

HISTORIC AND DESIGN REVIEW COMMISSION

July 20, 2016

Agenda Item No: 13

HDRC CASE NO: 2016-277
ADDRESS: 3700 N ST MARYS
LEGAL DESCRIPTION:
ZONING: R6 HS RIO-1
CITY COUNCIL DIST.: 2
LANDMARK: Brackenridge Park
APPLICANT: David Gauthier/Intelligent Engineering Serices
OWNER: City of San Antonio
TYPE OF WORK: Removal and reconstruction of a WPA era stone retaining wall
REQUEST:

The applicant is requesting a Certificate of Appropriateness for approval to remove a structurally failing WPA era retaining wall and construct a new retaining wall using salvaged stone.

APPLICABLE CITATIONS:

UDC Section 35-676. – Alteration, Restoration and Rehabilitation

In considering whether to recommend approval or disapproval of an application for a certificate to alter, restore, rehabilitate, or add to a building, object, site or structure, the historic and design review commission shall be guided by the National Park Service Guidelines in addition to any specific design guidelines included in this subdivision.

- (a) Every reasonable effort shall be made to adapt the property in a manner which requires minimal alteration of the building, structure, object, or site and its environment.
- (b) The distinguishing original qualities or character of a building, structure, object, or site and its environment, shall not be destroyed. The removal or alteration of any historic material or distinctive architectural features shall be avoided when possible.
- (c) All buildings, structures, objects, and sites shall be recognized as products of their own time. Alterations that have no historical basis and which seek to create an earlier appearance are prohibited.
- (d) Changes that may have taken place in the course of time are evidence of the history and development of a building, structure, object, or site and its environment. These changes may have acquired significance in their own right, and this significance shall be recognized and respected.
- (e) Distinctive stylistic features or examples of skilled craftsmanship, which characterize a building, structure, object, or site, shall be kept where possible.
- (f) Deteriorated architectural features shall be repaired rather than replaced, wherever possible. In the event replacement is necessary, the new material should reflect the material being replaced in composition, design, color, texture, and other visual qualities. Repair or replacement of missing architectural features should be based on accurate duplications of features, substantiated by historical, physical, or pictorial evidence rather than on conjectural designs or the availability of different architectural elements from other buildings or structures.
- (g) The surface cleaning of structures shall be undertaken with the gentlest means possible. Sandblasting and other cleaning methods that will damage the historic building's materials shall not be permitted.
- (h) Every reasonable effort shall be made to protect and preserve archaeological resources affected by, or adjacent to, any project.
- (i) Contemporary design for alterations and additions to existing properties shall not be discouraged when such alterations and additions do not destroy significant historical, architectural or cultural material, and such design is compatible with the size, scale, color, material, and character of the property, neighborhood or environment.
- (j) Wherever possible, new additions or alterations to buildings, structures, objects, or sites shall be done in such a manner that if such additions or alterations were to be removed in the future, the essential form and integrity of the building, structure, object, or site would be unimpaired.

FINDINGS:

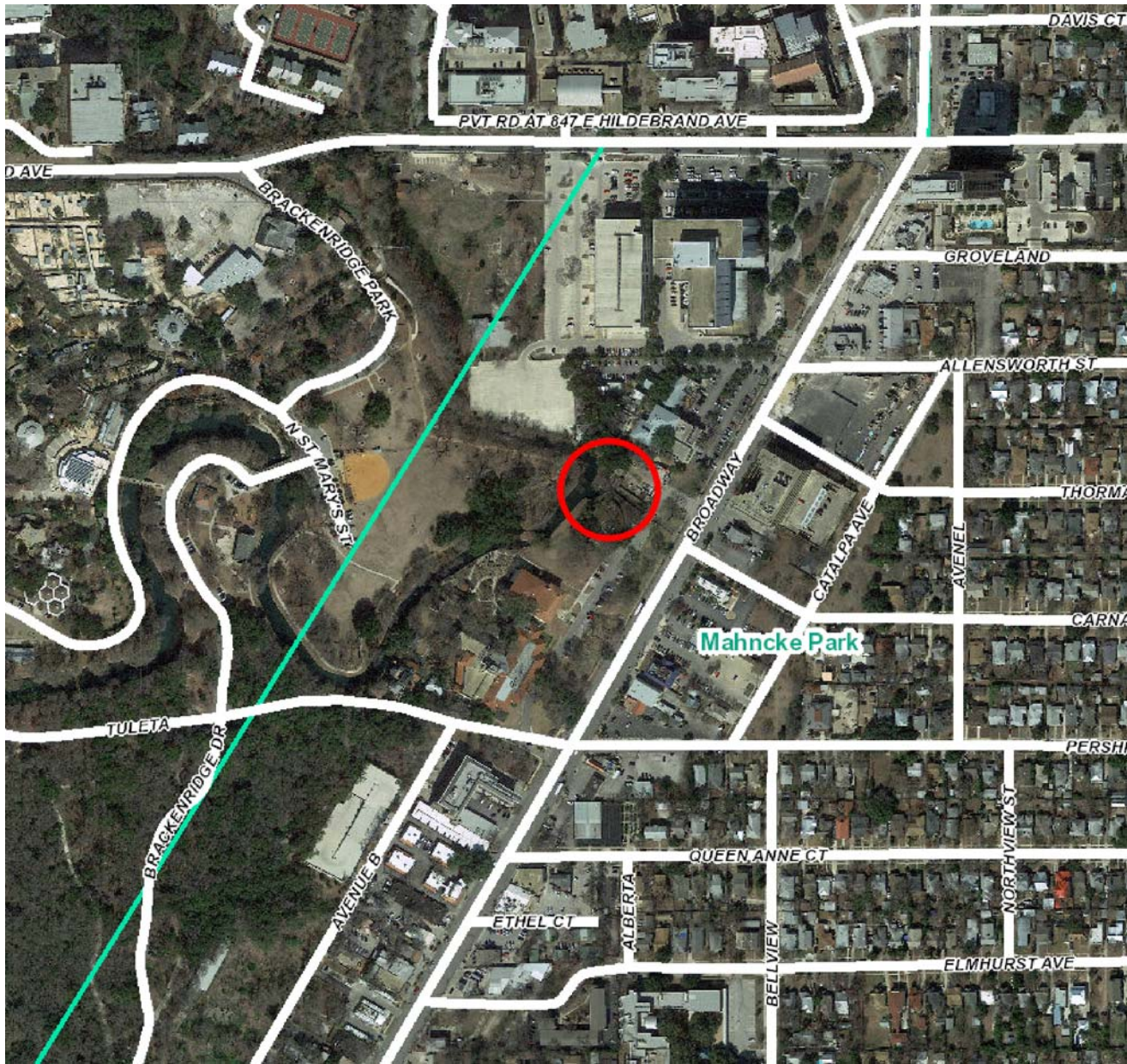
- a. The applicant has proposed to replace the WPA era stone retaining wall along the north and south sides of a drainage channel which extends from the west side of an existing bridge at Curiosity Lane on the east side of the San Antonio River. The wall, constructed circa 1930 has failed structurally, per the project engineer. In addition to this retaining wall, the applicant has proposed to replace a portion of the wall along the east bank of the San Antonio River where the drainage channel ties into the river. A site visit was conducted on July 13, 2016.
- b. According to the UDC Section 35-676, deteriorated architectural features shall be repaired rather than replaced, wherever possible. In the event replacement is necessary, the new material should reflect the material being replaced in composition, design, color, texture, and other visual qualities. Repair or replacement of missing architectural features should be based on accurate duplications of features, substantiated by historical, physical, or pictorial evidence rather than on conjectural designs or the availability of different architectural elements from other buildings or structures. Staff finds the applicant's proposal to replace the retaining wall and incorporate original stone into the new wall appropriate and consistent with the UDC. The applicant has noted that any supplemental stone will match the original stone.
- c. In an effort to preserve existing trees along the channel, two sections of the retaining wall have been designed as reinforced concrete channel section to reduce the impact of new construction on the root protection zone of existing trees. Staff finds this appropriate.

RECOMMENDATION:

Staff recommends approval based on findings a through c.

CASE MANAGER:

Edward Hall



Flex Viewer

Powered by ArcGIS Server

Printed: Jul 11, 2016

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Koi Kawa Japanese

Julie's Monogram Place

San Antonio River

San Ant



San Antonio River

Koi Kawa Japanese



Julie's Monogram Place



368

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San Antonio River



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.

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

GENERAL INFORMATION

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STRUCTURAL NOTES AND SPECIAL INSPECTIONS
ABBREVIATIONS
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SITE PLAN - NEW
NORTH WALL PROFILE
SOUTH WALL PROFILE
SITE DETAILS
SITE DETAILS

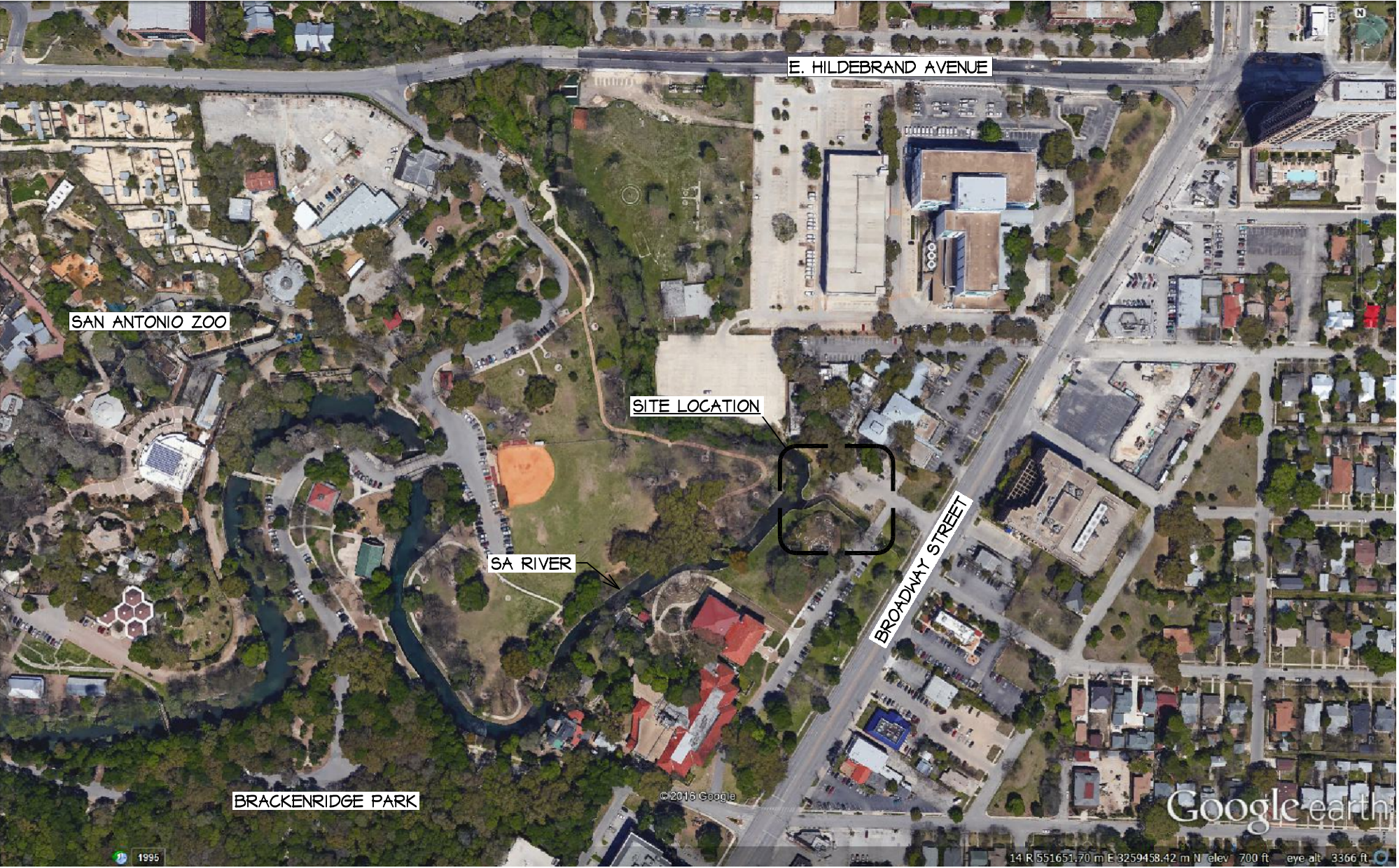
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OVERALL LANDSCAPE PLAN
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TREE PRESERVATION DETAILS

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LOCATION MAP



BRACKENRIDGE PARK
RETAINING WALL - PHASE II

Revisions:
CONSTRUCTION
DOCUMENTS

Date:
06/10/16

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 clouded.
- 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 clouded on the shop drawings.
- F. All structural elements of the project have been designed by the Engineer to resist the required code 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, adherences 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. This 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 (psf)	UNIFORM (psf)	CONCENTRATED (lbs.)
Assembly areas and theaters Yards, Plazas, 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 _p	+/-0.18		
Risk Category	II		

2. Ultimate Components and Cladding Wind Pressures:

Surface	(psf)	Zone	Area, A _x (ft ²)
Exterior	+28.2	Interior and edge	10 or less
Walls	-28.2	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	1.00
Risk Category	II
Mapped Spectral Response Accelerations	
Ss (%g)	0.107
SI (%g)	0.033
Site Class	D
Spectral Response Coefficients	
SDS	0.167
SDI	0.067
Seismic Design Category	A
Resisting system	Conc Moment Frame
Design Base Shear, V	-NA-
Seismic Response Coefficient(s), C _s	-NA-
Response Modification Factor(s), R	-NA-
Analysis Procedure Used	Simplified for SDC A

- G. 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+H) + 0.5(L_r or S or R)
 - 1.2(D+F) + 1.6(L_r or S or R) + 1.6H + (1*L or 0.5W)
 - 1.2(D+F) + 1.0W + 1*L + 1.6H + 0.5(L_r or S or R)
 - 1.2(D+F) + 1.0E + 1*L + 1.6H + F2*S
 - 0.9D + 1.0W + 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 + 0.75(L_r or S or R)
 - D + H + F + (0.6W or 0.7E)
 - D + H + F + 0.75(0.6W) + 0.75L + 0.75(L_r or S or R)
 - D + H + F + 0.75(0.7E) + 0.75L + 0.75(S)
 - 0.6D + 0.6W + 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 clouded.
- 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 1 horizontal to 1 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 Texas 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 Arias Geoprosessionals, Inc. 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.

2316 CONTROLLED BACKFILL BEHIND RETAINING WALLS

- A. Typical retaining wall backfill material shall meet the requirements to TxDot Item 423, Table 3 drainage aggregate of the 2014 Standard Specifications. Drainage aggregate shall fill the area behind the wall w/ excavation laid back at a 45° line from bottom of wall to ground surface (min). Where new work extends into exist tree root protection zone @ U-channel sections, excavate by hand to minimize damage to tree roots. All drainage aggregate shall be surrounded by a continuous layer of geosynthetic filter fabric, Mirafi 140N, or approved equal.
- B. Provide a continuous wall drainage system as indicated on the structural drawings consistant of:
- Drainage Board: Miradrain 6000 as manufactured by Carlisle Coatings & Waterproofing, or approved equal. Drainage board shall be secured to soil in tree root protection zones where drainage aggregate cannot be used. Drainage board shall extend from the top of the concrete wall to the wall drain as indicated on the Drawings.
 - Pipe and Fittings: Schedule 40, PVC.
 - Filter Fabric: Mirafi 140N, non-woven, polypropylene geotextile as manufactured by TenCate, or approved equal.
- C. The top 1'-6" 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.

- D. Backfill material shall not be placed against retaining walls until all supporting slabs, beams, struts, etc., have attained their 28 day design strength unless proper bracing is installed.
- E. 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".
- F. 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.
- G. Contractor shall retain the services of a certified arborist, recognized by the City of San Antonio, to prepare shop drawings/submittal information for the protection of tree root systems exposed in eroded/sloughed bank areas behind the retaining wall to be repaired.
- H. The work area is located within the San Antonio River channel inside Brackenridge Park. Contractor shall get familiar with the site constraints prior to submitting a bid for this work. The area where the wall will be repaired/replaced will require temporary dewatering to allow the work to progress. Dewatering will need to comply with requirements of all authorities having jurisdiction, including but not necessarily limited to the City of San Antonio, and the San Antonio River Authority. Dewatering will require the provision of cofferdams, and pumps to establish a suitable area for work.

- I. Pump discharge from the work area shall not adversely affect the water quality of the river. Contractor shall provide an engineered plan, sealed by a Professional Engineer licensed in the State of Texas for work including site preparation, dewatering, and restoration. Plan shall fully describe procedures to be used for dewatering, silt control and compliance with all applicable regulations.
- J. All materials used in the work area to promote a suitable work area shall be removed at the completion of the work, and the area restored to the condition that existed prior to the beginning of the work.

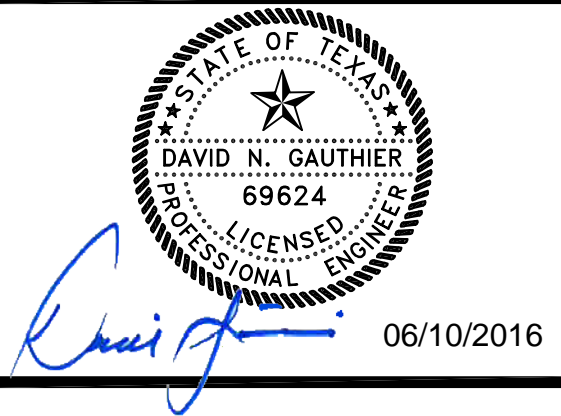
- K. Stockpiling of materials, and location of equipment performing the work, shall be carefully planned such that earth embankments, and existing stone retaining walls are not subjected to new surcharge loading during execution of the work.
- L. Fill shall be placed in loose lifts not to exceed eight (8) inches.
- M. 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.
- N. Compaction and moisture content of subgrade and each lift of fill shall be inspected and approved by a qualified engineering technician, supervised by a Geotechnical Engineer.

2465 DRILLED PIERS:

- A. Pier design is in accordance with the recommendations in the following geotechnical report:
- Geotechnical engineer: Arias Geoprosessionals, Inc
 - Report number: 2015-994
- B. Piers shall be located as indicated on plan, at the centerline of wall or beam.
- C. Provide dowels from piers into concrete above using same bar size and number as shown for plaster above. Where no plaster occurs, use dowels of same size and number as pier reinforcing steel. Extend dowels 30 bar diameters into pier and beam, wall, plaster or column, unless noted otherwise on the Structural Drawings.
- D. 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.
- E. Reinforcing cage shall be held securely away from earth at sides and bottom by sets of 3 spacers at a maximum spacing of 8 ft. along the length of the cage and 1'-0" from the bottom.
- F. 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.
- G. See plans for pier sizes, reinforcing and depth.
- H. 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 64 bar diameter laps in all vertical pier reinforcing.
- I. Reinforcing steel shop drawings shall include placing drawings for templates to set dowels in piers.
- J. 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.
- K. 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 holes. Special construction procedures in accordance with ACI 336.1 and ACI 336.3R and specifications shall be followed during extraction of the casing and during concrete placement.
- L. 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.
- M. All piers shall be inspected by a representative of the selected Special Inspector in order to ensure that the proposed bearing material has been reached in accordance with the recommendations given in the geotechnical report.
- N. 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
- All concrete shall conform to the requirements as specified in the table below, unless noted otherwise on the Structural Drawings:
 - Concrete Mix Schedule:
- | Conc. Class | Strength Psi | Agg. Type | Agg. Size | Slump Inches | Max w/c | Use |
|-------------|--------------|-----------|-----------|--------------|---------|---------------------|
| E | 4000 | NWT | 3/4" | 6-8 | --- | Piers |
| F | 4000 | NWT | 3/4" | 3-5 | --- | All other conc, UNO |
- "NWT" refers to normal concrete having air dry unit weight of approximately 145 PCF (ASTM C33 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.



BRACKENRIDGE PARK
RETAINING WALL – PHASE II

Revisions:

CONSTRUCTION
DOCUMENTS

Date:
06/10/16

Project No.
1162300

Sheet Title:
STRUCTURAL
NOTES

Drawing No.

S001

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

3000 CAST-IN-PLACE CONCRETE CONTD

- F. Submittal: 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 30 consecutive strength tests, or by three laboratory trial mixtures with confirmation tests.
- G. Grade beams in contact with earth shall be formed both sides unless noted otherwise in details.
- H. 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.

3200 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-#4 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. Coarse 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 530.1 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.
 - Wedge-All, Simpson Strong-Tie
- B. Adhesive Anchors shall be one of the following:
- Concrete:
 - HIT-RE 500-V3, Hilti Inc.
 - SET-XP, Simpson Strong-Tie
 - Grouted Masonry
 - HIT-HY 70, Hilti Inc.
 - SET, Simpson Strong-Tie.
- C. Adhesive Dowelling
- Adhesive dowelling 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 dowelling 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.

7900 JOINT SEALANT

- A. Joint sealant shall be a 2-component, premium-grade, polyurethane-based, elastomeric sealant with a chemical cure. Sealant shall have a self-leveling consistency in horizontal applications, and a non-sag consistency in vertical applications.
- B. All joint surfaces shall be clean, sound and frost-free. Joint walls shall be free of oil, grease, curing compound residues, and any other foreign matter that may prevent bond. Cleaning and preparation of joint surfaces shall be accomplished by mechanical means.
- C. Bond breaker tape, closed-cell backer rod or other approved method shall be used in bottom of joint to control depth and to prevent bond to bottom of joint.
- D. Thoroughly mix A, B and color pack components in accordance with manufacturer's instructions to achieve a uniform color and consistency.
- E. Pour or extrude sealant in one direction and allow to flow and level as necessary. Place nozzle of gun into bottom of joint and fill entire joint. Keep the nozzle deep in the sealant and continue with steady flow of sealant preceding nozzle to avoid air entrapment. Do not overlap sealant. Tool joint surface as required.
- F. Self-leveling joint sealant shall be Sikaflex -2c SL by Sika Corp. or approved equal.
- G. Non-sag joint sealant shall be Sikaflex -2c NS by Sika Corp. or approved equal.
- H. Submittals: Submit manufacturer's data sheets and application instructions for review.

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.
- 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.a	--	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 temperature and techniques	--	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)	--

1. STRUCTURES IN ASCE CATEGORY I, II, AND III WHERE THE MASONRY IS DESIGNED PER THE CHAPTER 5 (EMPIRICAL DESIGN), 6 (VENEER) AND 7 (GLASS UNIT MASONRY) IN ACI 530.))

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	--	--

Revisions:

CONSTRUCTION
DOCUMENTS

Date:
06/10/16

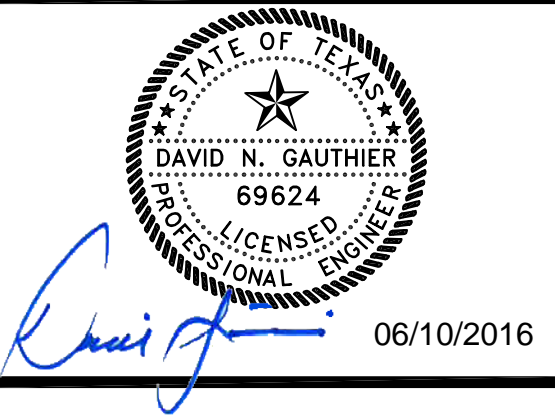
Project No.
1162300

Sheet Title:
STRUCTURAL NOTES
AND SPECIAL
INSPECTIONS

Drawing No.

S002

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

CONSTRUCTION
DOCUMENTS

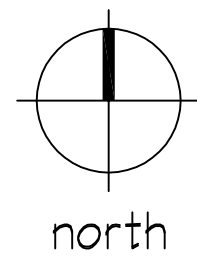
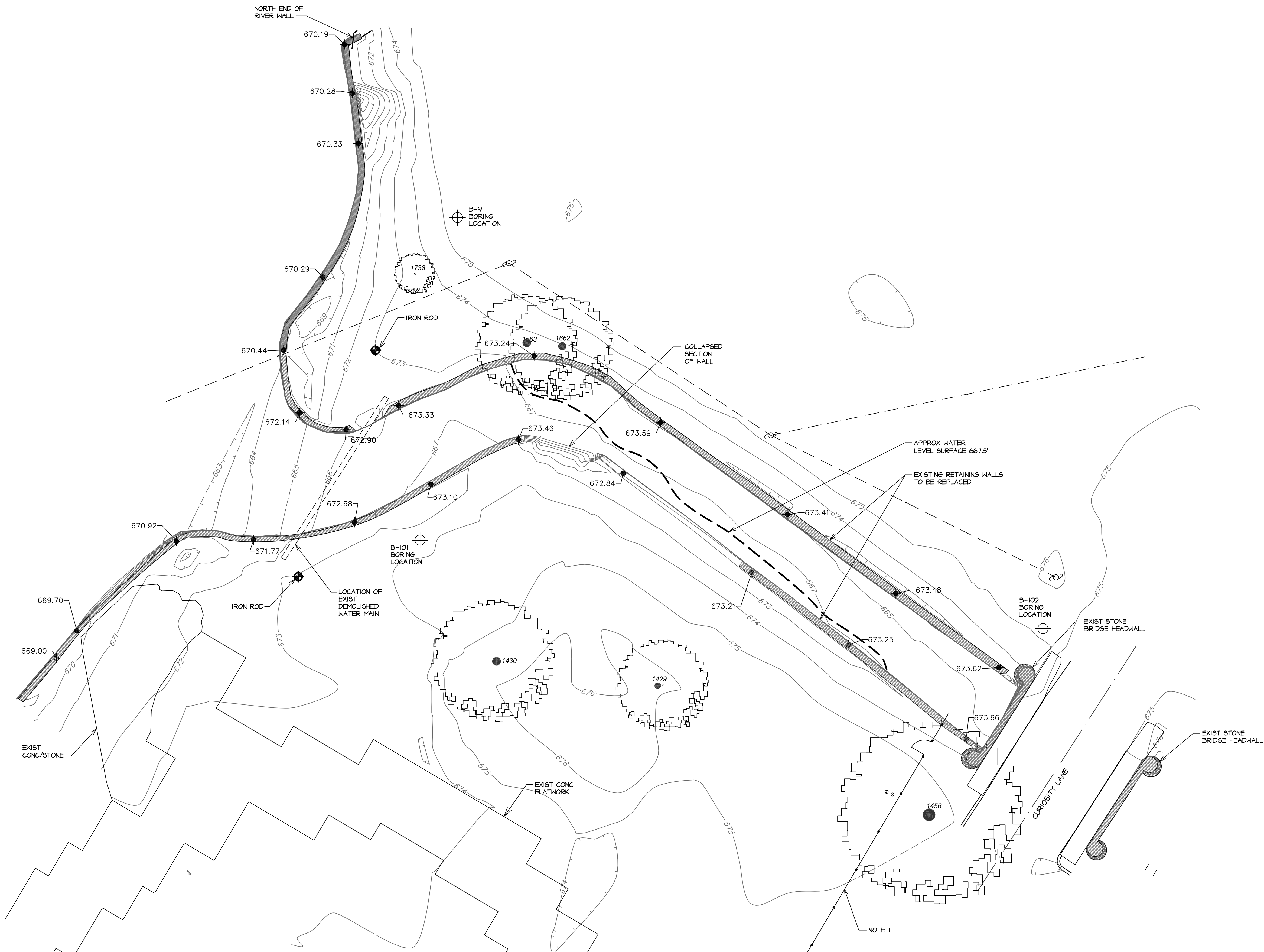
Date:
06/10/16

Project No.
1162300

Sheet Title:
SPECIAL
INSPECTIONS AND
ABBREVIATIONS

Drawing No.

