NOTE TO CONSULTANTS: Edit with Track Changes turned on, any text in this section that appears in bold and italics then turn off the bold and italics for the final approved version. (Remove this Note).

PART 1 - GENERAL

1.01 SECTION INCLUDES:

A. Work consisting of adjusting new and existing maintenance holes, catch basins, inlets, valve chambers, water meter boxes, handholes, and similar Utility Structures encountered during the Work to a new grade elevation.

1. The requirements of this Section apply to Utility Structures constructed from pre-cast concrete sections, masonry brick or blocks, and cast-in-place concrete.

1.02 RELATED SECTIONS:

Section 31 00 00 - Earthwork

Section 32 11 23 - Mineral Aggregates

Section 32 23 13.13 – Sub-grade Preparation for Asphalt Paving

Section 32 11 26.23- Asphalt Plants & Equipment

Section 32 12 16 - Asphalt Paving

1.03 REQUIREMENTS:

A. All work shall comply with The City of Seattle Standard Specifications for Road, Bridge and Municipal Construction (most recent edition).

B. The work shall include adjustment by removing or installing ring extensions; by removing and installing adjustment brick; by removing or adding a vertical riser section to the Utility Structure; by removing and rebuilding a portion of the existing structure; or by any combination of the preceding methods.

C. Publicly Owned Utility Structures shall be adjusted to finished grade by the Contractor.

D. Privately Owned Utilities are generally in the streets and road Rights of Way pursuant to franchises or to rights claimed under the laws of the United States of America, or the State of Washington and, therefore, these utility agencies are responsible for all adjustments and relocations of their own facilities.

1. The Contractor shall schedule the Work so that utility adjustments by others can be accomplished without undue delay.

1.04 SUBMITTALS:

A. Epoxy: Submit a Manufacturer's Certificate of Compliance and catalog cut stating the proposed epoxy provides acceptable bonding performance for the intended application.

PART 2 – PRODUCTS

2.01 GENERAL:

A. Material used in the adjustment of existing Utility Structures shall meet the requirements for new construction specified in the Specification Section applicable to the item being adjusted.

2.02 ADJUSTMENT RING EXTENSIONS:

A. Adjustment ring extensions shall meet the following requirements of the City of Seattle Standard Plans and Specifications (most recent edition).

1. Rings and ring extensions shall be manufactured from cast iron ASTM A 48, Class 30 or ductile iron ASTM A 536, Grade 80-55-06.

2. Rings and covers shall be free of defects such as porosity, pitting, shrink cavities, cold shuts, cracks, and other surface defects which would impair serviceability.

3. Repair of defects by welding or by the use of “smooth-on plasticized metals” or similar Material will not be accepted.

4. Manufacturer shall certify that the product conforms to the requirements of these Specifications.

a. In accordance with “Source of Supply and Quality of Materials” Paragraph of “Control of Work” Article of Section 00 72 00 - General Conditions, where source of Material is different from manufacturer, the Contractor shall also provide the name and location of the manufacturer.

5. Upon request of the Engineer, the manufacturer shall furnish at the foundry standard ring and covers for use by Inspectors in testing fit and seating.

6. All manhole rings shall be labeled with the name or symbol of the manufacturer and the type of Material.

2.03 EPOXY:

A. Epoxy used to secure manhole castings for ring extensions to existing frames shall be per epoxy manufacturer’s recommendations for the material application.

PART 3 - EXECUTION

3.01 ADJUSTMENT OF UTILITY STRUCTURES, GENERAL:

A. The Engineer will establish approximate grade elevation for the tops of existing utility Structures requiring adjustment. The final alignment and grade elevation shall be established from adjacent roadway surfaces, forms, or such offset hubs as may be provided by the Engineer.

B. Except where adjustment is to be made by ring extension, the Contractor shall remove the pavement around the casting; remove the casting and install or remove leveling or adjustment brick or block; or shall excavate around the utility structure,

remove a portion of it as necessary and rebuild the structure to meet the new grade elevation.

1. Pavement removal shall be kept to the minimum amount required to facilitate the adjustment.

2. Adjustment of a Drainage Structure to finished grade elevation, by whatever method, shall result in a finished Structure meeting the requirements for new construction as specified in the City of Seattle Standard Plan and Specifications (most recent edition).

