

Department of Defense Cultural Resources Program

<https://www.denix.osd.mil/cr/home/>



“Collaboration for Preservation, Construction, and Infrastructure through
Transition Career Training”

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PLEASE MUTE YOUR PHONES!



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OASD(Readiness)/ODASD(Force Education & Training)
OUSD Personnel & Readiness

<https://dodskillbridge.usalearning.gov/>

Collaboration for Preservation, Construction, & Infrastructure Based on Transition Career Training



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PRESENTATION OVERVIEW

1. Program Background
2. Partnerships
3. Failing Infrastructure & CR Management Challenges
4. Curriculum
5. Project Examples
6. Future Program Development

CPI Foundation Background



Combining the Disparate Worlds of Historic Preservation, Transition Assistance, U.S. Infrastructure Workforce Development



CPI Foundation

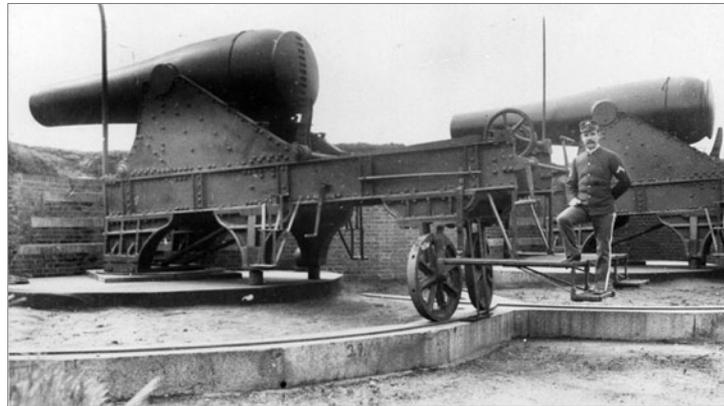
- 501 (c) 3 Non-Profit Educational Foundation
- Skillsbridge/Career Skills Program (CSP)
- Partner of National Park Service
- Partner of Industry Companies & Associations



Participant
Development:
College
Students to
Veterans to
Active Duty



Existing
Program
Location:
Alcatraz Island,
San Francisco,
California



Existing
Program
Location:
Pearl Harbor,
Hawaii



Partnerships



Construction Industry: Mentors, Employers, Special Expertise



Dept. of Defense,
Dept. of Interior,
Local Non-Profit
Building/Site
Owners



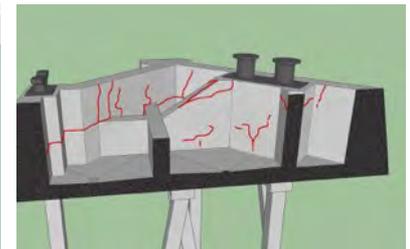
Memorandum of Understanding Between
The U.S. Department of the Interior
Of The
United States of America
The Concrete Preservation Institute Foundation

Challenges

Failing Infrastructure &
Cultural Resource
Management



Unknowns.
Hidden Conditions.
Misconceptions.
Where to Start?







Curriculum

Skillbridge in Action



Training Curriculum & Career Placement

TRAINING/PROJECTS

Career Exploration 40-Hour Class

- Industry orientation
- Career goals
- Geographic location preference
- Resume & interview skills
- Facilitated interviews

12-week Training

- 40% classroom / 60% projects
- 2 industry certifications
- Articulation agreement with MTSU for college-bound

CAREER PLACEMENT NATIONWIDE

Management & Trades Career Options

- Contracting
- Material production
- Manufacturing
- Sales
- Service
- Transportation
- Related fields

Construction industry estimated 1.2 million workers short by 2020

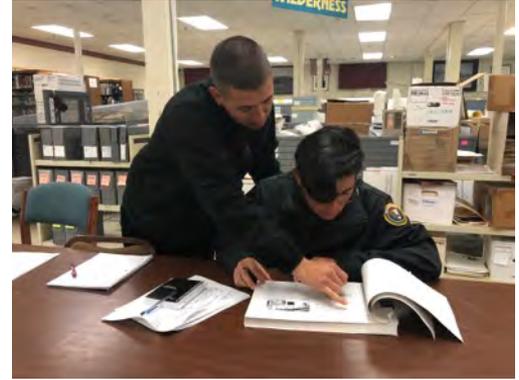
Secretary of the Interior's Standards for the Treatment of Historic Properties



In 1916, this building and several others on the island burned in 1976.



