

## DIAC Engineering Practice References

### Index

(March 2017 v1.1)

| I <b>Controls</b>            | APEGBC | CDA        | FEMA | ICOLD          | MAC    | USBR   | OTHERS     |
|------------------------------|--------|------------|------|----------------|--------|--------|------------|
| Inspection                   |        | 2h         |      |                |        |        | 7q         |
| Instrumentation              |        |            |      |                |        | 6a, 6g | 7i         |
| Performance review           |        | 2k         |      |                |        |        | 7i         |
| Emergency preparedness       |        | 2l         | 3f   |                |        |        | 7a         |
| Dam safety management system | 1a     | 2j, 2k, 2l |      | 4g, 4o         | 5a, 5b |        | 7j         |
| OM&S                         |        | 2h, 2l     |      | 4l, 4p, 4e, 4j | 5a, 5c |        | 7b, 7q     |
| Inundation mapping           |        | 2e, 2l     | 3g   | 4e             |        |        |            |
| Risk Management              |        |            |      | 4d             |        | 6j     | 7f, 7m, 7w |
| Public safety around dams    |        | 2i         |      |                |        |        |            |
| Construction QA/QC           |        |            |      |                |        |        | 7e, 7i, 7v |
| Site Investigation           | 1b     |            |      | 4c             |        |        | 7g, 7i     |
| Material Characterization    |        |            |      |                |        |        | 7i         |
| Filters                      |        |            |      |                |        | 6e     | 7r, 7s     |

  

| II <b>Failure Modes</b> | APEGBC | CDA    | FEMA   | ICOLD      | MAC | USBR   | OTHERS             |
|-------------------------|--------|--------|--------|------------|-----|--------|--------------------|
| General                 |        | 2a, 2c |        | 4a, 4k     |     |        |                    |
| Seepage                 |        |        | 3j     | 4k         |     | 6b, 6h | 7h, 7k             |
| Slope stability         |        |        |        |            |     | 6d     | 7i, 7n, 7t, 7y, 7z |
| Liquefaction            |        |        |        |            |     |        | 7u, 7x             |
| Overtopping             |        |        | 3h     |            |     |        |                    |
| Erosion                 |        |        | 3b, 3c |            |     |        | 7o                 |
| Earthquake              |        | 2f     | 3a     | 4h, 4i, 4j |     | 6i     | 7c, 7l             |
| Internal Erosion        |        |        | 3j     | 4m         |     |        | 7k                 |

  

| III <b>Design, Operation and Maintenance</b> | APEGBC | CDA        | FEMA   | ICOLD          | MAC | USBR     | OTHERS |
|--|--------|------------|--------|----------------|-----|----------|--------|
| Earth embankment                             |        |            | 3d     | 4k             |     | 6d to 6i | 7i     |
| Rockfill embankment                          |        |            |        | 4k             |     |          | 7i     |
| Concrete gravity / Roller Compacted Concrete |        | 2g         |        | 4b, 4h, 4k, 4n |     | 6c       | 7i     |
| Spillways / Flow Control                     |        | 2b, 2d     | 3l, 3h |                |     |          | 7i, 7p |
| Tailings/Conventional earthfill              |        |            |        |                |     |          | 7i     |
| Tailings/Hydraulic fill                      |        |            |        |                |     |          | 7i     |
| Freeboard                                    |        | 2d         | 3l, 3h | 4o             |     | 6f       | 7d     |
| Dam Safety                                   | 1a     | 2a, 2k, 2p |        | 4d, 4e, 4g, 4o |     |          |        |
| Geomembrane / Geotextiles                    |        |            | 3e     | 4f             |     |          |        |
| Conduits                                     |        |            | 3d     |                |     |          |        |

1. APEGBC Association of Professional Engineers & Geoscientists of BC
2. CDA Canadian Dam Association
3. FEMA Federal Emergency Management Agency
4. ICOLD International Commission on Large Dams
5. MAC Mining Association of Canada
6. USBR US Bureau of Reclamation
7. Other (Including USACE US Army Corps of Engineers)

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(March 2017 v1.1)

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| APEGBC 1b      | APEGBC 2016. APEGBC Professional Practice Guidelines - Site Characterization for Dam Foundations in BC   |
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| CDA 2b         | CDA 2007 Technical Bulletin: Flow Control Equipment for Dam Safety   |
| CDA 2c         | CDA 2007 Technical Bulletin: Geotechnical Considerations for Dam Safety  |
| CDA 2d         | CDA 2007 Technical Bulletin: Hydrotechnical Considerations for Dam Safety. 49pp.   |
| CDA 2e         | CDA 2007 Technical Bulletin: Inundation, Consequences, and Classification for Dam Safety   |
| CDA 2f         | CDA 2007 Technical Bulletin: Seismic Hazard Considerations for Dam Safety  |
| CDA 2g         | CDA 2007 Technical Bulletin: Structural Considerations for Dam Safety  |
| CDA 2h         | CDA 2007 Technical Bulletin: Surveillance of Dam Facilities. 27pp.   |
| CDA 2i         | CDA 2011 Technical Bulletin: Guidelines for Public Safety Around Dams  |
| CDA 2j         | CDA 2014 Technical Bulletin: Application of Dam Safety Guidelines to Mining Dams   |
| CDA 2k         | CDA 2016 Technical Bulletin: Dam Safety Reviews  |
| CDA 2l         | CDA Dam Safety Guidelines 2007 (2013 Edition)  |
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| FEMA 3d        | FEMA 2005 Technical Manual: Conduits through embankment dams. FEMA 484.<br>Available from <a href="http://www.fema.gov/media-library/assets/documents/3875">http://www.fema.gov/media-library/assets/documents/3875</a>  |
| FEMA 3e        | FEMA 2008 Geotextiles in Embankment Dams - Status Report on the Use of Geotextiles in Embankment Dam Construction and Rehabilitation<br>Available from <a href="https://www.hSDL.org/?view&amp;did=757396">https://www.hSDL.org/?view&amp;did=757396</a>                       |
| FEMA 3f        | FEMA 2013 Federal guidelines for dam safety - Emergency action planning for dams. FEMA 64.<br>Available from <a href="https://www.fema.gov/media-library/assets/documents/34177">https://www.fema.gov/media-library/assets/documents/34177</a>                                 |
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| FEMA 3h        | FEMA 2013 Selecting and accommodating inflow design floods for dams. FEMA P-94<br>Available from <a href="https://www.fema.gov/media-library/assets/documents/3898">https://www.fema.gov/media-library/assets/documents/3898</a>   |

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| ICOLD          | 4k ICOLD Bulletin Preprint 150 - Cutoffs for dams   |
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| ICOLD          | 4m ICOLD Bulletin Preprint 164 - Internal Erosion of Existing Dams, Levees and Dikes, and their Foundations   |
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