DOUBLE WING INLET SLAB SECTION

2-#5 BARS 18" LONG

15" OR 17" OVERLAP (TYPICAL)

DOUBLE WING INLET ELEVATION

SEE NOTE #19 FOR ROLL CURBS

NO CURB AND GUTTER WILL BE PAID FOR WITHIN THESE LIMITS

2-#6 REBAR 18" LONG

4 1/2"

6"

DOUBLE WING INLET TOP SECTION

5'-0" 12"

1" SPACE FROM END OF REBAR TO OUTSIDE EDGE OF CONCRETE.

EXPANSION JOINT

DOUBLE WING INLET PLAN

8'

5'-0" MIN.

8'

5'-0" MIN.

STORM SEWER

4-#6 REBAR PLACE UNDER RIM DIAGONALLY AND AROUND OPENING.

#5 REBAR 4" O.C. EACH WAY

2-#5 REBAR EA. 24" IN LENGTH

STANDARD CURB 4 1/2"

6"

5'-0" MIN.

5'-0" MIN.

APPVD. BY: Alison Frazier
CITY ENGINEER: Alison Frazier
IMPLEMENTED: 12-01-07
DEPARTMENT: ENGINEERING
STANDARD DETAILS: STORM SEWER
SCALE: N.T.S.
DRAWN BY: Brian Simpson
PROJECT TITLE: City of Auburn
SHEET 2 of 11
REVISED:
DOUBLE WING INLET DETAIL CC

SINGLE WING INLET DETAIL DD

PLAN VIEW

PROFILE VIEW

NOTE:
THIS DETAIL SHALL BE USED AT THE SAG INLETS WHERE WEARING SURFACE WILL NOT BE PLACED AT THIS TIME.

INLET SHALL BE PLACED AT LOWEST POINT IN THE ROADWAY.
1. Headwall and Wingwalls shall have a rubbed smooth finish. Pipe shall be cut flush with the inside face of the headwall.

2. Junction box inverts shall be smooth and approximate the cross section of the pipe used. At least 0.25 of fall is required across all junction boxes and/or inlets. The floor shall slope to drain all water to the invert. All pipes shall be cut flush with the face of the junction box and inlet junction box.

3. Cast iron frame and cover shall weigh 375 pounds in traffic and 325 pounds off traffic.

4. All pipes shall be laid with ends abutting and true to line. Pipe shall be fitted and matched to form a line with a smooth, uniform invert. Grout shall then be applied smoothly to the outside top two thirds and the inside bottom one half to water proof all pipe.

5. Precast manholes may be used for pipe up to 36”. Larger sizes must be approved by the City Engineer.

6. For pipe sizes larger than 42”, headwalls shall be as specified by the City Engineer.

7. Inlets shall not be placed in a radius of intersecting streets or drives.

8. Precast items must be approved prior to use.

9. Chamfer strips are required on all headwall edges.

10. Riprap is required at all pipe outlets with geofabric. The size of the pad shall be a designed by the engineer but shall be constructed per detail.

11. Distance from radius point to existing expansion or construction joint shall be at least 3.0’. If less than 3.0’, curb and gutter shall be replaced to existing joint.

12. Minimum inside dimension of junction boxes and inlets shall be 4 feet.

13. Top of inlet shall be the same elevation as adjoining curb and gutter.

14. 2” minimum weep holes shall be constructed in inlets to facilitate subgrade drainage.

15. If inlets also serve as a junction box, contour bottom as per junction box requirements.

16. Mortar: A concrete mix equivalent to at least a 3000 psi stability.

17. Number 5 rebar shall be installed into all curb and gutter cold joint ties, at all inlets & junction boxes, or to be determined by the Project Engineer/Project Inspector.

18. Install steps in junction boxes or inlet every 16” on center accessible.

19. Four foot (4’) minimum transitions from roll curb to standard curb and gutter to allow standard inlet to be construction.

20. Inverts shall be poured concrete. No brick or rocks shall be used as filler material.

21. #5 bars required in gutter.

22. Inverts shall not exceed half the diameter of the pipe. No flat areas are permitted.

23. Inlet tops shall be sloped at 1/4” toward the street (see detail).

24. Concrete used for storm structures must have a minimum compressive strength of 0.

25. Modified inlets must have same carrying capacity as standard inlets. Dimensions/sizes to be approved by city of Auburn engineer prior to installation.

