GEOTECHNICAL ENGINEERING REPORT

JERSEY SHORE UNIVERSITY MEDICAL CENTER
EAST EXPANSION BUILDING
NEPTUNE, NEW JERSEY

Prepared For:

RSC Architects
3 University Plaza Drive, Suite 600
Hackensack, NJ 07601

Prepared By:

Langan Engineering and Environmental Services, LLC
300 Kimball Drive
Parsippany, New Jersey 07054

Victoria Rhodes, P.E.
New Jersey Professional Engineer License No: 24GE05854400

Ronald D. Boyer, P.E.
New Jersey Professional Engineer License No: 24GE04200300

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INTRODUCTION

We have completed our geotechnical engineering investigation and study for the proposed East Expansion Building project at the Jersey Shore University Medical Center (JSUMC) campus in Neptune, New Jersey. The purpose of the investigation was to: 1) research and review available site information; 2) obtain subsurface information by drilling borings at accessible site areas; and 3) provide recommendations for site preparation, earthwork, foundation design, and other geotechnical aspects of construction for the proposed development. No environmental investigation or sampling was performed as part of this investigation and study.

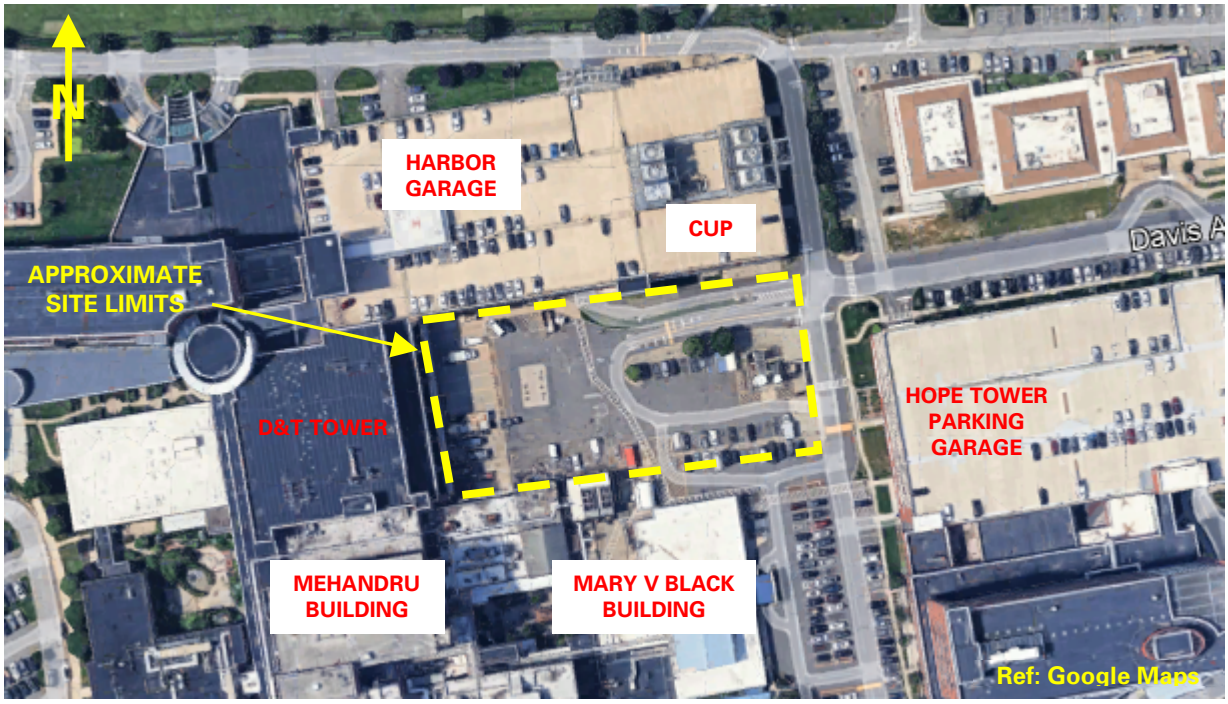
REPORT DATUM

Elevations provided in this report are approximate and are based on the elevations provided in the drawing titled "Boundary Survey with Topography" dated 11 July 2014 and prepared by Dewberry Engineers, Inc. Unless noted otherwise, elevations given herein are referenced to the above-referenced drawing, which references the North American Vertical Datum of 1988 (NAVD88).

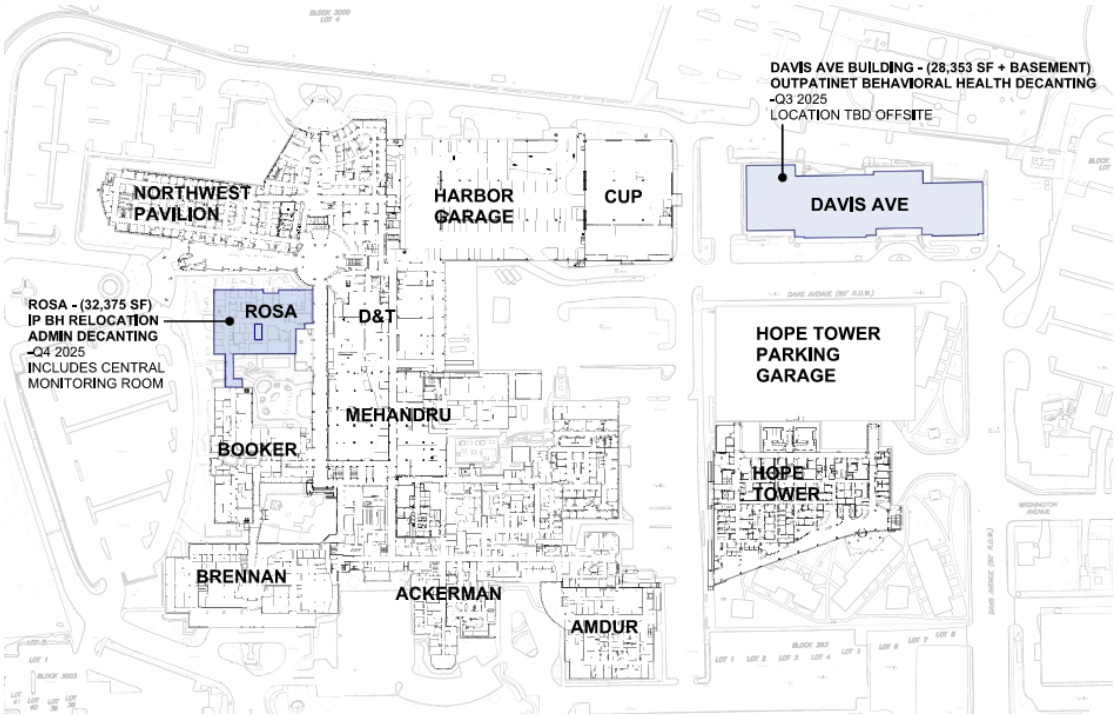
SITE DESCRIPTION

The project site is located at the central portion of the JSUMC campus located at 1945 Route 33 in Neptune, New Jersey. The JSUMC campus is generally bound by the Neptune High School athletic fields to the north, Davis Avenue to the east, Route 33 to the south and residential properties to the west. The JSUMC campus consists of several healthcare facility buildings, parking garages, on-grade parking lots, and access drives.

The East Expansion Building project site is bound by the Harbor Garage and Central Utility Plant (CUP) to the north, site access roads and the Hope Tower Parking Garage to the east, the Mehandru and Mary V Black Buildings to the south, and loading docks and the D&T Tower to the west. The adjacent buildings are discussed in more detail in the following sections. An aerial photograph of the project site and a JSUMC campus map are provided below and a site location plan is provided as Figure 1.



Aerial Photograph of Site



JSUMC Campus Map

The project site is currently occupied by a paved at-grade parking lot and loading docks. Several below-grade utilities, including electric conduits, steam lines, water utilities, storm sewer utilities and gas utilities, exist at the site. Two above-grade oxygen tanks with associated below-grade oxygen lines are located at the eastern portion of the site. Surface grades at the site vary from approximate elevation (el) 34.5 to el 38.

Portions of the JSUMC campus, including the majority of the east expansion site, are mapped with a landfill area. A discussion of the landfill is provided in a subsequent section of this report .

PROPOSED DEVELOPMENT

The proposed development will include construction of a 2-story East Expansion building and associated site improvements. The proposed building will be immediately adjacent and connected to the D&T Tower loading docks.

The western portion of the proposed building will consist of an approximately 13,000 sq-ft expansion of the loading docks with a lowest floor slab elevation at approximately el 37.5 to match the existing D&T Tower and loading docks at the eastern portion. This western portion of the building will have 2 additional floors above the ground floor.

The eastern portion of the proposed building will consist of an approximately 40,000 sq-ft overhang area above the loading docks. This portion will have 2 floors and be open-air at ground level.

We understand that surface grades will be generally maintained with minimal regrading. We understand that existing utilities which conflict with proposed foundations will be relocated. Utilities not in conflict with proposed foundations in the western portion of the site are to remain and include the existing steam lines and storm sewer and electric utilities.

The following information regarding the proposed East Expansion building structure was provided via email on 11 November 2024 by the project structural engineer (Reuther+Bowen) and project architect (RSC Architects).

- Structural System: Steel Frame
- Typical Column Spacing: 28 ft by 40 ft.
- Service Loads: The maximum service level column load is anticipated to be 2,175 kips.
- Risk Category: Category IV in accordance with the 2021 International Building Code New Jersey Edition (Building Code).

REVIEW OF AVAILABLE INFORMATION

We reviewed historic topographic maps, aerial photographs, geologic information, and the Flood Insurance Rate Map (FIRM) for the site vicinity. We also reviewed available foundation plans for the adjacent and nearby buildings, and existing landfill documents. Pertinent information obtained from the above documents is summarized in the following paragraphs.

Historic Topographic Maps

We reviewed historical topographic maps dated 1888, 1893, 1901, 1902, 1943, 1954, 1970, 1981, 1989, 1995, 2014, 2016 and 2019 to evaluate pre-development conditions at the proposed development area. A copy of the 1888 historic topographic map is provided as Figure 2. Copies of all the available topographic maps are provided in Attachment A.

The maps from 1888 to 1902 show the site within a historically undeveloped area. The maps from 1943 through 1954 show the Fitkin Memorial Hospital building within the western portion of the site and a stream within the eastern portion of the site. Several small buildings and hospital expansions throughout the JSUMC campus were added and depicted in the 1970 through 1995 maps.

Historic Aerial Photographs

We reviewed historical aerial photographs dated 1931, 1940, 1951, 1953, 1961, 1963, 1970, 1974, 1985, 1995, 2006, 2010, 2015, and 2019 to evaluate pre-development conditions at the proposed development area. Copies of the aerial photographs are provided in Attachment B.

The Fitkin Hospital building is shown to the south of the site and the majority of the site appears to be a wooded area with a building in the southwestern portion of the site in the 1931 through 1953 aerial photos. The site area appears to have been cleared sometime between 1953 and 1961 with the building remaining in the southwestern portion of the site. The aerial photos from 1970 to 2006 show a roadway and parking areas at the site.

The aerial photographs from 2010 through 2019 depict the East Expansion Building site conditions as similar to those observed currently.

Regional Geology

According to the New Jersey Department of Environmental Protection (NJDEP) GeoWeb maps, the surficial geology at the site consists of sand, silt, minor clay and pebble gravel of the Upper Colluvium Formation. A copy of the surficial geology map is provided as Figure 3A.

NJDEP's online NJ-GeoWeb geologic map indicates bedrock at the site is expected to be at depths of greater than 100 ft. The soil underlying the surficial soils is expected to consist of quartz

sand and clay of the Lower Member Kirkwood Formation. A copy of the geologic map is provided as Figure 3B.

Acid Producing Soils

Kirkwood formation deposits are known to have the potential to be acid-producing soils. Soils become naturally acidic typically due to rainfall/leaching, acidic parent material, and decay of organic matter.

The development of acid-sulfate soils occurs when sulfide minerals (pyrite and/or elemental sulfur, in reduced sulfidic sediments) oxidize upon air exposure through drainage or earth moving operations. The overall acid-sulfate soil-forming process involves a complex chain of reactions, which connect the oxidation of iron sulfides to the release of iron oxyhydrates and sulfuric acids.

Sulfide-bearing (pyritic) marine and estuarine sediment have potential to produce acidic soils. Soils developed on these sulfidic, non-calcareous, marine sediments are strongly acidic (pH < 5.5) to extremely acidic (pH < 4.5).

Flood Map

We reviewed the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Community-Panel Number 34025C0333G (revised date 15 June 2022). According to the flood maps, the proposed development area lies within "Zone X – no shading", which is defined as "areas determined to be outside the 0.2% annual chance floodplain". A copy of the referenced flood insurance rate map is provided as Figure 4.

Review of Available Information Regarding Adjacent Buildings

Our review of available information regarding the adjacent buildings (Harbor Garage, D&T Tower and the Hope Tower Parking Garage) is provided in the following sections.

Harbor Garage

The Harbor Garage is a 5-story parking structure located immediately north of the site. We reviewed the 29 August 2006 structural drawings for the Harbor Garage prepared by DiStasio & Van Buren Inc. Copies of the drawings are included in Attachment C.

Based on these drawings, the design top of slab at the ground floor was el 37.48. The existing Harbor Garage columns and walls are supported by 100 ton capacity auger cast piles, and the lowest level slab consists of a structural slab supported by 25 ton capacity timber piles. Pile diameters are not provided in the drawings.

D&T Tower

The D&T Tower is a 5-story medical building with loading docks located immediately west of the site. We reviewed the foundation drawings titled "Additions and Renovations" prepared by DiStasio & Van Buren, Inc dated 26 June 2006. Copies of the drawings are provided in Attachment D.

Based on the drawings, the design top of ground floor slab is at el 37.48. The drawings indicate the D&T Tower is supported by deep foundations. The columns are supported on minimum 16-inch-diameter auger cast-in-place concrete piles (ACIP). The ACIPs have a 30-ft-long sleeve from the pile cap and have 100 ton or 75 ton capacities. The ACIPs have a minimum longitudinal reinforcement requirement of 4 #5 bars with minimum transverse reinforcement of #3 bars at 4 inches for the upper 4 feet and #3 bars at 6 inches for the remainder of the reinforcing. The structural slab is supported on timber piles with a minimum tip diameter of 8 inches. The timber piles each have a 25 ton compression capacity.

The tops of the pile caps immediately adjacent to the proposed East Expansion building reportedly range from el 32.48 to el 35.48.

Hope Tower Parking Garage

The Hope Tower Parking Garage is a 9-story parking garage located east of the proposed East Expansion Building. We reviewed the foundation drawings titled "Foundation Plan / Framing Plan Level 1 Alternate" prepared by Walter P Moore dated 17 June 2016. Copies of the drawings are provided in Attachment E.

The foundation drawings indicate the Hope Tower Parking Garage is supported on deep foundations. The piles are designed as 18-inch-diameter augercast piles, each having an individual 100 ton compression, 50 ton tension, and 3.5 ton lateral capacity. An alternate design of a steel H Pile with a 100 ton compression, 50 ton tension, and 7 ton lateral capacity is also provided. Based on the drawings, the design top of slab elevation is at approximate el 38.5 to 41.5. The slab is shown as a 5-inch-thick slab on grade.

Landfill Exhibit

We reviewed the landfill exhibit titled "Exhibit B-1B – Restricted Area Engineering Controls" dated 2/7/14 prepared by the Elm Group. The exhibit indicates that the northeastern portion of the JSUMC campus is located within an environmentally restricted area. This restricted area includes the majority of the East Expansion Building site, excluding a small portion at the southwestern area of the proposed building site. Based on discussions with the Elm Group, we understand the restricted area consists of a landfill containing a soil matrix mixed with debris and

the landfill typically extends to depths of approximately 9 ft below existing surface grade and to a maximum depth of 13 ft below existing surface grade.

The above referenced landfill exhibit also indicates that the majority of the East Expansion Building site has a cap consisting of 8 inches of asphalt overlying 8 inches of dense graded aggregate overlying 12 inches of a granular subbase. A small area at the western portion of the site has a cap that consists of 8 inches of concrete overlying 8 inches of stone overlying 12 inches of granular base. Small areas also have caps consisting of 6 inches of topsoil overlying 18 inches of clean structural fill or 7 inches of asphalt overlying 8 inches of dense graded aggregate overlying 12 inches of granular subbase. A copy of the landfill exhibit is provided in Attachment F.

SUBSURFACE INVESTIGATION

A geotechnical subsurface investigation was performed at the site in November 2024 under Langan supervision. The geotechnical subsurface investigation for this study consisted of drilling 11 borings. Borings were performed in areas that were accessible at the time of our investigation.

The locations of all borings are shown in Figure 5. Logs of all borings are included in Appendix A.

Borings

Borings are identified as LD-1 through LD-11 and were performed between 16 November and 27 November 2024. Borings extended 32 ft to 102 ft below the ground surface. Borings were drilled by Craig Geotechnical Drilling, Co., Inc. (Craig) using a truck-mounted drill rig with mud-rotary drilling techniques.

Soil samples were obtained and Standard Penetration Tests (SPTs) were performed using a standard 2-inch outside-diameter split-spoon sampler driven by a 140-lb safety or automatic hammer in accordance with ASTM D1586. Sampling and SPTs were performed continuously in the upper 12 ft and through landfill materials, where present, and at 5-ft intervals thereafter. The boreholes were backfilled with soil cuttings and grouted using bentonite, and asphalt surfaces were patched with cold-patch asphalt.

The borings were completed under the full-time observation of a field engineer from our office and under the direct supervision of our project Professional Engineer. Our field engineer maintained logs of the explorations, classified soil encountered, and obtained representative material samples.

The soil samples were classified in accordance with the Unified Soil Classification System (USCS). The soil samples were sent to our storage facility in Whippany, NJ for further classification and laboratory testing. The samples will be stored for 12 months from the date of investigation.

GEOTECHNICAL LABORATORY TESTING

Soil samples from the Langan investigation were classified and examined in the field by a Langan geotechnical engineer. Representative samples were selected and tested to determine engineering properties and to confirm field classifications. The laboratory test results from the investigation are included in Appendix B. Laboratory testing included the following:

- Natural water content determinations (ASTM D2216)
- Grain Size Analyses (ASTM D1140)
- Atterberg Limit Determinations (ASTM D4318)
- Organic Content Determinations (ASTM D2974)
- Unconfined Compressive Strength Tests (ASTM D2166)

SUBSURFACE CONDITIONS

Based on the results of the borings performed for this study, the site subsurface conditions consist of surficial materials and fill overlying upper sand, clay and lower sand layers. Simplified, graphical presentations of the subsurface conditions encountered within the borings are presented in Table 1 and generalized subsurface profiles are provided in Figure 6. The following sections describe the encountered strata and observed groundwater conditions.

Surficial Materials and Fill

A 6-inch-thick to 24-inch-thick layer of asphalt was encountered at the surfaces of all borings.

In borings LD-3, LD-7, LD-8, LD-10 and LD-11, the asphalt was underlain by a 5-ft-thick to 9-ft-thick layer of fill generally consisting of brown to light gray fine to coarse sand with varying amounts of silt and gravel.

Landfill Materials: In borings LD-1, LD-2, LD-4 through LD-6 and LD-9, the asphalt was underlain by a 5-ft-thick to 12.5-ft-thick fill layer consisting of soil mixed with landfill debris. The landfill materials were typically described as gray to brown sand with varying amounts of silt, clay and gravel mixed with wood pieces, glass pieces, paper, brick fragments, concrete pieces, metal pieces and roots.

The SPT N-values recorded in this layer varied from 4 blows per foot (bpf) to 30 bpf indicative of the heterogeneous nature of the fill. Typical index properties determined from laboratory testing performed on one sample from the fill layer are provided in the following table.

Results of Identification Tests (Fill)

Boring	Sample	Depth (ft)	Natural Moisture Content (%)	Fines Content (%)
LD-8	S-3	5-7	16.8	2

Upper Sand

An upper sand layer was encountered immediately below the fill layer in all borings and was typically described as gray to brown fine to coarse sand with varying amounts of silt, clay and gravel. The upper sand was first encountered at depths of 2 ft to 12.5 ft below existing surface grade, or at el 24 to el 35.

In borings LD-1, LD-2, LD-3, LD-8, LD-9 and LD-10, a 2-ft-thick to 5-ft-thick silt layer was encountered interbedded within the upper sand.

The upper sand was typically found to be very loose to very dense as evidenced by SPT N-values typically ranging from 3 bpf to 64 bpf (average of 20 bpf).

The upper sand is classified as SM or SP per USCS. The interbedded silt was classified as ML per USCS. Typical index properties determined from laboratory testing performed on samples from the upper sand layer are provided in the following table.

Results of Identification Tests (Upper Sand/Interbedded Silt)

Boring	Sample	Depth (ft)	Natural Moisture Content (%)	Fines Content (%)
LD-2	S-5	9-11	24.1	20.4
LD-4	S-3	10-12	22.1	43.5
LD-7	S-5	10-12	33.4	72.6
LD-7	S-10	30-32	38.7	61.5
LD-11	S-6	9-11	23.7	27.4

Clay

A gray to greenish gray clay layer with varying amounts of silt and sand was encountered immediately below the upper sand in borings LD-2, LD-5, LD-7, LD-8, LD-10 and LD-11. The clay was first encountered at a depth of 35 ft below existing surface grade, corresponding to el -1 to el 2. An interbedded 5-ft-thick clayey/silty sand layer within the clay layer was encountered in all borings.

The clay was typically found to be stiff to very stiff as evidenced by SPT N-values typically ranging from 8 bpf to 26 bpf. The unconfined compressive strengths (q_u values) as measured by the field pocket penetrometer varied typically from 1,000 pounds per square foot (psf) to 7,000 psf, indicating stiff to very stiff consistency.

The clay classified as CH or CL per USCS. Typical index properties and consolidation properties determined from laboratory testing performed on samples from the clay layer are provided in the following table.

Results of Identification Tests (Clay)

Boring	Sample	Depth (ft)	Natural Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Fines Content (%)	Organic Content (%)
LD-2	S-8	25-27	35.7	48	23	25	-	-
LD-3	S-4	15-17	35.4	33	23	10	78.2	2.8
LD-5	S-15	50-52	32.5	64	17	47	51.8	-
LD-6	S-9	25-27	38.2	-	-	-	82.2	-
LD-9	S-4	8-10	70.2	90	36	54	-	12.2
LD-11	S-19	65-67	56.6	123	26	97	-	2.6

Lower Sand

A lower sand was encountered below the clay layer in the deep borings LD-2 and LD-11. The lower sand was first encountered at depths of 80 ft to 85 ft below existing surface grade, or at el -44 to el -49.5.

The lower sand was typically described as greenish gray clayey/silty sand. The sand was typically found to be medium dense to very dense as evidenced by SPT N-values typically ranging from 21 bpf to split spoon refusal values. The lower sand is classified as SM and SC per USCS. In boring LD-2, the sample taken at 100 ft was described as sandy clay and is classified as CL per USCS.

Typical index properties determined from laboratory testing performed on samples from the lower layer are provided in the following table.

Results of Identification Tests (Lower Sand)

Boring	Sample	Depth (ft)	Natural Moisture Content (%)	Fines Content (%)	Organic Content (%)
LD-2	S-20	65-67	30.7	47.7	1.1
LD-10	S-14	45-47	27.8	47.4	-

Groundwater

During our investigation, groundwater levels were inferred based on the moisture content of the retrieved soil samples. The groundwater levels typically ranged from 4 ft to 12.5 ft below surface grades, or between el 24 and el 32. Groundwater levels are subject to seasonal fluctuations.

Corrosion Test Results

The results of the corrosion testing of composited soil samples obtained from the upper 10 ft from borings LD-5, LD-6 and LD-10 are shown in the table below.

Corrosion Test Results

Parameter	**LD-5 (1 ft to 9 ft)**	**LD-6 (1 ft to 9 ft)**	**LD-10 (2 ft to 6 ft)**
pH	8.7	9.6	8.8
Resistivity	1,350 Ω-cm	3,210 Ω-cm	1,330 Ω-cm
Redox Potential	376 mV	356 mV	352 mV
Chlorides	373 ppm	118 ppm	338 ppm
Sulfide	6.3 ppm	5.9 ppm	5.9 ppm
Sulfate	376 ppm	275 ppm	436 ppm

EVALUATION AND RECOMMENDATIONS

Our geotechnical design and construction recommendations are presented in the following sections.

Seismicity

The 2021 International Building Code NJ Edition (Building Code) assigns a seismic site class based on the type, thickness and average properties in the top 100 ft of bearing stratum. Seismic site-class values are given in accordance with Chapter 20 of ASCE 7-16 per the Building Code.

The soils underlying the proposed structure typically consist of upper sand, clay and lower sand. The recommended seismic design parameters are summarized in the following table.

Seismic Parameters	Value at short period	Value at 1-second period
Mapped Spectral Response Acceleration *(in terms of gravitational acceleration, g)*	S_S= 0.224g	S_1= 0.058g
Seismic Site Class	Class D (stiff soil)	
Seismic Site Coefficients	F_A = 1.6	F_V = 2.4
Design spectral response acceleration, S_{DS}=2/3xFxS	S_{DS}=0.239g	S_{D1}=0.083g
Risk Category	IV	
Seismic Design Category	C	C

Liquefaction Potential

The Building Code requires an evaluation of the liquefaction potential of non-cohesive soils below the groundwater level and up to 50 ft below the ground surface. Soils below the groundwater level consisted mostly of medium dense to dense sand. Therefore, liquefaction potential is not a concern and does not need to be taken into account in the design.

Foundation System

The existing fill materials and landfill materials are not suitable for bearing support of conventional shallow foundations. The underlying upper sand and clay, in their present condition, also cannot provide adequate bearing support for conventional shallow foundations based on the proposed structure loads, since bearing in these upper sand and clay materials would result in excessive foundation settlements.

Therefore, the proposed East Expansion Building can be supported on deep foundations consisting of pile foundations to transfer the loads to the lower medium dense to very dense sand.

The proposed lowest floor slab within the loading dock expansion area can be supported by the existing fill materials following the proofrolling/compaction subgrade preparation is performed as subsequently recommended herein, or after new fill materials are placed and compacted in accordance with the "Engineered Fill" section below; pile support is not required beneath the slab.

Design and Construction Guidelines for Piles

We recommend that the proposed building be supported on auger cast-in-place (ACIP) piles bearing in the lower sand/clay. ACIP piles should be used to support the proposed building columns and walls. The pile design details (size, material properties, design loads and lengths) for the ACIP piles are provided in the table below.

Pile Design Summary Table

Pile type	16-inch-diameter auger cast-in-place pile (ACIP)
Minimum upper cage reinforcement **(minimum 1/3 the total pile length)**	Longitudinal Bars 4 No. 11 bars ASTM 615 threadbar, Fy=60 ksi (or equivalent steel casing)
	Lateral reinforcement #4 tie at 6 inches on centers (o.c.)
Additional Reinforcement (full length of pile)	1 No. 14 bar ASTM 615 threadbar, Fy=60 ksi
Concrete or cement grout 28-day compressive strength	6,000 psi
Center to center pile spacing	Minimum 3 pile diameter (4.5 feet) center-to-center spacing
Bearing material	Lower sand/clay below el -50
Anticipated pile length	Between 85 feet and 100 feet from cut-off Minimum tip elevation at el -50
Net allowable axial compressive load	200 kips (100 tons)
Allowable lateral load (lateral displacement less than 0.5 inch and free head condition)	4 kips with the specified steel cage to be substantiated by load testing
Allowable uplift load	50 kips (25 tons)

Where practical, it is ideal to support an individual column with at least two ACIP piles (rather than one large capacity ACIP pile) for redundancy and to minimize the effects of eccentricity that could create significant additional stresses, especially in the uncased sections.

General Details

The piles should be installed using equipment having appropriate installation tools to ensure adequate seating into the bearing stratum and to ease installation. Where needed, adequate measures (predrilling or pre-excavating) should be performed to overcome obstructions and to reach the specified bearing strata.

Pile Reinforcement

Pile reinforcement shall be deformed ASTM 615 steel with a yield strength of 60 ksi and shall extend to the tip of the pile. Core steel should be equipped with centralizers at 10 ft on centers to verify the minimum lateral dimension of the pile.

Cement Grout Fill

The piles should be filled with cement grout fill with a minimum compressive strength of 6,000 pounds per square inch (psi). The cement grout mix should be designed to prevent segregation and "bleeding" during placement. Grouting should be continuous and cold joints are not allowed.

Installation Criteria

The pile contractor should perform and submit his/her analysis to select a suitable installation criteria, including minimum length, crowd pressure and torque, for the specified bearing strata to achieve the specified loads.

Index Piles

Index piles should be installed and load tests should be performed prior to installation of production piles. This is necessary to more accurately estimate lengths, identify unusual conditions, confirm axial and lateral capacities, and to allow adjustments as needed. We recommend installing a minimum of 5 index piles that are the same in every respect as the production piles. The index piles may be used, if properly installed, as production piles. Their locations should be chosen by the contractor and approved by the project geotechnical engineer. Loads tests should be performed on the index piles per the Building Code requirements.

Static Compressive Axial Load Tests

A minimum of 1 compression load tests should be performed to confirm the pile compression capacity. The compression load tests should be performed in accordance with the requirements in ASTM D1143.

Use isolation casings and instrumentation to deduct the fill and landfill side resistance. The test piles should be instrumented with strain gages to determine load distribution along the pile length to estimate skin resistance and tip resistance. If isolation casing is not utilized, the maximum test load should be increased accordingly.

Lateral Load Tests

The Building Code requires that the lateral capacity of a pile be determined by an approved method of analysis, or by lateral load tests to at least twice the design load. The allowable lateral loads provided in the table above should be substantiated by at least 1 lateral load test performed in accordance with ASTM D3966 per the Building Code. The allowable lateral load is half of the test load that produces a gross lateral movement of 1 inch at the ground surface.

Settlement Estimates

We anticipate column settlement to be less than 1 inch and differential settlement will be less than 0.75 inch.

Obstructions (Pre-drilling or Pre-excavation)

Portions of the site are within the existing landfill which contains debris that may create difficulties for pile installation at relatively shallow depths. Proper measures such as pre-excavating (or pre-drilling) may be required to remove these obstructions and to prevent damage to the installation equipment. The contractor should assume that these measures may be required for installation of some piles.

Drilling Spoils

The drilling spoils will predominately consist of the natural sands and clays. Some drilling spoils will consist of landfill materials. The drilling spoils developed during the pile activities can be re-used on-site provided that they meet the recommendations provided in the "Backfilling and Compaction" sections of this report and are in accordance with the project environmental requirements. The site soils contain acid producing (sulfate) soils. The potential for exposing acid producing soils requires compliance with the applicable soil erosion and sediment control measures within the municipality where the work is being performed, to prevent acidic storm runoff from impacting areas outside the construction work zone.

Special Inspection

A qualified and experienced geotechnical engineer should inspect pile installation operations and should certify as-installed pile capacities. Special attention must be paid during inspection to minimize the risk of damaging the piles because of improper installation practices.

Ground Floor Slab (Lowest Floor Slab)

The western portion of the proposed East Expansion Building will match the existing D&T Tower and loading dock area lowest floor slab elevation at approximately el 37.5 and will require minimal site grading. The ground floor slab can be designed as slab-on-grade construction using a design modulus of subgrade reaction of 125 pounds per cubic inch (pci) provided that the subgrade is adequately prepared and improved as described herein.

Stripping and Buried Rigid Obstructions

All surficial materials (asphalt, concrete) and deleterious materials on the surface (timber, metal, garbage) should be removed entirely from the proposed slab footprint. Buried rigid obstructions (walls, foundations, pipes, slabs) if encountered, should be removed to at least 3 ft below the base of the proposed slab to prevent rigid spots.

Subgrade Preparation

Once the site grading and stripping are performed, the exposed subgrade should be proofrolled using a heavy smooth drum roller in accordance with the "Proofrolling" section of this report prior to placement of fill and bedding layers. All backfilling and compaction should be performed in accordance with the requirements of the "Backfilling and Compaction" section below.

Vapor Barrier and Bedding Layer

Once the subgrade is prepared and improved as described above, a 6-inch-thick layer of ¾-inch natural crushed stone should be placed immediately below the slab as a bedding layer, which will also serve as a capillary break. A plastic sheet vapor barrier should also be installed beneath the slab. The position of the vapor barrier should be chosen by the structural engineer in accordance with the latest ACI guidelines. The vapor barrier should not be less than 15-mil-thick and should conform to ASTM E 1745 Class A requirements. The vapor barrier and bedding layer should be coordinated with the environmental consultant.

Special Inspections

Slab bearing areas must be inspected and approved by a qualified geotechnical engineer prior to steel reinforcement or concrete placement. Any soft, loose, or unsuitable soils identified by the inspecting geotechnical engineer during proof-rolling should be removed and replaced with approved, compacted fill.

Joints

Construction and/or saw cut joints should be provided as necessary for crack control.

Permanent Groundwater Control

The proposed lowest floor will be at el 37.5. The proposed lowest floor will also be approximately 5.5 ft above the highest measured groundwater level at approximately el 32. If any deep pits are proposed extending below the lowest floor slab, they should be waterproofed and designed to resist hydrostatic pressures.

Waterproofing for Deep Pits

Deep pits extending below the lowest floor slab should be designed as a waterproofed structures to resist unbalanced hydrostatic uplift pressures (uplift and lateral) and the waterproofed below-grade walls and base slabs should be designed to resist associated hydrostatic pressures. At a minimum, a 6-inch-thick layer of ¾-inch natural crushed stone should be placed immediately below the base slab as a bedding layer. The base slab will need to be properly reinforced and thickened to resist hydrostatic uplift pressures.

Waterproofing: The exterior sides of the below-grade pit walls and the bottom of the pit base slab need to be waterproofed. The recommended waterproofing product for the slab is a pre-applied, positive-side composite waterproofing membrane such as Preprufe 300R Plus manufactured by Grace Construction Products (Grace) or equivalent. We recommend that a 2-inch-thick concrete mat (mud mat) be poured over the slab subgrade to ease the installation of the membrane beneath the base slab.

The below-grade walls that are constructed as single-face walls should be waterproofed using a pre-applied, positive-side, composite waterproofing membrane such as Preprufe 160R Plus manufactured by Grace. The installation of waterproofing products should be performed in accordance with the manufacturer's recommendations.

Prevention of cracking is important for the performance of the specified waterproofing product (Preprufe 160 and 300R), which bonds to the concrete during the curing process. Appropriate measures (i.e. additional reinforcing, curing procedures, saw-cutting) should be taken in the design and construction of the slab to minimize cracking, which can significantly reduce the effectiveness of the waterproofing.

Observations During Construction: Groundwater levels should be monitored during the excavation phase of the project to confirm that the design water level is consistent with the actual field conditions. If variations are observed, we should be notified immediately.

Site Clearing and Preparation

Prior to commencement of grading or fill placement, any miscellaneous trash, debris, or other unsuitable materials should be removed from the site. All debris should be properly disposed of off the site in accordance with applicable regulations. Below are our recommendations for demolition of the site utilities, and other site features:

- All abandoned buried structures (i.e. slabs, walls, tanks, utilities) below the proposed structure foundations should be removed completely. Any buried abandoned structure beneath the proposed slabs and pavement should be removed at least 3 ft below the existing surface grade. No void or pit should be left beneath the proposed slabs and pavement.

- Utilities should be completely removed from within the proposed structure foundation and slab areas.

- Existing utilities to be abandoned that are located outside the proposed structure foundation footprints should be removed or abandoned in-place by complete filling with grout.

- Excavations made to remove utilities should be backfilled with approved compacted fill as discussed herein.

- Any existing pavement and concrete walkways that are not part of the final design layout should be demolished in their entirety.

All clearing and stripping activities should be performed in strict accordance with the approved soil erosion and sediment control plan prepared for the project. All site demolition and site clearing operations should be performed in accordance with any environmental regulations and requirements established for the site as well as all Local, State, and Federal regulations. Dust control measures should be implemented during construction to limit the generation of airborne particulates.

All work should be performed so as not to adversely impact the existing and adjacent buildings, off-site structures, or utilities. Protection of these elements should be provided as necessary during the course of all construction activities at the site.

Subgrade Preparation

After performing the aforementioned site preparation work, and prior to constructing finished surfaces in on-grade supported areas (building slabs, pavement, and sidewalks), all site soil within the proposed development areas should be proofrolled in accordance with the "Proofrolling" section below.

If subgrade areas become wet and disturbed, the surficial soils may no longer be suitable for use in fill placement unless sufficiently dried. Should soft or unsuitable subgrade soils be observed as identified by the inspecting Geotechnical Engineer during construction and sufficient time to dry the material is not feasible, these materials should be excavated and replaced with approved compacted backfill.

The Contractor's ability to successfully work the site soils, combined with the weather conditions and the time of year during the site preparation and filling phases of construction, will have a significant impact on timely project completion. Care should be taken to prevent disturbance of the proof-rolled areas and softening of these materials prior to finished construction. At a minimum, all subgrade areas should be temporarily sloped and sealed by rolling with a smooth drum roller at the end of each working day, as necessary, so as to maximize surface water runoff, and minimize potential ponding and infiltration.

For slab and pavement areas, the aggregate subbase material can be placed as soon as practical upon completing site grading and subgrade preparation work as a protective layer. Prior to floor slab construction, this aggregate subbase layer will have to be repaired, re-graded, and re-compacted.

Proofrolling

Proofrolling of soil subgrades within the proposed building footprint and in pavement areas should be performed after removal of surficial materials scheduled for removal and removal of deleterious materials on the surface. Proofrolling can be achieved by a minimum of 6 overlapping passes of a heavy vibratory drum compactor having a static drum weight of at least 8 tons. Proofrolling should be performed in overlapping passes in both directions (perpendicular to each other).

Any areas exhibiting evidence of poor subgrade, such as rutting or weaving beneath the proofrolling equipment, or containing deleterious materials, should be removed to competent material and replaced with compacted structural fill. Requirements for compacted fill and its placement should be in accordance with the "Engineered Fill" section below.

Excavation and Support of Excavation (SOE)

Typical excavations for pile caps are anticipated to extend approximately 3 ft to 5 ft below the existing surface grades. The excavations can be performed using conventional earthwork equipment.

Open-cut excavations seem feasible throughout the site. Excavation sides should be sloped, benched or braced properly in accordance with OSHA guidelines. Open-cut excavations, where feasible, should consist of stable slopes satisfying OSHA.

The Harbor Garage and D&T tower to the north and west of the proposed East Expansion building are reportedly pile supported. The foundation systems for the Menhandru and Mary V Black buildings to the south of the site are unknown. The buildings are approximately 8 ft south of the proposed building limit at the closest point, and are typically greater than 10 ft south of the proposed building limits.

No excavations should be performed below the existing hospital building foundations unless adequate shoring/bracing or underpinning is installed.

Temporary excavation stability is a function of several factors including the presence of groundwater, the type and density of the various soil strata, the depth of excavation, surcharge loadings adjacent to the excavation, and the length of time and weather conditions while the excavation remains open. Sidewall instability should be expected when groundwater seepage is encountered and in areas of loose sandy soils, if any.

All excavations should be properly sloped and/or braced in conformance with applicable OSHA regulations including, but not limited to, temporary shoring, utilizing trench boxes and/or proper benching. The Contractor should be responsible for maintaining the stability of the soil excavations.

Engineered Fill

Reuse of Existing On-site Soils

The on-site granular soils having a maximum particle size of 6 inches in diameter can be used as compacted fill to raise grades or backfill foundation and utility excavations. The use of larger aggregate should only be done as approved by a qualified geotechnical engineer based on inspection of conditions encountered during construction.

Reuse of soils within the landfill should be in accordance with the project environmental requirements.

Some of the on-site soils have a relatively high percentage of fines and are expected to be difficult to handle, place, and compact when they become excessively wet. The Contractor should make provisions to dry portions of the excavated material such as by discing/air drying and soil stabilization as necessary, prior to compaction to an acceptable moisture content as determined by the Geotechnical Engineer.

Excavated materials which are at acceptable moisture contents should be reused as fill as soon as possible to minimize exposure to weather. Stockpiled materials that are planned for reuse should be protected or sealed by the Contractor to keep the materials from becoming wet.

Reuse of Milled Asphalt

Any existing asphalt designated for removal can be milled/broken and stockpiled for reuse as pavement subbase in proposed pavement areas, subject to any environmental requirements for reuse of materials at the site. Removed asphalt that will be reused should be broken into a well-graded mixture with pieces having dimensions less than 2 inches in any direction. The Contractor should provide adequate dust control during the milling process. The reuse of asphalt millings at the site should also be reviewed and approved by the project environmental consultant.

Imported Fill

Imported fill should consist of a relatively well-graded mixture of sand and gravel with not more than 15 percent (by weight) finer than the No. 200 sieve. The use of any imported fill containing a higher percentage of fines would need to be evaluated by a qualified geotechnical engineer during construction.

Suitable fill should be free of organics and other deleterious materials. The fill should be environmentally clean. "Clean fill" is defined as material to be used in a remedial action that meets all soil remediation standards, meets site-specific alternative standards or site-specific interim standards, does not contain extraneous debris or solid waste, and does not contain free liquids. This also includes any material that meets all criteria or action levels for contaminants without standards, available on the New Jersey Department of Environmental Protection's website at www.nj.gov/dep/srp.

Grain size distribution and Modified Proctor compaction tests (ASTM D1557) should be done on representative samples of the backfill and imported fill material proposed by the Contractor. Imported fill should be placed in accordance with the above-described procedure for on-site soils used as compacted fill.

Fill Placement and Compaction

Structural fill (i.e. beneath the building and pavement areas) should be placed in uniform lifts and compacted to at least 95 percent of the material's maximum dry density as determined by the Modified Proctor Compaction Test (ASTM D1557). Fill placed in landscape areas should be compacted to at least 92 percent of the material's maximum dry density as determined by the Modified Proctor Compaction Test (ASTM D1557). On-site soils and imported select fill should be placed in maximum 12-inch-thick loose lifts and compacted using a smooth drum vibratory roller having a minimum static drum weight of 5 tons.

Smaller compaction equipment (i.e. walk-behind trench roller or jumping jack compactor) and thinner lifts (maximum 6 inches to 8 inches thick) should be used in areas of limited maneuverability.

The water content at the time of compaction should be within 3 percentage points of the optimum water content. All fill placement should be subject to observation and testing by a qualified geotechnical engineer.

No fill material should be placed on areas where free water is standing, on frozen subgrade areas, or on surfaces which have not been approved by a qualified geotechnical engineer.

Utilities

Excavations will be required for the installation of proposed utilities and associated structures. All excavations should be properly sloped and/or braced in conformance with applicable OSHA regulations including, but not limited to, temporary shoring, utilizing trench boxes and/or proper benching.

Prior to construction, we recommend field locating any existing utilities that are to remain or that must be temporarily maintained during construction.

We expect site excavations for proposed utilities to be constructed in existing fill or landfill materials. Proposed utilities within landfill areas should be installed in accordance with the project environmental requirements and NJDEP requirements.

Exposed utility trenches in soil should be proof-rolled with at least three (3) overlapping coverages of a double-drum walk-behind vibratory compactor such as a Wacker RT 82-SC or equivalent. Any soft or unstable areas identified by the proof-rolling should be removed and replaced with compacted fill. Backfill in utility excavations should meet the previously discussed requirements for engineered fill, with fill placement and compaction performed as previously discussed.

If unsuitable bearing material is encountered at the proposed utility subgrade elevation, we recommend that 1 ft of over-excavation and replacement with approved bedding material be performed beneath the utility. The actual extent of removal should be determined by a qualified inspecting geotechnical engineer based on the ground conditions encountered at the time of excavation.

We recommend that a minimum 6-inch-thick layer of ¾-inch clean, crushed stone be placed above the soil subgrade as pipe bedding material. The remainder of the trench can be backfilled using approved on-site soils in accordance with the recommendations provided herein.

Acid Producing Soils

The natural soils underlying the anticipated fill materials have the potential to be acid producing if exposed to air, typically during earthwork operations. The potential for exposing acid producing soils requires compliance with the applicable soil erosion and sediment control measures within the municipality where the work is being performed, to prevent acidic storm runoff from impacting areas outside the construction work zone.

Groundwater Control During Construction

Construction dewatering is anticipated to be required for removal of perched and surface runoff water during the foundation and utility excavations. These excavations are anticipated to be above the measured groundwater levels recorded during the investigation. Therefore, dewatering measures consisting of trenching and sump pumping during construction are expected to be necessary to maintain a dry and workable site to control surface water and groundwater.

If deeper excavations are anticipated to extend below the groundwater level, more substantial pumping effort in conjunction with continued maintenance of gravel sumps, seepage control, and erosion protection along the side slopes may be required. We recommend that the sump pits and pumps be installed in advance of proposed excavations in order to facilitate removal of groundwater ahead of time, making excavation easier and cleaner. If groundwater is encountered during the excavation, we recommend that the contractor install temporary perimeter ditches or other subsurface drains to collect or intercept groundwater to facilitate deeper excavation.

Cohesive on-site soils (silt and clay) and on-site sandy soils with significant fine soil particles are sensitive to moisture. Water should not be allowed to pond and sit over soil subgrades. Proper grading, trenching and periodic pumping will be needed to maintain the site in a dry and workable condition. The pumping, handling and discharge of all dewatering effluent should be performed in accordance with all applicable regulations and any environmental requirements for the site.

Corrosion Protection

Laboratory testing of three select soil samples obtained from depths of up to 9 ft were tested for corrosivity to gray and ductile iron pipe and Portland cement. Our evaluation of the corrosion potential is provided in Appendix C.

The tested soil samples were found to contain negligible quantities of sulfates. Therefore, standard Type I Portland Cement concrete is appropriate for use at this site.

The tested soil samples from borings LD-5 and LD-10 were found to be corrosive to gray and ductile iron. To protect ductile/cast iron pipe utilities, we recommend that 1) the existing fill soils not be used as backfill directly against or in contact with the foundations and utilities, and 2) the ductile/cast iron pipe utilities have a minimum of 12 inches of bedding consisting of ¾-inch crushed stone or imported select granular soils and are backfilled with a minimum of 12 inches of ¾-inch crushed stone wrapped entirely in filter fabric such as Mirafi 140N or imported granular soils on the sides and above the pipe. For further corrosion protection, a polyethylene wrap can be placed around the pipes. Alternatively, HDPE may be used for the utilities.

The samples were generally found to be above the critical values for ground aggressiveness. Based on the results of the resistivity and chloride content testing, the upper soils may be aggressive to concrete steel reinforcement where in contact. ACI 318 recommends that below-

grade concrete should meet exposure class C2, which requires concrete to have a minimum compressive strength of 5,000 psi and a maximum water cement ratio of 0.4. Final interpretation of the chemical test results and corrosion protection structural design requirements should be evaluated and determined by the structural engineer.

Construction Adjacent to Existing Buildings

The existing D&T Tower and loading dock and Harbor Garage and CUP are reportedly pile-supported. The Mehandru and Mary V Black building foundation systems are unknown. We recommend determining the existing foundation systems of the Mehandru and Mary V Black buildings prior to construction. The buildings are approximately 8 ft south of the proposed building limit at the closest point, and are typically greater than 10 ft south of the proposed building limits.

If the existing buildings are found to be supported on shallow foundations, the as-built bottom of footing elevations adjacent to the proposed building should be verified. If excavations for the proposed foundations will extend below any existing wall or column foundations, the existing footings should be underpinned to a competent bearing stratum (consisting of natural, undisturbed soil) below the proposed excavation level prior to excavating for the proposed building. No excavation below the existing foundations should be performed prior to installation of underpinning for the adjacent existing building foundations.

Excavations for proposed pile caps below the level of adjacent building foundations and slabs should be done in a manner as to avoid loss of support or undermining of the existing footings, pile caps and slabs.

Protection and Monitoring of Adjacent Structures

Construction activities such as drilling for ACIPs are not anticipated to generate vibrations that can adversely affect the surrounding structures. However, the adjacent structures should be adequately protected and monitored during construction. It is possible that some movement or perceived movement may occur during construction. Contract documents should clearly state that the contractor is responsible for the repair of any damage to existing buildings, which are a result of their construction operations.

For this particular project, the structures of interest for monitoring purposes include the Harbor Garage and CUP, the D&T Tower, the Mehandru building, the Mary V Black building and the Hope Tower Parking Garage. The sections of the structures of interest that are within 75 ft of the site should also be monitored continuously throughout the excavation and foundation construction phases. Monitoring should include periodic measurements of the movement of lateral and vertical control points.

<u>Pre-Construction Conditions Documentation</u>

We recommend that a thorough pre-construction conditions documentation of the structures of

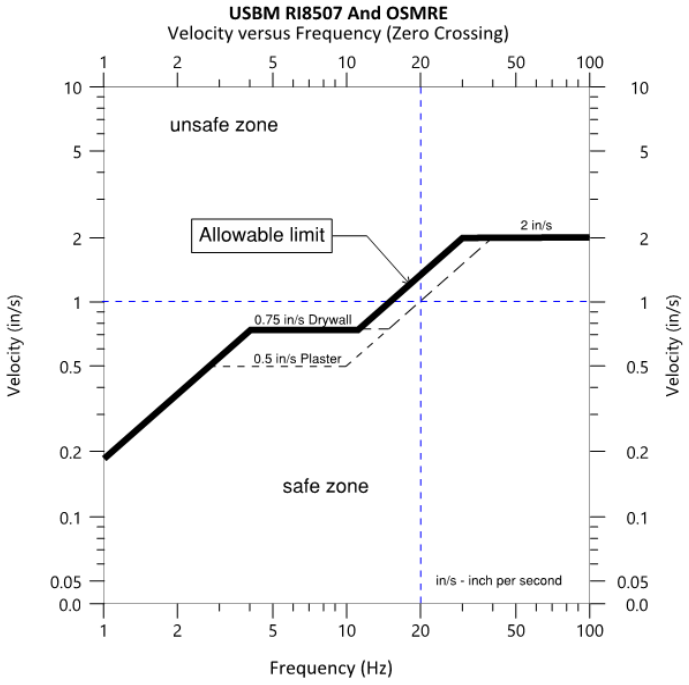
interest be performed by a qualified professional engineer experienced in such documentation work. The documentation will serve as a reference document to assess conditions prior to, during, and after construction. The documentation should include photographs, sketches, and measurements of ambient vibrations. Crack reference lines and settlement points should be established in advance for monitoring during construction. The documentation would serve as a pictorial and quantitative record for future reference.

Control Points

Lateral and vertical control points should be established on the structures of interest. These control points should be monitored periodically (i.e. once a week) by the project surveyor during sensitive construction operations such as excavation and ACIP installation. Periodic measurements should be forwarded to the project geotechnical engineer and structural engineer for evaluation. The lateral and vertical movements should not exceed 0.5 inch for temporary shoring or ground beyond the site development limits and 0.3 inch for nearby structures. The construction procedures should be re-evaluated when the magnitude of the movement reaches half of the allowable value.

Vibration Monitoring

Vibrations should be monitored using seismographs at the "structures of interest" during ACIP operations. Vibration levels measured in terms of peak particle velocities (PPV) should not exceed a limiting value to be determined by a qualified geotechnical engineer upon completion of the preconstruction conditions documentation of the surrounding structures and discussion with the JSUMC representatives regarding the vibration limits that can be tolerated by sensitive medical equipment, if any. Regardless, PPV values should not exceed the values given by the USBN RI8507 Chart on the following page.



CONSTRUCTION DOCUMENTS AND INSPECTION / QUALITY ASSURANCE

Technical specifications addressing deep foundations, earthwork and all other work related to the building foundations and site preparation/construction should be prepared by our firm. In addition, the foundation recommendations given herein should be included in the structural drawings for the project. Our firm should be provided with and review any Contractor submittals related to foundation work, site preparation, and soil importation for conformance with the recommendations given in this report.

During construction, it is critical that all geotechnical related work be performed under qualified geotechnical engineering inspection/monitoring/testing in order to ensure proper and timely implementation of the recommendations given in this report. We recommend that Langan perform this work to verify proper implementation of our recommendations and to maintain continuity of our responsibility for this project. Our field engineer would be able to immediately address unexpected or unusual conditions that may be encountered and provide remedial recommendations. This work includes: drilled pile installation, site preparation and proof-rolling, compacted fill placement, slab subgrade preparation, pavement subgrade preparation, utility construction and backfill placement, and asphalt paving.

OWNER AND CONTRACTOR OBLIGATIONS

The Contractor is responsible for construction quality control, which includes satisfactorily constructing the foundation system and any associated temporary works to achieve the design intent while not adversely impacting or causing loss of support to neighboring structures.

Construction activities that can alter the existing ground conditions such as excavation, fill placement, foundation construction, shoring installation, dewatering, etc. can also potentially induce stresses, vibrations, and movements in nearby structures and utilities, and disturb occupants of nearby structures. Contractors working at the site must ensure that their activities will not adversely affect the performance of the structures and utilities, and will not disturb occupants of nearby structures. Contractors must also take all necessary measures to protect the existing structures during construction. By using this report, the Owner agrees that Langan will not be held responsible for any damage to adjacent structures.

The preparation and use of this report is based on the condition that the project construction contract between the Owner and their Contractor(s) will include: 1) Langan being added to the Project Wrap and/or Contractor's General Liability insurance as an additional insured, and 2) language specifically stating the Foundation Contractor will defend, indemnify, and hold harmless the Owner and Langan against all claims related to disturbance or damage to adjacent structures or properties.

LIMITATIONS

The conclusions and recommendations provided in this report are based on subsurface conditions inferred from a limited number of borings, as well as architectural and structural information provided by the project Owner, project architect RSC Architects and the project structural engineer Reuther + Bowen. Recommendations provided are dependent upon one another and no recommendation should be followed independent of the others.

Any proposed changes in structures or their locations should be brought to Langan's attention as soon as possible so that we can determine whether such changes affect our recommendations. Information on subsurface strata and groundwater levels shown on the logs represent conditions encountered only at the locations indicated and at the time of investigation. If different conditions are encountered during construction, they should immediately be brought to Langan's attention for evaluation, as they may affect our recommendations.

This report has been prepared to assist the Owner, architect and structural engineer in the design process and is only applicable to the design of the specific project identified. The information in this report cannot be utilized or depended on by engineers or contractors who are involved in evaluations or designs of facilities (including underpinning, grouting, stabilization, etc.) on adjacent properties which are beyond the limits of that which is the specific subject of this report.

Environmental issues are outside the scope of this study and should be addressed in a separate study by qualified professionals.

LIST OF TABLES

JSUMC - East Expansion Building
Neptune, NJ
101166101

TABLE 1 - SUMMARY OF BORINGS

ELEVATION (NAVD 88)	LD-1	LD-2	LD-3	LD-4	LD-5	LD-6	LD-7	LD-8	LD-9	LD-10	LD-11
surface elevation	36.5	36	37	37.5	36	35.5	37	36	34.5	34	35.5
total depth (feet)	32	102	32	32	52	32	52	52	32	52	102
39											
38											
37				ASPHALT							
36	ASPHALT		ASPHALT				ASPHALT				
35		ASPHALT			ASPHALT	ASPHALT		ASPHALT			ASPHALT
34									ASPHALT		
33										ASPHALT	
32											
31											
30	9	27		26	12	30	13	11			
29			8								7
28	8	10		18	9	9	6	14			
27			18						16	10	9
26	17	3		7	4	25	3	4			
25			6						5	13	15
24	64				20	15	3	8			
23									7	5	9
22	9				20						
21				13			6		11	8	17
20		10	6		14	13		7			
19									10		8
18										16	
17											
16				13			45				
15	59	58	41		59	55		39	48		
14											31
13										52	
12											
11				53			13				
10	24	19	35		21	13		14	25		
9											15
8										29	
7											
6				18			9				
5	19	23	20		22	27		8	35		
4											19
3										22	
2											
1							8				
0		13			13		qu = 2 tsf	9			
-1		qu = 2.5 tsf			qu = 2 tsf			qu = 2 tsf			10
-2										14	qu = 2 tsf
-3										qu = 2 tsf	
-4							15				
-5		12			20			17			
-6											30
-7										23	
-8											
-9							11				
-10		10			9		qu = 3 tsf	13			
-11		qu = 2.5 tsf						qu = 3.5 tsf			15
-12										23	
-13											
-14							16				
-15		13			18		qu = 3.5 tsf	13			
-16		qu = 2.5 tsf			qu = 2 tsf						25
-17										24	qu = 3 tsf
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-20		12									
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-46											26
-47											
-48											
-49											
-50		41									
-51											30
-52											
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-55		49									
-56											ref
-57											
-58											
-59											
-60		28									
-61											26
-62											
-63											
-64											
-65		31									
-66		qu = 3 tsf									21

COLOR LEGEND
- Fill
- Landfill Materials
- Silt
- Clay
- Sand

NOTES

1 Subsurface information provided is generalized and is shown for illustration purposes only.
2 Refer to location plan for actual locations.
3 Refer to logs for actual soil descriptions and details.
4 The N-values tabulated are in blows/ft.

LEGEND

20 SPT N-Value

qu Unconfined Compressive Strength as measured by the field pocket penetrometer

Inferred Groundwater Level From Moisture Content of Samples

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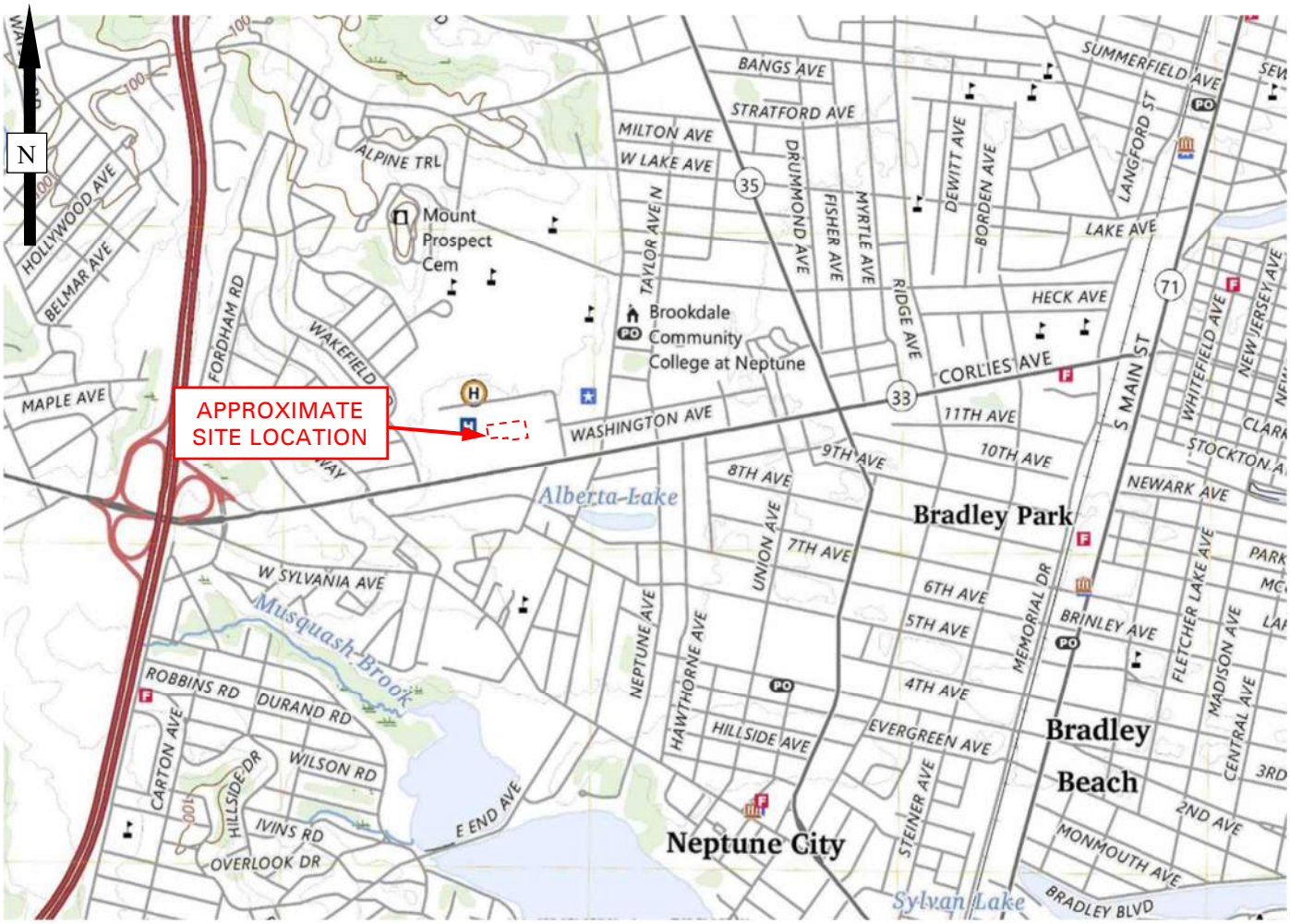
LIST OF FIGURES



Source: United States Geological Survey (USGS) – Asbury Park Quadrangle (2023)

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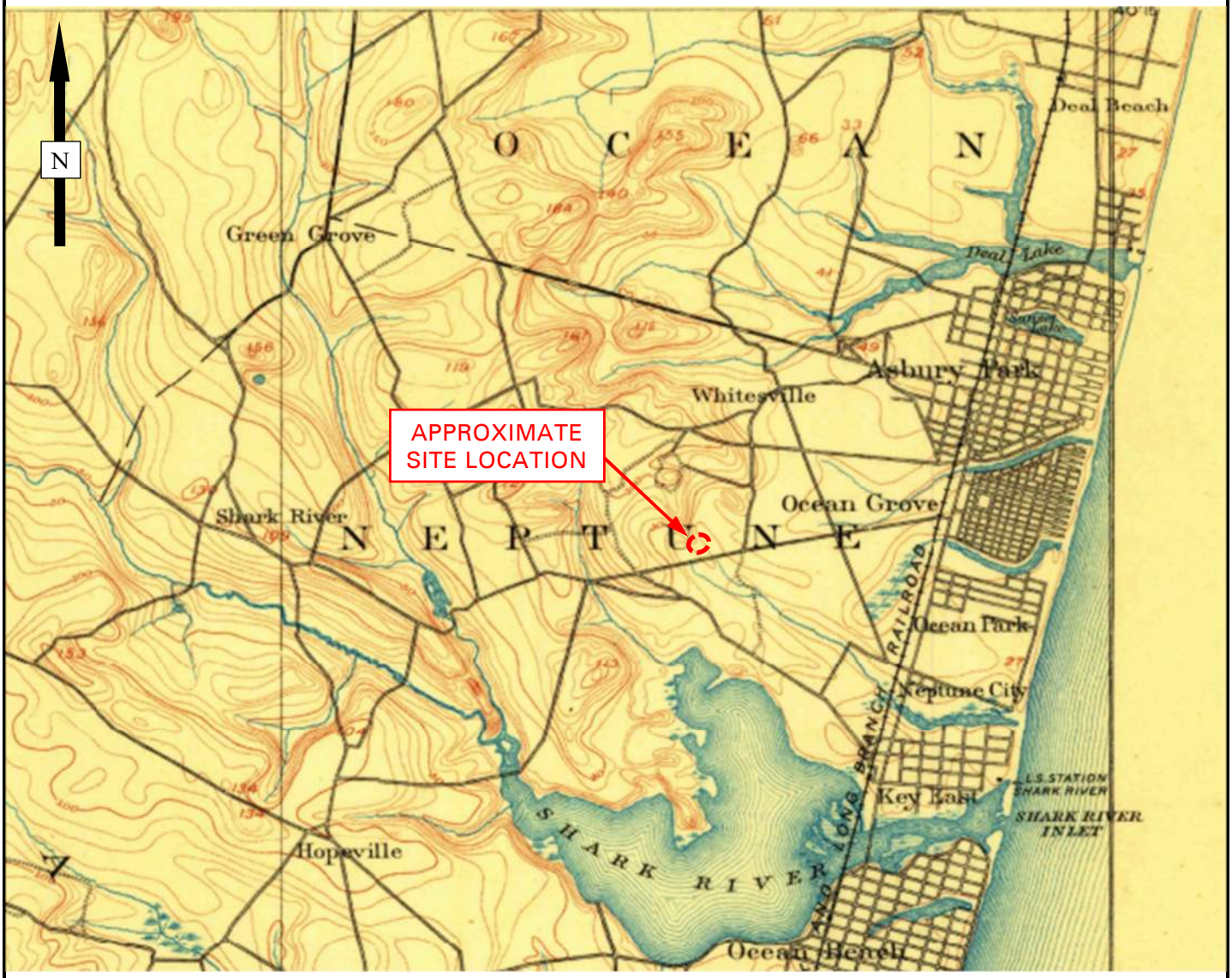
JSUMC – EAST EXPANSION BULDING

SITE LOCATION MAP

NEPTUNE **NEW JERSEY**

PROJECT NO.	SCALE	DATE	FIGURE
101166101	N.T.S.	01/03/2025	1



Source: United States Geological Survey (USGS) – Asbury Park Quadrangle (1888)

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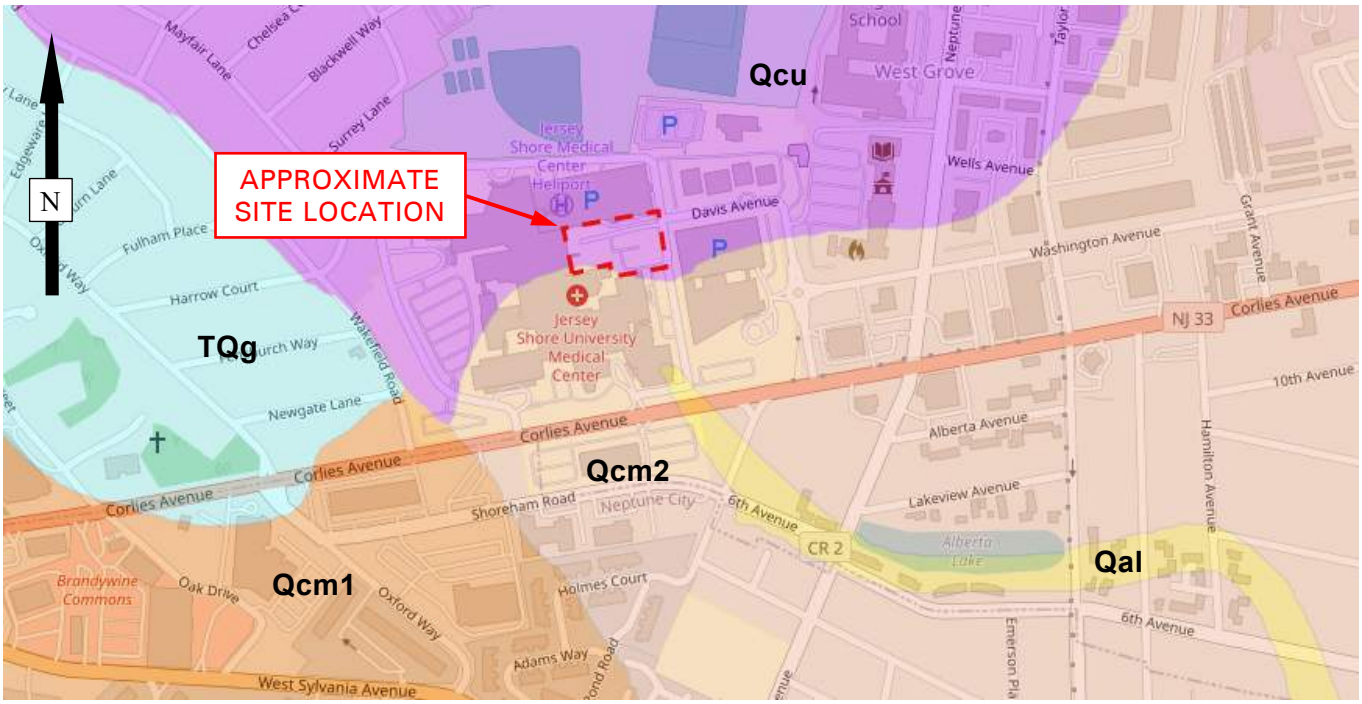
JSUMC – EAST EXPANSION BUILDING

HISTORIC USGS MAP

NEPTUNE **NEW JERSEY**

PROJECT NO.	SCALE	DATE	FIGURE
101166101	**N.T.S.**	**01/03/2025**	**2**



LEGEND

Qcu – Upper Colluvium Formation - Sand, silt, minor clay and pebble gravel; pale brown, yellow, reddish yellow. As much as 20 feet thick.

Qcm1 – Cape May Formation Unit 1 - Sand, minor silt, clay, and pebble gravel; very pale brown, yellow, reddish yellow. As much as 50 feet thick.

Qcm2 – Cape May Formation Unit 2 - Sand, pebble gravel, minor silt, clay, peat, and cobble gravel; very pale brown, yellow, reddish yellow, white, olive yellow, gray. As much as 200 feet thick on the Cape May peninsula, generally less than 50 feet thick elsewhere.

Qal – Alluvium - Sand, gravel, silt, minor clay and peat; reddish brown, yellowish brown, brown, gray. As much as 20 feet thick.

TQg – Upland Gravel Formation - Sand, clayey sand, and pebble gravel, minor silt; yellow to reddish yellow. As much as 20 feet thick.

Source: NJDEP, NJ-GeoWeb interactive maps

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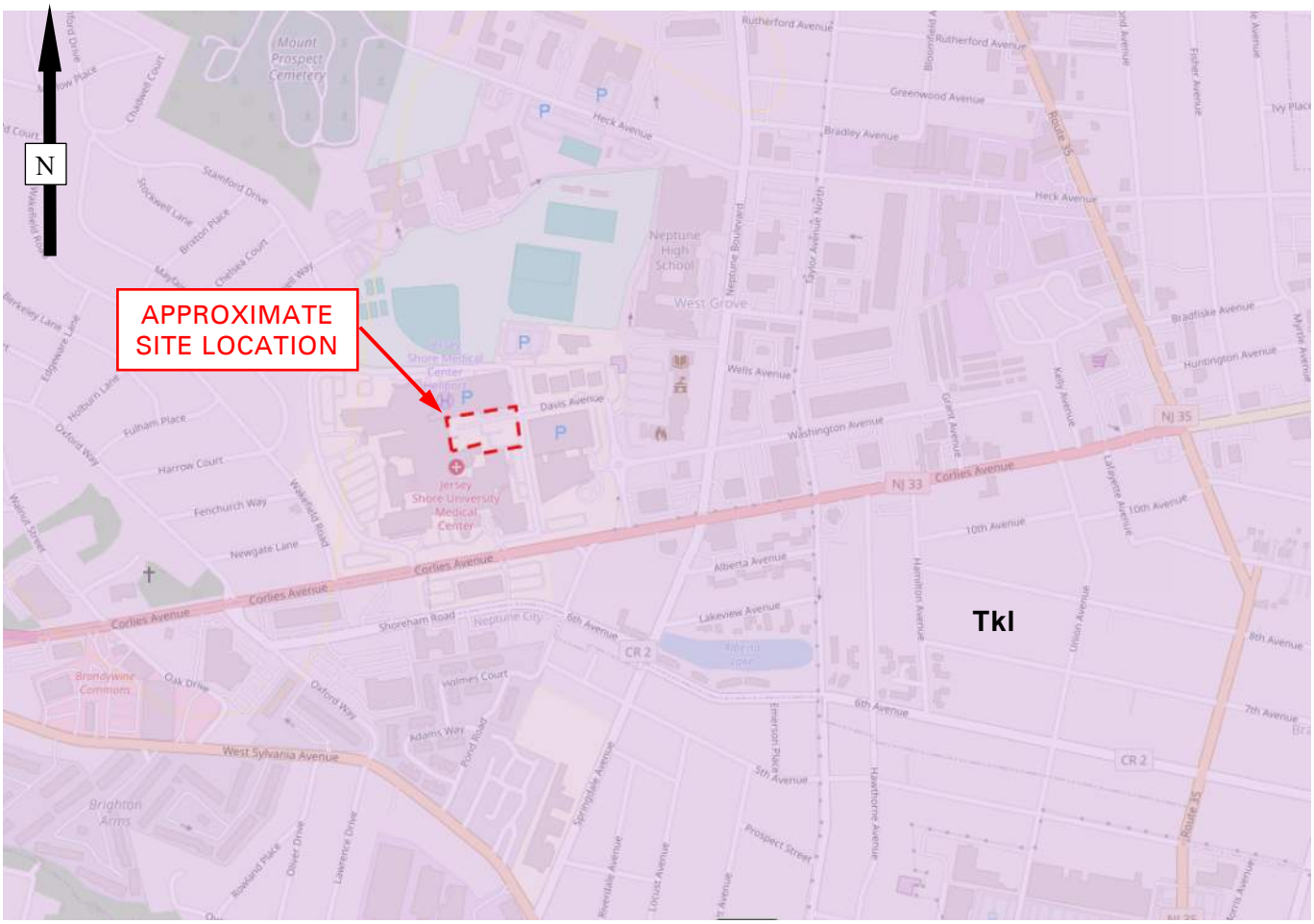
JSUMC – EAST EXPANSION BUILDING

SURFICIAL GEOLOGY MAP

NEPTUNE **NEW JERSEY**

PROJECT NO.	SCALE	DATE	FIGURE
101166101	N.T.S.	01/03/2025	3A



LEGEND

Tkl – Lower Member Kirkwood Formation – quartz sand and clay.

Source: NJDEP, NJ-GeoWeb interactive maps

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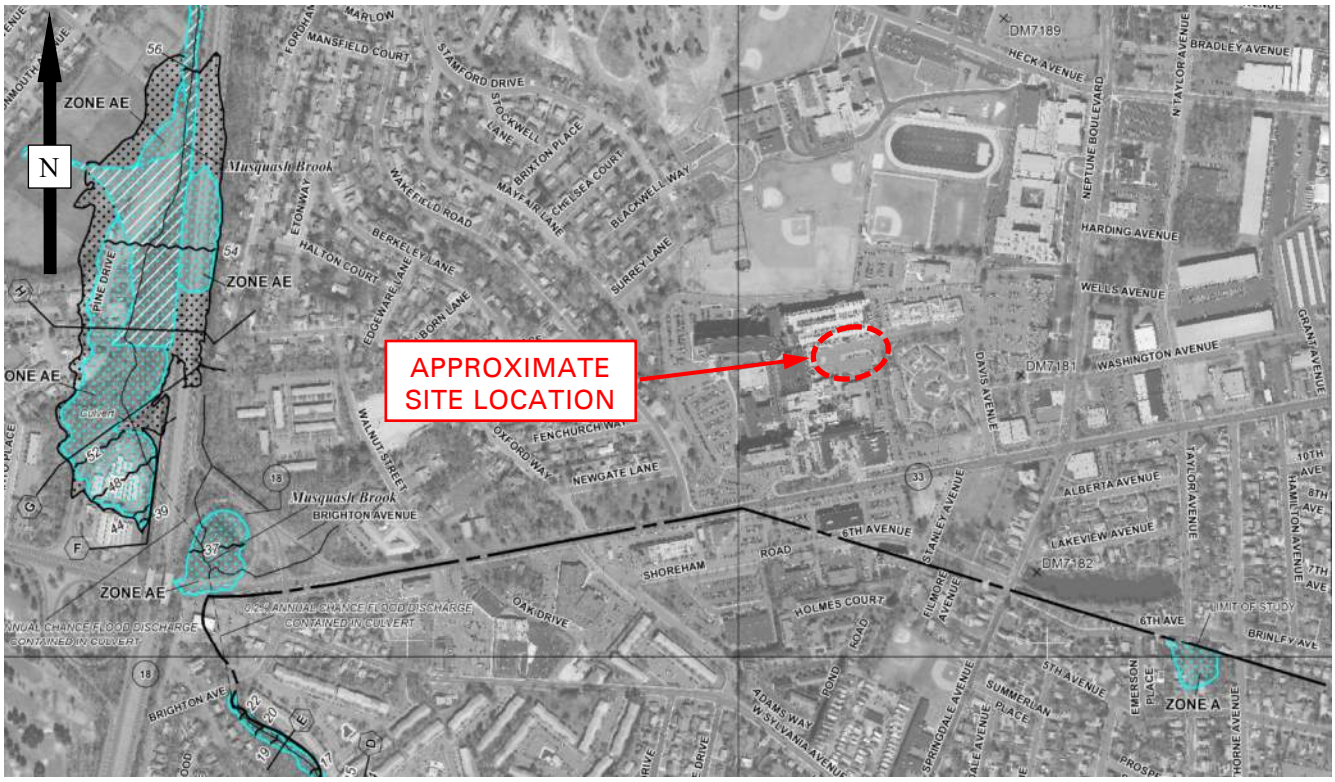
JSUMC – EAST EXPANSION BUILDING

GEOLOGIC MAP

NEPTUNE **NEW JERSEY**

PROJECT NO.	SCALE	DATE	FIGURE
101166101	**N.T.S.**	**01/03/2025**	**3B**



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- New Jersey Flood Hazard Area Design Flood (NJFHADF)
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- Limit of Moderate Wave Action
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

- Cross section line
- Limited detail cross section line
- Transect line
- 87°07'45", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 1000-meter Universal Transverse Mercator grid values, zone 18
- 600000 FT — 5000-foot grid values: New Jersey State Plane coordinate system (FIPSZONE 2900), Transverse Mercator projection
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
August 16, 2006

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

NFIP — NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0333G

FIRM

FLOOD INSURANCE RATE MAP

MONMOUTH COUNTY, NEW JERSEY
(ALL JURISDICTIONS)

PANEL 333 OF 457

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BELMAR, BOROUGH OF	345283	0333	G
NEPTUNE CITY, BOROUGH OF	340316	0333	G
NEPTUNE, TOWNSHIP OF	340317	0333	G
WALL, TOWNSHIP OF	340333	0333	G

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
34025C0333G

MAP REVISED
JUNE 15, 2022

Federal Emergency Management Agency

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New Jersey • New York • Virginia • California • Pennsylvania • Connecticut • Florida
Abu Dhabi • Athens • Doha • Dubai • Istanbul

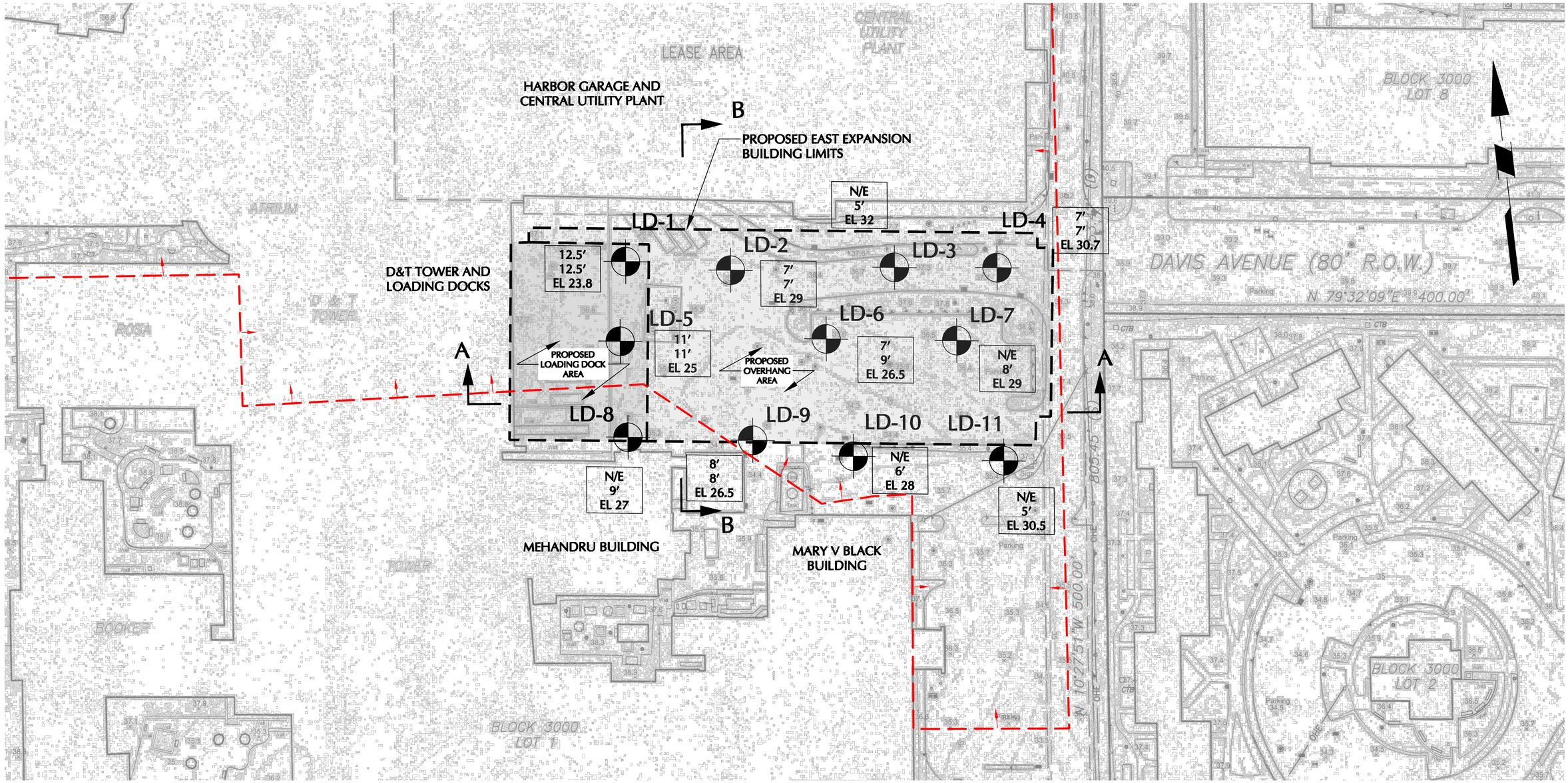
JSUMC – EAST EXPANSION BUILDING

FEMA FLOOD MAP

NEPTUNE **NEW JERSEY**

PROJECT NO.	SCALE	DATE	FIGURE
101166101	N.T.S.	01/03/2025	4

\\langan.com\data\PAR\data1\101166101\Project Data_Discipline\Geotechnical\Reports\East Expansion\Figures\Figure 4 - FEMA Flood Map JG.docx



NOTES

1. BASE PLAN TAKEN FROM PLAN TITLED "BOUNDARY SURVEY WITH TOPOGRAPHY" DATED 11 JULY 2014 PREPARED BY DEWBERRY ENGINEERING, INC.
2. PROPOSED BUILDING LIMITS TAKEN FROM PLAN TITLED "LAYOUT & DIMENSIONAL CONTROL SITE PLAN" DATED 8/2/2024 PREPARED BY DEWBERRY ENGINEERS, INC.
3. APPROXIMATE LANDFILL LIMITS TAKEN FROM PLAN TITLED "EXHIBIT B-1B - RESTRICTED AREA ENGINEERING CONTROLS" DATED 7 FEBRUARY 2014 PREPARED BY THE ELM GROUP.
4. BORINGS LD-1 THROUGH LD-11 WERE DRILLED BETWEEN 16 NOVEMBER AND 27 NOVEMBER 2024 BY CRAIG GEOTECHNICAL DRILLING, CO, INC (CRAIG) UNDER THE DIRECT OBSERVATION OF LANGAN.
5. SEE FIGURE 6 FOR SUBSURFACE PROFILES.
6. ALL LOCATIONS, ELEVATIONS, DIMENSIONS AND LIMITS ARE APPROXIMATE AND SHOULD BE VERIFIED IN FIELD.

