0.05 inches per minute to the force required for corresponding penetration of a standard crushed-rock base material; the ratio is usually determined at 0.1 inches of penetration.

**CHANNEL** - A natural stream that conveys water. A ditch, or passageway, excavated to

permit or accommodate the flow of water.

**CITY** - The City of Lebanon, Ohio.

**CLEAN WATER ACT** - Pub. L. 92-500, as amended Pub. L. 95-217, Pub. L. 95-576, Pub. L. 96-483, Pub. L. 97-117, and Pub. L. 100-4, 33 U.S.C. 1251 et. seq. Referred to as the Federal Water Pollution Control Act or the Federal Water Pollution Control Act Amendments of 1972.

**CLEARING** - The removal of trees, brush, and other ground cover from all or a part of a tract of land, but shall not include mowing.

**COLLECTOR STREET** – Street which carries traffic from local streets to the arterial system of principal and arterial streets, including the principal entrance streets of a residential development and streets within such a development.

**COMPENSATING STORAGE** - Equivalent floodplain storage provided to counterbalance floodplain filling.

**CONCENTRATED STORM RUNOFF** - Surface runoff that converges and flows primarily through water conveyance features such as swales, gullies, waterways, channels or storm sewers and which exceeds the maximum specified flow rates of filters or perimeter controls intended to produce or control sheet flow.

**CONSERVATION** - The wise use, care, protection and management of natural resources.

**CONSERVATION PLAN** - A formal document that outlines a system of management practices to control soil erosion and to prevent the degradation of the water quality for a specific parcel of property. Said plan shall be prepared by the United States Department of Agriculture Soil Conservation Service (SCS), in conjunction with the Warren County Soil and Water Conservation District, or by an independent consultant using accepted engineering principles according to standards, specifications, and guidelines developed by the SCS for Conservation Plans, which provide a level of treatment equivalent to that of SCS.

**CONSTRUCTION** - The building, assembling, expansion, modification or alteration of the existing contours of a site or any part thereof, including trenching, the clearing of land, or the erection of buildings or other structures above or below the level of existing ground.

**CONTRACTOR** - The person, firm or corporation that will perform the construction of the utility improvements. The Contractor may be the Owner/Developer; an agent of the Owner/Developer; or a person, firm, partnership or corporation with whom the Owner/Developer has executed an agreement to perform the construction of utility improvements. The Contractor may be a person, firm, partnership or corporation with whom the City of Lebanon has executed an agreement to perform the construction of utility improvements.

**CRITICAL STORM** - a storm that is calculated by means of the percentage increase in volume of runoff by a proposed development area. The critical storm is used to calculate the maximum allowable storm water discharge rate from a developed site.

**CROSSWALK** - A right-of-way, publicly-owned, cutting across a block in order to provide pedestrian access to an adjacent street or property.

**CUL-DE-SAC** – A short local street, having one end open to motor traffic, the other end being permanently terminated by a vehicular turn around having an outside radius of not less than 50 feet to the back of curb.

**CUT AND FILL SLOPES** - A portion of land surface or area upon which soil material is excavated and/or filled, consequently forming a slope or embankment.

**DEAD-END STREET** - A street having only one outlet for vehicular traffic and not

containing a permanent vehicular turn around.

**DESIGN ENGINEER** - A registered Professional Design Engineer, licensed to practice engineering as defined by the Registration Act of the State of Ohio.

**DETENTION OR TO DETAIN** - The prevention of, or to prevent, the discharge, directly or indirectly, of a given volume of stormwater runoff into surface waters by providing temporary on-site storage.

**DETENTION FACILITY** - a basin, pond, oversized pipe, or other structure that reduces the peak flow rate of storm water leaving the facility by temporarily storing a portion of the storm water entering the facility.

**DEVELOPMENT OR DEVELOPMENT ACTIVITY** - The alteration, construction, installation, demolition or removal of a structure, impervious surface, pipe, conduit, cable or line, above or below ground, or the clearing, scraping, grubbing, killing or otherwise removing the vegetation from a site; or adding, removing, exposing, excavating, leveling, grading, digging, burrowing, dumping, piling, dredging or otherwise significantly disturbing the soil, mud, sand or rock of a site.

**DEVELOPMENT AREA** - a parcel or contiguous parcels owned by one person or persons, or operated as one development unit, and used or being developed for commercial, industrial, residential, institutional, or other construction or alteration that changes runoff characteristics.

