

PROJECT ANNOUNCEMENT

Post Date: 09.01.2020

Submittal Deadline: 09.15.2020

Project Title: Ducktown Basin Museum Building and Site Restoration

Facility Name: Ducktown Basin Museum State Historic Site

City: Ducktown County: Polk

SBC Project No.:

Agency: TENNESSEE HISTORICAL COMMISSION

Maximum Allowable Construction Cost (MACC): \$4,647,500.00

Development Manager: Freeman, Doug

Agency Representative: Brown, Dan

Project Description:

Restoration and repairs to buildings, infrastructure, site features, and all required related work.

Additional information about the project can be found in the project's program document included as a part of this announcement.

Special Design or Submission Requirements:

Responding firms should have a historic preservation architect on staff or an individual that demonstrates substantial experience with historic preservation/restoration design.

Note: All information previously made available to consultants, by the State, and all information supplied by consultants to the State, relating to the subject project, will be made available to any potential respondents. Potential respondents desiring to review these documents can submit a request to STREAMDesigner.Interest@TN.gov.

Anticipated SBC Approval Date: 10.08.2020

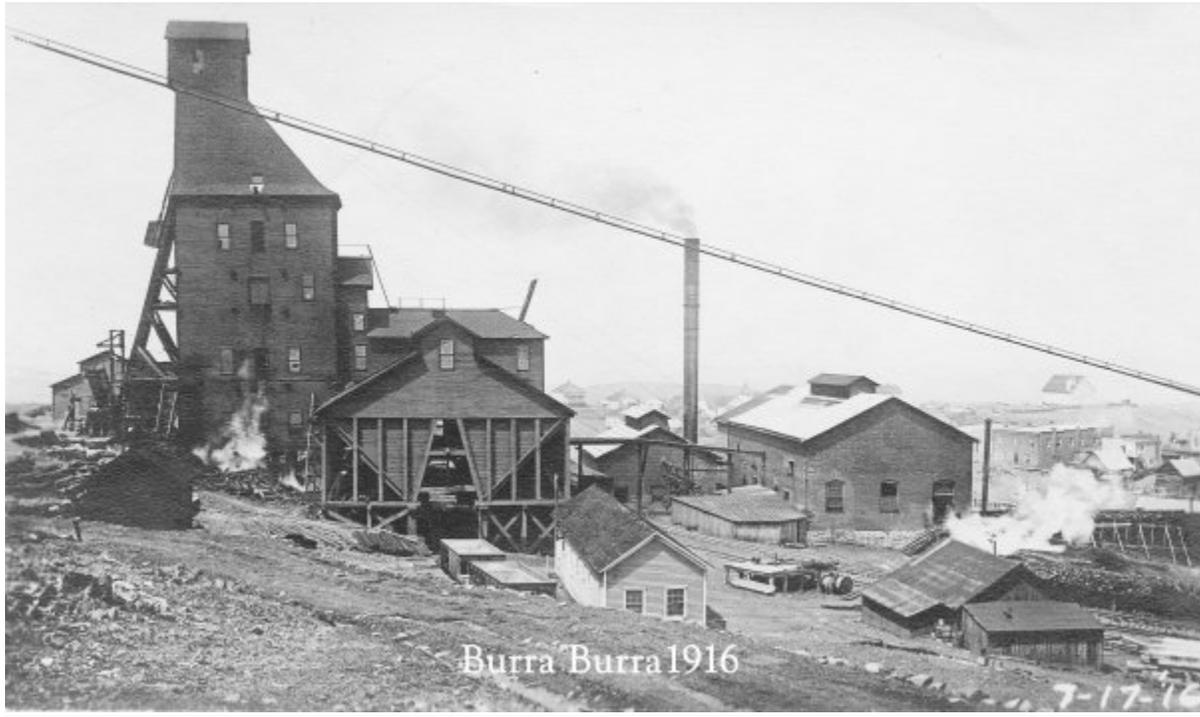
Anticipated ESC Designer Selection Date: 10.19.2020

Anticipated Designer NTP Date: 01.25.2021

Anticipated Project Bid Date: 10.28.2021

**DUCKTOWN BASIN MUSEUM & BURRA BURRA MINE PROGRAMMING STUDY
DUCKTOWN BASIN MUSEUM & BURRA BURRA MINE STATE HISTORIC SITE
DUCKTOWN, POLK COUNTY, TENNESSEE
SBC #160/000-01-2014**

July 22, 2019



Burra Burra Mine - 1916

BRIEF HISTORY¹

“In 1843, in a remote corner of east Tennessee’s newly formed Ocoee District, a disappointed prospector on a creek called Tater discovered that the shining red crystals he had found were not gold, but merely copper. The rest, as they say, is history.

Between 1850 and 1987, with only two brief breaks, the copper mines and the associated sulfuric acid industry of the Ducktown Basin provided employment for tens of thousands of people. But, by the mid-1950’s, things had begun to change. Faced by increasing global competition, the once-mighty Burra Burra Mine at Ducktown ceased operations in 1958. Others followed. Within two decades, the last of the mines had shut down. Except for the sulfuric acid

¹ History from the Internet Website for Ducktown Basin Museum/Burra Burra Mine State Historic Site: <https://ducktownbasinmuseum.com/history>

plant at Copperhill, which continued to operate until 2000 with raw materials acquired elsewhere, history was the only thing that was left.

At that point, a group of local citizens stepped in, determined to preserve the mining heritage of their beloved community, even if they couldn't preserve the mines. In 1978, with a zero budget and a few donated items, they opened the Ducktown Basin Museum in a tiny storefront on Main Street in Ducktown. Four years later, in 1982, the museum was moved a few blocks away, to the site of the former Burra Burra Mine overlooking the town.

With the closing of the mines, the museum was able to acquire a large number of donated artifacts from the local mining operations. Over the years, it has also become the repository for an increasing inventory of mining-company records, as well as a large collection of historic photographs and documents.

That creek, by the way, is now called "North Potato." And so, time marches on."

The site, now owned by the Tennessee Historical Commission, has been listed on the National Register of Historic Places since 1983. The 16 structures remaining on the site include virtually all of the original mine buildings and outbuildings except for the headframe, which was demolished after the closing of the mine in 1958. The mine office houses the museum's collection and is the only building permanently open to visitors, but tours of the grounds are available by appointment.

GOALS

Various elements of the site are currently being restored under a capital maintenance project. Unfortunately, due to budgetary reasons, this project wasn't able to repair or restore all the items needing attention.

The goal of this project is to prepare a programming document with budget for the State of Tennessee Real Estate Asset Management (STREAM) to verify the existing conditions and confirm the Statement of Need: which includes developing the total scope and budget to complete the repair and/or restore all the remaining work needed.

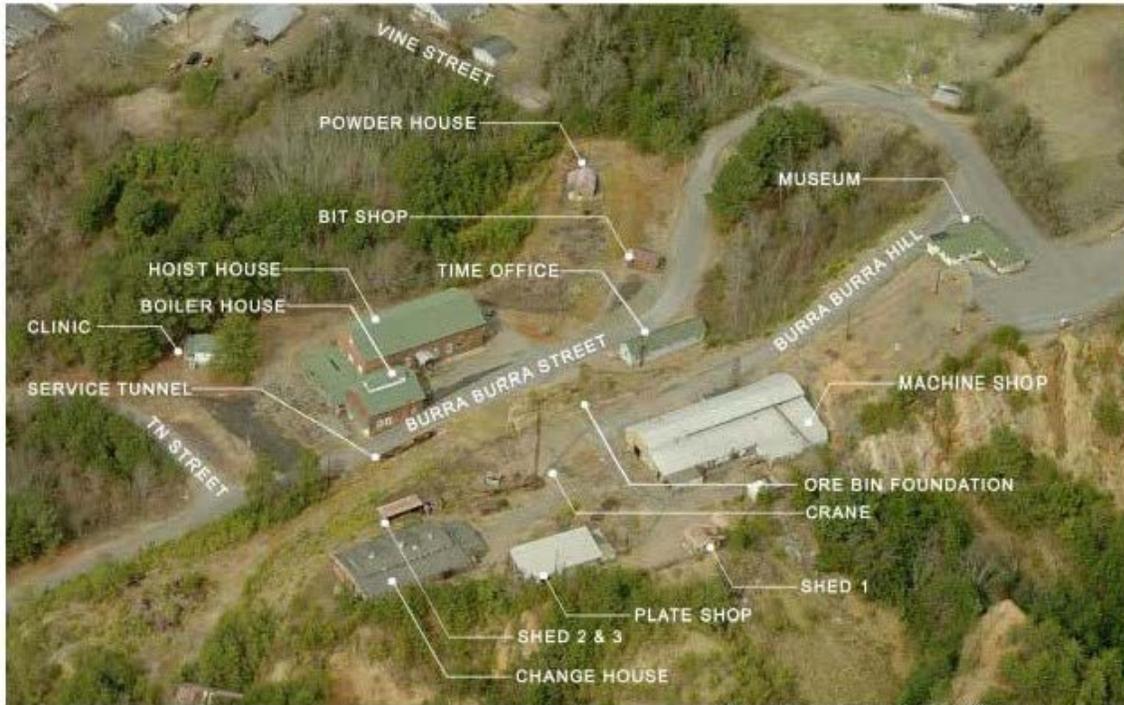
TABLE OF CONTENTS

NAME	PAGE
Introduction	
a. Brief History	1
b. Goals	2
Phase 1 – Verification of Owner-Provided Information Report	
a. Verify Existing Conditions and Develop an Observation Summary	
1. Museum/Former Mine Office	5
2. Hoist House	6
3. Boiler House	9
4. Time Office/Core Office	11
5. Machine Shop	11
6. Change House	16
7. Crane	23
8. Crane Operators Booth	24
9. Crane Winch House	25
10. Plate Shop	26
11. Clinic	28
12. Powder House	29
13. Sawdust Vacuum Shed	30
14. Steam Cleaner Shed	31
15. Parts Storage Sheds	32
16. Drill Repair Shed	35
17. Parts and Equipment Shed	37
18. Required Related Work	
a) Overlook Fence	38
b) Overlook Platform	39
c) Service Tunnel	40
d) Paved Surfaces	41
e) Walkway to Mine Office	42
f) Ore Bin Foundation	42
g) Fire Hose #1	44
h) Fire Hose #2	45
i) Bit House (Tank)	46
j) Guard Booth	46
k) Exterior Operational Equipment	47
l) Mine Shaft	49
Phase 2 – Recommendations Supporting a Solution	
a. Conceptual Scope of Work	51
b. Graphic Documentation	52

c. Preliminary Recommendations for Sequencing and Approach	52
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Phase 3- Program Document

a. Executive Summary	
1. Site Information/Analysis	52
2. Energy Requirements	53
3. Code Requirements	53
4. Licensing/Certification/Accreditation Requirements	53
5. Potential Additional Future Needs	53
b. Detailed Program Information	
1. Space Description, Size, Criteria, and Relationships	53
2. Equipment Description, Size, and Criteria	53
3. Conceptual Graphic Documentation	53
c. Anticipated Project Design and Construction Duration	54
d. Opinion of Probable Cost	
1. Total Project Cost Summary	55
2. Museum/Former Mine Office	56
3. Hoist House	58
4. Boiler House	61
5. Time Office/Core Office	64
6. Machine Shop	65
7. Change House	68
8. Crane	71
9. Crane Operators Booth	72
10. Crane Winch House	74
11. Plate Shop	75
12. Clinic	77
13. Powder House	79
14. Sawdust Vacuum Shed	80
15. Steam Cleaner Shed	81
16. Parts Storage Sheds	82
17. Drill Repair Shed	84
18. Parts and Equipment Shed	85
19. Overlook Fence	86
20. Overlook Platform	87
21. Service Tunnel	89
22. Paved Surfaces	90
23. Walkway to Mine Office	91
24. Ore Bin Foundation	92
25. Fire Hose #1	94
26. Fire Hose #2	95
27. Bit House (Tank)	96
28. Guard Booth	97
29. Exterior Operational Equipment	99
30. Mine Shaft	100



Keyed Site Map²

PHASE 1 – VERIFICATION OF OWNER-PROVIDED INFORMATION REPORT

a. Verify Existing Conditions and Develop an Observation Summary:

Centric Architecture met with the following participants on Thursday, May 16, 2019 to verify the existing conditions and the review the programming needs for the Burra Burra Mine State Historic Site:

Dan Brown	Director of State Historic Sites for the Tennessee Historical Commission
Ken Rush	Ducktown Basin Museum Site Director

1. **MUSEUM/FORMER MINE OFFICE**

a) **Observation Summary:**

The 2,000 square foot Museum/Mine Office building is a T-shaped, one-story structure with partial basement and originally served the site as the Mine Office. Two or more additions have been constructed to see the final form we see today. The building has a new green roof and the current project's scope of work includes removing the metal siding and repairing/replacing the windows

² Keyed Site Map from Hefferlin and Kronenberg Physical Needs Assessment - 2017



Museum/Mine Office



Museum/Mine Office

The following Code violations include, but are not limited to:

- 1) The unisex toilet is not handicap accessible.

b) Scope Findings:

The following work focusing on the interior is proposed to meet the site’s needs:

Upstairs: the existing exhibits are dated and need to be replaced which will likely require reworking partitions, adding new ones to support the new arrangement, new lights and mechanical modifications. Other work includes painting over the existing stained interior paneling, replacing sheet vinyl flooring, painting ceilings and general toilet modifications.

Downstairs: the archival storage needs to have the walls painted and new overhead lights.

2. HOIST HOUSE

a) Observation Summary:

The 7,385 square foot Hoist House is a single-story, high roof structure of originally one room with a separate original personnel entry on the east gable end. Large doors are located on the south wall near the connection to the adjacent Boiler House and were presumably used for equipment installation and removal. Based on the physical evidence, a brick addition was constructed at some point on the west end. Later a wood framed shed with wood siding was added beyond the addition.

The interior is utilized seasonally when temperatures allow for events and meetings. As there isn’t an HVAC system, it cannot be used year-round.



