

**ADDENDUM FOUR
GLENWOOD YFD CENTER AND OTHER CITY FACILITY FOUNDATION REPAIRS
CONTRACT NO. Y-19-009-202
CITY OF CHATTANOOGA, TENNESSEE**

The following changes shall be made to the Contract Documents, Specifications, and Drawings:

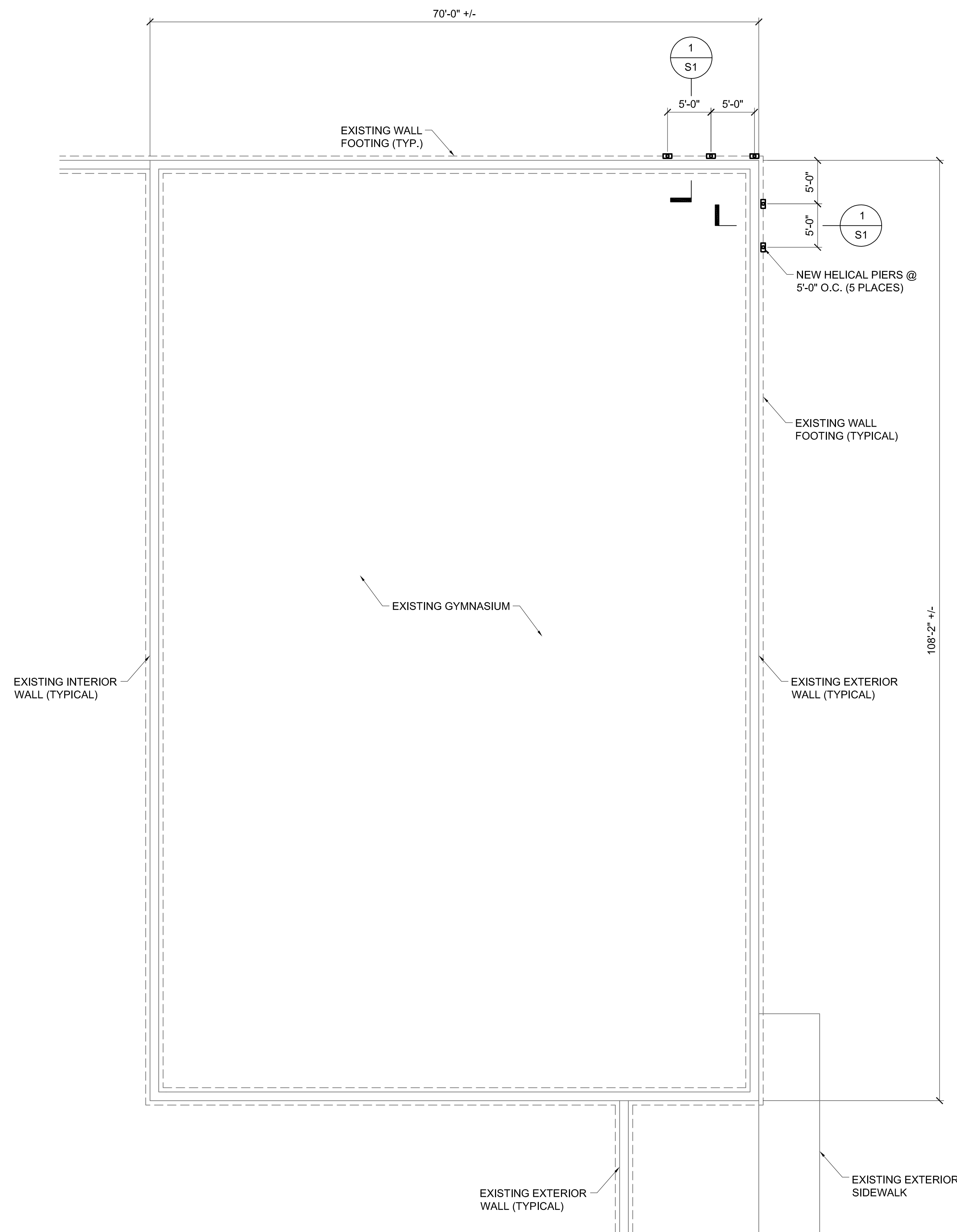
I. Q&A

Q? In an effort to keep the unit costs low, is the City willing to offer the names and addresses of the other City Facilities that would also require structural repairs in the next 365 days? And can the City indicate the size of scope for the other facilities?

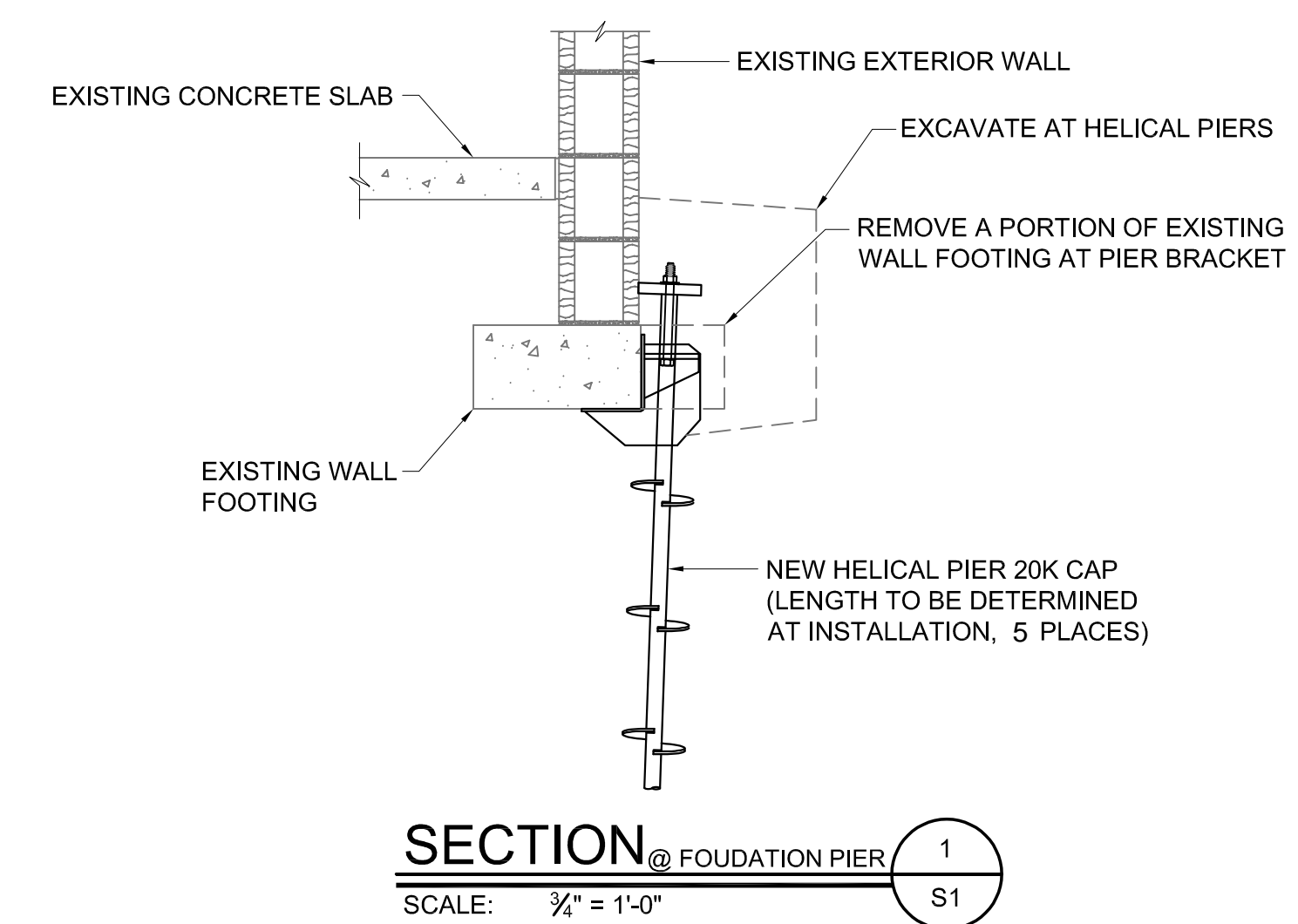
A. Tyner YFD and John A Patton are additional facilities. Size of scope attached.

