



**OAK RIDGE CITY COUNCIL
WORK SESSION
AGENDA**

May 27, 2014

7:00 p.m.—Call to order in the Multipurpose Room, Central Services Complex

- I. Brief demonstration to the Oak Ridge City Council on new audio and voting upgrades to the Municipal Building Courtroom.
- II. Report from Irma Mutiahsari and Hera Nugrahayu on the “little library” program and applications to neighborhoods in Oak Ridge.
- III. Discussion and review by the City Manager regarding the National Park Service designation and integration of the future of the American Museum of Science and Energy (AMSE) and Oak Ridge Library into strategic planning and vision.
- IV. Joint discussions with the Oak Ridge Convention and Visitors Bureau and City Council on the future direction of the organization.
- V. Discussion on Friendship Bell report and suggested next steps for repair.
- VI. Charter Request from Councilmember Baughn.
- VII. Updates:
 - a. White House Initiative Mayor’s Makers Challenge
 - b. Informal Meetings with City Council
 - c. Questions on recent “wind in grocery store” bill

THE MANHATTAN PROJECT NATIONAL HISTORICAL PARK

INTERPRETIVE HISTORY CENTER

★ OAK RIDGE, TN ★

LOS ALAMOS, NM

HANFORD, WA



a collaborative project by the National Park Service, the U.S.
Department of Energy, and the City of Oak Ridge



design and presentation prepared by:



cockrill design & planning

THE MANHATTAN PROJECT

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site diagram - existing condition

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site diagram - additions

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site diagram - connective green space

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site diagram - future build-out

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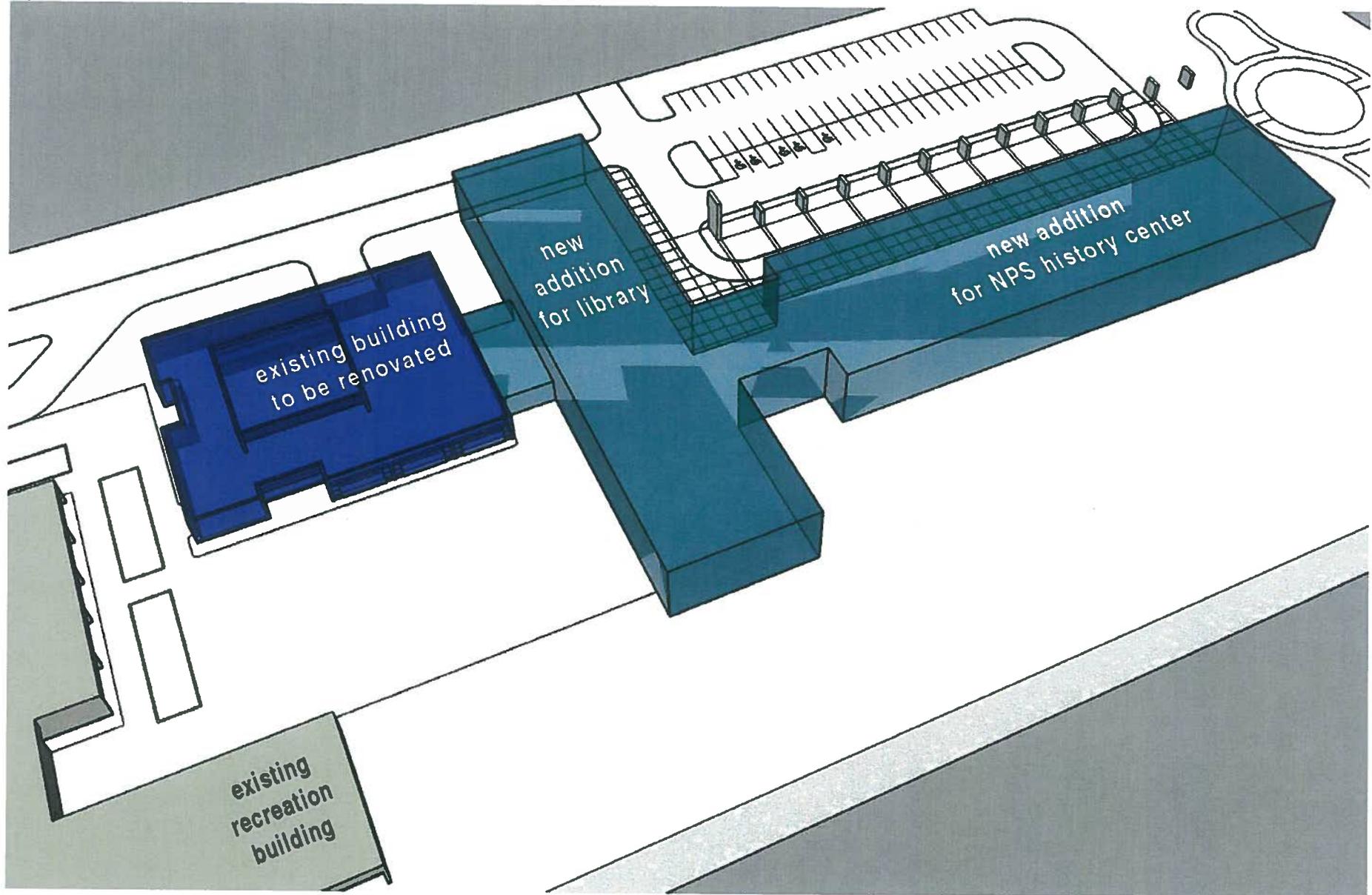


