

**DRC**

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12/03/2025

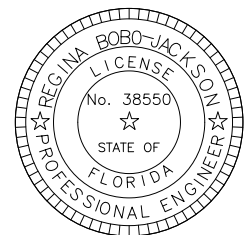
**DRAINAGE CALCULATION**  
**FOR**  
**AUTOMOTIVE CUSTOMIZERS**  
**1777 N ANDREWS ANVENUE**  
**POMPANO BEACH, FLORIDA**

**July, 2025**

**Prepared By:**

**Gator Engineering Associates, Inc.**  
**11390 Temple Street**  
**Cooper City, Florida 33330**

**GEC Project No. 23010**



**Signed:** \_\_\_\_\_

**Regina Bobo-Jackson, P.E.**  
**P.E. No. 0038550**

**Dated:** \_\_\_\_\_

**Pages 1-27**

Regina Bobo-Jackson, State of Florida, Professional Engineer, License No. 38550

This item has been digitally signed and sealed by Regina Bobo-Jackson, P.E. on the date adjacent to the seal.

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# 1. INTRODUCTION

The project, Automotive Customizers, is proposed on a 15,000 square feet (0.344 Ac) site located at 1777 North Andrews within the City of Pompano Beach, Broward County, Florida. The project proposes a warehouse development.

The site drainage is designed to satisfy the Broward County Surface Water Management Division and SFWMD drainage criteria and regulations.

## II. GIVEN PARAMETERS

- The average wet season water table is 1.50' NAVD per the FCAWSG map.
- Flood Zone: X  
Map No.: 12011C 0170H  
Base Flood Elevation: N/A  
2060 Future Broward County Flood Map = 13.5' NAVD
- The average existing site grade is 5.40' NAVD
- Site elevations  
Road Crown (Andrews Avenue) Highest Elevation = 11.73' NAVD  
Proposed Finish Floor Elevation = 14.75' NAVD

### III. SITE BREAKDOWN

**PROPOSED**

- Total (0.344 Ac)
- Impervious
  - Buildings (0.098 Ac)
  - Pavement/Walkways (0.114 Ac)
- Pervious (0.132 Ac)



**PRE DEVELOPMENT STAGE STORAGE CALCULATIONS**

STORM WATER MANAGEMENT AND  
FLOOD ROUTING CALCULATIONS

Project Name: Automotive Customizer - Pre- Development Condition  
Project Number: 23010

**I. Site Data****A. Acreage**

|                               |                 |
|-------------------------------|-----------------|
| <b>Total</b>                  | <b>0.344 ac</b> |
| <b>1. Impervious</b>          |                 |
| a. Pavement                   | 0.000 ac        |
| b. Walkways                   | 0.000 ac        |
| c. Building                   | 0.000 ac        |
| <b>Total Impervious</b>       | <b>0.000 ac</b> |
| <b>2. Water Management</b>    |                 |
| a. Lake                       | 0.000 ac        |
| b. Dry Retention              | 0.000 ac        |
| c. Swale                      | 0.000 ac        |
| <b>Total Water Management</b> | <b>0.000 ac</b> |
| <b>3. Pervious</b>            |                 |
| a. Grass area                 | 0.344 ac        |
| b. Green area near LME        | 0.000 ac        |
| c. Lake Bank                  | 0.000 ac        |
| d. L.M.E.                     | 0.000 ac        |
| e. N/A                        | 0.000 ac        |
| f. N/A                        | 0.000 ac        |
| g N/A                         | 0.000 ac        |
| <b>Total Pervious</b>         | <b>0.344 ac</b> |

**B. Elevations**

|                             |               |
|-----------------------------|---------------|
| 1. Road (N. Andrews Avenue) | 11.73 ft-NAVD |
| 3. Finished Floor           | 14.75 ft-NAVD |
| 4. FEMA Flood Elevation     | N/A ft-NAVD   |

**C. Allowable discharge**

|   |            |
|---|------------|
| 1. No Waterbody Connection              | 0.00 CSM   |
| 2. Allowable discharge for this project | 0.0000 CFS |

**D. Water level elevation**

|                               |              |
|-------------------------------|--------------|
| 1. Wet season water table     | 5.00 ft-NAVD |
| 2. Control elevation          | 5.00 ft-NAVD |
| 3. Receiving body water level | N/A ft-NAVD  |

**E. Rainfall amounts**

|                                       |              |
|---------------------------------------|--------------|
| 1. Desi2. Design Storm (5-year 1-day) | 6.00 inches  |
|                                       | 15.00 inches |
| 3. Finish Floor (100-year 3 day)      | 18.00 inches |

**STORM WATER MANAGEMENT AND  
FLOOD ROUTING CALCULATIONS**

Project Name: Automotive Customizer - Pre- Development Condition  
Project Number: 23010

**II. Water Quality Computations**

1. Compute the first inch of runoff from the developed project
  - = 1 in X total area X (1ft/12in)
  - = 0.029 ac-ft for the first inch of runoff
  
2. Compute 2.5 inches times the percentage of imperviousness
  - a. Site area for water quality pervious/impervious calculations only:
    - = Total project - (water surface + roof)
    - = 0.344 ac of site area for water quality pervious/impervious
  - b. Impervious area for water quality pervious/impervious calculation only:
    - = (site area for water quality pervious/impervious) - pervious
    - = 0.000 ac if impervious area for water quality pervious/impervious
  - c. Percentage of imperviousness for water quality:
    - = (Impervious area for water quality/site area for water quality) 100%
    - = 0.00 % impervious
  - d. For 2.5 inches times the percentage impervious:
    - = 2.5 X percent impervious
    - = 0.00 inches to be treated
  - e. Compute volume required for water quality detention:
    - = Inches to be treated X (total site - Lake)
    - = 0.000 ac-ft for the 2.5 inches times the percentage imperviousness
  
3. Since the
  - 0.029 ac-ft for the first inch of runoff is greater than
  - 0.000 ac-ft for the 2.5 inches times the percentage imperviousness
  - 0.029 ac-ft controls**

| Storage (ac-ft) | Stage (ft) |
|-----------------|------------|
| 0.010           | 10.50      |
| 0.029           | 10.59      |
| 0.120           | 11.00      |



**SOUTH FLORIDA WATER MANAGEMENT DISTRICT**  
**FLOOD ROUTING CALCULATIONS**

Project Name: Automotive Customizer - Pre- Development Condition  
Project Number: 23010

