

SECTION 6

6. SPECIFICATIONS

Street, sidewalk, curb and gutter and storm drainage construction within the Town's existing or proposed rights-of-way shall conform to these specifications.

6A. PRECONSTRUCTION MEETING

The developer/contractor shall arrange a preconstruction meeting with the Town prior to initiating construction.

6B. STAKING

All curb and gutter, streets, sidewalk, storm drainage improvements, and any other horizontal construction shall be staked by an engineering firm, surveying firm or Town authorized contractor capable of performing such work.

The developer/contractor will layout and set any construction stakes and marks needed to establish line, grades, slopes, cross sections and curve superelevations. All work performed shall be in conformance with the lines, grades, slopes, cross sections, superelevation data and dimensions shown on the Town approved plans. The Contractor shall not deviate from the approved plans unless the Town approves the revisions.

6C. STREETS

6C.01 Subgrade Preparation

The subgrade area of the street and/or sidewalk shall be cleared of brush, weeds, vegetation, grass and debris, per Section 2-01 of the Standard Specifications. All cleared and grubbed material shall be satisfactorily disposed of at an approved site. All depressions or ruts which contain water will be drained.

The subgrade shall then be bladed and graded to remove inequalities and secure a uniform surface. Subgrade preparation shall conform to Standard Specification Section 2-03 and 2-06. The existing subgrade will be compacted to a density required by the Standard Specification.

6C.02 Crushed Surfacing (Base and Top Course)

Surfacing shall consist of the construction of two or more courses of crushed stone upon an existing roadway surface, or upon a subgrade properly prepared as outlined above. Crushed surfacing shall be manufactured from ledge rock, talus or gravel and conform to Standard Specification Section 9-03.9(3) Crushed surfacing material shall be uniform in quality and substantially free from wood, roots, bark and other extraneous material. It will compact into a dense and unyielding mass

which will be true to line, grade and cross-section. It shall meet the following test requirements:

Los Angeles West, 500 Rev.	35% Max.
Degradation Factor - top course	25% Min.
Degradation Factor - base course	15% Min.

Percent Passing by Weight

<u>Sieve Size</u>	<u>Base Course</u>	<u>Top Course</u>
1-1/4" square sieve.....	100	
5/8" square sieve.....	50 to 80	100
1/4" square sieve.....	30 to 50	55 to 75
U.S. No. 40 sieve.....	3 to 18	8 to 24
U.S. No. 200 sieve.....	7.5 Max.	10 Max.
% Fracture		
Sand equivalent.....	75 Min.	75 Min.

Base courses and top courses shall be placed in accordance with the approved cross-section. Compaction shall be a minimum of 95% of standard density as determined by the compaction control test for granular materials.

6C.03 Surfacing Requirements

A. Asphalt Concrete

All streets in the Town shall be paved with either Asphalt Concrete or Cement Concrete, per Standard Details in Section 7. Construction of streets paved with Asphalt Concrete shall conform to Section 5-04 of the Standard Specifications. Pavement material will be Class "B" asphalt concrete placed over two (2) inches minimum over the prepared crushed surface. Mechanical spreading and finishing will be as described in Section 5-04.3(9) of the Standard Specifications. Compaction will be performed by the equipment and methods presented in Section 5-04.3(10) of the Standard Specifications, and surface smoothness shall satisfy the requirement of Section 5-04.3(13) of the Standard Specifications.

B. Cement Concrete

Cement concrete streets will be constructed as specified in Section 5-05 of the Standard Specifications.

6C.04 Pavement Restoration

Permanent pavement patching will be performed as indicated in the Standard Detail in Section 7, and in Section 5-04 of the Standard Specifications. All fill material will be placed in lifts no thicker than six inches and mechanically compacted to 95 percent of standard density, as described in Section 2-03 of the Standard Specifications to the satisfaction of the Town.

6C.05 Temporary Street Patching

Temporary restoration of trenches shall be accomplished by using 2" Class B Asphalt Concrete Pavement when available or 2" medium-curing (MC-250) liquid asphalt (cold mix), or steel plates. All temporary patches shall be maintained by the contractor until such time as the permanent pavement patch is in place. If the contractor is unable to maintain a patch for whatever reason, the Town will patch it at actual cost plus overhead and materials and bill the permittee.

