

## Exhibit D Design Summaries for Infiltration Basin

**Project Identifier:** Hall Automotive **Project Size:** 3.04 Acres **No. of Lots:** 1  
**Number of Runoff Discharge Points:** 1 **Watershed (ultimate discharge):** Pewaukee River  
**Watershed Area** (including off-site runoff traveling through project area): 3.65 acres (0.61 acres off-site)

**Watershed Data Summary.** The following table summarizes the watershed data used to determine peak flows and runoff volumes required to design the infiltration basin.

| Summary Data Elements   | Pre-developed   | Post-developed  |  |                           |
|---|---|---|--|---------------------------|
|   | Area 1  | Area 1  | Area 2   |                           |
| <b>Watershed Areas (in acres)</b><br><i>(see attached map)</i>      | 1.350 acres   | 3.350   | 0.296  |                           |
| <b>Average Watershed Slopes (%)</b>                                 | 0-3%  | 2-25%   | 10-25%   |                           |
| <b>Land Uses (% of each)</b><br><i>(see attached map)</i>           | 0.107 ac roof<br>0.280 ac paved<br>0.347 ac gravel<br>0.616 ac open                             | 0.502 ac roof<br>1.883 ac paved<br>0.965 ac open  | 0.072 ac paved<br>0.224 ac open  |                           |
| <b>Runoff Curve Numbers</b>   | 98 x (.107+.28+.347)<br>ac.= 71.9<br>61 x .616 ac.= 37.6<br><u>Net 109.51.35 ac.</u><br>CN = 81 | 98 x (.502+1.883)<br>ac.= 233.7<br>61 x .965 ac.= 58.9<br><u>Net 292.63.35 ac.</u><br>CN = 87 | 98 x .072 ac.= 7.0<br>61 x .224 ac.= 13.7<br><u>Net 20.70.296 ac.</u><br>CN = 70 |                           |
| <b>Conveyance Systems Types</b>                                     | Sheet flow over pavement / gravel   | Sheet flow over pavement / storm sewer  | Grass swale / infiltration basin   |                           |
| <b>Summary of Average Conveyance System Data</b>                    | Pavement / gravel @ 1 to 3 %  | Pavement at 1 to 2 %; Storm sewer @ 0.5 to 2%   | Grass swale at 1-2%  |                           |
| <b>Time of Concentration (Tc)</b><br><i>(see attached map)</i>      | 0.4 hrs.  | .08 hrs.  | .08 hrs.   |                           |
| <b>25% of 2-yr 24-hr post-dev runoff volume</b>                     | N/A   | N/A   | .11 ac. ft.  |                           |
| <b>1-year/24 hour Runoff Volume</b>                                 | N/A   | N/A   | .41 ac. ft.  | <b>Total Site Release</b> |
| <b>2-yr./24 hour Peak Flow</b><br><i>(see attached hydrographs)</i> | 1.37 cfs  | 7.46 cfs  | 0.22 cfs   | 1.25 cfs                  |
| <b>10-yr./24 hour Peak Flow</b>                                     | 2.72 cfs  | 13.27 cfs   | 0.58 cfs   | 2.43 cfs                  |
| <b>100-yr./24 hour Peak Flow</b>                                    | 4.50 cfs  | 20.54 cfs   | 1.11 cfs   | 3.93 cfs                  |

