



Office of General Services

DESIGN & CONSTRUCTION GROUP
THE GOVERNOR NELSON A. ROCKEFELLER
EMPIRE STATE PLAZA
ALBANY, NY 12242

ADDENDUM NO. 1 TO PROJECT NO. 45604

CONSTRUCTION, HVAC, PLUMBING AND ELECTRICAL WORK REPLACE EXPANSION JOINTS EAST AND WEST ARTERIAL ROADWAYS EMPIRE STATE PLAZA ALBANY, NY

October 17, 2024

NOTE: This Addendum forms a part of the Contract Documents. Insert it in the Project Manual. Acknowledge receipt of this Addendum in the space provided on the Bid Form.
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BIDDING REQUIREMENTS – CONSTRUCTION WORK

1. DOCUMENT 004143 CONSTRUCTION WORK UNIT PRICE CONTRACTS BID FORM: Discard the Bid Form bound in Project Manual and use the accompanying Bid Form noted “Revised 10/17/2024”.
Bidders that do not utilize the revised bid form included with this Addendum WILL BE DISQUALIFIED

BIDDING REQUIREMENTS – HVAC WORK

2. DOCUMENT 004143 HVAC WORK UNIT PRICE CONTRACTS BID FORM: Discard the Bid Form bound in Project Manual and use the accompanying Bid Form noted “Revised 10/17/2024”.
Bidders that do not utilize the revised bid form included with this Addendum WILL BE DISQUALIFIED

BIDDING REQUIREMENTS – ELECTRICAL WORK

3. DOCUMENT 004143 ELECTRICAL WORK UNIT PRICE CONTRACTS BID FORM: Discard the Bid Form bound in Project Manual and use the accompanying Bid Form noted “Revised 10/17/2024”.
Bidders that do not utilize the revised bid form included with this Addendum WILL BE DISQUALIFIED

CONTRACTING REQUIREMENTS – COMMON DOCUMENTS

4. SECTION 011000 SUMMARY OF THE WORK: Discard the Section bound in the Project Manual and substitute the accompanying Sections (pages 011000 – 1 thru 011000 – 8) noted “Addendum #1; Revised 10/17/2024”.

CONSTRUCTION WORK SPECIFICATIONS

5. SECTION 030131 CONCRETE REHABILITATION: Discard the Section bound in the Project Manual and substitute the accompanying Sections (pages 030131 – 1 thru 030131 – 15) noted “Addendum #1; Revised 10/17/2024”.
6. SECTION 031100 CONCRETE FORMWORK: Discard the Section bound in the Project Manual and substitute the accompanying Sections (pages 031100 – 1 thru 031100 – 3) noted “Addendum #1; Revised 10/17/2024”.
7. SECTION 032100 STEEL CONCRETE REINFORCEMENT: Discard the Section bound in the Project Manual and substitute the accompanying Sections (pages 032100 – 1 thru 032100 – 4) noted “Addendum #1; Revised 10/17/2024”.
8. SECTION 033713 SHOTCRETE: Add the accompanying section (pages 033713 – 1 and 033713 – 13) noted “Addendum #1” to the Project Manual.
9. SECTION 321723 PAVEMENT MARKINGS: Discard the Section bound in the Project Manual and substitute the accompanying Sections (pages 321723 – 1 thru 321723 – 2) noted “Addendum #1; Revised 10/17/2024”.
10. SECTION 344113 TRAFFIC SIGNS: Discard the Section bound in the Project Manual and substitute the accompanying Sections (pages 344113 – 1 thru 344113 – 2) noted “Addendum #1; Revised 10/17/2024”.

PLUMBING WORK SPECIFICATIONS

11. SECTION 211300 SPRINKLER AND STANDPIPE PIPING: Discard the Section bound in the Project Manual and substitute the accompanying Sections (pages 211300 – 1 thru 211300 – 15) noted “Addendum #1; Revised 10/17/2024”.
12. SECTION 221100 PLUMBING PIPING: Discard the Section bound in the Project Manual and substitute the accompanying Sections (pages 221100 – 1 thru 221100 – 9) noted “Addendum #1; Revised 10/17/2024”.

GENERAL DRAWINGS

13. Revised Drawings:
 - a. Drawing No. G-007, noted “REVISED DRAWING 10/17/2024” accompanies this Addendum and supersedes the same numbered originally issued drawing.
 - b. Drawing No. G-008, noted “REVISED DRAWING 10/17/2024” accompanies this Addendum and supersedes the same numbered originally issued drawing.
 - c. Drawing No. G-009, noted “REVISED DRAWING 10/17/2024” accompanies this Addendum and supersedes the same numbered originally issued drawing.
 - d. Drawing No. G-010, noted “REVISED DRAWING 10/17/2024” accompanies this Addendum and supersedes the same numbered originally issued drawing.
 - e. Drawing No. G-011, noted “REVISED DRAWING 10/17/2024” accompanies this Addendum and supersedes the same numbered originally issued drawing.

CONSTRUCTION WORK DRAWINGS

14. Revised Drawings:
 - a. Drawing No. INDEX, noted “REVISED DRAWING 10/17/2024” accompanies this Addendum and supersedes the same numbered originally issued drawing.

- b. Drawing No. TYP-01, noted “REVISED DRAWING 10/17/2024” accompanies this Addendum and supersedes the same numbered originally issued drawing.
- c. Drawing No. EP GP-01, noted “REVISED DRAWING 10/17/2024” accompanies this Addendum and supersedes the same numbered originally issued drawing.
 - 1.) The note which stated, “RELOCATE SHED. COORDINATE LOCATION WITH DIRECTOR’S REPRESENTATIVE” has been removed from the sheet as it is no longer applicable to the project.
- d. Drawing No. EP PRO-01, noted “REVISED DRAWING 10/17/2024” accompanies this Addendum and supersedes the same numbered originally issued drawing.
- e. Drawing No. EP PRO-02, noted “REVISED DRAWING 10/17/2024” accompanies this Addendum and supersedes the same numbered originally issued drawing.
- f. Drawing No. WB PRO-01, noted “REVISED DRAWING 10/17/2024” accompanies this Addendum and supersedes the same numbered originally issued drawing.
- g. Drawing No. WZTN-01, noted “REVISED DRAWING 10/17/2024” accompanies this Addendum and supersedes the same numbered originally issued drawing.

REFERENCE DRAWINGS

15. The following drawings are being provided to the Contractors for reference only and show the construction of the Foundation Piles and Pile Caps. NOTE: These are not As-Built drawings and the construction of these piles and pile caps have not been verified by the Engineer of Record. They are not part of the Contract Documents:
- a. 64/2-135 (Dated 1966)
 - b. 64/2-136 (Dated 1966)
 - c. 64/2-83 (Dated 1966)
 - d. 64/2-84 (Dated 1966)
 - e. 64/2-85 (Dated 1966)
 - f. 64/2-85A (Dated 1966)
 - g. 64/2-86 (Dated 1966)
 - h. 64/2-86A (Dated 1966)

END OF ADDENDUM

Brady M. Sherlock, P.E.
Director, Division of Design
Design & Construction

DETACH AND USE THIS FORM

BID FORM FOR: 45604-C

**CONSTRUCTION WORK
REPLACE EXPANSION JOINTS
EAST AND WEST ARTERIAL ROADWAYS
EMPIRE STATE PLAZA
ALBANY, NY**

State of New York
Office of General Services
Design and Construction Group
Division of Contract Management
35th Floor, Corning Tower
The Gov. Nelson A. Rockefeller
Empire State Plaza
Albany, NY 12242

THIS IS A 7 PAGE BID FORM. ALL PAGES MUST BE COMPLETED.

THE STATE RESERVES THE RIGHT TO REJECT ANY OR ALL BIDS. EACH BID FORM SHALL BE ACCOMPANIED BY BID SECURITY (AS DESCRIBED IN THE INSTRUCTIONS TO BIDDERS) IN THE AMOUNT STATED IN THE ADVERTISEMENT FOR BIDS.

The Undersigned agrees to complete the Work within the time stated in Section 011000 of the Specifications.

The Undersigned acknowledges his/her understanding of the social policy concerning minority and women business participation in the State building construction program, and pledges to cooperate with the State in the implementation of this policy, and further pledges to exert good faith efforts to achieve participation of minority and female employees.

The Undersigned certifies, as to each of the occupations listed in the Prevailing Rate Schedule applicable to this Project, the ability and willingness to exert good faith efforts to achieve the goal for minority and women workforce participation as set forth in the Supplementary Conditions.

The Undersigned certifies the ability and willingness to exert good faith efforts to achieve the goals for Minority and Women-Owned Business Enterprise and Service-Disabled Veteran-Owned Businesses participation as set forth in the Supplementary Conditions.

The Undersigned declares that the Bidding and Contract Documents have been carefully examined and that all things necessary for the completion of the Work shall be provided.

The Undersigned agrees that the bid security shall be subject to forfeiture if this bid is accepted by the State and he/she does not submit executed copies of the Agreement WITHIN TEN (10) DAYS OF RECEIPT OF A WRITTEN REQUEST TO PROVIDE SUCH AGREEMENT. A Performance Bond and a Labor and Material Bond, each in an amount equal to the contract sum, shall be supplied with the executed Agreement and shall be the statutory form of public bonds required by Sections 136 and 137 of the State Finance Law.

By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of his/her knowledge and belief:

(1) The prices in this bid have been arrived at independently without collusion, consultation, communication, or agreement, for the purpose of restricting competition as to any matter relating to such prices with any other bidder or with any competitor;

(2) Unless otherwise required by law, the prices which have been quoted in this bid have not been knowingly disclosed by the bidder and will not knowingly be disclosed by the bidder prior to opening, directly or indirectly, to any other bidder or to any competitor;

(3) No attempt has been made or will be made by the bidder to induce any other person, partnership or corporation to submit or not to submit a bid for the purpose of restricting competition.

(4) This contract shall not cause or result in a violation of Section 74(3)(e) of the Public Officers Law which states: "No officer or employee of a state agency, member of the legislature or legislative employee should engage in any transaction as representative or agent of the State with any business entity in which he/she has a direct or indirect financial interest that might reasonably tend to conflict with the proper discharge of his/her official duties."

(5) The Bidder understands and agrees to comply with the requirements of the Procurement Lobbying Law, State Finance Law § 139-j and § 139-k, and with OGS's procedures relating to permissible contacts during a procurement as required by State Finance Law § 139-j(3) and § 139-j(6)(b). Such requirements and procedures are posted at <https://ogs.ny.gov/acpl>.

(6) The bidder is not on the list created pursuant to paragraph (b) of subdivision 3 of section 165-a of the state finance law (NYS Iran Divestment Act of 2012). The list can be viewed at the following link:

<https://ogs.ny.gov/iran-divestment-act-2012>

(7) Will New York State Businesses be used in the performance of this contract (refer to Document 007324)?

Yes ☐ No ☐

(8) The New York State Human Rights Law (Human Rights Law), Article 15 of the Executive Law, prohibits discrimination and harassment based on age, race, creed, color, national origin, sex, pregnancy or pregnancy-related conditions, sexual orientation, gender identity, disability, marital status, familial status, domestic violence victim status, prior arrest or conviction record, military status or predisposing genetic characteristics.

The Human Rights Law may also require reasonable accommodation for persons with disabilities and pregnancy-related conditions. A reasonable accommodation is an adjustment to a job or work environment that enables a person with a disability to perform the essential functions of a job in a reasonable manner. The Human Rights Law may also require reasonable accommodation in employment on the basis of Sabbath observance or religious practices.

Generally, the Human Rights Law applies to:

- all employers of four or more people, employment agencies, labor organizations and apprenticeship training programs in all instances of discrimination or harassment;
- employers with fewer than four employees in all cases involving sexual harassment; and,
- any employer of domestic workers in cases involving sexual harassment or harassment based on gender, race, religion, or national origin.

In accordance with Executive Order No. 177, the Bidder hereby certifies that it does not have institutional policies or practices that fail to address the harassment and discrimination of individuals on the basis of their age, race, creed, color, national origin, sex, sexual orientation, gender identity, disability, marital status, military status, or other protected status under the Human Rights Law.

Executive Order No. 177 and this certification do not affect institutional policies or practices that are protected by existing law, including but not limited to the First Amendment of the United States Constitution, Article 1, Section 3 of the New York State Constitution, and Section 296(11) of the New York State Human Rights Law.

(9) In accordance with State Finance Law § 139-l, by submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that the bidder has and has implemented a written policy addressing sexual harassment prevention in the workplace and provides annual sexual harassment prevention training to all of its employees. Such policy shall, at a minimum, meet the requirements of section two hundred one-g of the labor law.

If the bidder cannot make the foregoing certification, such bidder shall so state and shall furnish with the bid a signed statement that sets forth in detail the reasons that the bidder cannot make the certification.

(10) In accordance with Section 165(5) of the State Finance Law, the bidder, by submission of this bid, certifies that it or any individual or legal entity in which the bidder holds a 10% or greater ownership interest, or any individual or legal entity that holds a 10% or greater ownership interest in the bidder, either (answer yes or no to one or both of the following, as applicable):

1. have business operations in Northern Ireland Yes ☐ No ☐ and if yes:
2. shall take lawful steps in good faith to conduct any business operations in Northern Ireland in accordance with the MacBride Fair Employment Principles relating to nondiscrimination in employment and freedom of workplace opportunity regarding such operations in Northern Ireland, and shall permit independent monitoring of compliance with such principles.

Yes ☐ No ☐

(11) Certification Under Executive Order No. 16 - Prohibiting State Agencies and Authorities from Contracting with Businesses Conducting Business in Russia

Executive Order No. 16 provides that “all Affected State Entities are directed to refrain from entering into any new contract or renewing any existing contract with an entity conducting business operations in Russia.” The complete text of Executive Order No. 16 can be found here: <https://www.governor.ny.gov/executive-order/no-16-prohibiting-state-agencies-and-authorities-contracting-businesses-conducting>

The Executive Order remains in effect while sanctions imposed by the federal government are in effect. Accordingly, vendors who may be excluded from award because of current business operations in Russia are nevertheless encouraged to respond to solicitations to preserve their contracting opportunities in case the sanctions are lifted during a solicitation or even after award in the case of some solicitations.

As defined in Executive Order No. 16, an “entity conducting business operations in Russia” means an institution or company, wherever located, conducting any commercial activity in Russia or transacting business with the Russian Government or which the commercial entities headquartered in Russia or with their principal place of business in Russia in the form of contracting, sales, purchasing, investment, or any business partnership.

Is Vendor an entity conducting business operations in Russia, as defined above? Please answer by checking one of the following boxes:

- ☐ 1. No, Vendor does not conduct business operations in Russia within the meaning of Executive Order No. 16.
- ☐ 2.a. Yes, Vendor conducts business operations in Russia within the meaning of Executive Order No. 16 but has taken steps to wind down business operations in Russia or is in the process of winding down business operations in Russia. (Please provide a detailed description of the wind down process and a schedule for completion.)
- ☐ 2.b. Yes, Vendor conducts business operations in Russia within the meaning of Executive Order No. 16 but only to the extent necessary to provide vital health and safety services within Russia or to comply with federal law, regulations, executive orders, or directives. (Please provide a detailed description of the services being provided or the relevant laws, regulations, etc.)
- ☐ 3. Yes, Vendor conducts business operations in Russia within the meaning of Executive Order No. 16.

Addenda to the Contract Documents are available at:

<https://online.ogs.ny.gov/dnc/contractorConsultant/esb/ESBPlansAvailableIndex.asp>

The Undersigned acknowledges receipt and review of all Addenda to the Contract Documents on the above website, listed by number in the space below:

The Undersigned proposes to perform the Work required for this project in accordance with the Contract Documents for the following amount:

TOTAL BID

Unit Price Schedule Total (from appended Unit Price Schedule) \$.00

Is your firm a NYS-Certified Minority and Women-Owned Business Enterprise (MWBE)?

Yes ☐ No ☐

MWBE Certification file No. _____

SIGN BID HERE _____
Authorized Signature

PRINT NAME OF SIGNER _____

TITLE OF SIGNER _____

OFFICIAL COMPANY NAME _____

MAILING ADDRESS _____
Street

_____ City State Zip

TELEPHONE NO. _____ FAX NO. _____
Area Code Area Code

E-MAIL ADDRESS _____

UNIT PRICE SCHEDULE FOLLOWS

UNIT PRICE SCHEDULE						
ITEM NO.	DETAIL/ SPECIFICATION SECTION NUMBER	DESCRIPTION OF WORK	ESTIMATED QUANTITY	UNIT OF MEASURE	INDICATE \$ PER UNIT OF MEASURE (Enter Unit Bid Price in Numerals)	AMOUNT BID* (In Numerals)
01	012100.01	FIELD ORDER ALLOWANCE FOR CONTINGENT ACTIVITIES WITHIN SCOPE OF CONTRACT	1	EACH	\$527,100	\$527,100
02	015526.01	PLASTIC CONSTRUCTION DRUMS	290	EACH		
03	015526.02	TEMP. POSITIVE BARRIER -CAT. 1	300	LINEAR FOOT		
04	015526.03	WARNING LIGHTS - TEMP. BARRIERS	15	EACH		
05	015526.04	TEMP IMPACT ATTENUATOR	2	EACH		
06	017329.01	REMOVE & STORE EXISTING FENCING	65	LINEAR FOOT		
07	030131.01	SHALLOW REPAIR- HORIZONTAL	50	SQUARE FOOT		
08	030131.02	SHALLOW REPAIR- VERTICAL	200	SQUARE FOOT		
09	030131.03	SHALLOW REPAIR- VERTICAL (OVER 6 FT)	50	SQUARE FOOT		
10	030131.04	SHALLOW REPAIR- VERTICAL (OVERHEAD)	50	SQUARE FOOT		
11	030131.05	DEEP REPAIR HORIZONTAL	1,800	SQUARE FOOT		
12	030131.06	DEEP REPAIR VERTICAL	500	SQUARE FOOT		
13	030131.07	DEEP REPAIR VERTICAL (OVER 6 FT)	500	SQUARE FOOT		
14	030131.08	DEEP REPAIR OVERHEAD	4,000	SQUARE FOOT		
15	030131.09	EXPANSION JOINT REPLACEMENT- ROADWAY	2,190	LINEAR FOOT		
16	030131.10	EXPANSION JOINT REPLACEMENT -W11	180	LINEAR FEET		
17	030131.11	SHEARHEAD REPAIR	24	EACH		
18	030131.12	STRUCTURAL SHORING	400	EACH		
19	030131.13	EXPANSION JOINT REPLACEMENT - BRIDGE	70	LINEAR FEET		
20	030131.14	REMOVE CONCRETE PAD	420	SQUARE FEET		

UNIT PRICE SCHEDULE						
ITEM NO.	DETAIL/ SPECIFICATION SECTION NUMBER	DESCRIPTION OF WORK	ESTIMATED QUANTITY	UNIT OF MEASURE	INDICATE \$ PER UNIT OF MEASURE (Enter Unit Bid Price in Numerals)	AMOUNT BID* (In Numerals)
21	030131.15	FULL DEPTH CONCRETE PAN REPLACEMENT	128	SQUARE FEET		
22	030132.01	CRACK INJECTION - HORIZONTAL SLAB	20	LINEAR FOOT		
23	030132.02	CRACK INJECTION- VERTICAL	40	LINEAR FOOT		
24	030132.03	CRACK INJECTION- VERTICAL (OVER 6 FEET)	20	LINEAR FOOT		
25	030132.04	CRACK INJECTION (OVERHEAD)	120	LINEAR FOOT		
26	033000.01	REMOVE AND REPLACE CURB/SIDEWALK	2,300	LINEAR FOOT		
27	033000.02	PARTIAL EXPANSION JOINT REMOVAL	45	LINEAR FOOT		
28	033000.03	PRECAST SLAB ON GRADE	420	SQUARE FOOT		
29	033400.01	CONTROLLED LOW STRENGTH MATERIAL	50	CUBIC YARD		
30	040121.01	MASONRY REPAIR – VERTICAL	180	SQUARE FOOT		
31	044301.01	LLENROC FAÇADE REMOVAL	3,200	SQARE FOOT		
32	044301.02	GRANITE FAÇADE INSTALLATION	3,200	SQUARE FOOT		
33	055000.01	STEEL SHEAR HEAD REPAIR	24	EACH		
34	055000.02	STEEL COLUMN REINFORCEMENT	800	LINEAR FOOT		
35	055000.03	CATCH BASIN REPAIRS	12	EACH		
36	078400.01	FIRESTOPPING	1	SQUARE FOOT		
37	079200.01	JOINT SEALANT AT SIDEWALKS	900	LINEAR FOOT		
38	099101.01	PAINTING AT REPAIR AREAS	1	SQUARE FOOT		
39	310000.01	UNCLASSIFIED EXCAVATION & DISPOSAL	2,245	CUBIC YARD		
40	310000.02	SUBBASE COURSE TYPE 2	655	CUBIC YARD		
41	310101.01	TOPSOIL -LAWNS	830	CUBIC YARD		
42	310101.02	SUBSOIL PREP FOR TURF	2,140	SQUARE YARD		

UNIT PRICE SCHEDULE						
ITEM NO.	DETAIL/ SPECIFICATION SECTION NUMBER	DESCRIPTION OF WORK	ESTIMATED QUANTITY	UNIT OF MEASURE	INDICATE \$ PER UNIT OF MEASURE (Enter Unit Bid Price in Numerals)	AMOUNT BID* (In Numerals)
43	310101.03	TURF ESTABLISHMENT	2,130	SQUARE YARD		
44	311300.01	TREE REMOVAL/STUMPS CUT	2	EACH		
45	312513.01	GEOTEXTILE	2,760	SQUARE YARD		
46	312513.02	DRAINAGE STRUCTURAL INLET PROTECTION – SILT FENCE	95	LINEAR FOOT		
47	321216.01	12.5 F3 ASPHALT TOP COURSE	300	TON		
48	321216.02	25 F9 BINDER COURSE	430	TON		
49	321216.03	DILUTED TACK COAT	135	GALLON		
50	321640.01	REMOVE AND REPLACE GRANITE CURB	710	LINEAR FOOT		
51	321723.01	COVER EXISTING PAVEMENT MARKING STRIPES	3,450	LINEAR FOOT		
52	321723.02	PAVEMENT STRIPING	9,030	LINEAR FOOT		
53	329219.01	SEEDING & MULCHING	2130	SQUARE YARD		
54	329301.01	PLANTS (DECIDUOUS TREES)	2	EACH		
55	330514.01	ALTERING DRAINAGE STRUCTURES, LEACHING BASINS & MANHOLES	4	EACH		
56	333913.01	REMOVE & RESET EXISTING COVERS AND GRATES	3	EACH		
57	333913.02	CLEANING DRAINAGE STRUCTURES	20	EACH		
58	344113.01	WORK ZONE TRAFFIC CONTROL	1	EACH		
59	347114.01	REMOVE & STORE BOX BEAM RAILING	175	LINEAR FEET		
60	347114.02	RESETTING BOX BEAM RAILING	175	LINEAR FEET		
					UNIT PRICE SCHEDULE TOTAL:	

*Amount Bid = Estimated Quantity X Unit Bid Price*****

DETACH AND USE THIS FORM

BID FORM FOR: 45604-H

**HVAC WORK
REPLACE EXPANSION JOINTS
EAST AND WEST ARTERIAL ROADWAYS
EMPIRE STATE PLAZA
ALBANY, NY**

State of New York
Office of General Services
Design and Construction Group
Division of Contract Management
35th Floor, Corning Tower
The Gov. Nelson A. Rockefeller
Empire State Plaza
Albany, NY 12242

THIS IS A 6 PAGE BID FORM. ALL PAGES MUST BE COMPLETED.

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The Undersigned agrees to complete the Work within the time stated in Section 011000 of the Specifications.

The Undersigned acknowledges his/her understanding of the social policy concerning minority and women business participation in the State building construction program, and pledges to cooperate with the State in the implementation of this policy, and further pledges to exert good faith efforts to achieve participation of minority and female employees.

The Undersigned certifies, as to each of the occupations listed in the Prevailing Rate Schedule applicable to this Project, the ability and willingness to exert good faith efforts to achieve the goal for minority and women workforce participation as set forth in the Supplementary Conditions.

The Undersigned certifies the ability and willingness to exert good faith efforts to achieve the goals for Minority and Women-Owned Business Enterprise and Service-Disabled Veteran-Owned Businesses participation as set forth in the Supplementary Conditions.

The Undersigned declares that the Bidding and Contract Documents have been carefully examined and that all things necessary for the completion of the Work shall be provided.

The Undersigned agrees that the bid security shall be subject to forfeiture if this bid is accepted by the State and he/she does not submit executed copies of the Agreement WITHIN TEN (10) DAYS OF RECEIPT OF A WRITTEN REQUEST TO PROVIDE SUCH AGREEMENT. A Performance Bond and a Labor and Material Bond, each in an amount equal to the contract sum, shall be supplied with the executed Agreement and shall be the statutory form of public bonds required by Sections 136 and 137 of the State Finance Law.

By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of his/her knowledge and belief:

(1) The prices in this bid have been arrived at independently without collusion, consultation, communication, or agreement, for the purpose of restricting competition as to any matter relating to such prices with any other bidder or with any competitor;

(2) Unless otherwise required by law, the prices which have been quoted in this bid have not been knowingly disclosed by the bidder and will not knowingly be disclosed by the bidder prior to opening, directly or indirectly, to any other bidder or to any competitor;

(3) No attempt has been made or will be made by the bidder to induce any other person, partnership or corporation to submit or not to submit a bid for the purpose of restricting competition.

(4) This contract shall not cause or result in a violation of Section 74(3)(e) of the Public Officers Law which states: "No officer or employee of a state agency, member of the legislature or legislative employee should engage in any transaction as representative or agent of the State with any business entity in which he/she has a direct or indirect financial interest that might reasonably tend to conflict with the proper discharge of his/her official duties."

(5) The Bidder understands and agrees to comply with the requirements of the Procurement Lobbying Law, State Finance Law § 139-j and § 139-k, and with OGS's procedures relating to permissible contacts during a procurement as required by State Finance Law § 139-j(3) and § 139-j(6)(b). Such requirements and procedures are posted at <https://ogs.ny.gov/acpl>.

(6) The bidder is not on the list created pursuant to paragraph (b) of subdivision 3 of section 165-a of the state finance law (NYS Iran Divestment Act of 2012). The list can be viewed at the following link:

<https://ogs.ny.gov/iran-divestment-act-2012>

(7) Will New York State Businesses be used in the performance of this contract (refer to Document 007324)?

Yes ☐ No ☐

(8) The New York State Human Rights Law (Human Rights Law), Article 15 of the Executive Law, prohibits discrimination and harassment based on age, race, creed, color, national origin, sex, pregnancy or pregnancy-related conditions, sexual orientation, gender identity, disability, marital status, familial status, domestic violence victim status, prior arrest or conviction record, military status or predisposing genetic characteristics.

The Human Rights Law may also require reasonable accommodation for persons with disabilities and pregnancy-related conditions. A reasonable accommodation is an adjustment to a job or work environment that enables a person with a disability to perform the essential functions of a job in a reasonable manner. The Human Rights Law may also require reasonable accommodation in employment on the basis of Sabbath observance or religious practices.

Generally, the Human Rights Law applies to:

- all employers of four or more people, employment agencies, labor organizations and apprenticeship training programs in all instances of discrimination or harassment;
- employers with fewer than four employees in all cases involving sexual harassment; and,
- any employer of domestic workers in cases involving sexual harassment or harassment based on gender, race, religion, or national origin.

In accordance with Executive Order No. 177, the Bidder hereby certifies that it does not have institutional policies or practices that fail to address the harassment and discrimination of individuals on the basis of their age, race, creed, color, national origin, sex, sexual orientation, gender identity, disability, marital status, military status, or other protected status under the Human Rights Law.

Executive Order No. 177 and this certification do not affect institutional policies or practices that are protected by existing law, including but not limited to the First Amendment of the United States Constitution, Article 1, Section 3 of the New York State Constitution, and Section 296(11) of the New York State Human Rights Law.

(9) In accordance with State Finance Law § 139-l, by submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that the bidder has and has implemented a written policy addressing sexual harassment prevention in the workplace and provides annual sexual harassment prevention training to all of its employees. Such policy shall, at a minimum, meet the requirements of section two hundred one-g of the labor law.

If the bidder cannot make the foregoing certification, such bidder shall so state and shall furnish with the bid a signed statement that sets forth in detail the reasons that the bidder cannot make the certification.

(10) In accordance with Section 165(5) of the State Finance Law, the bidder, by submission of this bid, certifies that it or any individual or legal entity in which the bidder holds a 10% or greater ownership interest, or any individual or legal entity that holds a 10% or greater ownership interest in the bidder, either (answer yes or no to one or both of the following, as applicable):

1. have business operations in Northern Ireland Yes ☐ No ☐ and if yes:
2. shall take lawful steps in good faith to conduct any business operations in Northern Ireland in accordance with the MacBride Fair Employment Principles relating to nondiscrimination in employment and freedom of workplace opportunity regarding such operations in Northern Ireland, and shall permit independent monitoring of compliance with such principles.

Yes ☐ No ☐

(11) Certification Under Executive Order No. 16 - Prohibiting State Agencies and Authorities from Contracting with Businesses Conducting Business in Russia

Executive Order No. 16 provides that “all Affected State Entities are directed to refrain from entering into any new contract or renewing any existing contract with an entity conducting business operations in Russia.” The complete text of Executive Order No. 16 can be found here: <https://www.governor.ny.gov/executive-order/no-16-prohibiting-state-agencies-and-authorities-contracting-businesses-conducting>

The Executive Order remains in effect while sanctions imposed by the federal government are in effect. Accordingly, vendors who may be excluded from award because of current business operations in Russia are nevertheless encouraged to respond to solicitations to preserve their contracting opportunities in case the sanctions are lifted during a solicitation or even after award in the case of some solicitations.

As defined in Executive Order No. 16, an “entity conducting business operations in Russia” means an institution or company, wherever located, conducting any commercial activity in Russia or transacting business with the Russian Government or which the commercial entities headquartered in Russia or with their principal place of business in Russia in the form of contracting, sales, purchasing, investment, or any business partnership.

Is Vendor an entity conducting business operations in Russia, as defined above? Please answer by checking one of the following boxes:

- ☐ 1. No, Vendor does not conduct business operations in Russia within the meaning of Executive Order No. 16.
- ☐ 2.a. Yes, Vendor conducts business operations in Russia within the meaning of Executive Order No. 16 but has taken steps to wind down business operations in Russia or is in the process of winding down business operations in Russia. (Please provide a detailed description of the wind down process and a schedule for completion.)
- ☐ 2.b. Yes, Vendor conducts business operations in Russia within the meaning of Executive Order No. 16 but only to the extent necessary to provide vital health and safety services within Russia or to comply with federal law, regulations, executive orders, or directives. (Please provide a detailed description of the services being provided or the relevant laws, regulations, etc.)
- ☐ 3. Yes, Vendor conducts business operations in Russia within the meaning of Executive Order No. 16.

Addenda to the Contract Documents are available at:

<https://online.ogs.ny.gov/dnc/contractorConsultant/esb/ESBPlansAvailableIndex.asp>

The Undersigned acknowledges receipt and review of all Addenda to the Contract Documents on the above website, listed by number in the space below:

The Undersigned proposes to perform the Work required for this project in accordance with the Contract Documents for the following amount:

TOTAL BID

Unit Price Schedule Total (from appended Unit Price Schedule) \$ _____ .00

Is your firm a NYS-Certified Minority and Women-Owned Business Enterprise (MWBE)?