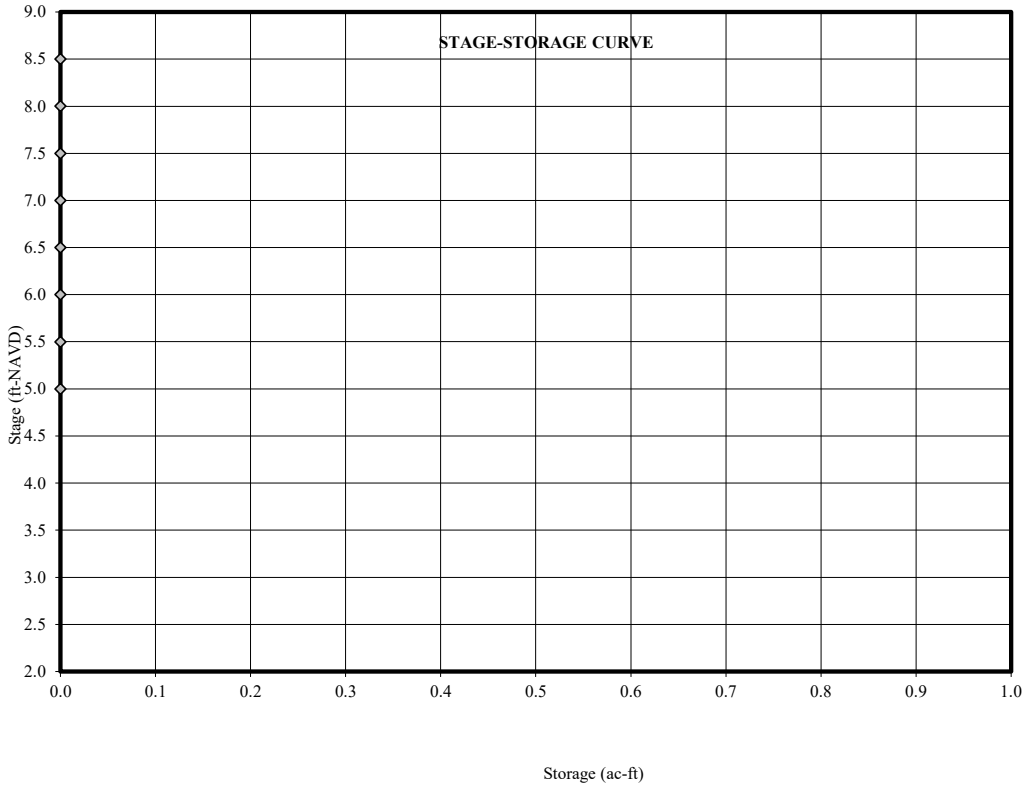
**III. Computations**

C. Project surface storage

| Land use            | Start | End   | Area   |
|---------------------|-------|-------|--------|
|                     | ft    | ft    | Acres  |
| Pavement            | 0.00  | 0.00  | 0.0000 |
| Walkways            | 0.00  | 0.00  | 0.0000 |
| Building            | 0.00  | 0.00  | 0.0000 |
| N/A                 | 0.00  | 0.00  | 0.0000 |
| Grass area          | 10.30 | 11.00 | 0.3440 |
| Green area near LME | 0.00  | 0.00  | 0.0000 |
| L.M.E.              | 0.00  | 0.00  | 0.0000 |
| N/A                 | 0.00  | 0.00  | 0.0000 |
| Lake                | 0.00  | 0.00  | 0.0000 |
| Lake Bank           | 0.00  | 0.00  | 0.0000 |
| L.M.E.              | 0.00  | 0.00  | 0.0000 |

2. For Stage-Storage curve data, please refer to table attached.

3. Stage-Storage curve.



## STORM WATER MANAGEMENT AND SOIL STORAGE CALCULATION

Project Name: Automotive Customizer - Pre- Development Condition  
Project Number: 23010

| Depth to Water<br>Table (feet) | Coastal (1)                                |                                     | Flatwoods (2)                        |                                     |
|--------------------------------|--|-------------------------------------|--------------------------------------|-------------------------------------|
|                                | Cumulative<br>Water<br>Storage<br>(inches) | Compacted Water<br>Storage (inches) | Cumulative Water<br>Storage (inches) | Compacted Water<br>Storage (inches) |
| 1                              | 0.60                                       | 0.45                                | 0.60                                 | 0.45                                |
| 2                              | 2.50                                       | 1.88                                | 2.50                                 | 1.88                                |
| 3                              | 6.60                                       | 4.95                                | 5.40                                 | 4.05                                |
| 4                              | 10.90                                      | 8.18                                | 9.00                                 | 6.75                                |

- (1) Sandy Soil 0-40" thick with water tables dropping below 40" - St. Lucie series is representative.  
 (2) Water tables 15"-40" - Immokalee series is representative  
 (3) Water tables above ground - 15" - Riviera and Pompano series are representative

\* 4 feet is the maximum depth of percolation assumed possible in three days for any soil.

- A. From the calculation the average depth to the water table is  
 B. The Soil Type is  
 C. Assuming 25% compaction  
 D. Inches of moisture stored under pervious area

| Depth to<br>Water Table<br>(feet) | Compacted Water<br>Storage (inches) |
|-----------------------------------|-------------------------------------|
| 3.00                              | 4.05                                |
| 5.65                              | 6.75                                |
| ≥4.00                             | 6.75                                |



|      |   |
|------|---|
| 0.00 | 0 |
| 0.00 | 0 |

| Depressional (3)                  |                                  |
|-----------------------------------|----------------------------------|
| Cumulative Water Storage (inches) | Compacted Water Storage (inches) |
| 0.60                              | 0.45                             |
| 2.10                              | 1.58                             |
| 4.40                              | 3.30                             |
| 6.80                              | 5.10                             |

5.65 ft  
Flatwoods

**STORMWATER MANAGEMENT AND  
FLOOD ROUTING CALCULATIONS**

Project Name: Automotive Customizer - Pre- Development Condition  
Project Number: 23010

**III. SCS Curve Number**

## 1. Average site finished grade

| Land use            | Area-A (ac) | Grade-G (ft) | A X G |
|---------------------|-------------|--------------|-------|
| Pavement            | 0.0000      | 0.00         | 0.00  |
| Walkways            | 0.0000      | 0.00         | 0.00  |
| Building            | 0.0000      | 0.00         | 0.00  |
| Lake                | 0.0000      | 0.00         | 0.00  |
| Green area near LME | 0.0000      | 0.00         | 0.00  |
| N/A                 | 0.0000      | 0.00         | 0.00  |
| Grass area          | 0.3440      | 10.65        | 3.66  |
| N/A                 | 0.0000      | 0.00         | 0.00  |
| N/A                 | 0.0000      | 0.00         | 0.00  |
| Lake Bank           | 0.0000      | 0.00         | 0.00  |
| L.M.E.              | 0.0000      | 0.00         | 0.00  |