November 25, 2019

/s/ Justin C. Holland, Administrator
City of Chattanooga
Department of Public Works



FOUNDATION REPAIR PLAN
SCALE: 3/8" = 1'-0" 1
S1



SECTION @ FOUNDATION PIER
SCALE: 3/8" = 1'-0" 1
S1

GENERAL NOTES

THESE NOTES SHALL APPLY UNLESS OTHERWISE INDICATED BY DRAWINGS OR SPECIFICATIONS.

WHERE A DETAIL IS SHOWN FOR ONE CONDITION IT SHALL APPLY FOR ALL LIKE OR SIMILAR CONDITIONS EVEN THOUGH NOT SPECIFICALLY MARKED ON THE DRAWINGS.

CONTRACTOR SHALL PROVIDE ADEQUATE BRACING OR SHORING FOR ALL WORK DURING THE CONSTRUCTION PERIOD.

IF NEEDED, NEW CONCRETE SHALL BE STANDARD WEIGHT WITH A COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS.

HELICAL PIERS TO BE PROVIDED BY A.B. CHANCE, HELITECH, RAM JACK, OR EQUAL. INSTALLATION CONTRACTOR SHALL HAVE A MINIMUM OF 5 YEARS OF EXPERIENCE ON SIMILAR PROJECTS AND HAVE COMPLETED 20 SUCH PROJECTS.

HELICAL PIERS SHALL CONFORM WITH ICC-AC308, WITH DETAILING AND FABRICATION IN ACCORDANCE WITH THE LATEST STEEL FABRICATING, WELDING, AND GALVANIZING STANDARDS. SHOP DRAWINGS SHALL BE SUBMITTED TO GIVE COMPLETE MANUFACTURING AND INSTALLATION INFORMATION, BOTH SHOP AND FIELD.

IF, AFTER EXCAVATION, THE CONDITION OF THE SOIL INDICATES A SAFE BEARING CAPACITY OF LESS THAN 3000 PSF, THE ENGINEER SHALL BE NOTIFIED AND THE PIER TYPE OR SPACING REVISED IF NECESSARY. LIKEWISE, IF AFTER EXCAVATION THE CONDITION OF THE EXISTING FOOTING IS OBSERVED TO BE DAMAGED, DETERIORATED, OR UNDERSIZED, THE ENGINEER SHALL BE NOTIFIED AND THE PIER TYPE OR SPACING REVISED AS REQUIRED. ALL PIERS ARE TO BEAR IN ORIGINAL UNDISTURBED SOIL, WHERE POSSIBLE. IT IS ANTICIPATED THAT THE PIERS WILL BEAR AT A DEPTH OF APPROXIMATELY 14 FEET. IT IS ANTICIPATED THAT THE PIERS WILL BE SPACED AT 5- FEET ON-CENTER UNLESS SITE CONDITIONS REQUIRE OTHERWISE.

PIERS ARE TO SAFELY SUPPORT A 20,000-POUND LOAD AND BE CAPABLE OF SLIGHTLY LIFTING THE STRUCTURE WHEN INSTALLED. FOLLOWING INSTALLATION, PITS ARE TO BE BACKFILLED EXCAVATED MATERIAL AND COMPACTED IN 6-INCH LIFTS TO 95% STANDARD PROCTOR. REESTABLISH GRADE TO MAINTAIN POSITIVE SURFACE DRAINAGE AWAY FROM THE STRUCTURE. UPON COMPLETION, THE WORK AREA SHALL BE CLEANED, SMOOTHED, SEEDED, AND STRAW PLACED TO ENCOURAGE GROWTH OF SURFACE COVER AND PREVENT EROSION.