26. HDPE can be used from right of way out with City of Auburn approval.

27. An expansion joint must be provided at the inlet / curb face.

28. Mechanical tamping is required around and behind inlets.
JUNCTION BOX DETAIL

#5 REBARS 12" O.C.
CORNER IRONS 15" or 17"
OVERLAP TYP. CORNERS.

6" MIN. or PIPE DIA.
PLUS 12" EA. SIDE

NOTE:
PIPE MUST BE FLUSH ON SIDES OF BOX.

PLAN VIEW
PIPE ENTRANCE IN BOX

SECTIONAL PLAN

SECTIONAL ELEVATION AA

STEP EVERY 16"

#5 REBARS 12" O.C.
EACH WAY

#5 REBARS AT 12" O.C.
CORNER IRONS 15" or 17"
OVERLAP TYP. CORNERS.

24" MIN

1 1/2"

1 1/2 Min

STORM SEWER

GROUT ON TOP OF PIPE

NOTE:
TRAFFIC RATED RING AND COVER WILL BE REQUIRED IN ALL TRAFFIC AREAS.

"IT IS RECOMMENDED #4 REBARS AT 4" O.C. PLACE IN TOP WHERE JUNCTION BOX IS LOCATED IN TRAFFIC AREAS."
Min. distance between holes approx. 1/2 of smallest pipe O.D.

90°

45°
defl.
defl.

Max. O.D. = 0.707 x MH I.D.

Min. distance between holes approx. 1/2 of smallest pipe O.D.

90°

45°
defl.
defl.

PLAN VIEW

4" Min. or PIPE DIA.
PLUS 12" EA. SIDE

6" Min.

6" DEEP OPEN THROAT FOR AREA INLET ALL SIDES.

AREA INLET ELEVATION

RISER DETAIL

SECTIONAL ELEVATION

* Opening = Pipe Dia. + (wall thickness x 2) + 3.5" free space

"Guide Specification for Flexible Sleeve use with pipe to Manhole Connection."

NTS

MANHOLE DIA. (IN.)

<table>
<thead>
<tr>
<th>Pipe Dia.</th>
<th>Req’d Opening</th>
<th>48</th>
<th>60</th>
<th>72</th>
<th>84</th>
<th>96</th>
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<tbody>
<tr>
<td>15&quot;</td>
<td>23&quot;</td>
<td>85</td>
<td>&gt;90</td>
<td>&gt;90</td>
<td>&gt;90</td>
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<tr>
<td>18&quot;</td>
<td>27&quot;</td>
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<td>&gt;90</td>
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<td>21&quot;</td>
<td>30&quot;</td>
<td>72</td>
<td>&gt;90</td>
<td>&gt;90</td>
<td>&gt;90</td>
<td>&gt;90</td>
</tr>
<tr>
<td>24&quot;</td>
<td>36&quot;</td>
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<td>85</td>
<td>&gt;90</td>
<td>&gt;90</td>
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<td>42&quot;</td>
<td>56&quot;</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>70</td>
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<tr>
<td>48&quot;</td>
<td>63&quot;</td>
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<td>45</td>
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<td>54&quot;</td>
<td>70&quot;</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>56</td>
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</table>

Max. Pipe Size O.D. (In.)

<table>
<thead>
<tr>
<th>Manhole Dia. (In.)</th>
<th>From Straight thru to 45° Defl.</th>
<th>If 90° Defl.</th>
<th>Hole Size (In.)</th>
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<tr>
<td>48</td>
<td>26.5</td>
<td>22.5</td>
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<tr>
<td>60</td>
<td>32.3</td>
<td>30.2</td>
<td>30-34</td>
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<tr>
<td>72</td>
<td>40.5</td>
<td>35.5</td>
<td>36-42</td>
</tr>
</tbody>
</table>
NOTE:
1. BOTTOM WIDTH IS DETERMINED BY ENGINEER.