Total 0.3440 3.66

Weighted Site Grade 10.65 ft-NAVD

## 2. Average depth to water table will be

= Average site grade - average water table/control elevation

= 5.65 ft

## 3. Soil type Flatwoods

## 4. From the soil storage calculation sheet, inches of moisture stored under the pervious areas for this type of soil is:

6.75 inches

## 5. Compute available soil storage

= Storage available X pervious area

= 0.19 ac-ft available soil storage onsite

## 6. Convert available soil storage to site-wide moisture storage, S

= Available soil storage onsite/site area

= 6.75 inches of site-wide storage, S

## 7. SCS Curve Number, CN

=  $1000/(S+10)$

= 60 SCS Curve Number

## STORM WATER MANAGEMENT AND FLOOD ROUTING CALCULATIONS

### STAGE - STORAGE CALCULATION

Project Name: Automotive Customizer - Pre- Development Condition  
Project Number: 23010

| Sub area        | Grass area      |                | Walkways        |                | Pavement        |                | Total Storage<br>ac-ft |
|-----------------|-----------------|----------------|-----------------|----------------|-----------------|----------------|------------------------|
| Low El.         | 10.30           |                | 0.00            |                | 0.00            |                |                        |
| High El.        | 11.00           |                | 0.00            |                | 0.00            |                |                        |
| Area (ft^2)     | 14984.64        |                | 0.00            |                | 0.00            |                |                        |
| Area (acres)    | 0.344           |                | 0.000           |                | 0.000           |                |                        |
| Stage<br>(NAVD) | Linear<br>Stor. | Vert.<br>Stor. | Linear<br>Stor. | Vert.<br>Stor. | Linear<br>Stor. | Vert.<br>Stor. |                        |
| 5.00            | 0.00            | 0.00           | 0.00            | 0.00           | 0.00            | 0.00           | 0.00                   |
| 5.50            | 0.00            | 0.00           | 0.00            | 0.00           | 0.00            | 0.00           | 0.00                   |
| 6.00            | 0.00            | 0.00           | 0.00            | 0.00           | 0.00            | 0.00           | 0.00                   |
| 6.50            | 0.00            | 0.00           | 0.00            | 0.00           | 0.00            | 0.00           | 0.00                   |
| 7.00            | 0.00            | 0.00           | 0.00            | 0.00           | 0.00            | 0.00           | 0.00                   |
| 7.50            | 0.00            | 0.00           | 0.00            | 0.00           | 0.00            | 0.00           | 0.00                   |
| 8.00            | 0.00            | 0.00           | 0.00            | 0.00           | 0.00            | 0.00           | 0.00                   |
| 8.50            | 0.00            | 0.00           | 0.00            | 0.00           | 0.00            | 0.00           | 0.00                   |
| 9.00            | 0.00            | 0.00           | 0.00            | 0.00           | 0.00            | 0.00           | 0.00                   |
| 9.50            | 0.00            | 0.00           | 0.00            | 0.00           | 0.00            | 0.00           | 0.00                   |
| 10.00           | 0.00            | 0.00           | 0.00            | 0.00           | 0.00            | 0.00           | 0.00                   |
| 10.50           | 0.01            | 0.00           | 0.00            | 0.00           | 0.00            | 0.00           | 0.01                   |
| 11.00           | 0.12            | 0.00           | 0.00            | 0.00           | 0.00            | 0.00           | 0.12                   |
| 11.50           | 0.12            | 0.17           | 0.00            | 0.00           | 0.00            | 0.00           | 0.29                   |
| 12.00           | 0.12            | 0.34           | 0.00            | 0.00           | 0.00            | 0.00           | 0.46                   |
| 12.50           | 0.12            | 0.52           | 0.00            | 0.00           | 0.00            | 0.00           | 0.64                   |
| 13.00           | 0.12            | 0.69           | 0.00            | 0.00           | 0.00            | 0.00           | 0.81                   |
| 13.50           | 0.12            | 0.86           | 0.00            | 0.00           | 0.00            | 0.00           | 0.98                   |
| 14.00           | 0.12            | 1.03           | 0.00            | 0.00           | 0.00            | 0.00           | 1.15                   |
| 14.50           | 0.12            | 1.20           | 0.00            | 0.00           | 0.00            | 0.00           | 1.32                   |

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Project Name: Automotive 5yr 1day Pre Design

Reviewer: RBJ

Project Number: 23010

Period Begin: Dec 01, 2000;0000 hr End: Dec 04, 2000;0000 hr Duration: 72 hr

Time Step: 0.2 hr, Iterations: 10

#### Basin 1: Project Site

Method: Santa Barbara Unit Hydrograph

Rainfall Distribution: SFWMD - 24 hr

Design Frequency: 5 year

1 Day Rainfall: 6 inches

Area: 0.344 acres

Ground Storage: 6.75 inches

Time of Concentration: 0.1 hours

Initial Stage: 10.3 ft NAVD

| Stage<br>(ft NAVD) | Storage<br>(acre-ft) |
|--------------------|----------------------|
| 10.00              | 0.00                 |
| 10.50              | 0.01                 |
| 11.00              | 0.12                 |
| 11.50              | 0.29                 |
| 12.00              | 0.46                 |
| 12.50              | 0.64                 |
| 13.00              | 0.81                 |
| 13.50              | 0.98                 |
| 14.00              | 1.15                 |
| 14.50              | 1.32                 |

#### User Specified Rainfall Distribution: User1

| Time<br>(hr) | Rainfall<br>(percent) |
|--------------|-----------------------|
| 0.00         | 0.00                  |

#### STRUCTURE MAXIMUM AND MINIMUM DISCHARGES

| Struc | Max (cfs) | Time (hr) | Min (cfs) | Time (hr) |
|-------|-----------|-----------|-----------|-----------|
| ===== | =====     | =====     | =====     | =====     |

#### BASIN MAXIMUM AND MINIMUM STAGES

| Basin        | Max (ft) | Time (hr) | Min (ft) | Time (hr) |
|--------------|----------|-----------|----------|-----------|
| =====        | =====    | =====     | =====    | =====     |
| Project Site | 10.73    | 25.00     | 10.30    | 0.00      |

#### BASIN WATER BUDGETS (all units in acre-ft)

| Basin        | Total<br>Runoff | Structure<br>Inflow | Structure<br>Outflow | Initial<br>Storage | Final<br>Storage | Residual |
|--------------|-----------------|---------------------|----------------------|--------------------|------------------|----------|
| =====        | =====           | =====               | =====                | =====              | =====            | =====    |
| Project Site | 0.05            | 0.00                | 0.00                 | 0.01               | 0.06             | 0.00     |