LEGEND

LD-1 — APPROXIMATE LOCATION OF BORING

APPROXIMATE LIMITS OF LANDFILL

A A — SUBSURFACE PROFILE LOCATION

7' 9' el 26.5 — APPROXIMATE THICKNESS OF LANDFILL MATERIALS AND CAP IN FEET; APPROXIMATE COMBINED THICKNESS OF FILL MATERIALS (LANDFILL AND NON-LANDFILL MATERIALS) IN FEET; APPROXIMATE TOP OF NATURAL SOILS ELEVATION IN FEET

N/E — NOT ENCOUNTERED

50 0 25 50
SCALE: 1 INCH = 50 FEET

LANGAN
Langan Engineering and Environmental Services, LLC.
300 Kimball Drive
Parsippany, NJ 07054
T: 973.560.4900 F: 973.560.4901 www.langan.com
NJ CERTIFICATE OF AUTHORIZATION NO. 24GA27996400

Project
EAST EXPANSION BUILDING
JERSEY SHORE UNIVERSITY MEDICAL CENTER
NEPTUNE NEW JERSEY

Drawing Title
BORING LOCATION PLAN

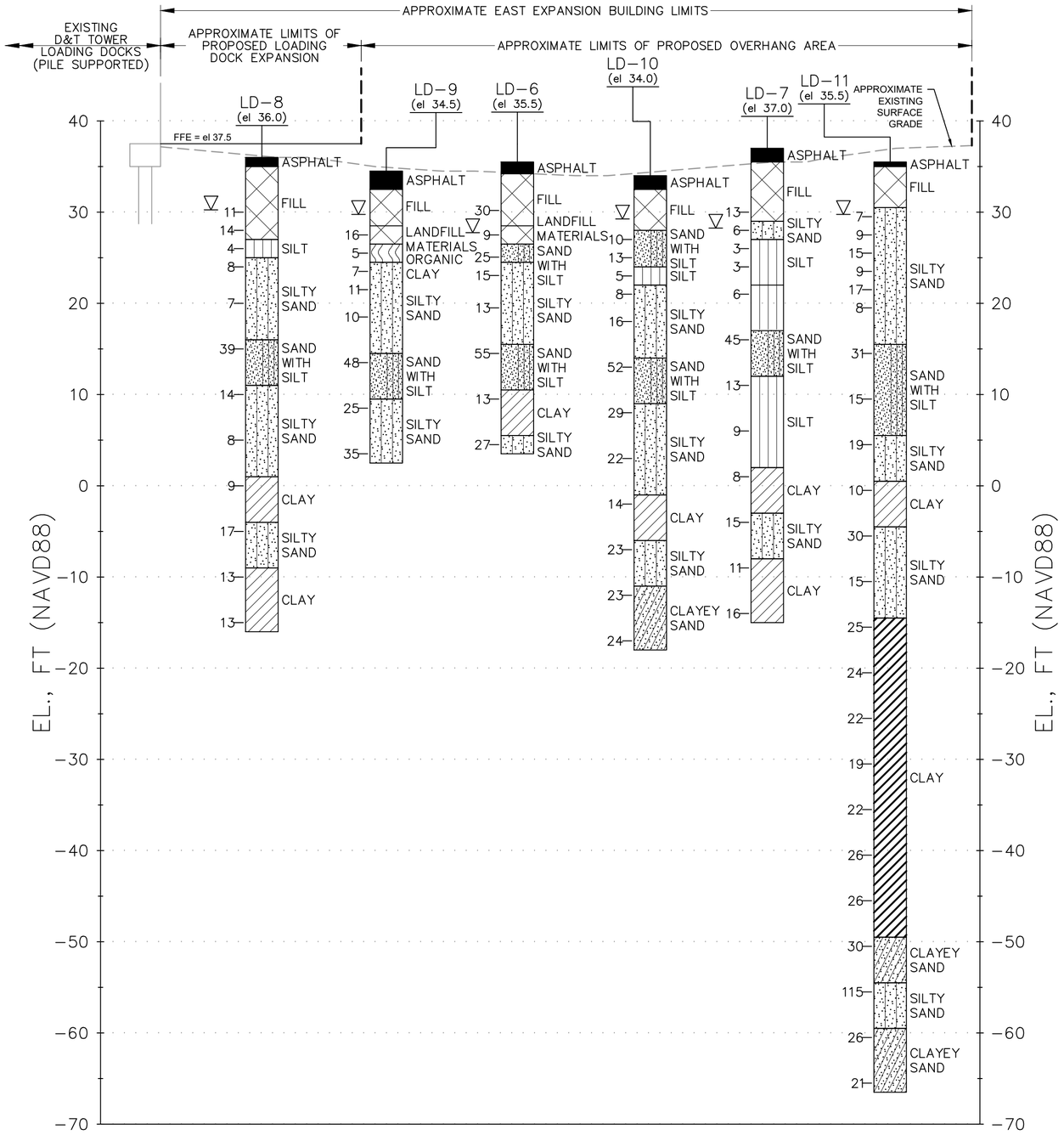
Project No. 101166101
Date 01/03/2025
Drawn By VAR
Checked By RDB

Figure 5

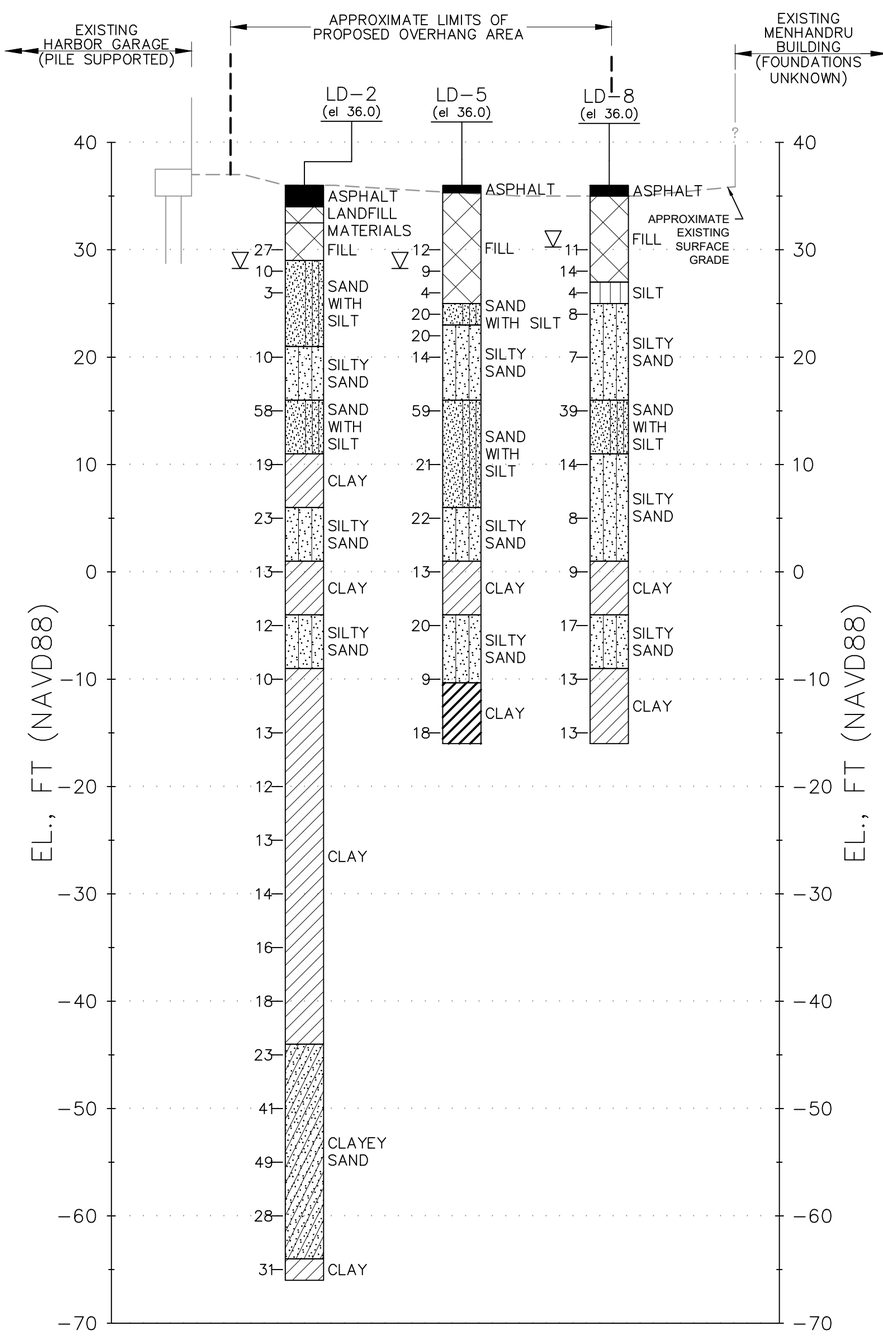
Sheet 0 of 1

Date: 1/2/2025 Time: 16:38 User: vmodes Style Table: Langan.stb Layout: East Exp Document Code: FG05-101166101-0205-BL101-0101

LANGAN
Project No. 101166101



PROFILE A-A'



PROFILE B-B'

Legend

LD-# (el. xx) — Borehole Number (elevation)

Borehole Legend

N — Standard Penetration Test (SPT) N-value

▽ — Observed Water Level in the Boring

ASPHALT, CLAY, SAND, CLAYEY SAND, ORGANIC SILT/CLAY, FILL, SILT, SILTY SAND, SAND WITH SILT

NOTES:

1. THESE PROFILES REPRESENT A GENERALIZED SOIL CROSS SECTION INTERPRETED FROM WIDELY SPACED BORINGS. SOIL AND GROUNDWATER MAY VARY IN TYPE, LOCATION, ELEVATION, AND ENVIRONMENTAL AND ENGINEERING PROPERTIES BETWEEN POINTS OF EXPLORATION. VARIATIONS IN SUBSURFACE CONDITIONS SHOULD BE EXPECTED BETWEEN BORINGS.
2. ALL BORING LOCATIONS ARE APPROXIMATE.
3. ALL ELEVATIONS ARE APPROXIMATE AND ARE IN REFERENCE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) UNLESS OTHERWISE NOTED.

10 0 5 10
VERTICAL SCALE: 1" = 10'
HORIZONTAL SCALE: N.T.S.

LANGAN
Langan Engineering and Environmental Services, LLC.
300 Kimball Drive
Parsippany, NJ 07054
T: 973.560.4900 F: 973.560.4901 www.langan.com
NJ CERTIFICATE OF AUTHORIZATION NO. 24GA27996400

Project
EAST EXPANSION BUILDING
JERSEY SHORE UNIVERSITY MEDICAL CENTER
NEPTUNE NEW JERSEY

Drawing Title
SUBSURFACE PROFILE

Project No. 101166101
Date 01/03/2025
Drawn By AC
Checked By RB

Drawing No. 6

LANGAN
Project No. 101166101

APPENDIX A

Logs of Borings

LANGAN

Log of Boring **LD-1** Sheet 1 of 2

Project: JSUMC Campus Expansion	Project No.: 101166101
Location: 1945 NJ-33, Neptune City, NJ	Elevation and Datum: Approx. el. 36.5 (NAVD 88)
Drilling Company: Craig Geotechnical Drilling Co, Inc.	Date Started: 11/16/2024 — Date Finished: 11/16/2024
Drilling Equipment: Truck Rig	Completion Depth: 32.0 ft — Rock Depth: Not Encountered
Size and Type of Bit: 3-7/8in Tricone Roller Bit	Number of Samples: Disturbed 8 — Undisturbed 0 — Core 0
Casing Diameter (in): 4" diameter steel — Casing Depth (ft): 12.0	Water Level (ft.): First ▽ 12.5 — Completion ▼ N/A — 24 HR. ▼ N/A
Casing Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	Drilling Foreman: George Zackman
Sampler: 2in OD Split Spoon	Field Engineer: Jordy Moina
Sampler Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr-resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Casing Depth, Fluid Loss, Drilling Resistance, etc.)
	+36.5		0						Started Drilling 11/16/2024 at 5:16 PM. Predrilled to 6ft with a vacuum truck.
	+36.0	Black ASPHALT (dry) [ASPHALT]							
		Dark gray GRAVEL, some fine to coarse sand, trace silt (dry) [FILL]	1						
		Gray SAND, some clay, some gravel, trace silt, with wood pieces (moist) [LANDFILL MATERIALS]	2						
		Light gray SAND, some fine gravel, trace clay, trace silt, with wood pieces (moist) [LANDFILL MATERIALS]	3						
			4						
			5						
		Light yellowish brown to dark gray fine to coarse SAND, some silt, trace fine gravel, with wood, root and glass pieces (moist) [LANDFILL MATERIALS]	6	S-1	SS	24	4 5 4 4	9	Drove casing to 6 ft. Drilled to 6 ft. Take S-1 at 6 ft.
		No Recovery	7	S-2	SS	0	6 4 4 3	8	Drilled to 8 ft. Take S-2 at 8 ft.
		Dark gray to gray fine to medium SAND, some silt, some clay, with root, wood and glass pieces (moist) [LANDFILL MATERIALS]	8	S-3	SS	13	5 9 8 14	17	Take S-3 at 10 ft.
			9						
			10						
			11						
		Dark gray to gray fine to medium SAND, some silt, some clay, with wood, root and glass pieces (moist) [LANDFILL MATERIALS] ▽	12	S-4A / S-4B	SS	11	9 33 31 13	64	Drove casing to 12 ft. Drilled to 12 ft. Take S-4 at 12 ft.
	+23.8	Light gray SAND, some silt, trace fine gravel (wet) [SP]	13						
	+22.5	Gray SILT, some fine sand, some clay (wet) [ML]	14	S-5	SS	14	4 4 5 6	9	Take S-5 at 14 ft.
			15						
			16						

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Log of Boring **LD-1** Sheet 2 of 2

Project	Project No.
JSUMC Campus Expansion	101166101
Location	**Elevation and Datum**
1945 NJ-33, Neptune City, NJ	Approx. el. 36.5 (NAVD 88)

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr-resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Casing Depth, Fluid Loss, Drilling Resistance, etc.)
	+20.5		16						
			17						
			18						
			19						
	+16.5		20						Drilled to 20 ft. Take S-6 at 20 ft.
		Light gray to gray coarse to medium SAND, some fine gravel, trace silt (wet) [SP]	21	S-6	SS	13	19 24 35 46	59	
			22						
			23						
			24						
			25						Drilled to 25 ft. Take S-7 at 25 ft.
		Light gray to gray coarse to medium SAND, some fine gravel, trace silt (wet) [SP]		S-7A			10 11		
		Gray to dark grayish brown fine to medium SAND, trace silt, trace clay (moist) [SP]	26	S-7B	SS	21	13 19	24	
			27						
			28						
			29						
			30				7 9		Drilled to 30 ft. Take S-8 at 30 ft.
		Gray to dark grayish brown fine to medium SAND, trace silt, clay lenses (moist) [SP]	31	S-8	SS	22	10 19	19	
	+4.5		32						Stopped drilling 11/16/2024 at 7:23 PM. Upon completion, borehole backfilled with soil cuttings and hole plug. Asphalt patched to match surface grades.
		End of Boring at 32.0ft.	33						
			34						
			35						
			36						

N-Value (Blows/ft) scale: 10 20 30 40

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Log of Boring **LD-2** Sheet 1 of 6

Project: JSUMC Campus Expansion	Project No.: 101166101
Location: 1945 NJ-33, Neptune City, NJ	Elevation and Datum: Approx. el. 36.0 (NAVD 88)
Drilling Company: Craig Geotechnical Drilling Co, Inc.	Date Started: 11/26/2024 — Date Finished: 11/26/2024
Drilling Equipment: Truck Rig	Completion Depth: 102.0 ft — Rock Depth: Not Encountered
Size and Type of Bit: 3-7/8in Tricone Roller Bit	Number of Samples: Disturbed 23 — Undisturbed 0 — Core 0
Casing Diameter (in): 4" diameter steel — Casing Depth (ft): 15.0	Water Level (ft.): First ▽ 7.0 — Completion ▼ N/A — 24 HR. ▼ N/A
Casing Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	Drilling Foreman: Shane Frick
Sampler: 2in OD Split Spoon	Field Engineer: Jonathan Gonzalez
Sampler Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Number	Type	Recov. (in)	Penetr-resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Casing Depth, Fluid Loss, Drilling Resistance, etc.)
	+36.0	ASPHALT (24 inches thick)	0						Start Drilling 11/26/2024 at 7:53 AM.
			1						Drill through asphalt
	+34.0	Gray medium to fine SAND, some fine gravel, trace silt (dry) [FILL]	2						Hand auger to 5ft
			3	S-1	GRAB				Take grab sample S-1 from 2ft to 3.5ft
		Brown SAND, trace silt, some fine gravel with wood pieces (dry) [LANDFILL MATERIALS]	4	S-2	GRAB				Take grab sample S-2 from 4ft to 5ft
		Gray to brown medium to fine SAND, trace fine gravel with wood and brick pieces (moist) [LANDFILL MATERIALS]	5	S-3	SS	21	26 15 12 11	27	Take sample S-3 from 5ft to 7ft using 3-inch spoon.
	+29.0	Tannish brown medium to fine SAND, trace silt (wet) [SP-SM] ▽	7	S-4	SS	16	13 6 4 6	10	Take sample S-4 from 7ft to 9ft
		Gray coarse to fine SAND, some silt, trace fine gravel (wet) [SP-SM]	9	S-5	SS	11	2 2 1 1	3	Drive casing to 9ft. Drill to 9ft, smooth drilling, brown wash Take sample S-5 from 9ft to 11ft
	+21.0	Brown Silty medium to fine SAND (wet) [SM]	15				4 4		Drive casing to 15ft Drill to 15ft, smooth drilling, brown wash Take sample S-6 from 15ft to 17ft

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Log of Boring **LD-2** Sheet 2 of 6

Project	Project No.
JSUMC Campus Expansion	101166101
Location	**Elevation and Datum**
1945 NJ-33, Neptune City, NJ	Approx. el. 36.0 (NAVD 88)

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr-resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Casing Depth, Fluid Loss, Drilling Resistance, etc.)
	+20.0		16	S-6		23	6 4	10	
			17						
			18						
			19						
	+16.0	Gray medium to fine SAND, trace silt (wet) [SP-SM]	20				30		Drill to 20ft, smooth drilling, brown wash Take sample S-7 from 20ft to 22ft
			21	S-7	SS	12	30 28	58	
			22				27		
			23						
			24						
	+11.0	Brown Silty CLAY, some fine sand (wet) [CL]	25				7		Drill to 25ft, smooth drilling, brown wash Take sample S-8 from 25ft to 27ft
			26	S-8	SS	22	8 11	19	
			27				7		
			28						
			29						
	+6.0	Grayish brown Silty fine SAND, trace clay (wet) [SM]	30				5		Drill to 30ft, smooth drilling, brown wash Take sample S-9 from 30ft to 32ft
			31	S-9	SS	19	10 13	23	
			32				15		
			33						
			34						
	+1.0	Gray Silty CLAY, trace fine sand (wet) [CL]	35				6		Drill to 35ft, smooth drilling, brown wash Take sample S-10 from 35ft to 37ft qu = 2.5 tsf (PP)
			36				6		

N-Value (Blows/ft) scale: 10 20 30 40

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Log of Boring **LD-2** Sheet 3 of 6

Project	Project No.
JSUMC Campus Expansion	101166101
Location	**Elevation and Datum**
1945 NJ-33, Neptune City, NJ	Approx. el. 36.0 (NAVD 88)

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr-resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Casing Depth, Fluid Loss, Drilling Resistance, etc.)
	0.0		36	S-10	SS	24	7 7	13	
			37						
			38						
			39						
	-4.0		40						Drill to 40ft, smooth drilling, brown wash Take sample S-11 from 40ft to 42ft
		Grayish brown Silty medium to fine SAND, some clay (wet) [SM]	41	S-11	SS	20	5 5 7 6	12	
			42						
			43						
			44						
	-9.0		45						Drill to 45ft, smooth drilling, brown wash Take sample S-12 from 45ft to 47ft qu = 2.5 tsf (PP)
		Greenish gray Sandy CLAY, some silt (wet) [CL]	46	S-12	SS	17	5 5 5 7	10	
			47						
			48						
			49						
		Greenish gray Sandy CLAY, some silt (wet) [CL]	50						Drill to 50ft, smooth drilling, brown wash Take sample S-13 from 50ft to 52ft qu = 2.5 tsf (PP)
			51	S-13	SS	24	5 6 7 6	13	
			52						
			53						
			54						
		Greenish gray Sandy CLAY, some silt (wet) [CL]	55				6 5		Drill to 55ft, smooth drilling, brown wash Take sample S-14 from 55ft to 57ft
			56						

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Log of Boring **LD-2** Sheet 4 of 6

Project	Project No.
JSUMC Campus Expansion	101166101
Location	**Elevation and Datum**
1945 NJ-33, Neptune City, NJ	Approx. el. 36.0 (NAVD 88)

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr-resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Casing Depth, Fluid Loss, Drilling Resistance, etc.)
	-20.0		56	S-14		24	7	12	
			57				6		
			58						
			59						
		Greenish gray Sandy CLAY, some silt (wet) [CL]	60				5		Drill to 60ft, smooth drilling, brown wash Take sample S-15 from 60ft to 62ft qu = 3.0 tsf (PP)
			61	S-15	SS	24	6 7	13	
			62				8		
			63						
			64						
		Greenish gray Sandy CLAY, some silt (wet) [CL]	65				5		Drill to 65ft, smooth drilling, brown wash Take sample S-16 from 65ft to 67ft qu = 3.5 tsf (PP)
			66	S-16	SS	24	6 8	14	
			67				7		
			68						
			69						
		Greenish gray Sandy CLAY, some silt (wet) [CL]	70				6		Drill to 70ft, smooth drilling, brown wash Take sample S-17 from 70ft to 72ft qu = 3.0 tsf (PP)
			71	S-17	SS	24	8 8	16	
			72				8		
			73						
			74						
		Greenish gray Sandy CLAY, some silt (wet) [CL]	75				9		Drill to 75ft, smooth drilling, brown wash Take sample S-18 from 75ft to 77ft qu = 3.0 tsf (PP)
			76				10		

N-Value (Blows/ft) scale: 10 20 30 40

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Log of Boring **LD-2** Sheet 5 of 6

Project	Project No.
JSUMC Campus Expansion	101166101
Location	**Elevation and Datum**
1945 NJ-33, Neptune City, NJ	Approx. el. 36.0 (NAVD 88)

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr-resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Casing Depth, Fluid Loss, Drilling Resistance, etc.)
	-40.0		76	S-18		24	8	18	
			77				10		
			78						
			79						
	-44.0		80				7		Drill to 80ft, smooth drilling, brown wash Take sample S-19 from 80ft to 82ft
		Greenish gray Clayey medium to fine SAND, some silt (wet) [SC]	81	S-19	SS	24	9 14	23	
			82				19		
			83						
			84						
			85				17		Drill to 85ft, smooth drilling, brown wash Take sample S-20 from 85ft to 87ft
		Greenish gray Clayey medium to fine SAND, some silt (wet) [SC]	86	S-20	SS	24	19 22	41	
			87				26		
			88						
			89						
			90				11		Drill to 90ft, smooth drilling, brown wash Take sample S-21 from 90ft to 92ft
		Greenish gray Clayey medium to fine SAND, some silt (wet) [SC]	91	S-21	SS	24	18 31	49	
			92				25		Drill to 95ft, smooth drilling, brown wash
			93						
			94						
			95				11		Take sample S-22 from 95ft to 97ft
		Greenish gray Clayey medium to fine SAND, some silt (wet) [SC]	96				13		

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Log of Boring **LD-2** Sheet 6 of 6

Project	Project No.
JSUMC Campus Expansion	101166101
Location	**Elevation and Datum**
1945 NJ-33, Neptune City, NJ	Approx. el. 36.0 (NAVD 88)

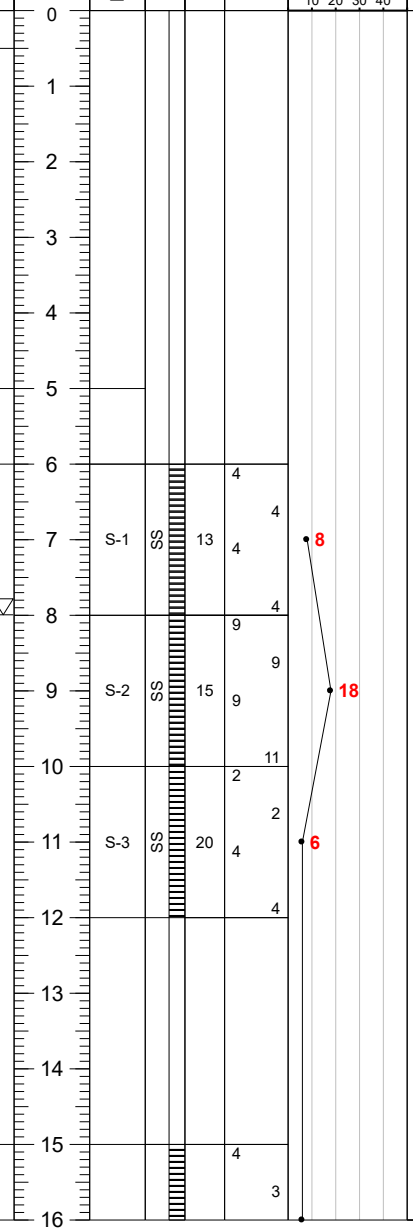
Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr-resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Casing Depth, Fluid Loss, Drilling Resistance, etc.)
	-60.0		96	S-22		24	15	28	
			97				13		Drill to 100ft, smooth drilling, brown wash
			98						
			99						
	-64.0		100				18		
		Greenish gray Sandy CLAY, some silt (wet) [CL]					16		Take sample S-23 from 100ft to 102ft qu = 3.0 tsf (PP)
			101	S-23	SS	24	15	31	
	-66.0		102				13		
		End of Boring at 102.0ft.							Stopped drilling 11/26/2024 at 1:14 PM. Upon completion, borehole backfilled with soil cuttings and hole plug. Asphalt patched surface to match existing grades.
			103						
			104						
			105						
			106						
			107						
			108						
			109						
			110						
			111						
			112						
			113						
			114						
			115						
			116						

LANGAN

Log of Boring **LD-3** Sheet 1 of 2

Project: JSUMC Campus Expansion	Project No.: 101166101
Location: 1945 NJ-33, Neptune City, NJ	Elevation and Datum: Approx. el. 37.0 (NAVD 88)
Drilling Company: Craig Geotechnical Drilling Co, Inc.	Date Started: 11/20/2024 — Date Finished: 11/20/2024
Drilling Equipment: Truck Rig	Completion Depth: 32.0 ft — Rock Depth: Not Encountered
Size and Type of Bit: 3-7/8in Tricone Roller Bit	Number of Samples: Disturbed 7 — Undisturbed 0 — Core 0
Casing Diameter (in): 4" diameter steel — Casing Depth (ft): 8.0	Water Level (ft.): First ▽ 8.0 — Completion ▼ N/A — 24 HR. ▼ N/A
Casing Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	Drilling Foreman: George Zackman
Sampler: 2in OD Split Spoon	Field Engineer: Jordy Moina
Sampler Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	

Material Symbol	Elev. (ft)	Sample Description
	+37.0	
	+36.5	Black ASPHALT (dry) [ASPHALT]
		Dark gray GRAVEL, some fine to coarse sand, trace silt (moist) [FILL]
		Gray SAND, some silt, some clay, trace fine gravel (moist) [FILL]
	+32.0	
		Light gray Silty CLAY, trace fine sand (wet) [CL]
	+31.0	
		Light gray fine SAND, trace silt (moist) [SP]
		Gray fine to medium SAND, trace silt (wet) [SP]
		Gray to dark grayish brown SAND, some silt, clay lenses (moist) [SP]
	+22.0	
		Dark gray Silty CLAY, some fine sand (moist) [CL]



Remarks (Drilling Fluid, Casing Depth, Fluid Loss, Drilling Resistance, etc.)

Started Drilling 11/16/2024 at 5:02 PM.
Precleared to 6 ft with a vacuum truck.

Take S-1 from 6ft to 8ft.

Drove casing to 8 ft. Drilled to 8 ft.
Take S-2 from 8ft to 10ft.

Take S-3 from 10ft to 12ft.

Drilled to 15 ft.
Take S-4 from 15ft to 17ft.

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Log of Boring **LD-3** Sheet 2 of 2

Project	Project No.
JSUMC Campus Expansion	101166101
Location	**Elevation and Datum**
1945 NJ-33, Neptune City, NJ	Approx. el. 37.0 (NAVD 88)

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr-resist BL/6in	N-Value (Blows/ft)	Remarks
	+21.0		16	S-4		22	3	6	
			17				2		
			18						
			19						
		Dark gray Silty CLAY, some fine sand (moist) [CL]	20	S-5A			8		Drilled to 20 ft. Take S-5 from 20ft to 22ft.
	+16.2						20		
		Light gray to gray coarse SAND, trace silt, trace fine gravel (moist) [SP]	21	S-5B	SS	20	21	41	
			22				23		
			23						
			24						
		Light gray to gray coarse SAND, trace silt, trace fine gravel (moist) [SP]	25	S-6A			29		Drilled to 25 ft. Take S-6 from 25ft to 27ft.
	+11.3						21		
		Gray to dark grayish brown fine SAND, trace clay (moist) [SM]	26	S-6B	SS	17	14	35	
			27				15		
			28						
			29						
	+7.0		30				6		Drilled to 30 ft. Take S-7 from 30ft to 32ft.
		Gray to grayish brown SILT, some fine sand, trace clay (moist) [ML]					10		
			31	S-7	SS	24	10	20	
	+5.0						11		
		End of Boring at 32.0ft.	32						Stopped drilling 11/16/2024 at 8:22 PM. Upon completion, borehole backfilled with soil cuttings and hole plug. Asphalt patched to match existing grades.
			33						
			34						
			35						
			36						

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Log of Boring **LD-4** Sheet 1 of 2

Project: JSUMC Campus Expansion	Project No.: 101166101
Location: 1945 NJ-33, Neptune City, NJ	Elevation and Datum: Approx. el. 37.5 (NAVD 88)
Drilling Company: Craig Geotechnical Drilling Co, Inc.	Date Started: 11/16/2024 — Date Finished: 11/16/2024
Drilling Equipment: Truck Rig	Completion Depth: 32.0 ft — Rock Depth: Not Encountered
Size and Type of Bit: 3-7/8in Tricone Roller Bit	Number of Samples: Disturbed 7 — Undisturbed 0 — Core 0
Casing Diameter (in): 4" diameter steel — Casing Depth (ft): 8.0	Water Level (ft.): First ▽ 10.0 — Completion ▼ N/A — 24 HR. ▼ N/A
Casing Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	Drilling Foreman: George Zackman
Sampler: 2in OD Split Spoon	Field Engineer: Jordy Moina
Sampler Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Number	Type	Recov. (in)	Penetr-resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Casing Depth, Fluid Loss, Drilling Resistance, etc.)
	+37.5								Started Drilling 11/16/2024 at 4:29 PM. Precleared to 6 ft with a vacuum truck.
	+37.0	Black ASPHALT [ASPHALT]	0						
		Dark gray GRAVEL, some fine to coarse sand, trace silt (dry) [FILL]	1						
		Yellowish brown fine to coarse SAND, some fine gravel, trace silt with wood and glass pieces (dry) [LANDFILL MATERIALS]	2						
			3						
			4						
			5						
		Yellowish brown fine to coarse SAND, some fine gravel, trace silt with wood and root pieces (moist) [LANDFILL MATERIALS]	6	S-1A	SS	16	17 16		Take S-1 from 6ft to 8ft.
	+30.7	Gray to yellowish brown SAND, trace silt, some clay (moist) [SP]	7	S-1B	SS	16	10 7	26	
		Light yellowish brownish yellow fine to medium SAND, trace silt, clay lenses (moist) [SP]	8	S-2	SS	17	9 9		Drove casing to 8 ft. Drilled to 8 ft. Take S-2 from 8ft to 10ft.
			9				9	18	
	+27.5	Light gray to brownish yellow Silty fine to medium SAND (wet) [SM] ▽	10				6		Take S-3 from 10ft to 12ft.
			11	S-3	SS	22	3 3 4 6	7	
			12						
			13						
			14						
	+22.5	Dark gray to dark grayish brown Silty SAND, some silt, trace clay (moist) [SM]	15				4 6		Drilled to 15 ft. Take S-4 from 15ft to 17ft.
			16						

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Log of Boring **LD-4** Sheet 2 of 2

Project	Project No.
JSUMC Campus Expansion	101166101
Location	**Elevation and Datum**
1945 NJ-33, Neptune City, NJ	Approx. el. 37.5 (NAVD 88)

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr-resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Casing Depth, Fluid Loss, Drilling Resistance, etc.)
	+21.5		16	S-4		22	7	13	
			17				8		
			18						
			19						
		Dark gray Silty SAND, some silt, trace clay (moist) [SM]	20				4		Drilled to 20 ft. Take S-5 from 20ft to 22ft.
			21	S-5	SS	24	5 8	13	
			22				10		
			23						
			24						
	+12.5		25				11		Drilled to 25 ft. Take S-6 from 25ft to 27ft.
		Gray to light gray SAND, some fine gravel, trace silt, clay lenses (moist) [SP]	26	S-6	SS	17	17 36	53	
			27				50/4"		
			28						
			29						
		Gray to light gray SAND, some fine gravel, trace silt, clay lenses (moist) [SP]	30				8		Drilled to 30 ft. Take S-7 from 30ft to 32ft.
			31	S-7	SS	24	8 10	18	
	+5.5		32				16		Stopped Drilling 11/16/2024 at 9:25 PM. Upon completion, borehole backfilled with soil cuttings and hole plug. Asphalt patched to match existing grades.
		End of Boring at 32.0ft.	33						
			34						
			35						
			36						

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Log of Boring **LD-5** Sheet 1 of 3

Project: JSUMC Campus Expansion	Project No.: 101166101
Location: 1945 NJ-33, Neptune City, NJ	Elevation and Datum: Approx. el. 36.0 (NAVD 88)
Drilling Company: Craig Geotechnical Drilling Co, Inc.	Date Started: 11/20/2024 — Date Finished: 11/20/2024
Drilling Equipment: Truck Rig	Completion Depth: 52.0 ft — Rock Depth: Not Encountered
Size and Type of Bit: 3-7/8in Tricone Roller Bit	Number of Samples: Disturbed 15, Undisturbed 0, Core 0
Casing Diameter (in): 4" diameter steel — Casing Depth (ft): 15.0	Water Level (ft.): First ▽ 7.0, Completion ▼ N/A, 24 HR. ▼ N/A
Casing Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	Drilling Foreman: Shane Frick
Sampler: 2in OD Split Spoon	Field Engineer: Jonathan Gonzalez
Sampler Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Number	Type	Recov. (in)	Penetr-resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Casing Depth, Fluid Loss, Drilling Resistance, etc.)
	+36.0							10 20 30 40	
		ASPHALT (8 inches thick)	0						Started Drilling 11/20/2024 at 7:30 AM.
	+35.3	Brown medium to fine SAND, trace clay, trace silt, trace fine gravel, metal fragments (dry) [LANDFILL MATERIALS]	1						Drilled through asphalt to 8 inches
			2	S-1	GRAB				Hand auger to 5ft. Take grab sample S-1 from 1ft to 3ft
		Brown to orangish brown medium to fine SAND, trace fine gravel, trace silt with wood and glass pieces (dry) [LANDFILL MATERIALS]	3						
			4	S-2	GRAB				Take grab sample S-2 from 3ft to 5ft
		Gray to orangish brown fine to coarse SAND, trace silt, trace fine gravel with glass pieces (moist) [LANDFILL MATERIALS]	5				6		Take sample S-3 from 5ft to 7ft using 3-inch spoon
			6	S-3	SS	20	8 4	12	
		Orangish brown medium to fine SAND, trace silt, trace fine gravel (wet) [LANDFILL MATERIALS]	7 ▽				5		Take sample S-4 from 7ft to 9ft
			8	S-4	SS	8	3 4 5	9	
		Brown fine GRAVEL, some medium to fine sand with glass pieces (wet) [LANDFILL MATERIALS]	9				5		Drive casing to 9ft Drill to 9ft, smooth drilling, brown wash
			10	S-5	SS	4	2 2	4	Take sample S-5 from 9ft to 11ft
	+25.0						2		
		Light gray fine SAND, trace silt (wet) [SP-SM]	11				5		Take sample S-6 from 11ft to 13ft
			12	S-6	SS	12	7 13	20	
	+23.0						9		Drill to 13ft, smooth drilling, brown wash Take sample S-7 from 13ft to 15ft using 3-inch spoon
		Gray Silty fine SAND (wet) [SM]	13				10		
			14	S-7	SS	14	10 10	20	
		Brownish gray Silty fine SAND, trace clay (wet) [SM]	15				11 5		Take sample S-8 from 15ft to 17ft Drive casing to15ft
			16				6		

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Log of Boring **LD-5** Sheet 2 of 3

Project	Project No.
JSUMC Campus Expansion	101166101
Location	**Elevation and Datum**
1945 NJ-33, Neptune City, NJ	Approx. el. 36.0 (NAVD 88)

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr-resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Casing Depth, Fluid Loss, Drilling Resistance, etc.)
	+20.0		16	S-8		13	8	14	
			17				9		
			18						
			19						
	+16.0	Gray medium to fine SAND, trace clay, trace silt (wet) [SP-SM]	20				16		Drill to 20ft, smooth drilling, brown wash Take sample S-9 from 20ft to 22ft
			21	S-9	SS	15	36 23	59	
			22				19		
			23						
			24						
		Gray medium to fine SAND, trace silt, trace clay (wet) [SP-SM]	25				13		Drill to 25ft, smooth drilling, brown wash Take sample S-10 from 25ft to 27ft
			26	S-10	SS	16	11 10	21	
			27				10		
			28						
			29						
	+6.0	Gray Silty fine SAND, trace clay (wet) [SM]	30				5		Drill to 30ft, smooth drilling, brown wash Take sample S-11 from 30ft to 32ft
			31	S-11	SS	24	9 13	22	
			32				11		
			33						
			34						
	+1.0		35				7		Drill to 35ft, smooth drilling, brown wash Take sample S-12 from 35ft to 37ft qu = 2.0 tsf (PP)
		Gray Silty CLAY, trace fine sand (wet) [CL]	36				6		

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Log of Boring **LD-5** Sheet 3 of 3

Project	Project No.
JSUMC Campus Expansion	101166101
Location	**Elevation and Datum**
1945 NJ-33, Neptune City, NJ	Approx. el. 36.0 (NAVD 88)

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr-resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Casing Depth, Fluid Loss, Drilling Resistance, etc.)
	0.0		36	S-12		16	7 9	13	
			37						
			38						
			39						
	-4.0		40				7		Drill to 40ft, smooth drilling, brown wash Take sample S-13 from 40ft to 42ft
		Gray medium to fine SAND, some silt, trace clay (wet) [SM]					13		
			41	S-13	SS	17	7	20	
			42				7		
			43						
			44						
			45				6		Drill to 45 ft, smooth drilling, brown wash Take sample S-14 from 45ft to 47ft
		Gray Silty medium to fine SAND, trace clay (wet) [SM]		S-14A			5		
	-10.3		46		SS	24	4	9	
		Greenish gray Sandy CLAY, some silt (wet) [CH]		S-14B			7		
			47						
			48						
			49						
			50				5		Drill to 50ft, smooth drilling to moderate drilling, brown wash Take sample S-15 from 50ft to 52ft qu = 2.0 tsf (PP)
		Greenish gray Sandy CLAY, some silt (wet) [CH]					10		
			51	S-15	SS	16	8	18	
	-16.0		52				8		Stopped drilling 11/20/2024 at 1:20 PM. Upon completion, borehole backfilled with soil cuttings and hole plug. Asphalt patched to match existing grades.
		End of Boring at 52.0ft.							
			53						
			54						
			55						
			56						

N-Value (Blows/ft) scale: 10 20 30 40

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Log of Boring **LD-6** Sheet 1 of 2

Project: JSUMC Campus Expansion	Project No.: 101166101
Location: 1945 NJ-33, Neptune City, NJ	Elevation and Datum: Approx. el. 35.5 (NAVD 88)
Drilling Company: Craig Geotechnical Drilling Co, Inc.	Date Started: 11/25/2024 — Date Finished: 11/25/2024
Drilling Equipment: Truck Rig	Completion Depth: 32.0 ft — Rock Depth: Not Encountered
Size and Type of Bit: 3-7/8in Tricone Roller Bit	Number of Samples: Disturbed 10 — Undisturbed 0 — Core 0
Casing Diameter (in): 4" diameter steel — Casing Depth (ft): 9.0	Water Level (ft.): First ▽ 7.0 — Completion ▼ N/A — 24 HR. ▼ N/A
Casing Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	Drilling Foreman: Shane Frick
Sampler: 2in OD Split Spoon	Field Engineer: Jonathan Gonzalez
Sampler Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Number	Type	Recov. (in)	Penetr-resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Casing Depth, Fluid Loss, Drilling Resistance, etc.)
	+35.5	ASPHALT (15 inches thick)	0						Start Drilling: 0 ft, 10:58 AM Drilled through asphalt to 1.3ft
	+34.2	Brown medium to fine SAND, trace silt, trace fine gravel (dry) [FILL]	1						
			2	S-1	GRAB				Hand auger to 5ft Take grab sample S-1 from 1.5ft to 3ft
		Brown medium to fine SAND, trace silt (moist) [FILL]	3						Take grab sample S-2 from 3ft to 5ft
			4	S-2	GRAB				
		Dark brown medium to fine SAND, trace silt with concrete and brick pieces (dry) [LANDFILL MATERIALS]	5						Take sample S-3 from 5ft to 7ft
			6	S-3	SS	12	14 18 12 10	30	
		Gray to dark gray Silty medium to fine SAND, trace organics, root fragments (wet) [FILL]	7						Take sample S-4 from 7ft to 9ft
			8	S-4	SS	15	8 5 4 8	9	Drive casing to 9ft.
	+26.5	Gray medium to fine SAND, trace silt (wet) [SP-SM]	9						Drill to 9ft, smooth drilling, gray wash
			10	S-5	SS	9	15 15 10 16	25	Take sample S-5 from 9ft to11ft using 3-inch spoon
	+24.5	Brownish gray Silty fine SAND, trace clay (wet) [SM]	11						Take sample S-6 from 11ft to 13ft
			12	S-6	SS	20	5 6 9 11	15	
			13						
			14						
		Grayish brown Silty fine SAND, trace clay (wet) [SM]	15				4 4		Drill to 15ft, smooth drilling, brown wash Take sample S-7 from 15ft to 17ft
			16						

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Log of Boring **LD-6** Sheet 2 of 2

Project	Project No.
JSUMC Campus Expansion	101166101
Location	**Elevation and Datum**
1945 NJ-33, Neptune City, NJ	Approx. el. 35.5 (NAVD 88)

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr-resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Casing Depth, Fluid Loss, Drilling Resistance, etc.)
	+19.5		16	S-7		14	9 7	13	
			17						
			18						
			19						
	+15.5	Gray medium to fine SAND, trace silt (wet) [SP-SM]	20						Drill to 20ft, smooth drilling, brown wash Take sample S-8 from 20ft to 22ft
			21	S-8	SS	15	16 27 28 34	55	
			22						
			23						
			24						
	+10.5	Grayish brown CLAY, some silt, some f-m sand (wet) [CL]	25				5 6		Drill to 25ft, smooth drilling, brown wash Take sample S-9 from 25ft to 27ft
			26	S-9	SS	21	7 8	13	
			27						
			28						
			29						
	+5.5	Grayish brown Silty fine SAND, some clay (wet) [SM]	30				12 12		Drill to 30ft, smooth drilling, brown wash Take sample S-10 from 30ft to 32ft
			31	S-10	SS	24	15	27	
	+3.5	End of Boring at 32.0ft.	32				13		Stopped drilling 11/25/2024 at 1:11 PM. Upon completion, borehole backfilled with soil cuttings and hole plug. Asphalt patched to match existing surface.
			33						
			34						
			35						
			36						

N-Value (Blows/ft) scale: 10 20 30 40

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Log of Boring **LD-7** Sheet 1 of 3

Project: JSUMC Campus Expansion	Project No.: 101166101
Location: 1945 NJ-33, Neptune City, NJ	Elevation and Datum: Approx. el. 37.0 (NAVD 88)
Drilling Company: Craig Geotechnical Drilling Co, Inc.	Date Started: 11/22/2024 — Date Finished: 11/22/2024
Drilling Equipment: Truck Rig	Completion Depth: 52.0 ft — Rock Depth: Not Encountered
Size and Type of Bit: 3-7/8in Tricone Roller Bit	Number of Samples: Disturbed 14, Undisturbed 0, Core 0
Casing Diameter (in): 4" diameter steel — Casing Depth (ft): 10.0	Water Level (ft.): First ▽ 8.0, Completion ▼ N/A, 24 HR. ▼ N/A
Casing Hammer: Automatic — Weight (lbs): 140 — Drop (in): 30	Drilling Foreman: Shane Frick
Sampler: 2in OD Split Spoon	Field Engineer: Jonathan Gonzalez
Sampler Hammer: Automatic — Weight (lbs): 140 — Drop (in): 30	

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Number	Type	Recov. (in)	Penetr-resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Casing Depth, Fluid Loss, Drilling Resistance, etc.)
	+37.0	ASPHALT (15 inches thick)	0						Started Drilling 11/22/2024 at 10:34 AM
	+35.5	Light brown to gray medium to fine SAND, trace silt, trace fine gravel (dry) [FILL]	1						Drill through asphalt to 1.25ft
			2	S-1	GRAB				Hand auger to 6ft
			3						Take grab sample S-1 from 1.5ft to 2.5ft
		Light gray fine SAND, some silt (dry) [FILL]	4						Take grab sample S-2 from 4ft to 6ft
			5	S-2	GRAB				
		Light gray fine SAND, trace silt (moist) [FILL]	6						Take sample S-3 from 6ft to 8ft using 3-inch spoon
			7	S-3	SS	18	6, 7, 6	13	
	+29.0		8						
		Light gray medium to fine SAND, some silt (wet) [SM]	9	S-4	SS	14	4, 3, 3	6	Take sample S-4 from 8ft to 10ft Drive casing to 10ft
	+27.0		10						Drill to 10ft, smooth drilling, brown wash
		Grayish brown SILT, some f-m sand, trace clay [ML]	11	S-5	SS	16	WOH, 2, 1	3	Take sample S-5 from 10ft to 12ft
			12						Take sample S-6 from 12ft to 14ft
		Gray SILT, some f-m sand, trace clay [ML]	13	S-6	SS	20	1, 1, 2, 2	3	
			14						
	+22.0		15						Drill to 15ft, smooth drilling, brown wash Take sample S-7 from 15ft to 17ft
			16				3, 3		

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Log of Boring **LD-7** Sheet 2 of 3

Project	Project No.
JSUMC Campus Expansion	101166101
Location	**Elevation and Datum**
1945 NJ-33, Neptune City, NJ	Approx. el. 37.0 (NAVD 88)

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr-resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Casing Depth, Fluid Loss, Drilling Resistance, etc.)
	+21.0		16	S-7		23	3	6	
							3		
			17						
			18						
			19						
			20				15		Drill to 20ft, smooth drilling, brown wash
		Brownish gray medium to fine SAND, trace silt (wet) [SP-SM]							Take sample S-8 from 20ft to 22ft
			21	S-8	SS	14	20	45	
							25		
			22				20		
			23						
			24						
	+12.0		25				3		Drill to 25ft, smooth drilling, brown wash
		Gray Sandy SILT, trace clay (wet) [ML]					6		Take sample S-9 from 25ft to 27ft
			26	S-9	SS	20	7	13	
			27				6		
			28						
			29						
			30				3		Drill to 30ft, smooth drilling, brown wash
		Grayish brown Sandy SILT, trace clay (wet) [ML]					4		Take sample S-10 from 30ft to 32ft
			31	S-10	SS	22	5	9	
			32				5		
			33						
			34						
	+2.0		35				3		Drill to 35ft, smooth drilling, brown wash
		Brownish gray Silty CLAY, trace fine sand (wet) [CL]							Take sample S-11 from 35ft to 37ft
							3		qu = 2.0 tsf (PP)
			36						

N-Value (Blows/ft) scale: 10 20 30 40

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Log of Boring **LD-7** Sheet 3 of 3

Project	Project No.
JSUMC Campus Expansion	101166101
Location	**Elevation and Datum**
1945 NJ-33, Neptune City, NJ	Approx. el. 37.0 (NAVD 88)

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr-resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Casing Depth, Fluid Loss, Drilling Resistance, etc.)
	+1.0		36	S-11		21	5 6	8	
			37						
			38						
			39						
	-3.0		40						Drill to 40ft, smooth drilling, brown wash Take sample S-12 from 40ft to 42ft
		Brownish gray medium to fine SAND, some silt, trace clay (wet) [SM]					12 8		
			41	S-12	SS	15	7	15	
			42				6		
			43						
			44						
	-8.0		45				3		Drill to 45ft, smooth drilling, brown wash Take sample S-13 from 45ft to 47ft qu = 3.0 tsf (PP)
		Greenish gray Sandy CLAY, some silt (wet) [CL]					5		
			46	S-13	SS	12	6	11	
			47				6		
			48						
			49						
			50				9		Drill to 50ft, smooth drilling, brown wash Take sample S-14 from 50ft to 52ft qu = 3.5 tsf (PP)
		Greenish gray Sandy CLAY, some silt (wet) [CL]					7		
			51	S-14	SS	24	9	16	
	-15.0		52				9		Stopped drilling 11/22/2024 at 3:35 PM. Upon completion, borehole backfilled with soil cuttings and hole plug. Asphalt patched to match existing grades.
		End of Boring at 52.0ft.							
			53						
			54						
			55						
			56						

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Log of Boring **LD-8** Sheet 1 of 3

Project: JSUMC Campus Expansion	Project No.: 101166101
Location: 1945 NJ-33, Neptune City, NJ	Elevation and Datum: Approx. el. 36.0 (NAVD 88)
Drilling Company: Craig Geotechnical Drilling Co, Inc.	Date Started: 11/20/2024 — Date Finished: 11/22/2024
Drilling Equipment: Truck Rig	Completion Depth: 52.0 ft — Rock Depth: Not Encountered
Size and Type of Bit: 3-7/8in Tricone Roller Bit	Number of Samples: Disturbed 14, Undisturbed 0, Core 0
Casing Diameter (in): 4" diameter steel — Casing Depth (ft): 9.0	Water Level (ft.): First ▽ 5.0, Completion ▼ N/A, 24 HR. ▼ N/A
Casing Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	Drilling Foreman: Shane Frick
Sampler: 2in OD Split Spoon	Field Engineer: Jonathan Gonzalez
Sampler Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Number	Type	Recov. (in)	Penetr-resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Casing Depth, Fluid Loss, Drilling Resistance, etc.)
	+36.0	ASPHALT (8 inches thick)	0						Started drilling 11/20/2024 at 11:00 AM
	+35.0	Brown coarse to fine SAND, trace silt, some fine gravel, shale fragments (moist) [FILL]	1						Drill through asphalt to 0.7ft
			2	S-1	GRAB				Take grab sample S-1 from 1ft to 3ft
		Brown medium to fine SAND, trace silt, trace fine gravel (moist) [FILL]	3						Take grab sample S-2 from 3ft to 5ft
			4	S-2	GRAB				
		Brown coarse to fine SAND, some fine gravel, trace silt (wet) [FILL] ▽	5						Take sample S-3 from 5ft to 7ft using 3-inch spoon
			6	S-3	SS	12	4 4 7 7	11	
		Brown Sandy GRAVEL, trace silt (wet) [FILL]	7						Take sample S-4 from 7ft to 9ft.
			8	S-4	SS	13	5 8 6 5	14	
	+27.0	Dark brown SILT, some clay, trace fine sand (wet) [ML]	9						Drive casing to 9ft. Drill to 9ft, smooth drilling, brown wash
			10	S-5	SS	12	2 2 2 1	4	Take S-5 from 9ft to 11ft
	+25.0	Brown medium to fine SAND, some silt, trace fine gravel (wet) [SM]	11						Take S-6 from 11ft to 13ft
			12	S-6	SS	15	5 3 5 3	8	
			13						
			14						
		Brownish gray Silty fine SAND (wet) [SM]	15				4 3		Drill to 15ft, smooth drilling, brown wash Take S-7 from 15ft to 17ft
			16						

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Log of Boring **LD-8** Sheet 2 of 3

Project	Project No.
JSUMC Campus Expansion	101166101
Location	**Elevation and Datum**
1945 NJ-33, Neptune City, NJ	Approx. el. 36.0 (NAVD 88)

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr-resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Casing Depth, Fluid Loss, Drilling Resistance, etc.)
	+20.0		16	S-7		16	4 4	7	
	+16.0	Gray medium to fine SAND, trace silt (wet) [SP-SM]	20	S-8	SS	11	14 22 17 16	39	Drill to 20ft, smooth drilling, brown wash Take S-8 from 20ft to 22ft
	+11.0	Brownish gray Silty medium to fine SAND (wet) [SM]	25	S-9	SS	20	5 7 7 9	14	Drill to 25ft, smooth drilling, brown wash Take S-9 from 25ft to 27ft
		Brownish gray Silty fine SAND, some clay (wet) [SM]	30	S-10	SS	16	4 4 4 5	8	Drill to 30ft, smooth drilling, brown wash Take S-10 from 30ft to 32ft
	+1.0	Brownish gray Silty CLAY, trace fine sand (wet) [CL]	35				3 4		Drill to 35ft, smooth drilling, brown wash Take S-11 from 35ft to 37ft qu = 2.0 tsf (PP)

N-Value (Blows/ft) scale: 10 20 30 40

Template: Log-BH; Strip: BH-GEO; Printed on 12/30/2024

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Log of Boring **LD-8** Sheet 3 of 3

Project	Project No.
JSUMC Campus Expansion	101166101
Location	**Elevation and Datum**
1945 NJ-33, Neptune City, NJ	Approx. el. 36.0 (NAVD 88)

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr-resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Casing Depth, Fluid Loss, Drilling Resistance, etc.)
	0.0		36	S-11		24	5 5	9	
			37						
			38						
			39						
	-4.0		40						Drill to 40ft, smooth drilling, brown wash Take S-12 from 40ft to 42ft
		Grayish brown medium to fine SAND, some silt, trace clay (wet) [SM]	41	S-12	SS	21	5 7 10 8	17	
			42						
			43						
			44						
	-9.0		45						Drill to 45ft, smooth drilling, brown wash Take S-13 from 45ft to 47ft qu = 3.5 tsf (PP)
		Greenish gray Sandy CLAY, trace silt (wet) [CL]	46	S-13	SS	24	3 6 7 8	13	
			47						
			48						
			49						
			50						Drill to 50ft, smooth drilling, brown wash Take S-14 from 50ft to 52ft
		Greenish gray Sandy CLAY, trace silt (wet) [CL]	51	S-14	SS	24	5 6 7 8	13	
	-16.0		52						Stopped drilling 11/22/2024 at 10:00AM. Upon completion, borehole backfilled with soil cuttings and hole plug. Asphalt patched to match existing grades.
		End of Boring at 52.0ft.	53						
			54						
			55						
			56						

N-Value (Blows/ft) scale: 10 20 30 40

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Log of Boring **LD-9** Sheet 1 of 2

Project: JSUMC Campus Expansion	Project No.: 101166101
Location: 1945 NJ-33, Neptune City, NJ	Elevation and Datum: Approx. el. 34.5 (NAVD 88)
Drilling Company: Craig Geotechnical Drilling Co, Inc.	Date Started: 11/27/2024 — Date Finished: 11/27/2024
Drilling Equipment: Truck Rig	Completion Depth: 32.0 ft — Rock Depth: Not Encountered
Size and Type of Bit: 3-7/8in Tricone Roller Bit	Number of Samples: Disturbed 10, Undisturbed 0, Core 0
Casing Diameter (in): 4" diameter steel — Casing Depth (ft): 10.0	Water Level (ft.): First ▽ 4.0, Completion ▼ N/A, 24 HR. ▼ N/A
Casing Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	Drilling Foreman: Shane Frick
Sampler: 2in OD Split Spoon	Field Engineer: Jonathan Gonzalez
Sampler Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Number	Type	Recov. (in)	Penetr-resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Casing Depth, Fluid Loss, Drilling Resistance, etc.)
	+34.5	ASPHALT (24 inches thick)	0						Started Drilling 11/27/2024 at 7:26 AM
			1						Drill through asphalt to approximately 2ft
	+32.5	Gray medium to fine SAND, trace fine gravel (dry) [FILL]	2						Performed soft digging to 6ft using vacuum truck
			3	S-1	GRAB				Take grab sample S-1 from 2ft to 4ft
		Brown coarse to fine SAND, some silt, some fine gravel with brick and wood pieces (wet) [LANDFILL MATERIALS]	4						Take grab sample S-2 from 4ft to 6ft
			5	S-2	GRAB				
		Dark brown coarse to fine SAND, some silt, some fine gravel with brick and wood pieces (wet) [LANDFILL MATERIALS]	6				7		Take sample S-3 from 6ft to 8ft using 3-inch spoon
			7	S-3	SS	16	9 7	16	
	+26.5						4		
		Dark gray CLAY, some silt, trace fine sand (wet) [OH]	8				3		Take sample S-4 from 8ft to 10ft
			9	S-4	SS	10	3 2	5	Drive casing to 10ft
	+24.5						2		
		Light gray Silty fine SAND (wet) [SM]	10				2		Drill to 10ft, smooth drilling, brown wash
			11	S-5	SS	15	4 3	7	Take sample S-5 from 10ft to12ft
		Grayish brown Silty medium to fine SAND (wet) [SM]	12				5		Take sample S-6 from 12ft to14ft
			13	S-6	SS	14	8 5 6	11	
			14				7		
		Grayish brown Silty fine SAND, trace clay (wet) [SM]	15				3		Drill to 15ft, smooth drilling, brown wash Take sample S-7 from 15ft to17ft
			16				5		

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Log of Boring **LD-9** Sheet 2 of 2

Project	Project No.
JSUMC Campus Expansion	101166101
Location	**Elevation and Datum**
1945 NJ-33, Neptune City, NJ	Approx. el. 34.5 (NAVD 88)

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr-resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Casing Depth, Fluid Loss, Drilling Resistance, etc.)
	+18.5		16	S-7		22	5 7	10	
	+14.5	Gray medium to fine SAND, trace silt (wet) [SP-SM]	17 18 19 20	S-8	SS	12	19 20 28 26	48	Drill to 20ft, smooth drilling, brown wash Take sample S-8 from 20ft to 22ft
	+9.5	Gray Silty medium to fine SAND, trace clay (wet) [SM]	21 22 23 24 25	S-9	SS	24	12 12 13 15	25	Drill to 25ft, smooth drilling, brown wash Take sample S-9 from 25ft to 27ft
		Gray Silty medium to fine SAND, some clay (wet) [SM]	26 27 28 29 30	S-10	SS	24	16 18 17 16	35	Drill to 30ft, smooth drilling, brown wash Take sample S-10 from 30ft to 32ft
	+2.5	End of Boring at 32.0ft.	31 32 33 34 35 36						Stopped drilling 11/27/2024 at 9:45 AM. Upon completion, borehole backfilled with soil cuttings and hole plug. Asphalt patched to match existing grades.

N-Value (Blows/ft) scale: 10 20 30 40

LANGAN Log of Boring **LD-10** Sheet 1 of 3

Project	JSUMC Campus Expansion	Project No.	101166101
Location	1945 NJ-33, Neptune City, NJ	Elevation and Datum	Approx. el. 34.0 (NAVD 88)
Drilling Company	Craig Geotechnical Drilling Co, Inc.	Date Started: 11/25/2024	Date Finished: 11/25/2024
Drilling Equipment	Truck Rig	Completion Depth: 52.0 ft	Rock Depth: Not Encountered
Size and Type of Bit	3-7/8in Tricone Roller Bit	Number of Samples: Disturbed 15	Undisturbed 0; Core 0
Casing Diameter (in)	4" diameter steel; Casing Depth (ft) 10.0	Water Level (ft.): First ▽ 4.0	Completion N/A; 24 HR. N/A
Casing Hammer	Safety; Weight (lbs) 140; Drop (in) 30	Drilling Foreman	Shane Frick
Sampler	2in OD Split Spoon	Field Engineer	Jonathan Gonzalez
Sampler Hammer	Safety; Weight (lbs) 140; Drop (in) 30		

Elev. (ft)	Sample Description	Depth Scale	Number	Type	Recov. (in)	Penetr-resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Casing Depth, Fluid Loss, Drilling Resistance, etc.)
+34.0	ASPHALT (18 inches thick)	0						Start Drilling 11/25/2024 at 7:50 AM. Drill through asphalt to 1.5ft
+32.5	Brown medium to fine SAND, trace fine gravel, trace silt (dry) [FILL]	1.5	S-1	GRAB				Hand auger to 6ft Take grab sample S-1 from 1.5ft to 2ft
	Tannish brown medium to fine SAND, trace fine gravel, trace silt (moist) [FILL]	2	S-2	GRAB				Take grab sample S-2 from 2ft to 4ft
	▽ Orangish brown medium to fine SAND, trace silt (wet) [FILL]	4	S-3	GRAB				Take grab sample S-3 from 4ft to 6ft
+28.0	Orangish brown medium to fine SAND, trace silt (wet) [SP-SM]	6	S-4	SS	16	5 6 4 3	10	Take sample S-4 from 6ft to 8ft
	Orangish brown medium to fine SAND, trace silt (wet) [SP-SM]	8	S-5	SS	10	4 8 5 4	13	Take sample S-5 from 8ft to 10ft using 3-inch spoon Drive casing to 10ft
+24.0	Black Clayey SILT, some organics with wood pieces (wet) [ML]	10	S-6	SS	19	3 3 2 2	5	Drill to 10ft, smooth drilling, gray wash Take sample S-6 from 10ft to 12ft
+22.0	Grayish brown Silty fine SAND, trace clay (wet) [SM]	12	S-7	SS	20	8 4 4 4	8	Take sample S-7 from 12ft to 14ft
	Brownish gray Silty SAND, trace clay (wet) [SM]	15				6 7		Drill to 15ft, smooth drilling, gray wash Take sample S-8 from 15ft to 17ft
		16						

Template: Log-BH; Strip: BH-GEO; Printed on 12/30/2024

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Log of Boring **LD-10** Sheet 2 of 3

Project	Project No.
JSUMC Campus Expansion	101166101
Location	**Elevation and Datum**
1945 NJ-33, Neptune City, NJ	Approx. el. 34.0 (NAVD 88)

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr-resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Casing Depth, Fluid Loss, Drilling Resistance, etc.)
	+18.0		16	S-8		21	9 7	16	
	+14.0	Gray medium to fine SAND, trace silt (wet) [SP-SM]	20	S-9	SS	14	20 25 27 20	52	Drill to 20ft, smooth drilling, gray wash Take sample S-9 from 20ft to 22ft
	+9.0	Grayish brown Silty fine SAND, trace clay (wet) [SM]	25	S-10	SS	24	11 12 17 12	29	Drill to 25ft, smooth drilling, gray wash Take sample S-10 from 25ft to 27ft
		Brownish gray Silty SAND, some clay (wet) [SM]	30	S-11	SS	20	10 11 11 10	22	Drill to 30ft, smooth drilling, gray wash Take sample S-11 from 30ft to 32ft
	-1.0	Gray Silty CLAY, trace fine sand (wet) [CL]	35				5 7		Drill to 35ft, smooth drilling, gray wash Take sample S-12 from 35ft to 37ft qu = 2.0 tsf (PP)

N-Value (Blows/ft) scale: 10 20 30 40

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Log of Boring **LD-10** Sheet 3 of 3

Project	Project No.
JSUMC Campus Expansion	101166101
Location	**Elevation and Datum**
1945 NJ-33, Neptune City, NJ	Approx. el. 34.0 (NAVD 88)

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr-resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Casing Depth, Fluid Loss, Drilling Resistance, etc.)
	-2.0		36	S-12		24	7 8	14	
			37						
			38						
			39						
	-6.0		40						Drill to 40ft, smooth drilling, gray wash Take sample S-13 from 40ft to 42ft
		Grayish brown Silty medium to fine SAND, trace clay (wet) [SM]	41	S-13	SS	19	6 10 13 13	23	
			42						
			43						
			44						
	-11.0		45						Drill to 45ft, smooth drilling, gray wash Take sample S-14 from 45ft to 47ft qu = 3.0 tsf (PP)
		Greenish gray Clayey f-c SAND, some silt (wet) [SC]	46	S-14	SS	24	7 9 14 13	23	
			47						
			48						
			49						
			50						Drill to 50ft, smooth drilling, gray wash Take sample S-15 from 50ft to 52ft qu = 3.0 tsf (PP)
		Greenish gray Clayey f-c SAND, some silt (wet) [SC]	51	S-15	SS	24	12 12 12 10	24	
	-18.0		52						Stopped drilling 11/25/2024 at 1:10 PM. Upon completion, borehole backfilled with soil cutting and hole plug. Asphalt patched to match existing grades.
		End of Boring at 52.0ft.	53						
			54						
			55						
			56						

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Log of Boring **LD-11** Sheet 1 of 6

Project: JSUMC Campus Expansion	Project No.: 101166101
Location: 1945 NJ-33, Neptune City, NJ	Elevation and Datum: Approx. el. 35.5 (NAVD 88)
Drilling Company: Craig Geotechnical Drilling Co, Inc.	Date Started: 11/19/2024 — Date Finished: 11/19/2024
Drilling Equipment: Truck Rig	Completion Depth: 102.0 ft — Rock Depth: Not Encountered
Size and Type of Bit: 3-7/8in Tricone Roller Bit	Number of Samples: Disturbed 26 — Undisturbed 0 — Core 0
Casing Diameter (in): 4" diameter steel — Casing Depth (ft): 40.0	Water Level (ft.): First ▽ 5.0 — Completion ▼ N/A — 24 HR. ▼ N/A
Casing Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	Drilling Foreman: Shane Frick
Sampler: 2in OD Split Spoon	Field Engineer: Jonathan Gonzalez
Sampler Hammer: Safety — Weight (lbs): 140 — Drop (in): 30	

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Number	Type	Recov. (in)	Penetr-resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Casing Depth, Fluid Loss, Drilling Resistance, etc.)
	+35.5							10 20 30 40	
	+35.0	ASPHALT (6 inches thick)	0						Start drilling 11/19/2024 at 7:55 AM. Hand auger to 5ft.
		Brown medium to fine SAND, some silt, trace fine gravel (dry) [FILL]	1	S-1	GRAB				Take grab sample S-1 from 1ft to 2ft
		Orangish brown medium to fine SAND, some silt, trace fine gravel (dry) [FILL]	2	S-2	GRAB				Take grab sample S-2 from 2ft to 4ft
		Light tan Silty fine SAND (moist) [FILL]	3	S-3	GRAB				Take grab sample S-3 from 4ft to 5ft
	+30.5		4						
		Gray Silty fine SAND, trace clay (wet) [SM]	5	S-4	SS	14	3 4 3 3	7	Take sample S-4 from 5ft to 7ft
		Orangish gray Silty fine SAND, trace clay (wet) [SM]	6						
			7	S-5	SS	15	4 4 5 8	9	Take sample S-5 from 7ft to 9ft
		Gray medium to fine SAND, some silt, trace clay (wet) [SM]	8						
			9	S-6	SS	12	15 6 9 8	15	Drive casing to 9ft Drill to 9ft, smooth drilling, brown wash Take sample S-6 from 9ft to 11ft using 3-inch spoon
		Gray Silty fine SAND, trace clay (wet) [SM]	10						
			11	S-7	SS	24	5 5 4 7	9	Take sample S-7 from 11ft to 13ft
		Gray Silty fine SAND, trace clay (wet) [SM]	12						
			13	S-8	SS	24	8 8 9 9	17	Drill to 13ft, smooth drilling, brown wash Take sample S-8 from 13ft to 15ft
		Gray Silty fine SAND, some clay (wet) [SM]	14						
			15				4 4		Take sample S-9 from 15ft to 17ft
			16						

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Log of Boring **LD-11** Sheet 2 of 6

Project	Project No.
JSUMC Campus Expansion	101166101
Location	**Elevation and Datum**
1945 NJ-33, Neptune City, NJ	Approx. el. 35.5 (NAVD 88)

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr-resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Casing Depth, Fluid Loss, Drilling Resistance, etc.)
	+19.5		16	S-9		24	4 4	8	
			17						
			18						
			19						
	+15.5	Gray medium to fine SAND, trace silt (wet) [SP-SM]	20				10 16		Drill to 20ft, smooth drilling, brown wash Take sample S-10 from 20ft to 22ft
			21	S-10	SS	13	15 13	31	
			22						
			23						
			24						
		Gray medium to fine SAND, trace silt, trace clay (wet) [SP-SM]	25				11 8		Drill to 25ft, smooth drilling, brown wash Take sample S-11 from 25ft to 27ft
			26	S-11	SS	15	7 10	15	
			27						
			28						
			29						
	+5.5	Gray Silty fine SAND, some clay (wet) [SM]	30				10 10		Drill to 30ft, smooth drilling, brown wash Take sample S-12 from 30ft to 32ft
			31	S-12	SS	24	9 9	19	
			32						
			33						
			34						
	+0.5		35				4 5		Drill to 35ft, smooth drilling, brown wash Take sample S-13 from 35ft to 37ft qu = 2.0 tsf (PP)
		Gray Silty CLAY, trace fine sand (wet) [CL]	36						

N-Value (Blows/ft) scale: 10 20 30 40

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Log of Boring **LD-11** Sheet 3 of 6

Project	Project No.
JSUMC Campus Expansion	101166101
Location	**Elevation and Datum**
1945 NJ-33, Neptune City, NJ	Approx. el. 35.5 (NAVD 88)

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr-resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Casing Depth, Fluid Loss, Drilling Resistance, etc.)
	-0.5		36	S-13		17	5	10	
			37				10		
			38						
			39						
	-4.5		40						Drill to 40ft, smooth drilling, brown wash Take sample S-14 from 40ft to 42ft
		Gray Silty medium to fine SAND (wet) [SM]					16		
			41	S-14	SS	14	16 14	30	
			42				15		
			43						
			44						
			45				5		Drill to 45ft, smooth drilling, brown wash Take sample S-15 from 45ft to 47ft
		Gray Silty medium to fine SAND, some clay (wet) [SM]					5		
			46	S-15	SS	17	10	15	Borehole got clogged multiple times. Drive casing to 40ft
			47				12		
			48						
			49						
	-14.5		50						Drill to 50ft, smooth drilling, brown wash Take sample S-16 from 50ft to 52ft qu = 3.0 tsf (PP)
		Greenish gray Silty CLAY, some medium to fine sand (wet) [CH]					8		
			51	S-16	SS	14	12 13	25	
			52				17		
			53						
			54						
			55				8		Drill to 55ft, smooth drilling, brown wash Take sample S-17 from 55ft to 57ft qu = 3.0 tsf (PP)
		Greenish gray Silty CLAY, some medium to fine sand (wet) [CH]					10		
			56						

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Log of Boring **LD-11** Sheet 4 of 6

Project	Project No.
JSUMC Campus Expansion	101166101
Location	**Elevation and Datum**
1945 NJ-33, Neptune City, NJ	Approx. el. 35.5 (NAVD 88)

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr-resist BL/6in	N-Value (Blows/ft)	Remarks (Drilling Fluid, Casing Depth, Fluid Loss, Drilling Resistance, etc.)
	-20.5	Greenish gray Silty CLAY, some medium to fine sand (wet) [CH]	56	S-17		24	14	24	
			57				10		
			58						
			59						
			60				10		Drill to 60ft, smooth drilling, brown wash Take sample S-18 from 60ft to 62ft qu = 2.3 tsf (PP)
			61	S-18	SS	21	12 10	22	
			62				13		
			63						
			64						
		Greenish gray Silty CLAY, trace fine sand (wet) [CH]	65				9		Drill to 65ft, smooth drilling, brown wash Take sample S-19 from 65ft to 67ft qu = 3.3 tsf (PP)
			66	S-19	SS	24	8 11	19	
			67				11		
			68						
			69						
		Greenish gray Silty CLAY, trace fine sand (wet) [CH]	70				11		Drill to 70ft, smooth drilling, brown wash Take sample S-20 from 70ft to 72ft qu = 4.0 tsf (PP)
			71	S-20	SS	24	10 12	22	
			72				12		
			73						
			74						
		Greenish gray Sandy CLAY, some silt (wet) [CH]	75				8		Drill to 75ft, smooth drilling, brown wash Take sample S-21 from 75ft to 77ft qu = 3.5 tsf (PP)
			76				12		

N-Value (Blows/ft) scale: 10 20 30 40

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Log of Boring **LD-11** Sheet 5 of 6

Project	Project No.
JSUMC Campus Expansion	101166101
Location	**Elevation and Datum**
1945 NJ-33, Neptune City, NJ	Approx. el. 35.5 (NAVD 88)

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr-resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Casing Depth, Fluid Loss, Drilling Resistance, etc.)
	-40.5		76	S-21		24	14	26	
			77				20		
			78						
			79						
		Greenish gray Sandy CLAY, some silt (wet) [CH]	80				11		Drill to 80ft, smooth drilling, brown wash Take sample S-22 from 80ft to 82ft
			81	S-22	SS	24	11 15	26	Switched to auto-hammer
			82				18		
			83						
			84						
	-49.5		85				11		Drill to 85ft, smooth drilling, brown wash Take sample S-23 from 85ft to 87ft
		Greenish gray Clayey medium to fine SAND, some silt (wet) [SC]	86	S-23	SS	24	12 18	30	
			87				16		
			88						
			89						
	-54.5		90				20		Drill to 90ft, smooth drilling, brown wash Take sample S-24 from 90ft to 92ft
		Greenish gray Silty fine to medium SAND, trace clay (wet) [SM]	91	S-24	SS	24	57 58	115	
			92				56		
			93						
			94						
	-59.5		95				10		Drill to 95ft, smooth drilling, brown wash Take sample S-25 from 95ft to 97ft
		Greenish gray Clayey medium to fine SAND, some silt (wet) [SC]	96				13		

LANGAN

Log of Boring **LD-11** Sheet 6 of 6

Project	Project No.
JSUMC Campus Expansion	101166101
Location	**Elevation and Datum**
1945 NJ-33, Neptune City, NJ	Approx. el. 35.5 (NAVD 88)

Material Symbol	Elev. (ft)	Sample Description	Depth Scale	Sample Data: Number	Type	Recov. (in)	Penetr-resist BL/6in	N-Value (Blows/ft) 10 20 30 40	Remarks (Drilling Fluid, Casing Depth, Fluid Loss, Drilling Resistance, etc.)
	-60.5		96	S-25		24	13	26	
			97				11		
			98						
			99						
			100				10		Drill to 100ft, smooth drilling, brown wash Take sample S-26 from 100ft to 102ft
		Greenish gray Clayey medium to fine SAND, some silt (wet) [SC]	101	S-26	SS	16	11 10	21	
	-66.5		102				10		Stopped drilling 11/19/2024 at 2:08 PM. Upon completion, borehole backfilled with soil cuttings and hole plug. Asphalt patched to match existing grades.
		End of Boring at 102.0ft.	103						
			104						
			105						
			106						
			107						
			108						
			109						
			110						
			111						
			112						
			113						
			114						
			115						
			116						

APPENDIX B

Geotechnical Laboratory Testing Results

Langan #101166101
JSUMC East Expansion
LABORATORY TESTING DATA SUMMARY

BORING NO.	SAMPLE NO.	DEPTH (ft)	IDENTIFICATION TESTS							REMARKS
			WATER CONTENT (%)	LIQUID LIMIT (-)	PLASTIC LIMIT (-)	PLAS. INDEX (-)	USCS SYMB. (1)	SIEVE MINUS NO. 200 (%)	ORGANIC CONTENT (burnoff) (%)	
LD-2	S-5	9-11	24.1				SC	20.4		
LD-2	S-8	25-27	35.7	48	23	25	CL			
LD-2	S-20	85-87	30.7	48	20	28	SC	47.7	1.1	
LD-3	S-4	15-17	35.4	33	23	10	CL	78.2	2.8	
LD-4	S-3	10-12	22.1				SM	43.5		
LD-5	S-15	50-52	32.5	64	17	47	CH	51.8		
LD-6	S-9	25-27	38.2				CL	82.2		
LD-7	S-5	10-12	33.4				CL	72.6		
LD-7	S-10	30-32	38.7				CL	61.5		
LD-8	S-3	5-7	16.8				SP	2		
LD-9	S-4	8-10	70.2	90	36	54	OH		12.2	
LD-10	S-14	45-47	27.8				SC	47.4		
LD-11	S-6	9-11	23.7				SM	27.4		
LD-11	S-19	65-67	56.6	123	26	97	CH		2.6	

Note: (1) USCS symbol based on visual observation and Sieve and Atterberg limits reported.

APPENDIX C

Evaluation of Corrosion Potential

CORROSION POTENTIAL EVALUATION

Project:	**JSUMC - East Expansion**	**Location:**	**Composite LB-5**
Location:	**Neptune, NJ**	**Sample:**	**COMPOSITE**
Job Number:	**101166101**	**Depth:**	**1'-9'**

CORROSION POTENTIAL FOR GRAY & DUCTILE CAST IRON-PIPE

Ref: ASTM A674-18 1 megaohm-cm= 1,000,000 ohm-cm

Soil Characterisitics	Laboratory Test Results	Points
Resistivity (ohm-cm)	1350	10
pH	8.7	3
Redox Potential (mV)	376	0
Sulfides (Positive, Trace, Negative)	6.3	3.5
Moisture (Poor, Fair, or Good)	Fair	2
	Total Points:	18.5

CORROSIVE

total points > 10 corrrosive

total points < 10 non-corrrosive

TABLE X1.1 Soil Test Evaluation[A]

Soil Characteristics	Points
Resistivity, ohm-cm (based on water-saturated soil-box):	
<1500	10
≥1500 to 1800	8
>1800 to 2100	5
>2100 to 2500	2
>2500 to 3000	1
>3000	0
pH:	
0–2	5
2–4	3
4–6.5	0
6.5–7.5	0[B]
7.5–8.5	0
>8.5	3
Redox potential:	
> +100 mV	0
+50 to +100 mV	3.5
0 to +50 mV	4
Negative	5
Sulfides:	
Positive	3.5
Trace	2
Negative	0
Moisture:	
Poor drainage, continuously wet	2
Fair drainage, generally moist	1
Good drainage, generally dry	0

[A] Ten points = corrosive to or ductile iron pipe; protection is indicated.
[B] If sulfides are present and low (<100 mv) or negative redox potential results are obtained, three points shall be given for this range.

