

HISTORIC AND DESIGN REVIEW COMMISSION

April 20, 2016

Agenda Item No: 13

HDRC CASE NO: 2016-143
COMMON NAME: Witte Museum
ADDRESS: 3901 BROADWAY
ZONING: R6 HS RIO-1
CITY COUNCIL DIST.: 2
LANDMARK: Brackenridge Park
APPLICANT: David Gauthier/Intelligent Engineering Services
OWNER: City of San Antonio
TYPE OF WORK: Reconstruction of stone channel walls
REQUEST:

The applicant is requesting conceptual approval to replace the stone walls of a circa 1930's channel. The wall structure will be fully replaced with reinforced concrete, but will be faced with salvaged stone to maintain the current appearance. A tree preservation plan for this phase of work has been developed for compliance with the City's tree ordinance.

APPLICABLE CITATIONS:

Historic Design Guidelines, Chapter 5, Guidelines for Site Elements

2. Fences and Walls

A. HISTORIC FENCES AND WALLS

- i. *Preserve*—Retain historic fences and walls.
- ii. *Repair and replacement*—Replace only deteriorated sections that are beyond repair. Match replacement materials (including mortar) to the color, texture, size, profile, and finish of the original.

B. NEW FENCES AND WALLS

- i. *Design*—New fences and walls should appear similar to those used historically within the district in terms of their scale, transparency, and character. Design of fence should respond to the design and materials of the house or main structure.
- v. *Appropriate materials*—Construct new fences or walls of materials similar to fence materials historically used in the district. Select materials that are similar in scale, texture, color, and form as those historically used in the district, and that are compatible with the main structure. Screening incompatible uses—Review alternative fence heights and materials for appropriateness where residential properties are adjacent to commercial or other potentially incompatible uses.

FINDINGS:

- a) The stone-lined channel at this location was constructed circa 1930 by the National Youth Administration and is a contributing element to this historic property.
- b) The proposed reconstruction is necessary due to the failure of the walls in multiple locations. The proposal will maintain the original locations and appearance of the walls consistent with the Guidelines for Site Elements 2.A. and 2.B.
- c) Required tree removal and replanting of appropriate species is being done in accordance with the City's tree ordinance.

RECOMMENDATION:

Staff recommends conceptual approval as submitted based on findings a through c.

CASE COMMENTS:

The applicant is responsible for satisfying all federal, state, or local cultural resources laws, rules, and regulations that may apply to this site.

CASE MANAGER: Cory Edwards



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SAN ANTONIO RIVER RETAINING WALL REPAIR- PHASE II BRACKENRIDGE PARK CITY OF SAN ANTONIO

GENERAL INFORMATION

DRAWING INDEX STRUCTURAL:

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GENERAL INFORMATION
STRUCTURAL NOTES
STRUCTURAL NOTES AND SPECIAL INSPECTIONS
ABBREVIATIONS
SITE PLAN
NORTH WALL PROFILE
SOUTH WALL PROFILE
SITE DETAILS

S000
S001
S002
S003
S100
S101
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S200

LANDSCAPE:

TREE PRESERVATION PLAN
TREE PRESERVATION DETAILS

TP-100
TP-101

LOCATION MAP



BRACKENRIDGE PARK
RETAINING WALL - PHASE II

Revisions:
PRELIMINARY DESIGN

Date: 04/01/16

Project No. 1162300

Sheet Title:
TITLE SHEET

Drawing No.

S000

S T R U C T U R A L N O T E S

1000. COORDINATION

- A. The Contractor shall compare the Structural, and other series drawings and report any discrepancies between each set of drawings and within each set of drawings prior to fabrication and installation of any structural members.
- B. Only larger sleeve openings and framed openings in structural framing component members are indicated on the Structural Drawings. However, all sleeves, inserts and openings, including frames and/or sleeves shall be provided for passage, provision and/or incorporation of the work of the contract, including but not limited to Mechanical, Electrical and Plumbing work. This work shall include the coordination of sizes, alignment, dimensions, position, locations, elevations and grades as required to serve the intended purpose. Openings not indicated on the Structural Drawings, but required as noted above, shall be submitted to the Engineer for review.
- C. Shop drawings shall be prepared for all structural items and submitted for review by the Engineer. Structural Drawings shall not be reproduced and used as shop drawings. All items deviating from the Structural Drawings or from previously submitted shop drawings shall be closed.
- D. The details designated as "Typical Details" apply generally to the Structural Drawings in all areas where conditions are similar to those described in the details.
- E. All dimensions and conditions of existing construction shall be verified at the job site prior to the preparation of shop drawings. Differences between existing construction and that shown on the Structural Drawings shall be referred to the Engineer. Differences shall also be closed on the shop drawings.
- F. All structural elements of the project have been designed by the Engineer to resist the required design vertical and lateral forces that could occur in the final completed structure only. It is the responsibility of the Contractor to provide all required bracing during construction to maintain the stability and safety of all structural elements during the construction process until the lateral-load resisting or stability-providing system is completely installed and the structure is completely tied together. Temporary supports shall not result in the overstress or damage of the elements to be braced nor any elements used as brace supports.
- G. The Contract Structural Drawings and Specifications represent the finished structure, and except where specifically shown, do not indicate the means or methods of construction. The Contractor and their Sub-Contractors shall supervise and direct the work and shall be solely responsible for all construction means, methods, procedures, techniques, sequences and safety measures including, but not limited to, adherence to all OSHA guidelines. The Engineer shall not have control of, and shall not be responsible for, construction means, methods, techniques, sequences or procedures, for safety precautions and programs in connection with the work, for the acts or omissions of the Contractor, Subcontractors, or any other person performing any of the work, or for the failure of any of these persons to carry out the work in accordance with the Structural Contract Documents.
- H. Where conflict exists among the various parts of the Structural Contract Documents, Structural Drawings, General Notes, and Specifications, the strictest requirements, as indicated by the Engineer, shall govern.
- I. Periodic site observation by field representatives of Intelligent Engineering Services, LLP (IES) is solely for the purpose of determining if the work is proceeding in accordance with the Structural Contract Documents. The limited site observation is not intended to be a check of the quality or quantity of the work, but rather a periodic check in an effort to inform the Owner against defects and deficiencies in the work of the Contractor.

1010. SUBSTITUTIONS

- A. All requests for substitutions of materials or details shown in the Structural Contract Documents shall be submitted for approval during the bidding period.
- B. Once bids are accepted, proposed substitutions will be considered only when they are officially submitted with an identified savings or duration to be deducted from the contract and/or schedule impact. Submittals not satisfying the above criteria will not be reviewed.

1020. CODES

- A. The General Building Code used as the basis for the structural design is as follows: City of San Antonio Building Code (2015 International Building Code with City of San Antonio Amendments)
- B. Structural Concrete: Building Code Requirements for Structural Concrete, American Concrete Institute, ACI 318, as referenced by the General Building Code.
- C. Concrete Masonry: Building Code Requirements for Masonry Structures, American Concrete Institute, ACI 530 & 530.1, as referenced by the General Building Code.

1030. IBC 2015 DESIGN LOADS

- A. Dead Loads include the self-weight of the structural elements.
- B. Live Loads:

OR USE	OCCUPANCY	UNIFORM (psf)	CONCENTRATED (kips)
Assembly areas and theaters Tennis, Piazas, Terraces (pedestrian only)	100	N/A	
Snow loads			
Ground snow load, Pg	5 psf		

D. Wind loads

1. Wind lateral load on structural frame is based on ASCE 7 using the following:

Ultimate Design Wind Speed (V _u)	115 mph
Nominal Design Wind Speed (V _w)	90 mph
Exposure Category	B
Internal Pressure Coefficient, GC _{pi}	+/-0.18
Risk Category	II

2. Ultimate Components and Cladding Wind Pressures:

Surface	(psf)	Zone	Area (sq ft)
Exterior	+25.2	Interior and edge	10 or less
Walls	-25.2	Interior and edge	10 or less
	+19.7	Interior and edge	500 or greater
	-22.6	Interior and edge	500 or greater

- Pressures for Tributary Areas in between the listed values may be linearly interpolated.
- Negative value signifies pressure acting away from the surface (suction).
- Edge and Corner zone distances shall be determined in accordance with referenced standard.
- Pressures on parapets shall be determined by combining positive and negative wall pressures or wall and roof pressures listed above in accordance with the referenced standard.
- Per code-defined ASD load combinations, nominal components and cladding wind pressures shall be taken as 60% of the listed Ultimate Components and Cladding Wind Pressures.

