



VILLAGE OF HASTINGS-ON-HUDSON

Municipal Building
7 Maple Avenue
Hastings-on-Hudson, New York 10706

22 February 2019

John Frankenthal
Liability Business Manager
Atlantic Richfield Company
MC 200-1E
150 West Warrenville Road
Naperville, IL 60563

RE: Draft Water Tower Preservation Plan, Harbor at Hastings Site

Dear Mr. Frankenthal:

Please find enclosed the Draft Water Tower Preservation Plan for the Harbor at Hastings site in the Village of Hastings-on-Hudson, NY (Village). The Draft Water Tower Preservation Plan summarizes the Village's general approach to retain a contractor to dismantle the water tower, transport it off-site, and store the tower at an off-site location for the duration of the remediation and redevelopment of the Harbor at Hastings site.

Please note that there are several questions directed to Atlantic Richfield within the text of the Draft Preservation Plan that will impact the scope of work for the Contractor selected by the Village to dismantle the water tower. For example, will it be permissible for the Village's Contractor to abate the lead paint on the water tower before removing it from the Harbor at Hastings site, with appropriate air and water quality controls in place?

Please review the attached Draft Preservation Plan and reply to the Village with responses to the questions within the Plan and other comments and questions that you may have by 22 March 2019. Once we receive your responses, the Village will be able to move forward with Contractor procurement and submit a Final Preservation Plan for your approval. Please contact me with any questions at (914) 478-3400.

Very truly yours,


Fran Frobel
Village Manager

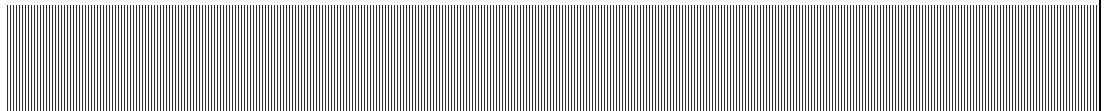
c: P. Johnson, J. Lucari (AR)
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S. Bailey, A. Gold, L. Warner (LBUS)



**PRE-DRAFT
WATER TOWER PRESERVATION PLAN**

**Harbor at Hastings Site
1 River Street
Hastings-on-Hudson, New York**

February 2019



Prepared By:

Louis Berger
Elmsford, New York



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Attachment A – Structural Survey

Attachment B – Lead-Based Paint Survey

Attachment C – Water Tower As-Builts

Attachment D – Cost Estimates



Glossary of Acronyms

AR	Atlantic Richfield
ARCO	ARCO Environmental Remediation Limited
AWC	Anaconda Wire and Cable Company
BP	British Petroleum
CAMP	Community Air Monitoring Plan
CFR	Code of Federal Regulations
CD	Consent Decree
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
OU	Operable Unit
PCB	Polychlorinated Biphenyl
PP	Preservation Plan
ROD	Record of Decision



1. GENERAL DESCRIPTION

This draft Water Tower Preservation Plan (PP) was prepared to outline the procedures that will be taken for dismantling, lead paint abatement, and storage of the Water Tower currently located on the Harbor at Hastings property (formerly Anaconda Wire and Cable). The Water Tower preservation effort will be conducted by the Village of Hastings-on-Hudson, New York. The plan for reinstallation of the Water Tower will be addressed at a later date, once environmental remediation of the Harbor at Hastings property (referred to as the Site) has been completed.

This PP was prepared in accordance with the 2016 Consent Order between BP – ARCO (British Petroleum – ARCO Environmental Remediation Limited), the Village of Hastings-on-Hudson, and Hudson Riverkeeper. This PP contains the following elements:

- Site background, physical setting, and Site history pertaining to the Water Tower preservation project.
- Previous investigations conducted to assess the condition of the existing Water Tower.
- Water Tower dismantling project requirements and provisions
- Project Schedule
- Requirements of the Consent Decree (CD) for the Water Tower preservation project
- Required design specifications and drawings
- Funding Plan
- Required permits and approvals
- References

1.1. Background

The Water Tower (Figure 1) was constructed circa 1916 for the National Conduit & Cable Company's operations at 1 River Street in Hastings-on-Hudson, New York. In 1919, Anaconda Copper and Mining Company, a predecessor to Anaconda Wire and Cable Company (AWC), purchased part of the property and eventually merged into AWC.

During World War II, AWC used polychlorinated biphenyl (PCB) mixtures to manufacture electric cables for shipboard use under a U.S. Navy contract. After World War II, production of such cables ceased, but AWC continued to produce electrical and television cables at the site until 1975. In 1977, Atlantic Richfield (AR) purchased AWC, although it never operated the plant in the Village of Hastings-on-Hudson, and subsequently sold the firm in 1978. The Site went through several



owners until 1998, when an affiliate of AR (ARCO) repurchased the Site. Since 1998, AR and ARCO have facilitated environmental investigations and remediation efforts at the Site. The Site is currently being remediated by BP and its subsidiary ARCO.

The Water Tower is no longer used for water storage; however, the Village of Hastings-on-Hudson wishes it to be preserved. In a public input survey in November 2017, Hastings-on-Hudson residents voted to preserve the Water Tower. The Water Tower must to be dismantled and removed from the Harbor at Hastings site to accommodate remedial construction activities, including the excavation of PCB and metal-contaminated surface and subsurface soils and restoration of a sloped shoreline. The Village plans to dismantle and store the Water Tower components for future reassembly on the Site.

1.2. Physical Setting

The Water Tower is located on the Harbor at Hastings Site in the Village of Hastings-on-Hudson, NY [Figure 2, reproduced from the Remedial Design Work Plan (Haley & Aldrich, 2014)]. Portions of the Site were reclaimed from the Hudson River created by the placement of fill between the mid-1800s and the early 1900s, using a series of bulkhead walls of various construction types along its western edge. The Site is designated NY State Superfund Site #360022 and is divided into two operable units (OUs) – OU-1 and OU-2 (please refer to Figure 2).

- OU-1 is the on-shore portion, encompassing approximately 28-acres of upland area located at 1 River Street in the Village of Hastings-On-Hudson. The remediation of OU-1 addresses PCB contamination and redevelopment of the property.
- OU-2 is the off-shore area that extends westward from the OU-1 boundary into the Hudson River and includes the Hudson River and Hudson River sediments. The remediation of OU-2 addresses PCBs detected in Hudson River sediments proximal to the shoreline of the Site.

The following terminology will be used throughout this document:

- “BP-ARCO” refers to the Atlantic Richfield Company and its affiliates including, but not limited to AR, ARCO Environmental Remediation Limited, LLP and BP America, Inc.
- The “Site” refers to the upland area, or OU-1.
- The “Village” refers to the Village of Hastings-on-Hudson, New York.



1.3. Site History

In November 1995, a Consent Order was signed by BP-ARCO and New York State Department of Environmental Conservation (NYSDEC) to investigate the environmental conditions at the Site. In December 2003, BP-ARCO, the Village, and the Hudson Riverkeeper Fund, Inc. entered into a CD to remediate PCB contamination detected at OU-1. NYSDEC issued a Record of Decision (ROD) for OU-1 in March 2004, which selected a remedial alternative that met the obligations of the 2003 CD.

Since the ROD, BP-ARCO has demolished the structures on the Site (with the exception of the Water Tower) to prepare for remediation via soil excavation and off-site disposal. In addition, groundwater wells have been installed to facilitate recovery of PCB-containing non-aqueous phase liquid waste from beneath the northwest corner of the Site.

A ROD (for OU-2) and a ROD amendment (for OU-1) were signed in March 2012 to integrate the remedy for both OUs. In November 2013, an Order on Consent was signed detailing BP-ARCO's remedial obligations at the Site. The Order on Consent incorporated the ROD for OU-2 and the amendment ROD for OU-1. The CD initially executed in 2003 was revised by the Village, BP-ARCO, and Riverkeeper to address the details of the 2012 ROD documents and include provisions for preservation of the Water Tower. The revised CD was signed by the parties in 2016 and signed and filed by the U.S. District Court in January 2017.

1.4. Summary of Previous Assessment Activities at Site

In accordance with the Water Tower preservation provisions of the 2017 CD, the Village retained Louis Berger to conduct an inspection of the Water Tower to determine if dismantling was feasible and to assess whether lead paint was present. The findings of the investigations are summarized in the sections that follow.

1.4.1. Structural Inspection

In November 2016, LB conducted a visual survey and where possible, hands-on inspection of the Water Tower's structural members and connections. An ultrasonic measuring device and basic caliper were used to determine the thickness of the tank's steel plates and other components for possible section loss due to corrosion. The Water Tower was found to be in overall good condition with mostly minor corrosion throughout and only minor loss of material on one of the posts and the tank. There were no observed missing rivets and pitting of material due to corrosion was not found. The inspection concluded that the Water Tower could withstand being dismantled, refurbished, and reinstalled. For the results and details of the structural survey, please refer to Attachment A.



1.4.2. Lead-Based Paint Survey

Following the findings of the structural inspection, the Village requested a lead paint survey of the Water Tower. Based on its age and construction, Louis Berger had previously recommended that the existing paint be assumed as lead-containing paint. A limited environmental lead-based paint survey of the Water Tower was conducted in April 2017 by Louis Berger. The survey consisted of X-Ray Fluorescence analysis of suspect lead-based paint in areas that could be accessed without a personnel lift. The results showed that six of the seven painted surfaces that were investigated contained lead-based paint, and it is assumed that all paint on the Water Tower structure is lead-based paint. For complete results and details see Attachment B.



2. REQUIREMENTS AND PROVISIONS

According to the available as-built plans (Attachment C), the Water Tower support structure consists of four riveted steel, laced posts/columns, each made up of two 12-inch channels with a 14-inch cover plate on the inside face of the post, and cross bars (lacing) on the outside face. The posts are constructed from three sections with splices and lateral support struts spaced at approximately 30-foot intervals to extend up about 90 feet in height. Lateral tower stiffness is provided at each bay of the three post sections with 1 ½-inch square steel cross rods. The Water Tower is anchored to a concrete foundation with one 2.5-inch diameter by 6-foot long anchor bolt at each post anchor.

The 75,000-gallon capacity tank, supported by the four posts, is made up of 5 steel welded cylindrical plates, with a total diameter of 22 feet, a height of 19 feet 4 inches and a conical shaped steel roof. The bottom two plates and top two plates of the tank have a thickness of ¼-inch and the middle plate has a thickness of 5/16-inch. A standard 24-inch diameter catwalk surrounds the lower end of the tank. The supply lines and control lines have been removed.

The available as-built plans indicate that the tower received a shop coat paint of standard Black Graphite and 3 field coats of standard Green Graphite.

The total weight of the Water Tower (when empty) is estimated at approximately 50,000 pounds.

2.1. Project Elements

2.1.1. Sequencing

The preservation and restoration of the Water Tower will involve multiple steps. These steps are discussed in the sections below.

2.1.2. Disassembly of Tower

Mobilization for the dismantling phase will be the first step. It is understood that the Water Tower has been painted with lead-based paint and that paint system is deteriorating. Lead paint abatement will be performed at limited locations, where the steel plate will be torch cut or rivets must be removed, prior to disconnections. After spot abatement has been performed, existing rivets will be removed and replaced with temporary high strength bolts to maintain the stability of the structure during designated rivet removals. Starting from the top of the tower, discrete elements of the structure, such as the catwalk and ladder will be removed to facilitate tank removal. Following removal of these items, the tank will be dismantled into manageable,



transportable pieces, as required for transportation and storage. This will be followed by removal of the tower legs and other miscellaneous elements such as electrical conduits. It is assumed that foundation removal will be conducted by BP-ARCO and its remedial construction contractors as a component of soil remediation following the dismantling of the tower structure.

Questions for BP-ARCO Reviewers:

1. *If contractor equipment decontamination is required before leaving the Site, is there a decontamination pad that the Village's contractor can use?*

2.1.3. Lead Paint Abatement

It is assumed that BP-ARCO will permit the Village's Water Tower dismantling contractor(s) to conduct lead paint abatement of the dismantled tower components at the Harbor at Hastings site. A temporary tented containment area located on one of the existing concrete pads shall be set up for the lead paint abatement. Pre-work sampling for lead contamination shall be conducted to establish existing conditions. Based on the results of the sampling, the lead paint shall then be abated from the Water Tower components. To protect metal surfaces during storage, exposed surfaces shall be sealed with a water proof metal sealer following paint abatement.

After all work has been completed, the lead paint abatement work area at the Site shall be decontaminated and post-work sampling conducted to confirm no significant adverse impact was caused to the existing concrete pad or surrounding area. Following confirmation of the post-abatement sample results with BP-ARCO, the tented area shall be removed, and waste generated during abatement removed and disposed off-site in accordance with State and Federal regulations.

Air monitoring shall be performed during all lead-paint abatement activities (see Section 2.2.1).

Questions for BP-ARCO Reviewers:

1. *Please specify areas at the Site that can be used for the proposed work and temporary storage.*
2. *Please specify minimum requirements for pre- and post- abatement sampling to be conducted in the work area.*

2.1.4. Transport and Storage of Water Tower

The Water Tower and its components will be loaded onto a lowboy transport and hauled approximately half a mile north on River Street to the Village's selected long-term storage location at the Tower Ridge Yacht Club and Marina. It is anticipated that a storage area approximately 25 by 50 foot in size will be needed to store the tower components. Figure 3 shows the location of the Village's selected storage site.



2.2. Design Considerations

2.2.1. Air Monitoring

The lead-paint based survey summarized in Section 1.4.2 confirmed the presence of lead-based paint on the Water Tower's legs and it is assumed that lead paint is present on all of the tower and tank's surfaces. Surfaces coated with lead-based paint can create contaminated dust and other airborne-lead hazards during handling. Therefore, any work which may potentially disturb the lead-based paint coated surfaces and lead-based materials needs to be performed in accordance with the Environmental Protection Agency 40 Code of Federal Regulations (CFR) 745 and Occupational Safety and Health Administration 29 CFR 1926.62 Lead in Construction regulations. Additionally, prior to the performance of such work, the selected contractor will develop a Community Air Monitoring Plan (CAMP) for lead. The New York State Department of Health (NYSDOH) will review and provide input on the CAMP.

Question for BP-ARCO Reviewers:

1. *Please specify minimum air quality parameters that BP-ARCO would request to be included in the CAMP and routine air quality monitoring to be performed during construction.*

2.2.2. Stormwater Management

Existing stormwater controls will not be disturbed during the Water Tower dismantling work. Prior to the start of work, the location and condition of existing stormwater controls will be documented and post-construction, existing conditions will be restored. If existing stormwater controls are inadvertently damaged during construction, they will be replaced with new, similar or equivalent systems to maintain the integrity of the existing system. If existing controls need to be temporarily relocated during construction to allow for access, BP-ARCO representatives will be contacted at least 48 hours prior to relocation and proposed alternative controls reviewed.

If necessary, based on work area location, additional stormwater controls may be installed prior to Water Tower disassembly and paint abatement, including but not limited to silt fencing, straw bales, and straw wattles to divert stormwater flows away from work areas.

2.2.3. Existing Utilities and Clearance

A potential route to transport the dismantled Water Tower would be to exit the Site, turn left onto River Street and proceed past the West Main Street Bridge until reaching the Marina; however, there are potential utility lines that may cause clearance problems. On the northern side of the West Main Street bridge, there are utility lines whose height may not provide adequate clearance. In addition, there are utility lines at the electronic gate at the entrance to the Site that may not provide enough clearance.



An alternate route would be to transport the Water Tower across the Site, past the location of the former Building 52 and enter River Street adjacent to the southern side of the Tennis Club. A portion of the fence surrounding the Site would need to be temporarily removed and restored following transport of the Water Tower off-site. This method of transportation would bypass the utility lines with overhead clearance concerns. Temporary fencing would be installed if the existing fencing would be open overnight.

The selected contractor will evaluate the transportation routes and coordinate with BP-ARCO and other stakeholders as to the most appropriate transportation route.

Question for BP-ARCO Reviewers:

1. *Is transportation of the dismantled Water Tower across the Site and temporary removal of a section of site fencing on the eastern site boundary adjacent to the Tennis Club an acceptable alternative haul route for transfer of the Water Tower to off-Site storage?*

2.2.4. Traffic Control

Traffic control will be required when transporting the tower and its components to the storage area. Coordination will be necessary with local police and businesses along the route. Advance notice will be given to area residents and businesses.

2.3. Project Documents

2.3.1. Dismantling and Restoration Design

According to the 2017 CD, this PP must be submitted 60 days prior to BP-ARCO's delivery of the Final Remedial Design for OU-1 to NYSDEC. The plan must include the following elements:

- Establishes that the selected Contractor meets BP-ARCO's requirements; see Section 2.4.1.
- Contractor Health and Safety Plan; see Section 2.4.2.
- Project schedule for dismantling and removal; see Sections 2.4.4. and 2.5.
- Demonstrate availability of sufficient funding; see Section 2.4.6.