Project Name: Automotive 25yr 3day Pre Design

Reviewer: RBJ

Project Number: 23010

Period Begin: Dec 01, 2000;0000 hr    End: Dec 04, 2000;0000 hr    Duration: 72 hr

Time Step: 0.2 hr,       Iterations: 10

Basin 1: Project Site

Method: Santa Barbara Unit Hydrograph

Rainfall Distribution: SFWMD - 3day

Design Frequency: 25 year

3 Day Rainfall: 15 inches

Area: 0.344 acres

Ground Storage: 6.75 inches

Time of Concentration: 0.1 hours

Initial Stage: 10.3 ft NAVD

| Stage<br>(ft NAVD) | Storage<br>(acre-ft) |
|--------------------|----------------------|
| 10.00              | 0.00                 |
| 10.50              | 0.01                 |
| 11.00              | 0.12                 |
| 11.50              | 0.29                 |
| 12.00              | 0.46                 |
| 12.50              | 0.64                 |
| 13.00              | 0.81                 |
| 13.50              | 0.98                 |
| 14.00              | 1.15                 |
| 14.50              | 1.32                 |

User Specified Rainfall Distribution: User1

| Time<br>(hr) | Rainfall<br>(percent) |
|--------------|-----------------------|
| 0.00         | 0.00                  |

STRUCTURE MAXIMUM AND MINIMUM DISCHARGES

|       |           |           |           |           |
|-------|-----------|-----------|-----------|-----------|
| Struc | Max (cfs) | Time (hr) | Min (cfs) | Time (hr) |
|-------|-----------|-----------|-----------|-----------|

BASIN MAXIMUM AND MINIMUM STAGES

|              |          |           |          |           |
|--------------|----------|-----------|----------|-----------|
| Basin        | Max (ft) | Time (hr) | Min (ft) | Time (hr) |
| Project Site | 11.43    | 72.00     | 10.30    | 0.00      |

BASIN WATER BUDGETS (all units in acre-ft)

|              |                 |                     |                      |                    |                  |          |
|--------------|-----------------|---------------------|----------------------|--------------------|------------------|----------|
| Basin        | Total<br>Runoff | Structure<br>Inflow | Structure<br>Outflow | Initial<br>Storage | Final<br>Storage | Residual |
| Project Site | 0.26            | 0.00                | 0.00                 | 0.01               | 0.27             | 0.00     |

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Project Name: Automotive 100yr 3day Pre Design

Reviewer: RBJ

Project Number: 23010

Period Begin: Dec 01, 2000;0000 hr End: Dec 04, 2000;0000 hr Duration: 72 hr

Time Step: 0.2 hr, Iterations: 10

#### Basin 1: Project Site

Method: Santa Barbara Unit Hydrograph

Rainfall Distribution: SFWMD - 3day

Design Frequency: 100 year

3 Day Rainfall: 18 inches

Area: 0.344 acres

Ground Storage: 6.75 inches

Time of Concentration: 0.1 hours

Initial Stage: 10.3 ft NAVD

| Stage<br>(ft NAVD) | Storage<br>(acre-ft) |
|--------------------|----------------------|
| 10.00              | 0.00                 |
| 10.50              | 0.01                 |
| 11.00              | 0.12                 |
| 11.50              | 0.29                 |
| 12.00              | 0.46                 |
| 12.50              | 0.64                 |
| 13.00              | 0.81                 |
| 13.50              | 0.98                 |
| 14.00              | 1.15                 |
| 14.50              | 1.32                 |

#### User Specified Rainfall Distribution: User1

| Time<br>(hr) | Rainfall<br>(percent) |
|--------------|-----------------------|
| 0.00         | 0.00                  |

#### STRUCTURE MAXIMUM AND MINIMUM DISCHARGES

| Struc | Max (cfs) | Time (hr) | Min (cfs) | Time (hr) |
|-------|-----------|-----------|-----------|-----------|
| ===== | =====     | =====     | =====     | =====     |

#### BASIN MAXIMUM AND MINIMUM STAGES

| Basin        | Max (ft) | Time (hr) | Min (ft) | Time (hr) |
|--------------|----------|-----------|----------|-----------|
| =====        | =====    | =====     | =====    | =====     |
| Project Site | 11.66    | 72.00     | 10.30    | 0.00      |

#### BASIN WATER BUDGETS (all units in acre-ft)

| Basin        | Total<br>Runoff | Structure<br>Inflow | Structure<br>Outflow | Initial<br>Storage | Final<br>Storage | Residual |
|--------------|-----------------|---------------------|----------------------|--------------------|------------------|----------|
| =====        | =====           | =====               | =====                | =====              | =====            | =====    |
| Project Site | 0.34            | 0.00                | 0.00                 | 0.01               | 0.34             | 0.00     |



## POST DEVELOPMENT STAGE STORAGE CALCULATIONS

STORM WATER MANAGEMENT AND  
FLOOD ROUTING CALCULATIONS

Project Name: Automotive Customizer - Post - Development Condition  
Project Number: 23010

**I. Site Data****A. Acreage**

|                               |                 |
|-------------------------------|-----------------|
| <b>Total</b>                  | <b>0.344 ac</b> |
| <b>1. Impervious</b>          |                 |
| a. Pavement                   | 0.103 ac        |
| b. Walkways & Pads            | 0.011 ac        |
| c. Building                   | 0.098 ac        |
| <b>Total Impervious</b>       | <b>0.212 ac</b> |
| <b>2. Water Management</b>    |                 |
| a. Lake                       | 0.000 ac        |
| b. Dry Retention              | 0.000 ac        |
| c. Swale                      | 0.000 ac        |
| <b>Total Water Management</b> | <b>0.000 ac</b> |
| <b>3. Pervious</b>            |                 |
| a. Grass area                 | 0.132 ac        |
| b. Green area near LME        | 0.000 ac        |
| c. Lake Bank                  | 0.000 ac        |
| d. L.M.E.                     | 0.000 ac        |
| e. N/A                        | 0.000 ac        |
| f. N/A                        | 0.000 ac        |
| g N/A                         | 0.000 ac        |
| <b>Total Pervious</b>         | <b>0.132 ac</b> |

**B. Elevations**

|                             |               |
|-----------------------------|---------------|
| 1. Road (N. Andrews Avenue) | 11.73 ft-NAVD |
| 2. Finished Floor           | 14.75 ft-NAVD |
| 3. FEMA Flood Elevation     | N/A ft-NAVD   |

**C. Allowable discharge**

|   |            |
|---|------------|
| 1. No Waterbody Connection              | 0.00 CSM   |
| 2. Allowable discharge for this project | 0.0000 CFS |