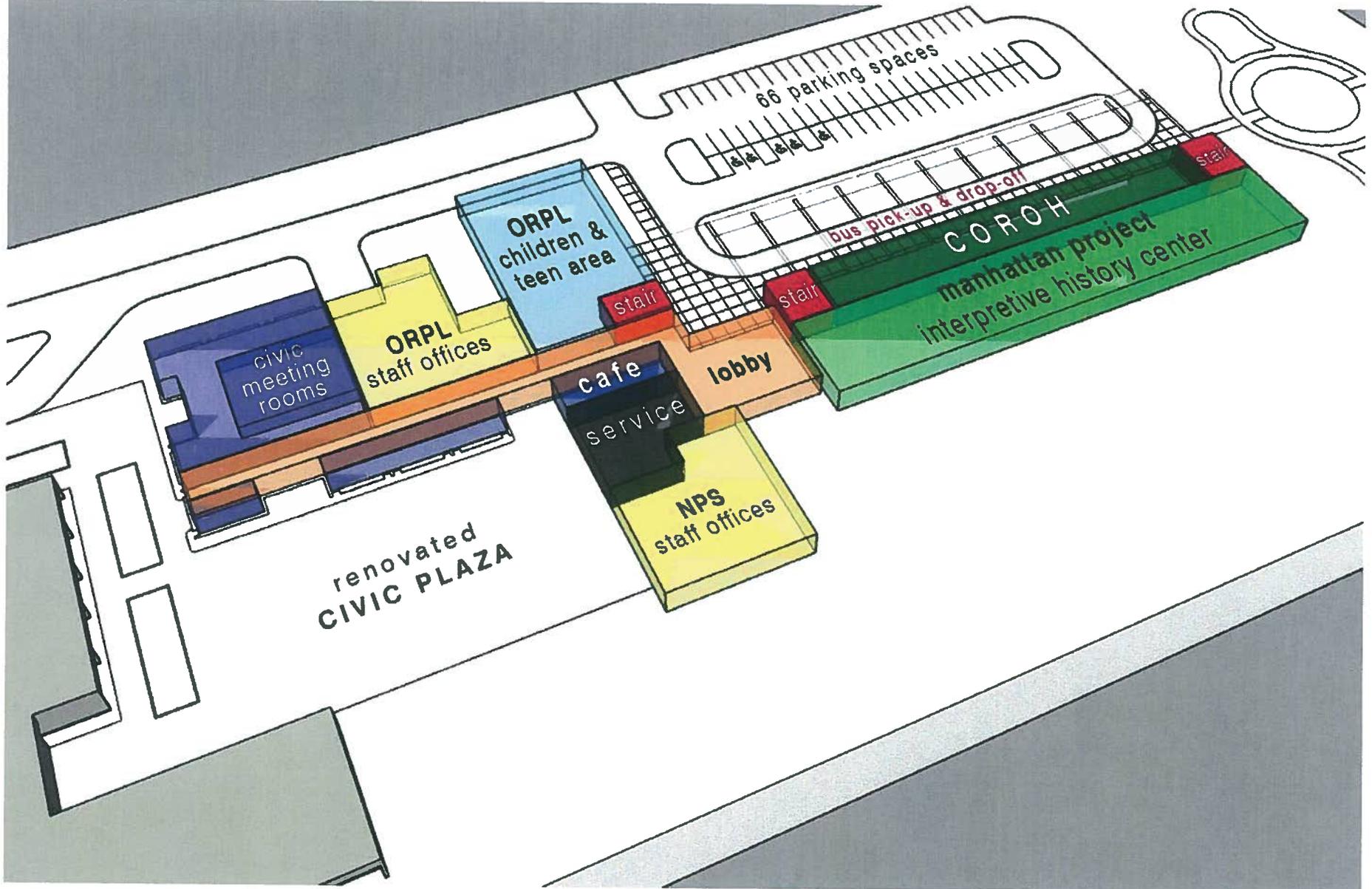
diagram - renovation/addition

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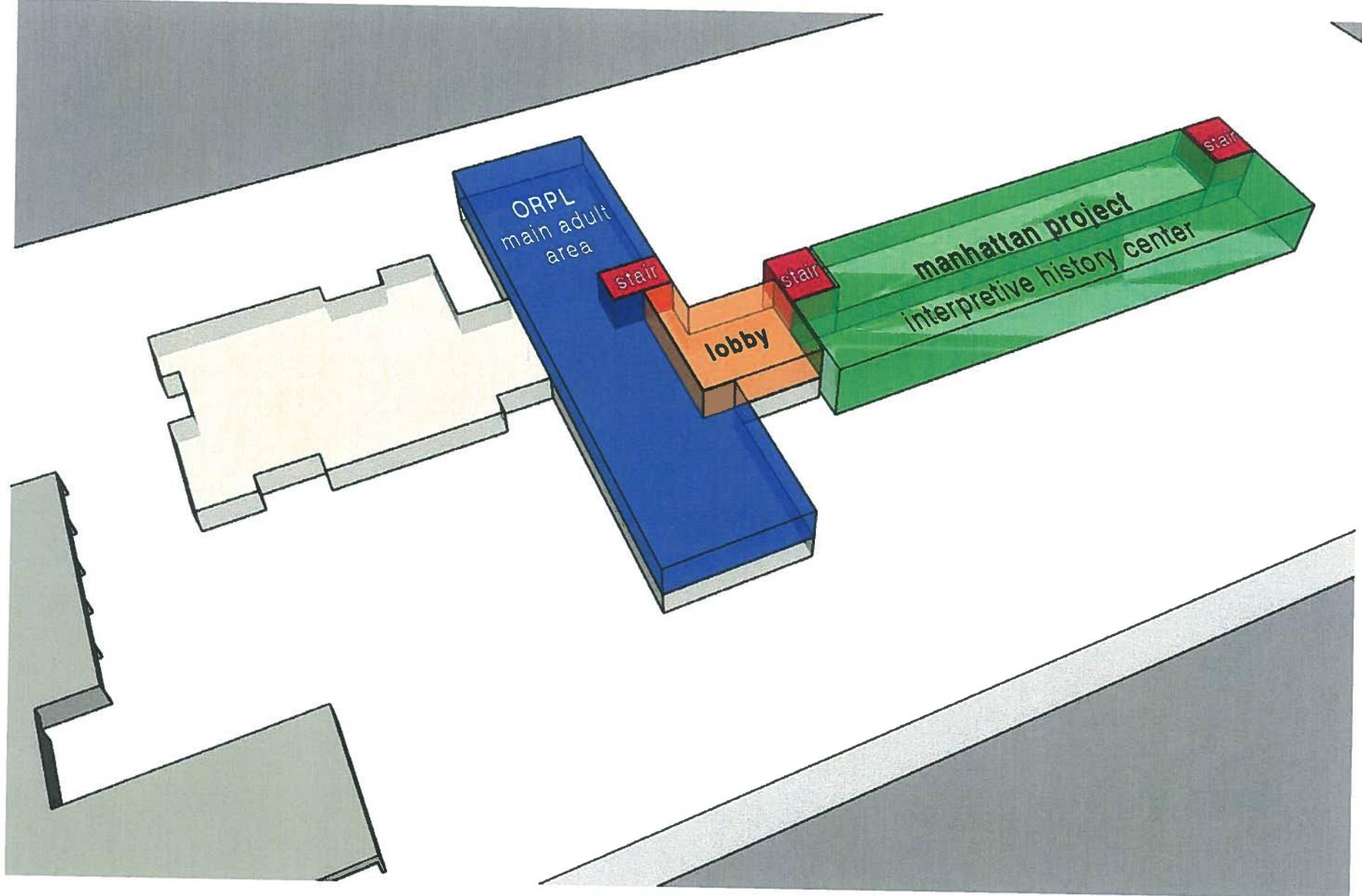
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floor plan diagram - main level

THE MANHATTAN PROJECT



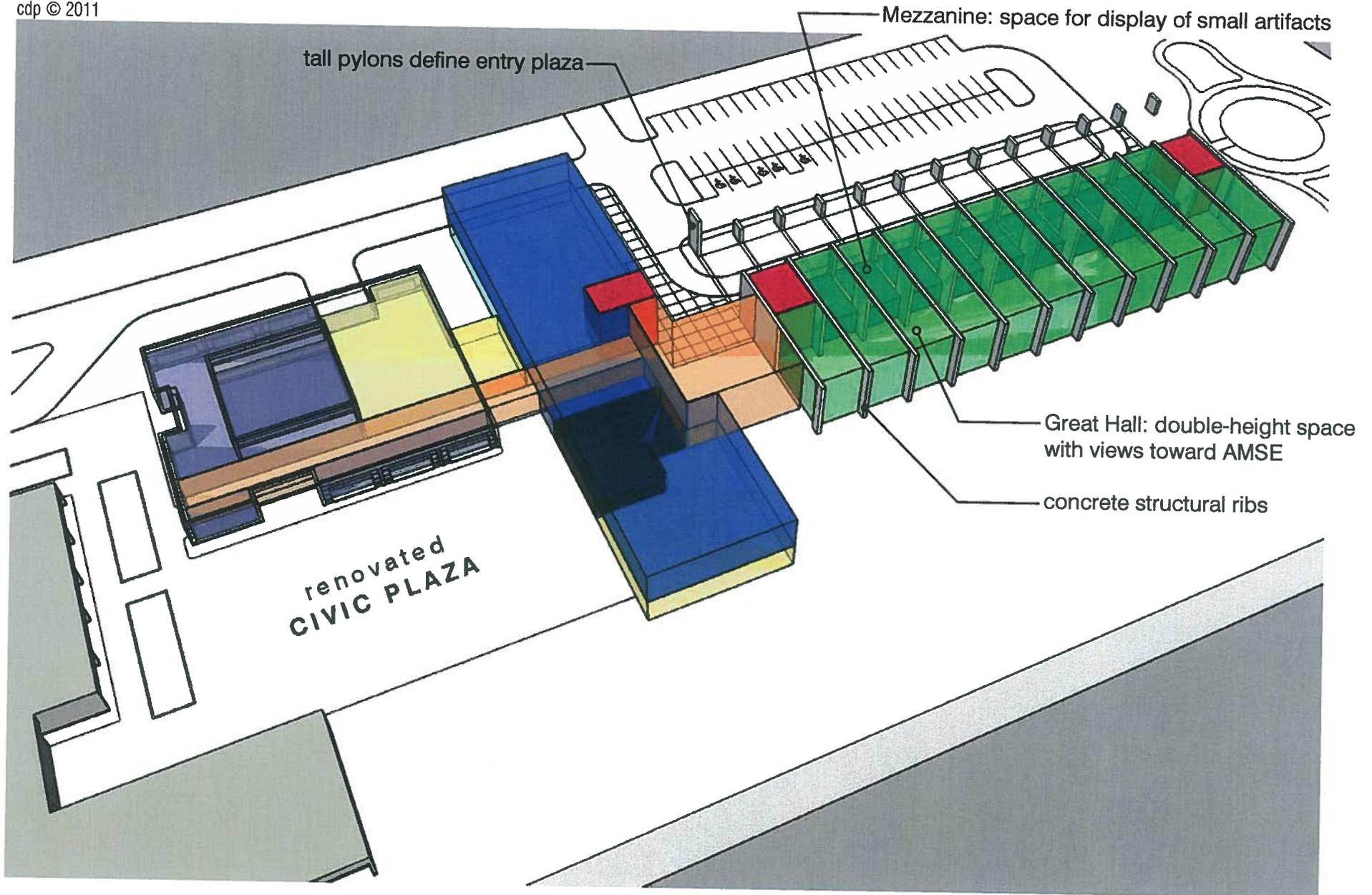
floor plan diagram - upper level

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composition diagram

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exterior view - main entry

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interior view - Interpretive History Center

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interior view - Interpretive History Center

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HANFORD, WA

**Inspection Report
of the
International Friendship Bell
for the
City of Oak Ridge
Parks and Recreation Department
Oak Ridge, Tennessee**

Inspection Report
of the
International Friendship Bell
for the
City of Oak Ridge
Parks and Recreation Department
Oak Ridge, Tennessee

Date Issued – April 2014

Prepared for the
CITY OF OAK RIDGE
Parks and Recreation Department

Prepared by
TETRA TECH, INC.
1093 Commerce Park Drive
Suite 100
Oak Ridge, Tennessee 37830

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1 INTRODUCTION

The International Friendship Bell is a pavilion in the south west region of A.K. Bissell Park. The pavilion was received by the City of Oak Ridge from the Oak Ridge Community Foundation and Bell Committee on May 3, 1996. In November 2013, Tetra Tech, Inc. was asked by the City of Oak Ridge to perform a structural inspection following deterioration discovered by Parks and Recreation Department personnel during routine inspections of the park facilities. This report provides documentation of the subsequent structural inspections, recommended modifications, and options.