In addition, NYSDEC, NYSDOH and the New York State Historic Preservation Office will review the dismantling and refurbishment design plan prior to implementation.

Question for BP-ARCO Reviewers:

1. *Please provide the current schedule for completion of the Remedial Design documents.*



2.3.2. Procurement and Construction Contract Documents

Following approval of the Water Tower PP, Louis Berger or the selected Contractor will prepare procurement documents for the Village of Hastings-on-Hudson, including plans and specifications for the work outlined in this PP. A list of the potential types of plans and specifications required is presented in Section 3.

2.3.3. Contractor Work Plan and Submittal

Following Contractor selection, the selected Contractor shall prepare a work plan detailing the proposed steps to be taken to implement the Water Tower dismantling, lead paint abatement, and transportation for long-term storage tasks. In addition, the work plan shall identify procedures for tracking construction deficiencies, including identification and corrective action. The workplan must also outline procedures for scheduling, reviewing, certify and managing submittals. A description of the quality control organization, including a chart and the names, qualifications, duties and responsibilities of each person assigned a quality control function shall be in the workplan.

2.4. Consent Decree

In keeping with the 2017 CD, the work will need to comply with the following requirements.

2.4.1. Contractor Requirements

The selected Contractor for the Water Tower PP must meet the following criteria:

- Experienced demolition and restoration contractor
- Trained, certified, and qualified to work on a hazardous waste site
- Capable of meeting BP-ARCO's health and safety requirements
- Fully insured and bonded at levels consistent with BP-ARCO's insurance and bonding requirements

The procurement documents will require the submittal of documents addressing the above criteria for review by BP-ARCO.

Questions for BP-ARCO Reviewers:

- 1. Please provide any specific requirements that BP-ARCO may have for the demolition contractor including types of experience, length of experience, work on similar projects.*
- 2. Please provide any specific requirement that BP-ARCO may have for potential lower-tier subcontractors related to the project.*



3. *Please clarify if BP-ARCO is requesting to review contractor/subcontractor qualifications or other input they may want to have in the selection process.*
4. *Please clarify if a property access agreement will be required for the proposed work. If required would this be issued to the Village and/or their Contractor. Please clarify any other requirements for the use of the site that need to be established prior to the start of construction.*

2.4.2. Contractor Health and Safety Plan

The Contractor Health and Safety Plan must be submitted for BP-ARCO review and approval following contractor selection.

Question for BP-ARCO Reviewers:

1. *Please provide the most recent version of the BP-ARCO Site Health and Safety Plan and requirements that should be incorporated into the Contractor Health and Safety Plan.*

2.4.3. Indemnification and Insurance Requirements

The selected Contractor must release and indemnify BP-ARCO for any claims related to work being performed. Such indemnification shall be subordinate to naming BP-ARCO as an insured or additional insured.

Questions for BP-ARCO Reviewers:

1. *Please provide any indemnification language addressing work on BP-ARCO property that should be included in the procurement documents.*
2. *Please provide any bonding or insurance requirements including funding levels for each.*

2.4.4. AR Remedial Construction Coordination Requirements

The Water Tower work must not interfere with or delay BP-ARCO's remediation schedule for OU-

1. At a minimum, the Water Tower must be completely dismantled and removed before on-site remediation begins and the Water Tower shall not be reinstalled until on-site remediation has finished and site redevelopment plans have been finalized.

2.4.5. Water Tower Preservation Plan

BP-ARCO has the right to review and approve the Water Tower PP. If BP-ARCO approves the plan, the Village shall be responsible for the dismantling, treating and storing the Water Tower and for demonstrating that it has raised the remaining funds necessary to carry out the Plan. As per the 2017 CD, if BP-ARCO rejects the plan, BP-ARCO shall progress with demolition of the Water Tower. The Village must review any demolition permit application in a timely manner. Failure to do approve the demolition is considered cause for renegotiation of the CD.



2.4.6. Funding

The Village must demonstrate that it has the funds to pay for the work minus the matching funds provided by BP-ARCO (see Section 4.2 for further details) and less any funds that have been contributed by the Trust Fund to the Village or funds from a third party that are specifically earmarked for the Water Tower Preservation.

2.5. Schedule

A concept schedule with assumed durations is shown in Figure 4.

Question for BP-ARCO Reviewers:

- 1. Are there any site activities scheduled that would impact planning for the dismantling of the Water Tower? If so, when are the 'blackout periods'?*



3. SPECIFICATIONS AND DRAWINGS

3.1. List of Specifications

The following is a list of the administrative and technical specifications included in the Water Tower dismantling, treatment and storage design:

DIVISION 0 – PROCUREMENT AND CONTRACTING REQUIREMENT

00 01 15	List of Drawings
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DIVISION 1 – GENERAL REQUIREMENTS

01 11 00	Summary of Work
01 14 00	Work Restrictions
01 22 00.00 10	Price and Payment Procedures
01 30 00	Administrative Requirements
01 32 01.00 10	Project Schedule
01 33 00	Submittal Procedures
01 31 13	Project Coordination and Meetings
01 35 29	Health, Safety, and Emergency Response Procedures for Contaminated Sites
01 36 20	Perimeter Air Monitoring
01 50 00	Temporary Construction Facilities and Controls
01 57 13	Erosion and Sediment Controls
01 71 13	Mobilization / Demobilization
01 77 00	Closeout Procedures

DIVISION 2 – EXISTING CONDITIONS

02 12 00	Offsite Transportation and Storage
02 41 19	Structure Demolition
02 61 13	Excavation and Handling of Contaminated Materials
02 83 19.13 10	Lead-Based Paint Abatement

DIVISION 5 – METALS

05 50 00	Metal Fabrications
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DIVISION 32—EXTERIOR IMPROVEMENTS

32 31 13	Chain Link Fences and Gates
32 92 00	Site Restoration



3.2. List of Drawings

The following is a partial list of drawings to be included in the Water Tower dismantling, treatment and storage design package:

- Title page
- Legend and notes
- Existing conditions drawing
- Site conditions plan
- Site controls (air monitoring, stormwater management, lead paint containment system)
- Structural drawings and details
- Removal plan and transportation route
- Storage facility plan and requirements
- Soil erosion & sediment control plan
- Other details, as appropriate



4. FUNDING

The 2017 CD describes the requirements for how the Water Tower preservation project is to be funded and how matching and avoided costs will be contributed by BP-ARCO. The key elements of the agreement with regard to funding sources and payment schedules are summarized below.

4.1. Dismantling and Restoration Cost Estimate

In April 2017, on behalf of BP-ARCO, Envirocon estimated the Water Tower demolition cost to be \$490,000 (Attachment D). This cost was based solely on the cost to dismantle and remove the tank from the Site. This estimate reflects a baseline cost to the remediation project necessary to address the Water Tower.

In June 2017 on behalf of the Village, Louis Berger estimated the cost to dismantle, restore, move, store and reinstall the Water Tower in the original location, to be \$750,000 (Attachment D). This estimate reflects the preservation cost for the Water Tower.

4.2. Matching Funds

According to the 2017 CD, BP will pay the Avoided Demolition Fee (estimated at \$490,000, for the removal of the Water Tower from the site. In addition, BP-ARCO shall contribute a 1:1 funding match to the Village Trust Fund up to 1.35 million dollars or 50% of the actual cost to construct the restored or replica water tower whichever is less.

The first third of BP-ARCO's estimated matching funds shall be provided at the time that the Village or a third party enters into the construction contract (including the avoided demolition costs?). The second third shall be provided upon initiation of construction activities and the final third provided upon completion of the restored Water Tower and submittal of final cost documentation (after reinstallation).



5. PERMIT EQUIVALENCY AND OTHER ENVIRONMENTAL REQUIREMENTS

5.1. Village Permit

A no fee demolition permit is needed for this project.

Question for BP-ARCO Reviewers:

1. *Please specify what approvals/permits, if any, are required.*



6. REFERENCES

Envirocon, 2017. Hastings on Hudson AERL Site Water Tower Demolition. Prepared by Envirocon. April 2017.

Haley & Aldrich, 2014. Remedial Design Work Plan. Former Anaconda Wire and Cable Company Site. Prepared by Haley & Aldrich. February 2014.

Louis Berger, 2017. Draft Conceptual Cost Opinion. Harbor at Hastings Water Tower Dismantling, Repainting, Storage, and Reinstallation. Prepared by Louis Berger. June 2017.

Louis Berger, 2017. Draft Report of Limited Environmental Lead-Based Paint Survey for the Potential Water Tower Dismantling Project in Hastings-on-Hudson, NY. Prepared by Louis Berger. June 2017.

Louis Berger, 2017. Draft Water Tower Evaluation. Prepared by Louis Berger. March 2017.

NYSDEC, 2012. Record of Decision Amendment, Harbor at Hasting, Operable Unit Number 01: On-Site Contamination State Superfund Project. Site No. 360022. March 2012.

NYSDEC, 2012. Record of Decision, Harbor at Hasting, Operable Unit Number 02: Hudson River Sediments State Superfund Project. Site No. 360022. March 2012.

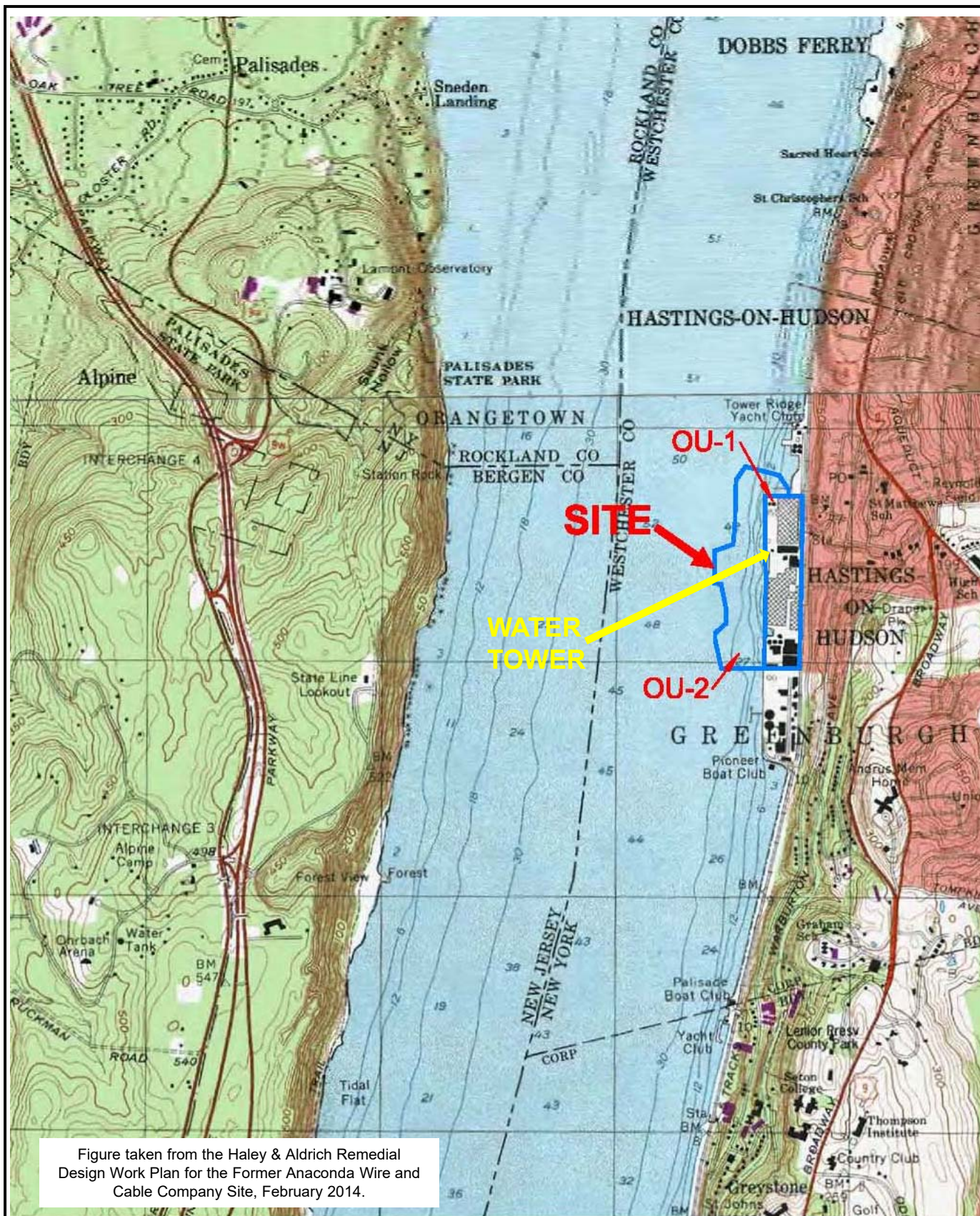


Figures



Water Tower Photograph

Figure 1



Site Map

Figure 2



Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Legend

 Water Tower Storage Area

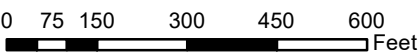
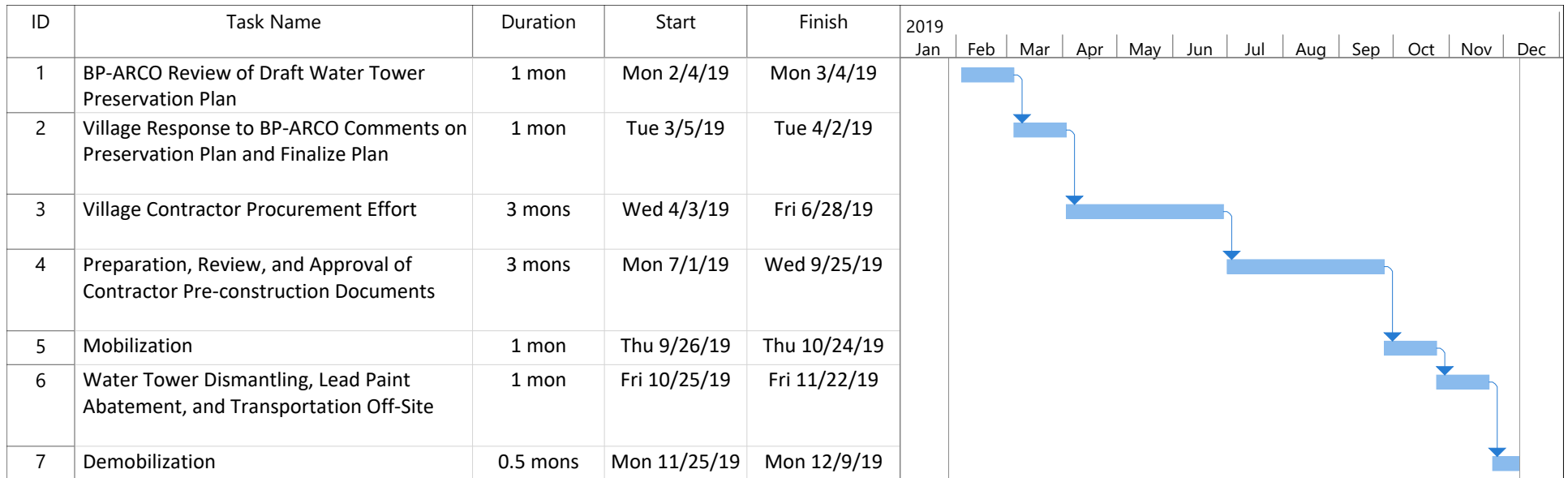


Figure 3


GYWYX Storage Location

Water Tower Preservation Plan



Project Schedule
Water Tower Preservation Plan

Figure 4
2019

Task 

Attachments

Attachment A: Structural Survey

PROJECT SCOPE

This project consists of the inspection and condition assessment of the water tower located on the Atlantic Richfield Co. (AR) Harbor-at-Hastings Site (site), located in the Village of Hastings-on-Hudson, NY. The existing water tower must either be dismantled or demolished to accommodate construction activities for the Superfund remediation of the former Anaconda Wire and Cable Co., including excavation of PCB- and metal-contaminated soils to depths of 9 to 12 feet below grade and restoration of a sloped shoreline.

The existing water tower may be restored or replaced with a replica following the completion of the soil remediation and site redevelopment activities. The water tower is not used as a functioning water tower, but the Village of Hastings-on-Hudson (Village) is exploring its preservation as an aesthetic element of the view shed of the Hudson River and Palisades Cliffs, and as an emblem of the Village. The Village's primary study question, addressed through this assessment, is whether the existing water tower structure can withstand being dismantled, restored, and re-erected.

The following tasks were conducted for this project by Louis Berger U.S. (Louis Berger):

- Attended an on-site coordination meeting with AR on 13 September 2016 to review Louis Berger's proposed assessment activities and AR's safety orientation and procedures for site activities.
- Prepared a site- and activity-specific Health and Safety Plan for the structural evaluation task and incorporate AR's comments on the plan.
- Conducted the water tower structural evaluation field work on 11 November 2016.
- Prepare this evaluation report indicating the condition and findings of the water tower and recommendations.

