



Staff Report

Text Amendment

Case #: TA-2019-11-00017

Attachments:

Staff Report, Revisions in Article 12

Zoning Commission Public Hearing: Thursday, December 5, 2019

City Council Introduction: Monday, December 23, 2019

City Council Final: Tuesday, January 14, 2020

City Council Request (Ordinance):

Introduction of an Ordinance to amend Ordinance UDC#14-5364 Article 12 Floodways, Floodplains, and Storm Water Management to update freeboard requirements and update the drainage design requirements from 10 yr. storm to 100 year storm (Case#TA-2019-11-00017) Recommend approval by the Zoning Commission

Additional Information:

Updating current freeboard requirements in Article 12, and updating current drainage design requirements from 10 year storm to 100 year storm to match Tangipahoa Parish Drainage District

Public Hearing:

For: NONE

Against: NONE

Commission Recommendation:

Motion: Recommend approval

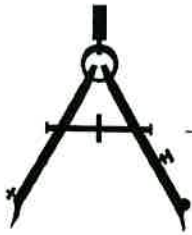
For: Jeffrey Smith, Matt Sandifer, Jimmy Meyer, William Travis

Against: NONE

Abstain: NONE

Absent: Kylan Douglas

Ordinance to Read:



Spangler Engineering, LLC

CONSULTING CIVIL ENGINEERS

T. C. Spangler, Jr., P.E.
Webb M. Anderson, P.E.
Jay C. Pittman, P.E.

December 4, 2019

Ms. Tracie Schillace, City Planner
City of Hammond
P. O. Box 2788
Hammond, Louisiana 70404

RE: Revision of Drainage Requirements
– City of Hammond

Tracie:

We have been reviewing drainage plans and drainage impact studies prepared by various design engineers and submitted to the City of Hammond since about 1988.

The catastrophic flooding from the two (2) extraordinary rain events in 2016 has finally resulted in much more stringent design guidelines being adopted by Tangipahoa Parish. We submit that the City of Hammond drainage design guidelines be revised to generally mirror the February 22, 2017 “Development Drainage Requirements” adopted by Consolidated Gravity Drainage District #1.

In view of the different types of developments which occur in the rural areas of Tangipahoa Parish versus City of Hammond developments, we have prepared several items for your review, Hammond Planning & Zoning Commission review, and ultimately, City of Hammond review and action:

General Drainage Design Requirements:

- (1) Utilize (and identify) generally accepted software for modeling of a watershed.
- (2) Acquire (by survey field work or detailed GIS/LIDAR mapping) adequate topographic information to confirm drainage patterns and watershed boundaries.
- (3) Model the entire watershed based on **existing** terrain and development conditions, aka “Pre-Development Runoff” (including contributing drainage areas outside of the development):
 - (a) Rainfall recurrence interval of **100 year/2 hours** (Note: per NOAA Atlas 14, Vol. 9, Version 2.0 = 6.16”)
 - (b) Rainfall recurrence interval of **25 year/2 hours** (Per NOAA Atlas 14/Vol.9 = 4.78”).
 - (c) Results shall be exhibited as “ Q_{PRE} ” in cubic feet per second (“cfs”).
- (4) Model the entire watershed based on proposed improvements, aka “Post-Development Runoff” (Q_{POST}). Note: Use the same rainfall intensities per Items “(3)(a)” and “(3)(b)” above.
 - (a) Results shall be exhibited as “ Q_{POST} ” in cfs.
- (5) Determine the difference between Q_{POST} and Q_{PRE} **for the 100 year event**.
- (6) Quantify the difference in “(5)” above in cubic feet.
- (7) Using Best Management Practices (“BMP”), design a retention/detention facility to **retain on-site** the volume of excess runoff calculated in “(6)” above.

Notes to “(7)”:

 - A. Typically retention/detention ponds shall include an outfall pipe allowing only the pre-development runoff to exit the development.
 - B. Oversized on-site storm drain pipes may be included in the retention/detention calculations.

General Drainage Design Requirements [continued]

Notes to "(7)" [continued]

C. In the case of open ditch subdivisions, driveway pipes shall **NOT** be allowed for retention/detention calculations.

D. Open ditches shall **NOT** be allowed for retention/detention calculations.

E. Parking lots shall **NOT** be allowed for retention/detention calculations except in unusual circumstances, and provided the Owner explicitly permits partially flooded parking lots during rainfall events equal to or greater than 25 year rainfalls.

(8) In the case of subdivisions, *interior* storm drain pipes/ditches may be designed for a 25 year rainfall event [Note: this provisions does not change the outfall and retention/detention requirements utilizing the 100 year rainfall event.]

(9) In the case of subdivisions, all lots shall have driveway pipes, including minimum diameter and upstream/downstream inverts, designed and displayed in tabular form on the "Grading & Drainage Plan" of the subdivision construction plans.

