

**APPENDIX A**  
**CITY OF ST. PETERS, MISSOURI**  
**ENGINEERING DEPARTMENT**  
**TECHNICAL SPECIFICATIONS**

**for**

**FACILITIES WORK IN PUBLIC RIGHT-OF-WAY**

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NOTE: Standard drawings for pavement repair are available at no cost from the Engineering Department, City of St. Peters.

## **DIVISION 1 - GENERAL REQUIREMENTS**

### **1.01 SUMMARY OF WORK**

#### **1.01.1 Work Covered by These Specifications**

The work covered by these specifications shall consist of any and all Facilities Work performed or to be performed in, under, or through right-of-way, streets, or alleys owned by the City of St. Peters, including but not limited to water supply, sanitary sewer, storm sewer, telephone, fiber optic cable, gas pipelines, electrical conduit or conductors, cable television lines, and telecommunication facilities. It is to include repair of street cuts, required final grading, clean-up, disposal of surplus materials and sodding.

No person shall make or cause to be made any cuts or excavations in, through or under any street, alley, sidewalk, parkway, boulevard or public place in the city, for any purpose whatsoever, without a permit therefore being first obtained from the CITY ENGINEER, as the case may be. A separate permit shall be obtained for each cut or excavation to be made.

#### **1.01.2 Work Sequence**

The PERMIT HOLDER, or his CONTRACTOR shall schedule Facilities Work to allow emergency vehicle access to public and private property at all times. Private drives and public streets and alleys shall be opened for use at the end of each work day unless approval has been obtained from the CITY ENGINEER. The person making a cut or excavation shall cause such work to be done with the least possible injury to the street, alley, sidewalk, parkway, boulevard or public place, and shall remove the paving material and excavated earth therefrom in such a manner as to cause the least possible inconvenience to the public and to permit uninterrupted passage of water along the gutters.

#### **1.01.3 PERMIT HOLDER Use of Premises**

The PERMIT HOLDER shall confine construction equipment, storage of materials and equipment, and operations or workers to areas within the public right-of-way and easements of record as indicated on the drawings or as directed by the CITY ENGINEER. If PERMIT HOLDER proposes to use any private property for his use, he shall be solely responsible for making arrangements for such use with the property owner. The CITY shall not be liable for any damages caused by PERMIT HOLDER's use of such property.

#### **1.01.4 Coordination of Facilities Work With Others**

The PERMIT HOLDER shall cooperate with CITY's employees or others who may be working in the area of this Facilities Work. PERMIT HOLDER shall strive to coordinate his Facilities Work to not interfere with the work of others unnecessarily. PERMIT HOLDER will not be required to interrupt the progress of his operations materially to assure such coordination.

## 1.02 EXISTING ABOVE GROUND AND UNDERGROUND INSTALLATION AND STRUCTURES

### 1.02.1 General

Utility poles, pipe lines and other existing above ground and underground installations and structures in the vicinity of the Facilities Work are to be indicated on the plans according to the best information available to the CITY and CITY ENGINEER.

Prior to receiving any excavation permit and commencing Facilities Work, the PERMIT HOLDER shall mark the proposed excavation and contact Missouri One Call (utility location service) and the City of St. Peters Engineering Department at least 72 hours, excluding Saturdays, Sundays, and holidays, to locate utilities before beginning Facilities excavation Work.

PERMIT HOLDER shall make every effort to protect such installations and structures and will make every effort to leave a corridor for maintenance of their facility. He shall contact the owners of such installations and structures and prospect in advance of trench excavation to notify the owners that their property will be in the vicinity of the proposed work site. Any delays or extra cost to the PERMIT HOLDER caused by such installations and structures, whether shown on the plans or not, or found in locations different than those indicated, shall not constitute a claim for extra work, additional payment or damages.

When the PERMIT HOLDER discovers above ground and underground installations, structures, or Facilities whose existence was not known, PERMIT HOLDER shall immediately notify owner and CITY ENGINEER.

Damage to existing above ground and underground installations or structures caused by the PERMIT HOLDER shall be repaired by the PERMIT HOLDER as directed by the owner of such installation or structure, and the owner shall be notified immediately of any such damage and repairs made as soon as possible to keep the interruption of service to a minimum. The PERMIT HOLDER shall bear any costs assessed because of such repairs and shall hold the CITY and CITY ENGINEER harmless.

## 1.03 TRAFFIC CONTROL AND SAFETY

### 1.03.1 Maintenance Of Traffic

The PERMIT HOLDER shall conduct his Facilities Work as to interfere as little as possible with public travel, whether vehicular or pedestrian. All barricades, signs, lights and other protective devices shall be installed and maintained in conformity with the Manual of Uniform Traffic Control. Whenever it is necessary to cross, obstruct, or close roads, driveways and walks, whether public or private, the PERMIT HOLDER shall at his own expense provide and maintain suitable and safe bridges, detours and other traffic control devices, including temporary expedients, for the accommodations of public and private travel, and shall give reasonable notice to owners of private drives before

interfering with them. Prior to interfering with the public travel in any way, the PERMIT HOLDER shall notify the Police Department with information as to the extent of the interference and the length of time of such interference. All roadways shall be kept open to all traffic by and at the expense of the PERMIT HOLDER.

#### 1.03.2 Barricades and Lights

All streets, roads, highways and other public thoroughfares that are closed to traffic shall be protected by means of effective barricades on which shall be placed acceptable warning signs. Barricades shall be located at the nearest intersecting public highway or street on each side of the blocked sections.

All open trenches and other excavations shall be provided with suitable barriers, signs and lights to the extent that adequate protection is provided to the public. Obstructions, such as material piles and equipment, shall be provided with similar warning signs and lights. All barricades and obstructions shall be illuminated by means of warning lights at night. All lights used for this purpose shall be kept burning from sunset to sunrise. Materials stored upon or alongside public streets shall be so placed, and the Facilities Work at all times shall be so conducted, as to cause the minimum obstructions and inconvenience to the traveling public.

All barricades, signs, lights and other protective devices shall be installed and maintained in conformity with the Manual of Uniform Traffic Control Devices and applicable statutory requirements, and where within highway rights-of-way, as required by the authority having jurisdiction there over.

### 1.04 MINIMUM LIMITS OF INSURANCE

1.04.1 Minimum Limits of Insurance: Permit Holder and its Contractor shall maintain limits no less than those outlined in Section 1.04.