S003



SITE PLAN - EXISTING

SCALE: 3/32"=1'-0"

PLAN NOTES:

1. REMOVE AND STORE EXIST STL FENCE AND FOOTINGS AS REQD FOR CONST OF RETAINING WALL. REPLACE FENCE AFTER RETAINING WALL WORK IS COMPLETE.



06/10/2016

**BRACKENRIDGE PARK
 RETAINING WALL - PHASE II**

Revisions:

CONSTRUCTION DOCUMENTS

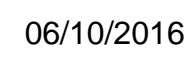
Date: 06/10/16

Project No. 1162300

Sheet Title: **SITE PLAN**

Drawing No.

S100



BRACKENRIDGE PARK
RETAINING WALL – PHASE II

Revisions:

CONSTRUCTION
DOCUMENTS

Date: 06/10/16

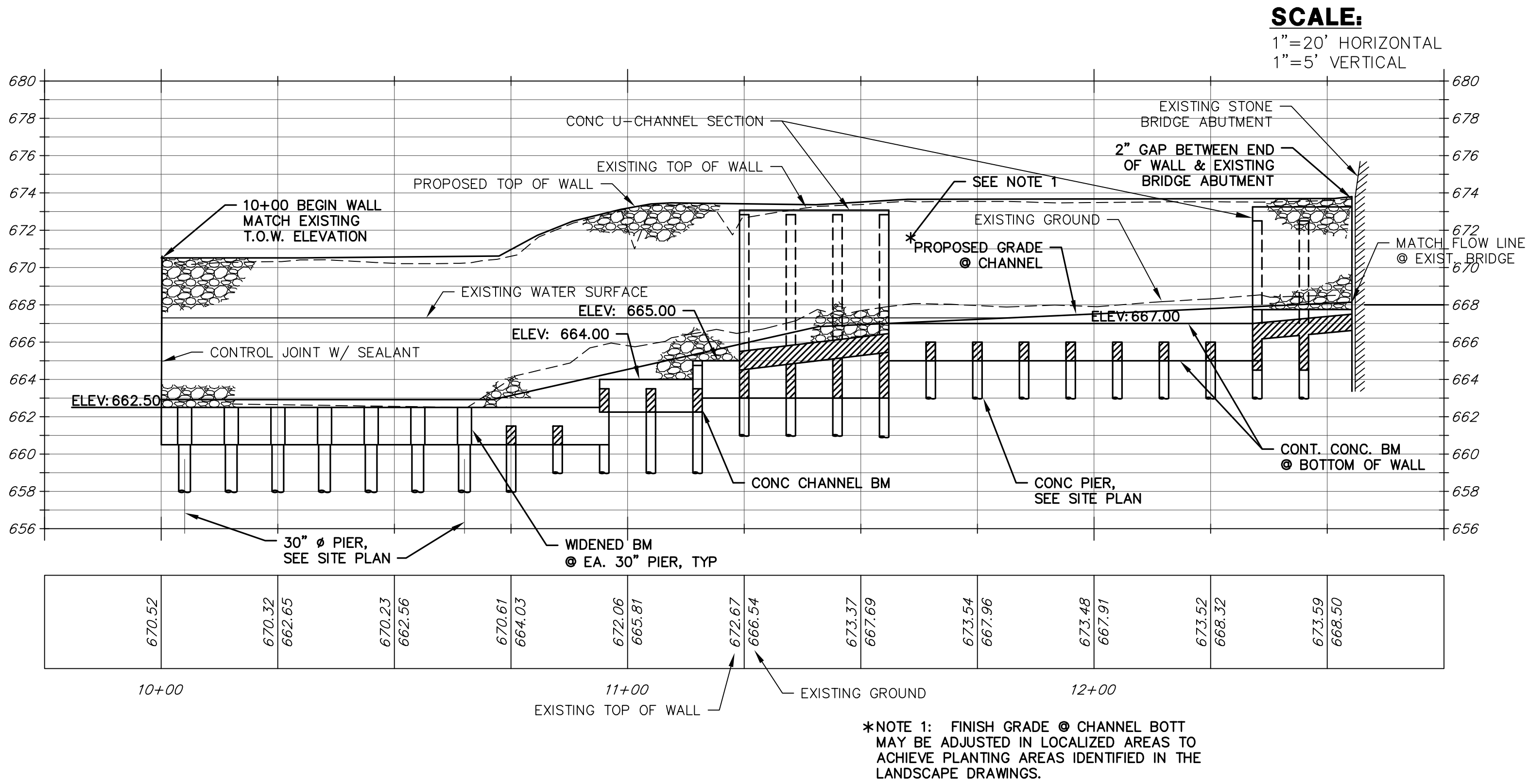
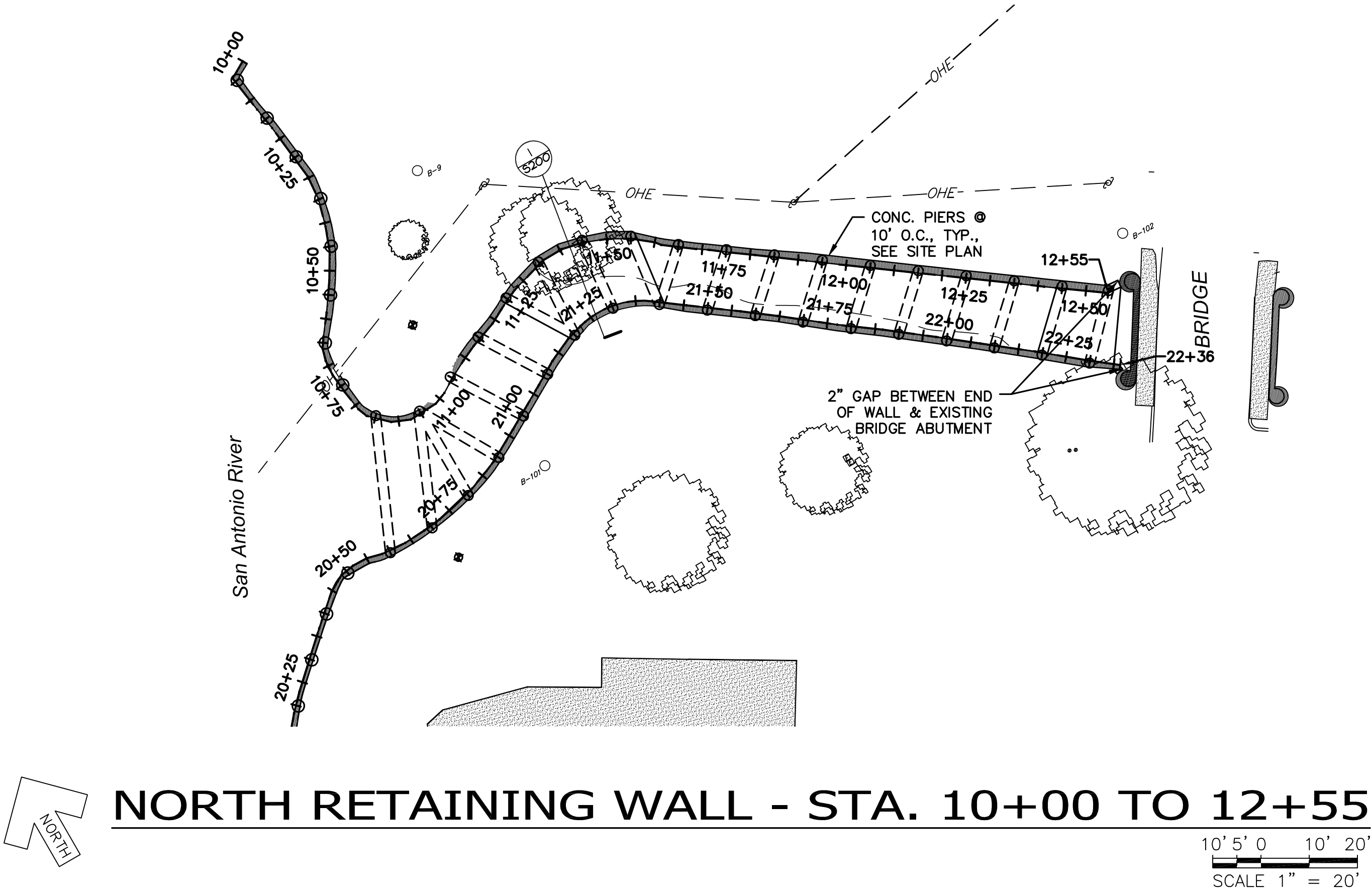
Project No.
1162300

Sheet Title:
SITE PLAN

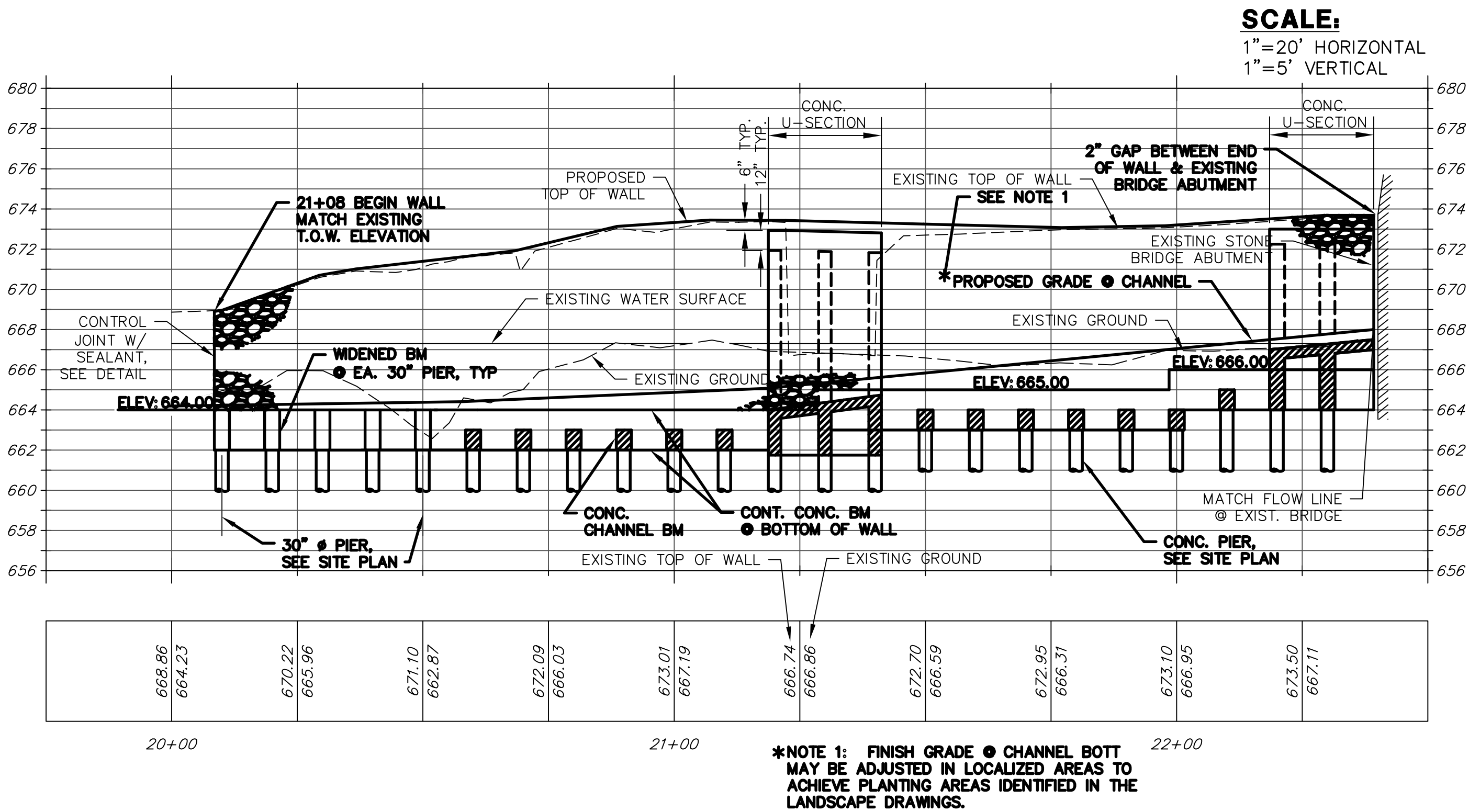
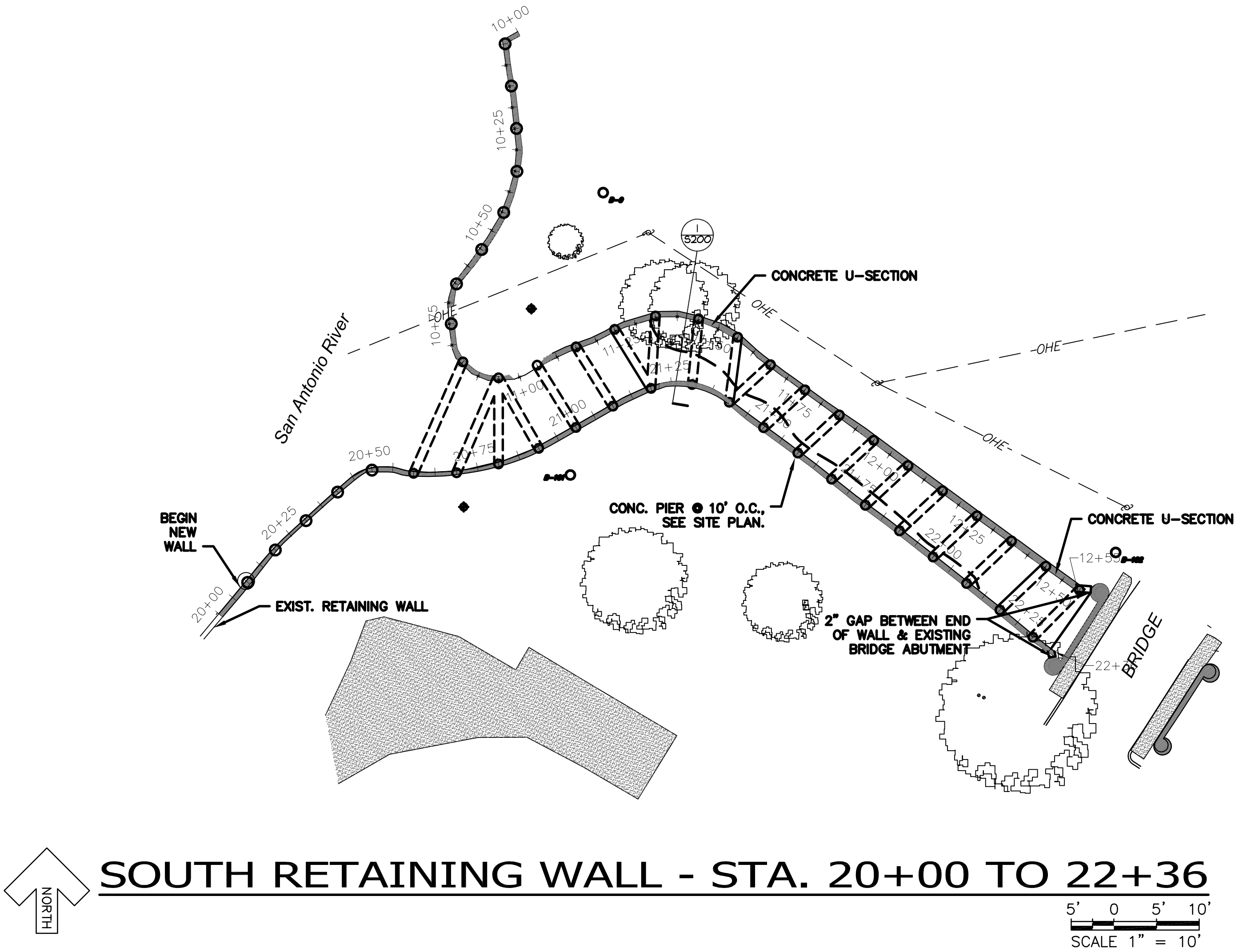
Drawing No.

S101

Point Table				
Point #	Station	Northing	Easting	Top Of Wall
1	10+00 BEGIN WALL	13716399.59	2138253.66	670.51
2	10+05	13716396.67	2138250.21	670.51
3	10+10	13716391.72	2138250.90	670.51
4	10+15	13716386.77	2138251.66	670.51
5	10+20	13716381.82	2138252.33	670.51
6	10+25	13716376.85	2138252.86	670.51
7	10+30	13716371.88	2138253.37	670.52
8	10+35	13716366.90	2138252.95	670.53
9	10+40	13716362.08	2138251.61	670.54
10	10+45	13716357.39	2138249.90	670.55
11	10+50	13716353.00	2138247.52	670.56
12	10+55	13716348.82	2138244.78	670.58
13	10+60	13716344.76	2138241.87	670.59
14	10+65	13716340.75	2138238.88	670.60
15	10+70	13716336.06	2138237.43	670.61
16	10+75	13716331.07	2138237.57	670.97
17	10+80	13716326.12	2138238.20	671.64
18	10+85	13716321.83	2138240.46	672.16
19	10+90	13716318.84	2138244.37	672.59
20	10+95	13716317.96	2138249.17	672.90
21	11+00	13716318.62	2138254.07	673.18
22	11+05	13716321.00	2138258.45	673.41
23	11+10	13716323.30	2138262.89	673.47
24	11+15	13716325.25	2138267.49	673.45
25	11+20	13716327.07	2138272.14	673.44
26	11+25	13716329.37	2138276.57	673.42
27	11+30	13716331.07	2138281.27	673.40
28	11+35	13716332.47	2138286.07	673.39
29	11+40	13716332.78	2138291.03	673.37
30	11+45	13716331.81	2138295.92	673.44
31	11+50	13716329.96	2138300.57	673.51
32	11+55	13716327.54	2138304.94	673.59
33	11+60	13716324.40	2138308.83	673.66
34	11+65	13716321.15	2138312.58	673.66
35	11+70	13716318.21	2138316.62	673.66
36	11+75	13716315.25	2138320.65	673.67
37	11+80	13716312.31	2138324.69	673.67
38	11+85	13716309.35	2138328.73	673.67
39	11+90	13716306.39	2138332.76	673.67
40	11+95	13716303.42	2138336.78	673.67
41	12+00	13716300.46	2138340.81	673.68
42	12+05	13716297.50	2138344.84	673.68
43	12+10	13716294.55	2138348.88	673.68
44	12+15	13716291.60	2138352.91	673.68
45	12+20	13716288.66	2138356.96	673.68
46	12+25	13716285.72	2138361.00	673.69
47	12+30	13716282.77	2138365.04	673.69
48	12+35	13716279.83	2138369.08	673.69
49	12+40	13716276.85	2138373.10	673.69
50	12+45	13716273.92	2138377.15	673.69
51	12+50	13716271.02	2138381.22	673.70
52	12+55 END WALL	13716268.32	2138384.98	673.78



Point Table				
Point #	Station	Northing	Easting	Top Of Wall
53	20+08 BEGIN WALL	13716269.31	2138188.70	668.90
54	20+10	13716270.85	2138189.98	668.95
55	20+15	13716274.69	2138193.18	669.40
56	20+20	13716278.45	2138196.47	669.85
57	20+25	13716281.97	2138200.02	670.30
58	20+30	13716285.36	2138203.69	670.72
59	20+35	13716288.74	2138207.38	670.94
60	20+40	13716292.07	2138211.11	671.11
61	20+45	13716295.32	2138214.90	671.25
62	20+50	13716297.33	2138219.41	671.39
63	20+55	13716297.53	2138224.39	671.53
64	20+60	13716296.58	2138229.28	671.68
65	20+65	13716296.37	2138234.27	671.82
66	20+70	13716296.72	2138239.25	672.02
67	20+75	13716297.61	2138244.16	672.32
68	20+80	13716298.77	2138249.03	672.62
69	20+85	13716300.38	2138253.75	672.92
70	20+90	13716302.37	2138258.33	673.16
71	20+95	13716304.79	2138262.70	673.24
72	21+00	13716307.26	2138267.05	673.33
73	21+05	13716309.74	2138271.39	673.41
74	21+10	13716312.26	2138275.71	673.45
75	21+15	13716314.60	2138280.12	673.44
76	21+20	13716316.47	2138284.75	673.43
77	21+25	13716317.56	2138289.62	673.41
78	21+30	13716317.39	2138294.60	673.38
79	21+35	13716315.86	2138299.34	673.35
80	21+40	13716313.14	2138303.53	673.31
81	21+45	13716310.15	2138307.53	673.28
82	21+50	13716307.18	2138311.56	673.25
83	21+55	13716304.22	2138315.59	673.21
84	21+60	13716301.23	2138319.59	673.18
85	21+65	13716298.21	2138323.58	673.15
86	21+70	13716295.11	2138327.50	673.12
87	21+75	13716292.01	2138331.42	673.08
88	21+80	13716288.99	2138335.40	673.08
89	21+85	13716286.03	2138339.44	673.11
90	21+90	13716283.00	2138343.41	673.13
91	21+95	13716279.94	2138347.36	673.15
92	22+00	13716276.86	2138351.30	673.20
93	22+05	13716273.76	2138355.23	673.28
94	22+10	13716270.65	2138359.15	673.37
95	22+15	13716267.55	2138363.07	673.45
96	22+20	13716264.42	2138366.97	673.53
97	22+25	13716261.23	2138370.82	673.61
98	22+30	13716258.05	2138374.68	673.68
99	22+35	13716254.98	2138378.62	673.68
100	22+36 END WALL	13716254.14	2138379.68	673.68

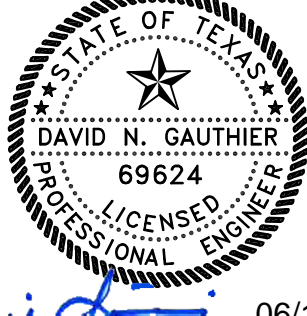


BRACKENRIDGE PARK
RETAINING WALL - PHASE II

Revisions:
CONSTRUCTION
DOCUMENTS

Date:
06/10/16
Project No.
1162300
Sheet Title:
SOUTH WALL
PLAN & PROFILE
Drawing No.

