

# Chapter 1

# Introduction

## Objective

This handbook has three major purposes:

1. To assist NRCS Field Office personnel in developing plans for agricultural waste structures. All structures must then be approved by an NRCS Engineer with appropriate approval authority.
2. To assist NRCS field office personnel when explaining various components of agricultural waste management buildings to customers.
3. To provide all necessary forms and documentation related to agricultural waste management buildings in one handbook.

This handbook should be used when discussing various waste management options with producers who are seeking assistance in installing litter drystacks and composter facilities. Poultry, swine, and dairy operations may have uses for buildings of this nature. Drawings of various types of structures are presented to provide the producer with a visual presentation of the alternatives.

Chapter 2 gives the background of what design methods and what types of loads were used in the development of the design aids that are provided in Chapter 3.

Member Sizing Charts are provided for different styles of composters and stacking sheds to aid in the selection of proper post, rafter, and girder sizes. The planner needs to select the appropriate wind speed from Table 1 in Chapter 2, and according to the bin size

needed, use the member sizing tables to chose the appropriate member size.

Blank forms are provided as well as sample forms to assist field office personnel in planning a waste management building. The blank forms can be reproduced as needed.

Construction checklists and construction specifications for both composters and stacking sheds are included in Chapter 4. Construction drawings for various designs are included in the Appendices.

This handbook is organized in a three ring binder style similar to building codes and NRCS Engineering Handbooks. This allows pages to be removed and copied, as well as additions or amendments to be inserted as needed.

A procedure for use of this handbook in the design and construction of waste management buildings is given on the following page.

## Permitting

Waste management buildings must be permitted by the South Carolina Department of Health and Environmental Control (SCDHEC) as a waste treatment facility or as a waste storage facility. If the building is constructed as part of a new waste management system, it will be included in the Waste Management Plan submitted for permitting. If the structure is a new treatment/storage component of an existing system, however, a new permit is required.

Before a waste management building is planned and designed, the producer must

have written site approval for the structure from SCDHEC. Upon receipt of this site approval NRCS should work with the client to design the structure. Furthermore, before the facility is used for composting and/or storage, the structure and surrounding critical area must receive NRCS certification of proper construction for the intended use. The producer or NRCS should transmit this certification to SCDHEC. Upon receipt of this waste management system certification, SCDHEC will issue the Permit to Operate.

It is the producer's responsibility to obtain the permit and operate in compliance with the permit requirements. Any operation of the facility before the issuance of the Permit

to Operate may result in an out of compliance report, fine, or other penalty as deemed appropriate by SCDHEC.

Manure storage and/or composting may be done under an existing structure. If this is the case, NRCS will not certify the design and construction of the building. NRCS can, however, certify that the process of storage or composting can effectively take place within the structure. Within an existing building to be modified for storage or composting, the walls against which compost, manure, and/or litter is to be placed, shall be structurally independent of the existing building.



**Figure 1.1** Lateral pressure from the weight of compost adds loads to the other building components such as the posts. These loads are taken into account in the designs of the structures in this handbook, but connecting bins to existing structures that were not designed for that purpose could be dangerous. Manure storage and/or composting may be done under an existing structure, but NRCS will not certify the design or construction of the existing building, only the process of storage or composting.

## Procedure for Design and Construction of Agricultural Waste Management Buildings

1. Determine the size of building required (bin size for composters and span for stacking shed) using Chapter 10 of the Agricultural Waste Management Field Handbook or computer spreadsheets approved by the field engineer.
2. Determine wind speed for site of proposed building (See Table 1, pages 2-7 and 2-8, or Figure 2.5 - Wind Speed Map, page 2-6)
3. Determine the type of structure needed by reviewing drawings in Chapter 3 and Chapter 4.
4. Using the member sizing charts in Chapter 3, pick member sizes for the structure selected in Step 3.
5. Complete Design Dimension Worksheet (page 3-16 for composters and page 3-21 for stacking sheds or composter/stacking shed combinations).
6. If the building has a truss roof, complete Truss Fabrication Sheet for Truss Fabricators (page 3-22).
7. Complete construction drawings by filling in the title block, building dimensions and member sizes.
8. Obtain approval of completed drawings from the Field Engineer and furnish approved drawings and specifications (pages 4-3 thru 4-11) to the landowner.
9. Conduct a pre-construction conference with the landowner and builder to discuss roles and responsibilities, and to review the drawings and specifications.
10. Inspect during construction for the following critical items:
  - Post embedment
  - Slab foundation preparation
  - Truss to post connection and bracing
11. Complete Construction Checklist (pages 4-12 and 4-13)