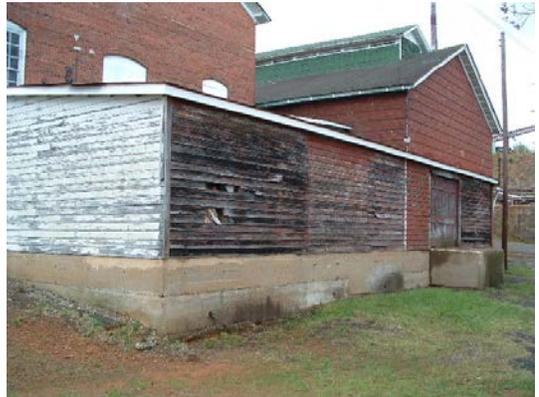
Hoist House



Hoist House – Boiler House to Left



Hoist House Showing Joint with Addition and Adjoining Transmission Tower



Hoist House - Wood Shed Addition



Hoist House – Missing Roof Ventilator

The following Code violations include, but are not limited to (the Pavilion is an Assembly A2 occupancy per the 2012 International Building Code):

- 1) The structure does not have sprinklers and exceeds an occupant load of 100 (IBC, Item 903.2.1.2.2). It is also likely to serve food and/or alcohol which will require the sprinklers.
- 2) It is our understanding that the current on-going work will install a new handicap ramp.
- 3) There are no handicap accessible toilets.

b) **Scope Findings:**

All historic sites need additional earned income for operational costs to run these sites as they're typically operated by non-profit associations comprised mainly of inexperienced history enthusiasts.

As such, having a venue to hold events or rent out to outsiders for such activities as parties, lectures, weddings, receptions, etc. to raise money are essential. The open large Hoist House is that space for Burra Burra, but the lack of amenities including HVAC, electrical convenience outlets and accessible toilets prevents the facility from being utilized to its maximum potential.

The following work is proposed to meet the site's needs:

Exterior: rebuild missing ventilator monitor on top of the existing roof.

Interior: install new toilets to serve 250 guests in the west addition along with a new janitor's closet, new glass storefront partitions at the arched openings in the wall between the original building and addition, extending the mezzanine storage wall up to deck above in the addition for a new mechanical room mezzanine, new handrails around interior stair to the basement, new HVAC, repointing the walls 100-percent, installing a new AV system and motorized screen and motorized window shades to darken the room for presentations.

3. **BOILER HOUSE**

a) **Observation Summary:**

Currently, the 2,395 square foot Boiler House is a two-story brick load-bearing structure with gable roof with ventilating monitor and green asphalt shingles, originally, it was a large volume, single story structure containing the boilers for the site to produce power for plant operations. It was originally separated from the Hoist House and a tall steel flue rose in the gap between the two buildings.

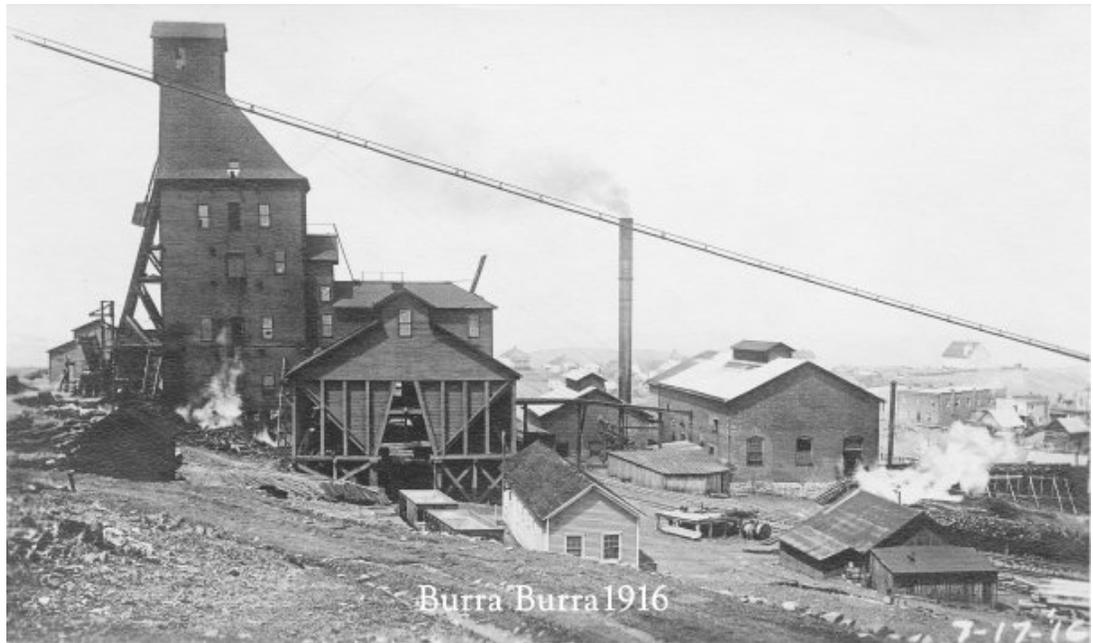
Today, the flue is gone and the buildings are now connected by a wood framed infill addition with asphalt shingle roof. A wood floor was inserted at some point and several of the windows have been removed and the openings bricked in. The remaining windows are not original and the openings have been made smaller.

The building contains a kitchen, public toilets and former large storage room on the upper level. The area below is used for storage and can be accessed from an internal stair.

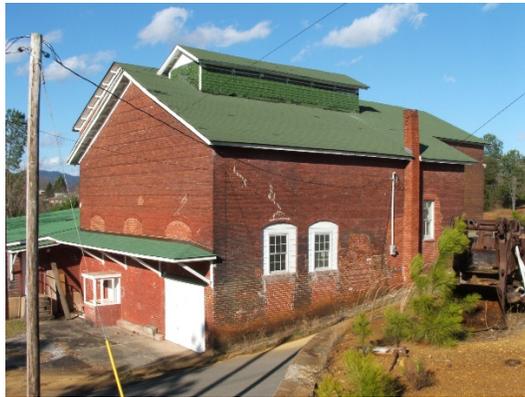
On the west side of the building, an exterior braced wood framed shed roof protects access into the lower level.

The following Code violations include, but are not limited to:

- 1) The existing toilets do not meet current Code requirements for handicap access.



Boiler House – Historic Image Showing the Boiler House & Its Original Smoke Stack



Boiler House – Southwest Exterior View



Boiler House – Northeast Exterior View

b) Scope Findings:

The structure is slated to receive new windows in the 2019 project currently underway, but no interior work is being performed.

The needed work includes the following items:

Interior: rework the existing kitchen as catering kitchen with new equipment: chest freezer, refrigerator, small upright cooler and separate warming unit, 3-compartment sink, hand sink, dishwasher; rework the existing toilets as handicap accessible facilities and upgrade the finishes and toilet compartments, patch the wood flooring in the large storage area and add lights; extend the wall at the west end of the entry area to the deck, abate the lead-based paint, install new HVAC for this floor and paint throughout the main level

4. TIME OFFICE/CORE OFFICE

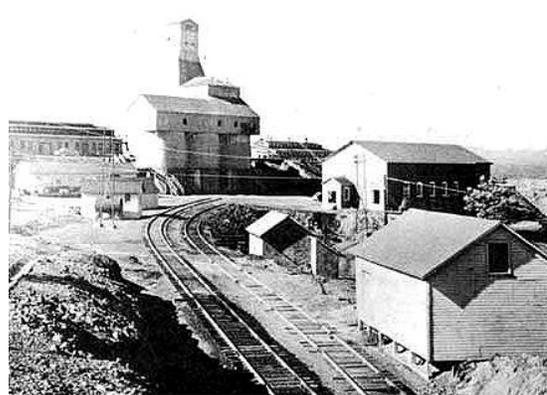
a) **Observation Summary:**

The 1,260 square foot Time Office/Core Office is a one-story wood framed structure with gable roof covered with an asphalt shingle roof and painted wood siding.

On-going current work focuses on the exterior replacing deteriorated wood siding and replacing the exterior porch decking and railing.



Time Office/Core Office



Time Office/Core Office Historic Photo (Lower Right)

b) **Scope Findings:**

The needed work includes the following interior items:

Re-charge the stucco around heating stove connection to the wall and minor wood repair around heating stove connection at the stucco, replacing a small portion of deteriorated wood flooring (approximately 18" x 4'-0") at an exterior pocket door.

5. MACHINE SHOP

a) **Observation Summary:**

The 9,980 square foot Machine Shop is a one-story load bearing masonry structure with a slab on grade with wood truss roof system and continuous roof monitor. The exterior brick I fire brick. Various additions to the rear of the building are built of corrugated metal panels over light wood framing.

Some of the monitor windows are still present though most have been sided over or removed.

The bulk of the building envelope is in reasonable condition though the existing windows are deteriorated and the rear shed additions are severely deteriorated. The

existing masonry is in fair condition but has several cracks and needs repointing in numerous places.

A lintel is failing at the west door on the north façade as a large section was removed. Also, at this location, the existing site topography directs water into the building as the clay tile drain under the payment no longer works.



Machine Shop



Machine Shop



Machine Shop – Corrugated Metal Panel Additions



Machine Shop – West Door



Machine Shop – Monitor Windows



Machine Shop – Cut Door Lintel



Machine Shop – Masonry Cracks



Machine Shop – Masonry Cracks



Machine Shop Historic Photo – Note Monitor Windows and Missing Monitor Roof Ventilator



Machine Shop – Rear Additions



Machine Shop – Rear Additions



Machine Shop – Interior



Machine Shop - Interior



Machine Shop – Carpenter Storage



Machine Shop – Dropped Ceiling



Machine Shop – Carpenter Storage
Deteriorated Flooring



Machine Shop – Rock Drill Repair Area

b) Scope Findings:

The needed work includes the following items:

Exterior: rebuild the missing/repair the deteriorated monitor windows, rebuild the missing ventilator monitor on top of the remaining light monitor, repoint the deteriorated or missing mortar joints and cracks in the masonry, replace and paint all deteriorated metal siding/paint, replace the missing wood windows and frames, reglaze the windows as needed. install a new grated trench drain at northeast pair doors and connect to the ditch/ drain by digging up the road and install a new storm

drain (pipe) ending at the cliff, repair the steel channel lintel at the north pair of doors, replace the door to the foreman's office with flush hollow metal door and repair its door frame

Interior: remove the later dropped ceilings and their framing throughout, abate any lead-based paint throughout.

Forman's Office: replace the window glass and the glass in the door (consider replacing the door with a flush hollow metal door for security purposes), and repair door frame.

Carpenter shop: replace the deteriorated wood floor (approximately 4' x 8'), remove the plywood at the windows and remove any paint on the glass.

Carpenter storage: remove the plywood ceiling and replace the deteriorated wood flooring and its framing.

Rock drill repair: remove later ceiling and framing

6. **CHANGE HOUSE**

a) **Observation Summary:**

The 5,025 square foot Change House is a one-story load bearing masonry structure with a slab on grade over crawlspace with wood timber columns supporting a wood truss roof system. It has a near- continuous roof monitor. Historically it was a place for workers to change clothes and shower and contained lockers, showers, and toilets for mine workers as well as foreman's offices and other storage.

Windows are broken and/or deteriorated at several locations around the building.

The masonry wall system has structural cracks at several places around the perimeter; however, historic photos show that the most notable of these cracks are at least half a century old. One wall between the office and acetylene storage room is severely deteriorated

The paint is peeling throughout the building. Based on the age of the building, the paint likely contains lead. Also, the existing plywood and bead board ceilings have fallen in several places.

Due to the condition of the deteriorated ceilings, suspected lead-based paint chips and miscellaneous debris, the building is not opened to the public for life safety reasons.



Change House



Change House



Change House



Change House – Peeling Interior Paint



Change House - Peeling Interior Paint



Change House – Falling Ceilings



Change House – Falling Ceilings



Change House – Monitor Windows



Change House – Lower Windows



Change House – Damaged Ventilator



Change House – Repair Shingles at Monitor Gable Ends



Change House – Deteriorated Door and Frame at Acetylene Room



Change House – Rebuild Wall to Right of Corner Flue



Change House – Replace Deteriorated Entry Doors – Match Left Door



Change House – Repoint Deteriorated Mortar Joints



Change House – Repoint Cracks in Brick



Change House – Repoint Cracks in Brick



Change House – Repoint Cracks in Brick



Change House – Repoint Cracks in Brick



Change House – Repoint Cracks in Brick



Change House – Repoint Cracks in Concrete Foundation



Change House – Repoint Cracks in Concrete Foundation and Replace Door



Change House – Repoint Cracks in Concrete Foundation



Change House – Boiler



Change House – Sink



Change House – Toilets



Change House - Lockers

b) **Scope Findings:**

The following proposed Scope of Work is identified:

Exterior: replace the missing crawl space door at the west elevation, scrape the paint on the ramp and railing system, and repair the cracks in the concrete foundation at the west elevation.

Replace approximately thirty (30) deteriorated or missing monitor windows (in lieu of new lighting), repoint the masonry as needed where the mortar is deteriorated or missing, rebuild/patch the acetylene metal door, provide a new hinge at the acetylene door, and rebuild the brick wall between the office and acetylene storage room. Replace the existing front doors with new ones to match original construction drawing. Remove hardware cloth over lower windows

Repair the asphalt shingles at the gable ends of the monitor, repair the painted metal ventilator, install a fixed metal panel over the view window in the door in the west elevation (due to a security problem). Repair the damaged roof ventilator on the monitor.

Interior: plywood over the interior window into the small addition/paint, remove the later ceilings and their framing (remove and reinstall early lighting, salvage ceiling hung baskets, chains and pulleys for reinstallation), remove the lead-based paint throughout.

7. **CRANE**³

a) **Observation Summary:**

“The crane structure consists of an approximately 80’ high mast with several guy wires and a low boom near ground level. Due to the topography of the site, the boom could operate without raising above the level of the guy wires.

According to site personnel, this crane was in use on the gulf coast for many years before being installed at this site in the early 1900’s.

Cranes of this type require periodic maintenance including painting of the structure and greasing of the guy wires in order to prevent rust. No such maintenance appears to have taken place since the mine closed down.

No attempt was made at the time of this report to determine the structural integrity of the crane. However, it is clear the only thing holding the mast upright is the guy wires, and that some buckling is present at the base of the mast. If one or more guy wires should come loose, or if the base should experience compressive failure, the structure would likely fall suddenly and unpredictably.”

³ Hefferlin and Kronenberg Physical Needs Assessment - 2017



Crane Mast



Crane Base

b) **Scope Findings:**

The following proposed Scope of Work is included:

Remove all rust in place, replace the rigging and guy wires, replace all deteriorated metal components and paint the crane entirely.

8. **CRANE OPERATOR'S BOOTH**

a) **Observation Summary:**

This small 325 square foot building is a one-story steel framed structure with concrete slab and wood nailers secured to the steel frame to attach the corrugated metal siding to. Six-light wood windows were originally present on three sides with the entry to the booth open. A small section of the building houses a small winch that originally operated/pivoted the crane.

Today one sash remains and the building is severely deteriorated.



Crane Operators Booth



Crane Operator's Booth



Crane Operator's Booth –
Deteriorated Siding



Crane Operator's Booth - Remaining
Wood Window

b) **Scope Findings:**

The following proposed Scope of Work is included:

Replace all deteriorated wood framing, replace approximately fifty-percent of the deteriorated corrugated metal siding, replace the deteriorated/missing wood windows and paint exterior

9. **CRANE WINCH HOUSE**

a) **Observation Summary:**

The 50 square foot Crane Winch House is a small steel frame structure resting on a concrete slab that housed the motorized winch to lift the cables on the crane arm. Wood framing members rest on top of the steel roof framing to attach the corrugated metal siding. Pierced steel plates are attached on the end of the structure facing the crane. The structure and the equipment inside are severely deteriorated.