S202



BRACKENRIDGE PARK
RETAINING WALL - PHASE II

Revisions:

CONSTRUCTION
DOCUMENTS

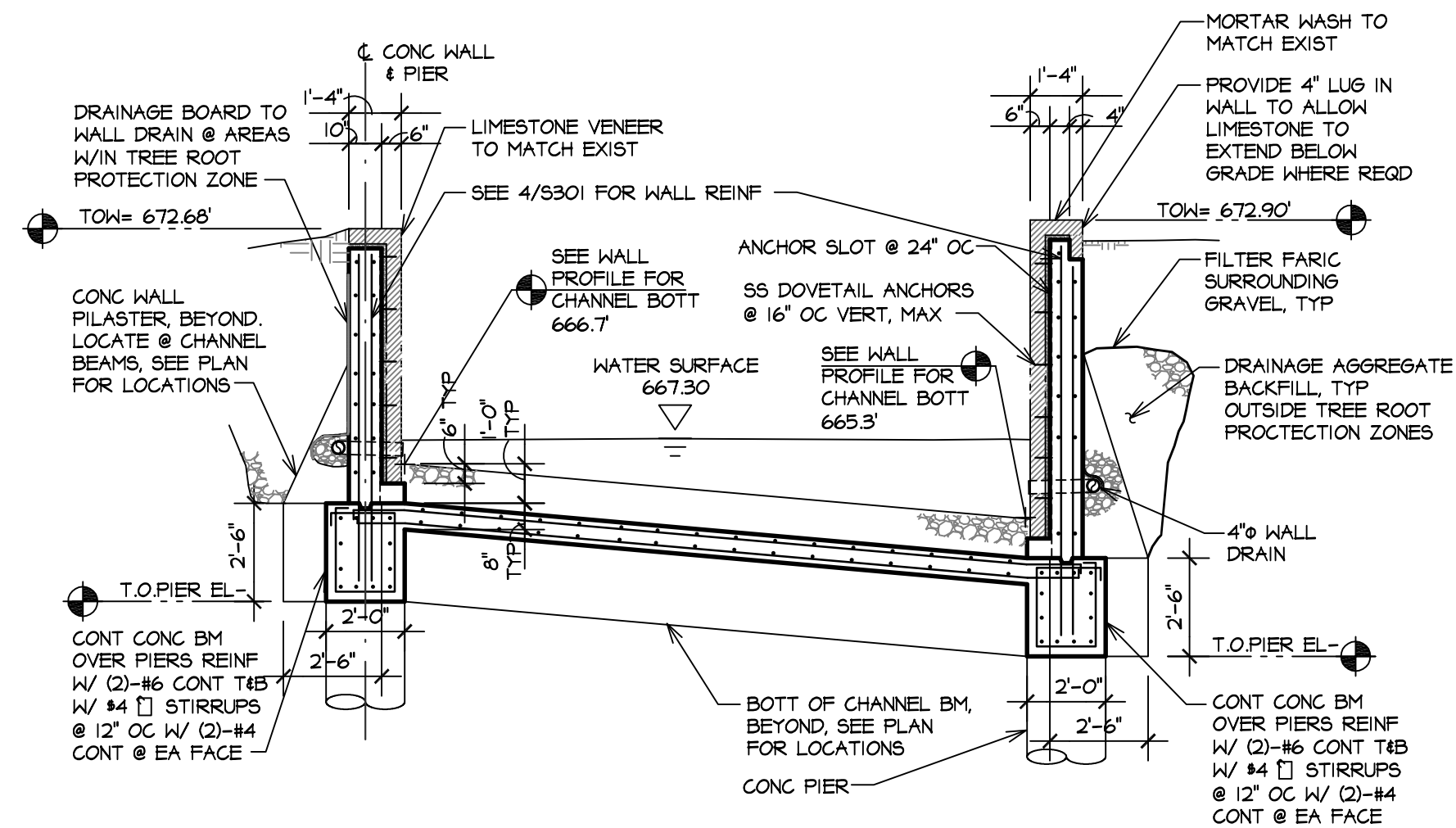
Date:
06/10/16

Project No.
1162300

Sheet Title:
SITE DETAILS

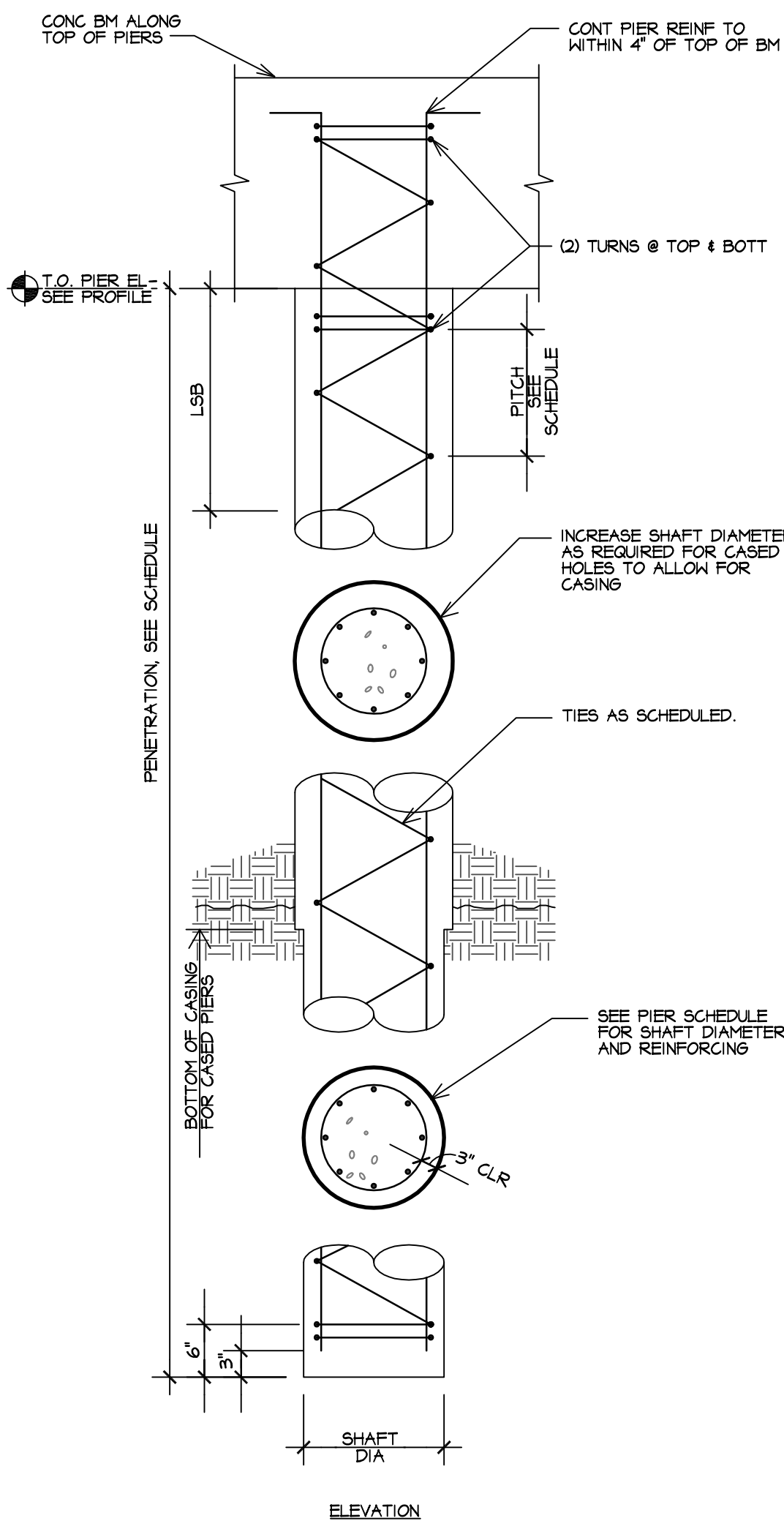
Drawing No.

S300

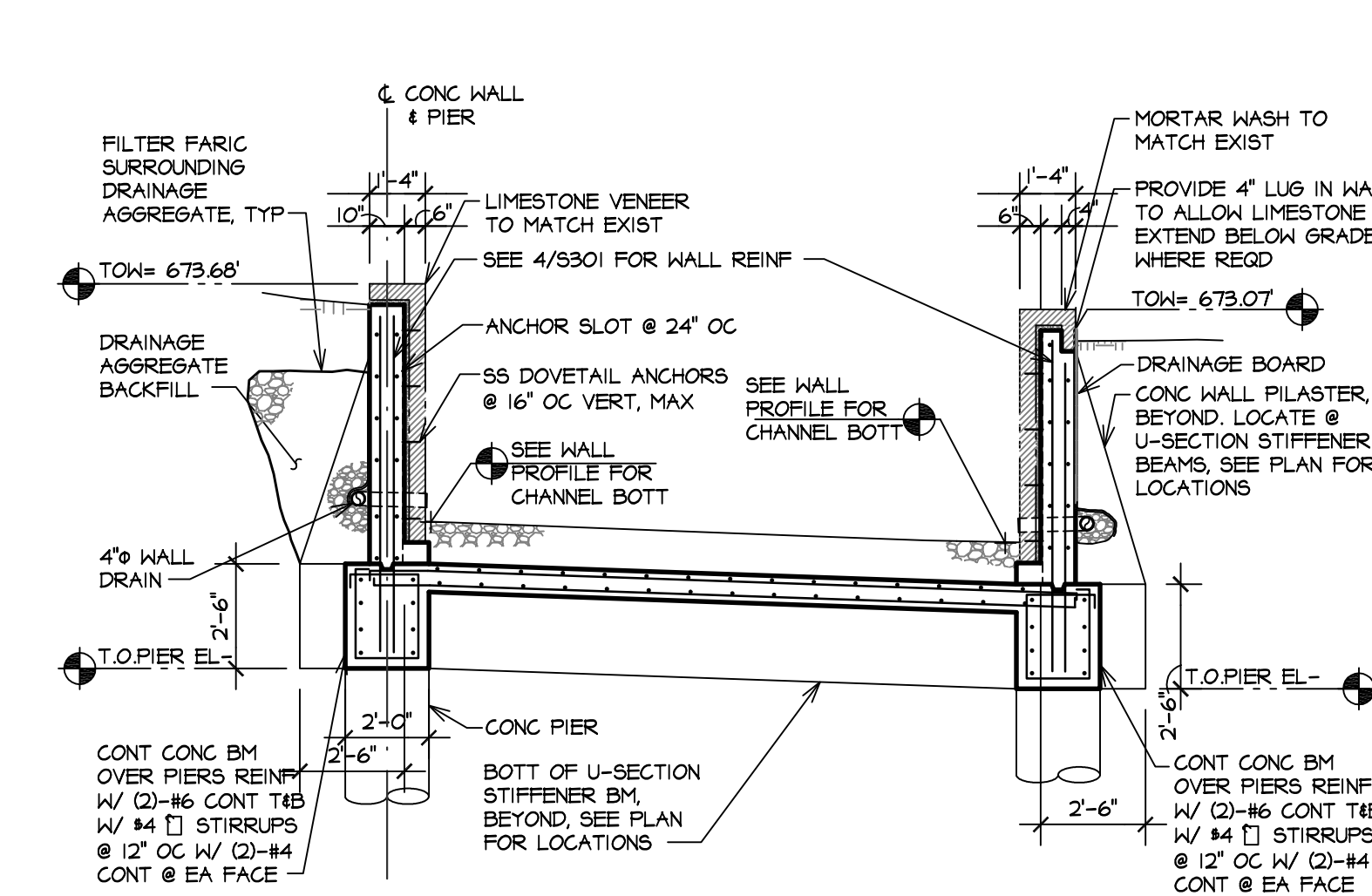


1 U-CHANNEL SECTION
SCALE: 1/4"=1'-0"

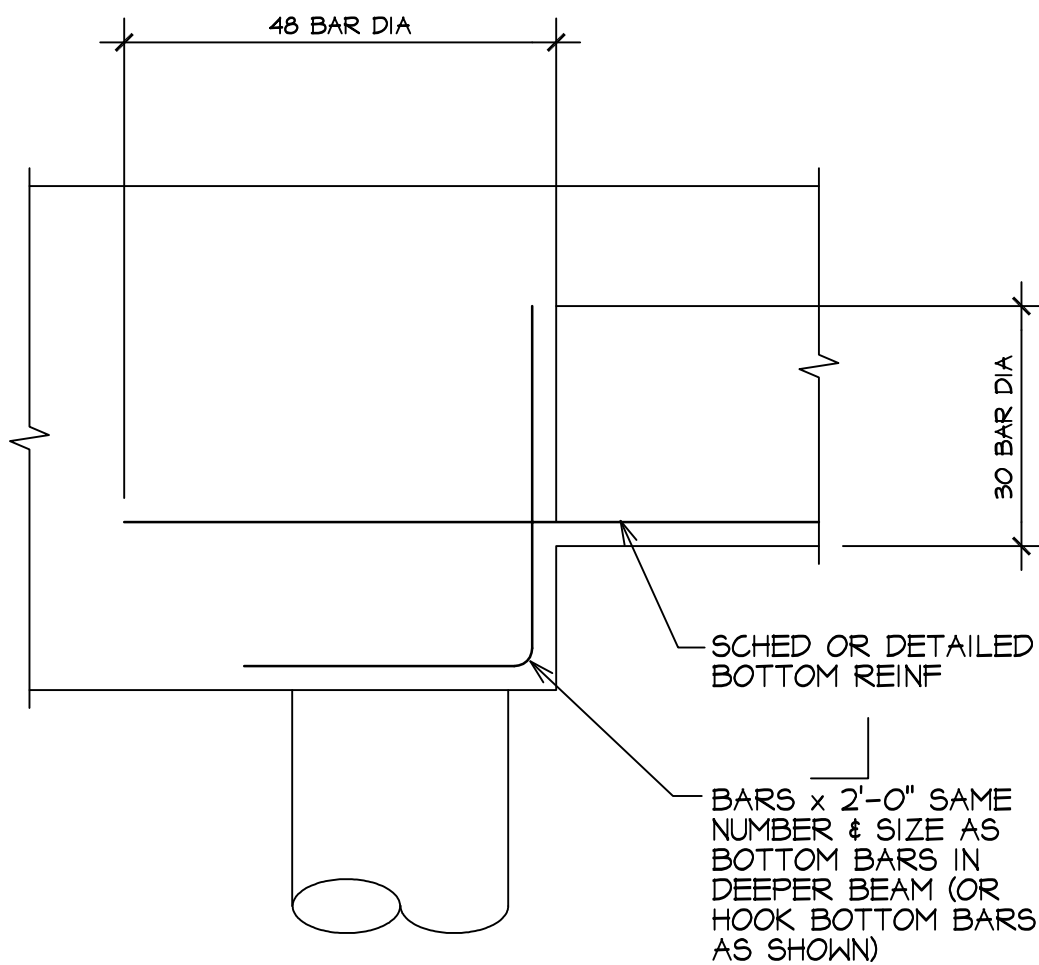
PIER SCHEDULE				
MARK	SHAFT DIAMETER	VERTICAL BARS	TIES	PENETRATION
P1	24"	(8)- #8	#3 @ 8" PITCH	15'-0"
P2	30"	(8)- #9	#3 @ 12" PITCH	20'-0"



4 TYPICAL CASSED DRILLED PIER DETAIL
SCALE: 3/4"=0'



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



5 TYPICAL DROP IN BOTTOM OF GRADE BEAM DETAIL
SCALE: 3/4"=0'

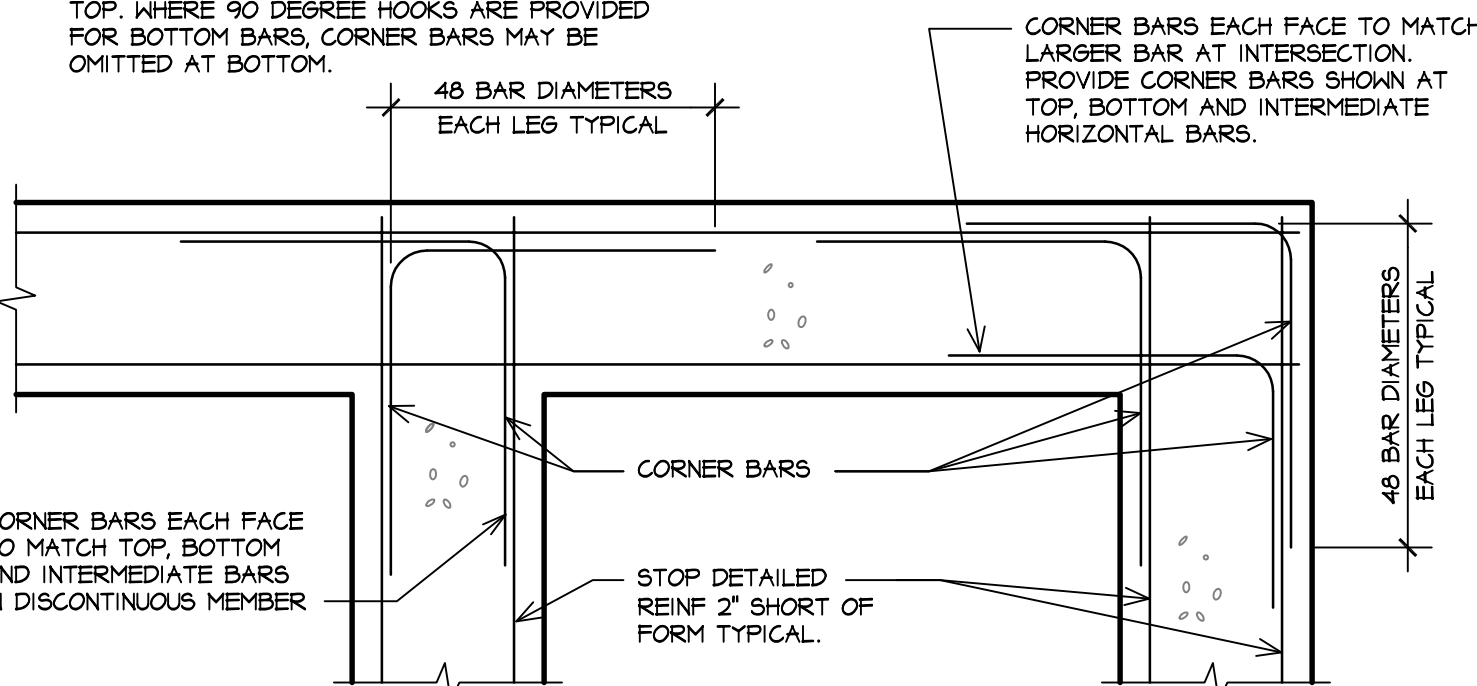
BAR SIZE	f'c = 3000 psi		f'c = 4000 psi		f'c = 5000 psi	
	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS
#3	1'-10"	1'-5"	1'-7"	1'-3"	1'-5"	1'-1"
#4	2'-5"	1'-10"	2'-1"	1'-7"	1'-11"	1'-5"
#5	3'-0"	2'-4"	2'-7"	2'-0"	2'-4"	1'-10"
#6	3'-7"	2'-9"	3'-1"	2'-5"	2'-10"	2'-2"
#7	5'-3"	4'-0"	4'-6"	3'-6"	4'-1"	3'-2"
#8	6'-0"	4'-7"	5'-2"	4'-0"	4'-8"	3'-7"
#9	6'-9"	5'-2"	5'-10"	4'-6"	5'-3"	4'-0"
#10	7'-7"	5'-10"	6'-7"	5'-1"	5'-11"	4'-6"
#11	8'-5"	6'-6"	7'-3"	5'-7"	6'-6"	5'-0"

* DENOTES BAR SPACING NOT LESS THAN 2 BAR DIAMETERS, CLEAR COVER NOT LESS THAN 1 BAR DIAMETER.

8 TYPICAL REINFORCEMENT DEVELOPMENT LENGTHS & LAP SPLICES SCHEDULES
SCALE: 3/4"=0'

NOTES:

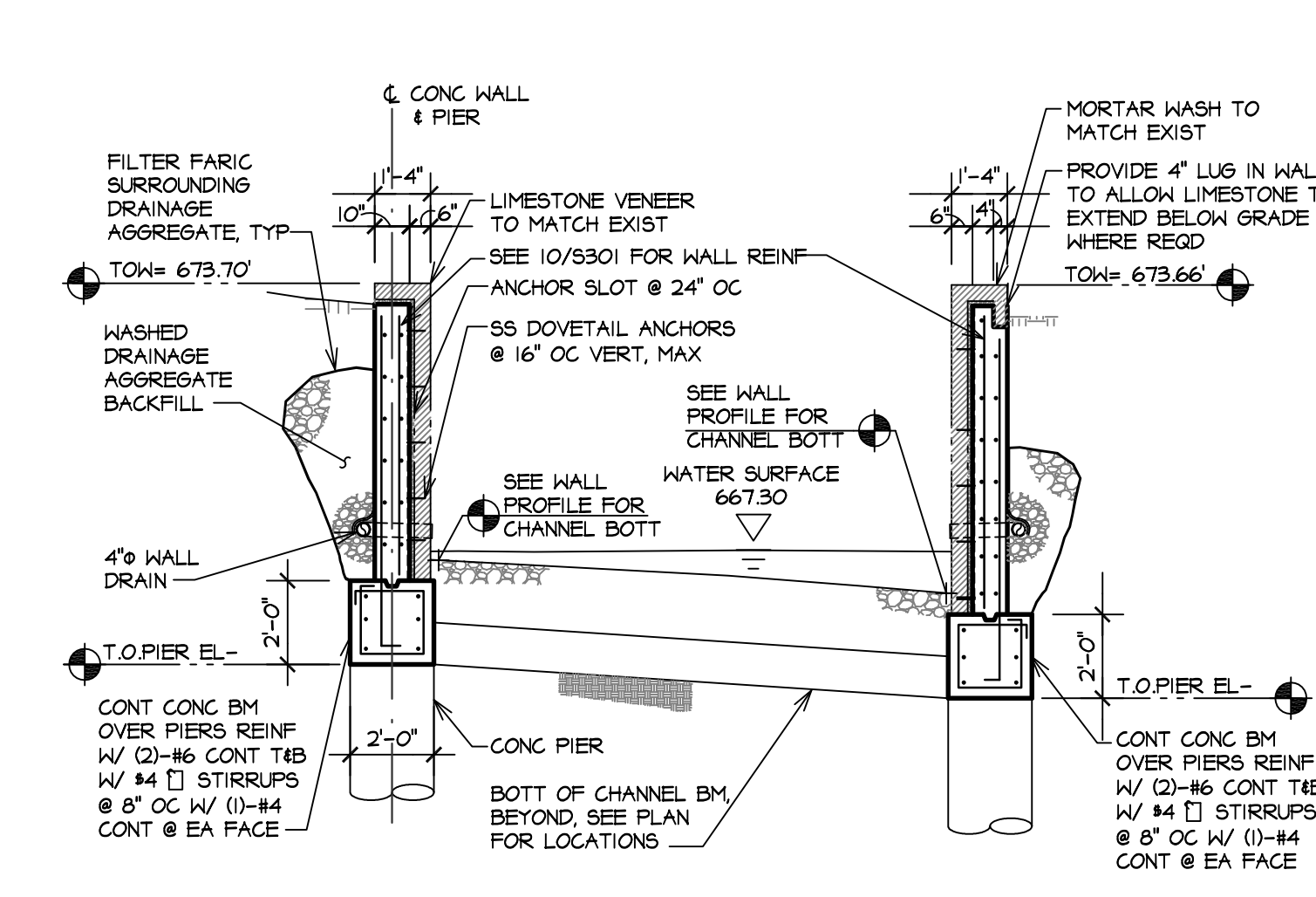
1. MATCH SIZE, LOCATION AND NUMBER OF HORIZONTAL BEAM AND WALL BARS, EXCEPT THAT WHERE THERE ARE MORE THAN 2 TOP OR BOTTOM BARS, ONLY THE INSIDE AND OUTSIDE BARS MUST BE MATCHED.
2. WHERE 90 DEGREE HOOKS ARE PROVIDED FOR TOP BARS CORNER BARS MAY BE OMITTED AT TOP. WHERE 90 DEGREE HOOKS ARE PROVIDED FOR BOTTOM BARS, CORNER BARS MAY BE OMITTED AT BOTTOM.



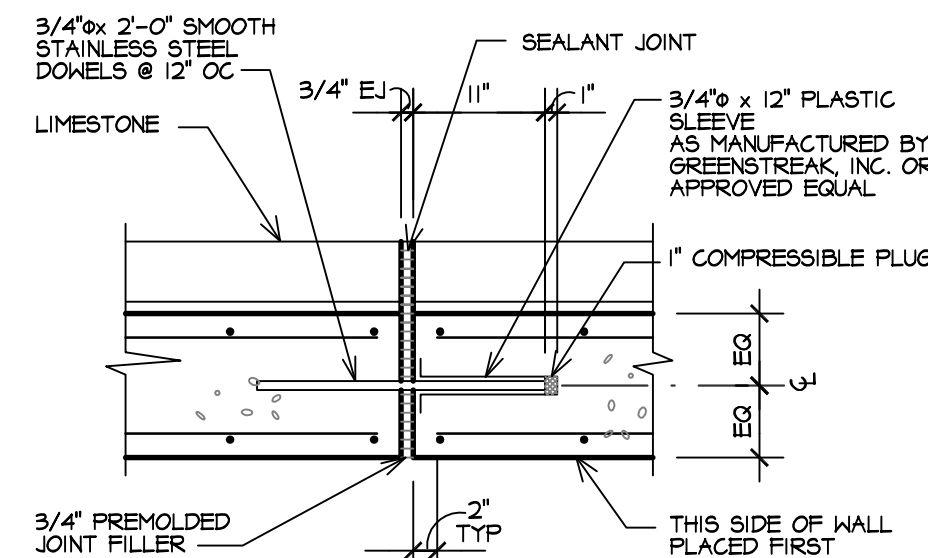
6 TYPICAL CORNER BARS AT WALL OR GRADEBEAM INTERSECTION DETAIL
SCALE: 3/4"=0'

BAR SIZE	f'c = 3000 psi		f'c = 4000 psi		f'c = 5000 psi	
	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS	TOP BARS	OTHER BARS
#3	2'-4"	1'-10"	2'-1"	1'-7"	1'-10"	1'-5"
#4	3'-2"	2'-5"	2'-9"	2'-1"	2'-5"	1'-11"
#5	3'-11"	3'-0"	3'-5"	2'-7"	3'-0"	2'-4"
#6	4'-8"	3'-7"	4'-1"	3'-1"	3'-8"	2'-10"
#7	6'-9"	5'-3"	5'-11"	4'-6"	5'-3"	4'-1"
#8	7'-9"	6'-0"	6'-9"	5'-2"	6'-0"	4'-8"
#9	8'-9"	6'-9"	7'-7"	5'-10"	6'-9"	5'-3"
#10	9'-10"	7'-7"	8'-6"	6'-7"	7'-8"	5'-11"
#11	10'-11"	8'-5"	9'-6"	7'-3"	8'-6"	6'-6"

NOTE: FOR CONCRETE STRENGTHS (f'c) NOT SPECIFICALLY LISTED IN SCHEDULES ABOVE, USE CLOSEST LOWER CONCRETE STRENGTH VALUE.

