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STANDARD SPECIFICATIONS – EXCAVATION, BACKFILL AND COMPACTION

PART I – GENERAL

These specifications are general in nature and are designed to cover excavation and backfill for pipeline and structure. In cases where a provision is applicable to a particular type of construction or use, it is covered in the specification for the specific application (e.g., Standard Specifications for Sewer Mains). Where there is a more stringent requirement in such a specification, compliance shall be with the specific specification which is directly applicable to the situation.

A Contractor shall comply with all applicable laws and regulations, including “Rules and Regulations Governing Excavation Work,” of the State of Colorado and receive an excavation permit from the City when working on City right-of-way.

Existing Conditions

Prior to commencing construction, the Contractor shall be responsible for documenting the existing condition of the construction site and surrounding areas. Photographs and written descriptions of all substandard pre-existing conditions are recommended. Width of gravel and/or pavement, depth of such, and existence of drainage should be noted for roadways, as should broken fences and other private structures which are in need of repair. Unless substandard conditions are adequately documented prior to commencing construction, the Contractor will be held responsible for restoring the site to conditions which the City consider to be those which are standard and/or were pre-existing. Since construction equipment tends to be destructive of gravel and asphalt roads, particular attention should also be paid to recording conditions of roads which will be traversed by construction equipment even if there will not be any construction along the specific roadway.

Protection of Existing Utilities

The City will assist the Contractor in locating existing utilities of which it has knowledge. Contractor shall be responsible for scheduling with the City sufficiently in advance for the City to have someone available to provide such assistance. It will be the Contractor’s responsibility to contact all other utilities to get assistance in locating their lines and buried structures. The Contractor will be responsible for verifying the locations of all utilities and for repairing any damage caused by his Work. The Contractor must file notice of intent to excavate with each of these entities at least 48 hours prior to commencing work. All utility lines, including cables and pipelines, in the vicinity of the work shall be exposed by the Contractor before work is started. If, after exposure, a conflict is discovered, Contractor shall propose a remedy which shall be subject to approval of the City and all other affected parties.

PART II – PRODUCTS

BEDDING MATERIALS

- Class I 3500 psi Class B concrete as specified in CDOT Specification
- Class II Well graded crushed stone or crushed gravel meeting the requirements of ASTM C33, Gradation 67 (3/4 inch to No. 4)
- Class III Selected soil free from clods and stones greater than 3/4 inch in maximum dimension and free of all unsuitable materials as defined below.

Unsuitable Materials

Expansive materials and material that contains debris, roots, organics, or frozen materials, stone or concrete having a maximum dimension larger than four (4) inches, or materials that are unsuitable for providing stable slopes, fill, backfill, foundation or sub-grade material for structures or surfaces shall be classified as unsuitable. Otherwise suitable material which is unsuitable due to excess moisture content will not be classified as unsuitable unless it cannot be dried by manipulation, aeration, or blending with other materials satisfactorily to meet moisture limits for proper compaction.

PART III – EXECUTION

CLEARING AND GRUBBING

The area to be occupied by permanent construction shall be cleared and grubbed of trees, stumps, roots, brush, rubbish, and other objectionable matter to the extent necessary for orderly performance of the work. All clearing limits shall be staked by the Contractor and approved by the City prior to any construction. No trees shall be removed or injured outside the area to be occupied by the work without the prior approval of the property owner and/or the City. The City will mark trees to be removed on public property.

Where applicable, strip existing topsoil prior to trenching operations. Depth of stripping shall be determined in the field by the City. Stockpile topsoil material for replacement after all backfilling and compacting operations is completed.

The Contractor shall be responsible for the protection of all surface improvements, structures, buried utilities, and plantings that have not been designated for removal or modification as part of this project. The Contractor shall exercise care in his work to insure that no damage will occur to lawns, shrubs, hedges, trees, and other plantings adjacent to the right-of-way or in areas of access to the work. If there is disturbance to structures or plantings, the Contractor shall take remedial action at his own expense. No act, representation, or instruction of the City shall in any way relieve the Contractor from liability for damages or costs that result from activities of the Contractor. The Contractor may, with permission of the property owner, remove fences and other property to expedite trenching operations.

These shall be repaired to the satisfaction of the property owner as soon as backfilling operations are completed.

Storm Water Management Plan

The Contractor is responsible for securing necessary storm water discharge permits from the Colorado Department of Public Health and Environment prior to construction.