1.04.2 Comprehensive General Liability or Broad Form Comprehensive General Liability to cover claims which may arise from Work as outlined in this Ordinance. The policy shall be written with limits of at least \$1,000,000 for Bodily Injury and Property Damage Liability for each occurrence, \$1,000,000 aggregate. The Policy will include protection for the following hazards and shall be written :

- (i) Premises and Operations
- (ii) Independent Contractors Coverage
- (iii) Products and Completed Operations liability coverage to apply one year beyond completion and acceptance of the work specified in Permit Plan required by this Ordinance.
- (iv) Personal Injury Liability
- (v) Broad Form Property Damage

(vi) Contractual Liability

(vii) Explosion, collapse and underground damage, if applicable

1.04.3 Business Automobile Policy (Comprehensive Automobile Liability Insurance) provides coverage for all owned, non-owned and hired vehicles. Minimum limits should be at least \$1,000,000 each person each occurrence. Bodily Injury Liability and \$500,000 each occurrence Property Damage Liability.

1.04.4 Deductibles and Self-Insured Retention: Any deductibles or self-insured retention must be declared to any approved by the City, either: the insurer shall reduce or eliminate such deductibles or self-insured retention as respects the City, its officers, officials and employees; or the Permit Holder shall procure a bond guaranteeing payment of losses and related investigations, claim administrative and defense expenses.

1.04.5 Other Insurance Provisions: The policies are to contain, or be endorsed to contain, the following provisions:

(i) General Liability and Automobile Liability Coverages

(a) The City, its officers, officials, employees and volunteers are to be covered as insureds as respects: liability arising out of activities performed by or on behalf of the Permit Holder; products and completed operations of the Permit Holder; premises owned, occupied or used by the Permit Holder; or automobiles owned, leased, hired, or borrowed by the Permit Holder. The coverage shall contain no special limitations on the scope of protection afforded to the City, its officers, officials, employees, or volunteers.

(b) The Permit Holder's insurance coverage shall be primary insurance as respects the City, its officers, officials, employees, and volunteers. Any insurance or self-insurance maintained by the City, its officers, officials, employees, or volunteers shall be excess of the Permit Holder's insurance and shall not contribute with it.

(c) Any failure to comply with reporting provisions of the policies shall not affect coverage provided to the City, its officers, officials, employees, or volunteers.

(d) The Permit Holder's insurance shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability.

(ii) Workers' Compensation and Employers Liability Coverage: The insurer shall agree to waive all rights of subrogation against the City, its officers, officials, employees, and volunteers for losses arising from work performed by the Permit Holder for the City.

(iii) All Coverages: Each insurance policy required by this clause shall be endorsed to state that coverage shall not be suspended, voided, canceled by either party, reduced in coverage or in limits except after thirty (30) days' prior written notice by certified mail, return receipt requested, has been given to the City.

1.04.6 Acceptability of Insurers: Insurance is to be placed with insurers with a Bests' rating of no less than A:VII.

1.04.7 Verification of Coverage: Permit Holder shall furnish the City with certificates of insurance. The certificates for each insurance policy are to be signed by a person authorized by the insurer to bind coverage on its behalf, and are to be received and approved by the City before work commences. The City reserves the right to require complete, certified copies of all required insurance policies, at any time.

1.04.8 Subconsultants/subcontractors: Permit Holder shall include all subconsultants and/or subcontractors as insureds under its policies or shall furnish separate certificates for each subconsultant/subcontractor. All coverages for subconsultants shall be subject to all of the requirements stated herein.

## 1.05 INDEMNIFICATION

1.05.1 Applicant shall, at its sole cost and expense, indemnify, hold harmless, and defend the City, its officials, boards, board members commissions, commissioners, agents and employees against any and all claims, suits, causes of action, proceedings, and judgements, including reasonable attorney's fees for damage or equitable relief arising out of the construction and maintenance of the Applicant's Facilities Work, except to the extent such claim, suit, cause of action or proceedings, and judgements for damages or equitable relief arises out of the negligent or willful misconduct of the City, its officials, board members, agents or employees.

1.05.2 Recovery by the City of any amounts under the performance bond does not limit an Applicant's duty to indemnify the City in any way, nor shall such recovery relieve an Applicant of its obligations under a Permit or reduce the amounts owed to the City other than by the amounts recovered by the City under the performance bond, or in any respect prevent the City from exercising any other right or remedy it may have.

## 1.06 SHOP DRAWINGS

### 1.06.1 General

Shop drawing or manufacturer's literature shall be required for water distribution for the following items: Pipe and fittings, valves and fire hydrant assemblies if not purchased from City of St. Peters. Material certification may be required on all other materials used in the installation of the Work in the CITY's Rights-of-Way.

## **DIVISION 2 - EXCAVATION, TRENCHING AND BACKFILL**

### **2.01 GENERAL**

This specification covers excavation and trenching and backfilling work and shall include the necessary clearing, grubbing and preparation of the site, removal of improvements; removal and disposal of all debris; excavation and trenching as required; the handling, storage, transportation and disposal of all excavated material; all necessary sheeting, shoring, and protection work; preparation of subgrades; pumping and dewatering as necessary or required; protection of adjacent property; backfilling; pipe embedment; surfacing and grading; and other appurtenant work.

Excavation, trenching and backfilling work shall be performed in a safe and proper manner, with suitable precautions being taken against hazards of every kind. Excavation shall provide adequate working space and clearance for the work to be performed therein.

No backfill, fill or embankment materials shall be installed on frozen surfaces, nor shall frozen materials, snow or ice be placed in any backfill, fill, or embankments.

### **2.02 CLASSIFICATION OF EXCAVATED MATERIALS**

No classification of excavated materials will be made. Excavation and trenching work shall include the removal and subsequent handling of all materials excavated or otherwise removed in performance of the Facilities Work, regardless of the type, character, composition, or condition thereof.

Trenches shall be backfilled with similar material as was removed, unless excavated material is deemed unacceptable by the CITY ENGINEER. If backfill material is deemed unacceptable, PERMIT HOLDER shall furnish material from other surfaces capable of producing uniformly acceptable material.

### **2.03 CONCRETE PAVEMENT REMOVAL**

2.03.1 Removal of pavement: New concrete pavement shall not be cut for at least five (5) years following the finishing of the paving, except in an emergency as defined in Chapter 25.8 or at the discretion of the CITY ENGINEER.

2.03.2 General Neatness: When pavement is removed, the remaining edge shall be neat, straight, and perpendicular to the base. Cuts shall be parallel and perpendicular to the centerline of the roadway.

2.03.3 Protection of tie bars and load transfer dowels: During the removal of concrete slabs, precautions must be taken not to damage load transfer dowels and tie bars or break out the concrete paving under the dowels or tie bars on the adjoining slab. Damage of the adjoining slab will require its replacement at the expense of the PERMIT HOLDER. Any existing tie bars or load transfer dowels damaged during the construction process shall be replaced. Longitudinal joint tie bars and/or transverse joint load transfer dowel bars shall

be required at the joints of concrete panels whenever two (2) or more slabs are being replaced.