## Exhibit D (continued)

**Practice Design Summary.** The following table summarizes the data used to design the infiltration basin.

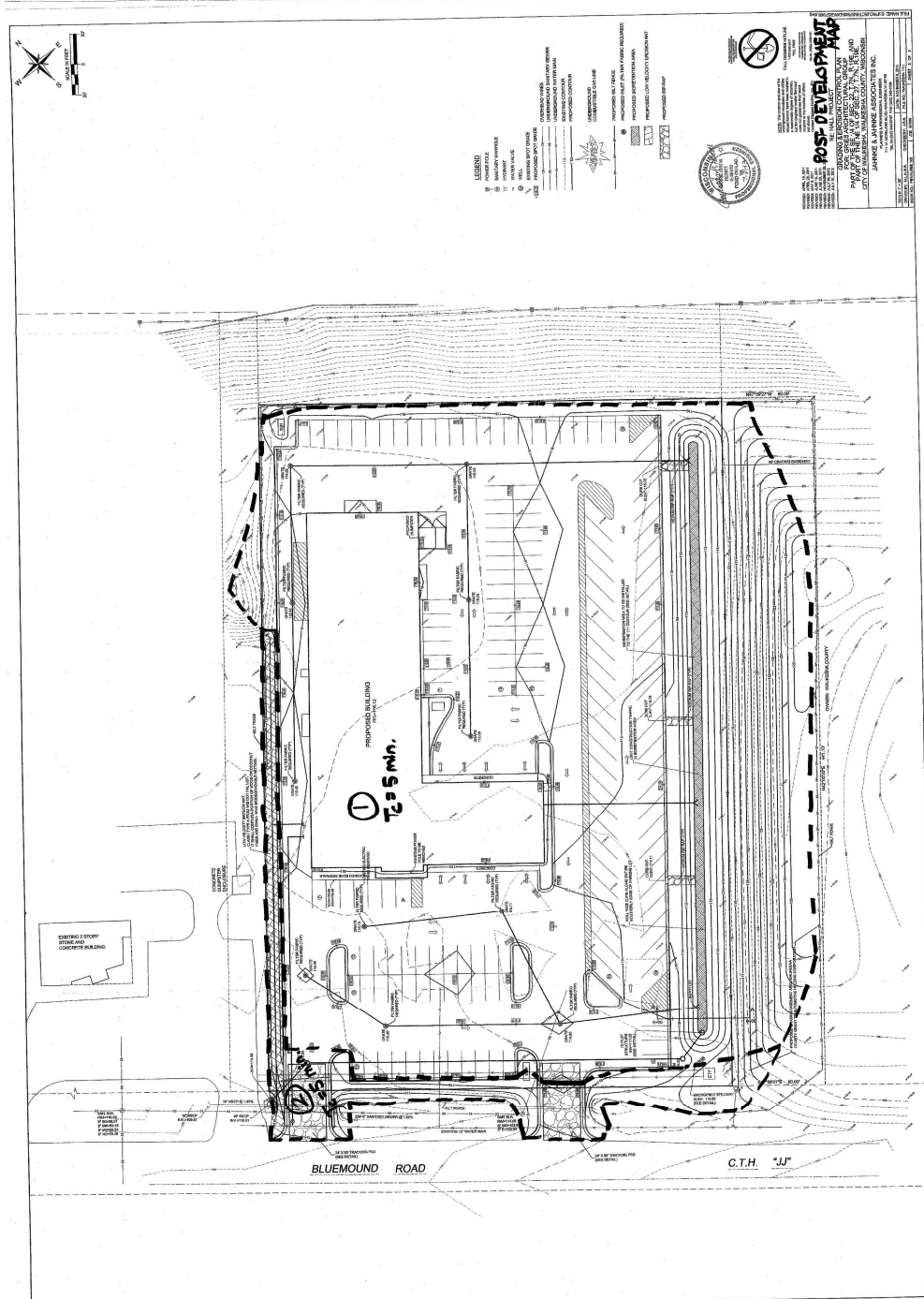
| Design Element   | Design Data  |
|--|--|
| <b>Site assessment data: (see attached maps)</b>                   |  |
| Contributing drainage area to basin (subwatershed 1 & 2)           | 3.35 acres   |
| Distance to nearest private well (including off-site wells)        | > 100 feet   |
| Distance to municipal well (including off-site wells)              | > 1200 feet  |
| Wellhead protection area involved?                                 | No   |
| Ground slope at site of proposed basin                             | average 2%   |
| Any buried or overhead utilities in the area?                      | Yes  |
| Proposed outfall conveyance system/discharge (w/ distances)        | 15 ft. to Bluemound Road ditch                           |
| Any downstream roads or other structures? (describe)               | Yes – 18” cmp d/w culvert                                |
| Floodplain, shoreland or wetlands?                                 | No   |
| <b>Soil investigation data (see attached map &amp; soil logs):</b> |  |
| Number of soil investigations completed                            | 7 (2 in basin area)                                      |
| Do elevations of test holes extend 3 ft. below proposed bottom?    | Yes (see map & boring logs)                              |
| Average soil texture at pond bottom elevation (USDA)               | Very gravelly sand                                       |
| Distance from pond bottom to bedrock                               | > 5 feet   |
| Distance from pond bottom to seasonal water table                  | No mottling observed;<br>No water observed in test holes |
| <b>General basin design data (see attached detailed drawings):</b> |  |
| Permanent pool surface area  | N/A  |
| Design permanent pool water surface elevation                      | N/A  |
| Top of berm elevation (after settling) and width                   | > 115.2 / 15 feet wide                                   |
| Length/width (dimensions/ratio)                                    | 395 ft. (L) x 35 ft. (W) = 11:1                          |
| Safety shelf design (length, grade, max. depth)                    | N/A  |
| Ave. water depth (minus safety shelf/sediment)                     | N/A  |
| Sediment forebay size & depth                                      | N/A  |
| Sediment storage depth & design maintenance                        | N/A  |