B & P Job No. 19615



STAMP



REVISIONS

NO.	DATE:	REMARKS

FOUNDATION REPAIR

Tyner Recreation Center
6900 Ty Hi Drive
Chattanooga, Tennessee 37421

Drawn By: TED	Reviewed By: T.F.I.
Scale: As Noted	Date: 11/14/19

SHEET NUMBER:
S1
1 of 1



STRUCTURAL ASSESSMENT + RENOVATION RECOMMENDATIONS

Under On-call Services Contract No. E-18-008-101

JOHN A. PATTEN RECREATIONAL CENTER
3202 Kellys Ferry Road
Chattanooga, Tennessee

PREPARED FOR:

City of Chattanooga

Mr. William D. Brown
Engineering Department



101 E. 11th Street, Suite G13
Chattanooga, TN 37402



wdbrown2@chattanooga.gov Phone:
423-762-7918



Issued:
23 November 2019

23 November 2019

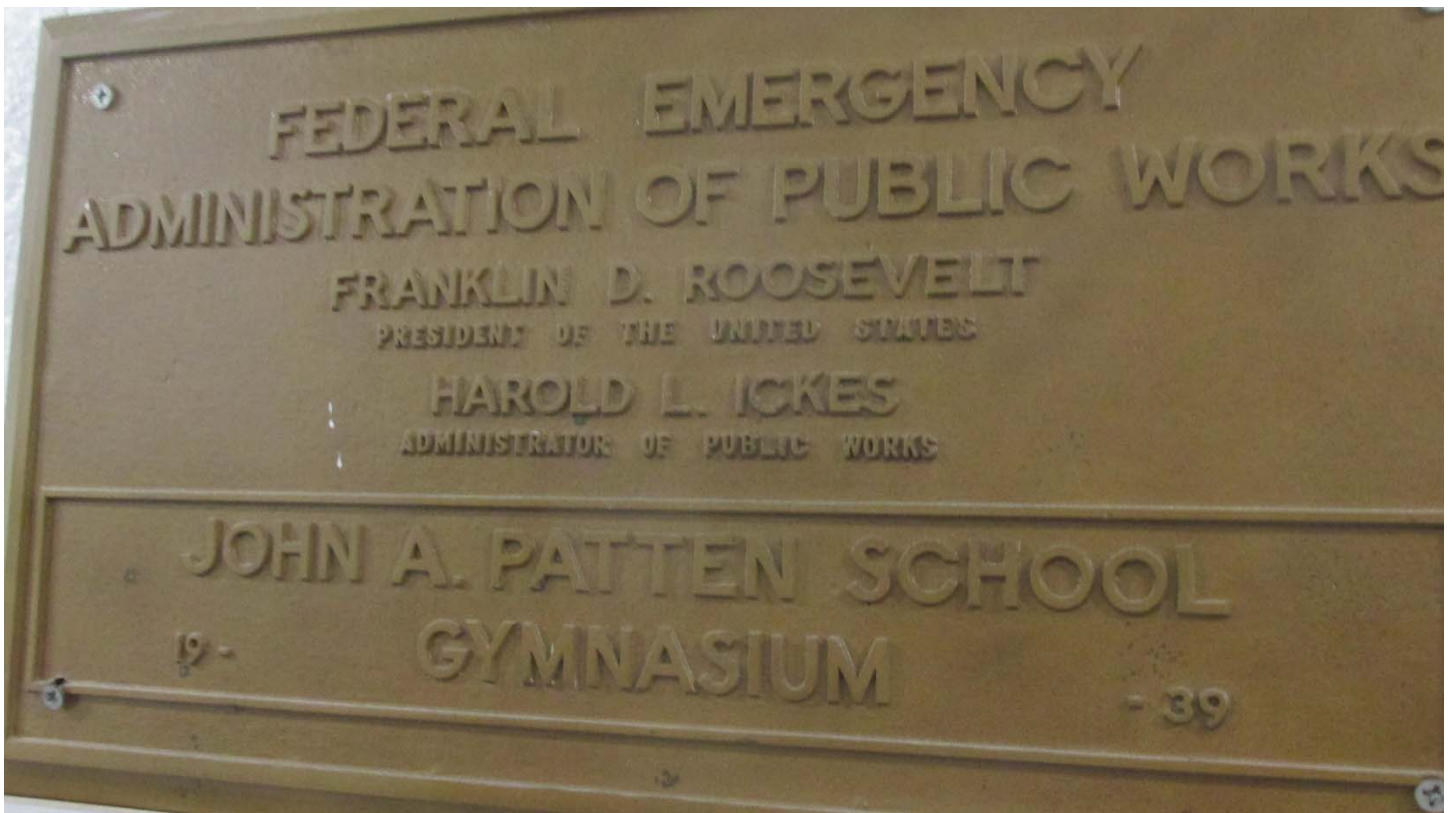
City of Chattanooga
Engineering Department
101 E. 11th Street
Chattanooga, TN 37402

PROJECT

STRUCTURAL ASSESSMENT + RENOVATION RECOMMENDATIONS
Under On-call Services Contract No. E-18-008-101
JOHN A. PATTEN RECREATIONAL CENTER
3202 Kellys Ferry Road
Chattanooga, Tennessee

PURPOSE

An engineering evaluation was performed Thursday, October 31, 2019, specifically to investigate problem areas involving the structural integrity of the historic existing recreational facility (circa 1939) known as the John A. Patten Recreational Center on Kelleys Ferry Road in Chattanooga, Tennessee. The areas of concern involved the existing Gymnasium Building, specifically the South Wall.



SITE DESCRIPTION

The building is located in an older residential neighborhood on a relatively flat site.



Picture #01: Site Plan (Courtesy Google Earth)



Picture #02: Site Elevation (Courtesy Google Earth)



Picture #03: Partial Site Plan – South End – Gymnasium Roof (Courtesy Google Earth)



Picture #04: Partial Elevation – South End – Gymnasium Roof (Courtesy Google Earth)