1.1 Purpose

The purpose of this report is to document the inspection performed of the International Friendship Bell structure (hereafter, Bell structure) for the City of Oak Ridge (COR). This report also identifies the heavy timber framing members (via photographs) that have deteriorated and require replacement to restore the structural integrity to the framework supporting the bell. A detail drawing is provided of redesigned roof drainage for the east and west sides of the Bell structure to minimize future weathering effects.

1.2 Scope

The scope for this task is defined in the proposal approved on March 3, 2014. The approved scope is listed below.

“Basis of Estimate:

Tetra Tech will provide an inspection report and a detail drawing for use in renovating the International Friendship Bell structure in A.K. Bissell Park. The prepared A-E documents will address the replacement of deteriorated wood structural members and will provide details of the redesigned rainwater discharge to restore the structure to a safe configuration and to extend its service life.

Deliverables include:

Report with photographs identifying deteriorated members and requirements for replacement members

Detail drawing for redesigned rainwater discharge

Estimate Assumptions:

The City of Oak Ridge will obtain vendor /contractor services under separate contract to accomplish the field work. One review cycle of the deliverables is assumed. Cost estimates are excluded from this scope of work.”

2 BACKGROUND

The International Friendship Bell and structure are located in the southwest region of A.K. Bissell Park in Oak Ridge, Tennessee. According to the commemorative display at the site, the Bell and structure were dedicated on May 3-4, 1996. The design of the Bell structure highlights both Japanese and East Tennessee vernacular architecture. The existing design invokes the image of simple Japanese temples and contains aspects of the regional cantilever barn that is seen in Tennessee farmland. The Bell is a solid bronze bell that was cast in Japan on July 14, 1993. The Bell is approximately 6.7 feet tall, 4.8 feet diameter, and weighs approximately 8,250 pounds.

3 SCOPING AND PRELIMINARY INSPECTIONS

A site visit was conducted on November 18, 2013 to discuss the scope of the project. During this scoping meeting, Tetra Tech's structural engineer recommended placing cribbing under the Bell due to obvious structural deterioration of the heavy timber framework. COR Parks and Recreation Department personnel installed the cribbing and a construction fence to barricade the structure from inadvertent access.

On February 6, 2014, a preliminary inspection was requested by the COR Parks and Recreation Department following an incident involving someone crossing the construction barricade and climbing on the cribbing under the Bell. The preliminary inspection noted that approximately 16 of the 26 members inspected exhibited signs or sounds of deterioration that would warrant replacement. This represented approximately 60% of the primary framing members inspected, including 3 of the 6 columns and the main beam supporting the south end of the Bell. Following the access incident and the preliminary inspection, COR Parks and Recreation Department personnel erected temporary chain-link fencing to further restrict access to the Bell structure.

4 DETAILED STRUCTURAL INSPECTION

A detailed structural inspection of the Bell structure was conducted on March 18, 2014. At the time of the inspection, the Bell structure was approximately 18 years old. Rough sketches were made of the primary cross-sections of the framework. Chalk was used to identify primary structural framing members with unique numbers. Visual inspections and soundings of the primary heavy timber framing members were conducted. Pass-fail conditions were assigned for each primary framing member. Roof rafters were not numbered or sounded. Visual inspection of the rafters indicated that the majority of the rafters are in good condition, with the exception being those exposed directly to the effects of inclement weather conditions.

The stone/masonry retaining wall at the south end of the Bell structure has vertical and diagonal cracks adjacent to Column 6 supporting the 8,250 lb. bronze bell and one fourth of the high bay roof structure. There are also diagonal cracks along the west wing wall. These cracks indicate load and settlement issues of the retaining wall structure.

The primary framing members of the Bell structure are heavy oak timbers, nominally 12-inches by 12-inches in cross-section. The members supporting the bottom of the rafters along the east and west sides are nominally 8-inches by 8-inches in cross-section and are noted in Table 1. Many of these primary members exhibited hollowness or visible physical deterioration of the wood. Checking (or cracking along the wood grain) was evident in several of the primary members in varying degrees of severity. Soundings were made of each member by hitting the members with a hammer at numerous locations. Solid soundings were indications that the wood was in good condition. Hollow or thud soundings were indications that the wood was deteriorated or rotting.

Fifty (50) primary members were identified and numbered. Members above the roof line were not labelled in the field. Only fifteen (15) of the primary members were in good condition throughout their length. Twenty-seven (27) of the primary members exhibited hollow or thud soundings along their length or at critical connection locations or both. The eight (8) members above the roof line failed based on visual inspection only. The failed members represent approximately 70% of the primary members of the Bell structure. The photographs in Attachment A and sketches in Attachment B may be used in conjunction with Table 1 to identify these members.

Member	Condition	Member	Condition	Member	Condition	Member	Condition
1	Pass	14	Fail	27	Fail	40	Pass
2	Fail	15	Pass	28	Fail	41	Pass
3	Fail	16	Pass	29	Fail	42	Fail
4	Fail	17	Pass	30	Fail	43	Fail
5	Pass	18	Fail	31	Fail	44	Fail
6	Fail	19	Pass (8x8)	32	Fail	45	Fail (Roof)
7	Fail	20	Pass (8x8)	33	Fail (Roof)	46	Fail (Roof)
8	Fail	21	Pass (8x8)	34	Fail	47	Fail (Roof)
9	Fail	22	Pass (8x8)	35	Fail	48	Fail (Roof)
10	Fail	23	Fail (8x8)	36	Fail (Roof)	49	Fail (Roof)
11	Fail	24	Fail	37	Pass	50	Fail (Roof)
12	Pass	25	Fail	38	Pass		
13	Fail	26	Pass (8x8)	39	Fail		

Table 1 - Primary Framing Member Condition Assessment

5 OPTIONS

The following options are provided for consideration by the City of Oak Ridge regarding the future disposition of the International Friendship Bell.

5.1 Replace the Entire Bell Structure (Limited Redesign)

- 5.1.1 Replace all heavy timber framing members (treated oak) with “like-for-like” member sizes and connections.
- 5.1.2 Reuse existing steel plates and connections (assumed intact from visual inspection).
- 5.1.3 Remove the gutters on the east and west sides of the Bell structure to keep drainage outside of the primary structural members. Eliminate the gutters /troughs that run inside the 12” x 12” framing members. Reuse existing drainage trough in the center of the north end of the Bell structure. The two horizontal scuppers will be abandoned and may be kept to maintain the appearance of the original structure or removed at the discretion of the City.
- 5.1.4 Replace the existing roof and rafters. Include roof modifications shown in Attachment C.
- 5.1.5 Monitor the existing stone wall at the south end of the Bell structure for widening of the existing cracks or the development of new cracks.

5.2 Replace Select Framing Members of the Bell Structure (Limited Redesign)

- 5.2.1 Replace only “failed” heavy timber framing members (treated oak) with “like-for-like” members and connections.
- 5.2.2 Reuse existing steel plates and connections (assumed intact from visual inspection).
- 5.2.3 Remove the gutters on the east and west sides of the Bell structure to keep drainage outside of the primary structural members. Eliminate the gutters /troughs that run inside the 12” x 12” framing members. Reuse existing drainage trough in the center of the north end of the Bell structure. The two horizontal scuppers will be abandoned and may be kept to maintain the appearance of the original structure or removed at the discretion of the City.
- 5.2.4 Replace the existing roof and rafters. Include roof modifications shown in Attachment C.
- 5.2.5 Repair the existing stone wall at the south end of the Bell structure with specialty grout injection.

Note: There are numerous long-term cost and maintenance issues with this option. Replacing select framing members will necessitate complete dismantlement of the Bell structure. Replacing select framing members will mean approximately 15 members will be 18 years older than 70% of the new structure. From strictly a practical point of view, this option is not recommended.

5.3 Replace the Entire Bell Structure (Full Redesign)

- 5.3.1 Replace the International Friendship Bell structure with updated design and materials to minimize maintenance costs and for extended service life.
- 5.3.2 Replace the stone wall at the south end of the Bell structure with a new retaining wall with reinforced pilasters under the south columns.