WATER TOWER DESCRIPTION

The water tower was constructed circa 1916 for the National Conduit & Cable Company, which later became the Anaconda Wire and Cable Company (Photo No. 1). As per the as-built plans the structure consists of four (4) riveted steel, laced posts/columns, each made up of two 12-inch channels with a 14-inch cover plate on the inside face of the post, and cross bars (lacing) on the outside face. The posts extend up approximately 90 high and are each constructed from three sections with splices and lateral support struts spaced at approximately 30-foot intervals. Lateral tower stiffness is provided at each bay of the three post sections with 1 1/8-inch square steel cross rods.

The 75,000 gallon capacity tank, supported by the four posts, is made up of 5 steel welded cylindrical plates with a diameter of 22 feet and a conical shaped steel roof. The bottom two plates and top two plates of the tank have a thickness of 1/4-inch and the middle plate has a thickness of 5/16-inch. The water tower is anchored to a concrete foundation with one 2.5-inch diameter by 6-foot long anchor bolt at each post anchor. The as-built plans indicate that the tower received a shop coat paint of standard Black Graphite and 3 field coats of standard Green Graphite. The current total weight of the water tower is estimated at approximately 50,000 pounds.

INSPECTION PROCEDURE

The inspection was performed by a three-person team (two structural engineers and a Health and Safety Officer), plus the operator for the personnel lift, on the morning of 11 November 2016. The team leader, a registered professional engineer, was responsible for planning the inspection procedures so that the water tower structural components were properly inspected. The weather was sunny with a 60 degrees F temperature and winds between 9 and 20 mph. Ten photographs documenting the inspection are attached to this report.

A visual inspection of the structural members and their connections was performed using a 135-foot personnel lift (Photo No. 2). Where access was possible, a hands-on inspection was performed including recording the thickness of structural members and the water tank using an ultrasonic measuring device and a basic caliper, to determine possible section loss due to corrosion.

Glossary of Inspection Terminology

- 1) **Corrosion**
 - a) Minor (or light) - A light surface rust.
 - b) Moderate - Rust that is loose and flaking with some pitting. This scaling, or exfoliation, can be removed with some effort by use of a scraper or chipping hammer. Element exhibits measurable but not significant loss of section.
 - c) Severe - Heavy, stratified rust or rust scales with extensive pitting. Removal requires exerted effort and may require mechanical means. Significant loss of section.
- 2) **Pack Rust** - Rust collected between two interfacing surfaces, usually two steel plates. Pack rust can be minor, moderate, or severe as described above. Pack rust can severely deform the steel members due to the expansive nature of rust.
- 3) **Pitting** - Formation of cavities due to corrosion. Minor, moderate, and severe pitting categories are used based upon depth and density of cavities.
 - a) Minor - Typically less than ¼ inch diameter and 1/32 inch deep.
 - b) Moderate - ¼ inch to ½ inch diameter and up to ⅛ inch deep.
 - c) Severe - Greater than ½ inch diameter and over ⅛ inch deep.

SUMMARY OF FINDINGS

The existing water tower is overall in good condition exhibiting mostly minor corrosion throughout, with only minor loss of material and no observed missing rivets. Pitting of material due to corrosion was not found. The original field paint coatings have peeled off, revealing the shop graphite primer coating that partially remains throughout the tower structure.

The tower anchors are in overall good condition with the northwest and southwest anchors exhibiting moderate pack rust at the stiffener plates and moderate corrosion on the base plate (Photos Nos. 3 & 4). The anchors for the northeast and southeast posts are partially buried by the soil and exhibit moderate corrosion on the stiffener plates (Photos Nos. 5 & 6). The horizontal rods located at the level of the anchor base have been removed or have become loose (Photo No. 4); however, the current state of these rods does not compromise the structural integrity of the water tower.

The posts are in good condition, exhibiting minor to moderate corrosion overall. Only the

northeast post is exhibiting moderate corrosion on one of the channels near the base of the post. The layers of corrosion were removed to record the thickness of the channel web, which revealed approximately 10 percent section loss of the web area (Photo No. 7). The post splice connection plates, struts and bracing channels, and cross rods are all in good condition, exhibiting only minor corrosion (Photo No. 8) and the connection to the tank is also in good condition (Photo No. 9). The tank is in overall good condition, exhibiting minor corrosion with approximately 10 percent section loss on the tank's cylindrical plates (Photos Nos. 9 & 10).

CONCLUSION AND RECOMMENDATIONS

As noted in the Summary of Findings, the water tower is in overall good condition with only minor corrosion throughout and some section loss on one of the posts and the water tank. These losses are considerably small given the age of the structure and are not considered significant. In addition, the water tank no longer stores water and the stresses on the steel members are significantly less than that for which they were designed. As such, given the condition of the water tower, it should be able to withstand being dismantled and re-erected if properly performed by a competent Contractor who can demonstrate pertinent project experience.

As stated in the Project Scope, the Village may either restore the water tower or replace it with a replica following the completion of the site cleanup. If The Village decides to dismantle, restore, and re-erect the water tower, Louis Berger recommends that the project scope include at a minimum, but not be limited to:

- A lead paint survey of the water tower structure and lead paint abatement in compliance with all applicable regulations, as necessary, for dismantling, restoration, and re-installation.
- Identification and application of an appropriate finish to preserve the water tower structural elements from additional corrosion after re-installation.
- Construction of a new water tower foundation and cleaning and painting of all four anchors up to 3 feet from each anchor base plate.

Please contact Len Warner with any questions regarding this report at (914) 798-3721.



Photo No. 1: View of the Water Tower looking west.



Photo No. 2: View of the Water Tower and personnel lift looking west.



Photo No. 3: Northwest post anchor exhibiting moderate pack rust at the stiffener plates and moderate corrosion on the base plate. Note concrete foundation.



Photo No. 4: Southwest post anchor exhibiting moderate pack rust at the stiffener plates and moderate corrosion on the base plate.



Photo No. 5: Northeast post anchor partially buried and exhibiting moderate corrosion on the stiffener plates.



Photo No. 6: Southeast post anchor partially buried and exhibiting moderate corrosion on the stiffener plates.



Photo No. 7: Northeast post exhibiting moderate corrosion. The layer of corrosion was removed from a testing location to record the thickness of the channel web, revealing approximately 10 percent loss of web area.



Photo No. 8: Typical post splice connection plates, struts bracing channels and cross rods exhibiting minor corrosion.



Photo No. 9: View of connection between tank and post in good condition.



Photo No. 10: View of tank lower section exhibiting minor corrosion.
Note recording of tank plate thickness using the ultrasonic measuring device.

Attachment B: Lead-Based Paint Survey

April 6, 2017

Mr. Fran Frobel
Village Manager
Village of Hastings-on-Hudson
Municipal Building
7 Maple Avenue
Hastings-on-Hudson, NY 10706

Subject: Report of Limited Environmental Lead Based Paint Survey Services for the Proposed Water Tower Dismantling Project in Hastings-on-Hudson.

Dear Mr. Frobel:

Louis Berger (Berger) has completed a limited environmental lead based paint survey of the water tower located at the Atlantic Richfield Co. (AR) Harbor-at-Hastings Site (site) in the village of Hastings-on-Hudson, NY. The survey was conducted on April 5, 2017 by Drew Cheskin, a NYS EPA Licensed Lead Risk Assessor (cert # NY-R-11931-1). The survey included visual observation and X-Ray Fluorescence (XRF) analysis of suspect lead based paint (LBP) for the upcoming proposed water tower dismantling project.

The readings of painted surfaces were taken using an RMD LPA-1 XRF Lead Paint Spectrum Analyzer. The LPA-1 method of measurement is based on the spectrometric analysis of lead K-shell X-ray fluorescence within a controlled depth of interrogation. The LPA-1 Analyzer uses a Co-57 radioactive source and an advanced, solid-state, room temperature, radiation detector to generate and detect the x-ray fluorescence spectrum of a painted surface. The spectrum is then analyzed by a microprocessor to eliminate the effects of substrate and other factors such as scattering to allow an accurate determination of the amount of lead on a surface. The LPA-1 automatically analyzes spectrometric data in real time and differentiates the lead signal from the spectrum. The x-ray fluorescence properties are determined through calibration process and are used for automatic substrate correction and calculation of the lead content of a painted surface.

Berger tested the following suspect paints to be impacted by the current scope of work (SOW);

Sample No.	Component	Substrate	Color	Condition	LEAD Result (mg/cm ²)
1	Positive Calibration	NA	NA	NA	0.9
2	Positive Calibration	NA	NA	NA	0.9
3	Positive Calibration	NA	NA	NA	0.9
4	Negative Calibration	NA	NA	NA	-0.1
5	Negative Calibration	NA	NA	NA	-0.0
6	Negative Calibration	NA	NA	NA	-0.0
7	NE Structural Post, S Side	Metal	Grey	Poor	0.1
8	NE Structural Post, N Side	Metal	Grey	Poor	4.2
9	NE Structural Post, E Side	Metal	NA ¹	NA ¹	-0.1
10	SE Structural Post, E Side	Metal	Grey	Poor	>9.9
11	SE Structural Post, S Side	Metal	Grey	Poor	>9.9
12	NW Structural Post, E Side	Metal	Grey	Poor	>9.9

Sample No.	Component	Substrate	Color	Condition	LEAD Result (mg/cm ²)
13	NW Structural Post, N Side	Metal	Grey	Poor	>9.9
14	NW Structural Post, S Side	Metal	Grey	Poor	>9.9
15	Positive Calibration	NA	NA	NA	0.9
16	Positive Calibration	NA	NA	NA	0.9
17	Positive Calibration	NA	NA	NA	0.9

¹ Bare Metal Structural Post Was Tested, No Paint Present

Six (6) of seven (7) painted surfaces tested were confirmed to contain lead-based paint. A single test of the bare metal on a structural post showed no indication of lead contained within the metal itself. Regulatory levels established by the EPA identify lead-based paint as containing 0.5% lead content by weight or 1.0 mg/cm². Surfaces coated with lead-based paint can create dust-lead, soil-lead or airborne-lead hazards if the paint is turned into dust or fumes by blasting, abrasion, scraping, sanding or torch cutting. Any work which disturbs painted surfaces containing lead needs to be performed in accordance with the Occupational Safety and Health Administrations (OSHA) 29 CFR 1926.62 Lead in Construction Standard and EPA's 40 CFR 745 regulations. Personal air monitoring should be conducted when disturbing lead based paints and lead containing materials as per 29 CFR 1926.62 (OSHA).

It is our hope that the information provided in this letter has met the project requirements. Thank you for the opportunity to provide you and your staff with our continued services. Please contact me via email at acheskin@louisberger.com or at 914-798-3733 if you have any questions or require any additional information.

Sincerely,



Louis Berger U.S., Inc.

Drew Cheskin
Manager, Emergency Management & IH Services

Attachment A – Consultant & Inspector Certifications
Attachment B – XRF Data
Attachment C – Photolog

ATTACHMENT A

CONSULTANT & INSPECTOR CERTIFICATIONS

United States Environmental Protection Agency

This is to certify that

The Louis Berger Group, Inc.

has fulfilled the requirements of the Toxic Substances Control Act (TSCA) Section 402, and has received certification to conduct lead-based paint activities pursuant to 40 CFR Part 745.226

In the Jurisdiction of:

All EPA Administered Lead-based Paint Activities Program States, Tribes and Territories

This certification is valid from the date of issuance and expires December 11, 2019

LBP-2612-1

Certification #

November 25, 2016

Issued On



Michelle Price, Chief

Lead, Heavy Metals, and Inorganics Branch

United States Environmental Protection Agency

This is to certify that



Andrew Brian Cheskin

has fulfilled the requirements of the Toxic Substances Control Act (TSCA) Section 402, and has received certification to conduct lead-based paint activities pursuant to 40 CFR Part 745.226 as:

Risk Assessor

In the Jurisdiction of:

New York

This certification is valid from the date of issuance and expires June 01, 2018

NY-R-11931-1

Certification #

May 18, 2015

Issued On



John Gorman, Chief

Pesticides & Toxic Substances Branch

Certificate of Achievement

This is to certify that

Andrew Cheskin
The Louis Berger Group

on the 12 th day of February 2009 successfully completed the factory training for

RMD's LPA-1 Lead Paint Inspection System

including, but not limited to the topics of Radiation Safety, DOT Regulations, and the Proper Use of the Instrument.


Sia Afshari, Product Manager RMD
44 Hunt St., Watertown, Massachusetts



ATTACHMENT B

XRF DATA

00,3.01,"04/05/17","09:40:00","04/05/17","10:13:00",1.1,0017,0000,03675
20,01,"Number Only ",""
20,02,"Number Only ",""
25,01,"Number Only ",""
25,02,"Number Only ",""
30,0001, 0.9,,,,,,,,, TC
30,0002, 0.9,,,,,,,,, TC
30,0003, 0.9,,,,,,,,, TC
30,0004, -0.1,,,,,,,,, TC
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30,0006, 0.0,,,,,,,,, TC
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30,0008, 4.2,,,,,,,,, QM
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30,0017, 0.9,,,,,,,,, TC