2.03.4 Removal Methods: The PERMIT HOLDER shall not proceed with pavement removal until it has been demonstrated, to the satisfaction of the CITY ENGINEER, that the method to be used to break and remove the concrete pavement will not damage the existing utilities, or pavement that is to remain in place. Standard cuts shall only be done in one slab; any damage to abutting slabs will require the removal and replacement of all the slabs cut or damaged at the PERMIT HOLDER'S expense

2.03.5 Alternate method of pavement removal: Owners of existing utilities may require that an alternate method of pavement removal be used if owner(s) believe that the proposed standard method of pavement removal (drop hammer, backhoe, pavement breaker, jackhammer) may jeopardize their utilities. The extra cost of removal will be the responsibility of the PERMIT HOLDER. On CITY paving rehabilitation projects, the owner of the utility is responsible for any additional costs associated with requested extra removal requirements.

## 2.04 ASPHALT PAVEMENT REMOVAL

2.04.1 New Asphalt pavement shall not be cut for at least five (5) years following the finishing of the paving, except in an emergency or when prior approval has been granted by the CITY ENGINEER.

2.04.2 Where possible, all rules governing concrete pavement removal and repair shall apply to asphalt base pavement.

2.04.3 If joints or cracks show through the surface on asphalt pavements, the same rules apply as though the surface was concrete. If no joints are visible or their locations cannot reasonable be determined before or after excavation, no additional removal will be required.

2.04.4 Prior to restoration of a street with paving older than five (5) years, the existing asphalt surfacing abutting the excavation, trench line, or cut, shall be saw cut back a minimum of twenty-four (24) inches beyond each side of the trench leaving a vertical edge to completely expose the existing rigid base.

## 2.05 REMOVALS IN UNIMPROVED ROADWAYS AND ROADWAY SHOULDERS: Provisions of Sections 2.03 and 2.04 shall apply.

## 2.06 REMOVALS IN AND RESTORATION OF PLANTING STRIPS AND UNIMPROVED RIGHT-OF-WAY

2.06.1 Where construction activity is within areas identified or serving as natural open spaces, or in planted or otherwise improved Right-of-Way, the Facilities Work and restoration thereafter shall be in accordance with the Municipal Tree and Landscape Ordinance.

## 2.07 STANDARD CONCRETE SIDEWALK REMOVAL

2.07.1 The removal of three (3) or more linear feet of curb or twelve (12) or more square feet of the sidewalk at an intersection, will require installation of standard curb ramps. Refer to Attachment A.

2.07.2 If the sidewalk adjacent to a cut was damaged prior to construction, it shall be removed and replaced as required by the CITY ENGINEER, but removal and replacement shall in no case be required farther than the nearest expansion joint or the nearest scribe mark that is at least five (5) feet beyond the opening.

2.07.3 Any walk area damaged by a PERMIT HOLDER during the Facilities Work shall be removed and replaced to the extent prescribed by the CITY ENGINEER, at the PERMIT HOLDER'S expense.

2.07.4 A PERMIT HOLDER doing Facilities Work immediately adjacent to a standard concrete walk that was damaged prior to or during construction, shall be required to replace the damaged walk, full width, for the length of the project. Such PERMIT HOLDER must bear the entire expense of such replacement or negotiate with the adjoining property owners prior to construction and arrange at that time to share the expense with the property owners.

2.07.5 All walkway areas and associated amenities including but not limited to pavers, tree grates, and plantings in tree pits or planting strips shall be protected from equipment damage. Sidewalk removal within the dripline of trees shall be executed in accordance with the City's Municipal Tree and Landscape Ordinance.

2.07.6 Openings in concrete sidewalks shall be made by saw cutting at the scribe marks or joints and trimmed so that the margin lines of the patch will form a rectangle with straight edges and vertical faces.

2.07.7 Under-cutting of walks is not permitted. Such excavation shall require replacement of the walk.

2.07.8 Patches in walks supported on all sides: Minimum width of all longitudinal cuts for repair shall be two (2) feet, or expanded to the nearest scribe line, providing the concrete walk repair is bounded on each side by other properly placed concrete or asphalt pavement or other improvements that will prevent the pavement from shifting.

2.07.9 Patches in walks not supported on all sides: Concrete walk shall be removed so that no panel is less than four (4) feet in width, unless the concrete walk replaced or remaining is bounded on each side by other properly placed concrete or asphalt pavement or other improvements that will prevent the concrete walk from shifting. Any remaining panel less than two (2) feet in width, regardless of support, shall be replaced in its entirety.

2.07.10 Patches in eight (8)-foot walks with support on one side: Concrete walks eight (8) feet or more in width bounded on one side by earth planting strip and on the other side by curbing, buildings or walk (concrete or asphalt) that will prevent movement of the remaining pavement, shall be removed so that the pavement remaining on the side bounded with earth shall be at least four (4) feet in width and the pavement remaining on the side bounded by curbing, building or other pavement shall be at least two (2) feet in width. Refer to Attachment B.

2.07.11 Patches in eight (8)-foot walks and less not supported on any side: Concrete walks less than eight (8) feet in width bounded on both sides by earth planting strips shall be entirely removed and replaced. Refer to Attachment B.

2.07.12 A concrete walk between the edge of an opening and a transverse expansion joint or scribe line shall be removed and replaced.

2.07.13 In emergency situations, concrete breakers will be permitted to break concrete sidewalks. However, edges of openings must be saw trimmed before repair.

## 2.08 STANDARD ASPHALT PATHWAYS AND WALK REMOVAL

2.08.1 If the asphalt pathway or walk adjacent to a cut was damaged prior to construction, it shall be removed and replaced as required by the CITY ENGINEER.

2.08.2 Any asphalt pathway or walk area damaged by a PERMIT HOLDER during the Facilities Work shall be removed and replaced to the extent prescribed by the CITY ENGINEER, at the PERMIT HOLDER'S expense.

2.08.3 A PERMIT HOLDER doing Facilities Work immediately adjacent to a standard asphalt pathway or walk that was damaged prior to or during construction, shall be required to replace the damaged pathway or walk, full width, for the length of the project. Such PERMIT HOLDER must bear the entire expense of such replacement or negotiate with the adjoining property owners prior to construction and arrange at that time to share the expense with the property owners.

2.08.4 All asphalt pathway areas and associated amenities including but not limited to pavers, tree grates, and plantings in tree pits or planting strips shall be protected from equipment damage. Asphalt pathway and walk removal within the dripline of trees shall be executed in accordance with the City's Municipal Tree and Landscape Ordinance.

2.08.5 Openings in asphalt pathways and walks shall be made by saw and trimming so that the margin lines of the patch will form a rectangle with straight edges and vertical faces.