5.4 Do Nothing

- 5.4.1 In its current condition, the barricades should not be removed nor should the public be allowed to enter the chain-link fence area around the Bell structure. Further deterioration of this heavy timber frame structure should be expected. The “Do Nothing” option will eventually result in collapse of the Bell structure. Although imminent danger does not presently describe the condition of the Bell structure, it is unsafe for public access in its current condition.

6 ASSESSMENT AND RECOMMENDATIONS

Documentation regarding the original construction of the Bell structure was not discovered from City records and archives. Most of the deterioration of the International Friendship Bell structure can be attributed directly to unprotected exposure to weather. The most significant deterioration occurred in members that were not protected by the roof. The open gable ends also permitted inclement weather to wear down the exposed trim and structural wood members. Additional deterioration of primary structural members resulted from a gutter/trough design for the roof that involved placement of welded structural steel members into hollowed out cross-sections of the heavy timber framing members. At one of the members protruding above the roof surface, a large hole was discovered with a squirrels nest inside the member.

There is no redundancy in structure supporting the Bell. Several members had good soundings for the majority of their length but sounded hollow near the connections. Reinforcing the joints is not considered a viable option due to the extent of deterioration at the joints.

The following recommendations are made, in decreasing order of importance, for consideration by the City of Oak Ridge.

- A. Utilize the redesigned fascia detail on Sheet S6 (Attachment C) provided as part of this scope of work to sheet flow water off the roof. The idea is to keep storm water on the outside of the structure and maintain a single waterfall effect on the north end of the structure during rain events. Recommend utilizing either Option 5.1 or 5.3 if the City of Oak Ridge intends to keep the International Friendship Bell pavilion.
- B. Eliminate all conduit/electrical chases inside primary structural members.
- C. Consider closing the gable ends of the structure with transparent material (including flashing details at the roof) to protect the wood members from inclement weather.
- D. For all wood members located above the roof line, consider replacing these members with false members of a different material type that give the appearance of wood. The false members could utilize the bolted connections of the existing roof structure.
- E. Consider utilizing the services of a timber frame home manufacturer or a log home manufacturer to determine appropriate weather protection (pressure treatment, coating, etc.) for the Oak Ridge area.
- F. Replace at least a portion of the stone/masonry wall with masonry pilasters or short reinforced concrete columns under the two south wood columns. Depending on the existing foundation /slab, small spread footings under these columns may be required. As a minimum, annual or biannual inspections of the existing stone/masonry wall are recommended to monitor additional movement.

ATTACHMENT A
PHOTOS OF EXISTING CONDITIONS

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Photo 1 - International Friendship Bell Structure (Looking East)



Photo 2 - International Friendship Bell (Approx. 8,250 lbs.)



Photo 3 - International Friendship Bell (Looking North West)



Photo 4 - Primary Members 1, 9, 19, 41, & 42



Photo 5 - Primary Members 2, 10, 16, 22, 43, & 44



Photo 6 - Primary Members 3, 11, 17, 37, & 38 (29 & 34 in Background)



Photo 7 - Primary Members 4, 12, 17, 39, & 40



Photo 8 - Primary Members 5, 13, 23, 24, 27, 29, 30, 32, & 34



Photo 9 - Primary Members 6, 14, 18, 25, 26, 27, 28, 31, & 35



Photo 10 - Primary Members 2, 7, & 16



Photo 11 - Primary Members 1, 8, 9, & 15



Photo 12 - Primary Members 1, 15, 20, 38, 41, & 42



Photo 13 - Primary Members 4, 17, 21, 39, 40, & 43



Photo 14 - Significant Checking on Member 18



Photo 15 - Severe Checking and Sagging of Member 32



Photo 16 - Member 50 Missing at North End of Bell Structure



Photo 17 - Severe Splitting and Deterioration of Column 3

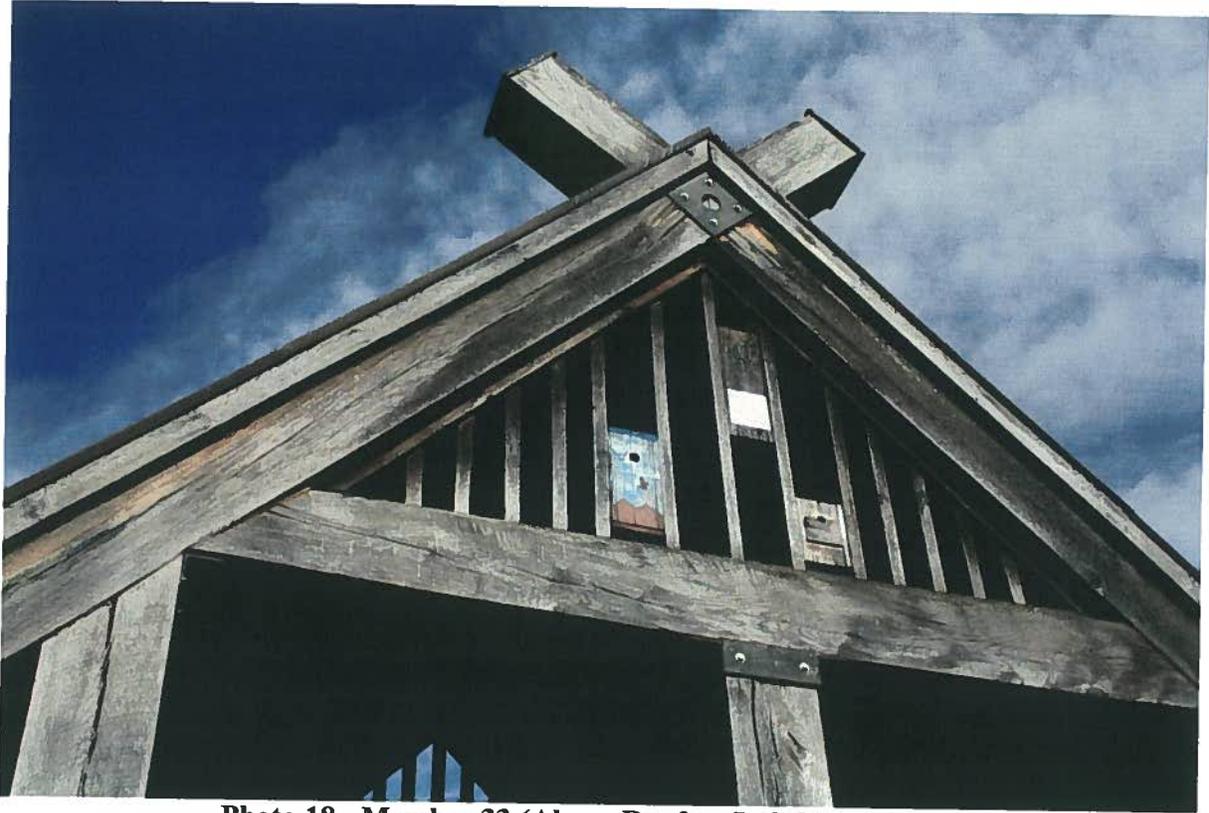


Photo 18 - Member 33 (Above Roof on Left-Not Labelled)

Squirrels Nest inside Member 33 (Member 48 Above Roof on Right – Not Labelled)



Photo 19 - Typical Pedestal (Columns 2 & 4 shown)