**DIRECTLY CONNECTED IMPERVIOUS AREAS** - Those impervious areas which are connected to the City's drainage system by a ditch, storm sewer, channel, or other man-made device for the conveyance of stormwater runoff.

**DISCHARGE** - The flow of water from a project, site, aquifer, drainage basin, or other drainage facility.

**DISTURBED AREA** - an area of land subject to erosion due to the removal of vegetative cover and/or soil disturbing activities.

**DITCH** - An artificial waterway for the purpose of irrigation or for stormwater conveyance.

**DRAINAGE FACILITY** - Any component of a stormwater management system.

**DRAINAGE SYSTEM** - All facilities used for the movement of stormwater through and from a drainage area including, but not limited to, any and all of the following: conduits, pipes and culverts, including appurtenant features such as catch basins, inlets, manholes, and headwalls, channels, ditches, flumes, curbs, streets and other paved areas, and all watercourses, standing or flowing bodies of water, and wetlands. While some such facilities may be isolated in a given storm event, all are interconnected in a given drainage system for a storm event exceeding a certain magnitude.

**EASEMENT** - A grant by a property owner for a specified use of all or a specified portion of land to a person, an entity, or to the public at large.

**EROSION** - the process by which the land surface is worn away by the action of wind, water, ice, gravity, or any combination of those forces.

**FEMA** - Federal Emergency Management Agency.

**FINAL INSPECTION** - Inspection conducted by the City of Lebanon prior to final approval of the improvements.

**EXTENDED CONVEYANCE** - a storm water management practice that replaces and/or enhances traditional open or closed storm drainage conduits by retarding flow, promoting percolation of runoff into the soil, and filtering pollutants during the storm water quality event.

**EXTENDED DETENTION** - a storm water management practice that replaces and/or enhances traditional detention facilities by releasing the runoff collected during the storm water quality event over at least 24 to 48 hours, retarding flow and allowing pollutants to settle within the facility.

**FINAL STABILIZATION** - all soil disturbing activities at the site have been completed and a uniform perennial vegetative cover with a density of at least 80% coverage for the area has been established or equivalent stabilization practices, such as the use of mulches or geotextiles, have been employed.

**FOREBAYS** - Areas with hardened bottoms, located at detention basin inlets, that are designed to trap coarse sediment particles by separating approximately ten percent of the basin volume from the remainder of the basin with a lateral sill, rock-filled gabions, a retaining wall, or horizontal rock filters.

**GRADING** - the process in which the topography of the land is altered to a new slope.

**GROUNDWATER** - Water below the surface of the ground, in known or defined natural channels, whether flowing or not.

**HYDROGRAPH** - A graph of inflow and/or discharge versus time for a selected point in the drainage system.

**ILLEGAL CONNECTION** – Any connection to the storm sewer system which allows any flows which are not entirely composed of clean water to enter the storm sewer system.

**ILLICIT DISCHARGE** - as defined at 40 C.F.R. 122.26 (b)(2) means any discharge to an MS4 that is not composed entirely of storm water, except for those discharges to an MS4 pursuant to a NPDES permit or noted in the City of Lebanon Codified Ordinances.

**IMPERVIOUS SURFACE** - A surface which has been compacted or covered with a layer of material so that it is resistant to infiltration by water, including semi-pervious surfaces such as compacted clay and gravel, most conventionally surfaced streets, roofs, sidewalks, parking lots, and other similar surfaces.

**IMPROVEMENTS** - Construction work, including materials and workmanship, to the water, sanitary, and/or storm sewer utility systems that are part of, will become part of or be connected to the City of Lebanon's water, sanitary and/or storm sewer utilities. Water improvements include but are not limited to water mains, valves, fire hydrants, service lines, pumps, meter pits, etc. Sanitary sewer improvements include but are not limited to sanitary sewer mains, manholes, laterals, cleanouts, etc. Storm sewer improvements include but are not limited to catch basins, manholes, stormwater detention and quality facilities, etc.

**INFILTRATION** - a storm water management practice that does not discharge to a water resource during the storm water quality event, requiring collected runoff to either infiltrate into the groundwater and/or be consumed by evapotranspiration, thereby retaining storm water pollutants in the facility.

**INSPECTOR** - The City Engineer, or his/her representative, who may be required to be on the job site during any construction of facilities that are to become part of the City of Lebanon.