F. Seismic Loads

1. The structure and structural components of the building have been designed in accordance with General Building Code with the following criteria:

Seismic Importance Factor, IE	[X]
Occupancy Category	[X]
Mapped Spectral Response Accelerations	[X]
S _s (1g)	[X]
S ₁ (1g)	[X]
Site Class	[X]
Spectral Response Coefficients	[X]
S _{DS}	[X]
S _{D1}	[X]
Seismic Design Category	[X]
Basic Seismic-force-resisting system	[X]
Design Base Shear, V	[X]
Seismic Response Coefficient, C _s	[X]
Response Modification Factor(s), R	[X]
Analysis Procedure Used	[X]

6. Balcony Railing and Guardrails: The balcony railings and guardrails shall be designed for 50 pounds/ft load applied horizontally at right angles to the top rail or a 200 pound concentrated load applied in any direction at any point along the top rail, whichever is greater. The railing shall have attachment devices to adequately anchor to the supporting structure for the loading indicated. Intermediate rails and panel fillers shall be designed to withstand a horizontally applied normal load of 50 pounds on an area not to exceed 12-inches by 12-inches including openings and space between rails and located so as to produce the maximum load effect. Resulting reactions due to these loads need not be combined with the design loads for handrails or guardrails.

H. Load Combinations

1. Strength Design

- $1.4(D+F)$
- $1.2(D+F) + 1.6(L_r \text{ or } S \text{ or } R) + 0.5(L_r \text{ or } S \text{ or } R)$
- $1.2(D+F) + 1.6(L_r \text{ or } S \text{ or } R) + 1.6(H + F_1L \text{ or } 0.5H)$
- $1.2(D+F) + 1.6(H + F_1L + 1.6H + 0.5L_r \text{ or } S \text{ or } R)$
- $1.2(D+F) + 1.0E + F_1L + 1.6H + F_2L + 1.2L_r$
- $0.9D + 1.0H + 1.6H$
- $0.9(D+F) + 1.0E + 1.6H$

2. Allowable Stress Design:

- D + F
- D + H + F + L
- D + H + F + (L_r or S or R)
- D + H + F + 0.75L + 0.75L_r or S or R
- D + H + F + (0.6H or 0.7E)
- D + H + F + 0.75(0.6H) + 0.75L + 0.75L_r or S or R
- D + H + F + 0.75(0.7E) + 0.75L + 0.75L_r
- 0.6D + 0.6H + H
- 0.6(D+F) + 0.7E + H

1100. SUBMITTALS

- A. Shop drawings shall be prepared for all structural items and submitted for review by the Engineer. Structural Drawings shall not be reproduced and used as shop drawings. All items deviating from the Structural Drawings or from previously submitted shop drawings shall be closed.
- B. Contractor shall review shop drawings for compliance with the Structural Drawings and shall certify that they have done so by a stamp noting that the drawings have been "Approved" and which bears the signature (or initials) of an authorized representative of the Contractor and the date. Submittals which do not reflect the Contractor's approval, signature and date will be returned without review.
- C. Contractor shall be responsible for delays caused by rejection of inadequate shop drawings.
- D. Where review and return of shop drawings is required or requested, the Engineer will review each submittal and, where possible, return within two weeks of receipt.
- E. Corrections or comments on shop drawings or manufacturer's data sheets do not relieve the Contractor from compliance with requirements of the plans and specifications. Engineer's review is for general conformance with the requirements of the Structural Drawings. Contractor is responsible for confirming and correcting all quantities and dimensions, selecting fabrication processes and techniques of construction, and coordinating the work with that of all other contractors.
- F. Refer to individual sections for specific submittal requirements.
- G. Contractor shall submit one reproducible copy and three maximum copies. Engineer will review, comment and retain one copy of each submittal and transfer comments onto the remaining copies for distribution to the Architect, Owner, and Contractor. Additional copies submitted will not have comments transferred to them. Alternatively, submittals may be submitted electronically. Contractor will be responsible for providing and distributing Engineer's comments to their subcontractors.

2260. EXCAVATION PROTECTION:

- A. The sides of all excavations greater than 5'-0" in depth shall be laid back to a slope of [X] horizontal to [X] vertical, unless the following applies:
- A steeper slope is allowed by the Geotechnical Engineer for the particular location and site conditions in question.
 - A temporary retention system is indicated on the Structural Drawings.
 - An alternative protective system is submitted by the Contractor and allowed by the Owner.

- B. Contractor shall submit drawings and calculations sealed by a Registered Engineer licensed in the State of [X] for the design of any temporary retention or alternative protective systems. Temporary retention or alternative protective systems shall be designed to resist the soil pressures stipulated in the project geotechnical report prepared by [X] dated [X]. In addition, the design shall consider surcharges created by construction equipment, excavation spoil, and other surface encumbrances.

C. Contractor shall comply with all Occupational Safety and Health Administration standards and all other regulatory agency standards regarding excavation safety.

2916. CONTROLLED BACKFILL BEHIND BASEMENT AND RETAINING WALLS

- A. Backfill material shall have a plasticity index between [X] and [X] with a liquid limit less than [X].
- B. Fill shall be placed in lifts not to exceed [X]".
- C. Fill shall be compacted at the optimum moisture content (-1% to +3%) to between 90 and 95 percent of the maximum dry density per ASTM D698.
- D. Compaction and moisture content of controlled backfill shall be verified by an independent testing laboratory.
- E. The top [X] ft of material below the ground surface shall consist of relatively impervious material, with a liquid limit between 40 and 50 percent and a plasticity index between 20 and 30. This material shall be placed in 6" lifts and compacted at optimum moisture content, to 95 percent of the maximum density per ASTM D698.
- F. Backfill material shall not be placed against foundation walls until all supporting slabs, beams, struts, etc., have attained their 28 day design strength unless proper bracing is installed.
- G. Where backfill is required on both sides of a structure or building element, backfill shall be placed simultaneously along both sides so that the backfill height on one side does not exceed the height on the opposite side by more than 4'-0".
- H. Compaction and moisture content of subgrade and each lift of structural fill shall be inspected and approved by a qualified engineering technician, supervised by a Geotechnical Engineer.
- I. Design of retaining walls is based on equivalent hydrostatic pressures of [X] psf, assuming free draining backfill (or select fill or on-site clay) and use of perforated drain pipe.
- J. The above recommendations have been prepared in accordance with the geotechnical report prepared by [X] dated [X].

2465. DRILLED PIERS:

A. Pier design is based on the following design criteria:

- Allowable end bearing: [X]
- Side friction: [X]
- Uplift Side friction: [X]
- Side friction (uplift resistance): [X]
- Minimum penetration into bearing stratum: [X]

B. Pier design is in accordance with the recommendations in the following geotechnical report:

- Geotechnical engineer: [X]
- Date of report: [X]
- Report number: [X]

C. Bearing stratum shown on the pier details is [X].

D. Piers shall be located as indicated on plan, at the centerline of wall or beam.

- E. Provide dowels from piers into concrete above using same bar size and number as shown for pier reinforcement. Where no pier exists, use dowels of same size and number as pier reinforcement steel. Extend dowels 30 bar diameters into pier and beam, wall, plaster or column, unless noted otherwise on the Structural Drawings.
- F. Elevation of top of piers, unless noted otherwise on the Structural Drawings, is at the bottom of the deepest intersecting beam or wall supported by the pier.
- G. Reinforcing cage shall be held securely away from earth at sides and bottom by sets of 5 spacers at a maximum spacing of 8 ft, along the length of the cage and 1'-0" from the bottom.
- H. Pier reinforcing and concrete shall be placed immediately after drilling operations are complete; in no case shall a pier be drilled that cannot be placed by the end of the workday.
- I. See plans for pier sizes, reinforcing and depth.
- J. The contractor shall verify depths of piers before pier steel is cut. Pier steel may be delivered to the jobsite in standard lengths and cut as required. Provide 6-bar diameter laps in all vertical pier reinforcing.
- K. Reinforcing steel shop drawings shall include placing drawings for templates to set dowels in piers.
- L. Top of pier shall be of the specified diameter. Form top of pier if required to maintain the specified diameter. Any concrete extending beyond the specified diameter shall be removed.
- M. Temporary steel casing may be required during pier drilling operations. Prior to the placement of concrete, any seepage water shall be removed from the pier hole. Special construction procedures in accordance with ACI 308.1 and ACI 308.3R and specifications shall be followed during extraction of the casing and during concrete placement.
- N. Contractor shall include in bid documents, unit-costs for casing if required and unit-cost for greater and lesser depth of drilling for each pier size.
- O. All piers shall be inspected by a representative of [X] in order to ensure that the proposed bearing material has been reached in accordance with the recommendations given in the geotechnical report.
- P. The contractor shall make and maintain accurate records of the drilled pier depths, bearing stratum, depth of penetration into bearing stratum, diameter and location (including off-center eccentricities), and shall submit this information to the Engineer.