Removal of Cleared and Unsuitable Materials

Materials from the clearing operations shall be the responsibility of the Contractor and shall be removed from the site of the work and disposed of in a manner satisfactory to the Owner and City, and in accordance with state and local regulations.

During the process of clearing or trench excavation, soils such as peat, soft clay, quicksand, or other materials which are unsuitable for bedding may be encountered. These materials shall be removed from the site and disposed of by the Contractor. If removal of unsuitable materials results in excavation below the grade required for bedding, the area shall be backfilled to grade with suitable bedding materials complying with the provisions of applicable specifications for the work being constructed.

ACCESS ROADS AND BYPASSES

The Contractor shall be responsible for providing all access roads required to get materials and equipment to the work areas. When required, the Contractor shall construct and maintain detours or bypasses around portions of the work that conflict with traffic. All barricades and safety devices required to protect persons from injury and to avoid property damage shall be determined and furnished by the Contractor. When necessary, the Contractor shall provide suitable bridges at crossings where traffic must cross open trenches. Construction of access ways on private or government property must have written approval of the property owner prior to commencing construction.

No road will be completely closed, unless deemed necessary by the Public Works Director. If a detour around the construction is not feasible, then the installation across the road will be made one-half at a time to allow through traffic around the construction. Adequate traffic control and signage must be provided by the Contractor and is subject to approval of the City Police Chief.

PAVEMENT CUTTING

Where trench excavation requires the removal of asphalt pavement, the pavement shall be cut in a straight line parallel to the direction of trench excavation. The cut shall be made with a spade bit air hammer, by sawing, or with similar approved equipment to obtain a straight, square, and clean break. Ripping the asphalt will not be allowed. The pavement cuts shall be at least one foot wider in each direction than the anticipated limits of the open trench. No excavation in paved areas will be started

until after the pavement has been cut. The paving material obtained from excavations in paved areas shall be disposed of by the Contractor. All areas where pavement is removed shall be restored as specified herein and shown on the typical drawings. Temporary surfaces shall be placed until the permanent repair can be made.

All surface improvements consisting of, but not limited to, pavements, gutters, driveways, curbs, and sidewalks damaged by the Contractor during the progress of work shall be replaced at Contractor expense. The construction of the repairs shall result in work equal to or better than that which existed before the damage was done.

EXCAVATION

Excavation for pipe shall be by open trenches unless otherwise specified or shown on the approved plans. The trench shall be excavated using conventional methods. Any method which is not in accordance with normally accepted practice must receive prior approval of the City. Excavation shall be made to line and grade shown on the approved plans. The banks of the trench shall be kept as nearly vertical as soil conditions will permit, but shall not exceed the angle of repose of the soil. Vertical trench walls shall be used in the pipe zone.

Grade Stakes

The Developer's engineer shall provide grade stakes for all pipeline excavation. These stakes shall locate the pipelines both horizontally and vertically for sewer and at least horizontally for water. Where finished grade of the ground will differ significantly from existing grade, vertical control shall be provided for water and other utilities. Maximum distance between grade stakes shall be fifty (50) feet. All appurtenances and structures shall be staked for location and elevation.

Stockpiling Material

Where material is excavated from the trenches and piled adjacent thereto, it shall be piled sufficiently away from the edge of the trench to prevent caving of the trench wall and to permit safe access along the trench.

Sheeting Bracing and Shoring

Where necessary, excavation shall be braced and sheeted to provide complete safety to persons working in or around the trenches and shall comply with applicable federal (OSHA), state, and local laws and ordinances. The Contractor shall be fully responsible for sufficiency and adequacy of bracing excavations with respect to work under construction and to adjacent utility lines and private property. If sheeting is used to support the excavated trench, the sheeting shall be removed by the Contractor. Remove sheeting and shoring as excavations are backfilled in a manner to protect the material, construction, and compaction and/or other structures, utilities or property. No such sheeting will be permitted to remain in the trench except when, in the opinion of the project engineer and the City, field conditions or the type of sheeting or methods of construction used by the Contractor are such as to make the removal of sheeting impractical. In such cases, they may permit portions of the sheeting to be cut off to such depth as he may approve and permit lower portions thereof to remain in the trench.