2.08.6 Undercutting of the asphalt pathways and walks is not permitted. Such excavations shall require replacement of the pathway and walk.

2.08.7 Patches in pathways and walks supported on all sides: Minimum width of all longitudinal cuts for repair shall be two (2) feet, providing the asphalt pathway repair is

bounded on each side by other properly placed concrete or asphalt pavement or other improvements that will prevent the pavement from shifting.

2.08.8 Patches in walks not supported on all sides: Asphalt pathways and walks shall be removed so that no part is less than four (4) feet in width, unless the asphalt pathway replaced or remaining is bounded on each side by other properly placed concrete or asphalt pavement or other improvements that will prevent the asphalt pathway from shifting. Any remaining part less than two (2) feet in width, regardless of support, shall be replaced in its entirety.

## 2.09 DECORATIVE/SPECIAL PAVEMENTS AND SIDEWALK REMOVAL

2.09.1 The preceding provisions shall apply where applicable.

2.09.2 Replacement of materials identical to the removed materials must be on the work site or in the PERMIT HOLDER's possession prior to the start of the Facilities Work. If no source can be located, an equivalent substitute may be considered.

2.09.3 The PERMIT HOLDER shall take photographs of all decorative/special pavements prior to removal to aid in restoration, unless photographs are not required by the CITY ENGINEER.

2.09.4 All mortared decorative/special sidewalks or street pavement (e.g., brick, cobblestone, pave blocks, etc.) shall be removed at a joint with the intent of salvaging as many units as possible, unless the CITY ENGINEER indicates there is no requirement to reuse the material.

2.09.5 Secured storage for salvaged materials shall be provided by the PERMIT HOLDER.

2.09.6 Tunneling may be required at the discretion of the CITY ENGINEER.

## 2.10 REMOVAL OF WATER

The PERMIT HOLDER shall provide and maintain adequate dewatering equipment to remove and dispose of all surface and ground water entering excavations, trenches, or other parts of the work. Each excavation shall be kept dry during subgrade preparation and continually thereafter until the pipe line to be installed therein is completed to the extent that no damage from hydrostatic pressure, flotation, or other causes will result.

Surface water shall be diverted or otherwise prevented from entering excavated areas or trenches, to the greatest extent practicable without causing damage to adjacent property.

## 2.11 SHEETING AND SHORING

Except where banks are cut back on a stable slope, excavation for structures and trenches shall be properly and substantially sheet braced, and shored, as necessary, to prevent caving or sliding, to provide protection for workmen and the Facilities Work, and to

provide protection for existing structures and facilities. Sheeting, bracing, and shoring shall be designed and built to withstand all loads that might be caused by earth movement or pressure, and shall be rigid, maintaining its shape and position under all circumstances.

## 2.12 STABILIZATION

Trench bottoms shall be firm, dense, and thoroughly compacted and consolidated; shall be free from mud and muck; and shall be sufficiently stable to remain firm and intact under the feet of the workmen.

Trench bottoms that are otherwise solid shall be reinforced with one or more layers of crushed stone embedded therein. Not more than 1/2 inch depth of mud or muck shall be allowed to remain on stabilized trench bottoms when the pipe bedding material is placed thereon.

All stabilization work hereunder shall be performed by and at the expense of the PERMIT HOLDER.

## 2.13 TRENCH EXCAVATION

Except where knifing, boring or tunneling is shown on the plans, is specified, or is permitted by the CITY ENGINEER, all trench excavation shall be open cut from the surface.

The PERMIT HOLDER shall not open more trench in advance of pipe laying than is necessary to expedite the Facilities Work. In the event that pipe laying is stopped for any cause, 100 feet shall be the maximum length of open trench permitted on any line under construction.

## 2.14 OPEN EXCAVATIONS AND USE OF STEEL PLATES

2.14.1 When backfilling operations cannot be completed by the end of the authorized work shift, steel plates (meeting the requirements below) may be used to temporarily cover the excavation. Each steel plate shall be identified with the PERMIT HOLDER's name and shall be installed such that there will not be any rocking, noise, hammering, or shaking of adjacent property.

2.14.2 The steel plates shall have a minimum of twelve (12) inches bearing width on all sides of a cut in rigid pavement. Additional bearing width may be required for non-rigid paved streets and areas where the pavement has been undercut, as the discretion of the CITY ENGINEER.

2.14.3 Plates shall be anchored to minimize shifting, using steel pins driven on at least two sides of the plate, or flanges or angle irons welded to the underneath side of the plate to conform to the size of the opening, or any equal or improved method approved by the CITY ENGINEER.

2.14.4 Where the street surface is uneven, plates will be bedded on asphaltic mix or approved material. Transition shims shall be provided to allow ease of traffic movement over the plate.

2.14.5 Steel plates shall be capable of carrying a minimum loading as determined by the CITY ENGINEER

2.14.6 Steel plates shall be coated with non-skid paint or other material to prevent slipping or skidding.

2.14.7 Steels plates shall be removed from the work site within 24 hours of notification by the CITY ENGINEER.

## 2.15 ALIGNMENT AND GRADE

2.15.1 Alignment and Grade of Water Mains: The alignment and grade or elevation of each pipe line at highway and railroad crossing and other critical points shall be fixed as determined by means of offset stakes to be set by the PERMIT HOLDER. At other locations, line stakes will be furnished and set by PERMIT HOLDER. Pipe is to be laid with 42 inches minimum cover with straight sections laid in a straight alignment and curved sections laid at an approximate uniform rate of curvature. Vertical and horizontal alignment of pipes, and the maximum joint deflection used in connection therewith, shall be in conformity with the requirements of the specification covering the installation of the pipe being laid in each case. Refer to Attachment C.

2.15.2 Alignment and Grade of Sewer: Pipe shall be laid true to line and grade as shown on drawings prepared by licensed engineer. Each section of pipe shall rest upon the pipe bed for the full length of the barrel with recesses excavated to accommodate bell joints. Any pipe that has its grade alignment or joint disturbed after laying shall be taken up and relaid. Under no circumstances shall pipe be laid in water or when weather or trench conditions are unsuitable for such work in the opinion of the CITY ENGINEER. Sewer mains shall be laid on a uniform grade, and at a uniform (straight) alignment between manholes. All changes in grade and or alignment shall be made only at a manhole. Sewer service laterals shall be laid at uniform grade and alignment. Clean-outs shall be provided at any change in grade or alignment of over 45 angle. No change in grade or alignment shall be permitted in that portion of a service lateral passing under a city street.