BUILDING CODE

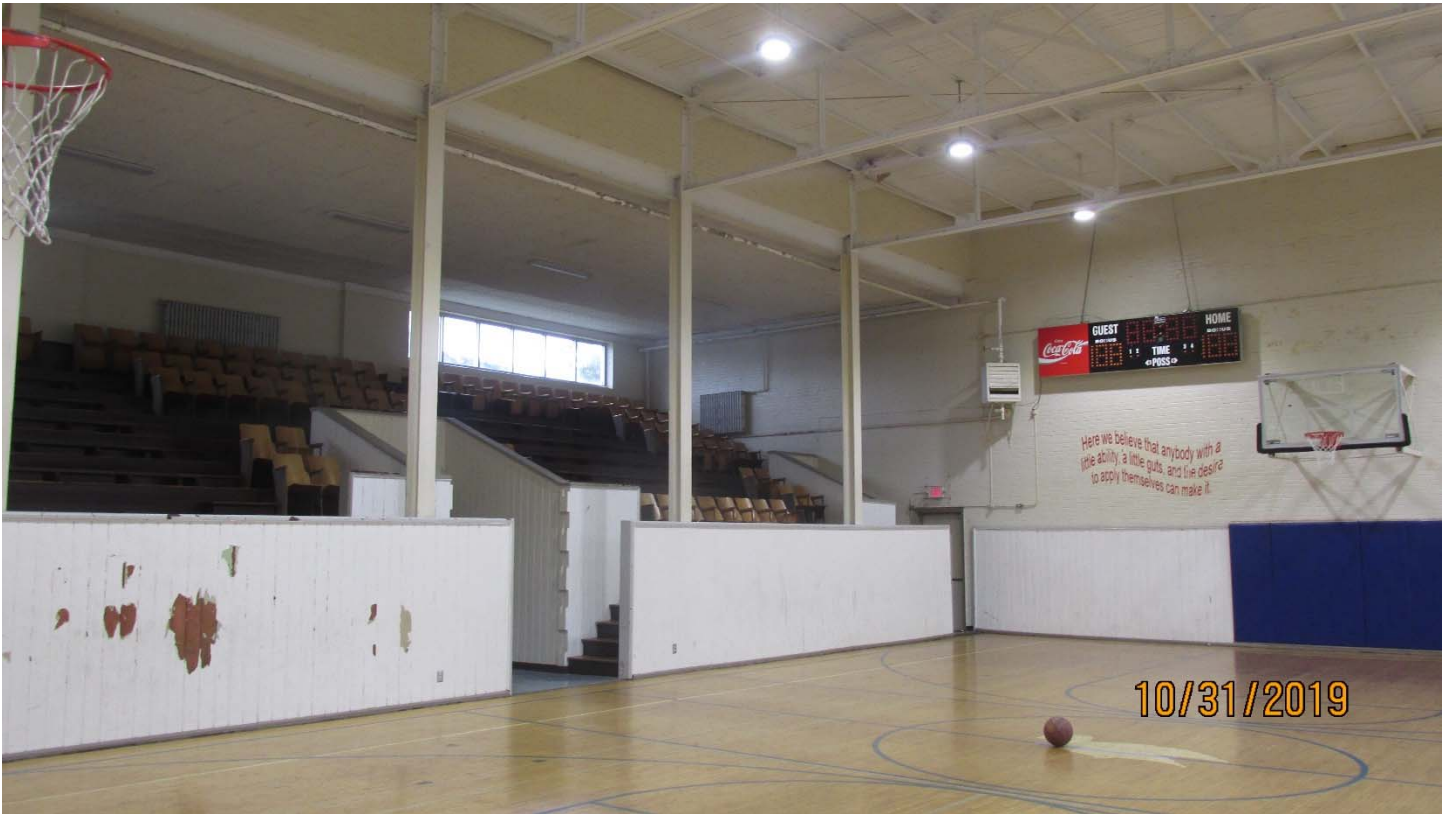
On May 29, 2012, the City Council passed several ordinances that will affect the design and construction of projects located inside the corporate city limits of Chattanooga. (See [Ordinance 12600](#).)

Effective immediately, the following codes are enforced by the Land Development Office:

- International Building Code, 2012 edition;
- International Residential Code, 2012 edition;
- National Electrical Code, 2017 edition;
- International Fire Code, 2012 edition;
- International Mechanical Code, 2012 edition;
- International Fuel Gas Code, 2012 edition;
- International Plumbing Code, 2012 edition;
- International Energy Conservation Code, 2009 edition for all Buildings constructed according to the International Residential Code;
- International Energy Conservation Code, 2012 edition for all Buildings constructed according to the International Building Code;
- Accessible and Usable Buildings and Facilities (ANSI ICC A117.1), 2009 edition

HAZARDS

- Wind: 115 mph (Ultimate Wind Design Speed)
90 mph (Allowable Wind Design Speed)
- Seismic: $S_S = 0.461$. $S_1 = 0.122$, Site Class "D"
- Ground Snow Load = 10 psf
- Importance Factor = 1.0



Picture #05: Interior Elevation – South End – Gymnasium

- Structural Steel columns and trusses
- Wood roof decking
- Wood gym floor framing over crawlspace
- Concrete floor on fill under bleachers
- Multi-Wythe brick walls



Picture #06: Interior Elevation – Southwest corner – Gymnasium

- Structural Steel columns and trusses
- Wood roof decking
- Wood gym floor framing over crawlspace
- Concrete floor on fill under bleachers
- Multi-Wythe brick walls



Picture #07: Roof framing – West Wall – Gymnasium

- Structural Steel columns and trusses
- Wood roof decking
- Multi-Wythe brick walls



Picture #08: Roof framing – North Wall – Gymnasium

- Wood roof decking
- Multi-Wythe brick walls

Damage Levels

The observed damaged structural components of each building are documented, photographed, and categorized as shown in the table below. Component damage levels are divided into four broad categories; serviceability concerns, serviceability issues, strength concerns, and strength issues.

DAMAGE LEVEL	TYPE OF CONCERN	DESCRIPTION
DL-0	None	<ul style="list-style-type: none">• No noticeable issues or concerns.
DL-1	Serviceability Concern	<ul style="list-style-type: none">• Does not affect structural capacity.• May affect building function.• Unsightly, may cause some public alarm.
DL-2	Serviceability Issue	<ul style="list-style-type: none">• May affect structural capacity.• Affects function of building.• Unsightly, causes public alarm.
DL-3	Strength Concern	<ul style="list-style-type: none">• Structural capacity appears reduced.• Load-carrying ability does not appear to be in question.• Building stability does not appear to be in question.• Component does not appear to be at an imminent danger level to occupants.
DL-4	Strength Issue	<ul style="list-style-type: none">• Structural capacity appears significantly reduced.• Load-carrying ability may be in question.• Building stability may be in question.• Danger to occupants is immediate.

Monitoring of Damaged Areas

Damaged structural components, categorized as shown in the previous table, may not need immediate repair or remediation, but do require monitoring. The following table is an attempt to give the Owner some general guidelines as to what types of monitoring should be done, by whom, and how often, for each level of damaged component. Note that level DL-4 requires immediate action to prevent loss of life or property.

DAMAGE LEVEL	TYPE OF Monitoring	Frequency	Action
DL-0	General observation by non-professional.	Annually.	Document status.
DL-1	Routine observation by non-professional and/or licensed contractor.	Every 6 months.	Document status. Evaluate necessity to repair.
DL-2	Scheduled observation by licensed contractor.	Every 4 months.	Document status. Repair before issue becomes structural concern.
DL-3	Scheduled observation by professional engineer.	Every 2 months.	Document status. Repair before concern becomes imminent danger.
DL-4	Immediate observation and assessment by professional engineer and licensed contractor.	Immediate	Cordon off area from public. Shore structural element(s). Repair or replace element(s).