**D. Water level elevation**

|                               |              |
|-------------------------------|--------------|
| 1. Wet season water table     | 5.00 ft-NAVD |
| 2. Control elevation          | 5.00 ft-NAVD |
| 3. Receiving body water level | N/A ft-NAVD  |

**E. Rainfall amounts**

|                                  |              |
|----------------------------------|--------------|
| 1. Design Storm (5-year 1-day)   | 6.00 inches  |
| 2. Design Storm (25-year 3 day)  | 15.00 inches |
| 3. Finish Floor (100-year 3 day) | 18.00 inches |



## STORM WATER MANAGEMENT AND FLOOD ROUTING CALCULATIONS

Project Name: Automotive Customizer - Post - Development Condition  
Project Number: 23010

### II. Water Quality Computations

1. Compute the first inch of runoff from the developed project
  - = 1 in X total area X (1ft/12in)
  - = 0.029 ac-ft for the first inch of runoff
2. Compute 2.5 inches times the percentage of imperviousness
  - a. Site area for water quality pervious/impervious calculations only:
    - = Total project - (water surface + roof)
    - = 0.246 ac of site area for water quality pervious/impervious
  - b. Impervious area for water quality pervious/impervious calculation only:
    - = (site area for water quality pervious/impervious) - pervious
    - = 0.114 ac if impervious area for water quality pervious/impervious
  - c. Percentage of imperviousness for water quality:
    - = (Impervious area for water quality/site area for water quality) 100%
    - = 46.34 % impervious
  - d. For 2.5 inches times the percentage impervious:
    - = 2.5 X percent impervious
    - = 1.16 inches to be treated
  - e. Compute volume required for water quality detention:
    - = Inches to be treated X (total site - Lake)
    - = 0.033 ac-ft for the 2.5 inches times the percentage imperviousness
3. Since the 0.033 ac-ft for the 2.5 inches times the percent is greater than 0.029 ac-ft for the first inch of runoff  
**0.033 ac-ft controls**

| Storage (ac-ft) | Stage (ft) |
|-----------------|------------|
| 0.031           | 8.50       |
| 0.033           | 8.72       |
| 0.035           | 9.00       |

### 4. Pretreatment

If the project discharges directly to a sensitive receiving body and is over 40% impervious, or the project is zoned commercial or industrial, then 0.5 inches of

dry retention or detention pretreatment must be provided

Compute 0.5 inch of pretreatment

- = 0.5 in X (total area - lakes)
- = 0.014 ac-ft required for pretreatment

| Storage (ac-ft) | Stage (ft) |
|-----------------|------------|
| 0.00            | 5.00       |
| 0.014           | 5.58       |
| 0.01            | 5.50       |

Interpolating from the stage storage table, pre-treatment volume is met at a stage of=

5.58 ft

Pre-treatment volume provided by exfiltration trench =

3.52 ac-in  
0.04 ac-ft

Since pre treatment volume provided is equal to the amount required, system meets SFWMD requirements



SOUTH FLORIDA WATER MANAGEMENT DISTRICT  
FLOOD ROUTING CALCULATIONS

Project Name: Automotive Customizer - Post - Development Condition  
Project Number: 23010

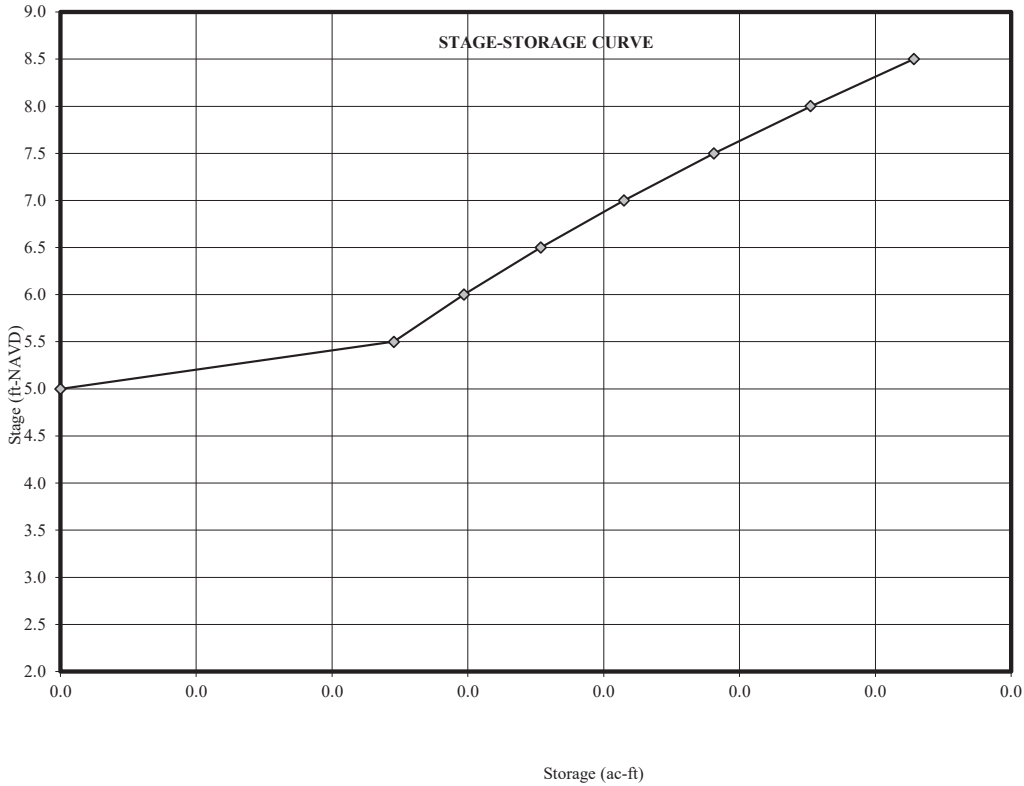
III. Computations

C. Project surface storage

| Land use            | Start | End   | Area   |
|---------------------|-------|-------|--------|
|                     | ft    | ft    | Acres  |
| Pavement            | 10.00 | 14.70 | 0.1030 |
| Walkways & Pads     | 14.15 | 14.70 | 0.0110 |
| Building            | 14.75 | 14.75 | 0.0980 |
| N/A                 | 0.00  | 0.00  | 0.0000 |
| Grass area          | 11.30 | 14.00 | 0.1320 |
| Green area near LME | 0.00  | 0.00  | 0.0000 |
| L.M.E.              | 0.00  | 0.00  | 0.0000 |
| N/A                 | 0.00  | 0.00  | 0.0000 |
| Lake                | 0.00  | 0.00  | 0.0000 |
| Lake Bank           | 0.00  | 0.00  | 0.0000 |
| L.M.E.              | 0.00  | 0.00  | 0.0000 |