3000. CAST-IN-PLACE CONCRETE

A. Classes of Concrete

1. All concrete shall conform to the requirements as specified in the table below, unless noted otherwise on the Structural Drawings.

2. Concrete Mix Schedule:

Class	Strength	Agg. Size	Agg. Type	Slump	Max. w/c	Uses
E	4000	NNT	3/4"	6-8	---	Flats
F	4000	NNT	3/4"	3-5	---	All other conc. UNO

- "NNT" refers to normal concrete having air dry unit weight of approximately 145 PCF (ASTM C239 aggregate).
 - Where w/c ratio is not indicated in the Concrete Mix Schedule, it shall be as necessary to meet strength requirements.
 - Where the w/c ratio is shown, it shall be adhered to regardless of strength requirements.
 - "Strength" is required compressive cylinder strength at an age of 28 days.
- B. A maximum of 20% by weight of the cementitious materials used in mix designs may be class C or F fly ash.
- C. Horizontal construction joints in concrete placements shall be permitted only where indicated on the Structural Drawings. All vertical construction joints shall be made in the center of spans in accordance with the typical details. Contractor shall submit proposed locations for construction joints not shown on the Structural Drawings for review by the Architect and Engineer. Additional construction joints may require additional reinforcing as specified by the Engineer which shall be provided by the contractor at no additional cost to the owner.
- D. Embedded conduits, pipes, and sleeves shall meet the requirements of ACI 318, Section 6.3, including the following:
- Conduits and pipes embedded within a slab, wall, or beam (other than those passing through) shall not be larger in outside dimension than 1/3 the overall thickness of the slab, wall or beam in which they are embedded.
 - Conduits, pipes and sleeves shall not be spaced closer than three diameters or widths on center.
- E. Concrete placements shall not exceed 10,000 square feet or 100 linear feet on each side without prior approval by the Engineer for each placement.
- F. Void forms: Shall be the product of a reputable manufacturer regularly engaged in commercial production of void forms.

- Void form composition shall be of corrugated paper material with a moisture resistant exterior and an interior fabrication of a uniform cellular configuration, composed of components constructed of double-faced wax-impregnated (partially or fully) corrugated flutedboard that is laminated with moisture resistant adhesive.
- Design and maintain void forms to support all vertical and lateral loads that might be applied during construction until such loads can be supported by the concrete structure.
- Form material shall be designed to lose its strength under prolonged contact with the moisture which normally accumulates beneath slabs and beams on grade.

- G. Submit: Submit proposed mix designs in accordance with ACI 301, chapter 3.9. Each proposed mix design shall be accompanied by a record of past performance based on at least 50 consecutive strength tests, or by three laboratory test mixtures with confirmation tests.
- H. Grade beams in contact with earth shall be formed both sides unless noted otherwise in details.

- I. Concrete sampling for quality assurance: Concrete that is pumped shall be sampled at the point of discharge from the truck for information, including slump; and shall be sampled at the point of placement for acceptance of slump and air content.



STRUCTURAL NOTES

5200 CONCRETE REINFORCING

- A. Concrete reinforcement for the project shall conform to the following:
- All reinforcing steel shall be new billet steel in accordance ASTM A615, Grade 60, unless noted otherwise in the Structural Drawings or these notes.
 - Welded wire reinforcement: Welded smooth wire reinforcement, ASTM A185, yield strength 65,000 psi where noted on the Structural Drawings. Welded deformed wire reinforcement, ASTM A497, yield strength 70,000 psi where noted on the Structural Drawings. Welded wire reinforcement to be provided in flat sheets.
- B. Detailing of reinforcing steel shall conform to the American Concrete Institute 315 Detailing Manual and all hooks and bends in reinforcing bars shall conform to ACI detailing standards, unless noted otherwise on the Structural Drawings.
- C. Welded wire Reinforcement shall be continuous across the entire concrete surface and not interrupted by beams or girders and properly lapped one cross wire spacing plus 2'.
- D. In unscheduled grade beams, walls, and slabs, detail reinforcing as follows:
- Class A lap beam top reinforcing bars at mid span.
 - Class A lap beam bottom reinforcing bars at the supports.
 - Provide Class B lap at other location pending Engineer's approval.
 - Provide standard hooks in top bars at cantilever and discontinuous ends of beams, walls and slabs.
 - Provide corner bars for all horizontal bars at the inside and outside faces of intersecting beams or walls. Corner bars are not required if horizontal bars are hooked.
 - Provide 2-H diagonal bars at all slab re-entrant corners placed under the top mat of steel.
- E. Welding of reinforcing steel will not be permitted unless specifically shown on the Structural Drawings.
- F. Heat shall not be used to bend reinforcing in the fabrication or installation of reinforcement.
- G. Reinforcing steel clear cover shall be as follows:
- | | |
|-----------------------------|---------------------------------------|
| 1. Beams | 1-1/2" interior, 2" exterior exposure |
| 2. Drilled Piers | 3" |
| 3. Earth-formed Grade Beams | 1-1/2" top, 3" sides, 3" bottom |
| 4. Formed Grade Beams | 1-1/2" top, 2" sides, 3" bottom |
| 5. Walls | 1" interior, 2" exterior exposure |

*Exterior Exposure refers to concrete exposed to earth or weather.

- H. Submittal: Submit shop drawings for fabrication, bending, and placement of concrete reinforcement. Comply with ACI 315, Details and Detailing of Concrete Reinforcement. Do not reproduce the Structural Drawings for use as shop drawings.

4800 MASONRY

- A. All limestone facing for new retaining walls shall be constructed to match the appearance of the existing retaining walls to be removed.
- B. Contractor shall salvage the existing stone facing during demolition of the existing retaining walls for re-use in the new walls.
- C. The new walls shall be topped with limestone and a matching mortar wash.
- D. Contractor shall field verify the dimensions of the existing wall, which are approximately 16" (1'-4") in overall thickness, and match the existing with the new wall construction.
- E. Mortar shall conform to ASTM C270, Type S by the Proportion Method. Pre-blended mortars shall not be used.
- F. Course grout shall conform to ASTM C476, with a maximum aggregate size of 1/2" and a minimum compressive strength equal to the specified minimum compressive strength, f_m , but not less than 2000 psi. Course grout shall be placed in accordance with ACI 330.1 Section 3.5.

5050 POST-INSTALLED ANCHORS AND DOWELS

- A. Expansion Anchors shall be one of the following:
- Concrete:
 - Kwik Bolt TZ, Hilti Inc.
 - Strong Bolt, Simpson Strong-Tie
 - Grouted Masonry:
 - Kwik Bolt 3, Hilti Inc.
 - Hedge-Air, Simpson Strong-Tie
- B. Adhesive Anchors shall be one of the following:
- Concrete:
 - HT-RE 500-V3, Hilti Inc.
 - SET-XP, Simpson Strong-Tie
 - Grouted Masonry:
 - HT-HY 70, Hilti Inc.
 - SET, Simpson Strong-Tie.
- C. Adhesive Dowelling
- Adhesive doweling system shall be one of the following products:
 - Hilti HIT RE 500-V3 epoxy
 - Simpson SET-XP
- D. Install dowels in strict accordance with the adhesive manufacturer's instructions.
- E. Clean out holes with compressed air after drilling holes.
- F. Unless noted otherwise on the structural drawings, embedment depth shall be as required to develop full yield strength of the embedded dowels.
- G. Prior to drilling holes for dowels, locate existing reinforcing steel with a Pachometer (R-Meter) or by drilling 1/4" diameter pilot holes. Relocate bolt holes as required to avoid existing reinforcement.
- H. Abandoned holes shall be completely filled with adhesive doweling compound.
- I. Anchors and dowels of the size and embedment shown on the Drawings shall be installed in accordance with the Contract Documents, the manufacturer's recommendations, and the manufacturer's current ICC-ES report for the anchor. If conflicts exist between these referenced documents, the most stringent requirements shall govern.

- J. The Contractor shall locate all existing reinforcing steel and other embedded items contained in the concrete using non-destructive methods and shall position anchor locations to avoid conflicts with existing embedded items. Anchor locations can be adjusted by a maximum of 1 1/2" from detailed locations to avoid conflicts, unless noted otherwise. Submit an as-built of anchor locations to engineer.
- K. Based on field verified locations of reinforcing steel and embedded items, the Contractor shall create templates for each anchor group. Submit template dimensions for review prior to fabrication of connection plates.
- L. Holes for anchors and dowels shall be drilled in a continuous operation using the bit type and size recommended by the anchor manufacturer. Holes shall be drilled perpendicular to the concrete surface and shall not be enlarged or redirected at any point along its length. All debris shall be blown out of the holes with compressed air after drilling.
- M. All abandoned holes shall be filled with high strength, non-shrink grout.
- N. Holes in connection plates shall be no more than 1/16" larger than the anchor diameter. If larger holes are required for erection purposes, Contractor shall notify Engineer such that a plate washer size can be provided.