Drainage and Groundwater Control

Maintain the excavations and site free from water throughout the work. Remove any water encountered in the trench to the extent necessary to provide firm sub-grade, to keep water level below final pipe grade, and to prevent entrance of water into the pipeline. Contractor shall furnish and operate adequate pumping equipment to keep the water level below the grade of construction. Water shall not be permitted to run through lengths of pipe already laid without written approval of the City. Ends of all pipes shall be capped or plugged to insure that water, dirt, etc., does not enter the pipe. Should any dirt, mud, etc., enter the pipe during installation, the Contractor shall flush the pipe thoroughly in the presence of the City's representative to insure complete removal of all foreign objects prior to connection to the existing system.

Use drainage methods which will prevent softening of foundation bottoms, undercutting of footings, or other conditions detrimental to proper construction procedures. Accomplish the foregoing by the use of sumps and gravel blankets, well points, drain lines, or other means approved by the City. Grade as necessary to prevent surface water from flowing into trenches or other excavations. Remove any surface or ground water accumulated in the excavation by the use of well points, pumps, or other approved methods. If the trench bottom becomes unstable due to the entrance of surface water into the open excavation, the saturated soil shall be removed and suitable backfill placed and compacted to pipe grade.

Use of Explosives

Should the use of explosives be required, and their use approved by the City, exercise all possible precautions in the use, storage, or transport of same. Employ only competent, experienced personnel. Comply with all local and state requirements. Contractor assumes full responsibility and liability for all damage which may be caused by his use of explosives. See also Section 14.04.e.

Sequencing

The Contractor shall excavate in advance of pipe laying only a sufficient length to assure steady progress in the installation of pipe. The length of open trench shall be limited where necessary to accommodate traffic, public safety, or as required by the City and/or other entities with authority, in the vicinity of the work being performed.

Pipeline installation shall follow trench excavation within 100 lineal feet. Trench backfill shall follow pipe installation within 100 lineal feet. Approved cleanup shall follow trench excavation within 300 lineal feet. Particular care shall be taken to provide minimum interference with mail delivery and school bus operation. If the work will require a road to be closed, the Contractor shall notify the proper agencies, preferably in writing with a copy of the notice to the City. In state and county road rights-of-way, the amount of open trench permitted shall be in accordance with the requirements of the respective agencies.

Excavation to Grade

All installation of utilities and structures shall be to the grade designated on the approved plans and in conformance with City specifications and standards. Excavation for water lines shall be to a depth

sufficient to provide a minimum cover below finished grade of the depth listed in the Water Specification or shown on the approved Drawings. Specific authorization may be given by the City to reduce the minimum cover by up to six (6) inches along short sections to eliminate or minimize conflict with other utilities or to facilitate connections if O&M problems are not likely to result from such a change. Additional trench depth shall be provided where street and roadway grades will probably be lowered under future construction and where necessary to provide clearance between ditches, culverts, and other structures. The City shall determine in the field the additional trench depth required in locations where possible future lowering of street grades or other future construction makes greater depth desirable.

Sewer line excavation shall be to the depth necessary to provide the grade and bury depth shown on the approved plans. When tying into an existing line, the Contractor shall excavate at the manhole or approved tie-in and shall begin laying pipe from the existing facility unless otherwise authorized by the City. More detailed specifications are discussed in other sections of this document.

Trench Width

Alignment of trenches shall be carefully controlled so that uniform distances are maintained from property lines and so that the pipe will be laid with adequate space for compaction of backfill between the pipe and trench walls. All excavation shall be of sufficient width to provide ample room for proper joining of pipe and fittings. Minimum trench width shall be twelve (12) inches plus pipe OD. Maximum trench width will be restricted to pipe diameter plus two (2) feet unless otherwise approved by the City. If the maximum trench width is exceeded, provide special bedding, encasement, or higher strength pipe as approved by the City.

PIPE BEDDING

Bedding Classes

Refer to trench width and backfill details shown on the drawings and to Bedding Details in this Section.

Class A – Concrete Cradle – Class A bedding shall be defined as bedding in which the lower half of the pipe is set in 3000 psi minimum concrete. The minimum thickness of the concrete shall be six (6) inches. The width of the concrete shall be at least equal to the outside pipe diameter plus eight (8) inches. Use where indicated on the plans and where improper trenching or unexpected trench conditions require its use as determined by the City.

