

STREET SPECIAL PROVISIONS

GENERAL REQUIREMENTS

The contractor shall determine the type of equipment and method to use to achieve required compaction. The contractor shall arrange for a Geotechnical engineer to perform or have performed all required tests and certify soil and all required compaction tests. The City of Kelso/Longview shall receive copies of all Geotechnical inspection and test reports within one week after completion. Earth compaction shall be consistent with standard specifications Section 2-03.3(14)C method C. Tests shall also include all asphalt & concrete incorporated into the project.

Material in soft spots within the roadway shall be removed to the depth required to provide a firm foundation and shall be thoroughly compacted to a relative density of 95% of optimum. The maximum allowable rock size is 4 inches. Work shall be consistent with the standard specifications Section 2-06.

All pavement patches shall be 2 inches plus existing in depth or as directed by the City of Kelso/Longview.

All pavement shall be full depth sawcut & replaced per the limits as marked by the City of Kelso/Longview after construction.

All roads shall be constructed per City of Kelso/Longview standards.

5-05 CEMENT CONCRETE PAVEMENT

The class of concrete to be used shall be as noted in the plans and these specifications. The numerical class of concrete defines the specified minimum compressive strength in accordance with AASHTO T 22 at the stated design age.

The Contractor shall provide submittals for concrete mix design in accordance with Section 5-05.3(1) of the Standard Specifications. Submittals for concrete mix design shall be on the applicable form provided by the City. (See attached form at end of these specifications)

For pavement patch or driveway pavement where the total bid item quantity is less than 200 square yards, the Contractor may substitute the following mix design in lieu of providing the normally required flexural and compressive strength results.

All cement concrete pavement shall be a minimum of 4000 PSI commercial except 4" sidewalk which shall be a minimum of 3000 PSI commercial mix.



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DATE: **FEB. 2008**

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**Standard Table
of
Concrete Mixes for Pavements**

Design Age	Pavement Thickness Increase Over Standard Section	Proportions: Amounts In Pounds Per Cubic Yard				Flexural Design Strength
		Portland Cement Type	Cement Factor	Aggregates Fine	Aggregates Coarse AASHTO 467	
14-day	0.00'	I or II	565	1230	2060	650
10-day	0.04'	I or II	565	1230	2060	590
	0.00'	I or II	625	1145	2060	650
7-day	0.08	I or II	565	1230	2060	540
	0.04'	I or II	625	1145	2060	590
	0.00'	I or II	750	975	2060	650
	0.00'	III	565	1230	2060	650
5-day	0.08'	I or II	655	1100	2060	540
	0.08'	III	565	1230	2060	540
4-day	0.08'	I or II	750	975	2060	540
	0.08'	III	655	1100	2060	540
3-day	0.12'	I or II	750	975	2060	500
	0.12'	III	655	1100	2060	500

Gradation for fine aggregates shall be per Sec. 9-03.1(2)B of the Standard Specifications.

Aggregate weights are based upon bulk specific gravities of 2.67. The mix design may be adjusted by the Engineer as deemed necessary for different bulk specific gravities of aggregates.

Air-entrained concrete shall be used.

Generally concrete shall be compacted by means of a vibrating screed. Small or irregular areas require machine vibration where directed by the Engineer.

The type of vibrating screed which the Contractor proposes to use, whether roller or beam, shall be subject to approval by the Engineer. Upon request by the Engineer, a test section of pavement shall be placed for the purpose of demonstrating the capabilities of the screed to satisfactorily compact and strike off the concrete to the established grade and section.

Concrete shall be uniformly distributed between the forms and it shall then be compacted and screeded to the level of the top of the forms by means of the vibrating screed. Supplemental compaction by hand spading or mechanical vibration of the concrete adjacent to the forms will be required if the concrete cannot otherwise be adequately compacted.



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The vibrating screed shall be operated over the freshly placed concrete in successive passes only a sufficient number of times to obtain maximum compaction. Over-vibration of the concrete, resulting in an excess of mortar at the surface of the pavement, will not be permitted.