2.15.3 Alignment And Grade of Natural Gas Pipelines: Natural gas pipelines laid in the city right-of-way shall be laid in a straight alignment parallel or perpendicular to the street centerline to the extent possible. Natural gas transmission lines shall be placed at depths specified by DOT/MPSC Part 192. Non-metallic lines shall be buried with metallic locator wires or tape which will permit accurate location of said lines from the surface with normal magnetic locator devices. Any line passing under a city street shall be buried a minimum of 36 inches and a maximum of 48 inches below the street surface. In the event the specified depth ranges are unsuitable, the City Engineer may approve alternate depths. Refer to Attachment C.

2.15.4 Alignment And Grade of Telecommunications Lines: Telecommunication lines buried in the city right-of-way shall be laid in a straight alignment parallel to or perpendicular to the street centerline to the extent possible. Local service lines shall be buried a minimum of 24 inches and a maximum of 36 inches. Trunk lines and fiber optic lines shall be buried at a minimum depth of 36 inches and a maximum depth of 48 inches. Any line passing under a city street shall be buried at a minimum of 36 inches and a maximum of 48 inches below the street surface. In the event the specified depth ranges are unsuitable, the City Engineer may approve alternate depths Refer to Attachment C.

2.15.5 Alignment And Grade of Underground Electric Transmission Lines: Electric transmission lines buried in the city right-of-way shall be laid in a straight alignment parallel to or perpendicular to the street centerline to the extent possible. Electric transmission lines shall be buried at a minimum depth of 36 inches and a maximum depth of 48 inches. In the event the specified depth ranges are unsuitable, the City Engineer may approve alternate depths Refer to Attachment C.

## 2.16 TRENCH WIDTHS AND PIPE CLEARANCES

2.16.1 Trenches shall be excavated to a width, which will provide adequate working space and pipe clearances for proper pipe installation, jointing and embedment. However, the maximum trench bottom width shall be nominal inside pipe diameter plus 24 inches.

2.16.2 Minimum trench widths shall be such as to give minimum of 6 inch clearance between trench walls and exterior of pipe for sewer and water mains. Minimum trench width for natural gas pipelines, conduit for electrical and telecommunication cables, and fiber optic lines shall be as specified by the engineer of record for the utility installing such facilities.

2.16.3 The stipulated minimum clearances are not minimum average clearances, but are minimum clear distances which will be permitted between the pipe as laid and any part, projection or point of rock, shale, stone or boulder.

2.16.4 Where for any reason, the width of the lower portion of the trench as excavated at any point exceeds the maximum permitted, either pipe of adequate strength, special pipe embedment, as required by loading conditions and as determined by the CITY ENGINEER, shall be furnished and installed by and at the expense of the PERMIT HOLDER.

## 2.17 MECHANICAL EXCAVATION

Mechanical equipment used for trench excavation shall be of a type, design, and construction, and shall be so operated, that the rough trench excavation bottom elevation can be controlled, that uniform trench widths and vertical side walls are obtained at least from an elevation one foot above the top of the installed pipe to the bottom of the trench, and that the trench alignment is such that the pipe when accurately laid to specified alignment will be centered in the trench with adequate clearance between the pipe and

side walls of the trench. Undercutting of the trench side wall to obtain clearance will not be permitted.

## 2.18 SUBGRADE PREPARATION

Except where otherwise required, pipe trenches shall be excavated below pipe subgrade elevations, as required to provide for the installation of granular fill pipe foundation material.

Whenever required by soft foundations, the PERMIT HOLDER shall excavate to such depth below grade as necessary and the trench bottom shall be brought to grade with granular fill.

Bell Holes shall provide adequate clearance for the tools and methods used in installing the pipe. No part of any bell or coupling shall be in contact with the trench bottom, trench walls or granular fill when the pipe is jointed.

## 2.19 PIPE EMBEDMENT

Granular fill material shall be used as shown on the detail plans. Granular fill may be crushed rock or gravel, and shall meet the requirements for Type 2 Aggregate for Base, Gradation B, Missouri Standard Specifications for Highway Construction. For water mains the granular fill shall be placed under and around the pipe up to a level halfway between the center of the pipe (spring line) and the top of the pipe barrel. For sewer lines, granular fill shall be placed under and around the pipe up to an elevation at least 12 inches above the barrel of the pipe. Natural gas lines may be directly bedded, without granular fill if directed by the engineer of record for this installing natural gas utility. Granular fill material shall be placed in a manner as to provide uniform and continuous support and shall not disturb alignment of the pipe during placement.

Succeeding layers of backfill above those described shall be placed as described in the following paragraphs.

## 2.20 BACKFILL

2.20.1 Ordinary Backfill: There shall be no ordinary backfill in this Facilities Work.

2.20.2 No fill shall be made so as to cause or allow the same to be deposited upon or to roll, flow, or wash upon or over the premises so affected; or upon or over any public street, walk, place or way.

2.20.3 Backfill material shall consist of material obtained from excavation of cut areas, borrow pits, or other approved sources. Material shall be free of vegetable matter and deleterious material and shall not contain rocks in excess of six (6) inches in diameter.

2.20.4 90% MP Compacted Backfill. Earth subgrade for paved areas, all filled places under sanitary and storm sewer lines, in paved streets, and/or paved areas including trench backfills which pass under lawns, pasture, and within the street right-of-way, shall

be compacted to 90% of maximum density as determined by the “Modified A.A.S.H.O. T-180 Compaction Test” (ASTM D-1557) unless otherwise specified by the CITY ENGINEER. All tests shall be verified by a soils engineer

2.20.5 The average density of the trench backfill shall be 90% of maximum density. Material shall be placed in lifts as required for adequate compaction with variations in lift thickness depending on soil and on method of compaction. Completed backfill shall have no less than 90% density in the top 2.5 feet in backfill excluding the top few inches to be used as seed bed or for bedding sod. Compaction may be by hand tamping, tamping machine, or other methods approved by the CITY ENGINEER. PERMIT HOLDER will prepare test pits for sampling and testing and evaluation of compaction procedures.

2.20.6 The person making such refill shall be required to clean up and haul away all surplus earth, rock, or rubbish immediately after such refill has been completed. In the event of default thereof, the CITY ENGINEER shall have the right to remove such earth, rock, or rubbish and charge the cost of such removal to the person who received the permit. Such person shall not be issued another permit until such charge has been paid.

2.20.7 All grading on Public Right-of-Way shall be completed in accordance with the City of St. Peters Grading Ordinance.

2.20.8 Emergency and Special Backfill: In Emergency Situations, or where it is necessary to reopen the street to traffic, or upon special request by the PERMIT HOLDER, emergency backfill of the excavation by the PERMIT HOLDER may be allowed with permission of the CITY ENGINEER. In such situations, the PERMIT HOLDER must make every reasonable effort to obtain authorization from the CITY ENGINEER before proceeding to emergency backfill.

