



# Northeastern Illinois Public Safety Training Academy

## Course Syllabus

207.1

<b>Title:</b> Structural Collapse Technician	<b>Program Duration:</b> 40 hours
<b>Type:</b> Campus Training Program (CTP)	<b>Coordinator:</b> P. Schey

### Course Description

NIPSTA's Structural Collapse Technician program is designed to exceed the requirements outlined by the Illinois Office of the State Fire Marshal (OSFM), and provides students with the basic knowledge and skills needed to perform structural collapse rescue at the NFPA 1006 technician level. Students will leave prepared to operate as a member of a regional team capable of responding to statewide emergencies where heavyweight structural collapse rescue may be needed.

### Prerequisites

The purpose of prerequisite course work is to ensure students have sufficient backgrounds to understand the terminology, tactics and practical applications presented in NIPSTA programs. At a minimum, NIPSTA requires successful completion of the following:

- Member of recognized fire department/brigade
- Rope Rescue Operations
- Vehicle & Machinery Operations
- Confined Space Operations
- Structural Collapse Operations

### Attendance

In order to receive a certificate of completion for courses, NIPSTA requires students to be present for all lectures, demonstrations and evolutions.

### Safety

NIPSTA Instructors will ensure hazards have been identified and addressed prior to the start of each program. All course safety guidelines are discussed prior to operations and at a minimum, a one (1) to six (6) instructor to student ratio will be maintained at all times. Unsafe actions or behaviors will not be tolerated and will be grounds for dismissal.

### Academic Integrity

NIPSTA aspires to the highest possible standards of academic honesty and integrity in all programs as key tenants of the NIPSTA experience. NIPSTA Instructors set forth clear ethical expectations, promote consistency of standards, and encourage reporting of dishonest and unsafe behaviors. While education through participation is the central goal for every NIPSTA program, it is only possible when honesty and integrity are part of the overall mission.

### Performance Testing & Evaluation

NIPSTA employs multiple methods of measuring competency subject matter including cognitive and performance skill testing. Cognitive skills will be measured by utilizing a comprehensive written exam at the conclusion of the course. Students must achieve a minimum 70% score to successfully pass the written exam. Performance skill tests measure an individual's ability to perform specific tasks or applications based on given or known JPRs. Unless otherwise specified, performance skill tests will be measured on a pass or fail basis.

## ADA Compliance

Students with a documented disabilities, as that term is used in the American with Disabilities Act (ADA), may qualify for reasonable accomidations as defined in section 504 of the Rehabilitation Act of 1973.

## Textbook

The following materials are required for NIPSTA's Structural Collapse Operations course.

- Title:** "FEMA National US&R Response System, Structural Collapse Technician Training Manual" (*provided by course coordinator*)
- Title:** "U.S. Army Corps of Engineers, Urban Search and Rescue Structures Specialist Field Operations Guide" Ed. 9 (*provided by course coordinator*)

## Pre-course Assignments

The purpose of pre-course assignments is to ensure candidates are prepared to succeed at the onset of the program. The pre-course assignments for NIPSTA's Structural Collapse Technician course are as follows:

- Review:** Urban Search and Rescue Structures Specialist Field Operations Guide

## Course Content

Course content is broken into subject area modules or "Mods". NIPSTA's Structural Collapse Technician program is comprised of the following 40 Mods:

**Mod 1:** Introduction & Orientation

**Mod 2:** Safety & Risk Management

**Mod 3:** Incident Hazards (heavyweight)

**Mod 4:** Collapse Rescue PPE

**Mod 5:** Destructive Forces

**Mod 6:** Force Types

**Mod 7:** Structural Components & Systems

**Mod 8:** Building Types (heavyweight)

**Mod 9:** Building Assessments

**Mod 10:** Marking Systems

**Mod 11:** Collapse Incident Size-up

**Mod 12:** Collapse Resonance

**Mod 13:** Victim Location & Survivability

**Mod 14:** Collapse Incident Safety

**Mod 15:** Structural Monitoring

**Mod 16:** Search Operations

**Mod 17:** Rescue Operations

**Mod 18:** Victim Assessment & Treatment

**Mod 19:** Collapse Patient Packaging

**Mod 20:** Cut Station & Assembly

**Mod 21:** Cribbing & Stabilization

**Mod 22:** Double Raker Shoring Systems

**Mod 23:** Laced Post Shoring Systems

**Mod 24:** Sloped Floor Shoring Systems

**Mod 25:** Pneumatic & Tie Back Systems

**Mod 26:** Heavy Lifting & Moving

**Mod 27:** Anchoring & Rigging

**Mod 28:** Heavy Equipment Operations

**Mod 28:** Breaching & Breaking

**Mod 30:** Cutting & Burning

**Mod 31:** Victim Search Equipment

**Mod 32:** Structural Monitoring Equipment

**Mod 33:** Collapse Rescue ICS

**Mod 34:** Rescue Planning & Logistics

**Mod 35:** WMD/CBRNE Factors

**Mod 36:** Decontamination & Sanitation

**Mod 37:** Incident Termination

**Mod 38:** Equipment Inspection

**Mod 39:** Knowledge Assessment Testing

**Mod 40:** Skill Assessment Testing

## Learning Outcomes & Evaluation

Following the conclusion of these modules, students will be familiar with the requisite knowledge and skills needed to perform as a member of a structural collapse rescue team. Written and practical evaluations will be conducted at the completion of this course.