After the final passage of the vibrating screed, the surface of the concrete shall be at the established pavement grade and cross section and shall be sufficiently smooth as to require only a very moderate amount of hand finishing for smoothness to meet the approval of the Engineer.

Hand methods of compaction are restricted to alleys and confined areas as determined by the Engineer. The concrete shall be spread evenly with shovels and spaded along the forms with a perforated spade after which it shall be struck off with a metal shod tamping rod. The rod shall be cut to the exact crown of the roadway and be fitted with handles at each end and be of such depth or trussed to be rigid. The strike-off rod shall be operated with a combined tamping, crosswise and sawing action to produce a smooth surface free from depressions or inequalities. A small amount of mortar must be kept ahead of and extending substantially along the entire length of the rod. Excessive swinging of the rod will not be permitted.

The concrete shall be struck off again with a "second strike rod" operated in the same manner as the first rod and following not closer than 20 feet behind the first. The second strike rod may be eliminated on alley pavements having the "V" section of the center. The second rod may also be eliminated on small pours of pavement of substandard width, unless use of the rod is required by the Engineer.

Section 5-05.3(2); Consistency

This section is supplemented with the following:

The consistency of the concrete shall be evaluated by one of the following test methods: Method of Test for Slump of Portland Cement Concrete, ASTM Designation C 143, WSDOT Test Method No. 804A or the Method of Test for Ball Penetration in Portland Cement Concrete, ASTM Designation C 360.

The slump of the concrete when placed by machine methods shall not exceed 2 inches. When hand methods are used, the slump shall not exceed 3-1/2 inches.

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Section 5-05.3(6); Subgrade

This section is supplemented with the following:

After the forms have been securely set to grade and alignment, the subgrade between the forms shall be brought to true cross section by dragging a subgrade template as many times as may be necessary to secure a true subgrade.

Where thickened edges for pavements are required, such as shown on the standard plans, the subgrade shall be excavated and shaped to provide for the section shown.

Wherever possible, vehicles shall be kept off the finished subgrade. If vehicles must travel on the subgrade ahead of the paving, a power drag shall be carried immediately ahead of placing the concrete. Irregularities in the subgrade caused by trucks during the placement of concrete shall be smoothed out and compacted immediately ahead of placing the concrete.

No concrete shall be placed until the subgrade is approved by the Engineer. The subgrade as finally completed and approved shall be maintained by the Contractor at an optimum moisture content by wetting with water until the concrete is actually placed.

Section 5-05.3(7); Placing, Spreading, and Compacting Concrete

This section is supplemented with the following:

The concrete shall be placed upon the prepared subgrade between the forms to the required depth and cross section in a continuous operation between construction or expansion joints.

The concrete shall be thoroughly consolidated against and along all forms or adjoining pavements by such means as will prevent gravel pockets along the edges of the finished pavement. Any gravel pockets found after removing the forms shall be repaired.

When integral curb is being constructed with the pavement, fresh concrete for the integral curb shall be placed at such time as will enable the top section of the curb to be consolidated, finished, and bonded to the pavement slab while the concrete is plastic.

Where curb is not being placed integral with the pavement slab, reinforcing steel dowels shall be placed in the base section for the curb per the standard drawing.

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Prior to placing concrete around manholes, catch basins, gate chambers, etc., a temporary cover fitting below the rim of the ring casting shall be provided to prevent the concrete from flowing into them.

Section 5-05.3(7)B; Stationary Side Form Construction

Paragraph 1 is replaced with the following:

Side form sections shall be straight, free from warps, bends, indentations, or other defects. Defective forms shall be removed from the work. Forms may be of wood, metal, or any other material at the option of the Contractor, provided the forms are constructed to result in the specified thickness, cross section, grade, and alignment as shown in the plans.

Section 5-05.3(7)B is supplemented with the following:

Forms shall be adequately supported to prevent deflection or movement and to result in concrete conforming with the plans and specifications. The top of the form shall not vertically deviate more than 1/8 inch in 10 feet and the alignment of forms shall be within 1/4 inch in 10 feet.