CONCRETE REQUIREMENTS

Ref 1: ACI 318, Part 3, Chapter 4 1kg=1,000g=1,000,000mg
Ref 2: NAVFAC DM 7.2 pg 146

Water Soluble Sulfate in Soil (mg/kg or ppm)	Water Soluble Sulfate in Soil (% by weight)	Exposure Type	Cement Type
376	0.0376	Negligible	**Type I**

to convert mg/kg (ppm) to weight ratio divide by 1,000,000 and to obtain % ratio multiply by 100

Ref 1: ACI 318, Part 3, Chapter 4

0.00 to 0.10, Negligible and Type I Cement

0.10 to 0.20, Moderate, and Type II Cement (typical for seawater)

0.20 to 2.00, Severe, and Type V Cement

over 2.00, Very Severe, and Type V Cement with pozzolan

Ref 2: NAVFAC DM 7.2 pg 146

if Sulfates in soil greater than 0.5%, or more than 1200 ppm in groundwater, need Type V Cement

Ref 3:FHWA GEC 4 Ground Anchors page 136

Determine Sulfate content par AASHTO T-290. For Sulfate content between 0.1% and 0.2% use Type II cement, For Sulfate content between 0.2% and 22% use Type V cement and Sulfate content gretaer than 2% use Type V plus pozzolan.

CRITICAL VALUES FOR GROUND AGGRESSIVENESS

Ref: FHWA DP-68-IR, as summarized in Fang (1991)

Test	Laboratory Test Results	Reference Standard	Critical Values	Critical?
Resistivity	1350	ASTM G57	below 2000 ohm/cm	**YES**
pH	8.7	ASTM G51	below 4.5	**NO**
Sulfate	376	CalDOT 407	above 500 ppm	**NO**
Chlorides	373	CalDOT 422	above 100ppm	**YES**

BDL : Below detectable limits

CORROSION POTENTIAL EVALUATION

Project:	**JSUMC - East Expansion**	**Location:**	**Composite LB-6**
Location:	**Neptune, NJ**	**Sample:**	**COMPOSITE**
Job Number:	**101166101**	**Depth:**	**1'-9'**

CORROSION POTENTIAL FOR GRAY & DUCTILE CAST IRON-PIPE

Ref: ASTM A674-18 1 megaohm-cm= 1,000,000 ohm-cm

Soil Characterisitics	Laboratory Test Results	Points
Resistivity (ohm-cm)	3120	0
pH	9.6	3
Redox Potential (mV)	356	0
Sulfides (Positive, Trace, Negative)	5.9	3.5
Moisture (Poor, Fair, or Good)	Fair	2
	Total Points:	8.5

NOT CORROSIVE

total points > 10 corrrosive

total points < 10 non-corrrosive

TABLE X1.1 Soil Test Evaluation[A]

Soil Characteristics	Points
Resistivity, ohm-cm (based on water-saturated soil-box):	
<1500	10
≥1500 to 1800	8
>1800 to 2100	5
>2100 to 2500	2
>2500 to 3000	1
>3000	0
pH:	
0–2	5
2–4	3
4–6.5	0
6.5–7.5	0[B]
7.5–8.5	0
>8.5	3
Redox potential:	
> +100 mV	0
+50 to +100 mV	3.5
0 to +50 mV	4
Negative	5
Sulfides:	
Positive	3.5
Trace	2
Negative	0
Moisture:	
Poor drainage, continuously wet	2
Fair drainage, generally moist	1
Good drainage, generally dry	0

[A] Ten points = corrosive to or ductile iron pipe; protection is indicated.
[B] If sulfides are present and low (<100 mv) or negative redox potential results are obtained, three points shall be given for this range.

CONCRETE REQUIREMENTS

Ref 1: ACI 318, Part 3, Chapter 4 1kg=1,000g=1,000,000mg
Ref 2: NAVFAC DM 7.2 pg 146

Water Soluble Sulfate in Soil (mg/kg or ppm)	Water Soluble Sulfate in Soil (% by weight)	Exposure Type	Cement Type
275	0.0275	Negligible	**Type I**

to convert mg/kg (ppm) to weight ratio divide by 1,000,000 and to obtain % ratio multiply by 100

Ref 1: ACI 318, Part 3, Chapter 4

0.00 to 0.10, Negligible and Type I Cement

0.10 to 0.20, Moderate, and Type II Cement (typical for seawater)

0.20 to 2.00, Severe, and Type V Cement

over 2.00, Very Severe, and Type V Cement with pozzolan

Ref 2: NAVFAC DM 7.2 pg 146

if Sulfates in soil greater than 0.5%, or more than 1200 ppm in groundwater, need Type V Cement

Ref 3:FHWA GEC 4 Ground Anchors page 136

Determine Sulfate content par AASHTO T-290. For Sulfate content between 0.1% and 0.2% use Type II cement, For Sulfate content between 0.2% and 22% use Type V cement and Sulfate content gretaer than 2% use Type V plus pozzolan.

CRITICAL VALUES FOR GROUND AGGRESSIVENESS

Ref: FHWA DP-68-IR, as summarized in Fang (1991)

Test	Laboratory Test Results	Reference Standard	Critical Values	Critical?
Resistivity	3120	ASTM G57	below 2000 ohm/cm	**NO**
pH	9.6	ASTM G51	below 4.5	**NO**
Sulfate	275	CalDOT 407	above 500 ppm	**NO**
Chlorides	118	CalDOT 422	above 100ppm	**YES**

BDL : Below detectable limits

CORROSION POTENTIAL EVALUATION

Project:	**JSUMC - East Expansion**	**Location:**	**Composite LB-6**
Location:	**Neptune, NJ**	**Sample:**	**COMPOSITE**
Job Number:	**101166101**	**Depth:**	**1'-9'**

CORROSION POTENTIAL FOR GRAY & DUCTILE CAST IRON-PIPE

Ref: ASTM A674-18 1 megaohm-cm= 1,000,000 ohm-cm

Soil Characterisitics	Laboratory Test Results	Points
Resistivity (ohm-cm)	1330	10
pH	8.8	3
Redox Potential (mV)	352	0
Sulfides (Positive, Trace, Negative)	5.9	3.5
Moisture (Poor, Fair, or Good)	Fair	2
	Total Points:	18.5

CORROSIVE

total points > 10 corrrosive

total points < 10 non-corrrosive

TABLE X1.1 Soil Test Evaluation[A]

Soil Characteristics	Points
Resistivity, ohm-cm (based on water-saturated soil-box):	
<1500	10
≥1500 to 1800	8
>1800 to 2100	5
>2100 to 2500	2
>2500 to 3000	1
>3000	0
pH:	
0–2	5
2–4	3
4–6.5	0
6.5–7.5	0[B]
7.5–8.5	0
>8.5	3
Redox potential:	
> +100 mV	0
+50 to +100 mV	3.5
0 to +50 mV	4
Negative	5
Sulfides:	
Positive	3.5
Trace	2
Negative	0
Moisture:	
Poor drainage, continuously wet	2
Fair drainage, generally moist	1
Good drainage, generally dry	0

[A] Ten points = corrosive to or ductile iron pipe; protection is indicated.
[B] If sulfides are present and low (<100 mv) or negative redox potential results are obtained, three points shall be given for this range.

CONCRETE REQUIREMENTS

Ref 1: ACI 318, Part 3, Chapter 4 1kg=1,000g=1,000,000mg
Ref 2: NAVFAC DM 7.2 pg 146

Water Soluble Sulfate in Soil (mg/kg or ppm)	Water Soluble Sulfate in Soil (% by weight)	Exposure Type	Cement Type
436	0.0436	Negligible	**Type I**

to convert mg/kg (ppm) to weight ratio divide by 1,000,000 and to obtain % ratio multiply by 100

Ref 1: ACI 318, Part 3, Chapter 4

0.00 to 0.10, Negligible and Type I Cement

0.10 to 0.20, Moderate, and Type II Cement (typical for seawater)

0.20 to 2.00, Severe, and Type V Cement

over 2.00, Very Severe, and Type V Cement with pozzolan

Ref 2: NAVFAC DM 7.2 pg 146

if Sulfates in soil greater than 0.5%, or more than 1200 ppm in groundwater, need Type V Cement

Ref 3:FHWA GEC 4 Ground Anchors page 136

Determine Sulfate content par AASHTO T-290. For Sulfate content between 0.1% and 0.2% use Type II cement, For Sulfate content between 0.2% and 22% use Type V cement and Sulfate content gretaer than 2% use Type V plus pozzolan.

CRITICAL VALUES FOR GROUND AGGRESSIVENESS

Ref: FHWA DP-68-IR, as summarized in Fang (1991)

Test	Laboratory Test Results	Reference Standard	Critical Values	Critical?
Resistivity	1330	ASTM G57	below 2000 ohm/cm	**YES**
pH	8.8	ASTM G51	below 4.5	**NO**
Sulfate	436	CalDOT 407	above 500 ppm	**NO**
Chlorides	436	CalDOT 422	above 100ppm	**YES**

BDL : Below detectable limits

ATTACHMENT A

Historic Topographic Maps

JSUMC

1945 NJ-33

Neptune, NJ 07753

Inquiry Number: 7820492.4

November 13, 2024

EDR Historical Topo Map Report

with QuadMatch™

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Historical Topo Map Report

11/13/24

Site Name:	Client Name:
JSUMC	Langan
1945 NJ-33	300 Kimball Drive, 4th Floor
Neptune, NJ 07753	Parsippany, NJ 07054-2172
EDR Inquiry # 7820492.4	Contact: Rebecca Blocker

EDR Topographic Map Library has been searched by EDR and maps covering the target property location as provided by Langan were identified for the years listed below. EDR's Historical Topo Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topo Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the late 1800s.

Search Results:

P.O.# NA

Project: NA

Coordinates:

Latitude:	40.208933 40° 12' 32" North
Longitude:	-74.041296 -74° 2' 29" West
UTM Zone:	Zone 18 North
UTM X Meters:	581585.37
UTM Y Meters:	4451387.83
Elevation:	36.00' above sea level

Maps Provided:

2019	1943
2016	1902
2014	1901
1995	1893
1989	1888
1981	
1970	
1954	

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

2019 Source Sheets

Asbury Park
2019
7.5-minute, 24000

2016 Source Sheets

Asbury Park
2016
7.5-minute, 24000

2014 Source Sheets

Asbury Park
2014
7.5-minute, 24000

1995 Source Sheets

Asbury Park
1995
7.5-minute, 24000
Aerial Photo Revised 1995

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1989 Source Sheets

Asbury Park
1989
7.5-minute, 24000
Aerial Photo Revised 1986

1981 Source Sheets

Asbury Park
1981
7.5-minute, 24000
Aerial Photo Revised 1976

1970 Source Sheets

Asbury Park
1970
7.5-minute, 24000
Aerial Photo Revised 1970

1954 Source Sheets

Asbury Park
1954
7.5-minute, 24000
Aerial Photo Revised 1941

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1943 Source Sheets

Asbury Park
1943
7.5-minute, 24000
Aerial Photo Revised 1941

1902 Source Sheets

Navesink
1902
30-minute, 125000

1901 Source Sheets

Asbury Park
1901
15-minute, 62500

1893 Source Sheets

Asbury Park
1893
15-minute, 62500

Topo Sheet Key

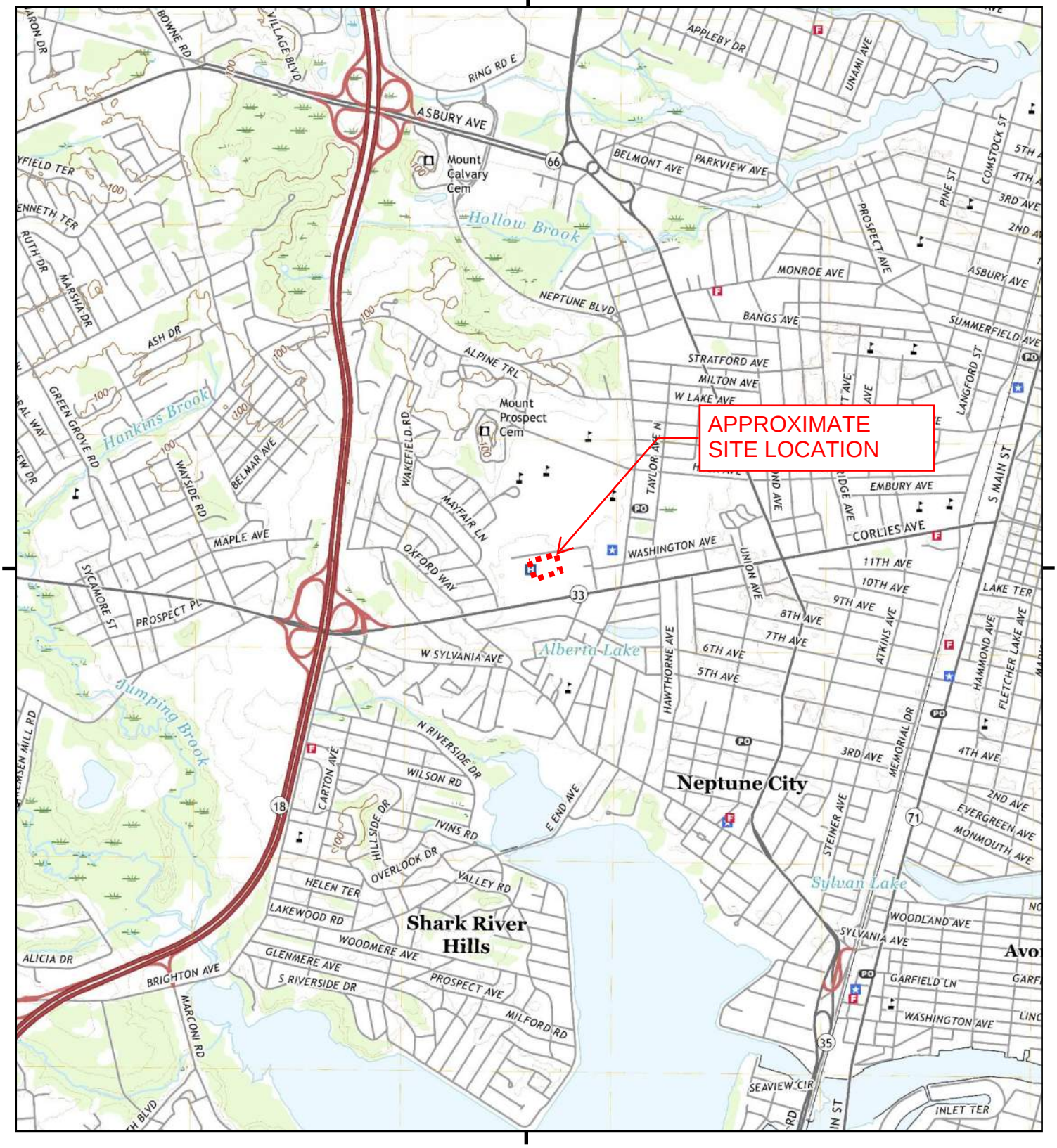
This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1888 Source Sheets

Asbury Park
1888
15-minute, 62500

Historical Topo Map

2019



This report includes information from the following map sheet(s).

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NW N NE
W E
SW S SE

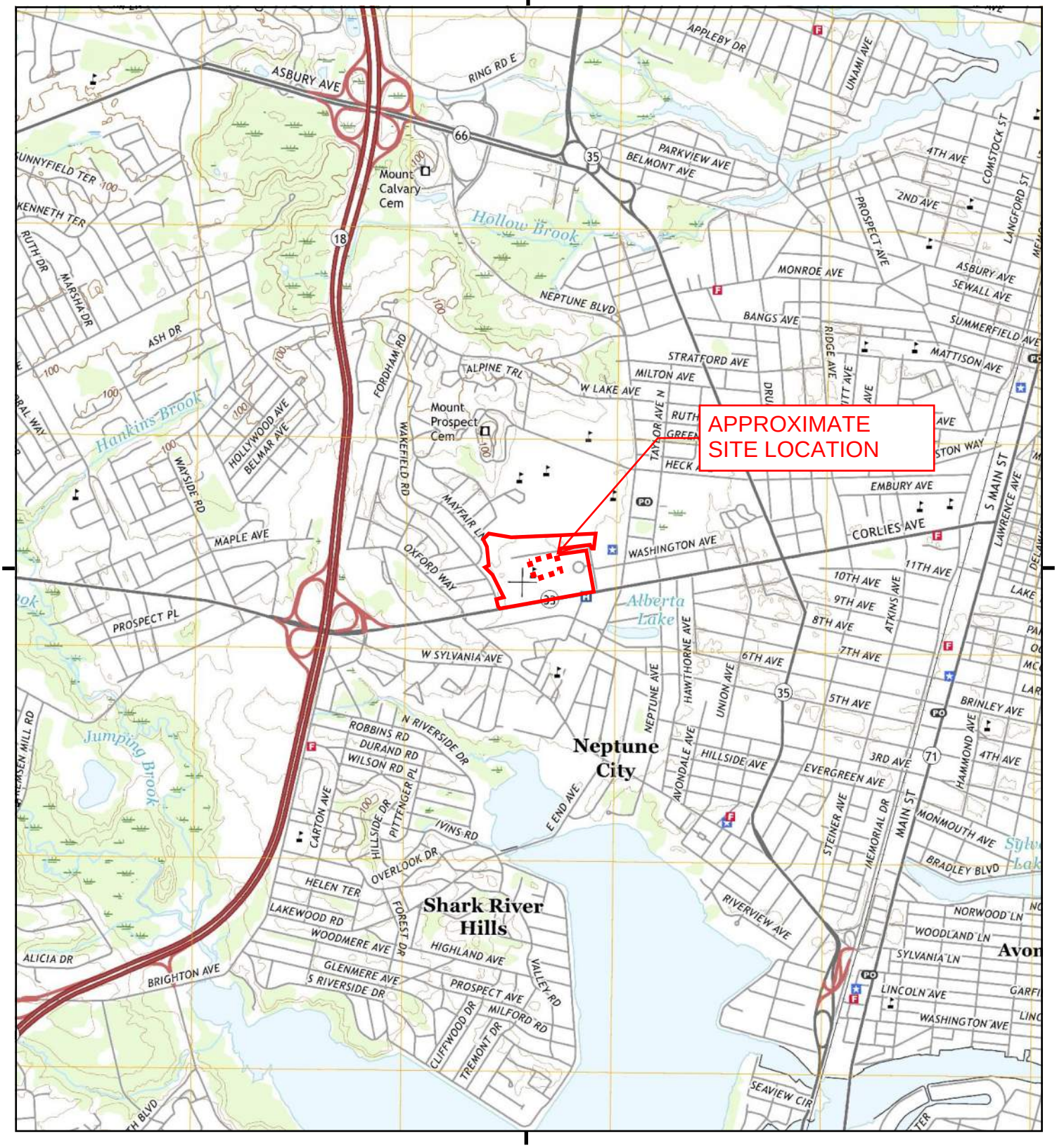
TP, Asbury Park, 2019, 7.5-minute

SITE NAME: JSUMC
ADDRESS: 1945 NJ-33
Neptune, NJ 07753
CLIENT: Langan

N

Historical Topo Map

2016



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W E
SW S SE

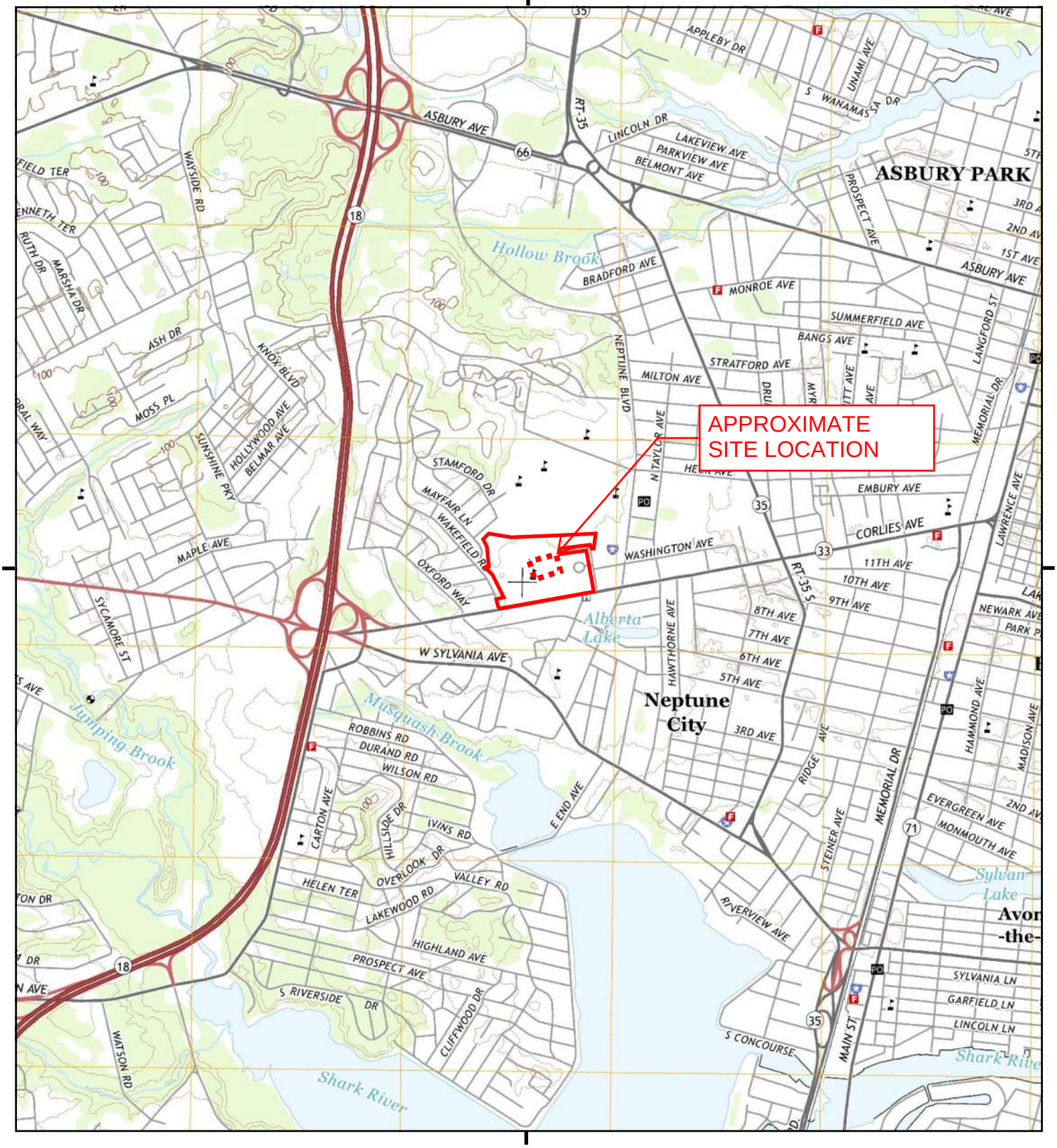
TP, Asbury Park, 2016, 7.5-minute

SITE NAME: JSUMC
ADDRESS: 1945 NJ-33
Neptune, NJ 07753
CLIENT: Langan

N

Historical Topo Map

2014



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W E
SW S SE

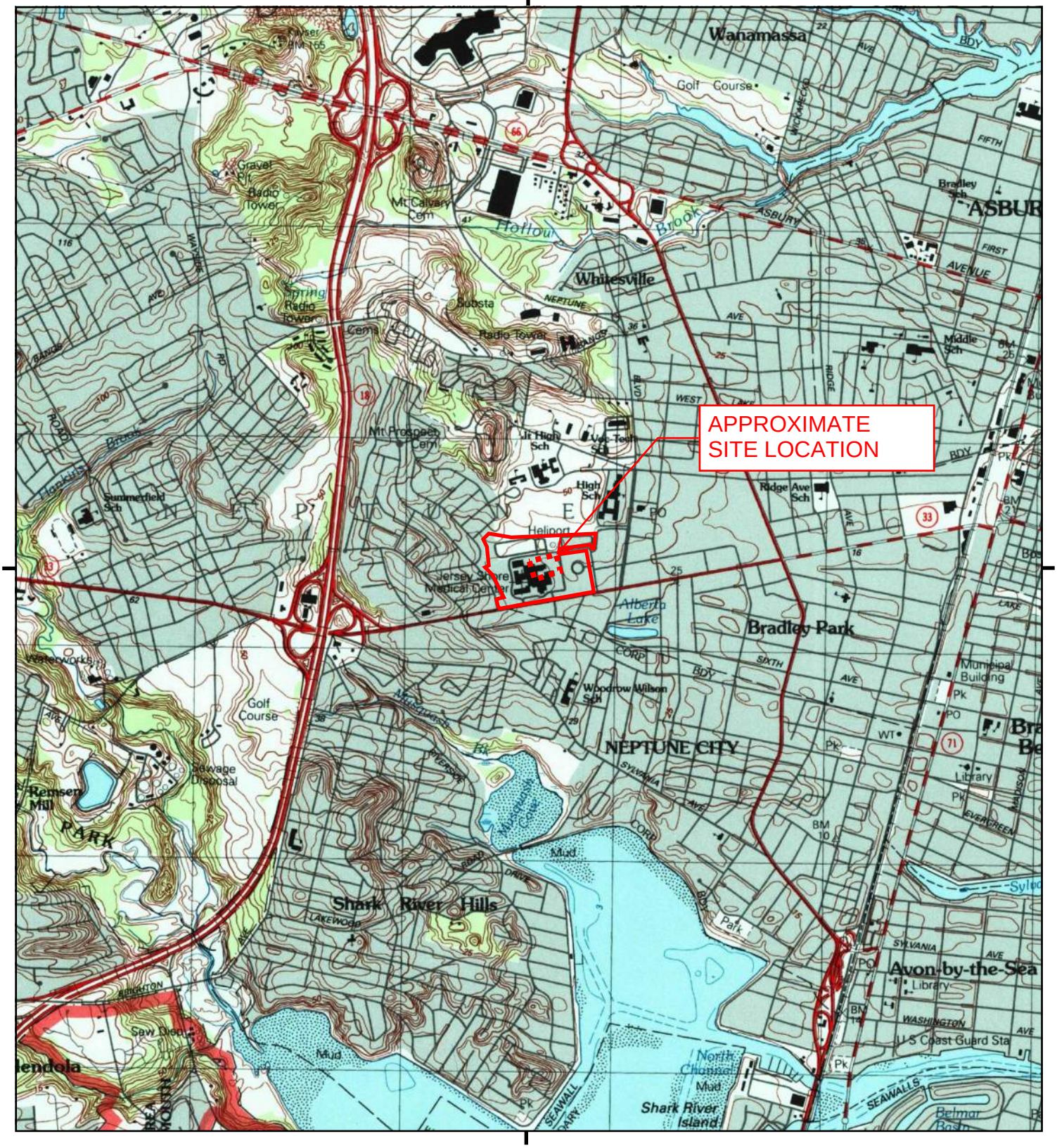
TP, Asbury Park, 2014, 7.5-minute

SITE NAME: JSUMC
ADDRESS: 1945 NJ-33
Neptune, NJ 07753
CLIENT: Langan

N

Historical Topo Map

1995



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SW S SE

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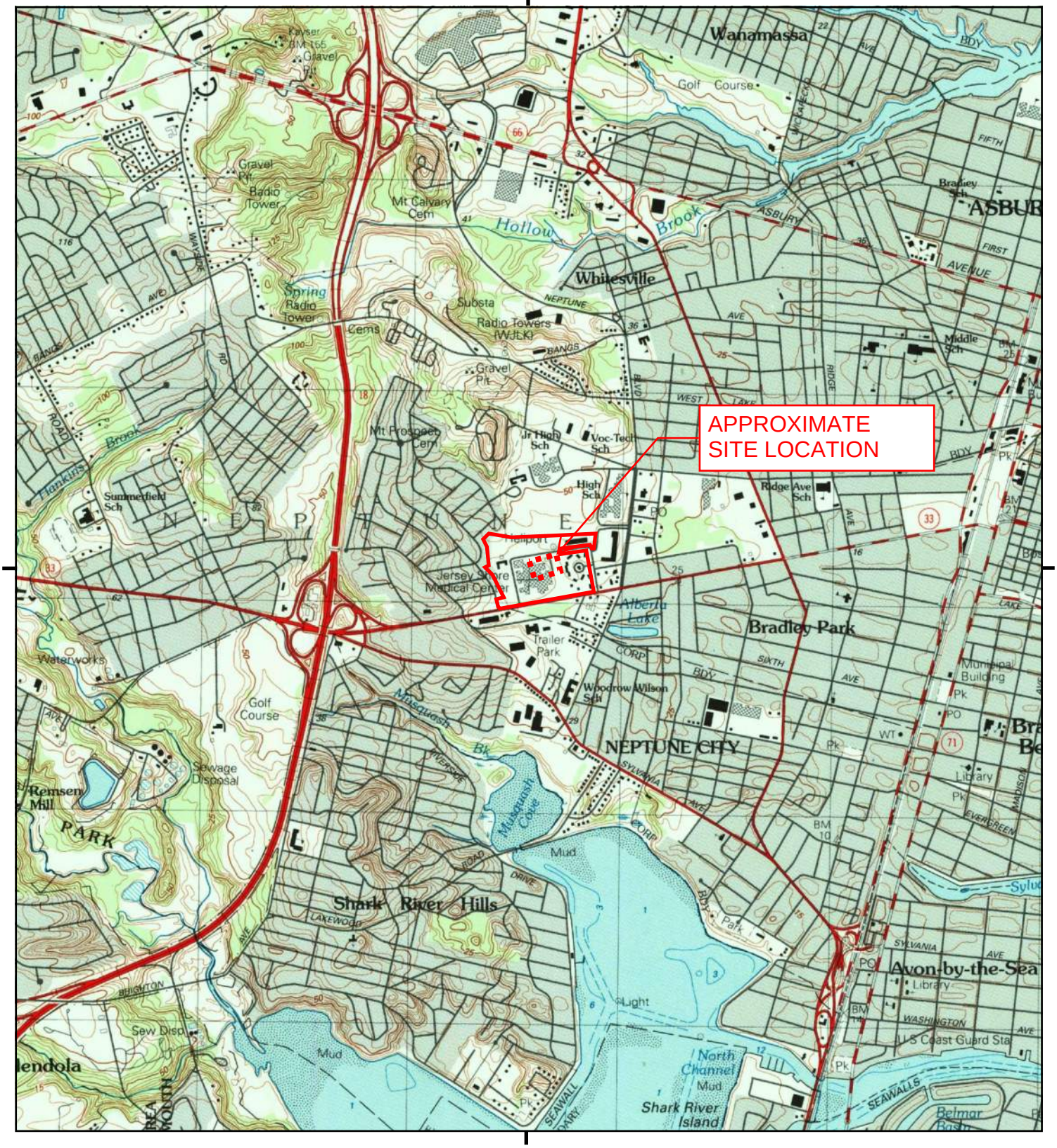
ADDRESS: 1945 NJ-33
Neptune, NJ 07753
CLIENT: Langan

N



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0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Asbury Park, 1989, 7.5-minute

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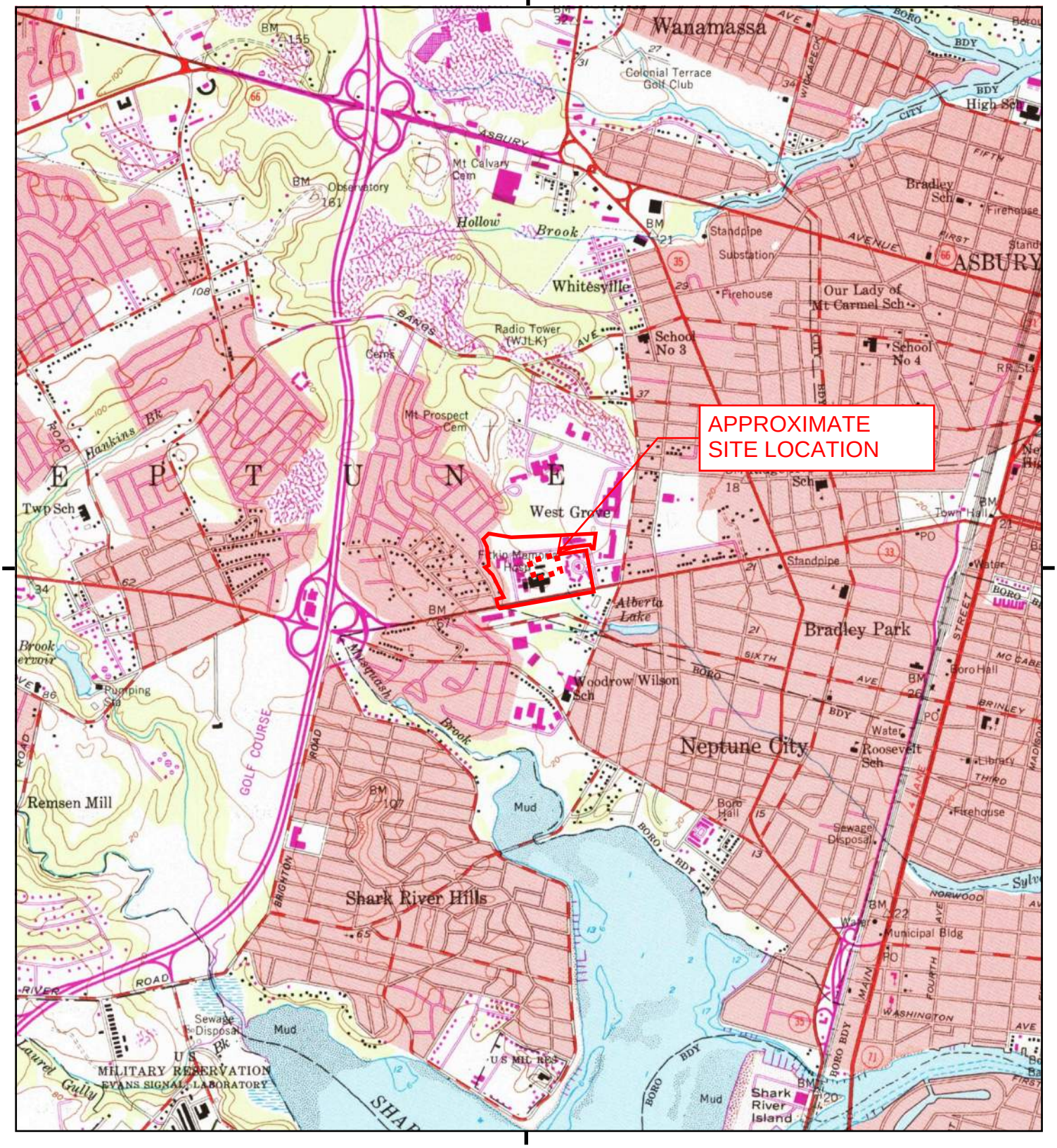
ADDRESS: 1945 NJ-33
Neptune, NJ 07753
CLIENT: Langan

N



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NW N NE
W E
SW S SE

TP, Asbury Park, 1981, 7.5-minute

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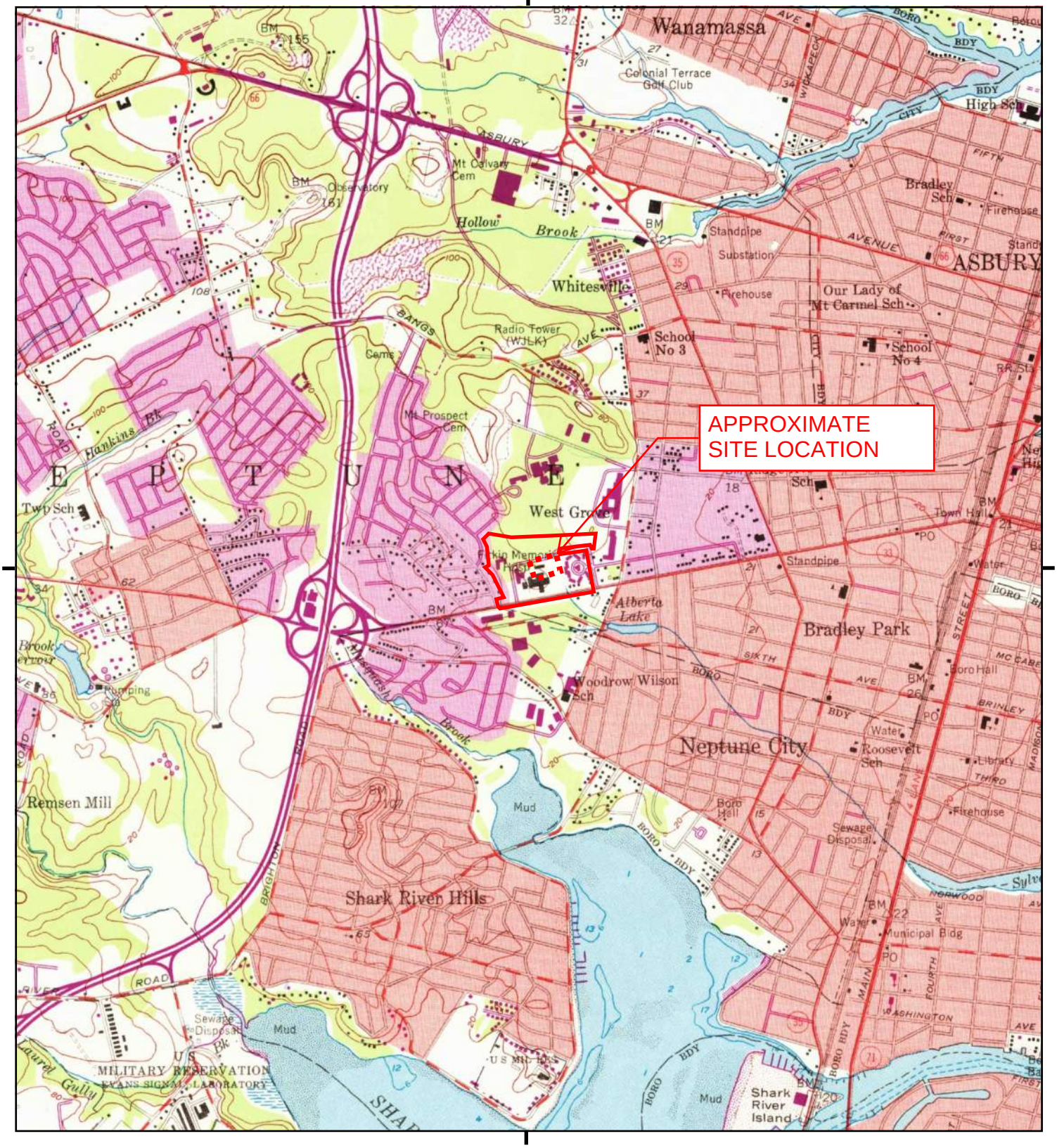
ADDRESS: 1945 NJ-33
Neptune, NJ 07753
CLIENT: Langan

N



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NW N NE
W E
SW S SE

TP, Asbury Park, 1970, 7.5-minute

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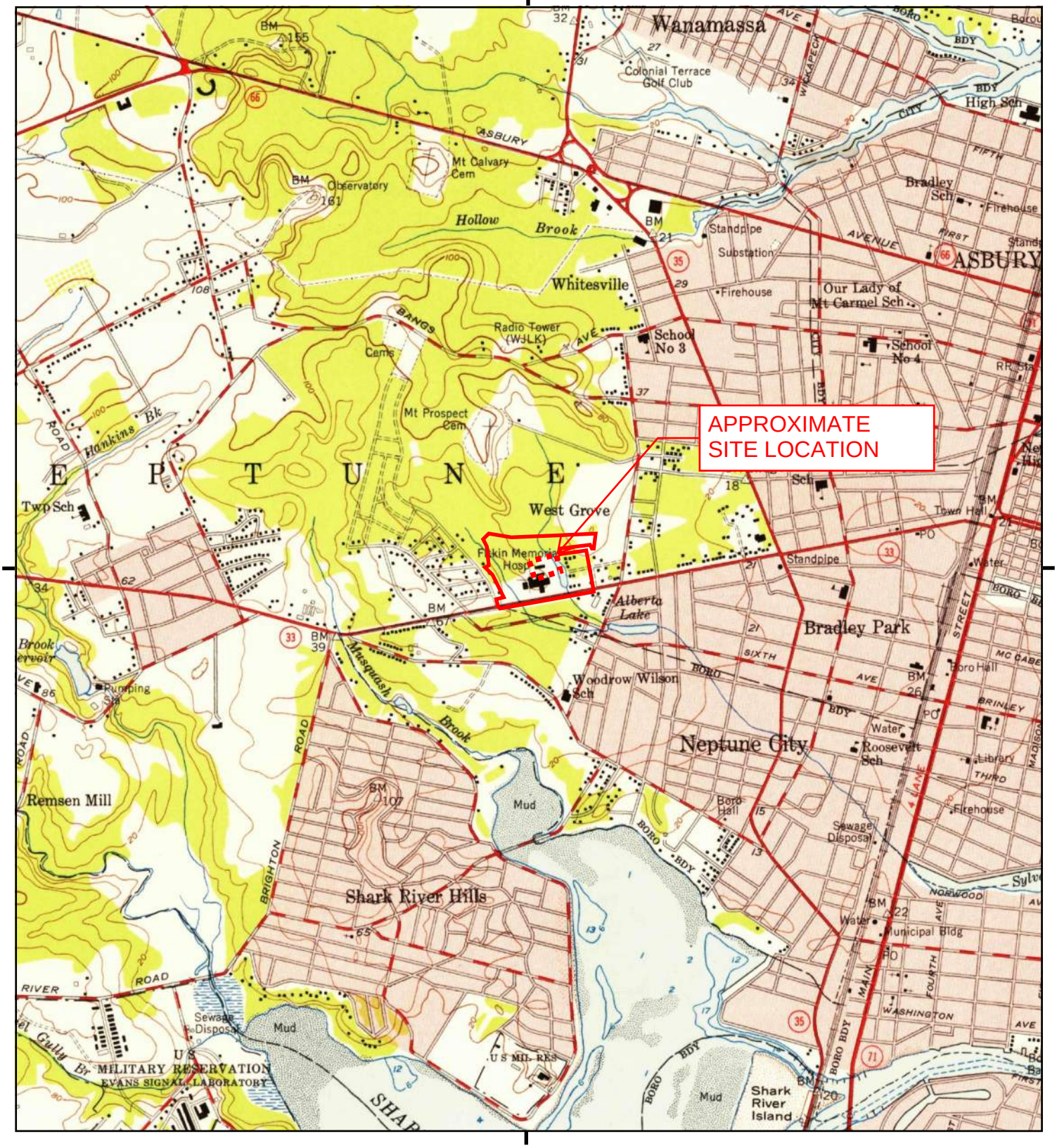
ADDRESS: 1945 NJ-33
Neptune, NJ 07753
CLIENT: Langan

N



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NW N NE
W E
SW S SE

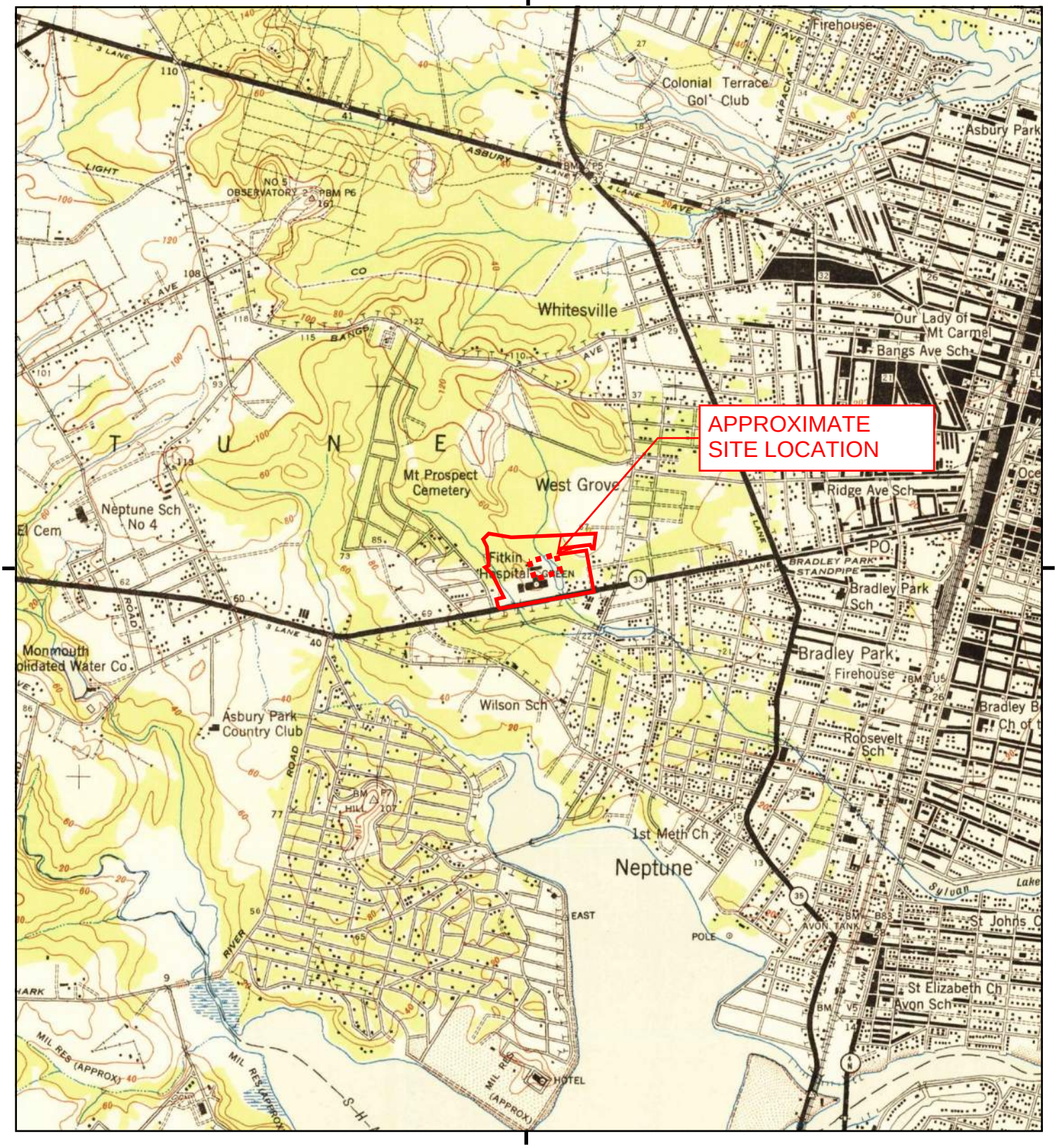
TP, Asbury Park, 1954, 7.5-minute

SITE NAME: JSUMC
ADDRESS: 1945 NJ-33
Neptune, NJ 07753
CLIENT: Langan

N

Historical Topo Map

1943



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NW N NE
W E
SW S SE

TP, Asbury Park, 1943, 7.5-minute

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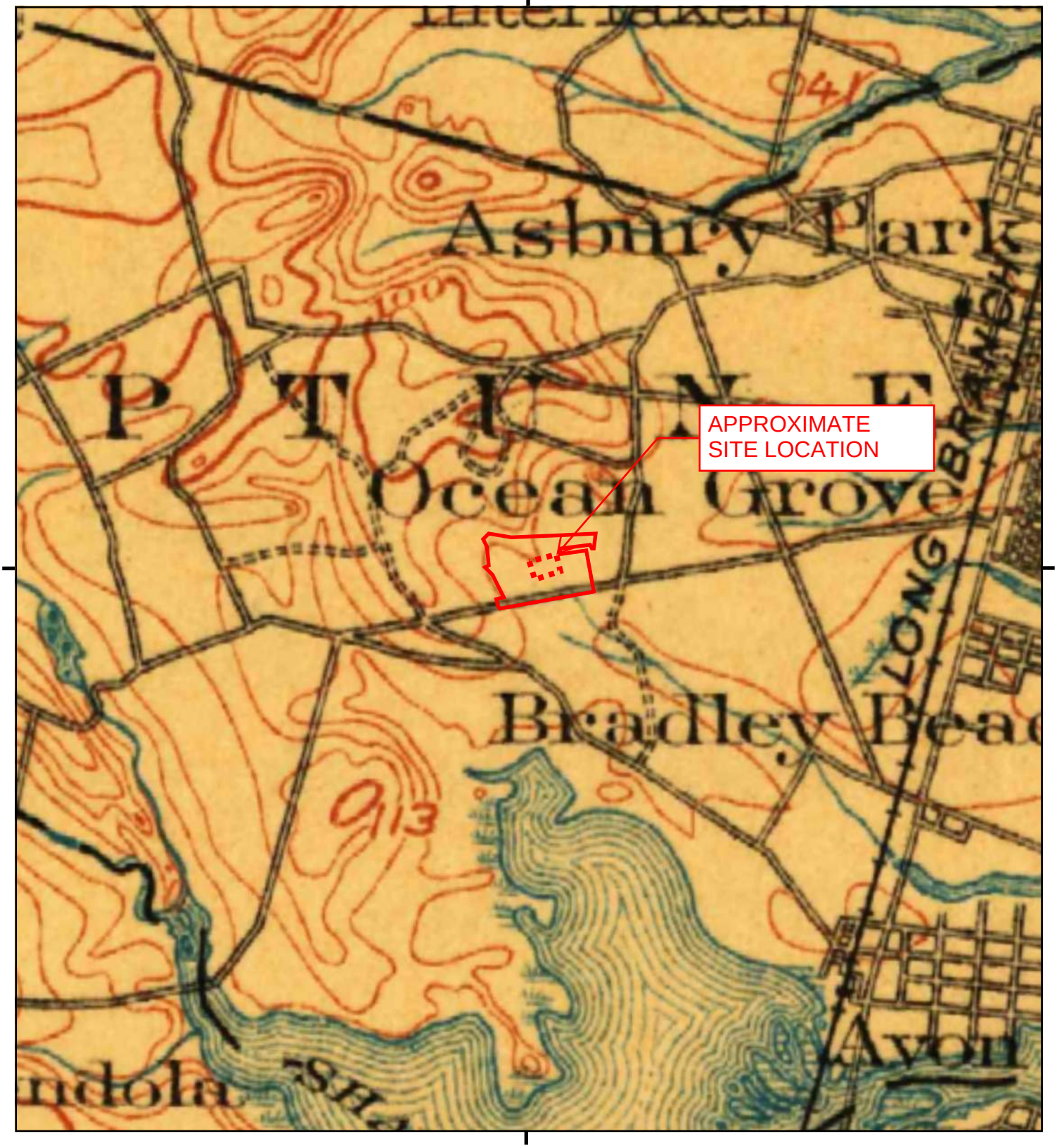
ADDRESS: 1945 NJ-33
Neptune, NJ 07753
CLIENT: Langan

N



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NW N NE
W E
SW S SE

TP, Navesink, 1902, 30-minute

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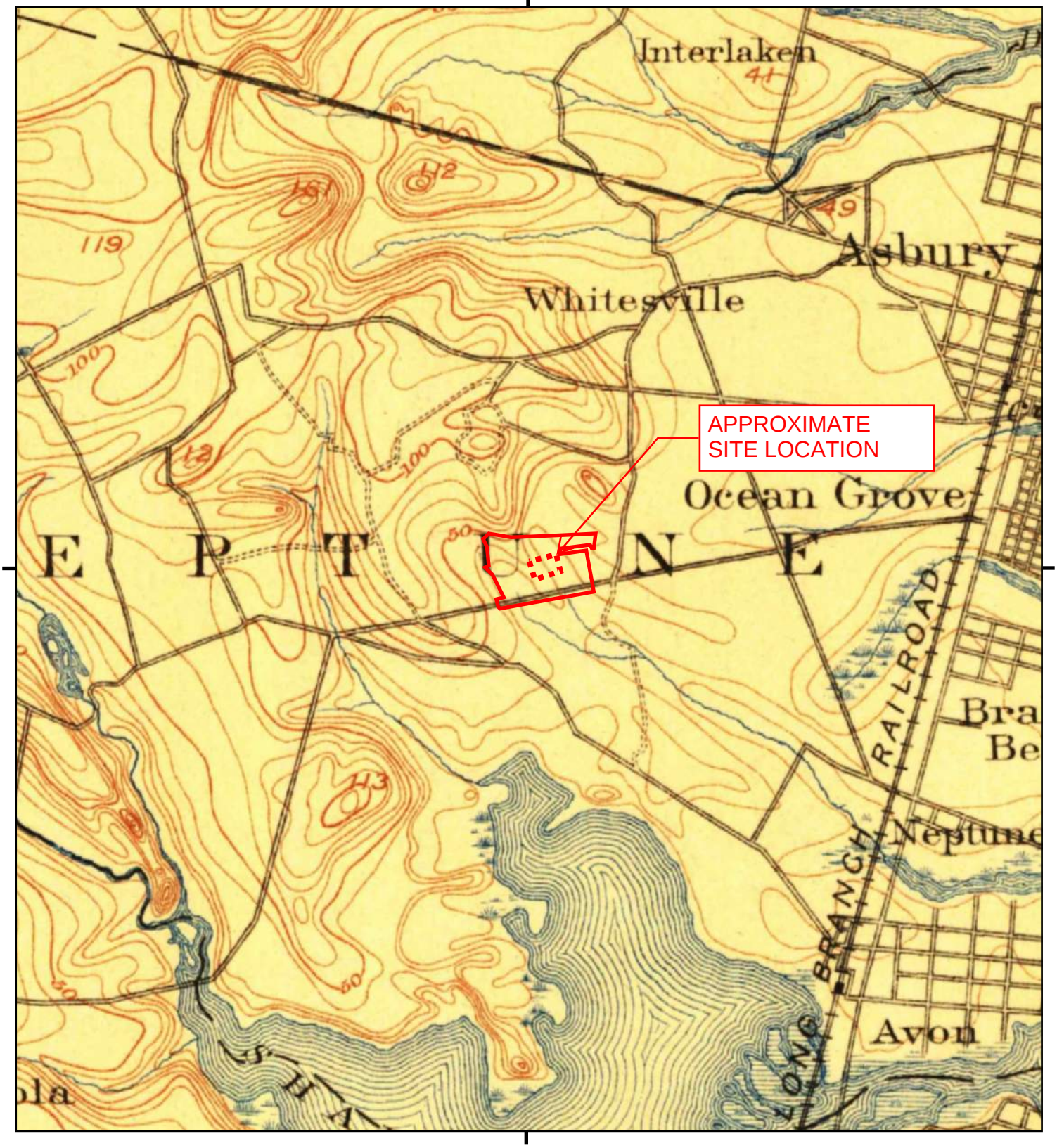
ADDRESS: 1945 NJ-33
Neptune, NJ 07753
CLIENT: Langan

N



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0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

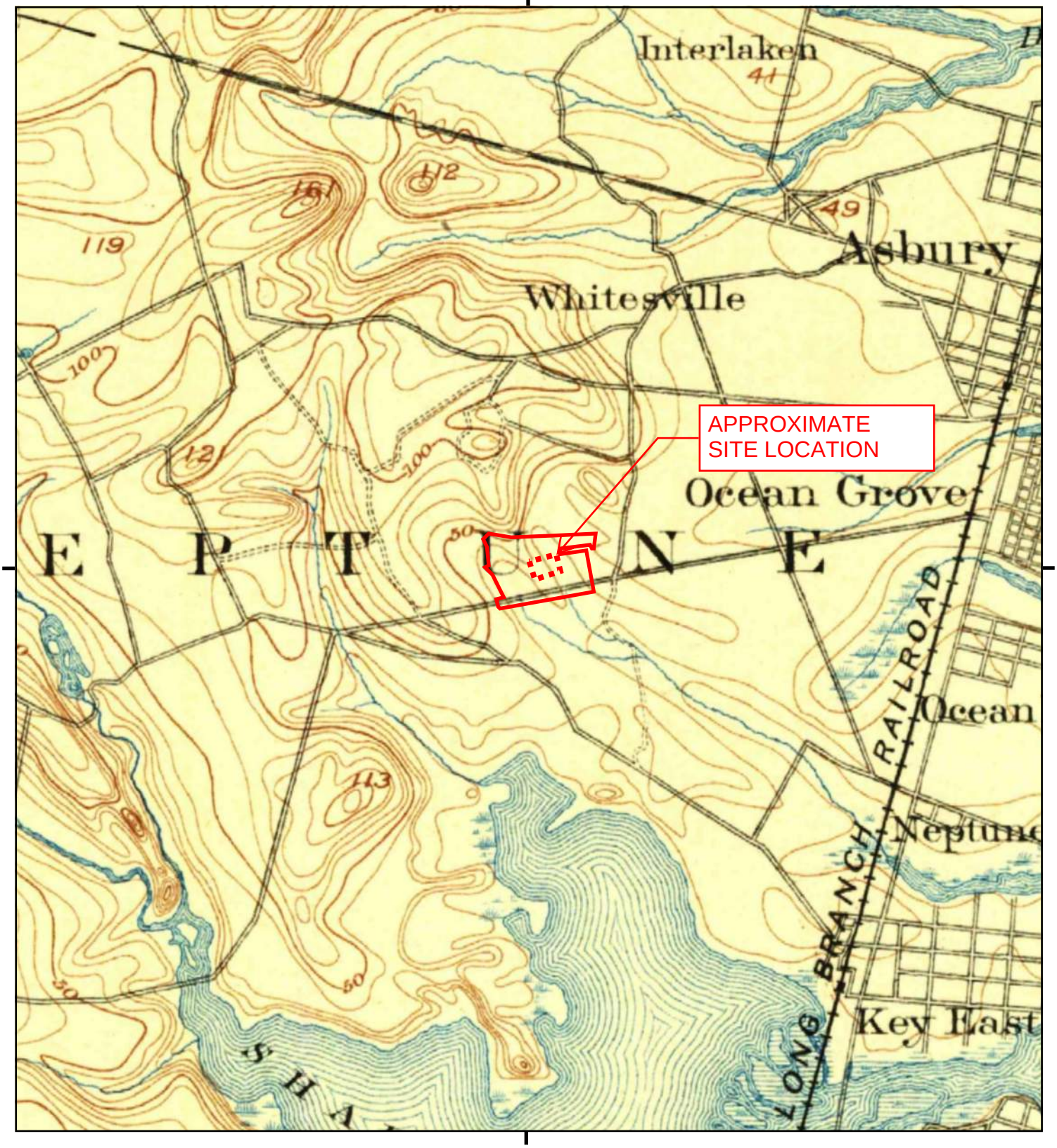
TP, Asbury Park, 1901, 15-minute

SITE NAME: JSUMC
ADDRESS: 1945 NJ-33
Neptune, NJ 07753
CLIENT: Langan

N

Historical Topo Map

1893



This report includes information from the following map sheet(s).

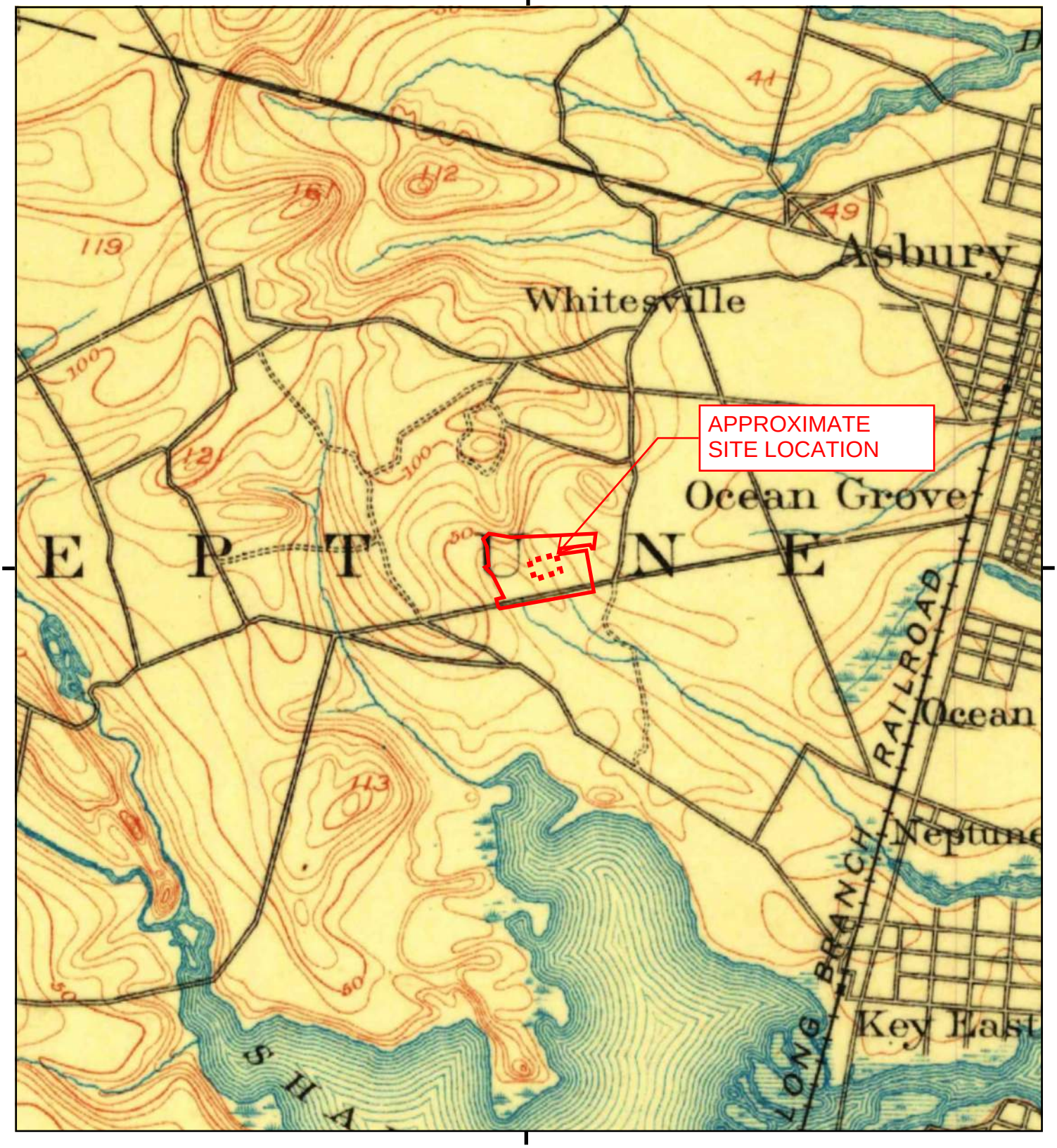
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Asbury Park, 1893, 15-minute

SITE NAME: JSUMC
ADDRESS: 1945 NJ-33
Neptune, NJ 07753
CLIENT: Langan

N



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Asbury Park, 1888, 15-minute

SITE NAME: JSUMC
ADDRESS: 1945 NJ-33
Neptune, NJ 07753
CLIENT: Langan

N

ATTACHMENT B

Historic Aerial Photographs

JSUMC

1945 NJ-33

Neptune, NJ 07753

Inquiry Number: 7820492.8

November 13, 2024

The EDR Aerial Photo Decade Package

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

11/13/24

Site Name:

JSUMC
1945 NJ-33
Neptune, NJ 07753
EDR Inquiry # 7820492.8

Client Name:

Langan
300 Kimball Drive, 4th Floor
Parsippany, NJ 07054-2172
Contact: Rebecca Blocker

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

Search Results:

Year	*Scale*	*Details*	*Source*
2019	1"=500'	Flight Year: 2019	USDA/NAIP
2015	1"=500'	Flight Year: 2015	USDA/NAIP
2010	1"=500'	Flight Year: 2010	USDA/NAIP
2006	1"=500'	Flight Year: 2006	USDA/NAIP
1995	1"=500'	Acquisition Date: March 29, 1995	USGS/DOQQ
1985	1"=500'	Flight Date: March 16, 1985	USDA
1974	1"=500'	Flight Date: March 13, 1974	EDR Proprietary Aerial Viewpoint
1970	1"=500'	Flight Date: February 21, 1970	USGS
1963	1"=500'	Flight Date: May 13, 1963	USDA
1961	1"=500'	Flight Date: May 04, 1961	EDR Proprietary Aerial Viewpoint
1953	1"=500'	Flight Date: April 22, 1953	USGS
1951	1"=500'	Flight Date: February 25, 1951	EDR Proprietary Aerial Viewpoint
1940	1"=500'	Flight Date: April 06, 1940	EDR Proprietary Aerial Viewpoint
1931	1"=500'	Flight Date: January 01, 1931	EDR/EdrAerials

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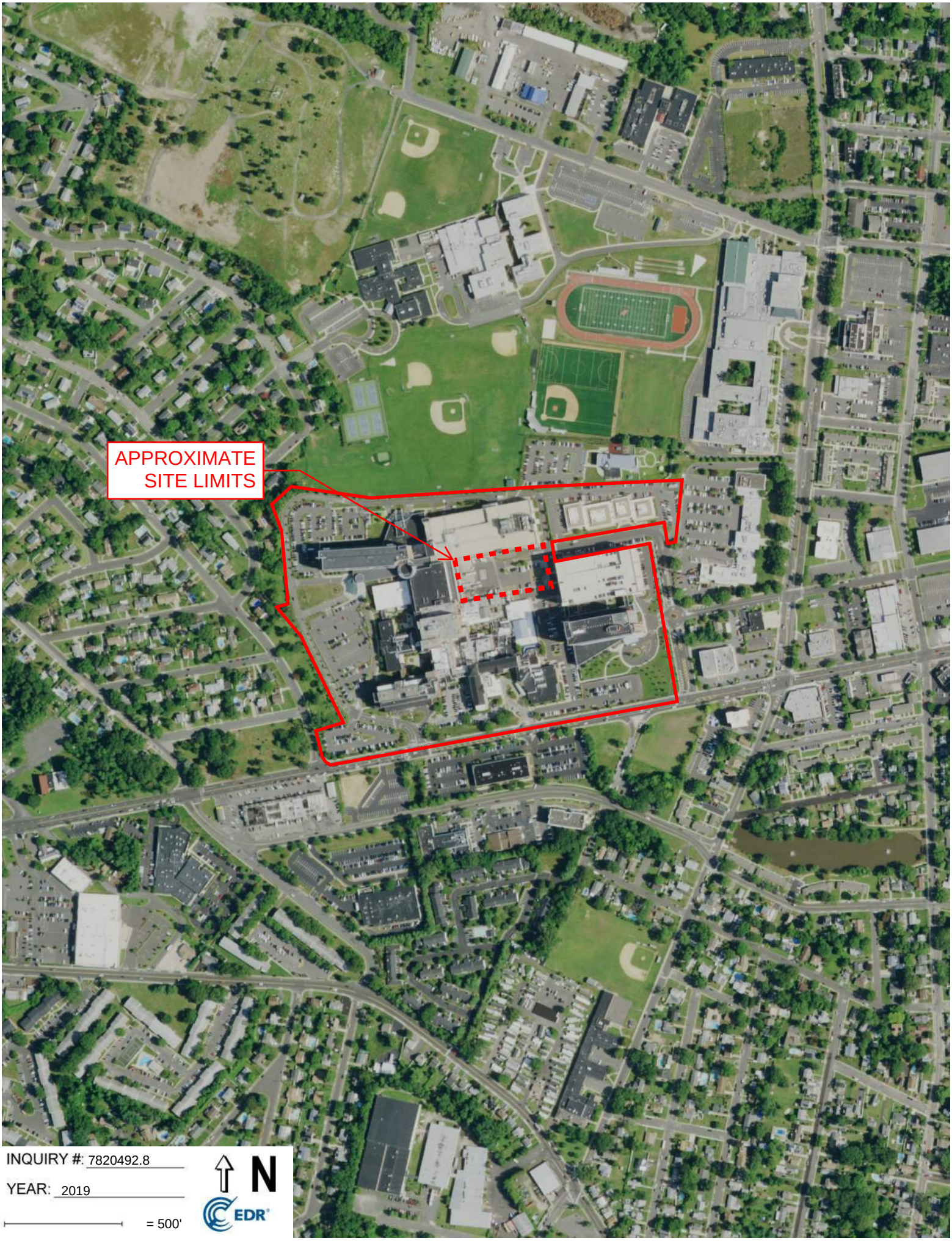
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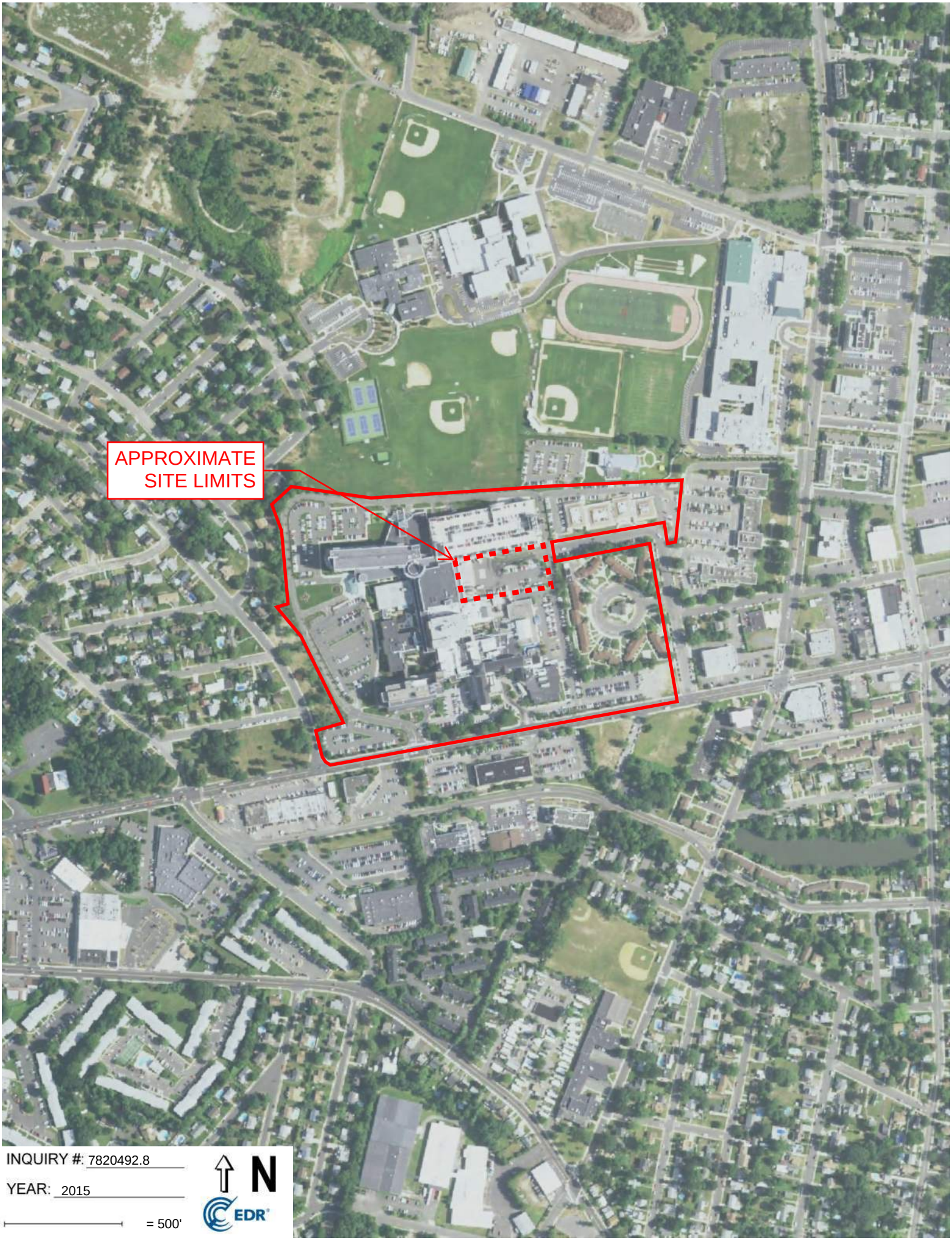
SITE LIMITS
INQUIRY #: 7820492.8
YEAR: 2019
= 500'
N
EDR


APPROXIMATE
SITE LIMITS
INQUIRY #: 7820492.8
YEAR: 2015
= 500'
N
EDR


APPROXIMATE
SITE LIMITS
INQUIRY #: 7820492.8
YEAR: 2010
= 500'
N
EDR


APPROXIMATE
SITE LIMITS
INQUIRY #: 7820492.8
YEAR: 2006
= 500'
N
EDR


APPROXIMATE
SITE LIMITS
INQUIRY #: 7820492.8
YEAR: 1995
= 500'
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EDR
Subject boundary not shown because it exceeds image extent or

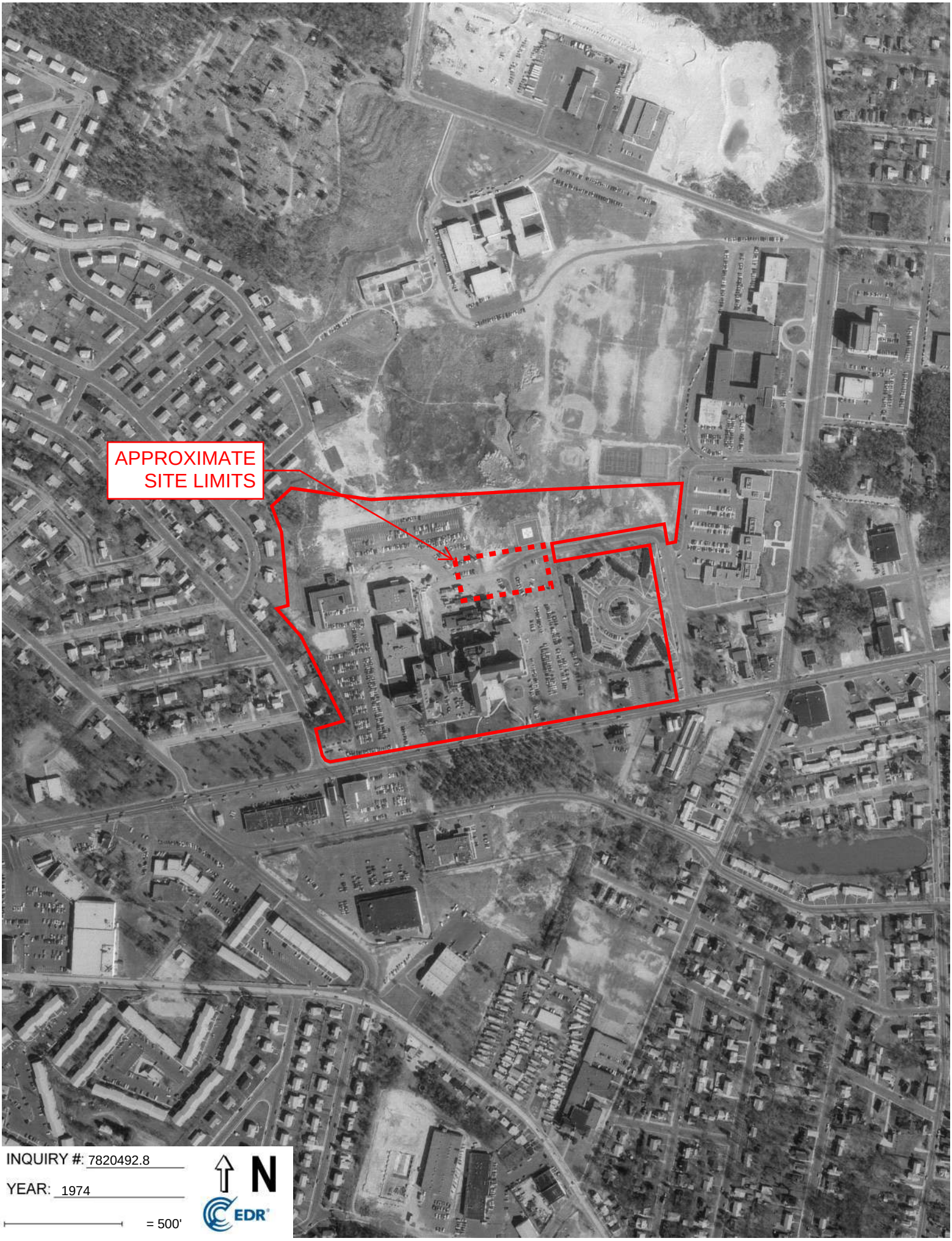
INQUIRY #: 7820492.8

YEAR: 1985

= 500'

N

EDR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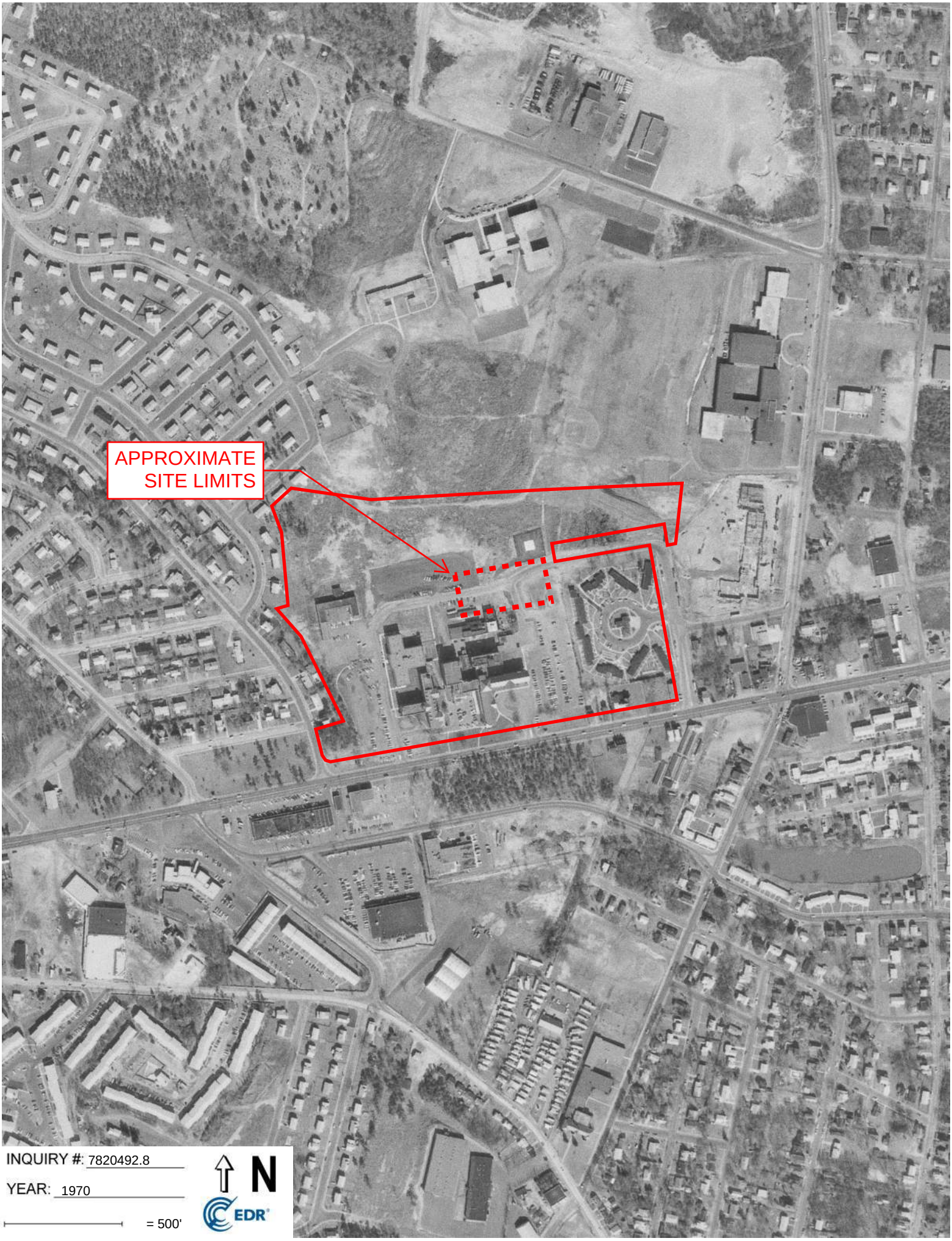
SITE LIMITS
INQUIRY #: 7820492.8
YEAR: 1974
= 500'
N
EDR


APPROXIMATE
SITE LIMITS
INQUIRY #: 7820492.8
YEAR: 1970
= 500'
N
EDR


APPROXIMATE
SITE LIMITS
INQUIRY #: 7820492.8
YEAR: 1963
= 500'
N
EDR


APPROXIMATE
SITE LIMITS
INQUIRY #: 7820492.8
YEAR: 1961
= 500'
N
EDR

INQUIRY #: 7820492.8

YEAR: 1953

= 500'

N

EDR

INQUIRY #: 7820492.8

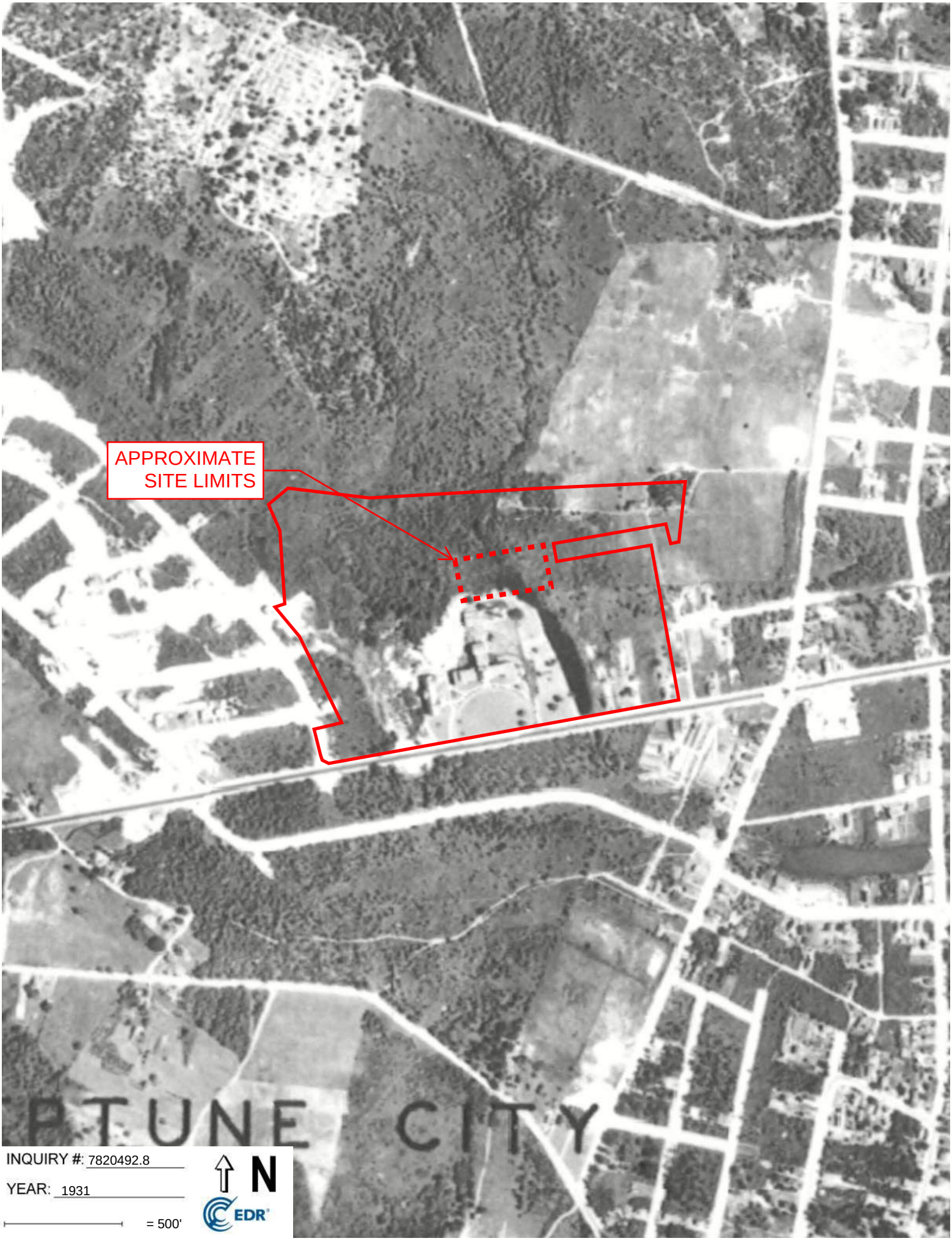
YEAR: 1951

= 500'

N

EDR


APPROXIMATE
SITE LIMITS
INQUIRY #: 7820492.8
YEAR: 1940
= 500'
N
EDR



INQUIRY #: 7820492.8

YEAR: 1931

= 500'

N

EDR

ATTACHMENT C

Existing Foundation Drawings – Harbor Garage and CUP

FOUNDATION & FIRST FLOOR PLAN

SCALE: 1/8" = 1'-0"

1. TOP OF SLAB ELEV 0'-0" (DATUM = 37.48') UNLESS OTHERWISE NOTED.
2. ⊗... INDICATES SINGLE SLAB TIMBER PILES WITH A BEARING CAPACITY OF 25 TONS.
3. COLUMN PILES ARE 100 TON PILES SHOWN THUS: ○
4. ALL SLABS ON GRADE ARE FRAMED 5" IN THICKNESS, UNLESS OTHERWISE NOTED ON PLAN, REINF w/ #4@12 T&B EACH WAY.
5. TOP OF PILE CAP ELEVATION EL. 35.48' UNLESS OTHERWISE NOTED THUS: ( ) ON PLAN.
6. TP ... INDICATES TENSION PILES. SEE TYPICAL PILE CAP DETAILS.
7. TOP OF GRADE BEAM ELEVATION SHALL BE 35.48', UNLESS OTHERWISE NOTED THUS: <...> ON PLAN.
8. TOP OF STEEL EL. 0'-0" UNLESS NOTED THUS: [±] INDICATING DISTANCE ABOVE OR BELOW EL. 0'-0"
9. FOR PAVEMENT, GRADING & DRAINAGE SEE ARCH'L DRAWINGS. SEE MECH'L DRAWINGS FOR SIZE, TYPE & LOCATIONS OF DRAINS.
10. "B1" INDICATES BUTRESS 24"x24" REINFORCED WITH 8-#8 VERT & #3@12 TIES & CROSS TIES
    "B2" INDICATES BUTRESS 30"x30" REINFORCED WITH 12-#8 VERT & #3@12 TIES & CROSS TIES
11. "BP1" INDICATES A ¾"x5"x8" BEARING PLATE WITH 2-¾" DIAM. ANCHOR BOLTS (TYP)

△1 △2

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	03-22-06	PACKAGE No. 6 FOUNDATION-ISSUED FOR GMP
	04-14-06	PACKAGE No. 5 – ISSUED FOR CONSTRUCTION
	05-08-06	REVISED FOUNDATION BID PACKAGE
△1	06-01-06	DCA ISSUE
△2	07-21-06	ADDENDUM #5
	08-29-06	PR #6

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1160 ROUTE 22 WEST
MOUNTAINSIDE, NJ 07092
Tel (908) 688-7887 Fax (908) 6887960

NJ Cert. of Authorization No. GA 276710
James F. Loudon, PE NJ Cert. No. 28704
Paul P. Pennavino, PE NJ Cert. No. 42798

KEY PLAN

Jersey Shore University Medical Center
MEMBER OF THE MERIDIAN HEALTH FAMILY

ADDITIONS & RENOVATIONS

NEPTUNE, NEW JERSEY

FOUNDATION & FIRST FLOOR PLAN

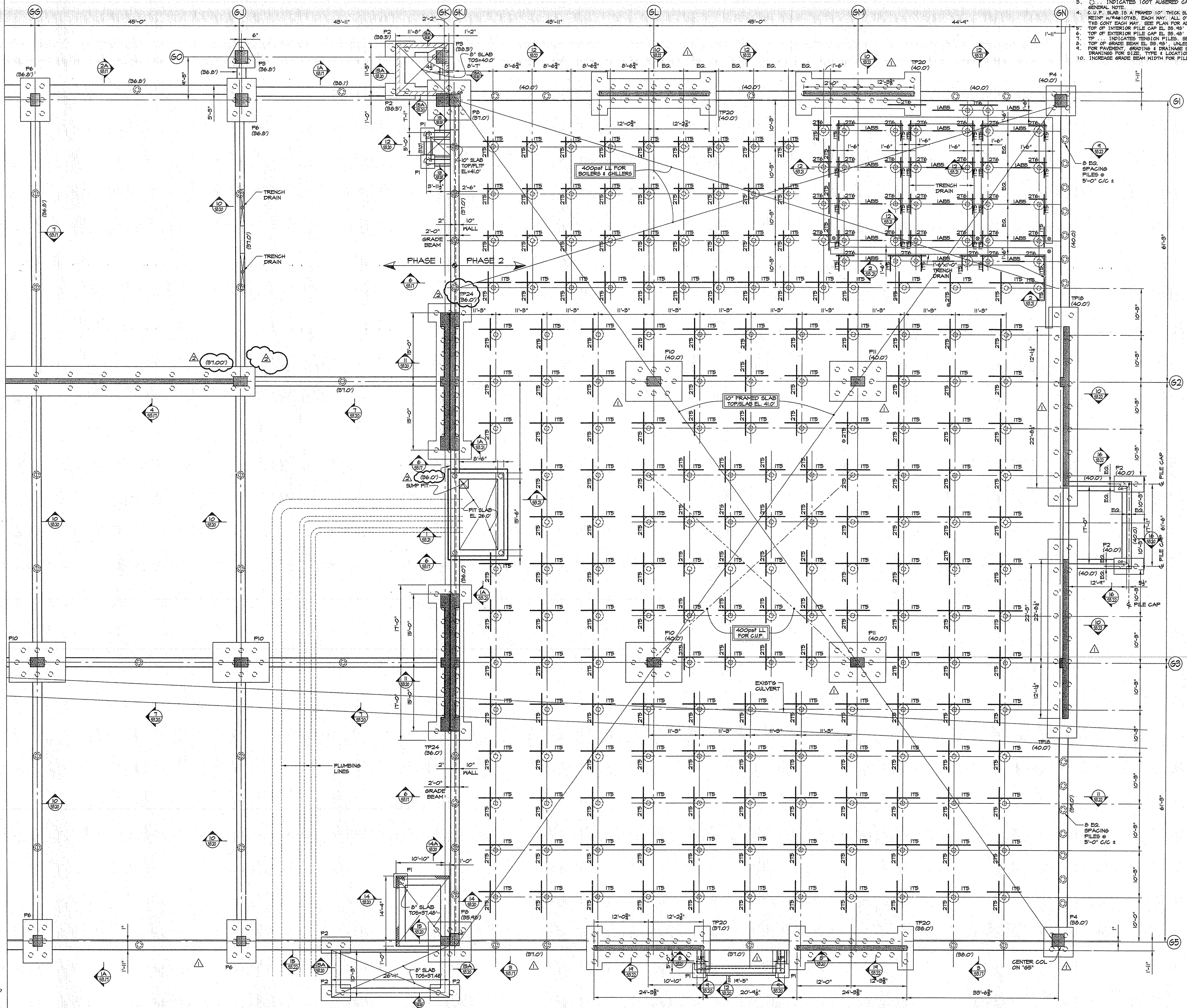
JOB NO.: H04043.03
PHASE: CD
DATE: 03-15-06

DRAWING NO: S1.16

FOUNDATION & FIRST FLOOR PLAN

SCALE: 1/8" = 1'-0"

1. TOP OF SLAB ELEV 0'-0" (DATUM = 37.48') UNLESS
2. ◎... INDICATES SINGLE SLAB TIMBER PILES WITH A BEARING CAPACITY OF 25 TONS.
3. ○... INDICATES 100T AUGERED CAST CONC. PILE SEE TYP. DETAIL & GENERAL NOTE.
4. C.U.P. SLAB IS A FRAMED 10" THICK SLAB-ON-GRADE, UNLESS OTHERWISE NOTED ON PLAN. REINF w/#4@10T&B, EACH WAY. ALL OTHER SLABS SHALL BE 8" THICK REINF w/#4@12 T&B CONT EACH WAY. SEE PLAN FOR ADDITIONAL REINF'G.
5. TOP OF INTERIOR PILE CAP EL 35.98' UNLESS OTHERWISE NOTED THUS: ( ) ON PLAN.
6. TOP OF EXTERIOR PILE CAP EL 35.48' UNLESS OTHERWISE NOTED THUS: ( ) ON PLAN.
7. TP ... INDICATES TENSION PILES. SEE TYPICAL PILE CAP DETAILS.
8. TOP OF GRADE BEAM EL 35.98', UNLESS OTHERWISE NOTED THUS: <....> ON PLAN.
9. FOR PAVEMENT, GRADING & DRAINAGE SEE ARCH'L DRAWINGS. SEE MECH'L DRAWINGS FOR SIZE, TYPE & LOCATIONS OF DRAINS.
10. INCREASE GRADE BEAM WIDTH FOR PILE DEVIATION.