| <b>Design Basin Inflow, Outflow &amp; Storage Data</b> |                              |                         |   |                                   |
|--|------------------------------|-------------------------|---|-----------------------------------|
| (see attached hydrographs and detail drawings)         |                              |                         |   |                                   |
| Inflow Peak Rate /<br>Total Volume                     | Maximum<br>Outflow Rate      | Max. Water<br>Elevation | Storage Volume<br>at Max. Elev.<br>(above perm. pool) | Outflow<br>Control<br>Structures* |
| 5.77 cfs / 0.320 Ac-Ft<br>1-yr./24 hr.                 | .99 cfs<br>(34 hr. drawdown) | 112.35 ft.              | 0.13 acre feet  | #1                                |
| 7.46 cfs / 0.413 Ac-Ft<br>2-yr./24 hr.                 | 1.14 cfs                     | 112.64 ft.              | 0.17 acre feet  | #1 and #2                         |
| 13.27 cfs / 0.736 Ac-Ft<br>10-yr./24 hr.               | 2.12 cfs                     | 113.41 ft.              | 0.31 acre feet  | #1 and #2                         |
| 20.54 cfs / 1.154 Ac-Ft<br>100-yr./24 hr.              | 3.71 cfs                     | 114.18 ft.              | 0.50 acre feet  | #1, #2 and #3                     |

- \* #1 = 7 inch orifice in outlet control structure – flow line elev. @ 111.00 (1.3 ft. max. head)  
 #2 = 7 inch orifice in outlet control structure – flow line elev. @ 112.55 (.7 ft. max. head)  
 #3 = 24 inch diameter structure – rim elev. @ 114.05 (3.0 ft. max. hydraulic head)

# Exhibit D (continued)

**Watershed Map.** The watershed map shown below was used to determine the post-development data contained in this exhibit. The post-developed watershed areas are greater than the pre-development watershed areas for this project.

