

I. Phase II Objective. To replace existing piers supporting nine (9) columns that run from approximately 10' on the west side and east side and across the entire southern side of the building; install a forty inch frost barrier protection wall across the southern 10' of the east and west sides of building and across the entire southern perimeter of the south wall; replace piers as part of monolithic pour of concrete with frost barrier protection wall; and, after piers have been prepped, install previous columns on piers.

The purpose of this is to (a) correct settling of column piers that have settled in the past 44-years of the building; and to (b) create a layer of frost protection to prevent future concrete heaving of the floor. The frost protection wall will, also, serve as additional support for the piers, providing resistance against the piers settling or moving in the outward direction under significant snow loads.

II. International Building Code (2006) Compliance and Soils & Foundation Report. The City of Horton, in seeking to (i) determine whether the Blue Building foundational piers could be adequately replaced to hold and secure the facility's structure, (ii) ensure the safety of the Blue Building's occupants, and (iii) comply with the foundation investigation required by IBC §1802.2.4, sought geotechnical engineering consultation from Terracon Consultants of Topeka ("Terracon").

The International Building Code of 2006 (the "IBC") is the applicable building code for the City of Horton, Kansas. The IBC includes Chapter 18 requirements on "Soils and Foundations", which further includes requirements for "Pile and pier foundations." IBC §1802.2.4. Under §1802.2.4, the IBC requires that "pier foundations shall be designed and installed on the basis of a foundation investigation and report as specified" by the IBC. In order to meet the requirements of the IBC, the City of Horton contracted with Terracon to perform the investigation report.

On December 3, 2007, Terracon issued its Geotechnical Report (the "Terracon Report") finding that "[i]n [their] opinion, new spread footing foundations supported on native stiff clay soils can be used to support the existing [red iron] metal frame." Parameters for construction of replacement foundation piers, or footings, to support the red iron frame of the structure have been more than sufficiently outlined by both the Terracon Report. The Terracon Report found that:

1. Foundation piers, or footings, must be supported on native stiff clays and should not be supported above any existing fill material, Terracon Report at 3 and 4. Native, stiff clays were, generally, found to be at a depth of three (3) to three and one-half (3.5) feet below the surface of the ground. See Terracon Report, Log of Borings.
2. Footings, additionally, must extend "to at least 4 feet below the lowest adjacent finished grade for frost protection and to reduce the extent of moisture fluctuation below the footings", Terracon at 4, and, as an additional minimum, "all foundations penetrate the existing fill." Id. at 3.

3. Isolated footings, such as those currently existing in the facility and planned for replacement, must have a minimum width of 24 inches. Id. at 4.
4. After excavation of existing footing locations to approximately four-to-five feet, depending on the location of the footing, control of the excavated footing location should be exercised and “excavations should be free of water and loose material prior to placing concrete.” Id.
5. Replacement footings be sized to transmit a minimum dead load pressure of 1,000 pounds per square foot (“psf”) to the bearing surface; and a maximum allowable total load net bearing pressure of 3,000 psf should be used to size footings for dead and live loads. Id.

Commentary to §1802.2.1 (“Questionable soil”), provides that investigation and testing may include load bearing tests, which provides that “field load-bearing tests are very expensive [and, therefore], seldom used.” Instead of requiring load-bearing test, “[s]ufficient information is usually available from soil borings taken at the site.” IBC Chapter 18 (“Soils and Foundations”), §1802.2.1 (“Questionable soil”) (2006). There is sufficient information available from the soil borings at the Blue Building site to continue with construction.