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1	07-21-06	ADDENDUM #5
2	08-29-06	PR #6

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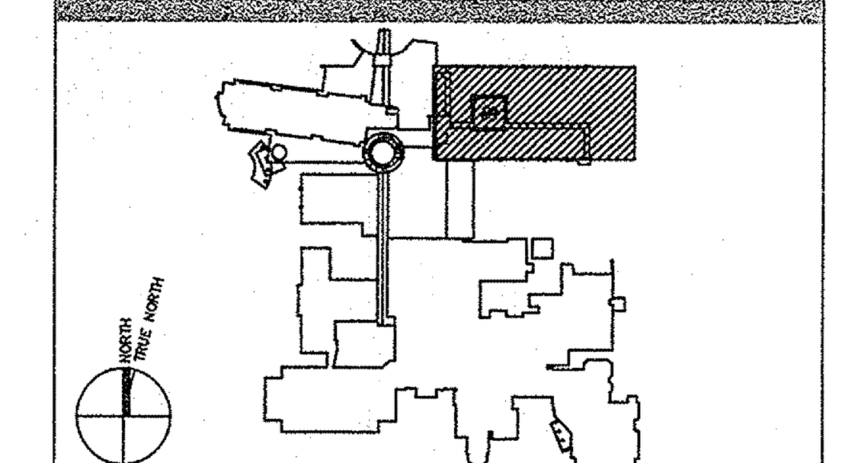

KEY PLAN

Jersey Shore University Medical Center
MEMBER OF THE MERIDIAN HEALTH FAMILY

ADDITIONS & RENOVATIONS

NEPTUNE, NEW JERSEY

FOUNDATION & FIRST FLOOR PLAN

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JOB NO.: H04043.03
PHASE: CD
DATE: 03-15-06

DRAWING NO: S1.17

04-077

FOUNDATION & FIRST FLOOR PLAN

SCALE: 1/8" = 1'-0"

1. TOP OF SLAB ELEV 0'-0" (DATUM = 37.48') UNLESS
2. ⓟ... INDICATES SINGLE SLAB TIMBER PILES WITH A BEARING CAPACITY OF 25 TONS.
3. (P)... INDICATES 100T AUGERED CAST CONC. PILE SEE TYP. DETAIL & GENERAL NOTE.
4. G.U.P. SLAB TO A FRAMED 10" THICK SLAB-ON-GRADE, UNLESS OTHERWISE NOTED ON PLAN. REINF w/#4@10TAB, EACH WAY. ALL OTHER SLABS SHALL BE 8" THICK REINF w/#4@12 T4B CONT EACH WAY. SEE PLAN FOR ADDITIONAL REINF'G.
5. TOP OF INTERIOR PILE CAP EL 35.48' UNLESS OTHERWISE NOTED THUS: ( ) ON PLAN.
6. TOP OF EXTERIOR PILE CAP EL 35.48' UNLESS OTHERWISE NOTED THUS: ( ) ON PLAN.
7. TP ... INDICATES TENSION PILES. SEE TYPICAL PILE CAP DETAILS.
8. TOP OF GRADE BEAM EL 35.48', UNLESS OTHERWISE NOTED THUS: < ...> ON PLAN.
9. FOR PAVEMENT, GRADING & DRAINAGE SEE ARCH'L DRAWINGS. SEE MECH'L DRAWINGS FOR SIZE, TYPE & LOCATIONS OF DRAINS.
10. INCREASE GRADE BEAM WIDTH FOR PILE DEVIATION.
11. E...INDICATES ADDITIONAL TIMBER PILES. SEE NOTE #2 ABOVE AND TYP. DET'S AND GENERAL NOTES.

TYPICAL

APPROX. TRENCH DRAIN LOCATIONS. EXACT LOCATIONS WHEN DETERMINED ARE TO BE VERIFIED BY THE ARCH, MECH, & STRUCTURAL ENGINEER. A COMPOSITE SHOP DRAWING WITH EXACT LOCATIONS SHALL BE SUBMITTED WITH REBAR DETAILING.

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	05-08-06	REVISED FOUNDATION BID PACKAGE
	06-01-06	DCA ISSUE
1	07-21-06	ADDENDUM #5
2	08-29-06	PR #6
3	01-12-07	PR #20
4	03-20-07	UNDERGROUND PIPING SUPPORT
12	07-27-07	REVISED PILE LENGTHS
13	08-27-07	PR54 -CT-TIMBER PILES & TRENCH DRAINS
14	11-07-07	PR72 -COGEN-ADDITIONAL PILES

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KEY PLAN

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ADDITIONS & RENOVATIONS

NEPTUNE, NEW JERSEY

FOUNDATION & FIRST FLOOR PLAN

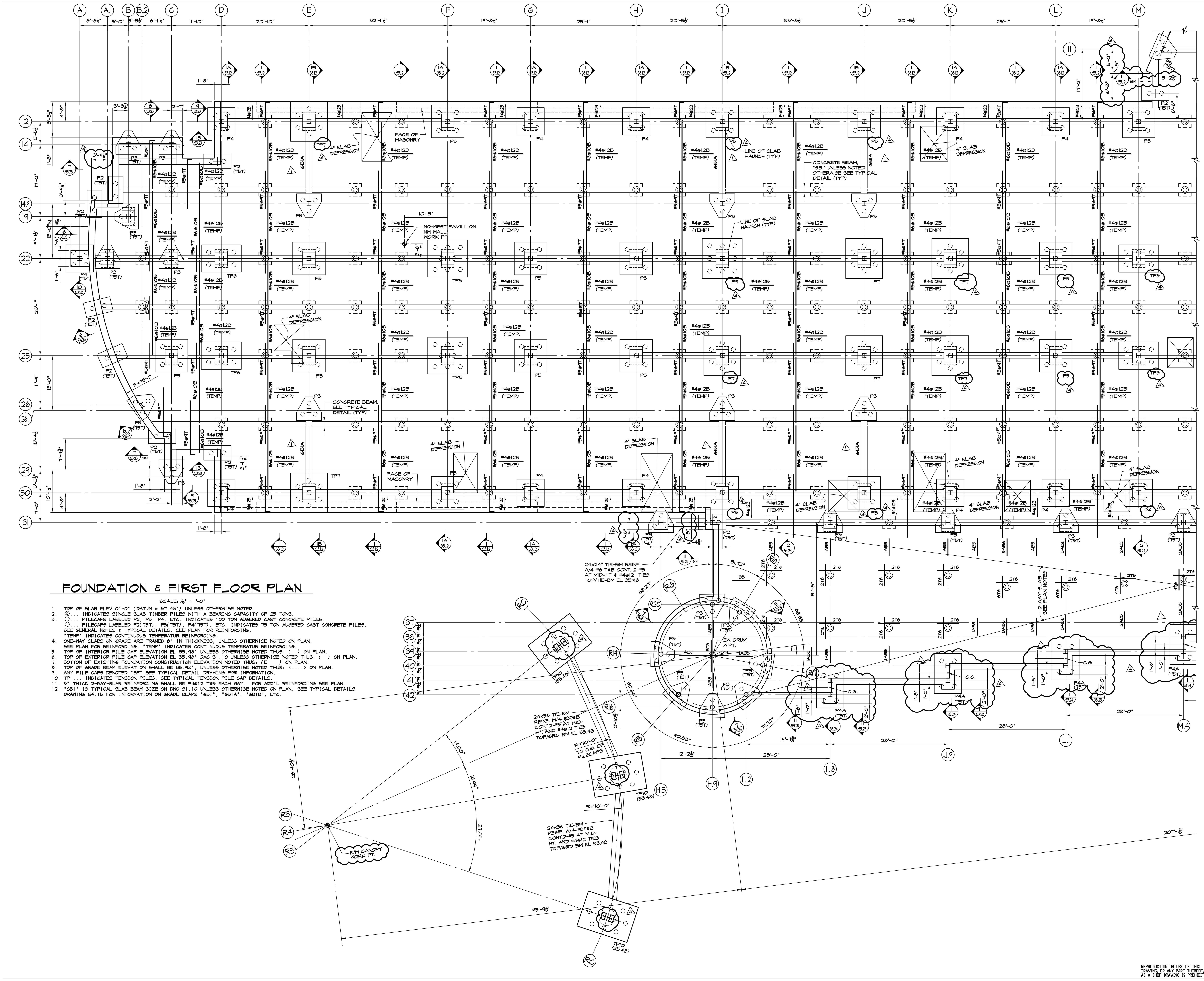
JOB NO.: H04043.03
PHASE: CD
DATE: 03-15-06

DRAWING NO: S1.17

04-077

ATTACHMENT D

Existing Foundation Drawings – D&T Tower



FOUNDATION & FIRST FLOOR PLAN

SCALE: 1/8" = 1'-0"

1. TOP OF SLAB ELEV 0'-0" (DATUM = 37.48') UNLESS OTHERWISE NOTED.
2. ◎... INDICATES SINGLE SLAB TIMBER PILES WITH A BEARING CAPACITY OF 25 TONS.
3. ◌... PILECAPS LABELED P2, P3, P4, ETC. INDICATES 100 TON AUGERED CAST CONCRETE PILES.
   ◌... PILECAPS LABELED P2(75T), P3(75T), P4(75T), ETC. INDICATES 75 TON AUGERED CAST CONCRETE PILES.
   SEE GENERAL NOTES & TYPICAL DETAILS. SEE PLAN FOR REINFORCING.
   "TEMP" INDICATES CONTINUOUS TEMPERATUR REINFORCING.
4. ONE-WAY SLABS ON GRADE ARE FRAMED 8" IN THICKNESS, UNLESS OTHERWISE NOTED ON PLAN.
   SEE PLAN FOR REINFORCING. "TEMP" INDICATES CONTINUOUS TEMPERATUR REINFORCING.
5. TOP OF INTERIOR PILE CAP ELEVATION EL 35.98' UNLESS OTHERWISE NOTED THUS: ( ) ON PLAN.
6. TOP OF EXTERIOR PILE CAP ELEVATION EL 35.98' DWG S1.10 UNLESS OTHERWISE NOTED THUS: ( ) ON PLAN.
7. BOTTOM OF EXISTING FOUNDATION CONSTRUCTION ELEVATION NOTED THUS: (E) ON PLAN.
8. TOP OF GRADE BEAM ELEVATION SHALL BE 35.98', UNLESS OTHERWISE NOTED THUS: <....> ON PLAN.
9. ANY PILE CAPS DENOTED "SP" SEE TYPICAL DETAIL DRAWING FOR INFORMATION.
10. TP ... INDICATES TENSION PILES. SEE TYPICAL TENSION PILE CAP DETAILS.
11. 8" THICK 2-WAY-SLAB REINFORCING SHALL BE #4@12 T&B EACH WAY. FOR ADD'L REINFORCING SEE PLAN.
12. "GB1" IS TYPICAL SLAB BEAM SIZE ON DWG S1.10 UNLESS OTHERWISE NOTED ON PLAN, SEE TYPICAL DETAILS DRAWING S4.15 FOR INFORMATION ON GRADE BEAMS "GBI", "GB1A", "GBIB", ETC.

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	03-22-06	PACKAGE No. 6 FOUNDATION-ISSUED FOR GMP
	05-01-06	BID PACKAGE No. 9
	05-09-06	REVISED FOUNDATION BID PACKAGE
	06-01-06	DCA ISSUE
	06-12-06	STRUCTURAL PRICING UPDATE
	06-26-06	ISSUED FOR GMP - B.P. #10
1	07-21-06	ADDENDUM #6
4	10-13-06	(VE) FOR NORTH-WEST TOWER

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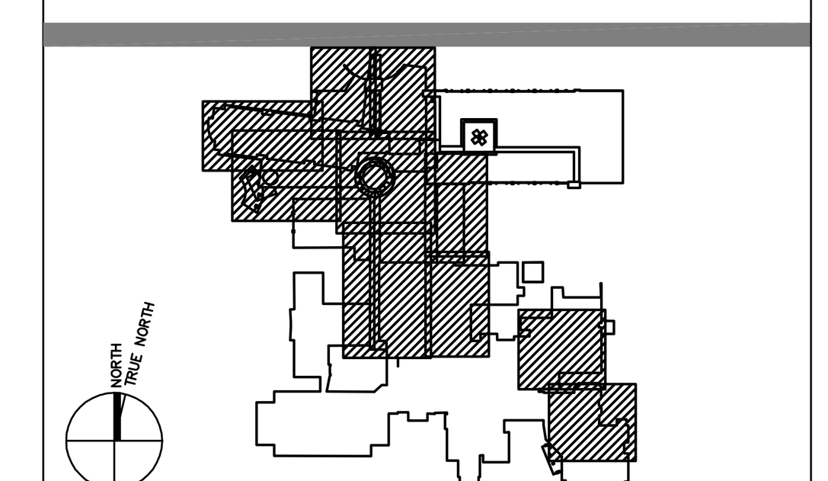

KEY PLAN

Jersey Shore University Medical Center
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ADDITIONS & RENOVATIONS

NEPTUNE, NEW JERSEY

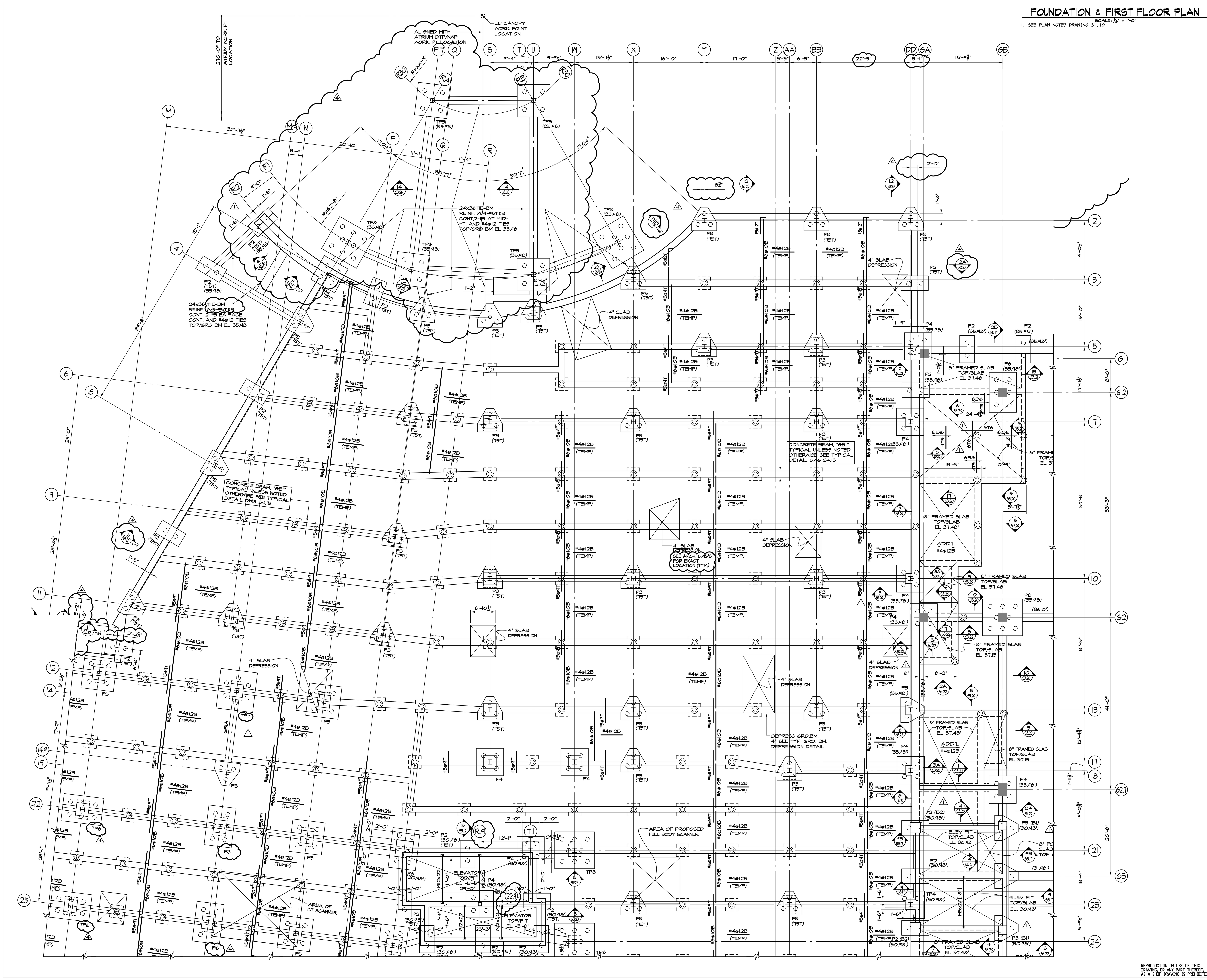
FOUNDATION & FIRST FLOOR PLAN

Date: 06-26-2006
Architect of record: CHARLES H GRIFFIN
State: NJ
Registration no.: 21AI01557600

JOB NO.: H04043-00
PHASE: DD #3
DATE: 06/26/06

DRAWING NO: S1.10

04-077



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	05-01-06	BID PACKAGE No. 9
	05-09-06	REVISED FOUNDATION BID PACKAGE
	06-01-06	DCA ISSUE
	06-12-06	STRUCTURAL PRICING UPDATE
	06-26-06	ISSUED FOR GMP - B.P. #10
1	07-21-06	ADDENDUM #6
4	10-13-06	(VE) FOR NORTH-WEST TOWER

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STRUCTURAL ENGINEERS
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MOUNTAINSIDE, NJ 07092
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KEY PLAN

Jersey Shore University Medical Center
MEMBER OF THE MERIDIAN HEALTH FAMILY

ADDITIONS & RENOVATIONS

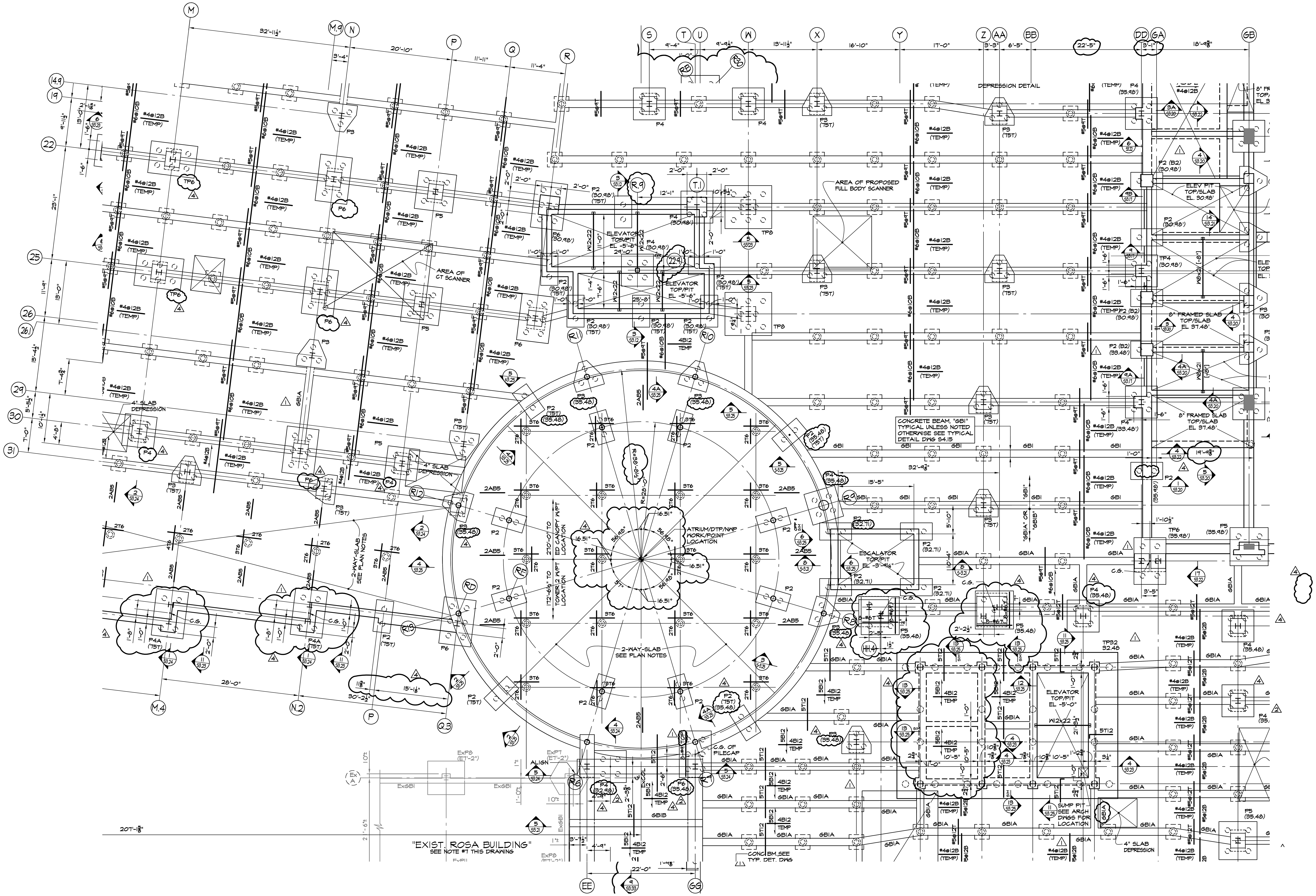
NEPTUNE, NEW JERSEY

FOUNDATION & FIRST FLOOR PLAN

Date: 06-26-2006
Architect of record: CHARLES H GRIFFIN
State: NJ
Registration no.: 21AI01557600

JOB NO.: H04043-00
PHASE: DD #3
DATE: 06/26/06
DRAWING NO: S1.11

04-077



FOUNDATION & FIRST FLOOR PLAN

SCALE: 1/8" = 1'-0"

1. TOP OF SLAB ELEV 0'-0" (DATUM = 37.48') UNLESS OTHERWISE NOTED.
2. ◎... INDICATES SINGLE SLAB TIMBER PILES WITH A BEARING CAPACITY OF 25 TONS.
3. ◌... PILECAPS LABELED P2, P3, P4, ETC. INDICATES 100 TON AUGERED CAST CONCRETE PILES.
   ◌... PILECAPS LABELED P2(75T), P3(75T), P4(75T), ETC. INDICATES 75 TON AUGERED CAST CONCRETE PILES.
   SEE GENERAL NOTES & TYPICAL DETAILS. SEE PLAN FOR REINFORCING.
   "TEMP" INDICATES CONTINUOUS TEMPERATURE REINFORCING.
4. ONE-WAY SLABS ON GRADE ARE FRAMED 8" IN THICKNESS, UNLESS OTHERWISE NOTED ON PLAN.
   SEE PLAN FOR REINFORCING "TEMP" INDICATES CONTINUOUS TEMPERATURE REINFORCING.
5. TOP OF INTERIOR PILE CAP ELEVATION EL 35.98' UNLESS OTHERWISE NOTED THUS: ( ) ON PLAN.
6. TOP OF EXTERIOR PILE CAP ELEVATION EL 35.48' DWG S1.12 UNLESS OTHERWISE NOTED THUS: ( ) ON PLAN.
7. TOP OF EXISTING FOUNDATION CONSTRUCTION ELEVATION NOTED THUS: (E) ON PLAN. ALL EXISTING ELEVATIONS GIVEN ON FONDATION PLAN FOR "ROSA" & "BOOKER" BUILDINGS ARE 7½" HIGHER IN RELATIONSHIP TO THE DATUM EL (12'-4") GIVEN AT THE EXISTING "TOWER" BUILDING. (IE: 12'-4"± IS EQUAL TO 12'-11½"±) IN "BOOKER" & "ROSA" BUILDINGS
8. TOP OF GRADE BEAM ELEVATION SHALL BE 35.98', UNLESS OTHERWISE NOTED THUS: <....> ON PLAN.
9. ANY PILE CAPS DENOTED "SP" SEE TYPICAL DETAIL DRAWING FOR INFORMATION.
10. TP ... INDICATES TENSION PILES. SEE TYPICAL TENSION PILE CAP DETAILS.
11. 8" THICK 2-WAY-SLAB REINFORCING SHALL BE #4@12 T&B EACH WAY. FOR ADD'L REINFORCING SEE PLAN.
12. "GB1" IS TYPICAL SLAB BEAM SIZE ON DWG S1.12 UNLESS OTHERWISE NOTED ON PLAN, SEE TYPICAL DETAILS DRAWING S4.15 FOR INFORMATION ON GRADE BEAMS "GB1","GB1A","GB1B",ETC.

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	09-19-05	ISSUE FOR DCA SD REVIEW
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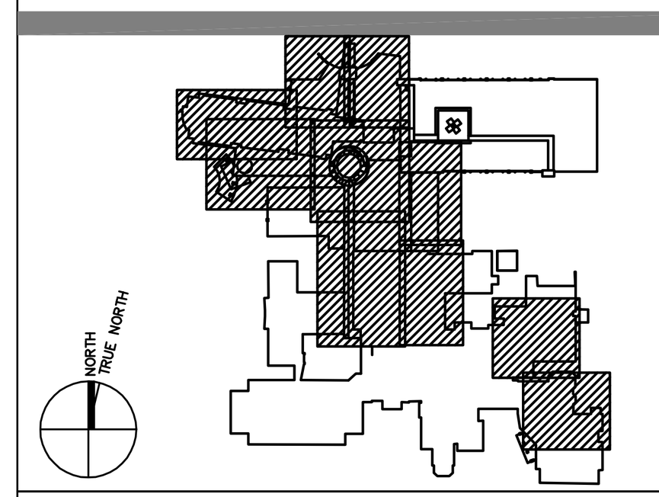


KEY PLAN

Jersey Shore University Medical Center
MEMBER OF THE MERIDIAN HEALTH FAMILY

ADDITIONS & RENOVATIONS

NEPTUNE, NEW JERSEY

FOUNDATION & FIRST FLOOR PLAN

Date: 06-26-2006
Architect of record: CHARLES H GRIFFIN
State: NJ
Registration no.: 21AI01557600

JOB NO.: H04043-00
PHASE: DD #3
DATE: 06/26/06
DRAWING NO: S1.12

04-077

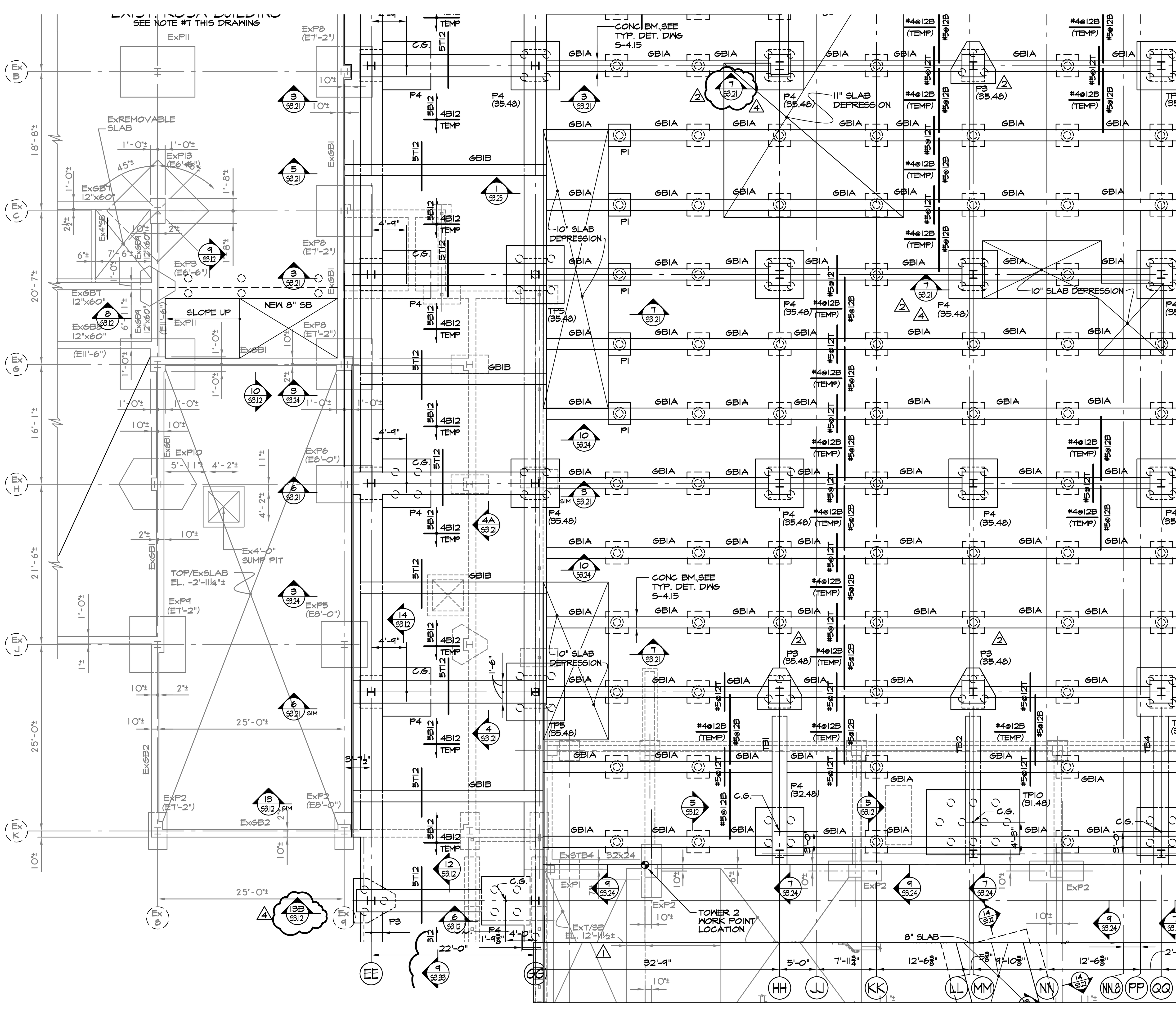
GRADE BEAM SCHEDULE

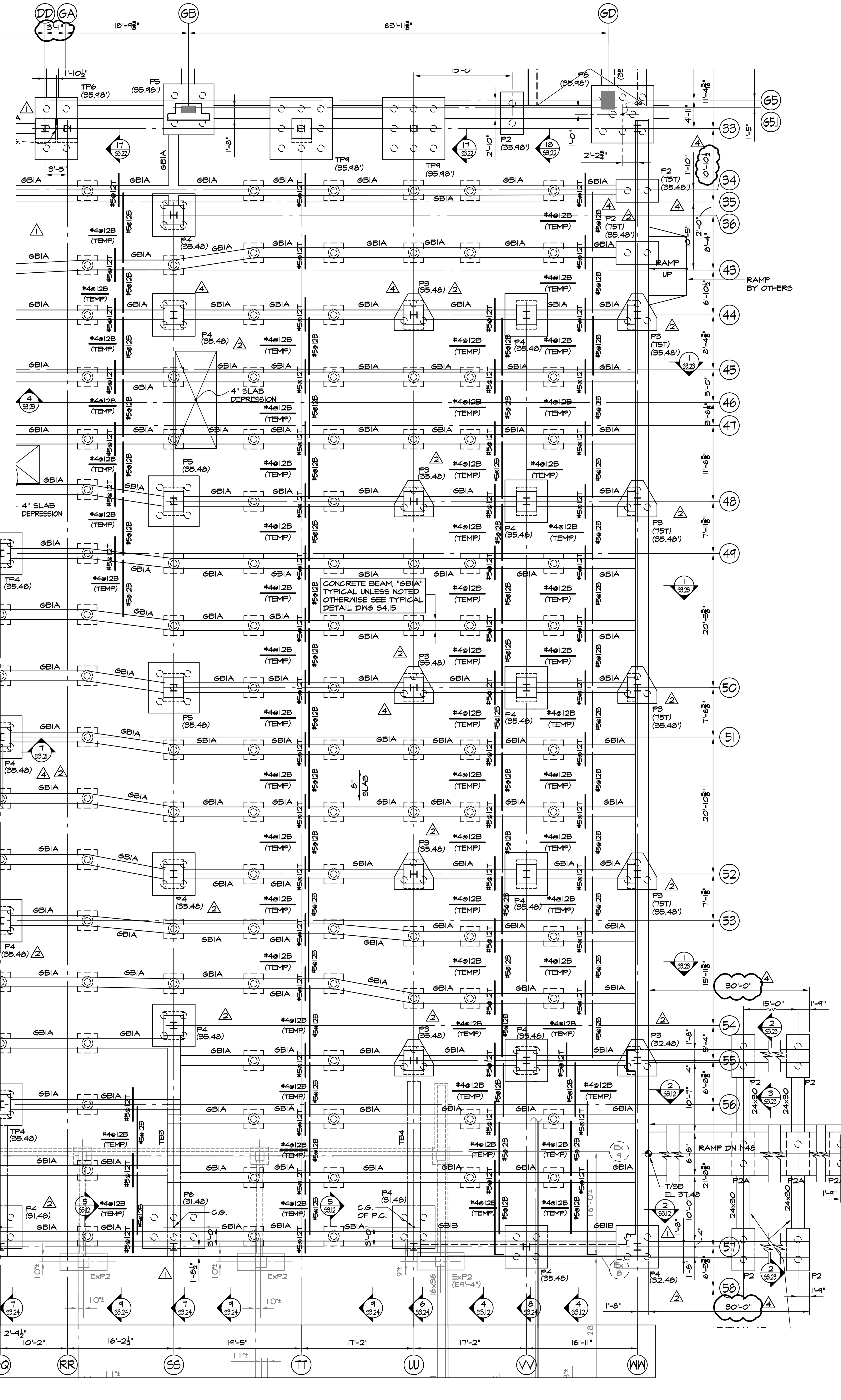
MARK	SIZE b x d	REINFORCING	REMARKS	STIRRUPS SPACED FROM EACH END
TB1	36x36	10-#11TOP CONT 10-#9 BOTT. CONT	EXTEND TOP & BOTT BARS TO END OF CANTIL & HOOK	#5 @6" IN CANT #4 @12 IN SPAN
TB2	42x48	8-#18 TOP CONT 8-#11 BOTT. CONT	EXTEND TOP & BOTT BARS TO END OF CANTIL & HOOK	#5 @5" IN CANT #5 @12 IN SPAN
TB3	42x48	10-#14 TOP CONT 10-#9 BOTT. CONT	EXTEND TOP & BOTT BARS TO END OF CANTIL & HOOK	#5 @5" IN CANT #4 @12 IN SPAN
TB4	42x48	10-#11TOP CONT 10-#9 BOTT. CONT	EXTEND TOP & BOTT BARS TO END OF CANTIL & HOOK	#4 @5" IN CANT #4 @12 IN SPAN

FOUNDATION & FIRST FLOOR PLAN

SCALE: 1/8" = 1'-0"

1. TOP OF SLAB ELEV 0'-0" (DATUM = 37.48') UNLESS OTHERWISE NOTED.
2. ◎... INDICATES SINGLE SLAB TIMBER PILES WITH A BEARING CAPACITY OF 25 TONS.
3. ◌... PILECAPS LABELED P2, P3, P4, ETC. INDICATES 100 TON AUGERED CAST CONCRETE PILES.
   ◌... PILECAPS LABELED P2(75T), P3(75T), P4(75T), ETC. INDICATES 75 TON AUGERED CAST CONCRETE PILES.
   SEE GENERAL NOTES & TYPICAL DETAILS. SEE PLAN FOR REINFORCING.
   "TEMP" INDICATES CONTINUOUS TEMPERATURE REINFORCING.
4. ONE-WAY SLABS ON GRADE ARE FRAMED 8" IN THICKNESS, UNLESS OTHERWISE NOTED ON PLAN.
   SEE PLAN FOR REINFORCING "TEMP" INDICATES CONTINUOUS TEMPERATURE REINFORCING.
5. TOP OF INTERIOR PILE CAP ELEVATION EL 35.48' UNLESS OTHERWISE NOTED THUS: ( ) ON PLAN.
6. TOP OF EXTERIOR PILE CAP ELEVATION EL 35.48' DWG S1.13 UNLESS OTHERWISE NOTED THUS: ( ) ON PLAN.
7. TOP OF EXISTING FOUNDATION CONSTRUCTION ELEVATION NOTED THUS: (E) ON PLAN. ALL EXISTING ELEVATIONS GIVEN ON FONDATION PLAN FOR "ROSA" & "BOOKER" BUILDINGS ARE 7½" HIGHER IN RELATIONSHIP TO THE DATUM EL (12'-4") GIVEN AT THE EXISTING "TOWER" BUILDING. (IE: 12'-4"± IS EQUAL TO 12'-11½"±) IN "BOOKER" & "ROSA" BUILDINGS
8. TOP OF GRADE BEAM ELEVATION SHALL BE 35.98', UNLESS OTHERWISE NOTED THUS: <....> ON PLAN.
9. ANY PILE CAPS DENOTED "SP" SEE TYPICAL DETAIL DRAWING FOR INFORMATION.
10. TP ... INDICATES TENSION PILES. SEE TYPICAL TENSION PILE CAP DETAILS.
11. "GB1A" IS TYPICAL SLAB BEAM SIZE ON DWG. S1.13 UNLESS OTHERWISE NOTED ON PLAN, SEE TYPICAL DETAILS DRAWING S4.15 FOR INFORMATION ON GRADE BEAMS "GB1","GB1A",GB1B", ETC.
12. SEE TYPICAL DETAIL DWGS. S4.10 & S4.12 FOR DEPRESSED BEAM AND SLABS.





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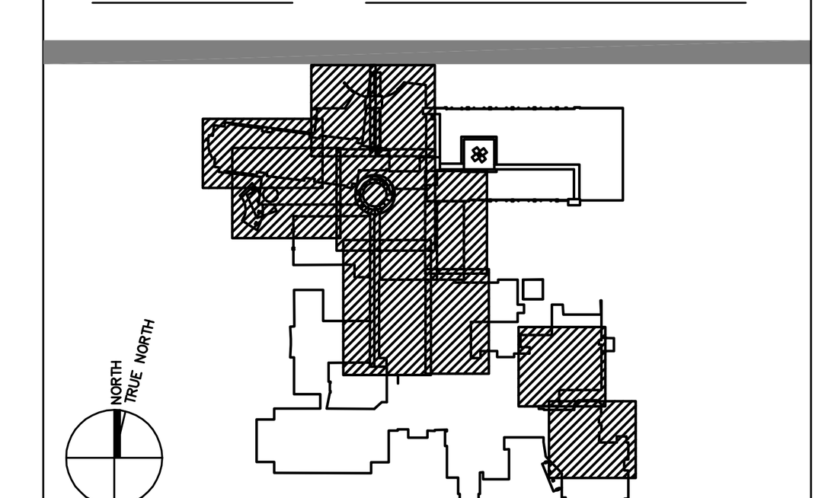

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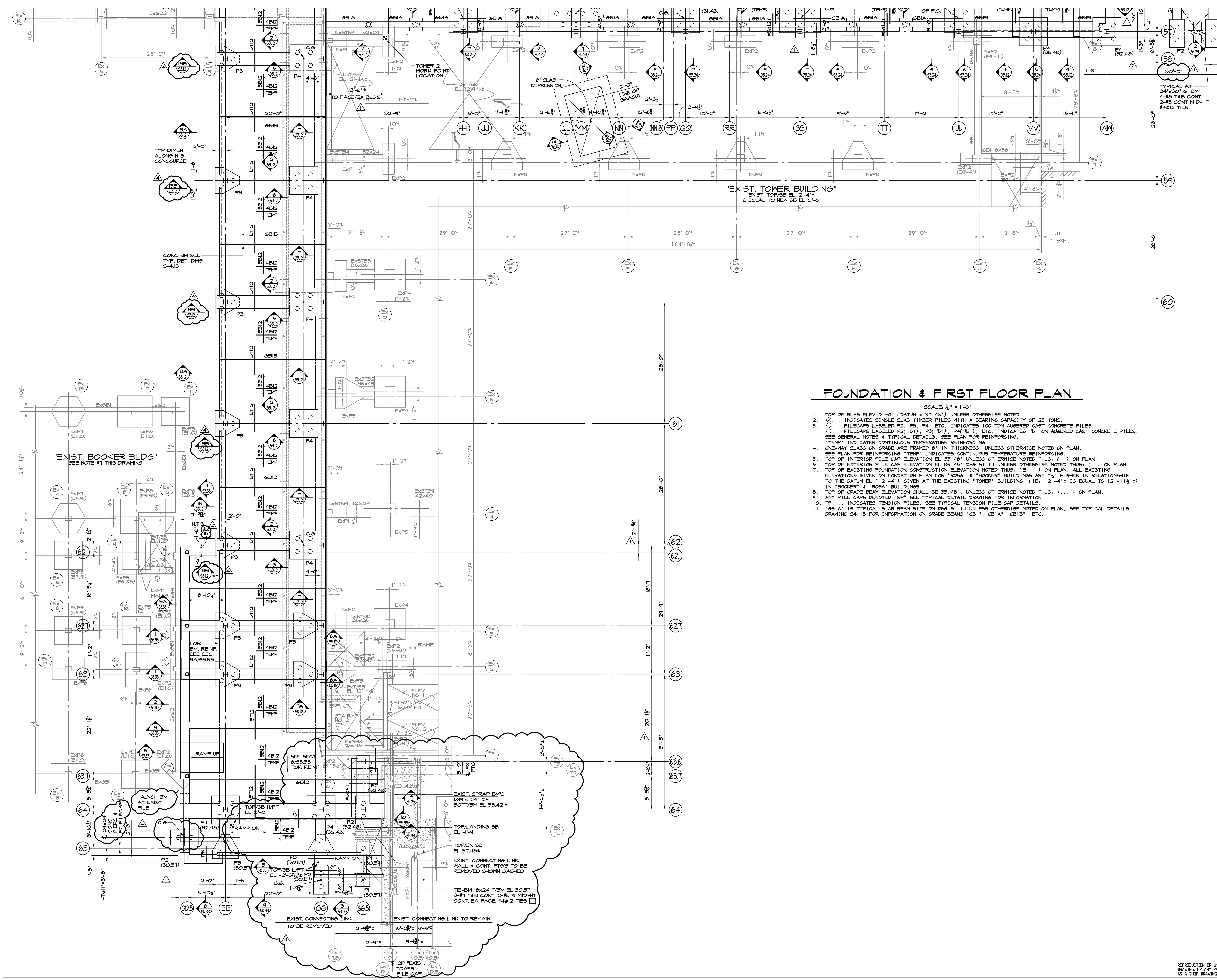

FOUNDATION & FIRST FLOOR PLAN

SCALE: 1/8" = 1'-0"

1. TOP OF SLAB ELEV 0'-0" (DATUM = 37.48') UNLESS OTHERWISE NOTED.
2. ◎... INDICATES SINGLE SLAB TIMBER PILES WITH A BEARING CAPACITY OF 25 TONS.
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   ◌... PILECAPS LABELED P2(75T), P3(75T), P4(75T), ETC. INDICATES 75 TON AUGERED CAST CONCRETE PILES.
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11. "GB1A" IS TYPICAL SLAB BEAM SIZE ON DWG S1.14 UNLESS OTHERWISE NOTED ON PLAN, SEE TYPICAL DETAILS DRAWING S4.15 FOR INFORMATION ON GRADE BEAMS "GB1", GB1A", GB1B", ETC.

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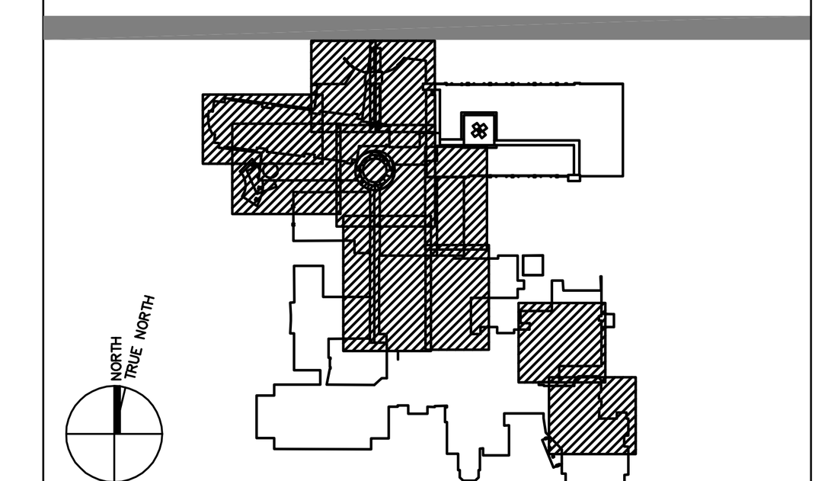

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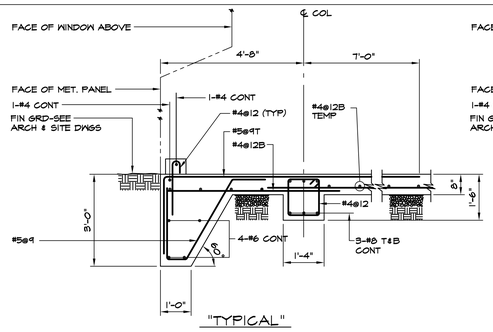
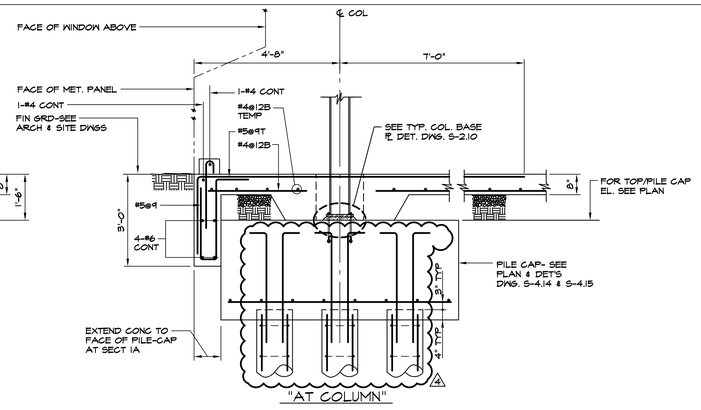


"TYPICAL"

SECTION 1

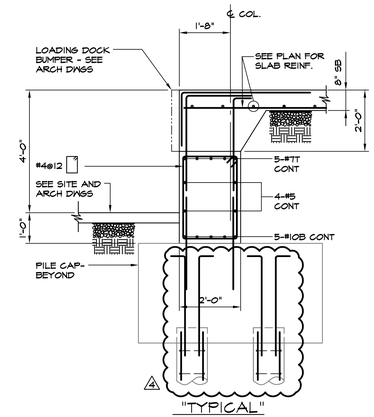
SCALE: ½" =1'-0"



"AT COLUMN"

SECTION 1A

SCALE: ½" =1'-0"



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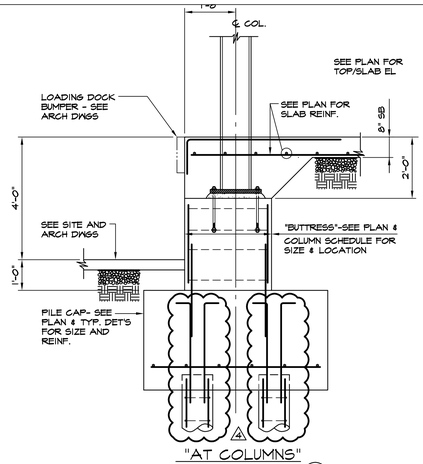
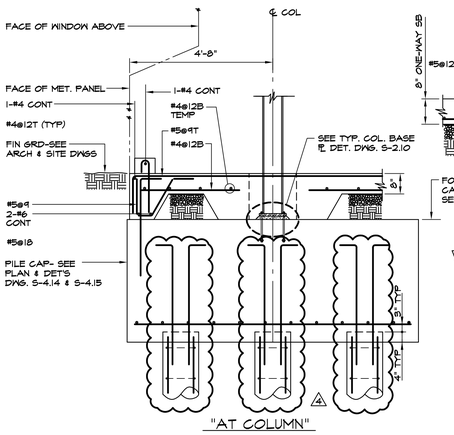


"AT COLUMNS"

SECTION 2

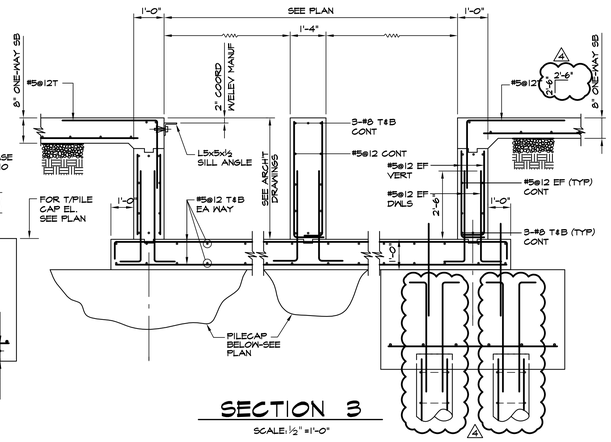
SCALE: ½" = 1'-0"



"AT COLUMN"

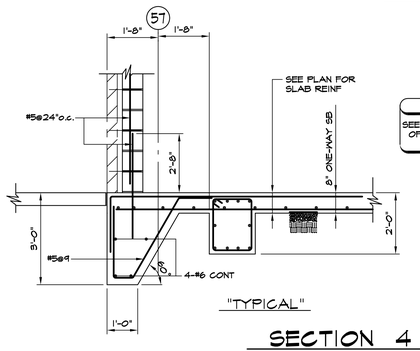
SECTION 1B

SCALE: ½" =1'-0"



SECTION 3

SCALE: ½" =1'-0"



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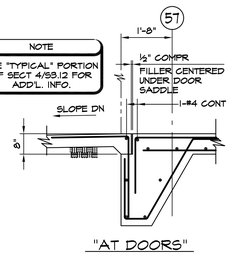
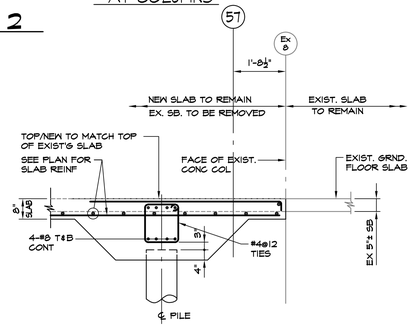


"AT DOORS"

SECTION 4

SCALE: ½" =1'-0"



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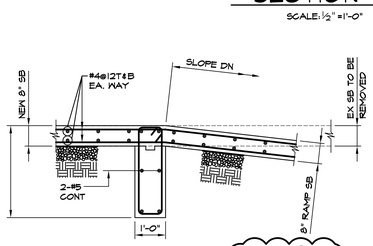

SECTION 8

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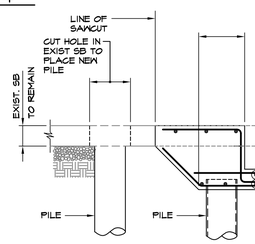

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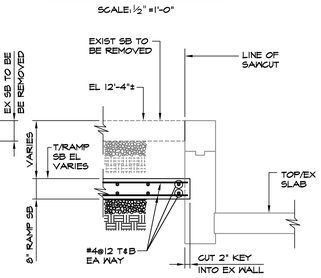

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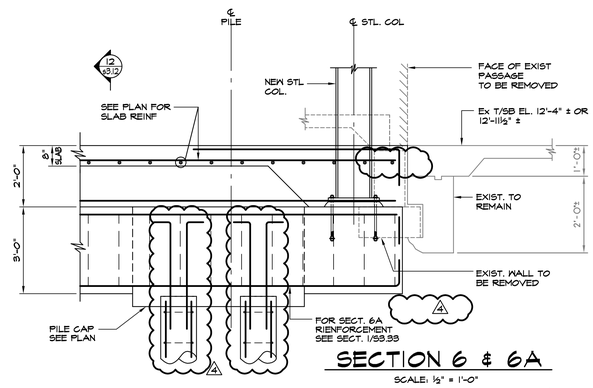
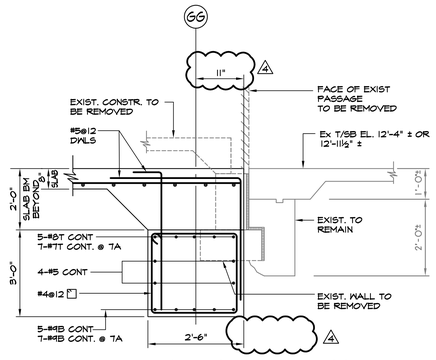
SCALE: ½" = 1'-0"



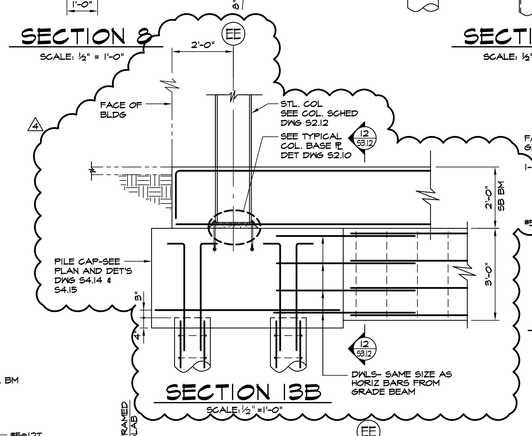
SECTION 6 & 6A

SCALE: ½" = 1'-0"



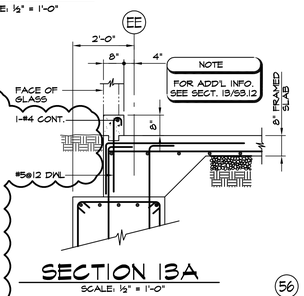
SECTION 7 & 7A

SCALE: ½" = 1'-0"



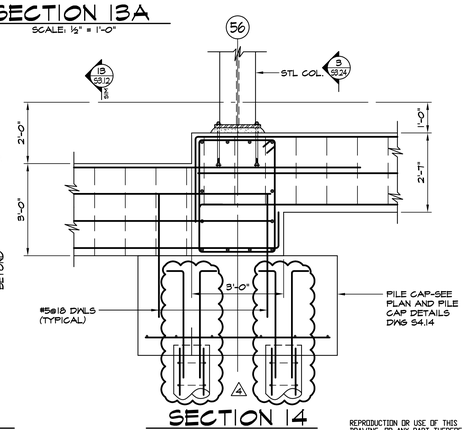
SECTION 13B

SCALE: ½" = 1'-0"



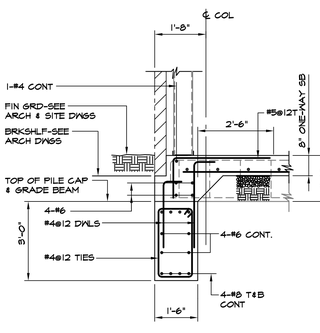
SECTION 13A

SCALE: ½" = 1'-0"

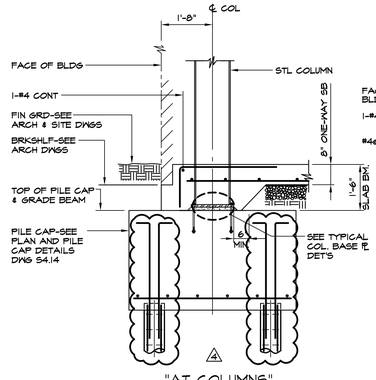


SECTION 14

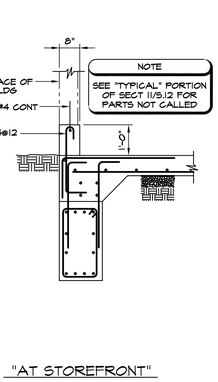
SCALE: ½" = 1'-0"



"TYPICAL"



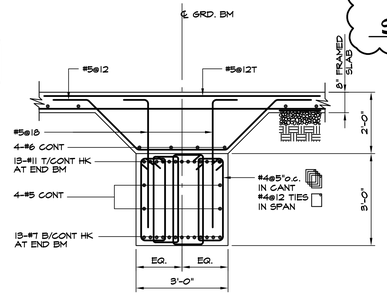
"AT COLUMNS"



"AT STOREFRONT"

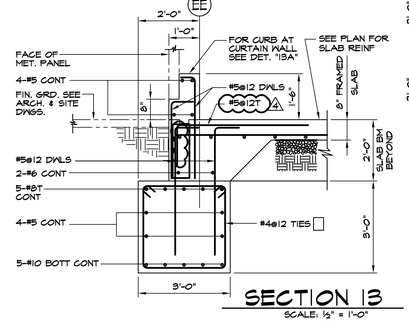
SECTION 11

SCALE: ½" =1'-0"



SECTION 12

SCALE: ½" = 1'-0"



SECTION 13

SCALE: ½" = 1'-0"

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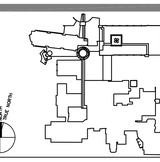

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MEMBER OF THE MERIDIAN HEALTH FAMILY

ADDITIONS & RENOVATIONS

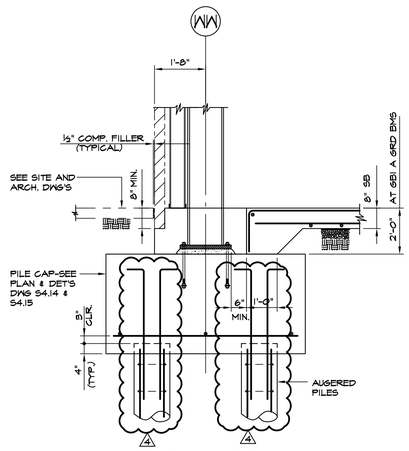
NEPTUNE, NEW JERSEY

SECTIONS 3

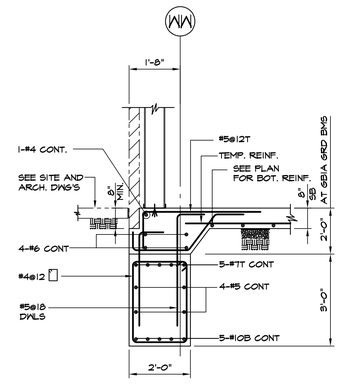
Date: 06-26-2006
Architect of record:
CHARLES H GRIFFIN
State: NJ
Registration no.: 21AI01557600

JOB NO.: H04043-00
PHASE: DD #3
DATE: 06/26/06

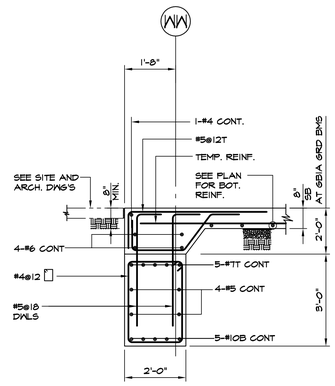
DRAWING NO:
S3.12



"AT COLUMNS"



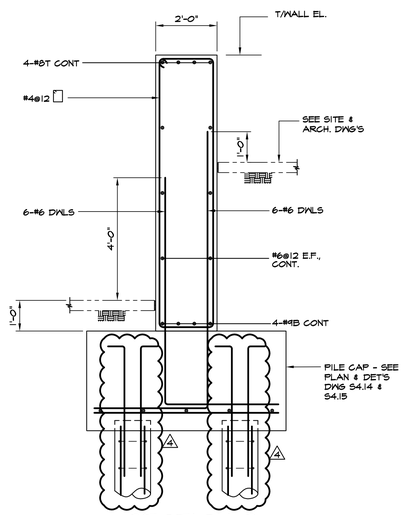
"BETW LOADING DOCKS DOORS"



" AT LOADING DOCK"

S E C T I O N 1

SCALE: ½" = 1'-0"



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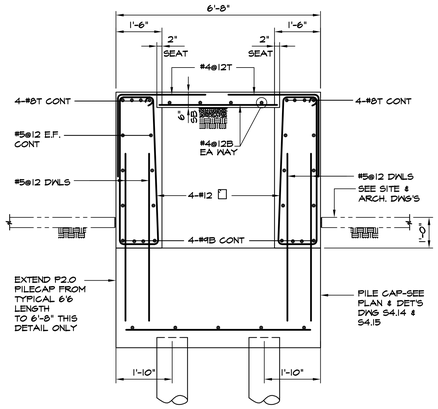

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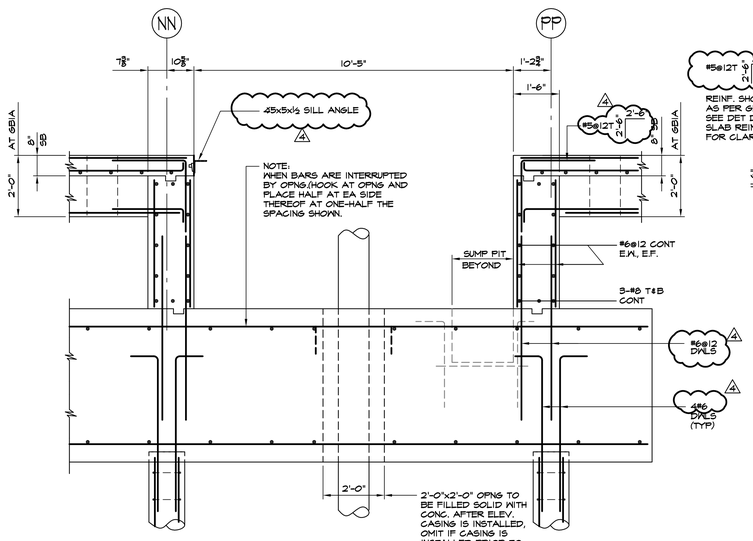

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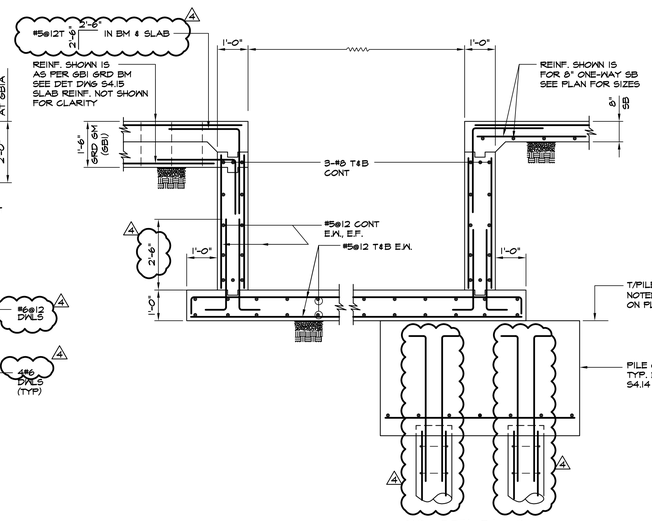

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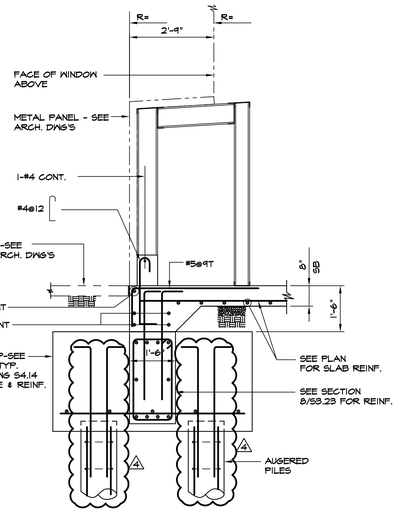

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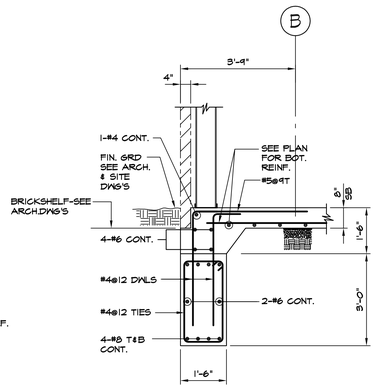

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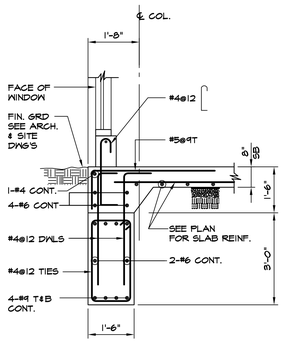

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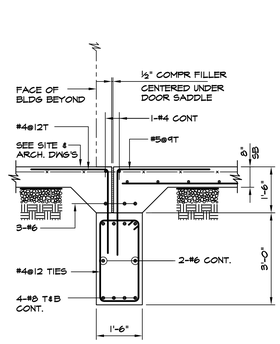

SECTION 9

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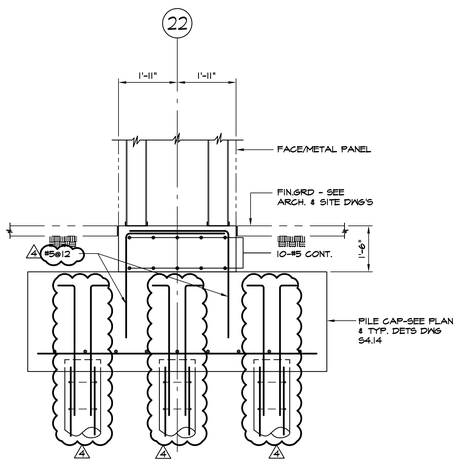

SECTION 10

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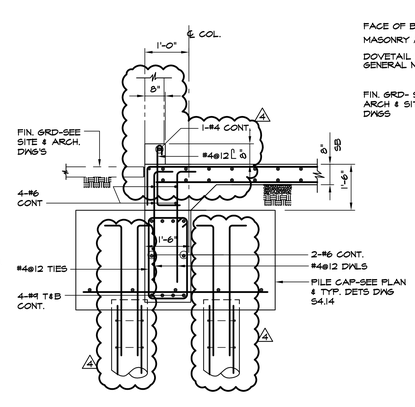

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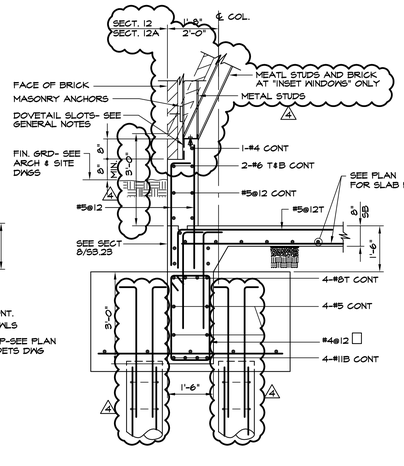
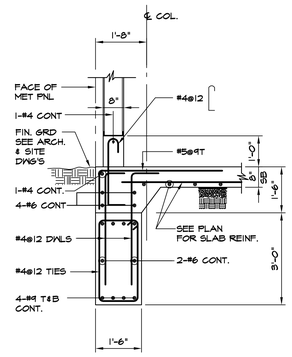


SECTION 12

SCALE: ½" = 1'-0"



SECTION 13

SCALE: ½" = 1'-0"

WHR ARCHITECTS

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HOUSTON, TEXAS 77002
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WWW.WHRARCHITECTS.COM

NO.	DATE	DESCRIPTION
	09-19-05	ISSUE FOR DCA SD REVIEW
	12-21-05	DD PRICING
	01-13-06	REVISED DD
	03-15-06	PACKAGE No. 5 GARAGE-ISSUED FOR GMP
	03-22-06	PACKAGE No. 6 FOUNDATION-ISSUED FOR GMP
	05-01-06	BID PACKAGE No. 9
	05-09-06	REVISED FOUNDATION BID PACKAGE
	06-01-06	DCA ISSUE
	06-12-06	STRUCTURAL PRICING UPDATE
	06-26-06	ISSUED FOR GMP - B.P. #10
1	07-21-06	ADDENDUM #6
2	10-13-06	(VE) FOR NORTH-WEST TOWER

DI STASIO & VAN BUREN INC.
STRUCTURAL ENGINEERS
1360 ROUTE 22 WEST
MOUNTAINSIDE, NJ 07092
Tel (908) 688-7887 Fax (908) 6887960

NJ Cert. of Authorization No. GA 2767I0
James F. Loudon, PE NJ Cert. No. 28704
Paul P. Panzarino, PE NJ Cert. No. 42798

KEY PLAN

Jersey Shore University Medical Center
MEMBER OF THE MERIDIAN HEALTH FAMILY

ADDITIONS & RENOVATIONS

NEPTUNE, NEW JERSEY

SECTION 14

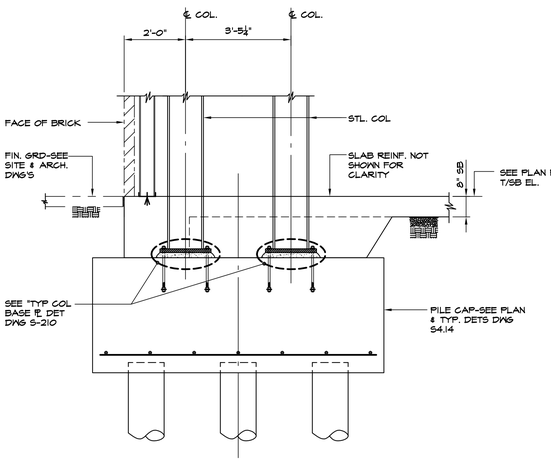
Date: 06-26-2006
Architect of record:
CHARLES H GRIFFIN
State: NJ
Registration no.: 21AI01557600

JOB NO.: H04043-00
PHASE: DD #3
DATE: 06/26/06

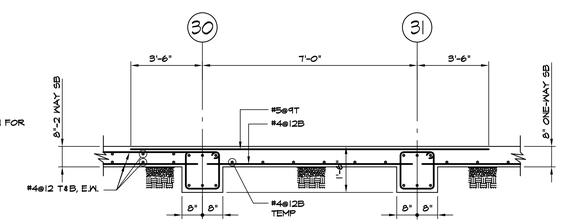
DRAWING NO: S3.23

P:\Jobs\2004 Jobs\04-077 (JerseShoreMC)\Drawings\Structural\S3.23_JSUMC_Sect14.dwg, 10/13/2006 4:46:56 PM, PDF995