Priority and Cost

In general, the importance and cost of repairing structural elements corresponds directly with level of damage. Apart from damage categorized as DL-4 (which requires immediate attention), a cost assessment and itemized priority list can easily be obtained from a licensed contractor, under the direction of a professional engineer, for each part. The Owner's input is needed to help generate this list, as the repairs may interfere with the function of the building, and may only be done as funds become available.

DAMAGE LEVEL	Priority of Repair /Cost	Time to take action / by whom
DL-0	None	-
DL-1	Low	At Owner's discretion / Repairs may be made by non-professionals.
DL-2	Moderate	At Owner's discretion but with input from and repairs made by a licensed contractor.
DL-3	High	Timely input from a professional engineer and a licensed contractor (who does all repairs) is required and to prevent further damage.
DL-4	Immediate Priority with High Cost	Immediate action is needed from a professional engineer and licensed contractor to prevent loss of life or property.

Structural Observations

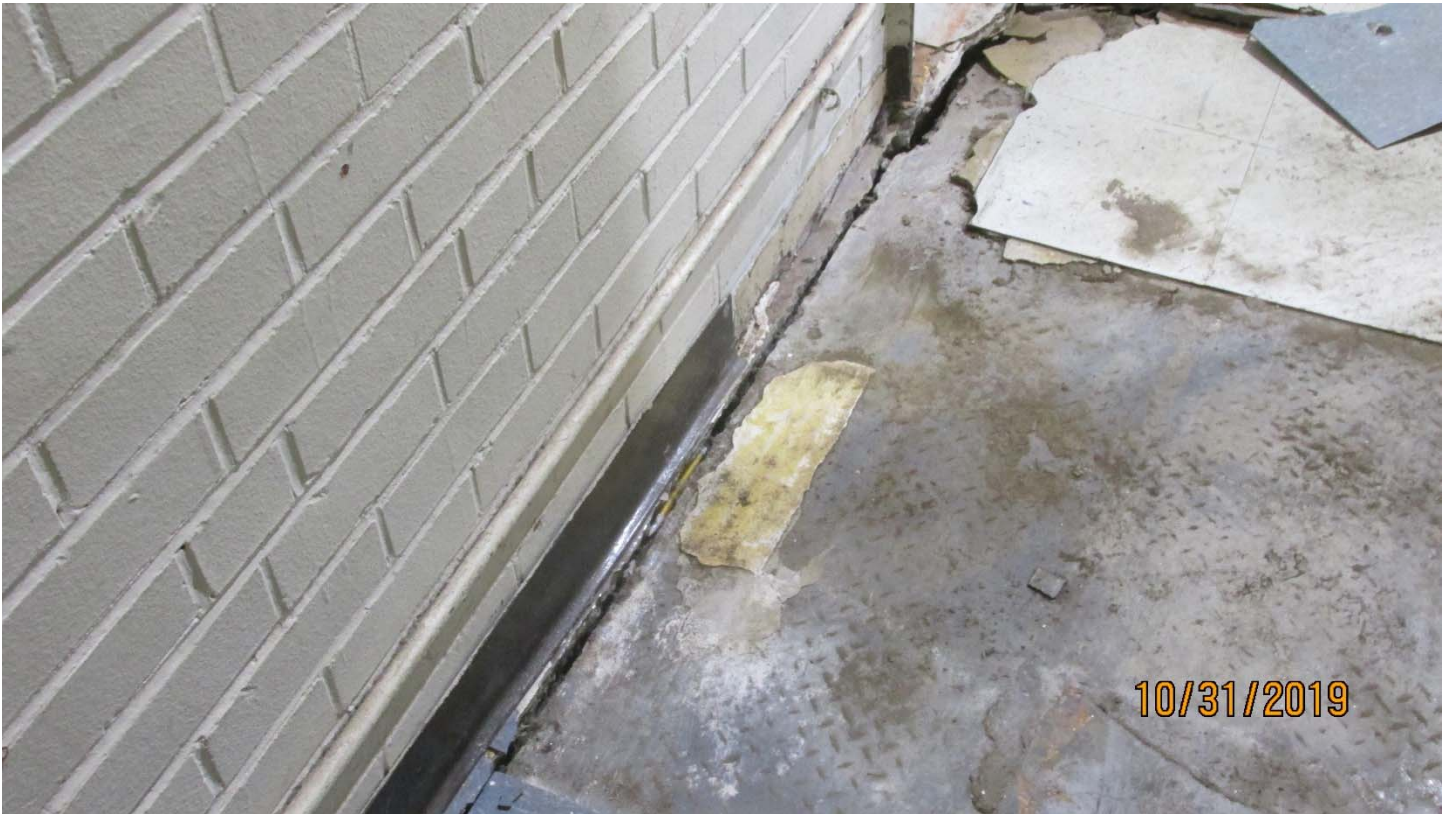
Building Component	General Condition	Remarks	Damage Level
Roof	Good	The existing roof had been recently repaired within the last two years, localized leaks had been stopped, according to facility personnel.	DL-2
Roof wood decking	Good	Though some indications of water infiltration had occurred, most of the damaged areas had been repaired.	DL-2
Roof steel framing	Good	No indications of structural damage.	DL-1
Gymnasium Floor	Fair	Some indications of localized subfloor damage	DL-2
Bleacher Floor	Poor	Many indications of floor cracking and/or settlement, especially in the Southeast corner of the gymnasium at the exit door. Slab subsidence severe.	DL-3
Gymnasium Walls and foundations	Poor	Several indications of wall settlement of the South wall. Cracks discovered on the inside of the Southwest corner.	DL-3



Picture #09: Concrete floor in bleacher area subsidence **(DL-3)**



Picture #10: Concrete floor in bleacher area subsidence (DL-3)



Picture #11: Concrete floor in bleacher area subsidence (DL-3)



Picture #12: Concrete floor in bleacher area subsidence (DL-3)



Picture #13: Concrete floor in bleacher area subsidence (DL-3)



Picture #14: Cracks in Exterior Brick Wall – South End of Gymnasium underneath bleachers (DL-3)



Picture #15: Cracks in Exterior Brick Wall – South End of Gymnasium underneath bleachers **(DL-3)**



Picture #16: Cracks in Exterior Brick Wall – South End of Gymnasium underneath bleachers (DL-3)



Picture #18: Cracks in Exterior Brick Wall – South End of Gymnasium underneath bleachers (DL-3)

STRUCTURAL ASSESSMENT

It is my professional opinion that the gymnasium building is stable, safe for occupation, and structural adequate to support the prescribed design loads for which it is intended. However, there are severe indications of foundation settlement along the south wall that, in my opinion, have been caused by the improper roof and site drainage, and need to be addressed immediately to prevent further damage.

