



Layout, Design & Selection of a Vapor Distribution System



4.1 Performance-Based Skill Assessment Evaluation Packet

- Task 4.1.1 Using Architectural & Construction Drawings
- Task 4.1.2 Determining System Load and Customer Demand
- Task 4.1.4 Designing Aboveground ASME Tank Installations
- Task 4.1.5 Determining Proper Corrosion Protection for Buried Tanks & Piping
- Task 4.1.6 Designing Underground ASME Tank Installations
- Task 4.1.7 Selecting Regulators for Distribution Systems
- Task 4.1.8 Selecting Piping & Tubing for Distribution Systems
- Task 4.1.9 Selecting Vapor Meters for Distribution Systems
- Task 4.1.10 Estimating Job Costs

Employee's Name (Please Print)

Date of Skills Evaluation

Skills Evaluator Name (Please Print)

NOTICE: THE SKILLS EVALUATOR MUST BE THE EMPLOYEE'S SUPERVISOR OR SOME OTHER QUALIFIED PERSON WHO HAS COMPLETED CETP "LAYOUT, DESIGN & SELECTION OF A VAPOR DISTRIBUTION SYSTEM" OR IS FAMILIAR WITH THE SUBJECT MATTER. CETP CERTIFICATION REQUIRES THAT THE EMPLOYEE SEEKING CERTIFICATION CANNOT ACT AS HIS/HER OWN EVALUATOR.

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Users of this material should consult the law of their individual jurisdictions for codes, standards and legal requirements applicable to them. This material is not intended to be an exhaustive treatment of the subject, and should not be interpreted as precluding other procedures that would enhance safe LP-gas operations. This training material merely suggests methods the user may find useful in implementing applicable codes, standards, and legal requirements. This publication is not intended nor should it be construed to (1) set forth procedures which are the general custom or practice in the propane industry; (2) to establish the legal standards of care owed by propane distributors to their customers; or (3) to prevent the reader from using different methods to implement applicable codes, standards or legal requirements. This material was designed to be used as a resource only to assist expert and experienced supervisors and managers in training personnel in their organizations and does not replace federal, state, local, or company safety rules. The user of this material is solely responsible for the method of implementation. The Propane Research and Education Council, the National Propane Gas Association, CASTLE Worldwide and Industrial Training Services, Inc. assume no liability for reliance on the contents of this training material.

Issuance of this material is not intended to nor should it be construed as an undertaking to perform services on behalf of any party either for their protection or for the protection of third parties.

I. General Instructions

Instructions for Use

This **Performance Based Skill Assessment Evaluation Packet** is designed to:

- provide structured on-the-job training for the LP-gas employee under the direction of an experienced and qualified skills evaluator, and
- standardize conditions under which the employee demonstrates his/her performance of tasks that meet the requirements of the NPGA Certified Employee Training Program.

Each task is divided into one or more operations on which the employee's performance is evaluated. Each operation is designated by the following symbol: . Also, under each operation is a performance guide that establishes the standard used by the skills evaluator.

When an operation within a task is successfully performed by the employee according to the criteria listed in the performance guide, a check (✓) is placed in the .

After completing the checklist for those operations required in the employee's job duties, the skills evaluator and employee must sign their respective affidavits. Section IV (page 13 and page 14) is photocopied for the company's personnel training record files. **The original of Section IV, pages 13 and 14, must be forwarded to the appropriate test processing facility to complete certification.**

On-line Test Candidates:
CASTLE Worldwide
900 Perimeter Park Drive, Suite G
Morrisville, NC 27560

Paper test Candidates:
Industrial Training Services, Inc.
310 C.C. Lowry Drive
Murray, KY 42071

Instructions to the Employee

The Performance Based Skill Assessment Evaluation Packet is designed as a training guide to assist you and your evaluator in performing the tasks listed on the front cover. Practice the tasks as many times as needed to become confident and proficient with the documents or equipment. Your skills evaluator will check and observe your performance using the checklist included in each hands-on task assignment.

The employee must adhere to all safety precautions. If a safety precaution is violated, then the demonstration shall be stopped and the skills evaluator must instruct the employee on the proper safety procedures that apply before allowing the employee to continue.

The packet is designed to establish the basic conditions under which the employee demonstrated his/her level of knowledge and proficiency.

Instructions to the Skills Evaluator

Review Section II, "Task Information."

Conduct the training as follows:

- Give a copy of the Performance Based Skill Assessment Evaluation Packet to the employee.
- Review all of the instructions with the employee and answer any questions or concerns about how it will be used.
- Demonstrate and/or talk the employee through each of the steps required to do the task.
- Allow the employee time to ask questions and/or study the steps.
- Observe the employee performing the required steps; correct him/her as needed.
- Allow the employee to practice until he/she is confident.
- Evaluate the employee at his/her request.
- Complete Section III, "Employee Performance Checklist," beginning on page 5.
- Complete **both** pages of Section IV, "Employer Record," which **must be signed and dated by both the Skills Evaluator and employee** on page 13.
- Remove Section IV (pages 13 and 14) from the packet and photocopy. Retain photocopy for your files. **For employee certification this form must be received within 12 months of the Certifying Examination date.** Mail original to:

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900 Perimeter Park Drive, Suite G
Morrisville, NC 27560

Paper test Candidates:

Industrial Training Services, Inc.
310 C.C. Lowry Drive
Murray, KY 42071

- This Evaluation Packet and the photocopy of Section IV (pages 13 and 14) should be retained in the Company's employee training files.

II. Task Information

Certification Standard: The employee's certification is based on satisfactory completion of the operations listed under each task in the Performance Based Skill Assessment Evaluation Packet and a Mastery Score on the Certification Area Examination.

Prerequisites: Successful completion of CETP Certification Area 4.1, "Layout, Design & Selection of a Vapor Distribution System."

References: Applicable LP-Gas Codes and company policies.

Evaluation: The skills evaluator must be the employee's supervisor or some other qualified person who has completed CETP "Layout, Design & Selection of a Vapor Distribution System" or is familiar with the subject matter. CETP certification requires that the employee seeking certification cannot act as his/her own evaluator.

III. Employee Performance Checklist

Print or type all entries except signatures and initials.

Employee Name _____

Social Security No. _____ Date _____

Skill Evaluator (Please Print) _____

I, _____, hereby attest the employee named on
(Skill Evaluator's Signature)

top line of this section has demonstrated the correct performance of the tasks listed below and on following pages.

The tasks in this assessment packet require the candidate to examine a construction project proposed for the area serviced by the candidate's company. A group of four townhouses consisting of two bedroom and a three bedroom units is sited around a central party room building, pool and spa. A Plot Plan is given on page 7. Complete construction plans give the following information:

Townhouses

The townhouses are two-story structures, each having a two-bedroom and a three-bedroom unit for lease or purchase. A townhouse floor plan is given on page 6. Both the ground floor and the second floor have 9-foot ceilings. A 24-inch box truss provides support for the second floor. Each unit must be provided a vapor meter so that the homeowner or tenant can be separately billed for propane. A vapor meter is also required for the gas appliances located at the party room.

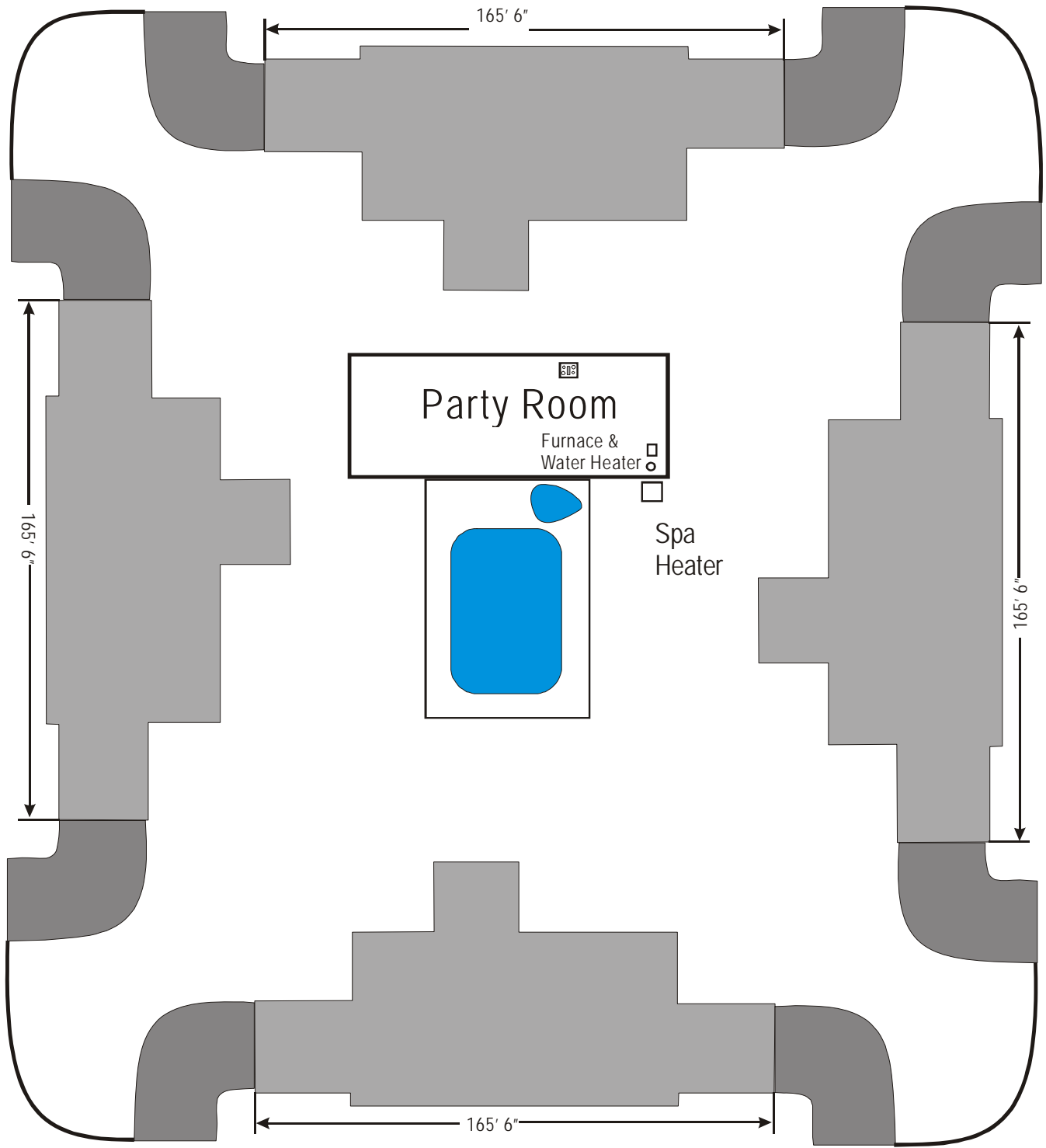
Party Room

The party room will be initially owned and operated by the developer through a separate company that can ultimately be conveyed to the townhouse owners. The spa will be heated year-round; the pool will be open only seasonally and is not heated.

Townhouse Appliances	Input Rating Btuh	Party Room Appliances	Input Rating Btuh
Dryer	20,000	Water Heater	40,000
Water Heater	40,000	Range/Oven/Grill	58,000
Range/Oven/Grill	58,000	Furnace	100,000
Furnace 1	55,000	Spa Heater	125,000
Furnace 2	75,000		
Furnace 3	50,000		
Furnace 4	55,000		

Installation Appearance

The developer specifies that if aboveground propane containers are used, they must be located in keeping with a landscaping plan that will conceal the tank(s) and limit access to unauthorized persons.



Townhouse Plot Plan

Task 4.1.1

Using Architectural and Construction Drawings

The employee is qualified to perform Task 4.1.1a at the following level:

Satisfactory



Using Architectural and Construction Drawings. 4.1.1a

Performance Guide: The person being evaluated for certification:

1. Using the townhouse floor plans and the construction information provided made an isometric sketch of the piping system for each unit of the townhouse indicating the horizontal and vertical length of each piping segment on the sketch.
2. Using the plot plan and the construction information provided made an isometric sketch of the piping system for the party room and the spa heater indicating the horizontal and vertical length of each piping segment on the sketch.

Task 4.1.2

Determining System Load and Customer Demand

The employee is qualified to perform Task 4.1.2a at the following level:

Satisfactory



Determining System Load and Customer Demand. 4.1.2a

Performance Guide: The person being evaluated for certification:

1. Using the construction information provided prepared a system load and customer demand profile, including the calculation of total system demand, application of any company-specific load factor adjustments, and the specification of the most severe operating conditions for the system (using anticipated low temperature and high humidity climate information for the company's operating area).
2. Recorded the information on any company-designated forms, or on worksheets to be included in this employee skills evaluation packet.

Task 4.1.4

Designing Aboveground Tank Installations

The employee is qualified to perform Task 4.1.4a at the following level:

Satisfactory



Designing Aboveground Tank Installations. 4.1.4a

Performance Guide: The person being evaluated for certification:

1. Using the construction information and the system load and customer demand profile, determined the water gallon capacity of the aboveground ASME tank(s) required to supply propane vapor to the townhouses and party room, based on the most severe operating conditions for the system (using anticipated low temperature and highest humidity climate information for the company's operating area).
2. Using the Plot Plan, determined the location of the tank installation, taking into account the:
 - Minimum separation distances required by NFPA 58, and any applicable local code requirements
 - Requirements for landscaping concealment requirements
 - Accessibility to authorized personnel
3. Recorded the information on any company-designated forms, or on the Plot Plan or worksheets to be included in this employee skills evaluation packet.

Task 4.1.6

Designing Underground ASME Tank Installations

The employee is qualified to perform Task 4.1.6a at the following level:

Satisfactory



Designing Underground Tank Installations. 4.1.6a

Performance Guide: The person being evaluated for certification:

1. Using the construction information and the system load and customer demand profile, determined the water gallon capacity of the underground ASME tank(s) required to supply propane vapor to the townhouses and party room, based on the most severe operating conditions for the system (using anticipated low temperature and highest humidity climate information for the company's operating area). Indicated whether the tank(s) selected were to be buried or mounded.
2. Using the Plot Plan, determined the location of the tank installation, taking into account the:
 - Minimum separation distances required by NFPA 58, and any applicable local code requirements
 - Requirements for landscaping concealment requirements
 - Accessibility to authorized personnel
3. Recorded the information on any company-designated forms, or on the Plot Plan or worksheets to be included in this employee skills evaluation packet.

Task 4.1.5

Designing Corrosion Protection for Buried Tanks and Piping

The employee is qualified to perform Task 4.1.5a at the following level:

Satisfactory



Designing Corrosion Protection for Buried Tanks and Piping. 4.1.5a

Performance Guide: The person being evaluated for certification:

1. Determined the components to be used to protect buried tank(s) used with buried polyethylene distribution lines.
2. Determined the components to be used to protect buried tank(s) if local codes or job specifications called for the use of buried copper or steel pipe lines
3. Recorded the information on any company-designated forms or on worksheets to be included in this employee skills evaluation packet.

Task 4.1.7

Selecting Regulators for Distribution Systems

The employee is qualified to perform Task 4.1.7a at the following level:

Satisfactory



Selecting Regulators for Half-Pound Distribution Systems. 4.1.7a

Performance Guide: The person being evaluated for certification:

1. Using manufacturers catalogs and the distribution load requirements, selected the regulators required for a ½- pound two-stage regulator system.
2. Marked the location of each regulator on the Plot Plan and Townhouse Floor Plan.
3. Recorded the information on any company-designated forms or on worksheets to be included in this employee skills evaluation packet.

Satisfactory



Selecting Regulators for Two-Pound Distribution Systems. 4.1.7b

Performance Guide: The person being evaluated for certification:

1. Using manufacturers catalogs and the distribution load requirements, selected the regulators required for a 2-pound two-stage regulator system.
2. Marked the location of each regulator on the Plot Plan and Townhouse Floor Plan.
3. Recorded the information on any company-designated forms or on worksheets to be included in this employee skills evaluation packet.

<p style="text-align: center;">Task 4.1.8 Piping and Tubing for Distribution Systems</p>
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The employee is qualified to perform Task 4.1.8a at the following level:

Satisfactory



Selecting Polyethylene Piping and Tubing for Buried Lines. 4.1.8a

Performance Guide: The person being evaluated for certification:

1. Marked the location of buried PE distribution lines on the Plot Plan, and determined the length of the runs.
2. Using manufacturers catalogs or sizing tables from NFPA 54 or 58 and the distribution load requirements and the Plot Plan, selected the polyethylene (PE) piping or tubing diameter required for the construction project.
3. Recorded the information on any company-designated forms or on worksheets to be included in this employee skills evaluation packet.

Satisfactory



Selecting Copper Tubing for Buried Lines. 4.1.8b

Performance Guide: The person being evaluated for certification:

1. Marked the location of buried copper distribution lines on the Plot Plan, and determined the length of the runs.
2. Using sizing tables from NFPA 54 or 58 and the distribution load requirements and the Plot Plan, selected the copper tubing diameter required for the construction project.
3. Recorded the information on any company-designated forms or on worksheets to be included in this employee skills evaluation packet.

Satisfactory



Selecting Steel Pipe for Distribution Systems. 4.1.8c

Performance Guide: The person being evaluated for certification:

1. Using the isometric sketches of the townhouse and party room, sizing tables from NFPA 54 or 58 pipe, and appliance input ratings, selected the steel pipe diameter required for each piping section of the townhouses and party room for a ½- pound system.
2. Recorded the information on any company-designated forms or on worksheets to be included in this employee skills evaluation packet.

Satisfactory



Selecting Corrugated Stainless Steel Tubing (CSST) for a ½-Pound Distribution System. 4.1.8d

Performance Guide: The person being evaluated for certification:

1. Using the isometric sketches of the townhouse and party room, manufacturer catalogs or sizing tables from NFPA 54 or 58 pipe, and appliance input ratings, selected the CSST diameter required for each piping section of the townhouses and party room for a ½-pound system.
2. Recorded the information on any company-designated forms or on worksheets to be included in this employee skills evaluation packet.

Satisfactory



Selecting Corrugated Stainless Steel Tubing (CSST) for a Two-Pound Distribution System. 4.1.8e

Performance Guide: The person being evaluated for certification:

1. Using the isometric sketches of the townhouse and party room, manufacturer catalogs or sizing tables from NFPA 54 or 58 pipe, and appliance input ratings, selected the CSST diameter required for each piping section of the townhouses and party room for a 2-pound manifold system.
2. Marked the location of the manifold on copies of the Plot Plan and Townhouse Floor Plans
3. Recorded the information on any company-designated forms or on worksheets to be included in this employee skills evaluation packet.

**Task 4.1.9
Selecting Vapor Meters for Distribution Systems**

The employee is qualified to perform Task 4.1.9a at the following level:

Satisfactory



Selecting Vapor Meters for Distribution Systems. 4.1.9a

Performance Guide: The person being evaluated for certification:

1. Using manufacturers catalogs selected the vapor meters required for the construction project.
2. Marked the location of each vapor meter on the Plot Plan and Townhouse Floor Plans.
3. Recorded the information on any company-designated forms or on worksheets to be included in this employee skills evaluation packet.

**Task 4.1.10
Estimating Job Costs.**

The employee is qualified to perform Task 4.1.10a at the following level:

Satisfactory



Estimating Job Costs. 4.1.10a

Performance Guide: Using company-designated forms or on worksheets. the person being evaluated for certification:

1. Listed all materials required for the layout and design of the distribution system selected for the construction project.
2. Listed all supplies required for the layout and design of the distribution system selected for the construction project.
3. Estimated the installation labor for the project.
4. Recorded the information on any company-designated forms or on worksheets to be included in this employee skills evaluation packet.

IV. CETP Performance Evaluation / Employer Record

THIS PAGE MUST BE RETURNED AS SOON AS POSSIBLE, BUT NO LATER THAN 12 MONTHS AFTER TAKING THE CERTIFICATION TEST, TO THE FOLLOWING ADDRESS:

On-line Test Candidates:

**CASTLE Worldwide
900 Perimeter Park Drive, Suite G
Morrisville, NC 27560**

Paper test Candidates:

**Industrial Training Services, Inc.
310 C.C. Lowry Drive
Murray, KY 42071**

Employee Information: (print or type) Test Group Number (if known): _____

Name _____ Social Security Number _____

Employer _____

Address _____

City, State: _____ Zip Code _____

Affidavit

I affirm that I am the person who has performed those items checked on this checklist. I acknowledge that the performance checklists used are solely for the purpose of skills assessment for the CETP certification requirements, and are not intended to replace or modify company operating or safety procedures, and may not be appropriate for use in all circumstances. I acknowledge that I am responsible for recognizing hazards and abnormal conditions in my workplace and must exercise care and good judgment, always using appropriate equipment, procedures and tools for the tasks I perform. The Propane Education and Research Council, the National Propane Gas Association, CASTLE Worldwide and Industrial Training Services, Inc. assume no liability for my actions, or for my application of the skills assessment performance guides used in this evaluation checklist.

Employee's Signature _____ Date _____

Skills Evaluator Information: (print or type)

Name _____

Organization/Employer _____

Telephone Number _____

Affidavit

I affirm that I am the person who has administered this checklist, and that I have conducted this employee skills assessment with integrity. I also affirm that the above named employee is the person whose performance I evaluated, and that the above named person performed the checked tasks at the indicated level without assistance from me or any other person.

Skill Evaluator's Signature _____ Date _____

The employee is qualified to perform the listed operations at the following level:

**Without
Direct
Supervision**

<input type="checkbox"/>	Using Architectural and Construction Drawings. 4.1.1a
<input type="checkbox"/>	Determining System Load and Customer Demand. 4.1.2a
<input type="checkbox"/>	Designing Aboveground Tank Installations. 4.1.4a
<input type="checkbox"/>	Designing Underground Tank Installations. 4.1.6a
<input type="checkbox"/>	Designing Corrosion Protection for Buried Tanks and Piping. 4.1.5a
<input type="checkbox"/>	Selecting Regulators for Half-Pound Distribution Systems. 4.1.7a
<input type="checkbox"/>	Selecting Regulators for Two-Pound Distribution Systems. 4.1.7b
<input type="checkbox"/>	Selecting Polyethylene Piping and Tubing for Buried Lines. 4.1.8a
<input type="checkbox"/>	Selecting Copper Tubing for Buried Lines. 4.1.8b
<input type="checkbox"/>	Selecting Steel Pipe for Distribution Systems. 4.1.8c
<input type="checkbox"/>	Selecting Corrugated Stainless Steel Tubing (CSST) for a ½-Pound Distribution System. 4.1.8d
<input type="checkbox"/>	Selecting Corrugated Stainless Steel Tubing (CSST) for a Two-Pound Distribution System. 4.1.8e
<input type="checkbox"/>	Selecting Vapor Meters for Distribution Systems. 4.1.9a
<input type="checkbox"/>	Estimating Job Costs. 4.1.10a

After completion of Section IV, "Employer Record," remove pages 13 and 14 from the packet and photocopy. Retain photocopy for your files. Mail original to:

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