ATTACHMENT C

PHOTOLOG

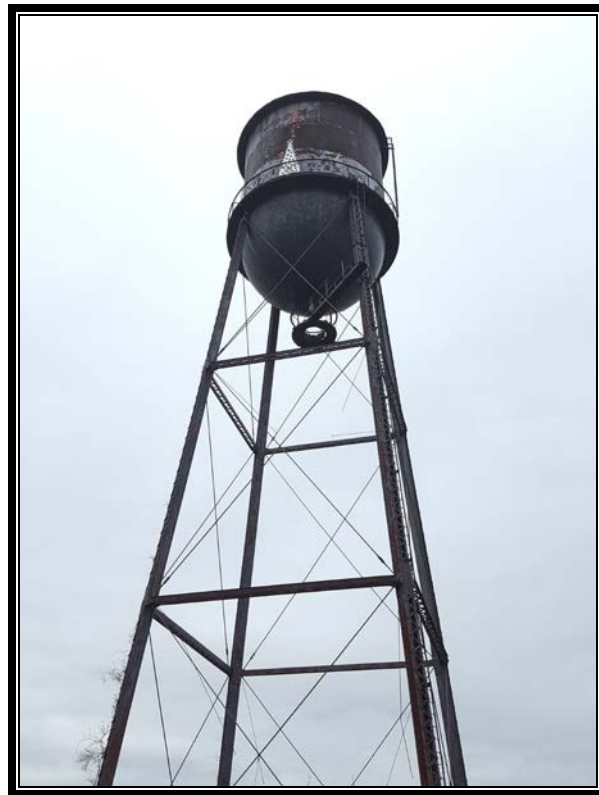


Photo #1: Hastings-on-Hudson Water Tower



Photo #2: Northwest Structural Post

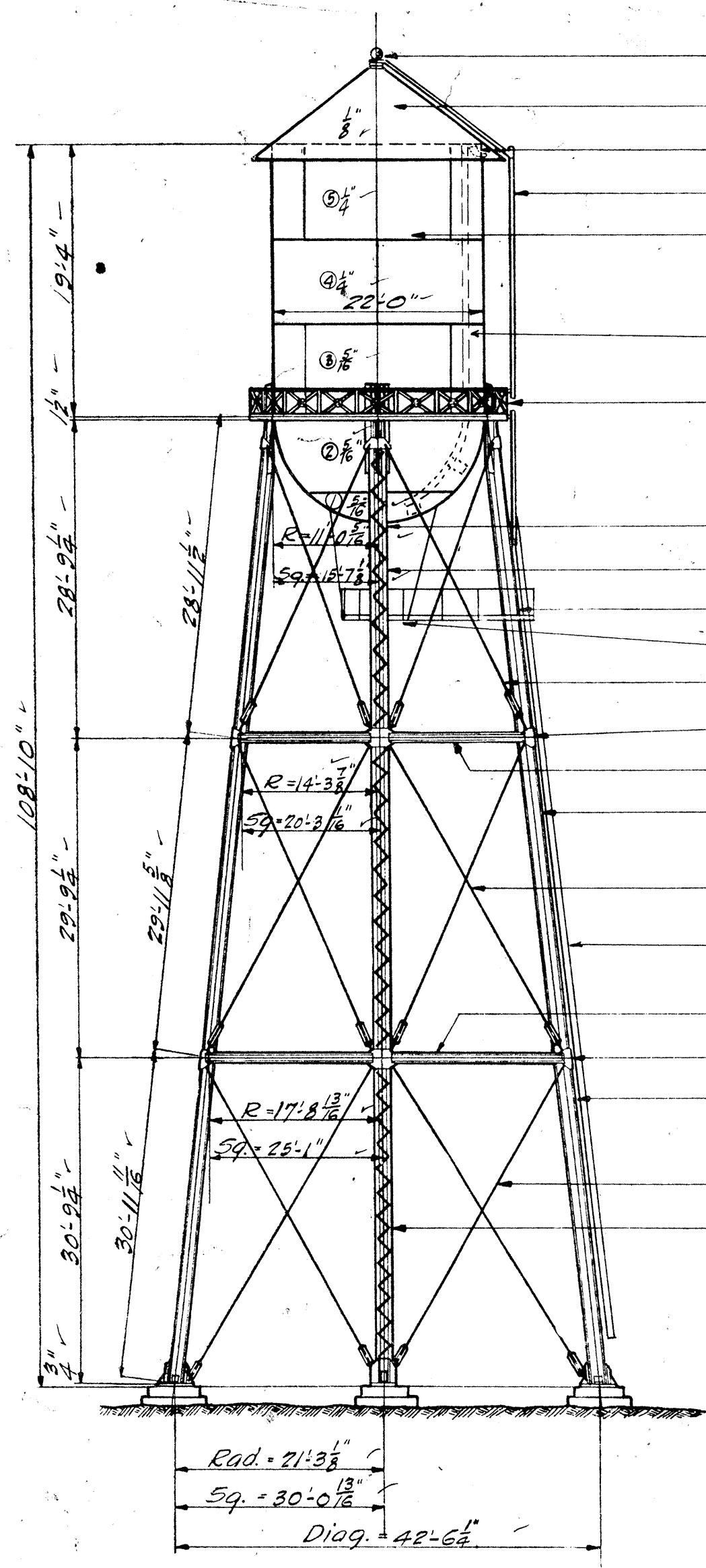


Photo #3: Northeast Structural Post



Photo #4: Southeast Structural Post

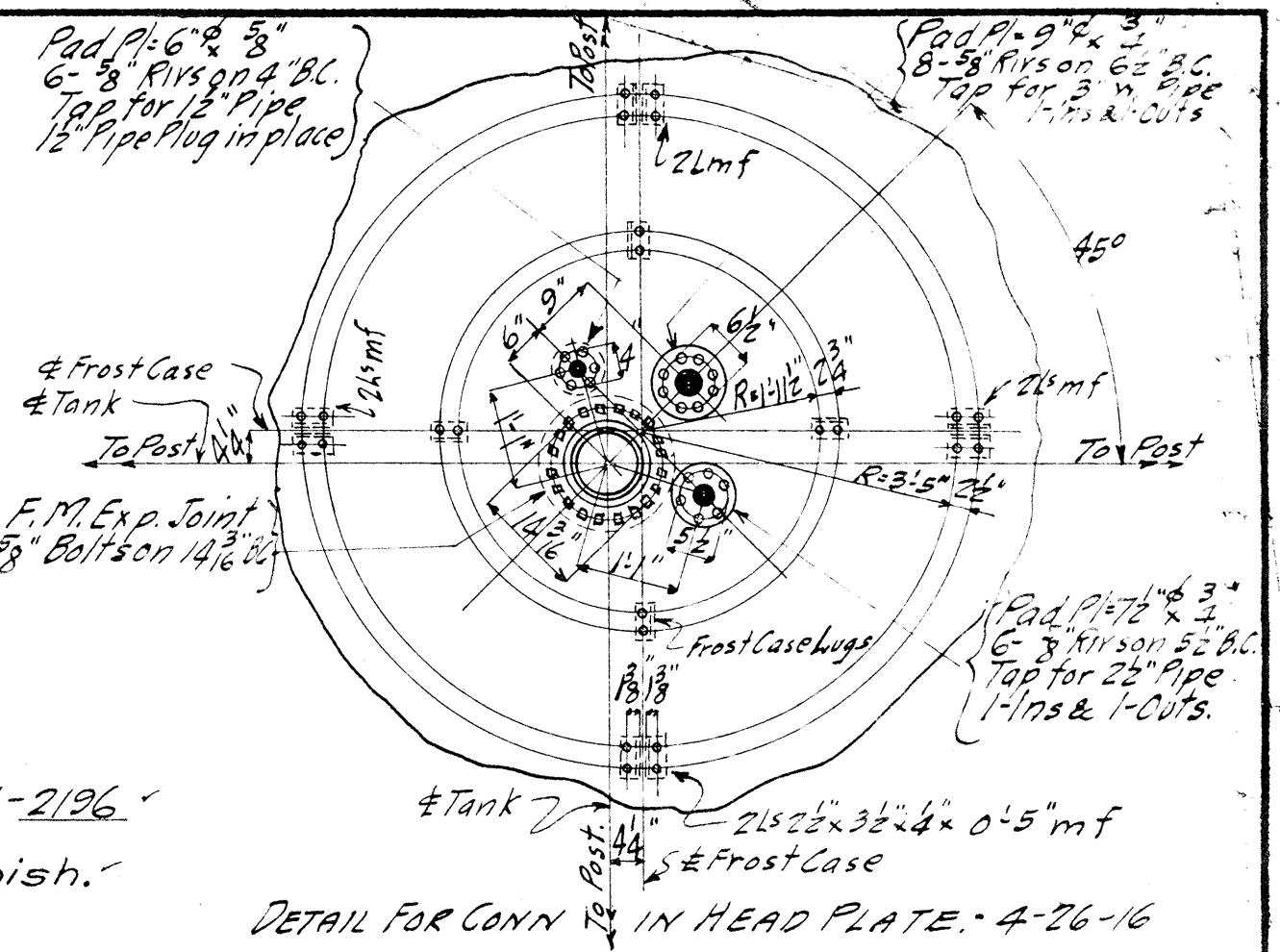
Attachment C: Water Tower As-Builts



- Std. 12" C.I. Finial Patt. No. 501
- Std. Conical Steel Roof with L at edge.
(Place Door in Roof to Right of Ladder)
- Std. 3 Overflow Patt. No. 1333
- Std. Revolving Ladder.
- Std. 75,000 Gallon Tank.
- 22'0" Diam. x 19'4" High.
- Std. Inside Ladder.
- Std. 24" Balcony and Hand Rail.

- Std. 8" C.I. Expansion Joint Patt. No's 2197-2196
- Riser Pipe 8" C.I. Flgd. — They Furnish.
- 4 Posts = 2 E 12" @ 20 1/2" x 29' 11 1/2"
- 1 Cov pl 14" x 16" x 28' 3 1/2"
- Special Platform.
- 8 Tower Rods = 18 x 32' 7" B to B.
- 4 Struts = 2 E 6" @ 8" x 20' 3 1/2" C to C.
- 4 Pipe Rods = 3" @ 14' 10" E to E.
- 4 Posts = 2 E 12" @ 20 1/2" x 29' 11 1/2"
- 1 Cov pl 14" x 16" x 29' 11 1/2"
- 8 Tower Rods = 18 x 37' 5 1/2" B to B.
- Std Ladder on 1 Post
- 4 Pipe Rods = 3" @ 18' 2 3/4" E to E.
- 4 Struts = 2 E 7" @ 9 3/4" x 25' 1" C to C.
- 4 Posts = 2 E 12" @ 25" x 31' 0 5/8"
- 1 Cov pl 14" x 16" x 29' 10 1/2"
- 8 Tower Rods = 18 x 39' 7 3/4" B to E.
- Frost Case 3 Ply for 8-3 & 2 1/2" Pipes

Paint - 1 Shop Coat Std. Black Graphite and
1 Field Coat Std. Green Graphite except
inside of Tank which has 1 Shop Coat of
H. & M. Primer and 1 Field Coat of H. & M.
Brine Resisting Paint.
Frost Case - 2 Field Coats Std. Green Graphite.
Foundation Std. — They Furnish.
4 Anchor Bolts = 2 1/2" x 6' 0" long.
2 1/2" Bored Hole in Ctr. of Shoe.
Inspection, None.
Factory Mutual & F.I.A.



DRAWINGS	
Index	Description
Sheet 1	General Plan
1-340	Roof
2-360	Tank
3-320	Balcony & Hand Rail
4-	Nº2 Plates
5-214	Top Posts
6-222	Inter. Posts
7-224	Lower Posts
8-220	Struts
9-171	Overflow
0-100	Revolving Ladder
Sh #3	Walkway & Platforms
0-104	Inside Ladder
0-101	Post Ladder
9-111	Pins
9-102	Expansion Joint
F-200	Frost Case F-500

WWB 00771

GENERAL PLAN
75,000 GALLON TANK & TOWER
TOTAL HEIGHT = 108'10"
FOR NATIONAL CONDUIT & CABLE CO.
HASTINGS-ON-HUDSON, N.Y.
Chicago Bridge & Iron Works
CONTRACT Nº 7799

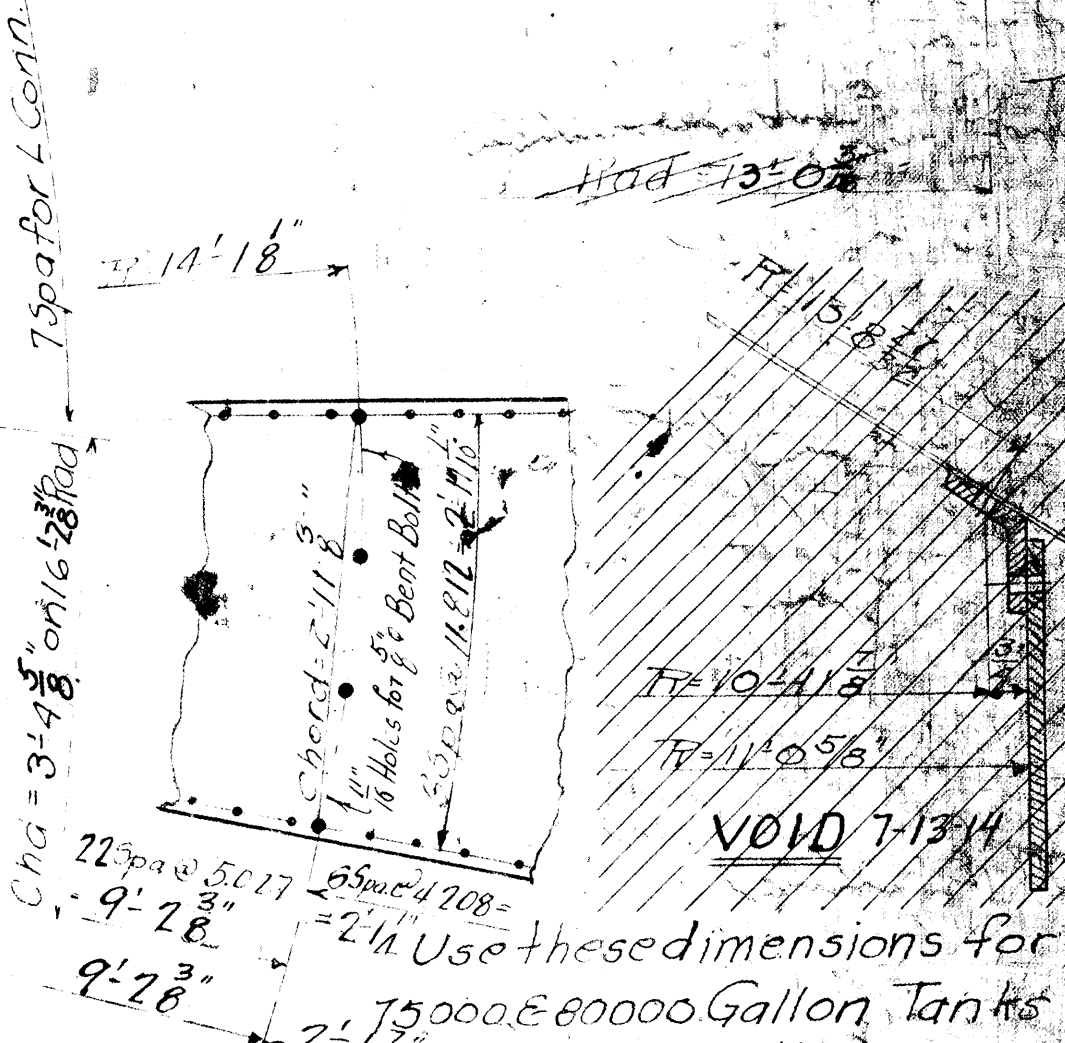
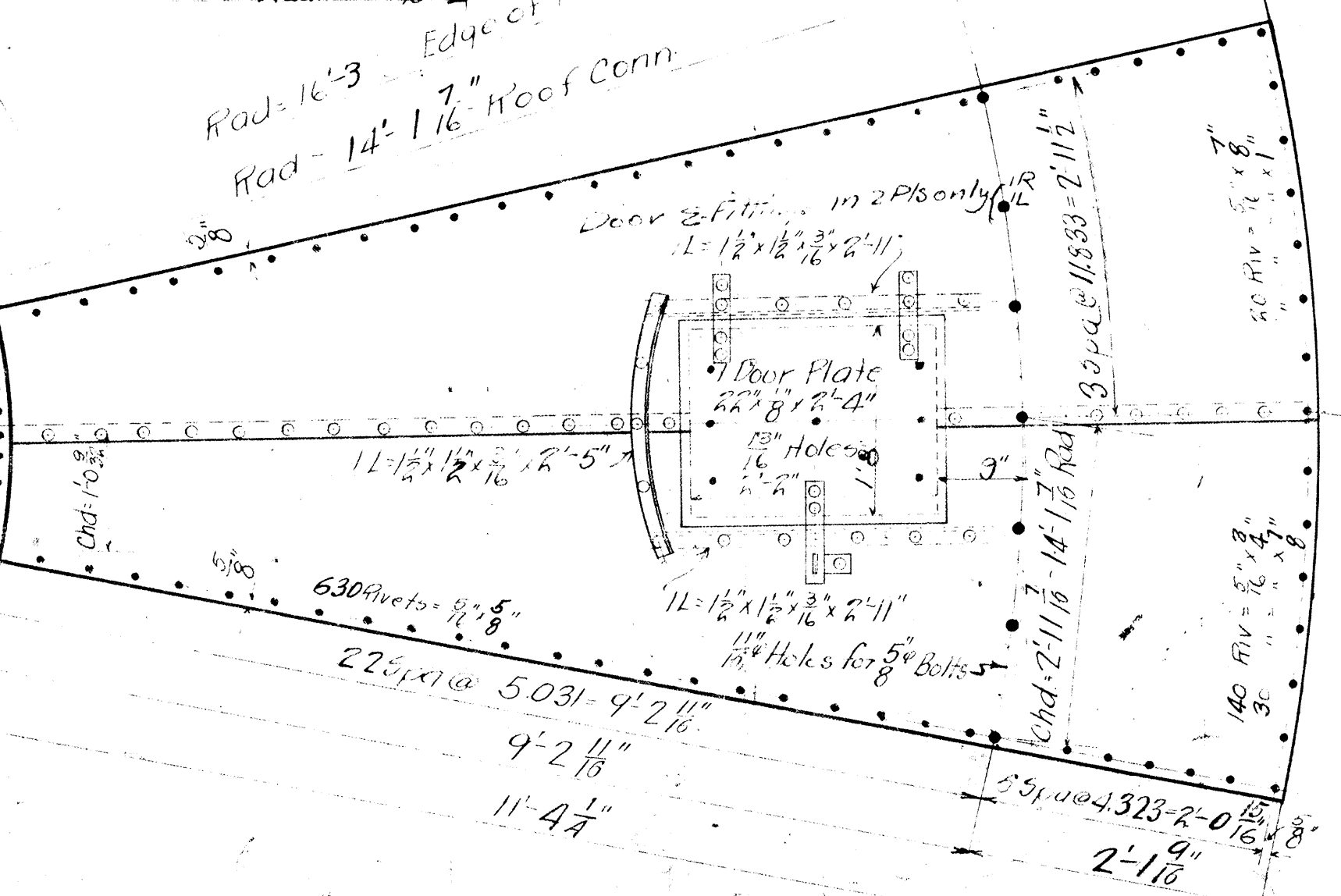
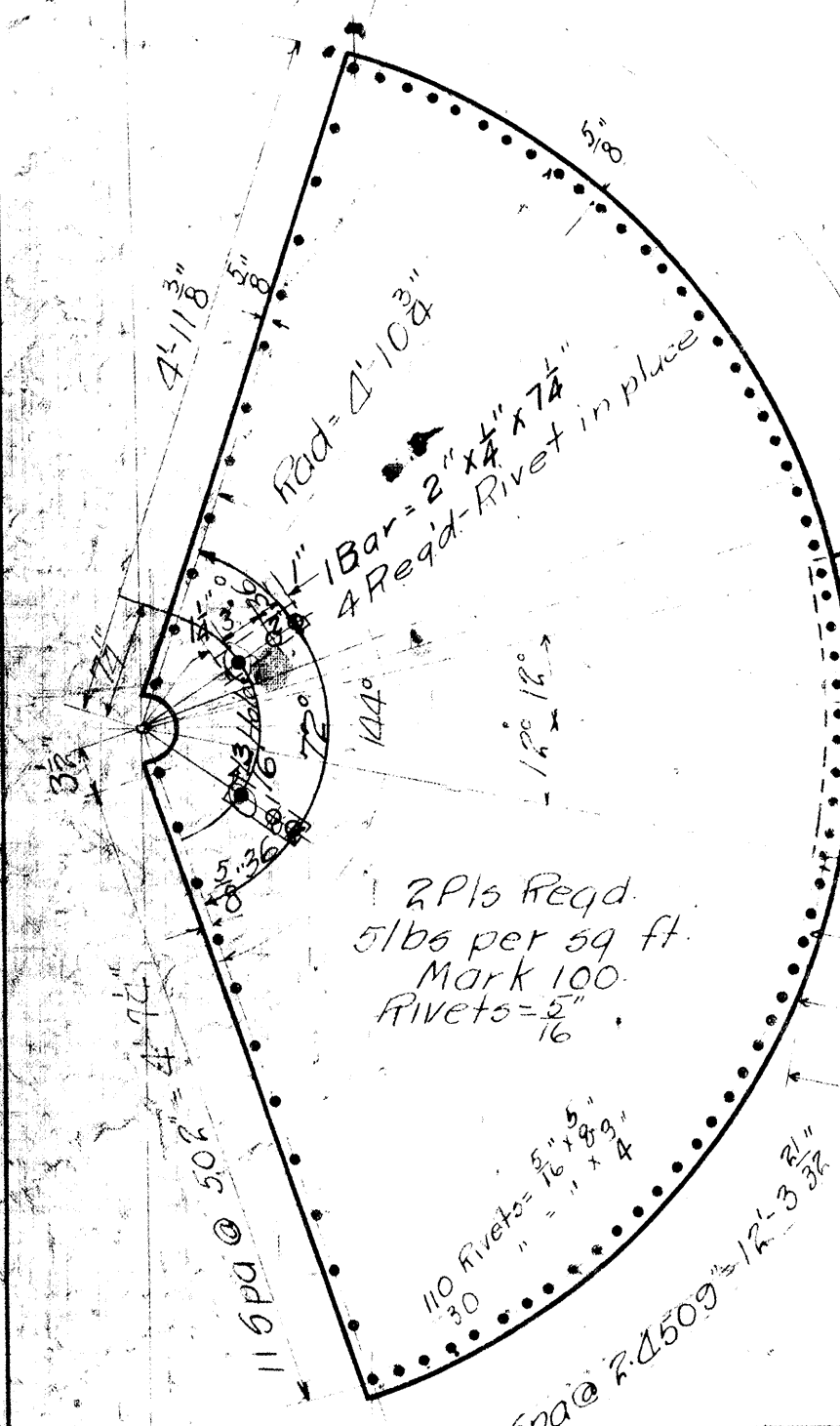
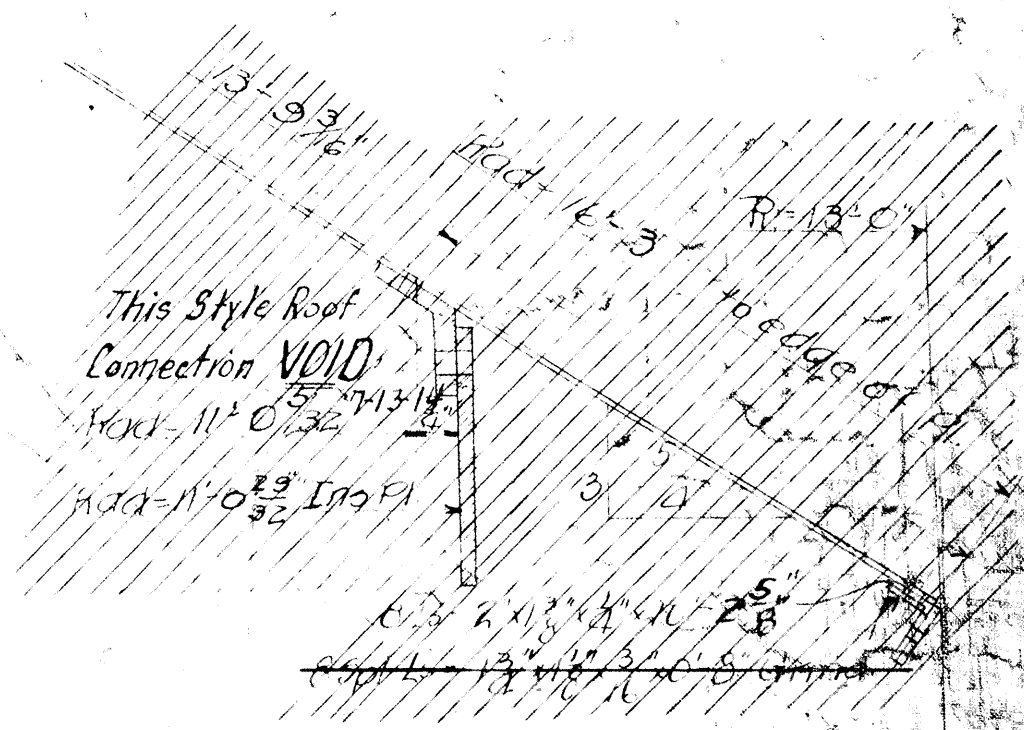
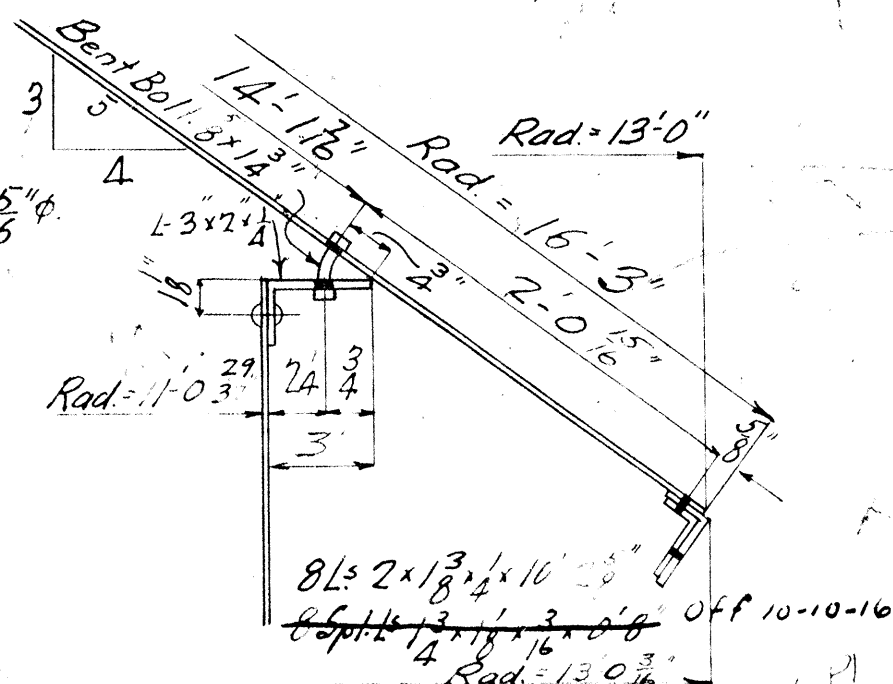
Pipe Added 4-26-16 - A.M.