RECOMMENDATIONS (SEE ATTACHED BUILDING PLAN S-1)

1. FOUNDATION REPAIR OF THE SOUTH WALL

- a. Add new foundation piers to the footing along the south wall, and around the corners approximately 12 feet, to arrest the building settlement and prevent further damage.
 - i. Foundation Piers
 1. Helical piers (soil bearing) or Steel piers (rock bearing)
 2. spaced a maximum of 12-foot centers,
 3. founded to an estimated depth of 16 feet below the existing footing or to auger refusal (encountering rock).
 4. attached to the existing concrete wall footing (field-verify size and location)
 5. Galvanized finish or weatherproof enamel-coated shop-applied paint
 6. With a 30-year pier manufacturer's warranty
 - b. Fill all cracks in the existing brick wall with an expansive weatherproof caulking material.

2. FLOOR SLAB REPAIR AROUND SOUTHEAST EXIT DOOR

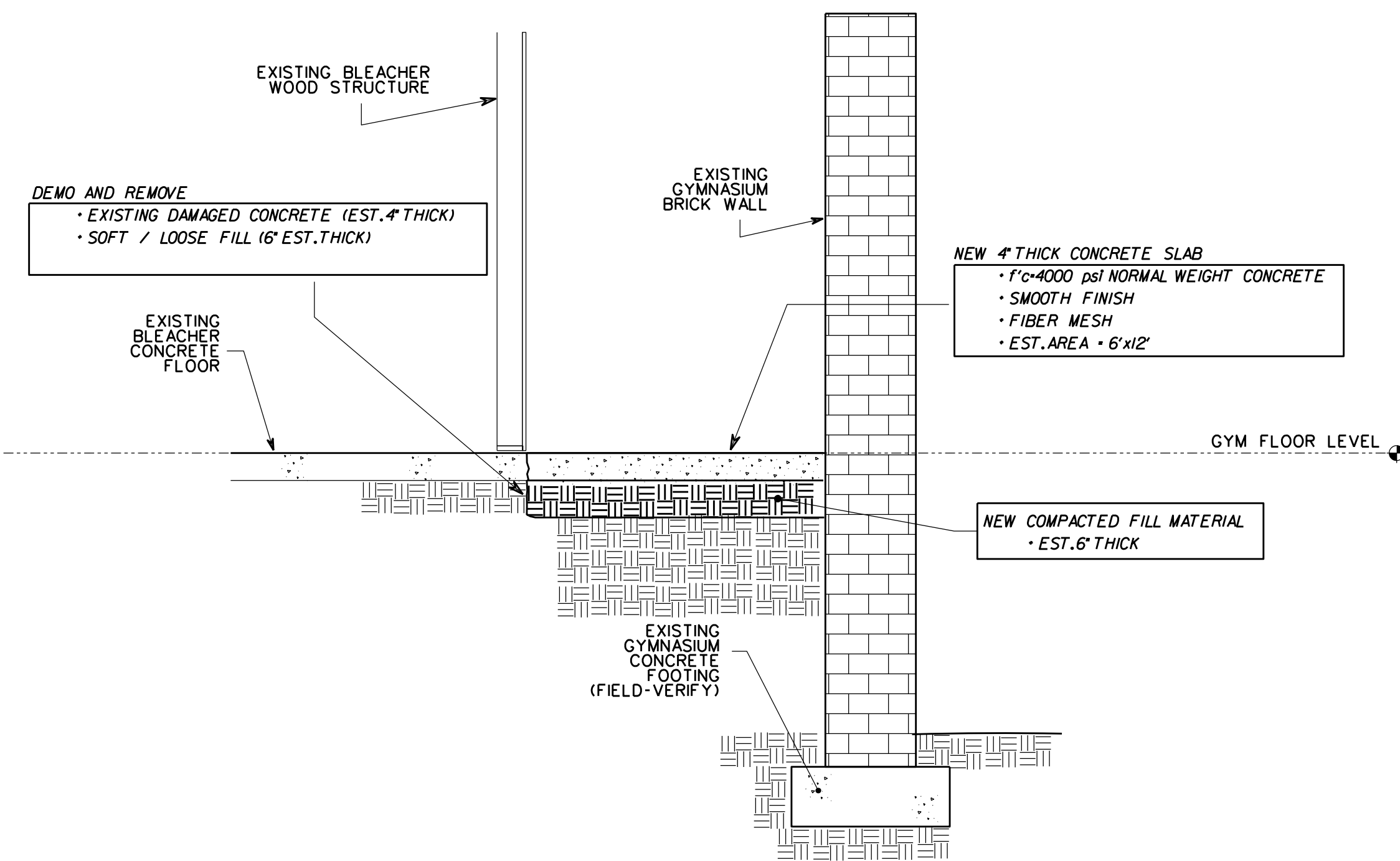
- a. Demolish and remove damaged concrete, (approximate damaged area = 6'-0"X12'-0")
- b. and soft or undesirable fill underneath, estimated depth of undesirable fill = 6" (field-verify)
- c. Install and compact new fill material (estimate 6" thick)
- d. Place new 4" thick concrete slab with
 - i. Isolation joint material between existing materials and new concrete
 - ii. f'c=4000 psi (no fly ash)
 - iii. Fibermesh reinforcing
 - iv. Smooth finish