Crane Winch House



Crane Winch House



Crane Winch House



Crane Winch House

b) Scope Findings:

The following proposed Scope of Work is included:

Replace the deteriorated wood framing and corrugated metal roofing and siding, refurbish the pierced metal plates, and paint the exterior.

10. PLATE SHOP

a) Observation Summary:

This 2,300 square foot, one-story structure with shed roof is covered on its roof and sides with painted corrugated metal siding. Recently restored, there are several areas where select parts were not painted, the wood doors and windows are deteriorated, or broken out. A support for a rear porch roof is missing and should be replaced.



Plate Shop



Plate Shop – Note Broken Out Windows



Plate Shop – Rotting Windows



Plate Shop – Missing Porch Roof Support



Plate Shop – Unpainted Elements



Plate Shop – Rotting Wood Doors and Frame

b) Scope Findings:

The following proposed Scope of Work is included:

Exterior: replace two broken window sash, rebuild rotting window sash, remove the rust and paint the unpainted braces and small equipment shed, etc. at the west elevation, replace the deteriorated pair of wood doors and frame on the west elevation with new painted hollow metal doors and frame, install a new pipe support for rear/south porch where missing, paint the concrete block addition to match the metal siding, and reglaze the windows in the concrete block addition.

Interior: provide new electrical convenience outlets and lights.

11. CLINIC

a) Observation Summary:

This 1,100 square foot, one-story wood framed structure with wood siding resting on a steep slope is utilized by the community's Boy Scouts for their meetings. Access into the building does not meet ADA.

The existing asphalt shingle roof and guttering system are nearing their life expectancy.

The following Code violations include, but are not limited to:

- 1) The rear door entrance does not meet ADA.



Clinic – Rear Door Entrance



Clinic – Rear Door Entrance

b) Scope Findings:

The following proposed Scope of Work is included:

Exterior: install a new “ramp” at the rear door (note: this door is inhibited by the supports for the overhang which may not be original. Alternative measures may be needed to meet the requirements of ADA), install new asphalt roof shingles, gutters and downspouts, install a new sidewalk from the adjacent parking lot to the rear door. Replace the asphalt shingle roof. Install new gutters and downspouts.

12. POWDER HOUSE

a) Observation Summary:

The 600 square foot Powder House is a one-story brick structure with metal roofing. The wooden steps and landing below outside the entry door are deteriorated. A former brick window over the door has been filled in with brick. Minor repointing is needed on select mortar joints. The nearby oil tank is rusted.



Powder House



Powder House – Historic Image with Window



Powder House – Deteriorated Stairs and Landing



Powder House – Deteriorated Masonry

b) Scope Findings:

The following proposed Scope of Work is included:

Exterior: replace the wooded stairs and landing, repoint the open and deteriorated mortar joints as needed, reopen the former window opening and install a new window frame and sash, and remove the rust on the adjacent oil tank and repaint.

13. SAWDUST VACUUM SHED

a) Observation Summary:

The 80 square foot Sawdust Shed is a simple one-story concrete block shed with a painted hollow metal door, window and associated frames. The building is capped

with a shed metal roof. A large round steel duct extends out of its right side and goes over head into the Machine Shop.



Sawdust Vacuum Shed



Sawdust Vacuum Shed

b) Scope Findings:

The following proposed Scope of Work is included:

Scrape and paint the metal door, window, associated frames, vacuum duct and lintel at the concrete block building's openings.

14. STEAM CLEANER SHED

a) Observation Summary:

The 415 square foot Steam Cleaner Shed is a one-story concrete block structure with shed corrugated metal roof supported on small wide flange steel beams that extend out its left side to create an open covered shed area. The roof has replacement corrugated metal panels over the concrete block section, but the open covered porch roof is deteriorated. There is a large hoist beam in the covered porch area. There are two hollow metal doors on the front with frames and two steel industrial pivot-type windows on the rear that utilize brick rowlock sills.

There are cracks within the masonry units.



Steam Cleaner Shed



Steam Cleaner Shed

b) Scope Findings:

The following proposed Scope of Work is included:

Repoint the concrete block as needed, remove the rust and repaint the doors and frames as well as the windows, scrape the shed porch framing and repaint, and replace the old corrugated roofing to match newer roofing.

15. PARTS STORAGE SHEDS

a) Observation Summary:

These sheds are actually two small separate one-story sheds near the Change House.

Enclosed Parts Storage Shed: the smaller (165 square feet) of the two sheds was used for storage. It is framed with wood and covered with corrugate metal siding and on its shed roof. The structure rests on a concrete slab. There are no interior finishes., however the interior contains fixed wood shelving .

The wood structure is highly deteriorated and parts of the siding have either blown away or rusted off.

Open Parts Storage Shed: the larger of the two sheds (465 square feet) is steel framed three-sided building with open front and shed roof. A high concrete slab raises the building up above the finish grade. It is covered with corrugated metal panels on those three sides on its roof.

Although there is some nostalgic quality to its advanced state of decay, both structures are in danger of blowing away.



Open Parts Storage Shed



Enclosed Parts Storage Shed



Open Parts Storage Shed – Steel Framing



Open Parts Storage Shed – Erosion at Corner of Building



Enclosed Parts Storage Shed –
Deteriorated Framing



Enclosed Parts Storage Shed –
Deteriorated Framing



Enclosed Parts Storage Shed – Wood
Shelving and Deteriorated Framing



Enclosed Parts Storage Shed



Enclosed Parts Storage Shed



Enclosed Parts Storage Shed

b) **Scope Findings:**

Little salvageable material remains in the smaller Enclosed Parts Storage Shed and needs to be rebuilt.

The Scope of Work includes:

- 1) Open Parts Storage Shed: replace corrugated metal siding and roofing where deteriorated. Underpin the foundation at the corner where erosion has undercut the building. Remove the rust, scrape flaking paint and repaint.
- 2) Enclosed Parts Storage Shed: reframe the smaller wood-framed structure using pressure treated lumber. Match existing adjacent framing system in spacing and installation. Rebuild the wood shelving as needed. Replace portions of the metal siding where deteriorated or missing. Provide a new door with corrugated metal siding. Prep and paint the exterior to match historic colors.

16. **DRILL REPAIR SHED**

a) **Observation Summary:**

This small(440 square foot) one-story, gable roof shed is constructed of corrugated metal siding on steel framing on top of a concrete slab floor. The concrete slab is cracked and the door removed.

There are no interior finishes.

A steel wide flange beam extends out the doorway where a bollard used to be located in the ground. The bollard is no longer in place, but is located nearby on the ground.

The structure is somewhat deteriorated and parts of the siding are rusted.



Drill Repair Shed



Drill Repair Shed



Drill Repair Shed – Broken Slab



Drill Repair Shed – Steel Framing



Drill Repair Shed – Reinstall Bollard

b) Scope Findings:

The Scope of Work includes:

Reinstall the bollard outside the door, remove the paint on the exterior and repaint, fill the cracks in concrete slab, replace all deteriorated metal siding where rusted through or pin holes with new siding to match, reroof the open shed porch and repaint the exterior.

17. PARTS AND EQUIPMENT SHED

a) Observation Summary:

This large (1,500 square foot), high height, gable roofed structure is located somewhat away from the other buildings but was originally used to store parts and equipment (previously, it was located on top of the ore bins). It is framed with steel members resting on poured concrete footings and the building and roof covered with corrugated metal siding panels.

The floor is dirt that's interrupted with raised concrete sections/curbs to raise any stored materials off the ground. The front of the building is not enclosed.

The connection of the steel columns to the concrete footers are severely deteriorated. Several panels of the metal siding are missing or deteriorated.



Parts and Equipment Shed – Deteriorated
Deteriorated
Ends of the Metal Siding



Parts and Equipment Shed –
Steel Column Bases



Parts and Equipment Shed – Concrete Curbs



Parts and Equipment Shed – Missing and Deteriorated Metal Siding

b) Scope Findings:

The following proposed Scope of Work is included:

Remove any tree or tree limb with ten-feet of the structure, pour concrete pedestals around the connection of the steel columns and footers where rusted, replace the deteriorated and missing corrugated metal panels. Paint the exterior.

18. REQUIRED RELATED WORK

a) OVERLOOK FENCE

1) Observation Summary:

There are approximately three fence systems built over time to protect workers and visitors from falling into the mine collapse. Originally, steel pipe bollards with steel cable (possibly from repurposed guy wire cables from the crane) were erected, later a chain link fence and most recently a taller chain link fence with barbed wire at the top.



Original Overlook Fence



Example of Original Cabling



Second Overlook Fence



Second Overlook Fence at Left and Current Fence to the Right

2) **Scope Findings:**

The following proposed Scope of Work is included:

Remove the middle chain link fence and fill the post holes with topsoil. Remove the latest fence and replace with a pre-painted aluminum security fence, 7-foot tall.

b) **OVERLOOK PLATFORM**

1) **Observation Summary:**

The existing Observation Platform (approximately 50 square feet) was originally used to raise and lower miners into the mine shaft. After the mine was closed and the shaft plugged, the platform was moved to the Mine Office parking lot overlooking the mine collapse below. The structure is not handicap accessible.

It is the understanding of the author that the ground this platform rests on (including a large portion of the parking lot) is on fill.

As the trees grow up the sides of the collapse, the view down into the collapse and the resulting pond that has partially filled the hole has diminished and a higher, larger viewing platform is needed.



Viewing Platform

2) **Scope Findings:**

The following proposed Scope of Work is included:

The existing viewing platform should be moved to the area of the mine shaft and a new larger, accessible platform constructed.

A geotechnical soil survey should be performed to ensure that the placement of the new viewing platform is on stable ground.

Move the current viewing platform to the former shaft opening at the new concrete pad cover.

Construct a new platform (300 square feet) with handicap ramp in a location determined by the Tennessee Historical Commission.

c) **SERVICE TUNNEL**

1) **Observation Summary:**

The service tunnel historically allowed workers to pass under a site train track. The structure is made of cast-in-place concrete. The adjacent stone work needs

repair and the lintel is cracked, however, the structure remains in serviceable condition.



Service Tunnel and Rock Retaining Wall

1) **Scope Findings:**

The following proposed Scope of Work is included:

Repairs to the Service Tunnel should include repointing the entire stone wall and rebuilding the adjacent stone wall left of the tunnel where deteriorated and epoxy grouting the crack in the header so that water doesn't get in there and freeze.

d) **PAVED SURFACES**

1) **Observation Summary:**

The historic paved surfaces were made using a crushed slag mixture and are in deteriorated condition. The road up to the Museum/Mine Office is asphalt.

2) **Scope Findings:**

The following proposed Scope of Work is included:

The Association operating the State Historic Site plans to repave the historic paved surfaces using a similar crushed slag mixture. No other pavement work is needed.

Repair the roadway at the Machine Shop where trenched for new drain. See Machine Shop pricing.

e) **WALKWAY NEAR MINE OFFICE**

1) **Observation Summary:**

The walkway from the Museum/Mine Office is comprised of a slag mixture paved surface lined with mortared stone curb. The stone curb is deteriorated and the walk surface is covered with grass.



Stone-Lined Walkway



Walkway to Left of Telephone Pole

2) **Scope Findings:**

The following proposed Scope of Work is included:

The grass and topsoil on top of the paved surface should be removed for the Association to repave it with a slag mixture. The loose stone should be reset using and supplemented with additional stone as needed.

f) **ORE BIN FOUNDATION**

1) **Observation Summary:**

The ore bins (675 square feet) are no longer present on the site; however, their foundations are directly adjacent to Burra Burra Street.

The bin foundations are built of poured concrete and they once contained several small rooms made of concrete masonry blocks that are roofed with a concrete

slab. Their condition is deteriorated not safe for occupancy. The associated stone and concrete wall is deteriorated.



Ore Bin Foundation – From Below



Ore Bin Foundation – Remove Roof Slab



Ore Bin Foundations – Shown in the Historic Photo Under the Tall Building



Ore Bin Foundation – Opening in Block Wall



Ore Bin Foundations – Repair Retaining Wall



Ore Bin Foundation – Repair Retaining Wall

2) **Scope Findings:**

The following Scope of Work is needed:

Remove the roof slab over the CMU rooms. Seal the top of the bins with new concrete slabs to prevent water getting into the foundations.

At the deteriorated open areas of the foundation's concrete block wall, reinstall a concrete block masonry infill wall with secured louvered metal access panels to close off the area. Seal and paint.

Repair stone/concrete retaining wall.

g) **FIRE HOSE #1**

1) **Observation Summary:**

Fire Hose #1 is a 50 square foot, one-story wooden structure with board and batten siding and shed roof resting on a raised poured concrete foundation. The exterior paint and the rolled asphalt roofing are severely deteriorated. There is a large crack in the foundation.



Fire Hose #1

2) **Scope Findings:**

The Fire Hose #1 structure should receive a new rolled asphalt roof and be painted. The foundation crack should be filled with grout.

h) **FIRE HOSE #2**

1) **Observation Summary:**

Fire House #2 is a 65 square foot, one-story wooden structure with board and batten siding and shed roof. The roof is covered with rolled asphalt.



Fire Hose #2

2) **Scope Findings:**

The following Scope of Work is needed:

Fire House #2 needs to have any deteriorated wood siding, decking or framing replaced as well as the roofing. All exposed parts of the wood materials should be painted.

i) **BIT HOUSE (TANK)**

1) **Observation Summary:**

The Bit House is currently being reconstructed. However, the adjacent metal drum on concrete foundations needs to be painted and that isn't part of that work.



Metal Drum at Bit House

2) **Scope Findings:**

The following Scope of Work is needed:

Paint the metal drum.

j) **GUARD BOOTH**

1) **Observation Summary:**

A small one-story guard booth (approximately 65 square feet) was originally located on the side of the hill across from the Boiler House to secure access onto the site. It appears to have a door facing the highway that's half glass, but the severe slope would require a stair, or ramp, and landing.

Access to the structure must have then been located on the train track side where there appears to be a step. The other sides must have a small window to maintain visual control of traffic.

Due to the slope of the finish grade, the high side was supported by posts. It appears that the roof is a hipped roof.

It is assumed that the structure is wood-framed.



Historic Photo of the Guard Booth

2) **Scope Findings:**

The following Scope of Work is needed:

Reconstruct the Guard Booth using wood frame construction and vertical wood siding with a hipped roof covered with asphalt shingles.

k) **EXTERIOR OPERATIONAL EQUIPMENT**

1) **Observation Summary:**

Throughout the site, there are numerous steel items used by the mining company for various activities. They are frequently sitting unprotected and are rusting.