Sheet 1.
DR. A.W. W-228-16
CHD. W.B. - 3-28-16

0-7799

5 lbs. per Sq. Foot. Rivets = $\frac{5}{16}$ " ϕ
Order 12 Plates 57" x 5" x 11'-7".

Order 12 Plates 57" x 5# x 11'-7".



2 Pls Req'd.
5/lbs per sq ft
Mark 100.
Rivets = $\frac{5}{16}$ "

Wt. - 24 Pieces - 3468[#]
Wt - 8 lbs - 221[#]

5pa

No. 10, 11, 12, 13, 14, 15, 16	* No	Mark	Description	Length
23	2	Roof	Pls = 2x6x8 x 5"	Mark 100
10	24	"	" = 5 lbs per sq ft	11' 10"
13 2-15	1	Door	" = 2x8"x1/2"	2' 4"
13	2	"	L5 = 1 1/2"x1 1/2"x3/16"	2' 11"
5	1	"	" = " x " x "	2' 5"
4	2	Hinges & 1 Hasp for Door.		
23	8	Roof L5 = 2"x1 3/8"x3"		10' 2 5/8"
10-10-16	4	8	Spl = 1 1/2"x1 1/2"x3/16"	0' 8"
	3	4	Bars 2"x1/2"	0' 7 1/4"

77 Shop Rivets

Rivets		
No.	Diam.	Length.
770	$\frac{7}{16}$ "	$\frac{3}{8}$ "
190	"	$\frac{3}{4}$ "
30	"	$\frac{1}{2}$ "

No.	Diam	Length
22	2 1/2"	1 3/4"

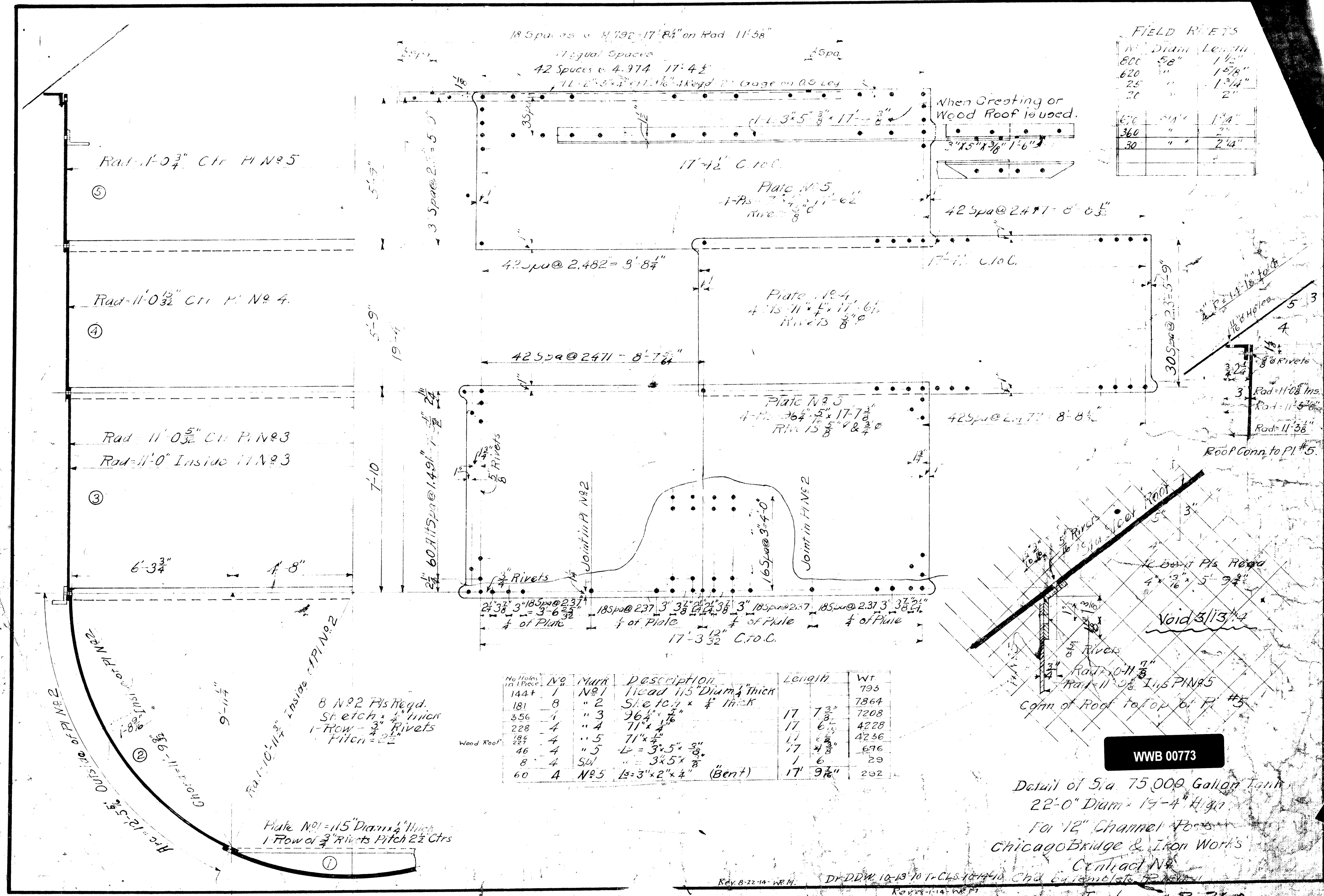
Use these Dimensions
for 75000 & 80000 Gallon Tanks
3 Plates High.

Bevel = 3-4-5
Std. Conical Steel Roof for
22'0" Diam. Tanks
For 24" Bolting
Chicago Bridge & Iron Works

WWB 00772

Contract No

1-340

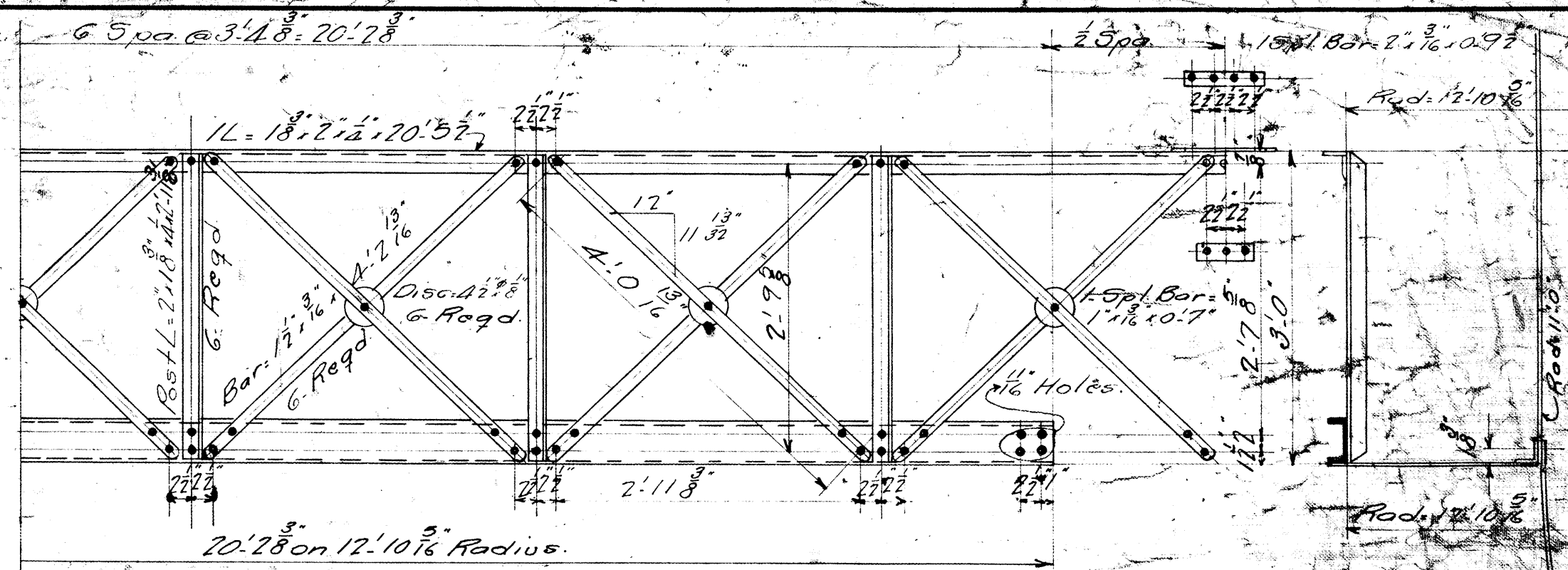


FIELD RIVETS

N	Diam	Length
800	5/8"	1 1/2"
620	"	1 5/8"
25	"	1 3/4"
30	"	2"
670	3/4"	1 3/4"
360	"	2"
30	"	2 1/4"

No Holes in Piece	No	Mark	Description	Length	Wt
144+	1	N#1	Head 1 1/2" Diam 1/4" thick		793
181	8	" 2	Sheet 1/4" x 1/4" thick		7864
356	4	" 3	96 1/2" x 1 1/2"	17	7208
228	4	" 4	71" x 1/4"	17	4228
185	4	" 5	71" x 1/4"	17	4236
46	4	" 5	L = 3' x 5' x 3/8"	17	676
8	4	Spl	" = 3' x 5' x 3/8"	1	29
60	4	N#5	15' x 3' x 2" x 1/4" (Bent)	17	202

Detail of Sta 75 000 Gallon Tank
 22'-0" Diam x 19'-4" High
 For 12" Channel Posts
 Chicago Bridge & Iron Works
 Contract No.
 Index R-360



1 Section of Balcony Hand Rail
4 Regd.
1 1/2 Holes for 1/2 Bolts

Hand Rail Wt. 625 #

No. Holes	No.	Description	Length
1	4	Rail B = 2 1/8" x 1/2"	20' 5 1/2"
3	14	Post L = 1 1/2" x 1/2"	2' 11 3/8"
3	4	Sp. Bars = 1 1/2" x 3/4"	0' 7"
4	4	" = 2" x 1 1/2"	0' 9 1/2"
4	18	Lattice = 1 1/2" x 1/2"	4' 2 1/2"
1	24	Discs = 4 1/2" Dia.	