3. The overall distance between the top of the casting to the bottom of the adjustment brick shall be not more than 26 inches.

C. Where a Water Main casting adjustment is required and the concrete pavement or concrete rigid pavement base is to be made thicker, the Contract will specify whether or not a new Water Main casting is required.

1. If a new Water Main casting is required, the Contractor shall comply with the requirements in "Furnishing Castings" Article of this Section; otherwise, adjustment of Water Main castings shall be by either brick or concrete block.

2. The adjustment of Water Main castings with ring extensions will not be allowed.

D. When a ring extension is specified in the Contract, it shall be epoxied securely to the existing frame.

1. All frame and ring extension surfaces to receive the epoxy shall be thoroughly cleaned with a wire brush prior to the application of epoxy.

E. When adjustment is made by adding or removing leveling bricks, all joints in the bricks shall be filled with mortar and the casting seated in mortar on the top brick course.

F. After the Utility Structure has been adjusted to grade, and the Structure made watertight by plastering with mortar cement, all voids around the Structure shall be backfilled and compacted with imported Mineral Aggregate Type 17 - Bank Run Gravel. The casting shall then be secured in place with a tapered layer of concrete or asphalt, as applicable.

G. The Contractor shall adjust to finish grade, water meter boxes encountered in the planting strip and sidewalk area.

H. Should adjustment to a water meter box necessitate adjustment or relocation of the water meter, the Contractor shall notify the Engineer at least two (2) working days in advance and the water meter will be adjusted or relocated by SPU Water Operations. The Contractor shall then make final adjustment of the meter box.

3.02 UNPAVED STREET GRADING PROJECTS:

A. New maintenance holes, catch basins and similar Structures constructed in conjunction with street grading Projects which are to be surfaced with gravel or crushed stone shall be constructed to a point approximately 8 inches below the Sub-grade and covered with a temporary wood cover.

B. Existing maintenance holes encountered shall be cut off and covered in a similar manner as above.

C. The Contractor shall carefully reference all manholes so that they may be easily found upon completion of the street work.

D. After placing the gravel or crushed stone surfacing, the utility Structures and utility castings shall be constructed to the finished grade of the roadway surface.

1. Excavation necessary for bringing utility castings to grade shall center about the utility structure and be held to the minimum area necessary.

2. After completion of the utility structure adjustment and after the structure is made watertight by plastering with mortar cement, the void around the maintenance hole shall be backfilled with imported Mineral Aggregate Type 17- Bank Run Gravel and thoroughly compacted.

E. Where bituminous surface treatment is to be placed, the manhole castings shall be installed from ½ inch to 1 inch higher than the rock surfacing so that the top of the casting matches the finished roadway surface.

3.03 CEMENT CONCRETE PAVING PROJECTS:

A. Manholes, catch basins and similar Structures shall be constructed or adjusted in the same manner as outlined in “Adjustment Of Utility Structures, General” Article of this Section except that the final adjustment shall be made and the cast iron frame set after the forms have been placed and checked.

B. In placing the concrete pavement, extreme care shall be taken not to alter the position of the casting in any way.

C. All castings installed in and requiring new concrete pavement or rigid concrete base pavement, shall comply with the requirements of the City of Seattle Standard Plans and Specifications (most recent edition), except monument castings which shall have the casting flange within the rigid pavement as indicated on COS Standard Plan #020.

D. Finished rigid pavement shall incorporate reinforcing steel around the casting as specified in the City of Seattle Standard Plan and Specifications (most recent edition).

E. See “Adjustment of Utility Structures, General” Article of this Section for Water Main casting adjustment requirements.

3.04 ASPHALT CONCRETE PAVING PROJECTS:

A. Utility Structures requiring adjustment of frames to match finish grade shall be adjusted prior to the start of the final paving operation.

B. The tops of existing utility Structure frames shall be raised or lowered to match the finish grade.

1. Immediately after adjustment of the frame to finish grade in lanes that are to remain open to traffic, the Contractor shall install temporary asphalt

transition tapers around the Structure frame to provide a safe usable surface for traffic.