Yes ☐ No ☐

MWBE Certification file No. _____

SIGN BID HERE _____

Authorized Signature

PRINT NAME OF SIGNER _____

TITLE OF SIGNER _____

OFFICIAL COMPANY NAME _____

MAILING ADDRESS _____

Street

City

State

Zip

TELEPHONE NO. _____ FAX NO. _____

Area Code

Area Code

E-MAIL ADDRESS _____

UNIT PRICE SCHEDULE FOLLOWS

UNIT PRICE SCHEDULE						
ITEM NO.	DETAIL/ SPECIFICATION SECTION NUMBER	DESCRIPTION OF WORK	ESTIMATED QUANTITY	UNIT OF MEASURE	INDICATE \$ PER UNIT OF MEASURE (Enter Unit Bid Price in Numerals)	AMOUNT BID* (In Numerals)
01	012100.01	FIELD ORDER ALLOWANCE FOR CONTINGENT ACTIVITIES WITHIN THE SCOPE OF THE WORK	1	EACH	\$72,400	\$72,400
02	078400.01	FIRESTOPPING	1	SQUARE FOOT		
03	099103.01	MECHANICAL PAINTING – METAL DUCT	1	SQUARE FOOT		
04	233113.01	192" X 60" METAL DUCTWORK REMOVAL	59	LINEAR FOOT		
05	233113.02	120" X 48" METAL DUCTWORK REMOVAL	17	LINEAR FOOT		
06	233113.03	120" X 44" METAL DUCTWORK REMOVAL	61	LINEAR FOOT		
07	233113.04	120" X 36" METAL DUCTWORK REMOVAL	11	LINEAR FOOT		
08	233113.05	48" X 36" METAL DUCTWORK REMOVAL	43	LINEAR FOOT		
09	233113.06	192" X 60" METAL DUCT 45 DEG. ELBOW REMOVAL	4	EACH		
10	233113.07	120" X 44" TO 120" X 48" METAL DUCT TRANSITION REMOVAL	3	EACH		
11	233113.08	120" X 36" TO 120" X 44" METAL DUCT TRANSITION REMOVAL	3	EACH		
12	233113.09	120" X 36" 90 DEG. METAL DUCT ELBOW REMOVAL	2	EACH		
13	233113.10	120" X 36" 90 DEG. METAL DUCT ELBOW – 1W RADIUS REMOVAL	2	EACH		

UNIT PRICE SCHEDULE						
ITEM NO.	DETAIL/ SPECIFICATION SECTION NUMBER	DESCRIPTION OF WORK	ESTIMATED QUANTITY	UNIT OF MEASURE	INDICATE \$ PER UNIT OF MEASURE (Enter Unit Bid Price in Numerals)	AMOUNT BID* (In Numerals)
14	233113.11	192" X 60" METAL DUCTWORK INSTALLATION	59	LINEAR FOOT		
15	233113.12	120" X 48" METAL DUCTWORK INSTALLATION	17	LINEAR FOOT		
16	233113.13	120" X 44" METAL DUCTWORK INSTALLATION	61	LINEAR FOOT		
17	233113.14	120" X 36" METAL DUCTWORK INSTALLATION	11	LINEAR FOOT		
18	233113.15	48" X 36" METAL DUCTWORK INSTALLATION	43	LINEAR FOOT		
19	233113.16	192" X 60" 45 DEG. METAL DUCT ELBOW INSTALLATION	4	EACH		
20	233113.17	120" X 44" TO 120" X 48" METAL DUCT TRANSITION INSTALLATION	3	EACH		
21	233113.18	120" X 36" TO 120" X 44" METAL DUCT TRANSITION INSTALLATION	3	EACH		
22	233113.19	120" X 36" 90 DEG. METAL DUCT ELBOW INSTALLATION	2	EACH		
23	233113.20	120" X 36" 90 DEG. METAL DUCT ELBOW – 1W RADIUS INSTALLATION	2	EACH		
					UNIT PRICE SCHEDULE TOTAL:	

*Amount Bid = Estimated Quantity X Unit Bid Price

DETACH AND USE THIS FORM

BID FORM FOR: 45604-E

**ELECTRICAL WORK
REPLACE EXPANSION JOINTS
EAST AND WEST ARTERIAL ROADWAYS
EMPIRE STATE PLAZA
ALBANY, NY**

State of New York
Office of General Services
Design and Construction Group
Division of Contract Management
35th Floor, Corning Tower
The Gov. Nelson A. Rockefeller
Empire State Plaza
Albany, NY 12242

THIS IS A 5 PAGE BID FORM. ALL PAGES MUST BE COMPLETED.

THE STATE RESERVES THE RIGHT TO REJECT ANY OR ALL BIDS. EACH BID FORM SHALL BE ACCOMPANIED BY BID SECURITY (AS DESCRIBED IN THE INSTRUCTIONS TO BIDDERS) IN THE AMOUNT STATED IN THE ADVERTISEMENT FOR BIDS.

The Undersigned agrees to complete the Work within the time stated in Section 011000 of the Specifications.

The Undersigned acknowledges his/her understanding of the social policy concerning minority and women business participation in the State building construction program, and pledges to cooperate with the State in the implementation of this policy, and further pledges to exert good faith efforts to achieve participation of minority and female employees.

The Undersigned certifies, as to each of the occupations listed in the Prevailing Rate Schedule applicable to this Project, the ability and willingness to exert good faith efforts to achieve the goal for minority and women workforce participation as set forth in the Supplementary Conditions.

The Undersigned certifies the ability and willingness to exert good faith efforts to achieve the goals for Minority and Women-Owned Business Enterprise and Service-Disabled Veteran-Owned Businesses participation as set forth in the Supplementary Conditions.

The Undersigned declares that the Bidding and Contract Documents have been carefully examined and that all things necessary for the completion of the Work shall be provided.

The Undersigned agrees that the bid security shall be subject to forfeiture if this bid is accepted by the State and he/she does not submit executed copies of the Agreement WITHIN TEN (10) DAYS OF RECEIPT OF A WRITTEN REQUEST TO PROVIDE SUCH AGREEMENT. A Performance Bond and a Labor and Material Bond, each in an amount equal to the contract sum, shall be supplied with the executed Agreement and shall be the statutory form of public bonds required by Sections 136 and 137 of the State Finance Law.

By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of his/her knowledge and belief:

(1) The prices in this bid have been arrived at independently without collusion, consultation, communication, or agreement, for the purpose of restricting competition as to any matter relating to such prices with any other bidder or with any competitor;

(2) Unless otherwise required by law, the prices which have been quoted in this bid have not been knowingly disclosed by the bidder and will not knowingly be disclosed by the bidder prior to opening, directly or indirectly, to any other bidder or to any competitor;

(3) No attempt has been made or will be made by the bidder to induce any other person, partnership or corporation to submit or not to submit a bid for the purpose of restricting competition.

(4) This contract shall not cause or result in a violation of Section 74(3)(e) of the Public Officers Law which states: "No officer or employee of a state agency, member of the legislature or legislative employee should engage in any transaction as representative or agent of the State with any business entity in which he/she has a direct or indirect financial interest that might reasonably tend to conflict with the proper discharge of his/her official duties."

(5) The Bidder understands and agrees to comply with the requirements of the Procurement Lobbying Law, State Finance Law § 139-j and § 139-k, and with OGS's procedures relating to permissible contacts during a procurement as required by State Finance Law § 139-j(3) and § 139-j(6)(b). Such requirements and procedures are posted at <https://ogs.ny.gov/acpl>.

(6) The bidder is not on the list created pursuant to paragraph (b) of subdivision 3 of section 165-a of the state finance law (NYS Iran Divestment Act of 2012). The list can be viewed at the following link:

<https://ogs.ny.gov/iran-divestment-act-2012>

(7) Will New York State Businesses be used in the performance of this contract (refer to Document 007324)?

Yes ☐ No ☐

(8) The New York State Human Rights Law (Human Rights Law), Article 15 of the Executive Law, prohibits discrimination and harassment based on age, race, creed, color, national origin, sex, pregnancy or pregnancy-related conditions, sexual orientation, gender identity, disability, marital status, familial status, domestic violence victim status, prior arrest or conviction record, military status or predisposing genetic characteristics.

The Human Rights Law may also require reasonable accommodation for persons with disabilities and pregnancy-related conditions. A reasonable accommodation is an adjustment to a job or work environment that enables a person with a disability to perform the essential functions of a job in a reasonable manner. The Human Rights Law may also require reasonable accommodation in employment on the basis of Sabbath observance or religious practices.

Generally, the Human Rights Law applies to:

- all employers of four or more people, employment agencies, labor organizations and apprenticeship training programs in all instances of discrimination or harassment;
- employers with fewer than four employees in all cases involving sexual harassment; and,
- any employer of domestic workers in cases involving sexual harassment or harassment based on gender, race, religion, or national origin.

In accordance with Executive Order No. 177, the Bidder hereby certifies that it does not have institutional policies or practices that fail to address the harassment and discrimination of individuals on the basis of their age, race, creed, color, national origin, sex, sexual orientation, gender identity, disability, marital status, military status, or other protected status under the Human Rights Law.

Executive Order No. 177 and this certification do not affect institutional policies or practices that are protected by existing law, including but not limited to the First Amendment of the United States Constitution, Article 1, Section 3 of the New York State Constitution, and Section 296(11) of the New York State Human Rights Law.

(9) In accordance with State Finance Law § 139-l, by submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that the bidder has and has implemented a written policy addressing sexual harassment prevention in the workplace and provides annual sexual harassment prevention training to all of its employees. Such policy shall, at a minimum, meet the requirements of section two hundred one-g of the labor law.

If the bidder cannot make the foregoing certification, such bidder shall so state and shall furnish with the bid a signed statement that sets forth in detail the reasons that the bidder cannot make the certification.

(10) In accordance with Section 165(5) of the State Finance Law, the bidder, by submission of this bid, certifies that it or any individual or legal entity in which the bidder holds a 10% or greater ownership interest, or any individual or legal entity that holds a 10% or greater ownership interest in the bidder, either (answer yes or no to one or both of the following, as applicable):

1. have business operations in Northern Ireland Yes ☐ No ☐ and if yes:
2. shall take lawful steps in good faith to conduct any business operations in Northern Ireland in accordance with the MacBride Fair Employment Principles relating to nondiscrimination in employment and freedom of workplace opportunity regarding such operations in Northern Ireland, and shall permit independent monitoring of compliance with such principles.

Yes ☐ No ☐

(11) Certification Under Executive Order No. 16 - Prohibiting State Agencies and Authorities from Contracting with Businesses Conducting Business in Russia

Executive Order No. 16 provides that “all Affected State Entities are directed to refrain from entering into any new contract or renewing any existing contract with an entity conducting business operations in Russia.” The complete text of Executive Order No. 16 can be found here: <https://www.governor.ny.gov/executive-order/no-16-prohibiting-state-agencies-and-authorities-contracting-businesses-conducting>

The Executive Order remains in effect while sanctions imposed by the federal government are in effect. Accordingly, vendors who may be excluded from award because of current business operations in Russia are nevertheless encouraged to respond to solicitations to preserve their contracting opportunities in case the sanctions are lifted during a solicitation or even after award in the case of some solicitations.

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Is Vendor an entity conducting business operations in Russia, as defined above? Please answer by checking one of the following boxes:

- ☐ 1. No, Vendor does not conduct business operations in Russia within the meaning of Executive Order No. 16.
- ☐ 2.a. Yes, Vendor conducts business operations in Russia within the meaning of Executive Order No. 16 but has taken steps to wind down business operations in Russia or is in the process of winding down business operations in Russia. (Please provide a detailed description of the wind down process and a schedule for completion.)
- ☐ 2.b. Yes, Vendor conducts business operations in Russia within the meaning of Executive Order No. 16 but only to the extent necessary to provide vital health and safety services within Russia or to comply with federal law, regulations, executive orders, or directives. (Please provide a detailed description of the services being provided or the relevant laws, regulations, etc.)
- ☐ 3. Yes, Vendor conducts business operations in Russia within the meaning of Executive Order No. 16.

Addenda to the Contract Documents are available at:

<https://online.ogs.ny.gov/dnc/contractorConsultant/esb/ESBPlansAvailableIndex.asp>

The Undersigned acknowledges receipt and review of all Addenda to the Contract Documents on the above website, listed by number in the space below:

The Undersigned proposes to perform the Work required for this project in accordance with the Contract Documents for the following amount:

TOTAL BID

Unit Price Schedule Total (from appended Unit Price Schedule) \$.00

Is your firm a NYS-Certified Minority and Women-Owned Business Enterprise (MWBE)?

Yes ☐ No ☐

MWBE Certification file No. _____

SIGN BID HERE _____
Authorized Signature

PRINT NAME OF SIGNER _____

TITLE OF SIGNER _____

OFFICIAL COMPANY NAME _____

MAILING ADDRESS _____
Street

_____ City State Zip

TELEPHONE NO. _____ FAX NO. _____
Area Code Area Code

E-MAIL ADDRESS _____

UNIT PRICE SCHEDULE FOLLOWS

UNIT PRICE SCHEDULE						
ITEM NO.	DETAIL/ SPECIFICATION SECTION NUMBER	DESCRIPTION OF WORK	ESTIMATED QUANTITY	UNIT OF MEASURE	INDICATE \$ PER UNIT OF MEASURE (Enter Unit Bid Price in Numerals)	AMOUNT BID* (In Numerals)
01	012100.01	FIELD ORDER ALLOWANCE FOR CONTINGENT ACTIVITIES WITHIN THE SCOPE OF THE CONTRACT	1	EACH	\$31,500	\$31,500
02	078400.01	FIRESTOPPING	1	SQUARE FOOT		
03	260501.01	ELECTRICAL BASE UNIT (EBU) -03 LIGHTING ½” -1”	18	EACH		
04	260501.03	ELECTRICAL BASE UNIT (EBU) -05 POWER ½” – 1”	12	EACH		
05	260501.04	ELECTRICAL BASE UNIT (EBU) -06 POWER 1-1/4” -2”	5	EACH		
06	260501.05	ELECTRICAL BASE UNIT (EBU) -07 LIGHTING 3” -4”	2	EACH		
07	260501.06	ELECTRICAL BASE UNIT (EBU) -09 SLAB WORK UNKNOWN UTILITY	16	EACH		
08	260501.08	ELECTRICAL BASE UNIT (EBU)-11 UNKNOWN UTILITY	1	EACH		
09	260501.09	ELECTRICAL BASE UNIT (EBU)-12 LIGHTING REMOVAL	180	EACH		
10	260501.10	ELECTRICAL BASE UNIT (EBU)-13 LIGHTING INSTALLATION	40	EACH		
					UNIT PRICE SCHEDULE TOTAL:	

*Amount Bid = Estimated Quantity X Unit Bid Price

SECTION 011000

SUMMARY OF THE WORK

PART 1 GENERAL

1.01 WORK COVERED BY CONTRACT DOCUMENTS

- A. The title and location of the Work is printed on the cover of this Project Manual.
- B. Type of Contract: Unit price.

1.02 RELATED CONTRACTS

- A. The Project consists of the following separate contracts:

Construction Work	Project No. 45604-C
HVAC Work	Project No. 45604-H
Plumbing Work	Project No. 45604-P
Electrical Work	Project No. 45604-E
- B. The suffix letter at the end of the project number distinguishes the separate Contracts. The Sections in Division 01 of the Specifications which have more than one suffix letter (such as this Section) are common to each related Contract.

1.03 SUBSTANTIAL AND PHYSICAL COMPLETION DATES

- A. Substantially complete the Work within 338 days after the Agreement is approved by the Comptroller.
 - 1. The time allocated for the performance of work under this contract includes 10 days for notification of the Contractor of the Comptroller's approval of the Agreement.
 - 2. The approval of the Agreement by the Comptroller constitutes the filing of the Contract Documents as a public record and notice to the Contractor that a fully executed contract exists between the Contractor and the State.
- B. Physically complete the Work within 90 days after the established Substantial Completion date.

1.04 CONTRACT AWARD SUBMITTALS

- A. Submittal No. 1: Submit the CONTRACTOR'S LIST OF SUBCONTRACTORS-SUPPLIERS information required in SCHEDULES AND RECORDS Article in Specification Section 013000 not later than 15 days after approval of the Contract by the Comptroller.
- B. Submittal No. 2: Submit Preliminary Project Schedule related information noted in 013113 Project Planning and Scheduling or 013200 Construction Progress Documentation, whichever section is applicable, within 15 days after approval of

the Contract by the Comptroller for review by the Director's Representative and OGS Scheduling.

- C. Submittal No. 3: Submit the Submittal Coordinator Qualifications not later than 10 days after Award. Include resume and references, and other certification, licenses, or other requested information.

1.05 RESTRICTED WORK HOURS

A. Construction Work Contract:

1. All work on the Roadway Level of the Arterial Highway to and from Column Lines S3-S2, and N2-N3 to be completed during the following hours:
 - a. 7:00 AM - 3:00 PM, Monday through Friday.
 - b. The Work Zone Traffic Control drawing (WZTN-01) indicates work being completed during off-peak traffic hours. The off-peak traffic hours are defined as 9:00 am – 3:00 pm, Monday through Friday.
 - c. Work during off-peak hours will be required during the slab scope of work by Swan Street. The work must be coordinated with the Director's Representative. The off-peak hours are defined as 9:00 pm – 4:00 am, Monday through Friday. All construction debris and/or equipment must be removed from this area by 5:00 am.
- d. Construction of this project will require sequencing:
 - 1.) When work is occurring on the West Arterial Roadway:
 - a.) One (1) lane of the West Bound Arterial Roadway will be open to allow parking access to P1 Parking Level, P2 Parking Level, and the Visitor Parking Level.
 - b.) One (1) lane through the North tube will be open for west bound through traffic.
 - c.) Both lanes of the East Bound Arterial will be open.
 - 2.) When work is occurring on the East Arterial Roadway:
 - a.) Both lanes of the West Bound Arterial Roadway will be open.
 - b.) One (1) lane of the East Bound Arterial Roadway will be open to allow access to the P3 Parking Level, P2 Parking Level, P1 Parking Level, and the P1 South Access Road to Madison Ave.
 - c.) One (1) lane through the North tube will be open for east bound through traffic.
 - 3.) Refer to the required traffic controls as specified under Specification Section 015526. This will allow entrance and exit to and from the parking levels.
- e. There will be one lane of traffic open in the north tube with the required traffic controls as required under Specification Section 015526. This will allow thru-traffic to use the roadway.
- f. If work is to be completed on Saturday or Sunday, the hours for construction work is to be established by the facility thru the

Director's Representative. All of the same traffic controls are to be adhered to.

2. All other work in all Contracts (not affected by the actual expansion joint repairs on the roadway level) to be completed during standard hours of operation.
- A. Plumbing Work Contract:
 1. All work to be completed during standard hours of operation, as established by the facility thru the Director's Representative.
- B. HVAC Work Contract:
 1. All work to be completed during standard hours of operation, as established by the facility thru the Director's Representative.
- C. Electrical Work Contract:
 1. All work to be completed during standard hours of operation, as established by the facility thru the Director's Representative.
- E. All Contracts – North Tube Temporary Roadway Renovation:
 1. All work to be completed during standard hours of operation, as established by the facility thru the Director's Representative.

1.06 RESTRICTED WORK PERIOD

- A. HVAC Work Contract: Do not perform Work requiring shut off of active heating piping and equipment on or after October 15th and up to, but not including May 1st unless approved otherwise, in writing, by the Director's Representative.
- B. Construction Work Contract: Do not perform the waterproofing and related work on or after December 1st and up to, but not including April 1st, unless approved otherwise, in writing, by the Director's Representative. During this period, clear the work area of materials, equipment, and debris.
- C. Construction Work Contract: Do not perform the asphalt paving work on or after November 15th and up to, but not including April 15th, unless approved otherwise, in writing, by the Director's Representative. During this period, leave the disturbed areas stabilized for winter shutdown and clear the work area of materials, equipment, and debris.
- D. Construction Work Contract: Contractor to coordinate with the Director's Representative and the Department of Transportation (DOT) to identify the shutdown period for the temporary roadway during the DOT's snow and ice period.

1.07 ITEMS NOT INCLUDED

- A. The following items shown on the Drawings are not included in the Contract:
 1. Items indicated "NIC" (Not in Contract).
 2. Existing construction, except where such construction is to be removed, replaced, or altered.

1.08 CONFINED SPACE

- A. Comply with confined space and permit-required confined space as defined in Title 29, Part 1910, Section 146 of the Code of Federal Regulations (29CFR 1910.146).
- B. Comply with Safety Requirements for Confined Spaces (ANSI/ASSE Z117.1-2009).
- C. All spaces shall be treated as permit-required confined spaces until the Contractor and/or subcontractors are able to re-classify the space to a non-permit confined space as per 29CFR 1910.146 and ANSI/ASSE Z117.1-2009.
- D. Indicated confined spaces are not intended to limit or define Contractor's or subcontractors' regulatory compliance requirements. In addition to confined spaces indicated on the drawings, other confined spaces may be present or created by the work of this contract. Notify the Director's Representative, in writing, of confined spaces created or eliminated during execution of the Work.
- E. For the purpose of inspecting ongoing work, furnish at no additional cost to the State, personnel, as directed, to allow the Director's Representative to enter confined space and permit-required confined space in compliance with Title 29, Part 1910, Section 146 of the Code of Federal Regulations (29CFR 1910.146).

1.09 OCCUPANCY

- A. This is an occupied Facility. The building will be occupied and operational during execution of the Work. Ingress to and egress from the building shall be maintained at all times.

1.10 CONNECTION TO ELECTRICAL EQUIPMENT OR SYSTEMS

- A. Contractor will not be allowed to tie into electrical equipment or systems until the Division of Utilities Management has reviewed and approved the connection.
 - 1. Submit written procedures thru the Director's Representative to the Division of Utilities Management, detailing how the connection Work is proposed to be performed.
 - 2. After procedures have been approved, notify the Director's Representative at least 3 working days prior to the connection Work so that arrangements can be made to have a Division of Utilities Management Representative witness the Work.

1.11 CONTRACTOR USE OF PREMISES

- A. Work hours shall be as established by the Facility authorities thru the Director's Representative.
- B. Inform the Director's Representative of work area access requirements. The Director's Representative will coordinate and schedule the requirements with Facility staff to obtain and ensure timely availability of work areas.

- C. Check in with the Facility Representative, as directed, at the beginning of each workday. Furnish information regarding where employees will be working during the day.
- D. Comply with the Facility's Visitor Identification Policy. A copy of the current policy will be distributed at the initial job meeting.
- E. The following items are not allowed on the Site or on Facility premises.
 - 1. Firearms, ammunition, weapons, and dangerous instruments (other than tools required for the Work).
 - 2. Alcoholic beverages and persons under the influence of same.
 - 3. Cannabis and persons under the influence of same. Cannabis, as used herein shall refer to any form of cannabis that has psychoactive properties.
 - 4. Illegal controlled substances and persons under the influence of same.
 - 5. Cameras (except with written permission from the Director's Representative).
- F. Comply with Facility policies relating to smoking at the Site.
 - 1. Empire State Plaza Projects: No smoking is allowed within the contract limit line, Individuals observed smoking in non-designated areas will be removed from the site for the duration of the project.
- G. Routes of ingress and egress within the building to the location of the Work shall be as directed by the Director's Representative.
- H. Store materials and perform the Work so that pedestrian and vehicular traffic is not obstructed.
- I. Do not diminish the level of life safety during performance of the Work.
- J. Remove furniture and portable equipment which interferes with the execution of the Work and store where directed. Reset such items when directed.
- K. Utility Outages and Shutdowns: Do not interrupt utility services or branch services within the building except for the time required to make new connections. Arrange with the Director's Representative for the time and duration of interruptions of services. Provide temporary services required to maintain building services at all times other than during scheduled interruptions.
- L. Do not use existing elevators for the Work.
- M. Be responsible and accountable for employees, suppliers, subcontractors and their employees, with regard to their use of the premises. Direct them to comply with the Facility Regulations and with the security and traffic regulations.
- N. Furnish Facility authorities with a telephone number or method to contact the supervisor for the Work in case of an emergency after work hours, including weekends and holidays.

- O. Comply with applicable federal and State of New York Right-to-Know Law provisions. Provide Safety Data Sheets (SDS) documents for products that have SDS data prior to use on the project site.
 - 1. Upload and maintain electronic SDS documents on the Submittals Website (SDS tab).
 - 2. SDS tab is organized by prime contracts. To be readily identified, name products with SDS by specification section number and product name.
 - 3. Supply and maintain one hard copy of the appropriate SDS on the project site and one hard copy with the Facility's Right-to-Know Information Officer.
- P. Direct employees to be watchful for people in or near the work area where safety hazards may be present. Notify the Facility Safety/Security Department, if necessary, to remove them from the work area or Site.
- Q. Report fire and other emergency situations to the Facility Safety/Security Department immediately.
- R. Empire State Plaza Work Permits: Comply with facility requirements for Work Permits
 - 1. A weekly permit is required for all work
 - 2. Daily Permits are required for work that generates sparks, open flame or excessive heat, etc.
 - 3. Hot Work Permit are required am minimum of 24 hours in advance of the start of anticipated work,

1.12 OPENINGS AND CHASES IN NEW CONSTRUCTION

- A. Construction Work Contract:
 - 1. Unless specifically indicated otherwise, provide openings, chases, and similar items in new construction provided under this Contract, as required for items to be provided under related contracts.
 - 2. After the installation and completion of the items for which openings and chases have been provided, build in, over, around and finish the openings and chases to complete the Work.
 - 3. Provide all cutting, patching, and refinishing resulting from failure to provide the required openings and chases, if the necessary information was furnished by the related contractor before 24 hours of start of the applicable part of the Work.
 - 4. If related contractors fail to furnish drawings or written information covering the openings and chases they require in new construction at least 24 hours before installation of the Work affected by those items, the related contractors will be required to do all cutting, patching, and refinishing of the construction so affected, at their own expense.
- B. HVAC Work, Plumbing Work, and Electrical Work Contracts:
 - 1. Unless specifically indicated otherwise, furnish drawings or written information to the Construction Work Contractor covering the openings and chases required in new construction for the Work. If such information is not furnished at least 24 hours before start of the applicable part of the Construction Work Contractor's work, all

necessary cutting, patching, and refinishing will be included in the Contract at no additional cost to the State.

1.13 SPRAYED-ON FIREPROOFING FOR NEW CONSTRUCTION

- A. Construction Work Contract:
 - 1. Notify the related contractors 5 working days prior to the application of fireproofing.
 - 2. If related contractors fail to install hangers, clips, sleeves, and other items that will penetrate the fireproofing, the related contractors will be required to cut and repair the fireproofing at their own expense.
- B. HVAC Work, Plumbing Work, and Electrical Work Contracts:
 - 1. Construction Work Contractor will give 5 working days' notice prior to application of fireproofing.
 - 2. If hangers, clips, sleeves, and other items that will penetrate the fireproofing are not in place before application of the fireproofing by the Construction Work Contractor, all necessary cutting and repair of the fireproofing will be included in the Contract at no additional cost to the State.

1.14 REFERENCE SPECIFICATIONS AND STANDARDS

- A. Comply with the requirements of the various specifications and standards referred to in these Specifications, except where they conflict with the requirements of these Specifications. Such reference specifications and standards shall be the date of latest revision in effect at the time of receiving bids unless the date is given.
- B. DOT Specifications: If the abbreviation DOT appears in these Specifications, it shall mean the most current edition of the New York State Department of Transportation, Office of Engineering specifications entitled "STANDARD SPECIFICATIONS - CONSTRUCTION AND MATERIALS", including all applicable Addenda in effect at the time of receipt of bids. The DOT specifications may be purchased from the Department of Transportation, Plan and Publication Sales, 50 Wolf Road, Albany, NY 12232, (518) 457-2124.

1.15 LAYING OUT

- A. Examine the Contract Documents thoroughly and promptly report any errors or discrepancies to the Director's Representative before commencing the Work.
- B. Lay out the Work in accordance with the Contract Documents.
 - 1. Layouts which require the establishment of property lines or monuments shall be performed by a Land Surveyor licensed by New York State.
- C. Construction Work Contract:
 - 1. Provide and maintain axis lines on each floor.
 - 3. Provide and maintain marks 4 feet above finish floor on each column at each floor.

4. Take elevations and locations from control points located by the Director's Representative.

1.16 SPECIAL INSPECTIONS

- A. Special Inspections and tests are required by Chapter 17 of the Building Code of New York State (BCNYS). Inspections & Testing Services will be provided by the state unless otherwise noted.
- B. Contractors are responsible for notifying the Directors Representative regarding individual inspections listed in the **STATEMENT OF SPECIAL INSPECTIONS**. Contractors shall cooperate with the inspectors and testing agencies and sufficient notice and lead time (minimum 48 hours) must be allowed for inspection and testing to be performed.
- C. Where deficiencies are identified, the contractor must take corrective actions to comply with the contract documents or remedy the deficiencies in accordance with Article 9 of the General Conditions.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

END OF SECTION

SECTION 030131

CONCRETE REHABILITATION

PART 1 GENERAL

1.01 UNIT PRICE WORK

- A. Payment for the Work listed in the Unit Price Schedule will be made at the unit prices indicated multiplied by the units of completed Work.
- B. The unit prices listed below shall include all Work specified in the Division 1 General Requirements Sections except for the unit price Work descriptions specified in Sections 015000 and 016500.
 - 1. Item 030131.01 – Shallow Repair – Horizontal. Payment for this Work will be made at the Contract unit price per square foot in place. The unit price includes the following:
 - a. The intent of this work is to repair the horizontal shallow depth surface scaled locations.
 - b. Access, labor, and materials to mobilize and demobilize to all repair and placement locations.
 - c. Fuel/power for equipment as required.
 - d. All Work as specified within this Section 030131, referenced Section 033000, Work Note SR-H, and detail 5/S-300.
 - e. Temporary lighting, heat, cold weather concrete procedures, hot weather concrete procedures, protection, and curing.
 - f. Daily clean up waste and debris resulting from the Work.
 - 2. Item 030131.02 – Shallow Repair – Vertical. Payment for this Work will be made at the Contract unit price per square foot in place. The unit price includes the following:
 - a. The intent of this work is to repair the vertical shallow depth surface scaled locations.
 - b. Access, labor, and materials to mobilize and demobilize to all repair and placement locations.
 - c. Fuel/power for equipment as required.
 - d. All Work as specified within this Section 030131, referenced Section 033000, Work Note SR-V, and detail 6/S-300.
 - e. Temporary lighting, heat, cold weather concrete procedures, hot weather concrete procedures, protection, and curing.
 - f. Daily clean up waste and debris resulting from the Work.
 - 3. Item 030131.03 – Shallow Repair – Vertical (Over 6 Ft.). Payment for this Work will be made at the Contract unit price per square foot in place. The unit price includes the following:
 - a. The intent of this work is to repair the vertical shallow depth surface scaled locations present at a distance greater than 6 feet above existing pedestrian access surface.

- b. Access (to include scaffolding, ladders, or other elevated work platforms as may be required), labor, and materials to mobilize and demobilize to all repair and placement locations.
 - c. Fuel/power for equipment as required.
 - d. All Work as specified within this Section 030131, referenced Section 033000, Work Note SR-V6, and detail 6/S-300.
 - e. Temporary lighting, heat, cold weather concrete procedures, hot weather concrete procedures, protection, and curing.
 - f. Daily clean up waste and debris resulting from the Work.
4. Item 030131.04 – Shallow Repair – Overhead. Payment for this Work will be made at the Contract unit price per square foot in place. The unit price includes the following:
- a. The intent of this work is to repair the overhead shallow depth surface scaled locations present. Overhead repairs occur at a distance greater than 6 feet above existing pedestrian access surface.
 - b. Access (to include scaffolding, ladders, or other elevated work platforms as may be required), labor, and materials to mobilize and demobilize to all repair and placement locations.
 - c. Fuel/power for equipment as required.
 - d. All Work as specified within this Section 030131, referenced Section 033000, Work Note SR-O, and detail 7/S-300.
 - e. Temporary lighting, heat, cold weather concrete procedures, hot weather concrete procedures, protection, and curing.
 - f. Daily clean up waste and debris resulting from the Work.
5. Item 030131.05 – Deep Repair – Horizontal. Payment for this Work will be made at the Contract unit price per square foot in place. The unit price includes the following:
- a. The intent of this work is to repair the horizontal partial depth locations where deteriorated conditions extend beyond the depth of steel concrete reinforcing.
 - b. Access, labor, and materials to mobilize and demobilize to all repair and placement locations.
 - c. Fuel/power for equipment as required.
 - d. All Work as specified within this Section 030131, referenced Section 033000, Work Note DR-H, and details 8/S-300 and 4/S-300.
 - e. Temporary lighting, heat, cold weather concrete procedures, hot weather concrete procedures, protection, and curing.
 - f. Daily clean up waste and debris resulting from the Work.
6. Item 030131.06 – Deep Repair – Vertical. Payment for this Work will be made at the Contract unit price per square foot in place. The unit price includes the following:
- a. The intent of this work is to repair the vertical partial depth locations present where deteriorated conditions extend beyond the depth of steel concrete reinforcing. Repairs may be associated directly with Item 055000.02.