100000 DESIGN BY OTHERS

- A. In accordance with the Specifications the items listed below are not included in the Contract Documents. Design of these elements shall be the responsibility of the Contractor, and shall be designed and sealed by a registered professional engineer licensed in the State of Texas.

- Guardrail and Handrail Systems
- Excavation Support and Protection
- Specialty Retention Systems

- B. Design of the items listed above shall be in accordance with the General Building Code, and shall include all attachments to the structure.

SPECIAL INSPECTIONS

- Special Inspections shall be performed in accordance with Chapter 17 of the 2015 International Building Code (IBC) by a Special Inspector hired by the Owner to perform the Special Inspections listed below. The Special Inspector shall be qualified by an approved agency according to the City's building official to perform the special inspections for which they will be undertaking. The Contractor shall coordinate with and notify the Special Inspector of all tests. The Special Inspector shall be responsible to verify that the items detailed in the Construction Documents were built accordingly and shall prepare, sign, and furnish inspection reports to the building official and the Architect for all time spent at the site. The Inspector shall bring discrepancies to the immediate attention of the General Contractor for correction. If the discrepancies are not corrected, the discrepancies shall be brought to the attention of the building official and to the Architect prior to the completion of that phase of the work. These special inspections are in addition to the other inspections listed in these Structural Notes or Project Specifications.
- Where structural members and assemblies are shop fabricated, the Special Inspector shall verify that the fabricator maintains detailed fabrication and quality control procedures that provide a basis for inspection control of the workmanship and the fabricator's ability to conform to the Construction Documents and Referenced Standards, unless the fabricator is registered and approved to perform such work without special inspection

VERIFICATION AND INSPECTION OF CONCRETE CONSTRUCTION (IBC TABLE 1705.3)				
VERIFICATION AND INSPECTION	INSPECTION FREQUENCY		REFERENCED STANDARD	IBC REFERENCE
	CONTINUOUS	PERIODIC		
1. Inspection of reinforcing steel, including prestressing tendons, and verify placement	--	X	ACI 318: Ch. 20, 25.2, 25.3, 26.5.1-26.5.3	1908.4
2. Inspect anchors cast in concrete	--	X	ACI 318: 17.8.2	--
3. Inspect anchors post-installed in hardened concrete members	--			
a. Adhesive anchors installed in horizontally or upwardly inclined orientations to resist sustained tension loads	X	--	ACI 318: 17.8.2.4	--
b. Mechanical anchors and adhesive anchors not defined in 4.2	--	X	ACI 318: 17.8.2	--
4. Verifying use of required design mix	--	X	ACI 318: Ch. 19, 26.4.3, 26.4.4	1904.1, 1904.2, 1908.2, 1908.3
5. Prior to concrete placement, fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete	X	--	ASTM C 172, ASTM C 31, ACI 318: 26.4.5, 26.12	1908.10
6. Inspect concrete and shotcrete placement for proper application techniques	X	--	ACI 318: 26.4.5	1908.6, 1908.7, 1908.8
7. Verify maintenance of specified curing	--	X	ACI 318: 26.4.7-26.4.9	1908.9
8. Inspect formwork for shape, location and dimensions of the concrete members being formed	--	X	ACI 318: 26.10.1(b)	--

- I. STRUCTURES IN ASCE CATEGORY I, II, AND III WHERE THE MASONRY IS DESIGNED PER THE CHAPTER 5 (EMPIRICAL DESIGN), 6 (VENEER) AND 7 (CLASS UNIT MASONRY) IN ACI 530.1

LEVEL A REQUIRED VERIFICATION AND INSPECTION OF MASONRY CONSTRUCTION (ACI 530 Table 1.19.1)	
MINIMUM TESTS	
None	
INSPECTION TASK	
Verify compliance with the approved submittals	

VERIFICATION AND INSPECTION OF SOILS (IBC TABLE 1705.6)		
VERIFICATION, INSPECTION AND TESTING	INSPECTION FREQUENCY	
	CONTINUOUS	PERIODIC
1. Verify materials below shallow foundations are adequate to achieve the design bearing capacity	--	X
2. Verify excavations are extended to proper depth and have reached proper material	--	X
3. Perform classification and testing of controlled fill materials	--	X
4. Verify use of proper materials, densities and lift thicknesses during placement and compaction of controlled fill	X	--
5. Prior to placement of compacted fill, observe subgrade and verify that site has been prepared properly	--	X

VERIFICATION AND INSPECTION OF CAST-IN-PLACE DEEP FOUNDATION ELEMENTS (IBC TABLE 1705.8)		
VERIFICATION AND INSPECTION	INSPECTION FREQUENCY	
	CONTINUOUS	PERIODIC
1. Inspect drilling operations and maintain complete and accurate records for each element	X	--
2. Verify placement locations and plumbness, confirm element diameters, bell diameters (if applicable), lengths, embedment into bedrock (if applicable) and adequate end bearing strata capacity. Record concrete or grout volumes	X	--
3. For concrete elements, perform tests and additional special inspections in accordance with IBC Section 1705.3	--	--



BRACKENRIDGE PARK
RETAINING WALL – PHASE II

Revisions:
PRELIMINARY DESIGN

Date: 04/01/16
Project No. 1162300
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Drawing No.