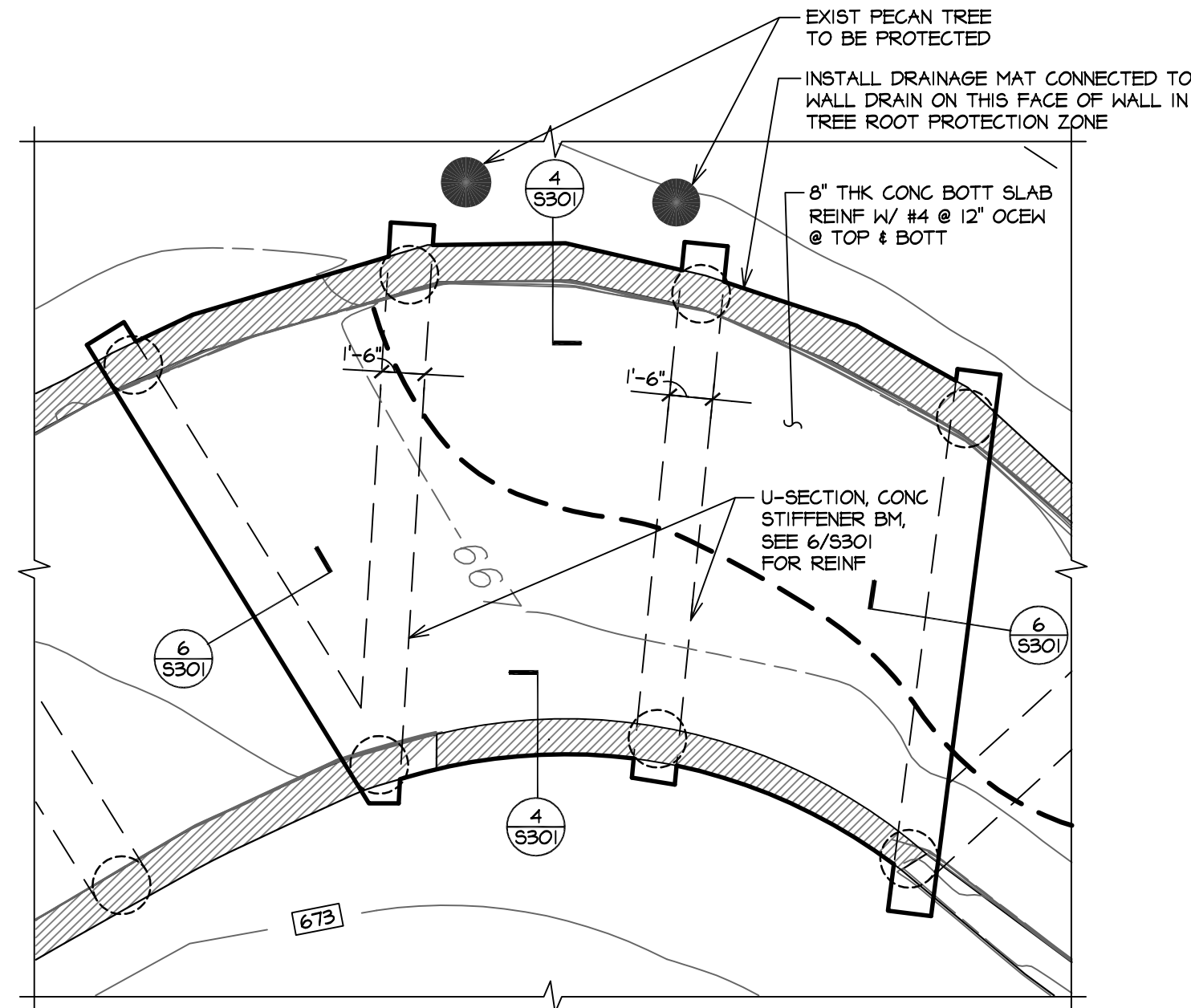


3 TYPICAL SECTION
SCALE: 1/4"=1'-0"

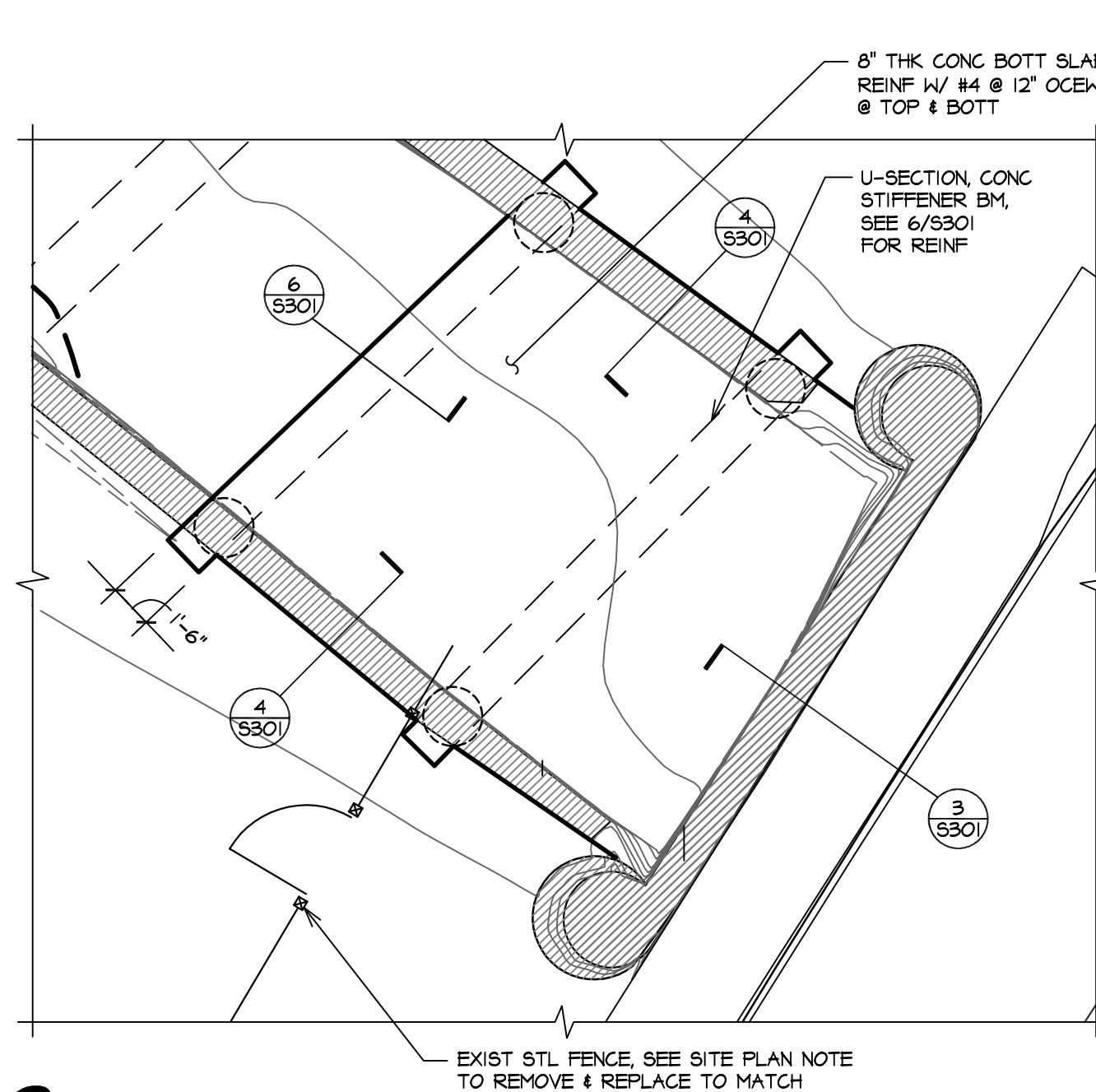


NOTE: EXPANSION JOINT SPACING NOT TO EXCEED 90'-0".

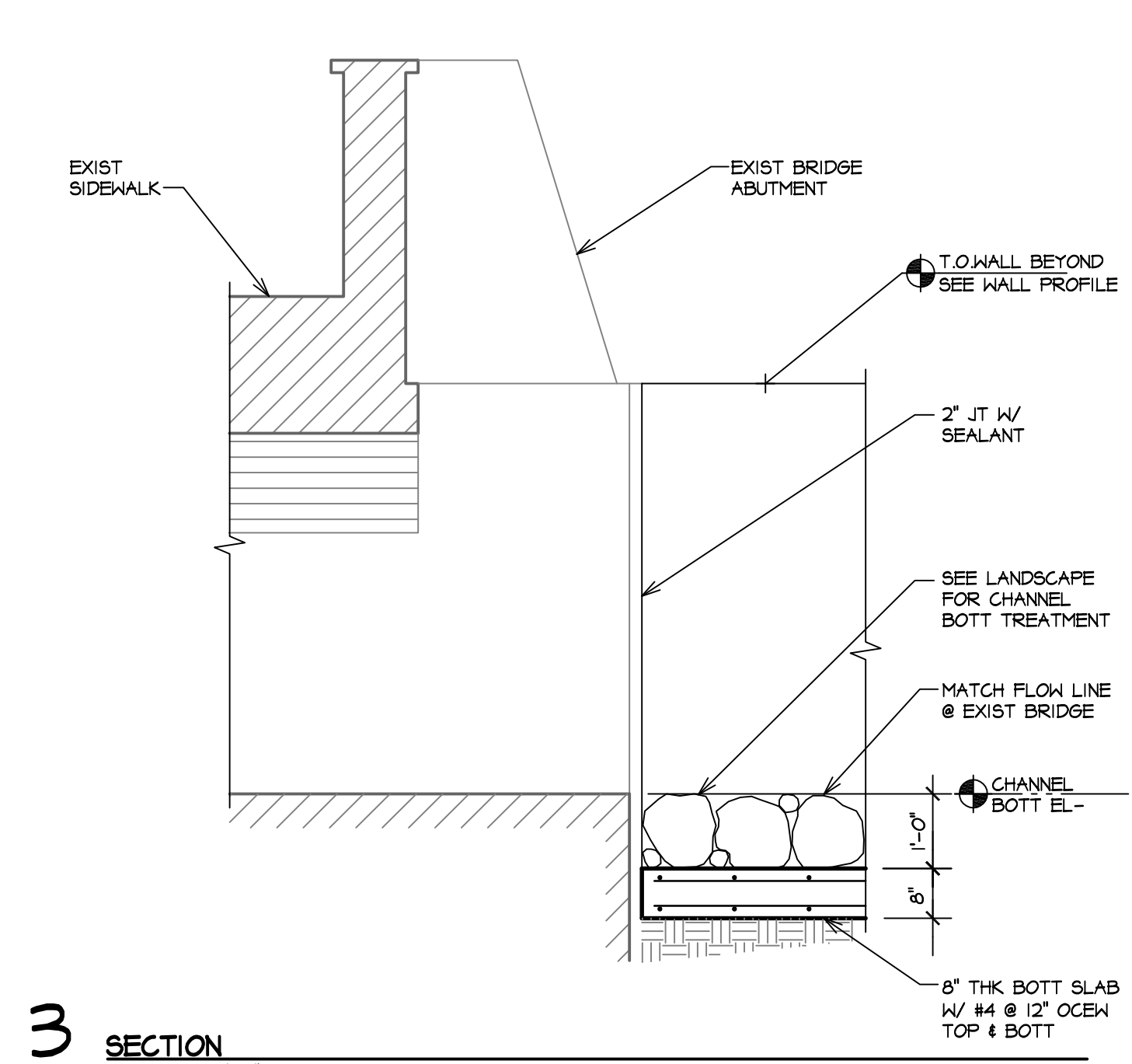
7 TYPICAL RETAINING WALL EXPANSION JOINT DETAIL
SCALE: 3/4"=0'



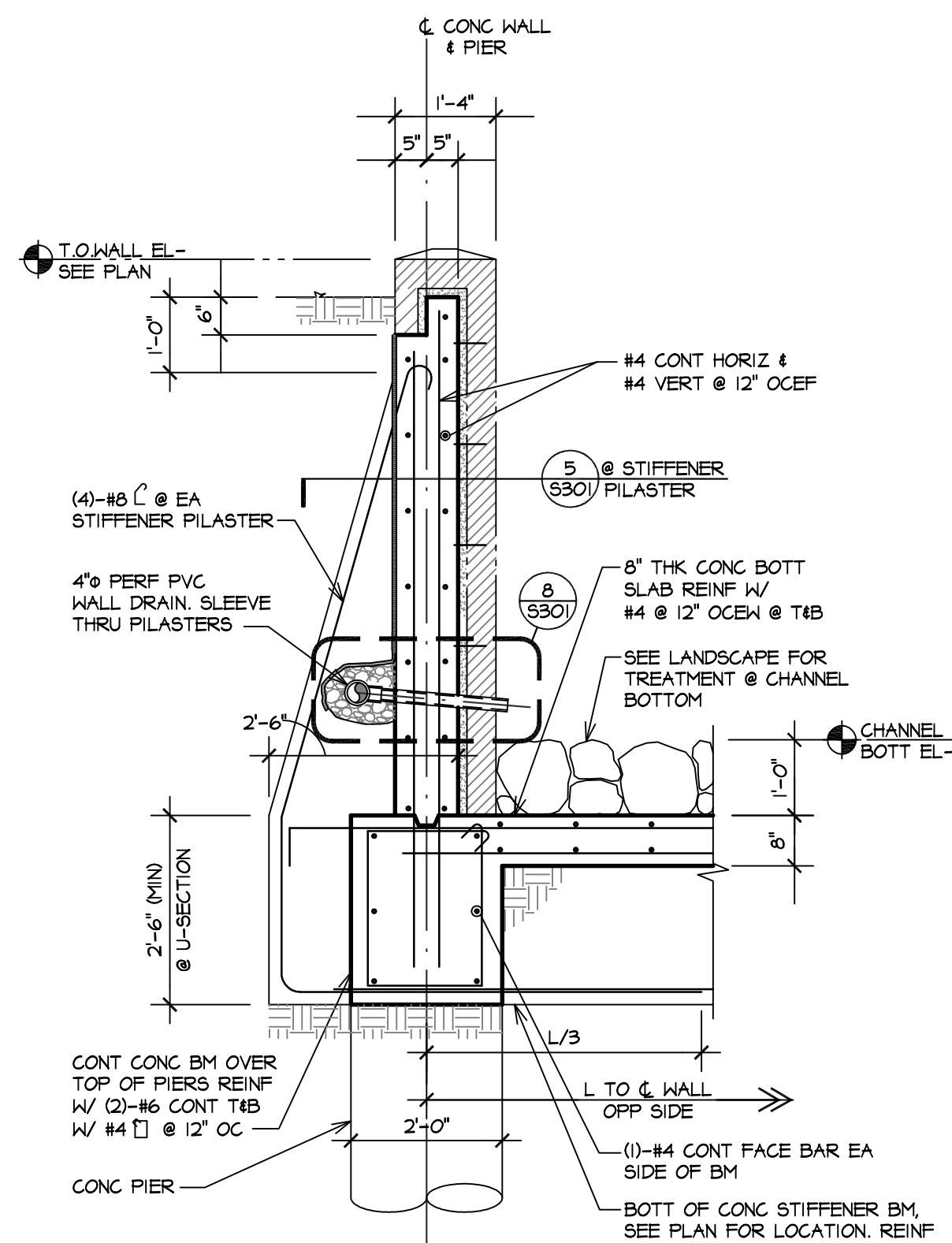
1 ENLARGED SITE PLAN - CONCRETE U-SECTION AT BEND
SCALE: 3/16"=1'-0"



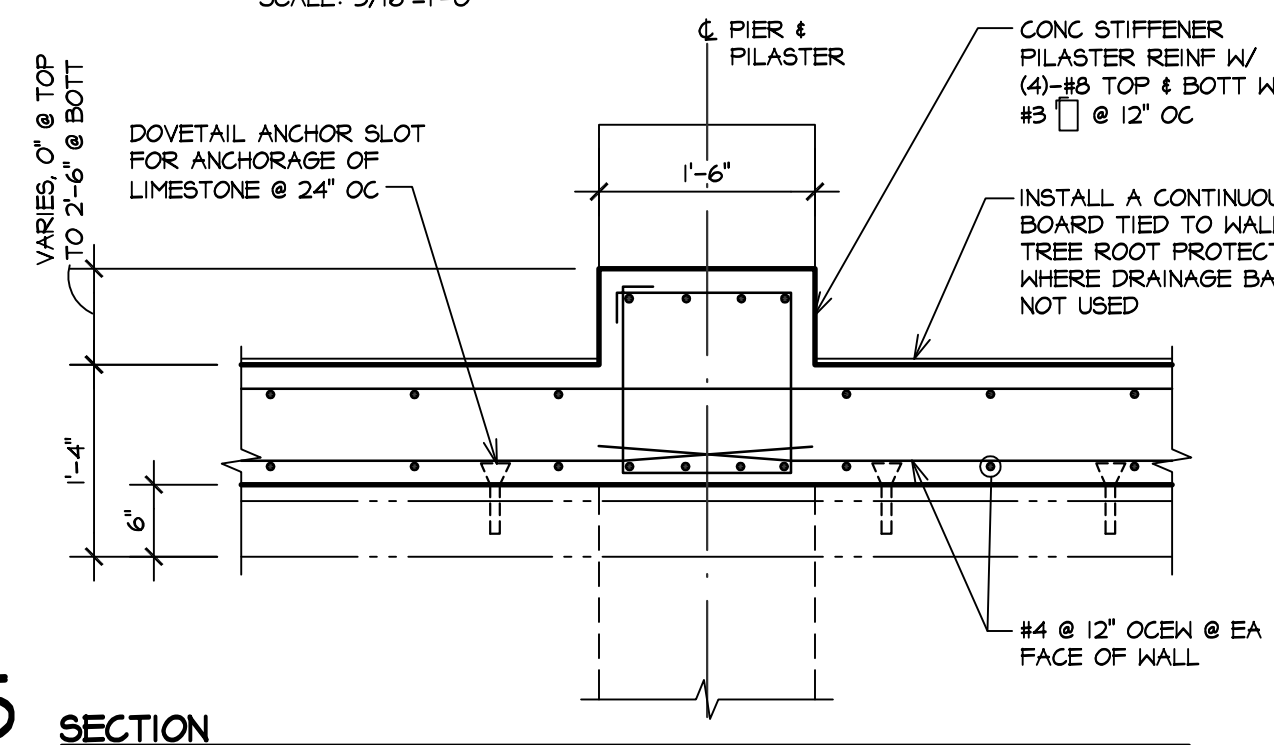
2 ENLARGED SITE PLAN - CONCRETE U-SECTION AT BRIDGE
SCALE: 3/16"=1'-0"



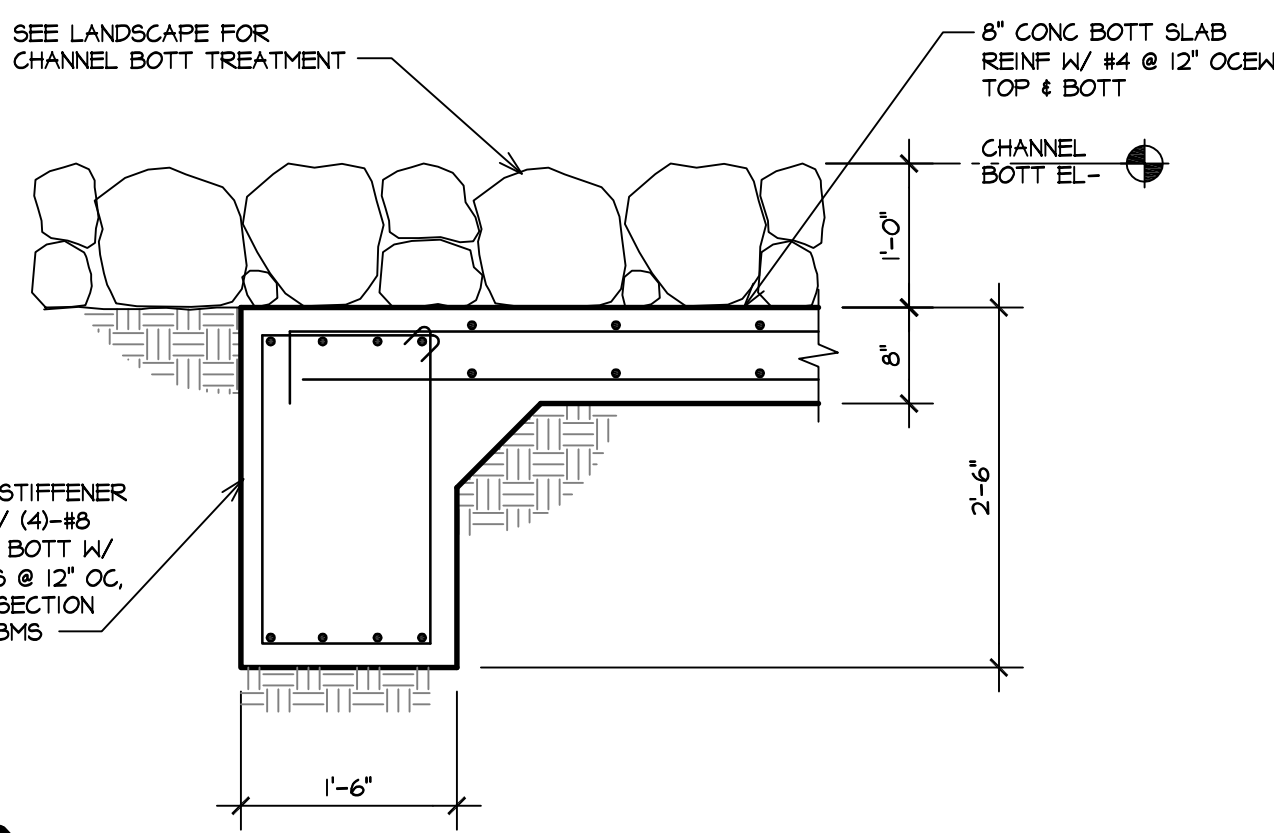
3 SECTION
SCALE: 1/2"=1'-0"



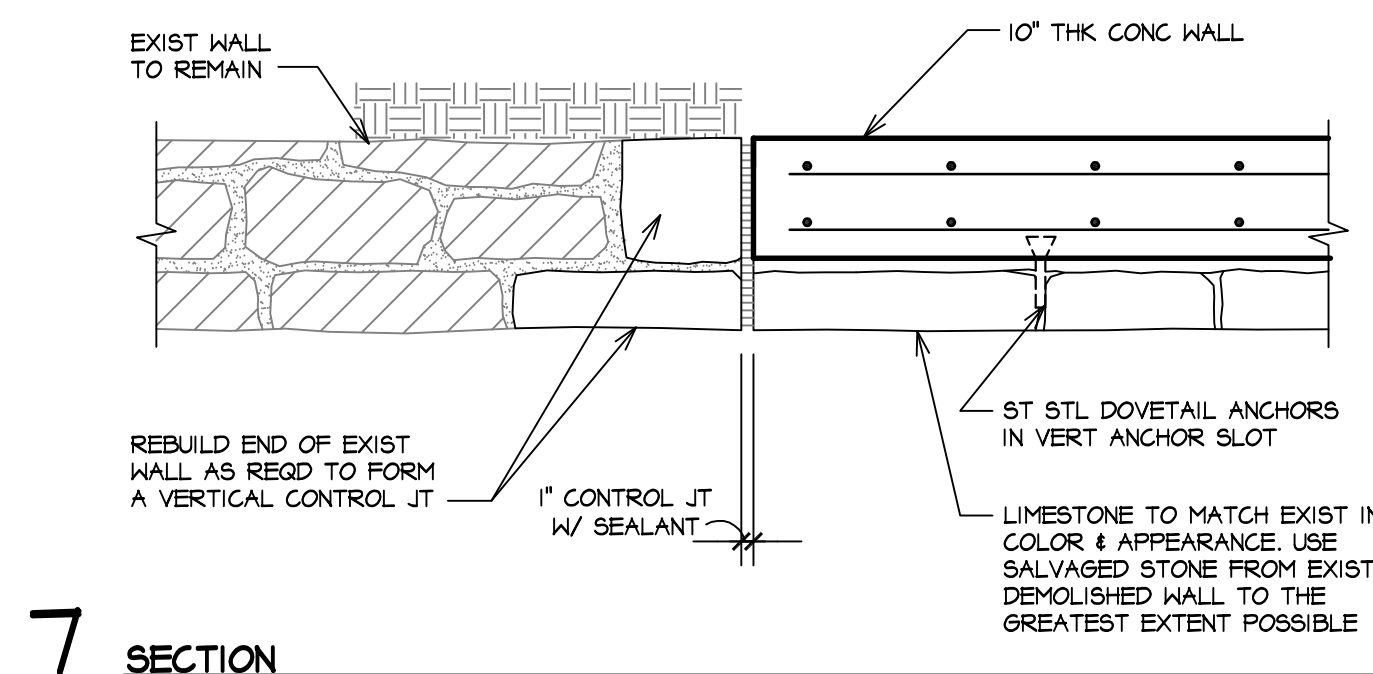
4 SECTION AT U-CHANNEL
SCALE: 1/2"=1'-0"