**INTENSITY** - The depth of accumulated rainfall per unit of time.

**IPS** – Iron Pipe Standard

**ISO** - Insurance Services Offices

**LARGER COMMON PLAN OF DEVELOPMENT** - a contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under one plan.

**LEBANON STANDARD CONCRETE** – ODOT Class C Portland cement concrete possessing the following qualities:

- Maximum water to cement (w/c) ratio of 0.50
- No fly ash
- Minimum compressive strength of 4,000 psi
- Air entrainment of 6% ±2%

**LOCAL STREET** – Street used primarily for access to abutting properties.

**MAINTENANCE** - The action taken to protect, preserve, or restore the as-built, functionality of any facility or system.

**MAJOR ARTERIAL** – Roadway that carries regional traffic, links cities, and carries long-distance statewide trips.

**MAJOR COLLECTOR** – Collects and distributes traffic to arterial roads. Provide access to specific traffic destinations, allow easy movement from one neighborhood to another, and provide cross-town traffic movement.

**MAXIMUM EXTENT PRACTICABLE** - the level of pollutant reduction that operators of small municipal separate storm sewer systems regulated under 40 c.f.r. parts 9, 122, 123, and 124, referred to as NPDES storm water phase ii, must meet.

**MINOR ARTERIAL** – Roadway Carries local and regional traffic, links communities, and carries intermediate and long-distance trips.

**MINOR COLLECTOR** – Takes traffic from local roads, carries it a short distance, and distributes it to major collectors and arterials.

**NOI (NOTICE OF INTENT) APPLICATION** - application form to request initial coverage or to renew coverage under a general permit. The applicant must certify their intention to comply with a general permit by submitting a complete NOI. The application shall be submitted to Ohio EPA’s Central Office. Refer to the following web address: <http://www.epa.state.oh.us/dsw/storm/stormform.html>

**NON-IMPROVED ROAD** – any roadway not meeting current City Of Lebanon standards regarding width and/or does not have curb and gutter and/or sidewalks.

**NONSTRUCTURAL STORM WATER MANAGEMENT PRACTICE** - storm water runoff control and treatment techniques that use natural practices to control runoff and/or reduce pollution levels.

**NPDES** - national pollutant discharge elimination system. A regulatory program in the federal clean water act that prohibits the discharge of pollutants into surface waters of the United States without a permit.

**ODNR** - Ohio Department of Natural Resources.

**ODOT** - Ohio Department of Transportation.

**OEPA** - Ohio Environmental Protection Agency.

**OHIO UTILITIES PROTECTION SERVICE** - (OUPS) – 1-800-362-2764 or 811.

**OPEN CHANNEL** - An uncovered ditch, channel, or swale used to convey stormwater runoff.

**OUTDOOR ACTIVITY AREAS** - Areas where pollutants are, or may become, more concentrated than typical urban runoff as characterized by the USEPA National Urban Runoff Program (NURP), as listed below or as otherwise defined by the City Engineer:

- Industrial material, waste handling, and storage areas, including but not limited to

loading docks, fuel and other liquid storage/dispensing facilities, material bins, containers, stockpiles, and other storage containers, waste dumpsters, bins, cans, tanks, stockpiles, and other waste containers.

Processing, manufacturing, fabrication, cleaning, or other permanent outdoor equipment or work areas.

Areas where vehicles and equipment are repaired, maintained, stored, disassembled, or disposed of.

**OWNER** - The person in whom the fee, ownership, dominion, or title of property (i.e., the proprietor) is vested. This term may also include a tenant, if chargeable under his lease for the maintenance of the property, and any agent of the owner or tenant including a developer.

**OWNER/DEVELOPER** - An individual, group of individuals, partnership, firm, association or corporation that is constructing, or is having constructed, water, sanitary and/or storm sewer improvements that are to become a part of or be connected to the City of Lebanon water, sanitary, and/or storm sewer utilities.

**PARCEL OR PARCEL OF LAND** - A tract, or contiguous tracts, of land.

**PEAK RATE OF FLOW** - The maximum rate of discharge resulting from a given storm event.

**PERMITTEE** - Any person who has been granted a permit to proceed with a project.

**PERSON** - Any individual, firm, corporation, governmental agency, business trust, estate, trust, partnership, association, two or more persons having a joint or common business interest, or any other legal entity.

**POLLUTANT** - Any liquid, solid, or semi-solid substance, or combination thereof, that enters stormwater runoff in concentrations or quantities large enough to contribute to the degradation of the body of water receiving the discharge.

**POSITIVE OUTLET** - A gravity discharge from a basin via overland flow, artificial waterway, natural waterway, or pipe.

**POST-DEVELOPMENT** - The physical, hydrologic and hydraulic condition of a project site immediately following completion of the development for which a permit has been applied.