- b. Access, labor, and materials to mobilize and demobilize to all repair and placement locations.
 - c. Fuel/power for equipment as required.
 - d. All Work as specified within this Section 030131, referenced Section 033000, Work Note DR-V, and details 1/S-301 and 4/S-300.
 - e. Temporary lighting, heat, cold weather concrete procedures, hot weather concrete procedures, protection, and curing.
 - f. Daily clean up waste and debris resulting from the Work.
7. Item 030131.07 – Deep Repair – Vertical (Over 6 ft.). Payment for this Work will be made at the Contract unit price per square foot in place. The unit price includes the following:
- a. The intent of this work is to repair the vertical partial depth locations at a distance greater than 6 feet above the existing pedestrian access surface where deteriorated conditions extend beyond the depth of steel concrete reinforcing. Repairs may be associated directly with Item 055000.02.
 - b. Access (to include scaffolding, ladders, or other elevated work platforms as may be required), labor, and materials to mobilize and demobilize to all repair and placement locations.
 - c. Fuel/power for equipment as required.
 - d. All Work as specified within this Section 030131, referenced Section 033000, Work Note DR-V6, and details 1/S-301 and 4/S-300.
 - e. Temporary lighting, heat, cold weather concrete procedures, hot weather concrete procedures, protection, and curing.
 - f. Daily clean up waste and debris resulting from the Work.
8. Item 030131.08 – Deep Repair – Overhead. Payment for this Work will be made at the Contract unit price per square foot in place. The unit price includes the following:
- a. The intent of this work is to repair the overhead partial depth locations where deteriorated conditions extend beyond the depth of steel concrete reinforcing. Overhead repairs occur at a distance greater than 6 feet above existing pedestrian access surface.
 - b. Access (to include scaffolding, ladders, or other elevated work platforms as may be required), labor, and materials to mobilize and demobilize to all repair and placement locations.
 - c. Fuel/power for equipment as required.
 - d. All Work as specified within this Section 030131, referenced Section 033000, Work Note DR-O, and details 3/S-301 and 4/S-300.
 - e. Temporary lighting, heat, cold weather concrete procedures, hot weather concrete procedures, protection, and curing.
 - f. Daily clean up waste and debris resulting from the Work.
9. Item 030131.09 – Expansion Joint Replacement - Roadway. Payment for this Work will be made at the Contract unit price per (linear) foot in place. The unit price includes the following:

- a. The intent of this work is to remove the existing deteriorated expansion joint system, repair deteriorated concrete surrounding the expansion joint, and install the specified expansion joint system.
 - b. Access (to include scaffolding, ladders, or other elevated work platforms as may be required), labor, and materials to mobilize and demobilize to all repair and placement locations.
 - c. Fuel/power for equipment as required.
 - d. All Work as specified within this Section 030131, referenced Section 033000, referenced section 079200, Work Note EJ-R, and details 2/S-302 and 5/S-302.
 - e. Temporary lighting, heat, cold weather concrete procedures, hot weather concrete procedures, protection, and curing.
 - f. Daily clean up waste and debris resulting from the Work.
10. Item 030131.10 – Expansion Joint Replacement – W11. Payment for this Work will be made at the Contract unit price per (linear) foot in place. The unit price includes the following:
- a. The intent of this work is to remove the existing deteriorated expansion joint system, repair deteriorated concrete surrounding the expansion joint, and install the specified expansion joint system.
 - b. Access (to include scaffolding, ladders, or other elevated work platforms as may be required), labor, and materials to mobilize and demobilize to all repair and placement locations.
 - c. Fuel/power for equipment as required.
 - d. All Work as specified within this Section 030131, referenced Section 033000, referenced section 079200, Work Note EJ-W11, and detail 5/S-303.
 - e. Temporary lighting, heat, cold weather concrete procedures, hot weather concrete procedures, protection, and curing.
 - f. Daily clean up waste and debris resulting from the Work.
11. Item 030131.11 – Shearhead - Repair. Payment for this Work will be made at the Contract unit price per shearhead in place. The unit price includes the following:
- a. The intent of this work is to repair the locations where deteriorated conditions occur at concrete encased steel wide-flange shearheads and extend beyond the depth of steel concrete reinforcing. Shearhead repairs occur overhead at a distance greater than 6 feet above existing pedestrian access surface. Repairs may be associated directly with Item 055000.01.
 - b. Access (to include scaffolding, ladders, or other elevated work platforms as may be required), labor, and materials to mobilize and demobilize to all repair and placement locations.
 - c. Fuel/power for equipment as required.
 - d. All Work as specified within this Section 030131, referenced Section 033000, Work Note SH, and detail 1/S-302.
 - e. Temporary lighting, heat, cold weather concrete procedures, hot weather concrete procedures, protection, and curing.
 - f. Daily clean up waste and debris resulting from the Work.

12. Item 030131.12 – Structural Shoring. Payment for this Work will be made at the Contract unit price per shoring unit as defined in Specification 017329, Section 3.02 Preparation, and detail 1/S-303. The unit price includes the following:
 - a. The intent of this work is to design, provide, install, maintain, and remove structural shoring where required to support the existing structure during repair operations.
 - b. Access (to include scaffolding, ladders, or other elevated work platforms as may be required), labor, and materials to mobilize and demobilize to all shoring locations.
 - c. Fuel/power for equipment as required.
 - d. All Work as specified within this Section 030131, Section 017329 Subsection 3.02, Work Note SHORE, and detail 1/S-303.
 - e. Daily clean up waste and debris resulting from the Work.

13. Item 030131.13 – Expansion Joint Replacement - Bridge. Payment for this Work will be made at the Contract unit price per (linear) foot in place. The unit price includes the following:
 - a. The intent of this work is to remove the existing deteriorated expansion joint system, repair deteriorated concrete surrounding the expansion joint, and install the specified expansion joint system.
 - b. Access (to include scaffolding, ladders, or other elevated work platforms as may be required), labor, and materials to mobilize and demobilize to all repair and placement locations.
 - c. Fuel/power for equipment as required.
 - d. All Work as specified within this Section 030131, referenced Section 033000, referenced section 079200, Work Note EJB, and detail 4/S-114.
 - e. Temporary lighting, heat, cold weather concrete procedures, hot weather concrete procedures, protection, and curing.
 - f. Daily clean up waste and debris resulting from the Work.

14. Item 030131.14 – Remove Concrete Pad. Payment for this Work will be made at the Contract unit price per (square) foot in place. The unit price includes the following:
 - a. The intent of this work is to remove the existing concrete pad at the north tube after the state removes the supported equipment.
 - b. Access (to include scaffolding, ladders, or other elevated work platforms as may be required), labor, and materials to mobilize and demobilize to all repair and placement locations.
 - c. Fuel/power for equipment as required.
 - d. All Work as specified within this Section 030131, referenced Section 017329, and note on sheet S-103.
 - e. Temporary lighting, and heat.
 - f. Daily clean up waste and debris resulting from the Work.

15. Item 030131.15 – Full-Depth Concrete Pan Replacement – Overhead. Payment for this Work will be made at the Contract unit price per square foot in place. The unit price includes the following:
- a. The intent of this work is to repair the overhead deep concrete repair locations that extend full depth of slab (pan) or extend to within 1” of the top surface of concrete as indicated in detail 3/S-301. Overhead repairs occur at a distance greater than 6 feet above existing pedestrian access surface.
 - b. Access (to include scaffolding, ladders, or other elevated work platforms as may be required), labor, and materials to mobilize and demobilize to all repair and placement locations.
 - c. Fuel/power for equipment as required.
 - d. All Work as specified within this Section 030131, referenced Section 033000, Work Note DR-O, and detail 4/S-301.
 - e. Temporary lighting, heat, cold weather concrete procedures, hot weather concrete procedures, protection, and curing.
 - f. Daily clean up waste and debris resulting from the Work.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Removals, Cutting, and Patching: Section 017329.
- B. Crack Repairs by Epoxy Injection: Section 030132.
- C. Concrete Formwork: Section 031100.
- D. Steel Concrete Reinforcement: Section 032100.
- E. Cast in Place Concrete: Section 033000.
- F. Joint Sealers: Section 079200.
- G. Shotcrete: Section 033713

1.03 REFERENCES

- A. Except as shown or specified, the Work of this Section shall conform to the requirements of International Concrete Repair Institute (ICRI), 3166 S. River Rd., Suite 132, Des Plaines, IL 60018, (847) 827-0830, www.icri.org.
 - 1. ICRI Guideline No. 310.1R-2008 Guide for Surface Preparation for the Repair of Deteriorated Concrete Resulting from Reinforcing Steel Corrosion (formerly Guideline No. 03730).

1.04 SUBMITTALS

- A. Product Data: Submit manufacturer’s technical data for each product indicated, including recommendations for its application and installation instructions. Include certifications substantiating product complies with requirements
- B. Qualifications:

1. Submit descriptions of projects completed within last ten years of similar scope and cost. Include project location and contact information.
 2. Submit project experience for person(s) responsible for work to be performed under this section.
 3. Submit written verification from product manufacturer that personnel performing this work have completed training from the Company Field Advisor as specified in Section 1.04 prior to start of work.
- C. Restoration and Reconstruction Program: Submit written program for each phase of restoration and reconstruction process, including protection of surrounding materials on building and site during operations. Describe in detail materials, methods, and equipment to be used for each phase of restoration and reconstruction work.
1. Submit sequencing of repair work. Specifically address how sequencing will be performed to prevent variations in color of concrete and patches.
 2. Describe in detail how repairs and coatings will be cured and protected during adverse weather conditions.
 3. Describe in detail the use of scaffolding and/or lifts, and how building entryways and pedestrian walkways will be protected.
- D. Submit labeled detailed preconstruction video of work areas with weekly look ahead schedule prior to work commencing.
- E. Structural Shoring: Submit engineered shoring drawings and calculations bearing the seal and signature of the professional New York Registered Engineer responsible for their preparation. See Specification section 017329, subsection 3.02.

1.05 QUALITY ASSURANCE

- A. Field Examples: Prior to performing the Work of this Section, prepare a sample panel, or a portion of existing concrete which is to be repaired, to represent each type of rehabilitation work required. Approved samples will be used as quality standards for the Work. Maintain approved samples at the site until the Work is completed.
- B. Material Container Labels: Material containers shall bear the manufacturer's label indicating manufacturer's name, trade name of product, lot number, shelf life of product, and mix ratio (if applicable).
- C. Company Field Advisor: Secure the services of a company field advisor from manufacturer of concrete surface treatment products including patching material, sealers, hardeners, sealants, and membranes. Field advisor shall be certified in writing by the manufacturer to be technically qualified in installing the product. Personnel involved solely in sales do not qualify. Field advisor shall be present at the beginning of product installation and as required during duration of the project for the purpose of:

1. Rendering technical assistance to the Contractor regarding installation procedures of the production to satisfy warrantee or guarantee requirements.
 2. Providing specialized training in use of product to the Contractor's personnel.
 3. Verifying surface preparation procedures and suitable substrates for material application.
 4. Verifying proper mixing proportions and procedures for the materials.
 5. Verifying proper temperature and other environmental controls.
 6. Verifying proper tools and application procedures.
 7. Verifying proper curing and protection of installed product.
 8. Familiarizing the Contractor, Owner, Architect, and Engineer with all aspects of the system including inspection techniques.
 9. Answering questions that may arise.
 10. Preparing a written report summarizing information listed above. Report shall be submitted to the Contractor, Owner, Architect, and Engineer.
- D. The Contractor shall be responsible for the field advisor's expenses.
- E. Contractor shall coordinate with Director's Representative for performance of the following inspections:
1. Inspect preparation of concrete surfaces for patching, crack repair, and coatings.
 2. Inspect installation, protection, and curing of patches, crack repairs, and coatings.
 3. Document quantity of repairs. For each repair location, document the size of the repair, and type of repair (deep or shallow) for comparison with size and type of repair noted in the Drawings.
 4. Test patched areas after seven days for soundness and delamination by sounding with a hammer.
 5. Perform adhesion tests on coatings and bond tests on patching materials by ASTM C1583. Testing shall include a minimum of 3 tests for each patching material.
 6. Inspect reinforcing steel preparation and placement.
 7. Verify first delivery and use of approved repair materials.
 8. Inspect for maintenance of specified placement temperature and curing techniques.
- F. Testing:
1. Test patched areas after seven days for soundness and delamination by sounding with a hammer. Repair all hollow-sounding areas by replacing the patch in the affected area at no cost to the Director. Document time and materials for rework of defective repairs and e-mail to director's representative by the close of business.
 2. Verify unconfined compressive strength of patching materials (ASTM C-109.) Three tests per material type per day of use.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to the site in original, sealed containers. Do not deliver materials that have exceeded shelf life limitation set forth by the manufacturer. Notify Director's Representative of deliveries for inspection.
- B. Comply with manufacturer's printed instructions for storing and handling materials.

1.07 PROJECT CONDITIONS

- A. Environmental Requirements:
 - 1. Comply with the product manufacturer's printed limitations and instructions.
 - 2. Make necessary provisions for the diversion and disposal of cleaning water/residue, including the furnishing of pumps if required. Take precautions as required to prevent damage and contamination resulting from run off.
 - 3. Do not wet or wash down surfaces when the temperature is below 40 degrees F or may drop below 40 degrees F within 24 hours.
- B. Existing Conditions:
 - 1. Take necessary precautions and protective measures to prevent injury to people and damage to property in areas adjacent to the Site, including damage due to wind drift of cleaning materials.
- C. Do not apply materials if temperature is below 45°F.
- D. Do not apply to materials to substrates with temperatures of 90 deg F and above.
- E. Provide artificial shade and wind breaks to prevent rapid drying of patches.
- F. Do not apply materials if precipitation is expected within 48 hours of application unless protection is provided.
- G. Do not apply materials if high winds are expected within 48 hours of application unless protection is provided. High wind is defined as a sustained surface wind greater than 40 mph lasting more than an hour or winds over 58 mph over land that are either predicted or occurring for any period of time.
- H. Protect surfaces from rapid drying.

PART 2 PRODUCTS

2.01 COMPANIES

- A. The Euclid Chemical Company, 19218 Redwood Rd., Cleveland, OH 44110-2799, (800) 321-7628, www.euclidchemical.com.

- B. Sika Corporation, 201 Polito Ave., Lyndhurst, NJ 07071, (800) 933-7452, www.sikausa.com.
- C. Kaufman Products, Inc., 3811 Curtis Ave., Baltimore, MD 21226, (800) 637-6372, www.kaufmanproducts.net.
- D. L&M Construction Chemicals, Inc., 14851 Calhoun Rd., Omaha, NE 68152, (800) 362-3331, www.lmcc.com.
- E. Conproco Corp., 17 Production Dr., Dover, NH 03820, (800) 258-3500, www.conproco.com.
- F. BASF Building Systems, 889 Valley Park Dr., Shakopee, MN 55379, (800) 433-9517, www.buildingsystems.basf.com.

2.02 MATERIALS

- A. The following brand names are specified to establish product generic type and standard of quality. Other comparable products in the manufacturer's same product series may be required to closely fit the particular job conditions. Use appropriate product for depth of patch and temperature at time of application. More than one product may be required for a particular type of patching mortar. When a color choice is available, select the color to match adjoining concrete as closely as practicable. A bonding agent/primer and/or sealer shall be used as recommended by the patching mortar manufacturer. Patching materials shall achieve a minimum unconfined compressive strength of 5,000 psi, verified by field test specimens.
- B. Bar Reinforcement: Galvanized. See specification 032100.
- C. Patching Material:
 - 1. Vertical and Overhead Type C-1 Patching Material: "Verticoat", by The Euclid Chemical Company; "SikaTop 123 Plus" by Sika Corp; "Master Emaco N 425" by Master Builders (BASF), "Conpro Set" by Conproco Corporation.
 - a. Shotcrete may be substituted per Section 033713 for overhead repairs equal to or exceeding 2 inches in depth.
 - 2. Horizontal Type C-2 Patching Material: "SikaTop 122 Plus" by Sika Corp.; "Eucocrete" by The Euclid Chemical Company, "MasterEmaco T Series" by Master Builders (BASF).
 - 3. Thin-Set Horizontal Patching Material: "Sika Top 121 Plus" or "Sika Top 111 Plus" by Sika Corporation, "MasterEmaco N 424" by Master Builders (BASF), "Thincoat" by The Euclid Chemical Company.
 - 4. Rapid-hardening Cementitious Patching Material: Type R-1 Patching Mortar: "Durapatch" by L&M Construction Chemicals, Inc.; or "SikaQuick 2500" by Sika Corp or "Duracrete II", "Duracrete II HW", "Duracrete II FR", Duracrete II HWFR", by Kaufman Products, Inc.;

- D. Flowable Patching Material: “Monotop 611 Plus” by Sika Corp.; “Forment” by Conproco Corporation; “MasterEmaco S 440 CI” by Master Builders Solutions; or accepted equivalent.
- E. Rebar Coating: “SurePoxxy HMEPL” or SurePoxxy HM 12” by Kaufman Products, Inc.; “ECB” by Conproco Corp.; or “MasterEmaco P122” or “MasterEmaco P124” by BASF Building Systems. Provide if required by patching material or if specifically directed by Director’s Representative. Manufacturer of rebar coating shall be same as for patching material used.
- F. Bonding Agent/Primer: As recommended by the patching material manufacturer, including primer for the reinforcing steel and primer for the concrete substrate. Manufacturer of bonding agent shall be the same as for patching material used.
- G. Concrete and Bonding Agent (for concrete): Normal weight cast-in-place concrete and adhesive bonding agent as specified in Section 033000. Ready Mix Concrete may be substituted for Patching material for use in deep or full section repairs on a case by case basis if approved, in writing, but the Director’s Representative.
- H. Shotcrete: Shotcrete as specified in Section 033713.
- I. Bonding Grout: Equal parts by volume of sand and cement with sufficient water to achieve a consistency of stiff “pancake batter” or as recommended by patching material manufacturer.
- I. Epoxy Crack Injection: See Specification 030132
- J. Anti-corrosive Paint for Exposed Steel: “Noxyde” by Rust-oleum Mathys.
- K. Aggregate: Hard, sound, and durable pea gravel ¼ to 3/8 inch.
- L. Penetrating Sealer (Slabs and stairs): Clear, non-yellowing, chrystalline waterproofing sealer. The following products are acceptable manufacturers:
 - 1. “Matrix Pro (P-1007)” by Foxfire Corporation,
 - 2. “SCP 743” by Spray-Lock,
 - 3. “CPT-2000” by Aquaron.
- M. Corrosion Inhibitor Coating: Water based, migrating corrosion inhibitor that forms a protective layer on existing steel reinforcing to inhibit corrosion due to chlorides and carbonation, and will not affect surface appearance of concrete. Calcium nitrite inhibitors are not permitted. The following products are acceptable manufacturers:
 - 1. “MCI-2020 V/O”, by Cortec Corporation.
 - 2. “Duralprep 3020”, by Euclid Chemical Company.
 - 3. “Ferrogard 903”, by Sika.

- N. Adhesive Grout for Doweled Concrete Reinforcing Bar and Threaded Rod:
1. Anchors to solid concrete:
 - a. Anchors for use when base material temperature is 0°F or greater: “HIT-Ice” by Hilti; “Epcon A7” by ITW Ramset/Red Head; “AC 100 + Gold” by Powers Fasteners; “AT-XP” by Simpson/Strong-Tie; or accepted equivalent.
 - b. Anchors for use when base material temperature is 40°F or greater; “HIT HY 200” by Hilti; “Epcon C6+” by ITW Ramset/Red Head; “PE 1000+” by Powers Fasteners; “ET-HP” by Simpson/Strong-Tie; or accepted equivalent.
- O. Threaded Rod:
1. 3/4” to 1.5” diameter: ASTM F 593 CW2 Type 304 / 316 Stainless Steel. Minimum yield strength at 0.2% offset 45,000 psi, Futa = 85,000 psi.
 2. 3/8” to 5/8” diameter: ASTM F 593 CW1 Type 304 / 316 Stainless Steel. Minimum yield strength at 0.2% offset 65,000 psi, Futa = 100,000 psi.
- P. Plastic Shim:
1. Engineered multi-polymer plastic shim. Rot, alkali, and oxidation resistant. Minimum compressive strength 4,500 psi. Korolath or accepted equivalent.
- Q. Gravity Feed Structural Epoxy: “Sikadur 35 Hi-Mod LV” by Sika; “MasterInject 1500”, by Master Builders; “Euco Qwikstitch” by Euclid Chemical, accepted equivalent.

PART 3 EXECUTION

3.01 PREPARATION

- A. Protection: Cover or otherwise protect adjacent surfaces not being repaired.
- B. Surface Preparation:
1. Prepare surfaces to be repaired in accordance with the product manufacturer’s printed instructions and as specified.
 2. Locate delaminations in members by sounding entire surface with hammer. Mark limits of delaminated area with chalk. Designate area to be removed with straight lines in rectangular patterns for neat patch. Review limits of hollow sounding (delaminated) and spalled areas and proposed limits of removal with Director’s Representative.
 3. Locate and mark reinforcing. Do not damage reinforcing during concrete removal operations.
 4. Removals:
 - a. Drill corners of concrete removal area and saw cut perimeter of area to required depth without cutting into reinforcing steel and without overrunning cuts at corners. Diameter of drill used in drilling corners prior to sawcutting shall be of sufficient diameter to allow for removals without overrunning cuts at corners. Make

shallow cuts inside area to be removed. This second cutting shall facilitate removal of concrete.

- b. Remove unsound concrete within marked areas.
- c. After required concrete has been removed, clean surface by sandblasting or high- pressure water to remove loose materials.
- d. Where embedded reinforcement is exposed by concrete removal, exercise extra caution to avoid damaging it during removal of concrete. If reinforcement is rusted, deteriorated, or if more than 50% of the circumference of an undeteriorated bar is exposed during concrete removals, remove concrete around and behind reinforcement to provide minimum of 3/4 inch clearance. If rust is on embedded reinforcement where it enters concrete, continue concrete removal until bare reinforcement is exposed or removals are terminated by Engineer.
- e. Notify Director's Representative 24 hours in advance via email when removals will be completed so that they may be observed. Unsatisfactory cavity preparation shall be corrected as required by Director's Representative.
- f. Clean rust from reinforcement by grit-blasting (sandblasting) until all corrosion is removed. If reinforcement is bowed out toward surface of the concrete, bend reinforcement back from surface.
- g. Install supplemental reinforcement.
- h. Prior to placing patching materials, air blast (oil-free) cavities clean to remove sand and debris.

3.02 SUPPLEMENTAL REINFORCEMENT

- A. Where there is a deteriorated or damaged reinforcement in cavities, add galvanized reinforcement. Add a sufficient number of bars to equal cross-sectional area of deteriorated or damaged bars, and provide a minimum length of 2 feet plus the required lap length or mechanical coupler length. Secure new reinforcement to existing reinforcement with non-corrosive wire ties.
- B. Supplementary reinforcing must lap splice with undamaged section of existing reinforcing. Where lap splice is not achievable, completely remove damaged portions of existing bar and mechanically splice supplementary reinforcing to undamaged remaining reinforcing.
- C. Securely anchor loose reinforcement in cavities to prevent its displacement during patching operation.
- D. Review installation of reinforcing with Director's Representative. Correct deficient installation as directed by Director's Representative.

3.03 COATING REBAR

- A. Where indicated by Patching Material printed instructions, coat reinforcing as soon as possible after completion of surface preparation.

- B. Place reinforcement coating complying with manufacturers printed instructions.
- C. Protect exposed reinforcing from initiation of rust or corrosion until patching material is placed. Re-clean exposed reinforcing of corrosion product prior to placement of patching material as directed by Director's Representative.

3.04 PATCHING CONCRETE

- A. Notify Director's Representative after providing saturated surface dry surfaces for patch material placement so that areas may be reviewed prior to placement of repair material. Patch concrete as soon as possible after completion of surface preparation.
- B. Reinforcement shall be coated by the contractor immediately after cleaning and inspection by Director's Representative. The Director's Representative shall be notified a minimum of 24 hours in advance that the contractor intends to clean and coat the bars.
- C. Apply bonding grout to surfaces to receive trowel applied materials with a uniform thickness of 1/16 to 1/8 inch thick. Coating may be retempered with a second coat if the first coat dries before patching materials are placed. Reclean cavity if second coat dries.
- D. Mixing Patching Mortar: Comply with mortar manufacturer's printed instructions. Proportion components and sizes of aggregate as recommended by mortar manufacturer for the particular job conditions.
- E. Patch concrete in accordance with the product manufacturer's printed instructions. Place in lifts as recommended by the manufacturer. Apply trowel finish to surface.
 - 1. Coat contact surfaces of existing concrete and steel reinforcing with a bonding agent/primer as recommended in the product manufacturer's instructions.
 - 2. For deep concrete repair of walls, column, or beams, build a form and apply flowable patching material. Place patching material with a head to ensure complete filling of void.
 - 3. Add aggregate to patching materials where patched area will be more than 2 inches deep. Add aggregate at a rate of 14 pounds for a 50-pound bag of patching material or as recommended by material's manufacturer.
- F. Bring patches out to the original surfaces in true planes. Provide concrete cover protection for reinforcement as indicated on drawings. Where position of existing reinforcement would violate minimum concrete cover when patched to original surface, increase thickness and extent of replaced concrete section as directed by Director's Representative. Finish patches to match texture of adjoining concrete as close as possible.
- G. Cure patches in accordance with the product manufacturer's printed instructions. Review finish and curing process with Director's Representative.

- H. Test patched areas after three days for soundness and delamination by sounding with a hammer. Mark repair patches to be replaced and review with Director's Representative. Repair all hollow-sounding areas by replacing the patch in the affected area at no cost to the Director. Replacement patches shall be tested again after three days and replaced as directed by Director's Representative.
- I. Make available additional patching material for each type of patch material used on each day's operations for the making of compression test specimens by the Director's Representative for verification of design strength.

3.05 CORROSION INHIBITOR COATING (Concrete Repairs)

- A. Surface must be clean and dry. Remove surface contaminants so that surface is clean and ready to receive coating. Protect adjacent surfaces not intended to be coated.
- B. Apply coating by brush, roller, or spray. Provide consistent application techniques for uniform appearance. Do not allow product to run down wall surfaces. Do not allow product to puddle in bugholes. Brush out bugholes to prevent streaking.
- C. Consult with manufacturer for proper dosage based on condition of existing concrete. Apply a minimum of two coats at manufacturers recommended coverage rate. Allow coating to dry according to manufacturer's recommendations before applying second coat.
- D. Protect surface from precipitation for minimum of 12 hours.

3.06 GRAVITY FEED CRACK REPAIR

- A. Prepare surface and install Crack Repair Material in accordance with manufacturer's recommendations.
- B. Where cracks in existing slabs are full depth, install crack repair material by injection and seal underside of slab. After patching clean bottom surface of slab to provide smooth finish.
- C. Remove loose material.
- D. Rout all cracks to a width of 1/16 inch or greater and clean of all dirt, oil, and debris.
- E. Fill crack with low viscosity gravity feed structural epoxy.
- F. Clean to smooth surface and seal.

3.07 CLEANING

- A. Clean up spatters and droppings.

3.08 PROTECTION

- A. Protect mortar after placement in accordance with the product manufacturer's printed instructions.

END OF SECTION

SECTION 031100
CONCRETE FORMWORK

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Concrete Rehabilitation: Section 030131.
- B. Steel Concrete Reinforcement: Section 032100.
- C. Cast-In-Place Concrete: Section 033000.
- D. Shotcrete: Section 033713.

1.02 REFERENCES

- A. Except as shown or specified otherwise, the Work of this Section shall conform to the requirements of Specifications for Structural Concrete for Buildings ACI 301-16 of the American Concrete Institute.

1.03 DESIGN REQUIREMENTS

- A. ACI 301, Section 2.1 – Formwork and formwork accessories, General:
 - 1. Add the following to 2.1.1 Description:

The formwork shall be designed for loads, lateral pressure, and allowable stresses outlined in Chapter 4 - Design of “Guide to Formwork for Concrete” (ACI 347-14).
- B. Design Calculations and Drawings: Forms, including shores and reshores, shall be designed by a professional engineer licensed to practice in New York State. The engineer’s calculations and drawings shall be signed and sealed by the engineer and kept on the job. Formwork shall be constructed in accordance with the engineer’s signed and sealed drawings.

1.04 SUBMITTALS

- A. Shop Drawings: Shoring Drawings.
- B. Product Data: Manufacturer’s catalog sheets, specifications, and installation/application instructions for the following:
 - 1. Form systems and ties.
 - 2. Textured (architectural) form linings.

1.05 QUALITY ASSURANCE

- A. Field Examples: Provide formwork for mock-up of cast-in-place concrete. Construct forms using facing materials required to provide specified finishes and

textures. Do not proceed with structure formwork until sample panels and forms have been approved by the Director in writing.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Chamfer Strips: Wood, metal, PVC or rubber; 1 inch chamfer, unless otherwise indicated on the Drawings.
- B. Facing for Exposed Textured Finish Concrete Surfaces:

PART 3 EXECUTION

3.01 PREPARATION OF FORM SURFACES

- A. Apply form-coating material in accordance with manufacturer's instructions.

3.02 INSTALLATION

- A. Provide chamfer on all exposed external corners of concrete.
- B. All formwork shall be built plumb, square, and level, or installed to follow the original slope of the undamaged structure.
- C. Provisions for Work of Related Contracts: Provide openings in concrete formwork to accommodate Work of related contracts. Obtain information for size and location of openings, recesses and chases from contractor requiring such items.
- D. Shores and Supports:
 - 1. Concrete members subject to additional loads during construction shall be shored in such a manner as will protect the member from damage by the loads.
 - 2. Place shores supporting successive stories directly over those below or so design the shores to transmit the load directly to them.
 - 3. Do not remove shores until the member supported has acquired sufficient strength to safely support its weight and any weight imposed thereon.

3.03 REMOVAL OF FORMS

- A. ACI 301, Section 2.3.2 - Removal of Forms:
 - 1. Change paragraph 2.3.2.5 to read as follows:
2.3.2.5 Forms and shoring used to support the weight of concrete in beams, slabs and other structural members shall be removed in accordance with recommendations in paragraph 3.2.5 of "Recommended Practice for Concrete Formwork" (ACI 347-14).
 - 2. Add the following paragraphs:

2.3.2.8 All formwork shall be removed after the concrete has sufficiently cured, except in inaccessible spaces where approved.

3. Change paragraph 2.3.2.7 to read as follows:
2.3.2.7 After the ends or end fasteners of form ties have been removed, the embedded portion of the ties shall terminate not less than 3/4 inch from the formed surfaces of concrete.

3.04 RE-USE OF FORMS

- A. Split, frayed, delaminated or otherwise damaged form facing material shall not be used.

END OF SECTION

SECTION 032100

STEEL CONCRETE REINFORCEMENT

PART 1 GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Concrete Rehabilitation: Section 030131.
- B. Concrete Formwork: Section 031100.
- C. Cast-In-Place Concrete: Section 033000.
- D. Shotcrete: Section 033713.