#### 2.20.9 Responsibility of PERMIT HOLDER for Backfill Settlement

Where 90% compaction is called for, the PERMIT HOLDER shall be responsible financially, and otherwise, for a period of one year after completion of Facilities Work, for (a) all settlement of trench and other backfill which may occur from time of original backfilling, (b) the refilling and repair of all backfill settlement and the repair or replacement to the original or a better condition of all pavement, top surfacing, driveways, walks, surface structures, utilities, drainage facilities, and sod which have been damaged as a result of backfill settlement or which have been removed or destroyed in connection with backfill replacement operations, and (c) all damage claims or court actions against the CITY for any damage directly or indirectly caused by backfill settlement.

The PERMIT HOLDER shall make, or cause to be made, all necessary backfill replacements, and repairs or replacements appurtenant thereto, within thirty days after due notification by the CITY ENGINEER or CITY.

When backfill is accomplished by the PERMIT HOLDER without CITY approval, the PERMIT HOLDER shall guarantee the integrity of the backfill until the street is reconstructed or resurfaced.. In the event of failure or severe deterioration as defined in

this policy, the CITY will make the necessary repairs at the expense of the PERMIT HOLDER, at the CITY ENGINEER's discretion.

## 2.21 DRAINAGE MAINTENANCE

Trenches across roadways or driveways adjacent to drainage ditches of water courses shall not be backfilled prior to the completion of backfilling of the trench on the upstream side of the roadway to prevent the impounding of water after the pipe has been laid. Bridges and other temporary structures required to maintain traffic across such unfilled trenches shall be constructed and maintained by the PERMIT HOLDER. Backfilling shall be done so that water will not accumulate in unfilled or partially filled trenches. All material deposited in roadway ditches or other water courses crossed by the line of trench shall be removed immediately after backfilling is completed and the section grades and contours of ditches or water courses shall be restored to their original condition. Surface drainage shall not be obstructed longer than necessary.

## 2.22 DISPOSAL OF EXCESS EXCAVATED MATERIAL

All excess excavated materials shall be disposed of away from the site of the Facilities Work. The PERMIT HOLDER shall be responsible for locating areas for disposal of such materials.

Excavated rock in excess of the amount permitted to be and actually installed in trench backfill, junk, and debris encountered in excavation work, and other similar waste material shall be disposed of away from the site of the Facilities Work.

## DIVISION 3 - RESTORATION OF SURFACE

### 3.01 GENERAL

The PERMIT HOLDER shall restore all surfaces ~~to~~ equal ~~to~~ or better than its original condition unless otherwise specified. Restoration includes pavement, sidewalks, alley, lawns, etc. The person making such refill shall be required to clean up and haul away all surplus earth, rock or rubbish immediately after such refill has been completed. In the event of default thereof, the CITY shall have the right to remove such earth, rock or rubbish and charge the cost of such removal to the person who received the permit. Such person shall not be issued another permit until such charge has been paid

### 3.02 REESTABLISHMENT OF GRASS

3.02.1 All vegetated areas damaged or disturbed during Facilities Work shall be replaced with sod.

3.02.2 Seeding and fertilizing may be allowed in lieu of sodding at the discretion of the CITY ENGINEER.

3.02.3 After shaping and dressing of areas to be seeded or sodded have been completed, a commercial fertilizer, analysis 12-12-12 or 13-13-13, shall be applied at a rate of not less than 350 pounds per acre.

3.02.4 The area to be seeded shall be prepared to receive the seed mixture by using a disc, harrow, tiller, spiker or other suitable implement. Seed shall then be spread at the specified rate by drill, by hand seeder, by brilliant seeder, or by other approved seeders. Seeding shall not be done during windy weather, or when the ground is frozen, muddy or otherwise in a nontillable condition.

3.02.5 An established grass cover shall be provided on all areas requiring seeding or sodding. Watering, mulching, mowing and any other operation necessary to provide an acceptable grass cover shall be provided by the PERMIT HOLDER at no additional cost to the CITY.

3.02.6 Seed shall be applied at the rate of 80 pounds per acre. The seed shall be composed of a mixture of 80% turf type fescue and 20% perennial rye grass spread at a rate of 450 pounds per acre. Seeded areas shall be mulched with straw at a rate of 200 bales per acre.

### 3.03 TEMPORARY SURFACE

3.03.1 Temporary Patches: If temporary patches are required to maintain traffic or pedestrian travel, the PERMIT HOLDER shall install and maintain a two-inch (2") thick patch of asphalt material over a minimum of two-inches (2") of crushed rock or, optionally, a three-inch (3") thick patch of asphalt material. These may be amended or expanded at the discretion of the CITY ENGINEER.

3.03.2 Responsibility for temporary patches: When temporary asphaltic patches are allowed or required, they must be compacted flush with the adjoining permanent pavement, and must be maintained in a good condition, at grade, until such time as a permanent patch is placed. Any settlement of the backfill under the patch is the responsibility of the PERMIT HOLDER until the street is reconstructed or repaved.

3.03.3 Responsibility for temporary patch failures: The CITY ENGINEER will respond to all complaints of patch failures or patches placed incorrectly by making permanent repair. Patches, less than 60 days old, will have the subbase removed and replaced prior to pavement repair at the PERMIT HOLDER's expense.

### 3.04 CONCRETE PAVEMENT RESTORATION

3.04.1 All materials used for concrete surfaces shall conform to CITY specifications for such use.

3.04.2 Longitudinal joint tie bars and transverse joint load transfer dowels – Any existing tie bars or load transfer dowels damaged during the construction process shall be replaced. Longitudinal joint tie bars and/or transverse joint load transfer dowel bars shall be required at the joints of concrete panels whenever two (2) or more slabs are being replaced.

3.04.3 Concrete Pavement Panel Replacement Determination: For concrete surface streets, the minimum restoration shall be full slab replacement if one or more of the following conditions exist (refer to Attachments D, E, and F):

- a. On any arterial street any slab less than fifteen (15) years old will require full slab replacement. On any non-arterial street, any slab less than fifteen (15) years old will require full slab replacement at intersection locations and may require full slab replacement for locations in-between intersections, at discretion of CITY ENGINEER.
- b. In any slab where the cut removes (or requires removal of) more than forty percent (40%) of the slab.
- c. On any slab whose preconstruction condition is “excellent” based on visual inspection by CITY ENGINEER.
- d. Any diagonal cut will require full slab replacement.
- e. Any slab where the proposed cut will leave the slab in three (3) or more pieces, will require full slab replacement.
- f. Any trenching that transverses any arterial.