<table>
<thead>
<tr>
<th>PIPE SIZE</th>
<th>BOTTOM WIDTH MINIMUM</th>
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<tr>
<td>15 IN</td>
<td>2 FT</td>
</tr>
<tr>
<td>18 IN</td>
<td>2 FT</td>
</tr>
<tr>
<td>24 IN</td>
<td>3 FT</td>
</tr>
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<td>30 IN</td>
<td>3 FT</td>
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<td>36 IN</td>
<td>4 FT</td>
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<td>42 IN</td>
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<td>48 IN</td>
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<td>5 FT</td>
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<tr>
<td>60 IN</td>
<td>6 FT</td>
</tr>
<tr>
<td>72 IN</td>
<td>7 FT</td>
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</tbody>
</table>
HDPE PIPE INSTALLATION DETAIL

UNLESS SPECIFIED BY THE ENGINEER, MINIMUM RECOMMENDED TRENCH WIDTH SHALL BE AS FOLLOWS:

<table>
<thead>
<tr>
<th>NOMINAL DIAMETER (IN.)</th>
<th>MIN. TRENCH WIDTH (IN.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>34</td>
</tr>
<tr>
<td>18</td>
<td>39</td>
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<td>42</td>
<td>72</td>
</tr>
<tr>
<td>48</td>
<td>80</td>
</tr>
<tr>
<td>60</td>
<td>96</td>
</tr>
</tbody>
</table>

NOTES:
1. BEDDING AND BACKFILL MATERIAL SHALL BE CLASS I MEETING ASTM D 2321. SEE DEFINITIONS BELOW.
2. TO PREVENT MIGRATION OF FINES AND LOSS OF PIPE SUPPORT FOR INSTALLATIONS WHERE SIGNIFICANT GROUND-WATER FLOW IS ANTICTIONATED, CLASS I BEDDING AND BACKFILL MUST BE USED AND THE ENTIRE PERIMETER OF THE ENCASEMENT SHALL BE WRAPPED WITH AN APPROVED GEOTEXTILE FABRIC.
3. FOR INSTALLATIONS WHERE THE TRENCH BOTTOM IS UNSTABLE, UNDERCUT TO A DEPTH AS REQUIRED BY THE ENGINEER AND REPLACE WITH A SUITABLE BEDDING MATERIAL, PLACED IN 6-INCH LIFTS.
4. ALL HIGH-DENSITY POLYETHYLENE (HDPE) PIPE USED FOR CULVERT AND STORMDRAIN APPLICATIONS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M294, TYPE S, CURRENT EDITION AND VERIFIED THROUGH THE PLASTIC PIPE INSTITUTE (PPI) THIRD PARTY CERTIFICATION PROGRAM. ALL HDPE PIPE DELIVERED AND USED SHALL BEAR THE THIRD PARTY ADMINISTERED PPI SEAL.
5. INSTALLATIONS WHICH MEASURE OVER 15 FEET OF FILL FROM TOP OF PIPE TO FINISHED GRADE LEVEL ARE TO BE APPROVED BY CITY ENGINEER.

ASTM D 2321 MATERIAL DEFINITIONS:
CLASS I - ANGULAR CRUSHED STONE OR ROCK, DENSE OR OPEN GRADED WITH LITTLE TO NO FINES. (1/4" TO 1.5" IN SIZE). INCLUDED NOT LIMITED TO SIZES 5, 57, 67, 8, 9, 10, & 610.
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APPENDIX S. Stormwater Storage Facility Final Certification
This page intentionally left blank.
Project Name: __________________________________________________________

Storage Volume Summary:

<table>
<thead>
<tr>
<th></th>
<th>2-Year</th>
<th>5-Year</th>
<th>10-Year</th>
<th>25-Year</th>
<th>100-Year</th>
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<td>Design Volume</td>
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<tr>
<td>As-Built Volume</td>
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<td></td>
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</tbody>
</table>

Outlet Device Elevation Summary:

<table>
<thead>
<tr>
<th>Outlet Device</th>
<th>Size and Description Information</th>
<th>Design Elevation</th>
<th>As-Built Elevation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency Spillway</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bottom of Pond</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(As necessary, please provide any comments or other information necessary to accurately describe the as-built storage facility conditions in a separate Memorandum and attach to this form)

By placing my professional stamp and signature on this form, I certify that this storage facility is constructed in accordance with the approved design on file with the City of Auburn and that all temporary sediment storage components have been removed. I further certify that the all drainage areas designed to be attenuated in the storage facility in fact do drain to this facility and the outlet peak discharge rates are equal to or less than the peak discharge rates as approved for the development.