1.02 REFERENCES

- A. Except as shown or specified otherwise, the Work of this Section shall conform to the applicable requirements of the following:
 - 1. Specifications for Structural Concrete, ACI 301-16 of the American Concrete Institute (ACI).
 - 2. Manual of Standard Practice, MSP-1-01 of the Concrete Reinforcing Steel Institute (CRSI).

1.03 SUBMITTALS

- A. Shop Drawings: Placing drawings for bar reinforcement.
- B. Submit an Environmental Product Declaration (EPD) from the manufacturer for steel within this specification section, if available. A statement of the contractor's good faith effort to obtain the EPD shall be provided if not available.
 - 1. Manufacturer-provided EPDs must be Product Specific Type III (Third-Party Reviewed), in adherence with ISO 14025 *Environmental labels and declarations*, ISO 14044 *Environmental management – Life cycle assessment*, and ISO 21930 *Core rules for environmental product declarations of construction products and services*.
- C. Samples:
 - 1. Bar Supports: Full size.
 - 2. Fabric Reinforcement: 8 inches square, each wire size.
 - 3. Fabric Reinforcement Supports: 3'-0" long pieces.
 - 4. Reed Clips: 2'-6" long pieces.
- D. Quality Control Submittals:
 - 1. Certificates: Affidavit required under Quality Assurance Article.

1.04 QUALITY ASSURANCE

- A. Certifications: Affidavit by the bar reinforcement manufacturer certifying that bar material meets the contract requirements.
 - 1. Submit evidence of steel material compliance with this Specification. Evidence shall consist of certification of source of material, copies of purchase orders and manufacturer's certifications. For stock material, submit copies of latest mill or purchase orders for material replacement.
 - a. Documentation to confirm compliance with General Conditions Article 25.4 Domestic Steel.
 - 2. Fabricator's and Erector's Qualifications Data: Name and experience of fabricator and erector.
- B. The Contractor agrees, that if the value of this contract exceeds \$100,000 all structural steel, reinforcing steel and other major steel items to be incorporated in the Work of this Contract shall be produced and made in whole or substantial part in the United States, its territories or possessions.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Bar Reinforcement: ASTM A 615, Grade 60, deformed steel bars, hot-dipped galvanized to ASTM A 767, Class I.
 - 1. Zinc repair material: ASTM A 780, zinc based solder, paint containing zinc dust, or spray zinc.
- B. Welded Wire Reinforcement: ASTM A 185, welded wire fabric, fabricated from galvanized-steel wire into flat sheets unless otherwise indicated.
- C. Bar Supports; Either of the Following Types:
 - 1. Galvanized steel or AISI Type 430 stainless steel, and without plastic tips.
 - 2. Insoluble plastic, with minimum 1,500 psi tensile strength and capable of retaining fabricated shape at temperatures between 5 degrees F and 170 degrees F.
- D. Welded Wire Reinforcement Supports:
 - 1. Shall comply with CRSI RB4.1
- E. Tie Wire: Black annealed wire, 16-1/2 gage or heavier. Provide coated tie wire for galvanized bars and welded wire fabric.
- F. Steel Wire: ASTM A 82, cold-drawn plain steel wire, size No. W2.9 unless otherwise indicated.
- G. Reed Clips: ASTM A 185, rigid type reed clips, fabricated of W1.4 steel cross wires spaced 12 inches apart and looped at edges of flanges, and W1.4

longitudinal wire. Reinforcement shall have two longitudinal wires for flanges 9 inches to 15 inches in width, and three longitudinal wires for flanges over 15 inches in width. Cross wires shall be welded to longitudinal wire(s).

PART 3 EXECUTION

3.01 PLACING

A. ACI 301, Section 3.3 Execution:

1. Replace the first sentence in paragraph 3.3.2.1 Tolerances- with the following:

Place, support, and fasten reinforcement as shown on the project drawing or approved shop submittal.

2. Add the following paragraphs:

3.3.2.3.f Bar Reinforcement: In rectangular panels of two-way construction, place the steel in the short direction first with the longer bars on top in the opposite direction.

3.3.2.5.c Welded Wire Reinforcement: Offset end laps in adjacent sheets to prevent continuous joints at ends of sheets.

In concrete slabs supported by steel joists, place welded wire reinforcement approximately 3/4 inch below top surface of the concrete.

3.3.2.11 Fireproofing Reinforcement: Unless otherwise indicated, install reinforcement for concrete fireproofing as follows:

3.3.2.11.a Reinforce concrete flange encasement of steel beams, girders, and columns with reed clips when the flanges are more than 3 inches in width and the thickness of concrete encasement on such flanges is less than 3 inches.

3.3.2.11.b Where the bottom of the concrete encasement on lower flange of steel beams and girders is 12 inches or more below the soffit of adjacent concrete slab, and where no slab occurs, wrap the beams and girders with steel wire at intervals of 12 inches, in addition to the reed clips.

- B. Touch up all cut ends with approved galvanizing product.

3.02 SCHEDULE

A. Unless other reinforcing is shown on the Drawings, reinforce the following items of concrete as indicated below:

1. Concrete Slabs on Grade: 6 x 6 - W2.9 x W2.9 welded wire reinforcement.

2. Concrete Floor Fills 2-1/2 Inches Thick or Less: 6 x 6 - W2.1 x W2.1 welded wire reinforcement.
3. Concrete Floor Fills Greater than 2-1/2 Inches Thick: 6 x 6 - W4 x W4 welded wire reinforcement.
4. Concrete Slabs Supported by Steel Joists: 6 x 6 - W2.1 x W2.1 welded wire reinforcement.

END OF SECTION

SECTION 033713

SHOTCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Dry-mix shotcrete.
 - 2. Wet-mix shotcrete.

1.3 DEFINITIONS

- A. Shotcrete: Mortar or concrete pneumatically projected onto a surface at high velocity.
- B. Dry-Mix Shotcrete: Shotcrete with most of the mixing water added at nozzle.
- C. Wet-Mix Shotcrete: Shotcrete with ingredients, including mixing water, mixed before introduction into delivery hose.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Require representatives of each entity directly concerned with shotcrete to attend, including the following:
 - a. Contractor's superintendent.
 - b. Independent testing agency responsible for shotcrete design mixtures.
 - c. Ready-mix concrete manufacturer.
 - d. Shotcrete Installer.
 - 2. Review methods and procedures related to shotcrete, but not limited to, the following:
 - a. Qualification data, equipment, and facilities needed to make progress and avoid delays.
 - b. Shotcrete finishes and finishing.
 - c. Cold- and hot-weather shotcreting procedures.

- d. Curing procedures
 - e. Construction joints.
 - f. Forms and form-removal limitations.
 - g. Reinforcement accessory installation.
 - h. Shotcrete repair procedures.
 - i. Protection of shotcrete.
3. Before submitting design mixtures, review each shotcrete design mixture and examine procedures for ensuring quality of shotcrete materials.

1.5 SUBMITTALS

- A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.
- B. Manufacturer's installation instructions shall be provided along with product data.
- C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).
- D. Product Data: For each type of product.
 - 1. Include reinforcement and forming accessories, shotcrete materials, admixtures, and curing compounds.
- E. Submit an Environmental Product Declaration (EPD) from the manufacturer for each concrete mix within this specification section, if available. A statement of the contractor's good faith effort to obtain the EPD shall be provided if not available.
 - 1. Manufacturer-provided EPDs must be Product Specific Type III (Third-Party Reviewed), in adherence with ISO 14025 *Environmental labels and declarations*, ISO 14044 *Environmental management – Life cycle assessment*, and ISO 21930 *Core rules for environmental product declarations of construction products and services*.
- F. Design Mixtures: For each shotcrete mixture. Submit alternative design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
 - 1. For predampened dry-mix mixtures, indicate amounts of mixing water to be added to the dry-mix materials before mixing and conveying through the delivery hose.
- G. Shop Drawings: For shotcrete installation.
 - 1. Include plans, elevations, sections, and support and anchor details.
 - 2. Detail fabrication, bending, and placing of reinforcement; number and location of splices; and special reinforcement required for openings through shotcrete structures.
 - 3. Detail formwork fabrication, assembly, and support.
 - 4. Indicate locations of proposed construction joints.

- H. Samples: For each exposed product and for each color and finish specified, approximately 24 by 24 by 2 inches in size.
- I. Qualification Data: For installer (nozzleman) provide qualifications and information on 3 successfully completed prior projects of similar scope completed by these workers with this material.
- J. Material Certificates: For each of the following:
 - 1. Cementitious materials.
 - 2. Admixtures.
 - 3. Form materials.
 - 4. Steel reinforcement and accessories.
 - a. Documentation to confirm compliance with General Conditions Article 25.4 Domestic Steel.
 - 5. Fiber reinforcement.
 - 6. Curing compounds.
 - 7. Aggregates.
- K. Preconstruction Test Reports: For shotcrete.
- L. Field quality-control reports.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer employing nozzle operators for Project, each of whom is ACI Shotcrete Nozzleman certified in Dry-Mix Process for Vertical and Overhead Positions and is ACI Shotcrete Nozzleman certified in Wet-Mix Process for Vertical and Overhead Positions as appropriate to the required shotcrete work.
- B. Testing Agency Qualifications: Qualified according to ASTM C1077 and ASTM E329 for testing indicated.
- C. Standard: Comply with ACI 506.2, "Specification for Shotcrete," unless otherwise indicated.
- D. Shotcrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design shotcrete mixtures.
- E. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.
 - 1. Build mockups for each finish required and for each design mixture, shooting orientation, and nozzle operator.
 - 2. Build mockups in the location and of the size indicated or, if not indicated, as directed by Director's Representative.
 - 3. Demonstrate curing and protecting of shotcrete, finishes, and joints, as applicable.

4. In presence of Director's Representative, damage part of the exposed-face surface for each color and finish, and demonstrate materials and techniques proposed for repair of holes and surface blemishes to match adjacent undamaged surfaces.
 5. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Director's Representative specifically approves such deviations in writing.
 6. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- F. If the value of the contract exceeds \$100,000 all structural steel, reinforcing steel and other major steel items to be incorporated in the Work of this Contract shall be produced and made in whole or substantial part in the United States, its territories or possessions.

1.7 PRECONSTRUCTION TESTING

- A. Preconstruction Testing Service: Engage a qualified testing agency to perform preconstruction testing on shotcrete.
1. Produce and test shotcrete test panels before shotcrete placement according to requirements in ACI 506.2 for each design mixture, shooting orientation, and nozzle operator. Produce test panels with dimensions of 24 by 24 inches minimum and of average thickness of shotcrete, but not less than 3-1/2 inches.
 2. From each test panel, testing agency shall obtain six test specimens: one set of three specimens unreinforced, and one set of three specimens reinforced. Agency will perform the following:
 - a. Strength Testing: Test each set of unreinforced specimens for compressive strength according to ASTM C42.
 - b. Core Grading: Visually inspect each set of reinforced shotcrete cores taken from test panels and determine mean core grades according to ACI 506.2.

PART 2 - PRODUCTS

2.1 FORM MATERIALS

- A. Forms: Form-facing panels that will provide continuous, straight, smooth, concrete surfaces. Furnish panels in largest practical sizes to minimize number of joints.

2.2 REINFORCING MATERIALS

- A. See Specification 032100.

2.3 SHOTCRETE MATERIALS

- A. Portland Cement: ASTM C150, Type I or II. Use only one brand and type of cement for Project.

1. Fly Ash: ASTM C618, Class C or Class F.
 2. Slag Cement: ASTM C989, Grade 100 or Grade 120.
 3. Silica Fume: ASTM C1240, amorphous silica.
- B. Blended Hydraulic Cement: ASTM C595, Type IS, portland blast-furnace slag, Type IP, portland-pozzolan, or Type IL, portland-limestone cement.
- C. Silica Fume: ASTM C 1240, amorphous silica.
- D. Normal-Weight Aggregates: ASTM C33, from a single source, and as follows:
1. Combined Aggregate Size: ACI 506R or ASTM C1436, Grading No. 1 sieve analysis.
 2. Deleterious Substances: As specified for fine aggregate according to ASTM C33.
- E. Water: Potable, complying with ASTM C94, and free from deleterious materials that may affect color stability, setting, or strength of shotcrete.
- F. Ground Wire: High-strength steel wire, 0.8 to 1.0 mm in diameter.
- G. Joint Filler Strips: ASTM D1751, asphalt-saturated cellulosic fiber.
- H. Admixtures: ASTM C1141, Class A (liquid) or Class B (nonliquid), but limited to the following admixture materials. Provide admixtures for shotcrete that contain no more than 0.1 percent chloride ions. Certify compatibility of admixtures with each other and with other cementitious materials.
1. Accelerating Admixture, Conventional: ASTM C494, Type C or Type E.
 2. Pozzolanic Admixture: Fly ash, slag cement, and silica fume as limited in "Portland Cement" Paragraph in this article.
 3. Coloring Admixture: ASTM C979, synthetic mineral-oxide pigment or colored, water-reducing admixture, free of carbon black; color stable, nonfading, and resistant to lime and other alkalis.
 4. Air-Entraining Admixture: As limited in "Shotcrete Mixtures" Article.
 5. Corrosion-Inhibiting Admixture: ASTM C494/C 494M, for use in resisting corrosion of steel reinforcement.
- I. Synthetic Fiber: Monofilament polypropylene fibers engineered and designed for use in shotcrete, complying with ASTM C 116/C 1116M, Type III, 1 to 1.5 inches (25 to 38 mm) long.

2.4 CURING MATERIALS

- A. Absorptive Cover: AASHTO M 182, Class 3, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. dry, or cotton mats.
- B. Moisture-Retaining Cover: ASTM C171, polyethylene film or white burlap-polyethylene sheet.
- C. Water: Potable.

- D. Curing Compound: ASTM C309, Type 1, Class B; clear, waterborne, membrane-forming curing compound.

2.5 SHOTCRETE MIXTURES

- A. Source Limitations for Shotcrete: Obtain each color, size, type, and variety of shotcrete material and shotcrete mixture from single manufacturer with resources to provide shotcrete of consistent quality in appearance and physical properties.
- B. Design Mixtures: Prepare design mixtures for each type and strength of shotcrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 506.2.
 - 1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixture or field test data, or both.
- C. Cementitious Materials Replacing Portland Cement: Use fly ash, pozzolan, slag cement, and silica fume as needed to reduce the total amount of portland cement, which would otherwise be used, by not less than 40 percent.
- D. Cementitious Materials, Maximum Content: Limit use of Cementitious Materials Replacing Portland Cement to not exceed, in combination, 25 percent of portland cement by weight.
- E. Limit water-soluble chloride ions to maximum percentage by weight of cement or cementitious materials permitted by ACI 301.
- F. Admixtures: Use admixtures according to manufacturer's written instructions.
- G. Design-Mixture Adjustments: Subject to compliance with requirements, shotcrete design-mixture adjustments may be proposed when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant.
- H. Shotcrete Mixture for substitution of overhead patching material: Proportion mixture to provide shotcrete with the following properties:
 - 1. Compressive Strength (28 Days): 5000 psi.
 - 2. Air Content: Add air-entraining admixture at manufacturer's prescribed rate to result in normal-weight wet-mix shotcrete having an air content before pumping of 7 percent with a tolerance of plus or minus 1-1/2 percent.
 - 3. Synthetic Fiber: Uniformly disperse in shotcrete mix, according to manufacturer's written instructions, at a rate of 1.5 lb/cu. yd.

2.6 SHOTCRETE EQUIPMENT

- A. Mixing Equipment: Capable of thoroughly mixing shotcrete materials in sufficient quantities to maintain continuous placement.
- B. Dry-Mix Delivery Equipment: Capable of discharging aggregate-cement mixture into delivery hose under close control and maintaining continuous stream of uniformly mixed materials at

required velocity to discharge nozzle. Equip discharge nozzle with manually operated water-injection system for directing even distribution of water to aggregate-cement mixture.

1. Provide uniform, steady supply of clean, compressed air to maintain constant nozzle velocity while simultaneously operating blow pipe for cleaning away rebound.
 2. Provide water supply with uniform pressure at discharge nozzle to ensure uniform mixing with aggregate-cement mix. Provide water pump to system if line water pressure is inadequate.
- C. Wet-Mix Delivery Equipment: Capable of discharging aggregate-cement-water mixture accurately, uniformly, and continuously.

2.7 BATCHING AND MIXING

- A. Dry-Mix Process: Measure mixture proportions by weight batching according to ASTM C94 or by volume batching complying with ASTM C685 requirements.
1. In volume batching, adjust fine-aggregate volume for bulking. Test fine-aggregate moisture content at least once daily to determine extent of bulking.
 2. Prepackaged shotcrete materials may be used at Contractor's option. Predampen prepackaged shotcrete materials and mix before use.
- B. Wet-Mix Process: Measure, batch, mix, and deliver shotcrete according to ASTM C94 and furnish batch ticket information.
1. Comply with ASTM C685 when shotcrete ingredients are delivered dry and proportioned and mixed on-site.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Concrete and Masonry Substrates: Before applying shotcrete, remove unsound or loose materials and contaminants that may inhibit shotcrete bonding. Chip or scarify areas to be repaired to extent necessary to provide sound substrate. Cut edges square and 1/2 inch deep at perimeter of work, tapering remaining shoulder at 1:1 slope into cavity to eliminate square shoulders. Dampen surfaces to saturated, surface-dry condition before shotcreting.
1. Abrasive blast or hydroblast existing surfaces that do not require chipping to remove paint, oil, grease, or other contaminants and to provide roughened surface for proper shotcrete bonding.
- B. Protect adjacent construction and surfaces not required to receive shotcrete.

3.2 FORMS

- A. Design, erect, support, brace, and maintain forms, according to ACI 301, to support shotcrete and construction loads and to facilitate shotcreting. Construct forms so shotcrete members and structures are secured to prevent excessive vibration or deflection during shotcreting.
 - 1. Fabricate forms to be readily removable without impact, shock, or damage to shotcrete surfaces and adjacent materials.
 - 2. Construct forms to required sizes, shapes, lines, and dimensions using ground wires and depth gages to obtain accurate alignment, location, and grades in finished structures. Construct forms to prevent mortar leakage but permit escape of air and rebound during shotcreting. Provide for openings, offsets, blocking, screeds, anchorages, inserts, and other features required in the Work.
- B. Form openings, chases, recesses, bulkheads, keyways, and screeds in formwork. Determine sizes and locations from trades providing such items. Accurately place and securely support items built into forms.

3.3 STEEL REINFORCEMENT

- A. Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other materials that weaken shotcrete bonding.
- C. Securely embed reinforcing anchors into existing substrates, located as required.
- D. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports, bolsters, chairs, spacers, and other devices as required to maintain minimum concrete cover.
- E. Set wire ties with ends directed into shotcrete, not toward exposed shotcrete surfaces.
- F. Install welded wire reinforcement in largest practical sheets on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.
- G. Zinc-Coated Reinforcement: Repair cut and damaged zinc coatings with zinc repair material according to ASTM A780. Use galvanized-steel wire ties to fasten zinc-coated steel reinforcement.

3.4 JOINTS

- A. General: Construct joints at locations indicated or as approved by Director's Representative.
- B. Construction Joints: Locate and install construction joints tapered to a 1:1 slope where joint is not subject to compression loads and square where joint is perpendicular to main reinforcement. Continue reinforcement through construction joints unless otherwise indicated.

3.5 ALIGNMENT CONTROL

- A. Ground Wires: Install ground wires to establish thickness and planes of shotcrete surfaces. Install ground wires at corners and offsets not established by forms. Pull ground wires taut and position adjustment devices to permit additional tightening.

3.6 EMBEDDED ITEMS

- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by shotcrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

3.7 APPLICATION

- A. Apply shotcrete applied by dry-mix or wet-mix process and according to ACI 506.2.
- B. Apply temporary protective coverings and protect adjacent surfaces against deposit of rebound and overspray or impact from nozzle stream.
- C. Moisten wood forms immediately before placing shotcrete where form coatings are not used.
- D. Apply dry-mix shotcrete materials within 45 minutes after predampening and wet-mix shotcrete materials within 90 minutes after batching.
- E. Deposit shotcrete continuously in multiple passes, to required thickness, without cold joints and laminations developing. Place shotcrete with nozzle held perpendicular to receiving surface. Begin shotcreting in corners and recesses.
 - 1. Remove and dispose of rebound and overspray materials during shotcreting to maintain clean surfaces and to prevent rebound entrapment.
 - 2. Remove and dispose of cuttings during the trimming or rodding process to prevent unconsolidated material from falling onto lower reinforcement.
- F. Maintain reinforcement in position during shotcreting. Place shotcrete to completely encase reinforcement and other embedded items. Maintain steel reinforcement free of overspray, and prevent buildup against front face during shotcreting.
- G. Do not place subsequent lifts until previous lift of shotcrete is capable of supporting new shotcrete.
- H. Do not permit shotcrete to sag, slough, or dislodge.
- I. Remove hardened overspray, rebound, and laitance from shotcrete surfaces to receive additional layers of shotcrete; dampen surfaces before shotcreting.
- J. Do not disturb shotcrete surfaces before beginning finishing operations.
- K. Remove ground wires or other alignment-control devices after shotcrete placement.

- L. Shotcrete Core Grade: Apply shotcrete to achieve mean core grades not exceeding 2.5 according to ACI 506.2, with no single core grade exceeding 3.0.
- M. Installation Tolerances: Place shotcrete without exceeding installation tolerances permitted by ACI 117, increased by a factor of two.
- N. Cold-Weather Shotcreting: Mix, place, and protect shotcrete according to ACI 306.1 and as follows. Protect shotcrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
 - 1. Discontinue shotcreting when ambient temperature is 40 deg F and falling.
 - 2. Uniformly heat water and aggregates before mixing to obtain a shotcrete shooting temperature of not less than 50 deg F and no more than 90 deg F.
 - 3. Do not use frozen materials or materials containing ice or snow.
 - 4. Do not place shotcrete on frozen surfaces or surfaces containing frozen materials.
 - 5. Do not use calcium chloride, salt, or other materials containing antifreeze agents.
- O. Hot-Weather Shotcreting: Mix, place, and protect shotcrete according to ACI 305.1 when hot-weather conditions and high temperatures would seriously impair quality and strength of shotcrete, and as follows:
 - 1. Cool ingredients before mixing to maintain, at time of placement, shotcrete temperature below 100 deg F for dry mix and 90 deg F for wet mix.
 - 2. Reduce temperature of reinforcing steel and receiving surfaces below 100 deg F before shotcreting.

3.8 SURFACE FINISHES

- A. General: Finish shotcrete according to descriptions in ACI 506R. Finish to match appearance of adjacent concrete construction.
- B. Natural Finishes:
 - 1. Gun Finish: Natural undisturbed finish as sprayed.
 - 2. Rod Finish: Rough-textured finish obtained by screeding or cutting exposed face of shotcrete to plane with cutting rod, edge of trowel, or straightedge after initial set. Do not push or float with flat part of trowel.
 - 3. Broom Finish: Rough-textured finish obtained by screeding or cutting exposed face of shotcrete to plane with cutting rod, edge of trowel, or straightedge after initial set; followed by uniform brooming.
- C. Flash-Coat Finish: After screeding or cutting exposed face of shotcrete to plane after initial set, apply up to 1/4-inch coat of shotcrete using ACI 506R, Grading No. 1, fine-screened sand modified with maximum aggregate size not exceeding No. 4 sieve to provide a finely textured finish.

3.9 CURING

- A. Protect freshly placed shotcrete from premature drying and excessive cold or hot temperatures.
- B. Begin curing immediately after placing and finishing but not before free water, if any, has disappeared from shotcrete surface.
- C. Curing Exposed Surfaces: Cure shotcrete by one of the following methods:
 - 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
 - a. Water.
 - b. Continuous water-fog spray.
 - c. Water-saturated absorptive covers or moisture-retaining covers. Lap and seal sides and ends of covers with 12-inch lap over adjacent covers.
 - 2. Curing Compound: Apply uniformly in continuous operation by power spray according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
 - a. Apply curing compound to natural gun and flash-coat finishes at rate of 1 gal./100 sq. ft..
- D. Curing Formed Surfaces: Cure formed shotcrete surfaces by moist curing with forms in place for full curing period or until forms are removed. If forms are removed, continue curing by methods specified above, as applicable.

3.10 FORM REMOVAL

- A. Forms not supporting weight of shotcrete may be removed after curing for 24 consecutive hours at not less than 50 deg F, provided shotcrete is hard enough not to be damaged by form-removal operations and provided curing and protecting operations are maintained.
 - 1. Leave forms supporting weight of shotcrete in place until shotcrete has attained design compressive strength. Determine compressive strength of in-place shotcrete by testing representative field-cured specimens of shotcrete.
 - 2. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.
- B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing materials are unacceptable for exposed surfaces. Apply new form-coating compound as specified for new formwork.

3.11 FIELD QUALITY CONTROL

- A. Testing Agency: Director's Representative will engage a qualified testing agency to perform tests and inspections.

- B. Air Content: ASTM C173, volumetric method or ASTM C231, pressure method; one test for each compressive-strength test for each mixture of air-entrained, wet-mix shotcrete measured before pumping.
- C. Shotcrete Temperature: ASTM C1064; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each set of compressive-strength specimens.
- D. Test Panels: Make a test panel, reinforced as in structure, for each shotcrete mixture and for each workday or for every 50 cu. yd. of shotcrete placed, whichever is less. Produce test panels with dimensions of 24 by 24 inches minimum and of average thickness of shotcrete, but not less than 4-1/2 inches. Testing agency will obtain sets of test specimens from each test panel.
 - 1. Compressive Strength Testing: One set of three unreinforced specimens. Test each set of unreinforced specimens for compressive strength according to construction testing requirements in ACI 506.2.
 - 2. Visual Core Grading: One set of three reinforced specimens. Visually inspect each set of reinforced shotcrete cores taken from test panels and determine mean core grades according to ACI 506.2.
- E. Strength of shotcrete will be considered satisfactory according to the following:
 - 1. Specimen Cores: Mean compressive strength of each set of three unreinforced cores equals or exceeds 85 percent of specified compressive strength, with no individual core less than 75 percent of specified compressive strength.
 - 2. Specimen Cubes: Mean compressive strength of each set of three unreinforced cubes shall equal or exceed design compressive strength with no individual cube less than 88 percent of specified compressive strength.
- F. Shotcrete will be considered defective if it does not pass tests and inspections.
- G. Prepare test and inspection reports.

3.12 REPAIRS

- A. Remove and replace shotcrete that is delaminated or exhibits laminations, voids, or sand/rock pockets exceeding limits for specified core grade of shotcrete.
 - 1. Remove unsound or loose materials and contaminants that may inhibit bond of shotcrete repairs.
 - 2. Chip or scarify areas to be repaired to extent necessary to provide sound substrate. Cut edges square and 1/2 inch deep at perimeter of work, tapering remaining shoulder at 1:1 slope into cavity to eliminate square shoulders.
 - 3. Dampen surfaces and apply new shotcrete. Match adjacent finish.
- B. Repair core holes from in-place testing according to repair provisions in ACI 301, except do not use shotcrete. Match adjacent color and finish.

3.13 CLEANING

- A. Immediately remove and dispose of rebound and overspray materials from final shotcrete surfaces and areas not intended for shotcrete placement.
- B. Repair or replace damaged surfaces not scheduled for shotcrete application to the satisfaction of the Director's Representative.

END OF SECTION 033713

SECTION 321723

PAVEMENT MARKINGS

PART 1 GENERAL

1.01 UNIT PRICE WORK

- A. Payment for the Work listed in the Unit Price Schedule will be made at the unit prices indicated multiplied by the unit of completed Work.
- B. The unit prices listed below shall include all Work specified in the Division 1 General Requirements Sections.
 - 1. Item No. 321723.01 – Cover Existing Pavement Marking Stripes (Removeable Tape). Payment for this Work will be made at the Contract unit price per linear foot in place.
 - 2. Item No. 321723.02 – Interim Pavement Markings, Stripes (6 inches) Traffic Paint. **Interim pavement markings will be removed once the project is completed.** Payment for this Work will be made at the Contract unit price per **linear foot** in place.

1.02 SUBMITTALS

- A. Samples:
 - 1. Paint: One pint, each type. Include the manufacturer's label with product analysis.
- B. Quality Control Submittals:
 - 1. Certificates: Affidavit required under Quality Assurance Article.

1.03 QUALITY ASSURANCE

- A. Certification: Affidavit by the paint applicator, certifying that the materials comply with the current regulatory requirements in effect at the time products were delivered and applied.

1.04 PROJECT CONDITIONS

- A. Perform the painting operations after working hours, on weekends or at such time so as not to interfere with the flow of traffic. Provide temporary barriers to prevent vehicles from driving over newly painted areas.
- B. Apply paint on dry pavement surface, when the air temperature is above 40 degrees F.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Paint: DOT Section 640-2, yellow or white as indicated, or if not indicated as directed. Delete reference to Glass Beads.
- B. Rapid Dry Paint:
 - 1. Aexcel Corp., www.aexcelcorp.com, 72W-A042 White, 72Y-A082 Yellow
 - 2. Sherwin-Williams, www.swpavementmarkings.com, TM2152 White, TM2153 Yellow, TM2224 Blue.
 - 3. Franklin Paint Company, Inc., www.franklinpaint.com, 2014 White, 2015 Yellow.

PART 3 EXECUTION

3.01 PREPARATION

- A. Remove dust, dirt, and other foreign material detrimental to paint adhesion.
- B. Mark layout of stripes and lines with chalk or paint.

3.02 APPLYING PAVEMENT MARKING

- A. Apply paint in accordance with DOT Section 640-3.02, except as follows:
 - 1. Delete references to Glass Beads.

END OF SECTION

SECTION 344113

TRAFFIC SIGNS

PART 1 GENERAL

1.01 UNIT PRICE WORK

- A. Payment for the Work listed in the Unit Price Schedule will be made at the unit prices indicated multiplied by the unit of completed Work.
- B. The unit prices listed below shall include all Work specified in the Division 1 General Requirements Sections.
 - 1. Item No. 344113.01 – Basic Work Zone Traffic Control. Payment for this Work will be made at the Contract unit price per unit in place.
 - 2. The unit price for 344113.01 shall include the following items:
 - a. Portable variable message signs
 - b. Portable traffic signals
 - c. Traffic signs
 - d. Work zone control temporary fencing (015000 – 1.07-A)
 - e. Temporary separation fence between north and south tubes (015000 – 1.07-B)
 - f. Temporary dust barricades
 - g. Temporary roadway and north tube inspections/maintenance

1.02 SUBMITTALS

- A. Shop Drawings: Show shop drawings, not necessarily to scale, but sufficient enough in detail to show color, wording, lettering size and style, overall sign size, construction details and installation details for each type of sign.

PART 2 PRODUCTS

2.01 TRAFFIC SIGNS

- A. Construction Materials: Comply with the applicable requirements of DOT Section 645.
- B. Posts: Galvanized steel.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Erect signs in their designated locations, as indicated and in accordance with the approved shop drawings and the applicable requirements of DOT Section 645.

- B. Protect surfaces and finishes from abrasion and other damage during handling and installation.
- C. Replace damaged or faulty signs.