Remove Bollards and Remove Rust Off Mine Cars



Remove Rust Off of Exposed Equipment.



Remove Rust Off of Exposed Equipment



Remove Rust Off of Exposed Equipment



Remove Rust Off of Exposed Equipment

2) **Scope Findings:**

The following Scope of Work is needed:

Remove the rust on the steel equipment and seal, or clearcoat.

l) **MINE SHAFT**

1) **Observation Summary:**

After the site was closed, the ore bin structures were removed and the structure that raised and lowered the miners was dismantled, then the entrance to the shaft was then capped using concrete. Over time, water has gotten in there and the area of the cap has dropped twelve to eighteen inches.

Concern has been raised by the Site Director, that the condition has worsened and should be address for life safety reasons.



Fence Around the Mining Shaft Area

2) **Scope Findings:**

The following Scope of Work is needed:

Install a heavily reinforced concrete slab approximately 15-feet wide and 30-feet long. Remove the existing fence protecting the former entrance to the mine shaft.

PHASE 2 – RECOMMENDATIONS SUPPORTING A SOLUTION

a. Conceptual Scope of Work

The Conceptual Scope of Work includes the restoration/renovation and adaptive reuse of several select historic buildings on a former copper mining operation in East Tennessee – now the Ducktown Basin Museum at the old Burra Burra Mine.

Each of these historic buildings plays a role in the “story” of copper mining operations in Tennessee and the development of the close-knit Ducktown, Tennessee community between the years 1850 and 1987.

The general Scope of Work on these buildings includes the following:

- 1) Museum/Mine Office – interior renovations including modifications for new exhibits; new painting and flooring.
- 2) Hoist House - installation of new mechanical systems and accessible public toilets; reconstruction of missing roof ventilator.
- 3) Boiler House – new HVAC; lighting; toilet and catering kitchen upgrades.
- 4) Time Office/Core Office – miscellaneous small interior repairs.
- 5) Machine Shop – repair/replace monitor windows; reconstruction of missing roof monitor/ventilator; replace deteriorated metal siding; repair/replace door lintel; masonry repairs; reworking of a portion of the site paving.
- 6) Change House – remove falling ceilings and their framing systems, repair/replace windows missing monitor windows; masonry repairs; exterior painting.
- 7) Crane – clean/paint components; replace guy wires.
- 8) Crane Operator’s Booth – replace deteriorated wood framing and metal siding/roof; replace wood windows; paint.
- 9) Crane Winch House – replace deteriorated wood framing and metal siding/roof; paint.
- 10) Plate Shop – install lights; replace broken and deteriorated wood windows, doors and their frames; paint.
- 11) Clinic – install new handicap ramp; new asphalt shingle roof.
- 12) Powder House – replace exterior wood stairs and landing; reopen former window; masonry repairs, paint storage drum.
- 13) Sawdust Vacuum Shed – paint exterior metals.
- 14) Steam Cleaner Room – repoint masonry; replace deteriorated metal roofing; exterior metal parts.
- 15) Parts Storage Shed – reframe smaller storage building and replace deteriorated siding and roofing; replace deteriorated metal siding and roofing; underpin corner of building at erosion. Paint exterior of structure.
- 16) Drill Repair Shed – fill cracks in floor slab; reinstall work bollard; replace deteriorated or missing metal roofing; paint.
- 17) Parts and Equipment Shed – replace deteriorated metal siding and roofing; repair bases of columns; paint. Trim trees.
- 18) Overlook Fence – remove second and third fences installed. Install new painted fence.
- 19) Overlook Platform – move existing platform to the mine shaft cover; replace existing platform with larger accessible platform.

- 19) Service Tunnel – repair service tunnel stone work and concrete.
- 20) Paved Surfaces – to be repaved by the Association.
- 21) Walkway to Mine Office – rebuild stone curbs and remove grass and topsoil. Association to repave walking surfaces.
- 22) Ore Bin Foundation – remove slab over CMU rooms. Infill holes in CMU and pour concrete slab at top of foundations.
- 23) Fire Hose #1 – paint wood and replace asphalt rolled roofing.
- 24) Fire Hose #2 – paint wood and replace asphalt rolled roofing.
- 25) Bit House Tank – repaint tank.
- 26) Guard Booth – reconstruct booth.
- 27) Exterior Operational Equipment – remove the rust and apply clear sealer.
- 28) Mine Shaft – cover shaft with reinforced concrete slab.

b. Graphic Documentation

As this work restores existing buildings, there is only a conceptual drawing provided for the new Overlook Platform.

Photographs of each building or structure are found in Phase 1.

c. Preliminary Recommendations for Sequencing and Approach

As these are existing buildings, there are no special recommendations for sequencing or approach the work other than protecting the public in each work area during the Work.

Special consideration (fencing, or other appropriate measures) for protecting the public when replacing the crane’s guy wires is recommended.

PHASE 3 – PROGRAM DOCUMENT

a. Executive Summary:

1) Site Information/Analysis:

The Ducktown Museum/Burra Burra Mine State Historic Site is an existing developed historic site and no improvements are generally required other than restoring the existing structures and reconstruction a few missing elements. Other considerations include:

- a) The existing collapsed mine is dangerous due to settlement, but is currently protected by a fence. The crane presents the single most dangerous element on site and needs the guy wires replaced.
- b) Pavement throughout the site is deteriorated but the operating Non-Profit Association running the site plans to repave it.

2) Energy Requirements:

- a) The new HVAC and lighting systems in the Hoist House and Boiler House will likely require a larger service to operate the new equipment.

3) Code Requirements:

- a) The site is generally not accessible due to the rolling topography.
- b) Hoist House and Boiler House:
 - i) The structure does not have sprinklers and exceeds an occupant load of 100 (IBC, Item 903.2.1.2.2). It is also likely to serve food and/or alcohol which will require the sprinklers.
- c) There are no handicap accessible toilets.

4) Licensing/Certification/Accreditation Requirements :

There are no licensing, certification or accreditation requirements.

5) Potential Additional Future Needs:

- a) Design services for an exhibits designer and a cost for the new exhibits are not included in this document.
- b) It is assumed that the State of Tennessee will engage a company to provide hazardous materials testing and abatement. Therefore, there are no costs included for those services in this programming document.

b. Detailed Program Information:

1) Space Description, Size, Criteria, and Relationships:

As an existing site and the programmed work primarily maintenance-related work, we are not providing space descriptions, size, criteria or relationship summaries.

2) Equipment Description, Size, and Criteria:

The only new equipment needed is a new HVAC system, toilets and audio visual equipment for the Hoist House and Boiler House interior.

3) Conceptual Graphic Documentation:

As an existing site, the only conceptual graphic documentation provided is for a new viewing platform to overlook.

c. Anticipated Project Design and Construction Durations by Phase:

<u>PHASE</u>	<u>DURATION IN DAYS</u>
Program Verification	45 days
Schematic Design	60 days
Design Development	90 days
Construction Documents	270 days
Bidding/Negotiation	45 days
Construction Administration	540 days
Close Out	<u>30 days</u>
Total:	1,080 days (36 months)

d. Opinion of Probable Cost

The Opinion of Probable Cost follows for each building on a separate page(s).

1. Museum/Former Mine Office
2. Hoist House
3. Boiler House
4. Time Office/Core Office
5. Machine Shop
6. Change House
7. Crane
8. Crane Operators Booth
9. Crane Winch House
10. Plate Shop
11. Clinic
12. Powder House
13. Sawdust Vacuum Shed
14. Steam Cleaner Shed
15. Parts Storage Sheds
16. Drill Repair Shed
17. Parts and Equipment Shed
18. Required Related Work
19. Overlook Fence
20. Overlook Platform
21. Service Tunnel
22. Paved Surfaces
23. Walkway to Mine Office
24. Ore Bin Foundation
25. Fire Hose #1
26. Fire Hose #2
27. Bit House (Tank)
28. Guard Booth
29. Exterior Operational Equipment
30. Mine Shaft

TOTAL PROJECT COST SUMMARY

Building or Structure	Cost
1. Museum/Former Mine Office	\$ 126,157
2. Hoist House	\$1,040,863
a. Structural Remediation	\$ 200,000
3. Boiler House	\$ 305,764
4. Time Office/Core Office	\$ 2,269
5. Machine Shop	\$ 335,578
6. Change House	\$ 196,415
7. Crane	\$ 139,397
8. Crane Operators Booth	\$ 9,686
9. Crane Winch House	\$ 1,654
10. Plate Shop	\$ 22,498
11. Clinic	\$ 27,125
12. Powder House	\$ 11,583
13. Sawdust Vacuum Shed	\$ 3,274
14. Steam Cleaner Shed	\$ 2,539
15. Parts Storage Sheds	\$ 44,136
16. Drill Repair Shed	\$ 10,680
17. Parts and Equipment Shed	\$ 50,094
18. Overlook Fence	\$ 104,852
19. Overlook Platform	\$ 125,720
20. Service Tunnel	\$ 6,438
21. Paved Surfaces	\$ 0
22. Walkway to Mine Office	\$ 16,674
23. Ore Bin Foundation	\$ 62,834
24. Fire Hose #1	\$ 1,011
25. Fire Hose #2	\$ 1,747
26. Bit House (Tank)	\$ 1,117
27. Guard Booth	\$ 16,047
28. Exterior Operational Equipment	\$ 80,016
29. Mine Shaft	\$ 37,025
30. Soils Report and Remediation	\$ 100,000
Total Project Cost	\$3,083,193

31.

OPINION OF PROBABLE COST – Museum/Mine Office

Ducktown Basin Museum & Burra Burra Mine Programming Study

Ducktown Basin Museum & Burra Burra Mine State Historic Site

Ducktown, Polk County, Tennessee

SBC Project #160/000-01-2014

Description of Work	Unit	Quantity	Total
Div. 2 – Existing Conditions			
a. Remove existing exhibits	Allowance	1	\$ 15,000
b. Remove walls for new exhibits	Allowance	1	\$ 5,000
c. Remove sheet vinyl flooring	\$1.50 sf	1,986 sf	\$ 2,979
Div. 6 – Wood, Plastics, and Composites			
a. Install new walls for exhibits	Allowance	1	\$ 10,000
Div. 9 – Finishes			
b. Repair ceilings where walls removed	Allowance	1	\$ 5,000
c. Install gyp board on new walls	Allowance	1	\$ 4,000
d. Repair walls where exhibits removed	Allowance	1	\$ 2,500
e. Install new LVT flooring on first floor	\$2 sf	1,986 sf	\$ 3,962
f. Paint all walls upstairs	\$2 sf	4,730 sf	\$ 9,460
g. Paint ceilings on first floor	\$2 sf	2,400 sf	\$ 4,800
h. Paint archival storage room in basement	\$2 sf	850 sf	\$ 1,700
Div. 22 – Plumbing			
a. Renovate toilet	Allowance	1	\$ 7,500
Div. 26 – Electrical			
a. New lights in archival storage in basement	\$5 sf	200 sf	<u>\$ 1,000</u>
Subtotal:			\$102,901
Overhead/Profit	15%		\$ 15,435
Design Contingency	5%		\$ 5,145
Bond	1.5%		\$ 1,544
Builder's Risk	0.55%/year		\$ 1,132
Total Construction Budget:			\$126,157

OPINION OF PROBABLE COST – Museum/Mine Office – continued

CSI SUMMARY	COST
Div. 2 – Existing Conditions	\$ 28,173
Div. 6 – Wood, Plastics and Composites	\$ 12,260
Div. 9 – Finishes	\$ 75,303
Div. 22 – Plumbing	\$ 9,196
Div. 23 – Electrical	<u>\$ 1,226</u>
Grand Total	\$126,157

OPINION OF PROBABLE COST – Hoist House

Ducktown Basin Museum & Burra Burra Mine Programming Study
Ducktown Basin Museum & Burra Burra Mine State Historic Site
 Ducktown, Polk County, Tennessee
 SBC Project #160/000-01-2014

DESCRIPTION	Unit	Quantity	Total
Div. 4 – Masonry			
a. Repoint all brick interior walls	\$15 sf	9,600 sf	\$144,000
Div. 5 – Metals			
a. New pipe railing systems at new entry ramp.	\$60 lin ft	20 lin ft	\$ 1,200
Div. 6 – Wood, Plastics and Composites			
a. Extend mechanical mezzanine walls to deck	Allowance	1	\$ 15,000
b. Frame walls for roof top ventilator	\$9 lin ft	100 lin ft	\$ 900
c. Frame roof at ventilator	\$6 sf	480 sf	\$ 2,880
d. Install roof decking at monitor	\$2 sf	480 sf	\$ 960
e. Install wood ventilator vents	\$600 ea	10 vents	\$ 6,000
f. Wood siding at roof top ventilator	Allowance	1	\$ 7,500
Div. 7 - Thermal & Moisture Protection			
a. Install new roofing felt at monitor	Allowance	1	\$ 800
b. Install new asphalt shingle roof at monitor	\$400 sq	5 sq	\$ 2,000
Div. 8 – Openings			
a. New wood doors at new toilets, janitor's closet, AV closet, and mechanical room.	\$2,000	5	\$ 10,000
b. Door hardware	\$750 ea	5	\$ 3,750
c. New storefront systems in arched walls	\$35 sf	540 sf	
d. New storefront doors in glass partitions	\$1,000 ea	6	\$ 6,000
e. Storefront door hardware	\$750 ea	6	\$ 4,500

OPINION OF PROBABLE COST – Hoist House – continued

Div. 9 – Finishes

a. New gyp. board walls and ceilings at new toilets, janitor's closet, AV closet and mechanical room	\$3 sf	3,000 sf	\$ 9,000
b. New rubber base on new rooms	\$5 lin ft	300 lin ft	\$ 1,500
c. Paint new gyp. board walls and ceiling in new rooms.	\$2 sf	3,000 sf	\$ 6,000
d. Stain new wood doors and frames.	\$2 sf	375 sf	\$ 750
e. LVT in new toilets and AV closet	\$2 af	425 sf	\$ 850
f. Paint roof top ventilator/louvers	Allowance	1	\$ 4,000

Div. 10 – Specialties

a. New toilet compartments.	\$1,000 ea	6	\$ 6,000
b. Toilet accessories	Allowance	1	\$ 6,000
c. Motorized roller shades	\$800 ea	12	\$ 9,600

Div. 11 – Equipment

a. AV system	Allowance	1	\$ 23,500
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Div. 21 – Fire Suppression

a. New sprinklers throughout Hoist House.	\$4 sf	4,700 sf	\$ 18,800
b. Fire suppression underground utilities	\$166 lin ft	600 lin ft	\$ 99,600