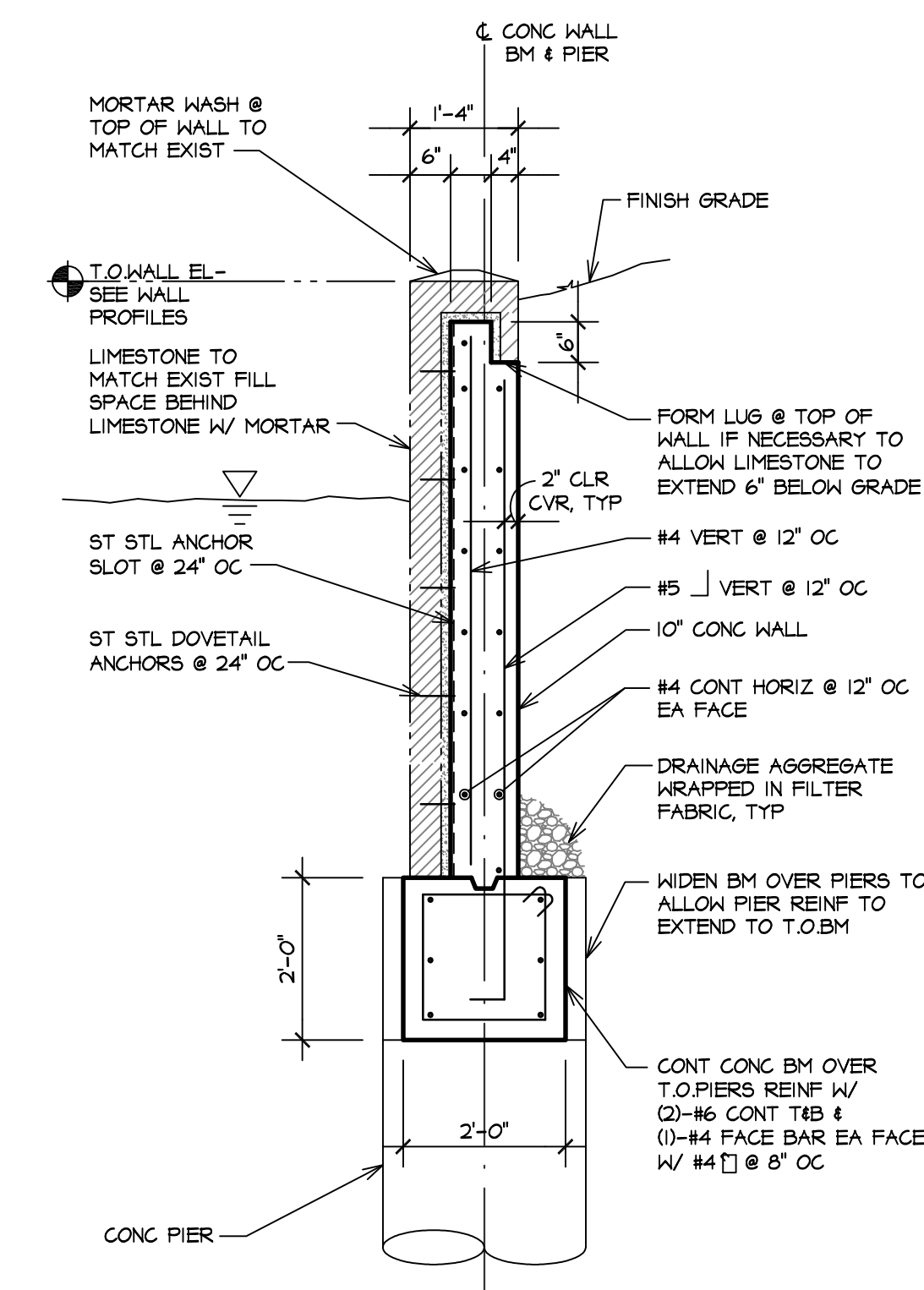
5 SECTION
SCALE: 3/4"=1'-0"



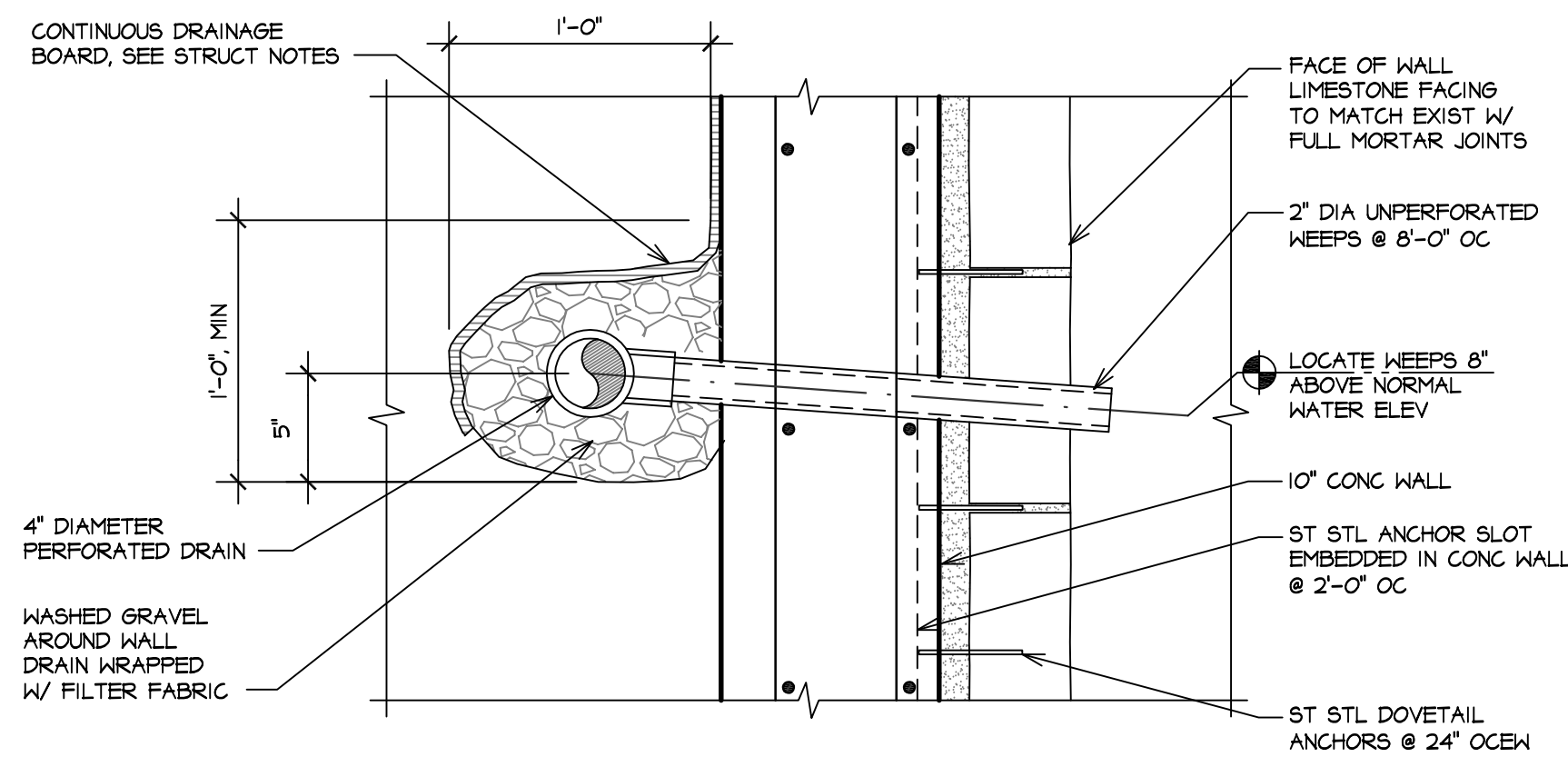
6 SECTION
SCALE: 3/4"=1'-0"



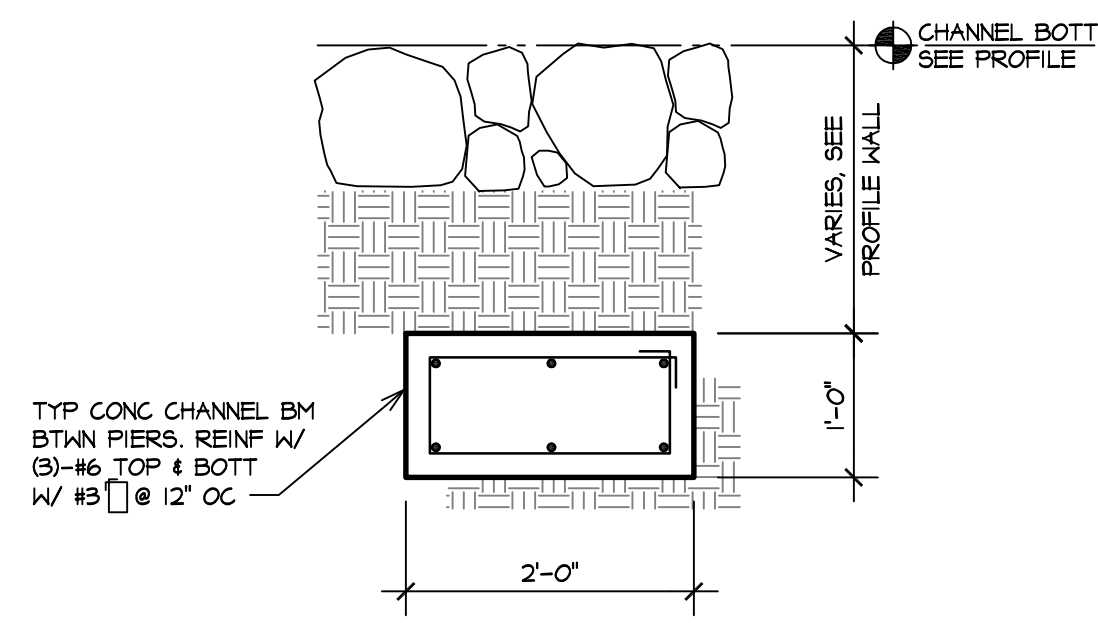
7 SECTION
SCALE: 3/4"=1'-0"



10 TYPICAL SECTION AT RIVER WALL (TYPE P2 PIER)
SCALE: 1/2"=1'-0"



8 DRAINAGE DETAIL AT TREE ROOT PROTECTION ZONES
SCALE: 1 1/2"=1'-0"



9 TYPICAL CONCRETE CHANNEL BEAM
SCALE: 3/4"=1'-0"

BRACKENRIDGE PARK RETAINING WALL - PHASE II

Revisions:

CONSTRUCTION DOCUMENTS

Date: 06/10/16

Project No: 1162300

Sheet Title:
SITE DETAILS

Drawing No.

S301



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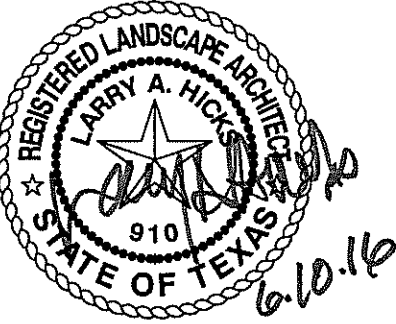
10001 REUNION PLACE, SUITE 200 SAN ANTONIO, TEXAS 78216

210.349.9098

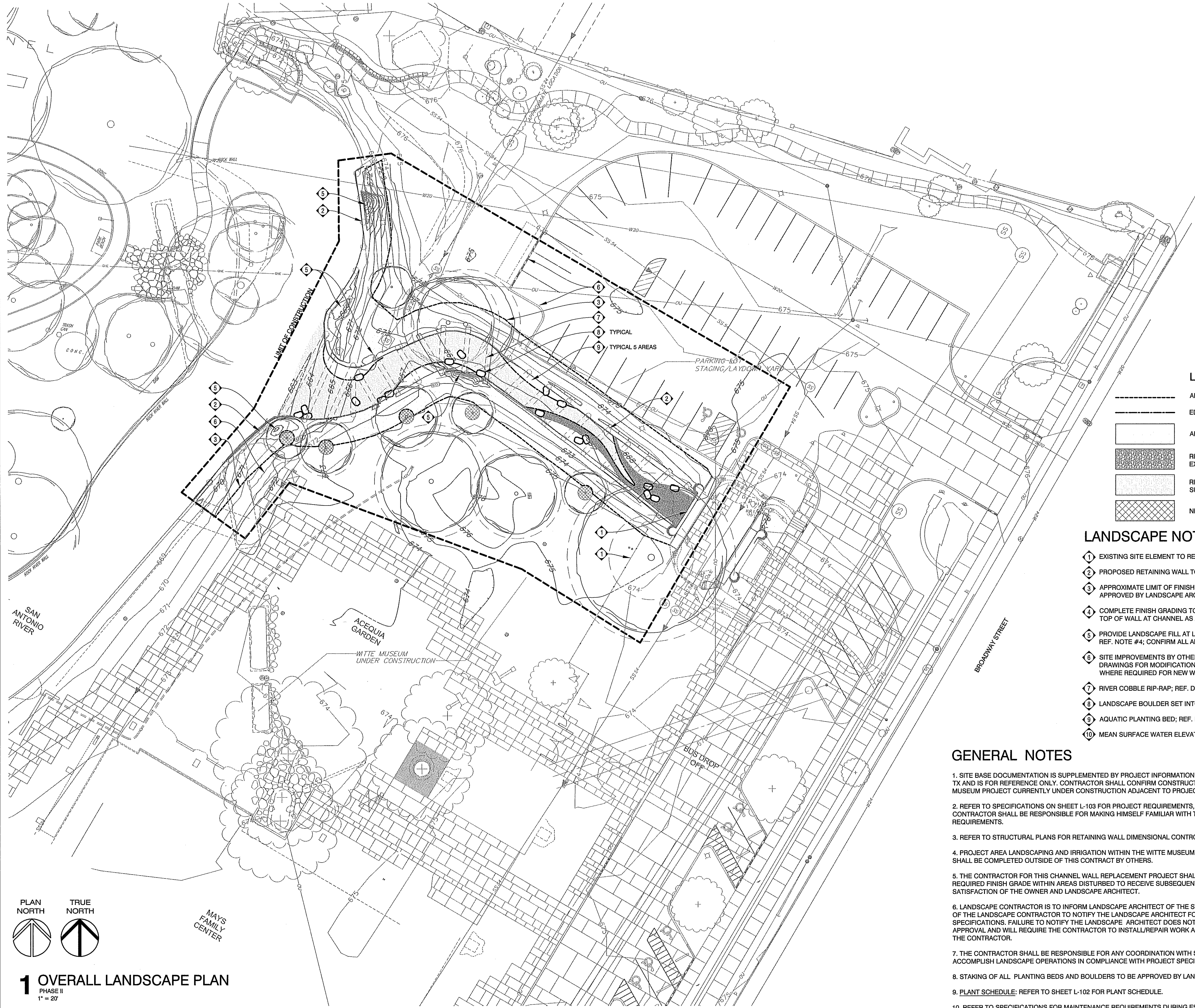
ie-services.com

RES JOB NO:1162300

TBPE FIRM F-432



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LEGEND

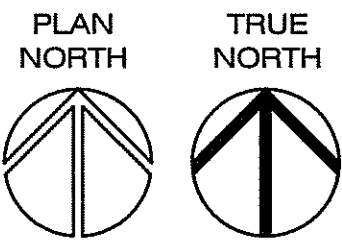
- APPROX. LIMIT OF EXCAVATION / FINISH GRADING
- EDGE OF SURFACE WATER - ELEV. 667.30'
- APPROX. AREA OF EXCAVATION / FINISH GRADING
- RIVER COBBLE RIP-RAP EXPOSED ABOVE WATER SURFACE
- RIVER COBBLE RIP-RAP SUBMERGED UNDER WATER SURFACE
- NEW TREE ROOT BALL AREA - DO NOT EXCAVATE

LANDSCAPE NOTES (Keyed on Plan)

- EXISTING SITE ELEMENT TO REMAIN. PROTECT IN PLACE
- PROPOSED RETAINING WALL TO REPLACE EXISTING; REF. STRUCTURAL
- APPROXIMATE LIMIT OF FINISH GRADING TO MEET EXISTING GRADE AS APPROVED BY LANDSCAPE ARCHITECT
- COMPLETE FINISH GRADING TO PROVIDE POSITIVE SURFACE DRAINAGE TO TOP OF WALL AT CHANNEL AS APPROVED BY LANDSCAPE ARCHITECT
- PROVIDE LANDSCAPE FILL AT LOW AREAS AS REQUIRED FOR FINISH GRADE; REF. NOTE #4; CONFIRM ALL AREAS IN FIELD
- SITE IMPROVEMENTS BY OTHERS (NOT IN THIS CONTRACT). SEE STRUCTURAL DRAWINGS FOR MODIFICATION AND RESTORATION OF SITE IMPROVEMENTS WHERE REQUIRED FOR NEW WORK
- RIVER COBBLE RIP-RAP; REF. DETAIL 1/L-102
- LANDSCAPE BOULDER SET INTO GRADE; REF. DETAIL 2/L-102
- AQUATIC PLANTING BED; REF. L-101 AND DETAIL 3/L-102
- MEAN SURFACE WATER ELEVATION - 667.30'

GENERAL NOTES

- SITE BASE DOCUMENTATION IS SUPPLEMENTED BY PROJECT INFORMATION PROVIDED BY RIALTO STUDIO OF SAN ANTONIO, TX AND IS FOR REFERENCE ONLY. CONTRACTOR SHALL CONFIRM CONSTRUCTION ACTIVITY AND COORDINATE WITH THE WITTE MUSEUM PROJECT CURRENTLY UNDER CONSTRUCTION ADJACENT TO PROJECT AREA.
- REFER TO SPECIFICATIONS ON SHEET L-103 FOR PROJECT REQUIREMENTS, MATERIALS AND EXECUTION. LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING HIMSELF FAMILIAR WITH THE SPECIFICATIONS AND ALL SUBMITTAL REQUIREMENTS.
- REFER TO STRUCTURAL PLANS FOR RETAINING WALL DIMENSIONAL CONTROLS, GRADING, AND DETAILS.
- PROJECT AREA LANDSCAPING AND IRRIGATION WITHIN THE WITTE MUSEUM PROJECT CURRENTLY UNDER CONSTRUCTION SHALL BE COMPLETED OUTSIDE OF THIS CONTRACT BY OTHERS.
- THE CONTRACTOR FOR THIS CHANNEL WALL REPLACEMENT PROJECT SHALL BE RESPONSIBLE FOR PROVIDING THE REQUIRED FINISH GRADE WITHIN AREAS DISTURBED TO RECEIVE SUBSEQUENT LANDSCAPE IMPROVEMENTS, TO THE SATISFACTION OF THE OWNER AND LANDSCAPE ARCHITECT.
- LANDSCAPE CONTRACTOR IS TO INFORM LANDSCAPE ARCHITECT OF THE START DATE OF WORK. IT IS THE RESPONSIBILITY OF THE LANDSCAPE CONTRACTOR TO NOTIFY THE LANDSCAPE ARCHITECT FOR SITE INSPECTIONS AS REQUIRED IN THE SPECIFICATIONS. FAILURE TO NOTIFY THE LANDSCAPE ARCHITECT DOES NOT RELIEVE THE CONTRACTOR FROM INSPECTION APPROVAL AND WILL REQUIRE THE CONTRACTOR TO INSTALL/REPAIR WORK AS REQUIRED FOR APPROVAL AT THE COST TO THE CONTRACTOR.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY COORDINATION WITH SUBCONTRACTORS AS REQUIRED TO ACCOMPLISH LANDSCAPE OPERATIONS IN COMPLIANCE WITH PROJECT SPECIFICATIONS.
- STAKING OF ALL PLANTING BEDS AND BOULDERS TO BE APPROVED BY LANDSCAPE ARCHITECT BEFORE PLANTING.
- PLANT SCHEDULE: REFER TO SHEET L-102 FOR PLANT SCHEDULE.
- REFER TO SPECIFICATIONS FOR MAINTENANCE REQUIREMENTS DURING ESTABLISHMENT. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE A MINIMUM OF 90 DAYS AFTER DATE OF FINAL ACCEPTANCE.



1 OVERALL LANDSCAPE PLAN
PHASE II
1" = 20'

BRACKENRIDGE PARK
RETAINING WALL - PHASE II

Revisions:

Date: 06/10/16
RVK Project No. 15231
Sheet Title:

OVERALL
LANDSCAPE
PLAN

Drawing No.

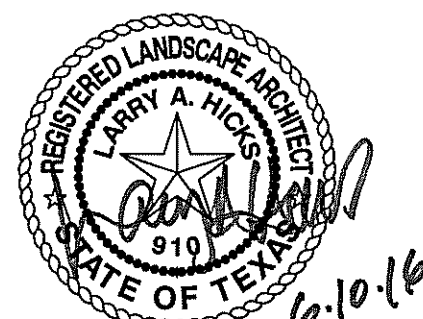
L-100

RVK
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San Antonio, Texas 78215
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BRACKENRIDGE PARK
RETAINING WALL - PHASE II

Revisions:

Date: 06/10/16

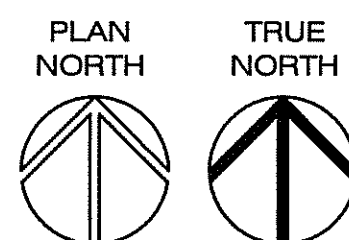
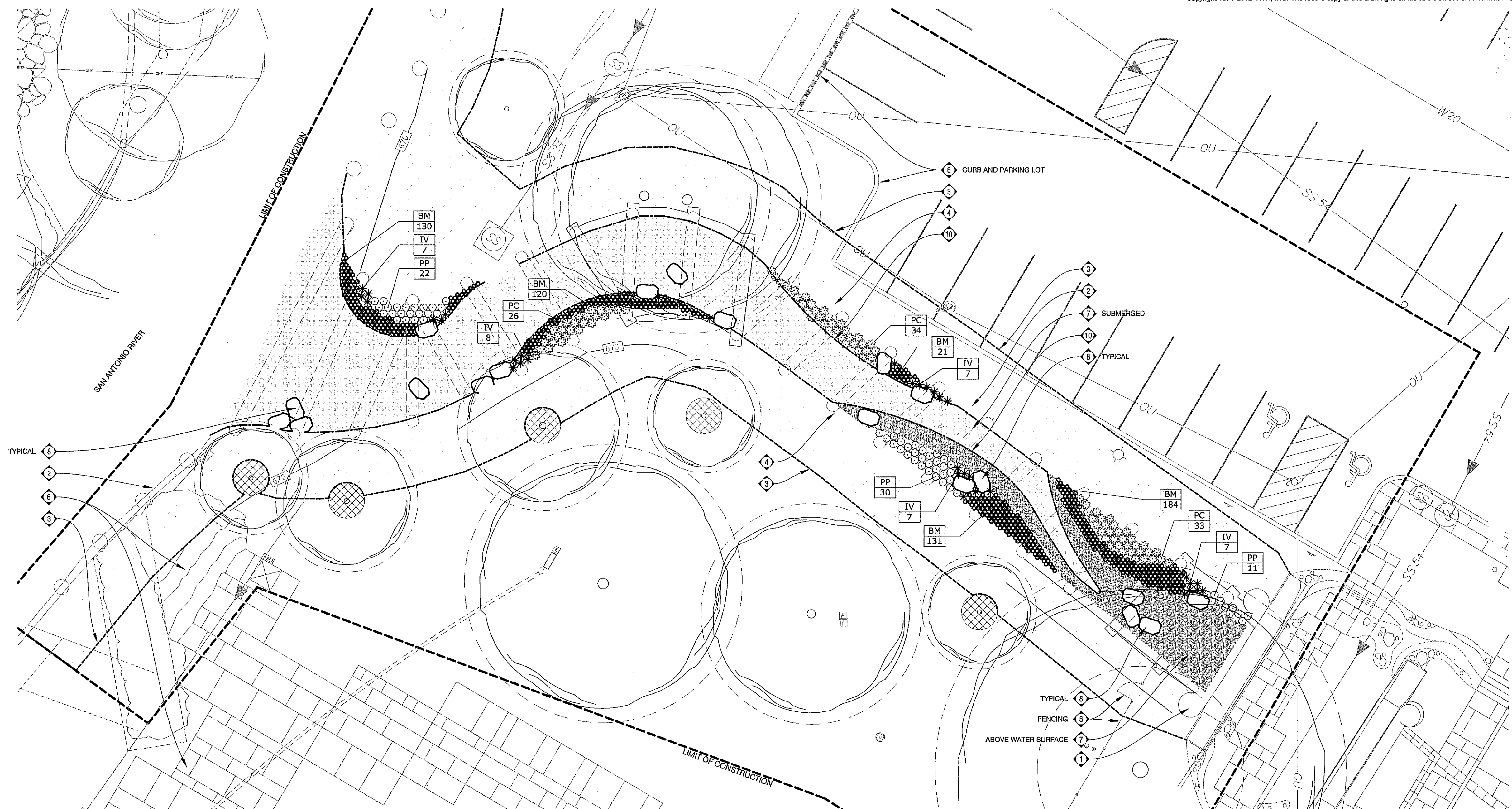
RVK Project No. 15231

Sheet Title:

ENLARGED
LANDSCAPE
PLAN

Drawing No.

L-101



1 ENLARGED LANDSCAPE PLAN
PHASE II
1" = 10'

PLANT SCHEDULE

SHRUBS	CODE	QTY	BOTANICAL NAME / COMMON NAME	SIZE	H X S	D / E	A / P	LID	SPACING
	BM	586	BACOPA MONNIERI / HERB OF GRACE	4" POT	6-12"	DECIDUOUS	PERENNIAL	SHALLOW WATER / AQUATIC	8" o.c.
	IV	36	IRIS VIRGINICA / BLUE FLAG IRIS	1 GAL	18-24" X 18-24"	DECIDUOUS	PERENNIAL	SHALLOW WATER / AQUATIC	18" o.c.
	PP	63	POLYGONUM PUNCTATUM / SMARTWEED	1 GAL	24-36" X 24-36"	DECIDUOUS	PERENNIAL	SHALLOW WATER / AQUATIC	18" o.c.
	PC	93	PONTERDERIA CORDATA / PICKEREL WEED	1 GAL	24-36" X 24-36"	DECIDUOUS	PERENNIAL	SHALLOW WATER / AQUATIC	18" o.c.