END OF SECTION

SECTION 211300

SPRINKLER AND STANDPIPE PIPING

PART 1 GENERAL

1.01 UNIT PRICE WORK

- A. Payment for the Work listed in the Unit Price Schedule will be made at the unit prices indicated multiplied by the units of completed Work.
- B. The unit prices listed below shall include Work specified in the Division 1 General Requirements. Refer to Drawing G008 for material and fitting types.
1. Item No. 211300.01 – **4” Black Steel Sprinkler Pipe with Threaded and Grooved Couplings Removal**. Payment for the work will be made at the Contract price per linear foot. The Unit Price includes the following:
 - a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
 2. Item No. 211300.02 **3” Black Steel Sprinkler Pipe with Threaded and Grooved Couplings Removal**. Payment for the work will be made at the Contract price per linear foot. The Unit Price includes the following:
 - a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
 3. Item No. 211300.03 **2-1/2” Black Steel Sprinkler Pipe with Threaded and Grooved Couplings Removal**. Payment for the work will be made at the Contract price per linear foot. The Unit Price includes the following:
 - a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
 4. Item No. 211300.04 – **2” Black Steel Sprinkler Pipe with Threaded Couplings Removal**. Payment for the work will be made at the Contract price per linear foot. The Unit Price includes the following:
 - a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
 5. Item No. 211300.05 – **1-1/2” Black Steel Sprinkler Pipe with Threaded Couplings Removal**. Payment for the work will be made at the Contract price per linear foot. The Unit Price includes the following:
 - a. Fuel/power equipment as required.

- b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
6. Item No. 211300.06 – **1-1/4" Black Steel Sprinkler Pipe with Threaded Couplings Removal**. Payment for the work will be made at the Contract price per linear foot. The Unit Price includes the following:
- a. Fuel/Power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
7. Item No. 211300.07 – **1" Black Steel Sprinkler Pipe with Threaded Couplings Removal**. Payment for the work will be made at the Contract price per linear foot. The Unit Price includes the following:
- a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
8. Item No. 211300.08 – **4" x 4" x 2-1/2" x 1" Black Steel Sprinkler Threaded Cross Fitting Removal**. Payment for the work will be made at the Contract price per fitting. The Unit Price includes the following:
- a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
9. Item No. 211300.09 – **4" x 4" x 2" Black Steel Sprinkler Threaded Tee Fitting Removal**. Payment for the work will be made at the Contract price per fitting. The Unit Price includes the following:
- a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
10. Item No. 211300.10 – **4" x 4" x 2-1/2" Black Steel Sprinkler Threaded Tee Fitting Removal**. Payment for the work will be made at the Contract price per fitting. The Unit Price includes the following:
- a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
11. Item No. 211300.11 – **4" x 4" x 1-1/2" x 1-1/2" Black Steel Sprinkler Threaded Cross Fitting Removal**. Payment for the work will be made at the Contract price per fitting. The Unit Price includes the following:
- a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.

12. Item No. 211300.12 – 4" x 4" x 1" x 1" Black Steel Sprinkler Threaded Cross Fitting Removal. Payment for the work will be made at the Contract price per fitting. The Unit Price includes the following:
 - a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
13. Item No. 211300.13 – 3" x 3" 1-1/4" x 1" Black Steel Sprinkler Threaded Cross Fitting Removal. Payment for the work will be made at the Contract price per fitting. The Unit Price includes the following:
 - a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
14. Item No. 211300.14 – 3" x 2" x 1-1/4" x 1" Black Steel Sprinkler Threaded Cross Fitting Removal. Payment for the work will be made at the Contract price per fitting. The Unit Price includes the following:
 - a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
15. Item No. 211300.15 – 3" 90° Black Steel Sprinkler Threaded Elbow Fitting Removal. Payment for the work will be made at the Contract price per fitting. The Unit Price includes the following:
 - a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
16. Item No. 211300.16 – 2-1/2" x 2-1/2" x 2" Black Steel Sprinkler Threaded Tee Fitting Removal. Payment for the work will be made at the Contract price per fitting. The Unit Price includes the following:
 - a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
17. Item No. 211300.17 – 2-1/2" x 2-1/2" x 1" Black Steel Sprinkler Threaded Tee Fitting Removal. Payment for the work will be made at the Contract price per fitting. The Unit Price includes the following:
 - a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.

18. Item No. 211300.18 – 2-1/2” x 1-1/2” x 1-1/2” Black Steel Sprinkler Threaded Tee Fitting Removal. Payment for the work will be made at the Contract price per fitting. The Unit Price includes the following:
 - a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
19. Item No. 211300.19 – 2-1/2” x 2-1/2” x 1” Black Steel Sprinkler Threaded Tee Fitting Removal. Payment for the work will be made at the Contract price per fitting. The Unit Price includes the following:
 - a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
20. Item No. 211300.20 – 2-1/2” x 2-1/2” x 1-1/2” Black Steel Sprinkler Threaded Tee Fitting Removal. Payment for the work will be made at the Contract price per fitting. The Unit Price includes the following:
 - a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
21. Item No. 211300.21 – 2-1/2” x 1-1/2” Black Steel Sprinkler Threaded Reducer Fitting Removal. Payment for the work will be made at the Contract price per fitting. The Unit Price includes the following:
 - a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
22. Item No. 211300.22 – 2-1/2” Black Steel Sprinkler 90° Elbow Fitting Removal. Payment for the work will be made at the Contract price per fitting. The Unit Price includes the following:
 - a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
23. Item No. 211300.23 – 2” x 2” x 1” Black Steel Sprinkler Tee Fitting Removal. Payment for the work will be made at the Contract price per fitting. The Unit Price includes the following:
 - a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
24. Item No. 211300.24 – 2” x 1-1/2” x 1-1/4” x 1” Black Steel Sprinkler Threaded Cross Fitting Removal. Payment for the work will be made at the Contract price per fitting. The Unit Price includes the following:

- a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
25. Item No. 211300.25 – **2” x 1-1/2” x 1” Black Steel Sprinkler Threaded Tee Fitting Removal**. Payment for the work will be made at the Contract price per fitting. The Unit Price includes the following:
- a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
26. Item No. 211300.26 – **2” x 1-1/2” Black Steel Reducer Fitting Removal**. Payment for the work will be made at the Contract price per fitting. The Unit Price includes the following:
- a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
27. Item No. 211300.27 – **2” Black Steel Sprinkler 90° Threaded Elbow Removal**. Payment for the work will be made at the Contract price per fitting. The Unit Price includes the following:
- a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
28. Item No. 211300.28 – **1-1/2” x 1-1/2” x 1” Black Steel Sprinkler Threaded Tee Fitting Removal**. Payment for the work will be made at the Contract price per fitting. The Unit Price includes the following:
- a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
29. Item No. 211300.29 – **1-1/2” x 1” x 1” Black Steel Sprinkler Threaded Tee Fitting Removal**. Payment for the work will be made at the Contract price per fitting. The Unit Price includes the following:
- a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
30. Item No. 211300.30 – **1-1/2” x 1” Black Steel Sprinkler Threaded Reducer Fitting Removal**. Payment for the work will be made at the Contract price per fitting. The Unit Price includes the following:
- a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.

- d. Daily clean up waste and debris resulting from the Work.
- 31. Item No. 211300.31 – **1-1/2" Black Steel Sprinkler Threaded Pipe Cap Removal**. Payment for the work will be made at the Contract price per fitting. The Unit Price includes the following:
 - a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
- 32. Item No. 211300.32 – **1-1/2" Black Steel Sprinkler 90° Elbow Removal**. Payment for the work will be made at the Contract price per fitting. The Unit Price includes the following:
 - a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
- 33. Item No. 211300.33 – **1-1/2" Black Steel Sprinkler 60° Elbow Removal**. Payment for the work will be made at the Contract price per fitting. The Unit Price includes the following:
 - a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
- 34. Item No. 211300.34 – **1-1/4" x 1" x 1" Black Steel Sprinkler Threaded Tee Fitting Removal**. Payment for the work will be made at the Contract price per fitting. The Unit Price includes the following:
 - a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
- 35. Item No. 211300.35 – **1-1/4" Black Steel Sprinkler 90° Threaded Elbow Fitting Removal**. Payment for the work will be made at the Contract price per fitting. The Unit Price includes the following:
 - a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
- 36. Item No. 211300.36 – **1" x 1/2" Black Steel Sprinkler Pipe Threaded Reducer Removal**. Payment for the work will be made at the Contract price per fitting. The Unit Price includes the following:
 - a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.

37. Item No. 211300.37 – **1" x 1" x 1" Black Steel Sprinkler Tee Threaded Fitting Removal**. Payment for the work will be made at the Contract price per fitting. The Unit Price includes the following:
 - a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
38. Item No. 211300.38 – **1" Black Steel Sprinkler 90° Threaded Elbow Removal**. Payment for the work will be made at the Contract price per fitting. The Unit Price includes the following:
 - a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
39. Item No. 211300.39 – **4" Black Steel Sprinkler Expansion Loop Removal**. Payment for the work will be made at the Contract price per fitting. The Unit Price includes the following:
 - a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
40. Item No. 211300.40 – **3" Black Steel Sprinkler Expansion Loop w/Grooved Fittings Removal**. Payment for the work will be made at the Contract price per loop. The Unit Price includes the following:
 - a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
41. Item No. 211300.41 – **1/2" Upright Sprinkler Head Removal**. Payment for the work will be made at the Contract price per head. The Unit Price includes the following:
 - a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
42. Item No. 211300.42 – **4" Black Steel Sprinkler Pipe with Threaded and Grooved Couplings Installation**. Payment for the work will be made at the Contract price per Linear foot. The Unit Price includes the following:
 - a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
43. Item No. 211300.43 – **3" Black Steel Sprinkler Pipe with Threaded and Grooved Couplings Installation**. Payment for the work will be made at the Contract price per Linear foot. The Unit Price includes the following:

- a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
44. Item No. 211300.44 – **2-1/2” Black Steel Sprinkler Pipe with Threaded and Grooved Couplings Installation**. Payment for the work will be made at the Contract price per Linear foot. The Unit Price includes the following:
- a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
45. Item No. 211300.45 – **2” Black Steel Sprinkler Pipe with Threaded Couplings Installation**. Payment for the work will be made at the Contract price per Linear foot. The Unit Price includes the following:
- a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
46. Item No. 211300.46 – **1-1/2” Black Steel Sprinkler Pipe with Threaded Couplings Installation**. Payment for the work will be made at the Contract price per Linear foot. The Unit Price includes the following:
- a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
47. Item No. 211300.47 – **1-1/4” Black Steel Sprinkler Pipe with Threaded Couplings Installation**. Payment for the work will be made at the Contract price per Linear foot. The Unit Price includes the following:
- a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
48. Item No. 211300.48 – **1” Black Steel Sprinkler Pipe with Threaded Couplings Installation**. Payment for the work will be made at the Contract price per Linear foot. The Unit Price includes the following:
- a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
49. Item No. 211300.49 – **4” x 4” x 2-1/2” x 1” Black Steel Sprinkler Threaded Cross Fitting Installation**. Payment for the work will be made at the Contract price per Fitting. The Unit Price includes the following:
- a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.

- c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
50. Item No. 211300.50 – **4" x 4" x 2" Black Steel Sprinkler Threaded Tee Fitting Installation**. Payment for the work will be made at the Contract price per Fitting. The Unit Price includes the following:
- a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
51. Item No. 211300.51 – **3" x 3" x 1-1/4" x 1" Black Steel Sprinkler Threaded Cross Fitting Installation**. Payment for the work will be made at the Contract price per Fitting. The Unit Price includes the following:
- a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
52. Item No. 211300.52 – **3" x 2-1/2" x 2" Black Steel Sprinkler Threaded Tee Fitting Installation**. Payment for the work will be made at the Contract price per Fitting. The Unit Price includes the following:
- a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
53. Item No. 211300.53 – **SP 3" x 1-1/2" x 3" Black Steel Sprinkler Threaded Tee Fitting Installation**. Payment for the work will be made at the Contract price per Fitting. The Unit Price includes the following:
- a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
54. Item No. 211300.54 – **3" 90° Black Steel Sprinkler Threaded Elbow Fitting Installation**. Payment for the work will be made at the Contract price per Fitting. The Unit Price includes the following:
- a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
55. Item No. 211300.55 – **2-1/2" x 1-1/2" x 1" Black Steel Sprinkler Threaded Tee Fitting Installation**. Payment for the work will be made at the Contract price per Fitting. The Unit Price includes the following:
- a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.

56. Item No. 211300.56 – 2" x 2" x 1" Black Steel Sprinkler Threaded Tee Fitting Installation. Payment for the work will be made at the Contract price per Fitting. The Unit Price includes the following:
- Fuel/power equipment as required.
 - Labor and materials to mobilize and demobilize.
 - All Work as specified with this Section 211300.
 - Daily clean up waste and debris resulting from the Work.
57. Item No. 211300.57 – 2" x 1-1/2" x 1" Black Steel Sprinkler Threaded Tee Fitting Installation. Payment for the work will be made at the Contract price per Fitting. The Unit Price includes the following:
- Fuel/power equipment as required.
 - Labor and materials to mobilize and demobilize.
 - All Work as specified with this Section 211300.
 - Daily clean up waste and debris resulting from the Work.
58. Item No. 211300.58 – 2" Black Steel Sprinkler 90° Threaded Elbow Installation. Payment for the work will be made at the Contract price per Fitting. The Unit Price includes the following:
- Fuel/power equipment as required. Installation. Payment for the work will be made at the Contract price per Fitting. The Unit Price includes the following:
 - Labor and materials to mobilize and demobilize.
 - All Work as specified with this Section 211300.
 - Daily clean up waste and debris resulting from the Work.
59. Item No. 211300.59 – 1-1/2" x 1-1/2" x 1" Black Steel Sprinkler Threaded Tee Fitting Installation. Payment for the work will be made at the Contract price per Fitting. The Unit Price includes the following:
- Fuel/power equipment as required.
 - Labor and materials to mobilize and demobilize.
 - All Work as specified with this Section 211300.
 - Daily clean up waste and debris resulting from the Work.
60. Item No. 211300.60 – 1-1/2" x 1-1/4" x 1" x 1" Black Steel Sprinkler Threaded Cross Fitting Installation. Payment for the work will be made at the Contract price per Fitting. The Unit Price includes the following:
- Fuel/power equipment as required.
 - Labor and materials to mobilize and demobilize.
 - All Work as specified with this Section 211300.
 - Daily clean up waste and debris resulting from the Work.
61. Item No. 211300.61 – 1-1/2" x 1-1/4" x 1" Black Steel Sprinkler Threaded Tee Fitting Installation. Payment for the work will be made at the Contract price per Fitting. The Unit Price includes the following:
- Fuel/power equipment as required.
 - Labor and materials to mobilize and demobilize.
 - All Work as specified with this Section 211300.
 - Daily clean up waste and debris resulting from the Work.

62. Item No. 211300.62 – 1-1/2" x 1" x 1" Black Steel Sprinkler Threaded Tee Fitting Installation. Payment for the work will be made at the Contract price per Fitting. The Unit Price includes the following:
- Fuel/power equipment as required.
 - Labor and materials to mobilize and demobilize.
 - All Work as specified with this Section 211300.
 - Daily clean up waste and debris resulting from the Work.
63. Item No. 211300.63 – 1-1/2" Black Steel Sprinkler Threaded Pipe Cap Installation. Payment for the work will be made at the Contract price per Fitting. The Unit Price includes the following:
- Fuel/power equipment as required.
 - Labor and materials to mobilize and demobilize.
 - All Work as specified with this Section 211300.
 - Daily clean up waste and debris resulting from the Work.
64. Item No. 211300.64 – 1-1/2" Black Steel Sprinkler 90° Elbow Installation. Payment for the work will be made at the Contract price per Fitting. The Unit Price includes the following:
- Fuel/power equipment as required.
 - Labor and materials to mobilize and demobilize.
 - All Work as specified with this Section 211300.
 - Daily clean up waste and debris resulting from the Work.
65. Item No. 211300.65 – 1-1/2" Black Steel Sprinkler 60° Elbow Installation. Payment for the work will be made at the Contract price per Fitting. The Unit Price includes the following:
- Fuel/power equipment as required.
 - Labor and materials to mobilize and demobilize.
 - All Work as specified with this Section 211300.
 - Daily clean up waste and debris resulting from the Work.
66. Item No. 211300.66 – 1" x 1/2" Black Steel Sprinkler Pipe Threaded Reducer Installation. Payment for the work will be made at the Contract price per Fitting. The Unit Price includes the following:
- Fuel/power equipment as required.
 - Labor and materials to mobilize and demobilize.
 - All Work as specified with this Section 211300.
 - Daily clean up waste and debris resulting from the Work.
67. Item No. 211300.67 – 1" x 1" x 1/2" Black Steel Sprinkler Tee Threaded Fitting Installation. Payment for the work will be made at the Contract price per Fitting. The Unit Price includes the following:
- Fuel/power equipment as required.
 - Labor and materials to mobilize and demobilize.
 - All Work as specified with this Section 211300.
 - Daily clean up waste and debris resulting from the Work.
68. Item No. 211300.68 – 1" x 1" x 1" Black Steel Sprinkler Tee Threaded Fitting Installation. Payment for the work will be made at the Contract price per Fitting. The Unit Price includes the following:

- a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
69. Item No. 211300.69 – **1” Black Steel Sprinkler 90° Elbow Installation**. Payment for the work will be made at the Contract price per Fitting. The Unit Price includes the following:
- a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
70. Item No. 211300.70 – **4” Black Steel Sprinkler Expansion Loop w/Threaded Fittings Loop Installation**. Payment for the work will be made at the Contract price per Fitting. The Unit Price includes the following:
- a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
71. Item No. 211300.71 – **3” Black Steel Sprinkler Expansion Loop w/Grooved Fittings Installation**. Payment for the work will be made at the Contract price per loop. The Unit Price includes the following:
- a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
72. Item No. 211300.72 – **1/2” Upright Sprinkler Head Installation**. Payment for the work will be made at the Contract price per Head. The Unit Price includes the following:
- a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.
73. Item No. 211300.73 – **1-1/2” Flushing Ball Valve Installation**.
- a. Fuel/power equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified with this Section 211300.
 - d. Daily clean up waste and debris resulting from the Work.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Hangers and Supports: Section 210529.
- B. Painting: Section 099101.

1.03 REFERENCES

- A. NFPA 13 (2016) - Standard for the Installation of Sprinkler Systems.

1.04 SUBMITTALS

- A. Product Data:
 - 1. Catalog sheets and specifications indicating manufacturer name, type, applicable reference standard, schedule, or class for specified pipe and fittings.
 - 2. Material Schedule: Itemize pipe and fitting materials for each specified application in Pipe and Fittings Schedule in Part 3 of this Section. Where optional materials are specified indicate option selected.
- B. Submit an Environmental Product Declaration (EPD) from the manufacturer for steel within this specification section, if available. A statement of the contractor's good faith effort to obtain the EPD shall be provided if not available.
 - 1. Manufacturer-provided EPDs must be Product Specific Type III (Third-Party Reviewed), in adherence with ISO 14025 *Environmental labels and declarations*, ISO 14044 *Environmental management – Life cycle assessment*, and ISO 21930 *Core rules for environmental product declarations of construction products and services*.

PART 2 PRODUCTS

2.01 STEEL PIPE AND FITTINGS

- A. Steel Pipe for Threading: Standard weight, Schedule 40, black or galvanized; ASTM A 53 or ASTM A 135.
- B. Steel Pipe for Roll Grooving: Standard weight, Schedule 40, black or galvanized; ASTM A 53, Grade B, Type F for sizes 3/4 inch to 1-1/2 inch, and Type E or S for sizes 2 inch to 24 inch, or ASTM A 135.
- C. Cast Iron Fittings:
 - 1. Drainage Pattern, Threaded: ASME B16.12.
- D. Unions: Malleable iron, 250 lb class, brass to iron or brass to brass seats.
- E. Nipples: Same material and strength as adjoining pipe, except nipples having a length of less than one inch between threads shall be extra heavy.

2.02 COUPLINGS AND FITTINGS FOR GROOVED END PIPE

- A. Couplings: Grinnell Corp.'s Rigidlok Fig. 7401, or Victaulic Co.'s Style 107, having minimum pressure rating of:
 - 1. 750 psi from 1-1/2 inch to 4 inch.
- B. Fittings: By same manufacturer as couplings, having pressure ratings equal to or greater than couplings. Comply with the following standards:
 - 1. Steel: ASTM A 53 or A 106, Grade B.
 - 2. Malleable Iron: ASTM A 47.

2.03 BOLTED MECHANICAL BRANCH CONNECTION

- A. Victaulic Co.'s 920 Mechanical T.

2.04 JOINING AND SEALANT MATERIALS

- A. Thread Sealant:
 - 1. LA-CO Industries' Slic-Tite Paste with Teflon.
 - 2. Loctite Corp.'s No. 565 Thread Sealant.
- B. Gaskets For Use With Grooved End Pipe and Fittings: Type and materials as recommended and furnished by the fitting manufacturer, for the service of piping system in which installed.
 - 1. For Grooved fittings on dry sprinkler use AWWA C606 and UL 213 rigid pattern unless otherwise indicated. Include ferrous housing sections, EDPM -rubber gasket Grade "E" Type A Flush seal gasket and bolts and nuts.
- C. Anti-Seize Lubricant: Bostik Inc.'s Never Seez or Dow Corning Corp.'s Molykote 1000.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install piping at approximate locations indicated, and at maximum height.
- B. Make allowances for expansion and contraction.
- C. Allow for a minimum of one inch free air space around pipe or pipe covering, unless otherwise specified.
- D. Install horizontal piping with a constant pitch, and without sags or humps.
- E. Use fittings for offsets and direction changes.
- F. Cut pipe and tubing ends square; ream before joining.
- G. Threading: Use American Standard Taper Pipe Thread Dies.

3.02 PIPE JOINT MAKE-UP

- A. Threaded Joint: Make up joint with a pipe thread compound applied in accordance with manufacturer's printed application instructions for the intended service.
- B. Grooved Pipe Joint: Roll groove pipe ends, make up joint with grooved end fittings and couplings, in conformance with the manufacturer's printed installation instructions.

1. Cut grooved end piping is not acceptable.

3.03 PIPE AND FITTING SCHEDULE

- A. Where options are given, choose only one option for each piping service. No deviations from the selected option will be allowed.
- B. Fire Standpipe and Sprinkler:
 1. Option No. 1: Standard weight black steel pipe, with standard weight cast iron fittings, and threaded joints.
 2. Option No. 2: Standard weight black steel pipe, with roll grooved ends, grooved pipe fittings, and couplings.

END OF SECTION

SECTION 221100

PLUMBING PIPING

PART 1 GENERAL

1.01 UNIT PRICE WORK

- A. Payment for the Work listed in the Unit Price Schedule will be made at the unit prices indicated multiplied by the units of completed Work.
- B. The unit prices listed below shall include all Work specified in the Division 1 General Requirements Sections.
1. Item No. 221100.01 – 8” Insulated Galvanized Storm Piping with Grooved Fittings Removal. Payment for the work shall be made at the Contract price per linear foot. The unit price includes the following:
 - a. Fuel/power for equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified within this Section 221100.
 - d. Daily clean up waste and debris resulting from the Work.
 2. Item No. 221100.02 – 8” Insulated Galvanized Sanitary Piping with Grooved Fittings Removal. Payment for the work shall be made at the Contract price per linear foot. The unit price includes the following:
 - a. Fuel/power for equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified within this Section 221100.
 - d. Daily clean up waste and debris resulting from the Work.
 3. Item No. 221100.03 – 6” Insulated Galvanized Storm Piping with Grooved Fittings Removal. Payment for the work shall be made at the Contract price per linear foot. The unit price includes the following:
 - a. Fuel/power for equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified within this Section 221100.
 - d. Daily clean up waste and debris resulting from the Work.
 4. Item No. 221100.04 – 4” Insulated Galvanized Storm Piping with Grooved Fittings Removal. Payment for the work shall be made at the Contract price per linear foot. The unit price includes the following:
 - a. Fuel/power for equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified within this Section 221100.
 - d. Daily clean up waste and debris resulting from the Work.
 5. Item No. 221100.05 – 3” Insulated Galvanized Storm Piping with Grooved Fittings Removal. Payment for the work shall be made at the Contract price per linear foot. The unit price includes the following:
 - a. Fuel/power for equipment as required.

- b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified within this Section 221100.
 - d. Daily clean up waste and debris resulting from the Work.
6. Item No. 221100.06 – **8” Galvanized Sanitary 90° Elbow with Grooved Fittings removal**. Payment for the work shall be made at the Contract price per fitting. The unit price includes the following:
- a. Fuel/power for equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified within this Section 221100.
 - d. Daily clean up waste and debris resulting from the Work.
7. Item No. 221100.07 – **8” Galvanized Sanitary 45° Elbow with Grooved Fittings Removal**. Payment for the work shall be made at the Contract price per fitting. The unit price includes the following:
- a. Fuel/power for equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified within this Section 221100.
 - d. Daily clean up waste and debris resulting from the Work.
8. Item No. 221100.08 – **8” Galvanized Storm 90° Elbow with Grooved Fittings Removal**. Payment for the work shall be made at the Contract price per fitting. The unit price includes the following:
- a. Fuel/power for equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified within this Section 221100.
 - d. Daily clean up waste and debris resulting from the Work.
9. Item No. 221100.09 – **8” Galvanized Storm 45° Elbow with Grooved Fittings Removal**. Payment for the work shall be made at the Contract price per fitting. The unit price includes the following:
- a. Fuel/power for equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified within this Section 221100.
 - d. Daily clean up waste and debris resulting from the Work.
10. Item No. 221100.10 – **6” x 6” x 6” Galvanized Insulated 90° Tee with Grooved Fittings Removal**. Payment for the work shall be made at the Contract price per fitting. The unit price includes the following:
- a. Fuel/power for equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified within this Section 221100.
 - d. Daily clean up waste and debris resulting from the Work.
11. Item No. 221100.11 – **6” Insulated Galvanized Plug with Grooved Fittings Removal**. Payment for the work shall be made at the Contract price per fitting. The unit price includes the following:
- a. Fuel/power for equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified within this Section 221100.
 - d. Daily clean up waste and debris resulting from the Work.

12. Item No. 221100.12 – **6” Insulated Galvanized 90° Elbow with Grooved Fittings Removal**. Payment for the work shall be made at the Contract price per fitting. The unit price includes the following:
 - a. Fuel/power for equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified within this Section 221100.
 - d. Daily clean up waste and debris resulting from the Work.
13. Item No. 221100.13 – **4” x 4” x 4” Insulated Galvanized 90° Tee with Grooved Fittings Removal**. Payment for the work shall be made at the Contract price per fitting. The unit price includes the following:
 - a. Fuel/power for equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified within this Section 221100.
 - d. Daily clean up waste and debris resulting from the Work.
14. Item No. 221100.14 – **4” x 4” x 4” Insulated Galvanized 45° Tee with Grooved Fitting. Removal**. Payment for the work shall be made at the Contract price per fitting. The unit price includes the following:
 - a. Fuel/power for equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified within this Section 221100.
 - d. Daily clean up waste and debris resulting from the Work.
15. Item No. 221100.15 – **4” Insulated Galvanized Plug with Grooved Fitting Removal**. Payment for the work shall be made at the Contract price per fitting. The unit price includes the following:
 - a. Fuel/power for equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified within this Section 221100.
 - d. Daily clean up waste and debris resulting from the Work.
16. Item No. 221100.16 – **4” Insulated Galvanized 45° Elbow with Grooved Fittings Removal**. Payment for the work shall be made at the Contract price per fitting. The unit price includes the following:
 - a. Fuel/power for equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified within this Section 221100.
 - d. Daily clean up waste and debris resulting from the Work.
17. Item No. 221100.17 – **4” Insulated Galvanized 90° Elbow with Grooved Fittings Removal**. Payment for the work shall be made at the Contract price per fitting. The unit price includes the following:
 - a. Fuel/power for equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified within this Section 221100.
 - d. Daily clean up waste and debris resulting from the Work.

18. Item No. 221100.18 – **3” x 3” x 3” Insulated Galvanized 45° Tee with Grooved Fittings Removal**. Payment for the work shall be made at the Contract price per fitting. The unit price includes the following:
 - a. Fuel/power for equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified within this Section 221100.
 - d. Daily clean up waste and debris resulting from the Work.
19. Item No. 221100.19 – **3” Insulated Galvanized Plug Fitting Removal**. Payment for the work shall be made at the Contract price per fitting. The unit price includes the following:
 - a. Fuel/power for equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified within this Section 221100.
 - d. Daily clean up waste and debris resulting from the Work.
20. Item No. 221100.20 – **3” Insulated Galvanized 45° Elbow with Grooved Fittings Removal**. Payment for the work shall be made at the Contract price per fitting. The unit price includes the following:
 - a. Fuel/power for equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified within this Section 221100.
 - d. Daily clean up waste and debris resulting from the Work.
21. Item No. 221100.21 - **3” Insulated Cap Installation**. Payment for the work shall be made at the Contract price per fitting. The unit price includes the following:
 - a. Fuel/power for equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified within this Section 221100.
 - d. Daily clean up waste and debris resulting from the Work.
22. Item No. 221100.22 – **8” Insulated Galvanized Storm Piping with Grooved Fittings Installation**. Payment for the work shall be made at the Contract price per Linear foot. The unit price includes the following:
 - a. Fuel/power for equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified within this Section 221100.
 - d. Daily clean up waste and debris resulting from the Work.
23. Item No. 221100.23 – **8” Insulated Galvanized Sanitary Piping with Grooved Fittings Installation**. Payment for the work shall be made at the Contract price per linear foot. The unit price includes the following:
 - a. Fuel/power for equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified within this Section 221100.
 - d. Daily clean up waste and debris resulting from the Work.
24. Item No. 221100.24 – **6” Insulated Galvanized Storm Piping with Grooved Fittings Installation**. Payment for the work shall be made at the Contract price per fitting. The unit price includes the following:

- a. Fuel/power for equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified within this Section 221100.
 - d. Daily clean up waste and debris resulting from the Work.
25. Item No. 221100.25 – **4” Insulated Galvanized Storm Piping with Grooved Fittings Installation**. Payment for the work shall be made at the Contract price per linear foot. The unit price includes the following:
- a. Fuel/power for equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified within this Section 221100.
 - d. Daily clean up waste and debris resulting from the Work.
26. Item No. 221100.26 – **3” Insulated Galvanized Storm Piping with Grooved Fittings Installation**. Payment for the work shall be made at the Contract price per linear foot. The unit price includes the following:
- a. Fuel/power for equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified within this Section 221100.
 - d. Daily clean up waste and debris resulting from the Work.
27. Item No. 221100.27 – **8” Insulated Sanitary Pipe Transition Installation**. Payment for the work shall be made at the Contract price per fitting. The unit price includes the following:
- a. Fuel/power for equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified within this Section 221100.
 - d. Daily clean up waste and debris resulting from the Work.
28. Item No. 221100.28 – **8” Galvanized Sanitary 90° Elbow with Grooved Fittings Installation**. Payment for the work shall be made at the Contract price per fitting. The unit price includes the following:
- a. Fuel/power for equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified within this Section 221100.
 - d. Daily clean up waste and debris resulting from the Work.
29. Item No. 221100.29 – **8” Galvanized Sanitary 45° Elbow with Grooved Fittings Installation**. Payment for the work shall be made at the Contract price per fitting. The unit price includes the following:
- a. Fuel/power for equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified within this Section 221100.
 - d. Daily clean up waste and debris resulting from the Work.
30. Item No. 221100.30 – **8” Galvanized Storm 90° Elbow with Grooved Fittings Installation**. Payment for the work shall be made at the Contract price per fitting. The unit price includes the following:
- a. Fuel/power for equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified within this Section 221100.