(10) Retention/detention pond(s) and outfall structure(s) shall be maintained by the Owner of the development in perpetuity (or HOA in the case of subdivisions).

(11) In the case of subdivisions, a note on the Final Plat of the subdivision shall be included designating ownership and/or perpetual maintenance responsibility of the retention/detention pond and outfall structure.

We concur with the existing exemptions as now set forth in the UDC for a Drainage Impact Study, with the single exception of the size of any individual commercial development. It is our recommendation that the following be considered:

"A commercial development being contemplated on a parcel smaller than 1.0 acre; i.e., less than 43,560 square feet parcel size, is exempt from the requirements to (i) retain all excess runoff (100 year event) on site, and (ii) prepare and submit a Drainage Impact Study."

Clearly, development size exempted from the "no net runoff" requirement is a political decision rather than an engineering decision; however, it is our experience that "small" developments typically have minimal impact on adjacent/publicly maintained drainage efficiency.

If there are any comments or questions, please advise. Unfortunately, I am unavailable to attend the Planning & Zoning meeting on 12/5; however, I will make myself available to discuss the contents of this letter if any P & Z members so desire.

Sincerely,



T. C. Spangler, Jr., P.E.

cc: Mayor Pete Panepinto
Mr. Robert Morgan, City of Hammond

NOAA Atlas 14, Volume 9, Version 2 HAMMOND

Station ID: 16-4034

Location name: Hammond, Louisiana, USA*

Latitude: 30.4839°, Longitude: -90.4731°

Elevation:

Elevation (station metadata): 90 ft**

* source: ESRI Maps

** source: USGS



POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Deborah Martin, Sandra Pavlovic, Ishani Roy, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Michael Yekta, Geoffery Bonnlin

NOAA, National Weather Service, Silver Spring, Maryland

[PF_tabular](#) | [PF_graphical](#) | [Maps & aeriels](#)

