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CITY OF ELK GROVE
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Modification or Addition to Improvement Standards and Details

Modification Number: **4-001**

Effective Date of Change: **12/2/2009**

Modification:

1. Add clarifying language to Improvement Standards Sections 4-6B and 4-6C.
2. Reduce minimum TI for 42', 46', and 48' residential streets specified in Section 4-6C from 6.5 to 6.0.
3. Add language to Section 4-6D allowing for a modified roadway structural section design methodology, in accordance with Caltrans standards, when lime treated sub-base is utilized.

Section 4-6 of the City Improvement standards is revised to read in its entirety as reflected in the attached. This modification shall apply to all projects for which a tentative map application has not been made as of the Effective Date, but may be applied to any project if the Owner so elects.

Effect of Modification:

1. Clarifies application of the Caltrans structural section design methodology.
2. Reduces minimum TI for minor local streets to reduce costs while maintaining adequate street service life.
3. Allows structural credit for lime-treated sub-base in accordance with Caltrans standards, subject to a minimum aggregate base layer thickness of 6 inches.

Request for Modification Initiated By:

Fritz Buchman, Asst. Public Works Director
Date:12/2/2009

Modification Reviewed for Consistency with Standards:

Fritz Buchman, Asst. Public Works Director
Date: 12/2/2009

Modification to Improvement Standards Approved:

Richard Shepard, Director of Public Works
Date: 12/2/2009

4-6 STRUCTURAL SECTION

The following standards for the design of structural sections shall govern the preparation of plans for proposed improvements.

A. The minimum allowable thickness of the pavement section on 20-foot wide streets (alleys) that drain to the center shall be six inches (6") of Portland cement concrete on 6 inches Class 2 aggregate base. Upon approval of the Director, alleys may be designed with a standard AC/AB structural section provided that the alley cross-section is crowned with a minimum cross slope of two percent, curb & gutter and drainage facilities are provided on the outside edges, and the minimum distance from face-of-curb to face-of-curb is 20 feet.

B. Structural sections for all asphalt roadways shall be designed to conform to the California Department of Transportation Highway Design Manual (Latest Edition), "Topic 608 - Asphalt Concrete Pavement Structural Section Design", as modified from time to time, or other method as approved by the Public Works Director. The gravel equivalent safety factor of 0.2 feet of asphalt concrete shall be used for design. Calculated asphalt thicknesses shall be rounded up to the nearest ½-inch increment and calculated aggregate base thicknesses shall be rounded to the nearest 1-inch increment.

C. The minimum traffic indices (T.I.) used for the calculation of the roadway structural sections shall be as shown in the following table. The Director may specify a higher Traffic Index where necessary based on projected traffic volumes.

Street Type by Right-of-Way Width	Minimum Traffic Index
42', 46' and 48' residential streets	6.0
50' b/c to b/c to 66' streets and all cul-de-sac bulbs	6.5
72' streets	9.0
96' and 118' streets	10.0

D. Geotextile fabric, meeting the AASHTO M228-96 Geotextile Specification for Class 1 geotextiles, see Table 4.1, shall be placed between the basement soil and the aggregate base material in all streets.

Table 4.1 AASHTO M228-96 Geotextile Specification for Class 1 Geotextile

GEOTEXTILE STRENGTH PROPERTY REQUIREMENTS				
Property	**ASTM Test Method**	**Units**	**Class 1**	
			Woven	Nonwoven
Grab Tensile Strength	D 4632	N	1400	900

		(lbs)	(315)	(202)
Seam Strength	D 4632	N (lbs)	1260 (283)	810 (182)
Trapezoidal Tear Strength	D 4533	N (lbs)	500 (112)	350 (78)
Index Puncture Strength	D 4833	N (lbs)	500 (112)	350 (78)
Mullen Burst Strength	D 3786	kPa (psi)	3500 (508)	1700 (247)

If the subgrade has an R-value of 30 or less, the installation of pavement edge drains at least 12" deep shall be required on both sides of the street, located at the back of curb, for all streets. Drain design to be submitted by design engineer, for City approval.

With approval by the Director, the subgrade soil beneath the curb & gutter and pavement section may be lime treated per geotechnical recommendations in lieu of the geotextile fabric and edge drain requirements noted above. When lime treatment is used, the street structural section shall be determined by the Caltrans method cited in Section B above based on a three layer section using a gravel equivalent factor no greater than 1.1and an R-value no greater than 50 for the lime-treated sub-base layer. However, the thickness of the aggregate base layer shall be no less than six inches under any circumstance.

E. A soils report indicating the "R" value of the basement (i.e., subgrade) soil, along with calculations for structural pavement sections, shall be submitted with any plan indicating construction of roadway. The first lift of pavement shall be a minimum of 2.25 inches thick and shall be a ¾ inch maximum aggregate densely graded mix.

F. Portland cement concrete streets may be constructed with the approval of the Director.

G. The use of alternate road building materials will be allowed if supported by a sound pavement design study prepared by a registered civil engineer and approved by the Director. These alternate road building materials may include but not be limited to the following:
   - Pavement stress absorbing interlayers
   - In-situ soil and subgrade stabilizing admixtures
   - At the option of the City, reclaimed asphalt pavement (RAP) may be substituted for virgin aggregate at a rate of up to fifteen percent (15%) by total weight of aggregate in the asphalt concrete. RAP shall be permitted for use in all asphalt concrete construction except for the top four inches (4") of pavement on major streets and shall meet County of Sacramento Specification 23-4 RECYCLED ASPHALT PAVEMENT
   - Rubberized asphalt concrete