Fully Engaged Historic Preservation



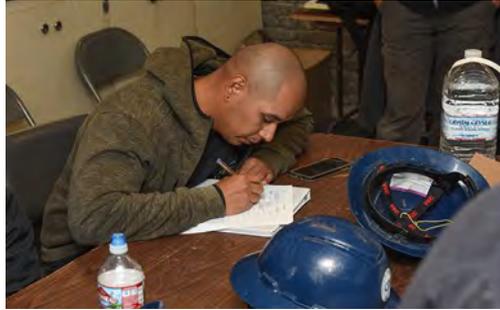
Classroom Learning



Safety Management & Practice



Project Management & Logistics



Professional Certifications



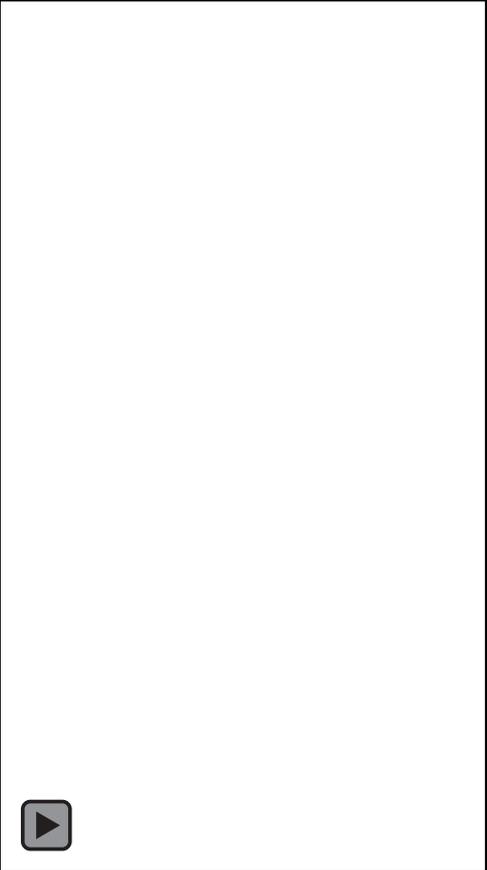
Evaluation, Non-Destructive Testing, Selective Destructive Testing



Concrete, Wood, & Steel Construction



Resumes,
Communication
& Interview
Skills,
Career
Placement



Community Service & Local Youth Mentoring



Graduation & Beyond



Project Examples



Project Profile: Alcatraz Penitentiary Roof Access

project Structural Building Repair

objectives Military-to-Civilian Career Training, Historic Preservation, Increase Safe Access

team Military Veterans, College Students

completed Summer 2015

owner National Park Service

location Alcatraz Island, San Francisco, California



Before: extensive concrete deterioration & steel corrosion, unsafe conditions



After Below: all repairs completed from below to retain historic fabric above



After Above: stair treads & space above retain all historic fabric and character

Project Highlights

- **Outcomes:** Repaired stairs, landing, & structural beams restoring safe access to sole roof entry point
- **Special Considerations:** Character-defining features maintained - stair treads with their story-telling indentations from over a 100 years of foot travel were suspended in place with work completed from below, protected historic Native American wall markings on opposite wall, night work as necessary to minimize disruption of 5,000 daily visitors in adjacent spaces
- **Work Items:** Overhead concrete form & pump under pressure on sloped surface (commonly accepted in industry as among the most technically challenging repair methods); finish concrete to historic texture; build wood formwork & shoring; place steel reinforcing; manage enclosed space working conditions; ensure project site safety for team & NPS staff, and safety for visitors

CPI PROJECT PROFILE details Alcatraz Penitentiary Roof Access

Beam formwork, new beams support repaired landing at top of stairs

Formwork & safety shoring

Historic concrete stair treads suspended in place while repairs completed from below

Team member

Concrete mixer, repairs completed at night to avoid visitor interruption

Concrete pump with hoses reaching up into confined space

Moving concrete-loaded hose to next port during high-pressure pumping

CFI military veteran participant explaining project during visit from U.S. Army chain of command