04-077



SECTION 1
SCALE: ½" = 1'-0"



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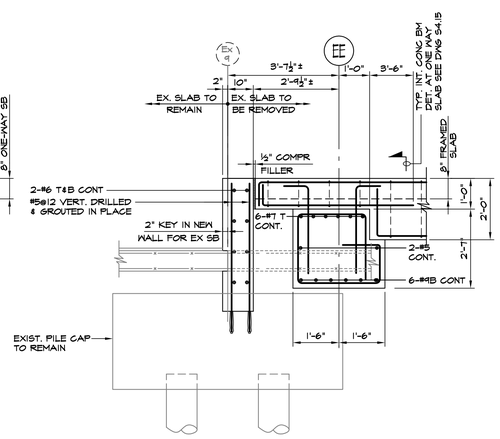

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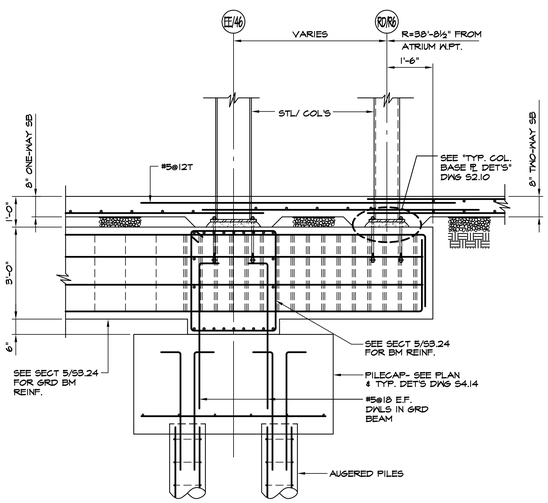
SCALE: ½" = 1'-0"



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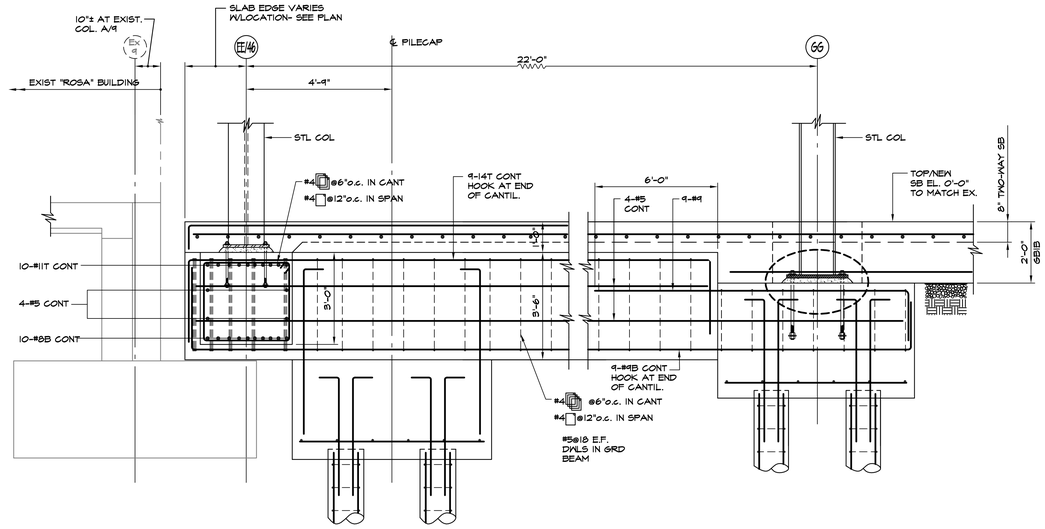

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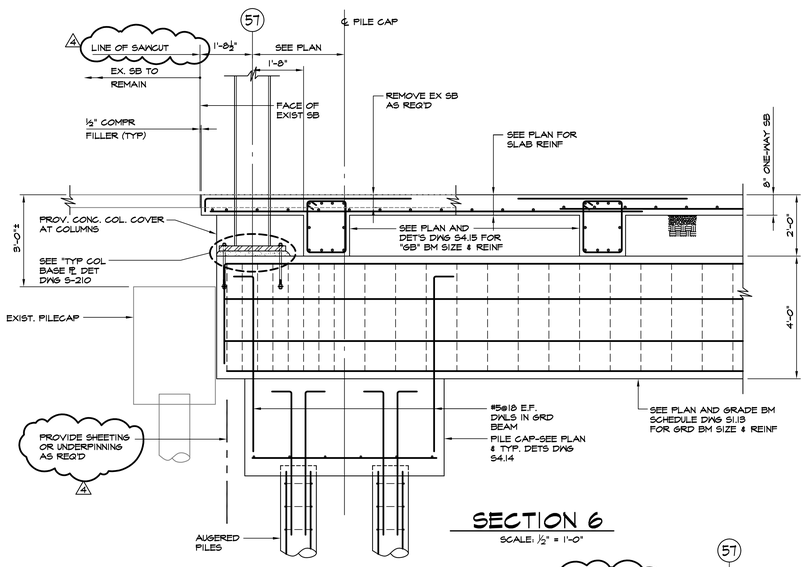
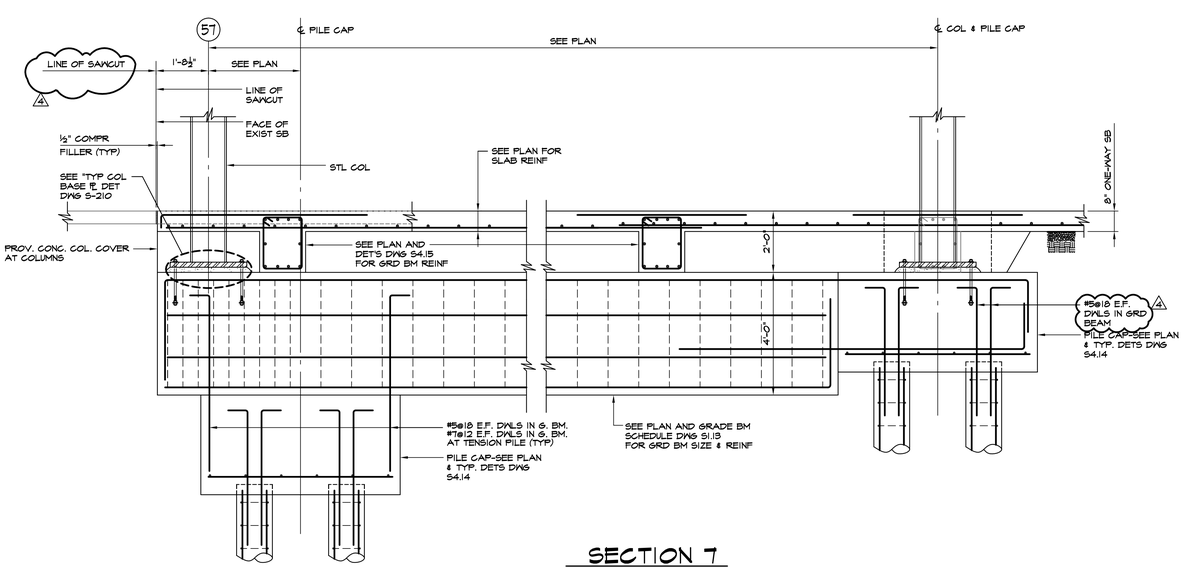


SECTION 6
SCALE: ½" = 1'-0"



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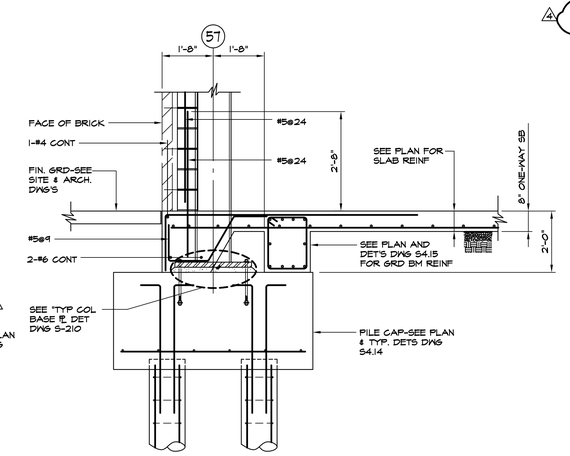

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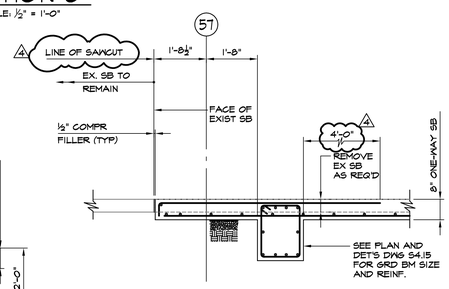
SCALE: ½" = 1'-0"



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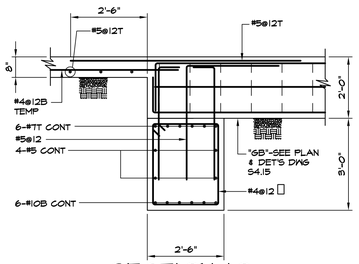

SECTION 10
SCALE: ½" = 1'-0"

WHR ARCHITECTS

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DI STASIO & VAN BUREN INC.
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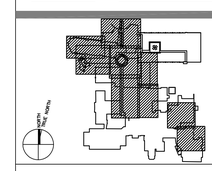
1568 ROUTE 22 WEST
MOUNTAINSIDE, NJ 07092
Tel (908) 688-7887 Fax (908) 6887960

NJ Cert. of Authorization No. GA 276710
James F. Loudon, PE NJ Cert. No. 28704
Paul P. Panzarino, PE NJ Cert. No. 42798



KEY PLAN

Jersey Shore University Medical Center
MEMBER OF THE MERIDIAN HEALTH FAMILY

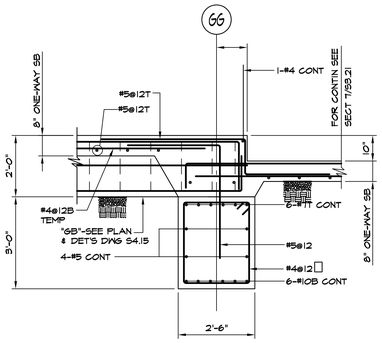
ADDITIONS & RENOVATIONS

NEPTUNE, NEW JERSEY

SECTION 15

Date: 06-26-2006
Architect of record:
CHARLES H GRIFFIN
State: NJ
Registration no.: 21AI01557600

JOB NO.: H04043-00	DRAWING NO:
PHASE: DD #3	S3.24
DATE: 06/26/06	



SECTION 1
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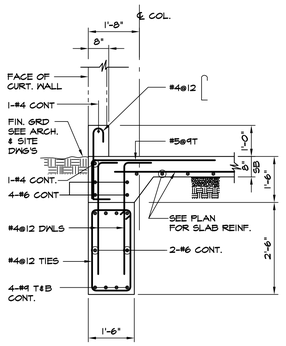

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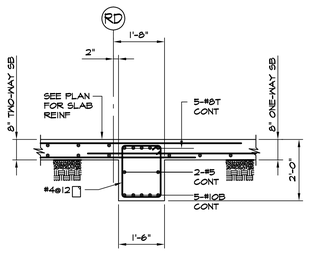

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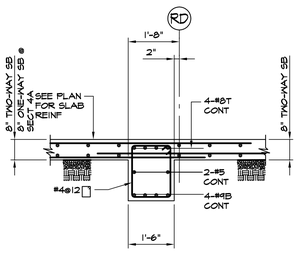

SECTION 4, 4A
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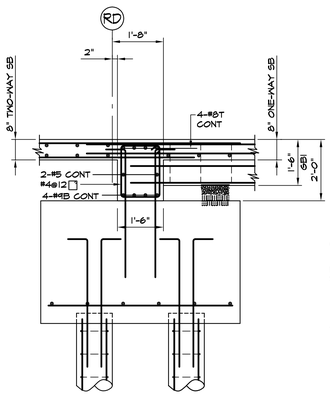

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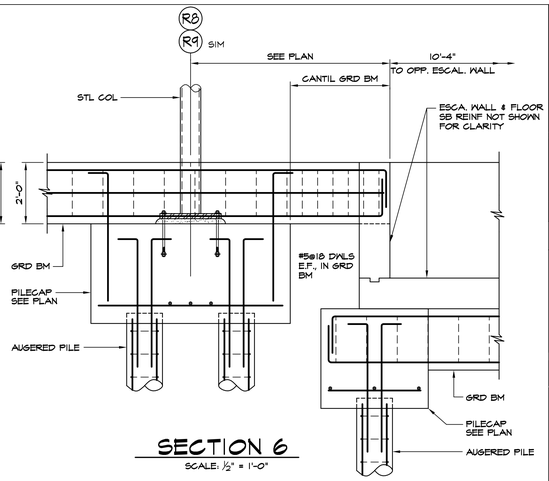

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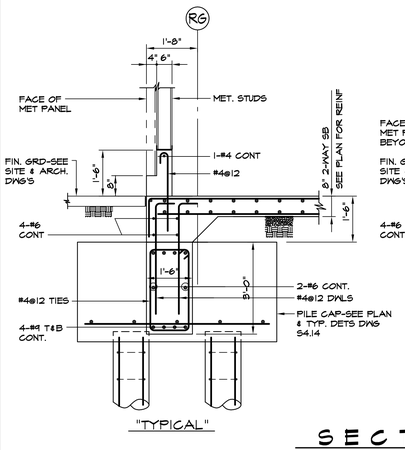
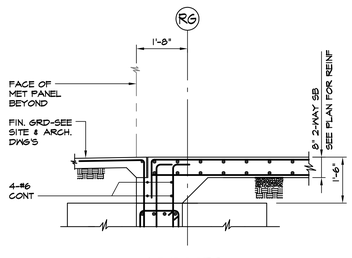


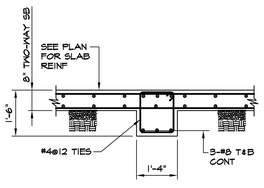
"TYPICAL"



"AT DOORS"

NOTE
SEE "TYPICAL" PORTION OF SECTION 7/S3.25 FOR BALANCE AND PARTS NOT CALLED

SECTION 7
SCALE: ½" = 1'-0"



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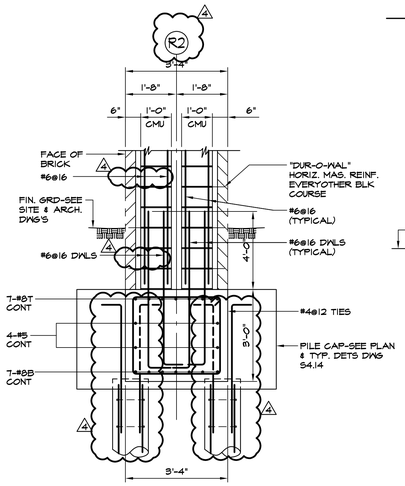

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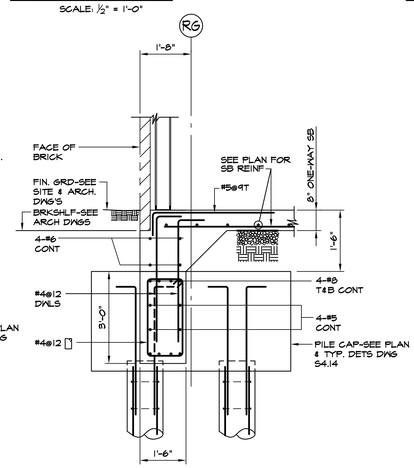
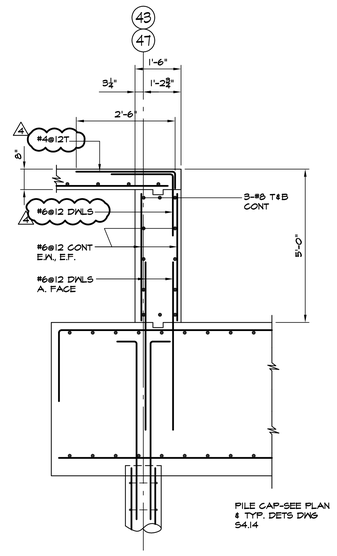
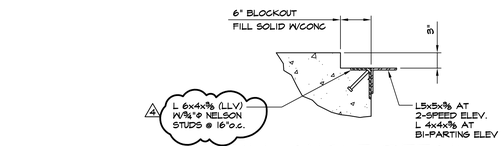


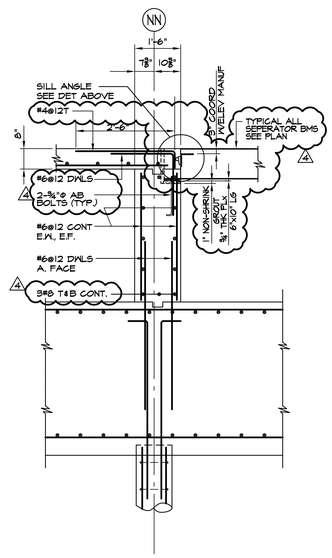
SECTION 10
SCALE: ½" = 1'-0"



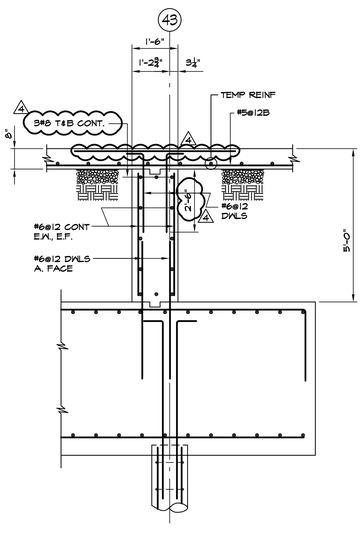
SECTION 11
SCALE: ½" = 1'-0"



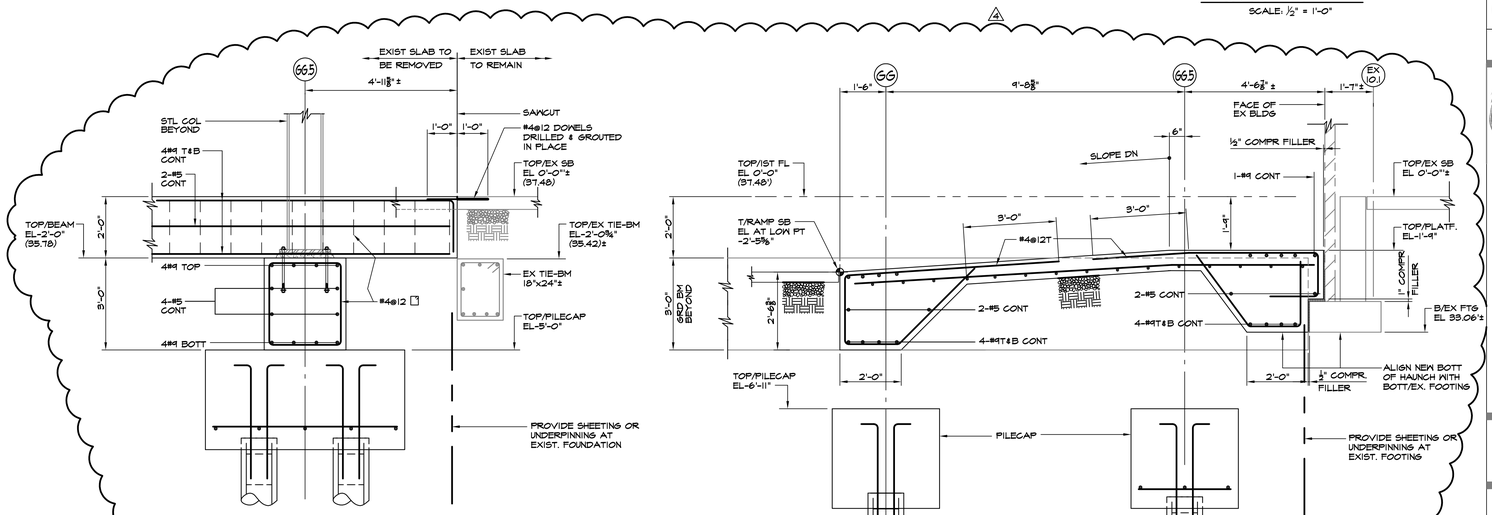
SILL ANGLE DETAIL
SCALE: 1" = 1'-0"



SECTION 12
SCALE: ½" = 1'-0"



SECTION 13
SCALE: ½" = 1'-0"



SECTION 14
SCALE: ½" = 1'-0"

SECTION 15
SCALE: ½" = 1'-0"

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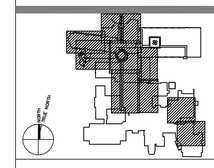

KEY PLAN

Jersey Shore University Medical Center
MEMBER OF THE MERIDIAN HEALTH FAMILY

ADDITIONS & RENOVATIONS

NEPTUNE, NEW JERSEY

SECTION 16

Date: 06-26-2006
Architect of record:
CHARLES H GRIFFIN
State: NJ
Registration no.: 21AI01557600

JOB NO.: H04043-00
PHASE: DD #3
DATE: 06/26/06

DRAWING NO: S3.25

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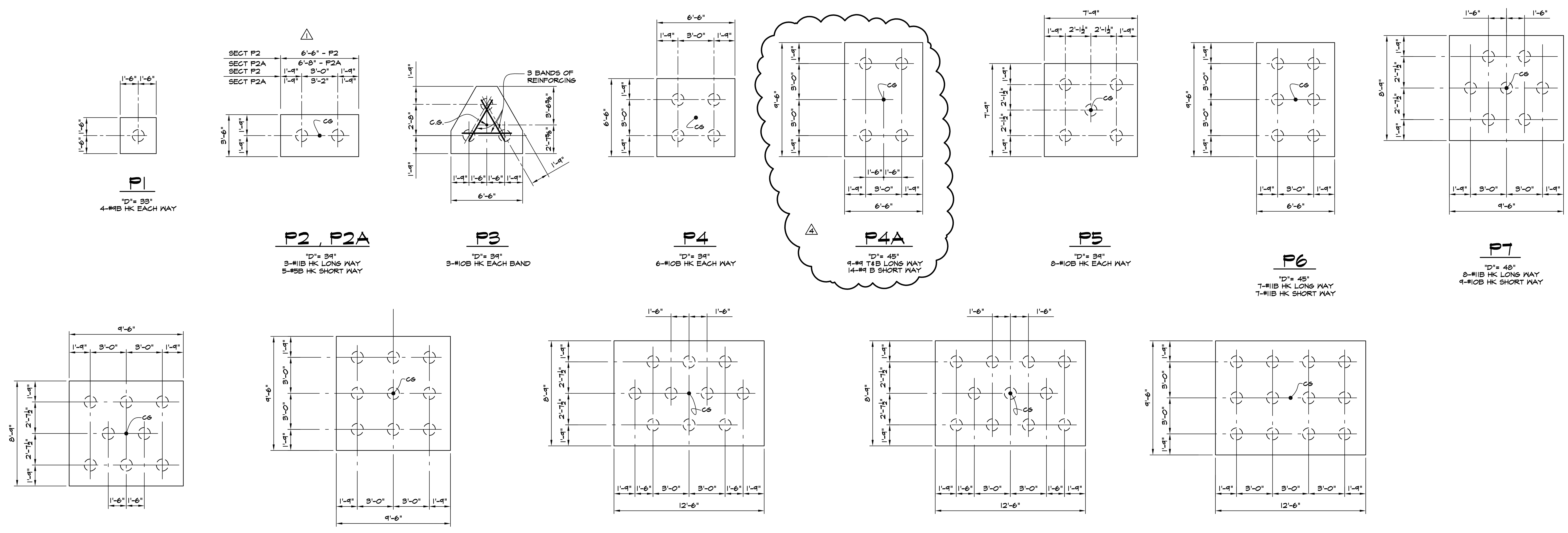
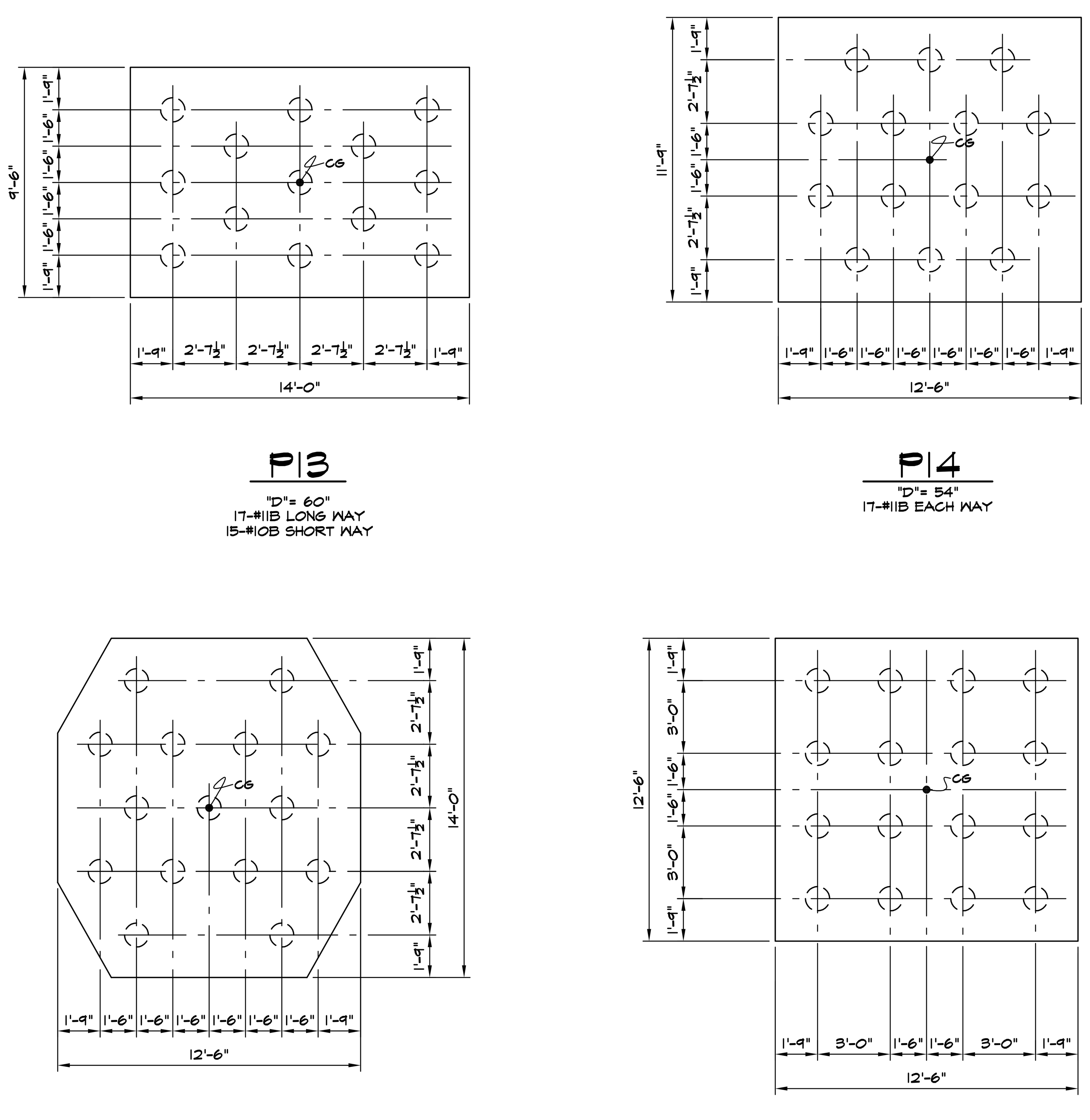
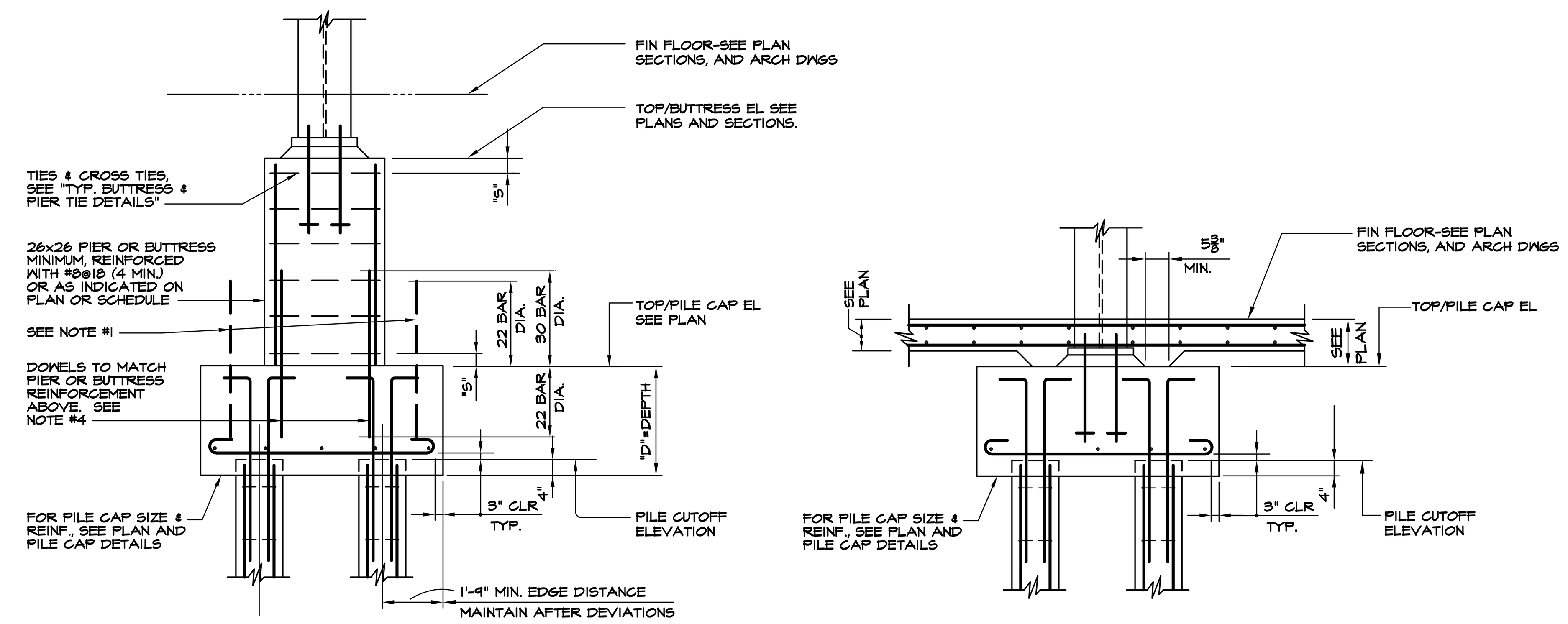
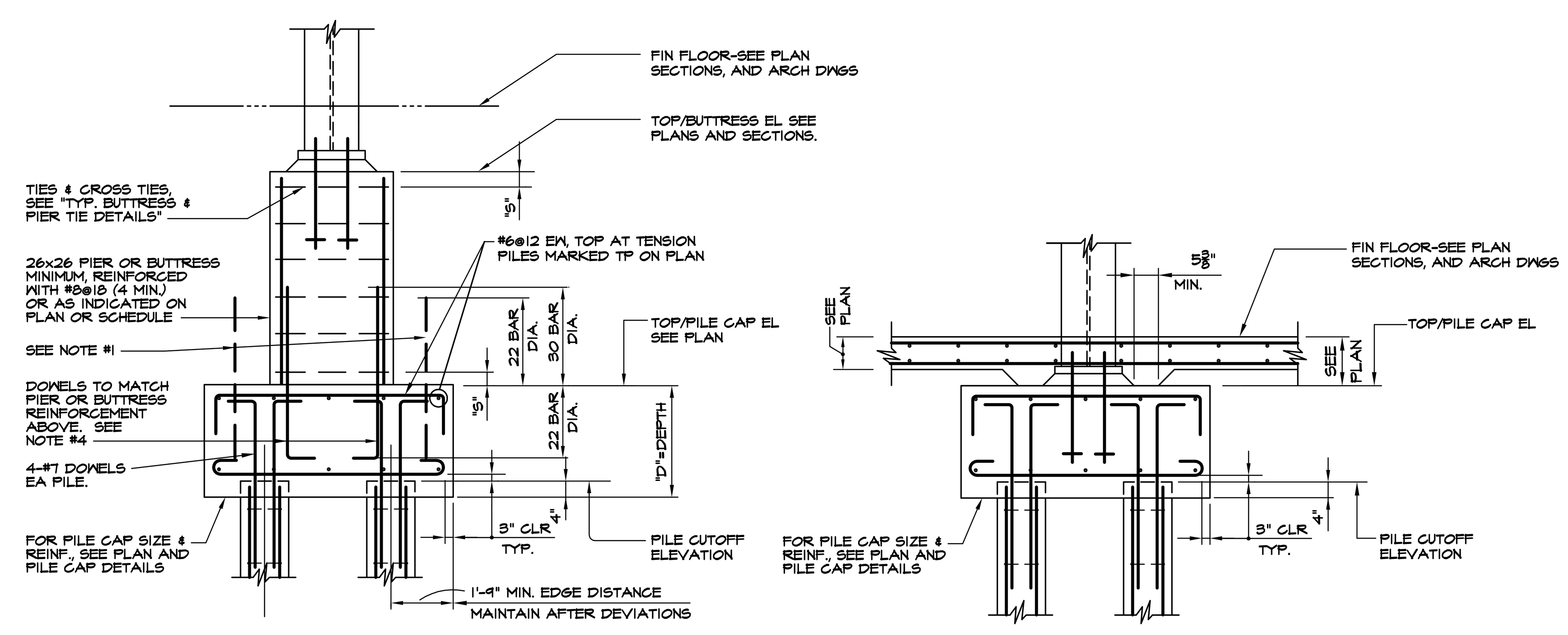






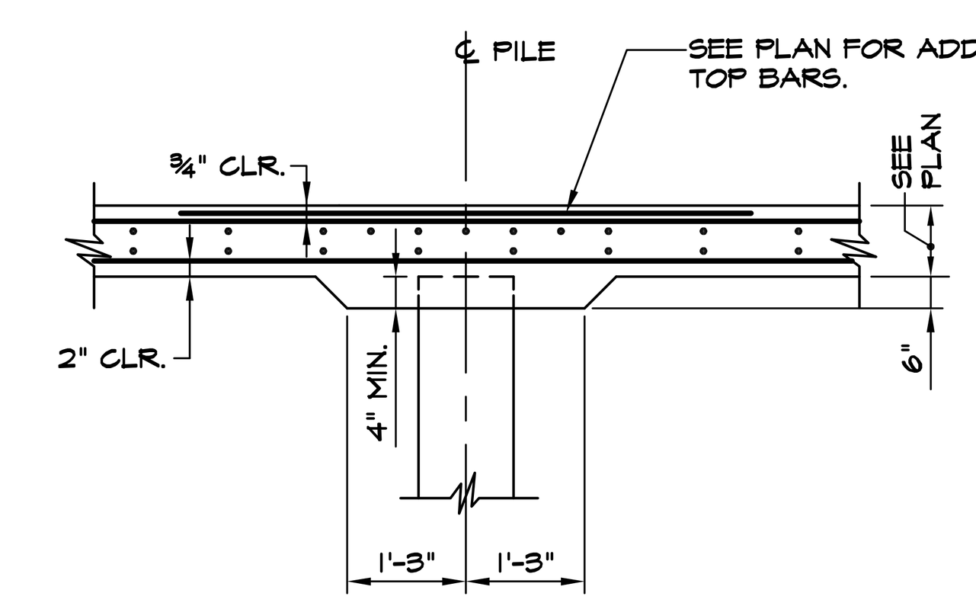
TYPICAL PILE CAP SECTIONS

1. WHERE WALL OR GRADE BEAM BEARS ON PILE CAP, PIER OR BUTTRESS, PROVIDE DOWELS TO MATCH WALL REINFORCEMENT ABOVE (#5@18 MINIMUM).
2. WHERE WALL OR GRADE BEAM BEARS ON PIER OR BUTTRESS, TOP OF PIER OR BUTTRESS TO BE AT BOTTOM OF LOWEST MEMBER BEARING THEREON.
3. PIER VERTICAL REINFORCEMENT MAY BE OMITTED AND DOWELS EXTENDED TO TOP OF PIER.
4. WHERE INDICATED IN COLUMN SCHEDULE, INCREASE SPLICE AND EMBEDMENT LENGTHS TO CONFORM TO SCHEDULE "A".
5. "S" EQUALS ¼ OF TIE SPACING SHOWN IN "TYPICAL COLUMN AND PIER TIE DETAILS" OR 3" MAXIMUM.

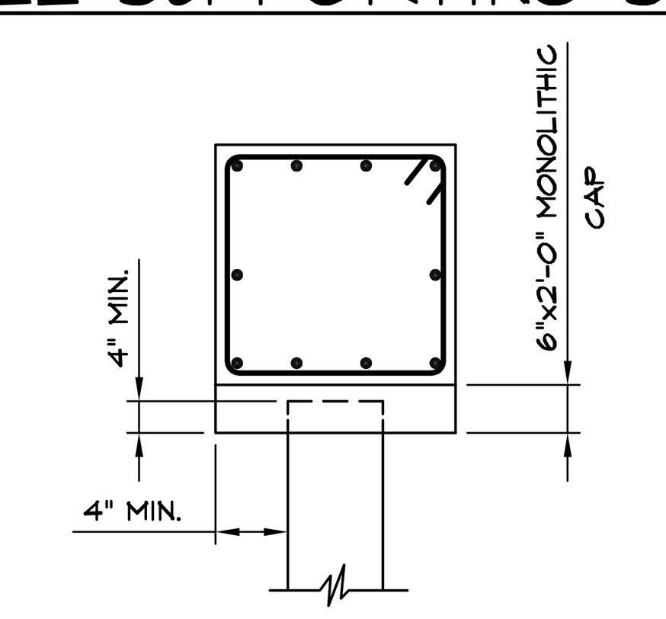


TYPICAL TENSION PILE CAP SECTIONS

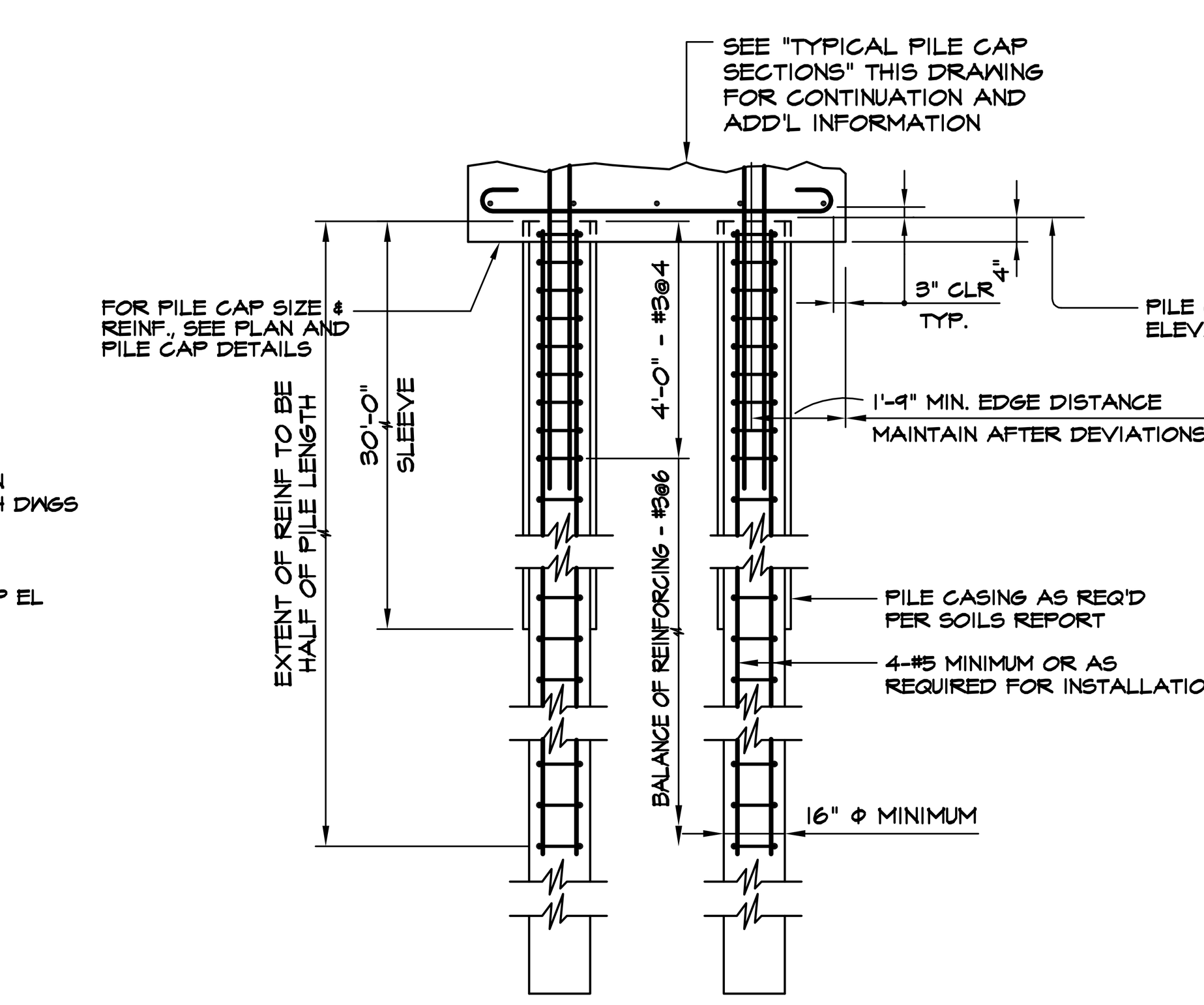
1. WHERE WALL OR GRADE BEAM BEARS ON PILE CAP, PIER OR BUTTRESS, PROVIDE DOWELS TO MATCH WALL REINFORCEMENT ABOVE (#5@18 MINIMUM).
2. WHERE WALL OR GRADE BEAM BEARS ON PIER OR BUTTRESS, TOP OF PIER OR BUTTRESS TO BE AT BOTTOM OF LOWEST MEMBER BEARING THEREON.
3. PIER VERTICAL REINFORCEMENT MAY BE OMITTED AND DOWELS EXTENDED TO TOP OF PIER.
4. WHERE INDICATED IN COLUMN SCHEDULE, INCREASE SPLICE AND EMBEDMENT LENGTHS TO CONFORM TO SCHEDULE "A".
5. "S" EQUALS ¼ OF TIE SPACING SHOWN IN "TYPICAL COLUMN AND PIER TIE DETAILS" OR 3" MAXIMUM.



TYPICAL DETAIL OF SINGLE PILE SUPPORTING SLAB



TYPICAL DETAIL AT PILE SUPPORTED GRADE BEAMS



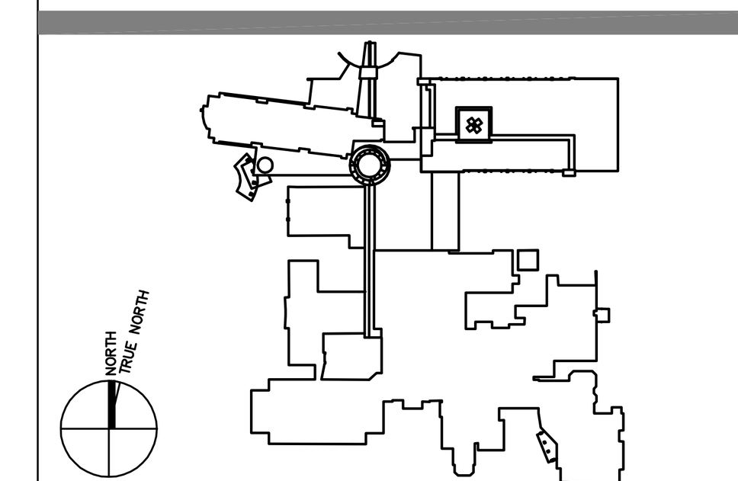
TYPICAL AUGERED CAST CONCRETE PILE DETAILS

1. "S" EQUALS ¼ OF TIE SPACING SHOWN IN "TYPICAL COLUMN AND PIER TIE DETAILS" OR 3" MAXIMUM.

WHR ARCHITECTS
WHR ARCHITECTS, INC.
1111 LOUISIANA
26TH FLOOR
HOUSTON, TEXAS 77002
(713) 665-5665 FAX (713) 665-6213
WWW.WHRARCHITECTS.COM

NO.	DATE	DESCRIPTION
	09-19-05	ISSUE FOR DCA SD REVIEW
	12-21-05	DD PRICING
	01-13-06	REVISED DD
	03-15-06	PACKAGE No. 5 GARAGE-ISSUED FOR GMP
	03-22-06	PACKAGE No. 6 FOUNDATION-ISSUED FOR GMP
	05-01-06	BID PACKAGE No. 9
	05-09-06	REVISED FOUNDATION BID PACKAGE
	06-01-06	DCA ISSUE
	06-12-06	STRUCTURAL PRICING UPDATE
	06-26-06	ISSUED FOR GMP - B.P. #10
1	07-21-06	ADDENDUM #6
4	10-13-06	(VE) FOR NORTH-WEST TOWER

DI STASIO & VAN BUREN INC.
STRUCTURAL ENGINEERS
1160 ROUTE 22 WEST
MOUNTAINSIDE, NJ 07092
Tel (908) 688-7887 Fax (908) 6887960
NJ Cert. of Authorization No. GA 276710
James F. Loudon, PE NJ Cert. No. 28704
Paul P. Panzarino, PE NJ Cert. No. 42798



KEY PLAN

Jersey Shore University Medical Center
MEMBER OF THE MERIDIAN HEALTH FAMILY

ADDITIONS & RENOVATIONS

NEPTUNE, NEW JERSEY

TYPICAL DETAILS 5

Date: 06-26-2006
Architect of record: CHARLES H GRIFFIN
State: NJ
Registration no.: 21AI01557600

JOB NO.: H04043-00
PHASE: DD #3
DATE: 06/26/06
DRAWING NO: S4.14

04-077

FOUNDATIONS

1. ALL EXCAVATION, BACKFILL AND PLACEMENT OF FOUNDATIONS SHALL BE IN ACCORDANCE WITH THE REPORT BY DEWBERRY-GOODKIND, INC. BLOOMFIELD, NJ, AND SUPERVISED BY A GEOTECHNICAL ENGINEER LICENSED IN THE STATE OF NEW JERSEY. SEE "EARTHWORK" SECTION OF THE SPECIFICATION.
2. ASSUMED BOTTOM OF FOOTING AND PILE CAP ELEVATIONS AS SHOWN ON PLANS WERE BASED UPON THE REPORT PREPARED BY DEWBERRY-GOODKIND, INC. BLOOMFIELD, NJ, AND FROM INFORMATION ON EXISTING DRAWINGS. ACTUAL FIELD CONDITIONS, AS FOUND, SHALL GOVERN. CONTRACTOR SHALL FULFILL ALL REQUIREMENTS AND INTENT OF THESE DRAWINGS AND SPECIFICATIONS.
3. ALL FOOTINGS AND PILE CAPS ARE CENTERED UNDER COLUMNS UNLESS C.G. (CENTER OF GRAVITY) IS INDICATED ON PLAN.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR, AND SHALL SAFEGUARD AND PROTECT, ALL EXCAVATIONS AND EXISTING STRUCTURES DURING CONSTRUCTION OF FOUNDATIONS BY PROPER SAFEGUARDS, WHICH MAY INCLUDE BRACING.
5. THE CONTRACTOR IS TO DE-WATER SITE AS REQUIRED TO:
   A. PROPERLY INSTALL HIS FOUNDATIONS IN THE DRY.
   B. COOPERATE WITH THE MECHANICAL TRADES FOR INSTALLATION OF PIPES.
   C. PREVENT UPLIFT PRESSURE WHICH COULD CAUSE FLOTATION OR IMPAIR OR OTHERWISE INJURE OR CAUSE DAMAGE TO THE FOUNDATION STRUCTURE.
6. EXCEPT WHERE DIFFERENTIAL OF FILL ON EITHER SIDE OF FOUNDATION WALLS IS LESS THAN 4'-0", BACKFILL SHALL NOT BE PLACED AGAINST FOUNDATION WALLS UNLESS THE WALLS HAVE ATTAINED FULL DESIGN STRENGTH AND UNTIL 7 DAYS AFTER THE TOP AND BOTTOM BRACING SLAB IS PLACED, OR ALTERNATELY, UNTIL THE TOP AND BOTTOM OF THESE WALLS ARE BRACED. BRACING SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEW JERSEY, SIGNED, SEALED AND SUBMITTED TO ENGINEER OF RECORD FOR REVIEW.
7. ELEVATIONS PREFIXED "E" ARE ELEVATIONS OF EXISTING FOUNDATIONS AND SHOULD BE VERIFIED BY CONTRACTOR PRIOR TO BEGINNING ANY FOUNDATION WORK. ANY VARIATION AFFECTING NEW WORK SHALL BE BROUGHT TO THE ATTENTION OF STRUCTURAL ENGINEER.
8. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL VERIFY THE LOCATION OF EXISTING UNDERGROUND UTILITIES (INCLUDING, BUT NOT LIMITED TO, ELECTRIC, TELEPHONE, COMMUNICATION, FUEL, SANITARY SEWER, GAS, STORM SEWER, AND WATER SERVICE) WITHIN THE LIMITS OF THE WORK.
9. WHERE CONSTRUCTION OPERATION CROSSES OR IS ADJACENT TO EXISTING UTILITY LINES, THE CONTRACTOR SHALL CAREFULLY HAND EXCAVATE SO AS TO LOCATE, MARK AND PROTECT THE UTILITY LINES AGAINST DISTURBANCE AND DAMAGE. THE CONTRACTOR SHALL PROVIDE ADEQUATE SUPPORT FOR ALL UTILITIES EXPOSED DURING CONSTRUCTION TO ENSURE AGAINST DISTURBANCE AND DAMAGE.

CONCRETE

1. ALL CONCRETE WORK SHALL CONFORM WITH ALL REQUIREMENTS OF THE LATEST EDITIONS OF THE INTERNATIONAL BUILDING CODE, NEW JERSEY EDITION, "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE", ACI 318, "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS", ACI 301, AND THE SPECIFICATIONS.
2. ALL CONCRETE SHALL BE CONTROLLED CONCRETE HAVING A MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS AS LISTED BELOW. MINIMUM CEMENT CONTENT SHALL BE AS STATED IN THE SPECIFICATIONS.

3,500 PSI STONE:	ALL CONCRETE EXCEPT AS NOTED BELOW.
3,500 PSI LIGHTWEIGHT:	ALL STEEL DECK SLABS.
4,500 PSI STONE:	ALL EXTERIOR EXPOSED SLABS.
5,000 PSI STONE:	ALL PILE CAPS AND GRADE BEAMS, AND SUPPORTED FRAMED SLAB-ON-GROUND

3. NO CONCRETE SHALL BE PLACED UNTIL THE PRELIMINARY TRIAL MIXES HAVE BEEN DESIGNED AND APPROVED.
4. ALL TESTS, INSPECTIONS AND CONTROLS SHALL BE PERFORMED AS STATED IN THE SPECIFICATIONS.
5. ALL REINFORCING STEEL SHALL BE DEFORMED BARS OF NEW BILLET STEEL CONFORMING TO CURRENT REQUIREMENTS OF ASTM SPECIFICATION A615, GRADE 60, WITH A MINIMUM YIELD STRESS OF 60,000 PSI. WELDED WIRE FABRIC SHALL CONFORM TO ASTM SPECIFICATION A185, LATEST EDITION. REBAR AND WELDED WIRE FABRIC SPLICES SHALL BE AS PER ACI 318, LATEST EDITION, AND ACI SP-66, LATEST EDITION.
6. MINIMUM STEEL PROTECTION, UNLESS OTHERWISE SHOWN, SHALL BE:

3"	FOOTINGS AND OTHER PRINCIPAL STRUCTURAL CONCRETE PLACED AGAINST AND PERMANENTLY EXPOSED TO EARTH OR ROCK.
2"	EXTERIOR SLABS AND EXTERIOR FACE OF WALLS, BEAMS, PIERS, BUTTRESSES, COLUMNS AND OTHER SURFACES EXPOSED TO EARTH OR WEATHER, WITH #6 OR LARGER BARS.
1-1/2"	EXTERIOR SLABS AND EXTERIOR FACE OF WALLS, BEAMS, PIERS, BUTTRESSES, COLUMNS AND OTHER SURFACES EXPOSED TO EARTH OR WEATHER, WITH #5 OR SMALLER BARS AND INTERIOR FACE OF BEAMS, COLUMNS AND BUTTRESSES.
3/4"	INTERIOR SLABS, JOISTS AND INTERIOR FACE OF WALLS.

7. ALL STRUCTURAL MEMBERS SHALL BE POURED FOR THEIR FULL DEPTH IN ONE OPERATION. CONSTRUCTION JOINTS, SUCH AS DAY'S POUR JOINTS, SHALL BE LOCATED IN THE MIDDLE THIRD OF THE SPAN. THE REINFORCEMENT SHALL EXTEND THROUGH THE JOINT IN BOTH FACES. WHERE, IN EITHER FACE, NO REINFORCEMENT IS CALLED FOR, PROVIDE #4 DOWELS AT 12" ON CENTER (SEE DETAIL). JOINT SHALL BE ROUGHENED BY USE OF AN APPROVED SURFACE RETARDER, IN ACCORDANCE WITH MANUFACTURER'S DIRECTIONS, TO EXPOSE AGGREGATE. DEPTH OF ETCH SHALL BE 1/8" MINIMUM.
8. IN WALLS, VERTICAL CONSTRUCTION JOINTS SHALL BE LOCATED IN THE MIDDLE THIRD OF THE SPAN BETWEEN SUPPORTING COLUMNS, BUT SHALL NOT BE LOCATED WITHIN 3'-0" OF ANY WALL OPENING. HORIZONTAL CONSTRUCTION JOINTS SHALL NOT BE PERMITTED UNLESS SPECIFICALLY SHOWN ON DRAWINGS.
9. LOCATION OF ALL CONSTRUCTION JOINTS NOT CALLED FOR ON CONTRACT DRAWINGS SHALL BE APPROVED BY THE ARCHITECT/ENGINEER BEFORE PLACING CONCRETE.
10. THE CONCRETE CONTRACTOR SHALL COOPERATE WITH OTHER CONTRACTORS AND, WHERE REQUIRED, INSTALL ALL BUILT-IN WORK, SLEEVES, INSERTS, BRICK TIES, ETC., INCLUDING FRAMEWORK FOR CHASES, REGLETS AND OTHER PROVISIONS FOR BUILT-IN WORK TO COMPLETE THE JOB (SEE SPECIFICATIONS).
11. PROVIDE CONTINUOUS 24 GA. MIN. DOVETAIL ANCHOR SLOTS AT 2'-0" ON CENTER FOR ANCHORS IN ALL CONCRETE SURFACES FACED OR BUTTED WITH BRICK, BLOCK OR FACING TILE.
12. PROVIDE A MINIMUM OF #5 @ 18" ON CENTER x 2'-6" LONG FROM ALL FOOTINGS, PILE CAPS, PIERS, CAISSONS, ETC., TO EXTEND 1'-3" INTO WALLS AND GRADE BEAMS ON EACH FACE.
13. FLOOR SLABS-ON-GRADE SHALL BE REINFORCED WITH WWF 6 x 6 - W1.4 x W1.4 TOP UNLESS NOTED OTHERWISE ON PLANS. SLABS SHALL BE PLACED ON A VAPOR BARRIER OVER A WELL TAMPED 6" DEEP POROUS FILL PLACED OVER VIRGIN MATERIAL OR STRUCTURAL COMPACTED FILL. FOR JOINTING REQUIREMENTS, SEE SPECIFICATIONS.
14. ALL REINFORCING STEEL MARKED "CONTINUOUS" OR "CONT.", SHALL BE TENSION LAPPED AT CONTINUOUS ENDS AND HOOKED AT DISCONTINUOUS ENDS AS PER ACI 318, LATEST EDITION, AND ACI SP-66, LATEST EDITION.
15. CONCRETE FILL OR TOPPING 2" OR MORE IN THICKNESS ON SLABS TO BE REINFORCED WITH 1 1/2" x 17 GAUGE WOVEN GALVANIZED MESH OR FIBERMESH, USED IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS, UNLESS OTHERWISE NOTED.
16. CONCRETE FILL OR TOPPING LESS THAN 2" THICK ON SLABS TO BE REINFORCED WITH FIBERMESH, USED IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
17. BONDING COMPOUND SHALL BE APPLIED TO CONCRETE SLAB BEFORE PLACEMENT OF CONCRETE FILL OR TOPPING LESS THAN 3" IN THICKNESS.
18. ALL OPENINGS IN SLABS AND WALLS, UNLESS OTHERWISE SHOWN, SHALL HAVE A MINIMUM OF 2 - #5 BARS, TOP AND BOTTOM OR EACH FACE, ON ALL SIDES, EXTENDING 2'-6" BEYOND EDGES OF OPENINGS.
19. CORNERS AND INTERSECTIONS OF WALLS AND GRADE BEAMS SHALL BE REINFORCED WITH ANGLE BARS, THE SAME SIZE AS THE LARGEST CALLED FOR IN THE ADJACENT WALLS AND GRADE BEAMS AND AT THE SAME SPACING. SEE TYPICAL WALL REINFORCING DETAILS.
20. AT STEEL DECK SLABS, CONCRETE CONTRACTOR SHALL INCLUDE IN HIS BID ADDITIONAL QUANTITY OF CONCRETE THAT MAY BE REQUIRED TO PROVIDE A LEVEL SLAB AT THE PRESCRIBED ELEVATION AND COMPENSATE FOR STEEL DECK AND STEEL BEAM DEFLECTIONS.

STEEL LOOSE LINTELS

1. LOOSE LINTELS SHALL CONFORM TO ASTM SPECIFICATION A36 FOR STEEL.
2. UNLESS OTHERWISE SHOWN ON DRAWINGS, PROVIDE LOOSE LINTELS FOR INTERIOR AND EXTERIOR MASONRY OPENINGS AS FOLLOWS:
   A. FOR EVERY 4" OF MASONRY WALL, USE 1 ANGLE 4 x 3 1/2 x 5/16 FOR OPENINGS UNDER 4'-0" WIDE, AND 1 ANGLE 4 x 3 1/2 x 3/8 FOR OPENINGS BETWEEN 4'-0" AND 8'-0" WIDE.
   B. FOR 6" WALLS, USE 1 ANGLE 5 x 3 1/2 x 5/16 FOR OPENINGS UNDER 4'-0" WIDE, AND 1 ANGLE 5 x 5 x 3/8 FOR OPENINGS BETWEEN 4'-0" AND 8'-0" WIDE.
3. ALL LOOSE LINTELS TO HAVE 6" MINIMUM BEARING EACH END.
4. LOOSE LINTELS IN EXTERIOR WALLS TO BE HOT DIPPED GALVANIZED.
5. ALL LOOSE LINTELS TO BE PROVIDED BY STRUCTURAL STEEL CONTRACTOR.
6. FOR LOOSE LINTELS IN EXISTING STRUCTURE, PROVIDE PROCEDURES AND PRECAUTIONS AS OUTLINED UNDER "ALTERATION, UNDERPINNING AND SHEETING" NOTES.

ELECTRICAL WORK IN CONCRETE

1. ELECTRICAL CONTRACTOR SHALL CONFER WITH ARCHITECT, STRUCTURAL ENGINEER AND GENERAL CONTRACTOR BEFORE PLACING ANY CONDUITS IN CONCRETE CONSTRUCTION IN ORDER TO AGREE ON PERMISSIBLE ARRANGEMENTS OF CONDUITS.
2. ELECTRICAL CONTRACTOR SHALL PREVENT PLACING CONDUITS IN CONCRETE THAT WILL IMPAIR CONCRETE STRENGTHS.
3. ONLY CONDUITS HAVING OUTSIDE DIAMETERS NO LARGER THAN ONE-THIRD OF THE SLAB THICKNESS MAY BE INSTALLED. FOR SLABS ON STEEL DECK, SLAB THICKNESS SHALL BE CONSIDERED AS THICKNESS OF CONCRETE ABOVE UPPER DECK FLUTES.
4. CONDUITS ARE TO BE SPACED SO AS TO PROVIDE NO LESS THAN THREE (3) CONDUIT DIAMETERS, CENTER TO CENTER. WHEREVER POSSIBLE, LARGER SPACINGS ARE PREFERRED.
5. CONTINUOUS ROWS OF CONDUITS ARE NOT TO BE PLACED IMMEDIATELY ALONG BEARING ENDS OF SLABS.
6. ALUMINUM CONDUITS ARE NOT ALLOWED.
7. CONDUITS ARE NOT ALLOWED IN CONCRETE SLABS LESS THAN 4" THICK AND SHALL NOT PASS THROUGH THE CROSS-SECTIONAL AREA OF COLUMNS.
8. CONDUITS ARE NOT ALLOWED IN PAN SLAB AREA OF CONCRETE JOIST CONSTRUCTION.
9. CROSSOVER OF CONDUIT SHALL NOT BE ALLOWED IN STEEL DECK SLABS.

FLOOR DEPRESSIONS AND OPENINGS

1. FLOOR DEPRESSIONS AND OPENINGS TO BE PROVIDED WHERE EQUIPMENT OR FLOOR FINISHES REQUIRE THEM, WHETHER OR NOT INDICATED ON STRUCTURAL DRAWINGS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE HIS WORK WITH ARCHITECTURAL AND MECHANICAL DRAWINGS AND SPECIFICATIONS AND PROVIDE DEPRESSIONS AND OPENINGS AS REQUIRED.
2. GENERAL CONTRACTOR SHALL PROVIDE A COMPOSITE PENETRATION AND DEPRESSION DRAWING FOR EACH FLOOR SHOWING PRECISE LOCATION AND SIZE OF ALL SLEEVES, BOXED OPENINGS AND DEPRESSIONS FOR ALL TRADES. APPROVED COPIES OF THESE DRAWINGS SHALL BE USED BY DETAILER TO PROVIDE NECESSARY ADDITIONAL REINFORCEMENT AT ALL SUCH LOCATIONS IN ACCORDANCE WITH CONTRACT DRAWINGS AND SPECIFICATIONS. BOXED OPENINGS WILL NOT BE ALLOWED UNLESS SPECIFICALLY SHOWN ON STRUCTURAL DRAWINGS.
3. UNLESS OTHERWISE SHOWN ON DRAWINGS, ALL SLEEVES SHALL BE SEPARATED BY AT LEAST 4" OF CONCRETE TO PERMIT PASSAGE OF REINFORCEMENT. UNLESS SPECIFICALLY SHOWN ON STRUCTURAL PLANS OR APPROVED WORKING DRAWINGS, NO SLEEVE SHALL BE PLACED CLOSER THAN 4" TO ANY COLUMN FACE AND NOT MORE THAN ONE SUCH SLEEVE WITH 5" MAXIMUM DIAMETER SHALL BE SO PLACED IN FRONT OF ANY COLUMN.

STRUCTURAL STEEL

1. STRUCTURAL STEEL WORK AND ERECTION SHALL BE IN ACCORDANCE WITH THE LATEST REQUIREMENTS OF THE INTERNATIONAL BUILDING CODE, NEW JERSEY EDITION, AISC "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS - ALLOWABLE STRESS DESIGN AND PLASTIC DESIGN", AND AISC "CODE OF STANDARD PRACTICE", INCLUDING THE "COMMENTARY" AND SUPPLEMENTS.
2. THE STEEL FRAME OF THIS BUILDING IS DEPENDENT ON SELECTED MOMENT FRAMES AND/OR BRACED FRAMES, STEEL ROOF DECKING AND FLOOR SLAB DIAPHRAGMS FOR LATERAL STABILITY AND MUST BE BRACED UNTIL ALL STRUCTURAL STEEL CONNECTIONS ARE MADE PERMANENT, BRACING IS IN PLACE, ALL STEEL JOISTS AND METAL DECKING ARE ERECTED AND PERMANENTLY FASTENED AND CONCRETE SLABS ARE CAST. COLUMN ANCHOR BOLTS ARE NOT DESIGNED TO SUPPORT COLUMNS DURING ERECTION WITHOUT TEMPORARY SHORING AND BRACING. DETERMINE, FURNISH AND INSTALL TEMPORARY SHORING AND BRACING MEMBERS AND GUY LINES TO ACHIEVE PROPER ALIGNMENT OF STRUCTURES AS ERECTION PROCEEDS, WITH CONNECTIONS OF SUFFICIENT STRENGTH TO BEAR IMPOSED LOADS.
3. STRUCTURAL STEEL SHALL BE NEW, CLEAN AND STRAIGHT.
4. STRUCTURAL STEEL "W" SHAPES SHALL CONFORM TO ASTM SPECIFICATION A992, GRADE 50. STRUCTURAL PLATES AND BARS SHALL CONFORM TO ASTM SPECIFICATION A572, GRADE 50. ALL OTHER STRUCTURAL STEEL SHAPES SHALL CONFORM TO ASTM SPECIFICATION A36.
5. STEEL TUBING SHALL CONFORM TO CURRENT REQUIREMENTS OF ASTM SPECIFICATION A500, GRADE B.
6. STEEL PIPE SHALL CONFORM TO CURRENT REQUIREMENTS OF ASTM SPECIFICATION A53, TYPE "E" OR "S", GRADE B.
7. COLD BENT LIGHTWEIGHT STEEL FRAMING SHALL BE MANUFACTURED BY MARINO\WARE, SOUTH PLAINFIELD, NJ OR EQUAL.
8. "SLEEVE ANCHORS" NOTED ON DRAWINGS SHALL BE AS MANUFACTURED BY HILTI FASTENING SYSTEMS, INC. OR APPROVED EQUAL.
9. "EXPANSION BOLTS" NOTED ON DRAWINGS SHALL BE HILTI KWIK-BOLTS AS MANUFACTURED BY HILTI FASTENING SYSTEMS, INC. OR APPROVED EQUAL.
10. SUBSTITUTIONS FOR HILTI KWIK-BOLTS OR SLEEVE ANCHORS WILL NOT BE ALLOWED UNLESS SPECIFICALLY APPROVED BY ENGINEER.
11. ANCHOR RODS SHALL CONFORM TO CURRENT REQUIREMENTS OF ASTM SPECIFICATION A36, UNLESS OTHERWISE NOTED.
12. ALL CONNECTIONS TO BE DESIGNED FOR SHEAR VALUES INDICATED ON STRUCTURAL DRAWINGS. IF NO REACTION IS SHOWN, THEN SHEAR CONNECTIONS SHALL BE DESIGNED FOR 60% OF THE MAXIMUM ALLOWABLE UNIFORM LOAD AT NON-COMPOSITE CONSTRUCTION AND 85% OF THE MAXIMUM ALLOWABLE UNIFORM LOAD AT COMPOSITE CONSTRUCTION.
13. ALL CONNECTIONS SHALL BE FRAMED OR SEATED UNLESS OTHERWISE APPROVED AND SHALL BE WELDED OR HIGH STRENGTH BOLTED. AT SKEWED BEAMS, CONNECTIONS SHALL BE DOUBLE BENT PLATES UNLESS OTHERWISE APPROVED. SEE "MINIMUM BOLT REQUIREMENTS FOR SHEAR CONNECTIONS" TABLE. CONNECTIONS SHALL CONFORM TO "OSHA REQUIREMENTS FOR STEEL DETAILING & ERECTION."
14. ALL BEAM CONNECTIONS TO TUBE OR PIPE COLUMNS TO BE THROUGH PLATE CONNECTIONS, UNLESS OTHERWISE NOTED.
15. ALL HIGH STRENGTH BOLTS SHALL BE 3/4" DIAMETER INSTALLED IN OPEN HOLES 13/16" DIAMETER UNLESS OTHERWISE NOTED.
16. HIGH STRENGTH BOLTS SHALL BE SLIP CRITICAL TYPE DESIGNATED A325-SC AND CONFORM TO ASTM SPECIFICATION A325, LATEST EDITION, UNLESS OTHERWISE NOTED. WELDING ELECTRODES SHALL CONFORM TO AWS D1.1-E70XX.
17. HARDENED WASHERS SHALL BE PROVIDED UNDER TURNING ELEMENT AT ALL HIGH STRENGTH BOLTED CONNECTIONS.
18. FIELD INSPECTION AND TESTING OF HIGH STRENGTH BOLTS WILL BE REQUIRED.
19. WELDING SHALL CONFORM TO CODE FOR ARC AND GAS WELDING IN BUILDING CONSTRUCTION OF THE AMERICAN WELDING SOCIETY. ALL WELDING TO BE PERFORMED BY LICENSED WELDERS AND WELDS TO BE APPROVED BY A WELDING INSPECTION AGENCY.
20. BEAMS SUPPORTING COLUMNS, STRUTS OR BEAMS ABOVE AND BEAMS BEARING ON COLUMNS OR BEAMS, SHALL BE PROVIDED WITH STIFFENER ANGLES, TEES OR PLATES ON WEBS, GROUND TO BEAR.
21. CONNECTIONS FOR HUNG LINTELS AND OTHER MEMBERS REQUIRING ADJUSTMENT SHALL BE PROVIDED WITH SHIMS OR SLOTTED HOLES, AS REQUIRED FOR PROPER FINAL INSTALLATION.
22. ALL HUNG LINTEL ANGLES AND RELIEVING ANGLES IN EXTERIOR WALLS TO BE HOT DIPPED GALVANIZED.
23. PROVISIONS SHALL BE MADE FOR PENETRATIONS AND CONNECTIONS OF OTHER TRADES, INCLUDING CUTTING, PUNCHING AND REINFORCEMENT OF STRUCTURAL MEMBERS, WHERE REQUIRED BY DRAWINGS OR FOR WHICH INFORMATION IS FURNISHED PRIOR TO FABRICATION.
24. PROVIDE STEEL FRAMING AS REQUIRED, WHETHER OR NOT SHOWN ON STRUCTURAL DRAWINGS, WHEN MORE THAN 1 RIB IS CUT IN STEEL DECK AND FOR ALL OPENINGS EXCEEDING 8". THIS APPLIES TO ROOF DRAINS, SUMP PANS, LARGE PIPES, SLEEVES, ETC. SEE TYPICAL OPENING DETAILS.
25. LEVELING PLATES WILL NOT BE PERMITTED UNDER BASE PLATES.
26. STEEL CONTRACTOR SHALL PROVIDE ERECTION PLANS TO MECHANICAL CONTRACTOR FOR VERIFICATION AND COORDINATION BY MECHANICAL CONTRACTOR OF LOCATION OF ALL FRAMING FOR SUPPORT OF MECHANICAL EQUIPMENT AND FOR SIZE AND LOCATION OF MECHANICAL OPENINGS, PRIOR TO SUBMISSION OF SHOP DRAWINGS AND PRIOR TO FABRICATION OR ERECTION OF STRUCTURAL STEEL. SUBMISSION OF ERECTION DRAWINGS TO STRUCTURAL ENGINEER WILL INDICATE THAT COORDINATION IS COMPLETE.
27. ALL COLUMN SPLICES TO BE DETAILED AS PER "STRUCTURAL STEEL DETAILING MANUAL/AISC", LATEST EDITION, UNLESS OTHERWISE INDICATED ON DRAWINGS.
28. PROVIDE MOMENT CONNECTIONS FOR BEAM TO COLUMN CONNECTIONS WHERE INDICATED ON PLAN. SEE "TYPICAL BEAM TO COLUMN MOMENT CONNECTION DETAILS".
29. PROVIDE BEARING PLATES AND ANCHOR BOLTS AT ALL BEAMS BEARING ON CONCRETE OR MASONRY.
30. PROVIDE GALVANIZED MASONRY ANCHORING SYSTEM VERTICALLY ON ALL STEEL COLUMN FLANGES AND WEBS, TUBE COLUMN FACES AND PREFABRICATED FIREPROOFED COLUMN SHELL FACES, AND HORIZONTALLY ON ALL BEAM WEBS, ABUTTED WITH OR ENCASED IN MASONRY. SEE "TYPICAL MASONRY ANCHORING SYSTEM DETAILS."

STEEL DECK

1. DECK UNITS SHALL BE DESIGNED AND MANUFACTURED IN ACCORDANCE WITH THE LATEST EDITION OF THE AISI "SPECIFICATION FOR THE DESIGN OF COLD FORMED STEEL STRUCTURAL MEMBERS" AND THE S.D.I. "DESIGN MANUAL FOR FLOOR DECKS AND ROOF DECKS", WITH MODIFICATIONS AS INDICATED ON DRAWINGS.
2. DECK SHALL BE MANUFACTURED FROM STEEL CONFORMING TO ASTM SPECIFICATION A653 WITH A MINIMUM YIELD STRENGTH OF 33,000 PSI. THE STEEL SHALL HAVE RECEIVED, BEFORE BEING FORMED, A METAL PROTECTIVE COATING OF ZINC CONFORMING TO ASTM SPECIFICATION A-653, 660 AND TO FEDERAL SPECIFICATION QQ-S-775d, TYPE 1, CLASS E. THE MAXIMUM WORKING STRESS SHALL NOT EXCEED 20,000 PSI.
3. ALL STEEL DECK TO BE AS MANUFACTURED BY UNITED STEEL DECK, INC. OR EQUAL.
4. DECK SHALL BE DETAILED FOR A MINIMUM OF 3 SPANS UNLESS OTHERWISE APPROVED BY ENGINEER OF RECORD.
5. FASTEN DECK TO SUPPORTING STEEL THROUGH BOTTOM OF RIBS BY WELDING FROM TOP OF DECK THROUGH WELD WASHERS SPACED A MAXIMUM OF 12" ON CENTER ALONG EACH SUPPORTING MEMBER. FASTEN SIDE LAPS MECHANICALLY BY BUTTON PUNCHING OR #12 SELF-DRILLING SCREWS SPACED A MAXIMUM OF 36" ON CENTER. WELD WASHERS MAY BE OMITTED FOR 20 GAUGE OR HEAVIER DECK IF INSTALLER CAN DEMONSTRATE TO THE SATISFACTION OF ENGINEER THAT ADEQUATE WORK CAN BE DONE WITHOUT WELD WASHERS.
6. FOR ADDITIONAL WELDING REQUIREMENTS OF ROOF DECK AT PERIPHERY OF BUILDING, SEE SPECIFICATIONS.
7. PROVIDE CONTINUOUS SHIMS OR CONTINUOUS 12 GA. BENT PLATE AS REQUIRED TO SUPPORT STEEL DECK ON STEEL BEAMS WHERE TOP OF BEAM IS MORE THAN 1/16" BELOW PLANE OF DECK SOFFIT. SEE "TYPICAL SLOPING DECK SUPPORT".
8. OPENINGS IN DECK FROM 4" TO 8" SHALL BE REINFORCED WITH 20" X 20" MINIMUM, 14 GAUGE PLATES, TO BE WELDED 6" ON CENTER AROUND PERIPHERY.
9. FOR OPENINGS IN DECK EXCEEDING 8" SEE STRUCTURAL STEEL NOTES.
10. PROVIDE ADDITIONAL ANGLE SUPPORTS UNDER DECK AT COLUMNS AS REQUIRED TO SUPPORT DECK. SEE DETAIL.
11. PROVIDE POUR STOPS AT ALL DECK EDGES AT CONCRETE SLABS. GAGE (THICKNESS) OF POUR STOP SHALL BE AS RECOMMENDED BY MANUFACTURER, BUT NOT LESS THAN 16 GAGE.
12. PROVIDE TEMPORARY SHORES AS REQUIRED WHEN OVERHANG OF DECK OR POUR STOP EXCEEDS MANUFACTURER'S RECOMMENDED DISTANCE.
13. PROVIDE 20 GA. MIN. CELL CLOSURES AT FLUTED DECK ENDS AT CONCRETE SLABS.
14. PROVIDE 20 GA. MIN. FINISH STRIPS AND 12 GA. MIN. BENT PLATE EDGE PIECES AS REQUIRED AT ROOF DECK AND OTHER EDGES WHERE CONCRETE SLABS ARE NOT REQUIRED, UNLESS OTHERWISE NOTED.
15. PROVIDE 20 GA. MIN. REINFORCING CHANNELS, RIDGE PLATES, VALLEY PLATES AND BUTT STRIPS AS REQUIRED AT ROOF DECK.
16. SUSPENDED CEILINGS, LIGHT FIXTURES, DUCTS OR OTHER UTILITIES SHALL NOT BE SUPPORTED BY STEEL ROOF DECK.

SHEAR CONNECTOR STUDS

1. SHEAR CONNECTOR STUDS SHALL BE INSTALLED IN ACCORDANCE WITH REQUIREMENTS OF AISC AND AWS SPECIFICATIONS, LATEST EDITION.
2. ALL SHEAR CONNECTOR STUDS TO BE 3/4" DIAMETER AND TO BE WELDED TO TOP FLANGE OF BEAMS AND GIRDERS DIRECTLY OR THROUGH DECK AS REQUIRED.
3. (22) INDICATES TOTAL NUMBER OF SHEAR CONNECTOR STUDS TO BE EQUALLY SPACED ALONG BEAM BETWEEN SUPPORTS.
4. (15/4/15) INDICATES NUMBER OF SHEAR CONNECTOR STUDS TO BE EQUALLY SPACED BETWEEN GIRDER SUPPORTS AND BEAMS FRAMING INTO GIRDER. UNLESS OTHERWISE NOTED, MIDDLE NUMBER (/4/) SHALL BE REPEATED FOR EACH INTERIOR BAY.
5. WHERE POSSIBLE, SHEAR CONNECTOR STUDS SHALL BE PLACED IN A SINGLE ROW WITH 1 PER RIB, OR A MINIMUM CENTER TO CENTER SPACING OF 4-1/2", ALONG LONGITUDINAL AXIS OF BEAM.
6. IF REQUIRED, A SECOND ROW OF SHEAR CONNECTOR STUDS SHALL BE PLACED WITH A MINIMUM CENTER TO CENTER SPACING OF 3" TRANSVERSE TO THE LONGITUDINAL AXIS OF THE BEAM AND MEETING CRITERIA OF NOTE 5 ABOVE. STUD PLACEMENT FOR SECOND ROW SHALL START AT SUPPORTS AND CONTINUE UNTIL REQUIRED NUMBER OF STUDS HAVE BEEN PLACED.
7. IF REQUIRED, ADDITIONAL ROWS OF SHEAR CONNECTOR STUDS SHALL BE PROVIDED, MEETING CRITERIA OF NOTE 6 ABOVE.
8. SHEAR CONNECTOR STUDS INDICATED DO NOT INCLUDE BEAM CANTILEVERS. AT CANTILEVERS PROVIDE STUDS AT 3'-0" ON CENTER MAXIMUM.
9. (N) INDICATES NO SHEAR CONNECTOR STUDS REQUIRED.
10. (M) INDICATES SHEAR CONNECTOR STUDS AT 3'-0" ON CENTER MAXIMUM.
11. UNLESS OTHERWISE NOTED, PROVIDE SHEAR CONNECTOR STUDS AT 3'-0" ON CENTER MAXIMUM ON ALL BEAMS OR PORTIONS OF BEAMS SUPPORTING SLABS.