2. For Stage-Storage curve data, please refer to table attached.

3. Stage-Storage curve.



## Gator Engineering Associates, Inc.

11390 Temple Street, Cooper City, FL-33330

Tel 954.434.5905 - Fax 954.434.5904

### STORM WATER MANAGEMENT AND SOIL STORAGE CALCULATION

Project Name: Automotive Customizer - Post - Development Condition  
Project Number: 23010

| Depth to Water<br>Table (feet) | Coastal (1)                                |                                     | Flatwoods (2)                        |                                     | Depressional (3)                     |                                     |
|--------------------------------|--|-------------------------------------|--------------------------------------|-------------------------------------|--------------------------------------|-------------------------------------|
|                                | Cumulative<br>Water<br>Storage<br>(inches) | Compacted Water<br>Storage (inches) | Cumulative Water<br>Storage (inches) | Compacted Water<br>Storage (inches) | Cumulative Water<br>Storage (inches) | Compacted Water<br>Storage (inches) |
| 1                              | 0.60                                       | 0.45                                | 0.60                                 | 0.45                                | 0.60                                 | 0.45                                |
| 2                              | 2.50                                       | 1.88                                | 2.50                                 | 1.88                                | 2.10                                 | 1.58                                |
| 3                              | 6.60                                       | 4.95                                | 5.40                                 | 4.05                                | 4.40                                 | 3.30                                |
| 4                              | 10.90                                      | 8.18                                | 9.00                                 | 6.75                                | 6.80                                 | 5.10                                |

(1) Sandy Soil 0-40" thick with water tables dropping below 40" - St. Lucie series is representative.

(2) Water tables 15"-40" - Immokalee series is representative

(3) Water tables above ground - 15" - Riviera and Pompano series are representative

\* 4 feet is the maximum depth of percolation assumed possible in three days for any soil.

A. From the calculation the average depth to the water table is

8.22 ft

B. The Soil Type is

Flatwoods

C. Assuming 25% compaction

D. Inches of moisture stored under pervious area

| Depth to<br>Water Table<br>(feet) | Compacted Water<br>Storage (inches) |
|-----------------------------------|-------------------------------------|
| 3.00                              | 4.05                                |
| 8.22                              | 6.75                                |
| 4.00                              | 6.75                                |

**STORMWATER MANAGEMENT AND  
FLOOD ROUTING CALCULATIONS**

Project Name: Automotive Customizer - Post - Development Condition  
 Project Number: 23010

**III. SCS Curve Number**

## 1. Average site finished grade

| Land use            | Area-A (ac) | Grade-G (ft) | A X G         |
|---------------------|-------------|--------------|---------------|
| Pavement            | 0.1030      | 12.35        | 1.27          |
| Walkways & Pads     | 0.0110      | 14.43        | 0.16          |
| Building            | 0.0980      | 14.75        | 1.45          |
| Lake                | 0.0000      | 0.00         | 0.00          |
| Green area near LME | 0.0000      | 0.00         | 0.00          |
| N/A                 | 0.0000      | 0.00         | 0.00          |
| Grass area          | 0.1320      | 12.65        | 1.67          |
| N/A                 | 0.0000      | 0.00         | 0.00          |
| N/A                 | 0.0000      | 0.00         | 0.00          |
| Lake Bank           | 0.0000      | 0.00         | 0.00          |
| L.M.E.              | 0.0000      | 0.00         | 0.00          |
| Total               | 0.3440      |              | 4.55          |
| Weighted Site Grade |             |              | 13.22 ft-NAVD |

## 2. Average depth to water table will be

= Average site grade - average water table/control elevation

= 8.22 ft

## 3. Soil type Flatwoods

## 4. From the soil storage calculation sheet, inches of moisture stored under the pervious areas for this type of soil is:

6.75 inches

## 5. Compute available soil storage

= Storage available X pervious area

= 0.07 ac-ft available soil storage onsite

## 6. Convert available soil storage to site-wide moisture storage, S

= Available soil storage onsite/site area

= 2.59 inches of site-wide storage, S

## 7. SCS Curve Number, CN

=  $1000/(S+10)$ 

= 79 SCS Curve Number

## Gator Engineering Associates, Inc.

11390 Temple Street, Cooper City, FL-33330

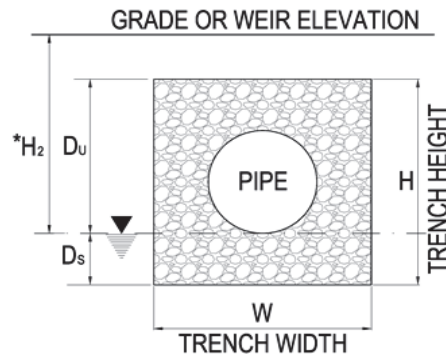
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**STORM WATER MANAGEMENT AND  
FLOOD ROUTING CALCULATIONS**

Project Name: Automotive Customizer - Post - Development Condition  
Project Number: 23010

**A. Exfiltration Trench Basin**

|          |       |  |
|----------|-------|--|
| Vwq =    | 0.037 | Required pre-treatment Volume in ac-ft                 |
| GW =     | 5.00  | (October Average Groundwater Level, ft., NAVD)         |
| WIDTH =  | 6.00  | (Exfiltration Trench Width, ft.)                       |
| H =      | 9.00  |  |
| TOP EL.  | 9.50  | (Exfiltration Trench Top Elev., ft., NAVD)             |
| BOT. EL. | 0.50  | (Exfiltration Trench Bottom Elev., ft., NAVD)          |
| d =      | 1.25  | (Exfiltration Trench Diameter, ft.)                    |
| INV. EL. | 7.75  | (Exfiltration Trench Pipe Invert Elev., ft., NAVD)     |
| Du =     | 4.50  | (Volume of runoff that can be stored)                  |
| Ds =     | 4.50  | (Depth of Trench below the Water table)                |
| H2 =     | 5.50  | Height of ground surface above the design water table) |



|                 |           |                                  |
|-----------------|-----------|----------------------------------|
| <b>K-Value:</b> |           | <b>* DEPTH OF EFFECTIVE HEAD</b> |
|                 | $K_{AVG}$ | 8.60E-05                         |

K = 0.000086 Hydraulic Conductivity, cfs/cu. Ft. head

|        |       |       |   |       |       |
|--------|-------|-------|---|-------|-------|
| FS =   | 2     |       |   |       |       |
| %WQ =  | 0.5   |       |   |       |       |
| Vwq =  | 0.037 | ac-ft | = | 0.44  | ac-in |
| Vadd = | 0.000 | ac-ft | = | 0.000 | ac-in |