S002

STRUCTURAL ABBREVIATIONS			
A/C -	AIR CONDITIONER	F TO F -	FACE TO FACE
AB -	ANCHOR BOLT	FABR -	FABRICATOR
ABV -	ABOVE	FD -	FLOOR DRAIN
ACI -	AMERICAN CONCRETE INSTITUTE	FDN -	FOUNDATION
ADDL -	ADDITIONAL	FTE -	FINISHED FLOOR ELEVATION
ADH -	ADHESIVE	FIN -	FINISH (OR) FINISHED
ADJ -	ADJACENT	FIN FL -	FINISHED FLOOR
AE -	ARCHITECTURAL EXPOSED	FL -	FLOOR
AECS -	ARCHITECTURAL EXPOSED	FLNG -	FLANGE
AEFF -	STRUCTURAL STEEL	FP -	FIREPROOF(ING)
AGGR -	AGGREGATE	FRMO -	FRAMING
AHU -	AIR HANDLING UNIT	FS -	FAR SIDE
AISC -	AMERICAN INSTITUTE OF	FT -	FOOT (OR) FEET
	STEEL CONSTRUCTION	FTG -	FOOTING
ALT -	ALTERNATE	FV -	FIELD VERIFY
APPD -	APPROVED	GA -	GAGE (OR) GAUGE
APPROX -	APPROXIMATE	GALV -	GALVANIZED
ARCH -	ARCHITECT (OR) ARCHITECTURAL	GC -	GENERAL CONTRACTOR
		GR -	GRADE
BD -	BOARD	GR BM -	GRADE BEAM
B.D. -	BOTTOM OF		
BF -	BACK FACE	HB -	HORIZONTAL BRACE
BFF -	BELOW FINISH FLOOR	HCA -	HEADED CONCRETE ANCHOR
BIL -	BOTTOM INSIDE LAYER	HCG -	HOT DIP GALVANIZED
BL -	BUILDING LINE	HDR -	HEADER
BLDG -	BUILDING	HI -	HIGH
BLK -	BLOCK	HK -	HOOK
BLKS -	BLOCKING	HL -	HOLE
BM -	BEAM	HORIZ -	HORIZONTAL
BOL -	BOTTOM OUTSIDE LAYER	HP -	HIGH POINT
BOS -	BOTTOM OF STEEL	HS -	HEADED STUD
BOTT -	BOTTOM	HT -	HOLLOW STRUCTURAL SECTION
BP -	BASE PLATE		
BRDG -	BRIDGING	ID -	INSIDE DIAMETER
BRG -	BEARING	IP -	INSIDE FACE
BRKT -	BRACKET	IN -	INCH
BRL -	BRICKLEDGE	INFO -	INFORMATION
BSMT -	BASEMENT	INT -	INTERIOR
B TO B -	BACK TO BACK	INTERM -	INTERMEDIATE
BTHN -	BETWEEN		
		JB -	JOIST GIRDER
C -	CAMBER	JSTS -	JOISTS
CANT -	CANTILEVER	JT -	JOINT
CFS -	COLD FORMED STEEL		
CG -	CENTER OF GRAVITY	K -	KIPS (1000 LBS)
CGS -	CENTER OF GRAVITY OF STRAND	KLF -	KIP PER LINEAR FOOT
CIP -	CAST IN PLACE	KSF -	KIP PER SQUARE FOOT
CJ -	CONTROL JOINT	KSI -	KIP PER SQUARE INCH
CJP -	COMPLETE JOINT PENETRATION		
CL -	CENTER LINE	L -	LENGTH
CLS -	CEILING	LBS -	POUNDS
CLR -	CLEAR (OR) CLEARANCE	LL -	LIVE LOAD
CMU -	CONCRETE MASONRY UNIT	LLH -	LONG LEG HORIZONTAL
COL -	COLUMN	LLV -	LONG LEG VERTICAL
C OR COMP -	COMPRESSION	LO -	LOW
CONC -	CONCRETE	LOC -	LOCATION
CONNS -	CONNECTION(S)	LONG -	LONGITUDINAL
CONST -	CONSTRUCTION	LP -	LOW POINT
CONST JT -	CONSTRUCTION JOINT	LSH -	LONG SIDE HORIZONTAL
CONT -	CONTINUOUS	LSL -	LONG SLOTTED HOLE
CONTR -	CONTRACTOR	LSV -	LONG SIDE VERTICAL
COORD -	COORDINATE	LN -	LIGHTHEIGHT
CTSK -	COUNTER SINK	LNC -	LIGHTHEIGHT CONCRETE
CVR -	COVER		
		M -	MOMENT
DBA -	DEFORMED BAR ANCHOR	MAS -	MASONRY
DBL -	DOUBLE	MATL -	MATERIAL
DEV -	DEVELOPMENT	MAX -	MAXIMUM
DFL -	DOUGLAS FIR LARCH	MC -	MOMENT CONNECTION(S)
DIA -	DIAMETER	MECH -	MECHANICAL
DIAG -	DIAGONAL	MEP -	MECHANICAL
DIMS -	DIMENSIONS		ELECTRICAL PLUMBING
DKG -	DECKING	MEZZ -	MEZZANINE
DL -	DEAD LOAD	MFR -	MANUFACTURER
DN -	DOWN	MID -	MIDDLE
DS -	DOWNPOUT	MIN -	MINIMUM
DTL -	DETAIL	MISC -	MISCELLANEOUS
DVTL -	DOVETAIL	MTL -	METAL
DWGS -	DRAWINGS	NF -	NEAR FACE
DWLS -	DRAWINGS	NIC -	NOT IN CONCRETE
		NOM -	NOMINAL
EA -	EACH FACE	NS -	NON-SHRINK
EF -	EACH FACE (OR) EXHAUST FAN	NTS -	NOT TO SCALE
EJ -	EXPANSION JOINT		
EL -	ELEVATION	OC -	ON CENTER
ELEC -	ELECTRICAL	OCEN -	ON CENTER EACH WAY
ELEV -	ELEVATOR	OD -	OUTSIDE DIAMETER
EMBED -	EMBEDMENT		(OR) OVERFLOW DRAIN
ENGR -	ENGINEER	OF -	OUTSIDE FACE
EOR -	ENGINEER OF RECORD	OH -	OPPOSITE HAND
EQ -	EQUAL (OR) EQUIVALENT	OPNS -	OPENINGS
EQUIP -	EQUIPMENT	OPP -	OPPOSITE
EX -	EACH WAY	OVS -	OVER-SIZED HOLE
EXIST -	EXISTING		
EXP -	EXPANSION		
EXT -	EXTERIOR		
EXTN -	EXTENSION		
		P -	PAN
		P/C -	PRECAST CONCRETE
		PAR -	PARALLEL
		PC -	PIECE
		PCF -	POUNDS PER CUBIC FOOT
		PEMB -	PRE-ENGINEERED METAL BUILDING
		PERP -	PERPENDICULAR
		PI -	PLASTICITY INDEX
		PJ -	PANEL JOINT
		PJP -	PARTIAL JOINT PENETRATION
		PL -	PLATE
		PLF -	POUNDS PER LINEAR FOOT
		PLYD -	PLYWOOD
		PREFAB -	PREFABRICATED
		PRELIM -	PRELIMINARY
		PROJ -	PROJECTION
		PSF -	POUNDS PER SQUARE FOOT
		PSI -	POUNDS PER SQUARE INCH
		PT -	POINT (OR) PRESSURE TREATED
		P-T -	POST-TENSIONED
		QTY -	QUANTITY
		R -	RADIUS (OR) REACTION
			(OR) REMAINDER
		RCP -	REINFORCED CONCRETE PIPE
		RD -	ROOF DRAIN
		REINF -	REINFORCING(EMENT)
		REQ -	REQUIREMENT
		REQD -	REQUIRED
		RET -	RETAINING
		RET SYS -	RETENTION SYSTEM
		RF -	ROOF
		RIS -	RISER
		RM -	ROOM
		RND -	ROUND
		RO -	ROUGH OPENING
		RTU -	ROOF TOP UNIT
		SCHED -	SCHEDULED
		SECT -	SECTION
		SF -	SQUARE FOOT
		SHT -	SHEET
		SHTG -	SHEATHING
		SH -	SIMILAR
		SJI -	STEEL JOIST INSTITUTE
		SL -	SLOPE
		SOS -	SLAB ON GRADE
		SP -	SOUTHERN PINE
		SPA -	SPACE
		SPECED -	SPECIFIED
		SPEC(S) -	SPECIFICATIONS
		SQ -	SQUARE
		SS -	STAINLESS STEEL
		SSL -	SHORT SLOTTED HOLE
		STAGG -	STAGGERED
		STD -	STANDARD
		STIFF -	STIFFENER
		STIRR -	STIRRUPS
		STL -	STEEL
		STR -	STRAIGHT
		STRUCT -	STRUCTURE (OR) STRUCTURAL
		SUBCONTR -	SUBCONTRACTOR
		SUPTS -	SUPPORTS
		SW -	SHEARWALL (OR) SIDEWALK
		T -	TENSION
		T.O. -	TOP OF
		T&B -	TOP AND BOTTOM
		T&G -	TONGUE AND GROOVE
		TEMP -	TEMPERATURE
		TERR -	TERRAZZO
		THK -	THICK
		THRD -	THREADED
		TIL -	TOP INSIDE LAYER
		TOS -	TOP OF BEAM
		TOT -	TOP OF CONCRETE
		TOF -	TOP OF FOOTING
		TOJ -	TOP OF JOIST
		TOL -	TOP OUTSIDE LAYER
		TOP -	TOP OF PIER
		TOPC -	TOP OF PIER (PILE) CAP
		TOS -	TOP OF STEEL
		TOW -	TOP OF WALL
		TR -	TREAD
		TRANSV -	TRANSVERSE
		TYP -	TYPICAL
		UNO -	UNLESS NOTED OTHERWISE
		V -	SHEAR
		VB -	VERTICAL BRACE
		VERT -	VERTICAL
		W -	WIDTH
		W/ -	WITH
		W/O -	WITHOUT
		WD -	WOOD
		WDX -	WINDOW
		WL -	WIND LOAD
		WP -	WORK POINT
		WPG -	WATERPROOFING
		WS -	WATERSTOP
		WT -	WEIGHT
		WWM -	WELDED WIRE MESH
		X-STR -	EXTRA STRONG
		XX-STR -	DOUBLE EXTRA STRONG

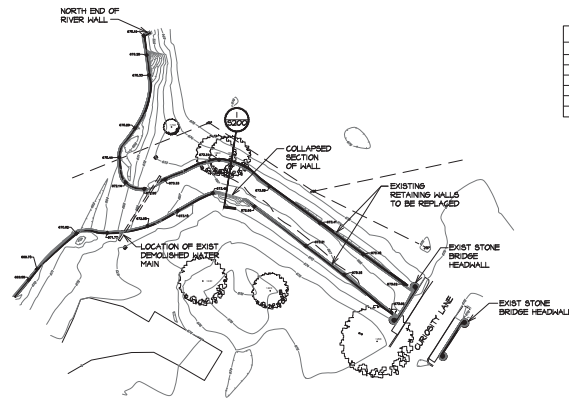


BRACKENRIDGE PARK RETAINING WALL – PHASE II

Revisions:
PRELIMINARY DESIGN

Date: 04/01/16
Project No: 1162300
Sheet Title: SPECIAL INSPECTIONS AND ABBREVIATIONS
Drawing No:

S003



POINT #	SPECIES	SIZE
1429	PECAN	34" ESTIMATE
1430	PECAN	48" ESTIMATE
1435	PECAN	24" ESTIMATE
1662	PECAN	30"
1665	PECAN	30"
1738	UNKNOWN	8"



SITE PLAN - EXISTING
SCALE: 1/32"=1'-0"



BRACKENRIDGE PARK
RETAINING WALL - PHASE II

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Project No. 1162300

Sheet Title:
SITE PLAN

Drawing No.