When forms are removed before the expiration of the curing period, the edges of the concrete shall be protected with moist earth or sprayed with curing compound.

Section 5-05.3(8)A; Contraction Joints

This section is supplemented with the following:

Generally contraction joints shall be constructed using pre-molded asphalt-impregnated felt or paper conforming to Sec. 9.04.1(1). Pre-molded joint filler shall be 1/4 pavement depth for all thicknesses of pavement unless specified elsewhere in the construction plans.

Contraction joints may be sawed pending approval by the Engineer. Sawed contraction joints shall be minimum 1/4 pavement depth for all thicknesses of pavement unless specified elsewhere in the construction plans.

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Expansion Joints

Expansion joints shall be installed at locations shown on the construction plans or where directed by the Engineer. Joint material shall be pre-molded, bituminuos material conforming to AASHTO designation 213, 3/4 inch thickness. Joints shall extend full width of the pavement from one inch below the subgrade to flush with the finished pavement.

The filler material shall be held accurately in place during the placing and finishing of the concrete by a bulkhead, a holder, a metal cap or any other approved method. The joint must be at right angles to the paved surface and the holder must be in place long enough to prevent sagging of the material.

Expansion joints shall extend continuously through all curbs. Special care shall be taken to preserve alignment perpendicular to the pavement in the curb section.

Payment for joint material and placement shall be considered incidental to the bid item for "Cement Concrete Pavement"

Section 5-05.3(11); Finishing

The third paragraph is amended as follows: after edging, the pavement shall be given a uniform gritty texture by brushing the pavement transversely with a fiber or wire brush of a type approved by the Engineer.

Curing 5-05.3(13)

Section 5-05.3(13)A; Curing Compound

This section is supplemented with the following:

White pigmentation curing compound is NOT ALLOWED. Clear curing compound shall be used.

Prior to be beginning of each day's pour, the Contractor shall provide the Engineer with calculations showing that Contractor has enough curing compound on site to provide the minimum coverage of one gallon to not more than 150 square feet.

Section 5-05.3(13)B; White Polyethylene Sheeting

This section is supplemented with the following:

White polyethylene sheeting shall not be allowed as a curing method but may be used to protect the finished surface from the weather.

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Section 5-05.3(15); Concrete Pavement Construction in Adjacent Lanes

This section is replaced with the following:

Concrete pavement may be placed in a single lane, full width, or multiple lanes between longitudinal joints. Placement patterns shall be subject to traffic control requirements through the project. Pour patterns shall be approved by the Engineer.

Concrete shall not be placed in an adjacent lane sooner than 48 hours after finishing of the first lane. Whenever possible as allowed by the Engineer, the mixer shall be operated on the subgrade or on the shoulder adjacent to the lane being paved.

If the Engineer shall deem conditions to be such as to justify the operation of a mixer and trucks upon newly paved concrete because of lack of space elsewhere, he may give permission to do so, but only under the following restrictions:

1. The concrete in the new lane shall have attained a compressive strength of 3,000 pounds per square inch prior to opening to traffic.
2. Any accumulation of concrete, sand gravel, or other debris deposited on the new pavement shall be completely removed.
3. The Contractor shall replace at his own expense any panels on the new pavement that are cracked, broken, vandalized, or damaged.

A protective ramp shall be constructed at the pavement edge where vehicles may be driven on and off the pavement. The forms shall be left on the outside edge of the first lane at all turnouts until the pavement is opened to traffic.

When tie bars are specified, they shall be placed before the concrete is struck off during the last pass with the strike-off screed whether hand or machine operated. The tie bars shall be protected from traffic by bending down and back against the side form. Prior to placing the adjacent lane, the tie bars shall be straightened.

The Engineer may require a metal strip 3 inches wide by 1/8 inch thick and at least 5 feet in length be placed on the completed pavement lane near to the common joint with the adjacent lane to be paved, and the concrete placed in the adjacent lane shall be struck off from the plate, whether by machine or hand placement.

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All roadways, shoulders, and subgrade in use by the Contractor shall be kept adequately dampened to prevent dust upon the freshly placed concrete.