6D. STORM DRAINAGE

6D.01 Material

All pipe for storm mains shall comply with one of the following types:

Polyvinyl Chloride: PVC pipe shall conform to ASTM D 3034, SDR 35 or ASTM F 789 with joints and rubber gaskets conforming to ASTM D3212 and ASTM F477.

Plain Concrete: Plain concrete pipe per Standard Specifications as set forth in Section 7-04.

Reinforced Concrete: Reinforced concrete pipe per Standard Specifications as set forth in Section 7-04.

Ductile Iron: Ductile iron pipe shall conform to AWWA C151 Class 50 and have a cement mortar lining conforming to AWWA C 104. All pipe shall be joined using non-restrained joints which shall be rubber gaskets, push on type or mechanical joint, conforming to AWWA C 111.

Polyethylene: PE smooth wall pipe per Advanced Drainage Systems (ADS) N-12, or Town approved equal, constructed per WSDOT Standard Specifications 7-04.

Corrugated Metal: Zinc-coated (galvanized) corrugated iron or steel pipe shall be coated uniformly with asphalt.

6D.02 Trench Excavation

A. Clearing and Grubbing

Clearing and grubbing where required shall be performed within the easement or public right-of-way as permitted by the Town and/or governing agencies. Debris resulting from the clearing and grubbing shall be disposed of by the owner or contractor in accordance with the terms of all applicable permits.

B. Pavement Cuts

All trench and pavement cuts shall be made by sawcuts. The cuts shall be a minimum of 1 foot outside the trench width.

C. Trench Excavation

- (1) Trenches shall be excavated to the line and depth designated by the Town to provide a minimum of 42 inches of cover over the pipe whenever possible. Under drainage easements, collector roadways, driveways, parking stalls, or other areas subject to light vehicular loading, pipe cover may be reduced to 1' minimum (from top of pipe to subgrade) if recommended by the pipe manufacturer. Pipe cover in areas not subject to vehicular loads, such as landscape planters and yards, may be reduced to 1' minimum. The trench sides shall be excavated vertically and the trench width shall be excavated only to such widths as are necessary for adequate working space as allowed by the governing agency. The trench shall be kept free from water until joining is complete. Surface water shall be diverted so as not to enter the trench. The owner shall maintain sufficient pumping equipment on the job to insure that these provisions are carried out.
- (2) The contractor shall perform all excavation; boulders, rocks, roots and other obstructions shall be entirely removed or cut out to the width of the trench and to a depth 6 inches below storm line grade. Where materials are removed from below water main grade, the trench shall be backfilled to grade with material satisfactory to the Town and compacted per the Standard Specifications.
- (3) Trenching and shoring operations shall not proceed more than 100 feet in advance of pipe laying and shall be in conformance with Washington Industrial Safety and Health Administration (WISHA) and Office of Safety and Health Administration (OSHA) Safety Standard.
- (4) The bottom of the trench shall be finished to grade with hand tools in such a manner that the pipe will have bearing along the entire length of the pipe barrel. The bell holes shall be excavated with hand tools to sufficient size to make up the joint.

6D.03 Bedding

Gravel backfill for pipe bedding shall be installed in conformance with Section 2-09 of the Standard Specifications.

A. Bedding for rigid pipe (concrete ductile iron pipe):

Bedding material for rigid pipe shall consist of crushed, processed, or naturally occurring granular material. It shall be essentially free from various types of wood waste or other extraneous or objectionable material. It shall have such characteristics of size and shape that it will compact readily and shall meet the following specifications for grading and quality:

<u>Sieve Size</u>	<u>Percent Passing by Weight</u>
3/4" Square	100
3/8" Square	95-100
U.S. No. 8	0-10
U.S. No. 200	0-3
Sand Equivalent	35 MIN.

Bedding material for ductile iron pipe may be select native granular material free from wood waste, organic material, and other extraneous or objectionable materials and shall have a maximum dimension of 2 inches.

B. Bedding for Flexible Pipe (H.D.P.E. pipe):

Bedding material for flexible pipe shall be a clean gravel mixture free from organic matter and conforming to the following gradation:

<u>Sieve Size</u>	<u>Percent Passing by Weight</u>
3/4" Square	100
3/8" Square	70-100
U.S. No. 4	55-100
U.S. No. 10	35-95
U.S. No. 20	20-80
U.S. No. 40	10-55
U.S. No. 100	0-10
U.S. No. 200	0-3

Native material shall not be used for bedding unless approved by the Town.