S100



BRACKENRIDGE PARK
RETAINING WALL - PHASE II

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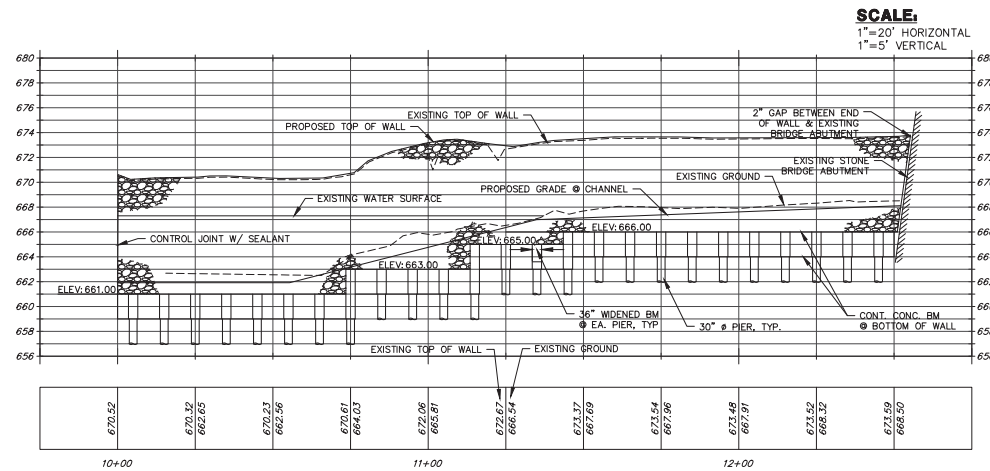
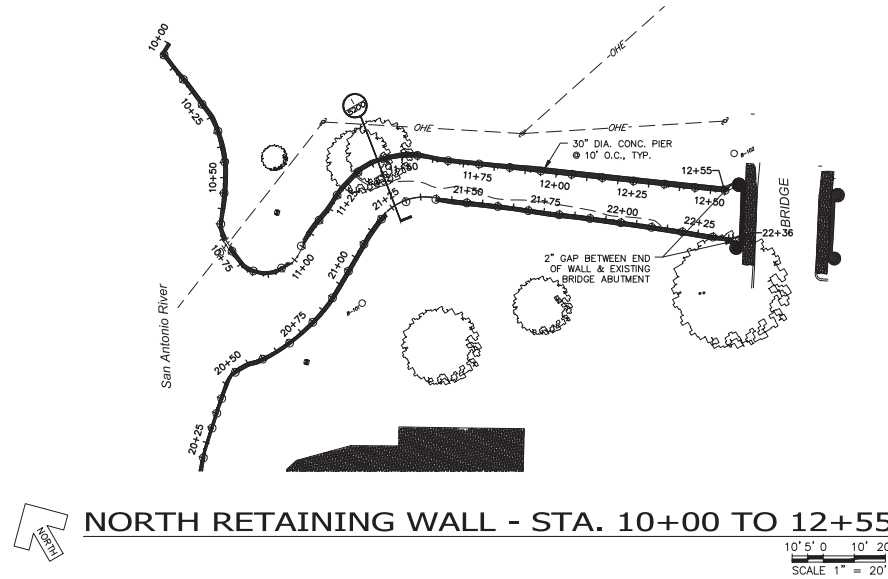
Date: 04/01/16

Project No.
1162300

Sheet Title:
NORTH WALL
PROFILE

Drawing No.

S101





BRACKENRIDGE PARK
RETAINING WALL - PHASE II

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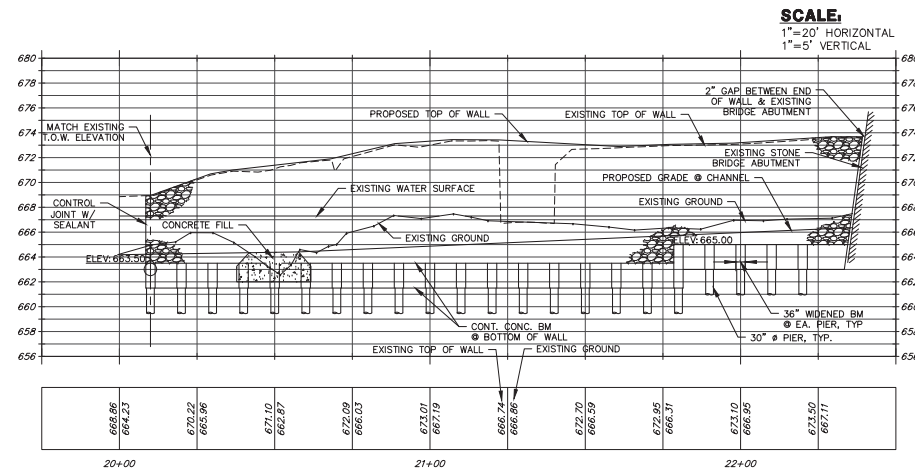
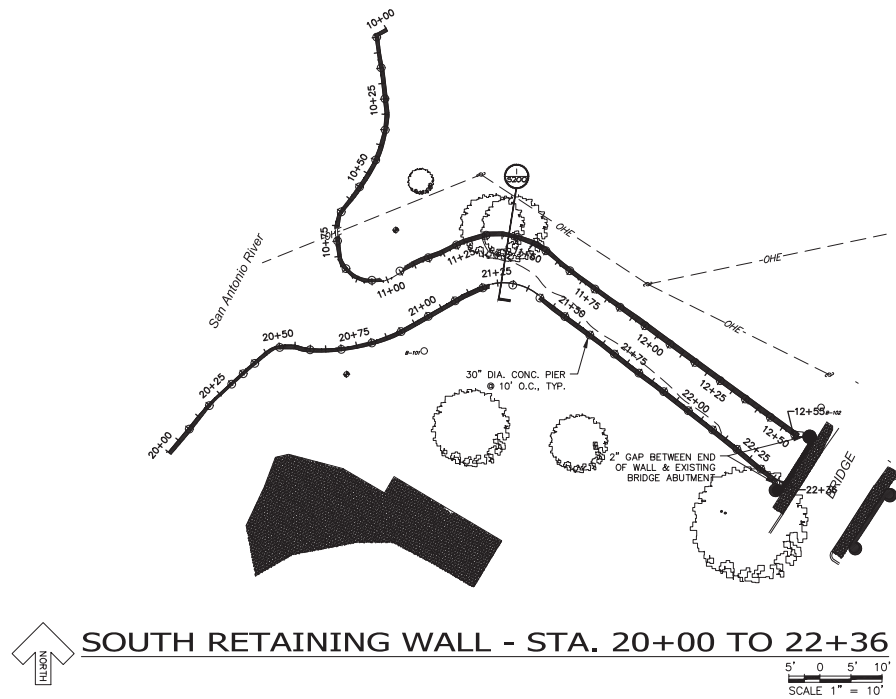
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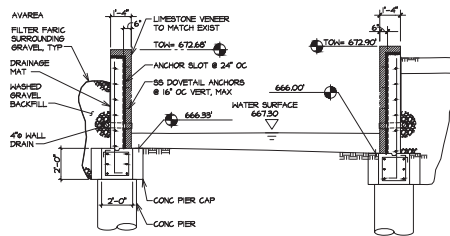
Project No. 1162300

Sheet Title:
SOUTH WALL
PLAN & PROFILE

Drawing No.

S102





CHANNEL SECTION
SCALE: 1/4"=1'-0"



BRACKENRIDGE PARK
RETAINING WALL – PHASE II

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Project No. 1162300

Sheet Title: SITE DETAILS

Drawing No.