Class B – Use “Granular Bedding” details for all flexible pipe such as PVC sewer and water pipe, fiberglass pipe, lightweight steel pipe, polyethylene pipe, and other similar pipes. Class II or Class III (see Part II this section) bedding is required up to the springline and shall be used for the select backfill. “Shaped Bottom” detail may be used for rigid pipe. Select backfill may be Class II or III materials except if noted otherwise in specific specifications.

Class C – Use only for pipelines in marshy or swampy ground or where approved by the City Public Works Director. Uniformly graded 1-1/2 inch rock shall be used for trench stabilization.

Class D – Impermissible bedding where the pipe is placed on an earth foundation with little or no care being exercised to shape the foundation to fit the lower quadrant of the pipe barrel or to refill all spaces under and around the pipe or where bedding materials are unsuitable to adequately support the load of the pipe and backfill. In no case will this type of bedding be acceptable.

Bedding Preparation

The bottom of the trenches shall be accurately graded to provide uniform bearing and support throughout the pipe length. Excess loading of the bell will not be permitted under any circumstances. Dig bell holes and depressions for joints after trench bottom has been graded. Bell holes and depressions shall be only of such length, depth, and width as required for properly making the particular type of joint. The use of earth mounds for bedding the pipe will not be permitted.

All sharp stones, trash, and other materials which may damage the pipe or interfere with the proper bedding of the pipe and the placement and compaction of the backfill shall be removed from the trench. The soil in the bottom of the trench shall be loose, and at the optimum moisture, so that uniform bedding and compaction around the pipe is easily obtainable. Should any material be encountered which would prevent the obtaining of suitable bedding, e.g., wet, unstable, etc., the trench shall be over-excavated to a depth of six (6) inches minimum below the outside bottom of the conduit, except at points of rock and earth transitions, at which point the rock shall be excavated to a minimum of twelve (12) inches below the outside bottom of the flexible conduit as shown on the typical drawing for pipe bedding. Backfill any over-excavation, required or inadvertent, with materials equivalent to and compacted as specified for haunching materials according to these specifications.

If the trench bottom becomes unstable due to the entrance of water into the excavation, the saturated soil shall be removed and suitable bedding placed and compacted to pipe grade.

Placing Bedding Material

The bottom of the trench must be dry or well-drained before bedding and backfilling is started. Place material below and around the pipe by hand to prevent damage or displacement of the pipe. Place in lifts not to exceed three (3) inches in compacted thickness in the pipe zone.

Whenever flexible pipe is used, special care shall be employed in the pipe bedding. Flexible pipes include PVC sewer and water pipe, fiberglass pipe, lightweight steel pipe, polyethylene pipe, and other similar pipes. Conform to recommendations of: 1) AWWA C 900 Appendix A Standard for Polyvinyl Chloride (PVC) Pressure Pipe, 4 inch through 12 inch for Water; 2) Uni-Bell PVC Handbook and relevant Uni-bell recommended practice manuals; and 3) ASTM Designation D2321 Standard Recommended Practice for Underground Installation of Flexible Thermoplastic Sewer Pipe.

BACKFILL AND COMPACTION

The Contractor shall proceed with backfilling as soon as practicable, but not until Work is inspected by City and Engineer. Compaction or consolidation shall follow as soon after the placing as is practical.

Backfill material shall consist of material which, after placement and compaction, will result in a stabilized soil condition capable of supporting the normal traffic and use loads that may be encountered. Normally the backfill material will be obtained from the soil banks accumulated from the trench excavation. The backfill materials shall be free of vegetation, lumps, trash, lumber, and other unsuitable or objectionable materials. The backfill placed within twelve (12) inches of the pipe (the pipe zone), shall be a Class II or III material and shall not contain any sharp rocks, stones larger than three-fourths (3/4) inch in diameter, or other objects that might damage the pipe. In no event shall rocks or other objects whose largest dimension exceeds four (4) inches be used as backfill material. All such material shall be removed from the work area and disposed of in a manner acceptable to the City. Moisture control of fill will be required to facilitate achieving acceptable soil densities.

