

## **APPENDIX D: Standard Manatee Conditions for new and existing pipes and culverts, March 2011**

*Note: These conditions may be subject to revision at any time. It is our intention that the most recent version of these conditions will be utilized during the evaluation of the permit application.*

The following guidance was developed to prevent manatee entrapment within culverts. This guidance applies only to culverts that are accessible to manatees. Structures with water control features (e.g., gates, flaps, etc.) and culverts that do not meet the specifications below will require FWC and Service review.

### 1. General Guidance:

- a. All culverts 8 inches to 8 feet in diameter must be grated with bars or rods strong enough to prevent manatee entrapment, unless the culvert or pipe is less than 200 feet long and connects two navigable waterways. Manatee entrapment can occur in culverts and pipes where the water level changes, either leaving the manatee stranded inside the culvert or flooding the culvert and drowning the manatee. Since they cannot swim backwards or turn around in culverts less than 8 feet wide, manatees become entrapped in culverts and pipes that have only one access point and the other end is a dead end or leads to a non-navigable stormwater pond or ditching. Culverts subject to variable and extreme water levels (little water to almost completely full) shall be grated as well as all dead end culverts.
  - b. Box culverts are preferred by the Service and FWC over round culverts. Bridges are the most preferred by the Service and FWC.
  - c. Manatees may become stranded in culverts greater than 8 feet in diameter during periods of low tide. Therefore, when planning for new culverts in tidal waters, a minimum 3-foot depth of water in the culvert at low tide stage is recommended, if necessary.
2. Size requirements: Grate bars or rods must be spaced a maximum of 8 inches apart (may be less for culverts smaller than 16 inches in diameter) to effectively prevent manatee access. Diagonal, horizontal or vertical grates may be installed. Grates must be a permanent fixture, maintained for the life of the structure, and not part of a water control structure. Grates may be hinged to swing outwards or may be removable for the purpose of cleaning debris. Culverts or pipes less than 8 inches in diameter are typically exempt from this requirement.
3. Length requirements: Based on documented manatee movement by FWC, the maximum recommended culvert length is no longer than 200 feet. Proposed culverts greater than 200 feet in length require a case-by-case review with the Service and FWC.

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4. Case-by-Case Review: Culverts that do not meet the specifications above or grates that preclude manatee access to essential habitat may be reviewed by the Service and FWC. The decision to block manatee access will be based on an assessment of several risk factors including, but not limited to culvert length and size, location, water level, and available habitat. The benefit of access to important habitat (forage resources, calving sites, freshwater, travel corridors, warmwater refugia, refuge from watercraft) will be weighed against the potential risk of injury or death to manatees, if the culvert were to remain accessible.