Cribbing under the Bell in the Background

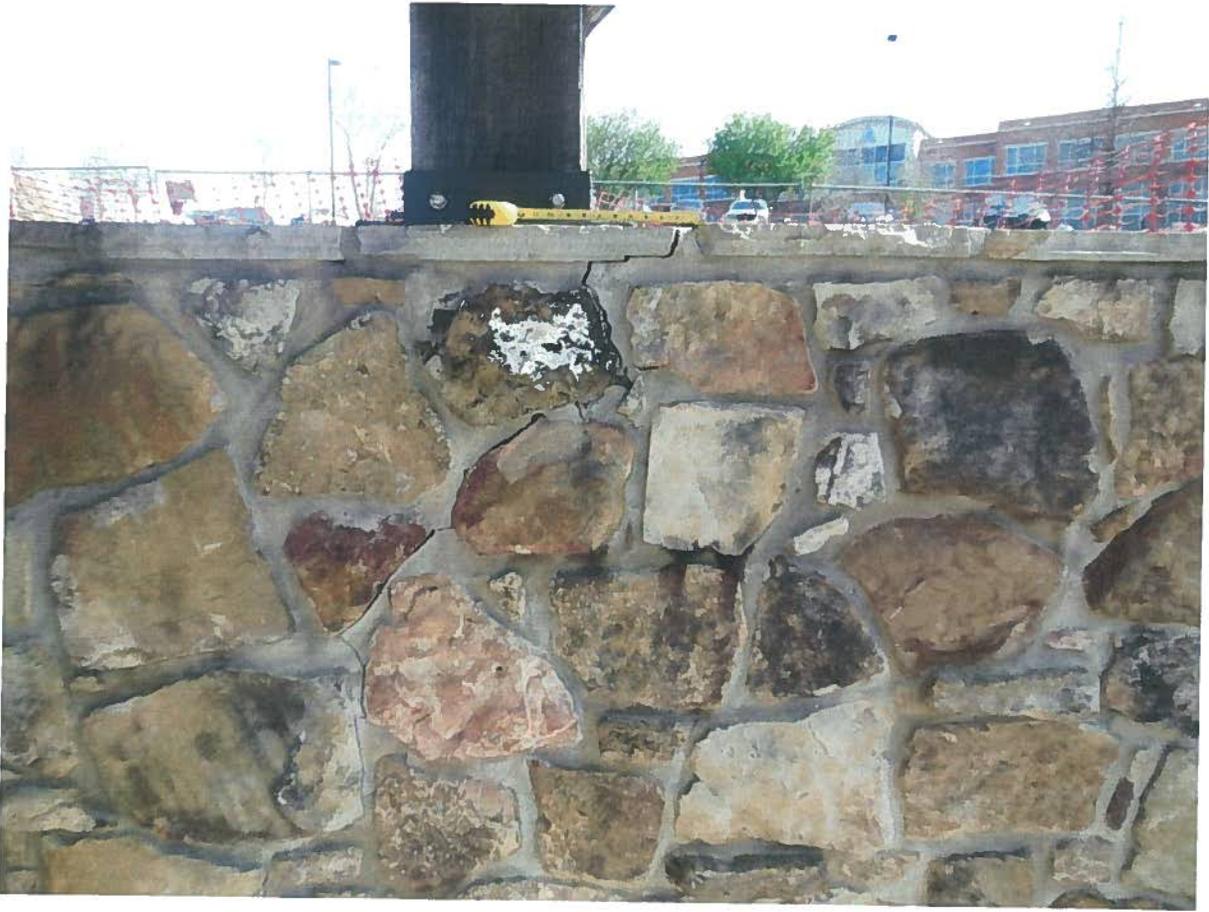


Photo 20 - Meandering Crack in Stone/Masonry Wall below Column 6



Photo 21 - Crack at Top of Stone/Masonry Wall below Column 6



Photo 22 - Crack at Top of West Wing Wall

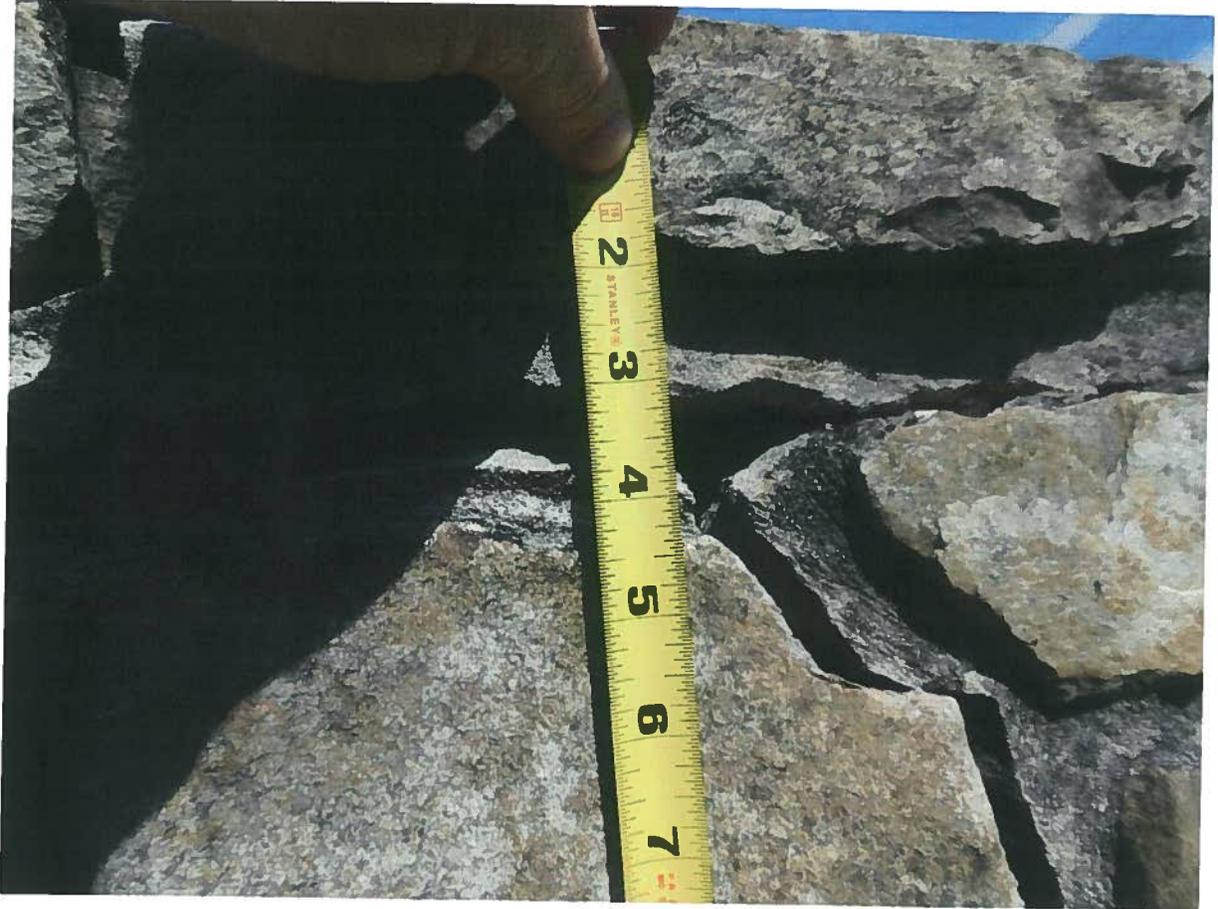


Photo 23 - Crack in West Wing Wall - Below the Cap



Photo 24 - Crack in West Wing Wall - Near the Top

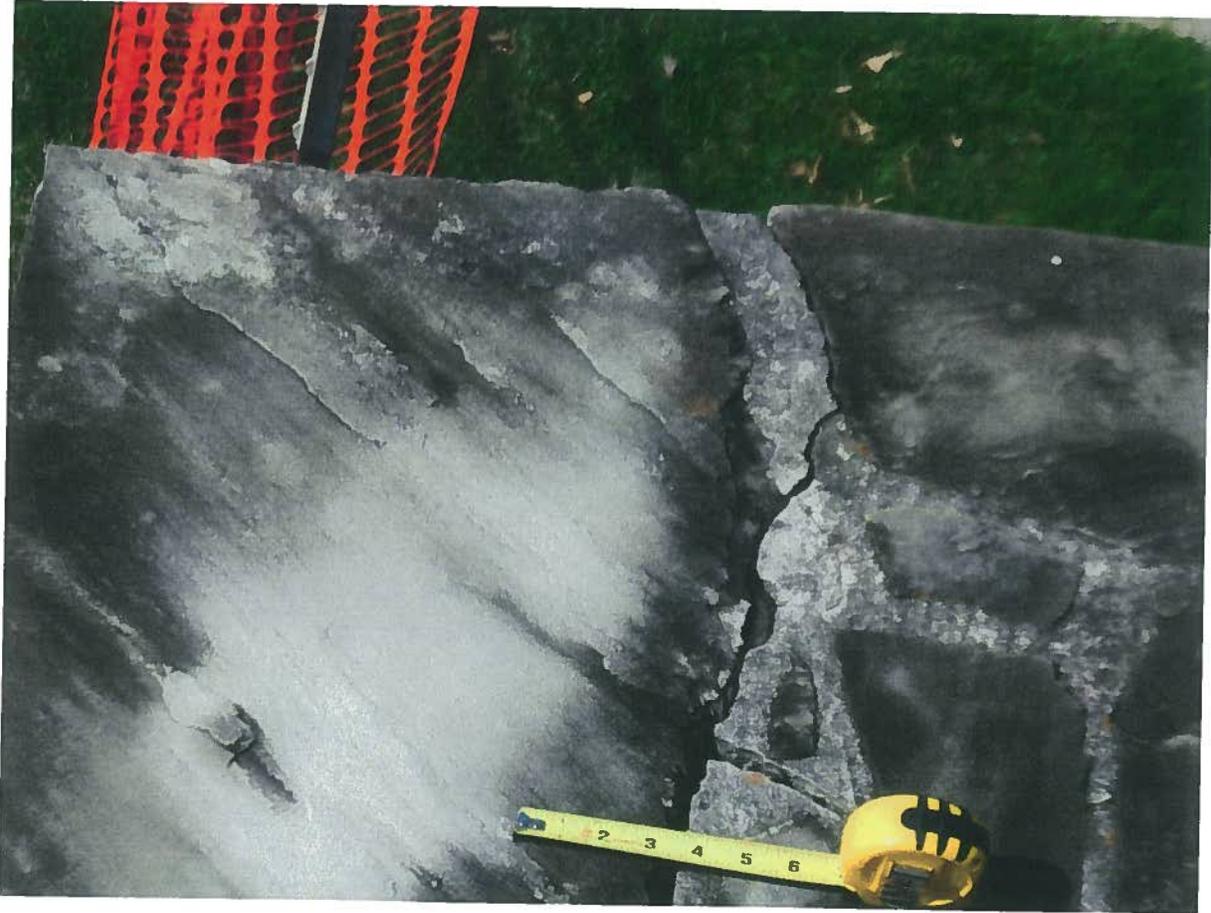
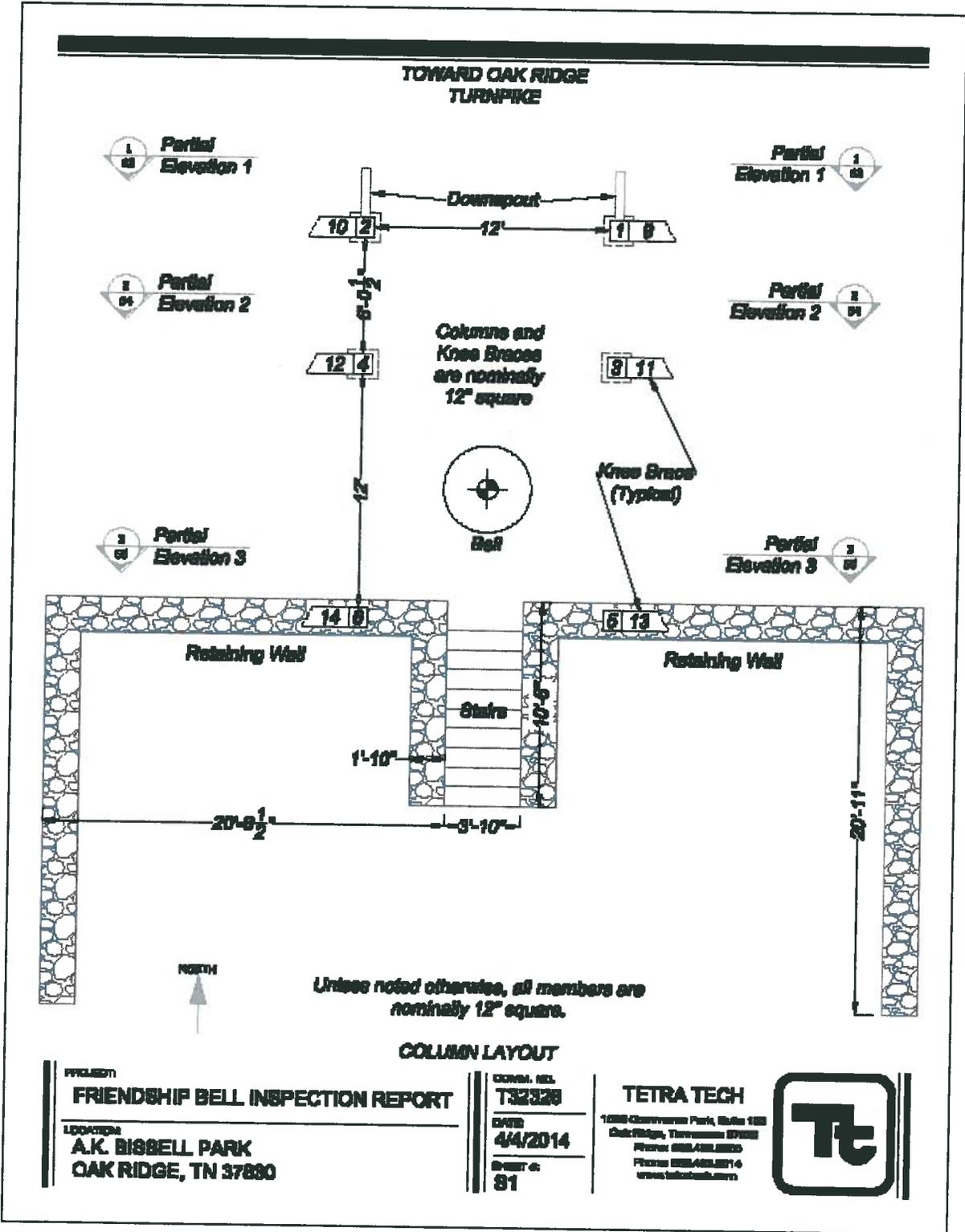