CITY OF SAN ANTONIO - UDC V-3-35-511-e (05/06/2010) & UDC V-5-35-523 (05/06/2010)		6/10/2016 10:08
LANDSCAPE ORDINANCE		
TOTAL ELECTIVE POINTS NEEDED FOR COMPLIANCE		25 PTS
TOTAL ELECTIVE POINTS ACHIEVED		40 PTS
PRESERVATION OF EXISTING TREES		
UDCV-3-35-511-e-2		POSSIBLE POINTS 40 PTS
REF. TP-101		TOTAL EARNED POINTS 40 PTS
TREE PRESERVATION ORDINANCE		
REF. TP-101		MITIGATION BALANCE -26 NEGATIVE REPRESENTS A SURPLUS
		FINAL TREE CANOPY COVERAGE 47.9% 25% MIN.

CITY OF SAN ANTONIO - UDC V-5-35-523-e (05/06/2010)				6/10/2016 10:09	
Final Tree Canopy Cover					
TOTAL PROJECT AREA				25,039 SF	
NONRES 25% TOTAL CANOPY REQUIRED				6,259 SF	
CANOPY MET WITH PRESERVED TREES - REFERENCE TP SERIES					
QTY.	SHADE VALUE	PERCENT	SQFT	SPECIES	TAG #
10	1,200	100%	12,000	PECAN, BALD CYPRESS	0001, 0002, 0003, 0004, 0005, 1008, 1011, 1012, 102
-	875	100%	-		
-	550	100%	-		
-	275	100%	-		
10					
TOTAL PRESERVED CANOPY				12,000 SF	
TOTAL PRESERVED CANOPY				47.9%	

LEGEND

- APPROX. LIMIT OF EXCAVATION / FINISH GRADING
- EDGE OF SURFACE WATER - ELEV. 667.30'
- APPROX. AREA OF EXCAVATION / FINISH GRADING
- RIVER COBBLE RIP-RAP EXPOSED ABOVE WATER SURFACE
- RIVER COBBLE RIP-RAP SUBMERGED UNDER WATER SURFACE
- NEW TREE ROOT BALL AREA - DO NOT EXCAVATE

LANDSCAPE NOTES (Keyed on Plan)

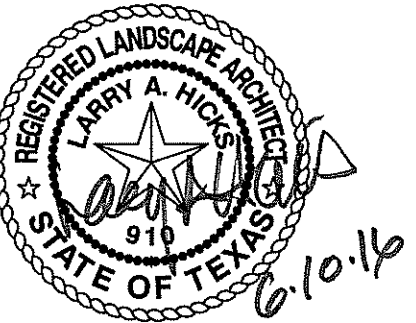
- EXISTING SITE ELEMENT TO REMAIN. PROTECT IN PLACE
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RVK
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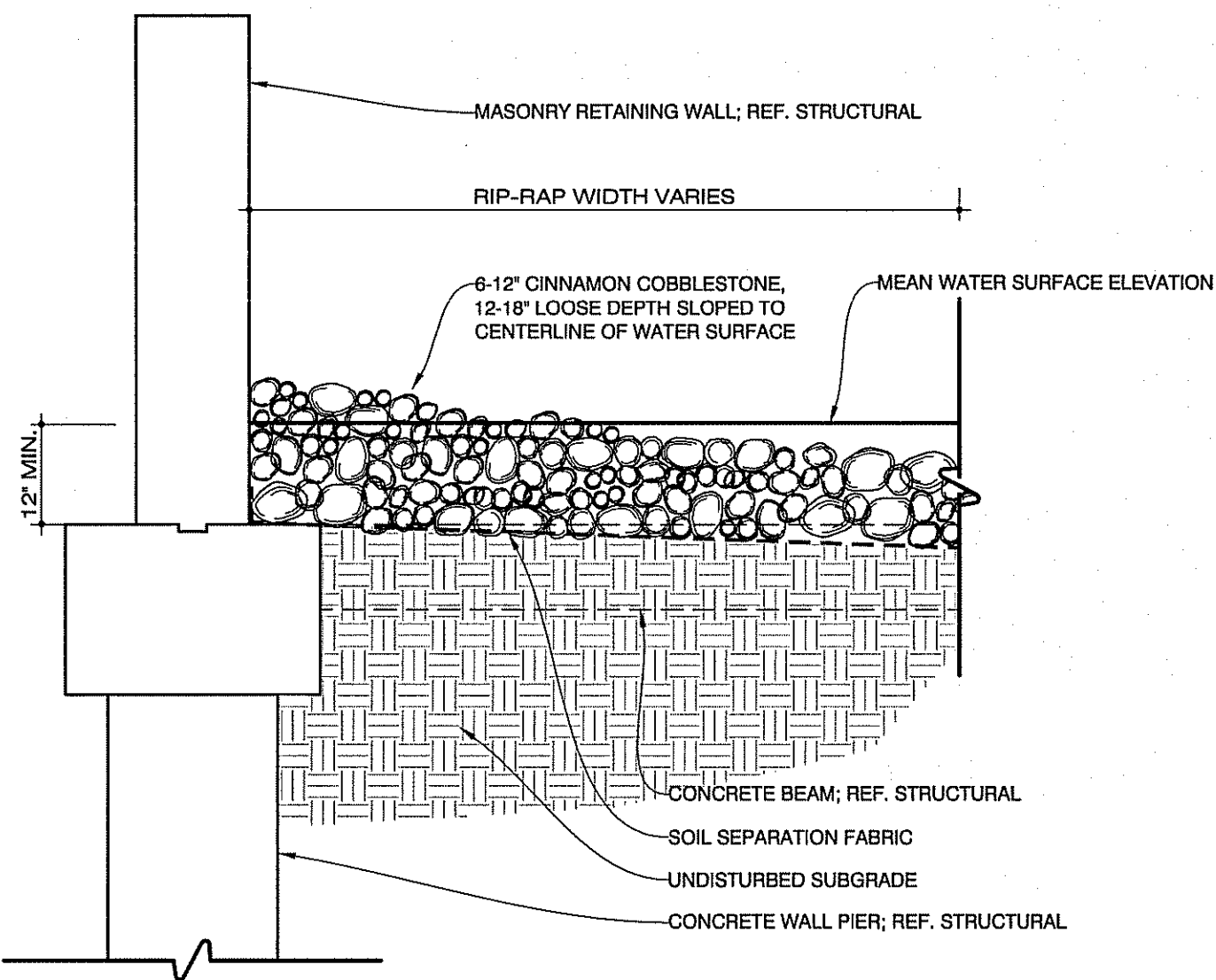
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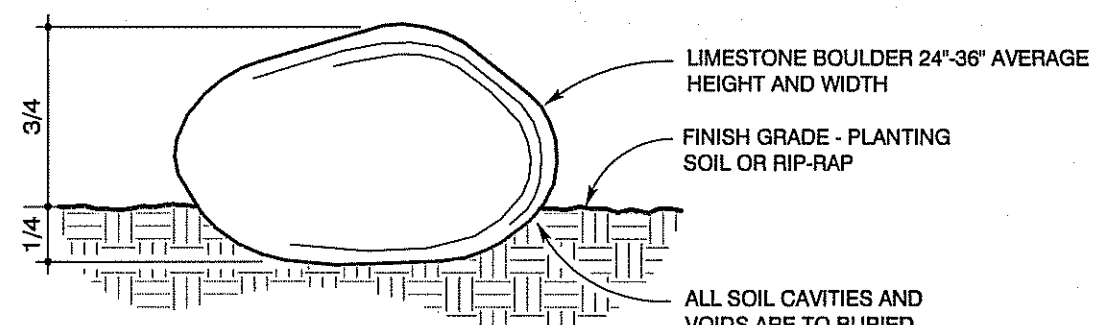
BRACKENRIDGE PARK
RETAINING WALL – PHASE II

Revisions:

Date: 06/10/16
RVK Project No. 15231
Sheet Title: LANDSCAPE DETAILS
Drawing No. L-102

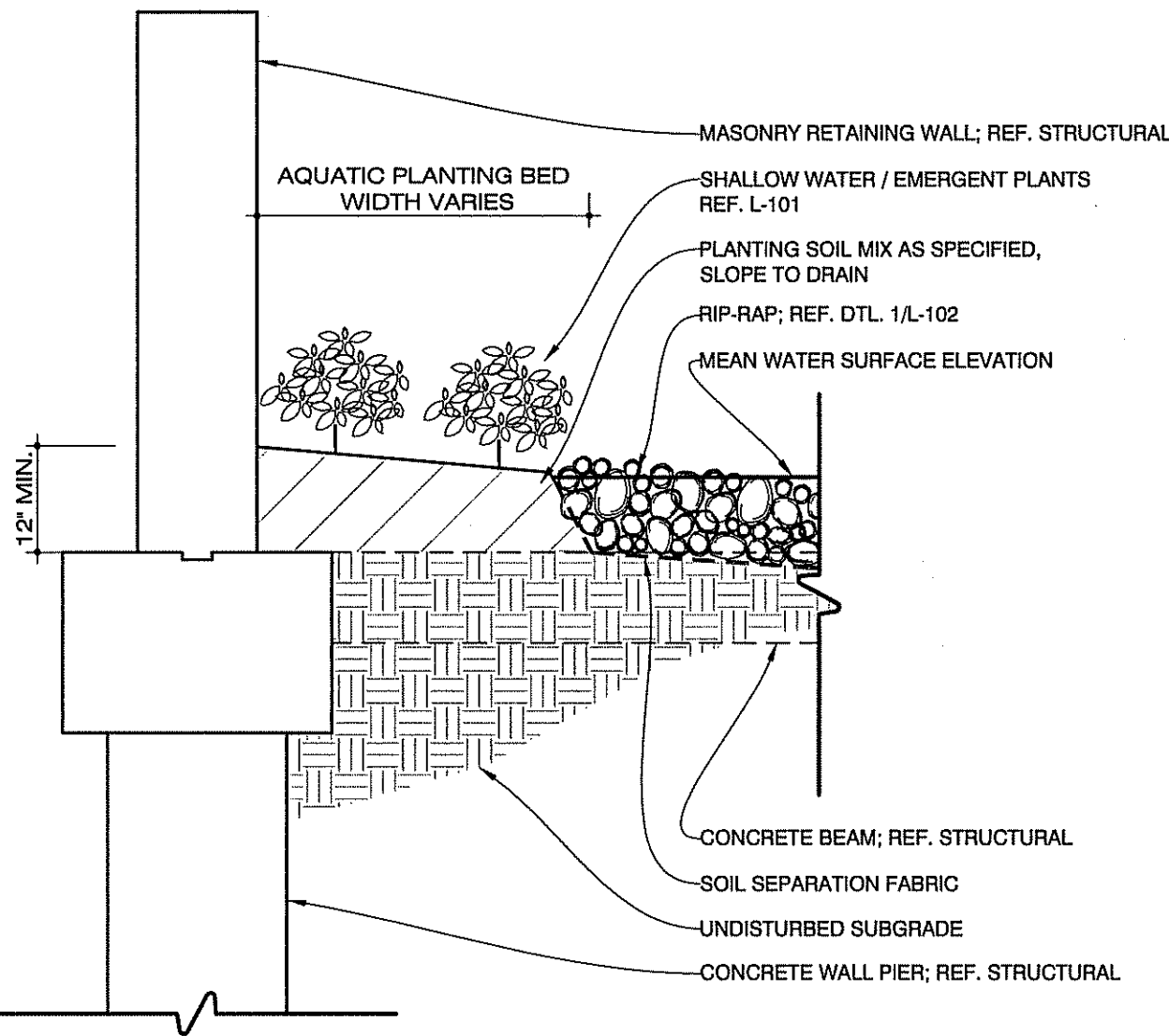


1 RIVER COBBLE RIP-RAP DETAIL
PHASE II
NTS



NOTE:
BOULDERS IN CLUSTERS ARE TO BE SET AT VARIED HEIGHTS.
LANDSCAPE ARCHITECT TO VERIFY LOCATION IN FIELD.

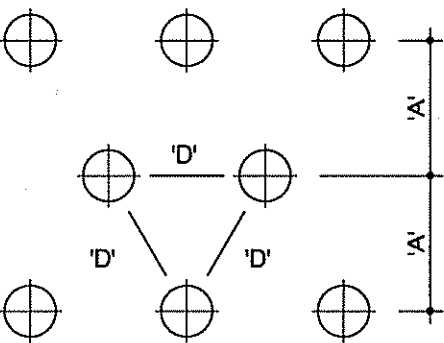
2 BOULDER PLACEMENT DETAIL
PHASE II
NTS



3 PLANTING AREA DETAIL
PHASE II
NTS

SPACING 'D'	ROW 'A'	NO. PLANTS	AREA UNIT
4"	3.46'	10.39	1 SQ. FT.
6"	5.20'	4.62	
8"	6.93'	2.60	
10"	8.66'	1.66	
12"	10.39'	1.15	10 SQ. FT.
15"	12.99'	7.39	
18"	15.59'	5.13	
24"	20.78'	2.89	
30"	25.96'	1.85	100 SQ. FT.
36"	31.18'	1.28	
4'-0"	3.46'	7.22	
5'-0"	4.33'	4.62	
6'-0"	5.20'	3.21	
8'-0"	6.93'	1.80	
10'-0"	8.66'	1.15	

NOTE:
FOR USE ONLY WHEN PLANTS ARE SPACED EQUIDISTANT FROM EACH OTHER AS SHOWN.
ALL SHRUBS AND GROUNDCOVERS SHALL BE INSTALLED WITH TRIANGULAR SPACING UNLESS OTHERWISE NOTED.



4 PLANT SPACING
PHASE II
NTS

**SECTION 01 5639
LANDSCAPE PROTECTION****PART 1 - GENERAL****1.01 WORK INCLUDED**

- A. Install landscape protection and institute landscape protection program.

PART 2 - PRODUCTS**2.01 MATERIALS**

- A. Tree Barricade Fencing:
1. Posts: Studded steel T-posts, 2 lbs. per linear foot; painted finish for rust protection.
 2. Fabric: 4'-0" height high density polyethylene netting with 5-7 year life (international orange color).
- B. Tree Armor:
1. Wood: SPFA utility grade, 2 x 4.
 2. Wire: Annealed steel wire, 16 gauge minimum.
 3. Burlap: 10 oz. natural fiber burlap; biodegradable.
- C. Mulch:
1. Regular double shredded, unscreened hardwood.
- D. Tree Wound Paint: Black enamel based spray paint or asphaltic based tree paint such as Treeshield or Ortho.

PART 3 - EXECUTION**3.01 LANDSCAPE PROTECTION**

- A. During the construction of this project, prevent damage and/or destruction of any trees to be preserved.
1. It shall be Contractor's sole responsibility to employ whatever means are necessary to prevent damage and/or destruction of any trees except as expressly stated in the contract documents.
 2. At a minimum, protection encompasses:
 - a. Prohibit earth stockpiling and material storage within drip line of trees.
 - b. Prohibit dumping of refuse, chemicals, other materials, and puddling or running water which may injure plant growth including root systems.
 - c. Prohibit unnecessary cutting, breaking, and skinning of branches and roots.
 - d. Prohibit skinning and bruising of bark.
 - e. Prohibit fires, high heat, and smoke adjacent to trees or beneath tree canopies.
 - f. Prohibit vehicle and equipment parking and storage within the drip line of trees except vehicles actively engaged in construction.
 - g. Prohibit traffic within the drip line of trees.
 - h. Refer to 31 13 30 - Treatment of Existing Trees for additional requirements.
- B. All landscape protection (barricade fencing and tree armor) shall be installed by Contractor and approved by City of San Antonio (COSA) Tree and Landscape Inspector prior to initiation of construction activity.
1. Contractor is responsible to request COSA inspection.
- C. Tree Barricade Fencing: As detailed.
- D. Tree Armor: As detailed.
- E. Placement of Mulch: As detailed.

3.02 WATERING AND FERTILIZATION

- A. Water and fertilize trees within limits of construction area.
- B. Fertilize trees before commencement of construction activities.
1. Refer to Section 31 13 30 - Treatment of Existing Trees.
- C. Water trees within construction area during entire construction period by means as approved by the Landscape Architect to apply an equivalent of 1 inch of water over the area beneath the canopy of the tree.
1. Between April 15 and October 15, water once per week.
 2. Between October 16 and April 14, water every other week.

3.03 EXCAVATION AROUND TREES

- A. Excavate within drip line of trees only where required and when absolutely necessary.
- B. Where excavating within drip line of trees is required for new construction or cutting grade:
1. Clean cut frayed ends of roots using sharp pruning instruments to be flush with surface of soil.
 2. Seal ends of roots 1 inch diameter and greater with tree wound paint within 30 minutes of cutting.

3.04 REPAIR AND REPLACEMENT OF LANDSCAPE COMPONENTS

- A. Repair or replace landscape components or features damaged or destroyed by construction operations.
- B. Replacement material shall be guaranteed for 12 full months from time of replacement.

END OF SECTION

**SECTION 31 1320
SELECTIVE CLEARING****PART 1 - GENERAL****1.01 SECTION INCLUDES**

- A. Selective removal of vegetation within project area.

PART 2 - PRODUCTS**2.01 MATERIALS - REFER TO LANDSCAPE SECTIONS FOR APPLICABLE MATERIALS NOT NOTED BELOW.**

- A. Herbicide: Product applicable to application.

PART 3 - EXECUTION**3.01 LANDSCAPE PROTECTION**

- A. During the construction of this project, prevent damage and/or destruction of any trees and vegetation to be preserved.
1. It shall be Contractor's sole responsibility to employ whatever means are necessary to prevent damage and/or destruction of any trees and vegetation except as expressly stated in the contract documents.

3.02 SELECTIVE CLEARING OF VEGETATION

- A. Scope:
1. Removal of invasive exotic vegetation including:
 - a. Golden Bamboo and other non-native bamboos (*Phyllostachys aurea* species)
 - b. Chinaberry (*Melia azedarach*)
 - c. Ligustrum (*Ligustrum sinense*/ *L. vulgare*)
 - d. Nandina (*Nandina domestica* s.p.)
 - e. Chinese Pistache (*Pistachia chinensis*)
 - f. Reference COSA Environmental Documents Website for publication "Invasive Plants of Central Texas" for additional applicable plant species.
 2. Treat the remaining stumps of vegetation approved to be removed with an applicable properly labeled herbicide to prevent regrowth.
 3. Within the drainage channel remove vegetation by mechanical means grabbing out all stumps and roots.
 - a. Coordinate salvage of soil for aquatic plants - refer to Section SOIL PREPARATION.
- B. In areas where vegetation must be removed but no construction will occur, remove vegetation with minimum disturbance of the subsoil.
- C. Vegetation Removed:
1. Remove and properly dispose of debris off-site.
- D. Bamboo:
1. Herbicide Treatment: Cut large stems and apply foliar spray herbicide to resprout tips when plants are 3 to 4 feet tall or use restricted spray nozzles and increased spray pressures to treat leaves as high as possible.
 - a. When damage to non-targeted plants is possible, repeatedly apply a glyphosate herbicide as a 10-percent solution (1 quart per 3 gallon mix) in water with a surfactant.
 - b. When there is no potential of non-target plant damage, thoroughly wet all leaves and sprouts with Arsenal AC[®] as a 1-percent solution (4 ounces per 3-gallon mix) in water with a surfactant.
 - 1) Use a combination of the two herbicides.
 - c. Management: During the period September through October, treat with multiple applications to regrowth when adequate foliage is present.
 - d. Allow for a minimum of two (2) weeks for effectiveness of herbicide application to take effect prior to removal.
 2. Bulldoze and rake to excavate root crowns and rhizomes. Dispose of off-site.
- E. Repair/prune damaged trees and vegetation.
- F. Restoration: If vegetation outside removal limits is damaged or destroyed due to subsequent construction operations, fee will be assessed for payment to Owner based on mitigation penalty as defined by the City of San Antonio Tree Preservation Ordinances.

3.03 DEBRIS

- A. Remove debris, junk, and trash from protected area.
- B. Contractor shall be responsible for legal disposal of debris.

END OF SECTION

**SECTION 31 1330
TREATMENT OF EXISTING TREES****PART 1 - GENERAL****1.01 SECTION INCLUDES**

- A. Operations in connection with protection, mulching, pruning, feeding of existing trees.
1. Refer to Section 01 56 39 - Landscape Protection concerning installation of tree protection barricade fence and tree armor.

1.02 REFERENCE STANDARDS

- A. The most current edition of the publications listed below form a part of this specification to the extent referenced. The following publications by the American National Standards Institute (ANSI) are referred to in the text by the basic designation only.

1. ANSI Z60.1 Nursery Stock.
2. ANSI Z133.1 Tree Care Operations- Pruning, Trimming, Repairing, Maintaining, and Removing Trees and Cutting Brush.
3. ANSI A300 Tree, Shrub and Other Woody Plant Maintenance- Standard Practices.

1.03 QUALITY CONTROL

- A. Employ qualified Arborist approved by the Landscape Architect. Arborist shall have, at a minimum, the following qualifications:
1. Five (5) years documented experience.
 2. Five (5) year period Tree Maintenance License (TRM) as regulated by the City of San Antonio Department of Development Services, Tree and Landscape Section.
 3. Membership in:
 - a. TCIA - Tree Care Industry Association
 - b. ISA - International Society of Arborists
 4. Meet contract requirements for insurance.

1.04 SCOPE

- A. Services of the Arborist shall include:
1. Survey the condition of existing trees and other landscape vegetation at the site indicated to remain.
 - a. Before initiation of construction any activities at the site, document and report condition of landscape vegetation with photographs which include readily identifiable objects which indicate the size of the plant in height and width of canopy.
 2. Inspection of all existing trees scheduled for preservation in order to determine:
 - a. Initial overall health of the tree.
 - b. Provide a Scheduled Prescription of Treatment for trees 1008, 1021, and 1024 to be preserved adjacent the walls to be replaced.
 - 1) Prescription of Treatment For Preserved Trees: This document shall prescribe treatment measures beyond requirements already specified in this Section for said trees during preconstruction, construction and post construction time periods.
 - c. Pruning and feeding of trees.
 3. Monitoring construction activities impacting trees.
 - a. Inspect landscape protection barriers before commencement of demolition and excavation activities.
 - 1) Observe demolition of the existing walls adjacent to the trees.
 - 2) Observe excavation in the vicinity of existing trees from commencement until conclusion.
 - 3) Direct excavation which occurs near major root systems.
 - 4) Prescribe additional measures or protection required to provide optimal growth conditions at the construction site.
 5. Periodically inspect the construction site for possibly dangerous or damaging practices, in relation to the existing trees, occurring or developing at the site.
 - a. Inform Contractor of such conditions and develop plan to repair damage that has occurred and prevent further damage.
 - b. Complete all repairs.

1.05 SUBMITTALS

- A. Furnish at Landscape Architect's office, prior to installation, the following:
1. Qualifications: Arborist's name, company and qualifications.
 2. Condition Survey Report: Documentation of the condition of the existing trees to remain.
 3. Treatment Report: General narrative and schedule of Arborist's pruning and treatment services.
 4. Mulch: Label from bag (Supplier's statement of analysis if bulk), and 1-gallon container of mulch sample.
 5. Fertilizer: Label from bag or Supplier's brochure.

PART 2 - PRODUCTS**2.01 MATERIALS**

- A. Fertilizer:
1. Fertilizer: Slow release, low salt index, 3-1-1 ratio; pelletized organic or liquified suspension.
- B. Tree Barricade Fencing: Refer to Section 01 56 39 - LANDSCAPE PROTECTION.
- C. Tree Armor: Refer to Section 01 56 39 - LANDSCAPE PROTECTION.
- D. Mulch: Refer to Section 01 56 39 - LANDSCAPE PROTECTION.
- E. Tree Wound Paint: Refer to Section 01 56 39 - LANDSCAPE PROTECTION.

PART 3 - EXECUTION**3.01 PROTECTION FOR EXISTING TREES TO BE PRESERVED**

- A. All trees to be preserved on the property shall be protected against damage from construction operations.
1. Tree protection fencing and armor protection must be in-place and approved prior to beginning any clearing, demolition or construction activity; coordinate with Section - 01 5639 LANDSCAPE PROTECTION.
- B. All tree protection shall be installed by Contractor and approved by City of San Antonio (COSA) tree and landscape inspector prior to initiation of construction activity.
- C. Contractor is responsible to request COSA inspection.
- C. Protect all trees/vegetation that are to remain from the following:
1. Compaction of root area by equipment or material storage:
 - a. Construction materials shall not be stored closer to trees than the farthest extension of their limbs (dripline).
 - b. Do not store, stockpile or dump any job material, equipment or supplies, soil or rubbish under the spread of the tree branches.
 - c. Do not park vehicles or place portable toilets under the spread of the tree branches.
 2. Do not clear, fill or grade in the RPZ of any tree.
 - a. The proposed finished grade within the root protection zone of any preserved tree shall not be raised or lowered more than three (3) inches without review by Arborist.
 3. Trunk damage by moving equipment, material storage, nailing or bolting.
 - a. Do not nail or attach temporary signs, meters, switches, wires, bracing or any other item to the trees.
 4. Strangling by tying ropes or guy wires to trunks or large branches.
 5. Poisoning by pouring solvents, gas, paint, etc., on or around trees and roots.
 - a. Do not permit runoff from waste materials including solvents, concrete washouts, asphalt tack coats (MC-30 oil), etc. to enter the RPZ.
 - b. Provide barriers to prevent such runoff substances from entering the RPZ whenever possible, including in an area where rain or surface water could carry such materials to the root system of the tree.
 6. Cutting on roots by excavating, ditching, etc.
 7. Damage of branches by improper pruning.
 8. Drought from failure to water or by cutting or changing normal drainage pattern past roots. Contractor shall provide means as necessary to ensure positive drainage.
 9. Changes of soil pH factor by disposal of lime base materials such as concrete, plaster, lime treatment at pavement subgrade, etc.
 - a. When installing concrete adjacent to the root zone of a tree, place a 30 mil. PVC membrane over the exposed face of the subgrade extending a minimum 12" into the undisturbed subgrade behind the concrete to prohibit leaching of lime into the soil. Extend ends of membrane a minimum of 10' beyond limit of dripline.
 - 10.No vehicular traffic shall occur within the drip line of any tree.
 - 11.Do not set up any construction operations under the spread of the tree branches. (e.g. pipe cutting and threading, mortar mixing, painting or lumber cutting)
 - 12.No soil shall be spread, spoiled or otherwise disposed of under any tree within the drip line.
 - 13.Dust Accumulation: Spray tree crowns periodically to reduce dust accumulation on the leaves.
- D. Any damage done to existing tree crowns and root systems shall be repaired by the Arborist to the satisfaction of the Landscape Architect and Owner.
1. Broken branches shall be cut cleanly.
 2. Any roots broken or exposed shall be cut cleanly with a saw other means approved by the Landscape Architect.
- E. Repairs to the trees necessitated by damage caused through negligence of Contractor or his employees will be completed at the Contractor's expense.
1. When trees other than those approved for removal are destroyed or killed, or badly damaged as a result of construction operations, the contract sum will be reduced by the value of the tree as determined by using the accepted International Society of Arboriculture's formula.
 2. Fee assessed shall be adjusted based on mitigation penalty as defined by the City of San Antonio Tree Preservation Ordinances.

