

MINUTES
INFRASTRUCTURE REVIEW ADVISORY BOARD
OAK VIEW LIBRARY
June 1, 2016 8:30 a.m.

Members and Alternates Present (Bold text includes voting member)

Chad Huwe, Jeff Schmitt, Joel McDowell, Scott Hofer, Phil Gundvaldson, Tim Galbraith, Mark Anderson, Craig Lauritzen

Members and Alternates Absent

Mark Cotter, Mike Cooper, Chris Fisher, Jason Snyders, Ryan Jansa

Others Present

Andy Berg, Myron Adam, Lance Weatherly, Todd Anawaski, Cynthia Monnin, Kent Johnson, Michal McMahan, Preston Mettler, Eric Willadsen, Frank Regas, Kevin Smith, Pat Starr, Damian Greble, Diane Best, Denise Hanzlik, Heidi Condon, Jeff DesLauriers

Business

Proposed Revision to Engineering Design Standards for Drainage Improvements (Chapter 11)

Lance Weatherly, Principal Drainage Engineer, distributed proposed revisions to Chapter 11 of the Engineering Design Standards regarding Hydraulic and Hydrologic (H&H) Analysis. This analysis is associated with the Floodplain Ordinance presented at the May 18 IRAB meeting. This analysis will be required in Special Flood Hazard Areas (SFHA), typically floodplain or floodway prior to development.

City Engineering held a meeting regarding the proposed H&H Analysis on Friday, May 27. The meeting was well attended by the development community and consulting engineers.

Discussion ensued about the background of the Southwest Sioux Falls floodplain study

- 2005-2006: Development completed Letter of Map Revisions (LOMRs)
- 2008-2009: New floodplain maps were effective and did not recognize LOMRs
- 2009-2013 City completed drainage study used as basis for new preliminary SFHA
- 2015: Commence process for making preliminary map into effective SFHA

Attendees had concerns if FEMA invalidated previous LOMRs. Schmitt stated the City is trying to be proactive by having the best available H&H data so risk of flooding is mitigated.

Schmitt explained two FEMA mapping efforts are ongoing

1. The levee project appeal process ended March 20, 2016. The city is waiting for the Letter of Final Determination.
2. The Southwest Sioux Falls (SWSF) project appeal process is underway.

Attendees inquired about size/scope of additional H&H Analysis areas. Weatherly explained the SWSF study encompassed 1600 acres and foresee future studies of similar magnitude or smaller.

Attendees inquired how development will be impacted if the H&H Analysis is not yet complete. Weatherly explained if an H&H Analysis is required, but not yet completed for a proposed development, the City will review available information to see what can be done.

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The City currently has two consultants under contract for H&H analysis. The City has had discussions with three developers in SWSF study area regarding H&H requirements.

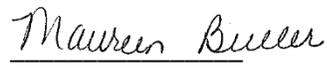
Motion was made by Schmitt to approve the proposed Engineering Design Standard revisions, seconded by Hofer. Roll call yeses – Huwe, Schmitt, McDowell, Hofer, Gundvaldson, Galbraith, Anderson. Noes – None. Motion passed 7-0.

Secondary Subdivision Access

This requirement has been updated, but is not ready for action by the IRAB. . Language will be added that this requirement can be waived by the City Engineer and the Director of Planning and Building Services.

Adjournment

The next IRAB meeting is scheduled for August 3, 2016, at 8:30 a.m., at the Oak View Library. A motion was made by Huwe and seconded by McDowell to adjourn. Roll Call: Yeses – Huwe, Cooper, McDowell, Snyders, Gundvaldson, Galbraith, Anderson. Noes none. Motion passed 7-0.


Maureen Buller
Secretary


Chad Huwe, P.E.
City Engineer

11.1.9 HYDRAULIC AND HYDROLOGIC ANALYSES STANDARDS

The purpose of this standard is define hydraulic and hydrologic (H&H) analyses used to evaluate proposed development for potential impacts to stormwater storage and conveyance in H&H Analysis Areas. H&H Analyses will generally be completed by the City Engineer utilizing Developer provided existing and proposed site digital elevation models for purposes of determining impacts.