Bolts for Hand Rails

No.	Diam.	Length
240	1/2"	1"
40	"	1 1/4"

Field Rivets

No.	Diam.	Length
60	5/8"	1 3/4"
60	"	2"

Balcony Girder Wt. 2572 #

No. Holes	No.	Description	Length
82	8	Pls = 5' x 3/4" x 1/2"	
24	4	Ls = 5' x 6 1/2"	20' 5 1/2"
18	12	Pls = 3' x 1/2"	1' 11 1/2"
4	4	Ls = 2 1/2' x 2 1/2' x 1/2"	16' 2 1/2"
4	2	" = 6' x 6' x 3/4"	0' 12 1/2"
8	4	Pls = 6 1/2' x 3"	0' 10 1/2"
4	4	Bars = 2' x 3"	1' 0"
10	4	Ls = 5' x 3' x 1/2"	0' 9 1/2"

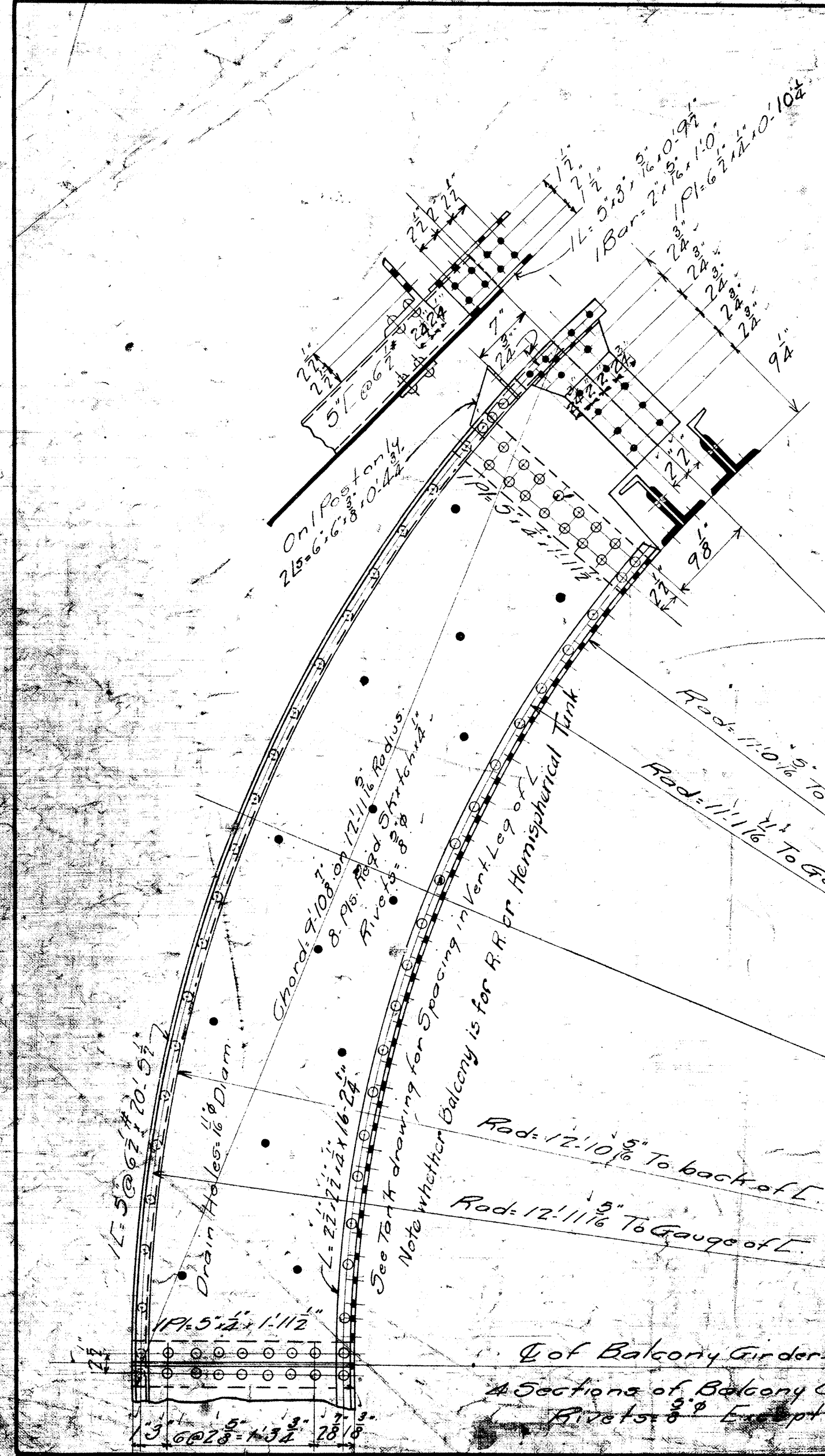
8 Shop Rivets

WWB 00774

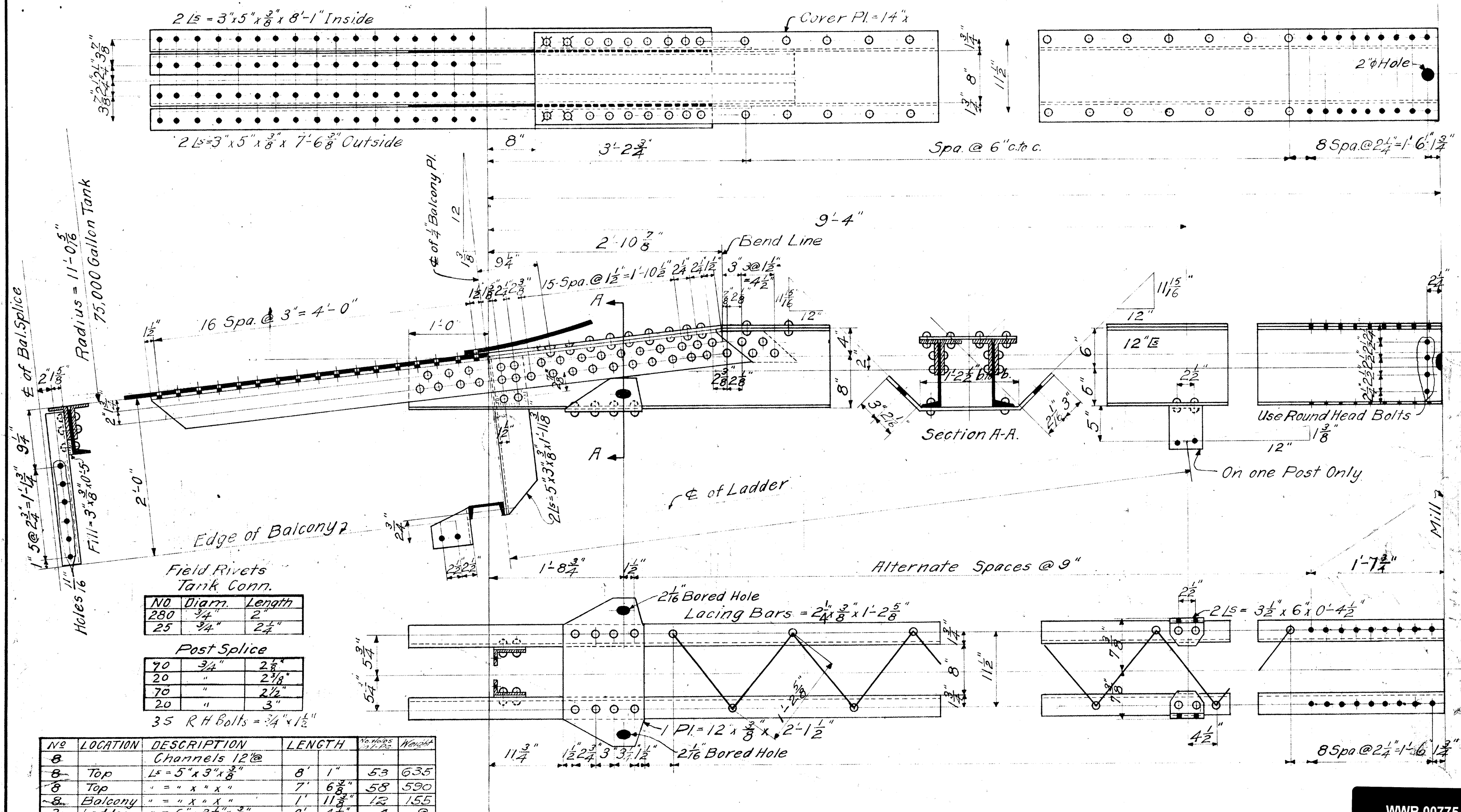
Patented
June 25, 1907

Std 24' Balcony
Hand Rail
For 22.0' Diam Tanks
17 Channel Posts

Chicago Bridge & Iron Works
Contract No. 110 by American Bridge Co.



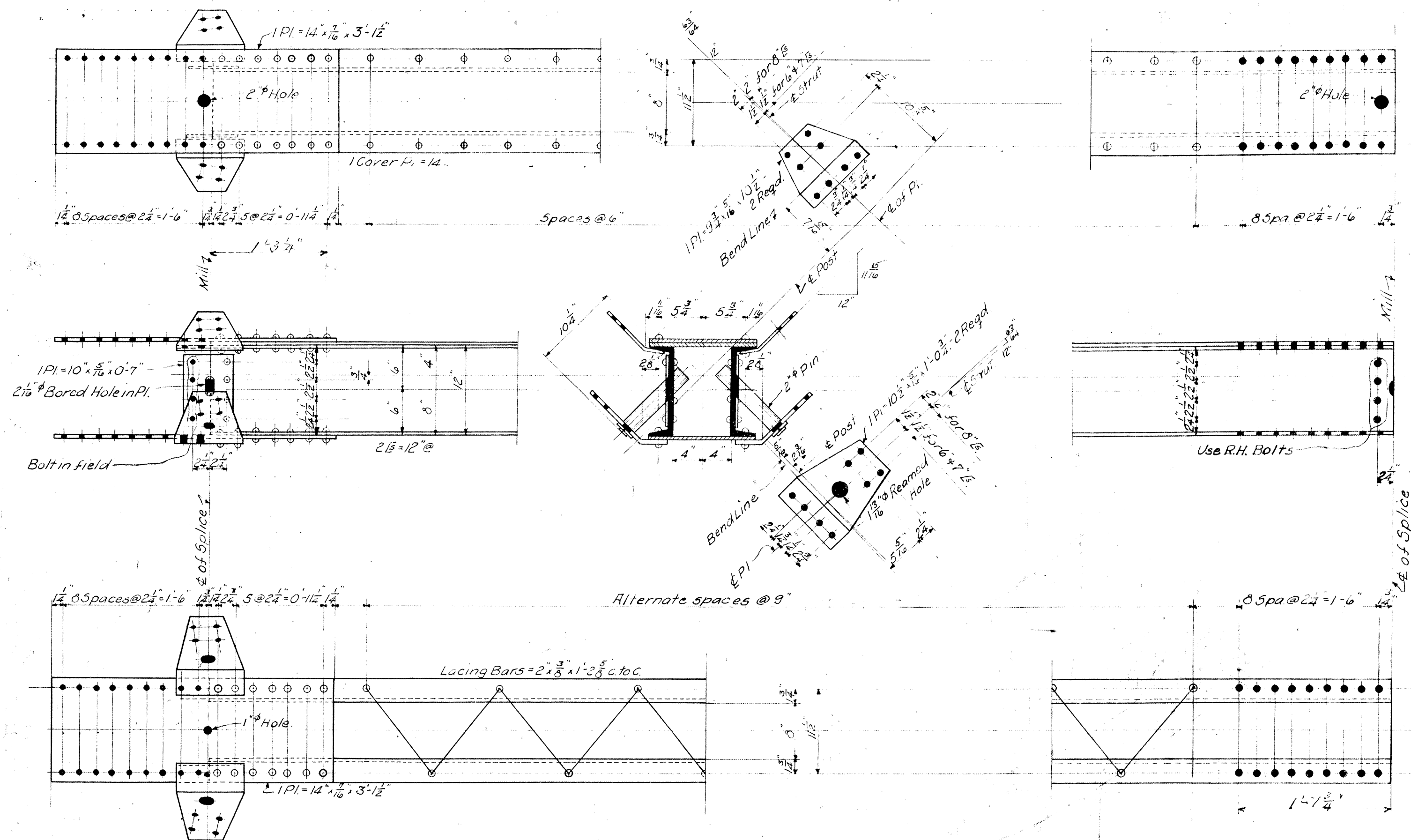
4 Sections of Balcony Girder Reqd.
Rivets = 8" Except noted



WWB 00775

Dr. Tr. - FEB-5-8-14

Change Bal. 1. Revised 7-23-17 A.W.W.



No	Description	No. Holes	Wt.	Length
8	Channels - 12" e			
4	Cover Pls - 14" x			
8	Spl. Pls = 7" x 1/2"	9	50	0' 10"
8	" = 14" x 1/2"	31	525	3' 12"
8	Wing " = 9" x 1/2"	8	65	0' 10 1/2"
8	" = 10 1/2" x 1/2"	9	90	1' 0 3/4"
	Lacing Bars = 2 1/2" x 3/8"	2	@ 3 3/4"	1' 2 3/4"

No.	Diagn.	Length
70	3/4"	2 3/4"
20	"	2 3/4"
70	"	2 3/4"
20	"	3"
35 R4 Bolts	3/4" x 1 1/2"	

Total Wt. of Details = 730#
 No. of Lacing Bars = 4 (Length of L) - (3' - 5")
 No. of Detail Rivets in 1-Post Sect. = 0
 " " Grasshopper " " 1- " " = No. of Lacing + No. in Cor. PL + 1
 " " Hand " " 1- " " = 16

4 Sections of Inter Post Reqd
 12" Channels with 14" Cover Pl
 Bevel of Post = 1/8" x 1/2"
 Rivets = 3/4" - Open Holes = 1 1/2" -
 Except as noted.

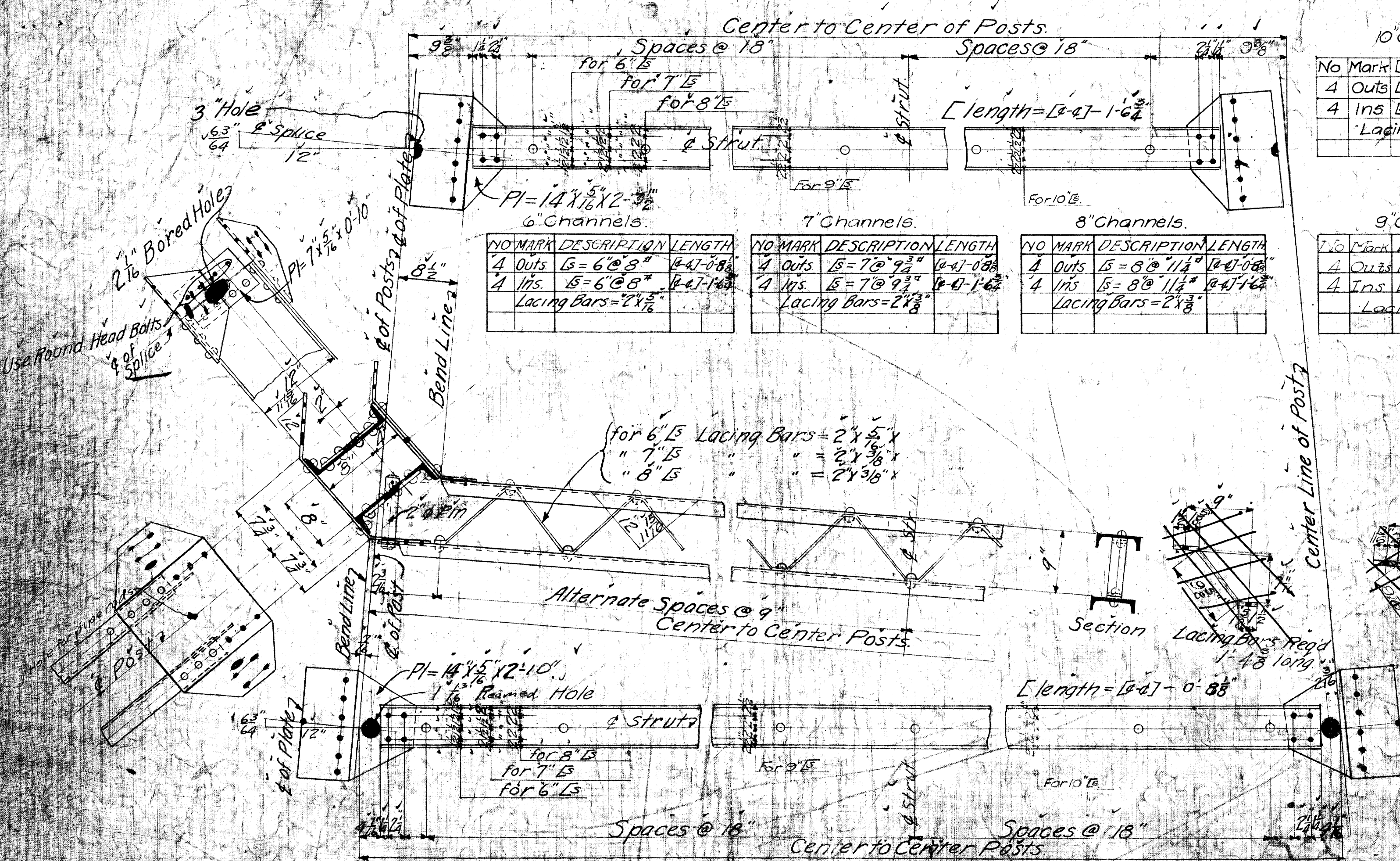
Holes and Wts = N.Y. 820-4

5-11-14

WWB 00776

Details of Std. Inter. Post
 For 75,000 Gallon Tank
 12" E with 14" Cor. Pl.
 For Factory Mutual Tanks.
 Chicago Bridge & Iron Works.
 Contract No.