COLD FORMED STEEL FRAMING

1. COLD FORMED STEEL FRAMING SHALL BE PROVIDED AND INSTALLED BY THE GENERAL CONTRACTOR.
2. COLD FORMED STEEL FRAMING AS REQUIRED FOR INTERIOR AND EXTERIOR CONSTRUCTION SHALL BE DESIGNED IN ACCORDANCE WITH THE LATEST REQUIREMENTS OF THE INTERNATIONAL BUILDING CODE, NEW JERSEY EDITION.
3. DESIGNATIONS SHOWN ON DRAWINGS ARE FOR "MARINOWARE, STUD-RITE LIGHTWEIGHT STEEL FRAMING". EQUIVALENT PRODUCTS OF OTHER MANUFACTURERS MAY BE PROPOSED FOR CONSIDERATION.
4. ALL STRUCTURAL PROPERTIES SHALL BE COMPUTED IN ACCORDANCE WITH THE A.I.S.I. "SPECIFICATIONS FOR THE DESIGN OF COLD FORMED STEEL STRUCTURAL MEMBERS".
5. STEEL FRAMING BRACING MASONRY WALLS SHALL BE DESIGNED SO THAT DEFLECTIONS CAUSED BY WIND AND SEISMIC LOADS ARE LIMITED TO ONE-SIX HUNDREDTH OF THE SPAN USING 16 GAGE MINIMUM MATERIAL.
6. ALL LIGHT GAGE STEEL STUDS AND JOISTS, INCLUDING ACCESSORIES, SHALL BE GALVANIZED WITH A MINIMUM G-60 COATING.
7. STUDS, RUNNERS, BRACING AND BRIDGING SHALL BE MANUFACTURED PER ASTM C-955.
8. ALL GALVANIZED STUDS, JOISTS AND ACCESSORIES, 16 GAGE OR HEAVIER, SHALL BE FORMED FROM STEEL THAT CONFORMS TO THE REQUIREMENTS OF ASTM A-653 WITH A YIELD OF 50 KSI AND AS SET FORTH IN SECTION 1.2 OF THE A.I.S.I. "SPECIFICATION FOR THE DESIGN OF COLD FORMED STEEL STRUCTURAL MEMBERS", LATEST EDITION.
9. ALL GALVANIZED STUDS, JOISTS AND ACCESSORIES, 18 GAGE OR LIGHTER, SHALL BE FORMED FROM STEEL THAT CONFORMS TO THE REQUIREMENTS OF ASTM A-653, WITH A YIELD OF 33 KSI AND AS SET FORTH IN SECTION 1.2 OF THE A.I.S.I. "SPECIFICATION FOR THE DESIGN OF COLD FORMED STEEL STRUCTURAL MEMBERS", LATEST EDITION.
10. PROVIDE SLIDE CLIPS, DEFLECTION TRACKS, ETC. AT CONNECTION OF LIGHT GAGE STEEL STUDS TO STRUCTURAL ELEMENTS TO PERMIT INDEPENDENT VERTICAL DEFLECTION OF STRUCTURE.
11. PROVIDE SOLID BRIDGING AT THIRD POINTS FOR SPANS GREATER THAN 16 FEET AND AT MID SPAN FOR SPANS LESS THAN 16 FEET.
12. FOR STUD WALLS PROVIDE BRIDGING AS PER MANUFACTURER'S RECOMMENDATIONS, BUT NOT GREATER THAN 4'-0" ON CENTER.
13. PROVIDE ADDITIONAL JOIST UNDER PARTITIONS WHEN THEY RUN PARALLEL TO JOISTS.
14. SEAT JOISTS FULLY AND SQUARELY ON SUPPORTS, LOCATED DIRECTLY OVER STUDS.
15. BEFORE FABRICATION VERIFY ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS.
16. FOR NON-LOAD BEARING STUDS SEE ARCHITECTURAL DRAWINGS.
17. PROVIDE HOT DIPPED GALVANIZED DW-10X MASONRY VENEER ANCHORS WITH 3/16" BYNA-TIE & SEISMICCLIP INTERLOCK SYSTEM BY HOHMANN AND BARNARD, INC. OR EQUAL, AT 16" ON CENTER VERTICALLY AND HORIZONTALLY AT MASONRY WALLS. SECURE ANCHORS DIRECTLY TO STEEL STUDS.
18. SHOP DRAWINGS AND CALCULATIONS SHALL BE SUBMITTED SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEW JERSEY AND CONTAIN AT LEAST THE FOLLOWING INFORMATION:
   A. PLACING DRAWINGS FOR FRAMING MEMBERS SHOWING SIZE, GAGE, DESIGNATIONS, NUMBER, TYPE, LOCATION AND SPACING.
   B. CALCULATIONS FOR ALL PANEL MEMBERS, CONNECTIONS, AND PRE-FABRICATED FRAMES.

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PAINTING OF EXPOSED STRUCTURAL STEEL

1. MATERIALS
   A. SHOP COAT PRIMER PAINT: SERIES 90-97 TNEME-ZINC AS MANUFACTURED BY TNEMEC COMPANY, KANSAS CITY, MO; ORGAN 16 ZINC RICH PRIMER S 3297 AS MANUFACTURED BY PRATT & LAMBERT, BUFFALO, NY, OR ZINC PLATE 265-74 PRIME AS MANUFACTURED BY CON-LUX COATINGS INC., EDISON, NJ.
   B. FIELD COAT PAINT: SERIES 73, ENDURA SHIELD III, AS MANUFACTURED BY TNEMEC COMPANY, KANSAS CITY, MO, ENDU-THANE HIGH BUILD URETHANE S 2800 AS MANUFACTURED BY PRATT & LAMBERT, BUFFALO, NY, OR ACROLON MULTI-MIL SERIES AS MANUFACTURED BY CON-LUX COATINGS INC., EDISON, NJ.
2. GENERAL
   A. DO NOT PAINT SURFACES WHICH ARE TO BE WELDED OR HIGH STRENGTH BOLTED WITH SLIP-CRITICAL CONNECTIONS.
   B. APPLY 2 COATS OF PAINT TO SURFACES WHICH ARE INACCESSIBLE AFTER ASSEMBLY OR ERECTION. CHANGE COLOR OF SECOND COAT TO DISTINGUISH IT FROM FIRST.
   C. SURFACE PREPARATION: AFTER INSPECTION AND BEFORE SHIPPING, CLEAN STEELWORK TO BE PAINTED. REMOVE LOOSE RUST, LOOSE MILL SCALE, AND SPATTER, SLAG OR FLUX DEPOSITS. CLEAN STEEL IN ACCORDANCE WITH STEEL STRUCTURES PAINTING COUNCIL (SSPC) AS FOLLOWS:
      1. NEW STEEL SHALL BE CLEANED IN ACCORDANCE WITH SSPC SP6 "COMMERCIAL BLAST CLEANING".
   D. PAINTING: IMMEDIATELY AFTER SURFACE PREPARATION, APPLY STRUCTURAL STEEL PRIMER PAINT IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS AND AT A RATE TO PROVIDE A DRY FILM THICKNESS OF 2.0 TO 3.0 MILS. USE PAINTING METHODS WHICH RESULT IN FULL COVERAGE OF JOINTS, CORNERS, EDGES AND EXPOSED SURFACES. STEEL SHALL RECEIVE A FIELD COAT APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS AND AT A RATE TO PROVIDE A DRY FILM THICKNESS OF 4.0 TO 6.0 MILS.
   E. APPLY EXTRA COAT TO CORNERS, WELDS, EDGES, AND FASTENERS.

MASONRY

1. ALL MASONRY WORK SHALL CONFORM WITH ALL REQUIREMENTS OF THE LATEST EDITIONS OF THE INTERNATIONAL BUILDING CODE, NEW JERSEY EDITION, "BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES", ACI 530/ASCE 5/TMS 402 AND THE SPECIFICATIONS.
2. MASONRY SHALL BE LIGHTWEIGHT HOLLOW LOAD BEARING CONCRETE MASONRY UNITS CONFORMING TO ASTM SPECIFICATION C90, TYPE I.
3. CONCRETE FOR MASONRY UNITS SHALL HAVE A MINIMUM STRENGTH OF 1,900 PSI (f'm = 1,500 psi).
4. MORTAR FOR MASONRY UNITS SHALL BE TYPE "S" CONFORMING TO ASTM SPECIFICATION C270.
5. PROVIDE CONTINUOUS JOINT REINFORCEMENT (STANDARD DUR-O-WAL, OR EQUAL) IN ALTERNATE BED COURSES FOR ALL MASONRY UNLESS OTHERWISE NOTED. SEE "MINIMUM REINFORCEMENT IN MASONRY WALLS".
6. MASONRY WALLS UNDER STRUCTURAL BEARINGS SHALL BE GROUT FILLED BLOCKS FOR A WIDTH OF 1'-4" EACH SIDE OF BEARING AND A DEPTH OF 2 COURSES BELOW BEARING ELEVATION UNLESS OTHERWISE NOTED ON DRAWINGS.
7. A 2'-0" WIDTH AT THE ENDS OF ALL MASONRY WALLS SHALL BE GROUT FILLED FOR THE FULL HEIGHT OF THE WALL.
8. MASONRY WALLS SUPPORTING PRECAST DECK SHALL BE GROUT FILLED BLOCKS FOR A DEPTH OF 2 COURSES BELOW BEARING ELEVATION UNLESS OTHERWISE NOTED ON DRAWINGS.
9. VERTICAL BARS DENOTED EACH FACE (EF) IN MASONRY WALLS SHALL BE PLACED 1/2" CLEAR FROM FACE OF CELL WALL.
10. MASONRY WALLS BELOW SLAB ON GROUND LEVEL SHALL BE GROUT FILLED.
11. VERTICAL BARS IN WALLS SHALL BE SUPPORTED AND SECURED AGAINST DISPLACEMENT AT 8'-0" ON CENTER MAXIMUM.
12. FILL ALL REINFORCED CMU VOIDS SOLID WITH GROUT.
13. MASONRY BEARING WALLS ARE SHOWN ON PLANS. SEE ARCHITECTURAL DRAWINGS FOR EXTENT AND LOCATION OF OTHER WALLS.
14. FOR GALVANIZED MASONRY ANCHORS TO STRUCTURE SEE "TYPICAL MASONRY ANCHORING YSTEM DETAILS".

STRUCTURAL SPECIAL INSPECTION

1. SPECIAL INSPECTIONS OF MATERIALS AND WORK WILL BE PERFORMED AS FOLLOWS AND IN CONFORMANCE WITH ALL REQUIREMENTS OF THE LATEST EDITION OF THE INTERNATIONAL BUILDING CODE, NEW JERSEY EDITION.
2. SPECIAL INSPECTORS SHALL KEEP RECORDS OF INSPECTIONS. THE SPECIAL INSPECTOR SHALL FURNISH INSPECTION REPORTS TO THE CODE OFFICIAL, AND TO THE ENGINEER OR ARCHITECT OF RECORD. ALL DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF THE DISCREPANCIES ARE NOT CORRECTED, THE DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE CODE OFFICIAL AND TO THE ARCHITECT OR ENGINEER OF RECORD. A FINAL REPORT OF INSPECTIONS, DOCUMENTING COMPLETION OF REQUIRED SPECIAL INSPECTIONS AND CORRECTION OF ANY DISCREPANCIES NOTED IN THE INSPECTIONS, SHALL BE SUBMITTED.
3. OWNER PROVIDED INSPECTION
   A. STRUCTURAL STEEL CONSTRUCTION
      (1) FABRICATION
         a. MATERIAL IDENTIFICATION
         b. INSTALLATION OF HIGH STRENGTH BOLTS
         c. WELDING
      (2) ERECTION
         a. MATERIAL IDENTIFICATION
         b. INSTALLATION OF HIGH STRENGTH BOLTS
         c. WELDING
         d. CONFORMANCE WITH CONTRACT DOCUMENTS
   B. CONCRETE CONSTRUCTION
      (1) MATERIAL IDENTIFICATION.
      (2) PLANT BATCHING OPERATION VERIFYING APPROVED MIX PROPORTIONS AND TECHNIQUES
      (3) PREPARATION AND TESTING OF CONCRETE CYLINDERS
      (4) FIELD TESTING OF CONCRETE FOR AIR CONTENT, SLUMP, TEMPERATURE, PLASTIC UNIT WEIGHT, ETC
      (5) INSTALLATION OF REINFORCING BARS
      (6) PLACEMENT OF CONCRETE FOR PROPER APPLICATION TECHNIQUES
      (7) MAINTENANCE OF CURING TEMPERATURES AND TECHNIQUES
      (8) FORMWORK FOR FINAL STRUCTURE SHAPES
      (9) INSTALLATION OF PRESTRESSING STEEL AND APPLICATION OF PRESTRESSING FORCES
   C. MASONRY CONSTRUCTION
      (1) MATERIAL IDENTIFICATION
      (2) MASONRY STRENGTH
      (3) CONSTRUCTION OPERATIONS
         a. PROPORTIONING, MIXING AND CONSISTENCY OF MORTAR AND GROUT
         b. APPLICATION OF MORTAR, GROUT AND MASONRY UNITS
         c. CONDITION, SIZE, LOCATION AND SPACING OF REINFORCING
         d. PROTECTION OF MASONRY DURING COLD WEATHER AND HOT WEATHER
         e. ANCHORAGE.
   D. SPRAY-ON FIREPROOFING
      (1) MATERIAL IDENTIFICATION
      (2) STRUCTURAL MEMBER SURFACE CONDITIONS
      (3) APPLICATION
      (4) THICKNESS
      (5) DENSITY
      (6) BOND STRENGTH
   E. EARTHWORK
      (1) REMOVAL OF ON SITE FILL MATERIALS
      (2) PROOFROLLING OF SUBGRADE
      (3) PLACEMENT OF CONTROLLED COMPACTED FILL
   F. PILE FOUNDATIONS
      (1) INSTALLATION
      (2) MATERIAL IDENTIFICATION
   G. CONCRETE CONSTRUCTION
      (1) MATERIAL IDENTIFICATION.
      (2) PLANT BATCHING OPERATION VERIFYING APPROVED MIX PROPORTIONS AND TECHNIQUES
      (3) PREPARATION AND TESTING OF CONCRETE CYLINDERS
      (4) FIELD TESTING OF CONCRETE FOR AIR CONTENT, SLUMP, TEMPERATURE, PLASTIC UNIT WEIGHT, ETC
      (5) INSTALLATION OF REINFORCING BARS
      (6) PLACEMENT OF CONCRETE FOR PROPER APPLICATION TECHNIQUES
      (7) MAINTENANCE OF CURING TEMPERATURES AND TECHNIQUES
      (8) FORMWORK FOR FINAL STRUCTURE SHAPES
      (9) INSTALLATION OF PRESTRESSING STEEL AND APPLICATION OF PRESTRESSING FORCES
      (10) MANUFACTURE OF PRECAST CONCRETE
      (11) ERECTION OF PRECAST CONCRETE
4. CONTRACTOR PROVIDED INSPECTION
   A. CONCRETE MIX DESIGNS
   B. FORMWORK DESIGN CONFORMANCE AND REMOVAL OF FORMS AND SHORES.

DEMOLITION

1. DURING ALL PHASES OF DEMOLITION AND CONSTRUCTION, GENERAL CONTRACTOR SHALL MAINTAIN STRUCTURAL INTEGRITY OF STRUCTURES TO BE DEMOLISHED AND ADJACENT FACILITIES TO REMAIN, WITH INTERIOR OR EXTERIOR SHORING, BRACING OR SUPPORT TO PREVENT MOVEMENT, SETTLEMENT OR COLLAPSE OF STRUCTURES.
2. AT CONCRETE STRUCTURES WHERE DEMOLITION OR NEW OPENINGS ARE REQUIRED, SAW-CUTTING SHALL BE PERFORMED AT THE DESIGNATED LINE OF DEMOLITION AND AT NO TIME EXCEED THE LIMITS OF THE OPENING. CORE DRILL AT CORNERS.
3. EXISTING STRUCTURES TO REMAIN SHALL BE SAFED-OFF AND PROTECTED FROM ELEMENTS AT ALL TIMES.

ALTERATION, AND SHEETING

1. CONTRACTORS ARE REQUIRED TO EXAMINE THE DRAWINGS CAREFULLY, VISIT THE SITE, AND FULLY INFORM THEMSELVES AS TO ALL EXISTING CONDITIONS AND LIMITATIONS, PRIOR TO SUBMITTING THEIR PROPOSAL. FAILURE TO VISIT THE SITE AND BECOME FAMILIAR WITH THE EXISTING CONDITIONS AND LIMITATIONS WILL IN NO WAY RELIEVE SUCCESSFUL BIDDER FROM FURNISHING ANY MATERIALS OR PERFORMING ANY WORK THAT MAY BE REQUIRED TO COMPLETE THE WORK, IN ACCORDANCE WITH THE DRAWINGS AND WITHOUT ADDITIONAL COST TO THE OWNER.
2. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS BY MEASUREMENTS AT THE JOB SITE AND SHALL TAKE ANY AND ALL OTHER MEASUREMENTS NECESSARY TO VERIFY THE DRAWINGS AND TO ALLOW PROPER PERFORMANCE OF HIS WORK. ANY DISCREPANCY BETWEEN THE DRAWINGS AND THE MEASURED DIMENSIONS OF THE EXISTING STRUCTURE SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ARCHITECT. NO WORK SHALL PROCEED UNTIL SUCH DISCREPANCY HAS BEEN RECTIFIED. SUCH DISCREPANCIES BETWEEN THE DRAWINGS AND THE MEASURED DIMENSIONS SHALL NOT BE THE REASON FOR ANY EXTRA COST OR DELAY IN THE EXECUTION OF THE WORK AND THE WORK SHALL BE PERFORMED PER INTENT OF THE CONTRACT DOCUMENTS AT NO EXTRA COST TO THE OWNER.
3. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO WORK WITH THE STRUCTURAL DRAWINGS AND THE ARCHITECTURAL DRAWINGS TO DETERMINE THE FULL EXTENT OF THE WORK. IN CASE OF CONFLICT BETWEEN THE STRUCTURAL DRAWINGS AND OTHER CONTRACT DRAWINGS, CONTRACTOR SHALL BRING SUCH CONFLICTS TO THE ATTENTION OF THE ARCHITECT.
4. WHERE EXISTING WORK IS TO BE CUT, AND/OR SHEETED, CONTRACTOR TO PROVIDE ALL SHEETING, SHORING, NEEDLING, BRACING, WEDGING AND DRY-PACKING AND BE RESPONSIBLE FOR THE SAFETY OF THE STRUCTURE DURING THIS OPERATION AT NO EXTRA COST TO THE OWNER.
5. SHORING AND SHEETING SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER WITH AT LEAST FIVE YEARS EXPERIENCE IN THE DESIGN OF THE ABOVE AND LICENSED IN THE STATE OF NEW JERSEY.
6. CONTRACTOR SHALL BE REQUIRED TO REPAIR AND PATCH ANY AREAS THAT ARE ALTERED OR DAMAGED DURING THE PROCESS OF THE ALTERATION AT NO EXTRA COST TO THE OWNER.
7. CONTRACTOR IS CAUTIONED TO MAKE CONTINUOUS OBSERVATIONS OF EXISTING STRUCTURE DURING THE PERFORMANCE OF HIS WORK. SHOULD HE BECOME AWARE OF ANY SITUATIONS THAT REQUIRE FURTHER INVESTIGATION OR STUDY (SUCH AS CRACKS IN CONCRETE AND PARTITIONS, ADDITIONAL DEFLECTIONS), HE SHALL NOTIFY THE OFFICE OF THE STRUCTURAL ENGINEER.
8. ALL DIMENSIONS INDICATED ON THE DRAWINGS ARE APPROXIMATE AND SHALL NOT BE USED FOR ORDERING AND/OR FABRICATING MATERIALS. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS PRIOR TO ORDERING AND/OR FABRICATING MATERIALS.
9. THE LOCATION OF THE EXISTING COLUMNS, BEAMS AND GIRDERS ARE INDICATED ON PLANS AND ARE BASED ON AVAILABLE INFORMATION. IF EXISTING CONSTRUCTION IS FOUND TO BE DIFFERENT THAN THAT SHOWN ON THE DRAWINGS, THE CONTRACTOR SHALL BRING VARIATIONS TO THE ATTENTION OF THE ARCHITECT AND PREPARE THE NECESSARY SKETCHES OF THE AS-BUILT CONSTRUCTION AND SUBMIT THE SAME TO THE ARCHITECT FOR REVIEW AND REDESIGN.
10. WHERE EXISTING STRUCTURE IS TO BE CUT, REINFORCEMENT TO BE LOCATED WITH A REBAR LOCATOR PRIOR TO CORING, DRIVING OR CUTTING. LOCATION OF CUTS OR HOLES NOT INDICATED ON STRUCTURAL DRAWINGS TO BE SUBMITTED FOR REVIEW.
11. SHOP DETAILS FOR ALL WORK TO BE SUBMITTED FOR REVIEW.

TIMBER PILES

1. ALL PILES SHALL BE CLASS "A" WITH AN 8" MINIMUM TIP DIAMETER AND CONFORM TO APPLICABLE PROVISIONS OF ASTM DESIGNATION D25, "STANDARD SPECIFICATION FOR ROUND TIMBER PILES".
2. ALL PILES SHALL BE 50'-0" LONG AND DRIVEN TO A DESIGN CAPACITY OF 25 TONS.
3. ALL PILES SHALL BE PRESSURE TREATED WITH CREOSOTE IN ACCORDANCE WITH AMERICAN WOOD PRESERVERS ASSOCIATION (AWPA) STANDARD C3.
4. ALL PILE CAPS ARE CENTERED UNDER COLUMNS UNLESS C.G. (CENTER OF GRAVITY) IS INDICATED ON PLAN.

AUGERED CAST-IN-PLACE PILES

1. PILES SHALL BE 16" DIAMETER MINIMUM INSTALLED TO 75 OR 100 TONS BEARING CAPACITY. SEE FOUNDATION PLAN FOR LOCATIONS. SEE TYPICAL DETAILS FOR REINFORCING. SEE GEOTECHINICAL REPORT FOR LENGTH OF PILE.
2. PILES SHALL BE INSTALLED WITH 4000 PSI MORTAR INJECTED THROUGH THE AUGER SHAFT UNDER PRESSURE TO PILE TIP ELEVATION SHOWN ON PLAN, SCHEDULE OR TYPICAL DETAILS.
3. NO PILE SHALL BE INSTALLED UNTIL LOAD TESTS ARE COMPLETED AND ACCEPTED BY THE ARCHITECT & ENGINEER. ALL PILES SHALL BE INSTALLED TO COMPLY WITH LOAD TEST RESULTS.
4. ALL PILE CAPS ARE CENTERED UNDER COLUMNS UNLESS C.G. (CENTER OF GRAVITY) IS INDICATED ON PLAN.

SPRAY-ON FIREPROOFING

1. FIREPROOFING MATERIAL SHALL BE ASBESTOS-FREE, CEMENTITIOUS TYPE AS MANUFACTURED BY W. R. GRACE CO. OR EQUAL.
2. THICKNESS OF SPRAY-ON FIREPROOFING SHALL BE IN ACCORDANCE WITH UNDERWRITER'S LABORATORIES INC. FIRE RESISTANCE RATINGS FOR UNRESTRAINED ASSEMBLIES.
3. ROOF ASSEMBLY LESS THAN 20 FEET IN HEIGHT TO LOWEST MEMBER SHALL CONFORM TO UNDERWRITER'S LABORATORIES INC. DESIGN NUMBER P732, ONE AND ONE-HALF HOUR RATING.
4. FLOOR ASSEMBLY SHALL CONFORM TO UNDERWRITER'S LABORATORIES INC. DESIGN NUMBER D925, TWO-HOUR RATING.
5. "W" COLUMNS SHALL CONFORM TO UNDERWRITER'S LABORATORIES INC. DESIGN NUMBER X772, THREE-HOUR RATING.
6. STEEL PIPE AND TUBE COLUMNS SHALL CONFORM TO UNDERWRITER'S LABORATORIES INC. DESIGN NUMBER X771.

INTUMESCENT PAINT-FIREPROOFING (SEE SPEC. SECTION 07811 FOR BALANCE OF INFO)

1. COLUMNS WHICH ARE TO RECEIVE INTUMESCENT PAINT-FIREPROOFING AS INDICATED ON FRAMING PLANS AND ARCHITECTURAL DWGS, ARE TO CONFORM TO UNDERWRITERS LABORATORY DESIGN NUMBER N610 FOR THREE-HOUR RATING.

GALVANIZING

1. AFTER FABRICATION AND INSPECTION, CLEAN STEEL WORK TO BE GALVANIZED. REMOVE LOOSE RUST, LOOSE MILL SCALE AND SPLATTER, SLUG OR FLUX DEPOSITS. CLEAN STEEL IN ACCORDANCE WITH STEEL STRUCTURES PAINTING COUNCIL (SSPC) SP6 "COMMERCIAL BLAST CLEANING."
2. IMMEDIATELY AFTER SURFACE PREPARATION, HOT-DIP GALVANIZE ALL EXTERIOR EXPOSED STRUCTURAL SHAPES, PLATES AND BARS ACCORDING TO ASTM A123.
3. AFTER ERECTION TOUCH UP ALL DAMAGE TO GALVANIZED SURFACES USING GALVANIZING REPAIR PAINT MEETING THE REQUIREMENTS OF FEDERAL SPECIFICATION DOD-P-21035A.

WHR
ARCHITECTS

WHR ARCHITECTS, INC.
1111 LOUISIANA
26TH FLOOR
HOUSTON, TEXAS 77002
(713) 665-5665 FAX (713) 665-6213
WWW.WHRARCHITECTS.COM

NO.	DATE	DESCRIPTION
	09-19-05	ISSUE FOR DCA SD REVIEW
	12-21-05	DD PRICING
	01-13-06	REVISED DD
	03-15-06	PACKAGE No. 5 GARAGE-ISSUED FOR GMP
	03-22-06	PACKAGE No. 6 FOUNDATION-ISSUED FOR GMP
	05-01-06	BID PACKAGE No. 9
	05-09-06	REVISED FOUNDATION BID PACKAGE
	06-01-06	DCA ISSUE
	06-12-06	STRUCTURAL PRICING UPDATE
	06-26-06	ISSUED FOR GMP - B.P. #10
1	07-21-06	ADDENDUM #6
4	10-13-06	(VE) FOR NORTH-WEST TOWER

DI STASIO & VAN BUREN INC.
STRUCTURAL ENGINEERS
1160 ROUTE 22 WEST
MOUNTAINSIDE, NJ 07092
Tel (908) 688-7887 Fax (908) 6887960

NJ Cert. of Authorization No. GA 276710
James F. Loudon, PE NJ Cert. No. 28704
Paul P. Panzarino, PE NJ Cert. No. 42798

KEY PLAN

Jersey Shore University Medical Center
MEMBER OF THE MERIDIAN HEALTH FAMILY

ADDITIONS & RENOVATIONS

NEPTUNE, NEW JERSEY

GENERAL NOTES 1

Date: 06-26-2006
Architect of record: CHARLES H GRIFFIN
State: NJ
Registration no.: 21AI01557600

JOB NO.: H04043-00
PHASE: DD #3
DATE: 06/26/06
DRAWING NO: S5.10

04-077

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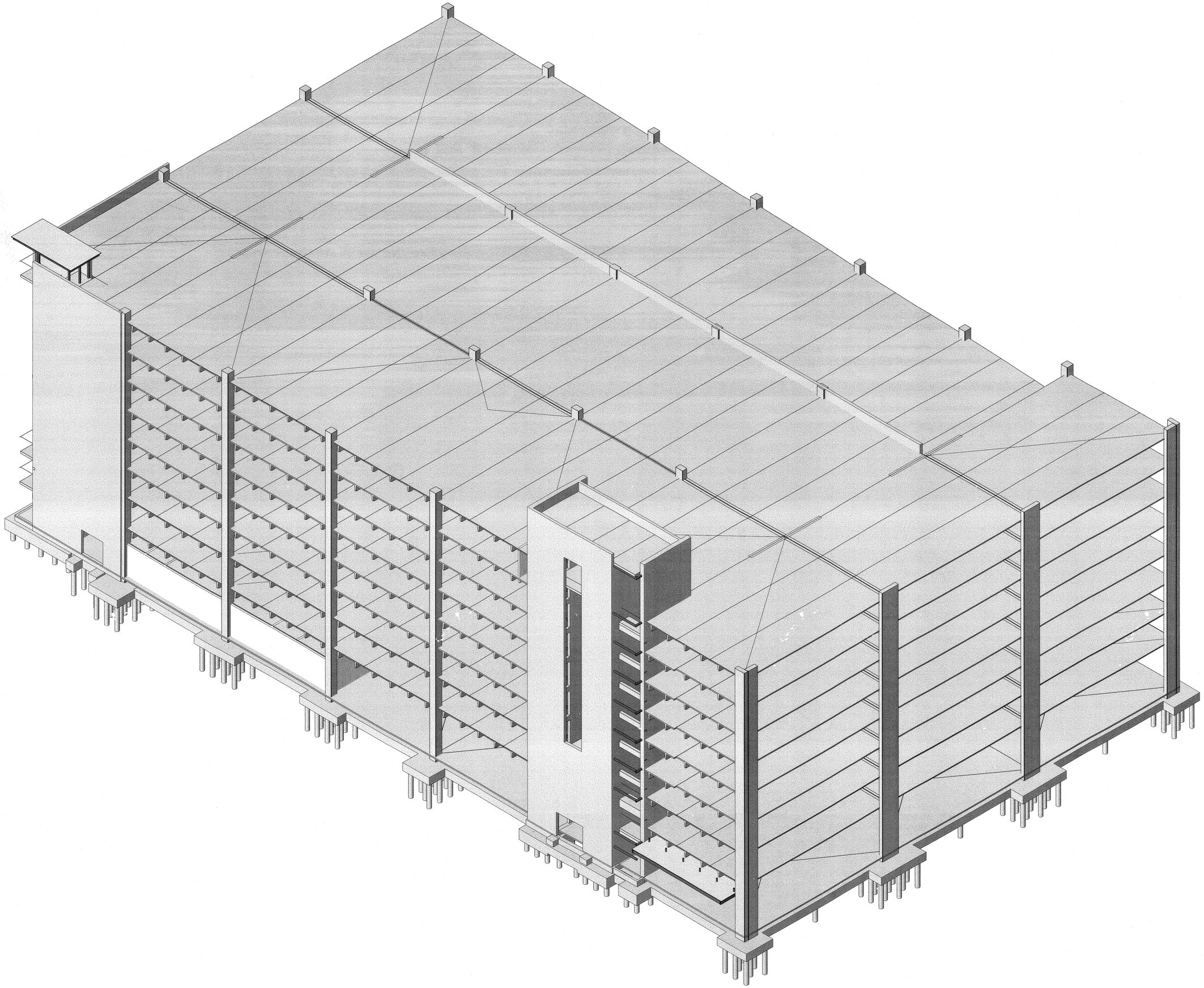
ATTACHMENT E

Existing Foundation Drawings – Hope Tower Parking Garage



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PHONE: 713.630.7300 FAX: 713.630.7396

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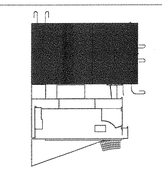
KEY PLAN



NORTH

JSUMC HOPE TOWER BUILDING PROJECT PARKING GARAGE BID PACK 2

Jersey Shore University Medical Center
MEMBER OF THE MERIDIAN HEALTH FAMILY

JERSEY SHORE UNIVERSITY MEDICAL CENTER

1945 STATE ROUTE - NJ - 33, NEPTUNE, NEW JERSEY

8/21/15

COVER SHEET

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DATE: 08-21-2015

PROJECT NO.
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GENERAL STRUCTURAL NOTES

PART I - DESIGN CRITERIA

A. GENERAL BUILDING CODE

1. THE CONSTRUCTION DOCUMENTS ARE BASED ON THE REQUIREMENTS OF THE INTERNATIONAL BUILDING CODE 2009, NEW JERSEY EDITION.

B. DEAD LOADS

1. HANGING MEP LOADS IN PARKING AREAS: AN ALLOWANCE OF 5 PSF HAS BEEN MADE IN THE PARKING AREAS FOR HANGING MEP AND FIRE PROTECTION LOADS SUCH AS DRAINAGE AND SPRINKLER PIPES.

C. LIVE LOADS

1. DESIGN LIVE LOADS ARE BASED ON THE MORE RESTRICTIVE OF THE UNIFORM LOAD LISTED BELOW OR THE CONCENTRATED LOAD LISTED ACTING OVER AN AREA 2.5 FEET SQUARE OR, IN THE CASE OF PARKING GARAGES, 20 SQUARE INCHES, OR STAIR TREADS, 4 SQUARE INCHES.
   - a. GARAGE: 40 PSF, 300 LBS
   - b. ELEVATOR MACHINE ROOMS: 125 PSF, REFER TO NOTE B BELOW.
   - c. SIDEWALKS, PLAZAS, DRIVEWAYS SUBJECT TO VEHICULAR TRAFFIC: 250 PSF, 8,000 LBS
   - d. STAIRS AND EXITS: 100 PSF, 300 LBS
   - e. STORAGE:
     - 1) LIGHT: 125 PSF

   NOTES:
   - a. DESIGN CONCENTRATED LOAD IS THAT REQUIRED BY ASSUMED EQUIPMENT WEIGHT.
   - b. NO LIVE LOAD REDUCTION SHALL BE USED FOR ANY HORIZONTAL FLOOR FRAMING MEMBERS IN PRECAST PARKING GARAGES. THE LIVE LOAD SHALL BE REDUCED BY A MAXIMUM OF 20% FOR MEMBERS SUPPORTING TWO OR MORE FLOORS BUT THE LIVE LOAD SHALL NOT BE LESS THAN THAT CALCULATED BY THE IBC FORMULAS.

2. THE ROOF STRUCTURE HAS BEEN DESIGNED TO SUPPORT THE WEIGHT OF PONDED WATER SHOWN BELOW CAUSED BY CLOGGING OF THE PRIMARY ROOF DRAINS FOR A DEPTH OF FOUR INCHES.

D. ELEVATOR LOADS

1. MACHINE BEAM, CAR BUFFER, COUNTERWEIGHT BUFFER, AND GUIDE RAIL LOADS: ASSUMED ELEVATOR LOADS TO THE SUPPORTING STRUCTURE ARE SHOWN ON THE DRAWINGS, INCLUDING MACHINE BEAM REACTIONS, CAR BUFFER REACTIONS, COUNTERWEIGHT BUFFER REACTIONS, AND HORIZONTAL AND VERTICAL GUIDE RAIL LOADS. THE GENERAL CONTRACTOR SHALL SUBMIT TO THE STRUCTURAL ENGINEER FINAL ELEVATOR SHOP DRAWINGS SHOWING ALL LOADS TO THE STRUCTURE PRIOR TO THE INSTALLATION OF THE ELEVATORS FOR VERIFICATION OF LOAD CARRYING CAPACITY.

E. WIND LOADS

1. WIND PRESSURES ARE BASED ON THE AMERICAN SOCIETY OF CIVIL ENGINEERS, MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES, ASCE 7-05 AND THE FOLLOWING CRITERIA:
   - a. BASIC WIND SPEED: 112 MPH (3 SECOND GUST)
   - b. WIND IMPORTANCE FACTOR (I): 1.0
   - c. BUILDING CATEGORY: II
   - d. WIND EXPOSURE CATEGORY: B
   - e. INTERNAL PRESSURE COEFFICIENT: +0.18/-0.18

2. WIND PRESSURES USED FOR THE DESIGN OF COMPONENTS AND CLADDING ARE SHOWN IN THE FOLLOWING TABLE:

CLADDING TYPE	LOCATION OR ZONE	EFFECTIVE WIND AREA (SQ-FT)	WIND LOAD (PSF)
WALL	INTERIOR	10	+29.0/-29.0
WALL	INTERIOR	20	+29.0/-29.0
WALL	INTERIOR	50	+26.8/-27.5
WALL	INTERIOR	100	+25.0/-26.4
WALL	INTERIOR	500	+21.0/-23.7
WALL	END ZONE	10	+29.0/-53.3
WALL	END ZONE	20	+29.0/-53.3
WALL	END ZONE	50	+26.8/-47.1
WALL	END ZONE	100	+25.0/-42.5
WALL	END ZONE	500	+21.0/-31.7
PARAPET	INTERIOR	10	+86.1/-48.4
PARAPET	INTERIOR	20	+82.7/-48.4
PARAPET	INTERIOR	50	+76.0/-44.6
PARAPET	INTERIOR	100	+71.0/-41.7
PARAPET	INTERIOR	500	+59.2/-35.0
PARAPET	END ZONE	10	+86.1/-72.6
PARAPET	END ZONE	20	+82.7/-72.6
PARAPET	END ZONE	50	+76.0/-64.2
PARAPET	END ZONE	100	+71.0/-57.8
PARAPET	END ZONE	500	+59.2/-43.0
ROOF	INTERIOR	10	+10.0/-42.5
ROOF	INTERIOR	20	+10.0/-40.1
ROOF	INTERIOR	50	+10.0/-37.0
ROOF	INTERIOR	100	+10.0/-34.6
ROOF	INTERIOR	500	+10.0/-29.0
ROOF	EDGE	10	+10.0/-66.7
ROOF	EDGE	20	+10.0/-63.4
ROOF	EDGE	50	+10.0/-59.0
ROOF	EDGE	100	+10.0/-55.6
ROOF	EDGE	500	+10.0/-47.9
ROOF	CORNER	10	+10.0/-66.7
ROOF	CORNER	20	+10.0/-63.4
ROOF	CORNER	50	+10.0/-59.0
ROOF	CORNER	100	+10.0/-55.6
ROOF	CORNER	500	+10.0/-47.9
OVERHANG	INTERIOR & EDGE	10	+10.0/-45.7
OVERHANG	INTERIOR & EDGE	20	+10.0/-44.9
OVERHANG	INTERIOR & EDGE	50	+10.0/-43.8
OVERHANG	INTERIOR & EDGE	100	+10.0/-43.0
OVERHANG	INTERIOR & EDGE	500	+10.0/-29.6
OVERHANG	CORNER	10	+10.0/-45.7
OVERHANG	CORNER	20	+10.0/-44.9
OVERHANG	CORNER	50	+10.0/-43.8
OVERHANG	CORNER	100	+10.0/-43.0
OVERHANG	CORNER	500	+10.0/-29.6

   NOTES:
   - a. WIDTH OF END ZONE/EDGE/CORNER STRIP: 18 FEET
   - b. COMPONENT AND CLADDING PRESSURES ACT NORMAL TO THE SURFACE. POSITIVE PRESSURES ACT TOWARDS THE SURFACE AND NEGATIVE PRESSURES ACT AWAY FROM THE SURFACE.
   - c. DESIGN PRESSURE FOR COMPONENTS AND CLADDING SHALL NOT BE LESS THAN 10 PSF ACTING IN EITHER DIRECTION NORMAL TO THE SURFACE.
   - d. THE EFFECTIVE WIND AREA IS THE SPAN LENGTH MULTIPLIED BY AN EFFECTIVE WIDTH THAT NEED NOT BE LESS THAN ONE-THIRD THE SPAN LENGTH. FOR CLADDING FASTENERS, THE EFFECTIVE WIND AREA SHALL NOT BE GREATER THAN THE AREA THAT IS TRIBUTARY TO AN INDIVIDUAL FASTENER.

F. SNOW LOADS

1. SNOW LOADS ARE BASED ON THE AMERICAN SOCIETY OF CIVIL ENGINEERS, MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES, ASCE 7-05 AND THE FOLLOWING CRITERIA:
   - a. GROUND SNOW LOAD (PG): 20 PSF
   - b. FLAT-ROOF SNOW LOAD (PF): 20 PSF
   - c. SNOW EXPOSURE FACTOR (CE): 1.0
   - d. SNOW LOAD IMPORTANCE FACTOR (I): 1.0
   - e. THERMAL FACTOR (CT): 1.2

G. SEISMIC DESIGN CRITERIA

1. THE STRUCTURE AND COMPONENTS OF THE BUILDING HAVE BEEN DESIGNED IN ACCORDANCE WITH AFOREMENTIONED BUILDING CODE WITH THE FOLLOWING CRITERIA:
   - a. 0.2 SEC. SPECTRAL ACCELERATION (SS) (%G): 0.281
   - b. 1 SEC. SPECTRAL ACCELERATION (S1) (%G): 0.060
   - c. SITE CLASS: D
   - d. SITE COEFFICIENT, SHORT PERIOD (FA): 1.575
   - e. SITE COEFFICIENT, 1 SEC. PERIOD (FV): 2.4
   - f. 0.2 SEC SPECTRAL RESPONSE COEFF. (SDS) (%G): 0.24 (SEE NOTE)
   - g. 1 SEC SPECTRAL RESPONSE COEFF. (SD1) (%G): 0.08 (SEE NOTE)
   - h. OCCUPANCY CATEGORY: II
   - i. OCCUPANCY IMPORTANCE FACTOR, I: 1.0
   - j. SEISMIC DESIGN CATEGORY: B
   - k. SEISMIC REDUNDANCY FACTOR, RHO: 1.0
   - l. SEISMIC RESPONSE COEFFICIENT, CS: 0.023
   - m. TOTAL BUILDING WEIGHT, W (KIPS): 64,480
   - n. BASIC SEISMIC-FORCE RESISTING SYSTEM: BEARING WALL SYSTEM – INTERMEDIATE PRECAST SHEAR WALLS
   - o. RESPONSE MODIFICATION FACTOR, R: 4.0
   - p. SYSTEM OVERSTRENGTH FACTOR, OMEGA-O: 2.5
   - q. DEFLECTION AMPLIFICATION FACTOR, CD: 4.0
   - r. DESIGN SEISMIC BASE SHEAR (KIPS): 1470
   - s. ANALYTICAL PROCEDURE: EQUIVALENT LATERAL FORCE

   NOTE: VALUE IS DETERMINED FROM SITE-SPECIFIC STUDY BY GEI, DATED 3/16/2015.

2. SEISMIC DEMANDS ON NONSTRUCTURAL COMPONENTS, STRUCTURAL COMPONENTS ENGINEERED AS PART OF DEFERRED SUBMITTALS, AND CONNECTIONS OF THOSE COMPONENTS TO THE PRIMARY STRUCTURE SHALL BE DESIGNED IN ACCORDANCE WITH THE AFOREMENTIONED BUILDING CODE, THE GENERAL SEISMIC CRITERIA LISTED ABOVE, AND THE REQUIREMENTS OF ASCE 7-05, CHAPTERS 12.11, 13.3, AND 13.4 AS APPROPRIATE.

H. VEHICLE BARRIER LOAD

1. ALL SPANDRELS, WALLS, COLUMNS AND OTHER MEMBERS OF PARKING GARAGES WHERE A CAR IMPACT LOAD COULD BE SUSTAINED SHALL BE DESIGNED TO WITHSTAND THE EFFECT OF THE FORCE FROM ANY DIRECTION ON THE DRIVING SURFACE AND SHALL HAVE THE ANCHORAGE OR ATTACHMENT CAPABLE OF TRANSMITTING THIS LOAD TO THE STRUCTURE AS SPECIFIED IN THE REFERENCED BUILDING CODE, BUT NOT LESS THAN THE EFFECT OF A SINGLE FACTORED LOAD OF 10,000 POUNDS APPLIED HORIZONTALLY IN ANY DIRECTION TO THE BARRIER SYSTEM UNDER TWO LOADING CONDITIONS. THE FIRST CONDITION SHALL APPLY THE LOAD AT A HEIGHT OF 1'-6" ABOVE THE FLOOR OR RAMP SURFACE AND THE SECOND LOADING CONDITION SHALL APPLY THE LOAD AT 2'-3" ABOVE THE FLOOR OR RAMP SURFACE. THE MORE SEVERE LOAD CONDITION SHALL GOVERN THE DESIGN OF THE BARRIER RESTRAINT SYSTEM.

PART I - DESIGN CRITERIA (CONTINUED)

I. FUTURE EXPANSION

1. NO PROVISIONS FOR ANY FUTURE EXPANSIONS HAVE BEEN MADE IN THE STRUCTURAL DESIGN.

J. BUILDING MOVEMENT AND DEFLECTIONS

1. THE BUILDING MOVEMENT SPECIFIED HEREIN IS ANTICIPATED TO OCCUR AND SHOULD BE CONSIDERED BY THE CONTRACTOR IN THE PERFORMANCE OF THE WORK.

2. SPANDREL BEAM DEFLECTIONS. THE FOLLOWING PROVISION SHOULD BE MADE FOR SUPERIMPOSED LOAD DEFLECTION OF ONE FLOOR RELATIVE TO AN ADJACENT FLOOR IN THE DESIGN, FABRICATION, AND ERECTION OF THE BUILDING CLADDING:
   - a. TYPICAL SPANDREL BEAM: 3/8"

   SUPERIMPOSED LOAD DEFLECTION IS DEFINED AS ALL DEFLECTION ANTICIPATED TO OCCUR AFTER THE CLADDING HAS BEEN ERECTED. THE RELATIVE DEFLECTION ABOVE DOES NOT INCLUDE THE FLOOR DEFLECTION CAUSED BY THE WEIGHT OF THE CLADDING ITSELF OR THE DEAD LOAD DEFLECTION OF THE FLOOR FRAMING ITSELF, NOR DOES IT INCLUDE ANY ALLOWANCE FOR FABRICATION OR ERECTION TOLERANCES.

3. FLOOR DEFLECTIONS: THE FOLLOWING PROVISION FOR SUPERIMPOSED LOAD DEFLECTIONS SHALL BE MADE IN THE DESIGN, FABRICATION, AND INSTALLATION OF ALL PARTITIONS, GLASS WALLS, AND OTHER ELEMENTS SUPPORTED BY AND ATTACHED TO THE STRUCTURE:
   - a. TYPICAL FLOOR MEMBERS: SPAN/360 BUT NOT LESS THAN 3/8"

4. LATERAL FRAME WIND DEFLECTION (DRIFT): THE FOLLOWING PROVISION FOR LATERAL FRAME DEFLECTION IN THE PLANE OF THE WALL OF ONE FLOOR RELATIVE TO AN ADJACENT FLOOR SHALL BE MADE IN THE DESIGN, FABRICATION AND INSTALLATION OF THE BUILDING CLADDING:
   - a. TYPICAL FLOOR TO FLOOR: FLOOR HEIGHT/400

   THE DEFLECTIONS LISTED ABOVE ARE BASED ON WIND LOADS WITH A 10-YEAR MEAN RECURRENCE INTERVAL.

5. LATERAL FRAME SEISMIC DEFLECTION: THE FOLLOWING PROVISION FOR INELASTIC LATERAL FRAME DEFLECTION IN THE PLANE OF THE WALL ONE FLOOR RELATIVE TO AN ADJACENT FLOOR SHALL BE MADE IN THE DESIGN, FABRICATION AND INSTALLATION OF BUILDING CLADDING AS SPECIFIED IN THE BUILDING CODE:
   - a. TYPICAL FLOOR TO FLOOR: FLOOR HEIGHT/50

K. RESTRAINED CONSTRUCTION CLASSIFICATION

1. IN ACCORDANCE WITH ASTM E 119, ALL FLOOR CONSTRUCTION IS CLASSIFIED AS RESTRAINED CONSTRUCTION.

L. HANDRAILS AND GUARDS

1. THE HANDRAIL ASSEMBLIES AND GUARDS SHALL BE DESIGNED FOR 50 PLF OR A CONCENTRATED LOAD OF 200 POUNDS AT ANY POINT APPLIED IN ANY DIRECTION AT THE TOP AND TO TRANSFER THIS LOAD THROUGH THE SUPPORTS TO THE STRUCTURE. THESE LOADS NEED NOT BE ASSUMED TO ACT CONCURRENTLY.

PART II - FOUNDATION

A. GEOTECHNICAL REPORT

1. FOUNDATION DESIGN IS BASED ON THE GEOTECHNICAL INVESTIGATION REPORT AS FOLLOWS: GEOTECHNICAL REPORT FOR MERIDIAN HEALTH, JERSEY SHORE UNIVERSITY MEDICAL CENTER, PROPOSED CANCER CENTER AND PARKING GARAGE, DATED APRIL 2015, BY DEWBERRY.

2. THE GEOTECHNICAL REPORT IS AVAILABLE TO THE GENERAL CONTRACTOR UPON REQUEST TO THE OWNER. THE INFORMATION INCLUDED THEREIN MAY BE USED BY THE GENERAL CONTRACTOR FOR HIS GENERAL INFORMATION ONLY. THE ARCHITECT AND ENGINEER WILL NOT BE RESPONSIBLE FOR THE ACCURACY OR APPLICABILITY OF SUCH DATA THEREIN.

B. DEEP FOUNDATION TYPE

1. AUGERCAST PILE FOUNDATION, 18" DIAMETER:
   - a. PILE CAPACITY
     - 1) COMPRESSION: 100 TONS (SERVICE LOAD)
     - 2) TENSION: 50 TONS (SERVICE LOAD)
     - 3) LATERAL LOAD, FIXED-HEAD CONDITION: 3.5 TONS (SERVICE LOAD)

C. DEEP FOUNDATION TYPE (ALTERNATE)

1. STEEL H PILE FOUNDATION, HP14X73:
   - a. PILE CAPACITY
     - 1) COMPRESSION: 100 TONS (SERVICE LOAD)
     - 2) TENSION: 50 TONS (SERVICE LOAD)
     - 3) LATERAL LOAD, FIXED-HEAD CONDITION, FOR BENDING ABOUT THE STRONG AXIS: 7 TONS (SERVICE LOAD)
   - b. PILE TYPE AND SIZE
     - 1) STEEL GRADE SHALL BE ASTM A 572, GRADE 60.

     PROVIDE PILES IN ONE PIECE WHERE POSSIBLE, CONTAINING NO MORE THAN ONE SPLICE WHICH SHALL BE DETAILED ON THE SHOP DRAWINGS.

D. RETAINING WALLS

1. DESIGN CRITERIA
   - a. ACTIVE SOIL PRESSURE: 45 PSF PER FOOT OF DEPTH.
   - b. SURCHARGE: WALLS HAVE BEEN DESIGNED FOR A SURCHARGE LOAD OF 100 PSF.
   - c. THE DESIGN PRESSURES SPECIFIED ABOVE ARE BASED ON DRAINED BACKFILL WITH NO BUILDUP OF WATER PRESSURE BEHIND THE WALLS.

PART III - REINFORCED CONCRETE

A. CLASSES OF CONCRETE

1. ALL CONCRETE SHALL CONFORM TO THE REQUIREMENTS OF THE "CLASSES OF CONCRETE MATRIX" ON SHEET S201 UNLESS NOTED OTHERWISE ON THE DRAWINGS.

B. HORIZONTAL CONSTRUCTION JOINTS IN CONCRETE POURS

1. THERE SHALL BE NO HORIZONTAL CONSTRUCTION JOINTS IN ANY CONCRETE POURS UNLESS SHOWN ON THE DRAWINGS. THE ARCHITECT/ENGINEER SHALL APPROVE ALL DEVIATIONS OR ADDITIONAL JOINTS IN WRITING.

C. REINFORCING STEEL

1. ALL REINFORCING STEEL SHALL BE ASTM A 615 GRADE 60 UNLESS NOTED OTHERWISE ON THE DRAWINGS OR IN THESE NOTES.
2. REINFORCING STEEL IN STRUCTURAL PRECAST CONCRETE: ASTM A 615, GRADE 60.
3. REINFORCING STEEL IN ARCHITECTURAL PRECAST CONCRETE: ASTM A 615, GRADE 60.
4. REINFORCING STEEL: PROVIDE REINFORCING STEEL CONFORMING TO ASTM A 706 FOR ALL REINFORCING STEEL REQUIRED TO BE WELDED AND WHERE NOTED ON THE DRAWINGS.
5. DEFORMED BAR ANCHORS: AWS D1.1 TYPE C (TABLE 7.1) STUDS MANUFACTURED IN CONFORMANCE WITH SPECIFICATION ASTM A 496 WITH A MINIMUM YIELD STRENGTH 70,000 PSI. REINFORCING BARS SHALL NOT BE SUBSTITUTED FOR DEFORMED BAR ANCHORS.
6. HEADED STUD ANCHORS FOR EMBEDDED PLATES: AWS D1.1 TYPE A STUDS MANUFACTURED IN CONFORMANCE WITH SPECIFICATION ASTM A 29 WITH A MINIMUM YIELD STRENGTH OF 61,000 PSI.
7. SMOOTH WELDED WIRE REINFORCEMENT: ASTM A 185, YIELD STRENGTH 65,000 PSI.
8. DEFORMED WELDED WIRE REINFORCEMENT: ASTM A 497, YIELD STRENGTH 70,000 PSI.

D. PLACEMENT OF WELDED WIRE REINFORCEMENT

1. WHEREVER WELDED WIRE REINFORCEMENT IS SPECIFIED AS REINFORCEMENT, IT SHALL BE CONTINUOUS ACROSS THE ENTIRE CONCRETE SURFACE AND NOT INTERRUPTED BY BEAMS OR GIRDERS AND PROPERLY LAPPED PER ACI 318, 12.18 AND 12.19.

E. REINFORCEMENT IN TOPPING SLABS

1. PROVIDE MINIMUM REINFORCEMENT AS NOTED BELOW IN ALL TOPPING SLABS UNLESS SPECIFIED OTHERWISE ON THE DRAWINGS.
   - a. WELDED SMOOTH WIRE REINFORCEMENT 6X6-W2.9XW2.9.

PART III - REINFORCED CONCRETE (CONTINUED)

F. REINFORCEMENT IN HOUSEKEEPING PADS

1. PROVIDE MINIMUM REINFORCEMENT AS NOTED BELOW IN ALL HOUSEKEEPING PADS SUPPORTING MECHANICAL EQUIPMENT UNLESS SPECIFIED OTHERWISE ON THE DRAWINGS.
   - a. WELDED SMOOTH WIRE REINFORCEMENT 6X6-W2.9XW2.9.

G. REINFORCING STEEL COVERAGE

1. REINFORCING STEEL COVERAGE SHOULD CONFORM TO THE REQUIREMENTS SPECIFIED IN DETAILS LABELED "TYPICAL CLEAR CONCRETE COVER" ON SHEET S201 UNLESS NOTED OTHERWISE ON THE DRAWINGS. COVER SPECIFIED SHALL BE CONSIDERED MINIMUMS THAT MAY REQUIRE INCREASING WHERE REINFORCING STEEL INTERSECTS FOR DIFFERENT MEMBER TYPES. COVER IN STRUCTURAL MEMBERS NOT SPECIFIED IN THE DETAILS SHALL CONFORM TO THE REQUIREMENTS OF ACI 318 UNLESS SPECIFIED OTHERWISE ON THE DRAWINGS. THE REINFORCING STEEL DETAILER SHALL ADJUST REINFORCING STEEL CAGE SIZES AT INTERSECTING STRUCTURAL MEMBERS AS REQUIRED TO ALLOW CLEARANCE FOR INTERSECTING REINFORCING BAR LAYERS WITH MINIMUM SPECIFIED COVER.

H. SPLICES AND HOOKS IN REINFORCING STEEL

1. SPLICE LOCATION AND TYPE AND HOOKS FOR UNSCHEDULED BEAMS, SLABS AND WALLS:
   - a. BEAMS AND SLABS. UNSCHEDULED BEAMS AND SLABS, INCLUDING GRADE BEAMS, SHALL HAVE CONTINUOUS TOP BARS LAPPED AT MIDSPAN BETWEEN SUPPORTS WITH A CLASS B TENSION SPLICE. BOTTOM BARS SHALL BE LAPPED AT THE SUPPORTS WITH A CLASS B TENSION SPLICE. ALL BEAM BARS SHALL BE HOOKED AT DISCONTINUOUS END, UNLESS NOTED OTHERWISE.

PART IV - STRUCTURAL PRECAST CONCRETE

A. DETAILS

1. TYPICAL DETAILS FOR PRECAST ELEMENTS ARE SHOWN ON THE DRAWINGS. MODIFICATIONS TO DETAILS SHOWN MUST BE SUBMITTED BY THE PRECASTER AND APPROVED BY THE ENGINEER PRIOR TO THE PREPARATION AND SUBMISSION OF SHOP DRAWINGS.

B. DESIGN

1. DESIGN ALL PRECAST CONCRETE UNITS AND CONNECTIONS TO WITHSTAND ALL SUPERIMPOSED DEAD, LIVE, ROOF, SNOW, VEHICULAR BARRIER, MECHANICAL EQUIPMENT, WIND, SEISMIC LOADS, AND LATERAL SOIL PRESSURE AS NOTED WITHIN THESE GENERAL NOTES.

2. DESIGN THE FRAMING SYSTEM AND CONNECTIONS TO MAINTAIN CLEARANCES AT OPENINGS, TO ALLOW FOR FABRICATION AND CONSTRUCTION TOLERANCES, TO ACCOMMODATE LIVE LOAD DEFLECTIONS, SHRINKAGE AND CREEP OF PRIMARY BUILDING ELEMENTS, AND OTHER BUILDING MOVEMENTS.
   - a. ALLOW FOR IN-PLANE THERMAL MOVEMENTS RESULTING FROM ANNUAL AMBIENT TEMPERATURE CHANGES OF 60 DEGREES F.
   - b. DESIGN THE STRUCTURAL CONCRETE FRAME TO HAVE STORY DRIFTS NO GREATER THAN H/400 DUE TO WIND LOADS OCCURRING AT AN AVERAGE 10-YEAR RETURN PERIOD.
   - c. DESIGN THE STRUCTURAL CONCRETE FRAME TO HAVE AN AMPLIFIED SEISMIC STORY DRIFT NO GREATER THAN 0.02H INCLUDING TORSIONAL EFFECTS.

3. SELECT MATERIALS AND MINIMUM THICKNESSES AND COVERS TO PROVIDE A FIRE-RESISTANCE OF 2 HOURS FOR FLOOR FRAMING MEMBERS AND 2 HOURS FOR COLUMNS AND WALLS.

PART V - ARCHITECTURAL PRECAST CONCRETES

A. DESIGN RESPONSIBILITY

1. DESIGN: THE DESIGN AND DETAILING OF ALL ARCHITECTURAL PRECAST CONCRETE AND ITS CONNECTION TO THE STRUCTURAL FRAME SHALL BE THE RESPONSIBILITY OF THE PRECAST FABRICATOR.

B. CONNECTIONS

1. TYPE: SUGGESTED GRAVITY AND LATERAL TYPICAL PANEL CONNECTIONS ARE SHOWN ON THE DRAWINGS. THE PRECAST MANUFACTURER MAY CONSIDER OTHER CONNECTION TYPES PROVIDED PRELIMINARY WRITTEN APPROVAL IS OBTAINED FROM THE ENGINEER PRIOR TO THE SUBMISSION OF SHOP DRAWINGS. THE LOCATION OF GRAVITY BEARING CONNECTIONS AND LATERAL CONNECTIONS SHALL BE AS SPECIFIED HEREIN AND IN THE DETAILS ON THE DRAWINGS UNLESS WRITTEN APPROVAL IS OBTAINED FOR ALTERNATE LOCATIONS FROM THE ENGINEER. CONNECTIONS USED SHALL BE ADJUSTABLE TYPE AND SHALL NOT RESULT IN ADDITIONAL FORCES ON THE SUPPORTING STRUCTURAL MEMBERS.

2. SUGGESTED DETAILS ON THE DRAWINGS SHALL IN NO WAY RELIEVE THE PRECASTER FROM THE FULL AND TOTAL RESPONSIBILITY FOR THE PROPER DESIGN AND DETAILING OF ALL PRECAST PANELS AND THEIR CONNECTIONS.

PART VI - CONCRETE MASONRY

A. SCOPE

1. REFER TO ARCHITECT'S DRAWINGS FOR THE EXTENT OF MASONRY WALLS. NON-LOADBEARING WALLS MAY NOT BE SHOWN ON THE STRUCTURAL DRAWINGS.
2. PROVIDE ONE-COURSE HORIZONTAL BOND BEAM REINFORCE WITH 1-#5 CONTINUOUS AT EVERY FLOOR LEVEL, ROOF LEVEL, AND PARAPET, MINIMUM.

B. CONCRETE MASONRY UNITS.

1. CONCRETE STRENGTH OF MASONRY UNITS (BASED ON NET AREA) SHALL BE 1,900 PSI MINIMUM.
2. UNITS SHALL CONFORM TO ASTM C 55 OR ASTM C 90 AND SAMPLED IN ACCORDANCE WITH ASTM C 140.

C. MORTAR

1. USE ONLY PORTLAND CEMENT/LIME, TYPE M OR S, MORTAR CONFORMING TO ASTM C 270. PROVIDE AN AVERAGE COMPRESSIVE STRENGTH AT 28 DAYS OF 1,800 PSI MINIMUM.

D. GROUT

1. MIX DESIGNS:
   - a. FOR FILLING SPACES 4" OR LARGER IN BOTH HORIZONTAL DIRECTIONS, USE "COARSE GROUT" WITH A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI. THE GROUT SHALL BE TESTED IN ACCORDANCE WITH ASTM C1019. FOR FILLING SPACES LESS THAN 4" IN ONE OR BOTH HORIZONTAL DIRECTIONS, USE "FINE GROUT" PROPORTIONED PER ASTM C 476.
   - b. USE 3,000 PSI NORMALWEIGHT CONCRETE FOR FILLING SPACES 10" AND LARGER IN BOTH DIRECTIONS. THE GROUT SHALL BE TESTED IN ACCORDANCE WITH ASTM C 1019.
   - c. ALL GROUT MIX DESIGN SUBMITTALS SHALL INCLUDE THE RESULTS OF THE TESTS PERFORMED IN ACCORDANCE WITH ASTM C 1019.
   - d. SLUMP RANGE AT POINT OF FINAL DISCHARGE: 8" TO 11".
   - e. THE USE OF AIR ENTRAINING ADMIXTURES IS NOT ALLOWED.

E. MINIMUM REINFORCEMENT FOR CONCRETE MASONRY UNITS

1. PROVIDE VERTICAL REINFORCEMENT IN CELLS OF CONCRETE MASONRY UNITS (FULLY EMBEDDED IN GROUT) AS SHOWN ON THE PLANS AND OTHER DETAILS. MINIMUM REINFORCEMENT OF INTERIOR AND EXTERIOR MASONRY SHALL BE AS FOLLOWS:
   - a. 1-#5 AT A MAXIMUM SPACING OF 48 INCHES
   - b. 1-#5 AT EACH CORNER
   - c. 1-#5 AT EACH SIDE OF OPENINGS UP TO 12 FEET WIDE
   - d. 2-#5 OR 1-#7 AT BOTH SIDES OF OPENINGS OVER 12 FEET WIDE
   - e. HEAVIER REINFORCEMENT MAY BE REQUIRED BY PLAN NOTES OR DETAILS IN THE DRAWINGS.

2. PROVIDE HORIZONTAL REINFORCEMENT IN BED JOINTS EVERY OTHER COURSE (MAXIMUM 16" SPACING) IN TYPICAL WALLS AND IN EVERY COURSE (MAXIMUM 8" SPACING) IN PARAPETS AND CANTILEVERED WALLS.

PART VI - CONCRETE MASONRY (CONTINUED)

3. TERMINATION OF REINFORCING STEEL:
   - a. ALL VERTICAL REINFORCEMENT SHALL HAVE STANDARD HOOK INTO BOND BEAM. TERMINATE AT HIGHEST BOND BEAM IF MASONRY DOES NOT EXTEND TO ROOF OR GROUTED CELL IS NOT CONTINUOUS TO ROOF. HOOK SHALL EXTEND TO THE UPPERMOST HORIZONTAL REINFORCEMENT OF THE BOND BEAM AND HAVE A MINIMUM EMBEDMENT OF 6".
   - b. ALL HORIZONTAL REINFORCEMENT AT ENDS OF BOND BEAMS SHALL HAVE STANDARD HOOK INTO VERTICAL GROUTED CELL. PROVIDE CORNER BARS SUCH THAT HORIZONTAL REINFORCEMENT IS CONTINUOUS AROUND CORNERS.

F. REINFORCING STEEL COVERAGE

1. COVER TO REINFORCING STEEL WITHIN MASONRY ELEMENTS SHALL NOT BE LESS THAN THE FOLLOWING:
   - a. EXPOSED TO EARTH OR WEATHER: 2" (#6 AND LARGER BARS), 1.5" (#5 AND SMALLER BARS).
   - b. NOT EXPOSED TO EARTH OR WEATHER: 1.5"
   - c. LONGITUDINAL WIRES OF JOINT REINFORCEMENT SHALL BE FULLY EMBEDDED IN MORTAR OR GROUT WITH A MINIMUM COVER OF 5/8" WHEN EXPOSED TO EARTH AND WEATHER AND 1/2" WHEN NOT EXPOSED TO EARTH OR WEATHER.

G. CONTROL JOINTS

1. CONTROL JOINTS SHALL BE PROVIDED IN ALL CONCRETE MASONRY CONSTRUCTION. REFER TO TYPICAL CONTROL JOINT DETAIL ON SHEET S601 FOR GUIDELINES AND SPACINGS.

H. STABILITY AND BRACING OF MASONRY WALLS DURING CONSTRUCTION

1. ALL MASONRY WALLS SHOWN ON THE ARCHITECTURAL AND STRUCTURAL DRAWINGS HAVE BEEN DESIGNED TO RESIST THE REQUIRED CODE VERTICAL AND LATERAL FORCES APPLIED TO THEM IN THE FINAL CONSTRUCTED CONFIGURATION ONLY ASSUMING FULL BRACING TOP, BOTTOM, AND/OR SIDE OF WALL AS SHOWN. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROPERLY AND ADEQUATELY BRACE ALL MASONRY WALLS AT ALL STAGES DURING CONSTRUCTION TO RESIST ERECTION LOADS AND LATERAL LOADS THAT COULD POSSIBLY BE APPLIED PRIOR TO COMPLETION OF CONSTRUCTION.

PART VII - STRUCTURAL STEEL

A. MATERIAL

1. HOT ROLLED STRUCTURAL MEMBERS: ALL HOT ROLLED STEEL PLATES, SHAPES, SHEET PILING, AND BARS SHALL BE NEW STEEL CONFORMING TO ASTM SPECIFICATION A 6.

2. ASTM SPECIFICATION AND GRADE: CLEARLY MARK THE GRADE OF STEEL ON EACH PIECE, WITH A DISTINGUISHING MARK VISIBLE FROM FLOOR SURFACES, FOR THE PURPOSE OF FIELD INSPECTION OF PROPER GRADE OF STEEL. UNLESS NOTED OTHERWISE ON THE DRAWINGS, STRUCTURAL STEEL SHALL BE AS FOLLOWS:
   - a. W- AND WT-SHAPES: ASTM A 992.
   - b. C-SHAPES: ASTM A572, GRADE 50.
   - c. L-SHAPES: ASTM A572, GRADE 50.
   - d. ROUND HSS: ASTM A 500, GRADE B (FY=42 KSI).
   - e. RECTANGULAR HSS: ASTM A 500, GRADE B (FY=46 KSI).
   - f. STEEL PIPES: ASTM A 53 (TYPES E OR S), GRADE B.
   - g. BASE PLATES: ALL BASE PLATES SHALL CONFORM TO ASTM A572, GRADE 50 UNLESS NOTED OTHERWISE ON THE DRAWINGS.
   - h. EDGE ANGLES, BENT PLATES, ANGLE HANGERS, AND ANGLE KICKERS: ASTM A572, GRADE 50.
   - i. CONNECTION MATERIAL:
     - 1) BEAM COLUMN CONTINUITY PLATES AND DOUBLER PLATES: ASTM A 572, GRADE 50.
     - 2) ALL CONNECTION MATERIAL, EXCEPT AS NOTED OTHERWISE HEREIN OR ON THE DRAWINGS, INCLUDING BEARING PLATES, GUSSET PLATES, STIFFENER PLATES, FILLER PLATES, ANGLES, ETC. SHALL CONFORM TO ASTM A 36 UNLESS A HIGHER GRADE OF STEEL IS REQUIRED BY STRENGTH AND PROVIDED THE RESULTING SIZES ARE COMPATIBLE WITH THE CONNECTED MEMBERS.
   - j. OTHER STEEL: ANY OTHER STEEL NOT INDICATED OTHERWISE SHALL CONFORM TO ASTM A 992 OR ASTM A 572, GRADE 50.

B. CONNECTIONS

1. CONNECTION DETAILS NOT COMPLETELY DETAILED ON THE DRAWINGS INCLUDING MATERIAL GRADE AND SIZES, WELD SIZES, AND NUMBER OF BOLTS SHALL BE DESIGNED BY THE CONTRACTOR PER THE SPECIFICATIONS. CONCEPTUAL CONNECTION DETAILS WITH THE REQUIRED MEMBER DESIGN FORCES ARE SHOWN ON THE DRAWINGS AND ARE APPLICABLE TO ALL CONNECTIONS NOT DESIGNED AND FULLY DETAILED ON THE DRAWINGS. THE CONCEPTUAL DETAILS ARE PROVIDED ONLY TO INDICATE THE CONNECTION TYPE REQUIRED AND MAY NOT FULLY REPRESENT THE COMPLEXITY OF THE CONNECTION AS REQUIRED BY THE FINAL CONNECTION DESIGN FOR THE FORCES THEY MUST RESIST. ADDITIONAL CONNECTION ELEMENTS MAY NOT BE SPECIFICALLY SHOWN IN THE CONCEPTUAL DETAILS BUT MAY BE REQUIRED BY THE FINAL CONNECTION DESIGN, SUCH AS STIFFENER PLATES, DOUBLER PLATES, SUPPLEMENT/ REINFORCING PLATES OR OTHER CONNECTION MATERIAL. THE FABRICATOR IS RESPONSIBLE FOR ENGAGING THE SERVICES OF A CONNECTION SPECIALTY ENGINEER TO PREPARE A FINAL CONNECTION DESIGN FOR SUBMISSION THAT MEETS THE REQUIREMENTS OF THE CONCEPTUAL CONNECTION DETAILS AND RESISTS THE INDICATED DESIGN FORCES.
2. REFER TO THE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
3. REACTIONS NOTED ON THE PLANS ARE BASED ON FACTORED LOADS AND ARE INTENDED FOR USE WITH THE LOAD AND RESISTANCE FACTOR DESIGN METHOD.

C. STRUCTURAL BOLTS AND THREADED FASTENERS

1. A 325 BOLTS: ALL BOLTS IN STRUCTURAL CONNECTIONS SHALL CONFORM TO ASTM A 325 TYPE 1, UNLESS INDICATED OTHERWISE ON THE DRAWINGS.
2. THREADED ROUND STOCK: THREADED RODS SHALL CONFORM TO:
   - a. ASTM A 36.

D. WELDING

1. UNLESS NOTED OTHERWISE, ELECTRODES FOR WELDING SHALL CONFORM TO E70XX (SMAW), F7XX-EXXX (SAW), ER70S-X (GMAW), OR E7XT-X (FCAW).

E. ANCHOR RODS

1. UNLESS INDICATED OTHERWISE ON THE DRAWINGS, ANCHOR RODS SHALL CONFORM TO ASTM F 1554 GRADE 55 (WITH SUPPLEMENTARY REQUIREMENT S1) AND THE SIZE SHALL BE 3/4" DIAMETER AND SHALL EMBED INTO THE CONCRETE FOUNDATION A DISTANCE OF 1'-0" WITH A HEAVY HEX NUT AT THE EMBEDDED END. STRIKE BOLT THREADS AT THE EMBEDDED END AT TWO PLACES BELOW THE NUT.

F. GROUT

1. GROUT BELOW STRUCTURAL STEEL BASE PLATES SHALL BE NON-METALLIC, NON-SHRINK GROUT WITH A MINIMUM STRENGTH OF 6,000 PSI WHEN BEARING ON 3,000 PSI CONCRETE OR LESS, A STRENGTH OF 8,000 PSI WHEN BEARING ON CONCRETE BETWEEN 3,000 AND 4,000 PSI, AND, UNLESS NOTED OTHERWISE ON THE DRAWINGS, A STRENGTH OF 8,000 PSI WHEN BEARING ON CONCRETE GREATER THAN 4,000 PSI.

PART VIII - STEEL DECKS

A. COMPOSITE DECK

1. SCHEDULE:

DEPTH OF DECK	DESIGN GAGE THICKNESS	MINIMUM SP [IN^3]	MINIMUM SN [IN^3]	MINIMUM I [IN^4]	MAXIMUM UNSHORED DECK SPAN (TWO-SPAN)	MAXIMUM UNSHORED DECK SPAN (THREE-SPAN)
2"	18	0.495	0.502	0.535	9'- 5"	9'- 9"

   NOTES:
   SP = POSITIVE SECTION MODULUS, INCHES^3
   SN = NEGATIVE SECTION MODULUS, INCHES^3
   I = MOMENT OF INERTIA, INCHES^4

2. ALL DECK SHALL BE 33 KSI UNLESS NOTED OTHERWISE.
3. HEADED STUD ANCHORS USED AS SHEAR CONNECTORS FOR COMPOSITE BEAMS SHALL BE AWS D1.1 TYPE B (TABLE 7.1) STUDS MANUFACTURED IN CONFORMANCE WITH SPECIFICATION ASTM A 108 WITH A MINIMUM TENSILE STRENGTH OF 65,000 PSI.
4. SHEAR CONNECTOR SIZES FOR COMPOSITE STEEL DECK CONSTRUCTION. STUD DIAMETER AND LENGTH (BEFORE WELD, BW) SHALL BE AS FOLLOWS:
   - a. 6.5" TOTAL SLAB THICKNESS – 3/4" DIAMETER X 5 3/16" BW
5. ATTACHMENT OF DECK:
   - a. MINIMUM ATTACHMENT AT SUPPORTS: STEEL DECK UNITS SHALL BE WELDED TO THE SUPPORT MEMBERS WITH 5/8" DIAMETER PUDDLE WELDS AT EACH END OF SHEET AND EACH INTERMEDIATE SUPPORT AT EACH LOW FLUTE, UNLESS NOTED OTHERWISE. AT MEMBERS PARALLEL TO DECK SPAN, SPACING OF PUDDLE WELDS SHALL BE 12". A SHEAR CONNECTOR WELDED THROUGH THE DECK CAN REPLACE A REQUIRED DECK WELD.
   - b. MINIMUM ATTACHMENT AT SIDE LAPS: SIDE LAPS OF ADJACENT UNITS SHALL BE FASTENED BY WELDING, SHEET METAL SCREWS, OR BUTTON PUNCHING AT A MAXIMUM OF ONE-HALF THE SPAN OR 36", WHICHEVER IS LESS, UNLESS NOTED OTHERWISE.

PART VIII - STEEL DECKS (CONTINUED)

B. ROOF DECK

1. SCHEDULE:

LOCATION	DEPTH	GAGE	TYPE
PENTHOUSE ROOF	1.5"	20	WR
CANOPIES	1.5"	18	WR

   NOTES:
   NR: NARROW RIB, TYPE A
   IR: INTERMEDIATE RIB, TYPE F
   WR: WIDE RIB, TYPE B
   3DR 3 INCH, DEEP RIB, TYPE N

2. ATTACHMENT OF DECK:
   - a. MINIMUM ATTACHMENT AT SUPPORTS: STEEL DECK UNITS SHALL BE FASTENED TO ALL SUPPORT MEMBERS AT EACH RIB (36/7) WITH 3/4" DIAMETER PUDDLE WELDS, UNLESS NOTED OTHERWISE. AT MEMBERS PARALLEL TO DECK SPAN, SPACING OF FASTENERS SHALL BE 6".
   - b. MINIMUM ATTACHMENT AT SIDE LAPS: SIDE LAPS OF ADJACENT UNITS SHALL BE FASTENED BY WELDING, SHEET METAL SCREWS, OR BUTTON PUNCHING AT A MAXIMUM OF 12", UNLESS NOTED OTHERWISE.

3. FLAT, RIDGE, AND VALLEY PLATES: UNLESS NOTED OTHERWISE, CONTRACTOR SHALL PROVIDE FLAT PLATES (20 GAGE MINIMUM) AT ALL LOCATIONS WHERE ROOF DECK CHANGES DIRECTION AND RIDGE OR VALLEY PLATES (20 GAGE MINIMUM) AT ALL LOCATIONS WHERE ROOF SLOPE

PART IX - COLD-FORMED METAL FRAMING

A. MATERIALS

1. STUD AND TRACK PROFILES SHALL BE STANDARD SECTIONS USED BY MEMBERS OF THE STEEL STUD MANUFACTURERS ASSOCIATION (SSMA). SSMA MEMBER DESIGNATIONS AS SHOWN ON THE FOLLOWING EXAMPLE:

   600 S 162-43 REPRESENTS A 6.00" DEEP, STUD SECTION, 1.625" WIDE FLANGE, 0.043" (43 MILS) MINIMUM STEEL THICKNESS.
   NOTES:
   S = STUD SECTION
   T = TRACK SECTION
   U = CHANNEL SECTION
   F = FURRING CHANNEL

2. UNLESS NOTED OTHERWISE ON THE DRAWINGS, MEMBERS SHALL HAVE THE FOLLOWING YIELD STRENGTHS:
   - a. STUDS: 33, 43 MIL THICKNESS — FY = 33 KSI
   - b. STUDS: 54, 68, 97 MIL THICKNESS — FY = 50 KSI
   - c. TRACKS: 33, 43, 54, 68, 97 MIL — FY = 33 KSI
   - d. U-CHANNELS, FURRING CHANNELS: — FY = 33 KSI

3. ALL COLD-FORMED STEEL FRAMING MATERIALS SHALL HAVE A MINIMUM G60 GALVANIZED COATING.

B. CONNECTIONS

1. CONNECTIONS NOT FULLY DETAILED ON THE CONTRACT DOCUMENTS SHALL BE DESIGNED BY THE CONTRACTOR PER THE SPECIFICATION.
2. SCREWS: UNLESS NOTED OTHERWISE SCREWS SHALL BE AS FOLLOWS:
   - a. SHEET STEEL TO SHEET STEEL: #10-16, 5/8 INCH LONG SELF DRILLING SCREWS.
   - b. SHEET STEEL TO STRUCTURAL STEEL: #12-24, 1-1/2 INCH LONG SELF DRILLING SCREWS WITH NO 5 TIP STYLE.
3. POWDER ACTUATED FASTENERS: UNLESS NOTED OTHERWISE, PAF SHALL BE AS FOLLOWS:
   - a. SHEET STEEL TO CONCRETE: 0.145" DIAMETER, 1-1/4" LONG, SMOOTH SHANK.
   - b. SHEET STEEL TO POST-TENSIONED CONCRETE: 0.145" DIAMETER, 3/4" LONG, SMOOTH SHANK.
   - c. SHEET STEEL TO STRUCTURAL STEEL: 0.145" DIAMETER, 3/4" LONG, KNURLED SHANK.
4. WELDING:
   - a. WELDING PROCEDURES FOR SHEET STEEL TO BE IN ACCORDANCE WITH AWS D1.3. WELDERS SHALL BE CERTIFIED FOR SHEET STEEL IN ALL POSITIONS REQUIRED PER AWS D1.3
   - b. SUGGESTED WELD METAL AND PROCESS FOR SHOP WELDING ARE: 60KSI WELD METAL STRENGTH (MINIMUM) - MIG.
   - c. SUGGESTED METHODS FOR FIELD WELDING: 1/8 INCH E60XX (MINIMUM) ELECTRODE - SMAW.
   - d. MINIMUM WELD THROAT THICKNESS (T) MUST MATCH OR EXCEED THE BASE STEEL THICKNESS OF THE THINNEST CONNECTED STEEL SHEET UNLESS NOTED OTHERWISE.
   - e. AFTER WELDING ALL FLUX SHALL BE REMOVED, AND A ZINC-RICH PAINT, WITH A DRY FILM CONTAINING 94% ZINC DUST BY WEIGHT, SHALL BE APPLIED TO THE WELD AREA TO RESTORE CORROSION RESISTANCE.

PART X - SPECIAL INSPECTIONS

A. THE OWNER'S TESTING LABORATORY SHALL PROVIDE SPECIAL INSPECTION SERVICES IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE FOR THE FOLLOWING ITEMS.

1. STEEL CONSTRUCTION:
   - a. ALL FIELD WELDING
   - b. HIGH-STRENGTH BOLTING
   - c. INSPECTION OF STRUCTURAL STEEL, BOLTING, WELDING MATERIAL
   - d. WELDING OF STRUCTURAL STEEL
2. CONCRETE CONSTRUCTION:
   - a. BOLTS INSTALLED IN CONCRETE
   - b. CONCRETE SHEAR WALLS
   - c. CONCRETE WORK
   - d. CONTINUOUS INSPECTION OF REINFORCING STEEL PLACING
   - e. EPOXY BOLTS
   - f. FORMWORK
   - g. PRESTRESSED CONCRETE
   - h. PRESTRESSING OPERATION
   - i. PRESTRESSING TENDON PLACEMENT
   - j. REINFORCING STEEL PLACEMENT
   - k. WELDING OF REINFORCING STEEL
3. MASONRY CONSTRUCTION:
   - a. HIGH-LIFT GROUTING
   - b. MASONRY WORK
4. SOILS:
   - a. PREPARED EARTH FILL
5. DEEP FOUNDATIONS:
   - a. PILE FOUNDATIONS
6. SPRAYED FIRE-RESISTANT MATERIALS
7. MASTIC AND INTUMESCENT FIRE-RESISTANT COATINGS
8. SPECIAL INSPECTION FOR SMOKE CONTROL

C. STATEMENT OF SPECIAL INSPECTIONS

1. SPECIAL INSPECTION IS REQUIRED FOR THE ITEMS LISTED ABOVE. REFER TO SPECIFICATION SECTION 014529 FOR TYPE AND EXTENT OF EACH SPECIAL INSPECTION AND EACH TEST. THE SPECIFICATION ALSO INDICATES WHETHER CONTINUOUS OR PERIODIC INSPECTION IS REQUIRED FOR THE ITEMS LISTED

PART XI - SUBMITTALS

A. SUBMITTAL LIST AND SCHEDULE

1. THE GENERAL CONTRACTOR SHALL PREPARE A DETAILED LIST AND SCHEDULE OF ALL SUBMITTAL ITEMS TO BE SENT TO THE STRUCTURAL ENGINEER PRIOR TO THE START OF CONSTRUCTION. THIS LIST SHALL BE UPDATED AND REVISED AND KEPT CURRENT AS THE JOB PROGRESSES. THE SUBMITTAL LIST SHALL BE ORGANIZED AS SHOWN BELOW:
   - a. SHOP DRAWINGS
   - b. DESIGN CALCULATIONS
   - c. PRODUCT DATA, CERTIFICATES, REPORTS, AND OTHER LITERATURE

B. SUBMITTALS TO BE PROVIDED TO STRUCTURAL ENGINEER

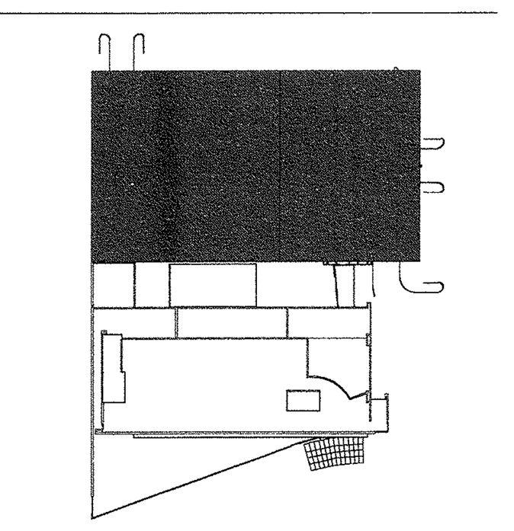
1. STRUCTURAL SUBMITTALS: IN ADDITION TO THE SUBMITTALS REQUIRED BY THE STRUCTURAL SPECIFICATIONS, THE FOLLOWING SUBMITTALS SHALL BE PROVIDED:
   - a. LAYOUT OF EMBEDDED ITEMS (PLATES, ANGLES, BOLTS, ETC.) OR ITEMS ATTACHED TO THE STRUCTURAL FRAME FOR BUILDING CLADDING ATTACHMENT OR FOR ATTACHMENT OF OTHER ITEMS.
   - b. LAYOUT OF MECHANICAL, ELECTRICAL, AND PLUMBING OPENINGS IN FLAT SLABS.