6D.04 Backfilling

A. Allowable Open Trench

Backfilling and surface restoration shall closely follow installation of pipe so that not more than 100 feet is left exposed during construction hours without approval of the Town.

B. Trench Backfill

Backfill shall consist of the replacement in the trench or about the structure of the excavated material, other than large boulders, broken rock, broken pavement, etc., in the manner herein specified. Large fragments of these items shall be disposed of on the site or hauled to waste.

Partial backfill to protect the pipes will be permitted immediately after the pipes have been properly laid in accordance with the Plans and Specifications. Complete backfilling of trenches will not be permitted, until the section of work in question has been inspected by the Town.

The material to be placed under, around and immediately over the pipe up to a point of 12 inches above the pipe, shall be placed in lifts of approximately 6 inches. It shall be hand-shoveled into the trench and carefully worked under the pipe and foot-tamped for compaction. The material shall be select bedding material for pipe bedding.

Above the point previously established, the material shall be compacted by means of mechanical tampers, in accordance with Section 2-03.3(14)C, Method C, of the Standard Specifications.

All trench backfill shall be compacted to a minimum of ninety-five percent (95%) of standard density as determined in accordance with the method of test for moisture density relations of soils, ASTM D-698, for

other than granular material, or as measured by Washington Highway Department method for granular materials.

C. Gravel Backfill for Pipe Bedding

Gravel backfill for pipe bedding shall consist of crushed, processed, or naturally occurring granular material. It shall be essentially free from various types of wood waste or other extraneous or objectionable materials. It shall have such characteristics of size and shape that it will compact readily and shall meet the following specifications for grading and quality:

<u>Sieve Size</u>	<u>Percent Passing by Weight</u>
1" square	100
1/4" square	25-80
U.S. No. 200	15.0 max.
Sand Equivalent	35 min.

If the existing material is determined by the Town to be suitable for backfill, the contractor may use the native material except that the top 8 inches of trench shall be 2-1/2 inch minus ballast. All trench backfill materials shall be compacted to 95% density.

Replacement of the asphalt concrete or Portland concrete cement shall match existing asphalt concrete or Portland concrete cement depth.

D. Pavement Restoration

- (1) Tack shall be applied to the existing pavement and edge of cut and shall be emulsified asphalt grade CSS-1 as specified in Section 9-02.1(6) of the Standard Specifications. Tack coat shall be applied as specified in Section 5-04 of the Standard Specifications.
- (2) Asphalt concrete Class B shall be placed on the prepared surface by an approved paving machine and shall be in accordance with the applicable requirements of Section 5-04 of the Standard Specifications, except that longitudinal joints between successive layers of asphalt concrete shall be displaced laterally a minimum of 12 inches unless otherwise approved by the Town. Fine and coarse aggregate for asphalt concrete shall be in accordance with Section 9-03.8 of the Standard Specifications. Asphalt concrete over 2 inches thick shall be placed in equal lifts not to exceed 2 inches each.
- (3) All street surfaces, walks or driveways within the street trenching areas affected by the trenching shall be feathered and shimmed to an extent that provides a smooth-riding connection and expeditious drainage flow for the newly paved surface. Shimming and feathering as required by the Town Inspector shall be accomplished by raking out the oversized aggregates from the Class B mix as appropriate. Surface smoothness shall be per Section 5-04.3(13) of

the Standard Specifications. The paving shall be corrected by removal and repaving of the trench only.

- (4) All joints shall be sealed using paving asphalt AR4000W.
- (5) When trenching within the roadway shoulder(s), the shoulder shall be restored to its original or better condition.
- (6) The final patch shall be completed as soon as possible and shall be completed within 30 days after first opening the trench. This time frame may be adjusted if delays are due to inclement paving weather, or other adverse conditions that may exist. However, delaying of final patch of overlay work is allowable only subject to the Town approval. The Town may deem it necessary to complete the work within the 30 days time frame and not allow any time extension. If this occurs, the Contractor shall perform the necessary work as directed by the Town.

6E. SIDEWALKS

6E.01 Material

Sidewalks shall be constructed of Portland Cement Concrete, 4 inches thick per Section 8-14 of the Standard Specifications. The concrete in sidewalks shall be air-entrained concrete Class 3000 in accordance with Standard Specification Section 6-02.