Exfiltration Trench Length formula, L =

$$\frac{FS((\%WQ)(Vwq)+Vadd)}{K(H_2 W + 2H_2 D_U - D_U^2 + 2H_2 D_S) + (1.39 \times 10^{-4})WD_U}$$

Required Exfiltration length L = 33.22 LF

Provided Exfiltration length L = 55.00 LF

**STORM WATER MANAGEMENT AND FLOOD ROUTING CALCULATIONS****STAGE - STORAGE CALCULATION**

Project Name: Automotive Customizer - Post - Development Condition

Project Number: 23010

**Stage-Storage Curve Data**

| Sub area     | Grass area   |             | Walkways & Pads |             | Pavement     |             | Exfiltration Trench |             | Total Storage ac-ft |
|--------------|--------------|-------------|-----------------|-------------|--------------|-------------|---------------------|-------------|---------------------|
| Low El.      | 11.30        |             | 14.15           |             | 10.00        |             | 0.50                |             |                     |
| High El.     | 14.00        |             | 14.70           |             | 14.70        |             | 9.50                |             |                     |
| Area (ft^2)  | 5749.92      |             | 479.16          |             | 4486.68      |             | 385.00              |             |                     |
| Area (acres) | 0.132        |             | 0.011           |             | 0.103        |             | 0.009               |             |                     |
| Stage (NAVD) | Linear Stor. | Vert. Stor. | Linear Stor.    | Vert. Stor. | Linear Stor. | Vert. Stor. | Linear Stor.        | Vert. Stor. |                     |
| 5.00         | 0.00         | 0.00        | 0.00            | 0.00        | 0.00         | 0.00        | 0.00                | 0.00        | 0.00                |
| 5.50         | 0.00         | 0.00        | 0.00            | 0.00        | 0.00         | 0.00        | 0.01                | 0.00        | 0.01                |
| 6.00         | 0.00         | 0.00        | 0.00            | 0.00        | 0.00         | 0.00        | 0.01                | 0.00        | 0.01                |
| 6.50         | 0.00         | 0.00        | 0.00            | 0.00        | 0.00         | 0.00        | 0.02                | 0.00        | 0.02                |
| 7.00         | 0.00         | 0.00        | 0.00            | 0.00        | 0.00         | 0.00        | 0.02                | 0.00        | 0.02                |
| 7.50         | 0.00         | 0.00        | 0.00            | 0.00        | 0.00         | 0.00        | 0.02                | 0.00        | 0.02                |
| 8.00         | 0.00         | 0.00        | 0.00            | 0.00        | 0.00         | 0.00        | 0.03                | 0.00        | 0.03                |
| 8.50         | 0.00         | 0.00        | 0.00            | 0.00        | 0.00         | 0.00        | 0.03                | 0.00        | 0.03                |
| 9.00         | 0.00         | 0.00        | 0.00            | 0.00        | 0.00         | 0.00        | 0.04                | 0.00        | 0.04                |
| 9.50         | 0.00         | 0.00        | 0.00            | 0.00        | 0.00         | 0.00        | 0.04                | 0.00        | 0.04                |
| 10.00        | 0.00         | 0.00        | 0.00            | 0.00        | 0.00         | 0.00        | 0.04                | 0.00        | 0.04                |
| 10.50        | 0.01         | 0.00        | 0.00            | 0.00        | 0.00         | 0.00        | 0.04                | 0.00        | 0.05                |
| 11.00        | 0.12         | 0.00        | 0.00            | 0.00        | 0.00         | 0.00        | 0.04                | 0.00        | 0.16                |
| 11.50        | 0.23         | 0.09        | 0.00            | 0.00        | 0.00         | 0.00        | 0.04                | 0.00        | 0.36                |
| 12.00        | 0.23         | 0.31        | 0.00            | 0.00        | 0.00         | 0.00        | 0.04                | 0.00        | 0.58                |
| 12.50        | 0.23         | 0.53        | 0.00            | 0.00        | 0.00         | 0.00        | 0.04                | 0.00        | 0.8                 |
| 13.00        | 0.23         | 0.75        | 0.00            | 0.00        | 0.00         | 0.00        | 0.04                | 0.00        | 1.02                |
| 13.50        | 0.23         | 0.97        | 0.00            | 0.00        | 0.00         | 0.00        | 0.04                | 0.00        | 1.24                |
| 14.00        | 0.23         | 1.19        | 0.00            | 0.00        | 0.00         | 0.00        | 0.04                | 0.00        | 1.46                |
| 14.50        | 0.23         | 1.41        | 0.00            | 0.00        | 0.00         | 0.00        | 0.04                | 0.00        | 1.68                |

PZ25-12000035  
12/03/2025

Project Name: Automotive 5yr 1day Post Design

Reviewer: RBJ

Project Number: 23010

Period Begin: Dec 01, 2000;0000 hr End: Dec 04, 2000;0000 hr Duration: 72 hr

Time Step: 0.2 hr, Iterations: 10

#### Basin 1: Project Site

Method: Santa Barbara Unit Hydrograph

Rainfall Distribution: SFWMD - 24 hr

Design Frequency: 5 year

1 Day Rainfall: 6 inches

Area: 0.344 acres

Ground Storage: 2.59 inches

Time of Concentration: 0.1 hours

Initial Stage: 5 ft NAVD

| Stage<br>(ft NAVD) | Storage<br>(acre-ft) |
|--------------------|----------------------|
| 5.00               | 0.00                 |
| 6.00               | 0.01                 |
| 7.00               | 0.02                 |
| 8.00               | 0.03                 |
| 9.00               | 0.04                 |
| 10.00              | 0.04                 |
| 11.00              | 0.16                 |
| 12.00              | 0.58                 |
| 13.00              | 1.02                 |
| 14.00              | 1.46                 |
| 14.50              | 1.68                 |

#### User Specified Rainfall Distribution: User1

| Time<br>(hr) | Rainfall<br>(percent) |
|--------------|-----------------------|
| 0.00         | 0.00                  |

#### STRUCTURE MAXIMUM AND MINIMUM DISCHARGES

| Struc | Max (cfs) | Time (hr) | Min (cfs) | Time (hr) |
|-------|-----------|-----------|-----------|-----------|
| ===== | =====     | =====     | =====     | =====     |

#### BASIN MAXIMUM AND MINIMUM STAGES

| Basin        | Max (ft) | Time (hr) | Min (ft) | Time (hr) |
|--------------|----------|-----------|----------|-----------|
| =====        | =====    | =====     | =====    | =====     |
| Project Site | 10.56    | 24.80     | 5.00     | 0.00      |