WHR ARCHITECTS
Architecture with People in Mind
1111 Louisiana 26TH Floor
Houston, Texas 77002
713.665.5665 phone · whrarchitects.com

WALTER P MOORE
WALTER P. MOORE AND ASSOCIATES, INC.
1301 McKINNEY STREET, SUITE 1100
HOUSTON, TEXAS 77010-3064
PHONE: 713.630.7300 FAX: 713.630.7396

Revisions		
No.	Date	Description

KEY PLAN

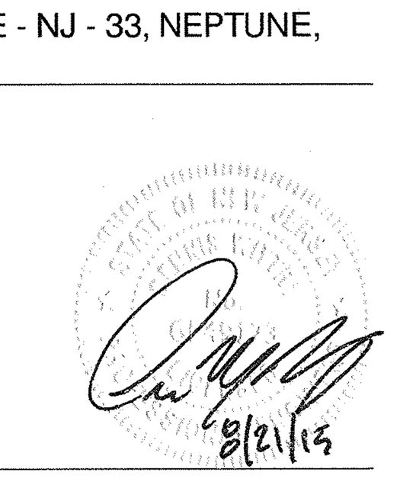


NORTH

JSUMC HOPE TOWER BUILDING PROJECT PARKING GARAGE BID PACK 2

Jersey Shore University Medical Center — MEMBER OF THE MERIDIAN HEALTH FAMILY

JERSEY SHORE UNIVERSITY MEDICAL CENTER
1945 STATE ROUTE - NJ - 33, NEPTUNE, NEW JERSEY



GENERAL NOTES

PHASE: 100% CD
DATE: 08-21-2015

PROJECT NO. H14009-01

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GENERAL STRUCTURAL NOTES

PART XI - SUBMITTALS (CONTINUED)

c. LAYOUT OF PENETRATIONS IN BEAMS AND JOISTS.

2. DEFERRED SUBMITTALS:
   a. THE FOLLOWING ITEMS ARE CONSIDERED DEFERRED SUBMITTALS BY THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE:
      1) COLD-FORMED METAL FRAMING (S&S, REC)
      2) EXTERIOR WINDOW WALL SYSTEM (S&S, REC)
      3) FORMWORK, SHORING, AND BACKSHORING (S&S, REC)
      4) METAL FABRICATIONS, RAILINGS, AND GRATINGS (S&S)
      5) PILE LOAD TEST FRAME (S&S, REC)
      6) PRECAST ARCHITECTURAL CONCRETE (S&S, REC)
      7) PRECAST STRUCTURAL CONCRETE (S&S)
      8) ROOF TOP EQUIPMENT AND ANCHORAGES (S&S)
      9) STRUCTURAL STEEL CONNECTIONS (S&S)

   NOTES:

   (S&S) ITEMS MARKED THUS SHALL HAVE THE SHOP DRAWINGS AND DELEGATED DESIGN SUBMITTALS (INCLUDING CALCULATIONS) SEALED PER THE PROJECT SPECIFICATIONS BY AN ENGINEER REGISTERED IN THE STATE WHERE THE PROJECT IS LOCATED.

   (REC) ITEMS MARKED THUS SHALL BE SUBMITTED TO ENGINEER FOR RECORD ONLY AND WILL NOT HAVE THE ENGINEER'S SHOP DRAWING STAMP AFFIXED.

3. SUBMITTALS WITH IMPACT TO STRUCTURE:
   a. ELEVATORS
   b. MECHANICAL EQUIPMENT WEIGHTS

4. OTHER SUBMITTALS:
   a. PILE LOAD TEST RECORDS (S&S, REC)

5. SUBMITTAL REQUIREMENTS:
   a. ALL SHOP DRAWINGS MUST BE REVIEWED AND STAMPED BY THE GENERAL CONTRACTOR PRIOR TO SUBMITTAL. CONTRACTOR SHALL PROVIDE THE SUBMITTAL IN ELECTRONIC PORTABLE DOCUMENT FORMAT (PDF) PER THE SPECIFICATIONS.
   c. THE OMISSION FROM THE SHOP DRAWINGS OF ANY MATERIALS REQUIRED BY THE CONTRACT DOCUMENTS TO BE FURNISHED SHALL NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF FURNISHING AND INSTALLING SUCH MATERIALS, REGARDLESS OF WHETHER THE SHOP DRAWINGS HAVE BEEN REVIEWED AND APPROVED.

C. REPRODUCTION

1. THE USE OF ELECTRONIC FILES OR REPRODUCTIONS OF THESE CONTRACT DOCUMENTS BY ANY CONTRACTOR, SUBCONTRACTOR, ERECTOR, FABRICATOR, OR MATERIAL SUPPLIER IN LIEU OF PREPARATION OF SHOP DRAWINGS SIGNIFIES THEIR ACCEPTANCE OF ALL INFORMATION SHOWN HEREON AS CORRECT, AND OBLIGATES THEMSELVES TO ANY JOB EXPENSE, REAL OR IMPLIED, ARISING DUE TO ANY ERRORS THAT MAY OCCUR HEREON.

PART XII - MISCELLANEOUS

A. CONTRACT DOCUMENTS

1. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO OBTAIN ALL CONTRACT DOCUMENTS AND LATEST ADDENDA AND TO SUBMIT SUCH DOCUMENTS TO ALL SUBCONTRACTORS AND MATERIAL SUPPLIERS PRIOR TO THE SUBMITTAL OF SHOP DRAWINGS, FABRICATION OF ANY STRUCTURAL MEMBERS, AND ERECTION IN THE FIELD.

2. THE CONTRACT STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE, AND, EXCEPT WHERE SPECIFICALLY SHOWN, DO NOT INDICATE THE METHOD OR MEANS OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, PROCEDURES, TECHNIQUES, AND SEQUENCE.

3. OPENINGS THROUGH FLOORS, ROOFS, AND WALLS FOR DUCTS, PIPING, AND/OR CONDUIT SHALL BE COORDINATED BY THE CONTRACTOR. CONTRACTOR SHALL VERIFY SIZES AND LOCATIONS OF HOLES AND OPENINGS WITH THE MECHANICAL, ELECTRICAL, PLUMBING, AND FIRE PROTECTION DRAWINGS AND THE RESPECTIVE SUBCONTRACTORS.

4. REFER TO DRAWINGS OTHER THAN STRUCTURAL FOR COMPLETE INFORMATION INCLUDING: TYPES OF FLOOR SLAB FINISHES AND THEIR LOCATIONS, FLOOR SLAB DEPRESSIONS AND CURBS, OPENINGS IN STRUCTURAL WALLS, ROOFS AND FLOORS REQUIRED BY ARCHITECTURAL AND MEP FEATURES, STAIRS, RAMPS, ETC.

5. WHERE MEMBER LOCATIONS ARE NOT SPECIFICALLY DIMENSIONED, MEMBERS ARE EITHER LOCATED ON COLUMNS LINES OR ARE EQUALLY SPACED BETWEEN LOCATED MEMBERS.

6. IF CERTAIN FEATURES ARE NOT FULLY SHOWN OR SPECIFIED ON THE DRAWINGS OR IN THE SPECIFICATIONS, THEIR CONSTRUCTION SHALL BE OF THE SAME CHARACTER AS SHOWN OR SPECIFIED IN SIMILAR CONDITIONS.

B. DRAWING CONFLICTS

1. THE GENERAL CONTRACTOR SHALL COMPARE THE ARCHITECTURAL AND STRUCTURAL DRAWINGS AND REPORT ANY DISCREPANCY BETWEEN EACH SET OF DRAWINGS AND WITHIN EACH SET OF DRAWINGS TO THE ARCHITECT AND ENGINEER PRIOR TO THE FABRICATION AND INSTALLATION OF ANY STRUCTURAL MEMBERS.

C. CONFLICTS IN STRUCTURAL REQUIREMENTS

1. 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.

D. EXISTING CONDITIONS

1. THE GENERAL CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS OF THE EXISTING BUILDING AT THE JOB SITE AND REPORT ANY DISCREPANCIES FROM ASSUMED CONDITIONS SHOWN ON THE DRAWINGS TO THE ARCHITECT AND ENGINEER PRIOR TO THE FABRICATION AND ERECTION OF ANY MEMBERS.

2. WORK SHOWN ON THE DRAWINGS IS NEW, UNLESS NOTED AS EXISTING.

3. EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS WAS OBTAINED FROM EXISTING CONSTRUCTION DOCUMENTS AND LIMITED SITE OBSERVATION. THESE DRAWINGS OF EXISTING CONSTRUCTION ARE AVAILABLE FOR CONTRACTOR USE. HOWEVER, THE AVAILABLE DRAWINGS OF EXISTING CONSTRUCTION ARE NOT NECESSARILY COMPLETE. THE CONTRACTOR SHALL FIELD VERIFY ALL PERTINENT INFORMATION.

4. DEMOLITION, CUTTING, DRILLING, ETC. OF EXISTING WORK SHALL BE PERFORMED WITH GREAT CARE SO AS NOT TO JEOPARDIZE THE STRUCTURAL INTEGRITY OF THE EXISTING BUILDING. IF ANY ARCHITECTURAL, STRUCTURAL, OR MEP MEMBERS NOT DESIGNATED FOR REMOVAL INTERFERE WITH THE NEW WORK, THE ARCHITECT SHALL BE NOTIFIED IMMEDIATELY AND APPROVAL OBTAINED PRIOR TO REMOVAL OF THOSE MEMBERS.

5. THE CONTRACTOR SHALL SAFELY SHORE EXISTING CONSTRUCTION WHEREVER EXISTING SUPPORTS ARE REMOVED TO ALLOW THE INSTALLATION OF NEW WORK. ALL SHORING METHODS AND SEQUENCING OF DEMOLITION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND HIS ENGINEER.

6. THE CONTRACTOR SHALL VERIFY THE LOCATION OF EXISTING UTILITIES PRIOR TO THE START OF CONSTRUCTION AND TAKE CARE TO PROTECT EXISTING UTILITIES THAT ARE TO REMAIN IN SERVICE.

7. THE CONTRACTOR SHALL REPAIR ALL DAMAGE CAUSED DURING CONSTRUCTION WITH SIMILAR MATERIALS AND WORKMANSHIP TO RESTORE CONDITIONS TO LEVELS ACCEPTABLE TO THE ARCHITECT.

E. ADJACENT BUILDINGS AND PROPERTY

1. THE GENERAL CONTRACTOR SHALL ENSURE THAT ALL CONSTRUCTION METHODS USED WILL NOT CAUSE DAMAGE TO THE ADJACENT BUILDINGS AND PROPERTY. THIS SHALL INCLUDE ALL FOUNDATION INSTALLATION.

2. THE GENERAL CONTRACTOR IS ADVISED TO PERFORM ALL PHOTOGRAPHIC SURVEYS AND OTHER DOCUMENTATION OF THE ADJACENT BUILDINGS BEFORE THE START OF AND DURING CONSTRUCTION.

F. RESPONSIBILITY OF THE CONTRACTOR FOR STABILITY OF THE STRUCTURE DURING CONSTRUCTION

1. ALL STRUCTURAL ELEMENTS OF THE PROJECT HAVE BEEN DESIGNED BY THE STRUCTURAL ENGINEER TO RESIST THE REQUIRED CODE VERTICAL AND LATERAL FORCES THAT COULD OCCUR IN THE FINAL COMPLETED STRUCTURE ONLY. THE ABILITY OF THE STRUCTURAL FRAME TO RESIST THE REQUIRED CODE FORCES DERIVES FROM THE COMPLETE INSTALLATION OF THE LATERAL FORCE RESISTING SYSTEMS AND DIAPHRAGMS DESCRIBED BELOW. 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 ALL DESIGNATED CONCRETE ELEMENTS (IF ANY) HAVE REACHED A MINIMUM OF 75% OF THEIR DESIGN STRENGTH. THE REQUIRED STRUCTURAL ELEMENTS ARE:
   a. GARAGE:
      1) LATERAL-FORCE RESISTING SYSTEM
         a) PRECAST CONCRETE SHEAR WALLS
      2) DIAPHRAGM: A CONCRETE FLOOR SLAB THAT CREATES A CONTINUOUS ELEMENT LINKING THE LATERAL-FORCE-RESISTING ELEMENTS TO ALL OTHER COLUMNS.

G. RESPONSIBILITY OF THE CONTRACTOR FOR CONSTRUCTION LOADS

1. THE STRUCTURE HAS BEEN DESIGNED FOR THE LOADS IDENTIFIED WITHIN THESE STRUCTURAL DRAWINGS THAT ARE ANTICIPATED TO BE APPLIED TO THE FINAL STRUCTURE ONCE COMPLETED AND OCCUPIED. THE CONTRACTOR SHALL NOT OVERLOAD THE STRUCTURE DURING CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CHECKING THE ADEQUACY OF THE STRUCTURE TO SUPPORT ANY APPLIED CONSTRUCTION LOADS, INCLUDING THOSE DUE TO CONSTRUCTION VEHICLES OR EQUIPMENT, MATERIAL HANDLING OR STORAGE, SHORING OR RESHORING, OR ANY OTHER CONSTRUCTION ACTIVITY. THE CONTRACTOR SHALL SUBMIT CALCULATIONS SIGNED AND SEALED BY AN ENGINEER LICENSED IN THE STATE WHERE THE PROJECT IS LOCATED VERIFYING THE ADEQUACY OF THE STRUCTURE FOR ANY PROPOSED CONSTRUCTION LOADS THAT ARE IN EXCESS OF THE STATED DESIGN LOADS. THE STRUCTURAL ENGINEER IS NOT RESPONSIBLE TO DESIGN OR CHECK THE STRUCTURE FOR LOADS APPLIED TO THE STRUCTURE FOR ANY CONSTRUCTION ACTIVITY.

H. CONTRACTOR SUBSTITUTIONS

1. ANY MATERIALS OR PRODUCTS SUBMITTED FOR APPROVAL THAT ARE DIFFERENT FROM THE MATERIAL OR PRODUCTS SPECIFIED IN THE STRUCTURAL CONTRACT DOCUMENTS WILL BE APPROVED ONLY IF THE FOLLOWING CRITERIA ARE SATISFIED:
   a. A COST SAVINGS TO THE OWNER IS DOCUMENTED AND SUBMITTED WITH THE REQUEST.
   b. THE MATERIAL OR PRODUCT HAS BEEN APPROVED BY THE INTERNATIONAL CODE COUNCIL (ICC) AND THE ICC REPORT IS SUBMITTED WITH THE REQUEST.
      1) THE ICC ESR THAT IS SUBMITTED MUST REFERENCE THE BUILDING CODE UNDER WHICH THE PROJECT IS PERMITTED.
      2) ICC REPORTS THAT HAVE BEEN DISCONTINUED AT THE TIME OF PRODUCT INSTALLATION WILL NOT BE ACCEPTED.

2. SUBMITTALS NOT SATISFYING THE ABOVE CRITERIA WILL NOT BE CONSIDERED.

I. ELEVATOR GUIDE RAIL SUPPORTS

1. THE GENERAL CONTRACTOR SHALL PROVIDE INTERMEDIATE GUIDE RAIL SUPPORTS FOR ELEVATOR CAB RAILS AND COUNTERWEIGHT RAILS WHEREVER THE FLOOR TO FLOOR HEIGHT EXCEEDS 14'-0".

J. MECHANICAL EQUIPMENT WEIGHTS

1. THE GENERAL CONTRACTOR SHALL SUBMIT ACTUAL WEIGHTS OF EQUIPMENT TO BE USED IN THE PROJECT TO THE STRUCTURAL ENGINEER FOR VERIFICATION OF LOADS USED IN THE DESIGN AT LEAST THREE WEEKS PRIOR TO FABRICATION AND CONSTRUCTION OF THE SUPPORTING STRUCTURE.

K. THE STRUCTURAL ENGINEER'S ROLE DURING CONSTRUCTION

1. THE ENGINEER SHALL NOT HAVE CONTROL NOR CHARGE 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 OMISSION OF THE CONTRACTOR, SUBCONTRACTOR, OR ANY OTHER PERSONS PERFORMING ANY OF THE WORK, OR FOR THE FAILURE OF ANY OF THEM TO CARRY OUT THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

L. MAINTENANCE STATEMENT

1. ALL STRUCTURES REQUIRE PERIODIC MAINTENANCE TO EXTEND LIFESPAN AND TO ENSURE STRUCTURAL INTEGRITY FROM EXPOSURE TO THE ENVIRONMENT. A PLANNED PROGRAM OF MAINTENANCE SHALL BE ESTABLISHED BY THE BUILDING OWNER. THIS PROGRAM SHALL INCLUDE SUCH ITEMS SUCH AS BUT NOT LIMITED TO PAINTING OF STRUCTURAL STEEL, PROTECTIVE COATING FOR CONCRETE, SEALANTS, CAULKED JOINTS, EXPANSION JOINTS, CONTROL JOINTS, SPALLS AND CRACKS IN CONCRETE, AND PRESSURE WASHING OF EXPOSED STRUCTURAL ELEMENTS EXPOSED TO A SALT ENVIRONMENT OR OTHER HARSH CHEMICALS.

PART XIII - DRAWING INTERPRETATION

A. DRAWING VIEWS LABELED AS "TYPICAL"

1. PARTIAL PLANS, ELEVATIONS, SECTIONS, DETAILS, OR SCHEDULES LABELED WITH "TYPICAL" AT THE BEGINNING OF THEIR TITLE SHALL APPLY TO ALL SITUATIONS OCCURRING ON THE PROJECT THAT ARE THE SAME OR SIMILAR TO THOSE SPECIFICALLY SHOWN. THE APPLICABILITY OF THE CONTENT OF THESE VIEWS TO LOCATIONS ON THE PLAN CAN BE DETERMINED FROM THE TITLE OF THE VIEWS. SUCH VIEWS SHALL APPLY WHETHER OR NOT THEY ARE KEYED IN AT EACH LOCATION. DECISIONS REGARDING APPLICABILITY OF THESE "TYPICAL" VIEWS SHALL BE DETERMINED BY THE STRUCTURAL ENGINEER.

B. STRUCTURAL ABBREVIATIONS, SYMBOLS, AND NOTATIONS

1. REFER TO SHEET S003 FOR ABBREVIATIONS, SYMBOLS, AND NOTATIONS USED ON THE STRUCTURAL DRAWINGS.

WHR ARCHITECTS
Architecture with People in Mind

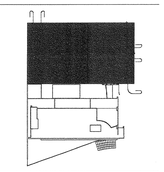
1111 Louisiana 26TH Floor
Houston, Texas 77002
713.665.5665 phone · whrarchitects.com

WALTER P MOORE

WALTER P. MOORE AND ASSOCIATES, INC.
1301 McKINNEY STREET, SUITE 1100
HOUSTON, TEXAS 77010.3084
PHONE: 713.630.7300 FAX: 713.630.7396

Revisions		
No.	Date	Description

KEY PLAN



JSUMC
HOPE TOWER
BUILDING PROJECT
PARKING GARAGE
BID PACK 2

Jersey Shore University Medical Center
MEMBER OF THE MERIDIAN HEALTH FAMILY

JERSEY SHORE
UNIVERSITY
MEDICAL CENTER
1945 STATE ROUTE - NJ - 33, NEPTUNE, NEW JERSEY

8/21/15

GENERAL NOTES

PHASE: 100% CD
DATE: 08-21-2015

PROJECT NO. H14009-01

S002

P:\S03\2014\14088-00 JSUMC East Campus Project\3-Documentation\Drawings\Revit Structure\WPM-JSUMCEC-STRUCT-GARAGE.rvt
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STRUCTURAL SYMBOLS AND NOTATIONS

MATERIAL IDENTIFICATION SYMBOLS

THE FOLLOWING MATERIAL IDENTIFICATION SYMBOLS MAY BE USED IN THE SECTIONS AND DETAILS:

ALUMINUM | CAST-IN-PLACE CONCRETE | EARTH | EARTH (UNDISTURBED) | EXISTING CONSTRUCTION | GRAVEL | GROUT

MASONRY | POLYSTYRENE | RIGID INSULATION | ROCK | STEEL | STRUCTURAL PRECAST CONCRETE | WOOD

THE FOLLOWING MATERIAL IDENTIFICATION SYMBOLS MAY BE USED IN THE PLANS:

STEEL COLUMN | CONCRETE COLUMN | CONCRETE WALL | LOADBEARING MASONRY WALL | NON-LOADBEARING MASONRY WALL | STRUCTURAL PRECAST WALL | GRATING

BOUNDARY OF EXISTING CONSTRUCTION

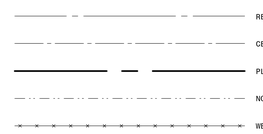
BOUNDARY OF EXISTING CONSTRUCTION TO BE DEMOLISHED


BOUNDARY OF FUTURE EXPANSION


BOUNDARY OF CONCRETE TOPPING SLAB POURED ON SUBSTRUCTURE

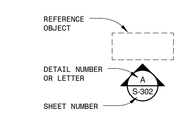
SYMBOLIC LINEWORK

THE FOLLOWING SYMBOLIC LINEWORK MAY BE USED THROUGHOUT THE DRAWINGS:

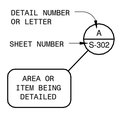


VIEW REFERENCE SYMBOLS

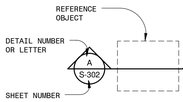
THESE FOLLOWING SYMBOLS MAY BE USED THROUGHOUT THE DRAWINGS TO REFER TO OTHER VIEWS:



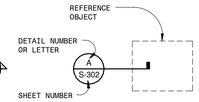
FRAMING ELEVATION SYMBOL



DETAIL REFERENCE SYMBOL



OVERALL SECTION SYMBOL

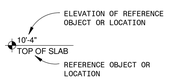


PARTIAL SECTION SYMBOL

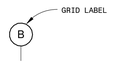
UNIVERSAL SYMBOLS

THESE FOLLOWING SYMBOLS MAY BE USED THROUGHOUT THE DRAWINGS:

REVISION CLOUD SYMBOL



ELEVATION DESIGNATION SYMBOL



REFERENCE GRID INDICATOR SYMBOL

WORK POINT SYMBOL


FLAT FACE BREAK MARK


CURVED FACE BREAK MARK

LINE BREAK MARK

PLAN SYMBOLS

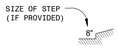
THE FOLLOWING SYMBOLS MAY BE USED THROUGHOUT THE PLANS.

SLOPE TRANSITION INDICATOR SYMBOL

RAMP SLOPE INDICATOR SYMBOL

SLOPE PITCH INDICATOR SYMBOL

STEP INDICATOR SYMBOL

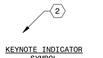


STEP TO SLOPE INDICATOR SYMBOL

RIDGE INDICATOR SYMBOL

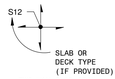
PROJECT NORTH ARROW SYMBOL

BORING LOCATION SYMBOL

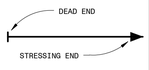


KEYNOTE INDICATOR SYMBOL

ONE-WAY SLAB OR DECK SPAN INDICATOR SYMBOL

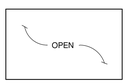


TWO-WAY SLAB SPAN INDICATOR SYMBOL



POST-TENSIONING TENDON SYMBOLS


SMALL OPENINGS IN STRUCTURAL SLAB OR DECK



LARGE OPENING IN STRUCTURAL SLAB OR DECK

REINFORCING STEEL WITH 90° HOOK

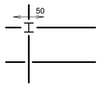
REINFORCING STEEL WITH 180° HOOK

CONCRETE FRAMING PENETRATION

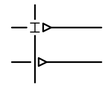
STEEL FRAMING PENETRATION

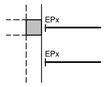
PASS-THROUGH FORCE SYMBOL

BRACE/KICKER DIRECTION INDICATOR SYMBOL

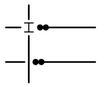


CONNECTION WITH PASS THROUGH FORCE


MOMENT CONNECTION (NON-SEISMIC)



CONNECTION TO CONCRETE WITH EMBEDDED PLATE


CONNECTION WITH TWO COLUMNS OF BOLTS

CONNECTION WITH DOUBLE SHEAR PLATE

CONNECTION WITH FULL-DEPTH SHEAR PLATE

CONNECTION WITH GUSSET AND WELDED FLANGES

CONNECTION WITH GUSSET

SPECIAL CONNECTION (TYPE X)

CONNECTION WITH WELDED TOP FLANGE

BEAM SPLICE CONNECTION (SHEAR ONLY)

MOMENT CONNECTION (SEISMIC)

MECHANICAL UNIT OR OTHER EQUIPMENT

STRUCTURAL ELEMENTS TAGS

THE FOLLOWING STRUCTURAL ELEMENT TAGS, USED IN CONJUNCTION WITH SCHEDULES, MAY APPEAR ON THE DRAWINGS:

Bxx DENOTES SLAB BOTTOM REINFORCEMENT TYPE "xx"
BMxx DENOTES CONCRETE BEAM TYPE "xx"
BPxx DENOTES BASE PLATE TYPE "xx"
Cxx DENOTES COLUMN TYPE "xx"
CFxx DENOTES CONTINUOUS FOOTING TYPE "xx"
DPxx DENOTES DRILLED PIER TYPE "xx"
EPxx DENOTES EMBEDDED PLATE TYPE "xx"
Fxx DENOTES SPREAD FOOTING TYPE "xx"
FPxx DENOTES FRAMING PENETRATION TYPE "xx"
GBxx DENOTES GRADE BEAM TYPE "xx"
MWxx DENOTES CMU WALL TYPE "xx"
Pxx DENOTES PIER TYPE "xx"
PCxx DENOTES PILE OR PIER CAP TYPE "xx"
Sxx DENOTES ONE-WAY SLAB TYPE "xx"
SRxx DENOTES HEADED SHEAR STUD REINFORCEMENT TYPE "xx"
SFxx DENOTES STRIP FOOTING TYPE "xx"
Txx DENOTES SLAB TOP REINFORCEMENT TYPE "xx"
WFxx DENOTES WALL FOOTING TYPE "xx"

ABBREVIATIONS

THE FOLLOWING ABBREVIATIONS MAY BE USED IN THE DRAWINGS:

@	AT	LLH	LONG LEG HORIZONTAL
&	AND	LLV	LONG LEG VERTICAL
#	NUMBER	LONG	LONGITUDINAL
Ø	ROUND, DIAMETER	LSH	LONG SIDE HORIZONTAL
ADDL	ADDITIONAL	LSLP	LONG-SLOTTED HOLE PARALLEL
AESS	ARCHITECTURAL EXPOSED STRUCTURAL STEEL	LSLT	LONG-SLOTTED HOLE TRANSVERSE
		LSV	LONG SIDE VERTICAL
AFF	ABOVE FINISHED FLOOR	LWC	LIGHTWEIGHT CONCRETE
AHR	ANCHOR	M	MOMENT
AHU	AIR HANDLING UNIT	MAS	MASONRY
ALT	ALTERNATE	MAX	MAXIMUM
APPROX	APPROXIMATE	MC	MOMENT CONNECTION
AR	ANCHOR ROD	MECH	MECHANICAL
ARCH	ARCHITECTURAL	MEZZ	MEZZANINE
BC	BOTTOM OF COLUMN	MFR	MANUFACTURER
BF	BRACED FRAME	MH	HORIZONTAL MOMENT
BLDG	BUILDING	MIN	MINIMUM
BM	BEAM	MISC	MISCELLANEOUS
BO	BOTTOM OF	MTL	METAL
BOD	BOTTOM OF DECK	NF	NEAR FACE
BOT	BOTTOM	NIC	NOT IN CONTRACT
BRDG	BRIDGING	NS	NEAR SIDE
BRG	BEARING	NTS	NOT TO SCALE
BTWN	BETWEEN	NWC	NORMALWEIGHT CONCRETE
C	CAMBER	OC	ON CENTER
CANTIL	CANTILEVER	OD	OUTSIDE DIAMETER
CFSF	COLD-FORMED STEEL FRAMING	OPH	OPPOSITE HAND
CIP	CAST-IN-PLACE	OPNG	OPENING
CJ	CONSTRUCTION/CONTROL JOINT	OPP	OPPOSITE
CJP	COMPLETE JOINT PENETRATION	OVS	OVERSIZED HOLE
CL	CENTERLINE	P	AXIAL LOAD
CMU	CONCRETE MASONRY UNIT	PAF	POWDER ACTUATED FASTENER
COL	COLUMN	PAR	PARALLEL
CONC	CONCRETE	PCC	PRECAST CONCRETE
CONN	CONNECTION	PCF	POUNDS PER CUBIC FOOT
CONSTR	CONSTRUCTION	PCY	POUNDS PER CUBIC YARD
CONT	CONTINUOUS	PERP	PERPENDICULAR
COORD	COORDINATE	PL	PLATE
COV	COVER	PLF	POUNDS PER LINEAR FOOT
CPRS	COMPRESSIBLE	PJP	PARTIAL JOINT PENETRATION
CTRS	CENTERS	PRELIM	PRELIMINARY
db	BAR DIAMETER	PROP	PROPERTY
DBA	DEFORMED BAR ANCHOR	PSF	POUNDS PER SQUARE FOOT
DCW	DEMAND CRITICAL WELD	PSI	POUNDS PER SQUARE INCH
DET	DETAIL	PT	POST-TENSION(ED)
DIA	DIAMETER	QTY	QUANTITY
DIM	DIMENSION	R	REACTION
DWA	DEFORMED WIRE ANCHOR	RAD	RADIUS
DWG	DRAWING	REF	REFERENCE
EA	EACH	REINF	REINFORCEMENT
EF	EACH FACE	REM	REMAINDER
EJ	EXPANSION JOINT	REQD	REQUIRED
EL	ELEVATION	REV	REVISION
ELEV	ELEVATOR	RS	ROCK SOCKET
EMBED	EMBEDMENT, EMBEDDED	RTU	ROOF TOP UNIT
ENGR	ENGINEER	SC	SLIP CRITICAL
EQ	EQUAL	SCHED	SCHEDULE(D)
EQUIP	EQUIPMENT	SDS	SELF-DRILLING SCREW
EQUIV	EQUIVALENT	SECT	SECTION
EW	EACH WAY	SHT	SHEET
EXIST	EXISTING	SIM	SIMILAR
EXP	EXPANSION	SLBB	SHORT LEG BACK TO BACK
EXT	EXTERIOR	SLRS	SEISMIC LOAD RESISTING SYSTEM
FAB	FABRICATE	SOG	SLAB-ON-GRADE
f'c=	28 DAY CONCRETE STRENGTH=	SPA	SPACING
f'm=	28 DAY MASONRY STRENGTH=	SPEC	SPECIFICATION
FD	FLOOR DRAIN	SPRT	SUPPORT
FDTN	FOUNDATION	SQ	SQUARE
FF	FAR FACE	SS	STAINLESS STEEL
FIN	FINISH(ED)	SSLP	SHORT-SLOTTED HOLE PARALLEL
FLR	FLOOR	SSLT	SHORT-SLOTTED HOLE TRANSVERSE
FS	FAR SIDE	STD	STANDARD
FTG	FOOTING	STIF	STIFFENER
FUT	FUTURE	STIR	STIRRUP
FV	FIELD VERIFY	STL	STEEL
Fy=	YIELD STRENGTH=	STRUCT	STRUCTURE, STRUCTURAL
GALV	GALVANIZE(D)	SW	SHEAR WALL
GEN	GENERAL	SYMM	SYMMETRIC, SYMMETRICAL
GR	GRADE	T	TORSION
H	HORIZONTAL REACTION	TC	TOP OF COLUMN
HGR	HANGER	THD	THREADED
HORIZ	HORIZONTAL	TO	TOP OF
HSA	HEADED STUD ANCHOR	TOC	TOP OF CONCRETE
HSS	HOLLOW STRUCTURAL SECTION	TOM	TOP OF MASONRY
ID	INSIDE DIAMETER	TOS	TOP OF STEEL, TOP OF SLAB
INFO	INFORMATION	TRANS	TRANSVERSE
INT	INTERIOR	TYP	TYPICAL
JT	JOINT	UNO	UNLESS NOTED OTHERWISE
K	KIPS (1000 LBS)	VERT	VERTICAL
KSF	KIPS PER SQUARE FOOT	WF	WIDE FLANGE
KSI	KIPS PER SQUARE INCH	WP	WORK POINT
LBS	POUNDS	WS	WATERSTOP
Ld	DEVELOPMENT LENGTH	WT	WEIGHT
LLBB	LONG LEG BACK TO BACK	WWR	WELDED WIRE REINFORCEMENT
		XS	EXTRA STRONG
		XXS	DOUBLE EXTRA STRONG

FOUNDATION ANNOTATION STYLES

THE FOLLOWING STRUCTURAL ANNOTATIONS MAY APPEAR ON THE FOUNDATION PLANS:

SPREAD, STRIP, OR COMBINED FOOTING MARK
COLUMN MARK (IF PROVIDED)
TOP OF FOOTING ELEVATION (IF PROVIDED)

PIER MARK
COLUMN MARK (IF PROVIDED)
TOP OF PIER ELEVATION (IF PROVIDED)
ESTIMATED PIER TIP ELEVATION (IF PROVIDED)
REQUIRED ROCK SOCKET (IF PROVIDED)
COLUMN UNFACTORED REACTION IN KIPS (IF PROVIDED)

WALL FOOTING MARK
WALL MARK (IF PROVIDED)
ALL STEPS WILL BE NOTED

CONCRETE ANNOTATION STYLES

THE FOLLOWING STRUCTURAL ANNOTATIONS MAY APPEAR ON THE CONCRETE FRAMING PLANS

COLUMN MARK (IF PROVIDED)
HEADED SHEAR STUD REINFORCEMENT MARK (IF PROVIDED)

BEAM MARK
TOP OF CONCRETE BEAM ELEVATION RELATIVE TO TYPICAL TOP OF CONCRETE ELEVATION. A POSITIVE VALUE INDICATES THE CONCRETE BEAM IS ABOVE THE TYPICAL ELEVATION.

TYPICAL PAN SIZE PROVIDED IN PLAN NOTES IS NOT PROVIDED ON PLAN

ATYPICAL PAN SIZE NOTED IN PLAN AT EACH PAN

REINFORCING STEEL NOTED IN PLAN SHALL BE LOCATED ACCORDING TO PLAN NOTES, TYPICAL VIEWS, AND SCHEDULES. HOOKS ARE INDICATED IN PLAN WHERE REQUIRED FOR NON-SCHEDULED REINFORCING STEEL. WHERE HOOKS ARE SHOWN, LENGTHS PROVIDED DO NOT INCLUDE HOOK.

A SINGLE ARROWED LINE INDICATES THE EXTENT OVER WHICH THE REINFORCING STEEL IS TO BE DISTRIBUTED WITH AN EQUAL SPACING BETWEEN BARS.

REFERENCE LINE OR OBJECT WHERE REINFORCING STOPS

A DOUBLE ARROWED LINE INDICATES THAT THE REINFORCING STEEL IS TO BE PROVIDED IN EACH DIRECTION UNTIL ONE OF THE FOLLOWING OCCURS:

1. AN EDGE OF SLAB
2. A SIGNIFICANT CHANGE IN THE SLAB GEOMETRY
3. OTHER REINFORCING STEEL OF A SIMILAR NATURE IS SHOWN

STEEL ANNOTATION STYLES

COLUMN SIZE OR MARK (IF PROVIDED)
BASE PLATE MARK (IF PROVIDED)

THE FOLLOWING STRUCTURAL ANNOTATIONS MAY APPEAR ON THE STEEL FRAMING PLANS. ALL LOADS INDICATED ARE FACTORED:

NON-COMPOSITE BEAM

COMPOSITE BEAM

ADDITIONAL INFORMATION MAY BE SPECIFIED ON STEEL BEAMS FOR THE PURPOSES OF DELEGATED CONNECTION DESIGN. IN THOSE CASES, FORCES AND MOMENTS WILL BE PROVIDED AS APPROPRIATE AT THE ENDS OF THE BEAMS AS INDICATED BELOW.

THE FOLLOWING DIAGRAM PROVIDES INFORMATION REGARDING THE ORIENTATION OF THE REACTIONS PROVIDED. THE DIAGRAM BELOW APPLIES TO ALL NON-SLOPING MEMBERS REGARDLESS OF THE INDIVIDUAL MEMBER ORIENTATION (FOR EXAMPLE, AN HSS ORIENTED LONG-SIDE HORIZONTAL). REFER TO DETAILS FOR ADDITIONAL INFORMATION ON LOADING OF SLOPED MEMBERS.

FOR ALL LOADING, REACTIONS ARE TO BE APPLIED AT THE CENTERLINE OF THE MEMBER AT THE WORK POINT, UNLESS NOTED OTHERWISE. IF ONLY A SINGLE VALUE IS SHOWN, THE LOAD SHALL BE ASSUMED TO ACT IN BOTH DIRECTIONS WITH EQUAL MAGNITUDE. FOR AXIAL LOAD REACTIONS, A POSITIVE VALUE INDICATES TENSION. FOR VERTICAL MOMENTS, A POSITIVE VALUE WILL CAUSE COMPRESSION IN THE TOP OF THE BEAM AND TENSION IN THE BOTTOM.

SECTION ELEVATION

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WALTER P MOORE

WALTER P. MOORE AND ASSOCIATES, INC.
1301 McKINNEY STREET, SUITE 1100
HOUSTON, TEXAS 77010.3064

PHONE: 713.630.7300 FAX: 713.630.7396

Revisions		
No.	Date	Description

DESIGN DEVELOPMENT APPROVAL/SIGN OFF

THE SIGNATURES BELOW SIGNIFY THAT THIS DOCUMENT HAS BEEN DEVELOPED BASED ON APPROPRIATE PATIENT CARE AND STAFF CONSIDERATIONS AND REPRESENTS A PROGRAM, FUNCTIONAL ORGANIZATION, SPACE LAYOUT, AND DESIGN WHICH WILL EFFECTIVELY SUPPORT THE DELIVERY OF SERVICES FOR WHICH THE PROJECT HAS BEEN DESIGNED.

THE APPROVAL AUTHORIZES USE OF THIS DOCUMENT AS THE BASIS OF DESIGN DEVELOPMENT PRICING AND THE PREPARATION OF THE DETAILED CONSTRUCTION DOCUMENTS, EQUIPMENT AND FURNITURE REQUIREMENTS AND SPECIFICATIONS NEEDED TO IMPLEMENT CONSTRUCTION OF THE BUILDING.

ANY EQUIPMENT SHOWN IS FOR ILLUSTRATION ONLY. THE HOSPITAL HAS TO MAKE A DECISION ON THE EQUIPMENT TYPES AND MANUFACTURERS.

SIGNATURE:	DEPARTMENT:	DATE:

KEY PLAN

HOPE TOWER BUILDING PROJECT GARAGE

JERSEY SHORE UNIVERSITY MEDICAL CENTER
Enter address here

INTERIM REVIEW ONLY
Document Incomplete: Not intended for permit, bidding or construction.
Engineer: DENNIS WITTRY
P.E. Serial No.: 24GE04917300
Date: 06/19/2015
Walter P. Moore and Associates, Inc.

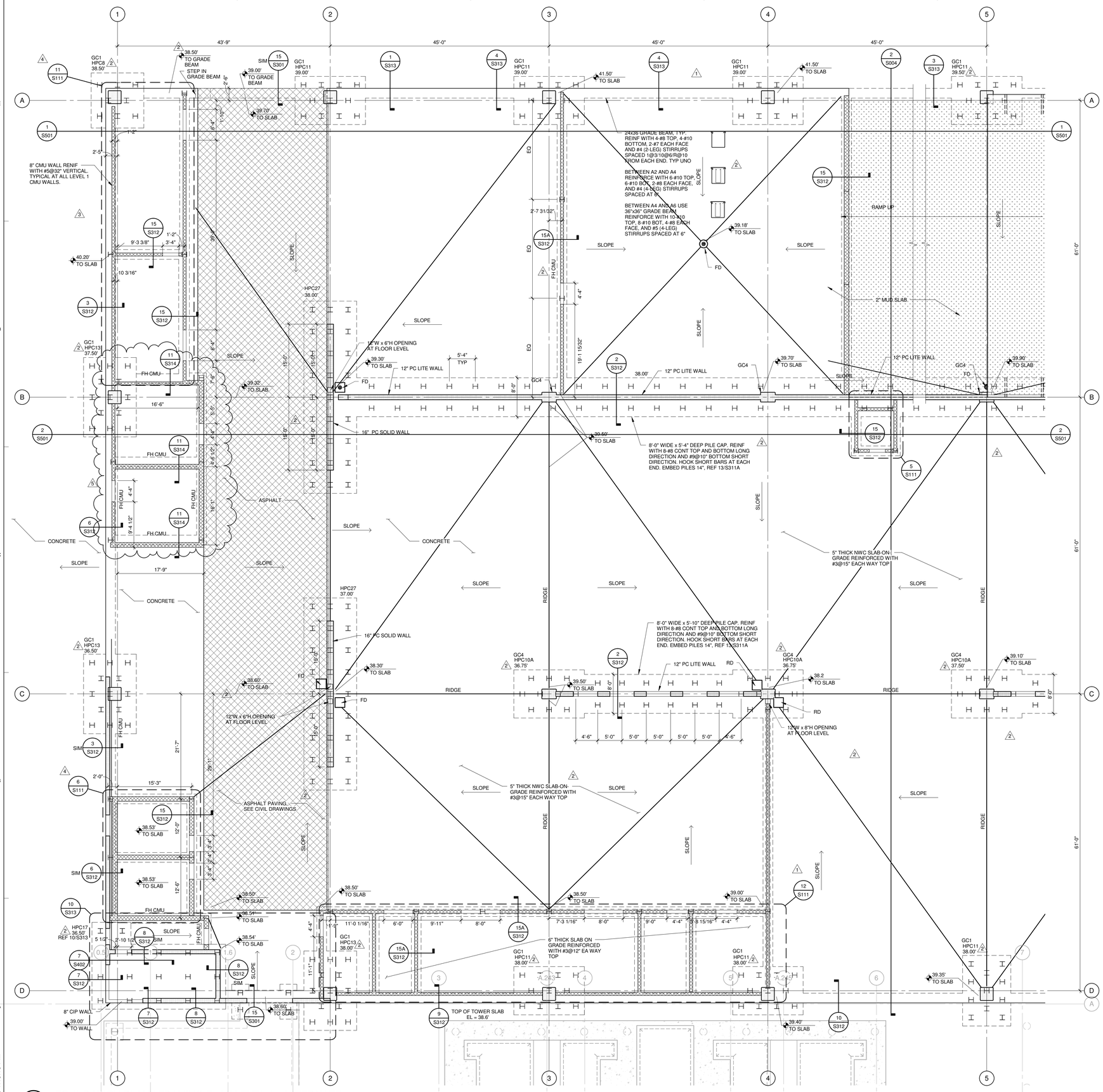
SYMBOLS AND NOTATIONS

PHASE:
DATE: 06/19/2015

PROJECT NO.

S003

6/18/2015 5:42:45 PM



1 FOUNDATION PLAN / FRAMING PLAN LEVEL 1 - ALTERNATE

1/8" = 1'-0"

COLUMN SIZE, SEE FOUNDATION NOTES
PILE CAP TYPE
GCX
PCXX
XX.X
TOP OF PILE CAP ELEVATION (CIVIL)

PILE CAP ANNOTATION KEY

FOUNDATION NOTES

1. CIVIL DRAWINGS ELEVATION 41'-6" = DATUM ELEVATION 0'-0".
2. TOP OF FOUNDATION ELEVATION IS 2'-0" BELOW GRADE, UNLESS NOTED OTHERWISE ON PLAN.
3. CENTER OF PILE CAPS SHALL BE ALIGNED TO CENTER OF COLUMN.
4. WALL FOOTINGS SHALL BE CENTERED ON THE SUPPORTED WALL, UNLESS NOTED OTHERWISE.
5. ALIGN TOP OF GRADE BEAM WITH TOP OF ADJACENT PILE CAP(S), UNLESS NOTED OTHERWISE.
6. REFER TO THE S30X AND S31X SERIES SHEETS FOR FOUNDATION AND SLAB ON GRADE SECTIONS AND DETAILS.
7. REFER TO S311A FOR FOUNDATION SCHEDULE.
8. REFER TO ARCHITECTURAL DRAWINGS FOR EXTENTS AND DIMENSIONS OF RAISED OR DEPRESSED SLAB AREAS, SLOPES, CURBS, AND DRAINS. REFER TO TYPICAL DETAILS FOR REINFORCEMENT.
9. REFER TO MECHANICAL, ELECTRICAL, AND PLUMBING DRAWINGS FOR SLAB PENETRATIONS AND UNDERGROUND UTILITIES.
10. CONTRACTOR TO FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS. NOTIFY ARCHITECT AND STRUCTURAL ENGINEER OF ANY DISCREPANCIES.
11. REFER TO ARCHITECTURAL DRAWINGS FOR FINISHES.
12. PRECAST COLUMNS ARE AS FOLLOWS:
    GC1 = 32"x32" NOMINAL
    GC2 = 18"x84" NOMINAL
    GC3 = 18"x48" NOMINAL
    GC4 = 24"x36" NOMINAL
13. REFER TO CIVIL DRAWINGS FOR PAVEMENT DESIGN AND ELEVATIONS.
14. REFER TO ARCHITECTURAL DRAWINGS FOR BOLLARD LOCATIONS.
15. REFER TO 14-S302 FOR TYPICAL SLEEVE THROUGH GRADE BEAM DETAIL.

FRAMING NOTES

1. SEE S501 FOR NOMINAL FLOOR ELEVATIONS.
2. THE FLOOR IS COMPRISED OF 26" PRECAST NORMAL WEIGHT CONCRETE PRE-TOPPED DOUBLE TEES WITH 4 3/4" FLANGE (TOTAL DEPTH = 30-3/4"). THE DOUBLE TEES ARE SUPPORTED BY INVERTED TEE BEAMS, LOAD BEARING SPANDRELS AND LITE WALLS. ALL HORIZONTAL FRAMING ELEMENTS ARE SUPPORTED BY PRECAST COLUMNS OR WALLS.
3. REFER TO S40X SERIES FOR TYPICAL FRAMING DETAILS.
4. ALL PRECAST TO PRECAST CONNECTIONS ARE TO BE DESIGNED, SUPPLIED AND LAID OUT BY PRECAST MANUFACTURER.
5. REFER TO MECHANICAL, ELECTRICAL AND PLUMBING DRAWINGS FOR PENETRATIONS NOT SHOWN.
6. REFER TO GENERAL NOTES AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.
7. REFER TO ARCHITECTURAL DRAWINGS FOR PRECAST, REVEALS, ETC AROUND PERIMETER OF GARAGE.
8. ENSURE TOP OF SLAB SLOPES TOWARDS THE INTERIOR OF THE GARAGE AND AWAY FROM ELEVATOR DOORS.
9. FH CMU DENOTES FULL HEIGHT CMU WALL. REFER TO S601 FOR TOP OF WALL CONNECTION. REFER TO PLAN FOR REINFORCEMENT.
10. REFER TO FOUNDATION PLAN FOR COLUMN SIZES.

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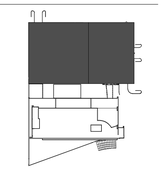
HOUSTON, TEXAS 77010.3064

PHONE: 713.630.7300 FAX: 713.630.7396

Revisions		
No.	Date	Description
1	09-09-2015	ADDENDUM 1
2	09-23-2015	ADDENDUM 2
3	10-21-2015	ADDENDUM 4
4	11-20-2015	ADDENDUM 6
5	06-17-2016	Proposal Request 006

KEY PLAN



NORTH

JSUMC
HOPE TOWER
BUILDING PROJECT
PARKING GARAGE
BID PACK 2

Jersey Shore University Medical Center
MEMBER OF THE MERIDIAN HEALTH FAMILY

JERSEY SHORE
UNIVERSITY
MEDICAL CENTER
1945 STATE ROUTE - NJ - 33, NEPTUNE, NEW JERSEY

FOUNDATION PLAN / FRAMING PLAN LEVEL 1 - ALTERNATE

PHASE: 100% CD
DATE: 08-21-2015

PROJECT NO. H14009-01

S101A.1

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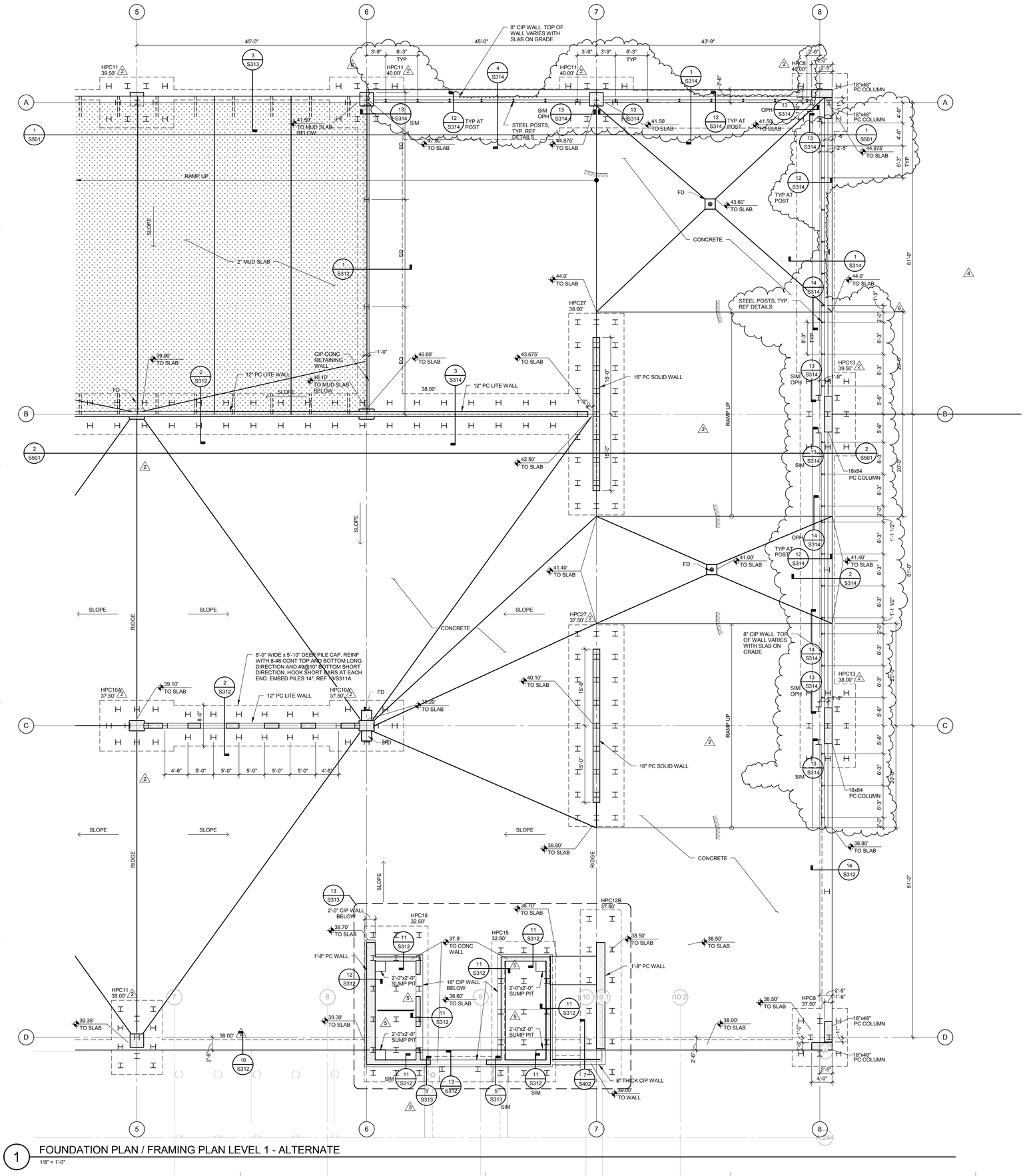

1 FOUNDATION PLAN / FRAMING PLAN LEVEL 1 - ALTERNATE

1/8" = 1'-0"

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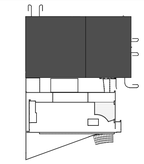
Revisions		
No.	Date	Description
1	09-09-2015	ADDENDUM 1
2	09-23-2015	ADDENDUM 2
3	10-21-2015	ADDENDUM 4
4	11-13-2015	ADDENDUM 5
5	02-15-2016	ADDENDUM 8
6	08-22-2016	RFI0376

KEY PLAN



NORTH

JSUMC
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PARKING GARAGE
BID PACK 2

Jersey Shore University Medical Center
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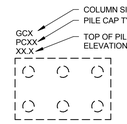
JERSEY SHORE
UNIVERSITY
MEDICAL CENTER
1945 STATE ROUTE - NJ - 33, NEPTUNE, NEW JERSEY



PILE CAP ANNOTATION KEY

FOUNDATION NOTES

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FRAMING NOTES

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6. REFER TO GENERAL NOTES AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.
7. REFER TO ARCHITECTURAL DRAWINGS FOR PRECAST, REVEALS, ETC AROUND PERIMETER OF GARAGE.
8. ENSURE TOP OF SLAB SLOPES TOWARDS THE INTERIOR OF THE GARAGE AND AWAY FROM ELEVATOR DOORS.
9. FH CMU DENOTES FULL HEIGHT CMU WALL. REFER TO S601 FOR TOP OF WALL CONNECTION. REFER TO PLAN FOR REINFORCEMENT.
10. REFER TO FOUNDATION PLAN FOR COLUMN SIZES.

FOUNDATION PLAN / FRAMING PLAN LEVEL 1 - ALTERNATE

PHASE: 100% CD
DATE: 08-21-2015

PROJECT NO. H14009-01

S101A.2

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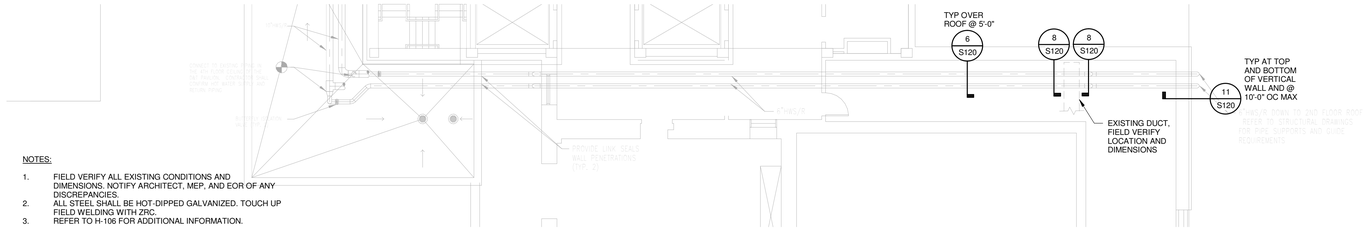
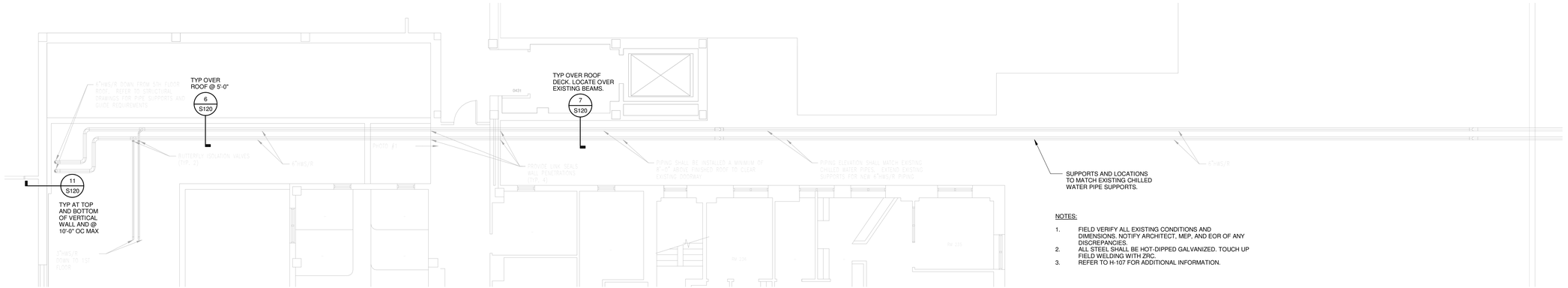


NOTES:

1. FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS. NOTIFY ARCHITECT, MEP, AND EOR OF ANY DISCREPANCIES.
2. ALL STEEL SHALL BE HOT-DIPPED GALVANIZED. TOUCH UP FIELD WELDING WITH ZRC.
3. REFER TO H-106 FOR ADDITIONAL INFORMATION.

1 HOT WATER PIPE ROUTE PLAN

1/8" = 1'-0"

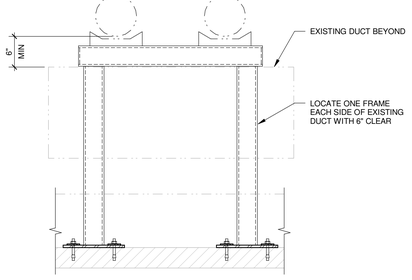


NOTES:

1. FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS. NOTIFY ARCHITECT, MEP, AND EOR OF ANY DISCREPANCIES.
2. ALL STEEL SHALL BE HOT-DIPPED GALVANIZED. TOUCH UP FIELD WELDING WITH ZRC.
3. REFER TO H-107 FOR ADDITIONAL INFORMATION.

2 HOT WATER PIPE ROUTE PLAN

1/8" = 1'-0"

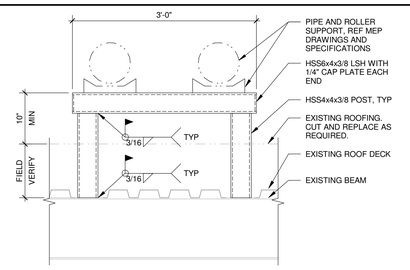


NOTES:

1. REFER TO 6/S120 FOR ADDITIONAL INFORMATION.

8 PIPE SUPPORT FRAME AT DUCT

1" = 1'-0"

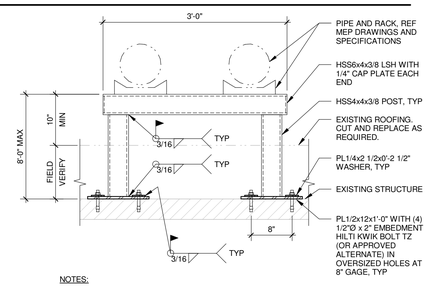


NOTES:

1. CENTER PIPE SUPPORT FRAMES OVER EXISTING STEEL BEAMS.
2. FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS PRIOR TO FABRICATION.
3. REFER TO MEP DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.

7 TYPICAL PIPE SUPPORT FRAME OVER DECK

1" = 1'-0"

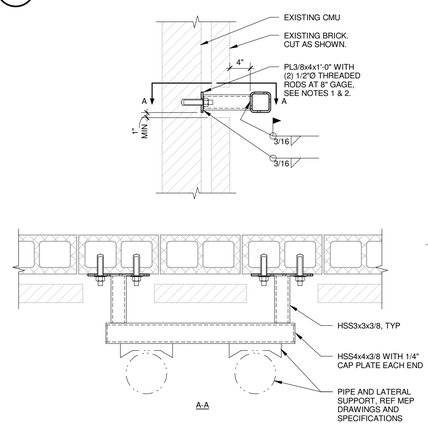


NOTES:

1. SPACING OF PIPE SUPPORT FRAMES SHALL NOT EXCEED 5'-0" ON CENTER.
2. FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS PRIOR TO FABRICATION.
3. REFER TO MEP DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.

6 TYPICAL PIPE SUPPORT FRAME OVER SLAB

1" = 1'-0"



NOTES:

1. DRILL AND EPOXY WITH HILTI HIT-HY 70 ADHESIVE WITH 2" MIN EMBEDMENT. CENTER ANCHORS VERTICALLY AND HORIZONTALLY IN CELL OF EXISTING CMU. BLOCKS MAY BE GROUT-FILLED OR HOLLOW; FIELD VERIFY AT EACH ANCHOR LOCATION.
2. PROVIDE OVERSIZED HOLES IN PLATE AND PL1/4x2 1/2x0'-2 1/2" WASHERS FIELD WELD ALL AROUND WITH 3/16" FILLET WELD AT EACH ANCHOR.
3. CONNECT PIPES LATERALLY ONLY. DO NOT GRAVITY CONNECT PIPES AT VERTICAL WALL SUPPORT FRAMES.

11 LATERAL SUPPORT AT WALL

1" = 1'-0"

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Houston, Texas 77002
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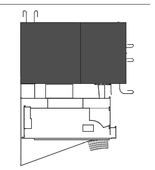
Revisions		
No.	Date	Description
1	05-16-2016	ADDENDUM 9

KEY PLAN



NORTH

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BID PACK 2

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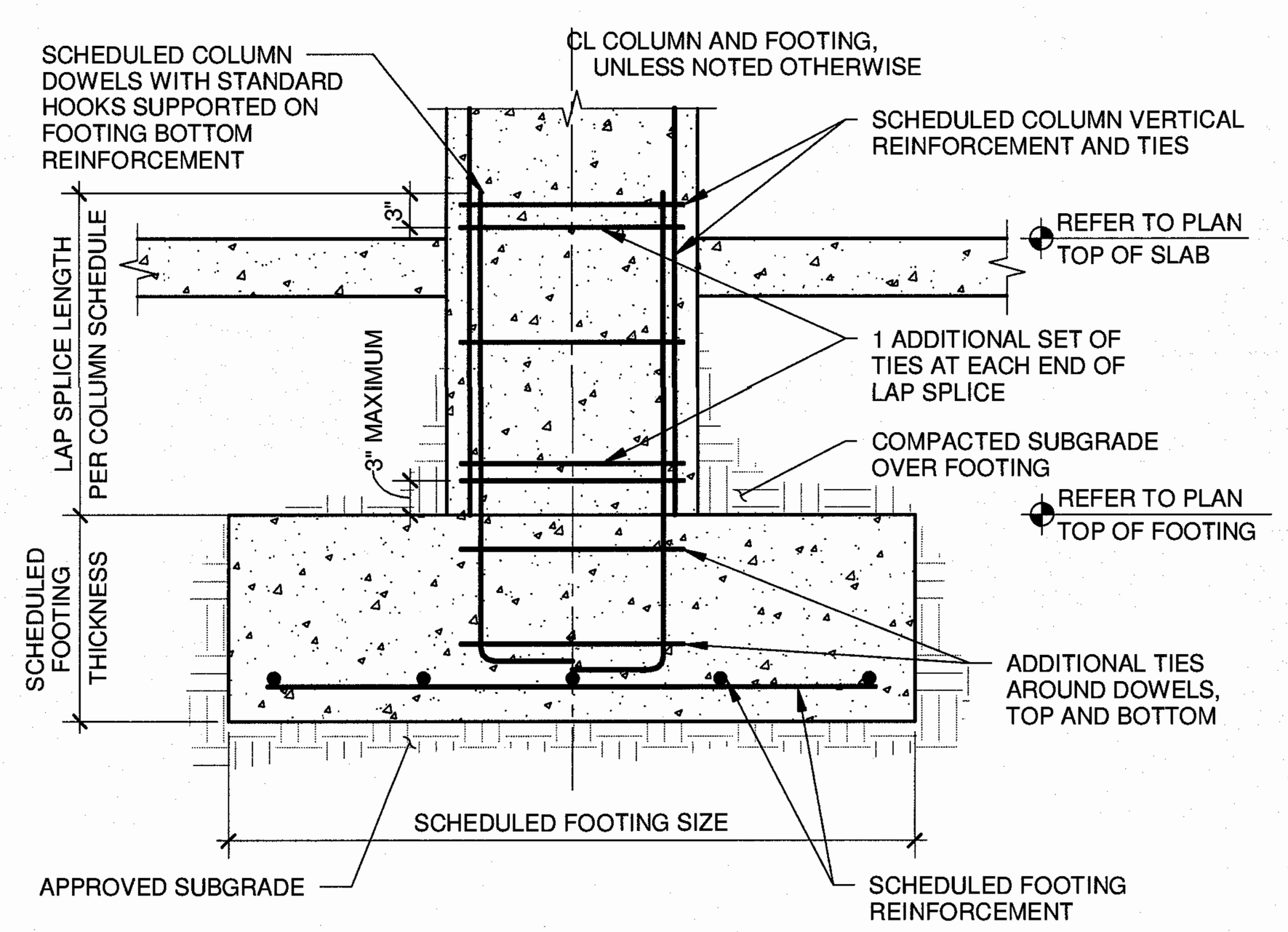
MEDICAL CENTER
1945 STATE ROUTE - NJ - 33, NEPTUNE,
NEW JERSEY

PIPE SUPPORT

PHASE: 100% CD
DATE: 08-21-2015

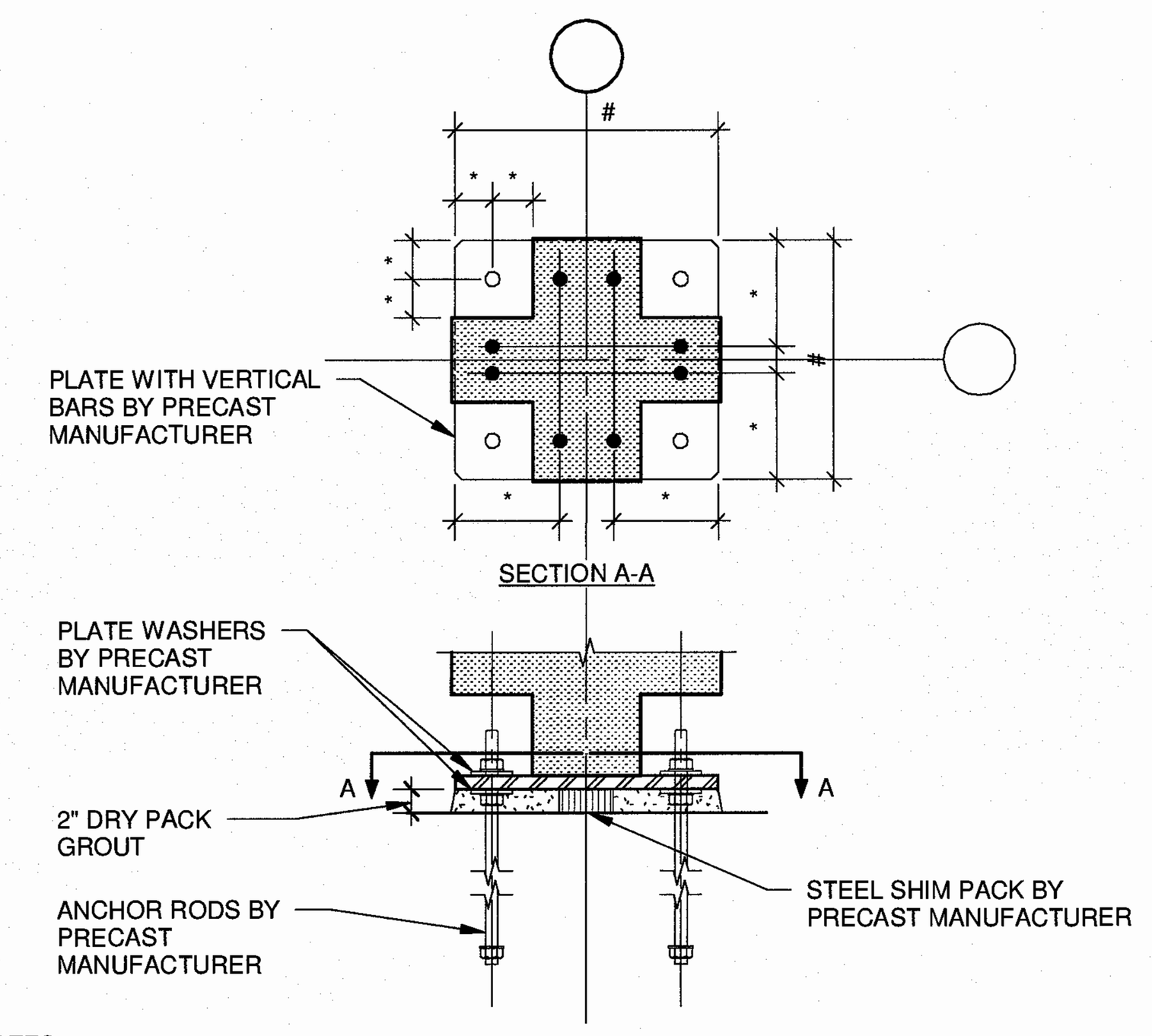
PROJECT NO.
H14009-01

S120



5 TYPICAL CONCRETE COLUMN ON SPREAD FOOTING

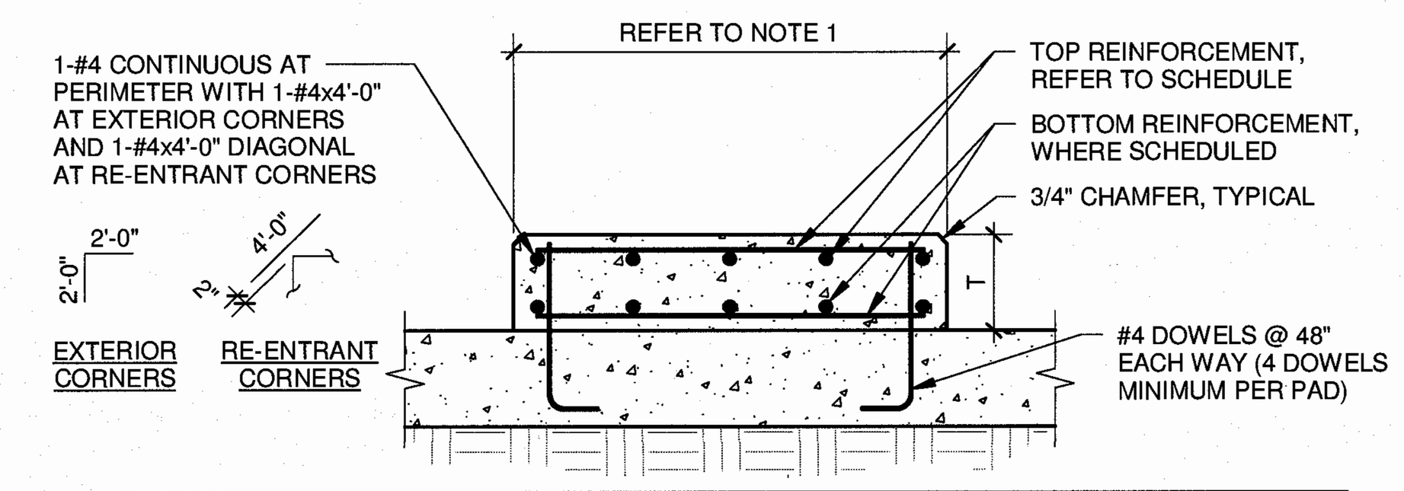
NO SCALE



NOTES:
1. ALL CONNECTIONS EMBEDDED IN PRECAST TO BE DESIGNED BY PRECAST MANUFACTURER.
2. WELDING REQUIREMENTS SHALL BE AS PER PRECAST MANUFACTURER.
3. (*) DENOTES DIMENSIONS SET BY PRECAST MANUFACTURER.

4 TYPICAL EXTERIOR PRECAST COLUMN CONNECTION TO FOUNDATION

NO SCALE

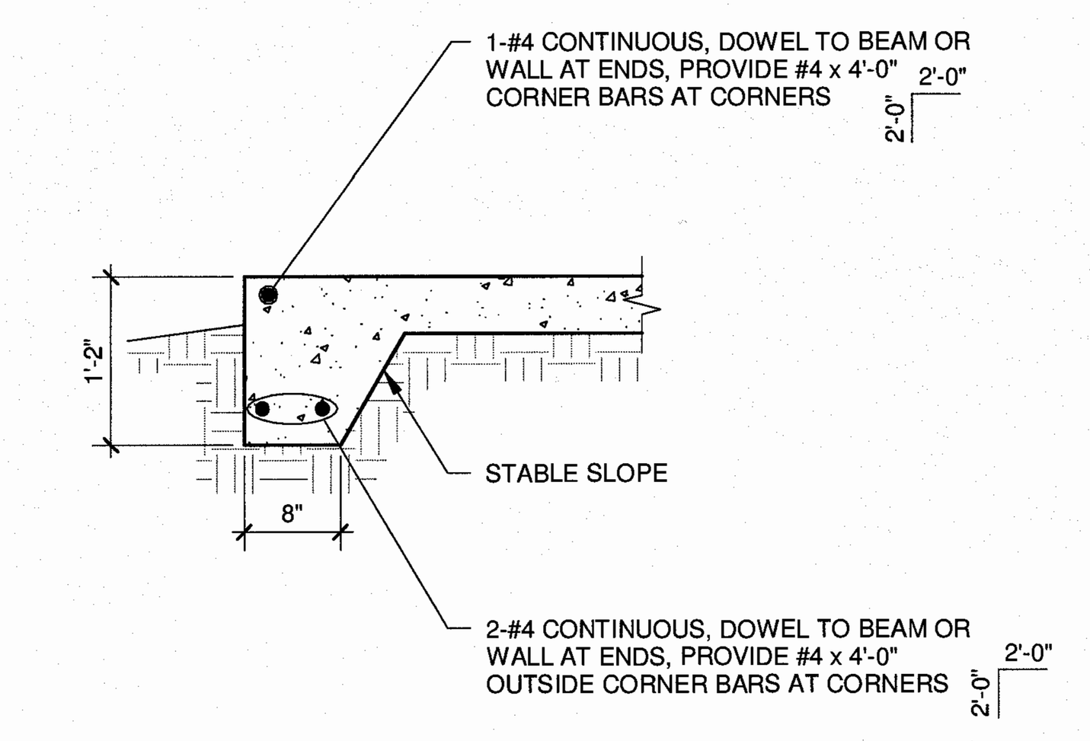


HOUSEKEEPING PAD REINFORCEMENT SCHEDULE		
PAD THICKNESS	TOP REINFORCEMENT	BOTTOM REINFORCEMENT
T = 4"	WWR 4x4-W2.9xW2.9 OR #3@12" EACH WAY	NONE
4" < T <= 6"	WWR 4x4-W4xW4 OR #4@18" EACH WAY	NONE
6" < T <= 8"	WWR 4x4-W6xW6 OR #4@12" EACH WAY	NONE
8" < T <= 12"	#4@18" EACH WAY	#4@18" EACH WAY
12" < T <= 16"	#4@12" EACH WAY	#4@12" EACH WAY

NOTES:
1. REFER TO ARCHITECTURAL, STRUCTURAL, OR MEP DRAWINGS FOR HOUSEKEEPING PAD PLAN DIMENSIONS AND THICKNESS (4" MINIMUM THICKNESS).
2. CONTRACTOR SHALL COORDINATE DIMENSIONS AND OTHER SPECIAL REQUIREMENTS WITH EQUIPMENT MANUFACTURERS AND PROVIDE WHERE REQUIRED WHETHER SHOWN ON STRUCTURAL DRAWINGS OR NOT.

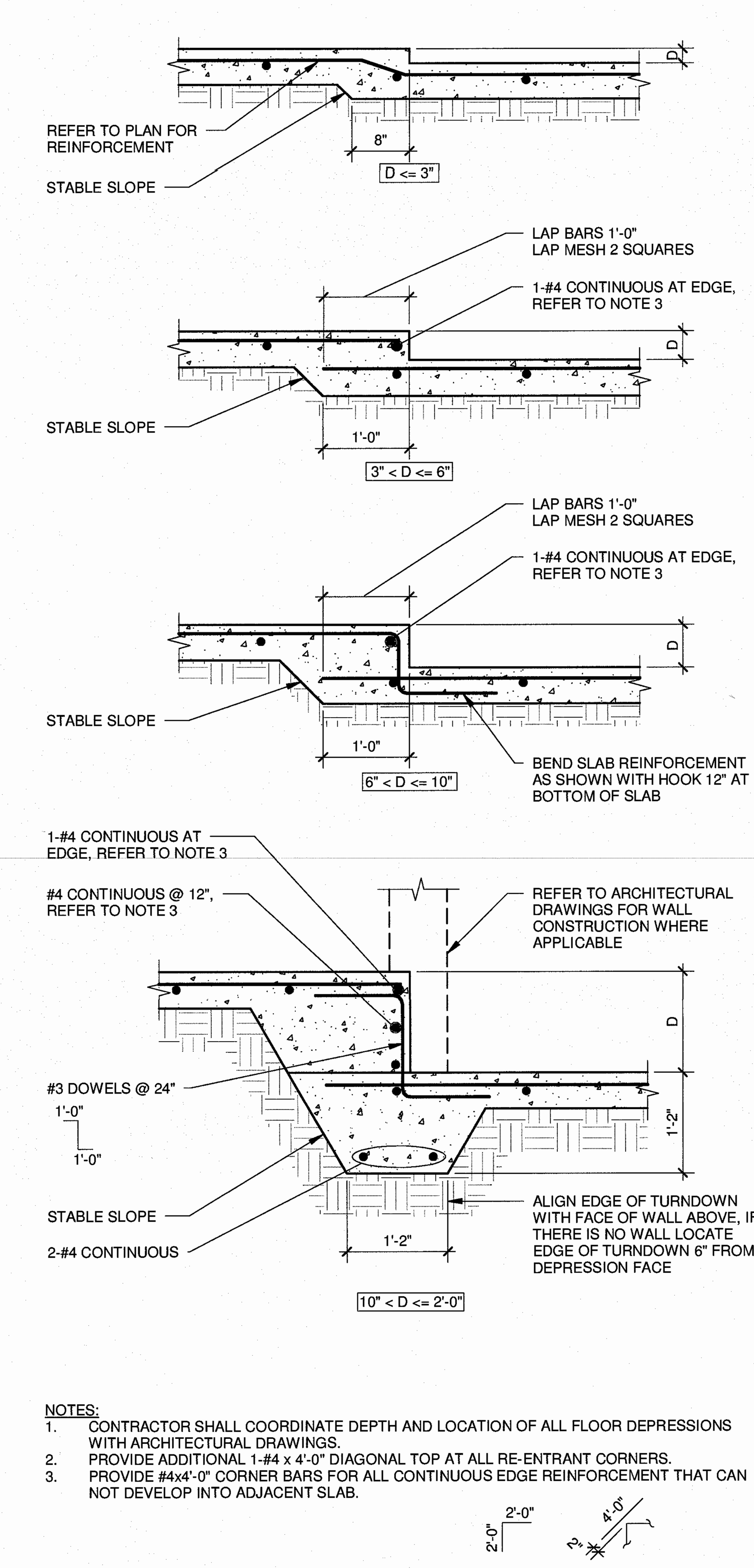
3 TYPICAL HOUSEKEEPING PAD OVER SLAB-ON-GRADE

NO SCALE



1 TYPICAL EXTERIOR SLAB-ON-GRADE TURNDOWN

NO SCALE

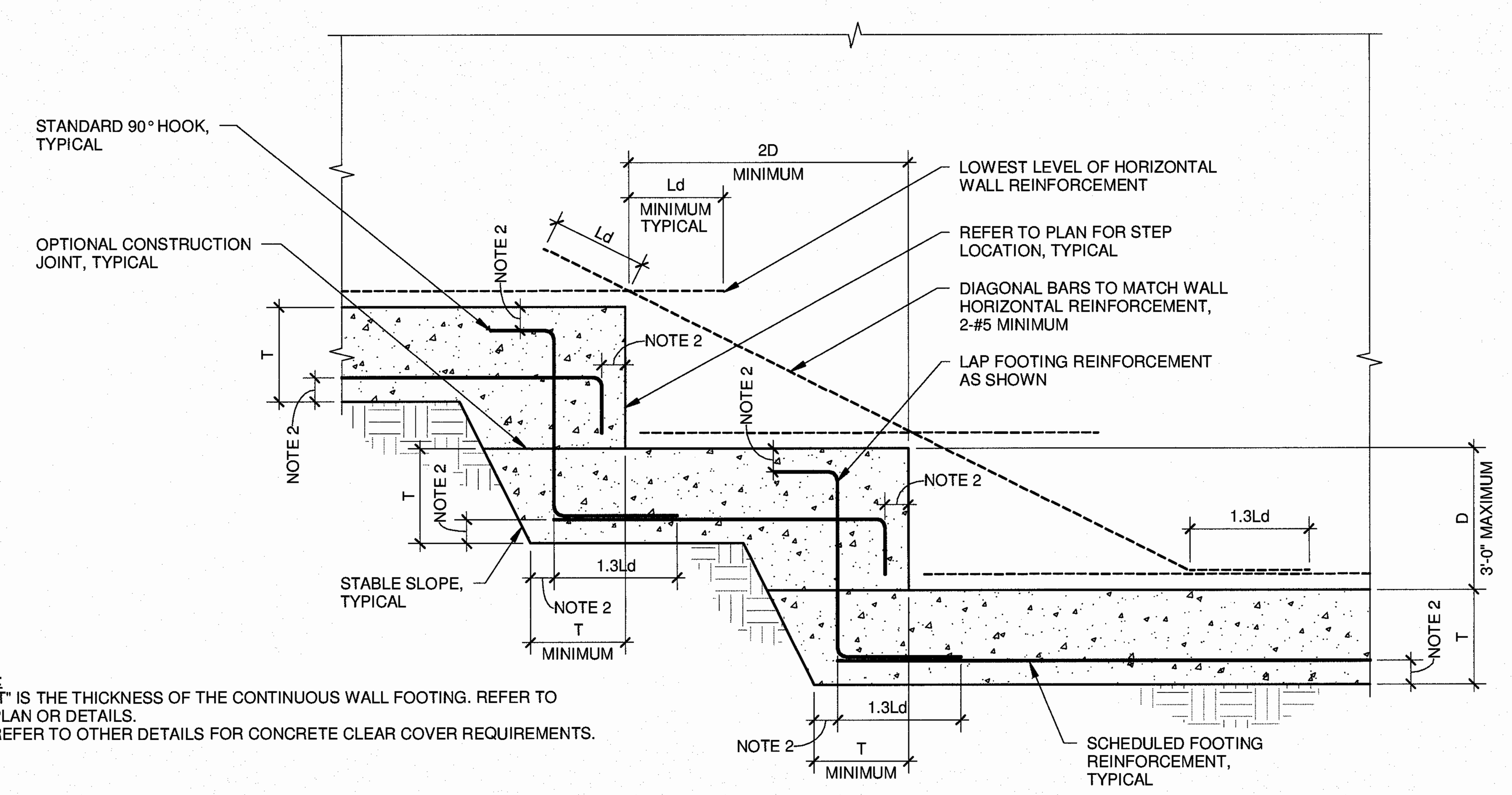


NOTES:
1. CONTRACTOR SHALL COORDINATE DEPTH AND LOCATION OF ALL FLOOR DEPRESSIONS WITH ARCHITECTURAL DRAWINGS.
2. PROVIDE ADDITIONAL 1-#4 x 4'-0" DIAGONAL TOP AT ALL RE-ENTRANT CORNERS.
3. PROVIDE #4x4'-0" CORNER BARS FOR ALL CONTINUOUS EDGE REINFORCEMENT THAT CAN NOT DEVELOP INTO ADJACENT SLAB.