PF tabular

| PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches) ¹ | | | | | | | | | | |
|--|-------------------------------------|------------------------|------------------------|-----------------------|----------------------|----------------------|----------------------|----------------------|---------------------|---------------------|
| Duration | Average recurrence interval (years) | | | | | | | | | |
| | 1 | 2 | 5 | 10 | 25 | 50 | 100 | 200 | 500 | 1000 |
| 5-min | 0.529 (0.422-0.666) | 0.604 (0.481-0.762) | 0.733 (0.582-0.926) | 0.845 (0.667-1.07) | 1.01 (0.770-1.31) | 1.14 (0.848-1.48) | 1.27 (0.915-1.68) | 1.41 (0.974-1.90) | 1.61 (1.06-2.20) | 1.76 (1.13-2.42) |
| 10-min | 0.774 (0.617-0.975) | 0.885 (0.705-1.12) | 1.07 (0.852-1.36) | 1.24 (0.977-1.57) | 1.47 (1.13-1.91) | 1.66 (1.24-2.17) | 1.86 (1.34-2.46) | 2.07 (1.43-2.78) | 2.36 (1.56-3.22) | 2.58 (1.66-3.55) |
| 15-min | 0.944 (0.753-1.19) | 1.08 (0.860-1.36) | 1.31 (1.04-1.65) | 1.51 (1.19-1.91) | 1.80 (1.38-2.33) | 2.03 (1.51-2.65) | 2.27 (1.63-3.01) | 2.52 (1.74-3.39) | 2.87 (1.90-3.93) | 3.15 (2.02-4.33) |
| 30-min | 1.41 (1.13-1.78) | 1.62 (1.29-2.04) | 1.97 (1.56-2.49) | 2.28 (1.80-2.88) | 2.72 (2.08-3.53) | 3.08 (2.30-4.02) | 3.46 (2.49-4.58) | 3.85 (2.65-5.18) | 4.39 (2.91-6.01) | 4.82 (3.10-6.63) |
| 60-min | 1.88 (1.50-2.37) | 2.17 (1.73-2.74) | 2.67 (2.12-3.37) | 3.11 (2.46-3.94) | 3.75 (2.87-4.87) | 4.27 (3.18-5.58) | 4.81 (3.46-6.37) | 5.38 (3.71-7.24) | 6.18 (4.09-8.45) | 6.80 (4.37-9.36) |
| 2-hr | 2.35 (1.90-2.92) | 2.73 (2.20-3.39) | 3.38 (2.71-4.21) | 3.94 (3.15-4.93) | 4.78 (3.70-6.13) | 5.45 (4.12-7.04) | 6.16 (4.49-8.07) | 6.91 (4.83-9.20) | 7.96 (5.34-10.8) | 8.78 (5.73-11.9) |
| 3-hr | 2.64 (2.14-3.26) | 3.07 (2.49-3.80) | 3.83 (3.09-4.74) | 4.49 (3.61-5.57) | 5.47 (4.27-6.98) | 6.26 (4.77-8.04) | 7.10 (5.22-9.25) | 7.99 (5.63-10.6) | 9.23 (6.25-12.4) | 10.2 (6.72-13.8) |
| 6-hr | 3.17 (2.60-3.87) | 3.70 (3.03-4.51) | 4.63 (3.78-5.65) | 5.45 (4.43-6.67) | 6.67 (5.28-8.42) | 7.67 (5.92-9.73) | 8.73 (6.51-11.2) | 9.86 (7.05-12.9) | 11.4 (7.88-15.2) | 12.7 (8.50-17.0) |
| 12-hr | 3.76 (3.13-4.53) | 4.38 (3.63-5.27) | 5.46 (4.51-6.58) | 6.43 (5.29-7.77) | 7.88 (6.32-9.83) | 9.07 (7.10-11.4) | 10.3 (7.82-13.2) | 11.7 (8.51-15.2) | 13.6 (9.53-18.0) | 15.2 (10.3-20.1) |
| 24-hr | 4.39 (3.68-5.21) | 5.12 (4.29-6.08) | 6.40 (5.35-7.61) | 7.54 (6.27-9.00) | 9.24 (7.50-11.4) | 10.6 (8.42-13.2) | 12.1 (9.28-15.2) | 13.7 (10.1-17.5) | 15.9 (11.3-20.7) | 17.7 (12.2-23.1) |
| 2-day | 5.03 (4.28-5.90) | 5.91 (5.02-6.93) | 7.43 (6.29-8.73) | 8.78 (7.39-10.3) | 10.8 (8.82-13.0) | 12.4 (9.91-15.1) | 14.1 (10.9-17.4) | 15.9 (11.8-20.0) | 18.4 (13.2-23.6) | 20.4 (14.3-26.3) |
| 3-day | 5.48 (4.68-6.37) | 6.39 (5.46-7.43) | 7.99 (6.81-9.31) | 9.41 (7.98-11.0) | 11.5 (9.54-13.9) | 13.3 (10.7-16.1) | 15.1 (11.8-18.6) | 17.1 (12.9-21.4) | 19.8 (14.4-25.3) | 22.0 (15.6-28.2) |
| 4-day | 5.85 (5.03-6.76) | 6.78 (5.82-7.84) | 8.43 (7.21-9.76) | 9.90 (8.43-11.5) | 12.1 (10.1-14.5) | 13.9 (11.3-16.8) | 15.9 (12.5-19.5) | 18.0 (13.6-22.4) | 20.9 (15.3-26.5) | 23.3 (16.5-29.6) |
| 7-day | 6.80 (5.90-7.78) | 7.81 (6.77-8.94) | 9.60 (8.29-11.0) | 11.2 (9.63-12.9) | 13.6 (11.5-16.2) | 15.6 (12.8-18.6) | 17.7 (14.1-21.5) | 20.0 (15.4-24.7) | 23.3 (17.3-29.2) | 25.9 (18.7-32.7) |
| 10-day | 7.68 (6.71-8.72) | 8.75 (7.63-9.94) | 10.6 (9.25-12.1) | 12.3 (10.7-14.1) | 14.8 (12.6-17.5) | 16.9 (14.0-20.0) | 19.1 (15.3-23.0) | 21.5 (16.6-26.3) | 24.8 (18.5-31.0) | 27.5 (20.0-34.5) |
| 20-day | 10.3 (9.10-11.5) | 11.5 (10.2-12.9) | 13.6 (12.0-15.3) | 15.5 (13.5-17.4) | 18.1 (15.5-20.9) | 20.2 (16.9-23.5) | 22.4 (18.2-26.5) | 24.8 (19.4-29.8) | 28.0 (21.2-34.3) | 30.5 (22.6-37.8) |
| 30-day | 12.6 (11.2-13.9) | 14.0 (12.4-15.5) | 16.3 (14.5-18.2) | 18.3 (16.2-20.4) | 21.1 (18.1-24.0) | 23.3 (19.6-26.8) | 25.5 (20.9-29.8) | 27.8 (21.9-33.1) | 30.9 (23.6-37.5) | 33.2 (24.8-40.8) |
| 45-day | 15.5 (13.9-17.0) | 17.2 (15.4-18.9) | 20.0 (17.9-22.1) | 22.3 (19.8-24.7) | 25.4 (21.9-28.6) | 27.7 (23.5-31.5) | 30.0 (24.7-34.7) | 32.3 (25.7-38.1) | 35.3 (27.2-42.5) | 37.6 (28.3-45.8) |
| 60-day | 18.0 (16.2-19.7) | 20.0 (18.0-21.9) | 23.3 (20.9-25.6) | 25.9 (23.2-28.5) | 29.4 (25.5-32.8) | 32.0 (27.2-36.1) | 34.4 (28.5-39.5) | 36.8 (29.4-43.1) | 39.8 (30.9-47.6) | 42.0 (31.9-51.0) |

¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.