Photo 25 - Crack at Top of West Wing Wall - North West Corner

ATTACHMENT B
DRAWINGS

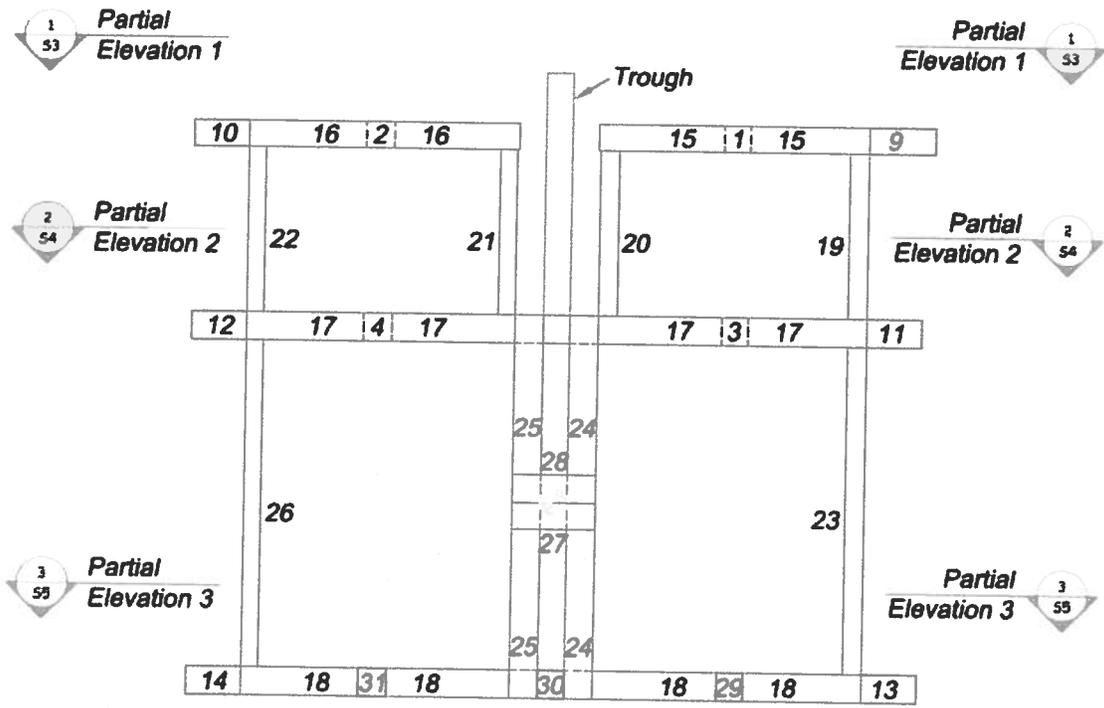
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Drawing 1 - Column Layout

**TOWARD OAK RIDGE
TURNPIKE**

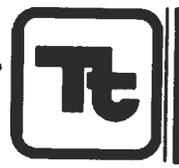


*Columns 1, 2, 3, and 4 terminate at the bottom of Beams 15, 16, and 17.
Beams 19, 20, 21, 22, 23, and 26 are nominally 8" square.
Unless noted otherwise, all other members are nominally 12" square.*