Index 6-222



10" Channels.

No	Mark	Description	Length
4	Outs	Ls = 10" x 15"	L-47-0-88"
4	Ins	Ls = 10" x 15"	L-47-1-64"
Lacing Bars = 22 x 3/8"			

9" Channels.

No	Mark	Description	Length
4	Outs	Ls = 9" x 13 1/4"	L-47-0-85"
4	Ins	Ls = 9" x 13 1/4"	L-47-1-62"
Lacing Bars = 22 x 3/8"			

6" Channels.

No	Mark	Description	Length
4	Outs	Ls = 6" @ 8"	L-47-0-88"
4	Ins	Ls = 6" @ 8"	L-47-1-62"
Lacing Bars = 22 x 5/16"			

7" Channels.

No	Mark	Description	Length
4	Outs	Ls = 7" @ 9 3/4"	L-47-0-88"
4	Ins	Ls = 7" @ 9 3/4"	L-47-1-62"
Lacing Bars = 22 x 3/8"			

8" Channels.

No	Mark	Description	Length
4	Outs	Ls = 8" @ 11 1/4"	L-47-0-88"
4	Ins	Ls = 8" @ 11 1/4"	L-47-1-62"
Lacing Bars = 22 x 3/8"			

WWB 00778

Attachment D: Cost Estimates



Remediation Management Services Company

150 W. Warrenville Rd.
MC 200-1N
Naperville, IL 60563

Office: 312.809.4117
john.frankenthal@bp.com

April 24, 2017

Mr. Peter Swiderski
Mayor
Village of Hastings-on-Hudson
7 Maple Avenue
Hastings-on-Hudson, NY 10706

Dear Mayor Swiderski:

In accordance with Section 4.7 (a) of the 2016 Modification to the 2013 Consent Order between Riverkeeper, the Village of Hastings-on-Hudson and Atlantic Richfield Company attached is cost estimate from an "independent third party contractor" for the demolition of the Water Tower.

The attached estimate, provided by Envirocon includes a summary of the assumptions used to develop the demolition costs and costs by task totalling \$490,000.

Please feel free to contact me with any questions or if you require additional information.

Sincerely,

A handwritten signature in black ink, appearing to read "J. Frankenthal", with a long horizontal line extending to the right.

John A. Frankenthal
Liability Business Manager
Remediation Management Services Company
An affiliate of Atlantic Richfield Co.

Enclosure: Envirocon Proposal



ENVIROCON, INC.
101 International Drive
Missoula, MT 59808
(406) 523-1150
(406) 523-1197 FAX
www.envirocon.com

21 April 2017

Remediation Management Services Company
150 W. Warrenville Road, MC 200 1N
Naperville, IL 60563

Attention: Mr. John A. Frankenthal
Liability Business Manager

Subject: Hastings on Hudson AERL Site Water Tower Demolition

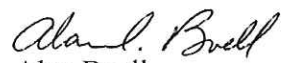
Dear Mr. Frankenthal,

In response to your request for a budgetary estimate for the demolition and disposal of the water tower located on the AERL Hastings on Hudson site, Envirocon offers the following:

The cost to cripple, drop, shear, and dispose of the HOH water tower is on the order of \$490,000. The cost is dependent on the agreement of BP to fall the tower by cripple method. Also, should BP require the water tower to be disassembled using a crane, this budgetary estimate is not applicable. We are providing this as an "average" figure, since the cost varies up or down, based on whether a separate mobilization is required (please see assumptions detail attached). As you know, there is demolition activity to occur this summer on Building 52 and that debris is being transported off-site for disposal via barge.

We'll be glad to work with you to refine this estimate further, should the project move forward.

Sincerely,


Alan Buell

Operations Director/BP Program Manager
Envirocon, Inc.
406-698-2012
abuell@envirocon.com

Attachment: Detail of costing assumptions

ENVIROCON'S ASSUMPTIONS FOR THE WATER TOWER DEMOLITION

- The cost to perform a demolition of the water tower is **\$350,000**, including setup, drop, shearing/sizing for disposal, and loadout
- General mobilization is already accomplished versus a separate project mobilization. If mobilized as a separate project, there is additional cost of approximately **\$80,000**.
- Drop method: cripple the structure, and cable it to the ground in a prepared drop area; the cable is 1-time use at ~\$8,000, and engineering for safe drop purposes is ~\$25,000. The sand pad is roughly 200 tons, which could be reused onsite, at @25/ton delivered, or \$5,000 total. If a separate machine is needed to spread the sand, that would cost all-up approximately \$2,000. Total cost is therefore **\$40,000**
- We would need at least a high reach man lift to attach the cables. The high reach costs about \$5,000 per week, plus mobilization. (See paint below.) Figure 2 weeks = \$10,000, plus mobe/demobe of \$3,000. Total cost is **\$13,000**.
- If we were to remove the materials via barge (as with the Building 52) and concurrent, the cost of transport to a transload point would be about \$108/ton; it would take 3-6 disposal "cans" on chassis, using the standard loading method, and assuming that it has enough PCB concerns to simply remove it to the same Heritage facility that the Building 52 materials are going. We had heard from Jacobs that if they were to truck the materials to a local scrapyards or disposal facility, the trucking transportation costs would be \$42/ton. Disposal at 120 tons would total ~\$13,000.
- There would need to be an assessment of the paint for two reasons: (1) is it PCBs?, and (2) is it flaking? This cost is **\$2,000** for sampling and analysis. If it's PCBs, then the question is level, and in view of the Consent Order requirements, perhaps it would be prudent to assume it should go to a TSCA facility, and Heritage would be the logical choice, since they're set up for this work already.
- We assume that the paint is flaking, and lead-containing. To mitigate the potential for flakes to disperse during the work, we would bring in an abatement subcontractor for scraping and HEPA vacuuming to control the scraped material. After scraping, they would encapsulate the surface. This work is done using a high reach all-terrain articulating-bucket man lift. This total cost is approximately **\$30,000**, plus a week of the man lift (approximately \$5,000, but counted above as 1 of 2 weeks).

In summary:

- If mobilized already, total cost is approximately \$448,000
- If done as a separate project, total cost is approximately \$528,000

Thus, for an "average" budgetary figure, the total cost is approximately **\$490,000**.

DRAFT Conceptual Cost Opinion

Harbor at Hastings Water Tower Dismantling, Repainting, Storage, and Reinstallation

Prepared by: Louis Berger US

Date: 21 June 2017

Task	Description	Cost
A	Lead Abatement for Water Tower Demolition	\$41,630
B	Remove Catwalk, Ladder, etc. to facilitate tank removal	\$24,695
C	Remove Water Tank and Top Section of Legs	\$18,974
D	Water Tank (and top section of legs) Disassembly for Transport	\$36,492
E	Transport Pieces to Paint Facility	\$17,513
F	Cleaning and Painting Existing Water Tower at Paint Shop	\$78,827
G	Retrieve from Paint Facility and Transport to Storage	\$17,513
H	Transport Painted Pieces from Storage back to Original Location for Re-Erection	\$14,289
I	Construct New Foundations	\$23,968
J	Re-Erect Water Tower and Tank	\$166,984
K	Painting of Connections and Touch-up	\$11,775

Note: Tasks H through K escalated above by 9.3% to account for 3-year storage period.

Subtotal	\$452,662
Profit 10% + Overhead 10%	\$90,532
PD + PL Insurances	\$45,266
Storage Rental Cost \$1,000 per month for 36 months	\$36,000
Subtotal Construction Costs, Fees and Storage Cost	\$624,461
Design and Permitting Fees (5%)	\$31,223
Contingency Fee (15%)	\$93,669
Grand Total	\$749,353

DRAFT Hastings Water Tower Conceptual Cost

Task A Lead Abatement for Water Tower Demolition

Mobilize

Set up containment

De-lead connections; collect lead containing materials

Removal of rivets and replacement with temporary high-strength bolts

Name	Hourly Rate		Hours for Period		Regular (Direct) Wages	Premium Wages	Fringe Benefits per Hour	Total Fringe Benefits	Labor Cost Rate and Benefits
	Basic (Regular)	Premium Additive	TOTAL	O.T. Premium					
Painter (4)	\$55.13	\$27.57	64		\$3,528.32	\$0.00	\$30.00	\$1,920.00	\$5,448.32
Painter Foreman	\$57.00	\$28.50	16		\$912.00	\$0.00	\$30.00	\$480.00	\$1,392.00
Ironworker (4)	\$51.48	\$25.74	64		\$3,294.72	\$0.00	\$71.60	\$4,582.40	\$7,877.12
Ironworker Foreman	\$53.00	\$26.50	16		\$848.00	\$0.00	\$71.60	\$1,145.60	\$1,993.60
Compressor Operator	\$41.85	\$20.93	16		\$669.60	\$0.00	\$28.52	\$456.32	\$1,125.92
C-3 or CIH	\$90.00	\$45.00	16		\$1,440.00	\$0.00	\$90.00	\$1,440.00	\$2,880.00
Air Monitor Rep.	\$75.00	\$37.50	16		\$1,200.00	\$0.00	\$75.00	\$1,200.00	\$2,400.00
Teamster	\$45.00	\$22.50	24		\$1,080.00	\$0.00	\$27.00	\$432.00	\$1,512.00
Fire Watch	\$51.48	\$25.74	16		\$823.68	\$0.00	\$71.60	\$1,145.60	\$1,969.28
Total for Labor									\$26,598.24

EQUIPMENT TYPE	Hourly Rate	Number	Hours						Total
Pick Up Truck	\$15.88	2	16						\$508.16
375 Compressor	\$31.35	1	16						\$501.60
Needle Scalers	\$10.00	1	16						\$160.00
Hoses	\$5.00	1	16						\$80.00
135 ft Aerial Lift	\$28.41	2	32						\$1,818.18
Tractor Trailer for Lifts	\$150.00	2	8						\$2,400.00
Tractor Trailer	\$150.00	1							\$0.00
Excavator	\$130.00	1							\$0.00
Equipment Truck	\$31.50	1	16						\$504.00
Area Air Monitors	\$8.00	4	16						\$512.00
Generator	\$10.00	4	16						\$640.00
Torch Set	\$4.00	2	16						\$128.00
Rivet Buster	\$15.00	2	16						\$480.00
Total Equipment									\$7,731.94

Materials	Price	Number							Total
Tarps	\$20.00	20							\$400.00
LCM Debris Bags	\$10.00	40							\$400.00
55 Gal Drums	\$100.00	6							\$600.00
HS Bolts, Nuts, Washers	\$5.00	100							\$500.00
Laboratory Testing	\$50.00	8							\$400.00
LCM Disposal		1							\$5,000.00
Total Materials									\$7,300.00

\$41,630.18

DRAFT Hastings Water Tower Conceptual Cost

Task B Remove Catwalk, Ladder, etc. to facilitate tank removal

Mobilize

Disconnect and store catwalk, ladder, etc

Name	Hourly Rate		Hours for Period		Regular (Direct) Wages	Premium Wages	Fringe Benefits per Hour	Total Fringe Benefits	Labor Cost Rate and Benefits
	Basic (Regular)	Premium Additive	TOTAL	O.T. Premium					
Ironworker (3)	\$51.48	\$25.74	48		\$2,471.04	\$0.00	\$71.60	\$3,436.80	\$5,907.84
Ironworker Foreman	\$53.00	\$26.50	16		\$848.00	\$0.00	\$71.60	\$1,145.60	\$1,993.60
Compressor Operator	\$41.85	\$20.93	16		\$669.60	\$0.00	\$28.52	\$456.32	\$1,125.92
Excavator Operator	\$50.67	\$25.34	16		\$810.72	\$0.00	\$26.75	\$428.00	\$1,238.72
Teamster	\$45.00	\$22.50	8		\$360.00	\$0.00	\$27.00	\$432.00	\$792.00
Consultant Lift Plan									\$7,500.00
Total for Period					\$4,799.36	\$0.00		\$5,466.72	\$18,558.08

EQUIPMENT TYPE	Hourly Rate	Number	Hours						Total
Pick Up Truck	\$15.88	1	16						\$254.08
375 Compressor	\$31.35	1	16						\$501.60
Needle Scalers	\$10.00								\$0.00
Hoses	\$5.00	1	16						\$80.00
135 ft Aerial Lift	\$28.41	2	16						\$909.09
Tractor Trailer	\$150.00	1	8		Deliver Excavator				\$1,200.00
Excavator	\$130.00	1	16						\$2,080.00
Equipment Truck	\$31.50	1	16						\$504.00
Area Air Monitors	\$8.00								\$0.00
Generator	\$10.00								\$0.00
Torch Set	\$4.00	2	16						\$128.00
Rivet Buster	\$15.00	2	16						\$480.00

Total Equipment \$6,136.77

Materials

None

\$24,694.85

DRAFT Hastings Water Tower Conceptual Cost

Task C Remove Water Tank and Top Section of Legs

Mobilize

Prepare site for crane staging

Disconnect temporary bolts and pick water tank

Name	Hourly Rate		Hours for Period		Regular (Direct) Wages	Premium Wages	Fringe Benefits per Hour	Total Fringe Benefits	Labor Cost Rate and Benefits
	Basic (Regular)	Premium Additive	TOTAL	O.T. Premium					
Ironworker (3)	\$51.48	\$25.74	24		\$1,235.52	\$0.00	\$71.60	\$1,718.40	\$2,953.92
Ironworker Foreman	\$53.00	\$26.50	8		\$424.00	\$0.00	\$71.60	\$572.80	\$996.80
Excavator Operator	\$50.67	\$25.34	8		\$405.36	\$0.00	\$26.75	\$214.00	\$619.36
Total for Period			32	0	\$2,064.88	\$0.00		\$2,505.20	\$4,570.08

EQUIPMENT TYPE	Hourly Rate	Number	Hours		Total
Pick Up Truck	\$15.88	1	8		\$127.04
375 Compressor	\$31.35	1	8		\$250.80
Needle Scalers	\$10.00				\$0.00
Hoses	\$5.00	1	8		\$40.00
135 ft Aerial Lift	\$28.41	2	8		\$454.55
Tractor Trailer	\$150.00				\$0.00
Excavator	\$130.00	1	8		\$1,040.00
Equipment Truck	\$31.50	1	8		\$252.00
Area Air Monitors	\$8.00				\$0.00
Generator	\$10.00				\$0.00
Torch Set	\$4.00				\$0.00
Impact Gun	\$15.00	2	8		\$240.00
Rigging	\$1,500.00				\$1,500.00
Crane Service	\$8,000.00			Crane with Operator for one day	\$8,000.00
Crane Mobilization	\$2,500.00			Transport crane to and from site	\$2,500.00

Total Equipment \$14,404.39

Materials

None

\$18,974.47

DRAFT Hastings Water Tower Conceptual Cost

Task D Water Tank (and top section of legs) Disassembly for Transport

Mobilize

Disconnect temporary bolts, disassemble water tank

Remove legs, other elements

Name	Hourly Rate		Hours for Period		Regular (Direct) Wages	Premium Wages	Fringe Benefits per Hour	Total Fringe Benefits	Labor Cost Rate and Benefits
	Basic (Regular)	Premium Additive	TOTAL	O.T. Premium					
Ironworker (4)	\$51.48	\$25.74	96		\$4,942.08	\$0.00	\$71.60	\$6,873.60	\$11,815.68
Ironworker Foreman	\$53.00	\$26.50	24		\$1,272.00	\$0.00	\$71.60	\$1,718.40	\$2,990.40
Excavator Operator	\$50.67	\$25.34	24		\$1,216.08	\$0.00	\$26.75	\$642.00	\$1,858.08
Cherry Picker Operator	\$58.00	\$29.00	24		\$1,392.00	\$0.00	\$26.75	\$642.00	\$2,034.00
Teamster	\$45.00	\$22.50	8		\$360.00	\$0.00	\$27.00	\$648.00	\$1,008.00
Total for Period			120	0	\$7,430.16	\$0.00		\$9,234.00	\$19,706.16

EQUIPMENT TYPE	Hourly Rate	Number	Hours						Total
Pick Up Truck	\$15.88	2	24						\$762.24
375 Compressor	\$31.35	1	24						\$752.40
Cherry Picker	\$325.00	1	24						\$7,800.00
Hoses	\$5.00	1	24						\$120.00
135 ft Aerial Lift	\$28.41	2	24						\$1,363.64
Tractor Trailer	\$150.00	1	8		Cherry Picker Delivery/Removal				\$1,200.00
Excavator	\$130.00	1	24						\$3,120.00
Equipment Truck	\$31.50	1	24						\$756.00
Area Air Monitors	\$8.00								\$0.00
Generator	\$10.00								\$0.00
Torch Set	\$4.00	2	24						\$192.00
Rivet Buster	\$15.00	2	24						\$720.00

Total Equipment \$16,786.28

Materials: None

\$36,492.44

DRAFT Hastings Water Tower Conceptual Cost

Task E Transport Pieces to Paint Facility

Load pieces onto trailers

Transport to a facility for cleaning and painting.