Div. 22 – Plumbing

a. Three fixtures each toilet	\$4,000 ea	6	\$ 24,000
b. Janitor's sink	\$3,000 ea	1	\$ 3,000
c. Two sinks each toilet	\$3,000 ea	4	\$ 12,000
d. Drinking fountains	\$2,500 ea	2	\$ 5,000
e. Water heater	\$2,500 ea	1	\$ 2,500
f. Associated piping	\$2,000	1	\$ 2,000

Div. 23 – Heating, Ventilation and Air Conditioning

a. New HVAC system throughout Hoist House – 15-20 tons AC	\$6,000 ton	20 tons	\$120,000
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Div. 26 – Electrical

a. New electrical system inside	\$15 sf	4,700 sf	\$ 70,500
b. New underground electrical service	Allowance	1	\$120,000
c. New lighting in addition	\$5 sf	1,600 sf	\$ 8,000
d. Ceiling fans in assembly area	\$6000 ea	5	\$ 30,000
e. Fire alarm system	Allowance	1	\$ 12,000

Subtotal: \$848,990

OPINION OF PROBABLE COST – Hoist House – continued

Overhead/Profit	15%	\$ 127,349
Design Contingency	5%	\$ 42,450
Bond	1.5%	\$ 12,735
Builder's Risk	0.55%/year	\$ 9,339
Total Construction Budget:		\$1,040,863

CSI SUMMARY

COST

Div. 4 – Masonry	\$ 176,544
Div. 5 – Metals	\$ 1,471
Div. 6 – Wood, Plastics and Composites	\$ 40,753
Div. 7 - Flashing and Sealants	\$ 3,435
Div. 8 – Openings	\$ 52,903
Div. 9 – Finishes	\$ 27,095
Div. 10 – Specialties	\$ 26,482
Div. 11 – Equipment	\$ 28,812
Dive 21 – Fire Suppression	\$ 145,158
Div. 22 – Plumbing	\$ 48,500
Div. 23 - Heating, Ventilation and Air Conditioning	\$ 183,875
Div. 26 – Electrical	<u>\$ 294,848</u>
Grand Total	\$1,040,863

OPINION OF PROBABLE COST – Boiler House

Ducktown Basin Museum & Burra Burra Mine Programming Study
Ducktown Basin Museum & Burra Burra Mine State Historic Site
Ducktown, Polk County, Tennessee
SBC Project #160/000-01-2014

DESCRIPTION	Unit	Quantity	Total
Div. 2 – Existing Conditions			
a. Remove catering kitchen equipment	\$250 ea	10	\$ 2,500
b. Remove finish flooring in toilets	\$1.50 sf	250 sf	\$ 375
Div. 6 – Wood, Plastic and Composites			
a. Extend walls at meeting area to deck	\$9 lin ft	40 lin ft	\$ 360
Div. 9 – Finishes			
a. Repaint walls on main floor	\$2 sf	9,235 sf	\$ 7,695
b. New ceramic tile in toilets	\$15 sf	250 sf	\$ 3,750
c. New quarry tile in catering kitchen	\$15 sf	250 sf	\$ 3,750
d. Patch floor in meeting area	\$9 sf	400 sf	\$ 3,600
e. Install gyp board at wall extensions	\$3 sf	720 sf	\$ 2,160
Div. 10 – Specialties			
a. New toilet compartments.	\$1,000 ea	6	\$ 6,000
b. Toilet accessories	Allowance	1	\$ 6,000
c. Motorized roller shades	\$800 ea	4	\$ 3,200
Div. 11 – Equipment			
a. Chest freezer	\$1,200	1	\$ 1,200
b. Refrigerator	\$3,200	1	\$ 3,200
c. Refrigeration unit	\$5,000	1	\$ 5,000
d. Warming unit	\$5,000	1	\$ 5,000
e. Ice machine in catering kitchen	\$2,500	1	\$ 2,500
f. Dishwasher	\$2,000	1	\$ 2,000
Div. 21 – Fire Suppression			
a. New sprinklers throughout Boiler House	\$4 sf	2,200 sf	\$ 8,800

OPINION OF PROBABLE COST – Boiler House – continued

Div. 22 – Plumbing

a. Three fixtures each toilet	\$4,000 ea	6	\$ 24,000
b. Janitor’s sink	\$3,000 ea	1	\$ 3,000
c. Two sinks each toilet	\$3,000 ea	4	\$ 12,000
d. Drinking fountains	\$1,500 ea	2	\$ 3,000
e. 3-Compartment sink in catering kit.	\$3,500 ea	1	\$ 3,500
f. Handwash sink in catering kitchen	\$3,500 ea	1	\$ 3,500
g. Floor drains	\$1,000 ea	3	\$ 3,000
h. Ice machine piping	\$1,000 ea	1	\$ 1,000

Div. 23 – Heating, Venting and Air Conditioning

a. New HVAC system throughout Boiler House – 9 tons AC	\$6,000 ton	9 tons	\$ 54,000
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Div. 26 – Electrical

a. Increase service as needed for new HVAC system and lighting.	\$15 sf	2,200 sf	\$ 33,000
b. New lighting throughout.	\$6 sf	2,200 sf	\$ 13,200
c. Fire alarm system	Allowance	1	\$ 5,000
d. Ceiling fans in assembly area	\$6,000	1	\$ 6,000

Subtotal: \$249,400

Overhead/Profit	15%	\$ 37,410
Design Contingency	5%	\$ 12,470
Bond	1.5%	\$ 3,741
Builder’s Risk	0.55%/year	\$ 2,743

Total Construction Budget: \$305,764

OPINION OF PROBABLE COST – Boiler House – continued

CSI SUMMARY	COST
Div. 2 – Existing Conditions	\$ 3,525
Div. 6 – Wood, Plastics and Composites	\$ 441
Div. 9 – Finishes	\$ 25,961
Div. 10 – Specialties	\$ 18,630
Div. 11 – Equipment	\$ 23,172
Div. 21 – Fire Suppression	\$ 10,789
Div. 22 – Plumbing	\$ 64,978
Div. 23 – Heating, Venting and Air Conditioning	\$ 66,204
Div. 26 – Electrical	<u>\$ 70,127</u>
Grand Total	\$305,764

OPINION OF PROBABLE COST – Time Office/Core Office

Ducktown Basin Museum & Burra Burra Mine Programming Study
Ducktown Basin Museum & Burra Burra Mine State Historic Site
 Ducktown, Polk County, Tennessee
 SBC Project #160/000-01-2014

DESCRIPTION	Unit	Quantity	Total
Div. 2 – Existing Conditions			
a. Remove deteriorated wood flooring at door.	\$20 sf	18 sf	\$ 360
Div. 4 – Masonry			
a. Re-parge stucco around heating stove connection	Allowance	1	\$ 500
Div. 6 – Wood, Plastics, and Composites			
a. Repair wood around heating stove connection	Allowance	1	\$ 450
Div. 9 - Finishes			
a. Replace deteriorated wood flooring at pocket door. Match existing	\$30	18 sf	<u>\$ 540</u>
Subtotal:			\$1,850
Overhead/Profit	15%		\$ 278
Design Contingency	5%		\$ 93
Bond	1.5%		\$ 28
Builder's Risk	0.55%/year		\$ 20
Subtotal:			\$2,269

CSI SUMMARY	COST
Div. 2 – Existing Conditions	\$ 441
Div. 4 – Masonry	\$ 614
Div. 6 – Wood, Plastics and Composites	\$ 553
Div. 9 – Finishes	<u>\$ 662</u>
Grand Total	\$2,269

OPINION OF PROBABLE COST – Machine Shop

Ducktown Basin Museum & Burra Burra Mine Programming Study
Ducktown Basin Museum & Burra Burra Mine State Historic Site
 Ducktown, Polk County, Tennessee
 SBC Project #160/000-01-2014

DESCRIPTION	Unit	Quantity	Total
Div. 2 – Existing Conditions			
a. Remove infill at existing monitor window openings	\$150	42	\$ 6,300
b. Remove deteriorated metal panels at rear addition	\$4 sf	1,200 sf	\$ 4,800
c. Remove shingles on existing monitor	\$1.50 sf	1,120 sf	\$ 1,680
d. Trench road at underground drainage pipe	\$50 cu yd	15 cu yds	\$ 750
e. Remove underground drainage Pipe	\$15 yd	15 yds	\$ 225
f. Remove dropped ceilings and associated framing	\$6 sf	11,345 sf	\$ 68,070
g. Remove deteriorated flooring in carpenter’s shop	\$2.25 sf	32 sf	\$ 72
h. Remove deteriorated flooring system in carpenter’s storage	\$6 sf	600 sf	\$ 3,600
i. Remove plywood on windows	Allowance	1	\$ 2,000
j. Remove paint on glass	Allowance	1	\$ 500
Div. 4 – Masonry			
a. Repoint deteriorated mortar joints	Allowance	1	\$ 10,000
b. Clean masonry	\$5 sf	4,000 sf	\$ 20,000
Div. 5 – Metals			
a. Replace deteriorated metal corrugated siding at rear addition. Match existing.	\$4	1,200 sf	\$ 4,800
b. Repair deteriorated door lintel	Allowance	1	\$ 6,500
Div. 6 – Wood, Plastics, and Composites			
a. Repair rough openings at former monitor window openings	Allowance	42	\$ 10,500
b. Replace deteriorated or missing existing monitor window trim	Allowance	60 openings	\$ 12,000
c. Repair deteriorated monitor window sash	\$450 ea	18	\$ 8,100

OPINION OF PROBABLE COST – Machine Shop – continued

d. Frame walls for new roof top ventilation monitor	\$9 lin ft	225 lin ft	\$ 2,025
e. Frame roof at new ventilation monitor	\$6 sf	1,500 sf	\$ 9,000
f. Install roof decking at new ventilation monitor	\$2 sf	1,500 sf	\$ 3,000
g. Install new wood vents at ventilation monitor	\$600 ea	80 vents	\$ 48,000
h. Wood siding at new rooftop Ventilator monitor	Allowance	1	\$ 7,500
i. Wood trim at new ventilation monitor	\$6 lin ft	850 lin ft	\$ 5,100

Div. 7 - Thermal & Moisture Protection

a. Install new roofing felt at ventilation monitor	Allowance	1	\$ 1,200
b. Install new metal roof panels on roof at ventilation monitor	\$4 sf	1,500 sf	\$ 6,000

Div. 8 – Openings

a. Reglaze lower windows as needed	Allowance	1	\$ 5,000
b. Replace door to foreman’s office	\$150 ea	1	\$ 150
c. New door hardware to foremen’s Door	\$750 ea	1	\$ 750
d. Repair wood windows sash in angled metal panel wain in southeast corner	\$500 ea	2	\$ 1,000
e. Install new wood windows in metal panel addition and concrete brick addition	\$600 ea	12	\$ 7,200
f. Install new wood door and frame in metal panel addition	\$1,200 ea	1	\$ 1,200
g. Hardware for new door	\$750	1	\$ 750

Div. 9 – Finishes

a. Paint windows and trim at monitor	\$2 sf	600 sf	\$ 1,200
b. Paint lower windows	\$2 sf	325 sf	\$ 700
c. Paint exterior doors and frames	\$2 sf	600 sf	\$ 1,200
d. Paint metal siding	\$2 sf	1,200 sf	\$ 2,400
e. Replace finish flooring in Carpenter’s shop	\$10 sf	32 sf	\$ 320
f. Replace finish flooring in Carpenter’s storage	\$15 sf	600 sf	\$ 9,000

OPINION OF PROBABLE COST – Machine Shop – continued

Div. 22 – Plumbing

a. Storm drainage piping	\$60 in ft	40 lin ft	\$ 240
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Div. 32 – Exterior Improvements

a. Backfill road trench with gravel	Allowance	1	\$ 200
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b. Asphalt pavement	\$4 sf	120 sf	<u>\$ 480</u>
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Subtotal:			\$ 273,712
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Overhead/Profit	15%		\$ 41,057
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Design Contingency	5%		\$ 13,691
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Bond	1.5%		\$ 4,107
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Builder's Risk	0.55%/year		\$ 3,011
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Total Construction Budget:			\$ 335,578
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CSI SUMMARY

COST

Div. 2 – Existing Conditions			\$ 107,885
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Div. 4 – Masonry			\$ 66,780
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Div. 5 – Metals			\$ 13,854
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Div. 6 – Wood, Plastics and Composites			\$ 129,780
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Div. 7 - Thermal & Moisture Protection			\$ 8,827
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Div. 8 – Openings			\$ 19,679
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Div. 9 – Finishes			\$ 18,169
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Div. 22 – Plumbing			\$ 295
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Div. 32 – Exterior Openings			<u>\$ 1,079</u>
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Grand Total			\$ 335,578
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OPINION OF PROBABLE COST – Change House

Ducktown Basin Museum & Burra Burra Mine Programming Study
Ducktown Basin Museum & Burra Burra Mine State Historic Site
 Ducktown, Polk County, Tennessee
 SBC Project #160/000-01-2014

DESCRIPTION	Unit	Quantity	Total
Div. 2 – Existing Conditions			
a. Remove infill at former monitor windows	\$150 ea	12	\$ 1,800
b. Remove existing front doors	\$150 ea	2	\$ 300
c. Remove wall between acetylene room and office from ground up. Salvage brick for reuse.	\$25 sf	100 sf	\$ 2,500
d. Remove hardware cloth on windows	\$50 ea	60	\$ 3,000
e. Remove foundation access door and frame on west elevation at crawlspace	\$200	1	\$ 200
f. Remove deteriorated metal panels on interior	Allowance	1	\$ 2,000
g. Remove deteriorated metal panels on Exterior	Allowance	1	\$ 1,500
h. Remove later ceilings and their framing. Reinstall early lighting, salvage ceiling hung baskets, chains and pulleys for reinstallation	\$10 sf	5,885 sf	\$58,850
i. Remove deteriorated monitor window sash	\$200 ea	35	\$ 7,000
Div. 4 – Masonry			
a. Repoint deteriorated or missing brick mortar joints	Allowance	1	\$12,000
b. Grout cracks in concrete foundation or belt courses	Allowance	1	\$ 5,000
c. Rebuild top of flue	Allowance	1	\$ 1,500
d. Rebuild wall between office and acetylene room from ground up using salvaged brick	Allowance	1	\$10,000
Div. 5 – Metals			
a. Repair acetylene room door and frame	Allowance	1	\$ 7,500
b. Repair monitor roof top metal ventilator	Allowance	1	\$ 3,500
c. Install fixed metal panel over door window in west elevation	Allowance	1	\$ 1,500

