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## 3000 PROJECT DESIGN

### 3001 GENERAL OVERVIEW

This section is to help with the development and preparation of roadway, bridge, storm drain, and other projects. Projects require compliance with guidelines that are effective for traffic operations and highway safety, based on past use. Design personnel are expected to have enough flexibility to develop cost effective, efficient and safe projects that are compatible with the terrain and adjacent development.

### 3002 DESIGN FUNCTION

The design section coordinates District wide planning and design activities, aids in resolving conflicts, designs exceptions and assures that District, local, State and AASHTO standards have been met.

### 3003 DESIGN STANDARDS AND SPECIFICATIONS

The design policies and standards serve as a basic District guide in design work. They are not considered to be mandatory. The standards represent minimum values and are not a substitute for engineering knowledge, experience or judgment. Final designs should be of the highest quality possible, consistent with existing conditions.

### 3004 ROADWAY DESIGN STANDARDS

#### 3004.1 Roadway Design

Roadway planning and design for the public road system shall conform to the following guidelines and referenced specifications. Use the most current edition, unless otherwise specified.

1. American Association of State Highway Transportation Officials (AASHTO) Policy on Geometric Design of Highways and Streets.
2. AASHTO Roadside Design Guide.
3. AASHTO Guide for Development of New Bicycle Facilities.
4. Erosion and Sediment Control on Highway Construction Projects (FHWA, FHPM 6-7-3-1).
5. Idaho Department of Transportation Standard Drawings, Specifications and Current Supplementals (where applicable).
6. Idaho Standards for Public Works Construction (ISPWC).
7. AASHTO Materials Testing and Sampling Methods.
8. American Society for Testing and Materials (ASTM) Specifications.
9. Traffic Engineering Hand Book from Institute of Transportation Engineers.
10. Manual on Uniform Traffic Control Devices (MUTCD).

3004.2 Bridge Design Standards

1. AASHTO Bridge Design unless modified by 3004.3.
2. Idaho Department of Transportation Bridge Design Manual, Specifications and Current Supplements.

3004.3 Precast Structure Stiff Leg Bridge or Box Culvert Bridge

Any precast stiff leg or box culvert bridge placed in the Ada County Highway District right-of-way shall meet one of the following supplementary design options criteria:

1. A cover design (including pavement) option placed over the top of the precast sections shall be in accordance with the following:

<u>SPAN</u>	<u>DEPTH OF COVER</u>
8'	30"
10'	32"
14'	34"
16'	35"
18'	36"
20'	38"
22'	40"
24'	42"
26'	42"
28'	44"
30'	46"

- i. The material for the cover may be crushed aggregate conforming to Section 802 of ISPWC; asphaltic concrete may be used in the pavement section, and its thickness may be reduced to one-half of crushed aggregate thickness (i.e., 2 inches of asphalt = 4 inches of 802 aggregate); or Portland Cement concrete may be used in the pavement section, and its thickness may be reduced to one-sixth of required crushed aggregate thickness (i.e., 4 inches of Portland Cement concrete = 24 inches of aggregate).

2. A design of the precast sections option using a reduced wheel load distribution factor in accordance with the following:

<u>SPAN</u>	<u>DISTRIBUTION WIDTH</u>
8'	3.24'
10'	3.30'
12'	3.36'
14'	3.42'
16'	3.48'
18'	3.54'
20'	3.60'
22'	3.66'
24'	3.72'
26'	3.78'
28'	3.84'
30'	3.90'

- i. If this method is chosen, the designer shall review the slab thickness for deflection control in accordance with Section 8.9.3 of the 2000 Interim Revisions to the STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES 16<sup>th</sup> Edition 1996.
3. A deck design option employing a concrete topping slab over the precast deck to distribute the wheel load across the longitudinal joint wherein the topping slab may be either composite or non-composite as determined by a license Professional Engineer (registered in the State of Idaho).
4. A design option employing weld plates to transfer the wheel load across the longitudinal joint may be used. This option requires that the design engineer submit calculations to ACHD demonstrating that the weld plate size and spacing is adequate to transfer the concentrated load across the joints.
5. The final design option is that a three dimensional analysis prepared by a licensed Professional Engineering (registered in the State of Idaho) be submitted to ACHD for approval on behalf of a precast manufacturer showing how the wheel loads are distributed across the longitudinal joint.

#### 3004.4 Storm Drain Design Standards

Design of storm drain related facilities shall be completed in accordance with Section 8000, STORM WATER MANAGEMENT and appropriate subsections.

#### 3005 PROJECT CHECKLIST

The purpose of the Project Development Checklist (Exhibit 1) is to provide a guideline in the development of various types of projects. This checklist should be a useful tool to the designer to prevent overlooking a project activity and also to evaluate the current status of a project. Some of the items shown on the checklist will not be necessary for some projects, while additional items may be necessary for other projects.