S200

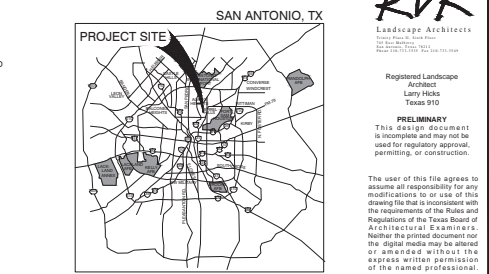
BRACKENRIDGE PARK
RETAINING WALL - PHASE II

Date: 03/31/16

RVK Project No.
15231

TREE
 PRESERVATION
 PLAN

TP-100



1. TREE SURVEY INFORMATION IS BASED ON SITE SURVEY PREPARED BY IES ENGINEERS OF SAN ANTONIO, TX. (T101349-0098).
2. ALL CONDITIONS NECESSITATING THE REMOVAL OR PRUNING OF A TREE SHALL BE REVIEWED BY LANDSCAPE ARCHITECT & OWNER'S REPRESENTATIVE. THE LOCATIONS OF ANY IMPROVEMENTS WITH THE POTENTIAL OF IMPACTING TREES SHALL BE STAKED/DELINEATED PRIOR TO THE FIELD REVIEW AND ANY CONSTRUCTION ACTIVITY.
3. REMOVAL OF ANY TREES SCHEDULED FOR PRESERVATION MUST BE DOCUMENTED BY CONTRACTOR WITH EVIDENCE OF CONSTRUCTION. INFORMATION DOCUMENTED BY CONTRACTOR TO BE SUBMITTED TO THE LANDSCAPE ARCHITECT FOR RECONCILIATION AT END OF PROJECT AS COORDINATION FOR APPROVAL OF CITY ARBORIST AND CERTIFICATE OF OCCUPANCY PROCESS.
4. PRIOR TO SITE CLEARING OPERATIONS PROCESS IS:
 - A. LAYOUT FOOTPRINT OF IMPROVEMENTS.
 - B. INSTALL TREE PROTECTIVE BARRICADE FENCING. TREES NOT ABLE TO BE FENCED-OFF DUE TO WORK CLEARANCE NEEDED ARE TO BE PROTECTED WITH TREE ARM.
 - C. OBTAIN APPROVAL FROM TREE INSPECTOR.
 - D. PERFORM SITE CLEARING.
 - E. PLACE MULCH OVER ALL DISTURBED AREA & AS DIRECTED BENEATH ALL REMAINING TREE CANOPIES.

CITY OF SAN ANTONIO - UDC V-5-30-523 (05/06/2010)

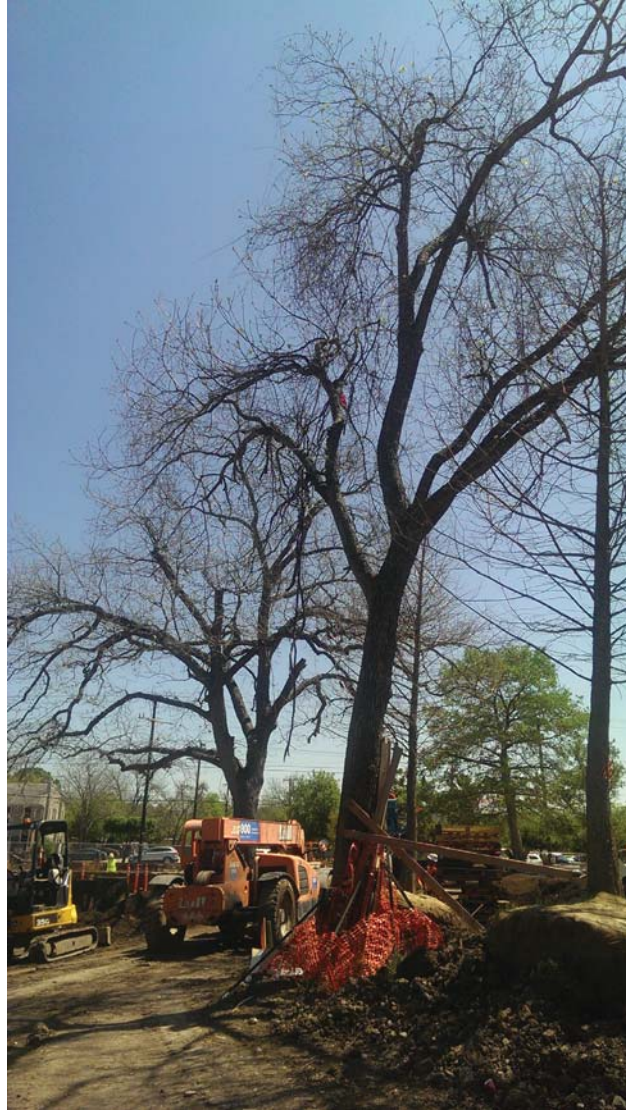
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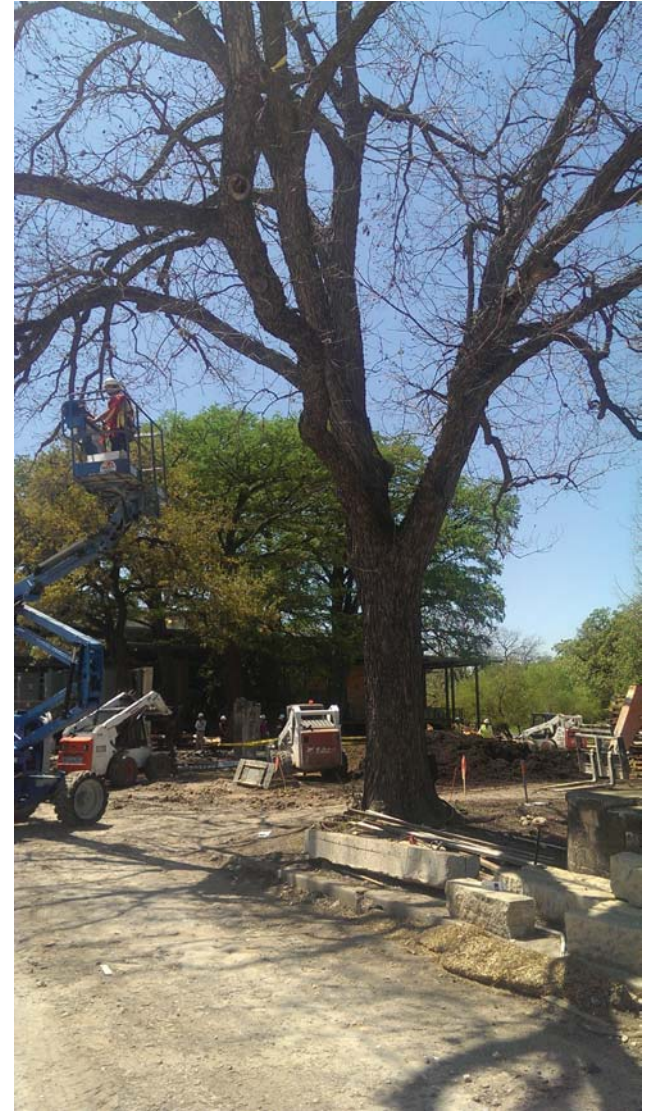
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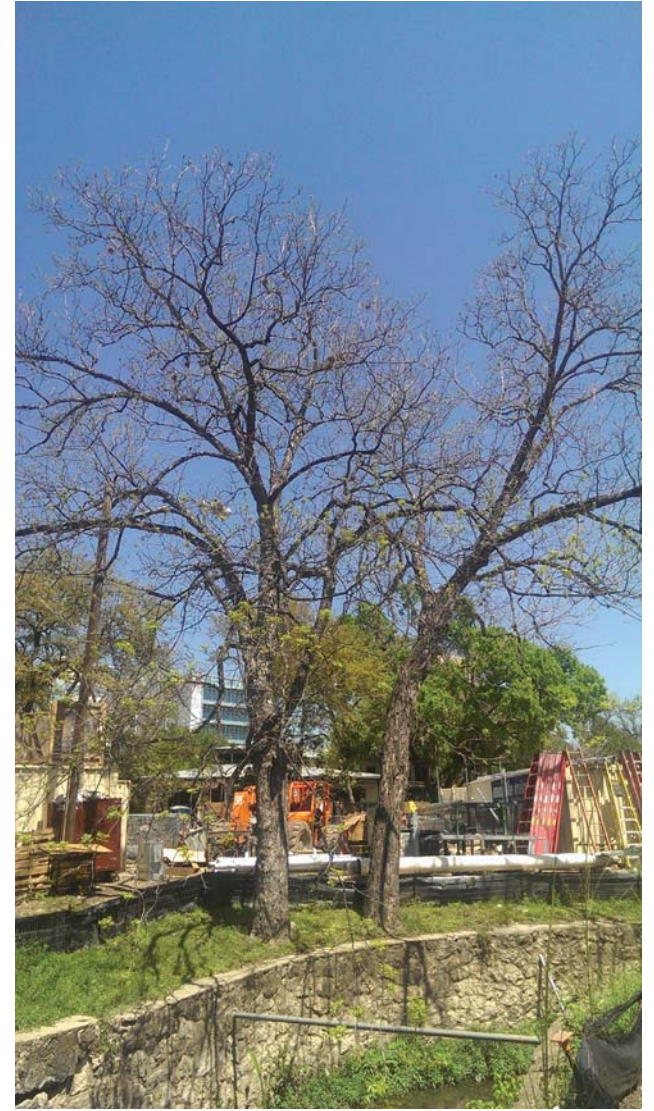
TREE PRESERVATION INVENTORY-revised 6/30/2015