OPINION OF PROBABLE COST – Change House – continued

d. Install hardware cloth in crawl-space behind each foundation opening on west elevation	Allowance	1	\$ 1,500
e. Replace removed metal panels on interior	Allowance	1	\$ 2,500
f. Replace deteriorated metal panels on exterior	Allowance	1	\$ 1,000

Div. 6 – Wood, Plastics, and Composites

a. Replace deteriorated wood trim	Allowance	1	\$ 8,000
b. Install plywood over interior window at north addition	\$4 sf	18 sf	\$ 72

Div. 7 – Thermal & Moisture Protection

a. Repair loose asphalt shingles at gable ends of roof monitor	Allowance	1	\$ 2,500
b. Install new asphalt shingles where missing at monitor around windows	\$400 sq	5 sqs	\$ 2,000

Div. 8 – Openings

a. Replace missing crawlspace door and frame on west elevation with hollow metal	Allowance	1	\$ 2,500
b. Replace acetylene door hinge	Allowance	1	\$ 3,500
c. Replace front doors. Match doors in original construction drawing.			
d. Repair existing wood windows where deteriorated Replace missing monitor sash	\$300 ea	35	\$10,500

Div. 9 – Finishes

a. Paint all monitor windows	\$2 sf	1,120 sf	\$ 2,240
b. Paint all other exterior wood materials	Allowance	1	\$ 8,000
c. Paint metal ramp and railing on west elevation	Allowance	1	\$ 1,000
d. Paint all metal doors and frames	\$2 sf	75	\$ 150
e. Paint all exterior metal panels	\$2 sf	1,000 sf	\$ 2000
f. Paint interior plywood at windows	\$2 sf	100 sf	<u>\$ 200</u>

Subtotal: \$

OPINION OF PROBABLE COST – Change House - continued

Overhead/Profit	15%	\$ 24,947
Design Contingency	5%	\$ 832
Bond	1.5%	\$ 2,495
Builder's Risk	0.55%/year	\$ 1,829
Total Construction Budget:		\$ 196,415

CSI SUMMARY

COST

Div. 2 – Existing Conditions	\$ 94,587
Div. 4 – Masonry	\$ 34,942
Div. 5 – Metals	\$ 9,897
Div. 6 – Wood, Plastics and Composites	\$ 21,456
Div. 7 - Flashing and Sealants	\$ 6,130
Div. 8 – Openings	\$ 20,230
Div. 9 – Finishes	\$ 16,662
Grand Total	\$ 196,415

OPINION OF PROBABLE COST – Crane

Ducktown Basin Museum & Burra Burra Mine Programming Study
Ducktown Basin Museum & Burra Burra Mine State Historic Site
 Ducktown, Polk County, Tennessee
 SBC Project #160/000-01-2014

DESCRIPTION	Unit	Quantity	Total
Div. 2 – Existing Conditions			
a. Remove guy wires	\$1.50 lin ft	6,600 lin ft	\$ 9,900
b. Remove rust	Allowance	1	\$ 21,000
Div. 5 – Metal			
a. Replace guy wires and grease them	\$8 lin ft	6,600 lin ft	\$ 52,800
b. Remove/repair deteriorated components	Allowance	1	\$ 15,000
Div. 9 – Finishes			
a. Paint crane	Allowance	1	<u>\$ 15,000</u>
Subtotal:			\$113,700
Overhead/Profit	15%		\$ 17,055
Design Contingency	5%		\$ 5,685
Bond	1.5%		\$ 1,706
Builder's Risk	0.55%/year		\$ 1,251
Subtotal:			\$139,397

CSI SUMMARY	COST
Div. 2 – Existing Conditions	\$ 37,884
Div. 5 - Metal	\$ 83,123
Div. 9 – Finishes	<u>\$ 18,390</u>
Grand Total	\$139,397

OPINION OF PROBABLE COST – Crane Operator’s Booth

Ducktown Basin Museum & Burra Burra Mine Programming Study
Ducktown Basin Museum & Burra Burra Mine State Historic Site
Ducktown, Polk County, Tennessee
SBC Project #160/000-01-2014

DESCRIPTION	Unit	Quantity	Total
Div. 2 – Existing Conditions			
a. Remove deteriorated metal siding and roof	\$4 sf	275 sf	\$1,100
b. Remove deteriorated wood nailers	\$5 lin ft	75	\$ 375
c. Remove wood framing at windows	Allowance	1	\$ 350
d. Remove wood sash	\$75 ea	1	\$ 75
Div. 5 – Metals			
a. Install new metal panels at walls and roof	\$4 sf	275 sf	\$ 1,100
Div. 6 – Wood			
a. Install new framing for new window sash and roof nailers	Allowance	1	\$ 1,200
Div. 8 – Openings			
a. Install new 6 light window sash	\$450 ea	7 sash	\$ 3,150
Div. 9 – Finishes			
a. Paint exterior enclosure	\$2 sf	275	<u>\$ 550</u>
Subtotal:			\$ 7,900
Overhead/Profit	15%		\$ 1,185
Design Contingency	5%		\$ 395
Bond	1.5%		\$ 119
Builder’s Risk	0.55%/year		\$ 87
<hr/>			
Subtotal:			\$ 9,686

OPINION OF PROBABLE COST – Crane Operator’s Booth - continued

CSI SUMMARY	COST
Div. 2 – Existing Conditions	\$ 2,330
Div. 5 - Metals	\$ 1,349
Div. 6 – Wood	\$ 1,471
Div. 8 – Openings	\$ 3,865
Div. 9 – Finishes	<u>\$ 675</u>
Grand Total	\$ 9,686

OPINION OF PROBABLE COST – Crane Winch House

Ducktown Basin Museum & Burra Burra Mine Programming Study
Ducktown Basin Museum & Burra Burra Mine State Historic Site
 Ducktown, Polk County, Tennessee
 SBC Project #160/000-01-2014

DESCRIPTION	Unit	Quantity	Total
Div. 2 – Existing Conditions			
a. Remove metal roofing	\$5 sf	40 sf	\$ 200
b. Remove wood nailers	\$5 lin ft	18 lin ft	\$ 90
Div. 5 – Metals			
a. Replace metal roofing	\$4 sf	40 sf	\$ 160
Div. 6 – Wood			
a. Install new wood nailers	Allowance	1	\$ 50
Div. 9 – Finishes			
a. Paint steel components of enclosure and base below roof	Allowance	1	\$ 850
Subtotal:			\$1,350
Overhead/Profit	15%		\$ 203
Design Contingency	5%		\$ 68
Bond	1.5%		\$ 20
Builder's Risk	0.55%/year		\$ 15
Subtotal:			\$1,654

CSI SUMMARY	COST
Div. 2 – Existing Conditions	\$ 356
Div. 5 - Metals	\$ 196
Div. 6 – Wood	\$ 63
Div. 9 – Finishes	<u>\$1,039</u>
Grand Total	\$1,654

OPINION OF PROBABLE COST – Plate Shop

Ducktown Basin Museum & Burra Burra Mine Programming Study
Ducktown Basin Museum & Burra Burra Mine State Historic Site
 Ducktown, Polk County, Tennessee
 SBC Project #160/000-01-2014

DESCRIPTION	Unit	Quantity	Total
Div. 2 – Existing Conditions			
a. Remove deteriorated wood doors and Frame on west end of building	Allowance	1	\$ 500
Div. 5 – Metals			
a. Install pipe support for end of rear porch	Allowance	1	\$ 850
Div. 8 – Openings			
a. Replace damaged/deteriorated sash	\$500 ea	4	\$ 2,000
b. Replace deteriorated wood window sills	Allowance	1	\$ 750
c. Provide new hollow metal pair doors and frame	\$2,500 pr	1 pr	\$ 2,500
d. Reglaze steel window in CMU Addition	Allowance	1	\$ 300
e. New door hardware for pair doors	Allowance	1	\$ 800
Div. 9 – Finishes			
a. Paint unpainted steel components at west end of building	\$2 sf	100 sf	\$ 200
b. Paint CMU addition to building on east side	\$2 sf	135sf	\$ 270
c. Paint steel window in CMU addition	\$2 sf	25 sf	\$ 50
d. Paint new pair doors and frame	\$2 sf	65 sf	\$ 130
Div. 26 – Electrical			
a. New lights	\$5 sf	2,000 sf	<u>\$10,000</u>
Subtotal:			\$18,350
Overhead/Profit	15%		\$ 2,753
Design Contingency	5%		\$ 918
Bond	1.5%		\$ 275
Builder's Risk	0.55%/year		\$ 202
Total Construction Budget:			\$22,498

OPINION OF PROBABLE COST – Plate Shop - continued

CSI SUMMARY	COST
Div. 2 – Existing Conditions	\$ 614
Div. 5 - Metals	\$ 1,043
Div. 8 – Openings	\$ 7,786
Div. 9 – Finishes	\$ 798
Div. 26 - Electrical	<u>\$12,260</u>
Grand Total	\$22,498

OPINION OF PROBABLE COST – Clinic

Ducktown Basin Museum & Burra Burra Mine Programming Study
Ducktown Basin Museum & Burra Burra Mine State Historic Site
 Ducktown, Polk County, Tennessee
 SBC Project #160/000-01-2014

DESCRIPTION	Unit	Quantity	Total
Div. 2 – Existing Conditions			
a. Remove existing asphalt shingle roof	\$2 sf	1,770 sf	\$ 3,544
b. Remove existing gutters and downspouts	\$2 lin ft	2,500 lin ft	\$ 2,500
c. Remove concrete landing at rear door	Allowance	1	\$ 500
Div. 4 – Concrete			
a. Install new reinforced concrete sidewalk from parking to rear door. Warp concrete at door to less than 1:20 slope	\$4 sf	325 ft	\$ 1,300
Div. 7 - Thermal & Moisture Protection			
a. Install new roofing felt	Allowance	1	\$ 600
b. Install new asphalt shingle roof	\$400 sq	18 sq	\$ 7,200
c. Install new gutters and downspouts	\$10 lin ft	250 lin ft	\$ 2,500
Div. 31 - Earthwork			
a. Excavate for new sidewalk	\$25 cu ft.	15 cu ft	\$ 375
b. Install gravel base for new sidewalk	\$10 sq yd	36 sq yds	\$ 360
c. Add topsoil to either side of new sidewalk, seed and straw	\$10 sf	325 sf	<u>\$ 3,250</u>
Subtotal:			\$22,125
Overhead/Profit	15%		\$ 3,319
Design Contingency	5%		\$ 1,106
Bond	1.5%		\$ 332
Builder's Risk	0.55%/year		\$ 243
Total Construction Budget:			\$27,125

OPINION OF PROBABLE COST – Clinic - continued

CSI SUMMARY	COST
Div. 2 – Existing Conditions	\$ 8,023
Div. 4 - Concrete	\$ 1,594
Div. 7 – Thermal & Moisture Protection	\$12,628
Div. 31 – Earthwork	<u>\$ 4,826</u>
Grand Total	\$27,125

OPINION OF PROBABLE COST – Powder House

Ducktown Basin Museum & Burra Burra Mine Programming Study
Ducktown Basin Museum & Burra Burra Mine State Historic Site
 Ducktown, Polk County, Tennessee
 SBC Project #160/000-01-2014

DESCRIPTION	Unit	Quantity	Total
Div. 2 – Existing Conditions			
a. Remove window infill above entry door	\$30 sf	25 sf.	\$ 750
b. Remove existing wood stairs and landing	Allowance	1	\$ 2,000
Div. 4 – Masonry			
a. Repoint deteriorated mortar joints	Allowance	1	\$ 2,000
b. Replace missing brick	Allowance	1	\$ 250
Div. 6 – Openings			
a. Insert new window frame and sash components.	Allowance	1	\$ 1,500
b. Construct new wooden stairs with Railings and landing	Allowance	1	\$ 2,500
Div. 9 - Finishes			
a. Paint metal storage tank and supports	\$2 sf	100 sf	\$ 200
b. Paint window	\$2 sf	125 sf	\$ 250
Subtotal:			\$ 9,200
Overhead/Profit	15%		\$ 1,380
Design Contingency	5%		\$ 460
Bond	1.5%		\$ 138
Builder's Risk	0.55%/year		\$ 101
Total Construction Budget:			\$11,583
CSI SUMMARY			COST
Div. 2 – Existing Conditions			\$ 3,372
Div. 4 – Masonry			\$ 2,760
Div. 6 – Wood, Plastics and Composites			\$ 4,904
Div. 9 - Finishes			\$ 553
Grand Total			\$11,583

OPINION OF PROBABLE COST – Sawdust Vacuum Shed

Ducktown Basin Museum & Burra Burra Mine Programming Study
Ducktown Basin Museum & Burra Burra Mine State Historic Site
 Ducktown, Polk County, Tennessee
 SBC Project #160/000-01-2014

DESCRIPTION	Unit	Quantity	Total
Div. 9 - Finishes			
a. Paint exterior metal surfaces	\$2 sf	60 sf	\$ 120
b. Paint duct and supports	\$3	850 sf	<u>\$2,550</u>
Subtotal:			\$2,670
Overhead/Profit	15%		\$ 401
Design Contingency	5%		\$ 134
Bond	1.5%		\$ 40
Builder's Risk	0.55%/year		\$ 29
Total Construction Budget:			\$3,274

CSI SUMMARY	COST
Div. 9 - Finishes	<u>\$3,274</u>
Grand Total	\$3,274

OPINION OF PROBABLE COST – Steam Cleaner Shed

Ducktown Basin Museum & Burra Burra Mine Programming Study
Ducktown Basin Museum & Burra Burra Mine State Historic Site
 Ducktown, Polk County, Tennessee
 SBC Project #160/000-01-2014

DESCRIPTION	Unit	Quantity	Total
Div. 4 – Masonry			
a. Repoint cracks in CMU walls	Allowance	1	\$ 450
Div. 5 – Metals			
a. Replace metal panels at porch roof	\$4 sf	125 sf	\$ 500
Div. 8 – Openings			
a. Reglaze windows	Allowance	1	\$ 250
Div. 9 - Finishes			
a. Paint doors and windows	\$2 sf	135 sf	\$ 270
b. Paint exterior roof and porch framing	\$2 sf	300 sf	<u>\$ 600</u>
Subtotal:			\$2,070
Overhead/Profit	15%		\$ 311
Design Contingency	5%		\$ 104
Bond	1.5%		\$ 31
Builder's Risk	0.55%/year		\$ 23
Total Construction Budget:			\$2,539

CSI SUMMARY	COST
Div. 4 – Masonry	\$ 553
Div. 5 - Metals	\$ 614
Div. 8 - Openings	\$ 308
Div. 9 - Finishes	<u>\$1,068</u>
Grand Total	\$2,539

OPINION OF PROBABLE COST – Parts Storage Shed

Ducktown Basin Museum & Burra Burra Mine Programming Study
Ducktown Basin Museum & Burra Burra Mine State Historic Site
 Ducktown, Polk County, Tennessee
 SBC Project #160/000-01-2014