Name	Hourly Rate		Hours for Period		Regular (Direct) Wages	Premium Wages	Fringe Benefits per Hour	Total Fringe Benefits	Labor Cost Rate and Benefits
	Basic (Regular)	Premium Additive	TOTAL	O.T. Premium					
Ironworker (4)	\$51.48	\$25.74	32		\$1,647.36	\$0.00	\$71.60	\$2,291.20	\$3,938.56
Ironworker Foreman	\$53.00	\$26.50	8		\$424.00	\$0.00	\$71.60	\$572.80	\$996.80
Excavator Operator (2)	\$50.67	\$25.34	16		\$810.72	\$0.00	\$26.75	\$428.00	\$1,238.72
Teamster (5)	\$45.00	\$22.50	40		\$1,800.00	\$0.00	\$27.00	\$1,080.00	\$2,880.00
Total for Period			40	0	\$2,882.08	\$0.00		\$4,372.00	\$9,054.08

EQUIPMENT TYPE	Hourly Rate	Number	Hours						Total
Pick Up Truck	\$15.88	1	8						\$127.04
375 Compressor	\$31.35								\$0.00
Cherry Picker	\$325.00								\$0.00
Hoses	\$5.00								\$0.00
135 ft Aerial Lift	\$28.41								\$0.00
Tractor Trailer	\$150.00	3	8						\$3,600.00
Tractor Trailer	\$150.00	1	8		Del/Remove Excavator from storage location				\$1,200.00
Tractor Trailer	\$150.00	1	8		Remove Excavator from Harbor location				\$1,200.00
Excavator	\$130.00	2	8						\$2,080.00
Equipment Truck	\$31.50	1	8						\$252.00
Area Air Monitors	\$8.00								\$0.00
Generator	\$10.00								\$0.00
Torch Set	\$4.00								\$0.00
Rivet Buster	\$15.00								\$0.00

Total Equipment

\$8,459.04

Materials: None

\$17,513.12

DRAFT Hastings Water Tower Conceptual Cost

Task F Cleaning and Painting Existing Water Tower at Paint Shop

Blast clean existing steel
Re-paint elements

Name	Hourly Rate		Hours for Period		Regular (Direct) Wages	Premium Wages	Fringe Benefits per Hour	Total Fringe Benefits	Labor Cost Rate and Benefits
	Basic (Regular)	Premium Additive	TOTAL	O.T. Premium					
Painter (4)	\$55.13	\$27.57	320		\$17,641.60	\$0.00	\$30.00	\$9,600.00	\$27,241.60
Painter Foreman	\$57.00	\$28.50	80		\$4,560.00	\$0.00	\$30.00	\$2,400.00	\$6,960.00
Excavator Operator	\$50.67	\$25.34	80		\$4,053.60	\$0.00	\$26.75	\$2,140.00	\$6,193.60
C-3 or CIH	\$90.00	\$45.00	8		\$720.00	\$0.00	\$90.00	\$720.00	\$1,440.00
Air Monitor Rep.	\$75.00	\$37.50	80		\$6,000.00	\$0.00	\$75.00	\$6,000.00	\$12,000.00
Total for Period									\$53,835.20

EQUIPMENT TYPE	Hourly Rate	Number	Hours						Total
Pick Up Truck	\$15.88								\$0.00
375 Compressor	\$31.35								\$0.00
Cherry Picker	\$325.00								\$0.00
Hoses	\$5.00								\$0.00
135 ft Aerial Lift	\$28.41								\$0.00
Tractor Trailer	\$150.00								\$0.00
Paint Sprayer	\$10.00	1	80						\$800.00
Equipment Truck	\$31.50	1	8						\$252.00
Area Air Monitors	\$8.00	2	80						\$1,280.00
Generator	\$10.00	2	8						\$160.00
Dust Collector	\$75.00	1	80						\$6,000.00
Recycling Unit	\$75.00	1	80						\$6,000.00
Total Equipment									\$14,492.00

Materials

Laboratory Testing	\$50.00	10				\$500.00
Paint - 3 coat system	\$50.00	100		Include Prime, Intern., and Finish Coats		\$5,000.00
PPE	\$500.00			Tyvek suits, respirators, etc.		\$0.00
Plywood	\$30.00					\$0.00
Lumber	\$6.25					\$0.00
Rubbber Matting	\$35.00			sheets of matting for sealing door, etc.		\$0.00
LCM Disposal		1				\$5,000.00
Total Materials						\$10,500.00

\$78,827.20

DRAFT Hastings Water Tower Conceptual Cost

Task G Retrieve from Paint Facility and Transport to Storage

Load pieces onto trailers

Transport to a location no farther away than that which allows for loading, transport, and unloading in one workday.

Unload, categorize and secure

Name	Hourly Rate		Hours for Period		Regular (Direct) Wages	Premium Wages	Fringe Benefits per Hour	Total Fringe Benefits	Labor Cost Rate and Benefits
	Basic (Regular)	Premium Additive	TOTAL	O.T. Premium					
Ironworker (4)	\$51.48	\$25.74	32		\$1,647.36	\$0.00	\$71.60	\$2,291.20	\$3,938.56
Ironworker Foreman	\$53.00	\$26.50	8		\$424.00	\$0.00	\$71.60	\$572.80	\$996.80
Excavator Operator (2)	\$50.67	\$25.34	16		\$810.72	\$0.00	\$26.75	\$428.00	\$1,238.72
Teamster (5)	\$45.00	\$22.50	40		\$1,800.00	\$0.00	\$27.00	\$1,080.00	\$2,880.00
Total for Period			40	0	\$2,882.08	\$0.00		\$4,372.00	\$9,054.08

EQUIPMENT TYPE	Hourly Rate	Number	Hours						Total
Pick Up Truck	\$15.88	1	8						\$127.04
375 Compressor	\$31.35								\$0.00
Cherry Picker	\$325.00								\$0.00
Hoses	\$5.00								\$0.00
135 ft Aerial Lift	\$28.41								\$0.00
Tractor Trailer	\$150.00	3	8						\$3,600.00
Tractor Trailer	\$150.00	1	8		Del/Remove Excavator from storage location				\$1,200.00
Tractor Trailer	\$150.00	1	8		Del/Remove Excavator at Paint Facility				\$1,200.00
Excavator	\$130.00	2	8						\$2,080.00
Equipment Truck	\$31.50	1	8						\$252.00
Area Air Monitors	\$8.00								\$0.00
Generator	\$10.00								\$0.00
Torch Set	\$4.00								\$0.00
Rivet Buster	\$15.00								\$0.00

Total Equipment

\$8,459.04

Materials: None

\$17,513.12

DRAFT Hastings Water Tower Conceptual Cost

Task H Transport Painted Pieces from Storage back to Original Location for Re-Erection

Load pieces onto trailers

Return to Harbor at Hastings Site

Unload and stockpile

(This cost escalated on Summary Sheet to reflect 3-year storage period.)

Name	Hourly Rate		Hours for Period		Regular (Direct) Wages	Premium Wages	Fringe Benefits per Hour	Total Fringe Benefits	Labor Cost Rate and Benefits
	Basic (Regular)	Premium Additive	TOTAL	O.T. Premium					
Ironworker (4)	\$51.48	\$25.74	32		\$1,647.36	\$0.00	\$71.60	\$2,291.20	\$3,938.56
Ironworker Foreman	\$53.00	\$26.50	8		\$424.00	\$0.00	\$71.60	\$572.80	\$996.80
Excavator Operator (2)	\$50.67	\$25.34	16		\$810.72	\$0.00	\$26.75	\$428.00	\$1,238.72
Teamster	\$45.00	\$22.50	4		\$180.00	\$0.00	\$27.00	\$432.00	\$612.00
Teamsters (2)	\$45.00	\$22.50	16		\$720.00	\$0.00	\$27.00	\$108.00	\$828.00
Total for Period			40	0	\$2,882.08	\$0.00		\$3,832.00	\$7,614.08

EQUIPMENT TYPE	Hourly Rate	Number	Hours						Total
Pick Up Truck	\$15.88	1	8						\$127.04
375 Compressor	\$31.35								\$0.00
Cherry Picker	\$325.00								\$0.00
Hoses	\$5.00								\$0.00
135 ft Aerial Lift	\$28.41								\$0.00
Tractor Trailer	\$150.00	1	4						\$600.00
Tractor Trailer	\$150.00	1	8		Del/Remove Excavator at Harbor site				\$1,200.00
Tractor Trailer	\$150.00	1	8		Del/Remove Excavator at Paint Facility				\$1,200.00
Excavator	\$130.00	2	8						\$2,080.00
Equipment Truck	\$31.50	1	8						\$252.00
Area Air Monitors	\$8.00								\$0.00
Generator	\$10.00								\$0.00
Torch Set	\$4.00								\$0.00
Rivet Buster	\$15.00								\$0.00

Total Equipment

\$5,459.04

Materials: None

\$13,073.12

DRAFT Hastings Water Tower Conceptual Cost

Task I Construct New Foundations

Formwork, rebar and place concrete.

Area previously excavated for remediation and restored (not included)

Strip forms

Backfill around new foundations

(This cost escalated on Summary Sheet to reflect 3-year storage period.)

Name	Hourly Rate		Hours for Period		Regular (Direct) Wages	Premium Wages	Fringe Benefits per Hour	Total Fringe Benefits	Labor Cost Rate and Benefits
	Basic (Regular)	Premium Additive	TOTAL	O.T. Premium					
Laborer	\$39.00	\$19.50	32		\$1,248.00	\$0.00	\$21.00	\$672.00	\$1,920.00
Labor Foreman	\$41.00	\$20.50	16		\$656.00	\$0.00	\$21.00	\$336.00	\$992.00
Carpenters	\$45.00	\$22.50	16		\$720.00	\$0.00	\$31.00	\$496.00	\$1,216.00
Excavator Operator	\$50.67	\$25.34	16		\$810.72	\$0.00	\$26.75	\$428.00	\$1,238.72
Lathers	\$55.00	\$27.50	16		\$880.00	\$0.00	\$33.00	\$528.00	\$1,408.00

Total for Labor

\$6,774.72

EQUIPMENT TYPE	Hourly Rate	Number	Hours						Total
Pick Up Truck	\$15.88	1	48						\$762.24
375 Compressor	\$31.35								\$0.00
Needle Scalars	\$10.00								\$0.00
Hoses	\$5.00								\$0.00
135 ft Aerial Lift	\$28.41								\$0.00
Tractor Trailer for Lifts	\$150.00								\$0.00
Tractor Trailer	\$150.00								\$0.00
Excavator	\$130.00	1	16						\$2,080.00
Equipment Truck	\$31.50								\$0.00
Area Air Monitors	\$8.00								\$0.00
Generator	\$10.00	1	48						\$480.00
Concrete Vibrator	\$4.00	1	8						\$32.00
Rivet Buster	\$15.00								\$0.00

Total Equipment

\$3,354.24

Materials	Price	Number							Total
Concrete	\$175.00	40							\$7,000.00
Reinforcement	\$1.50	1600							\$2,400.00
Formwork	\$800.00	1							\$800.00
Anchor Rods	\$50.00	8							\$400.00
Clean Backfill	\$20.00	60							\$1,200.00

Total Materials

\$11,800.00

\$21,928.96

DRAFT Hastings Water Tower Conceptual Cost

Task J Re-Erect Water Tower and Tank

Re-assembly of legs, ladders, catwalk

Weld tank segments, re-erect tank onto tower

Demobilize

(This cost escalated on Summary Sheet to reflect 3-year storage period.)

Name	Hourly Rate		Hours for Period		Regular (Direct) Wages	Premium Wages	Fringe Benefits per Hour	Total Fringe Benefits	Labor Cost Rate and Benefits
	Basic (Regular)	Premium Additive	TOTAL	O.T. Premium					
Ironworker (6)	\$51.48	\$25.74	480		\$24,710.40	\$0.00	\$71.60	\$34,368.00	\$59,078.40
Ironworker Foreman	\$53.00	\$26.50	80		\$4,240.00	\$0.00	\$71.60	\$5,728.00	\$9,968.00
Excavator Operator	\$50.67	\$25.34	80		\$4,053.60	\$0.00	\$26.75	\$2,140.00	\$6,193.60
Cherry Picker Operator	\$58.00	\$29.00	80		\$4,640.00	\$0.00	\$26.75	\$2,140.00	\$6,780.00
Teamster	\$45.00	\$22.50	8		\$360.00	\$0.00	\$27.00	\$2,160.00	\$2,520.00
Consultant Lift Plan									\$7,500.00
Total for Period			560	0	\$33,004.00	\$0.00		\$46,536.00	\$92,040.00

EQUIPMENT TYPE	Hourly Rate	Number	Hours						Total
Pick Up Truck	\$15.88	1	80						\$1,270.40
375 Compressor	\$31.35								\$0.00
Cherry Picker	\$325.00	1	80						\$26,000.00
Tractor Trailer	\$150.00	1	8		Cherry Picker Delivery/Removal				\$1,200.00
Hoses	\$5.00								\$0.00
135 ft Aerial Lift	\$28.41	2	80						\$4,545.45
Generator	\$10.00	2	80						\$1,600.00
Excavator	\$130.00	1	80						\$10,400.00
Equipment Truck	\$31.50	1	80						\$2,520.00
Welding Machine	\$15.00	1	80						\$1,200.00
Rigging	\$1,500.00								\$1,500.00
Crane Service	\$8,000.00			Crane with Operator for one day					\$8,000.00
Crane Mobilization	\$2,500.00			Transport crane to and from site					\$2,500.00

Total Equipment

\$60,735.85

Materials: None

\$152,775.85

DRAFT Hastings Water Tower Conceptual Cost

Task K Painting of Connections and Touch-up

Apply 3 coats

(This cost escalated on Summary Sheet to reflect 3-year storage period.)

Name	Hourly Rate		Hours for Period		Regular (Direct) Wages	Premium Wages	Fringe Benefits per Hour	Total Fringe Benefits	Labor Cost Rate and Benefits
	Basic (Regular)	Premium Additive	TOTAL	O.T. Premium					
Painters (2)	\$55.13	\$27.57	48		\$2,646.24	\$0.00	\$30.00	\$1,440.00	\$4,086.24
Painter Foreman	\$57.00	\$28.50	24		\$1,368.00	\$0.00	\$30.00	\$720.00	\$2,088.00
Total for Labor									\$6,174.24

EQUIPMENT TYPE	Hourly Rate	Number	Hours						Total
Pick Up Truck	\$15.88	1	24						\$381.12
375 Compressor	\$31.35								\$0.00
Needle Scalars	\$10.00								\$0.00
Hoses	\$5.00								\$0.00
135 ft Aerial Lift	\$28.41	2	32						\$1,818.18
Tractor Trailer for Lifts	\$150.00	2	8		Del/Rem Aerial Lifts				\$2,400.00
Tractor Trailer	\$150.00								\$0.00
Excavator	\$130.00								\$0.00
Equipment Truck	\$31.50								\$0.00
Area Air Monitors	\$8.00								\$0.00
Generator	\$10.00								\$0.00
Torch Set	\$4.00								\$0.00
Rivet Buster	\$15.00								\$0.00
Total Equipment									\$4,599.30

Materials	Price	Number							Total
Paint				Accounted for in previous painting operation.					\$0.00
LCM Debris Bags	\$10.00								\$0.00
55 Gal Drums	\$100.00								\$0.00
HS Bolts, Nuts, Washers	\$5.00								\$0.00
Laboratory Testing	\$50.00								\$0.00
Total Materials									\$0.00

\$10,773.54