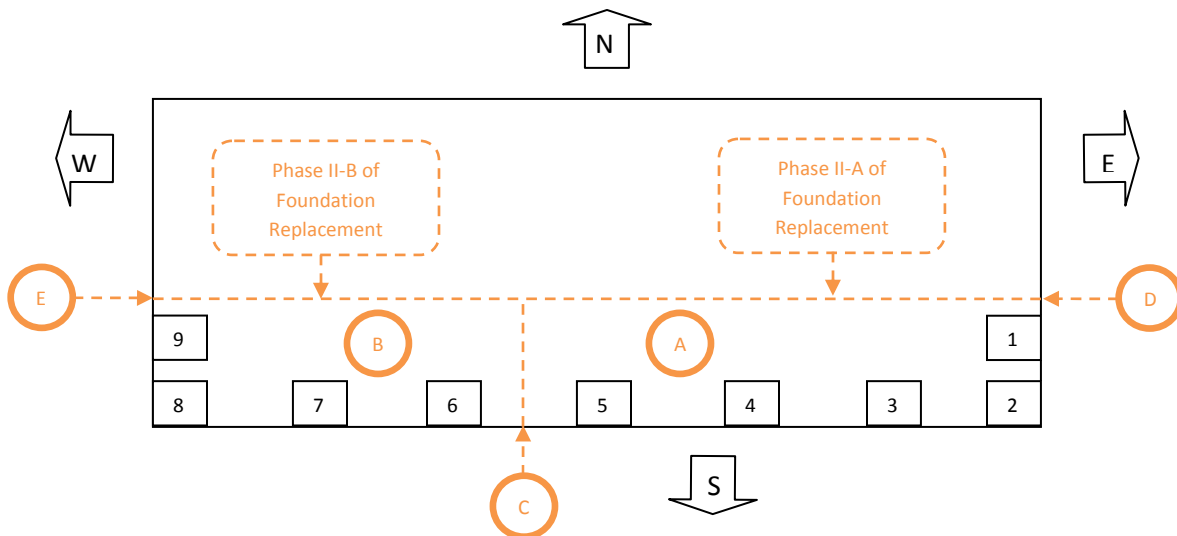
III. General Plan. The general plan for accomplishing this phase of the project is to begin with the foundation rehabilitation on the east side first and then, after completing the east half of the building, to rehabilitate the foundation on the west side of the building. The foundation construction on the east side of the building is classified as Phase II-A of the project and the west side of the building is described as Phase II-B of the project. Special attention should be provided to Figure A, which is included in this plan, because the plans herein reference points that are identifiable on the figure provided.

A. **Phase II-A**. Tasks required for completing Phase II-A of the rehabilitation are, generally, (i) support all beams being supported by columns no. 1, 2, 3, 4, and 5; (ii) removal of columns 1, 2, 3, 4, and 5; (iii) securing unremoved section of remaining red iron structure to ground to assist the structure during times of high wind that will be experienced in March; (iv) saw cut 10’ by 60’ from the south edge of building (see Section A in Figure A), remove slab floor, and remove existing piers while maintaining minimum disturbance to sub-floor compacted soil; (v) trench the southern wall from approximately the midpoint of the length of the building to approximately 10’ north of the south wall along the east wall (trench cut from point C to point D on Figure A) with a trench that is, at a minimum, four feet deep and six inches wide; (vi) auger new pier footings that are 24” wide and 8’ deep; (vii) complete rough-in sewer in to building’s east new bathroom; (viii) apply rebar to trench and pier footings, tying footings and earth-formed frost wall together in order to provide for a single, monolithic pour of a minimum 4,000 psi concrete that will tie the wall together in order to provide for increased horizontal support in accordance with IBC §1906.1.3 (Concrete Bracing); (ix) form and pour upper cap that will complete footings for column reattachment and provide protection to sheetmetal of building to provide concrete protection around exterior base of building; (x) prep and pour new concrete for Section A of Figure A,

which was removed as part of beginning of project; and (xi) replace previously removed red iron columns on newly poured footings and correctly square building.

B. **Phase II-B.** Tasks required for completing Phase II-B of the rehabilitation are, generally, (i) support all beams being supported by columns no. 6, 7, 8 and 9; (ii) removal of columns 6, 7, 8 and 9; (iii) securing un-removed section of remaining red iron structure to ground to assist the structure during times of high wind that will be experienced in March; (iv) saw cut 10' by 40' from the south edge of building (see Section B in Figure A), remove slab floor, and remove existing piers while maintaining minimum disturbance to sub-floor compacted soil; (v) trench the southern wall from approximately the midpoint of the length of the building to approximately 10' north of the south wall along the east wall (trench cut from point C to point E on Figure A) with a trench that is, at a minimum, four feet deep and six inches wide; (vi) auger new pier footings that are 24" wide and between 4' and 8' deep; (vii) complete rough-in sewer in to building's west new bathroom; (viii) apply rebar to trench and pier footings, tying footings and earth-formed frost wall together in order to provide for a single, monolithic pour of minimum 4,000 psi concrete that binds the footings and wall together in order to provide for increased horizontal support in accordance with IBC §1906.1.3 (Concrete Bracing); (ix) form and pour upper cap that will complete footings for column reattachment and provide protection to sheetmetal of building to provide concrete protection around exterior base of building; (x) prep and pour new concrete for Section B of Figure A, which was removed as part of beginning of project; and (xi) replace previously removed red iron columns on newly poured footings and correctly square building.

Figure A. Blue Building Sketch and Approximate Pier Locations of Piers Requiring Replacement (Not To Scale).



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