3.04.4 Where partial panel replacement is allowed, additional pavement replacement beyond the cut or trench line will be required under the conditions stated below (refer to Attachment G):

- a. Cuts less than eighteen (18) square feet or less and where the depth of excavation is six (6) feet or less below grade and not within three (3) feet from a longitudinal joint or five (5) feet from transverse joint, other patches or any cracks, may be patched to its initial size.
- b. The minimum restoration in a concrete pavement slab shall be three (3) feet in width in the longitudinal direction and five (5) feet long in the transverse direction.
- c. If the cut is less three (3) feet from a longitudinal or five (5) feet from a transverse joint or other patches or cracks, the intervening portion of the slab must be removed.
- d. If the edge of the cut is less than twenty-four (24) inches from the face of a curb, the intervening portion of the panel and curb must be removed and replaced, at the discretion of the CITY ENGINEER.
- e. Patches on the longitudinal (outside) edge of a slab shall be a minimum of three (3) feet in width.

3.04.5 Saw Cutting: Saw cutting is required except when pavement removal extends to a full-depth joint, line drilling is used, or exception granted by the CITY ENGINEER. The minimum depth of any saw cut on concrete pavement or on asphalt over concrete pavement shall be such that one-half the thickness of the concrete base is cut. The maximum depth saw cut shall be such that no more than three-fourths the thickness of the concrete base is cut. No cutting wheel runout will be permitted beyond the limit of the opening of the cut or on adjacent slabs. The slurry resulting from the cutting operation shall be contained, collected and disposed at an appropriate disposal site. No such material shall be disposed of in any storm drain system.

3.04.6 For concrete pavements, the concrete thickness of the repair shall be at least 8 inches. Reinforcement shall be placed with #4 bars at 12 inches o.c., transverse and a minimum of three #4 bars longitudinal. Concrete used for repair shall meet Missouri Standard Specifications for Highway Construction for Pavement Concrete (501.2.2) and shall have a minimum cement content of 6.5 bags per cubic yard, a maximum slump of 2 1/2 inches, and a minimum compressive strength of 4000 psi at 28 days.

### 3.05 ASPHALT PAVEMENT RESTORATION

3.05.1 All materials used for asphalt pavement surfaces shall conform to CITY specifications for such use.

3.05.2 The minimum width of the replacement overlay shall be the full lane width on multiple lane roadways and to the center line on two lane roads. The length of the replacement shall be the longitudinal length of the cut or trench plus twenty-four (24) inches at both ends. In all cases the top of the pavement base must be exposed a minimum of twenty-four (24) inches from all edges of the cut. Refer to Attachments D and E.

3.05.3 Restoration shall be full lane width, at the discretion of the CITY ENGINEER, for the entire length of the trench cut. A self-contained, power propelled asphalt paving machine with an activated screed or strike-off assembly, capable of spreading and finishing asphalt material shall be used. Prior to paving the lane, the asphalt outside the

trench shall be removed by cold planing (grinding) the asphalt down a minimum of two (2) inches or to the surface of the base, whichever is less.

3.05.4 For full depth asphaltic concrete pavements, the asphalt thickness of the repair shall be at least 12 inches. Replace the pavement with hot-mix asphalt and compact thoroughly in lifts not to exceed 4 inches each. Hot-mix asphalt shall be of a commercial mix design equivalent to Missouri Standard Specification Type 1-C. (403.3)

3.05.5 For other asphalt surfaces, the thickness shall be at least 10 inches, consisting of 6 inches of rolled stone base (MoDOT Type 5) compacted to 100% of Maximum Dry Density, and 4 inches of thoroughly compacted bituminous surfacing layer consisting of an approved commercial asphalt-aggregate mixture. (Cold-mix)

3.05.6 The completed surface of all courses shall be of uniform texture, smooth, uniform as to crown and grade, and free from defects of all kinds. The completed surface of the wearing course shall not vary more than one-eighth inch from the lower edge of a 10-foot straightedge placed on the surface parallel to the centerline. The transverse slope of the completed surface of the wearing course shall vary not more than one-quarter inch in ten (10) feet from the rate of transverse slope shown in the construction plan.

3.05.7 When deviations in excess of the above tolerances are found, the pavement surface shall be corrected by the addition of asphalt concrete mixture of an appropriate class to low places or the removal of material from high places by grinding with an approved grinding machine, or by removal and replacement of the wearing course of asphalt concrete. Correction of defects shall be carried out until there are no deviations anywhere greater than the allowable tolerances.

3.05.8 In all areas in which the surface of the completed pavement deviates more than twice the allowable tolerances described above, the surface wearing course shall be removed and replaced to the satisfaction of the CITY ENGINEER.

3.05.9 Castings, such as inlets, access holes, monument cases, etc., shall be adjusted to finish grade prior to construction of the final wearing course. Any casting and/or lid which is worn or broken shall be replaced prior to the installation of the final wearing course.

### 3.06 UNIMPROVED ROADWAY AND ROADWAY SHOULDER RESTORATION

3.06.1 The restoration of unimproved shoulders of the roadway shall be patched with crushed rock or other material approved by the CITY ENGINEER to a compacted depth of four (4) inches.

3.06.2 Untreated road surface (crushed rock, gravel, or oil-mat surface) shall be resurfaced with a minimum of two (2) inches of crushed rock base or other material approved by the CITY ENGINEER and application of a dust palliative treatment.

3.06.3 Private improvements, such as driveways, paved areas, etc., shall be restored to equal or better condition to that prior to construction.

### 3.07 STANDARD CONCRETE SIDEWALK AND DRIVEWAY RESTORATION

3.07.1 The concrete sidewalk thickness shall be at least 4 inches placed over a 4-inch thick rolled stone base. Reinforcement shall be placed 2 inches below the surface and shall be 6X6-10-10/WWF. Concrete used for sidewalk repair shall be equivalent to MoDOT Class B concrete, and shall have a minimum cement content of 6 bags per cubic yard, and a maximum slump of 4 inches.

3.07.2 Residential driveways shall be six (6) inches in thickness and commercial driveways and alley approaches to be a minimum of eight (8) inches in thickness. Any changes in sidewalk configuration or grade shall be subject to approval by the CITY ENGINEER prior to execution of the restoration work.

### 3.08 STANDARD ASPHALT PATHWAYS AND WALK RESTORATION

3.08.1 Prior to placing aggregate base material, CONTRACTOR shall apply weed killer (soil sterilant) to entire asphalt pathway area in accordance with manufacturer's recommendations.

3.08.2 The base course aggregate shall meet the Specifications of the current edition of Missouri Standard Specification for Highway Construction as published by the Missouri State Highway Commission for "Type I" aggregates – Gradation A or B (Section 1007.2).

3.08.3 The base materials shall be uniformly graded so that the asphaltic concrete surfacing may be applied in even thickness with no depressions; compact same to a minimum depth of seven (7) inches.