2. The Contractor shall maintain the asphalt tapers and shall furnish, install, and maintain warning signs.

3. The Contractor shall remove the asphalt tapers immediately prior to the start of paving operations.

C. Inside surfaces of adjusted Structure frame and bricks or rings which are disturbed or damaged by the adjustment, as well as the new adjustment area shall be mortared to give a smooth, watertight surface.

3.05 ASPHALT RESURFACING PROJECTS:

A. Adjustment of manholes, catch basins, and similar Structures on asphalt resurfacing Projects shall meet the requirements of "Asphalt or Concrete Paving Projects" Article of this Section.

3.06 STORM AND SANITARY SEWER OR WATER PROJECTS:

A. Manholes, catch basins, gate valve Structures and other similar type Structures being constructed in conjunction with Sewer or water Projects on improved Streets shall be brought to final grade as outlined in this Section.

3.07 ESTABLISHMENT OF GRADE FOR TOP OF MAINTENANCE HOLE:

A. The Engineer will establish the grade for top of manholes, catch basins and similar Structures; however, these grades will be approximate only.

B. The Contractor shall allow adjustment of frame and frame extensions in accordance with the City of Seattle Standard Plans and Specifications (most recent edition).

C. The Engineer assumes no responsibility in this regard, except when the final grade is set.

3.08 ADJUSTMENT OF INLETS:

A. The final alignment and grade of frames for new and old inlets to be adjusted to grade shall be established from the forms or from adjacent pavement surfaces.

B. The final adjustment of the inlet frame and frame extension shall be performed in similar manner to that described for maintenance holes.

C. On asphalt concrete paving Projects using curbs and gutters, that portion of the frame not embedded in the gutter section shall be solidly embedded in concrete.

1. The concrete shall extend a minimum of 6 inches beyond the edge of the frame and shall be left 1½ inches below the top of the frame so that the wearing course of asphalt concrete pavement butts against the frame.

2. The existing concrete pavement and edge of the casting shall be painted with hot asphalt cement.

D. Adjustments in the inlet structure frame and frame extension shall be made in the same manner and of the same Material as that required for new inlets.

E. The inside of the inlet frame and frame extension shall be plastered smooth.

3.09 ADJUSTMENT OF MONUMENTS, AND FRAME AND COVER:

A. Monuments and monument castings shall be adjusted to grade in the same manner as for maintenance holes.

3.10 ADJUSTMENT OF VALVE BOX CASTINGS:

A. Adjustment of valve box castings and Water Main castings shall be as specified in "Adjustment of Utility Structures, General" and "Furnishing Castings" Articles of this Section.

3.11 FURNISHING CASTINGS:

A. Where adjustment of existing utility Structures is required and the Drawings indicate that the existing castings be replaced, the Contractor shall furnish new castings of the type specified on the Drawings with the exception of Water Main castings.

B. Water Main castings requiring replacement will be furnished by SPU Water Operations.

C. Casting shall include frame and grate, or ring and cover unless the specified otherwise in other technical Sections.

the City of Seattle Standard Plans and Specifications (most recent edition).

3.12 ADJUST BY SHAFTING:

A. Adjustment of existing utility casting and Structure shall be by shafting when the casting remains the same and one of the following conditions exists:

1. The casting is to be raised, resulting in a total depth of the adjustment brick zone greater than the maximum allowable as indicated in the City of Seattle Standard Plans and Specifications (most recent edition)..

2. The casting is to be lowered more than the depth of the existing adjustment brick or in excess of 16 inches.

B. Work required shall include excavation, removal of the existing frame and cover, leveling bricks, cone section or flat slab of the utility structure.

1. The Contractor shall add to or remove from the utility structure as appropriate, the vertical riser section having the least dimension, unless otherwise indicated on the Drawings, to allow the structure to be adjusted to the new grade elevation.

2. The cone section or flat slab shall be reinstalled, adjustment bricks installed, and the existing frame and cover reset.

3. The surrounding void shall be backfilled and compacted the City of Seattle Standard Plans and Specifications (most recent edition).

END OF SECTION