THE AUTHOR

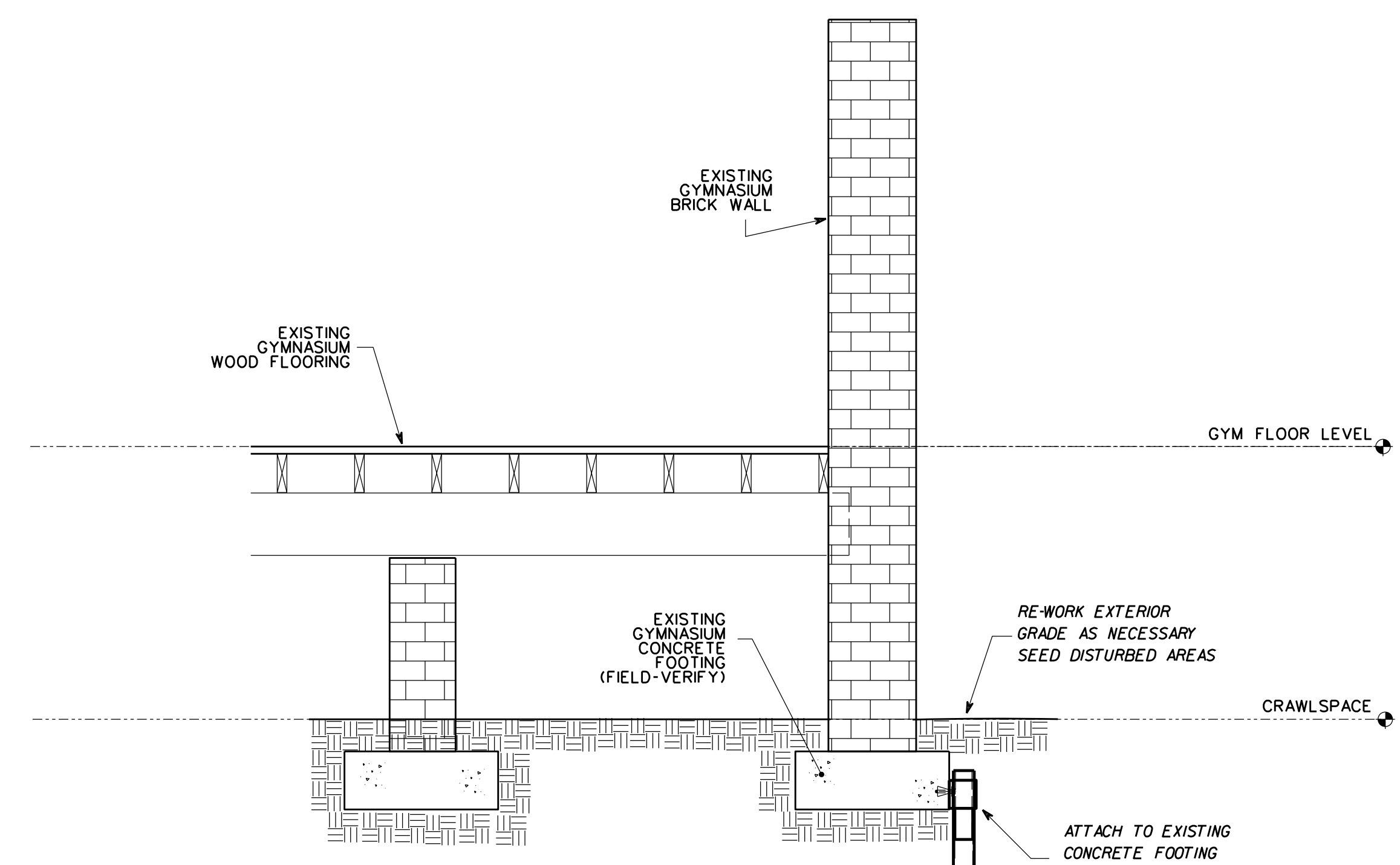
Personally, I am a licensed professional engineer licensed in the State of Tennessee with over 34 years of experience. I am the Principal Structural Engineer for Estes Russell Engineering, Inc.



David W. Cartwright, PE
Principal Structural Engineer
Estes Russell Engineering, Inc.
423-800-7998 Ext. 703
Cell: 615-934-2256
dcartwright@estesrusselleng.com

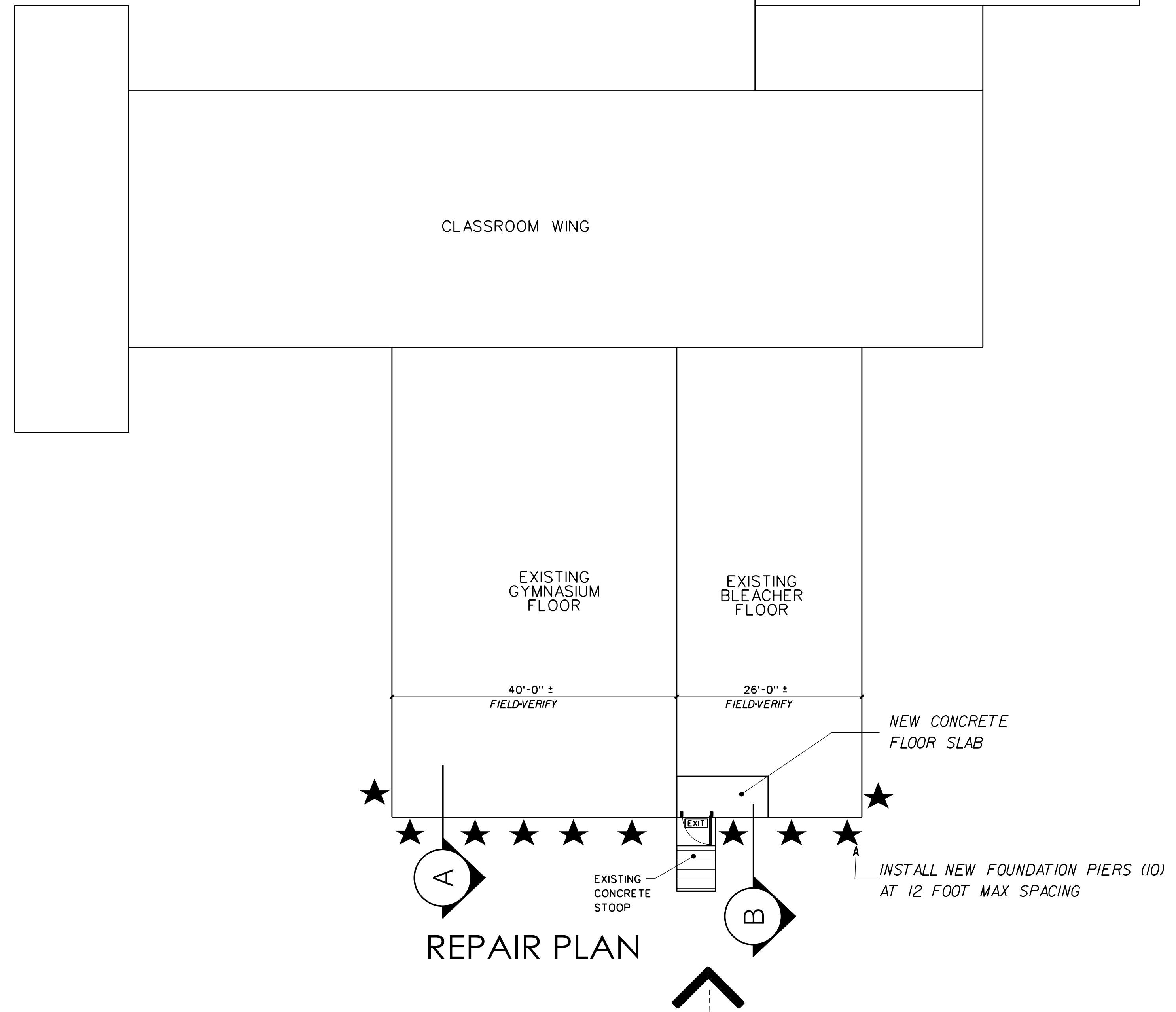


NEW SLAB REPAIR AT BLEACHERS (B)