Increasing Resilience for Our Communities, Our Infrastructure, Our Most Vulnerable

Project Profile: Red Barn

project Structural Building Repair, Seismic Stabilization

objectives College Student Field Training, Historic Preservation, Owner Operational Need

team College Students & Community Volunteers

completed 2011-12

owner National Park Service

location Miwok Riding Stables, Golden Gate National Recreation Area, San Francisco, California

Before: Existing conditions, building rear

In Progress: Top: New roof installation; Bottom: Splicing new wood members to historic

In Progress: Lifting entire structure to straighten, construct new foundation

After: Repairs complete, building rear

Project Highlights

- Outcomes:** Overall structure repaired, entire building lifted and placed back down on new foundation, seismic stabilization, new roof over historic framing
- Special Considerations:** NPS goal to rehabilitate the structure for eventual use and mitigate immediate safety concerns due to location in active visitor area; CPI completed project and invited community participation during special open days; NPS staff joined the team for a "barn painting day" at project completion
- Work Items:** Coordinated with local house moving company to lift entire structure; worked with structural engineer to straighten structure; preserved historic wood members when possible; added new concrete foundation; added new flooring; added interior shear strengthening; added new roof over historic framing to preserve historic appearance from inside; repaired/rebuilt barn doors

PROJECT PROFILE details Red Barn

Top: Barn in lifted condition, placement of new concrete foundation; Bottom: foundation formwork

Foundation concrete placement

CPI & NPS partnering to train team members

Pre-project: Historic wood foundation rot

New foundation

Straightening the structural frame after barn lifted off foundation

Top: Existing condition; Bottom: preserved/new members

Completed roof interior, preserved historic framing & decking remain visible

Painting repaired barn with NPS staff

Celebrating achievement & hard day of work

Project Profile: Hawaii Theater Center

project Structural Building Repair

objectives Military-to-Civilian Career Training, Historic Preservation, Community Service

team Active Duty Military Service Members

completed Spring 2019

owner Hawaii Theater Center

location Honolulu, Hawaii

In Progress: work at exterior of building with CFI team and public safety barriers in place

In Progress: column and soffit repairs

Before (top): structural crack, in progress (bottom): building up repair material to match profile

Before (top): cracks at door surround, After (bottom)

Project Highlights

- **Outcomes:** Exterior & interior structural and aesthetic repairs with historically appropriate finishes
- **Special Considerations:** Connecting with community organization for historic preservation as part of CFI's Pearl Harbor National Memorial partnership
- **Work Items:** Plan and manage multiple simultaneous projects; repair plumbing in damage zone; interior wall, mix on-site & hand-place concrete, finish concrete to historic texture; build wood formwork & shoring, place steel reinforcing; manage safe work in enclosed space; ensure project site safety and accessibility for team, building staff, and visitors

PROJECT PROFILE details Hawaii Theater Center

Assessing conditions, planning repairs

Partial depth slab repair: concrete removal; reinforcing hand placed placement

Partial depth slab repair concrete

Deteriorated concrete removal at soffit

Soffit repair

Prep for next CFI project, US Marine Memorial, Pearl Harbor Visitor Center

CFI active duty military team discussing project with clients

Team field trip to learn about high-rise building construction

The team

Repaired door surrounds at back of theater

Project Profile: Power House, Alcatraz Island

Project Structural Building Repair

Objectives Military-to-Civilian & Student Career Training, Historic Preservation, Increase Safe Access

Team Military Veterans, College Students

Completed Summer 2013

Owner National Park Service

Location Alcatraz Island, Golden Gate National Recreation Area, San Francisco, California

Before: Power House

Top: Exterior front façade in progress;
Bottom: Exterior front façade repairs
completed, prior to painting

Before: Interior
column

In Progress:
Interior column
with custom
ironwork for
pumped concrete

After: Interior
column with
preserved historic
material, prior to
painting

Project Highlights

- **Outcomes:** Repaired interior & exterior front façade, repaired interior beam & columns
- **Special Considerations:** Historic metal windows/doors originally placed integrally with façade concrete - repair project included their removal/storage during selective demolition then replacement in original configuration with repair concrete material, temporary interior wood wall constructed to protect solar array batteries
- **Work Items:** Vertical and overhead concrete form & pump under pressure (commonly accepted in industry as among the most technically challenging repair methods), finish concrete to historic texture; build wood formwork & shoring, place steel reinforcing; preserve historic metal windows/doors; ensure project site safety & accessibility for team & NPS staff, and safety for visitors