#### BASIN WATER BUDGETS (all units in acre-ft)

| Basin        | Total<br>Runoff | Structure<br>Inflow | Structure<br>Outflow | Initial<br>Storage | Final<br>Storage | Residual |
|--------------|-----------------|---------------------|----------------------|--------------------|------------------|----------|
| =====        | =====           | =====               | =====                | =====              | =====            | =====    |
| Project Site | 0.11            | 0.00                | 0.00                 | 0.00               | 0.11             | 0.00     |

PZ25-12000035  
12/03/2025

Project Name: Automotive 25yr 3day Post Design

Reviewer: RBJ

Project Number: 23010

Period Begin: Dec 01, 2000;0000 hr End: Dec 04, 2000;0000 hr Duration: 72 hr

Time Step: 0.2 hr, Iterations: 10

Basin 1: Project Site

Method: Santa Barbara Unit Hydrograph

Rainfall Distribution: SFWMD - 3day

Design Frequency: 25 year

3 Day Rainfall: 15 inches

Area: 0.344 acres

Ground Storage: 2.59 inches

Time of Concentration: 0.1 hours

Initial Stage: 5 ft NAVD

| Stage<br>(ft NAVD) | Storage<br>(acre-ft) |
|--------------------|----------------------|
| 5.00               | 0.00                 |
| 6.00               | 0.01                 |
| 7.00               | 0.02                 |
| 8.00               | 0.03                 |
| 9.00               | 0.04                 |
| 10.00              | 0.04                 |
| 11.00              | 0.16                 |
| 12.00              | 0.58                 |
| 13.00              | 1.02                 |
| 14.00              | 1.46                 |
| 14.50              | 1.68                 |

User Specified Rainfall Distribution: User1

| Time<br>(hr) | Rainfall<br>(percent) |
|--------------|-----------------------|
| 0.00         | 0.00                  |

STRUCTURE MAXIMUM AND MINIMUM DISCHARGES

| Struc | Max (cfs) | Time (hr) | Min (cfs) | Time (hr) |
|-------|-----------|-----------|-----------|-----------|
| ===== | =====     | =====     | =====     | =====     |

BASIN MAXIMUM AND MINIMUM STAGES

| Basin        | Max (ft) | Time (hr) | Min (ft) | Time (hr) |
|--------------|----------|-----------|----------|-----------|
| =====        | =====    | =====     | =====    | =====     |
| Project Site | 11.46    | 72.00     | 5.00     | 0.00      |

BASIN WATER BUDGETS (all units in acre-ft)

| Basin        | Total<br>Runoff | Structure<br>Inflow | Structure<br>Outflow | Initial<br>Storage | Final<br>Storage | Residual |
|--------------|-----------------|---------------------|----------------------|--------------------|------------------|----------|
| =====        | =====           | =====               | =====                | =====              | =====            | =====    |
| Project Site | 0.35            | 0.00                | 0.00                 | 0.00               | 0.35             | 0.00     |



PZ25-12000035  
12/03/2025

Project Name: Automotive 100yr 3day Post Design

Reviewer: RBJ

Project Number: 23010

Period Begin: Dec 01, 2000;0000 hr End: Dec 04, 2000;0000 hr Duration: 72 hr

Time Step: 0.2 hr, Iterations: 10

#### Basin 1: Project Site

Method: Santa Barbara Unit Hydrograph

Rainfall Distribution: SFWMD - 3day

Design Frequency: 100 year

3 Day Rainfall: 18 inches

Area: 0.344 acres

Ground Storage: 2.59 inches

Time of Concentration: 0.1 hours

Initial Stage: 5 ft NAVD

| Stage<br>(ft NAVD) | Storage<br>(acre-ft) |
|--------------------|----------------------|
| 5.00               | 0.00                 |
| 6.00               | 0.01                 |
| 7.00               | 0.02                 |
| 8.00               | 0.03                 |
| 9.00               | 0.04                 |
| 10.00              | 0.04                 |
| 11.00              | 0.16                 |
| 12.00              | 0.58                 |
| 13.00              | 1.02                 |
| 14.00              | 1.46                 |
| 14.50              | 1.68                 |

#### User Specified Rainfall Distribution: User1

| Time<br>(hr) | Rainfall<br>(percent) |
|--------------|-----------------------|
| 0.00         | 0.00                  |

#### STRUCTURE MAXIMUM AND MINIMUM DISCHARGES

| Struc | Max (cfs) | Time (hr) | Min (cfs) | Time (hr) |
|-------|-----------|-----------|-----------|-----------|
| ===== | =====     | =====     | =====     | =====     |

#### BASIN MAXIMUM AND MINIMUM STAGES

| Basin        | Max (ft) | Time (hr) | Min (ft) | Time (hr) |
|--------------|----------|-----------|----------|-----------|
| =====        | =====    | =====     | =====    | =====     |
| Project Site | 11.66    | 72.00     | 5.00     | 0.00      |

#### BASIN WATER BUDGETS (all units in acre-ft)

| Basin        | Total<br>Runoff | Structure<br>Inflow | Structure<br>Outflow | Initial<br>Storage | Final<br>Storage | Residual |
|--------------|-----------------|---------------------|----------------------|--------------------|------------------|----------|
| =====        | =====           | =====               | =====                | =====              | =====            | =====    |
| Project Site | 0.44            | 0.00                | 0.00                 | 0.00               | 0.44             | 0.00     |

## SUMMARY

### a. Stage-Storage Computations

Stage storage was calculated for the pre-design and post-design (no discharge). The 25 year, 3 day – No discharge and the 100 year, and the 3 day – No discharge flood routing was calculated for both the pre and post-design. The 5 year, 1 hour was also calculated for the post-design to determine if the proposed elevations in the parking areas are high enough. The results are listed below.

| Design Storm         | Pre Development   | Post Development  |
|----------------------|-------------------|-------------------|
|                      | Stage (ft) (NAVD) | Stage (ft) (NAVD) |
| 5-Year 1-day storm   | 10.73'            | 10.56'            |
| 25-Year 3-day storm  | 11.43'            | 11.46'            |
| 100-Year 3-day storm | 11.66'            | 11.66'            |

Based on the Cascade model for the Post design storm events, it is clear the storm management system will be sufficient to handle runoff from the 25 year 3 day storm and 100 year 3 day events.

The Finish Floor elevation of the proposed building is at 14.75' NAVD which is higher than both the pre and post 100 year 3day stage elevation of 11.66' NAVD. The parking site meets pre verse post design conditions.

There is no discharge from the proposed sites and all runoff will be maintained on both sites.