3.02 ROOT PROTECTION ZONE

- A. The root protection zone (RPZ) is measured with a radius from the trunk of 1 foot for each caliper inch of trunk measured at four and one-half (4-1/2) feet above grade or at the point where the smallest diameter closest to the branching occurs.

3.03 ROOT PROTECTION ZONE IMPACTS

- A. Mulching:
1. Trees impacted shall have a minimum of a six (6) inch layer of mulch placed and maintained over the root protection zone and the remaining undisturbed area to 6 feet past the dripline.
 - a. This six (6) inch depth of mulch shall be maintained throughout construction.
- B. Pruning and Fertilization: Immediate pruning and fertilization shall occur per the pruning and fertilization sections of this specification.
- C. Watering: Provide water in a slow drip manner to impacted trees as approved by the Landscape Architect and Owner.
1. Provide water to apply equivalent to 1 inch once per week to deeply soak in over the area within the dripline of the tree during periods of hot, dry weather.
 2. Coordinate with Section - LANDSCAPE PROTECTION.

3.04 DEMOLITION OF EXISTING SITE IMPROVEMENTS ADJACENT TREES

- A. Protect tree roots exposed upon removal of existing site improvements (structures, paving, curbs, walls and etc.).
- B. Within 8 hours of initial exposure of root system:
1. Cover roots by benching exposed face with backfill of natural material soil, bark mulch or several layers of burlap fabric.
 2. Keep roots moist.
 3. Maintain protective cover and adequate moisture level until reconstruction of the retaining wall section is completed.

3.05 PRUNING

- A. Governing Standards:
1. Work procedures will be guided by the current provisions found in the ANSI references listed. The two basic objectives of the pruning operation shall include:
 - a. Hazard Reduction Pruning: Completed to remove visible hazards in a tree. Consists of one or more of the maintenance pruning types.
 - b. Maintenance Pruning: Completed to maintain and improve tree health and structure; includes hazard reduction pruning.
- B. Provide pruning of existing trees 1008, 1021, and 1024:
1. Refer to PRUNING SCHEDULE for specifics regarding pruning requirements.
 2. Prune trees according to their natural growth characteristics leaving trees well shaped and balanced.
 3. Pruning shall be completed to the satisfaction of the Owner and Landscape Architect.

3.06 PRUNING TYPES

- A. Both hazard reduction pruning and maintenance pruning shall consist of the following pruning types:

1. Crown Clearing: Crown clearing shall consist of the selective removal of one or more of the following items: dead, dying, or diseased branches, weak branches, water sprouts and stubbed branches.
2. Crown Restoration: Crown restoration pruning shall improve the structure, form and appearance of a tree which has been severely headed, vandalized, storm damaged or improperly pruned.

3.07 PRUNING SCHEDULE

- A. All of the pruning type(s) as applicable are required at each tree.
1. All pruning shall be completed to remove branches/laterals 1/8 inch and greater.

3.08 CROWN IMPACTS

- A. Trees impacted by construction shall be limited to a maximum of 30 percent of the viable portion of a tree's crown removed as approved by the Landscape Architect and Owner.
1. Removal of more than 30 percent of the viable portion of a tree's crown will necessitate the tree's removal and replacement at the Contractor's expense.
 2. Replacement shall be governed at the ratio of 1 inch of new tree per inch of tree removed up to trees of size less than 24" caliper.
 3. For trees 24" caliper and greater the ratio shall be 3 inches per new tree per inch of tree removed.
 4. Replacement trees are to have a one (1) year warranty. Refer to Section EXTERIOR PLANTS.

3.09 APPROVAL: NO MAJOR LIMBS OR STRUCTURE WILL BE CUT OR REMOVED WITHOUT PRIOR APPROVAL OF THE LANDSCAPE ARCHITECT AND OWNER.**3.10 STERILIZATION:**

- A. All tools used will be sterilized with Clorox bleach prior to use and between each tree. Residue from sterilization operation shall be diluted so as not to damage any vegetation.

1. At sites stated to be diseased and where there is danger of transmitting that disease, tools are to be disinfected after each cut.

3.11 PAINT CUTS: PAINT CUTS MORE THAN 1 INCH IN DIAMETER WITH AN APPROVED TREE WOUND PAINT ON TREES OF OAK SPECIES.

- A. Paint immediately after cutting; in no instance no longer than 30 minutes.

3.12 FERTILIZATION OF PRESERVED TREES

- A. Existing trees to be fertilized - tree #1008, #1021, and #1024.

- B. Feeding of existing trees through liquid injection shall be accomplished in accordance with the following:

1. Complete prior to construction of permanent improvements adjacent to all trees including site fill or paving including trenching operations.
2. Apply with a standard hydrant sprayer at a pressure of 100 to 200 psi injected in slightly slanted holes approximately twelve (12) inches in depth.
3. Concentration of suspension to provide six (6) pounds of actual nitrogen per 1,000 square feet of area under drip-line.
4. Holes are to be made in concentric circles and 3' on center around the tree with the last ring located at the dripline of the foliage of the trees.
5. Area beneath the dripline of the trees is to be well watered after the fertilization is placed.

3.13 PLACEMENT OF MULCH

- A. Supplement mulch as required to maintain six (6) inch deep mulch layer.

3.14 CLEANUP

- A. Wood and debris shall become property of the Contractor and shall be removed from the site. Cost of disposal to be paid by Contractor.

END OF SECTION

**SECTION 32 9113
SOIL PREPARATION****PART 1 - GENERAL****1.01 SECTION INCLUDES**

- A. Soil placement and finish grading for landscape work within and adjacent drainage channel.
1. Includes stripping and stockpiling of existing site soils for use in project.

1.02 SOURCE QUALITY CONTROL

- A. Topsoil Source:
1. Topsoil to be furnished shall be subject to inspection at its source to determine whether or not it meets with requirements specified and to approved depth to which it may be stripped.

1.03 SUBMITTALS

- A. Furnish at Landscape Architect's office, prior to installation, the following information/samples:
1. Landscape Soil Fill: 1 gallon container.
 2. Compost: 1-gallon container.
 3. Soil Probiotic: Product literature and MSDS information.

1.04 WARRANTY & GUARANTEES

- A. Repair:
1. When any portion of the surface becomes gullied or otherwise damaged or treatment is destroyed during the Project's warranty period, the affected portion shall be repaired to reestablish condition and grade of soil to as it was prior to injury as directed.
 2. Repair work required shall be performed without cost to the Owner.
- B. Repair shall be made within 10 days of notification or as soon as weather conditions are satisfactory.

PART 2 - PRODUCTS**2.01 SOIL MATERIALS**

- A. Landscape Soil Fill (for subgrade fill): Friable, natural loam soil, be free from objectionable material, have a relatively high erosion resistance and capable of sustaining plant growth. Free of stone lumps, clods of hard earth, plants or their roots, sticks and other extraneous matter 1" and greater in size.
- B. Compost: Topsoil Compost - New Earth Soils and Composting, San Antonio, Texas, 210-661-5180.

2.02 MISCELLANEOUS

- A. Post-Emergence Herbicide: Round-Up by Monsanto Corp., or approved substitute.
- B. Soil Probiotic: Biota Max; Custom Biologics, Inc., 561-998-1699. No substitution.

PART 3 - EXECUTION**3.01 WEED TREATMENT**

- A. All site locations tostrip topsoil where surface vegetation (grass and weeds) exists shall be treated with post-emergent herbicide.
1. Repeat treatment as required that no surface vegetation is present at the beginning of work in stripping of topsoil for use in the project.
- B. Post-emergent weed treatment includes:
1. Removal of weeds and other undesirable ground cover vegetation.
 2. Care shall be taken not to affect existing trees or shrubs to be saved adjacent to the work area.
- C. Weed Treatment Procedure:
1. Mow grass and/or existing weeds to 3-inch height.
 2. Spray herbicide on a day that is not rainy, not windy and adequately warm.
 - a. Within 24 hours of cutting grass/weeds.
 3. Do not disturb soil for 14 days. If live, green grass / weeds remain, repeat as required to kill all weeds, before disturbing soil.
 4. After 14 days, scalp and mechanically rake soil when the soil is not excessively hard or dry (water the soil if necessary) to remove 85% of dead foliage above grade.
 5. The remaining dead material shall be allowed to accumulate in place and shall be incorporated into the soil through rototilling or other suitable and approved means.

3.02 STRIP AND SALVAGE EXISTING TOPSOIL

- A. Coordinate with limit of excavation required to construct the new retaining wall to strip the quantity of existing surface topsoil to be stockpiled and re-used to restore finish grade of the backfilled areas along the new walls.
1. Obtain the quantity of soil required to provide a 6 inch compacted depth over the backfilled area to establish finish grade.
 2. Coordinate with weed treatment.

3.03 LANDSCAPE SOIL FILL

- A. Low Areas: Subgrade fill for landscape areas-
1. Place material in maximum 8 inch lifts. Compact in not less than two complete coverages with appropriate compactor to achieve 90-95% maximum dry density.
 2. Coordinate grade elevation of landscape soil fill to accommodate placement of salvaged topsoil to establish finish grade.

3.04 PLANTING SOIL (AQUATIC PLANTINGS)

- A. Coordinate with excavation for new improvements within drainage channel to attain the quality of existing drainageway soil to be stockpiled and re-used to replace within the new aquatic planting areas.
1. Place the salvaged drainageway soil to a minimum of 12" depth.
 2. Incorporate soil amendments thoroughly mixing prior to placement at the following rates:
 - a. Compost - 30/70 (compost:soil)
 - b. Soil Probiotic: Dissolve the number of tablets as recommended by the manufacturer in the quantity of water necessary to spray on soil while incorporating compost.
 - c. Thoroughly mix compost and soil probiotic with the quantity of soil required for the planting areas. Place prepared soils within 8 hours of being mixed to maintain viability of soil probiotic.
 3. Coordinate with placement of cobble riprap per EXTERIOR PLANTS.
 4. After planting soil is in place, resaturate bed of drainageway to allow settlement of soil for a minimum of one week before planting.

3.05 AREA SOIL PREPARATION

- A. Protection:
1. Take care and preparation in work to avoid conditions which will create hazards. Post signs or barriers as required.
 2. Provide adequate means for protection from damage through excessive erosion, flooding, heavy rains, etc. Repair or replace damaged areas.
 3. Keep site well drained and landscape excavations dry.
- B. Fine grade planting areas to smooth, even surface with loose, uniformly fine texture.
1. Roll, rake and drag planting areas, remove ridges and fill depressions, as required to meet finish grade.
 - a. Rake area to remove clods, rocks, weeds, roots, and debris.

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BRACKENRIDGE PARK
RETAINING WALL - PHASE II

Revisions:

Date:
06/10/16RVK Project No.
15231

Sheet Title:

LANDSCAPE
SPECIFICATIONS

Drawing No.

L-103

2. Compact the entire area to a maximum dry density not less than 80 percent and not more than 85 percent.
- a. After preparation of areas and topsoil in semi-dry condition, roll planting areas in two directions at approximately right angles with water ballast roller weighing 100 to 300 lbs according to soil type.
- C. Grade and shape area to bring surface to true uniform planes free from irregularities and to provide positive drainage.
- D. After areas have been prepared, take no heavy objects over them except compaction rollers.
- E. Rake or scarify and cut or fill irregularities that develop as required until area is true and uniform, free from lumps, depressions, and irregularities.
- 3.06 INSPECTION AND ACCEPTANCE**
- A. When soil preparation is completed, Landscape Architect will, upon written request by the Contractor, make an inspection to determine acceptability.
- B. Where inspected soil preparation work does not comply with requirements, replace rejected work until reinspected by the Landscape Architect and found to be acceptable.

END OF SECTION

**SECTION 32 9300
EXTERIOR PLANTS**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Extent of landscape work is shown on drawings and in schedules.

1.02 SUBMITTALS

- A. Furnish at Landscape Architect's office, prior to installation, the following information/samples:

1. Aggregates: Photos.
2. Boulders: Photos.
3. Soil Separation Fabric: Suppliers brochure and 12" x 12" section of fabric.
4. Plant Schedule: Indicate quantities and species of plant material, with complete source information (nursery name, address, phone number).

1.03 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver plant materials after preparations for planting have been completed and plant immediately.
1. Protect all plants from drying out.
2. Use all means necessary to protect plant materials before, during and after installation and to protect the installed work and materials of all other trades.
- B. Do not remove container grown stock from containers until planting time. Do not drop stock during delivery; broken and loose balls shall not be accepted.

1.04 JOB CONDITIONS

- A. Basic Regulations:
1. Planting operations shall be conducted under favorable weather conditions during the seasons which are normal for such work as determined by acceptable practice in the locality.
2. Contractor is hereby notified of active utilities and caution shall be exercised to avoid interruption of services.
3. The Contractor is responsible for replacement of any buried utilities, irrigation lines, etc., if they are broken during the planting operations.
4. It is recommended that he contact the appropriate utility to get the locations of underground utilities. The replacement costs are at the Contractor's expense.
5. When it is necessary to cross paved areas, curbing or walks, protection against damage shall be provided by the Contractor.
6. When conditions detrimental to plant growth are encountered during soil preparation or planting, such as rubble fill, adverse drainage conditions, or obstructions, notify Landscape Architect before planting.
- a. Such obstructions shall be removed or relocated or the work adjusted as directed by the Landscape Architect.
- b. If work proceeds without contacting the Landscape Architect, the Contractor shall be held liable for any and all revisions necessary.

1.05 WARRANTY & GUARANTEES

A. SHRUB AND GROUND COVER:

1. Warranty shrubs and groundcovers for a period of one (1) year following the date of final acceptance to be alive and in satisfactory growth at the end of the warranty period.
- a. Plants damaged or killed as a result of hail, winds over 75 miles per hour, lightning, fire, winter kill caused by extreme cold and severe winter conditions not typical of the planting area, theft, vandalism, occupancy of the building, or Owner neglect of proper maintenance are not covered by the warranty.
2. Replacement:
- a. By the end of the guarantee period, any plant that is dead or 50 percent or more of the main branch structure dead, or not in satisfactory growth as determined by the Owner or the Landscape Architect, shall be removed from the site and shall be replaced.
- b. All replacements shall be plants of the same kind and size as specified in the plant list and shall be furnished and planted as originally specified.
- c. Cost of such replacements shall be borne by the Contractor.
- d. Replacement plants shall be guaranteed for one (1) year or as noted in the warranty.
- e. Replacement shall be made within 10 days after notification, or as soon as weather conditions are satisfactory for planting.

PART 2 - PRODUCTS

2.01 PLANT MATERIALS

- A. Plant Schedule:
1. The quantities as shown in the Plant Schedule are solely for the convenience of the landscape contractor.
2. Provides a summary indicating plant material, common and botanical name and size specifications indicated on the drawings.
3. The contractor is to verify the quantities as shown in the plant schedule with those quantities as shown on the planting plan.
4. In the event that quantity discrepancies or material omissions occur in the plant materials list, the Contractor is responsible for planting those quantities as required to complete the design as intended on the plans.
- B. Quality:
1. Provide plant materials of size, genus, species and variety shown and scheduled for landscape work as per the following:
- a. Provide plants typical of their species or variety, with normal, densely-developed branches and vigorous, fibrous root systems.
- b. Provide only sound, healthy, vigorous plants free from defects, disfiguring knots, sunscald injuries, frost cracks, abrasions of the bark, plant diseases, insect eggs, borers, and all forms of infestation.
- c. All plants shall have a fully developed form without voids and open spaces.

2.02 MISCELLANEOUS LANDSCAPE MATERIALS

- A. Soil Separation Fabric (Geotextile):
1. Mirafi 140N as manufactured by TenCate, Pendergrass, Georgia (www.mirafi.com); tel. 800.685.9990 or approved substitute.
- B. Aggregates:
1. Stone: Hard, durable stone, washed free of soil, sand, clay and other foreign substances. Provide the following stone, color and size range:
- a. Source: Keller Material, Inc., San Antonio, Texas, (210)948-4221 or approved substitute.
- b. Cinnamon Cobble - size range 6" to 12".
2. Boulders: Limestone boulders per size range indicated.

PART 3 - EXECUTION

3.01 PLANTING DETAILS

- A. Planting details regarding shrub and groundcover planting, and planting bed soil preparations are included on the drawings.

3.02 PLANTING GROUND COVER AND SHRUBS

- A. Space plants in accordance with indicated dimensions providing the quantity of plants necessary to evenly fill planting area.
1. Plant layout is to be equidistantly triangular spaced.
2. Plant to within 6 inches of edge, but in no instance less than 1/2 the spacing distance of the plant.
- B. All plant material shall be set at a level that, after settlement, they shall bear the same relationship to the finish grade that they bore to the soil from which they were dug/grown.
- C. When plants are set at proper elevation, planting soil shall be replaced around the ball and compacted, avoiding injury to the roots and filling all voids.
1. Form a ring of soil around the edge of each planting pit to retain water.
- D. Wetland Plantings:
1. Time plantings for when water level is constant avoiding hot summer periods to avoid repeated loss and replacement from heat stress and drought.
2. After wetland area has been shaped and graded, disk, harrow and prepare surface for planting.
3. Coordinate placement of planting soil - refer to SOIL PREPARATION. During preparation, incorporate soil amendments recommended by plant material nursery for the establishment of the plantings.
4. Release water into the wetland area to facilitate soil setting prior to planting.
- a. Confirm and remedy hot spots present.
5. Utilize the appropriate equipment to insure adjacent existing wetlands or surrounding areas are not damaged.
6. Installation: Complete planting per prescribed spacing.
- a. Provide temporary irrigation as approved by Landscape Architect for establishment of plantings not within water line.

3.03 MISCELLANEOUS LANDSCAPE WORK

- A. Aggregate Mulch:
1. Place aggregate beds where shown.
2. Compact soil subgrades before placing aggregate.
3. Place soil separation fabric over compacted subgrade prior to placing aggregate.
4. Place aggregate over entire area as indicated to grade and cross section as indicated.
- B. Boulders: Set boulders as directed in field by Landscape Architect.

3.04 MAINTENANCE

- A. Begin maintenance immediately after each plant is planted. Maintenance shall continue until final acceptance of the project unless indicated otherwise. Refer to Section 32 93 10 - LANDSCAPE MAINTENANCE.

3.05 CLEANUP AND PROTECTION

- A. Any excess excavated subsoil or topsoil shall be removed from the site.
- B. After planting operations are finished, all paved areas which may have become strewn with soil or other material shall be thoroughly cleaned by sweeping, and if necessary, power washing.

- C. Protect landscape work and materials from damage due to landscape operations, operations by other contractors and trades and trespassers.
1. Maintain protection during installation and maintenance periods.
2. Treat, repair or replace damaged landscape work as directed.

3.06 INSPECTION AND ACCEPTANCE

- B. Immediately prior to request for Substantial Completion, inspect the work and replace all materials or portions of the construction that are damaged, defaced, eroded, or in any manner does not comply with requirements, replace rejected work and continue specified maintenance until reinspected by Landscape Architect and found to be acceptable.
- C. When Contractor considers work is substantially complete, submit:
1. Request for Substantial Completion inspection with a list of items to be completed or corrected, one of which shall not be cleaning.
- C. Complete modifications or corrections required by punch list within 14 days from date of receipt of punch list.
- D. When landscape work is completed, including maintenance, Landscape Architect will, upon written request by the Contractor, make an inspection to determine acceptability.
- E. Where inspected landscape work does not comply with requirements, replace rejected work and continue specified maintenance until reinspected by the Landscape Architect or Landscape Architect and found to be acceptable.
- F. Final Review: Prior to project turn over, the Contractor will be required to conduct a final walk-thru with the Owner or their representative.
1. The walk-thru is to establish 100% completion and Final Acceptance of the landscape work according to specifications.
2. After three (3) uncompleted items from Substantial Completion punch list or installation discrepancies occur, the walk-thru will be stopped and rescheduled for a later date at the Contractor's liability.

END OF SECTION

**SECTION 32 9310
LANDSCAPE MAINTENANCE**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Maintenance of the landscape to be provided.

1.02 JOB CONDITIONS

- A. Maintenance operations shall be conducted until Final Acceptance of Project (or otherwise directed).

PART 2 - PRODUCTS

2.01 MATERIALS- REFER TO RESPECTIVE LANDSCAPE SECTIONS FOR APPLICABLE MATERIALS.

PART 3 - EXECUTION

3.01 LANDSCAPE MAINTENANCE - GENERAL

- A. Obtain and follow the maintenance instructions provided by the installer of new wetland plant materials.
- B. Watering, Soil Erosion, and Sedimentation Control: Comply with Federal, state, local, and other regulations in force; prevent over-watering, run-off, erosion, puddling, and ponding.
1. Repair eroded areas and replant.
- C. General Cleanup: Remove debris from project area at least once a week.
1. Debris consists of trash, rubbish, dropped leaves, downed branches and limbs of all sizes, dead vegetation, rocks, and other material not belonging in landscaped areas.
2. Remove debris from site and dispose of properly.
- D. Health Maintenance: Inspect all plants regularly for health.
1. Remove unhealthy or dead plants and replant. Determine reason(s) for poor health and take remedial action immediately.
- 3.02 MAINTENANCE**
- A. Maintain plants by pruning removal of dead portions of plants, cultivating, watering, and hand-weeding as required for normal, healthy growth.
1. Removal of more than 30 percent of plant requires replacement.
2. Treat as required to keep plant materials free of insects and disease.
3. Do not use herbicides to control weeds and other invasive growth. Remove by mechanical means or by hand only.

3.03 CLEANUP AND PROTECTION

- A. Protect existing vegetation, pavements, and facilities from damage due to maintenance activities/operations, operations by other contractors and trades and trespassers; restore damaged items to original condition or replace, at no extra cost to Owner.
1. Treat, repair or replace damaged landscape work as directed.
- B. Remove and dispose of general cleanup debris and biodegradable debris in a proper manner.
- C. After maintenance operations are finished, all paved areas and walls which may have become strewn with soil or other material shall be thoroughly cleaned by sweeping, and if necessary, power washing.

3.04 INSPECTION AND ACCEPTANCE

- A. When maintenance period is complete, Landscape Architect will, upon written request by the Contractor, make an inspection to determine acceptability.
- B. Where inspected landscape work does not comply with requirements, replace rejected work and continue specified maintenance until reinspected by the Landscape Architect and found to be acceptable.