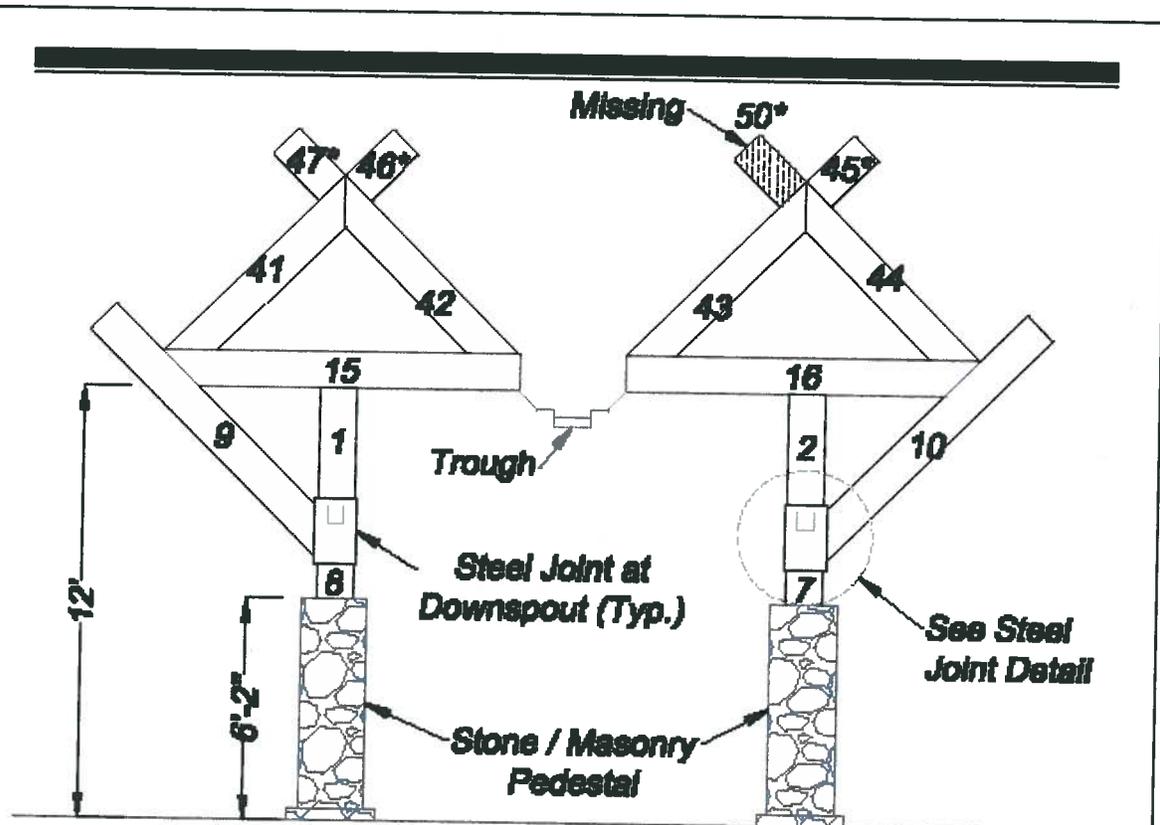


PLAN VIEW AT ELEVATION 12 FEET

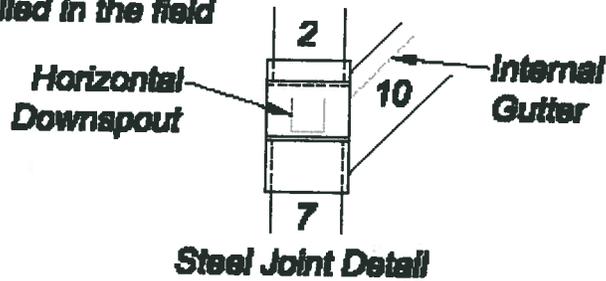
<p>PROJECT: FRIENDSHIP BELL INSPECTION REPORT</p> <hr/> <p>LOCATION: A.K. BISSELL PARK OAK RIDGE, TN 37830</p>	<p>COMM. NO.: T32326</p> <hr/> <p>DATE: 4/4/2014</p> <hr/> <p>SHEET #: S2</p>	<p>TETRA TECH</p> <p><small>1023 Commerce Park, Suite 100 Oak Ridge, Tennessee 37830 Phone: 865.483.6900 Phone: 865.483.2014 www.tetrattech.com</small></p>
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Drawing 2 - Plan View at Elevation 12 Feet



* - Not labelled in the field



Unless noted otherwise, all members are nominally 12" square.

PARTIAL ELEVATION 1

PROJECT
FRIENDSHIP BELL INSPECTION REPORT

LOCATION
**A.K. BISSELL PARK
 OAK RIDGE, TN 37890**

CONTRACT NO.
T32328

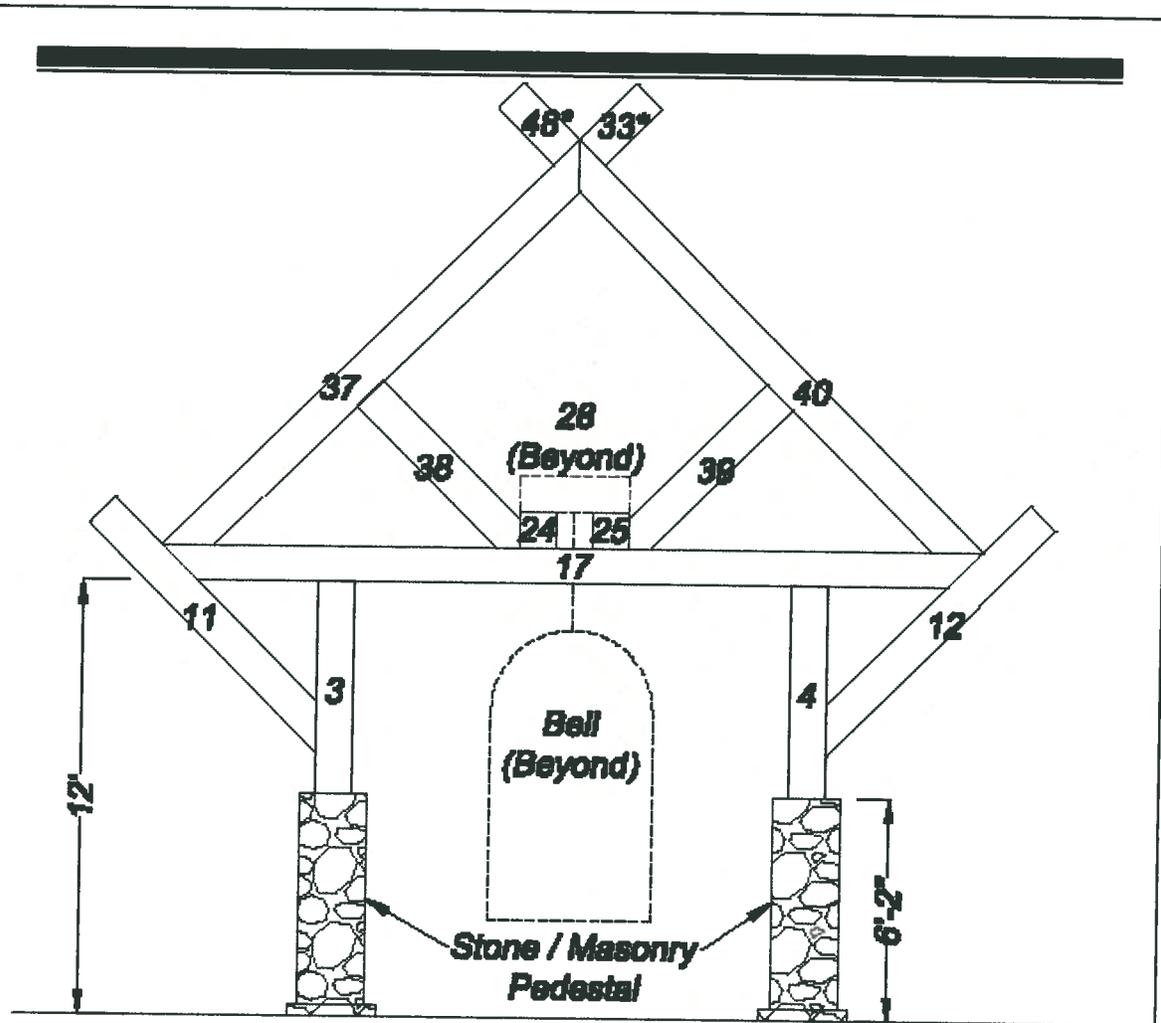
DATE
4/4/2014

DRAWN BY
SS

TETRA TECH
 1088 Clarendon Park, Suite 100
 Oak Ridge, Tennessee 37890
 Phone: 615/426-8880
 Fax: 615/426-8814
 www.tetratech.com