Pipe Zone Compaction

After the pipeline has been installed, suitable backfill material shall be hand-placed in up to three (3) inch lifts to the pipe centerline (springline) and hand-tamped and compacted to provide firm uniform support for the pipe. Take care to ensure that sufficient material has been worked under the haunch of the pipe to provide adequate side support. With rigid pipe, if care has been taken to shape the bedding material to the curvature of the pipe, only one stage of placement will be required to bring the haunching material to the springline. Compact haunching material to a minimum of 95% Standard Proctor Density. Additional backfill shall then be hand-placed and hand-compacted in three (3) inch lifts to provide at least six (6) inches of suitable cover over the top of the pipe before any material is placed with machinery. Take care to avoid contact between the pipe and compaction equipment to avoid damage or displacement.

Compaction of initial backfill and backfill materials shall be done in such a way that the sufficient backfill has been placed to ensure that such compaction equipment will not have a damaging effect on the pipe or its installation. Any damage resulting from the backfilling or compaction of the backfill shall be repaired by the Contractor in a timely manner. At all times precautions should be taken to prevent flotation of the pipeline due to entry of water into the trench. Compaction in the pipe zone shall be to 95% Standard Proctor unless authorized or noted on the approved plans.

Upper Trench Compaction

The degree of upper trench compaction required for the backfill will depend upon the location of the pipeline and the material used in the backfill. Under roads and other potential driving surfaces, minimum compaction through the entire depth shall be 95% of maximum dry density. Elsewhere within public rights-of-way the minimum compaction shall be at least 92%. In no case shall compaction be less than 85% or original soil density, whichever is greater.

In general, backfill shall be mechanically compacted by means of tamping rollers, sheep foot rollers, pneumatic tire rollers, vibrating rollers, or other mechanical tampers which are appropriate for the material being compacted. Compaction by jetting or flooding shall not be permitted. The trench shall

be filled to provide a minimum of three (3) feet of cover over the pipe before rolling equipment is used and 50 inches before utilizing a hydrohammer during compaction. The maximum density shall be determined by the Standard Proctor test, except that Modified Proctor may be used for Class 6 materials.

Typical Methodology

The following method of compaction is typically acceptable. Use of alternate methods must first be reviewed and given approval by the City.

Bedding and backfill in the pipe zone shall be hand-placed with a shovel and hand-compacted with a tamping bar. Backfill below the three (3) foot level but above the pipe zone shall be placed and compacted in lifts not to exceed eight (8) inches in uncompacted thickness. Required compaction shall be obtained by using suitable pneumatic or vibratory equipment below the three (3) foot depth. Above three feet of fill, twelve (12) inch lifts may be placed if adequate compaction can be achieved. It is the intent of this specification to permit the compaction of pipeline trenches by traversing with heavy, rubber-tired equipment above three (3) feet of fill, providing that adequate compaction can be obtained over the full depth by this method without damage to the pipe. If suitable compaction cannot be obtained, the backfill material shall be placed in thinner layers and/or other types of compaction equipment shall be provided. Rolling and backfilling will continue until the trench is filled and compacted to original grade. If approved by the City, outside roadways excess material shall be mounded over the trench, allowed to settle, and the area regraded.

On graveled and paved roads, six (6) inches of gravel will be added to the sub-grade and compacted to 90% Modified Proctor. Where the trench lies within improved streets and where the trench crosses any street or road, the non-pipe zone backfill will be compacted with equipment suitable for the fill materials to a density of 95% Standard Proctor density as determined in accordance with ASTM 698. The materials shall be placed in the trench in lifts not exceeding eight (8) inches in thickness at a moisture content near optimum, unless Contractor demonstrates ability to adequately compact larger lifts.

In improved streets or streets programmed for immediate paving, at all road crossings, paved or not, and in other areas designated by the City, the upper layer of backfill shall be CDOT Class 6 road base material, compacted to 90% Modified Proctor. The cohesive material below the roadbase shall be compacted with impact-type equipment in a manner similar to that described above for open areas. In most cases, wheel rolling of the backfilled trench with heavy, rubber-tired equipment will be adequate. No wheel rolling of trenches with less than three (3) feet of fill will be permitted. Cohesionless materials shall be compacted to densities comparable to those specified above, but the most satisfactory compaction is likely to be achieved through vibratory equipment.

Compaction Around Appurtenances

Backfill around appurtenances such as pump stations, vaults, meter pits, valve boxes, lift stations, manholes, etc., shall conform to the same requirements for material, compaction, and site restoration as specified herein for trench backfill. Materials shall be compacted to 95% Standard Proctor.