END OF SECTION

RVK

Landscape Architects
745 E. Mulberry, Suite 601
San Antonio, Texas 78215
Phone 210-733-2333 Fax 210-733-2349

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BRACKENRIDGE PARK
RETAINING WALL – PHASE II

Revisions:

Date:
06/10/16

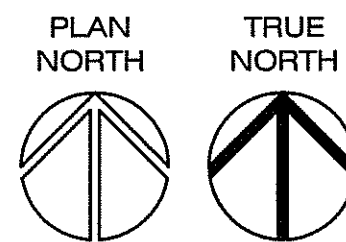
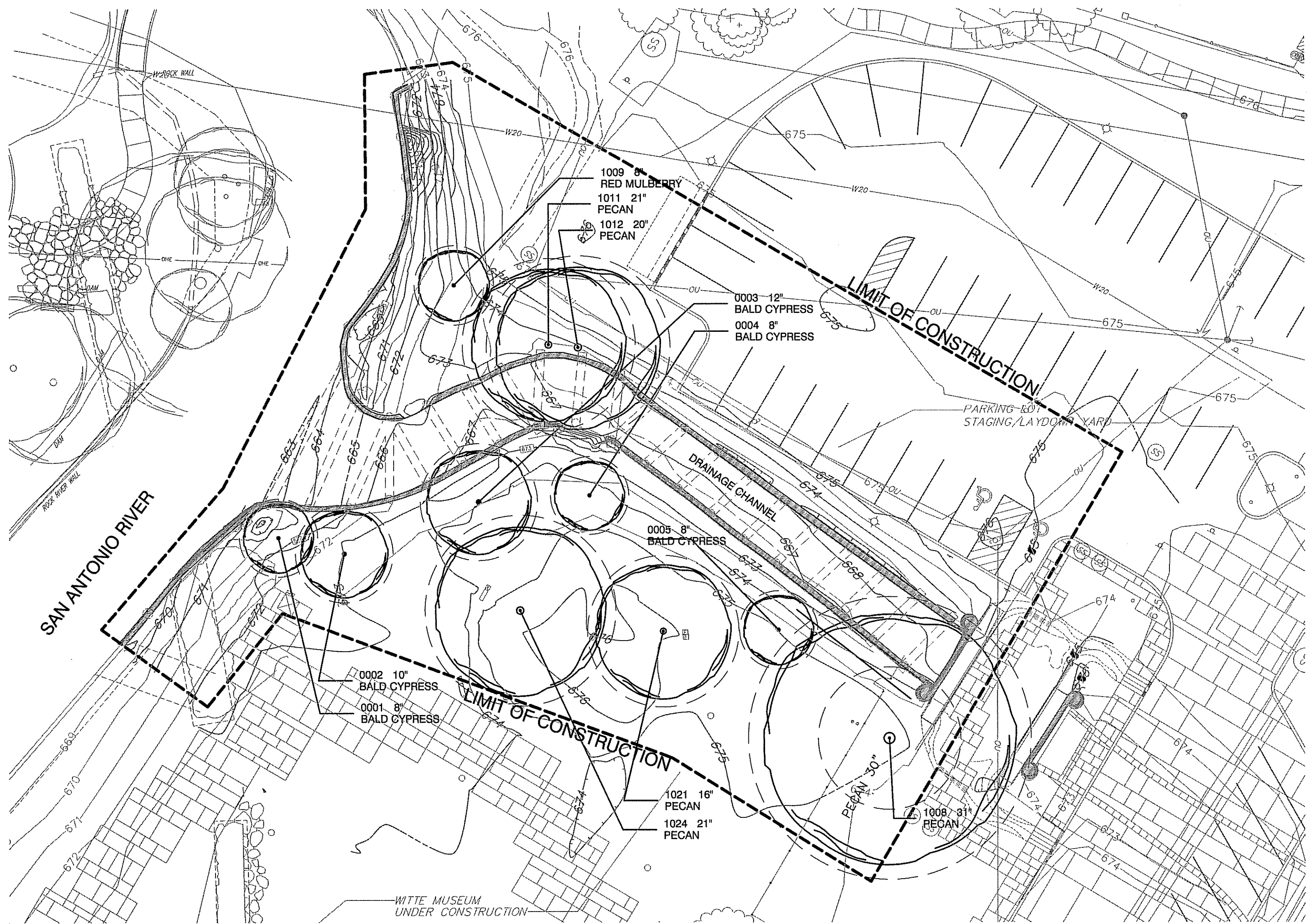
RVK Project No.
15231

Sheet Title:

LANDSCAPE
SPECIFICATIONS

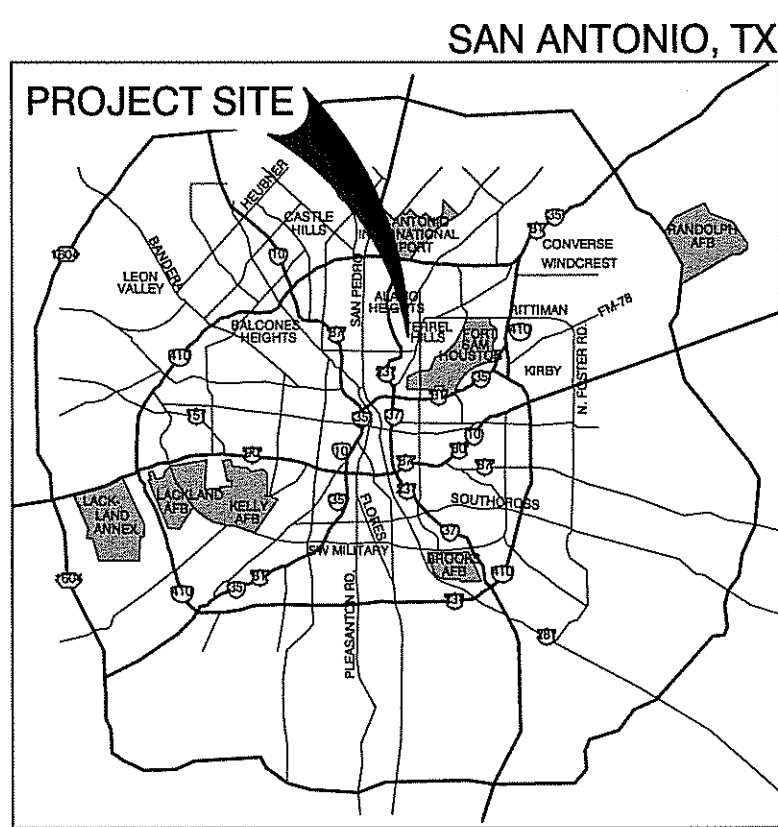
Drawing No.

L-104



1 OVERALL TREE PRESERVATION PLAN

1" = 20'



RVK
Landscape Architects

10001 REUNION PLACE, SUITE 200 SAN ANTONIO, TEXAS 78216
210.349.9098
IES JOB NO:1162300

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LEGEND

- TAG# DBH" SPECIES
EXISTING TREE TO BE PRESERVED
- TAG# DBH" SPECIES
EXISTING TREE TO BE REMOVED
- EXISTING CONCRETE FLATWORK
- EXISTING RETAINING WALL

TREE PRESERVATION NOTES

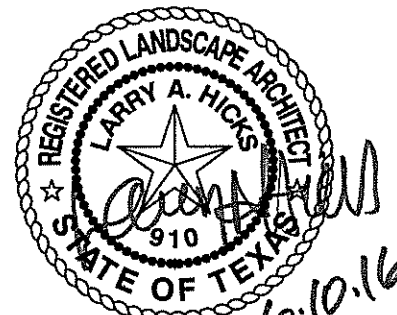
- TREE SURVEY INFORMATION IS BASED ON SITE SURVEY PREPARED BY IES ENGINEERS OF SAN ANTONIO, TX.(210)349-9098. SITE BASE DOCUMENTATION IS SUPPLEMENTED BY PROJECT INFORMATION PROVIDED BY RIALTO STUDIO OF SAN ANTONIO, TX AND IS FOR REFERENCE ONLY. CONTRACTOR SHALL CONFIRM CONSTRUCTION ACTIVITY AND COORDINATE WITH THE WITTE MUSEUM PROJECT CURRENTLY UNDER CONSTRUCTION ADJACENT TO PROJECT AREA.
- 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.
- REMOVAL OF ANY TREES SCHEDULED FOR PRESERVATION MUST BE DOCUMENTED BY CONTRACTOR DURING PROGRESS 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.
- PRIOR TO SITE CLEARING OPERATIONS PROCESS IS:
 - LAYOUT FOOTPRINT OF IMPROVEMENTS.
 - INSTALL TREE PROTECTIVE BARRICADE FENCING. TREES NOT ABLE TO BE FENCED-OFF DUE TO WORK CLEARANCE NEEDED ARE TO BE PROTECTED WITH TREE ARMOR.
 - OBTAIN APPROVAL FROM TREE INSPECTOR.
 - PERFORM SITE CLEARING.
 - PLACE MULCH OVER ALL DISTURBED AREA & AS DIRECTED BENEATH ALL REMAINING TREE CANOPIES.
- ALL EXISTING TREES ARE TO REMAIN UNLESS INDICATED OTHERWISE. TREES SHALL BE REMOVED ONLY UNDER THE FOLLOWING CONDITIONS:
 - TREE IS INDICATED TO BE REMOVED; SEE LEGEND.
 - CUT/FILL GREATER THAN FOUR (4') EXCEEDS 50% OF THE ROOT PROTECTION (RPZ). RPZ IS DEFINED AS A DISTANCE FROM TRUNK TO 12' FOR EACH CALIPER INCH (DBH) OF TRUNK. DBH IS DEFINED AS A DIAMETER OF TRUNK AT BREAST HEIGHT.
 - CONSTRUCTION REQUIRES THE REMOVAL OF MORE THAN 30% OF THE VIABLE PORTION OF THE TREE CROWN.
- ALL TREES TO REMAIN ON SITE REQUIRE PROTECTIVE FENCING OR ARMOR PROTECTION, MULCHING, PRUNING, WATERING, AND FERTILIZATION AS DIRECTED BY A QUALIFIED ARBORIST.
- BARRICADE FENCE TO BE STAKED IN FIELD BY CONTRACTOR'S REPRESENTATIVE, BEFORE ANY CONSTRUCTION RELATED ACTIVITY BEGINS, ON ALL TREES WITHIN 100' OF ANY CONSTRUCTION. REFER TO DTL. 1/TP-101.
- INSTALL BARRICADE FENCE DIRECTLY BELOW DRIPLINE OF TREE AT A MINIMUM AS INDICATED IN DTL. 1/TP-101. IN CONDITIONS WHERE CONSTRUCTION INTRUDES WITHIN DRIPLINE OF TREE, PLACE FENCE AT DISTANCE OF TREE RPZ MINIMUM.
- ALL WOODY MATERIAL TO BE REMOVED SHALL BE CHIPPED INTO MULCH AND UTILIZED ON SITE. SUBSEQUENT MULCH MATERIAL IS TO BE PLACED ON SITE WITHIN RPZS AT TREES ADJACENT TO CONSTRUCTION & NATURAL AREAS. MATERIAL NOT USED ON SITE IS TO BE REMOVED AND PROPERLY DISPOSED OF BY CONTRACTOR. IF MATERIAL OBTAINED FROM SITE DOES NOT PROVIDE AN ADEQUATE QUANTITY OF MULCH, CONTRACTOR TO PROVIDE THE QUANTITY OF SUPPLEMENTAL MULCH REQUIRED TO ACCOMPLISH INTENT OF PLANS.
- SITE LAYOUT OF MAJOR IMPROVEMENTS IS TO BE COMPLETED BEFORE ANY DEMOLITION OF EXISTING TREES OR VEGETATION IS STARTED.
- CONTRACTOR TO COORDINATE REVIEW WITH AND OBTAIN APPROVAL OF TREE PROTECTION BY COSA TREE INSPECTOR, ENVIRONMENTAL REVIEW DEPT. PRIOR TO INITIATING ANY WORK ON PROJECT.
- THE RPZ & AREA TO DRIPLINE SHALL BE COVERED WITH 6" OF COARSE MULCH FOR MOISTURE CONSERVATION & PROTECTION AGAINST COMPACTION.
- PRESERVED TREES SHALL BE PROTECTED UNTIL SUCH TIME AS THE PROPOSED IMPROVEMENTS CAN BE STAKED TO DETERMINE ITS DISTANCE FROM TREE TRUNK. (IF FOUND THAT THE IMPROVEMENTS WILL BE CLOSER THAN 8', THE CONTRACTOR WILL MEET WITH REPRESENTATIVES OF THE ENVIRONMENTAL REVIEW DEPARTMENT TO MINIMIZE IMPACT.)
- NO GRADING GREATER OR LESS THAN 4" IN PROTECTED TREES RPZ, NO TRENCHING IN PROTECTED TREES RPZ EXCEPT BY HAND WITH CLEAN CUTTING ROOTS LARGER THAN 2" IN DIAMETER.

NOTE:

EXISTING TREES ON SITE ARE ASSOCIATED WITH THE PREVIOUSLY APPROVED TREE PRESERVATION PLAN FOR THE WITTE MUSEUM CONSTRUCTION CURRENTLY UNDERWAY. REFERENCE AP# AM2002331 & AP# A2002212. MITIGATION REQUIRED FOR REMOVAL OF PROTECTED TREES WILL BE PROVIDED AS REQUIRED BY CITY OF SAN ANTONIO TREE PRESERVATION ORDINANCE (SEC. 35-523).

INTELLIGENT
ENGINEERING
SERVICES

ENGINEERING COMMUNITIES FROM THE GROUND UP
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210.349.9098
IES JOB NO:1162300



BRACKENRIDGE PARK
RETAINING WALL - PHASE II

Revisions:

Date:
06/10/16

RVK Project No.
15231

Sheet Title:

TREE
PRESERVATION
PLAN

Drawing No.

TP-100

RVK
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745 E. Mulberry, Suite 601
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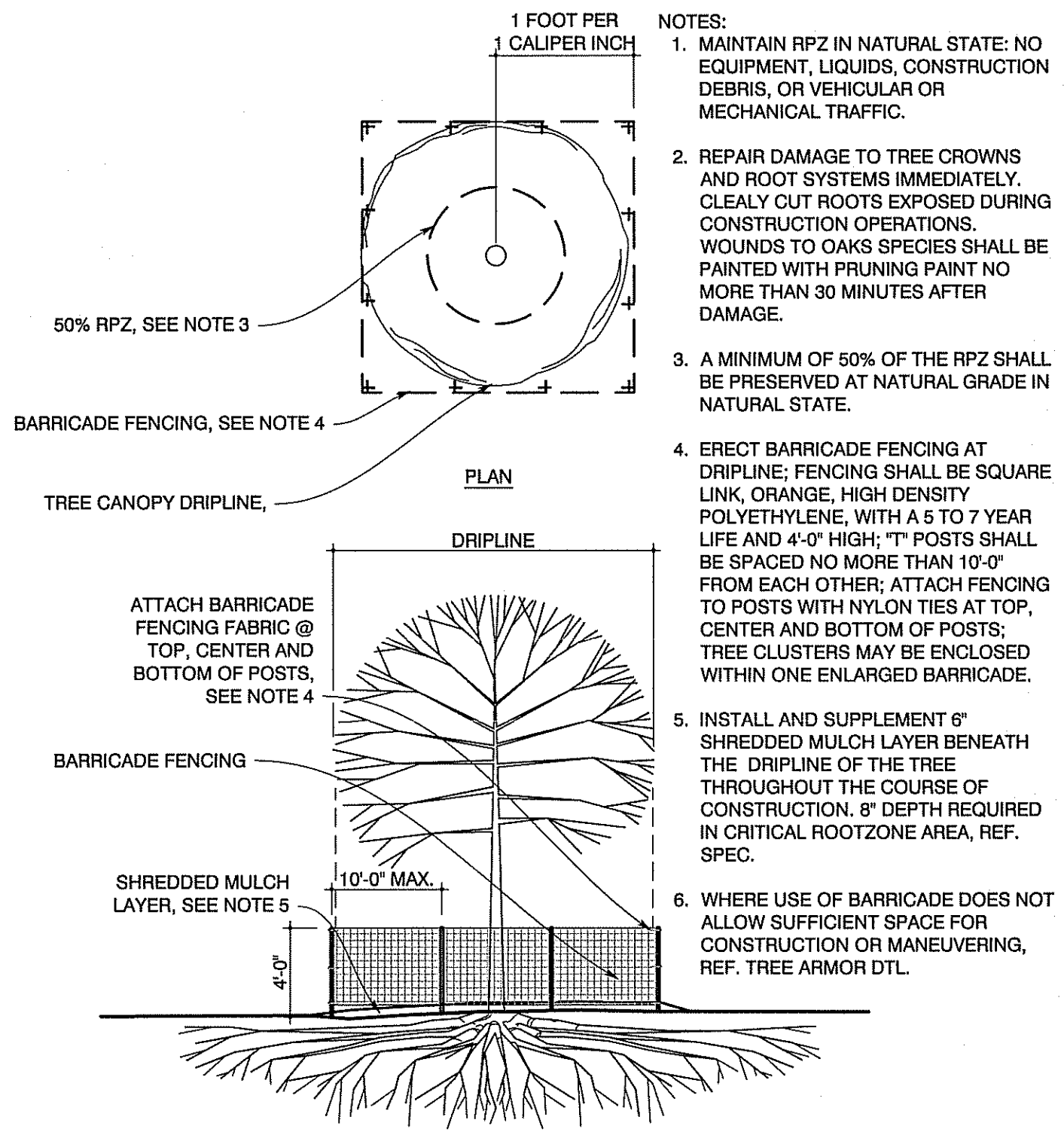
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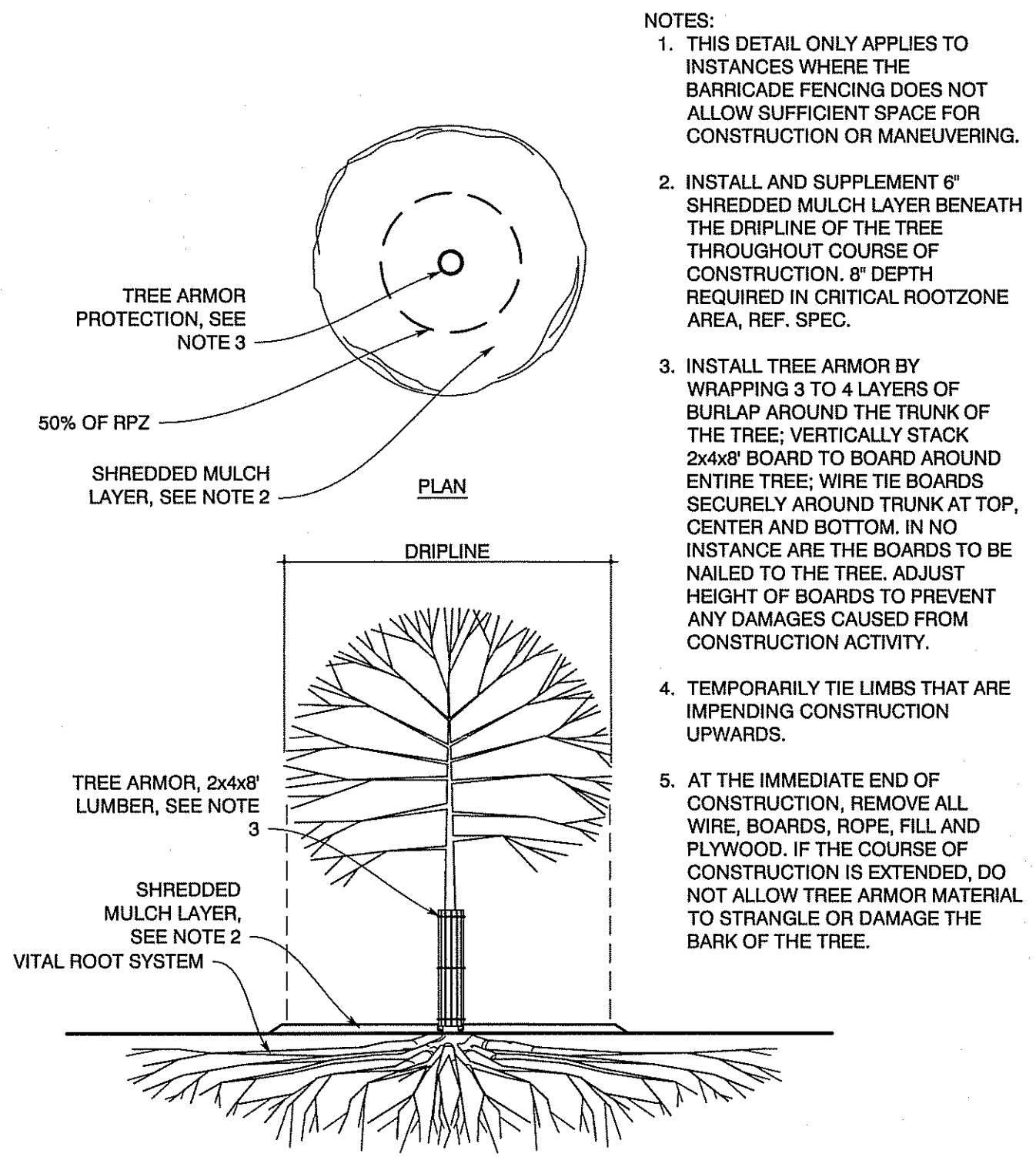
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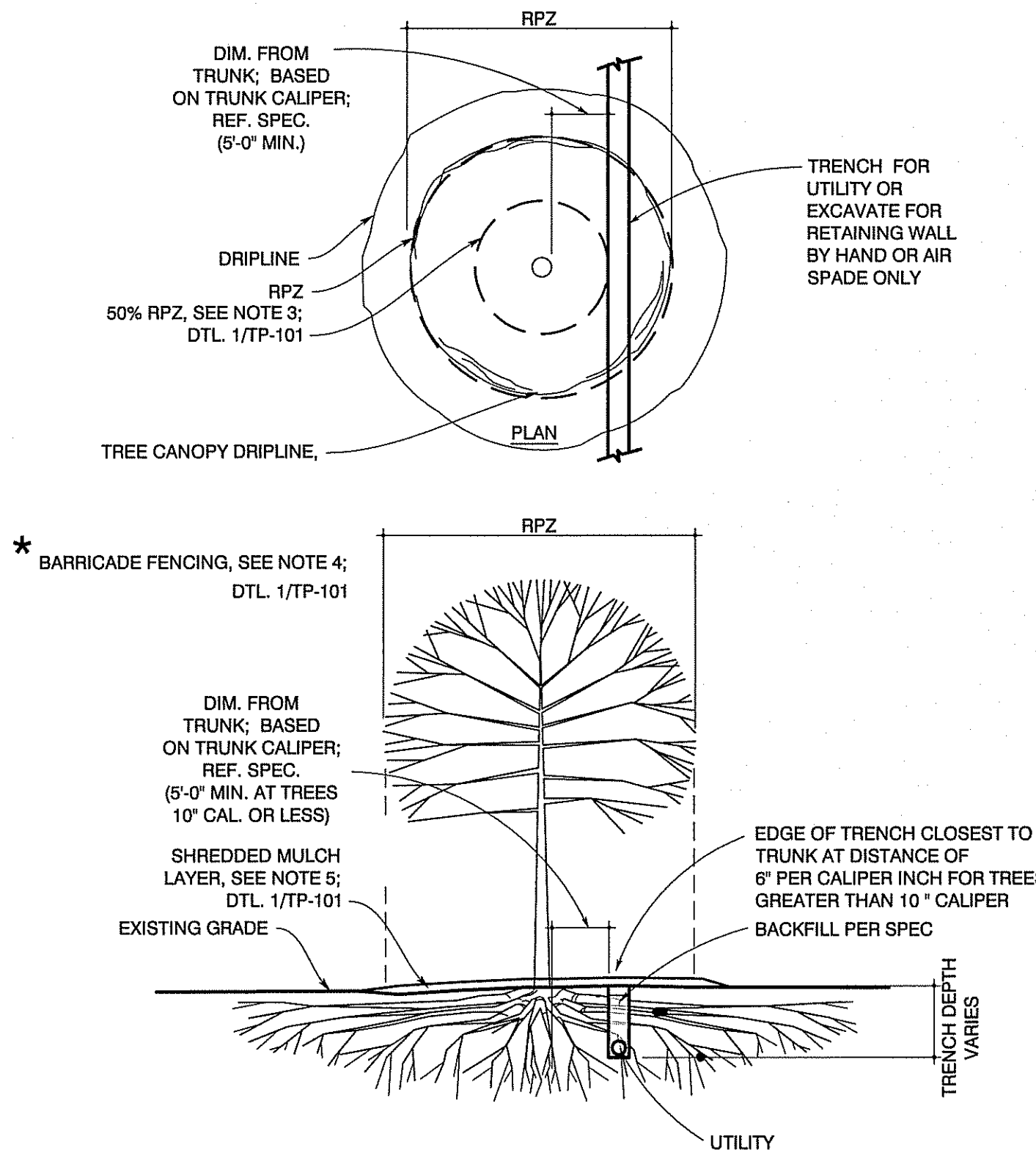
BRACKENRIDGE PARK
RETAINING WALL - PHASE II



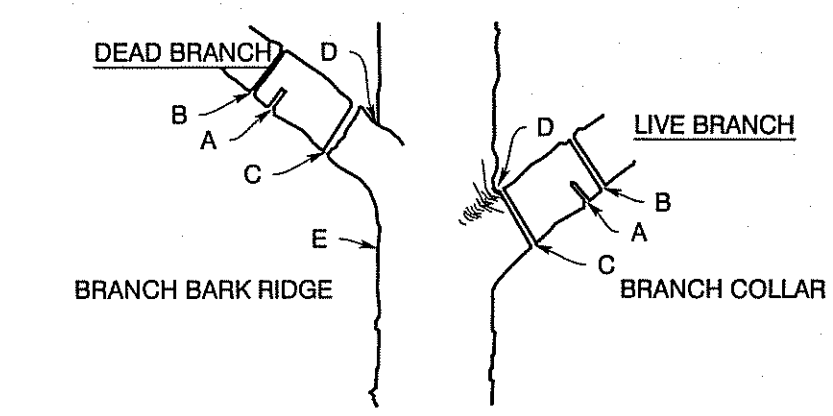
1 RPZ PROTECTIVE BARRICADE
NTS



2 TREE ARMOR
NTS



3 TRENCHING / WALL EXCAVATION WITHIN THE RPZ
NTS



- NOTES:
- FIRST CUT - TO PREVENT THE BARK FROM BEING PEELED WHEN THE BRANCH FALLS.
 - SECOND CUT - TO REDUCE THE WEIGHT OF BRANCH.
 - FINAL CUT - TO ALLOW FOR HEALING COLLAR BUT NO STUBS.
 - BRANCH RIDGES - PROPERLY INDENT BRANCH RIDGES WHICH ARE SITE FOR DECAY.
 - MAIN TRUNK OF TREE
- NOTES:
- PROPER PRUNING FOR BRANCHES 1-1/2" OR GREATER IN DIAMETER
 - DO NOT CUT FROM D TO E.
 - FOR OAKS ONLY: PAINT ALL WOUNDS AND CUTS IMMEDIATELY TO PREVENT THE SPREAD OF OAK WILT.
 - REFER TO SPECIFICATIONS, SECTION 015639 AND 311330 FOR MORE DETAILED REQUIREMENTS.
 - INSPECTION: CONTRACTOR, ARBORIST, OWNER, AND LANDSCAPE ARCHITECT SHALL REVIEW PRUNING WORK TO BE COMPLETED PRIOR TO INITIATING WORK.
 - EMPLOY QUALIFIED CERTIFIED ARBORIST; REFER TO SPECIFICATIONS

4 BRANCH PRUNING DETAIL
NTS