Signed: ____________________________  Seal: ____________________________

Date: ______________________________
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STATE OF ALABAMA
LEE COUNTY

STORMWATER STORAGE FACILITY OPERATION AND MAINTENANCE AGREEMENT

THIS AGREEMENT, made and entered into this the __________ day of __________________, __________,
by and between The City of Auburn, hereinafter referred to as City, and ____________________________, hereinafter referred to as Owner;

WITNESSETH

THAT WHEREAS, Owner is this day accepting responsibility for perpetual care, operation, maintenance, and associated liabilities of the storm water storage facility installed on that certain real property known as __________________________________________, as described in the deed and as shown on the plat thereof recorded in the Deed Book __________, Page ________, and/or Plat Book __________, Page ________ Lee County Court House; and

WHEREAS, as part of construction of the development the City’s Phase II Storm Water Ordinance required that a storm water storage facility be constructed; and

WHEREAS, the Owner accepts responsibility for maintenance of the storm water storage facility listed below as prescribed in the attached Operation and Maintenance Plan; and

WHEREAS, the Owner grants access to the City to inspect the storm water storage facility; and

WHEREAS, the Owner understands that this Agreement shall endure to the benefit of his successors in title, whomsoever the may be in the future.

NOW, THEREFORE, it is understood and agreed by and between the parties:

1. Maintenance of the storm water storage facility shall be the sole responsibility of the Owner.
2. The responsibility for maintenance of the storm water storage facility shall pass in the chain of title to the Owner’s successor in interest.
3. Operation and maintenance will be in accordance with previously approved Operation and Maintenance Plan.
4. Access is granted to the City to carry out all provisions of the City’s Phase II Storm Water Ordinance, including but not limited to inspections of the storm water storage facility.
5. The City will provide a copy of its inspection report to the Owner, and any required maintenance or remedial work identified in the report must be completed within 60 days.
6. The Owner will submit evidence that the required maintenance and/or remedial repairs identified during the City’s inspection have been completed within 60 days of receipt of the inspection report.
7. Failure to follow the Operations and Maintenance Plan and/or complete necessary repairs identified during the City’s inspection will result in enforcement actions.
Future communications in writing, from the City to the Owner, shall be sent to the Owner’s address, as stated below.

In Witness Whereof, the parties have executed this Agreement the day and year above first written.

By: ______________________________
    OWNER

______________________________
    GRANTOR’S SIGNATURE

______________________________
    ADDRESS

______________________________
    CITY, STATE

______________________________
    TELEPHONE NUMBER

I, ________________________________, a Notary Public of said County and State, certify that ________________________________ personally appeared before me this day and acknowledged that he/she is ________________________________, an Alabama company and that by authority duly given and as the act of the ________________________________ company, the foregoing instrument was signed in its name and by its ____________________, sealed with its corporate seal and/or attested by him/her as its ________________________________.

Witness my hand and seal this ______ day of ______, ________.

________________________________________
    Notary Public

(SEAL)

My Commission Expires: ________________________________.
APPENDIX T-1. Subdivision Operation and Maintenance Agreement
Subdivision Stormwater Storage Facility Operations & Maintenance Agreement

This agreement made and entered into this ____________ day of _____________ 20____, by and between the City of Auburn, hereinafter referred to as CITY, and ___________________________ hereinafter referred to as DEVELOPER;

WITNESSETH:

WHEREAS, the DEVELOPER intends to construct a development known as ____________________________ hereinafter referred to as DEVELOPMENT; and

WHEREAS, construction of the DEVELOPMENT requires, by the CITY, that the DEVELOPER construct a stormwater storage facility in accordance with the CITY’s stormwater management requirements; and

WHEREAS, the stormwater management facility servicing the DEVELOPMENT is located on lot(s) ______ ____________________________, as described in the Deed Book ________________, Page __________, and/or Plat Book ________________________, Page __________ Lee County Court House, herein referred to as the PROPERTY; and

WHEREAS, the DEVELOPER intends to establish a Homeowner’s Association which is primarily responsible for the maintenance of landscaping thereon, and maintenance of the stormwater storage facility within the PROPERTY. Operation and maintenance of the stormwater storage facility shall be in accordance with the previously approved Operation and Maintenance Plan; and