Soil Compaction Tests

Conduct tests for determination of maximum density and optimum moisture in accordance with the requirements of ASTM 698 – Moisture density relations of soils using a 5.5 lb. hammer and twelve (12) inch drop. Use method A, B, C, or D as appropriate, based on soil condition and judgment of party conducting tests. Samples tested shall be representative of materials to be placed.

Obtain optimum moisture density curve and Atterburg limits for each type of material or combination of materials encountered or utilized.

Use test results as basis for density control of compaction operations.

Density Control

Conduct tests for density control to verify the compaction of the materials in any area of backfill in accordance with the requirements of ASTM D2922 – Density of Soil and Soil Aggregate In-Place by Nuclear Methods, or ASTM D1556 – Density of Soil In-Place by the Sand Cone Method. Nuclear gauge must be calibrated with sand cone densities and laboratory moisture measurements.

Conduct tests of backfill under all structures, adjacent to all structures, and in all utility trenches when under a roadway or sidewalk, and at a rate of at least three tests for every 1000 feet of utility lines installed. Exact location of tests shall be as directed by the City Public Works Director. Tests may be taken to verify the compaction through the depth of trench or at a depth designated by the City.

Contractor shall excavate to depths directed to accommodate testing, and backfill test hole in accordance with above provisions.

SURFACE RESTORATION

On completion of backfill operations and other work, the entire site shall be cleared of all debris, and ground surfaces shall be finished to smooth, uniform slopes and shall present a neat and workman-like appearance. The final grade in unpaved streets and other areas will be graded to match existing grades without producing drainage problems. Areas which are to receive pavements, surfacing, topsoil, or landscaping shall be graded as required to allow installation of the specific surface treatment.

Restoration of grass, shrubs, and other plants shall be done to the extent required to restore the damaged areas to a condition as close as practical to that which existed prior to construction. Replace topsoil without compacting, to depth which was stripped in landscaped areas. Tree damage shall be repaired in accordance with good horticultural practice.

No permanent pavement shall be restored until the backfill is determined to be adequate and able to properly support the pavement. All paved areas shall be replaced with suitable pavement.

The finished surface of roads will be restored to their original condition as determined by the owner(s) involved. The City, county, or CDOT, as applicable, shall be notified 24 hours prior to pavement repair so that a final inspection can be made. Pavement repair shall be guaranteed for a period of one year.

Prior to replacing asphalt on properly compacted backfill, square up any ragged edges of adjoining pavement. Such cutting shall be done in accordance with "Pavement Cutting" paragraph above. Apply MC-70 or other approved prime coat to Class 6 roadbase on top and against sides where pavement is to be placed, in accordance with manufacture's recommendations. Lay two 2" mats of hot bituminous asphalt to area and compact to 95% of Marshal Density. Place patching material around the edges and work inward. Unless otherwise specified herein, materials and construction methods shall comply with the Colorado Department of Highways (CDOT) Specifications, Section 401 – Hot Mix Pavements.

Concrete work shall be removed and replaced to the nearest joint on each side of the trench. (See City Standard Drawing for concrete replacement.) Concrete shall be a 3/4" 6 sack mix meeting CDOT Class B requirements from Section 601. Thickness of the concrete mat shall equal the thickness of the surrounding concrete but not less than four (4) inches thick. Immediately prior to placing concrete, foundation shall be thoroughly moistened. After placing, the surface shall be shaped to match surrounding surface, floated with a magnesium float, and given a broom finish that matches the existing surface. All outside edges of slab and all joints shall be edged with a one-fourth (1/4) inch radius edging tool. Expansion joints shall be placed to match surrounding concrete. Dummy joints to divide concrete into sections shall extend one-third (1/3) of the depth and approximately one-eighth (1/8) inch wide. Construction joints shall be formed around all appurtenances. Pre-molded expansion joint filler or thicker shall be installed in the joints for the full depth. Immediately upon completion of concrete, finishing shall be moistened and kept moist for three (3) days, or curing may be by curing with a membrane-forming curing compound subject to approval of the City. During curing all traffic, both pedestrian and traffic, shall be excluded.

The City shall be the final judge of the acceptance of restoration work. The Contractor shall be responsible for returning all roadways traversed with his equipment to conditions at least as good as existed prior to commencing construction. Again, in cases where substandard conditions existed prior to beginning construction, it shall be the Contractor's responsibility to have documented such conditions or to restore the site to standard conditions acceptable to the City.