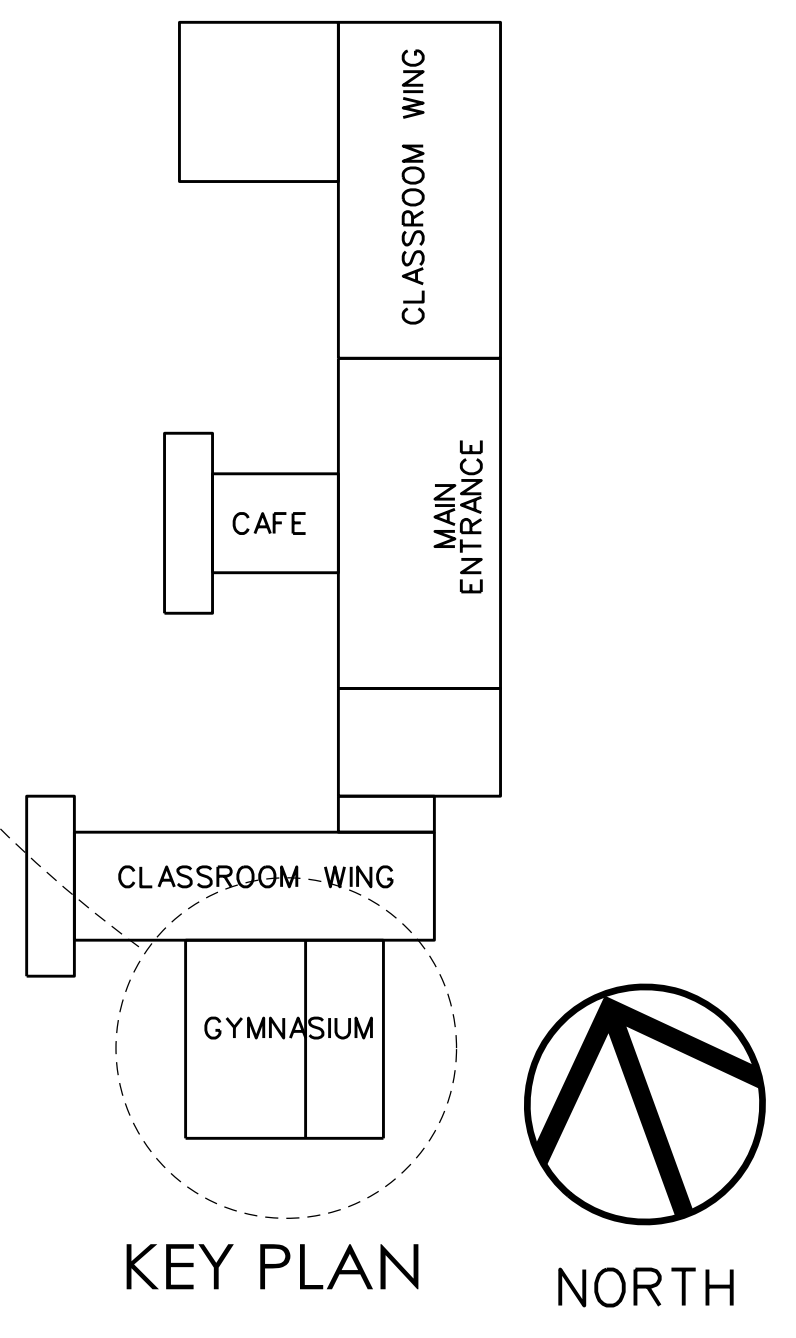


FOUNDATION REPAIR OF EXISTING EXTERIOR MASONRY WALL (A)

- FOUNDATION REPAIR NOTES:**
1. HELICAL PIERS (SOIL BEARING) OR STEEL PIERS (ROCK BEARING)
 - a. GALVANIZED OR SHOP-COATED WITH WEATHERPROOF ENAMEL PAINT
 - b. DESIGN LOADS (SERVICE):
 - DEAD LOAD - 6.4 kips
 - LIVE LOAD - 2.0 kips
 - c. MAXIMUM SPACING - 12'-0" c/c
 - d. ESTIMATED DEPTH - 16' FT FROM BOTTOM OF FOOTING (OR TO AUGER REFUSAL)
 - e. ACCEPTABLE MANUFACTURERS:
 - RAMJACK
 - DWYER
 - CHANCE
 - approved equal
 - f. 30 year MANUFACTURERS WARRANTY



REPAIR PLAN



KEY PLAN NORTH

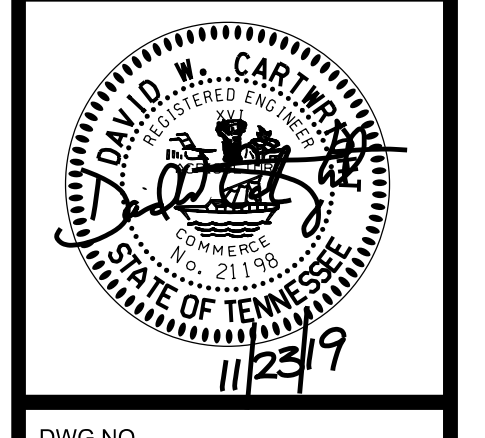
Estes Russell Engineering, Inc.
 2 International Plaza, Suite 4108
 4400 Lee Highway, Suite 109
 Fairfax, VA 22031
 Phone: (703) 544-2256
 WWW.ESTESRUSSELLENG.COM

REPAIR PLAN

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REVISIONS		
NO.	DATE	DESCRIPTION

DATE: 11/23/19



DWG NO. **S-1**
 PROJECT NO. 190224