6E.02 Sidewalk Thickness

The sidewalk thickness shall be as follows:

<u>SIDEWALK LOCATION</u>	<u>SIDEWALK THICKNESS</u>
Adjacent to curb/gutter and planting strip	4” thick
Driveway sections	6” thick

6E.03 Expansion and Contraction Joints

The sidewalks will be divided into five foot lengths by contraction joints and expansion joints shall be at intervals of no more than 15 feet. Joints will be filled with an asphalt mastic material.

6E.04 Form and Subgrade Inspection

Form and subgrade inspection by the Town is required before sidewalk is poured. Monolithic pour of curb, gutter and sidewalk will not be allowed.

6F. CURB & GUTTERS

6F.01 Materials

The concrete for curbs and gutters, air-entrained concrete, shall be of Class 3000 in accordance with Standard Specification Section 6-02. Extruded curb and gutter per Standard Specifications will be allowed.

6F.02 Form and Subgrade Inspection

Form and subgrade inspection by the Town is required before curb and gutter are poured. Forms, wood or steel, shall be staked securely in place, true to line and grade. Sufficient support shall be given to the form to prevent movement in any direction, resulting from the weight of the concrete or the concrete placement. Forms shall not be set until the subgrade has been compacted within one inch of the established grade. Forms shall be clean and well oiled prior to setting in place. When set, the top of the form shall not depart from grade more than one-eighth (1/8) inch when checked with a ten-foot straightedge. The alignment shall not vary more than one-fourth (1/4) inch in ten (10) feet. Immediately prior to placing the concrete, forms shall be carefully inspected for proper grading, alignment and rigid construction. Adjustments and repairs as needed shall be completed before placing concrete.

6F.03 Subgrade Preparation

The subgrade shall be properly compacted and brought to specified grade before placing concrete. The subgrade shall be thoroughly dampened immediately prior to the placement of the concrete. Concrete shall be spaded and tamped thoroughly into the forms to provide a dense, compacted concrete free of rock pockets. The exposed surfaces shall be floated, finished and brushed longitudinally with a fiber hair brush approved by the Town. When the curb section is to be placed separately, the surface of the gutter directly underneath the curb section shall be covered with a protective cover to protect that area from the curing agent when the gutter is sprayed. This cover must remain in place until the curb is placed. Care shall be taken in the placing of this cover to prevent the steel dowels from puncturing the cover.

6F.04 Construction

The face form of the curb shall be stripped at such time in the early curing as will enable inspection and correction of all irregularities that appear thereon. Forms shall not be removed until the concrete has set sufficiently to retain its true shape. The face of the curb shall be troweled with a tool cut to the exact section of the curb and at the same time maintain the shape, grade and alignment of the curb. The exposed surface of the curb shall be brushed with a fiber hair brush.

6F.05 Curing

White pigmented or transparent curing compounds shall be applied to all exposed surfaces immediately after finishing. Transparent curing compounds shall contain a color dye of sufficient strength to render the film distinctly visible on the concrete for a minimum period of four (4) hours after application.

If, at any time during the curing period any of the forms are removed, a coat of curing compound shall be applied immediately to the exposed surface. The curing compound shall be applied in sufficient quantity to obscure the natural color of the concrete. Additional coats shall be applied if the Town determines that the coverage is not adequate. The concrete shall be cured for the minimum period of 72 hours time set forth in Section 8-04 of the Standard Specifications.

6F.06 Joints

Joints shall be constructed in the manner and at the locations shown in Standard Details in Section 7. They shall be cleaned and edged as shown on the drawings. All expansion and contraction joints shall extend entirely through the curb section above the pavement surface. Joint filler in the curb shall be normal to the pavement and in full but contact with pavement joint filler.

6G. ROCK RETAINING WALLS

6G.01 Material

The rock material shall be as nearly rectangular as possible. No stone shall be used which does not extend through the wall. The rock material shall be hard, sound, durable and free from weathered portions, seams, cracks and other defects. The rock density shall be a minimum of 160 pounds per cubic foot.

6G.02 Construction

The rock wall shall be started by excavating a trench having a depth below subgrade of one half the base course or one foot (whichever is greater).