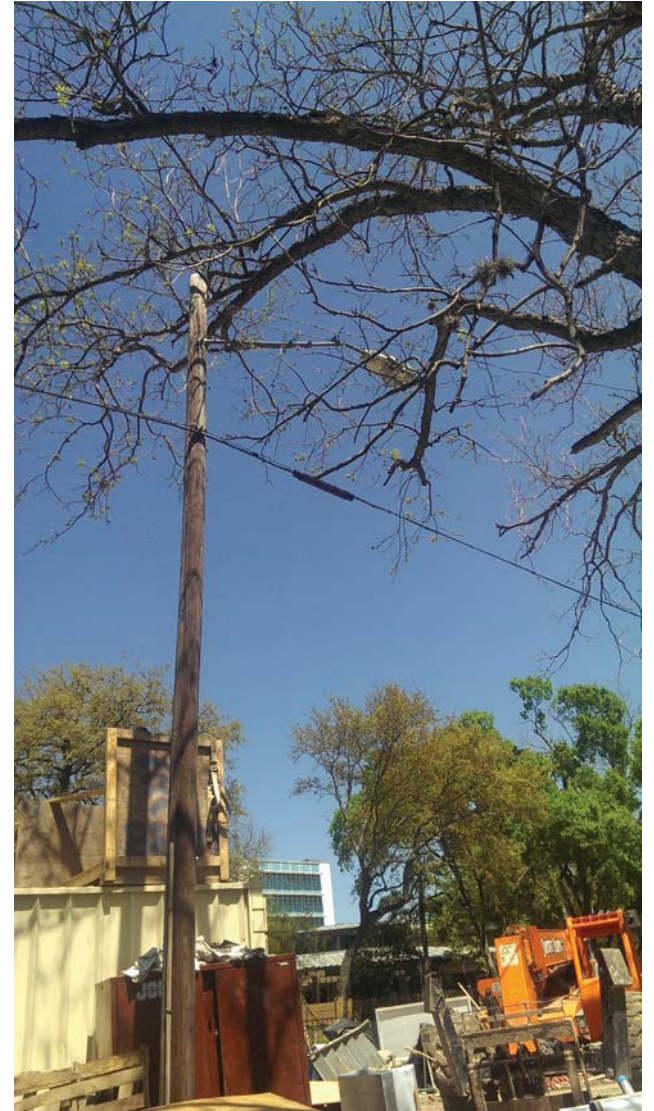
TAG #	SPECIES	DBH	CODE	SMALL TREES 2.5' - 5.9'			SHORT LIVED 10' +			SIGNIFICANT SMALL SPECIES 5.0' - 11.9'		SIGNIFICANT TREES 6' - 23.9'			HERITAGE SMALL SPECIES 12' +			HERITAGE TREES 24' +		NOTES
				PRESERVED	REMOVED	PRESERVED	REMOVED	PRESERVED	REMOVED	PRESERVED	REMOVED	PRESERVED	REMOVED	PRESERVED	REMOVED	PRESERVED	REMOVED			
0001	BALD CYPRESS	6"	P											6						
0002	BALD CYPRESS	6"	P											6						
0003	BALD CYPRESS	6"	P											6						
1008	PECAN	31"	P															31		
1009	CRAPE MYRTLE	6"	P																	
1011	PECAN	21"	R									21								
1012	PECAN	20"	R									20								
1021	PECAN	16"	R										16							
1024	PECAN	21"	P									21								
TOTAL TREE COUNT (Trees)				0	0	0	0	0	0	2	6	0	0	0	0	0	1	9	TREES COUNTED ON SITE	
SUBTOTALS (Inches)				0	0	0	0	0	41	61	0	0	0	0	31	133	103	TOTAL INCHES		
TOTAL PER-CATEGORY (Inches)										102					0	31				
PERCENT PRESERVED				0		+	0		+	61		+	0		+	100%		80% AVERAGE PRESERVATION RATE		
NON RES-MULTI FAM PRESERVATION REQUIRED				80%			80%			80%			100%			100%		7	TREES PRESERVED	
REPLACEMENT REQUIRED (Inches)				0			0			21			0			0		2	TREES REMOVED	
MITIGATION RATE							1:1			1:1			1:1			1:1		3:1		
TOTAL REPLACEMENT REQUIRED (Inches)										21										A negative value represents a surplus
ARE SMALL TREES UTILIZED IN MITIGATION?				NO						0										MITIGATION PROVIDED AS SMALL TREE PRESERVATION
										0										MITIGATION PROVIDED AS PROPOSED PLANTINGS (SEE PLANTING PLAN)
										0										MITIGATION PROVIDED AS PAYMENT
MITIGATION BALANCE										21										A negative value represents a surplus

EXISTING TREES ON SITE ARE ASSOCIATED WITH THE PREVIOUSLY APPROVED TREE PRESERVATION PLAN FOR THE WITTE MUSEUM CONSTRUCTION CURRENTLY UNDERWAY. REFERENCE AP# AM0020231 & AP# A2002212. MITIGATION REQUIRED FOR REMOVAL OF PROTECTED TREES WILL BE PROVIDED AS REQUIRED BY CITY OF SAN ANTONIO TREE PRESERVATION ORDINANCE (SEC. 35-623).









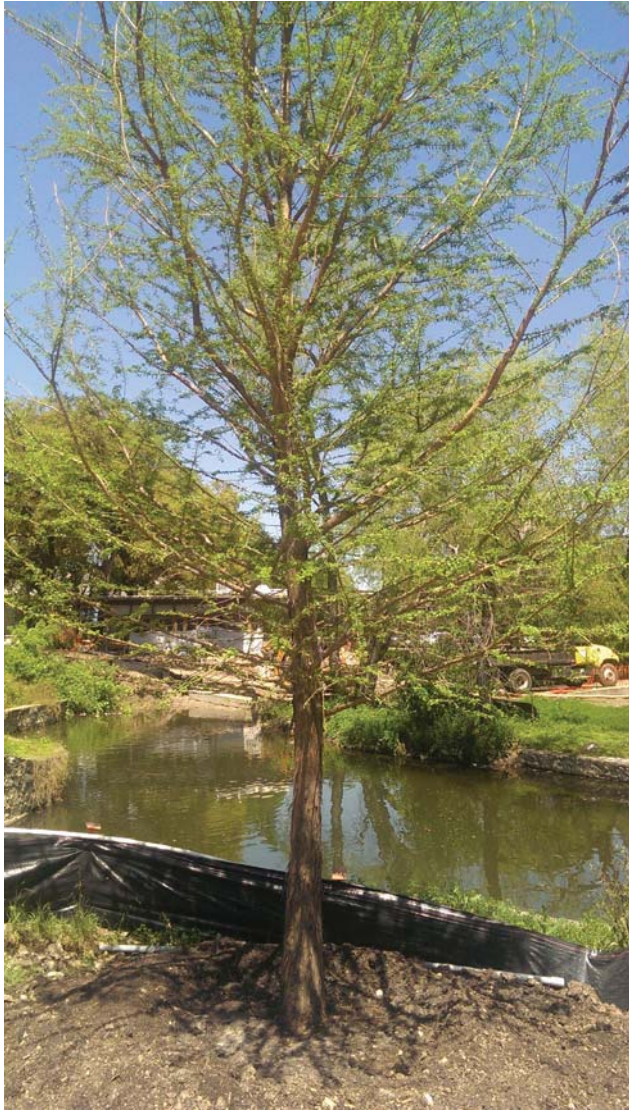




Photo 1: Drainage channel confluence with the San Antonio River looking east.



Photo 2: Drainage channel confluence with the San Antonio River looking south. The water main crossing the channel has been removed already.



Photo 3: North end of retaining wall on the San Antonio River to be replaced looking east.



Photo 4: Top of north wall at the San Antonio River that has displaced and allowed soil behind wall to subside.



Photo 5: Failed section of north drainage channel wall at a steel pipe brace.



Photo 6: Severely cracked and failed section of north drainage channel wall.



Photo 7: Cracked and failed section of south drainage channel wall.



Photo 8: Segment of south drainage channel wall that has failed.



Photo 9: Collapsed section of south drainage channel wall.



Photo 10: Drainage channel walls leaning inward and braced with steel pipe, looking east. The existing bridge abutment at Curiosity Lane is visible at arrow.



Photo 11: Drainage channel walls leaning at top looking west.