**PRE-DEVELOPMENT** - The physical, hydrologic and hydraulic condition of a project site immediately before development or construction begins.

**PRINCIPAL ARTERIAL** – Streets that service metropolitan centers, corridors with the highest traffic volume, and the longest trip lengths that carry most trips entering and leaving urban areas that provide continuity for all rural arterials that intercept urban boundaries.

**PROFESSIONAL ENGINEER** - A professional engineer licensed by the State of Ohio, skilled in the practice of civil engineering and the engineer of record for the project under consideration.

**PROHIBITED DISCHARGE** - Any discharge which is not composed entirely of stormwater, unless authorized under a discharge permit issued by the OEPA.

**RAINFALL INTENSITY** - The depth of accumulated rainfall per unit of time.

**RATE** - Volume of water, or other material, per unit of time.

**RECEIVING WATERS OR WATER BODY** - Any water body, watercourse, or wetland into which surface water flows.

**RECHARGE** - The inflow of water into an aquifer.

**RETENTION OR TO RETAIN** - The prevention of, or to prevent, the discharge, directly or indirectly, of a given volume of stormwater runoff into receiving waters by complete on-site storage.

**RIPARIAN AREA** - land adjacent to any brook, creek, river, or stream having a defined bed and bank that, if appropriately sized, helps to stabilize streambanks, limit erosion, reduce flood size flows, and/or filter and settle out runoff pollutants.

**RUNOFF** - the portion of rainfall, melted snow, or irrigation water that flows across the ground surface and is eventually returned to water resources.

**SCS** - The United States Department of Agriculture Soil Conservation Service.

**SEDIMENT** - Solid material, whether mineral or organic, that is in suspension, is being transported, or has been moved from its place of origin by water.

**SEDIMENTATION** - the deposition of sediment in water resources.

**SEDIMENT CONTROL DEVICE** - Any structure or area that is designed to hold runoff water until suspended sediment has settled out.

**SIGHT DISTANCE** – Refers to the arrangement of geometric elements so that sufficient visibility is provided for safe and efficient operation.

**SITE** - Any tract, lot, or parcel of land or contiguous combination of tracts, lots, or parcels of land that is in one ownership, or contiguous and in diverse ownership, where development is to be performed as part of a unit, subdivision, or project.

**STORM EVENT** - A storm of a specific duration, intensity, and frequency.

**STORMWATER OR STORMWATER RUNOFF** - Refers to the flow of water which results from, and which occurs during and following a rainfall event.

**STORMWATER DESIGN STANDARDS** - The design standards presented in the Stormwater Regulations, and such other standards that may be adopted by the City from time to time.

**SITE STORMWATER MANAGEMENT PLAN** - Refers to the approved, detailed analysis, drawings, and design of the stormwater management system required for all construction.

**SOIL DISTURBING ACTIVITY** - clearing, grading, excavating, filling, or other alteration of the earth's surface where natural or human made ground cover is destroyed and that may result in, or contribute to, increased storm water quantity and/or decreased storm water quality.

**STABILIZATION** - the use of best management practices that reduce or prevent soil erosion by storm water runoff, trench dewatering, wind, ice, gravity, or a combination thereof.

**STORMWATER MAINTENANCE AGREEMENT** - a formal contract between a local government and a property owner designed to guarantee that specific maintenance functions are performed.

**STORMWATER MANAGEMENT SYSTEM OR FACILITIES** - Refers to the existing, designed, and/or constructed features which collect, convey, channel, store, inhibit, or divert the movement of stormwater.

**STORMWATER MANAGEMENT PLAN** - The technical and policy manuals, plans, regulations and/or calculations, and any subsequent updates or amendments thereto, used by the City Engineer to administer the stormwater regulations.

**STREAM** – A blue-line waterway as shown on an USGS map.

**STREET** – A way for vehicular traffic, whether designated as a street, highway, thoroughfare, parkway, road, boulevard, lane, place, or however otherwise designated.

**STRUCTURAL STORM WATER MANAGEMENT PRACTICE** - any constructed facility, structure, or device that provides storage, conveyance, and/or treatment of storm water runoff.

**STRUCTURE** - Anything constructed or installed with a fixed location on or in the ground, or attached to something having a fixed location on or in the ground.

**SUBDIVIDER** - Any person, individual, firm, partnership, association, corporation, estate, trust or any other group or combination acting as a unit, dividing or proposing to divide land so as to constitute a subdivision as herein defined and including any agent of the subdivider.