- d. Daily clean up waste and debris resulting from the Work.
- 31. Item No. 221100.31 – **8” Galvanized Storm 45° Elbow with Grooved Fittings Installation**. Payment for the work shall be made at the Contract price per fitting. The unit price includes the following:
 - a. Fuel/power for equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified within this Section 221100.
 - d. Daily clean up waste and debris resulting from the Work.
- 32. Item No. 221100.32 – **6” x 6” x 6” Galvanized Insulated 90° Tee with Grooved Fittings Installation**. Payment for the work shall be made at the Contract price per fitting. The unit price includes the following:
 - a. Fuel/power for equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified within this Section 221100.
 - d. Daily clean up waste and debris resulting from the Work.
- 33. Item No. 221100.33 – **6” Insulated Cap Installation**. Payment for the work shall be made at the Contract price per fitting. The unit price includes the following:
 - a. Fuel/power for equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified within this Section 221100.
 - d. Daily clean up waste and debris resulting from the Work.
- 34. Item No. 221100.34 – **6” Insulated Galvanized 90° Elbow Installation**. Payment for the work shall be made at the Contract price per fitting. The unit price includes the following:
 - a. Fuel/power for equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified within this Section 221100.
 - d. Daily clean up waste and debris resulting from the Work.
- 35. Item No. 221100.35 – **4” x 4” x 4” Insulated Galvanized 90° Tee Installation**. Payment for the work shall be made at the Contract price per fitting. The unit price includes the following:
 - a. Fuel/power for equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified within this Section 221100.
 - d. Daily clean up waste and debris resulting from the Work.
- 36. Item No. 221100.36 – **4” x 4” x 4” 45° Insulated Tee Installation**. Payment for the work shall be made at the Contract price per fitting. The unit price includes the following:
 - a. Fuel/power for equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified within this Section 221100.
 - d. Daily clean up waste and debris resulting from the Work.

- 37. Item No. 221100.37 – **4” Insulated 90° Elbow Installation**. Payment for the work shall be made at the Contract price per fitting. The unit price includes the following:
 - a. Fuel/power for equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified within this Section 221100.
 - d. Daily clean up waste and debris resulting from the Work.

- 38. Item No. 221100.38 – **4” Insulated 45° Elbow Installation**. Payment for the work shall be made at the Contract price per fitting. The unit price includes the following:
 - a. Fuel/power for equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified within this Section 221100.
 - d. Daily clean up waste and debris resulting from the Work.

- 39. Item No. 221100.39 – **4” Insulated Cap Installation**. Payment for the work shall be made at the Contract price per fitting. The unit price includes the following:
 - a. Fuel/power for equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified within this Section 221100.
 - d. Daily clean up waste and debris resulting from the Work.

- 40. Item No. 221100.40 – **3” x 3” x 3” 45° Insulated Tee Installation**. Payment for the work shall be made at the Contract price per fitting. The unit price includes the following:
 - a. Fuel/power for equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified within this Section 221100.
 - d. Daily clean up waste and debris resulting from the Work.

- 41. Item No. 221100.41 – **3” Insulated 45° Elbow Installation**. Payment for the work shall be made at the Contract price per fitting. The unit price includes the following:
 - a. Fuel/power for equipment as required.
 - b. Labor and materials to mobilize and demobilize.
 - c. All Work as specified within this Section 221100.
 - d. Daily clean up waste and debris resulting from the Work.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Piping Insulation: Section 220700.

1.03 SUBMITTALS

- A. Product Data:
 - 1. Catalog sheets and specifications indicating manufacturer name, type, applicable reference standard, schedule, or class for specified pipe and fittings.

- B. Submit an Environmental Product Declaration (EPD) from the manufacturer for steel within this specification section, if available. A statement of the contractor's good faith effort to obtain the EPD shall be provided if not available.
 - 1. Manufacturer-provided EPDs must be Product Specific Type III (Third-Party Reviewed), in adherence with ISO 14025 *Environmental labels and declarations*, ISO 14044 *Environmental management – Life cycle assessment*, and ISO 21930 *Core rules for environmental product declarations of construction products and services*.

PART 2 PRODUCTS

2.01 STEEL PIPE AND FITTINGS

- A. Steel Pipe for Roll Grooving: Standard weight, Schedule 40, galvanized; ASTM A 53, Grade B, Type F for sizes 3/4 inch to 1-1/2 inch, and Type E or S for sizes 2 inch to 24 inch, or ASTM A 135.

2.02 COUPLINGS AND FITTINGS FOR GROOVED END PIPE

- A. Couplings: Grinnell Corp.'s Rigidlok Fig. 7401, or Victaulic Co.'s Style 107, having minimum pressure rating of:
 - 1. 750 psi from 1-1/2 inch to 4 inch.
 - 2. 700 psi for 6 inch.
 - 3. 600 psi for 8 inch.
- B. Fittings: By same manufacturer as couplings, having pressure ratings equal to or greater than couplings. Comply with the following standards:
 - 1. Steel: ASTM A 53 or A 106, Grade B.
 - 2. Malleable Iron: ASTM A 47.
 - 3. Ductile Iron: ASTM A 536.

2.03 JOINING AND SEALANT MATERIALS

- A. Gaskets For Use With Grooved End Pipes and Fittings: Type and materials as recommended and furnished by the fitting manufacturer, for the service of piping system in which installed.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install piping at approximate locations indicated, and at maximum height.
- B. Make allowances for expansion and contraction.
- C. Allow for a minimum of one inch free air space around pipe or pipe covering, unless otherwise specified.
- D. Install horizontal piping with a constant pitch, and without sags or humps.

1. Drainage Piping: Pitch 1/4 inch per foot downward, in direction of flow, unless otherwise noted.
- E. Use fittings for offsets and direction changes.
- F. Cut pipe and tubing ends square; ream before joining.

3.02 DRAINAGE SYSTEMS

- A. Fittings:
 1. Use long turn drainage pattern fittings, unless space conditions prohibit their use; in such cases, short turn pattern fittings may be used.
- B. Cleanouts:
 1. Install cleanouts with sufficient side and end clearance to allow for the removal of the cleanout plug, and the use of cleaning tools.
 2. Lubricate cleanout plugs with anti-seize lubricant.

3.03 PIPE JOINT MAKE-UP

- A. Grooved Pipe Joint: Roll groove pipe ends, make up joint with grooved end fittings and couplings, in conformance with the manufacturer's printed installation instructions.
 1. Cut grooved end piping is not acceptable.

3.04 PIPE AND FITTING SCHEDULE

- A. Drainage (Sanitary) Above Ground:
 1. Standard weight galvanized steel pipe, with roll grooved ends, grooved pipe fittings and couplings of coated ductile iron or hot dipped galvanized malleable iron.
- B. Drainage (Storm) Above Ground:
 1. Standard weight galvanized steel pipe, with roll grooved ends, grooved pipe fittings and couplings of coated ductile iron or hot dipped galvanized malleable iron.

END OF SECTION

* SUMMATION TABLE NOTE:
EJ-R AND EJ-B WORK NOTES INCLUDE AN ESTIMATED 1 SQUARE FOOT OF ITEM DR-H FOR EVERY 1 FOOT OF JOINT. THIS QUANTITY OF DEEP HORIZONTAL REPAIR IS ADDITIONAL AND IS INCLUDED IN THE BID QUANTITIES FOR ITEM DR-H IN THIS TABLE.

GENERAL NOTE:
THE BID SUMMATION TABLE ON THIS DRAWING IDENTIFIES WORK QUANTITIES FOR THE C CONTRACT. HOWEVER THESE TABLES AND NOTES ARE NUMBERED AS A G DRAWING TO LET EACH TRADE KNOW WHAT WORK IS BEING DONE. AS ALL TRADES WILL HAVE TO WORK TOGETHER IN A SPECIFIC WORK ZONE, NOT AT RANDOM THROUGHOUT ALL ZONES.

S-DRAWING BID QUANTITY SUMMATION TABLE FOR THE C-CONTRACT					
WORK NOTE	SPEC.	DESCRIPTION	SURVEYED QTY	BID QTY	DETAIL
SR-H	030131.01	SHALLOW REPAIR - HORIZONTAL	0 SF	50 SF	5/S-300
SR-V	030131.02	SHALLOW REPAIR - VERTICAL	180 SF	200 SF	6/S-300
SR-V6	030131.03	SHALLOW REPAIR - VERTICAL (OVER 6 FT)	0 SF	50 SF	6/S-300
SR-O	030131.04	SHALLOW REPAIR - OVERHEAD	11 SF	50 SF	7/S-300
DR-H *	030131.05	DEEP REPAIR - HORIZONTAL - INCLUDES REPAIR AT EXPANSION JOINTS	1473 SF	1,800 SF	8/S-300
DR-V	030131.06	DEEP REPAIR - VERTICAL	418 SF	500 SF	1/S-301
DR-V6	030131.07	DEEP REPAIR - VERTICAL (OVER 6 FT)	405 SF	500 SF	1/S-301
DR-O	030131.08	DEEP REPAIR - OVERHEAD	3,330 SF	4,000 SF	3/S-301
EJ-R *	030131.09	EXPANSION JOINT REPLACEMENT - ROADWAY	1,826 LF	2,190 LF	2/S-302 5/S-302
EJ-W11	030131.10	EXPANSION JOINT REPLACEMENT - W11	168 LF	180 LF	5/S-303
SH	030131.11	SHEARHEAD - REPAIR	19 EA	24 EA	1/S-302
SHORE	030131.12	STRUCTURAL SHORING	0 EA	400 EA	1/S-303
EJB *	030131.13	EXPANSION JOINT REPLACEMENT - BRIDGE	60 LF	70 LF	4/S-114
-	030131.14	REMOVE CONCRETE PAD	350 SF	420 SF	-
DR-O	030131.15	FULL DEPTH CONCRETE PAN REPLACEMENT	0 SF	120 SF	4/S-301
CH-H	030132.01	CRACK INJECTION - HORIZONTAL - SLAB	0 LF	20 LF	1/S-300
CI-V	030132.02	CRACK INJECTION - VERTICAL	14 LF	40 LF	2/S-300
CI-V6	030132.03	CRACK INJECTION - VERTICAL (OVER 6 FT)	3 LF	20 LF	2/S-300
CI-O	030132.04	CRACK INJECTION - OVERHEAD	100 LF	120 LF	3/S-300
MR-V	040121.01	MASONRY REPAIR - VERTICAL	156 SF	180 SF	-
SW	033000.01	REMOVE AND REPLACE CURB AND SIDEWALK	1,954 LF	2,300 LF	2/S-102 3/S-102 2/S-103 2/S-104 4/S-103
PJR	033000.02	PARTIAL EXPANSION JOINT REMOVAL	42 LF	45 LF	5/S-301
PC-SOG	033000.03	PRECAST SLAB ON GRADE	350 SF	420 SF	3/S-114
SR	055000.01	STEEL SHEARHEAD REPAIR	19 EA	24 EA	3/S-303 4/S-303 5/S-303
DR-V/V6-C	055000.02	STEEL COLUMN REINFORCEMENT	705 LF	800 LF	1/S-304 2/S-304
CB	055000.03	CATCH BASIN	10 EA	12 EA	5/S-103
-	SHEET GN-01 GENERAL NOTE #10	STORM WATER INLET FLUSH AND CLEAN	19 EA	20 EA	-

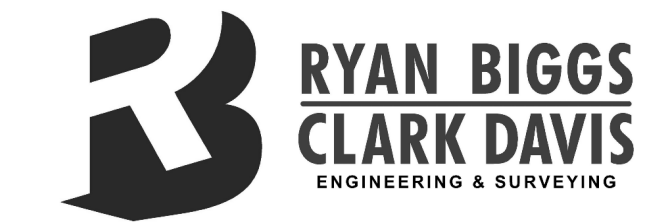
S-DRAWING BID QUANTITY SUMMATION TABLE FOR THE C-CONTRACT					
WORK NOTE	SPEC.	DESCRIPTION	SURVEYED QTY	BID QTY	DETAIL
	015526.01	PLASTIC CONSTRUCTION DRUMS (EACH)	253 EA	290 EA	-
	015526.02	TEMPORARY POSITIVE BARRIER - CATEGORY 1 (PINNING PROHIBITED)	260 LF	300 LF	-
	015526.03	WARNING LIGHTS ON TEMPORARY POSITIVE BARRIERS	13 EA	15 EA	-
	015526.04	TEMPORARY IMPACT ATTENUATOR - REDIRECTIVE (TEST LEVEL 2)	1 EA	2 EA	-
	017329.01	REMOVE, STORE & RESET EXISTING FENCING	57 LF	65 LF	-
	033400.01	CONTROLLED LOW STRENGTH MATERIAL (CLSM)	44 CY	50 CY	-
	044301.01	REMOVE LLENROC STONE FACADE	2,600 SF	3,200 SF	1& 2/G-003
	044301.02	INSTALL GRANITE FACADE	2,600 SF	3,200 SF	1& 2/G-003
	078400.01	FIRESTOPPING	0 SF	1 SF	-
	079200.01	JOINT SEALANT AT SIDEWALKS	900 LF	900 LF	-
	099101.01	PAINTING AT REPAIR AREAS	0 SF	1 SF	-
	310000.01	UNCLASSIFIED EXCAVATION & DISPOSAL	1,950 CY	2,245 CY	-
	310000.02	SUBBASE COURSE, TYPE 2	570 CY	655 CY	-
	310101.01	TOPSOIL - LAWNS	720 CY	830 CY	-
	310101.02	PREPARATION OF SUBSOIL FOR TURF ESTABLISHMENT	1,860 SY	2,140 SY	-
	310101.03	TURF ESTABLISHMENT - LAWNS	1,850 SY	2,130 SY	-
	311300.01	TREE REMOVAL OVER 4" TO 6"	1 EA	2 EA	-
	312513.01	GEOTEXTILE SEPARATION	2,400 SY	2,760 SY	-
	312513.02	DRAINAGE STRUCTURE INLET PROTECTION - SILT FENCE	81 LF	95 LF	-
	321216.01	12.5 F3 TOP COURSE ASPHALT, 80 SERIES COMPACTION	260 TON	300 TON	-
	321216.02	25 F9 BINDER COURSE ASPHALT, 80 SERIES COMPACTION	375 TON	430 TON	-
	321216.03	DILUTED TACK COAT	115 GAL	135 GAL	-
	321640.01	REMOVE AND REPLACE GRANITE CURB	614 LF	710 LF	-
	321723.01	COVER EXISTING PAVEMENT MARKING STRIPES (REMOVABLE TAPE)	3,000 LF	3,450 LF	-
	321723.02	INTERIM PAVEMENT MARKINGS, STRIPES (6 INCH) TRAFFIC PAINT	7,850 LF	9,030 LF	-
	329219.01	SEED AND MULCH - TEMPORARY	1,850 SY	2,130 SY	-
	329301.01	PLANTING - MAJOR DECIDUOUS TREES	1 EA	2 EA	-
	330514.01	ALTERING DRAINAGE STRUCTURES, LEACHING BASINS & MANHOLES	3 EA	4 EA	-
	333913.01	REMOVE & RESET EXISTING FRAMES & GRATES OR COVERS	2 EA	3 EA	-
	333913.02	CLEANING DRAINAGE STRUCTURES	6 EA	20 EA	-
	344113.01	BASIC WORK ZONE TRAFFIC CONTROL	1 EA	1 EA	-
	347114.01	REMOVING & STORING BOX BEAM GUIDE RAILING	150 LF	175 LF	-
	347114.02	RESETTING BOX BEAM GUIDE RAILING	150 LF	175 LF	-

REVISED DRAWING 10/17/2024

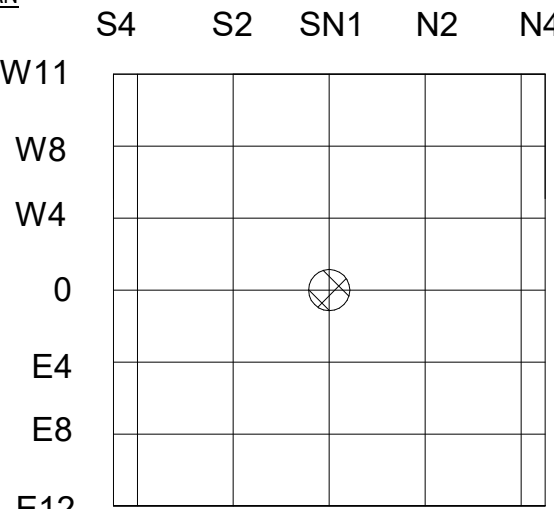
DESIGN & CONSTRUCTION

CONSULTANT

CERTIFICATE OF AUTHORIZATION #: 019598

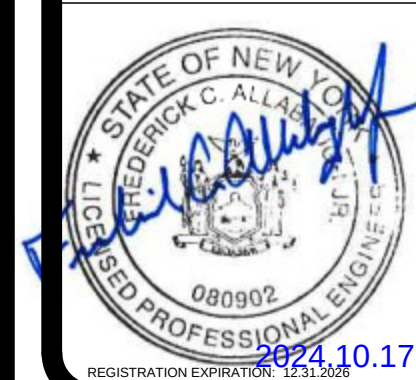


KEY PLAN



WARNING:

THE ALTERATION OF THIS MATERIAL IN ANY WAY, UNLESS DONE UNDER THE DIRECTION OF A COMPARABLE PROFESSIONAL, I.E. ARCHITECT FOR AN ARCHITECT, ENGINEER FOR AN ENGINEER OR LANDSCAPE ARCHITECT FOR A LANDSCAPE ARCHITECT, IS A VIOLATION OF THE NEW YORK STATE EDUCATION LAW AND/OR REGULATIONS AND IS A CLASS 'A' MISDEMEANOR.



CONTRACT:

CONSTRUCTION, HVAC,
PLUMBING AND ELECTRICAL

TITLE:

REPLACE EXPANSION JOINTS
EAST AND WEST ARTERIAL ROADWAYS

LOCATION:

EMPIRE STATE PLAZA
ALBANY, NY

CLIENT:

OFFICE OF GENERAL SERVICES

1	2024.10.17	ADDENDUM #1
	2024.08.20	BID DOCUMENTS
MARK	DATE	DESCRIPTION
PROJECT NUMBER:	45604-C,H,P,E	
DESIGNED BY:	KJH	
DRAWN BY:	KJH	
CHECKED:	JMS	
APPROVED:	JMS	

CONSTRUCTION - BID
QUANTITY SUMMATION
TABLE

DRAWING NUMBER:

G-007

NOTE:
THE BID SUMMATION TABLE ON THIS DRAWING IDENTIFIES WORK QUANTITIES FOR THE P-CONTRACT. HOWEVER THIS TABLE AND NOTES ARE NUMBERED AS A G-DRAWING TO LET EACH TRADE KNOW WHAT WORK IS BEING DONE, AS ALL TRADES WILL HAVE TO WORK TOGETHER IN A SPECIFIC WORK ZONE, NOTE AT RANDOM THROUGHOUT ALL ZONES.

GENERAL NOTES

1 BID QUANTITY TABLE REPRESENTS THE PROPOSED RENOVATIONS TO THE EXISTING FIRE PROTECTION SYSTEM AND DRAIN PIPING WITH THE PARKING GARAGE LEVELS ASSOCIATED WITH THE CONCRETE REPAIRS. QUANTITIES ARE BASED ON FIELD VERIFICATION OF ROUTING. ACTUAL PHYSICAL QUANTITIES WERE NOT VERIFIED. QUANTITIES INDICATED ARE REPRESENTED FROM A COMPUTER PROGRAM BASED ON INPUT OF ROUTINGS. ACTUAL QUANTITIES MAY DIFFER. THE INTENT IS TO PROVIDE A TAKE OFF QUANTITY THAT IS SIMILAR TO EXISTING CONDITIONS.

P-DRAWING BID QUANTITY SUMMATION TABLE FOR FIRE PROTECTION AND PLUMBING WORK

SPEC.	DESCRIPTION	SURVEYED QTY	BID QTY	UNITS
078400.01	FIRESTOPPING	0	1	SF
099103.01	MECHANICAL PAINTING - SPRINKLER PIPING	2238	2486	LF
210529.01	SPRINKLER PIPE HANGER REMOVAL	263	290	EA
210529.02	SPRINKLER PIPE HANGER INSTALLATION	251	277	EA
211300.01	4" BLACK STEEL SPRINKLER PIPE WITH THREADED AND GROOVED COUPLINGS REMOVAL	61	68	LF
211300.02	3" BLACK STEEL SPRINKLER PIPE WITH THREADED AND GROOVED COUPLINGS REMOVAL	17	19	LF
211300.03	2-1/2" BLACK STEEL SPRINKLER PIPE WITH THREADED AND GROOVED COUPLINGS REMOVAL	49	54	LF
211300.04	2" BLACK STEEL SPRINKLER PIPE WITH THREADED COUPLINGS REMOVAL	74	82	LF
211300.05	1-1/2" BLACK STEEL SPRINKLER PIPE WITH THREADED COUPLINGS REMOVAL	256	282	LF
211300.06	1-1/4" BLACK STEEL SPRINKLER PIPE WITH THREADED COUPLINGS REMOVAL	199	220	LF
211300.07	1" BLACK STEEL SPRINKLER PIPE WITH THREADED COUPLINGS REMOVAL	772	850	LF
211300.08	4" X 4" X 2-1/2" X 1" BLACK STEEL SPRINKLER THREADED CROSS FITTING REMOVAL	3	4	EA
211300.09	4" X 4" X 2" BLACK STEEL SPRINKLER THREADED TEE FITTING REMOVAL	1	2	EA
211300.10	4" X 4" X 2-1/2" BLACK STEEL SPRINKLER THREADED TEE FITTING REMOVAL	1	2	EA
211300.11	4" X 4" X 1-1/2" X 1-1/2" BLACK STEEL SPRINKLER THREADED CROSS FITTING REMOVAL	1	2	EA
211300.12	4" X 4" X 1" X 1" BLACK STEEL SPRINKLER THREADED CROSS FITTING REMOVAL	2	3	EA
211300.13	3" X 3" X 1-1/4" X 1" BLACK STEEL SPRINKLER THREADED CROSS FITTING REMOVAL	1	2	EA
211300.14	3" X 2" X 1-1/4" X 1" BLACK STEEL SPRINKLER THREADED CROSS FITTING REMOVAL	1	2	EA
211300.15	3" 90 DEG BLACK STEEL SPRINKLER THREADED ELBOW FITTING REMOVAL	4	5	EA
211300.16	2-1/2" X 2-1/2" X 1" BLACK STEEL SPRINKLER THREADED TEE FITTING REMOVAL	1	2	EA
211300.17	2-1/2" X 2-1/2" X 1" BLACK STEEL SPRINKLER THREADED TEE FITTING REMOVAL	3	4	EA
211300.18	2-1/2" X 1-1/2" X 1-1/2" BLACK STEEL SPRINKLER THREADED TEE FITTING REMOVAL	4	5	EA
211300.19	2-1/2" X 2-1/2" X 1" BLACK STEEL SPRINKLER THREADED TEE FITTING REMOVAL	2	3	EA
211300.20	2-1/2" X 2-1/2" X 1-1/2" BLACK STEEL SPRINKLER THREADED TEE FITTING REMOVAL	1	2	EA
211300.21	2-1/2" X 1-1/2" BLACK STEEL SPRINKLER THREADED REDUCER FITTING REMOVAL	1	2	EA
211300.22	2-1/2" BLACK STEEL SPRINKLER 90 DEG ELBOW FITTING REMOVAL	14	16	EA
211300.23	2" X 2" X 1" BLACK STEEL SPRINKLER TEE FITTING REMOVAL	5	6	EA
211300.24	2" X 1-1/2" X 1-1/4" X 1" BLACK STEEL SPRINKLER THREADED CROSS FITTING REMOVAL	1	2	EA
211300.25	2" X 1-1/2" X 1" BLACK STEEL SPRINKLER THREADED TEE FITTING REMOVAL	5	6	EA
211300.26	2" X 1-1/2" X 1" BLACK STEEL REDUCER FITTING REMOVAL	1	2	EA
211300.27	2" BLACK STEEL SPRINKLER 90 DEG THREADED ELBOW REMOVAL	3	4	EA
211300.28	1-1/2" X 1-1/2" X 1" BLACK STEEL SPRINKLER THREADED TEE FITTING REMOVAL	15	17	EA
211300.29	1-1/2" X 1" X 1" BLACK STEEL SPRINKLER THREADED TEE FITTING REMOVAL	6	7	EA
211300.30	1-1/2" X 1" BLACK STEEL SPRINKLER THREADED REDUCER REMOVAL	3	4	EA
211300.31	1-1/2" BLACK STEEL SPRINKLER THREADED PIPE CAP REMOVAL	1	2	EA
211300.32	1-1/2" BLACK STEEL SPRINKLER 90 DEG ELBOW REMOVAL	31	34	EA
211300.33	1-1/2" BLACK STEEL SPRINKLER 60 DEG ELBOW REMOVAL	1	2	EA
211300.34	1-1/4" X 1-1/4" X 1" BLACK STEEL SPRINKLER THREADED TEE FITTING REMOVAL	19	22	EA
211300.35	1-1/4" BLACK STEEL SPRINKLER 90 DEG THREADED ELBOW REMOVAL	7	8	EA
211300.36	1" X 1/2" BLACK STEEL SPRINKLER PIPE THREADED REDUCER REMOVAL	101	112	EA
211300.37	1" X 1" X 1" BLACK STEEL SPRINKLER TEE THREADED FITTING REMOVAL	27	30	EA
211300.38	1" BLACK STEEL SPRINKLER 90 DEG THREADED ELBOW REMOVAL	136	150	EA
211300.39	4" BLACK STEEL SPRINKLER EXPANSION LOOP W/ THREADED FITTING REMOVAL	1	2	EA
211300.40	3" BLACK STEEL SPRINKLER EXPANSION LOOP W/ GROOVED FITTINGS REMOVAL	1	2	EA
211300.41	1/2" UPRIGHT SPRINKLER HEAD REMOVAL	107	118	EA
211300.42	4" BLACK STEEL SPRINKLER PIPE WITH THREADED AND GROOVED COUPLINGS INSTALLATION	61	68	LF
211300.43	3" BLACK STEEL SPRINKLER PIPE WITH THREADED AND GROOVED COUPLINGS INSTALLATION	17	19	LF
211300.44	2-1/2" BLACK STEEL SPRINKLER PIPE WITH THREADED AND GROOVED COUPLINGS INSTALLATION	49	54	LF
211300.45	2" BLACK STEEL SPRINKLER PIPE WITH THREADED COUPLINGS INSTALLATION	74	82	LF
211300.46	1-1/2" BLACK STEEL SPRINKLER PIPE WITH THREADED COUPLINGS INSTALLATION	256	282	LF
211300.47	1-1/4" BLACK STEEL SPRINKLER PIPE WITH THREADED COUPLINGS INSTALLATION	199	220	LF
211300.48	1" BLACK STEEL SPRINKLER PIPE WITH THREADED COUPLINGS INSTALLATION	772	850	LF
211300.49	4" X 4" X 2-1/2" X 1" BLACK STEEL SPRINKLER THREADED CROSS FITTING INSTALLATION	3	4	EA
211300.50	4" X 4" X 2" BLACK STEEL SPRINKLER THREADED TEE FITTING INSTALLATION	4	5	EA
211300.51	3" X 3" X 1-1/4" X 1" BLACK STEEL SPRINKLER THREADED CROSS FITTING INSTALLATION	1	2	EA
211300.52	3" X 2-1/2" X 2" BLACK STEEL SPRINKLER THREADED TEE FITTING INSTALLATION	1	2	EA
211300.53	3" X 1-1/2" X 3" BLACK STEEL SPRINKLER THREADED TEE FITTING INSTALLATION	1	2	EA
211300.54	3" 90 DEG BLACK STEEL SPRINKLER THREADED ELBOW FITTING INSTALLATION	1	2	EA
211300.55	2-1/2 X 1-1/2 X 1" BLACK STEEL SPRINKLER THREADED TEE FITTING INSTALLATION	5	6	EA
211300.56	2" X 2" 1" BLACK STEEL SPRINKLER THREADED TEE FITTING INSTALLATION	3	4	EA
211300.57	2" X 1-1/2" X 1" BLACK STEEL SPRINKLER THREADED TEE FITTING INSTALLATION	5	6	EA
211300.58	2" BLACK STEEL SPRINKLER 90 DEG THREADED ELBOW INSTALLATION	2	3	EA
211300.59	1-1/2" X 1-1/2" X 1" BLACK STEEL SPRINKLER THREADED TEE FITTING INSTALLATION	14	16	EA
211300.60	1-1/2" X 1-1/4" X 1" X 1" BLACK STEEL SPRINKLER THREADED CROSS FITTING INSTALLATION	1	2	EA
211300.61	1-1/2" X 1-1/4" X 1" BLACK STEEL SPRINKLER THREADED TEE FITTING INSTALLATION	13	15	EA
211300.62	1-1/2" X 1" X 1" BLACK STEEL SPRINKLER THREADED TEE FITTING INSTALLATION	3	4	EA
211300.63	1-1/2" BLACK STEEL SPRINKLER THREADED PIPE CAP INSTALLATION	2	3	EA
211300.64	1-1/2" BLACK STEEL SPRINKLER 90 DEG ELBOW INSTALLATION	11	13	EA
211300.65	1-1/2" BLACK STEEL SPRINKLER 60 DEG ELBOW INSTALLATION	1	2	EA
211300.66	1" X 1/2" BLACK STEEL SPRINKLER PIPE THREADED REDUCER INSTALLATION	105	116	EA
211300.67	1" X 1" X 1/2" BLACK STEEL SPRINKLER TEE THREADED FITTING INSTALLATION	1	2	EA
211300.68	1" X 1" X 1" BLACK STEEL SPRINKLER TEE THREADED FITTING INSTALLATION	19	21	EA
211300.69	1" BLACK STEEL SPRINKLER 90 DEG ELBOW INSTALLATION	93	103	EA
211300.70	4" BLACK STEEL SPRINKLER EXPANSION LOOP W/ THREADED FITTINGS LOOP INSTALLATION	1	2	EA
211300.71	3" BLACK STEEL SPRINKLER EXPANSION LOOP W/ GROOVED FITTINGS INSTALLATION	1	2	EA
211300.72	1/2" UPRIGHT SPRINKLER HEAD INSTALLATION	107	118	EA
211300.73	1-1/2" FLUSHING BALL VALVE INSTALLATION	2	3	EA
220529.01	DRAIN PIPE HANGER REMOVAL	97	107	EA
220529.02	DRAIN PIPE HANGER INSTALLATION	110	121	EA
220577.01	TYPE 1 FLOOR DRAIN REMOVAL	3	4	EA
220577.02	TYPE 1 FLOOR DRAIN INSTALLATION	3	4	EA
221100.01	6" INSULATED GALVANIZED STORM PIPING WITH GROOVED FITTINGS REMOVAL	69	76	LF
221100.02	6" INSULATED GALVANIZED SANITARY PIPING WITH GROOVED FITTINGS REMOVAL	64	71	LF
221100.03	6" INSULATED GALVANIZED STORM PIPING WITH GROOVED FITTINGS REMOVAL	97	107	LF
221100.04	4" INSULATED GALVANIZED STORM PIPING WITH GROOVED FITTINGS REMOVAL	124	131	LF
221100.05	3" INSULATED GALVANIZED STORM PIPING WITH GROOVED FITTINGS REMOVAL	3	4	LF
221100.06	6" GALVANIZED SANITARY 90 DEG ELBOW WITH GROOVED FITTINGS REMOVAL	1	2	EA
221100.07	6" GALVANIZED SANITARY 45 DEG ELBOW WITH GROOVED FITTINGS REMOVAL	2	3	EA
221100.08	6" GALVANIZED STORM 90 DEG ELBOW WITH GROOVED FITTINGS REMOVAL	1	2	EA
221100.09	6" GALVANIZED STORM 45 DEG ELBOW WITH GROOVED FITTINGS REMOVAL	1	2	EA
221100.10	6" X 6" X 6" GALVANIZED INSULATED 90 DEG TEE WITH GROOVED FITTINGS REMOVAL	1	2	EA
221100.11	6" INSULATED GALVANIZED PLUG REMOVAL WITH GROOVED FITTINGS REMOVAL	1	2	EA
221100.12	6" INSULATED GALVANIZED 90 DEG ELBOW WITH GROOVED FITTINGS REMOVAL	6	8	EA
221100.13	4" X 4" X 4" INSULATED GALVANIZED 90 DEG TEE WITH GROOVED FITTINGS REMOVAL	1	2	EA
221100.14	4" X 4" X 4" INSULATED GALVANIZED 45 DEG TEE WITH GROOVED FITTINGS REMOVAL	1	2	EA
221100.15	4" INSULATED GALVANIZED PLUG WITH GROOVED FITTINGS REMOVAL	2	3	EA
221100.16	4" INSULATED GALVANIZED 45 DEG ELBOW WITH GROOVED FITTINGS REMOVAL	4	6	EA
221100.17	4" INSULATED GALVANIZED 90 DEG ELBOW WITH GROOVED FITTINGS REMOVAL	1	2	EA
221100.18	3" X 3" X 3" INSULATED GALVANIZED 45 DEG TEE WITH GROOVED FITTINGS REMOVAL	1	2	EA
221100.19	3" INSULATED GALVANIZED PLUG FITTING REMOVAL	1	2	EA
221100.20	3" INSULATED GALVANIZED 45 DEG ELBOW WITH GROOVED FITTINGS REMOVAL	1	2	EA
221100.21	3" INSULATED CAP INSTALLATION	1	2	EA
221100.22	6" INSULATED GALVANIZED STORM PIPING WITH GROOVED FITTINGS INSTALLATION	89	98	LF
221100.23	6" INSULATED GALVANIZED SANITARY PIPING WITH GROOVED FITTINGS INSTALLATION	88	97	LF
221100.24	6" INSULATED GALVANIZED STORM PIPING WITH GROOVED FITTINGS INSTALLATION	97	107	LF
221100.25	4" INSULATED GALVANIZED STORM PIPING WITH GROOVED FITTINGS INSTALLATION	124	137	LF
221100.26	3" INSULATED GALVANIZED STORM PIPING WITH GROOVED FITTINGS INSTALLATION	3	4	LF
221100.27	6" INSULATED SANITARY PIPE TRANSITION INSTALLATION	1	2	EA
221100.28	6" GALVANIZED SANITARY 90 DEG ELBOW WITH GROOVED FITTINGS INSTALLATION	3	4	EA
221100.29	6" GALVANIZED SANITARY 45 DEG ELBOW WITH GROOVED FITTINGS INSTALLATION	1	2	EA