Rock selection and placement shall be such that there will be minimum voids and, in the exposed face, no open voids over 6 inches across in any direction. The final course shall have a continuous appearance and shall be placed to minimize erosion of the backfill material. The larger rocks shall be placed at the base of the rockery so that the wall will be stable and have a stable appearance. The rocks shall be placed in a manner such that the longitudinal axis of the rock shall be at right angles or perpendicular to the rockery face. The rocks shall have all inclining faces sloping to the back of the rockery. Each course of rocks shall be seated as tightly and evenly as possible on the course beneath. After setting each course of rock, all voids between the rocks shall be chinked on the back with quarry rock to eliminate any void sufficient to pass a 2 inch square probe.

6G.03 Backfill

The wall backfill shall consist of quarry spalls with a maximum size of 6 inches and a minimum size of 4 inches or as specified by a licensed engineer. This material shall be placed to a 12-inch minimum thickness between the entire wall and the cut or fill material. The backfill material shall be placed in lifts to an elevation approximately 6 inches below the top of each course of rocks as they are placed, until the uppermost course is placed. Any backfill material on the bearing surface of one rock course shall be removed before setting the next course.

6G.04 Perforated Drainage Pipe

Perforated drainage pipe and filter fabric shall be installed as per the Standard Detail in Section 7.

6H. TESTING

Testing shall be required at the developer's/contractor's expense on all materials and construction as specified in the Standard Specifications. Table 6H-1 identifies the minimum testing and sampling frequency required for the various construction materials.

**TABLE 6H-1
TESTING AND SAMPLING FREQUENCY GUIDES**

<u>ITEM</u>	<u>TYPE OF TESTS</u>	<u>MIN. NO.</u>	<u>FREQUENCY</u>
GRAVEL BORROW	GRADING & SE	1 EACH	1-4000 TON
SAND DRAINAGE BLANKET	GRADING	1 EACH	1-4000 TON
CRUSHED SURF. TOP COURSE	GRADING, SE & FRACTURE	1 EACH	1-2000 TON
CRUSHED SURF. BASE COURSE	GRADING, SE & FRACTURE	1 EACH	1-2000 TON
BALLAST	GRADING, SE & DUST RATIO	1 EACH	1-2000 TON
BACKFILL/SAND DRAINS	GRADATION	1 EACH	1-2000 TON
GRAVEL BACKFILL FOR:			
FOUNDATIONS	GRADING, SE & DUST RATIO	1 EACH	1-1000 TON
WALLS	GRADING, SE & DUST RATIO	1 EACH	1-1000 TON
PIPE BEDDING	GRADING, SE & DUST RATIO	1 EACH	1-1000 TON
DRAINS	GRADATION	1 EACH	1-100 TON
PCC STRUCTURES: (Sidewalk, Curb and Gutter, Foundations)			
COARSE AGGREGATE	GRADATION	1 EACH	1-1000 TON
FINE AGGREGATE	GRADATION	1 EACH	1-500 TON
CONSISTENCY	SLUMP	1 EACH	1-100 CY
AIR CONTENT	AIR	1 EACH	1-100 CY
CYLINDERS (28 DAY)	COMPRESSIVE STRENGTH	2 EACH	1-100 CY
CEMENT:	CHEMICAL & PHYSICAL CERTIFICATION	1	1-JOB
ASPHALT CEMENT CONCRETE:			
BLEND SAND	SE	1 EACH	1-1000 TON
MINERAL FILLER	S.G. & PI, CERTIFICATION	1	1-JOB
COMPLETED MIX	FRACTURE, SE, GRADING, ASPHALT CONTENT	1 EACH	1-1000 TON
	COMPACTION	2 EACH	5-400 TON
ASPHALT MATERIALS	CERTIFICATION	1	1-JOB
RUBBERIZED ASPHALT:	CERTIFICATION	1	1-JOB
COMPACTION TESTING:			
EMBANKMENT	COMPACTION	1 EACH	1-500 LF
CUT SECTION	COMPACTION	1 EACH	1-500 LF
CRUSHED SURF. TOP COURSE	COMPACTION	1 EACH	1-500 LF
CRUSHED SURF. BASE COURSE	COMPACTION	1 EACH	1-500 LF
BALLAST	COMPACTION	1 EACH	1-500 LF
TRENCH BACKFILL	COMPACTION	1 EACH	1-500 LF

SE = Sand Equivalency
SG = Specific Gravity
PI = Plasticity Index