DESCRIPTION	Unit	Quantity	Total
Div. 2 – Existing Conditions			
a. Remove rust on existing metal to remain	Allowance	1	\$5,500
Div. 3 - Concrete			
a. Underpin foundation in corner due to erosion	Allowance	1	\$6,500
Div. 5 – Metals			
a. Replace metal panels where deteriorated	\$4 sf	850 sf	\$3,400
Div. 6 – Wood, Plastics and Composites			
a. Reframe smaller shed as needed	Allowance	1	\$8,500
b. Replace wooden shelves as needed	Allowance	1	\$2,000
Div. 8 – Openings			
a. Create new wood framed door for small shed with metal covering	Allowance	1	\$500
b. Provide hasp for new door	\$100	1	\$100
Div. 9 - Finishes			
a. Paint exterior of both sheds	\$2 sf	2,500 sf	\$5,000
b. Paint steel framing of larger shed	Allowance	1	\$2,000
Div. 31 – Earthwork			
a. Excavate to under pin foundation	Allowance	1	<u>\$2,500</u>
Subtotal:			\$36,000
Overhead/Profit	15%		\$ 5,400
Design Contingency	5%		\$ 1,800
Bond	1.5%		\$ 540
Builder's Risk	0.55%/year		\$ 396
Total Construction Budget:			\$44,136

OPINION OF PROBABLE COST – Parts Storage Shed - continued

CSI SUMMARY	COST
Div. 2 – Existing Conditions	\$ 6,744
Div. 3 – Concrete	\$ 7,970
Div. 5 – Metals	\$ 4,168
Div. 6 – Wood, Plastics and Composites	\$15,370
Div. 8 - Openings	\$ 736
Div. 9 - Finishes	\$ 8,582
Div. 31 - Earthwork	<u>\$ 566</u>
Grand Total	\$44,136

OPINION OF PROBABLE COST – Drill Repair Shed

Ducktown Basin Museum & Burra Burra Mine Programming Study
Ducktown Basin Museum & Burra Burra Mine State Historic Site
 Ducktown, Polk County, Tennessee
 SBC Project #160/000-01-2014

DESCRIPTION	Unit	Quantity	Total
Div. 3 – Concrete			
a. Fill cracks in floor slab with grout	Allowance	1	\$2,500
b. Set relocated bollard with concrete	\$100	1	\$ 100
Div. 5 – Metals			
a. Replace corrugated metal roofing on side porch	\$4 sf	90 sf	\$ 360
b. Replace deteriorated metal panels	\$4 sf	200 sf	\$ 800
c. Repair pin holes in metal panels	\$5 ea	150 holes	\$ 750
Div. 9 - Finishes			
a. Paint exterior surfaces	2 sf	2,000 sf	\$ 4,000
Div. 31 – Earthwork			
a. Dig hole for relocated bollard	\$200	1	<u>\$ 200</u>
Subtotal:			\$ 8,710
Overhead/Profit	15%		\$ 1,307
Design Contingency	5%		\$ 436
Bond	1.5%		\$ 131
Builder's Risk	0.55%/year		\$ 96
Total Construction Budget:			\$10,680

CSI SUMMARY	COST
Div. 3 – Concrete	\$ 3,188
Div. 5 - Metals	\$ 2,343
Div. 9 - Finishes	\$ 4,904
Div. 31 - Earthwork	<u>\$ 245</u>
Grand Total	\$10,680

OPINION OF PROBABLE COST – Parts and Equipment Shed

Ducktown Basin Museum & Burra Burra Mine Programming Study
Ducktown Basin Museum & Burra Burra Mine State Historic Site
 Ducktown, Polk County, Tennessee
 SBC Project #160/000-01-2014

DESCRIPTION	Unit	Quantity	Total
Div. 2 – Existing Conditions			
a. Remove any tree or limb within 10-feet of the structure	\$800 ea	15 trees	\$12,000
Div. 3 – Concrete			
a. Pour concrete pedestals around bases of columns	\$150 ea	14 posts	\$ 2,100
Div. 5 – Metals			
a. Replace deteriorated or missing corrugated panels	\$8 sf	480 sf	\$ 3,840
b. Repair pin holes in metal panels	\$5 ea	500 holes	\$ 2,500
Div. 9 - Finishes			
a. Paint exterior of metal siding	\$4 sf	5,105 sf	<u>\$ 20,420</u>
Subtotal:			\$ 40,860
Overhead/Profit	15%		\$ 6,129
Design Contingency	5%		\$ 2,043
Bond	1.5%		\$ 613
Builder's Risk	0.55%/year		\$ 449
Total Construction Budget:			\$ 50,094

CSI SUMMARY	COST
Div. 2 – Existing Conditions	\$ 14,712
Div. 3 - Concrete	\$ 2,574
Div. 5 - Metals	\$ 7,773
Div. 9 - Finishes	<u>\$ 25,035</u>
Grand Total	\$ 50,094

OPINION OF PROBABLE COST – Overlook Fence

Ducktown Basin Museum & Burra Burra Mine Programming Study
Ducktown Basin Museum & Burra Burra Mine State Historic Site
 Ducktown, Polk County, Tennessee
 SBC Project #160/000-01-2014

DESCRIPTION	Unit	Quantity	Total
Div. 2 – Existing Conditions			
a. Remove earlier chain link fence	Allowance	1	\$ 1,500
Div. 3 – Concrete			
a. Provide new concrete footers for new fence posts.	\$12 cu ft	150 posts	\$ 1,800
Div. 32 – Exterior Improvements			
a. Dig holes for new fence posts	\$100 ea.	150 posts	\$ 15,000
b. New aluminum security fence with radius spiked top at overlook and site	\$55 lin ft	1,200 lin ft	<u>\$ 66,000</u>
Subtotal:			\$ 84,300
Overhead/Profit	15%		\$ 14,145
Design Contingency	5%		\$ 4,215
Bond	1.5%		\$ 1,265
Builder's Risk	0.55%/year		\$ 927
Total Construction Budget:			\$104,852

CSI SUMMARY	COST
Div. 2 – Existing Conditions	\$ 1,840
Div. 3 –Concrete	\$ 2,207
Div. 32 – Exterior Improvements	<u>\$ 100,805</u>
Grand Total	\$ 104,852

OPINION OF PROBABLE COST – **Overlook Platform**

Ducktown Basin Museum & Burra Burra Mine Programming Study
Ducktown Basin Museum & Burra Burra Mine State Historic Site
Ducktown, Polk County, Tennessee
SBC Project #160/000-01-2014

DESCRIPTION	Unit	Quantity	Total
Div. 2 – Existing Conditions			
a. Relocate existing overlook platform to new concrete slab on top of mine shaft	Allowance	1	\$ 5,000
Div. 3 – Concrete			
a. Install reinforced concrete foundations for ramp and platform	\$12 cu ft	20	\$ 960
b. Pour concrete over metal formwork at ramp and floor of platform	\$5 sf	500 sf	\$ 2,500
Div. 5 – Metals			
a. Fabricate steel framing system for new ramp and platform	Allowance	1	\$ 35,000
b. Install new metal decking for concrete ramp and platform floor	\$5 sf	500 sf	\$ 2,500
c. Install corrugated metal panel roof	\$6 sf	385 sf	\$ 2,310
d. Install railing system and handrails at Ramp and platform	\$275 lin ft	165 lin ft	\$ 45,375
Div. 9 – Finishes			
a. Paint old Overlook Platform	Allowance	1	\$ 1,500
b. Paint metal parts of new platform	\$2 sf	2,800 sf	\$ 5,600
Div. 31 – Earthwork			
a. Excavate for foundations	\$100 cu yd	10 cu yds	\$ 1,000
b. Add topsoil, seed and straw at disturbance	\$5 sf	160 sf	<u>\$ 800</u>
Subtotal:			\$102,545

OPINION OF PROBABLE COST – Overlook Platform - continued

Overhead/Profit	15%	\$ 15,382
Design Contingency	5%	\$ 5,127
Bond	1.5%	\$ 1,538
Builder's Risk	0.55%/year	\$ 1,128
Total Construction Budget:		\$125,720

CSI SUMMARY

COST

Div. 2 – Existing Conditions	\$ 6,130
Div. 3 - Concrete	\$ 4,242
Div. 5 - Metals	\$104,436
Div. 9 - Finishes	\$ 8,705
Div. 31 – Earthwork	<u>\$ 2,207</u>
Grand Total	\$125,720

OPINION OF PROBABLE COST – Service Tunnel

Ducktown Basin Museum & Burra Burra Mine Programming Study
Ducktown Basin Museum & Burra Burra Mine State Historic Site
 Ducktown, Polk County, Tennessee
 SBC Project #160/000-01-2014

DESCRIPTION	Unit	Quantity	Total
Div. 4 – Masonry			
a. Rebuild retaining wall at collapse to left of tunnel entrance	Allowance	1	\$5,000
b. Fill crack in slab above tunnel entrance with grout	Allowance	1	<u>\$ 250</u>
Subtotal:			\$ 5,250
Overhead/Profit	15%		\$ 788
Design Contingency	5%		\$ 263
Bond	1.5%		\$ 79
Builder's Risk	0.55%/year		\$ 58
Total Construction Budget:			\$ 6,438

CSI SUMMARY	COST
Div. 4 – Masonry	<u>\$ 6,438</u>
Grand Total	\$ 6,438

OPINION OF PROBABLE COST – Paved Surfaces

Ducktown Basin Museum & Burra Burra Mine Programming Study
Ducktown Basin Museum & Burra Burra Mine State Historic Site
Ducktown, Polk County, Tennessee
SBC Project #160/000-01-2014

DESCRIPTION	Unit	Quantity	Total
Div. 32 – Exterior Improvements			\$0
a. See Machine Shop for required work			
b. Other pavement by Operating Association			

OPINION OF PROBABLE COST – Walkway to Mine Office

Ducktown Basin Museum & Burra Burra Mine Programming Study

Ducktown Basin Museum & Burra Burra Mine State Historic Site

Ducktown, Polk County, Tennessee

SBC Project #160/000-01-2014

DESCRIPTION	Unit	Quantity	Total
Div. 4 – Masonry			
a. Repair stone curb at walkway	\$35 sf	160 sf	\$ 5,600
b. Provide additional matching stone to complete repairs	Allowance	1	\$ 2,500
Div. 31 – Earthwork			
a. Remove grass and fill on top of pavement	\$100 cu yd	55 cu yd	<u>\$ 5,500</u>
Subtotal:			\$ 13,600
Overhead/Profit	15%		\$ 2,040
Design Contingency	5%		\$ 680
Bond	1.5%		\$ 204
Builder's Risk	0.55%/year		\$ 150
Total Construction Budget:			\$ 16,674

CSI SUMMARY	COST
Div. 4 – Masonry	\$ 8,931
Div. 31 - Earthwork	\$ 7,743
Grand Total	\$ 16,674

OPINION OF PROBABLE COST – Ore Bin Foundation

Ducktown Basin Museum & Burra Burra Mine Programming Study
Ducktown Basin Museum & Burra Burra Mine State Historic Site
Ducktown, Polk County, Tennessee
SBC Project #160/000-01-2014

DESCRIPTION	Unit	Quantity	Total
Div. 2 – Existing Conditions			
a. Remove roof slab over concrete block rooms	\$450 cu yd	39 cu yds	\$ 17,550
Div. 3 – Concrete			
a. Add gravel fill on top of bins for new slabs	\$10 sq yd	350 sf	\$ 3,500
b. Cover top of ore bins with concrete slabs	\$5 sf	350 sf	\$ 1,750
Div. 4 – Masonry			
a. Infill openings in CMU walls with new CMU. Coordinate with new access doors	\$22 sf	100 sf	\$ 2,200
b. Repair retaining wall. Repoint deteriorated mortar joints. Parge wall where missing. Infill holes in wall with stone or concrete.	Allowance	1	\$20,000
Div. 8 – Openings			
a. Install new access door frames	\$325	2	\$ 650
b. Install new louvered metal doors	\$625 ea	2	\$ 1,350
c. Install door hardware	\$175 ea	2	\$ 350
Div. 31 – Earthwork			
a. Remove dirt on top of bins for new slabs	\$100 cu yd	39 cu yds	<u>\$ 3,900</u>
Subtotal:			\$51,250
Overhead/Profit	15%		\$ 7,688
Design Contingency	5%		\$ 2,563
Bond	1.5%		\$ 769
Builder's Risk	0.55%/year		\$ 564
Total Construction Budget:			\$ 62,834

OPINION OF PROBABLE COST – Ore Bin Foundation - continued

CSI SUMMARY	COST
Div. 2 – Existing Conditions	\$ 21,517
Div. 3 - Concrete	\$ 6,436
Div. 4 - Masonry	\$ 27,217
Div. 8 - Openings	\$ 2,882
Div. 31 - Earthwork	<u>\$ 4,782</u>
Grand Total	\$ 62,834

OPINION OF PROBABLE COST – Fire Hose #1

Ducktown Basin Museum & Burra Burra Mine Programming Study
Ducktown Basin Museum & Burra Burra Mine State Historic Site
 Ducktown, Polk County, Tennessee
 SBC Project #160/000-01-2014

DESCRIPTION	Unit	Quantity	Total
Div. 2 – Existing Conditions			
a. Remove existing roofing to deck.	Allowance	1	\$ 175
Div. 3 – Concrete			
a. Fill crack in concrete foundation	Allowance	1	\$ 100
Div. 7 – Thermal & Moisture Protection			
a. Install new roofing felt	Allowance	1	\$ 50
b. Apply new rolled asphalt roofing material	\$400 sq	0.5 sf	\$ 200
Div. 9 – Finishes			
a. Paint exterior wood surfaces	\$2 sf	150 sf	<u>\$ 300</u>
Subtotal:			\$ 825
Overhead/Profit	15%		\$ 124
Design Contingency	5%		\$ 41
Bond	1.5%		\$ 12
Builder's Risk	0.55%/year		\$ 9
Total Construction Budget:			\$1,011

CSI SUMMARY	COST
Div. 2 – Existing Conditions	\$ 215
Div. 3 – Concrete	\$ 120
Div. 7 – Thermal & Moisture Protection	\$ 308
Div. 9 - Finishes	<u>\$ 368</u>
Grand Total	\$ 1,011

OPINION OF PROBABLE COST – Fire Hose #2

Ducktown Basin Museum & Burra Burra Mine Programming Study
Ducktown Basin Museum & Burra Burra Mine State Historic Site
 Ducktown, Polk County, Tennessee
 SBC Project #160/000-01-2014