**SUBDIVISION** - The division of any parcel of land shown as a unit or as contiguous units on the tax rolls as of January 6, 1959, into two or more parcels, sites or lots, any one of which is less than five acres for the purpose, whether immediate or future, of transfer of ownership, provided, however, that the division or partition of land into parcels of more than five acres, not involving any new streets or easements of access, and the sale or exchange of parcels between adjoining lot owners, where such sale or exchange does not create additional building sites, shall be exempted; or

The improvement of one or more parcels of land for residential, commercial or industrial structures or groups of structures involving the division or allocation of land for the opening, widening or extending of any street or streets, except private streets serving industrial structures; the division or allocation of land as open spaces for common use by owners, occupants or leaseholders, or as easements for the extension and maintenance of public sewers, water, storm drainage or other public facilities.

**SUBGRADE** - The top elevation of graded and compacted earth underlying roadway pavement.

**SURFACE WATERS OF THE STATE** - all streams, lakes, reservoirs, marshes, wetlands, or other waterways situated wholly or partly within the boundaries of the state, except those private waters which do not combine or affect a junction with surface water. Waters defined as sewerage systems, treatment works or disposal systems in section 6111.01 of the Ohio Revised Code are not included.

**SURVEYOR** - A Registered Surveyor, as defined by the Registration Act of the State of Ohio.

**SWALE** - An artificial or natural waterway which may contain contiguous areas of standing or flowing water following a rainfall event. A swale may be planted with or otherwise contain vegetation suitable for soil stabilization, stormwater re-treatment, and/or nutrient uptake; or may be designed to accommodate or account for soil erodibility, soil percolation, slope, slope length, and contributing area, so as to prevent erosion and reduce the pollutant concentration of any discharge.

**TAILWATER** - The water into which a spillway or outfall discharges.

**TOTAL MAXIMUM DAILY LOAD (TMDL)** - the sum of the existing and/or projected point source, nonpoint source, and background loads for a pollutant to a specified watershed, water body, or water body segment. A TMDL sets and allocates the maximum amount of a pollutant that may be introduced into the water and still ensures attainment and maintenance of water quality standards.

**USEPA OR EPA** - United States Environmental Protection Agency.

**WATER BODY** - Any natural or artificial pond, lake, reservoir, or other area that ordinarily or intermittently contains water, and which has a discernible shoreline.

**WATERCOURSE** - Any natural or artificial stream, creek, channel, ditch, canal, waterway, gully, ravine, or wash in which water flows either continuously or intermittently, and which has a definite channel, bed, or banks.

**WATER QUALITY VOLUME** - the volume of runoff from a contributing watershed that must be captured and treated, equivalent to the maximized capture volume as defined in the American Society of Civil Engineers (ASCE) manual and report on engineering practice no. 87 and water environment federation manual of practice no. 23 titled *Urban Runoff Quality Management*.

**WATER RESOURCE** - any public or private body of water; including wetlands; the area within the ordinary high water level of lakes and ponds; as well as the area within the ordinary high water level of any brook, creek, river, or stream having a defined bed and bank (either natural or artificial) which confines and conducts continuous or intermittent flow.

**WATER RESOURCE CROSSING** - any bridge, box, arch, culvert, truss, or other type of structure intended to convey people, animals, vehicles, or materials from one side of a watercourse to another. This does not include private, non-commercial footbridges or pole mounted aerial electric or telecommunication lines, nor does it include below grade utility lines.

**WATERSHED** - the total drainage area contributing storm water runoff to a single point.

**WET DETENTION** - A detention basin that contains a permanent pool of water that will retain runoff for a minimum period of 14 days for an average rainfall summer, and which has a littoral zone over a substantial portion of the pond surface area.

**WATERS OF THE STATE OF OHIO** - all streams, lakes, reservoirs, marshes, wetlands, or other waterways situated wholly or partly within the boundaries of the state, except those private waters which do not combine or affect a junction with surface water. Waters defined as sewerage systems, treatment works or disposal systems in section 6111.01 of the Ohio Revised Code are not included.

**WETLAND** - An area that is inundated or saturated by surface or groundwater with a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

**WORKS** - All artificial, manmade structures, including, but not limited to, canals, ditches, swales, conduits, channels, culverts, pipes, and other construction that connects to, draws water from, drains water into, or is placed in or across the waters of the state.