P-DRAWING BID QUANTITY SUMMATION TABLE FOR FIRE PROTECTION AND PLUMBING WORK

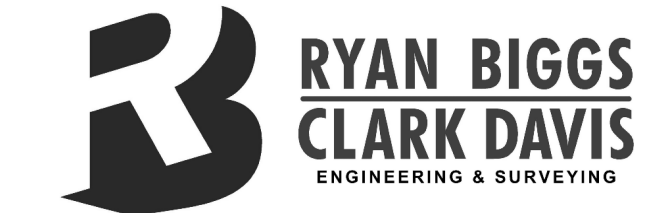
SPEC.	DESCRIPTION	SURVEYED QTY	BID QTY	UNITS
221100.30	8" GALVANIZED STORM 90 DEG ELBOW WITH GROOVED FITTINGS INSTALLATION	3	4	EA
221100.31	8" GALVANIZED STORM 45 DEG ELBOW WITH GROOVED FITTINGS INSTALLATION	2	3	EA
221100.32	6" X 6" X 6" GALVANIZED INSULATED 90 DEG TEE WITH GROOVED FITTINGS INSTALLATION	1	2	EA
221100.33	6" INSULATED CAP INSTALLATION	1	2	EA
221100.34	6" INSULATED GALVANIZED 90 DEG ELBOW INSTALLATION	6	8	EA
221100.35	4" X 4" X 4" INSULATED GALVANIZED 90 DEG TEE INSTALLATION	1	2	EA
221100.36	4" X 4" X 4" 45 DEG INSULATED TEE INSTALLATION	1	2	EA
221100.37	4" INSULATED 90 DEG ELBOW INSTALLATION	4	3	EA
221100.38	4" INSULATED 45 DEG ELBOW INSTALLATION	2	6	EA
221100.39	4" INSULATED CAP INSTALLATION	2	3	EA
221100.40	3" X 3" X 3" 45 DEG INSULATED TEE INSTALLATION	1	2	EA
221100.41	3" INSULATED 45 DEG ELBOW INSTALLATION	1	3	EA



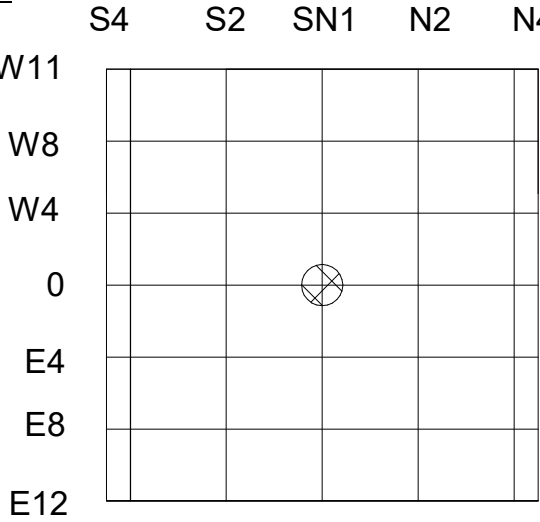
DESIGN & CONSTRUCTION

CONSULTANT

CERTIFICATE OF AUTHORIZATION #: 019598

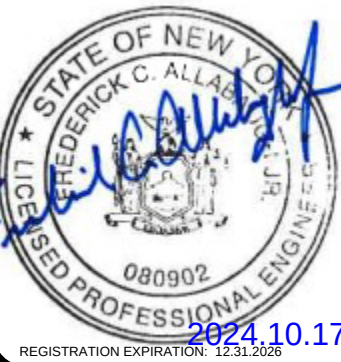


KEY PLAN



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CONTRACT: CONSTRUCTION, HVAC, PLUMBING AND ELECTRICAL

TITLE: REPLACE EXPANSION JOINTS EAST AND WEST ARTERIAL ROADWAYS

LOCATION: EMPIRE STATE PLAZA ALBANY, NY

CLIENT: OFFICE OF GENERAL SERVICES

1	2024.10.17	ADDENDUM #1
	2024.08.20	BID DOCUMENTS
MARK	DATE	DESCRIPTION
PROJECT NUMBER:	45604-C,H,P,E	
DESIGNED BY:	TJK	
DRAWN BY:	TJK	
CHECKED:	TAC	
APPROVED:	TAC	

SHEET TITLE:

PLUMBING - BID QUANTITY SUMMATION TABLE

DRAWING NUMBER:

G-008

Sheet 9 of 98

REVISED DRAWING 10/17/2024

NOTE:
THE BID SUMMATION TABLE ON THIS DRAWING IDENTIFIES WORK QUANTITIES FOR THE H-CONTRACT. HOWEVER THIS TABLE AND NOTES ARE NUMBERED AS A G-DRAWING TO LET EACH TRADE KNOW WHAT WORK IS BEING DONE, AS ALL TRADES WILL HAVE TO WORK TOGETHER IN A SPECIFIC WORK ZONE, NOTE AT RANDOM THROUGHOUT ALL ZONES.

M-DRAWING BID QUANTITY SUMMATION TABLE FOR HVAC WORK				
SPEC.	DESCRIPTION	SURVEYED QTY	BID QTY	UNITS
233113.01	192" X 60" METAL DUCTWORK REMOVAL	53	59	LF
233113.02	120" X 48" METAL DUCTWORK REMOVAL	15	17	LF
233113.03	120" X 44" METAL DUCTWORK REMOVAL	55	61	LF
233113.04	120" X 36" METAL DUCTWORK REMOVAL	10	11	LF
233113.05	48" X 36" METAL DUCTWORK REMOVAL	39	43	LF
233113.06	192" X 60" 45 DEG. METAL DUCT ELBOW REMOVAL	3	4	EA
233113.07	120" X 44" TO 120" X 48" METAL DUCT TRANSITION REMOVAL	2	3	EA
233113.08	120" X 36" TO 120" X 44" METAL DUCT TRANSITION REMOVAL	2	3	EA
233113.09	120" X 36" 90 DEG. METAL DUCT ELBOW REMOVAL	1	2	EA
233113.10	120" X 36" 90 DEG. METAL DUCT ELBOW - 1W RADIUS REMOVAL	1	2	EA
233113.11	192" X 60" METAL DUCTWORK INSTALLATION	53	59	LF
233113.12	120" X 48" METAL DUCTWORK INSTALLATION	15	17	LF
233113.13	120" X 44" METAL DUCTWORK INSTALLATION	55	61	LF
233113.14	120" X 36" METAL DUCTWORK INSTALLATION	10	11	LF
233113.15	48" X 36" METAL DUCTWORK INSTALLATION	39	43	LF
233113.16	192" X 60" 45 DEG. METAL DUCT ELBOW INSTALLATION	3	4	EA
233113.17	120" X 44" TO 120" X 48" METAL DUCT TRANSITION INSTALLATION	2	3	EA
233113.18	120" X 36" TO 120" X 44" METAL DUCT TRANSITION INSTALLATION	2	3	EA
233113.19	120" X 36" 90 DEG. METAL DUCT ELBOW INSTALLATION	1	2	EA
233113.20	120" X 36" 90 DEG. METAL DUCT ELBOW - 1W RADIUS INSTALLATION	1	2	EA
078400.01	PROVIDE FIRESTOPPING	0	1	SF
099103.01	PAINT METAL DUCTWORK	0	1	SF

GENERAL NOTES

- 1 BID QUANTITY TABLE REPRESENTS THE PROPOSED RENOVATIONS TO THE EXISTING HVAC SYSTEM WITH THE PARKING GARAGE LEVELS ASSOCIATED WITH THE CONCRETE REPAIRS. QUANTITIES ARE BASED ON FIELD VERIFICATION OF ROUTING. ACTUAL PHYSICAL QUANTITIES WERE NOT VERIFIED. QUANTITIES INDICATED ARE REPRESENTED FROM A COMPUTER PROGRAM BASED ON INPUT OF ROUTINGS. ACTUAL QUANTITIES MAY DIFFER. THE INTENT IS TO PROVIDE A TAKE OFF QUANTITY THAT IS SIMILAR TO EXISTING CONDITIONS.

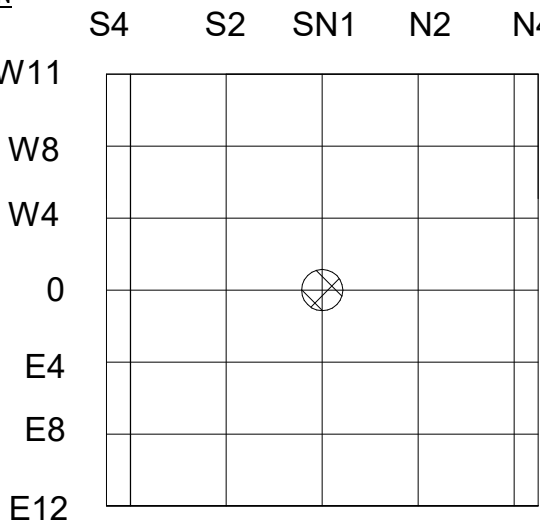
DESIGN & CONSTRUCTION

CONSULTANT

CERTIFICATE OF AUTHORIZATION #: 019598

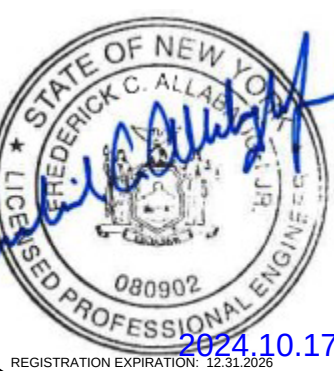


KEY PLAN



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CONTRACT: CONSTRUCTION, HVAC, PLUMBING AND ELECTRICAL

TITLE: REPLACE EXPANSION JOINTS EAST AND WEST ARTERIAL ROADWAYS

LOCATION: EMPIRE STATE PLAZA ALBANY, NY

CLIENT: OFFICE OF GENERAL SERVICES

REVISED DRAWING 10/17/2024

HVAC - BID QUANTITY SUMMATION TABLE

DRAWING NUMBER:

G-009



WORK AREA SCHEDULE - BID QUANTITY SUMMATION TABLE						EBU = ELECTRICAL BASE UNIT BY UTILITY	
SPEC.	EBU'S WITHIN THE WORK AREA	DESCRIPTION (WORK BEYOND EBU DESCRIPTION)	SURVEYED QTY	BID QTY	UNITS	ADDITIONAL NOTES	
260501.04	EBU-6		EBU-6: (5)	EBU-6: (5)	EA		
260501.01	EBU-3		EBU-3: (1)	EBU-3: (1)	EA		
260501.03	EBU-5		EBU-5: (2)	EBU-5: (2)	EA		
260501.06	EBU-7		EBU-7: (1)	EBU-7: (1)	EA		
260501.06	EBU-9		EBU-9: (5)	EBU-9: (5)	EA		
NIC	EBU-1		EBU-1: (1)	EBU-1: (0)	EA		
260501.01	EBU-3		EBU-3: (1)	EBU-3: (1)	EA		
260501.03	EBU-5		EBU-5: (1)	EBU-5: (1)	EA		
260501.05	EBU-7		EBU-7: (1)	EBU-7: (1)	EA		
260501.06	EBU-9		EBU-9: (1)	EBU-9: (1)	EA		
NIC	EBU-2		EBU-2: (1)	EBU-2: (0)	EA		
260501.01	EBU-3		EBU-3: (3)	EBU-3: (3)	EA		
260501.03	EBU-5		EBU-5: (2)	EBU-5: (2)	EA		
260501.06	EBU-9		EBU-9: (3)	EBU-9: (3)	EA		
NIC	EBU-1		EBU-1: (1)	EBU-1: (0)	EA		
260501.03	EBU-5		EBU-5: (2)	EBU-5: (2)	EA		
260501.01	EBU-3		EBU-3: (2)	EBU-3: (2)	EA		
260501.03	EBU-5		EBU-5: (1)	EBU-5: (1)	EA		
260501.06	EBU-9		EBU-9: (6)	EBU-9: (6)	EA		
NIC	EBU-1	IDENTIFY SERVING PANEL FOR LIGHTING AND DISCONNECT POWER BEFORE WORK. REMOVE CONDUIT FROM 1/2" UP TO AND INCLUDING 1", AND WIRE ON THE DUCT WORK THAT IS TO BE REMOVED. REFER TO HVAC PLANS FOR SECTIONS OF DUCT WORK BEING REMOVED. ASSUME (15) #12 CURRENT CARRYING CONDUCTORS PER CONDUIT. TAG CIRCUITS FOR REUSE. ONCE WORK IS COMPLETED, PROVIDE JUNCTION BOXES ON EACH OF THE EXISTING CONDUIT. PROVIDE IN-KIND CONDUIT AND WIRE. EXTEND TAGGED CIRCUITS FROM REMOVALS AS REQUIRED. PROVIDE TEMPORARY LIGHTING FOR ALL AFFECTED AREAS AS REQUIRED.	EBU-1: (1)	EBU-1: (0)	EA		
260501.01	EBU-3		EBU-3: (10)	EBU-3: (10)	EA		
260501.03	EBU-5		EBU-5: (2)	EBU-5: (2)	EA		
NIC	EBU-2		EBU-2: (1)	EBU-2: (0)	EA		
260501.03	EBU-5		EBU-5: (2)	EBU-5: (2)	EA		
NIC	EBU-2		EBU-2: (1)	EBU-2: (0)	EA		
260501.01	EBU-3		EBU-3: (1)	EBU-3: (1)	EA		
260501.06	EBU-9		EBU-9: (1)	EBU-9: (1)	EA		
260501.08	EBU-11		EBU-11: (1)	EBU-11: (1)	EA		
260501.09	EBU-12	IDENTIFY SERVING PANEL FOR LIGHTING AND DISCONNECT POWER BEFORE WORK. REMOVE HORIZONTAL MOUNTED FLUORESCENT VAPOR-TIGHT FIXTURES. REMOVE 6' OF 3/4" LIQUID-TIGHT FLEXIBLE METAL CONDUIT AND WIRE PER FIXTURE. ASSUME (3) #10 CONDUCTORS PER CONDUIT. REMOVE VERTICAL MOUNTED FLUORESCENT VAPOR-TIGHT FIXTURES. REMOVE 10' OF 1" GRC BACK TO NEAREST COUPLING. ASSUME (3) #10 CONDUCTORS PER CONDUIT. TAG ALL CIRCUITS FOR REUSE. PROVIDE TEMPORARY LIGHTING FOR ALL AFFECTED AREAS AS REQUIRED. VERIFY IN FIELD. COORDINATE WITH DIRECTOR'S REPRESENTATIVE.	EBU-12: (100)	EBU-12: (100)	EA		
260501.10	EBU-13	PROVIDE TYPE W1 FULL CUT-OFF LED WALL-PACK FIXTURES. INSTALL AT 15' ABOVE ROADWAY SURFACE. PROVIDE 10'GRC WITH (3) #10 CONDUCTORS FROM JUNCTION BOX TO WALL-PACK. CONNECT TO EXISTING LIGHTING CIRCUITS TAGGED FOR REUSE. PROVIDE TEMPORARY LIGHTING FOR ALL AFFECTED AREAS AS REQUIRED. VERIFY IN FIELD. COORDINATE WITH DIRECTOR'S REPRESENTATIVE.	EBU-13: (40)	EBU-13: (40)	EA		

NOTE:

- SEE DRAWING E-001 FOR EBU DESCRIPTIONS
- WORK AREA CORRESPONDS TO AREAS SHOWN ON DRAWINGS E-101, E-102, E-103 AND E-104.
- NUMBER IN THE PARENTHESIS IN THE SURVEYED AND BID QUANTITY COLUMNS REFER TO THE NUMBER OF CONDUITS IN THAT WORK AREA FOR THAT SPECIFIC EBU. EBU DESCRIPTION AND BASIS OF WORK SHOWN ON DRAWING E-001 APPLIES TO (1) CONDUIT. PROVIDE BASIS OF WORK TO EACH CONDUIT SHOWN IN THE WORK AREA.



E-DRAWING BID QUANTITY SUMMATION TABLE FOR E-CONTRACT						
ITEM NO.	WORK NOTE	SPEC.	DESCRIPTION	SURVEYED QTY	BID QTY	UNITS
E1		078400.01	FIRESTOPPING	(0)	(1)	SF

NOTE:

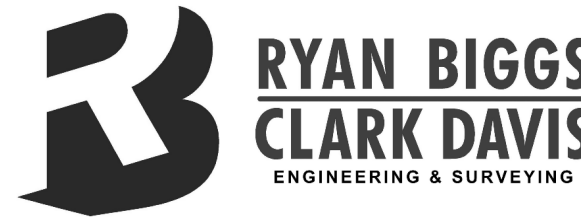
THE BID SUMMATION TABLE ON THIS DRAWING IDENTIFIES WORK QUANTITIES FOR THE E-CONTRACT. HOWEVER THIS TABLE AND NOTES ARE NUMBERED AS A G-DRAWING TO LET EACH TRADE KNOW WHAT WORK IS BEING DONE. AS ALL TRADES WILL HAVE TO WORK TOGETHER IN A SPECIFIC WORK ZONE, NOTE AT RANDOM THROUGHOUT ALL ZONES.

REVISED DRAWING 10/17/2024

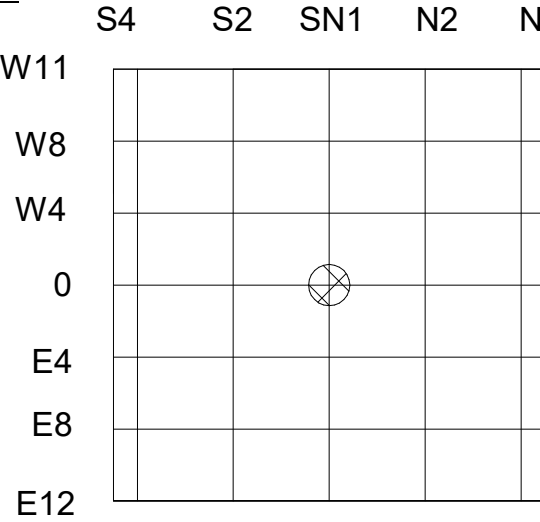
DESIGN & CONSTRUCTION

CONSULTANT

CERTIFICATE OF AUTHORIZATION #: 019598

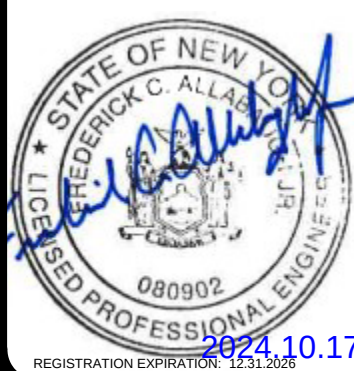


KEY PLAN



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CONTRACT: CONSTRUCTION, HVAC, PLUMBING AND ELECTRICAL

TITLE: REPLACE EXPANSION JOINTS EAST AND WEST ARTERIAL ROADWAYS

LOCATION: EMPIRE STATE PLAZA ALBANY, NY

CLIENT: OFFICE OF GENERAL SERVICES

1	2024.10.17	ADDENDUM #1
	2024.08.20	BID DOCUMENTS
MARK	DATE	DESCRIPTION
PROJECT NUMBER:	45604-C,H,P,E	
DESIGNED BY:	JTS	
DRAWN BY:	JTS	
CHECKED:	SRB	
APPROVED:	SRB	

SHEET TITLE:

ELECTRICAL - BID QUANTITY SUMMATION TABLE

DRAWING NUMBER:

G-010

SCOPE OF WORK NOTE:
THE EMPIRE STATE PLAZA IS AN EXISTING MULTI-OCCUPANCY COMPLEX OF OFFICE, ASSEMBLY, MERCANTILE, AND SERVICE AREAS. THE LOWER LEVELS OF THE FACILITY ARE COMPOSED OF ACCESS, PARKING, SERVICE DOCKS AND MECHANICAL ROOMS. WORK IS RESTRICTED TO THE PARKING AND ACCESS ROAD PORTION OF THE COMPLEX.

THE PARKING LEVELS OF THE COMPLEX ARE CONSTRUCTED OF REINFORCED CONCRETE COLUMNS, BEAMS AND DECK TO PROVIDE A FIRE RESISTIVE ENCLOSURE.

THE SCOPE OF WORK FOR THE PROJECT INVOLVES THE REPLACEMENT IN KIND OF ROADWAY EXPANSION JOINTS, ADJACENT DETERIORATED CONCRETE, AND MECHANICAL/ELECTRICAL PLUMBING (SPRINKLER WORK WHICH OBSTRUCTS THE JOINT WORK AND/OR HAS DETERIORATED TO THE POINT OF NEEDING REPLACEMENT. THE SCOPE OF WORK ALSO INCLUDES CREATION OF A TEMPORARY DIVERSION ROADWAY IN THE NORTH TUBE TO ALLOW TRAFFIC TO BYPASS THE WEST AND EAST ARTERIALS WHICH WILL REMAIN OPEN FOR PARKING ACCESS.

WORK AREA #1: ARTERIAL ROADWAY EXPANSION JOINT REPLACEMENT AND NORTH TUBE STRUCTURAL WORK
A. THE WORK IN THIS AREA FALLS WITHIN THE 2020 EXISTING BUILDING CODE OF NEW YORK STATE - REPAIRS.

WORK AREA #2: TEMPORARY ROADWAY AND NORTH TUBE LIGHTING RENOVATIONS
A. THE WORK IN THIS AREA FALLS WITHIN THE 2020 EXISTING BUILDING CODE OF NEW YORK STATE - ALTERATION LEVEL 2.

UNIFORM CODE NOTE:
TO THE BEST OF THE ARCHITECT/ENGINEER'S KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGMENT, THESE PLANS AND/OR SPECIFICATIONS ARE IN COMPLIANCE WITH THE NEW YORK STATE CODES AND REFERENCE STANDARDS NOTED BELOW:
A. 2020 BUILDING CODE OF NEW YORK STATE
B. 2020 ENERGY CONSERVATION CONSTRUCTION CODE OF NEW YORK STATE
C. 2020 EXISTING BUILDING CODE OF NEW YORK STATE
D. 2020 FIRE CODE OF NEW YORK STATE
E. 2020 FUEL CODE OF NEW YORK STATE
F. 2020 PLUMBING CODE OF NEW YORK STATE
G. 2020 MECHANICAL CODE OF NEW YORK STATE
H. 2020 PROPERTY MAINTENANCE CODE OF NEW YORK STATE
I. 2020 RESIDENTIAL CODE OF NEW YORK STATE
SYSTEMS SHALL COMPLY WITH THE LATEST VERSION OF THE FOLLOWING REFERENCE STANDARDS:
A. NFPA 70 - 2017 NATIONAL ELECTRICAL CODE
B. NFPA 72 - 2016 NATIONAL FIRE ALARM AND SIGNALING CODE
C. NFPA 101 - 2018 LIFE SAFETY CODE
D. NFPA 110 - 2016 EMERGENCY AND STANDBY POWER SYSTEMS
E. NFPA 13 - 2016 SPRINKLER SYSTEMS

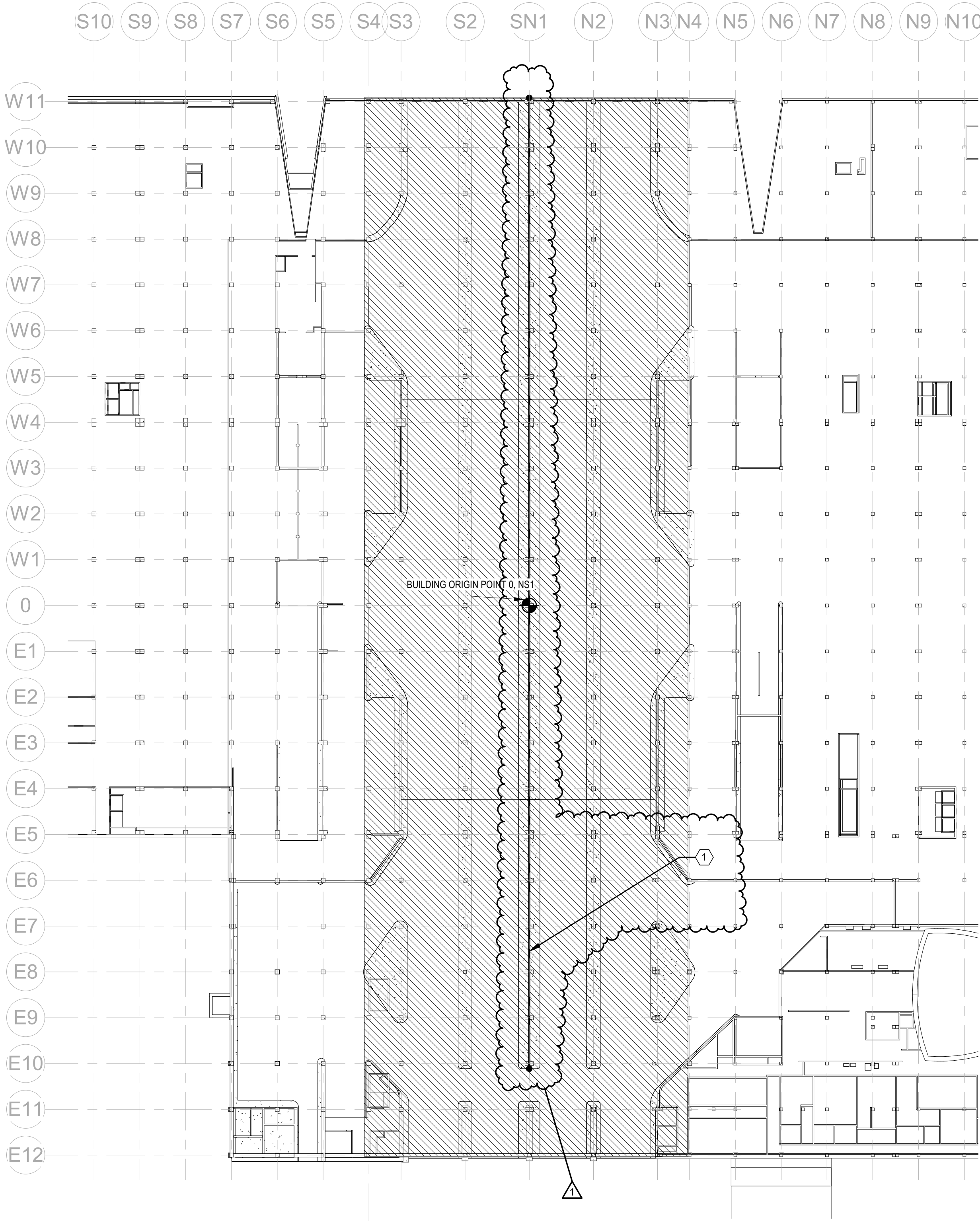
ENERGY CODE NOTE:
TO THE BEST OF THE ARCHITECT/ENGINEER'S KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGMENT, THESE PLANS AND/OR SPECIFICATIONS ARE IN COMPLIANCE WITH THE 2020 ENERGY CODE.