DESCRIPTION	Unit	Quantity	Total
Div. 2 – Existing Conditions			
a. Remove existing roofing to deck.	Allowance	1	\$ 175
Div. 6 – Wood, Plastics and Composites			
a. Replace deteriorated wood materials	Allowance	1	\$ 600
Div. 7 – Thermal & Moisture Protection			
a. Install new roofing felt	Allowance	1	\$ 50
b. Apply new rolled asphalt roofing material	\$400 sq	0.5 sf	\$ 200
Div. 9 – Finishes			
a. Paint exterior wood surfaces	\$2 sf	200 sf	<u>\$ 400</u>
Subtotal:			\$1,425
Overhead/Profit	15%		\$ 214
Design Contingency	5%		\$ 71
Bond	1.5%		\$ 21
Builder's Risk	0.55%/year		\$ 16
Total Construction Budget:			\$1,747

CSI SUMMARY	COST
Div. 2 – Existing Conditions	\$ 215
Div. 6 – Wood, Plastics and Composites	\$ 736
Div. 7 – Thermal & Moisture Protection	\$ 308
Div. 9 - Finishes	<u>\$ 488</u>
Grand Total	\$1,747

OPINION OF PROBABLE COST – Bit House (Tank)

Ducktown Basin Museum & Burra Burra Mine Programming Study
Ducktown Basin Museum & Burra Burra Mine State Historic Site
Ducktown, Polk County, Tennessee
SBC Project #160/000-01-2014

DESCRIPTION	Unit	Quantity	Total
Div. 2 – Existing Conditions			
a. Clean exterior of storage tank	\$1.50 sf	260 sf	\$ 390
Div. 9 – Finishes			
a. Paint exterior of storage tank	\$3 sf	260 sf	<u>\$ 520</u>
Subtotal:			\$ 910
Overhead/Profit	15%		\$ 137
Design Contingency	5%		\$ 46
Bond	1.5%		\$ 14
Builder's Risk	0.55%/year		\$ 10
Total Construction Budget:			\$1,117

CSI SUMMARY	COST
Div. 2 – Existing Conditions	\$ 479
Div. 9 - Finishes	<u>\$ 638</u>
Grand Total	\$1,117

OPINION OF PROBABLE COST – Guard Booth

Ducktown Basin Museum & Burra Burra Mine Programming Study
Ducktown Basin Museum & Burra Burra Mine State Historic Site
Ducktown, Polk County, Tennessee
SBC Project #160/000-01-2014

DESCRIPTION	Unit	Quantity	Total
Div. 3 – Concrete			
a. Provide new concrete footers for new support columns	\$350 ea	2	\$ 700
Div. 6 – Wood, Plastics and Composites			
a. Erect new support columns	\$500 ea	2	\$ 1,000
b. Construct new wood platform - 6' x 6'	\$4 lin ft	60 lin ft	\$ 240
c. Apply plywood floor	\$2 sf	36 sf	\$ 72
d. Erect new walls, frame new openings	\$20 lin ft	24 lin ft	\$ 480
e. Install roof framing	\$8 sf	50 sf	\$ 400
f. Install wood roof decking	\$2 sf	75 sf	\$ 150
g. Install plywood on studs for interior wall finishes	\$2 sf	325 sf	\$ 650
h. Install plywood on rafters for ceiling	\$2 sf	75 sf	\$ 150
i. Install wood step at door	Allowance	1	\$ 500
Div. 7 – Thermal and Moisture Protection			
a. Install roof felt	Allowance	1	\$ 100
b. Install asphalt shingles	\$400 sq	0.75 sq	\$ 300
c. Install wood siding on exterior	\$15 sf	250 sf	\$ 3,750
Div. 8 – Openings			
a. Install window frames	\$7 lin ft.	30 lin ft.	\$ 210
b. Install door frames	\$30 lin ft	17 lin ft	\$ 510
c. Install windows	\$400	3	\$ 1,200
d. Install door	\$375	1	\$ 375
e. Install door hardware	\$750	1	\$ 750
Div. 9 – Finishes			
a. Paint exterior of guard booth	\$2 sf	250 sf	\$ 500
b. Paint interior of guard booth	\$2 sf	325 sf	\$ 650
Div. 31 – Earthwork			
a. Dig holes for support posts	\$200 ea	2	\$ 400
Subtotal:			\$13,087

OPINION OF PROBABLE COST – Guard Booth - continued

Overhead/Profit	15%	\$ 1,963
Design Contingency	5%	\$ 654
Bond	1.5%	\$ 196
Builder's Risk	0.55%/year	\$ 144
Total Construction Budget:		\$16 047

CSI SUMMARY

COST

Div. 3 – Concrete	\$ 859
Div. 6 – Wood, Plastics and Composites	\$ 4,465
Div. 7 - Thermal & Moisture Protection	\$ 5,089
Div. 8 - Openings	\$ 3,733
Div. 9 - Finishes	\$ 1,411
Div. 31 – Earthwork	<u>\$ 490</u>
Grand Total	\$16,047

OPINION OF PROBABLE COST – Exterior Operational Equipment

Ducktown Basin Museum & Burra Burra Mine Programming Study
Ducktown Basin Museum & Burra Burra Mine State Historic Site
 Ducktown, Polk County, Tennessee
 SBC Project #160/000-01-2014

DESCRIPTION	Unit	Quantity	Total
Div. 5 – Metals			
a. Remove rust off equipment	\$7,000 week	8 weeks	\$56,000
Div. 9 – Finishes			
a. Seal metals with clear coat	Allowance	1	<u>\$10,000</u>
Subtotal:			\$66,000
Overhead/Profit	15%		\$ 9,900
Design Contingency	5%		\$ 3,300
Bond	1.5%		\$ 990
Builder's Risk	0.55%/year		\$ 726
Total Construction Budget:			\$80,016

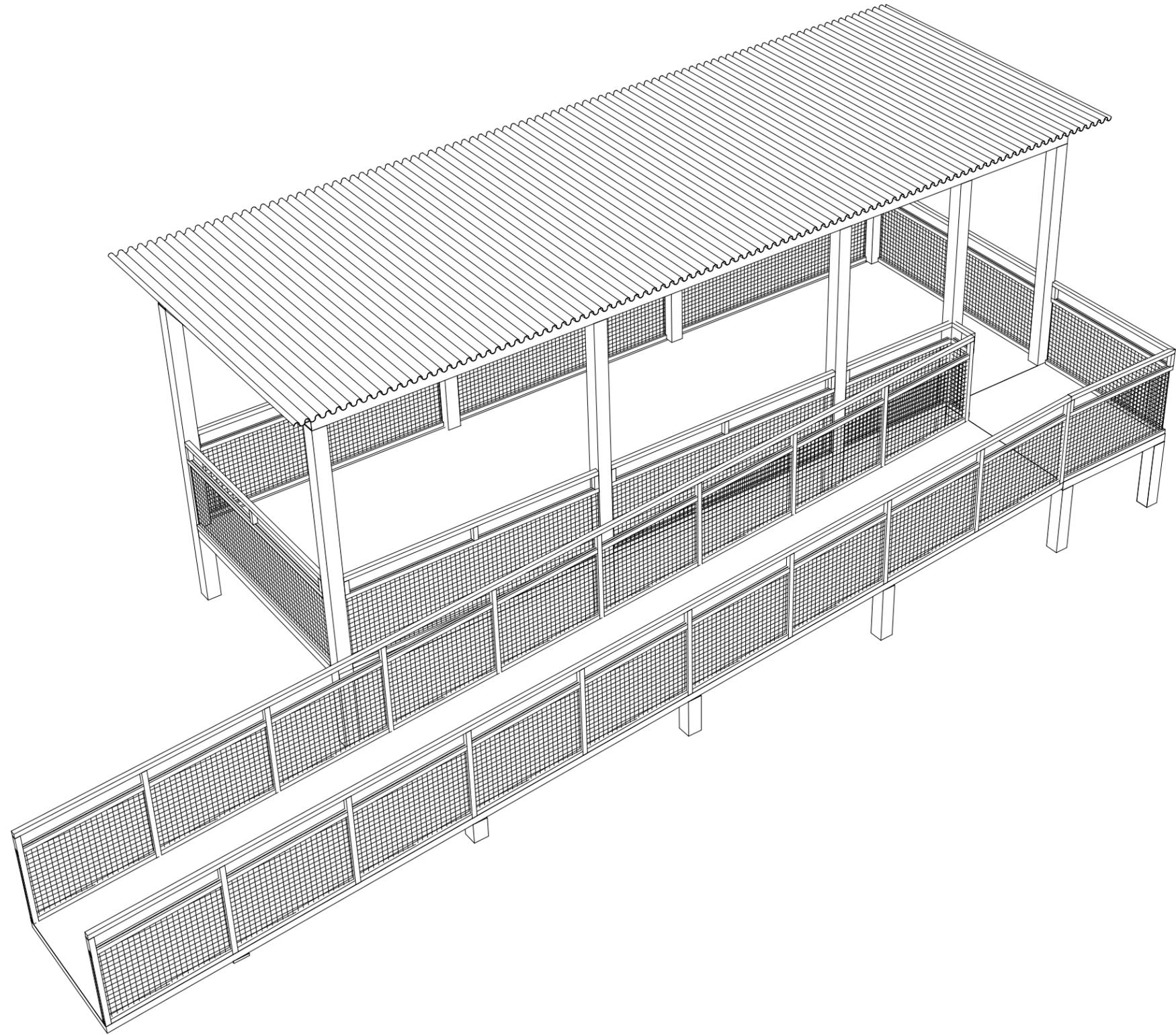
CSI SUMMARY	COST
Div. 5 – Metals	\$67,756
Div. 9 - Finishes	\$12,260
Grand Total	\$80,016

OPINION OF PROBABLE COST – Mine Shaft

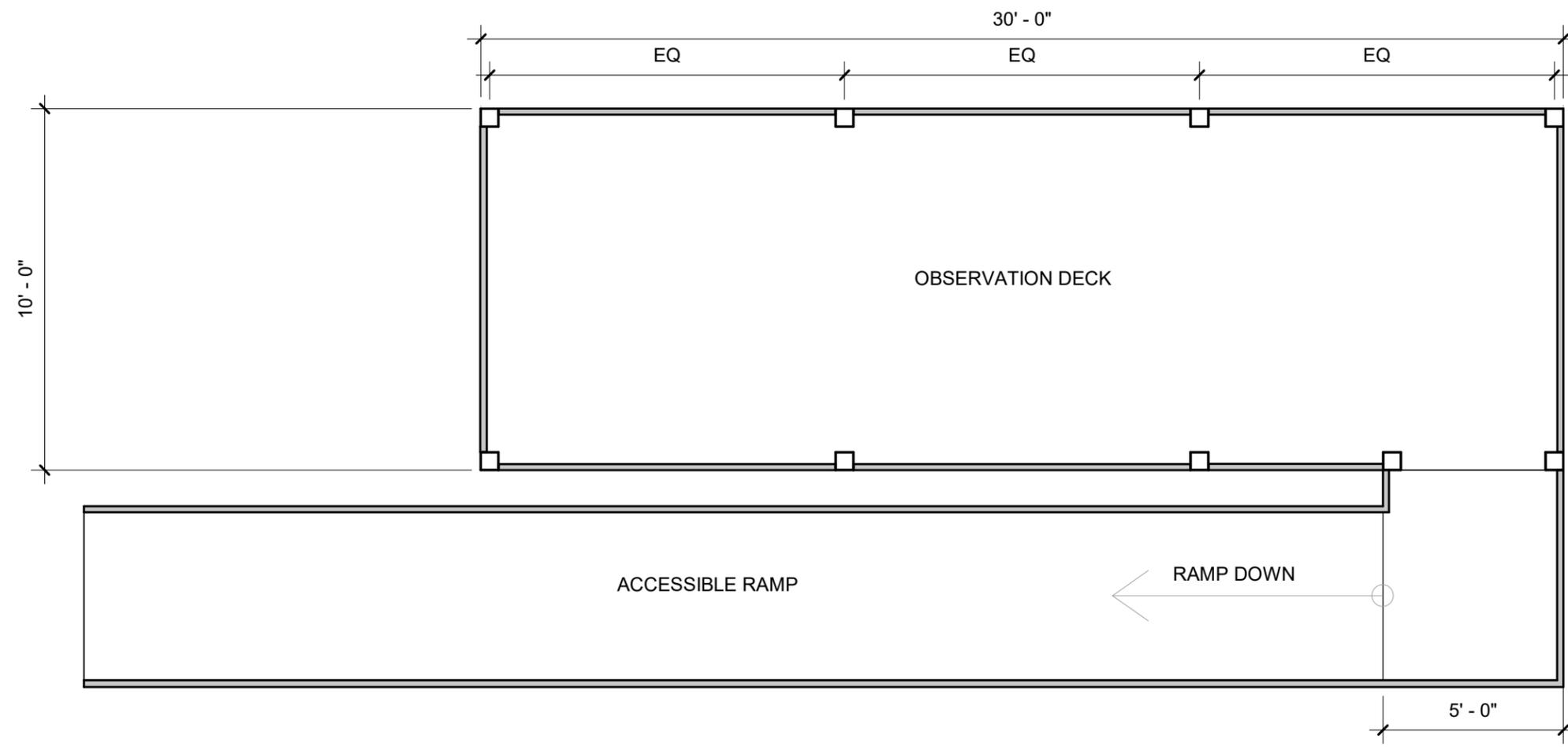
Ducktown Basin Museum & Burra Burra Mine Programming Study
Ducktown Basin Museum & Burra Burra Mine State Historic Site
 Ducktown, Polk County, Tennessee
 SBC Project #160/000-01-2014

DESCRIPTION	Unit	Quantity	Total
Div. 2 – Existing Conditions			
a. Remove fences.	\$6 lin ft	250 lin ft	\$ 1,500
Div. 3 – Concrete			
a. Install heavily reinforced concrete slab over former entrance to mine shaft	\$50 sf	450 sf	\$22,500
Div. 31 – Earthwork			
a. Fill former fence post holes with topsoil, seed and straw	\$50 ea	40 posts	\$ 1,200
b. Remove topsoil at mine shaft opening – 15' x 30'	\$100 cu yd	50 cu yds	<u>\$ 5,000</u>
Subtotal:			\$30,200
Overhead/Profit	15%		\$ 4,530
Design Contingency	5%		\$ 1,510
Bond	1.5%		\$ 453
Builder's Risk	0.55%/year		\$ 332
Total Construction Budget:			\$37,025

CSI SUMMARY	COST
Div. 2 – Existing Conditions	\$ 3,309
Div. 3 - Concrete	\$27,586
Div. 31 - Earthwork	<u>\$ 6,130</u>
Grand Total	\$37,025



DUCKTOWN OBSERVATION DECK
PERSPECTIVE



DUCKTOWN OBSERVATION DECK
FLOOR PLAN

0' 2' 4' 8'