WHEREAS, the DEVELOPER understands that this Agreement shall inure to the benefits of his successors in title, whomsoever they may be in the future.
NOW THEREFORE, in consideration of the mutual covenants and agreements, IT IS AGREED, as follows:

1. Each lot in the DEVELOPMENT, and any future subdivision of lots within the DEVELOPMENT, shall have attached to it an equal and undividable ownership in the PROPERTY and each and every lot owner, including lots retained by the DEVELOPER, shall be considered the “OWNER” of the stormwater storage facility(s) located on the PROPERTY. Subject to the other terms of the agreement, the Homeowner’s Association shall, as the agent of the OWNER, thereafter be primarily responsible for the landscaping and maintenance of the stormwater storage facility located on the PROPERTY. If the Homeowner’s Association is never created, is not responsive, or is dissolved, then the OWNER shall be responsible for all obligations of this agreement.

2. The CITY is authorized to access the PROPERTY to inspect the storm water storage facility as necessary to ascertain that the practices are being maintained and operated in accordance with the approved stormwater management plan.

3. The CITY is authorized to perform the corrective actions identified in the annual stormwater storage facility inspections report if the OWNER or Homeowner’s Association does not make the required corrections in the specified time period.

4. Each lot in the DEVELOPMENT, and any future subdivision of lots within the DEVELOPMENT, shall be jointly and severally liable for any expense or cost incurred by the CITY to preserve, maintain, or restore the stormwater storage facility, or landscaping located on the PROPERTY. The CITY shall be empowered, without notice of hearing, to levy a special assessment against each OWNER within the DEVELOPMENT, and any future subdivision of the lots within the DEVELOPMENT, and each and every OWNER agrees to pay for any such special assessment for expenses incurred by the CITY for the maintenance of stormwater facility(s) should they not be maintained by the OWNER or the Homeowner’s Association.

5. DEVELOPER, OWNER, and Homeowner’s Association agree to indemnify and hold harmless the CITY, its board members, employees, agents, and officers from any costs, damage, loss, claim, suit, liability or award which may arise, come, be brought or incurred or assessed because of the existence of, and action or failure to act with respect to the stormwater storage facility, and the drainage and utility easements on the PROPERTY or because of any adverse effect upon any person or property related or alleged to be related to the stormwater storage facility and drainage and utility easements. The CITY shall have the right to defend any such claim and DEVELOPER, OWNER, and Homeowner’s Association shall reimburse the CITY for any and all costs and/or expenses, including but not limited to attorney’s fees, which the CITY may incur as a result of such claims.

6. The rights and obligations created by this Agreement shall be covenants running within the DEVELOPMENT and future subdivision thereof and shall inure to the benefit of, and be binding upon, the parties, their heirs, personal representatives, successors and assigns.
In Witness Whereof, the parties have executed this Agreement the day and year above first written.

By: ____________________________ (DEVELOPER)

______________________________ (GRANTOR’S SIGNATURE)

______________________________ (ADDRESS)

______________________________ (CITY, STATE)

______________________________ (TELEPHONE NUMBER)

CITY OF AUBURN, ALABAMA
A Municipal Corporation

By: ____________________________

Its: ____________________________

STATE OF ALABAMA

LEE COUNTY

I, the undersigned authority, a Notary Public in and for said County, in said State, hereby certify that ____________________________, whose name is signed to the foregoing instrument, on behalf of the Developer, and who is known to me, acknowledged before me on this date that, being informed of the contents of the foregoing document, he/she executed the same voluntarily on the day the same bears date.

Given under my hand and official seal this the ________ day of ______________________, 2012.

______________________________
Notary Public

Commission Expires _____________________
STATE OF ALABAMA

LEE COUNTY

I, the undersigned authority, a Notary Public in and for said County, in said State, hereby certify that

___________________________________________, whose name is signed to the foregoing instrument, on behalf of the City of Auburn, Alabama, and who is known to me, acknowledged before me on this date that, being informed of the contents of the foregoing document, he/she executed the same voluntarily on the day the same bears date.

Given under my hand and official seal this the _______ day of ____________________, 2012.

_________________________________________
Notary Public

Commission Expires ___________________________