### 1.3. REFERENCES

- 1.3.1. Certain technical aspects concerning construction materials and methods of construction are based on the Ohio Department of Transportation, Standard Specifications for Road and Bridge Construction, hereafter referred to as ODOT.
- 1.3.2. Other standards or specifications referred to are those of the American Society of Testing Materials (ASTM), American Association of State Highway and Transportation Officials (AASHTO), Portland Cement Association (PCA), American Public Works Association (APWA) the American Water Works Association (AWWA), and the Ten States Standards.
- 1.3.3. Standard drawings showing details of certain improvements, shall be complementary to and a part of this manual.
- 1.3.4. The Codified Ordinances of the City of Lebanon.

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#### **1.4. GENERAL REQUIREMENTS**

- 1.4.1. Prior to the development of detailed plans and specifications for the construction of proposed improvements, the Owner/Developer shall complete and file a Development Utility Needs Analysis form with the City of Lebanon so that the impact of the proposed improvements can be evaluated and determined. A copy of this form can be found in the Appendix of this document.
- 1.4.2. In order to ensure that the design and construction of water and sanitary sewer Improvements meet generally accepted Engineering Standards and Practices, the Owner/Developer proposing the Improvements, must employ a Design Engineer, registered as a Professional Engineer in the State of Ohio. The Owner/Developer shall employ the Design Engineer to:
  - 1.4.2.1. Prepare detailed construction drawings on standard drawing sheets of 22" x 34". 24" x 36" drawings will be acceptable but not preferred. Other paper sizes will not be accepted unless specifically permitted by the City Engineer in writing.
  - 1.4.2.2. Prepare stormwater detention and stormwater calculations in accordance with City of Lebanon standards.
  - 1.4.2.3. Provide to the City of Lebanon detailed submittals of all parts and materials required to be used during construction in accordance with the approved plans.
  - 1.4.2.4. Prepare and submit a certified construction cost estimate, signed and stamped by a Professional Engineer registered in the State of Ohio.
  - 1.4.2.5. Prepare and submit PTI applications to OEPA for all water and sanitary improvements.
  - 1.4.2.6. Prepare and submit NOI applications for all developments.
  - 1.4.2.7. Provide a complete set of As-Built drawings to the City of Lebanon. As-Built drawings shall be provided on Mylar sheets (4-mil double matte finish, white) and as a digital file compatible with AutoCAD. As-Built drawings shall conform to the requirements found in the Appendix.
  - 1.4.2.8. Prepare and submit certified final as-built quantities signed and stamped by a Professional Engineer registered in the State of Ohio. The As-Built quantities shall conform to the requirements found in the Appendix.

#### **1.5. CITY AUTHORITY**

- 1.5.1. The City of Lebanon shall be responsible for answering questions that may arise as to the quality and acceptability of construction materials used and workmanship performed. The City of Lebanon shall interpret the intent of the requirements contained in this Manual in a fair and unbiased manner for all decisions.
- 1.5.2. Nothing contained in this Manual is intended to conflict with any State or Federal law or regulation. If such a case arises, the more stringent requirement shall be met. In no case shall the requirements of this Manual be less stringent than any existing State or Federal law or regulation.
- 1.5.3. Plans are approved by the City of Lebanon subject to the condition of compliance with applicable Federal, State and local laws, rules, regulations and standards. Approval of plans does not constitute an assurance that the proposed improvements will properly function, operate or meet-compliance with Federal, State or local laws and regulations.
- 1.5.4. The City of Lebanon, at any time during design or construction, shall have the authority to modify any engineering or construction detail or require additional testing whenever necessary for the protection of the public interest.
- 1.5.5. This Manual shall be revised as needed to insure that the requirements contained herein keep abreast with current State and Federal laws and regulations, approved construction materials and recognized construction methods.

## **1.6. REQUIREMENT TO MEET CURRENT STANDARDS**

- 1.6.1. Any development which has been approved, but the preliminary plan has expired, shall meet all current standards for all uncompleted areas and any subsequent development.