3.08.4 Compact aggregate base to 90% of maximum dry density as determined by ASTM D-1557 (modified proctor test). The CONTRACTOR shall protect the aggregate base from subsequent construction operations or adverse weather, and keep free of trash and debris.

3.08.5 The CONTRACTOR shall use asphaltic concrete which meets the specifications of the current edition of the Missouri Standard Specifications for Highway Construction for "Asphaltic Concrete Pavement – Type C".

3.08.6 Loose material shall be removed from the compacted base immediately before applying the prime coat, and any unstable areas shall be corrected with aggregate base.

3.08.7 The prime coat shall be asphalt type MC-30, MC-70, or MC-250. The prime coat shall be applied to prepared aggregate base. Asphaltic concrete mixture shall be placed on prepared surface with paver and roll-compacted. The prime coat shall be applied at a rate of 0.25 gallons per square yard over the compacted base. The prime coat shall be applied to penetrate the seal, but not flood the surface. The prime coat shall be allowed to cure as long as necessary to attain penetration and evaporation of volatile. The prime coat shall be applied when ambient temperature is above 50 degrees Fahrenheit, and

when temperature has not been below 35 degrees Fahrenheit for 12 hours immediately prior to application. Prime coat shall not be applied when base is wet or contains an excess of moisture.

3.08.8 The asphalt concrete mixture shall be placed on the prepared surface, spread, and struck-off with paver. The mixture shall be spread at a minimum temperature of 225 degrees Fahrenheit. The asphalt concrete mixture shall be placed to grade and proper compacted thickness of 2 inches, with a 2% cross-slope for asphalt pathway. CONTRACTOR shall provide a straight edge at the soil-asphalt interface; do not feather. The CONTRACTOR shall begin rolling when mixture will bear roller weight without excessive displacement. The surface should be checked after breakdown rolling and displaced areas shall be repaired by filling and re-rolling if necessary. Finish rolling shall be performed until all roller marks are eliminated, and the course has attained maximum density while mixture is hot. The asphalt concrete surface course shall be constructed only when atmospheric temperature is above 40 degrees Fahrenheit and when base is dry.

3.08.9 Joints shall be made between old and new pavements, or between successive day's work, to ensure continuous bond between adjoining work. The joints shall be constructed to have the same texture, density, and smoothness as other sections of asphalt concrete course. Contact surfaces shall be cleaned and tack coat applied.

3.08.10 The tack coat shall be emulsified asphalt, SS-1, SS-1h, CSS-1, or CSS-1h, diluted with one part water to one part emulsified asphalt. The tack coat shall be applied to contact surfaces of previously constructed asphalt or portland cement concrete and surface abutting or projecting into asphalt concrete pavement. The tack coat shall be distributed at rate of 0.05 to 0.15 gallon per square yard of surface.

3.08.11 Displaced soil shall be backfill to tightly abut beveled straight edge of completed top of asphalt pavement at grade. Soil shall be smooth graded to 2% slope and prepared for sodding.

3.08.12 Existing asphalt pathways or walks shall be replaced with a minimum thickness of two (2) inches of asphalt. Minimum thickness of all vehicular crossings shall be three (3) inches of asphalt. Refer to Attachment H.

### 3.09 DECORATIVE/SPECIAL PAVEMENT AND SIDEWALK RESTORATION

3.09.1 Any cobblestone and other decorative surfaces, including curbs and/or gutters, base and sub-base, shall be restored to match original construction conditions and appearance. This restoration may entail additional pavement removal as directed by the CITY ENGINEER.

### 3.10 CURB RAMPS

3.10.1 Curbs and gutters are to be constructed of Pavement Concrete (6.5 bag mix).

3.10.2 Curb ramps must be installed any time three (3) or more feet of existing curb or more than twelve (12) square feet of the sidewalk is being removed and replaced within

the area bounded by lines that are the production of the right-of-way lines (property lines) at an intersection. The CITY ENGINEER will assist in determining location and/or configuration of curb ramps.

3.10.3 Companion curb ramp(s) shall be installed on the opposite side of the street from any new curb ramp, unless there is no existing curb or sidewalk on the opposite side of the street. If only curbs exist, then the curb shall be depressed in the same manner as if a ramp were being built. If the initial ramp is being constructed at the mid-point of the arc of the curb, then at least one additional ramp shall be installed at the opposite end of the crosswalk.

3.10.4 Preferred location: If a preferred curb ramp location is not feasible due to utility location or other conflicts, then the PERMIT HOLDER shall work with the CITY ENGINEER to choose an alternate location in descending priority order.

3.10.5 Utility Conflicts: Utility and other street furniture items which conflict with the preferred ramp location should be relocated if such can be done for \$1,000 or less. Where utility castings are in conflict, they shall be reconstructed to ramp grade or relocated.

3.10.6 Utility Clearance: Minimum lateral clearance from utility poles, hydrants, traffic signal hardware or above grade obstacles shall be one (1) foot to the scored portion of the ramp.

3.10.7 Cross Slopes: Where the cross slope or the ramp (or street grade) is six percent (6%) or greater, alternative locations for ramps should be sought.

3.10.8 Adjacent Driveways: Where property access driveways exist or are planned to be constructed as part of a street or sidewalk construction project, and any portion of the driveway immediately abuts or overlaps the preferred curb ramp location, said driveway may serve as the curb ramp for that location. The driveway shall be constructed, or if existing, it shall be shimmed (to a minimum of six (6) feet of the driveway which is closest to the corner), to be flush with the adjacent roadway surface. In locations where a new or existing driveway serves as the required new curb ramp, the companion ramp (Subsection 3.11.3) shall still be required. Repair or replacement of an existing driveway only, or installation of a new driveway only, shall not be construed as requiring a curb ramp on the opposite side of the street.

3.10.9 Curb Ramp Landing Areas: Minimum size of the concrete walk behind the ramp shall be three (3) feet by four (4) feet.

**DIVISION 4 - SEPARATION OF WATER MAINS, SANITARY SEWERS  
AND STORM SEWERS**

4.01 PARALLEL INSTALLATION

Water mains shall be laid at least 10 feet horizontally from any existing or proposed sewer. The distance shall be measured edge to edge.

4.02 CROSSINGS

Water mains crossing sewers shall be laid to provide a minimum vertical clear distance of 18 inches between the outside of the water main and the outside of the sewer. This shall be the case where the water main is either above or below the sewer. At crossings, the full length of water pipe shall be located so both joints will be as far from the sewer as possible.

4.03 EXCEPTION

The Missouri Department of Natural Resources must specifically approve any variance from the requirements of Sections 8.1 and 8.2 when it is impossible to obtain the specified separation distances. The CITY ENGINEER shall request any such variance after all other remedies have been evaluated.

4.04 SEWER MANHOLES

No waterline shall be located closer than 10 feet to any part of a sewer manhole.