## Course Schedule

### Day 1

#### **Morning**

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**Mod:** Introduction & Orientation  
**Mod:** Safety & Risk Management  
**Mod:** Incident Hazards (Tech Level)  
**Mod:** Collapse Rescue PPE  
**Mod:** Destructive Force Types  
**Mod:** Structural Components & Systems (Tech Level)  
**Mod:** Building Types (technician level)  
**Mod:** Building Assessments (Tech Level)  
**Mod:** Collapse Incident Size-up  
**Mod:** Structural Monitoring  
**Mod:** Collapse Tools & Equipment (Tech Level)  
**Mod:** Collapse Incident ICS: Incident Action Plans  
**Mod:** Record Keeping & Documentation  
**Mod:** WMD/CBRNE Factors

#### **Afternoon**

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**Mod:** Tool & Equipment Familiarization:

- Breaching & Breaking Equipment
- Steel Cutting & Burning Equipment
- Lifting & Moving Equipment
- Carpentry Equipment, Fasteners & Nail Patterns
- Monitoring Equipment: Structural & Atmospheric
- Listening Devices & Search Cameras
- Structural Monitoring Equipment

**Mod:** Cut Station Operations: Table Jig & Lumber Management  
**Mod:** Shoring Components: Gussets, Wedges, Posts, Headers, Soles & Braces  
**Mod:** Vertical Shoring: T-Spot, Double T and 3 Post Vertical Shores

### Day 2

#### **Morning**

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**Mod:** Collapse Scene Safety  
**Mod:** Collapse Search & Resonance  
**Mod:** Victim Location & Survivability  
**Mod:** Victim Injuries, Care & Management  
**Mod:** Structural Monitoring  
**Mod:** Heavy Lifting Operations  
**Mod:** Collapse Shoring Operations (Tech Level)

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## **Afternoon**

- Mod:** Listening Devices & Haling Operations
- Mod:** Structural Monitoring
- Mod:** Collapse Search & Resonance: Inspection Holes
- Mod:** Horizontal Breaching Operations: Stitch Cutting
- Mod:** Vertical Breaching Operations: Dirty Breach (up)
- Mod:** Patient Packaging: Hasty Harness, SKED, Stokes Baskets
- Mod:** Lateral Shoring: Split Sole & Solid Sole Raker Shores (braced together)
- Mod:** Decontamination & Sanitation
- Mod:** Equipment Inspection & Inventory

## **Day 3**

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## **Morning**

- Mod 27:** Anchoring & Rigging Operations (Concrete, Wood, & Steel)
- Mod 28:** Heavy Equipment Operations (Loaders, Cranes, Etc)

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## **Afternoon**

- Mod:** Building Marking Systems (Structural & Victim)
- Mod:** Pneumatic Shoring Systems (Lateral & Vertical)
- Mod:** Vertical Breaching Operations: Lift-Out
- Mod:** Vertical Shoring Operations: Laced Post Shores
- Mod:** Heavy Lifting Operations: Bridge Beam Exercise (Air Bags, Cribbing Etc)
- Mod:** Decontamination & Sanitation
- Mod:** Equipment Inspection & Inventory

## **Day 4**

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## **Morning**

- Mod:** Heavy Lifting Operations: Lifting & Moving Exercise (hand tools, etc)
- Mod:** Building Marking Systems (Structural & Victim)
- Mod:** Structural Monitoring Operations

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## **Afternoon**

- Mod:** Vertical Breaching Operations: Step Cutting
- Mod:** Vertical Shoring Operations: Sloped Floor Shores (Type II & II, Cribbing)
- Mod:** Decontamination & Sanitation
- Mod:** Equipment Inspection & Inventory

## **Day 5**

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## **Morning**

- Mod:** Knowledge Assessment (Final Exam)
- Mod:** Anchoring & Rigging Operations: Grip Hoist
- Mod:** Heavy Equipment Operations: Rigging and Communicating with Loaders and Cranes
- Mod:** Steel Cutting & Burning Exercise

## **Afternoon**

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- Mod:** Collapse Rescue ICS (Final Scenario IAP & Briefing)
- Mod:** Practical Skill Evaluation: Comprehensive Final Collapse Tech Scenario
- Mod:** Incident Termination & Post Incident Analysis
- Mod:** Decontamination & Sanitation
- Mod:** Equipment Inspection & Inventory
- Mod:** Course Evaluation (CEQs)

### **Reference List**

NFPA 1006, *Standard for Rescue Technician Professional Qualifications*, 2021 Edition

FEMA National Urban Search and Rescue Response System: *Incident Command System for Structural Collapse Incidents*, 3<sup>rd</sup> Ed. 2006

FEMA National Urban Search and Rescue Response System: *National US&R Response System Operational Systems Description US&R Safety Program and Search Procedures*

FEMA National Urban Search and Rescue Response System: *Rescue Specialist Training Manual, Vol. 1 and 2*.

FEMA National Urban Search and Rescue Response System: *US&R Safety Program and Search Procedures*

United States Army Corps of Engineers: *Urban Search and Rescue Structures Specialist Field Operations Guide*, 2021 Ed. 9.0