Drawing 3 - Partial Elevation 1



** - Not labelled in the field*

**Unless noted otherwise, all members
are nominally 12" square.**

PARTIAL ELEVATION 2

PROJECT:
FRIENDSHIP BELL INSPECTION REPORT

LOCATION:
**A.K. BISSELL PARK
OAK RIDGE, TN 37830**

ORDER NO.
T32328

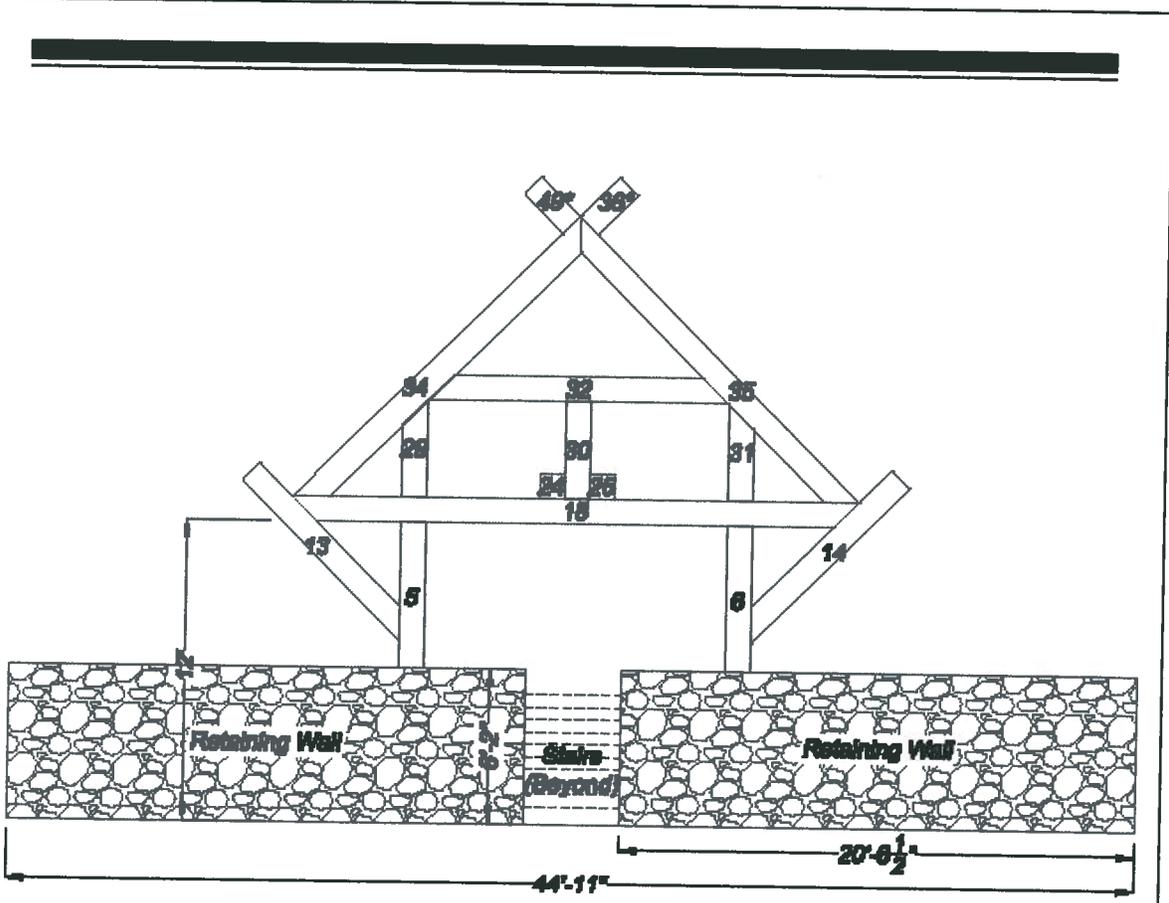
DATE
4/4/2014

SHEET NO.
84

TETRA TECH
1888 Clovercrest Park, Suite 500
Oak Ridge, Tennessee 37830
Phone: 888-428-8888
Fax: 615-428-8274
www.tetra-tech.com



Drawing 4 - Partial Elevation 2



* - Not labelled in the field

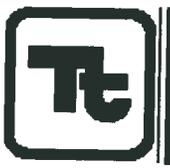
Unless noted otherwise, all members are nominally 12" square.

PARTIAL ELEVATION 3

PROJECT:
FRIENDSHIP BELL INSPECTION REPORT
 LOCATION:
**A.K. BISSELL PARK
 OAK RIDGE, TN 37830**

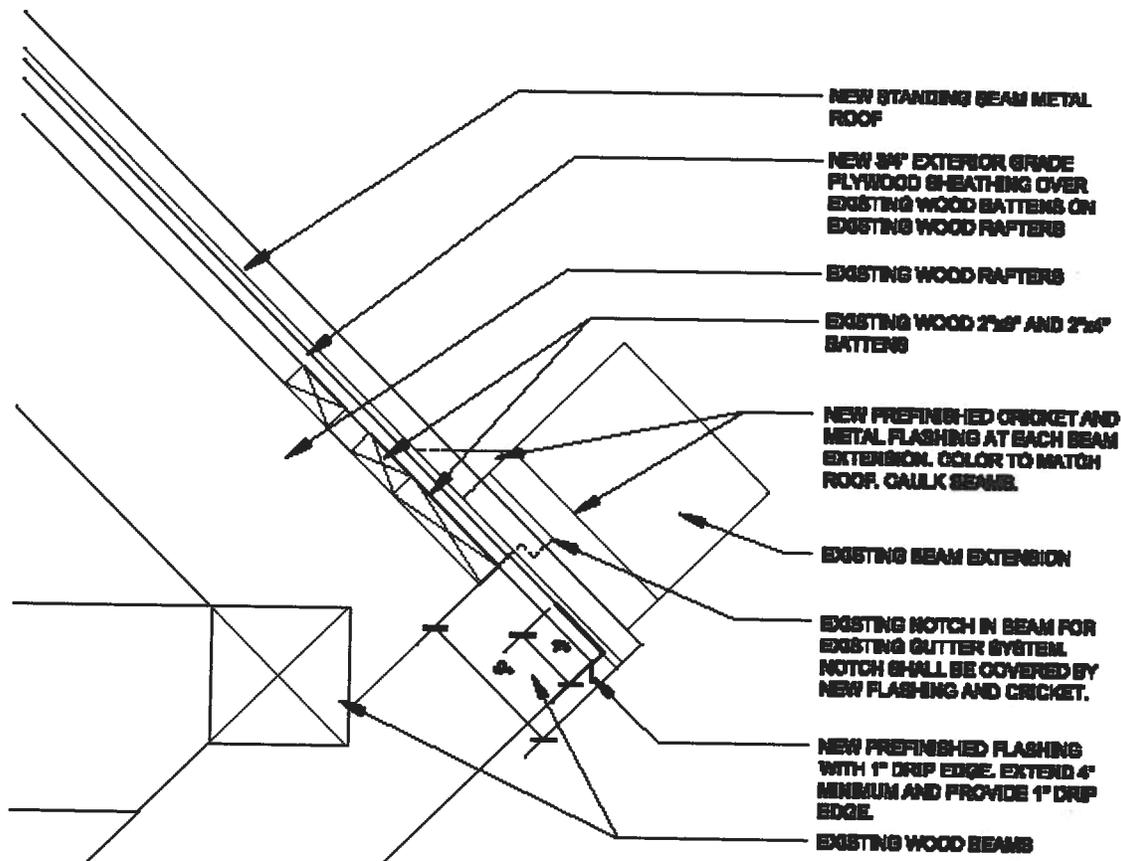
DRAWING NO.
T32328
 DATE:
4/4/2014
 SHEET OF:
85

TETRA TECH
 1000 Cloverwood Park, Suite 100
 Oak Ridge, Tennessee 37830
 Phone: 615.426.8800
 Fax: 615.426.8714
 www.tetratech.com



Drawing 5 - Partial Elevation 3

ATTACHMENT C
REDESIGNED ROOF DRAINAGE



FASCIA DETAIL

SCALE: 1'-1/2" = 1'-0"

PROJECT:
FRIENDSHIP BELL INSPECTION REPORT

LOCATION:
**A.K. BISSELL PARK
 OAK RIDGE, TN 37830**

CONTRACT NO.
T32328

DATE
4/4/2014

SHEET NO.
88

TETRA TECH
 1000 Clearwater Park, Suite 100
 Oak Ridge, Tennessee 37830
 Phone: 888.428.8825
 Fax: 888.428.8814
 www.tetra-tech.com



Stanley, Diana

Subject: FW: June 2nd Agenda Request

From: Trina Baughn [<mailto:trina.baughn@gmail.com>]

Sent: Tuesday, May 20, 2014 11:58 AM

To: Watson, Mark; Krushenski, Ken; McGinnis, Janice

Subject: June 2nd Agenda Request

Mark,

Please consider including in our agenda a resolution to amend Section 13 of the charter for placement on the November election ballot.

Ken,

Please consult with Janice and advise on potential verbiage that could/would stipulate accountability measures that we are currently lacking. The idea is that we allow the schools to retain their autonomy in their budgetary projections but we equip council with the tools and the ability to hold them accountable for how they project and how they spend.

We may also want to discuss the potential conflict of the resolution passed regarding the high school debt and this statement found in the same section of the charter: "Requests for such improvements shall be transmitted to the **planning commission for review and incorporation into the capital improvement program** before November 1 prior to the next fiscal year."

This needn't be a complex revision and we could certainly table until July; however, my preference is to begin the discussion during our June 2nd meeting so that it becomes part of the 2015 budget discussions.

Thanks,

Trina