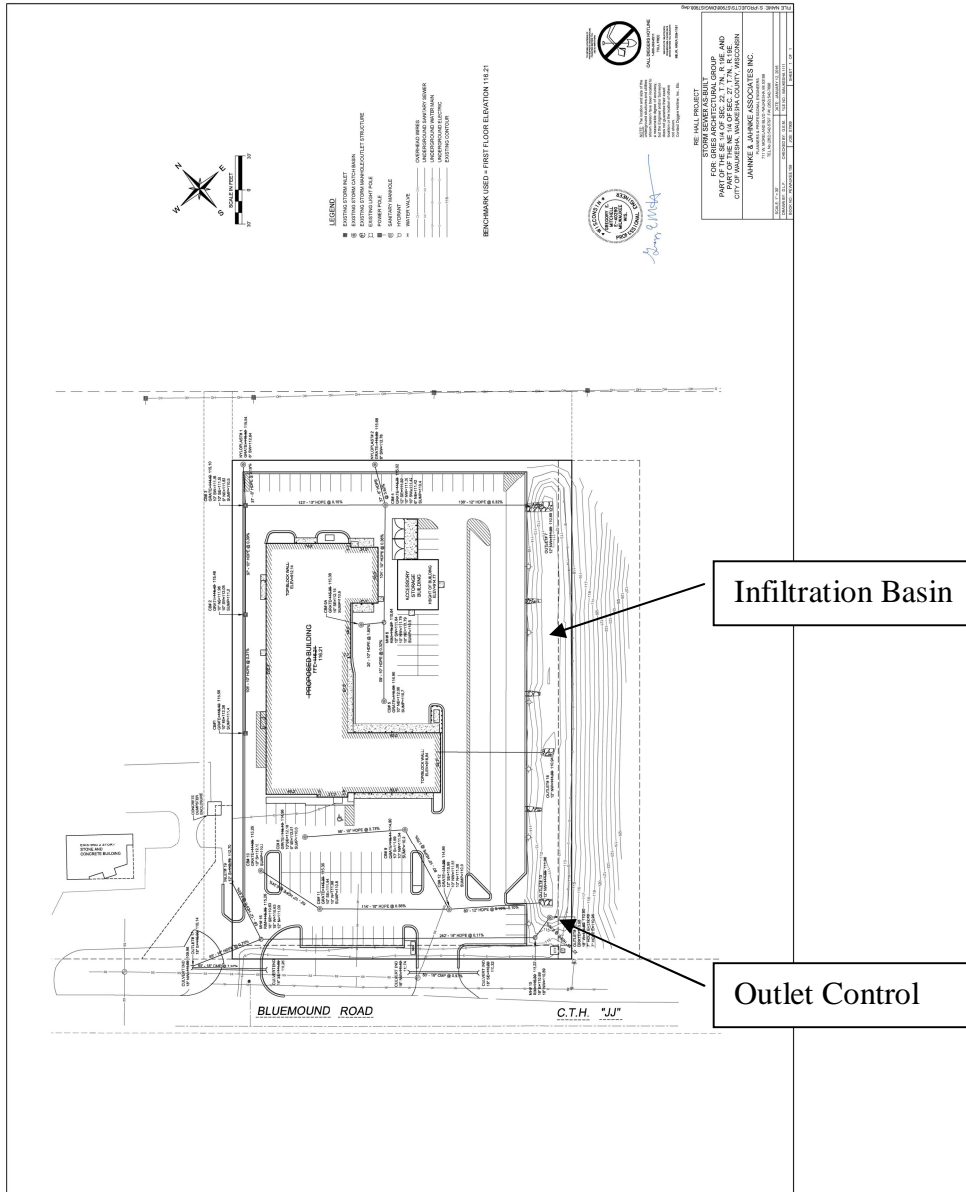


# Exhibit E

## As-built Survey for Infiltration Basin

The infiltration basin depicted in Figure 1 is a reduced copy of the as-built plan.

Project Identifier:           **Hall Automotive**  
Storm water Practice:   **Infiltration Basin**  
Location of Practice:   **Southeast 40' of subject parcel**  
Owners of Parcel:       **Automotive Holding Corporation**



| Element: | Design:     | As-Built:   |
|----------|-------------|-------------|
| Rim      | 114.05      | 113.98      |
| Inv 1    | 7" @ 111.00 | 7" @ 110.95 |
| Inv 2    | 7" @ 112.55 | 7" @ 112.48 |

**Exhibit "F"**  
**Engineering/Construction Verification**

DATE: March 11, 2016

TO: City of Waukesha

FROM: Gregory E. Mitchell, PE – Jahnke & Jahnke Associates, Inc.

RE: Engineering/Construction Verification for the following project:  
Project Name: Hall Automotive  
Section 22 & 27, Town of Pewaukee  
Storm Water Management & Erosion Control Permit #15-015  
Storm Water Management Practices: Infiltration Basin / Outlet Control Structure

For the above-referenced project and storm water management practices, this correspondence shall serve as verification that: 1) all site inspections outlined in approved inspection plans have been successfully completed; and 2) the storm water management practice design data presented in Exhibit D, and the "as-built" construction documentation presented in Exhibit E comply with all applicable state and local technical standards, in accordance with the City of Waukesha Storm Water Management and Erosion Control Ordinance.

Any variations from the originally approved construction plans are noted in Exhibit E. These variations are considered to be within the tolerances of standard construction techniques and do not affect the original design as presented in Exhibit D in any way.



(Signed P.E. stamp must be included)

**Exhibit G**  
**Storm Water Management and Erosion Control Permit Termination**

Project Identifier: Hall Automotive

Location: Part of the SW ¼ of Section 22 and NW ¼ of Section 27, Township 7 North, Range 19 East, City of Waukesha, Waukesha County, Wisconsin

Storm Water Management and Erosion Control Permit Holder's Name:

Pat Konkol, Berghammer Construction Company

Storm Water Management & Erosion Control Permit #: 15-015

Chapter 32 – City of Waukesha Storm Water Management and Erosion Control requires that all newly constructed storm water management practices be maintained by the Storm Water and Erosion Control Permit Holder until permit termination, after which maintenance responsibilities shall be transferred to the responsible party identified in this Maintenance Agreement.

Upon execution below, this exhibit shall serve to certify that the Storm Water Permit Holder has satisfied all requirements of the Storm Water Management and Erosion Control Ordinance and that the City of Waukesha has terminated the Storm Water Management and Erosion Control Permit for the property covered by this Maintenance Agreement.

Dated this \_\_\_ day of \_\_\_\_\_, 201\_.

City of Waukesha representative:

\_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(Typed Name and Title)

**Acknowledgements**

State of Wisconsin  
County of Waukesha

Personally came before me this \_\_\_ day of \_\_\_\_\_, 201\_, the above named \_\_\_\_\_ to me known to be the person who executed the foregoing instrument and acknowledged the same.

\_\_\_\_\_  
[Name]  
Notary Public, Waukesha County, WI  
My commission expires: \_\_\_\_\_