## **1.7. OBLIGATION OF THE CONTRACTOR**

- 1.7.1. The Contractor shall perform and complete the work to the satisfaction of the City of Lebanon and in accordance with approved plans. The Contractor shall conduct his/her work so as to minimize interference with public and/or private business and traffic. The Contractor shall, at his/her own expense, whenever necessary or required, provide barricades, flagmen, maintain lights, and take other precautions as may be necessary to protect life, property, adjacent buildings and structures. The Contractor shall be liable for all damages and injuries received or sustained by any person(s) or property in consequence of any neglect in safeguarding the work of subcontractors, employees or workmen. Traffic control procedures shall follow the most current ODOT regulations and the Ohio Manual of Uniform Traffic Control Devices.
- 1.7.2. The Contractor shall pay for all overtime expenses of City of Lebanon personnel for testing, inspection or "Call-Outs" after normal business hours, weekends, or on holidays.
- 1.7.3. At least two (2) working days prior to the start of any construction, the Contractor shall notify the City of Lebanon in writing of his/her intent to commence work.
- 1.7.4. The Contractor is responsible for contacting all utilities covered under The Ohio Utilities Protection Service (OUPS), 1-800-362-2764, or 811 as well as the utilities in the Lebanon area that are not a member of OUPS.
- 1.7.5. The Contractor is responsible for ensuring that they meet state certification where applicable, i.e. state fire codes for installation.
- 1.7.6. The Contractor shall be responsible for correcting and/or repairing defects found to exist or those that develop in the Improvements for a period of two years from the date of final inspection and acceptance by the City of Lebanon. Failure of the Contractor to comply with this manual or directive by the City of Lebanon will result in a revocation of permit and/or fines or the denial to perform work within the City of Lebanon.

## **1.8. TESTING**

- 1.8.1. In addition to the tests listed below, all tests found in other sections of this Manual shall be performed as required.
- 1.8.2. Concrete Testing
  - 1.8.2.1. Concrete testing will be required on a case-by-case basis.
  - 1.8.2.2. When required, concrete testing shall be conducted as follows:
    - 1.8.2.2.1. One set of cylinders (three cylinders) shall be prepared for every 100 CY of concrete placed on each day, but no less than one set of cylinders per day.
    - 1.8.2.2.2. Each cylinder set shall be broken as follows:
      - 1.8.2.2.2.1. One cylinder at seven days.
      - 1.8.2.2.2.2. The remaining two cylinders at 28 days.
  - 1.8.2.3. The City of Lebanon reserves the right to request any concrete tests. The costs for any tests shall be borne by the Owner/Developer or Contractor.
- 1.8.3. Compaction Testing
  - 1.8.3.1. Compaction testing shall be required every 50 feet as follows:
    - 1.8.3.1.1. Subgrade shall be compacted to within 95% of Modified Proctor maximum density

1.8.3.2. The City of Lebanon reserves the right to request any compaction tests. The costs for any tests shall be borne by the Owner/Developer or Contractor.

1.8.4. Proof Rolling

1.8.4.1. Proof rolling shall be required prior to all curb, curb and gutter, and pavement installations.

1.8.4.2. A representative of the Office of the City Engineer shall be present during the proof roll test.

1.8.4.2.1. The representative will witness the test and will mark any areas needing repair.

1.8.4.2.2. All repairs shall be made and all repaired areas shall pass an additional proof roll prior to the placement of curb, curb and gutter or pavement.

1.8.4.3. Proof rolling shall be performed by a tandem dump truck loaded with a minimum of 18 tons of gravel.

1.8.4.3.1. A load ticket indicating the net and total weight provided for the test shall be provided to the City of Lebanon at the time of the proof roll.

1.8.4.3.2. “Cheater” wheels shall be raised during the entire proof rolling test.

1.8.5. Additional Tests

1.8.5.1. Additional testing may be required by the City Engineer on an as-needed basis.

**1.9. DEFECTIVE MATERIAL AND WORKMANSHIP**

1.9.1. Materials and workmanship not in accordance with the approved plans and/or specifications shall be rejected and replaced in a satisfactory manner.

1.9.2. Upon notification by the Design Engineer and/or City of Lebanon, corrections shall be required to comply with the approved plans and/or specifications.

**1.10. CONSTRUCTION INSPECTION**

1.10.1. The City Engineer or inspectors designated by him or her shall inspect all work performed and materials used in constructing and installing the improvements to ascertain if they are in accordance with the approved plans and specifications. The subdivider or his or her contractor shall notify the City Engineer at least 24 hours in advance of any construction.

1.10.2. Third Party Inspections

1.10.2.1. The City of Lebanon reserves the right to retain a construction inspection firm for the inspection of developments. The Owner/Developer shall be responsible for reimbursement to the City of Lebanon for the costs of the construction inspections above and beyond the standard inspection fee described in the City of Lebanon Codified Ordinances. Full reimbursement shall be required prior to final plat approval unless approved otherwise.