EXTERIOR CORNERS — RE-ENTRANT CORNERS

7 TYPICAL SLAB-ON-GRADE DEPRESSIONS

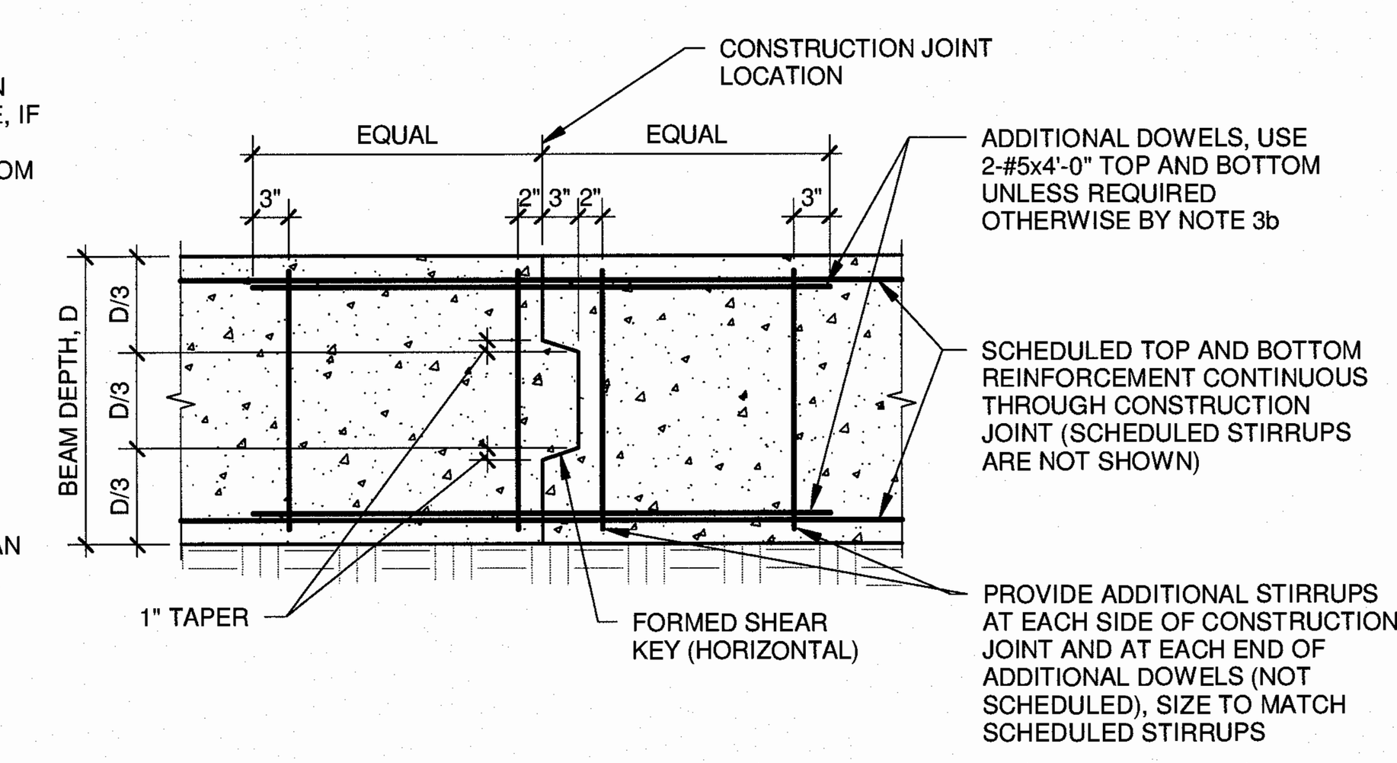
NO SCALE



NOTES:
1. "T" IS THE THICKNESS OF THE CONTINUOUS WALL FOOTING. REFER TO PLAN OR DETAILS.
2. REFER TO OTHER DETAILS FOR CONCRETE CLEAR COVER REQUIREMENTS.

9 TYPICAL STEPPED CONCRETE WALL FOOTING

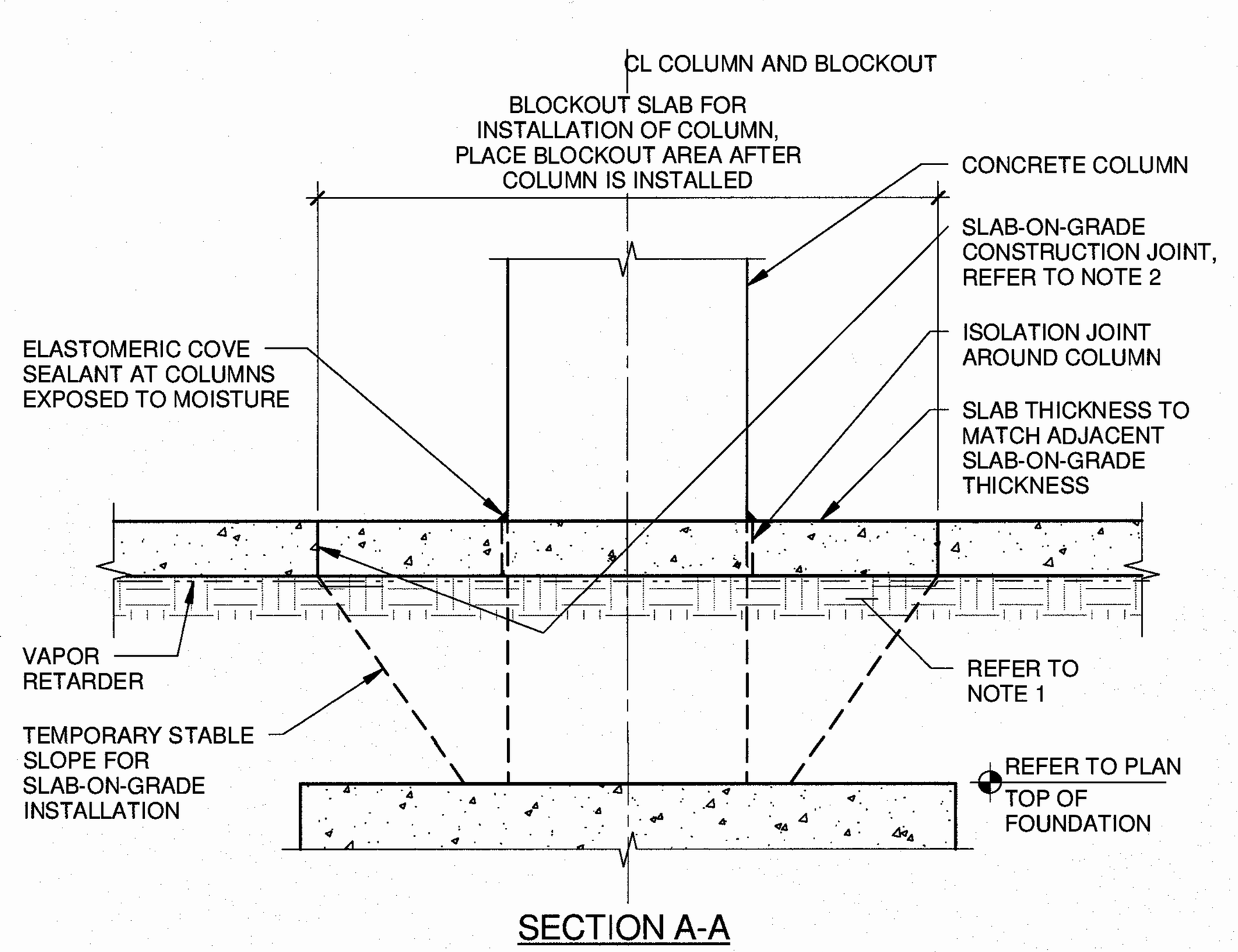
NO SCALE

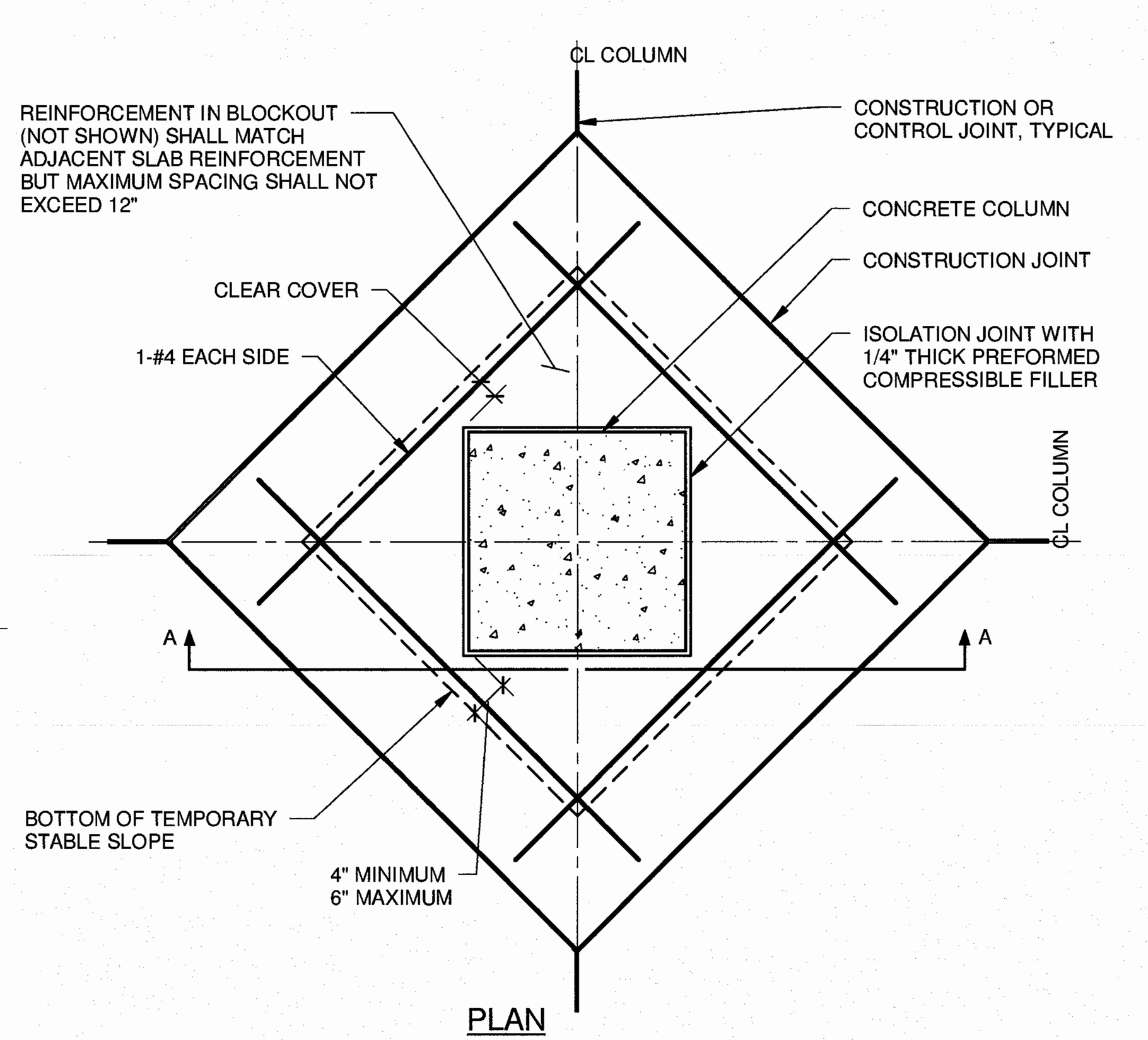


NOTES:
1. CONTRACTOR SHALL SUBMIT PROPOSED CONSTRUCTION JOINT LAYOUT AS A SHOP DRAWING FOR APPROVAL PRIOR TO DETAILING REINFORCEMENT AND A MINIMUM OF TWO WEEKS PRIOR TO POUR.
2. CONSTRUCTION JOINT LOCATIONS SHALL BE COORDINATED WITH REINFORCING STEEL SUPPLIER AND ERECTOR.
3. ACCEPTABLE JOINT LOCATIONS ARE AS FOLLOWS:
   a. FOR BEAMS NOT SUPPORTING INTERSECTING BEAMS, PLACE JOINT WITHIN MIDDLE THIRD OF SPAN.
   b. FOR BEAMS SUPPORTING INTERSECTING BEAMS, CHECK WITH STRUCTURAL ENGINEER FOR JOINT LOCATIONS AND DOWEL REQUIREMENTS.
4. SHOP DRAWINGS SHALL SHOW ALL REQUIRED ADDITIONAL REINFORCEMENT AT JOINTS.

6 TYPICAL CONSTRUCTION JOINT IN GRADE BEAM

NO SCALE

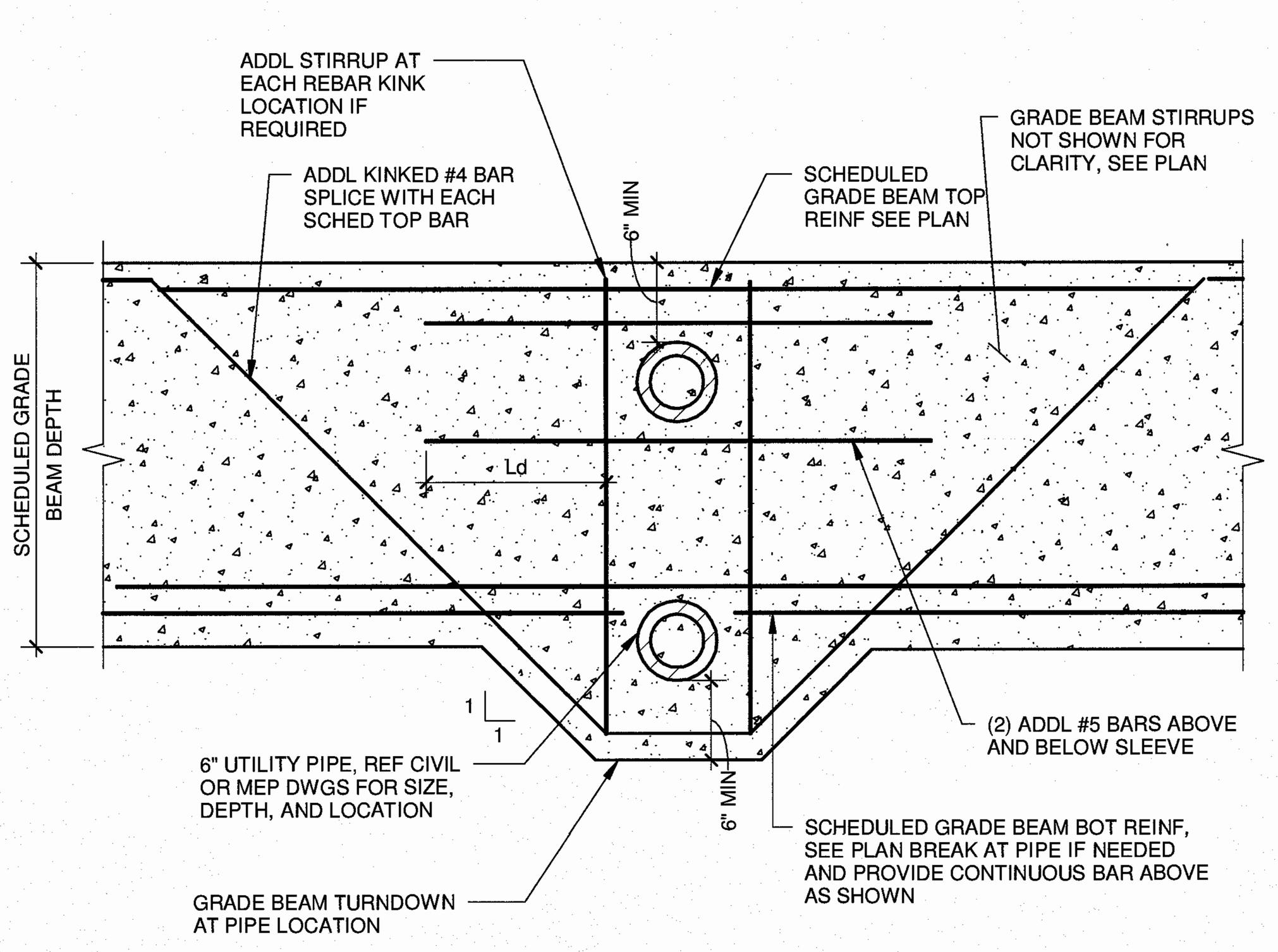




NOTES:
1. REFER TO "TYPICAL SLAB-ON-GRADE SUBGRADE PREPARATION" FOR SUBGRADE PREPARATION REQUIREMENTS.
2. REFER TO "TYPICAL CONSTRUCTION AND CONTROL JOINTS - SLAB-ON-GRADE" FOR CONSTRUCTION AND CONTROL JOINT REQUIREMENTS.

15 TYPICAL SLAB-ON-GRADE BLOCKOUT AROUND CONCRETE COLUMNS

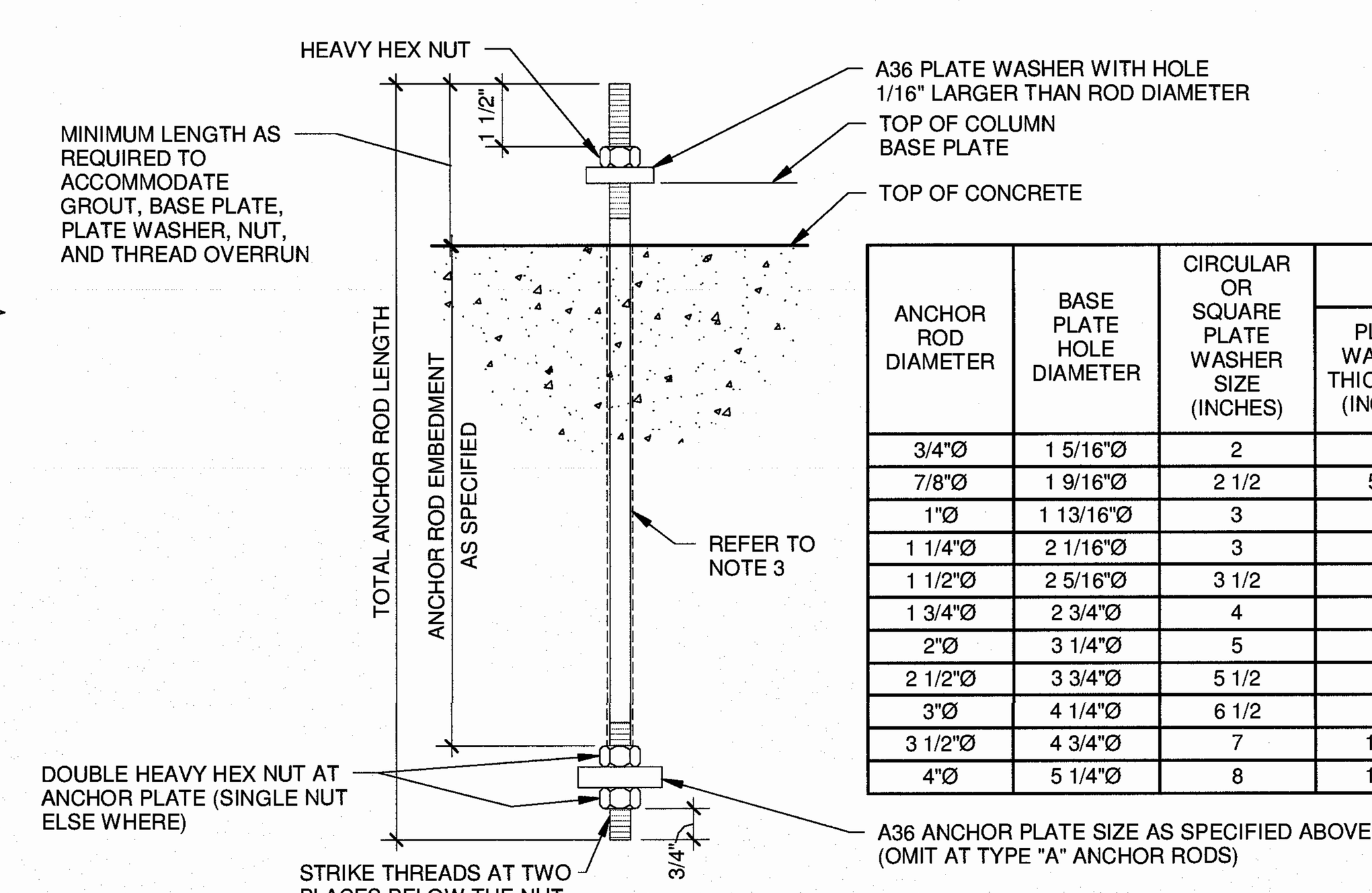
3/4" = 1'-0"



NOTE:
1. PROVIDE SLEEVE SIZE EQUIVALENT TO PIPE DIAMTER PLUS 2"
2. SLEEVE SHALL NOTE BEAR ON PIPE.
3. SEE PLAN FOR GRADE BEAM SIZE AND REINFORCEMENT
4. VERIFY FINAL PIPE LOCATION AND SIZE WITH EOR

14 TYPICAL SLEEVE THROUGH GRADE BEAM

1" = 1'-0"

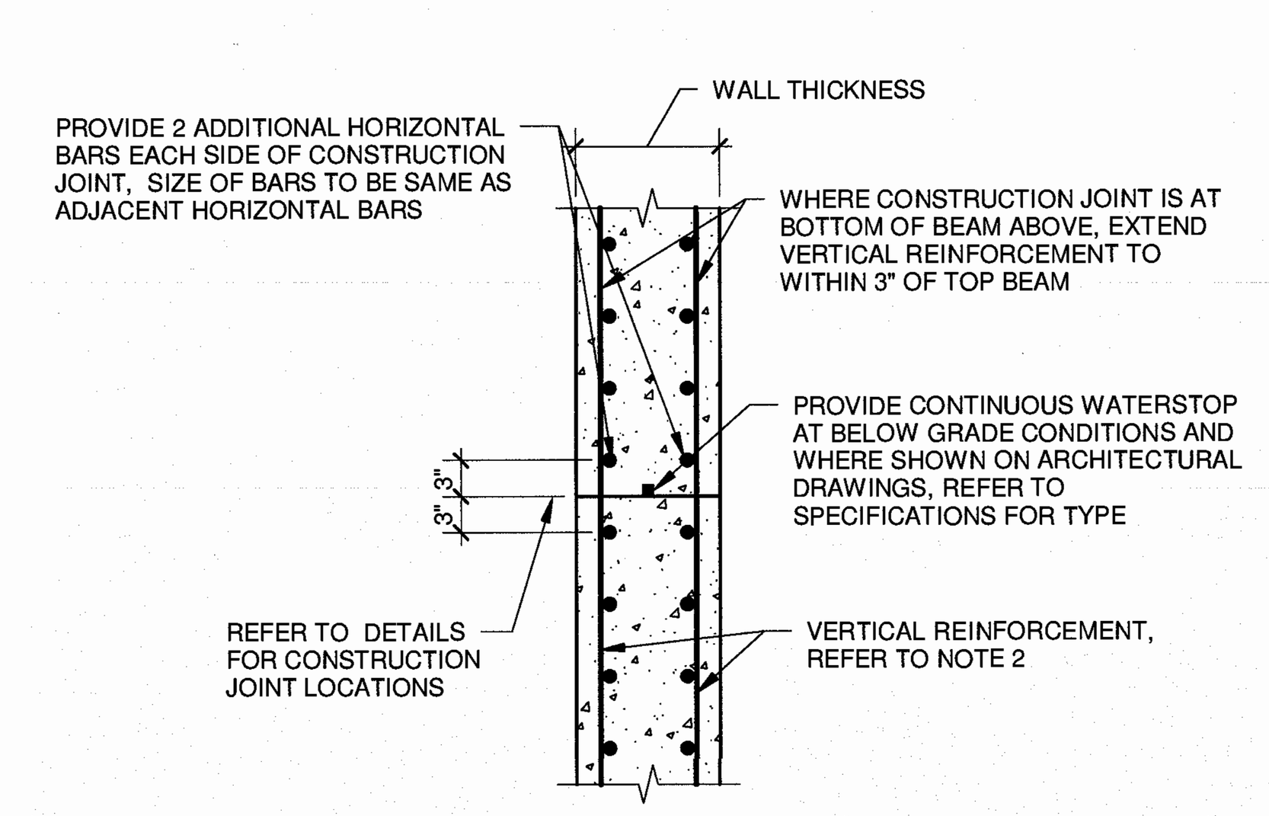


ANCHOR ROD DIAMETER	BASE PLATE HOLE DIAMETER	CIRCULAR OR SQUARE PLATE WASHER SIZE (INCHES)	F1554 GRADE 36		F1554 GRADE 55		F1554 GRADE 105	
			PLATE WASHER THICKNESS (INCHES)	ANCHOR PLATE SIZE (INCHES)	PLATE WASHER THICKNESS (INCHES)	ANCHOR PLATE SIZE (INCHES)	PLATE WASHER THICKNESS (INCHES)	ANCHOR PLATE SIZE (INCHES)
3/4"Ø	1 5/16"Ø	2	1/4	ANCHOR PLATE NOT NEEDED	5/16	-	5/8	1/2x2 1/4x2 1/4
7/8"Ø	1 9/16"Ø	2 1/2	5/16		3/8	-	5/8	5/8x2 1/2x2 1/2
1"Ø	1 13/16"Ø	3	3/8		7/16	1/2x2 3/4x2 3/4	3/4	3/4x2 3/4x2 3/4
1 1/4"Ø	2 1/16"Ø	3	1/2		1/2	5/8x3x3	7/8	7/8x3x3
1 1/2"Ø	2 5/16"Ø	3 1/2	1/2		5/8	3/4x3 1/2x3 1/2	1 1/4	1x3 1/2x3 1/2
1 3/4"Ø	2 3/4"Ø	4	5/8		3/4	7/8x3 3/4x3 3/4	1 1/4	1 1/4x4 1/4x4 1/4
2"Ø	3 1/4"Ø	5	3/4		7/8	1x4 1/4x4 1/4	1 1/2	1 1/2x4 3/4x4 3/4
2 1/2"Ø	3 3/4"Ø	5 1/2	7/8		1	1 1/4x5x5	1 3/4	1 3/4x6x6
3"Ø	4 1/4"Ø	6 1/2	1		1 1/4	1 1/2x5 3/4x5 3/4	2 1/4	2 1/4x7 1/4x7 1/4
3 1/2"Ø	4 3/4"Ø	7	1 1/4		1 1/2	1 3/4x6 1/2x6 1/2	2 1/2	2 1/2x8 1/2x8 1/2
4"Ø	5 1/4"Ø	8	1 1/2		1 3/4	2x7 1/2x7 1/2	3	2 3/4x9 3/4x9 3/4

NOTES:
1. REFER TO COLUMN SCHEDULE FOR ANCHOR ROD SIZE, TYPE, AND EMBEDMENT. ALL ANCHOR RODS SHALL BE TYPE "A" UNLESS NOTED OTHERWISE.
2. UNLESS NOTED OTHERWISE, ALL ANCHOR ROD NUTS SHALL BE TIGHTENED TO A "SNUG TIGHT" CONDITION AS DEFINED BY AISC AFTER THE CONCRETE IS AT LEAST 14 DAYS OLD.
3. WRAP EMBEDDED LENGTH OF ANCHOR ROD ABOVE NUT WITH TAPE AT BRACED-FRAME LOCATIONS ONLY IN SEISMIC DESIGN CATEGORY C OR HIGHER.
4. ANCHOR PLATE IS NOT REQUIRED AT TYPE "A" ANCHOR RODS.

13 TYPICAL ANCHOR ROD TYPE "A" AND "B" (f'c>=4000 PSI)

NO SCALE



NOTES:
1. CONTRACTOR SHALL OBTAIN PRIOR WRITTEN APPROVAL FROM ENGINEER IF ADDITIONAL HORIZONTAL CONSTRUCTION JOINTS NOT SHOWN ON THE DRAWINGS ARE DESIRED.
2. SPLICES OF VERTICAL REINFORCEMENT ARE ALLOWED BUT NOT REQUIRED AT CONSTRUCTION JOINTS. WHERE SPLICE IS DESIRED AT CONSTRUCTION JOINT, PROVIDE CLASS B LAP SPLICES WITH NO MORE THAN 50% OF THE BARS IN ANY FACE SPLICED AT THE JOINT. SPLICED BARS SHALL BE STAGGERED WITH UNSPLICED BARS. REFER TO OTHER TYPICAL DETAILS FOR WALL REINFORCEMENT SPLICE LENGTHS.

11 TYPICAL HORIZONTAL CONSTRUCTION JOINT AT CONCRETE WALL

NO SCALE

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Architecture with People in Mind
1111 Louisiana 26TH Floor
Houston, Texas 77002
713.665.5665 phone · whrarchitects.com

WALTER P MOORE
WALTER P. MOORE AND ASSOCIATES, INC.
1301 McKINNEY STREET, SUITE 1100
HOUSTON, TEXAS 77010.3064
PHONE: 713.630.7300 FAX: 713.630.7396

Revisions		
No.	Date	Description
1	09-23-2015	ADDENDUM 2

KEY PLAN

NORTH

JSUMC HOPE TOWER BUILDING PROJECT PARKING GARAGE BID PACK 2

Jersey Shore University Medical Center

JERSEY SHORE UNIVERSITY MEDICAL CENTER
1945 STATE ROUTE - NJ - 33, NEPTUNE, NEW JERSEY

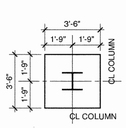
FOUNDATION TYPICAL DETAILS

PHASE: 100% CD
DATE: 08-21-2015

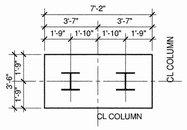
PROJECT NO. H14009-01

S302

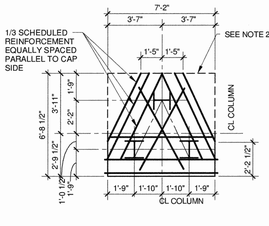
NOTES:
1. ALL PILES SHALL BE HP14x73, ASTM A572 GRADE NO. 60 UNO.
2. CORNERS MAY BE EXTENDED AS SHOWN DASHED WITHOUT REINFORCEMENT AT CONTRACTOR'S OPTION EXCEPT AT BUILDING EXTERIOR.
3. COLUMNS SHALL BE CENTERED ON PIPE CAP UNO.
4. PILES SHALL BE ORIENTED AS SHOWN IN THIS DETAIL, TYPICAL UNLESS NOTED OTHERWISE.
5. ALL PILES AT HPCXA CAPS SHALL HAVE 14" EMBEDMENT.



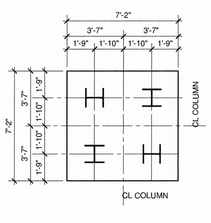
HPC1
(1 PILE)



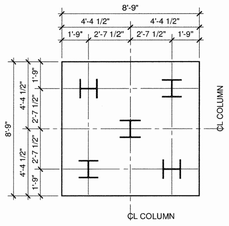
HPC2
(2 PILES)



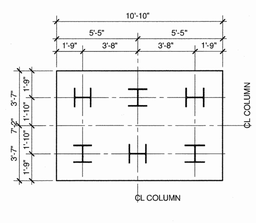
HPC3
(3 PILES)



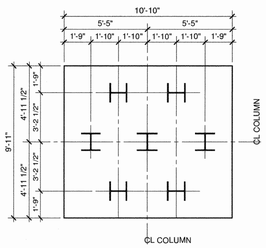
HPC4
(4 PILES)



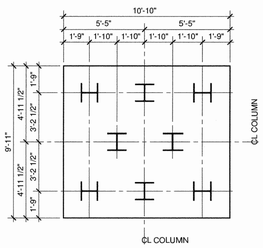
HPC5
(5 PILES)



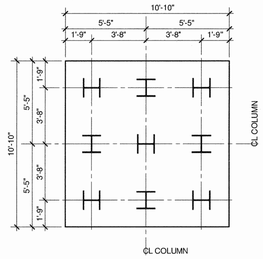
HPC6
(6 PILES)



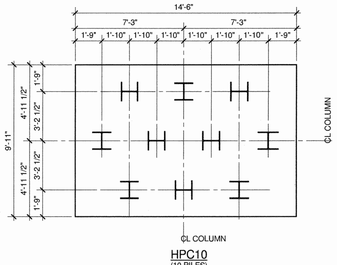
HPC7
(7 PILES)



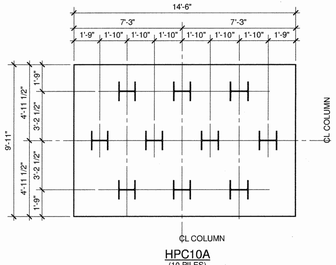
HPC8
(8 PILES)



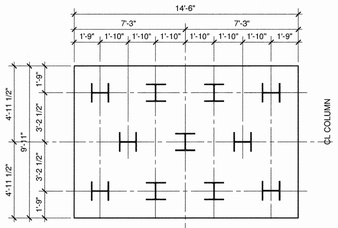
HPC9
(9 PILES)



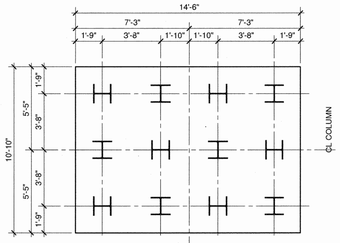
HPC10
(10 PILES)



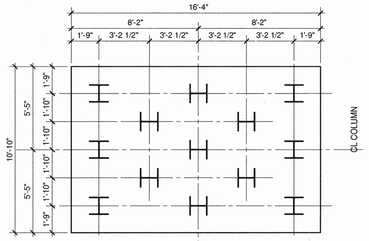
HPC10A
(10 PILES)



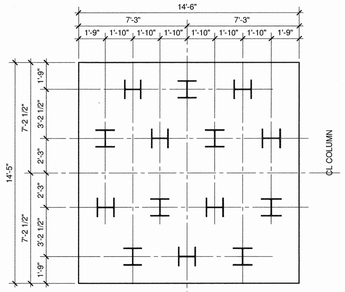
HPC11
(11 PILES)



HPC12
(12 PILES)



HPC13
(13 PILES)

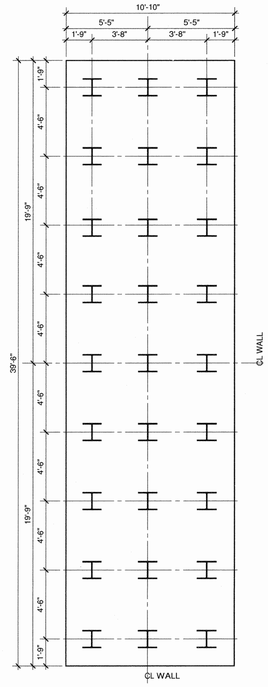


HPC14
(14 PILES)

PILE CAP SCHEDULE						
MARK	THICKNESS	BOTTOM REINFORCEMENT		TOP REINFORCEMENT		NOTES
		LONG	SHORT	LONG	SHORT	
HPC8	4'-6"	15-#10	15-#10			
HPC10A	5'-0"	18-#10	18-#10	18-#8	18-#8	EMBED 14", REF 13/S311A
HPC11	5'-0"	19-#10	17-#10			
HPC13	5'-6"	22-#11	16-#11			
HPC27A	6'-6"	20-#11	40-#11	20-#9	40-#9	EMBED 14", REF 13/S311A

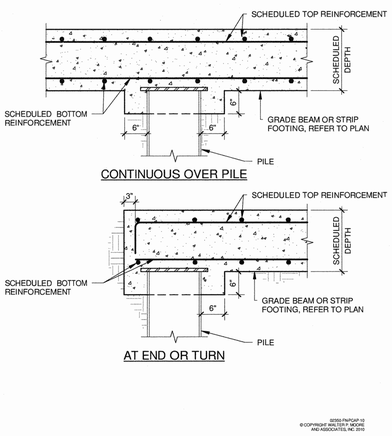
NOTES:
1. ALL REINFORCEMENT SHALL HAVE STANDARD HOOKS AT EACH END.

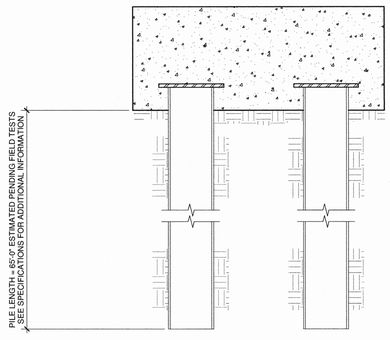
1 PILE CAP SCHEDULE
12" = 1'-0"

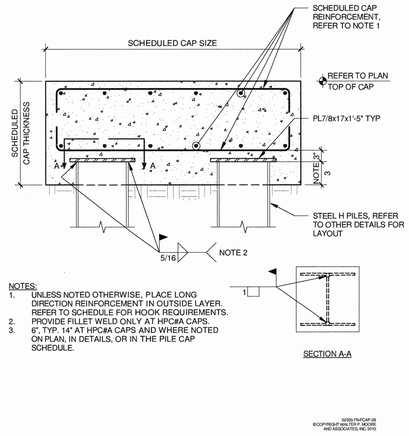


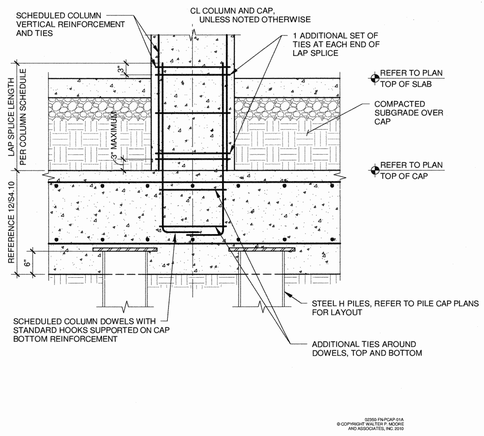
HPC27A
(27 PILES)

10 PILE CAP PLANS
1/4" = 1'-0"









15 TYPICAL STRIP FOOTING OR GRADE BEAM ON PILES
NO SCALE

14 TYPICAL PILE DEPTH
NO SCALE

13 TYPICAL PILE CAP BAR PLACEMENT
NO SCALE

12 TYPICAL CONCRETE COLUMN ON PILE CAP
NO SCALE

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Houston, Texas 77002
713.665.5665 phone · whrarchitects.com

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WALTER P. MOORE AND ASSOCIATES, INC.
1301 McKINNEY STREET, SUITE 1100
HOUSTON, TEXAS 77010.3064
PHONE: 713.630.7300 FAX: 713.630.7396

Revisions		
No.	Date	Description

KEY PLAN
NORTH

JSUMC
HOPE TOWER
BUILDING PROJECT
PARKING GARAGE
BID PACK 2

Jersey Shore University Medical Center
MEMBER OF THE MERIDIAN HEALTH FAMILY

JERSEY SHORE
UNIVERSITY
MEDICAL CENTER
1945 STATE ROUTE - NJ - 33, NEPTUNE, NEW JERSEY

8/21/15

FOUNDATION DETAILS - ALTERNATE

PHASE: 100% CD
DATE: 08-21-2015
PROJECT NO. H14009-01
S311A

P:\S03\2014\14088-00 JSUMC East Campus Project\3-Documentation\Drawings\Revit Structure\WPM-JSUMCEC-STRUCT-GARAGE.rv'
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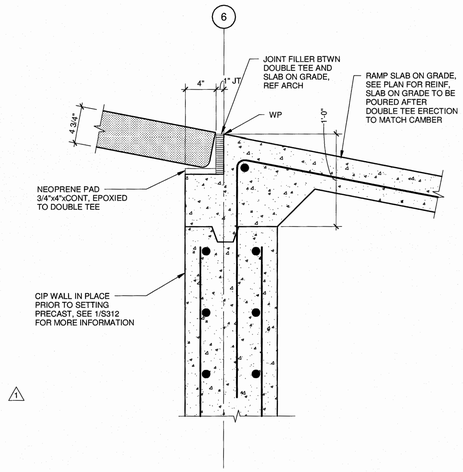
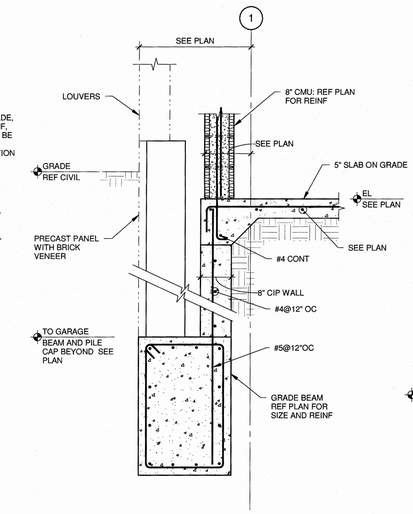
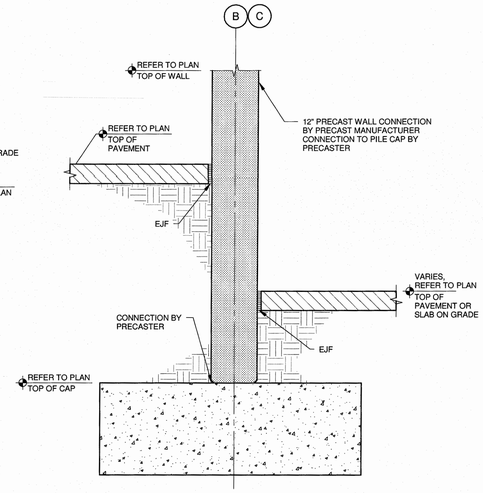


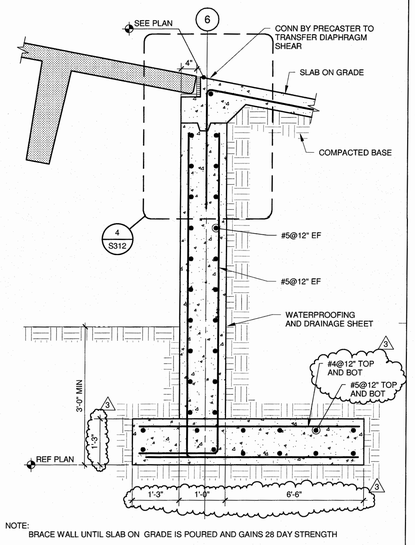
4 TYPICAL CAST IN PLACE WALL
1 1/2" = 1'-0"



3 GRADE BEAM AT WEST SIDE AT 1-(A-B)
3/4" = 1'-0"

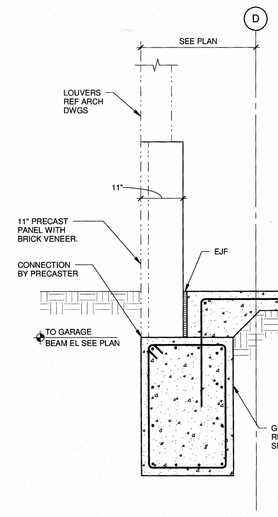


2 SECTION AT EXTERIOR WALL
3/4" = 1'-0"

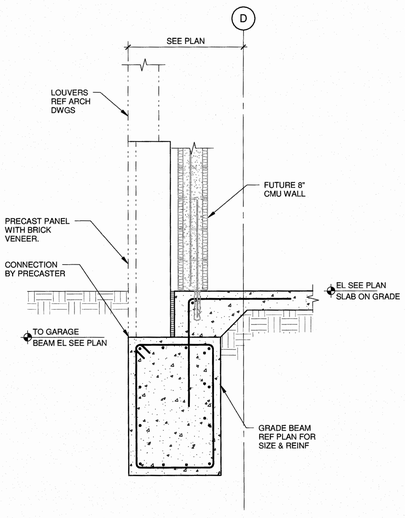


NOTE:
BRACE WALL UNTIL SLAB ON GRADE IS POURED AND GAINS 28 DAY STRENGTH

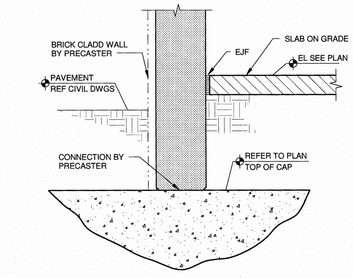
1 SECTION
3/4" = 1'-0"



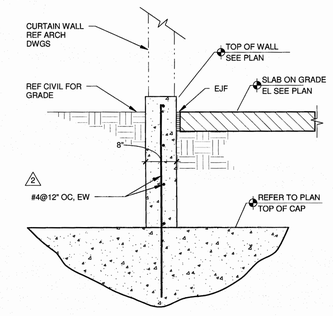
10 SECTION AT SOUTH ELEVATION
3/4" = 1'-0"



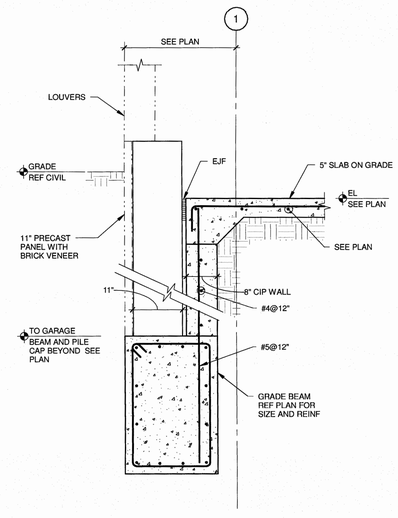
9 SECTION AT SOUTH ELEVATION
3/4" = 1'-0"



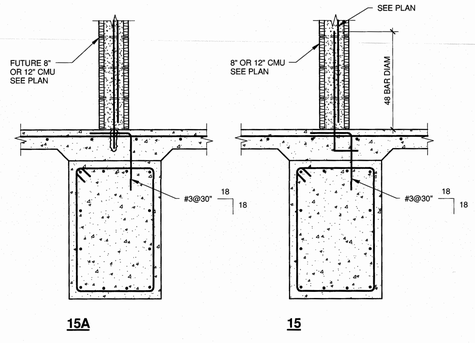
8 SECTION: PRECAST WALL AT SW STAIR
3/4" = 1'-0"



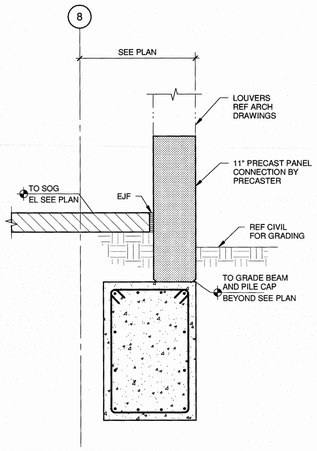
7 CURTAIN WALL SUPPORT AT SW STAIR
3/4" = 1'-0"



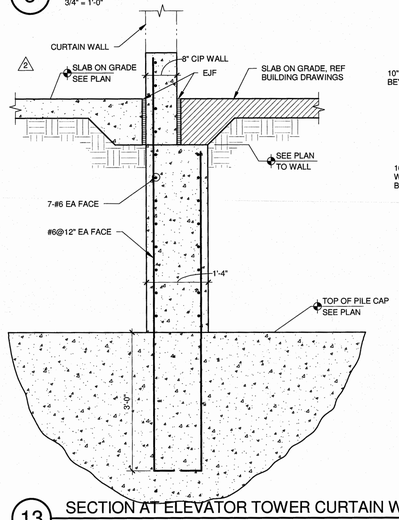
6 GRADE BEAM AT WEST SIDE AT 1-(B-C)
3/4" = 1'-0"



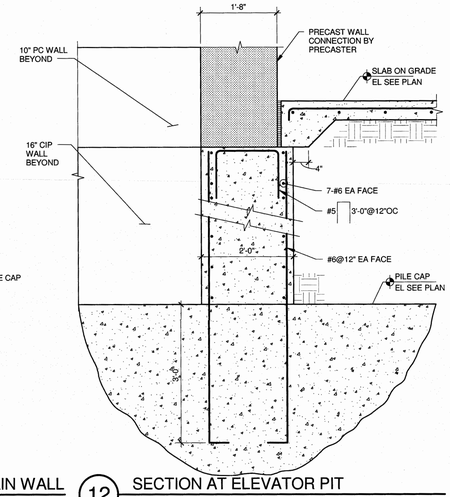
15 15A CMU SUPPORT
3/4" = 1'-0"



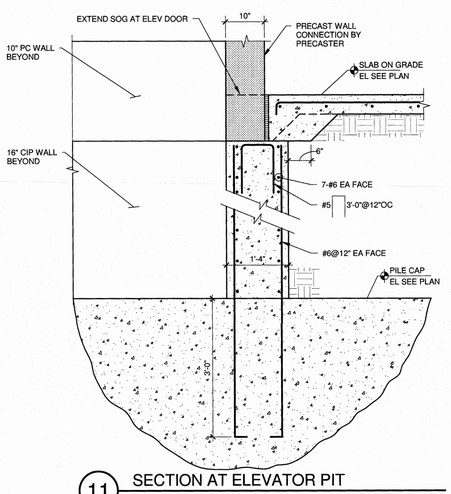
14 SECTION AT EAST WALL
3/4" = 1'-0"



13 SECTION AT ELEVATOR TOWER CURTAIN WALL
3/4" = 1'-0"



12 SECTION AT ELEVATOR PIT
3/4" = 1'-0"



11 SECTION AT ELEVATOR PIT
3/4" = 1'-0"

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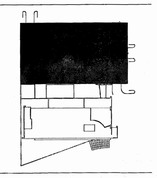
WALTER P MOORE

WALTER P. MOORE AND ASSOCIATES, INC.
1301 McKINNEY STREET, SUITE 1100
HOUSTON, TEXAS 77010.3064
PHONE: 713.630.7300 FAX: 713.630.7395

Revisions		
No.	Date	Description
1	09-23-2015	ADDENDUM 2
2	10-21-2015	ADDENDUM 4
3	11-13-2015	ADDENDUM 5

KEY PLAN



NORTH

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BID PACK 2

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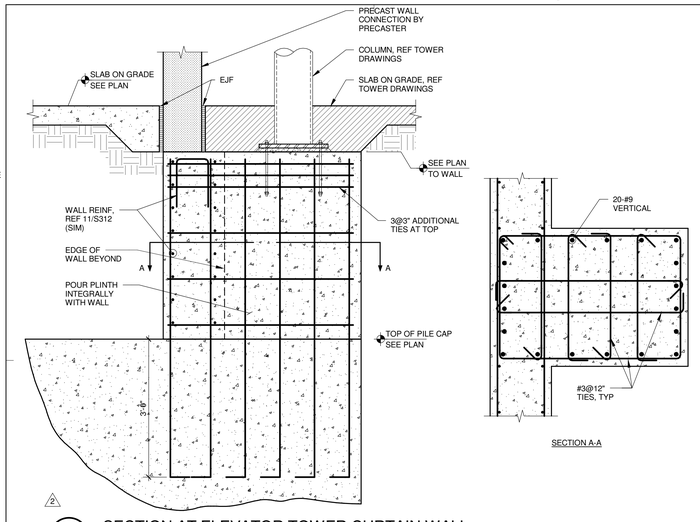
UNIVERSITY
MEDICAL CENTER
1945 STATE ROUTE - NJ - 33, NEPTUNE, NEW JERSEY

FOUNDATION DETAILS

PHASE: 100% CD
DATE: 08-21-2015

PROJECT NO.
H14009-01

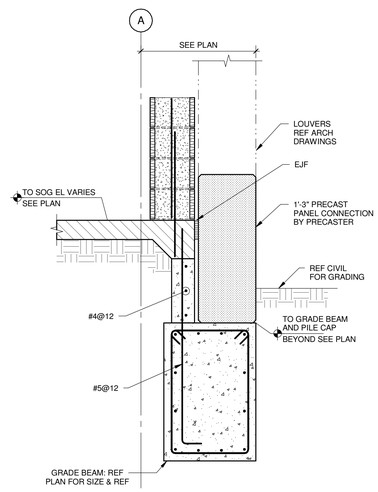
S312



5 SECTION AT ELEVATOR TOWER CURTAIN WALL

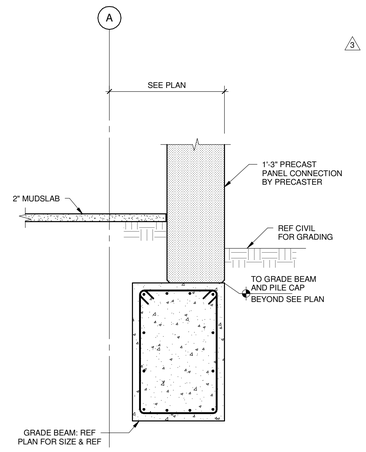
3/4" = 1'-0"

SECTION A-A



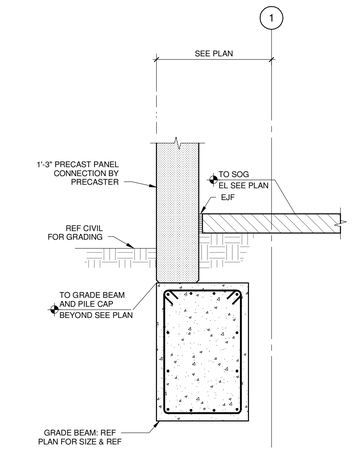
4 SECTION AT NORTH WALL

3/4" = 1'-0"



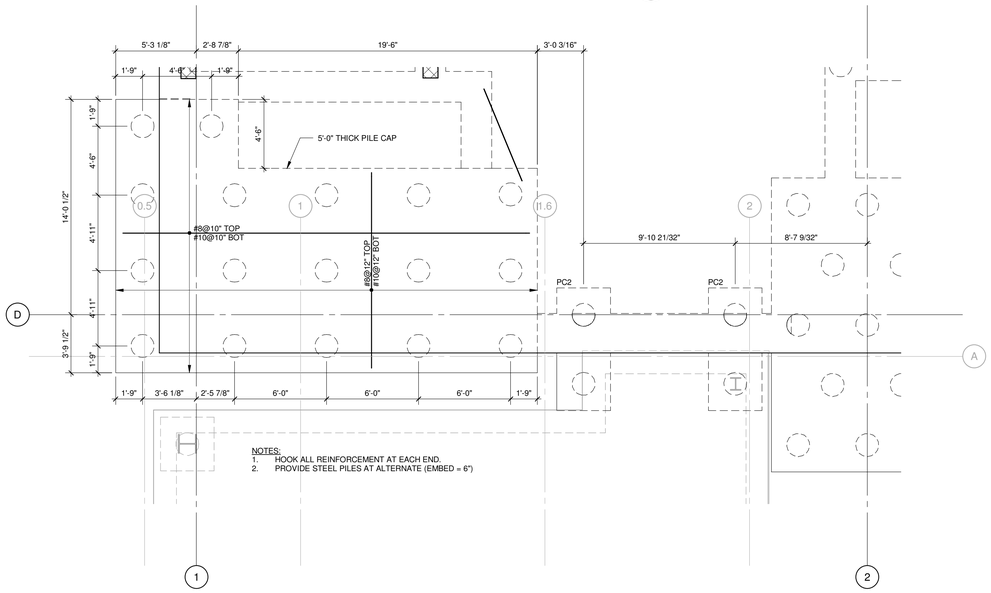
3 SECTION AT NORTH WALL

3/4" = 1'-0"



1 SECTION AT NORTH WALL

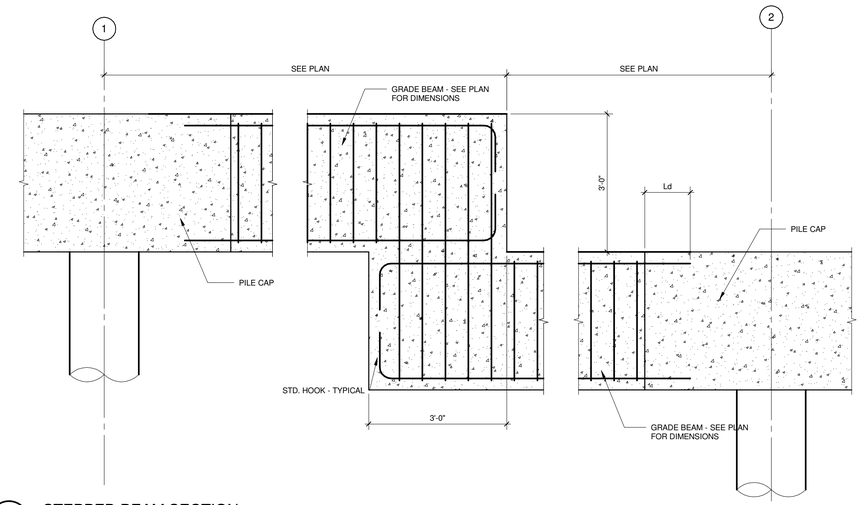
3/4" = 1'-0"



NOTES:
1. HOOK ALL REINFORCEMENT AT EACH END.
2. PROVIDE STEEL PILES AT ALTERNATE (EMBED = 6")

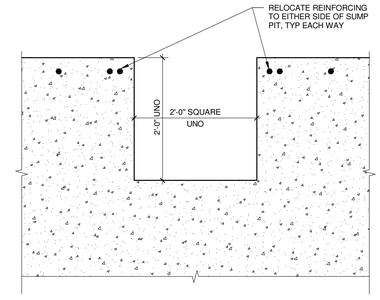
10 FOUNDATION PARTIAL PLAN

1/4" = 1'-0"



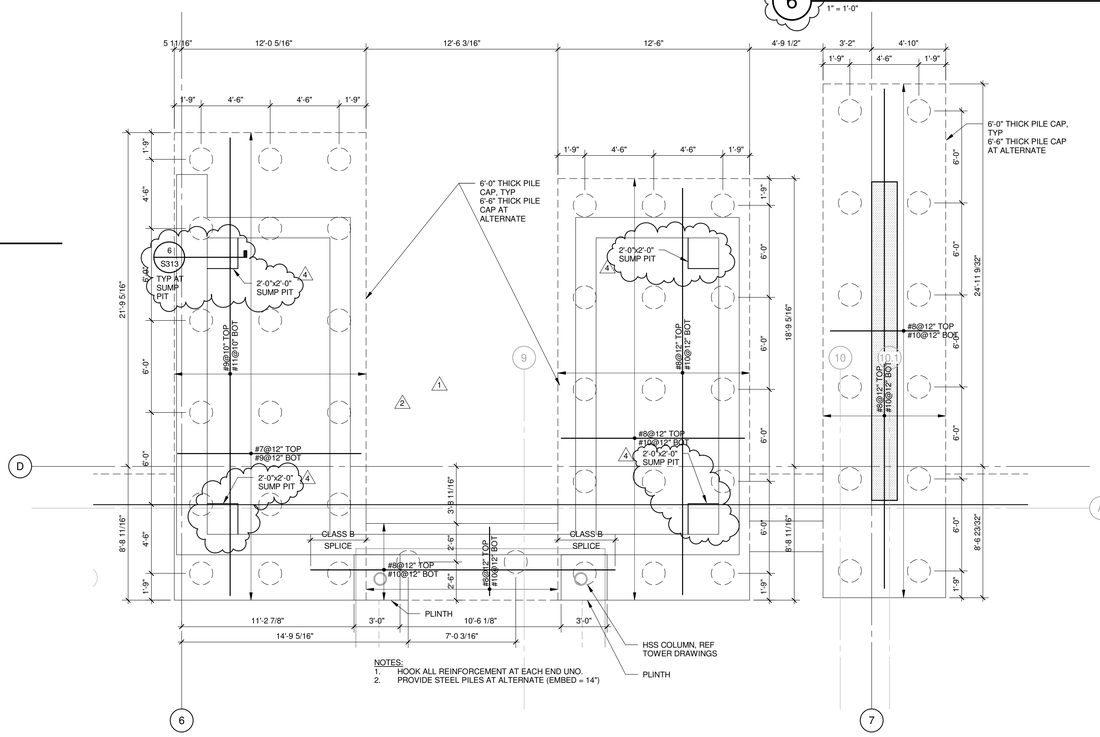
15 STEPPED BEAM SECTION

3/4" = 1'-0"



6 SUMP PIT AT PILE CAP

1" = 1'-0"



NOTES:
1. HOOK ALL REINFORCEMENT AT EACH END UNO.
2. PROVIDE STEEL PILES AT ALTERNATE (EMBED = 14")

13 FOUNDATION PARTIAL PLAN

1/4" = 1'-0"

WHR ARCHITECTS
Architecture with People in Mind

1111 Louisiana 26TH Floor
Houston, Texas 77002
713.665.5665 phone · whrarchitects.com

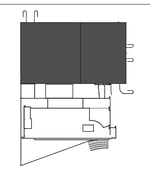
WALTER P MOORE

WALTER P. MOORE AND ASSOCIATES, INC.
1301 McKINNEY STREET, SUITE 1100
HOUSTON, TEXAS 77010.3064

PHONE: 713.630.7300 FAX: 713.630.7396

Revisions		
No.	Date	Description
1	09-23-2015	ADDENDUM 2
2	10-21-2015	ADDENDUM 4
3	11-13-2015	ADDENDUM 5
4	02-15-2016	ADDENDUM 8

KEY PLAN



NORTH

JSUMC
HOPE TOWER
BUILDING PROJECT
PARKING GARAGE
BID PACK 2

Jersey Shore University Medical Center
MEMBER OF THE MERIDIAN HEALTH FAMILY

JERSEY SHORE
UNIVERSITY
MEDICAL CENTER
1945 STATE ROUTE - NJ - 33, NEPTUNE, NEW JERSEY

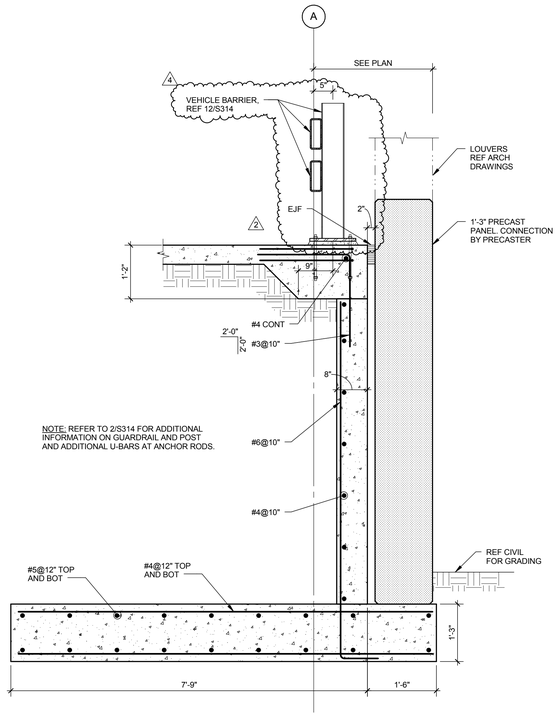
FOUNDATION DETAILS

PHASE: 100% CD
DATE: 08-21-2015

PROJECT NO.
H14009-01

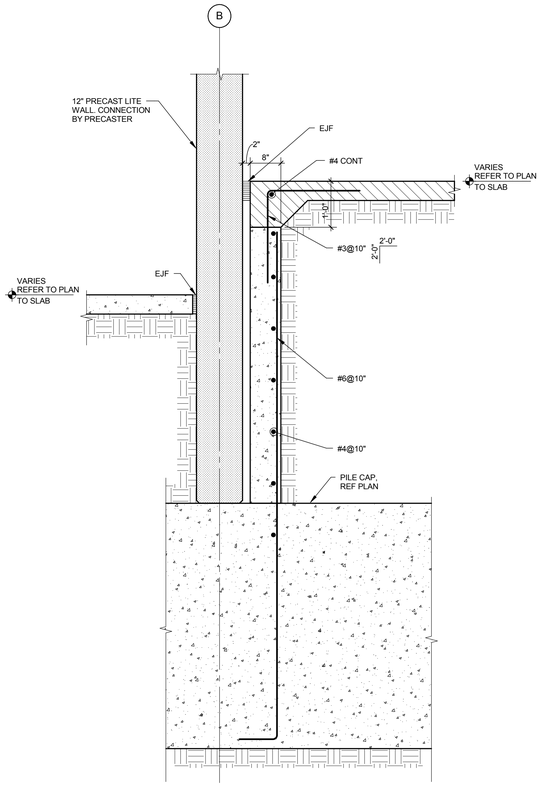
S313

P:\SO3\2014\14088-00 JSUMC East Campus Project\3-Documentation\Drawings\Revit Structure\WPM-JSUMCEC-STRUCT-GARAGE.rvt
2/15/2016 3:12:31 PM



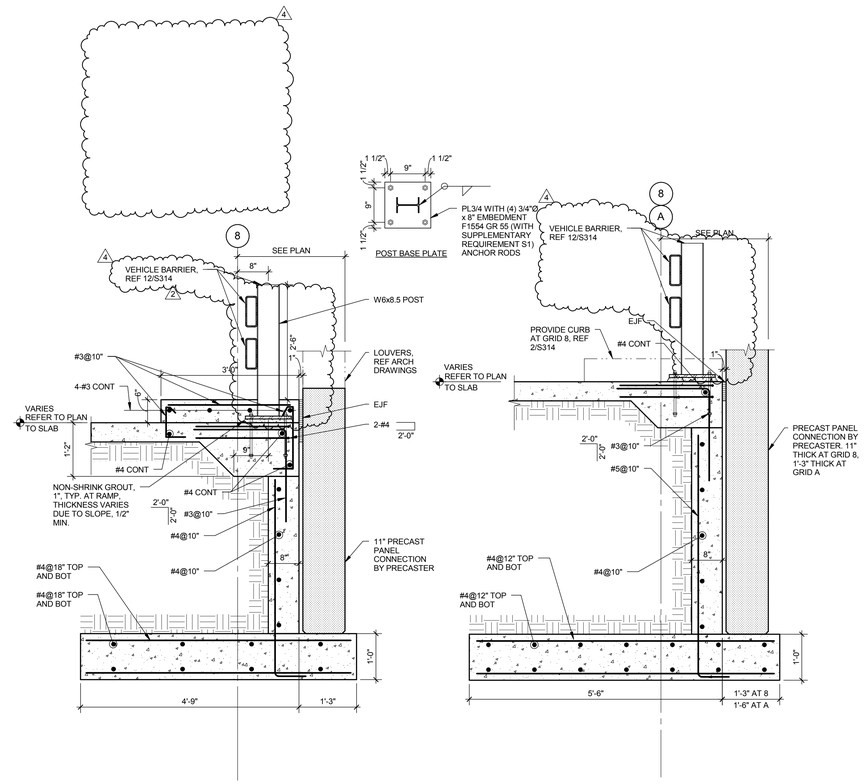
4 SECTION AT NORTH RETAINING WALL

3/4" = 1'-0"



3 SECTION AT LIGHT WALL

3/4" = 1'-0"

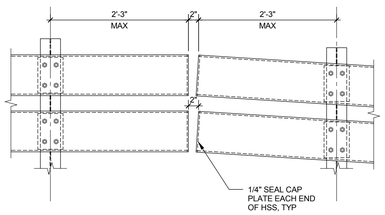


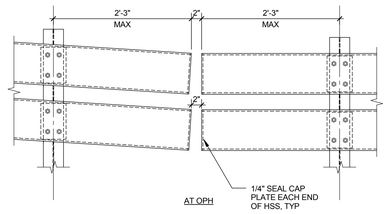
2 SECTION AT EAST RETAINING WALL

3/4" = 1'-0"

1 SECTION AT RETAINING WALL

3/4" = 1'-0"



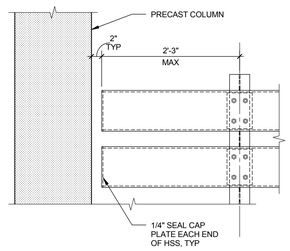


NOTES:

1. REFER TO 12/S314 FOR ADDITIONAL INFORMATION.
2. REFER TO 1, 2, & 4/S314 FOR POST BASE PLATE, REINFORCING, FOUNDATIONS, AND ADDITIONAL INFORMATION.
3. REFER TO PLAN FOR POST SPACING.
4. SHIM AS REQUIRED.
5. ALL STEEL SHALL BE HOT-DIPPED GALVANIZED.
6. AT RAMPS, HSS TUBES SHALL FOLLOW THE SLOPE OF THE RAMP.

14 HSS VEHICLE BARRIER

1" = 1'-0"

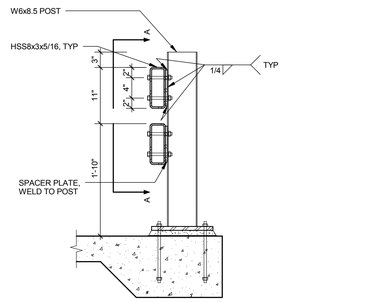


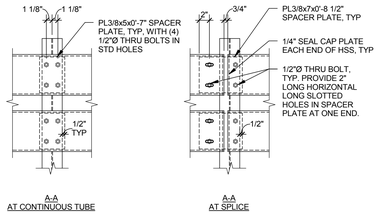
NOTES:

1. REFER TO 12/S314 FOR ADDITIONAL INFORMATION.
2. REFER TO 1, 2, & 4/S314 FOR POST BASE PLATE, REINFORCING, FOUNDATIONS, AND ADDITIONAL INFORMATION.
3. REFER TO PLAN FOR POST SPACING.
4. SHIM AS REQUIRED.
5. ALL STEEL SHALL BE HOT-DIPPED GALVANIZED.
6. AT RAMPS, HSS TUBES SHALL FOLLOW THE SLOPE OF THE RAMP.

13 HSS VEHICLE BARRIER

1" = 1'-0"



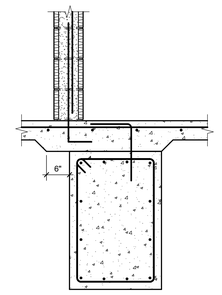


NOTES:

1. PROVIDE SPLICES AT POSTS AS REQUIRED.
2. REFER TO 1, 2, & 4/S314 FOR POST BASE PLATE, REINFORCING, FOUNDATIONS, AND ADDITIONAL INFORMATION.
3. REFER TO PLAN FOR POST SPACING.
4. SHIM AS REQUIRED.
5. ALL STEEL SHALL BE HOT-DIPPED GALVANIZED.
6. AT RAMPS, HSS TUBES SHALL FOLLOW THE SLOPE OF THE RAMP.

12 HSS VEHICLE BARRIER

1" = 1'-0"



NOTE: REFER TO 15/S312 FOR ADDITIONAL INFORMATION.

11 CMU SUPPORT

3/4" = 1'-0"

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1111 Louisiana 26TH Floor
Houston, Texas 77002
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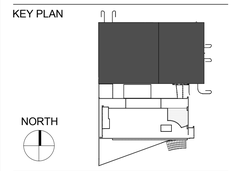
PHONE: 713.630.7300 FAX: 713.630.7396

Revisions		
No.	Date	Description
1	11-13-2015	ADDENDUM 5
2	02-19-2016	ASI#1
3	06-17-2016	Proposal Request 006
4	08-22-2016	RFI0376

KEY PLAN



JSUMC HOPE TOWER BUILDING PROJECT PARKING GARAGE BID PACK 2

Jersey Shore University Medical Center
MEMBER OF THE MERIDIAN HEALTH FAMILY

JERSEY SHORE UNIVERSITY MEDICAL CENTER

1945 STATE ROUTE - NJ - 33, NEPTUNE, NEW JERSEY

FOUNDATION DETAILS

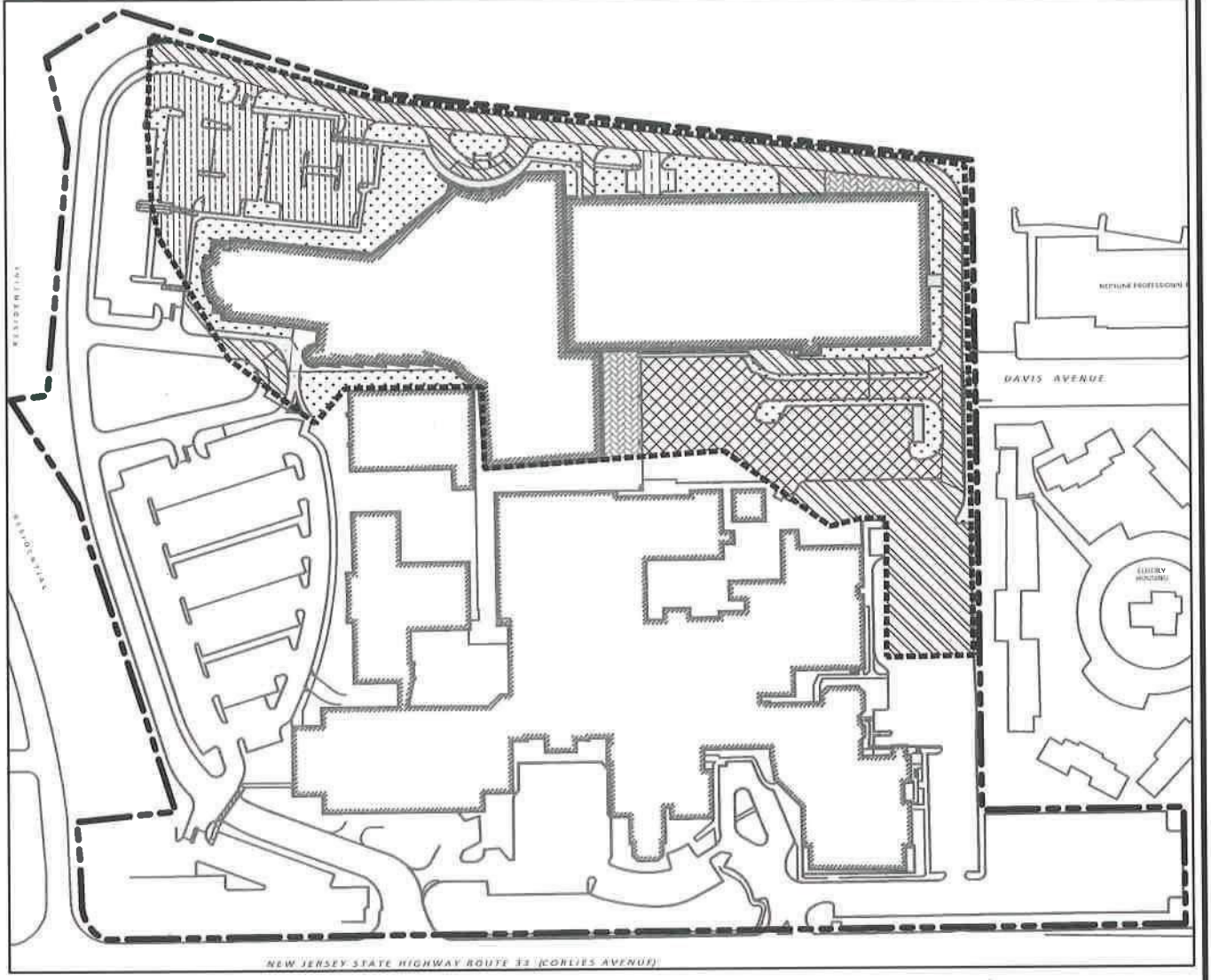
PHASE: 100% CD
DATE: 08-21-2015

PROJECT NO. H14009-01

S314

ATTACHMENT F

Landfill Exhibit Prepared by the Elm Group



LEGEND

- SITE BOUNDARY (APPROXIMATE)
- RESTRICTED AREA
- EXISTING BUILDING
- CIRCULATION ROADS - 2 IN. BITUMINOUS CONCRETE ON 5 IN. BIT. STABILIZED BASE COURSE ON 8 IN. DENSE GRADED AGGREGATE ON 12 IN. GRANULAR SUB-BASE
- PARKING - 2 IN. BIT. CONCRETE ON 4 IN. BIT. STABILIZED BASE COURSE ON 6 IN. DENSE GRADED AGGREGATE BASE ON 12 IN. GRANULAR SOIL SUB-BASE
- LANDSCAPED AREAS - 6 IN. OF TOP SOIL ON 18 IN. CLEAN STRUCTURAL FILL
- GROUND FLOOR OF BUILDING - 8 IN. TO 10 IN. OF CONCRETE ON 4 IN. TO 6 IN. OF STONE
- TRUCK LOADING DOCK AREA - 2 IN. BIT. CONCRETE ON 6 IN. BIT. STABILIZED BASE COURSE ON 8 IN. DENSE GRADED AGGREGATE BASE COURSE ON 12 IN. GRANULAR SUB-BASE
- CONCRETE - 4 IN. CONCRETE ON 4 IN. STONE
- CONCRETE - 8 IN. CONCRETE ON 8 IN. STONE ON 12 IN. GRANULAR BASE

SOURCES:

1. A PLAN ENTITLED "TEST BORING AND TEST PIT LOCATION PLAN - JERSEY SHORE MEDICAL CENTER - PRELIMINARY SITE ASSESSMENT - NEPTUNE TOWNSHIP, MONMOUTH COUNTY, NJ," BY FRENCH AND PARRELLO ASSOCIATES, P.A., DATED FEBRUARY 6, 2004.
2. DRAWING ENTITLED "EXISTING CONDITIONS - MERIDIAN HEALTH - JERSEY SHORE UNIVERSITY MEDICAL CENTER, 1945 STATE HIGHWAY ROUTE 33, TOWNSHIP OF NEPTUNE, MONMOUTH COUNTY, NJ", BY DEWBERRY-GOODKIND, INC., DATED 6/13/05, PROJECT NO. 4075, SHT. NO. V-101.
3. DRAWING ENTITLED "BORING LOCATION PLAN - MERIDIAN HEALTH - JERSEY SHORE UNIVERSITY MEDICAL CENTER, 1945 STATE HIGHWAY ROUTE 33, TOWNSHIP OF NEPTUNE, MONMOUTH COUNTY, NJ", BY DEWBERRY-GOODKIND, INC., DATED MAY 11, 2005.

0 200 400

SCALE: 1"=200'

TITLE: EXHIBIT B-1B

RESTRICTED AREA ENGINEERING CONTROLS

LOCATION: JERSEY SHORE MEDICAL CENTER
1945 STATE HWY. ROUTE 33
NEPTUNE TOWNSHIP, NEW JERSEY

DATE: 2/7/14

FILENAME: 204093_Redevelopment_REV1

LAYOUT: EXHIBIT B-1B

THE ELM GROUP
345 WALL STREET, PRINCETON, NEW JERSEY 08540
4920 YORK ROAD, SUITE 290, HOLICONG, PENNSYLVANIA 18928
612 MAIN STREET, BOONTON, NEW JERSEY 07005
2436 EMRICK BOULEVARD, BETHLEHEM, PENNSYLVANIA 18020
www.ExploreELM.com