All H&H analyses of proposed Development are intended to be reviewed and approved by the City Engineer in approximately ten business days from receipt of all Developer required information and an H&H Analysis of existing conditions is complete. If H&H Analysis is required for an area which existing conditions are not yet modeled, the City will endeavor to expeditiously complete the H&H Analysis, alternatively the Developer may propose alternative methods to satisfy H&H Analysis requirements.

H&H Analyses shall be completed using H&H software approved by the City Engineer with final report including software file/s exported to a City approved compatible format for all hydraulic conditions.

- 1) H&H Analysis Areas
 - a) Special Flood Hazard Areas (SFHA)
 - b) TBD
- 2) Conveyance
- 3) Hydrologic analysis
 - a) Rainfall data to utilize:
 - (1) Engineering Design Standards
 - (2) NOAA Atlas 14
 - (3) Or approved method
 - b) Duration
 - (1) SCS Type II Distribution (24 hr)
 - (2) Or approved method
 - ii) In developing watersheds, the H&H analyses shall reflect anticipated runoff from all projected future development based on current zoning and best available information.
- 4) Hydraulic modeling
 - a) determination of the required limits of the hydraulic model shall be based on detailed study information for downstream structures (dam, bridge, culvert) to determine adequate starting water surface elevation for the H&H analysis.
 - b) channel sections must be surveyed.
 - c) development of cross sections shall utilize the more accurate of two foot contour data or current available City LIDAR data.
 - d) cross section spacing sufficient to accurately define a hydraulic profile and determine elevations at key locations such as roads, buildings, and property lines.”
 - e) a survey of bridge and culvert openings and the top of road is required at each road crossing.
 - f) standard accepted engineering practices shall be used when assigning parameters for the base model such as flow, Manning’s N values, expansion and contraction coefficients or effective flow limits. The model of existing conditions shall be calibrated to past flooding

- data such as high water marks to determine the reasonableness of the model results. If no historical data is available, adequate justification shall be provided for any parameters outside standard accepted engineering practices.
- g) the H&H analyses must extend past the upstream limit of the difference in the existing and proposed flood profiles in order to provide a tie-in to existing analyses. The height difference between the proposed flood profile and the existing study profiles shall be no more than 0.00 feet at the tie in point.
- 5) Hydraulic analysis — The following criteria shall be the basis for determining the hydraulic profile:
- a) *Reconnaissance*. The H&H Analyses Engineer of Record is responsible for the collection of all existing data with regard to flooding in the study area. This shall include a literature search of all published reports in the study area and an information search to obtain all unpublished information on flooding in the immediate and adjacent areas from federal, state and local units of government.
 - b) *Base data*. Cross sections to be used for the hydraulic analysis may be obtained by one of several methods, including surveying or LIDAR/photogrammetry.
 - c) *Previous H&H Analyses studies*. If differences exist between a study previously approved by the City Engineer and calculated hydraulic profiles, the engineer shall document justification and obtain departmental approval for these differences.
 - d) *Calculation of the hydraulic profile*. The hydraulic profile shall be calculated to the 0.01 foot.
 - e) *Adequacy of the hydraulic model*. The following factors shall be considered by the City Engineer to determine the adequacy of the hydraulic model:
 - i) Cross section spacing.
 - ii) Differences in energy grade.
 - iii) Methods for analyzing structure hydraulics
 - iv) Lack of flow continuity.
 - v) Use of gradually varied flow model.
 - vi) Manning's "n" values.
 - vii) Calibration of the hydraulic model with past flood events.
- 6) Mapping
- a) An exhibit/map of the reach analyzed shall be provided, showing all cross section locations, floodway/floodplain/major design event inundation limits based on best available data, limits of the proposed development.
 - b) If any part of the proposed development is in the H&H analysis areas, the proposed site digital elevation model shall be incorporated into the existing model to analyze any impacts.
 - c) Any effective and preliminary floodways/floodplains shall be shown on the map.
 - d) The reach centerline of the model shall be visible on the map.
- 7) Storage
- a) Analyze proposed development or grading for reduction of hydraulic storage in H&H Analysis areas.
 - b) Developer to provide existing site digital elevation model
 - c) Developer to provide proposed site digital elevation model with sufficient information to support a H&H Analysis for purposes of determining conveyance impacts.
 - d) *Final report*. A comprehensive final report shall be submitted to the City Engineer: