



## **Three-Day PACP/MACP/LACP Combined Class Syllabus**

Pipeline Assessment & Certification Program (PACP™) Version 7.0.4

Manhole Assessment and Certification Program (MACP™) Version 7.0.4

Lateral Assessment and Certification Program (LACP™) Version 7.0.4

### **Pre-requisites**

All MACP and LACP students must pass the PACP portion of the class before moving forward towards MACP and LACP certification.

### **Required Texts**

Pipeline Assessment & Certification Manual- provided by NASSCO through a certified trainer. Updates to the manual can be found by logging in to [www.nassco.org](http://www.nassco.org)

### **Suggested Reference**

Sewerage Rehabilitation Manual- WRc. Available for purchase at [www.nassco.org](http://www.nassco.org)

Manual of Sewer Condition Classifications- WRc. Available for purchase at [www.nassco.org](http://www.nassco.org)

### **Course Goals**

PACP - The goal of the NASSCO PACP course is to provide the student a thorough indoctrination of the PACP coding procedures, provide an opportunity for students to ask questions and clarify various aspects of the program, review coding procedures, and insure the contents of the PACP have been adequately conveyed to the student through the successful completion of the certification examination.

MACP - The goal of the MACP is to provide the student a thorough understanding of the procedures required to perform an appropriate inspection of manholes and other Access Points.

LACP - The goal of the LACP is to provide the student, who is familiar with PACP as a certified User, with a complete understanding of how the PACP codes have been adapted to provide critical data on the conditions found in laterals. The course presents many opportunities for the student to ask questions about the new codes specifically required for proper use of the LACP.

### **Course Activities**

Presentation of Modules

Course Review

Multiple Choice/Open Book Test

## Course Schedule

### Day 1

1. Module 0 – PACP Overview (Preface and Introduction of the PACP Reference Manual), *estimated time 45 minutes*
  - A. Course Content
  - B. Introduction to NASSCO
  - C. NASSCO Website
  - D. Overview of PACP Manual
  
2. Module 1 – Introduction and Need for Condition Categorization (Section 1 of the PACP Reference Manual), *estimated time 1.75 hour*
  - A. PACP® Overview
  - B. Origin of Condition Codes
  - C. Reasons for TV Inspection
  - D. How We Use TV Inspection Data
  - E. Why Standardization is Important
  - F. General Approach to TV Using the PACP®
  - G. Supplemental Technologies
  - H. Background to Technical Issues
    - i. Deterioration Mechanisms
  - I. PACP Inspection Form
  - J. PACP Inspection Deliverables
  - K. Clay Pipe Video
  
3. Module 2 – PACP Header Section (Section 2 of the PACP Reference Manual), *estimated time 1.0 hour*
  - A. PACP Inspection Form Header Section Instructions
  - B. General Guidelines When Completing CCTV Inspection Form Header Section
  - C. CCTV Inspection Header Information
  
4. Module 3 – PACP Details Section (Section 3 of the PACP Reference Manual), *estimated time 1.25 hours*
  - A. PACP Inspection Form Details Section
  - B. Initial Coding
  - C. Final Coding
  - D. Column Entries
  - E. Sample PACP Inspection Form
  
5. Module 4 – Structural Defect Coding (Section 4 of the PACP Reference Manual), *estimated time 3.25 hours*
  - A. Crack (C)
  - B. Fracture (F)
  - C. Broken (B)

- D. Hole (H)
- E. Deformed (D)
  - i. Rigid Pipe
  - ii. Flexible Pipe
  - iii. Brick
- F. Collapsed (X)
- G. Joint (J)
- H. Surface Damage (S)
- I. Lining Features (LF)
- J. Weld Failure (WF)
- K. Point Repair (RP)
- L. Brickwork

## **Day 2**

6. Module 5 – O&M Defect Coding (Section 5 of the PACP Reference Manual), *estimated time 2 hours*
  - A. Deposits (D)
  - B. Roots (R)
  - C. Infiltration (I)
  - D. Obstacles/Obstructions (OB)
  - E. Vermin (V)
  - F. Testing and Grouting (G)
    - i. Mainline Packer Video
    - ii. Packer Liner Extended Video
  
7. Module 6 – Construction Features Coding (Section 6 of the PACP Reference Manual) *estimated time 1 hour*
  - A. Tap (T)
  - B. Intruding Sealing Material (IS)
  - C. Line (Direction/Alignment of the Sewer) (L)
  - D. Access Points (A)
  
8. Module 7 - Miscellaneous Features Coding (Section 7 of the PACP Reference Manual), *estimated time 1 hour*
  - A. General features and defects that are not described by or included in other PACP categories
  - B. Used to record features' special observations
  
9. Module 10 – Appendices A-C, *estimated time 1.0 hour*
  - A. Appendix A – Code List
  - B. Appendix B – Color Coded Chart
  - C. Appendix C – PACP® Condition Grading System
  - D. Appendix D – PACP® Based Risk Management (optional)

- E. Appendix E – Pipe Shapes and Materials (optional)
- 10. Course Review, *estimated time 2 hours*
  - A. Practice Pictures – Module 11
  - B. Jeopardy

- 11. Multiple Choice Test, *estimated time 2 hours*

### **Day 3**

- 12. Introduction to Manhole Condition Assessment, *estimated time 45 minutes*
  - A. Manhole Assessment Certification Program (MACP)
    - i. Overview
    - ii. MACP Inspection Form
    - iii. Levels
    - iv. Photographs
  - B. Manhole Component Descriptions
    - i. Cover
    - ii. Frame
    - iii. Chimney
    - iv. Cone
    - v. Wall
    - vi. Bench
    - vii. Channel
    - viii. Pipe Connections
- 13. Manhole Inspection Header Section and Component Observation, *estimated time 1.75 hours*
  - C. Header Section Instructions
  - D. Component Observation Section Instructions
- 14. Manhole Component Defect Section, *estimated time 1 hour*
  - E. PACP Defect Codes
  - F. Manhole Component Section
  - G. Chimney Defect Condition Inspection
  - H. Cone Defect Condition Inspection
  - I. Wall Defect Condition Inspection
  - J. Bench Defect Condition Inspection
  - K. Channel Defect Condition Inspection
  - L. Sample MACP Inspection Form
- 15. Introduction and Overview of Lateral Sewer Assessment, *estimated time 30 minutes*
  - M. Lateral Assessment Certification Program (LACP)
  - N. Lateral Configurations

- O. Examples of Lateral Inspections
  - P. General Approach to CCTV Inspection Using the LACP
  - Q. General Rules for Coding Observations/Defects
16. Lateral Inspection Form Header Section, *estimated time 1 hour*
- R. LACP Header Section
  - S. LACP Header Fields
17. LACP Inspection Form Details Section, *estimated time 1 hour*
- T. Continuous Defect Coding
  - U. Structural Defects
  - V. Operation and Maintenance Features
  - W. Construction Features
    - i. Access Points (A)
    - ii. Fittings (F)
18. Course Review, *estimated time 1 hour*
19. Multiple Choice Tests, *estimated time 1 hour (30 minutes per subject matter)*

### **Grading**

Each student will be expected to get at least 85% of the questions asked correct in order to become certified. If the target is not met, every effort will be made to help the student grasp the information and retake the test.

Estimated time: PACP: 17 hours, MACP: 4.5 hours, LACP: 3.5 hours

Total Course Time: 25 hours