PROJECT PROFILE details Power House, Alcatraz Island

Interior façade existing
conditions

Interior façade
beam
formwork

Volunteer structural
engineer training team on
proper placement of steel
reinforcing

Scaffolding
constructed by
team at façade

Team member
grinding surface of
repairs to achieve
historic texture;
safety first

Historic
window/deteriorated
concrete

Historic window
removed during
construction

Deteriorated concrete removed,
reinforcing steel cleaned/new
steel installed

Historic window and doors reinstalled
integrally with façade concrete



Incorporating Accessibility into Our Medicines, Our Infrastructure, Our Missioned Parts

Project Profile: Wheeler Middle School

project New Construction: Improved Access

objectives Military-to-Civilian Career Training, Operational Need

team Active Duty Military Service Members

completed Spring 2017

owner U.S. Army

location Wheeler Army Air Field, Wahiawa, Hawaii

PROJECT PROFILE details Wheeler Middle School

Pre-project formwork and ready-mix concrete training

Top & Bottom: Managing heavy equipment work

Preparing sub-grade

Facing pipe to be embedded in concrete

Building custom formwork

Reinforcing steel placement

Measuring & cutting reinforcing

Project planning: site surveying

"Buddy bench" installed

Bike racks installed

Before: First day defined at entrance

In Progress: Site preparation

In Progress: Placing concrete

After: Completed project

Project Highlights

- **Outcomes:** New sidewalk, new bike rack slab & racks, bench footings & installation
- **Special Considerations:** School located on military base; collaborated with teacher/parent association for projects identified as priorities; responded to student request for "buddy bench" footings and installation as a place for kids to meet new friends
- **Work Items:** Develop project plan; develop site lay-out & drainage design; manage military heavy equipment operator; coordinate with local concrete ready-mixed producer to deliver concrete; compact soil & base; place concrete & finish; build wood formwork & shoring; place steel reinforcing; ensure project site safety for team, school staff, and visitors



Incorporating Accessibility into Our Medicines, Our Infrastructure, Our Missioned Parts

Project Profile: Windy Gulch, Alcatraz Island

project Site Feature Repair

objectives Military-to-Civilian Career Training, Historic Preservation, Visitor Access to Closed Area

team Military Veterans, Active Duty Military Service Members

completed Fall 2017

owner National Park Service

location Alcatraz Island, Golden Gate National Recreation Area, San Francisco, California

PROJECT PROFILE details Windy Gulch, Alcatraz Island

Visit and on-site instruction from industry executive

CPI constructed safety railing in place during project

Removing formwork from completed precast panel

Transporting 300-pound precast concrete panel up hill

Work site with difficult project access from below

Completed stair railing from cliff side

Constructing walkway at base of stairs

Installing welded wire mesh for visitor safety

Completed project open to the public

Before: Deteriorated conditions, no visitor access

In Progress: Precast concrete panels built off-site, moved & temporarily held in place while team built concrete posts & hand rail in place (Golden Gate Bridge in background)

After: Area now accessible for visitors

Project Highlights

- **Outcomes:** New precast concrete railing panels, new concrete cast-in-place hand-rail and posts with footings into historic stair, new railing system below stair, historic stair treads repaired, reopened to public after many years of closure
- **Special Considerations:** Difficult logistical and safety challenges working next to cliff and transporting materials, equipment, generators, and precast panels weighing nearly 300 pounds to the remote site while ensuring no disturbance to nesting birds
- **Work Items:** Research historic configuration, assess existing conditions, develop site-specific safety plan, selective demolition, build formwork and safety barriers, install reinforcing, install wire mesh for life safety in railing panel openings

Project Profile: Battery Chamberlin

project Structural Building Repair

objectives Military-to-Civilian Career Training, Advanced Technology for Historic Preservation

team Active Duty Military Service Members

completed Fall 2018 & Spring 2019

owner National Park Service

location Golden Gate National Recreation Area, San Francisco, California

Before: Deteriorated condition, visitor safety compromised

After: Repairs complete

In Progress: Advanced technology glass fiber composite reinforcing for increased durability