Section 5-05.3(17); Opening to Traffic

This section is supplemented with the following:

Streets with curbs shall not be opened or disturbed until the curb has cured for at least 72 hours. If the curb has not attained the above-mentioned 3,000 pound strength for the pavement, the Contractor shall place curb protection, such as form lumber, 2 feet away from the curb on the pavement and place standard barricades and maintain them to the satisfaction of the Engineer. Such curb protection shall remain in place as long as may be necessary for protection of the curb.

Section 5-05.4; Measurement

This section is replaced with the following:

Measurement for cement concrete pavement is computed per square yard complete in-place.

Section 5-05.5; Payment

This section is replaced with the following:

Payment for Cement Concrete Pavement shall be at the unit contract price per square yard complete in place. The unit contract price shall be full compensation for furnishing all labor, tools, equipment, materials and also construction, curing, and protecting the cement concrete pavement, alley returns and driveways.

Construction of thickened edges and placing of longitudinal and transverse construction joints and alley return transition curbing shall be considered incidental to the cement concrete pavement and no additional payment shall be made.

Reinforcing steel shown on the standard plans and required for the construction of pavement, curbs, curb and gutter, driveways, catch basins, curb inlets, and manholes shall be considered as incidental to the construction and all costs thereof shall be included in other items of work and no further payment will be allowed.

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Concrete Mix Design

City of Longview Engineering Division • PO Box 128 • Longview, WA 98632 • 360.442.5203

Contractor	Submitted by	Date
Concrete Supplier	Plant Location	
Contract Number	Contract Name	

This mix is to be used in the following Bid Item No(s):

Concrete Class:

<input type="checkbox"/> 3000 psi	<input type="checkbox"/> 4000 psi Cement Concrete Pavement at specified design age:
	<input type="checkbox"/> 3 day <input type="checkbox"/> 7 day <input type="checkbox"/> 14 day <input type="checkbox"/> 28 day

Mix design number:

Cementitious Materials	Source	Type or Class	Sp. Gr.	Lbs/cy
Cement				
Fly Ash				
Microsilica				
Latex				
Slag				

Concrete Admixtures	Manufacturer	Product	Type	Est. Range (oz/cy)
Air Entrainment				
Water Reducer				
High-range Water Reducer				
Set Retarder				
Other				

Water (maximum in lbs/cy): lbs/cy	Reclaimed/Recycled Water ^a (maximum in lbs/cy): lbs/cy	Water Cementitious Ratio (maximum):
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Design Performance	1	2	3	4	5	Average
28-day Compressive Strength psi						
14-day Compressive Strength						
Compressive Strength at Specified Design Age						
14-day Flexural ^d Strength (beams) psi						

Reviewed by:	Date
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GRADATION CHART						
Concrete Aggregates	Component 1	Component 2	Component 3	Component 4	Component 5	Combined Gradation
WSDOT Pit No.						
ASR Mitigation Required? ^b	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Grading ^c						
Percent of Total Aggregate						100%
Specific Gravity						
Lbs/cy (ssd)						

COURSE AGGREGATE						
Percent Passing						
2 inch						
1-1/2 inch						
1 inch						
3/4 inch						
1/2 inch						
3/8 inch						
No. 4						

FINE AGGREGATE: <input type="checkbox"/> Class 1 <input type="checkbox"/> Class 2						
3/8 inch						
No. 4						
No. 8						
No. 16						
No. 30						
No. 50						
No. 100						
No. 200						

Aggregate Correction Factor:	Fineness Modulus (Required for Class 2 Sand)
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Rev. 3/06

^b If Alkali Silica Reactivity Mitigation is required per WSDOT ASA Database – Attach evidence that mitigating measure controls expansion in the form of ASTM C 1260 / AASHTO T303, ASTM C 1293, or ASTM C 295 test results.

^c AASHTO No. 467,57,67,7,8; WSDOT Class 1, Class 2; or combined gradation. See standard.

^d Required for Cement Concrete Pavements.

^e Attach test results indicating conformance to Standard Specification 9-25.1.