1.10.3. A Final Inspection will be made, prior to final acceptance of any Improvements by the City of Lebanon, after all Improvements are completed. The Final Inspection will be made upon written request of the Owner/Developer to the City of Lebanon stating that all Improvements are complete and all corrections have been made. Prior to the final acceptance of the work, the City of Lebanon shall be given a completed set of As-Built Drawings. All sanitary and storm manholes or access openings shall be opened and all pipes and conduits shall be cleaned of all dirt, mud, and other foreign matter. All water valve boxes shall be opened, cleaned of all mud and debris and inspected for proper alignment. The Contractor shall provide personnel as required to aid in the performance of the Final Inspection.

1.10.3.1. A video inspection of all sanitary and storm sewer mains shall be conducted at the Contractor’s expense by a professional inspection firm. Copies of all video and written reports shall be provided to the City of Lebanon for review and approval prior to the

acceptance of the improvements or the release of bonds. Refer to the video inspection requirements found in Section 2.13. of this manual.

### **1.11. EXISTING UTILITIES**

- 1.11.1. Precautions shall be taken by the Contractor to avoid damage to existing overhead, at grade, and underground utilities owned and operated by public or private utility companies.
- 1.11.2. Where existing underground or aboveground utilities or appurtenant structures are encountered, they shall not be displaced or disturbed unless necessary, and in such case shall be replaced in as good or better condition than found. Prior to disturbing any underground or aboveground utilities or appurtenant structures, the office of the City Engineer shall be notified and a solution shall be agreed to.
- 1.11.3. The Contractor shall bear the entire responsibility for locating, avoiding, or repairing damage to said existing utilities.

### **1.12. UTILITY SHUTDOWNS**

- 1.12.1. No planned utility shutdowns shall be performed without approval of the City of Lebanon.
- 1.12.2. The Contractor shall notify the City of Lebanon a minimum of 48 hours prior to the planned shutdown.
- 1.12.3. Upon approval by the City, the contractor shall notify all affected residences and businesses no less than 24 hours in advance of the shutdown.
- 1.12.4. The City of Lebanon reserves the right to require the shutdown to be performed at a different time than requested by the Contractor to prevent significant inconveniences or hazards to affected residences or businesses.

### **1.13. SERVICE LINE ABANDONMENTS**

- 1.13.1. If any structure is to be demolished, all utility services shall be properly abandoned.
- 1.13.2. Water services
  - 1.13.2.1. Curb stop shall be closed and water service shall be properly capped.
  - 1.13.2.2. The private water service shall be exposed and properly sealed at a point outside the limits of demolition, within ten feet of the property line, R/W line, or the water main. Demolition contractor shall provide at least three-dimensional ties to the end of the sealed service line.
- 1.13.3. Sanitary laterals
  - 1.13.3.1. Sanitary laterals shall be properly capped.
  - 1.13.3.2. The private sewer lateral shall be exposed and properly sealed at a point outside the limits of demolition, within ten feet of the property line, R/W line, or the sewer main. Demolition contractor shall provide at least three-dimensional ties to the end of the sealed lateral.
- 1.13.4. Prior to backfilling, abandoned water services and sanitary laterals shall be inspected and approved by the City Engineer.

### **1.14. BLASTING**

- 1.14.1. Blasting shall not be permitted unless:
  - 1.14.1.1. All other excavation methods have been tried and exhausted, and
  - 1.14.1.2. Permission is granted by the City Engineer.
- 1.14.2. Prior to the commencement of any blasting the following items shall be completed:

- 1.14.2.1. An investigation shall be performed to ensure there are no subsurface features that will be impacted by the blasting activities. Copies of the investigation shall be provided to the Office of the City Engineer.
  - 1.14.2.1.1. The Warren County Soil and Water Conservation District shall be contacted for subsurface information on the area in question.
  - 1.14.2.2. All appropriate permits shall be applied for and granted through the City of Lebanon Fire Department,
  - 1.14.2.3. A 48 hour notice shall be given to the City of Lebanon Engineer's Office and the City of Lebanon Fire Department prior to any blasting activities; and
- 1.14.3. Written notices, sent via certified mail with return receipts, shall be provided to **all** adjacent properties (north, south, east, and west) to the development. The notices shall be delivered 48 hours prior to any blasting activity and will need to inform residents of what is happening and what to expect. The notice shall also include a phone number and contact person for the Developer **and** the Blasting Company for residents to call should they have any questions or concerns.

## **1.15. APPEAL PROCESS**

- 1.15.1. All appeals to the standards set forth in this manual shall be brought before the Council of the City of Lebanon. All decisions of the Council shall be final.

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