In Progress: concrete placed via pressure pumping

Project Highlights

- **Outcomes:** Repaired concrete, new drainage system
- **Special Considerations:** Water intrusion due to non-functioning drainage system and vegetation area above caused embedded steel corrosion and concrete deterioration, loss of historic fabric and falling concrete safety hazard in open visitor area, utilized advanced glass fiber composite reinforcing appropriate for conditions and in compliance with historic preservation standards in concrete repair
- **Work Items:** Research historic configuration, assess existing conditions, develop site specific safety plan, selective demolition, erect scaffolding & safety barriers, build formwork, install glass fiber composite reinforcing, mix/place concrete by hand in isolated areas & place concrete with pressure pumping for overall repairs, paint structure to match historic

PROJECT PROFILE details Battery Chamberlin

Concrete carbonation testing

Condition assessment, drawing plans

Formwork drawing by military spouse team member

Composite bars & drainage pipe prior to being embedded in concrete

Work site; Golden Gate Bridge in background

Condition assessment revealed non-functioning drainage pipe

New drainage pipe installed, later embedded in concrete

Ready mix concrete truck arrives at dawn, ahead of high visitor traffic

Concrete from ready mix truck delivered through pump and hoses; all hands on deck to manage hoses heavy with concrete

CPI team member interviewed by press during project

U.S. Marine
Memorial, Pearl
Harbor, Hawaii
Summer 2019



Future Program Development



Recommended Development Process for New Program Locations

- Establish & Deliver 40 Hour Career Exploration Program
 - Initial online from existing program locations
 - Place candidates
 - Begin development of internal & external partnerships
 - **Recommend 3 project partners within 50 mile radius**
- Establish Skillbridge 12-week Training Program & Project Work Agreements
 - Training agreement: Skillbridge MOU
 - Project work agreements: MOU's, Cooperative/Task Agreements, etc.
 1. DoD installation (part of Skillbridge MOU or other)
 2. DoI or other neighboring publicly owned sites
 3. Private/non-profit sites
 - Cooperation: key to success:
 - Regional/local industry partners – in-kind contributions, technology, mentoring, employ graduates
 - Installation leadership and TAP office committed to unique training + project program benefits
 - Engage DPW and military construction units for on-installation projects
- Establish 3 Year Project List Among 3 Project Partners
 - Ensures sustainable program over time and helps weather changing circumstances
 - Allows scheduling flexibility, cost reduction, varied training experiences, etc. (next slide)
 - Builds good will and trust with external communities and industry
- Deliver Full Program & Project Work
 - Engage, complete, & document projects
 - As appropriate among all 3 project partners, needs:
 - Full time/qualified recruitment, training, project management, & career placement staff
 - Full time partnership management staff
 - Classroom, lab, storage space
 - Joint PR & marketing

Practical Benefits of Combining Skillbridge Training & Project Work

Regulatory Compliance

- Cooperate to develop approach for
 - National Historic Preservation Act/Section 106
 - National Environmental Policy Act
 - Life safety codes

Safety

- Meets/exceeds industry standard
- Highlights safety for users and visitors

Scheduling

- On-time project completion & training achieved through overlapping efficiencies
- Flexibility to respond to emergency project needs

Cost Reduction

- Installation expertise applied strategically, augmented
- Supports local decision-making
- Design/build efficiencies (majority of questions to ask are not known until work begins)
- Trusted outcomes – open partnership to discuss emerging issues as part of training program
- Reduced mobilization/demobilization

Quality Assurance

- Professional staff
- Better than industry standard expert/entry level crew ratio

Skillbridge Considerations



Service Member

- Application process & approval
- Out-processing while training
- Committing to job & location

Installation

- Educating chain of command on benefits of program
- Time remaining on duty after training
- Opportunity for installation to put skills to use
- Succession planning for program continuity

Project Owners

- Liability questions
- Responsibilities as beneficiaries of completed projects

Employers

- Remote interviewing
- Candidate availability to start jobs

Program Leadership

- All of the above





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