CONSTRUCTION SAFEGUARDS:

- SCOPE:**
A. THE SAFETY OF THE CONSTRUCTION AREA, AND ADJACENT PUBLIC AND PRIVATE PROPERTIES SAFETY, SHALL BE PROTECTED DURING CONSTRUCTION AND DEMOLITION IN ACCORDANCE WITH THE 2020 EXISTING BUILDING CODE OF NEW YORK STATE (EBCNYS) CHAPTER 15 AND THE 2020 FIRE CODE OF NEW YORK STATE (FCNYS) CHAPTER 33. COMPLIANCE WITH NFPA 241 IS REQUIRED FOR ITEMS NOT SPECIFICALLY ADDRESSED. THIS SPECIFICATION PROSCRIBES MINIMUM SAFEGUARDS FOR CONSTRUCTION TO PROVIDE REASONABLE SAFETY TO LIFE AND PROPERTY FROM FIRE DURING SUCH OPERATIONS.
- WORK:**
A. CONSTRUCTION INCLUDES ANY NEW CONSTRUCTION, REMOVALS, REMODELING ALTERATIONS, REPAIRS OR ADDITIONS TO ANY BUILDING OR STRUCTURE.
- MAINTENANCE OF SAFE CONDITIONS:**
A. REQUIRED SAFETY ELEMENTS SUCH AS EXITS, EXISTING STRUCTURAL MEMBERS, FIRE PROTECTION DEVICES AND SANITARY SAFEGUARDS SHALL BE MAINTAINED AT ALL TIMES, EXCEPT WHERE THE BUILDING IS NOT OCCUPIED OR WHERE SUCH REQUIRED ELEMENTS ARE BEING ALTERED OR REPAIRED AND ADEQUATE SUBSTITUTE PROVISIONS ARE MADE.
- MEAN OF EGRESS:**
A. AN APPROVED PERMANENT OR TEMPORARY MEANS OF EGRESS SHALL BE MAINTAINED. AN EGRESS COMPONENT SHALL NOT BE DESTROYED UNLESS AND UNTIL A SUBSTITUTE MEANS OF EGRESS HAS BEEN PROVIDED.
- FIRE SAFETY DURING CONSTRUCTION AND REMOVALS:**
A. FIRE SAFETY SHALL COMPLY WITH THE APPLICABLE REQUIREMENTS OF BEACONS CHAPTER 15 AND CNSK CHAPTER 33.
 - FIRE EXTINGUISHERS: PROVIDE PORTABLE FIRE EXTINGUISHERS FOR PROTECTION DURING CONSTRUCTION AND REMOVALS AT EACH STAIRWAY, ON EACH FLOOR LEVEL, WHERE COMBUSTIBLE MATERIALS HAVE ACCUMULATED, AND IN EVERY STORAGE AND CONSTRUCTION SHED. EXTINGUISHERS SHALL COMPLY WITH THE CNSK 906, SIZED FOR ORDINARY HAZARD UNLESS GREATER HAZARD IS SPECIFIED. ADDITIONAL PORTABLE FIRE EXTINGUISHERS SHALL BE PROVIDED WHERE SPECIAL HAZARDS EXIST, SUCH AS THE STORAGE AND USE OF FLAMMABLE AND COMBUSTIBLE LIQUIDS.
 - ANY BURNING, CUTTING OR WELDING SHALL REQUIRE A HOT WORK PERMIT AND APPROVAL.
- MATERIAL HANDLING:**
A. EQUIPMENT AND MATERIAL SHALL BE STORED AND PLACED, AND WASTE SHALL BE REMOVED, SO AS NOT TO ENDANGER THE PERSONS OR PROPERTY OR TO IMPEDE A MEANS OF EGRESS. PLACE MATERIAL AND WASTE SO AS NOT TO OBSTRUCT ACCESS TO FIRE HYDRANTS, STANDPIPES, FIRE EXTINGUISHERS, FIRE OR POLICE ALARM BOXES, CATCH BASINS, MANHOLES, RELEVANT UTILITY STRUCTURES, TRAFFIC OR OBSERVATION OF TRAFFIC SIGNALS. COMBUSTION DEBRIS SHALL NOT BE ACCUMULATED ON SITE, AND SHALL BE REMOVED AT THE END OF EACH WORK SHIFT. RUBBISH CONTAINERS WITH A CAPACITY EXCEEDING 5.33 CUBIC FEET (40 GALLONS OR 0.15 CUBIC METERS) SHALL HAVE TIGHT FITTING OR SELF CLOSING LIDS, AND SHALL BE CONSTRUCTED OF NONCOMBUSTIBLE MATERIAL OR MATERIAL THAT MEETS FCNYS SECTION 3304.2.3 (2)

#	RENOVATION KEY NOTES
1	PROVIDE TEMPORARY FENCING AS SPECIFIED IN 015000, PARAGRAPH 1.07-B.

1 ARTERIAL ROADWAY REFERENCE PLAN
G-011 SCALE: 1" = 50'-0"



REVISED DRAWING 10/17/2024

DESIGN & CONSTRUCTION

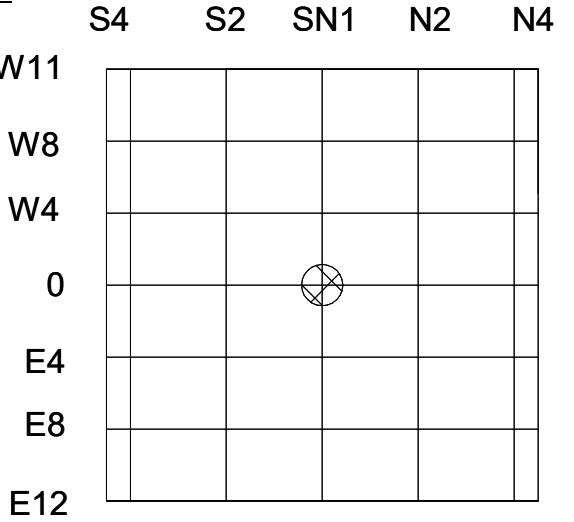
CONSULTANT

CERTIFICATE OF AUTHORIZATION #: 019598

DELTA
ENGINEERS, ARCHITECTS, & LAND SURVEYORS

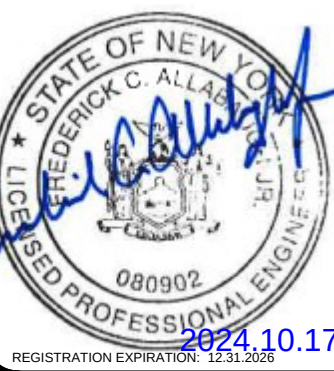
**RYAN BIGGS
CLARK DAVIS**
ENGINEERING & SURVEYING

KEY PLAN



WARNING:

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CONTRACT: CONSTRUCTION, HVAC,
PLUMBING AND ELECTRICAL

TITLE:
REPLACE EXPANSION JOINTS
EAST AND WEST ARTERIAL ROADWAYS

LOCATION:
EMPIRE STATE PLAZA
ALBANY, NY

CLIENT:
OFFICE OF GENERAL SERVICES

MARK	DATE	DESCRIPTION
1	2024.10.17	ADDENDUM #1
	2024.08.20	BID DOCUMENTS

PROJECT NUMBER:	
DESIGNED BY:	Designer
DRAWN BY:	Author
CHECKED:	Checker
APPROVED:	Approver

SHEET TITLE:

REGULATORY
INFORMATION

DRAWING NUMBER:

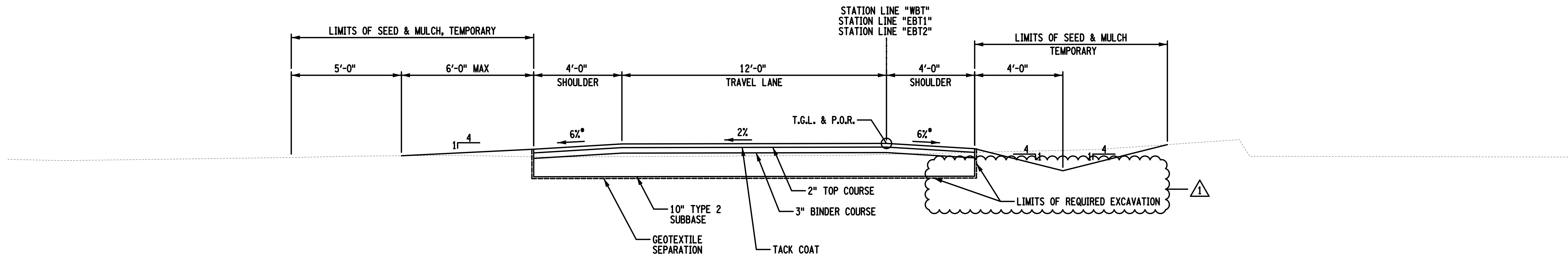
G-011

Sheet 12 of 98

STANDARD SYMBOL (PLANS)	ITEM PAYMENT UNIT: ESTIMATE OF QUANTITIES SHEET	EQUIVALENT NOMENCLATURE: (SPECS/PROPOSAL)
"	-	INCHES
'	LF	LINEAR FEET
mi	MI	MILES
ft ²	SF	SQUARE FEET
YD ²	SY	SQUARE YARD
AC	AC	ACRES
YD ³	CY	CUBIC YARD
GAL	GAL	GALLON
lb	LB	POUND
TON	TON	TON

1

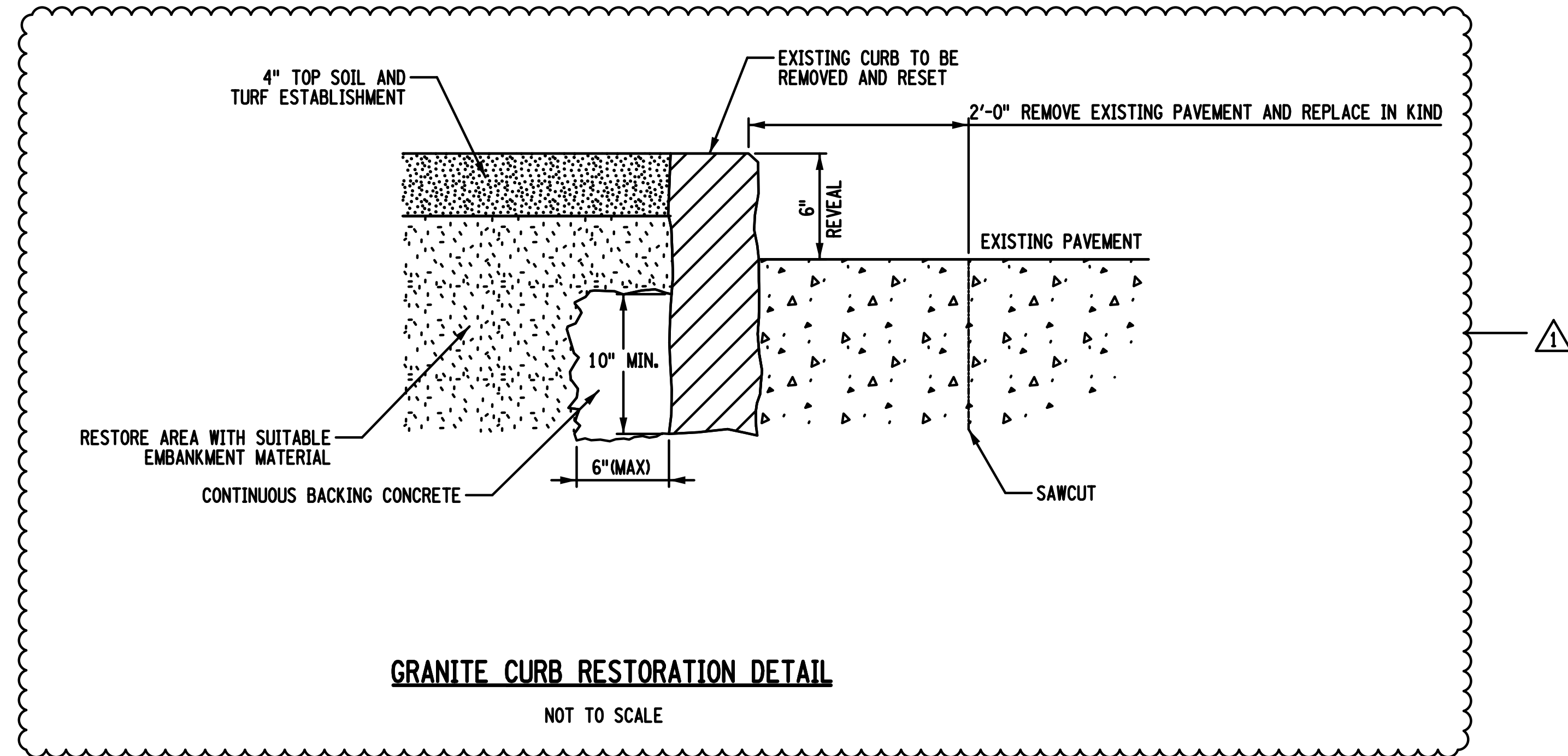
FILE NAME: Y:\2021\2021\762\205 45604 - Personal Expansion Joint Replacement\20-Drawings\2-D-TYP-01 ROADWAY TYPICAL SECTION AND MISCELLANEOUS DETAILS.dgn
DATE: 10/17/2024
USER: jmm
36x24 PLOT SHEET



ROADWAY TYPICAL SECTION

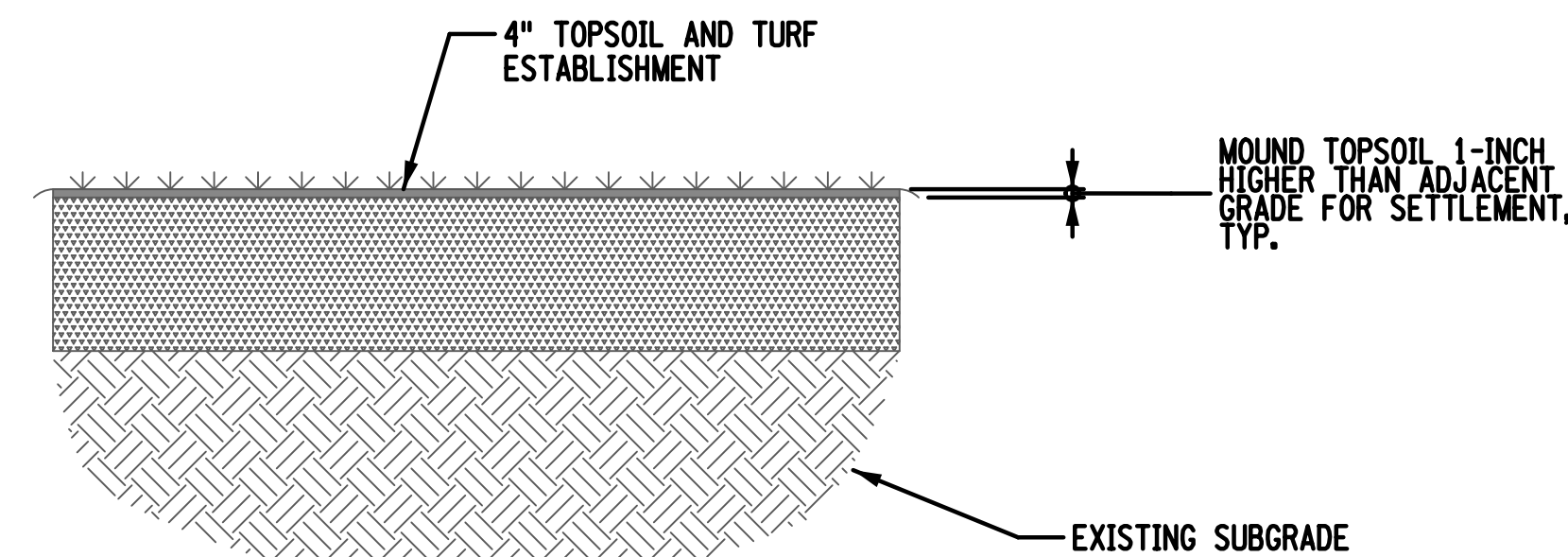
NOT TO SCALE

• - 8% MAX. ROLLOVER



GRANITE CURB RESTORATION DETAIL

NOT TO SCALE



LANDSCAPE RESTORATION DETAIL

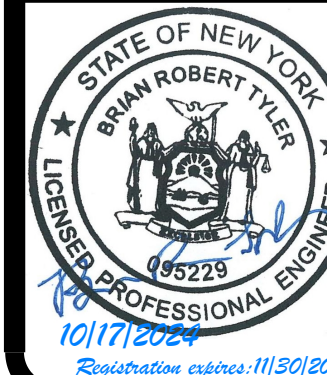
NOT TO SCALE

MATERIALS SHOWN	UNIT	NOTES:
UNCLASSIFIED EXCAVATION AND DISPOSAL	CY	1. TACK COAT, SHALL BE APPLIED BETWEEN ALL LIFTS OF PAVEMENT.
CONTROLLED LOW STRENGTH MATERIAL	CY	2. PRIOR TO PLACING THE SUBBASE, THE SUBGRADE SHOULD BE PROOFROLLED AND COMPACTED USING A SMOOTH DRUM ROLLER WITH A STATIC WEIGHT OF AT LEAST 10 TONS. THE ROLLER SHOULD COMPLETE AT LEAST 6 OVERLAPPING PASSES ACROSS THE SUBGRADE AT A SPEED NO GREATER THAN 3 FEET PER SECOND. ANY AREAS WHICH PUMP OR WEAVE UNDER THE PASSING ROLLER SHOULD BE UNDERCUT AND STABILIZED THOROUGH THE PLACEMENT OF SELECTED FILL MATERIAL COMPATIBLE WITH NYSDOT, ITEM 203.06.
GEOTEXTILE SEPARATION	SY	3. THE NYSDOT SPECIFICATIONS 80 SERIES PAVEMENT COMPACTION METHOD SHALL BE UTILIZED. THE ASPHALT BINDER USED IN PAVEMENT SHALL CONSIST OF POLYMER-MODIFIED PERFORMANCE GRADED BINDER GRADE 64V-22.
SEED AND MULCH - TEMPORARY	SY	4. GEOTEXTILE SHALL BE MIRAFI 160N OR APPROVED EQUAL.
SUBBASE COURSE, TYPE 2	TON	
12.5 F2 TOP COURSE ASPHALT, 80 SERIES COMPACTION	TON	
25 F9 BINDER COURSE ASPHALT, 80 SERIES COMPACTION	GAL	
DILUTED TACK COAT	CY	
TOPSOIL - LAWNS	SY	
TURF ESTABLISHMENT - LAWNS	LF	
CUTTING PAVEMENT		

REVISED DRAWING
10/17/2024

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CONTRACT:

CONSTRUCTION

TITLE:

REPLACE EXPANSION JOINTS,
EAST & WEST ARTERIAL ROADWAYS

LOCATION:

EMPIRE STATE PLAZA
ALBANY, NY

CLIENT:

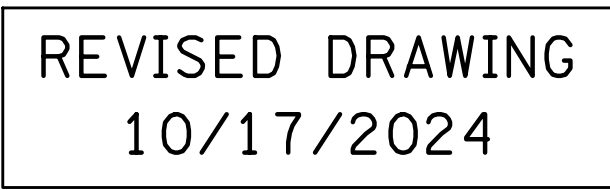
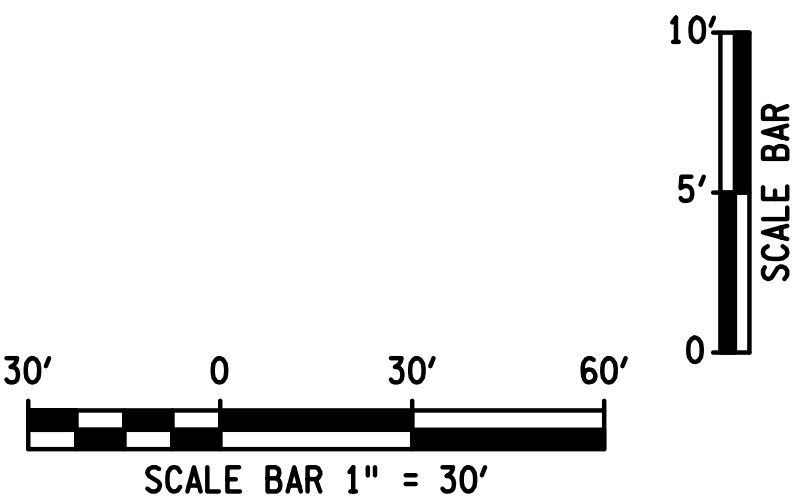
OFFICE OF GENERAL SERVICES

1	2024.10.17	ADDENDUM #1
	2024.08.20	BID DOCUMENTS
MARK	DATE	DESCRIPTION
PROJECT NUMBER:	45604-C	
DESIGNED BY:	CJM	
DRAWN BY:	ASM	
FIELD CHECK:		
APPROVED:		

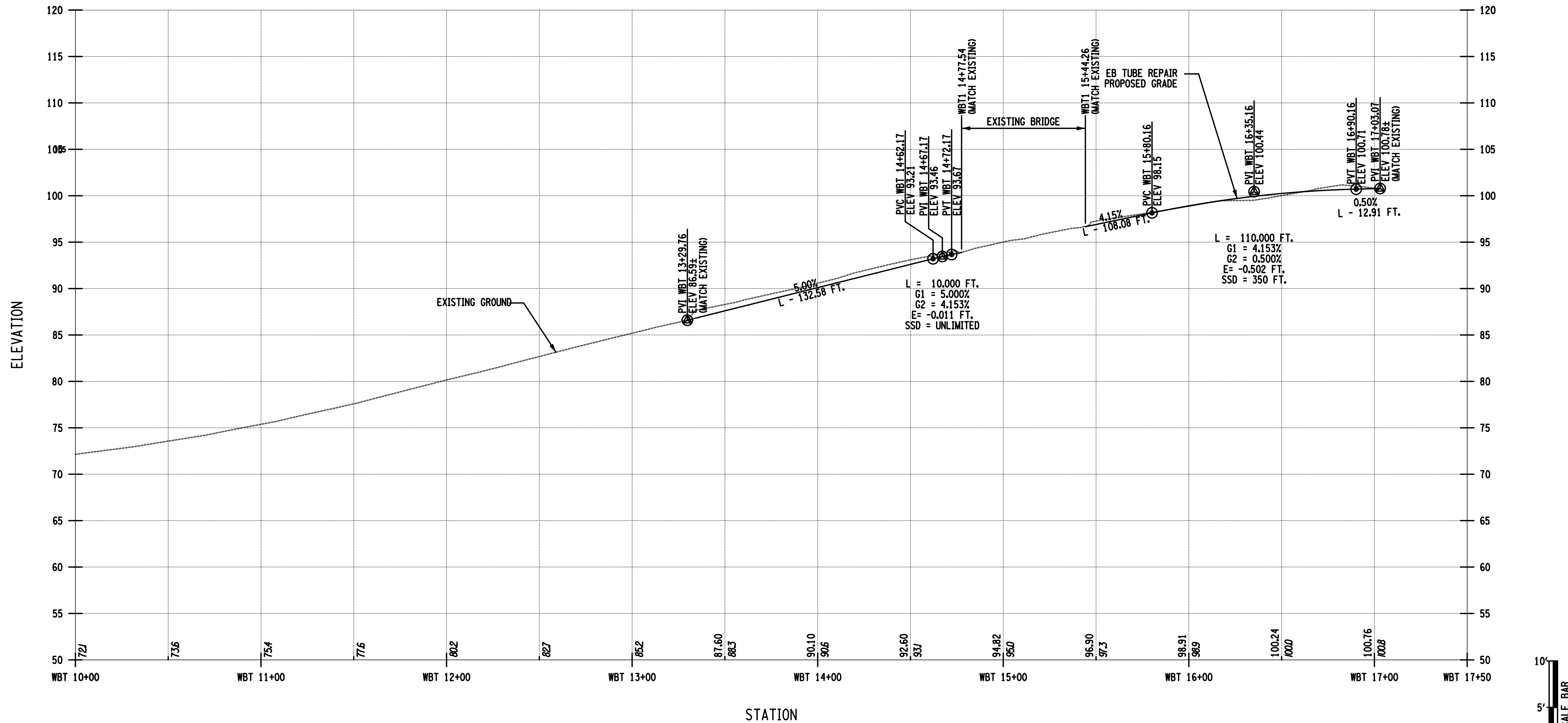
ROADWAY TYPICAL SECTION AND MISC. DETAILS

DRAWING NUMBER:

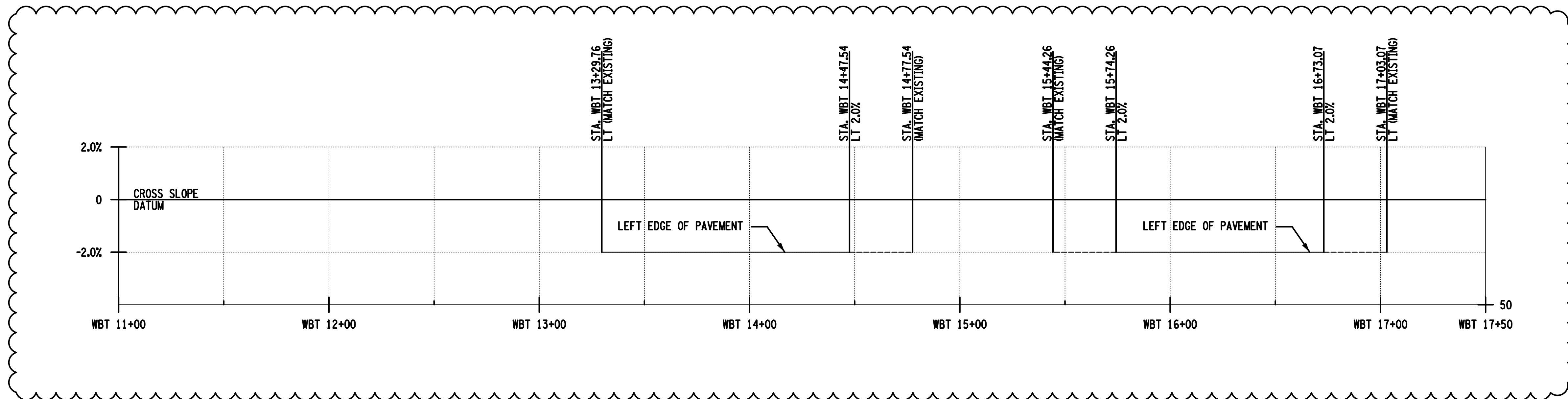
TYP-01



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DATE: 10/17/2024
USER: jh1013 PM
36x24 PLOT SHEET

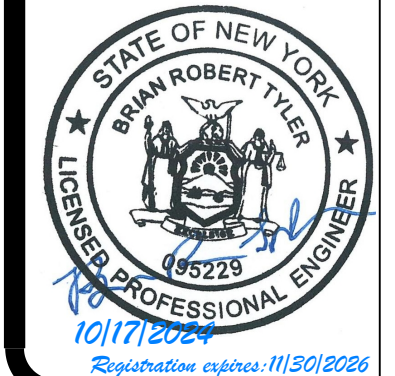


REVISED DRAWING
10/17/2024



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CONTRACT:

CONSTRUCTION

TITLE:

REPLACE EXPANSION JOINTS,
EAST & WEST ARTERIAL ROADWAYS

LOCATION:

EMPIRE STATE PLAZA
ALBANY, NY

CLIENT:

OFFICE OF GENERAL SERVICES

1	2024.10.17	ADDENDUM #1
	2024.08.20	BID DOCUMENTS
MARK	DATE	DESCRIPTION
PROJECT NUMBER:	45604-C	
DESIGNED BY:	CJM	
DRAWN BY:	ASM	
FIELD CHECK:		
APPROVED:		
SHEET TITLE:		

WB TUBE REPAIR
ROADWAY PROFILE

DRAWING NUMBER:

WB PRO-01

SHEET 52 OF 98

FILE NAME: Y:\2021\2024\702.005 - 65684 - Federal Expansion Joint Replacement\20-Drawings\12-Civil\WZN-01 WORK ZONE TRAFFIC CONTROL NOTES AND DETAILS.dgn
DATE: 10/17/2024
USER: jmm
36x24 PLOT SHEET

CONSTRUCTION PHASES (WORKZONE/DETOUR)

THE FOLLOWING WORK SHALL BE PERFORMED IN THE ORDER AGREED TO BY THE CONTRACTOR & THE DIRECTOR'S REPRESENTATIVE, AND TO BE COMPLETED DURING OFF PEAK TRAFFIC HOURS. THIS WORK CAN ALSO BE CONSTRUCTED DURING WEEKEND HOURS, PENDING PRIOR WRITTEN APPROVAL BY THE DIRECTOR'S REPRESENTATIVE. IF A SHIFT'S WORK IS COMPLETED EARLY, THE FOLLOWING SHIFT'S WORK MAY BEGIN WITHIN THAT SHIFT WITH APPROVAL OF THE DIRECTOR'S REPRESENTATIVE. THERE MIGHT BE TIME NEEDED BETWEEN SHIFTS (SO THEY ARE NOT CONCURRENT) TO ALLOW FOR JOINT REPAIRS AT THE EXISTING BRIDGE TO BE USED AS PART OF ACCESS TO THE NORTH TUBE.

THE FOLLOWING IS SUGGESTED PHASING. CONTRACTOR TO DEVELOP THEIR OWN PLAN AND SUBMIT FOR APPROVAL PRIOR TO COMMENCING WORK.

PHASE I: NORTH TUBE RENOVATION

- ALL WORK WITHIN THE NORTH TUBE MUST BE COMPLETED BEFORE PHASE II CAN START.
- PROVIDE TEMPORARY FENCING BETWEEN THE NORTH AND SOUTH TUBES. REFER TO SPECIFICATION SECTION 015000, PARAGRAPH 1.07-B.

PHASE II: EB ARTERIAL ROADWAY REPAIRS

SHIFT #1

- REMOVE EXISTING FENCE AND GATE AT NORTH END OF NORTH TUBE.
- INSTALL TEMPORARY STRIPING ALONG STATION LINE EBT1 BETWEEN BUILDINGS.
- REPLACE INLETS AND TRENCH DRAIN AT NORTH END OF NORTH TUBE.
- PLACE BARRELS TO KEEP TRAFFIC CHANNELIZED ON EXISTING ROADWAY.

SHIFT #2

- REMOVE EXISTING FENCE AT SOUTH END OF NORTH TUBE.
- REMOVE AND STORE EXISTING GRANITE CURB EBP 62+90 TO EBP 63+51.
- ADJUST DRAINAGE GRATES IN WORK AREA TO MATCH PROPOSED GRADE.
- INSTALL TEMPORARY POSITIVE BARRIER.
- REMOVE TREE BY LANDSCAPE AREA.
- BEGIN GRADING FOR EBT1 & EBT2.

SHIFT #3

- COMPLETE GRADING FOR EBT1 & EBT2.

SHIFT #4

- PAVE EBT1 & EBT2.

SHIFT #5

- STRIPE EBT1 & EBT2.

SHIFT #6

- REMOVE PAVEMENT AND STRIPING SOUTH OF THE EAGLE STREET BRIDGE ONCE THE EB ARTERIAL ROADWAY EXPANSION JOINT REPLACEMENT IS COMPLETED.

PHASE III: WB ARTERIAL ROADWAY REPAIR

SHIFT #1

- REMOVE AND STORE EXISTING BOX BEAM GUIDERAIL BETWEEN BUILDINGS.
- CLEAN EXISTING INLETS AND TRENCH DRAINS AT NORTH END OF NORTH TUBE.
- REMOVE EXISTING FENCE & GATE AT NORTH END OF NORTH TUBE.
- INSTALL TEMPORARY STRIPING ALONG STATION LINE WBT.
- PLACE BARRELS TO KEEP TRAFFIC CHANNELIZED ON EXISTING ROADWAY.

SHIFT #2

- REMOVE EXISTING FENCE AT SOUTH END OF NORTH TUBE.
- REMOVE AND STORE EXISTING GRANITE CURB WBP 11+45± WBP 13+70.
- ADJUST DRAINAGE INLETS AS NEEDED IN WORK AREA.
- REMOVE TREE BY LANDSCAPE AREA.
- BEGIN GRADING FOR WBT.

SHIFT #3

- COMPLETE GRADING FOR WBT.

SHIFT #4

- PAVE WBT.

SHIFT #5

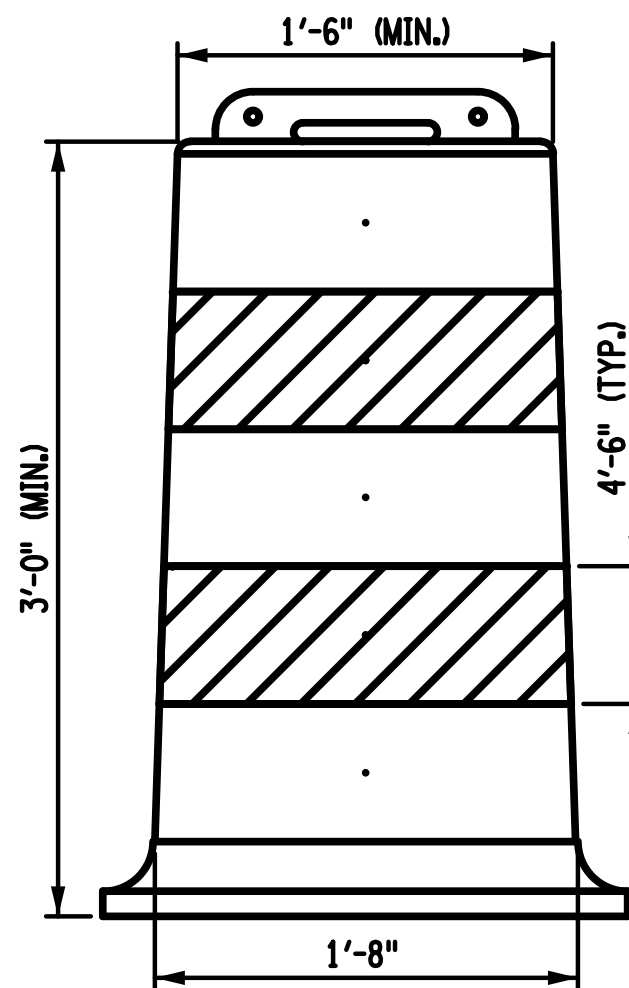
- STRIPE WBT.

SHIFT #6

- REMOVE PAVEMENT AND STRIPING SOUTH OF THE EAGLE STREET BRIDGE ONCE THE WB ARTERIAL ROADWAY EXPANSION JOINT REPLACEMENT IS COMPLETED.

GENERAL CONSTRUCTION NOTES

- ALL GRANITE CURB OR STONE MASONRY THAT IS TO BE RESTORED SHALL BE PALLETIZED. ANY GRANITE OR STONE CURBING TO BE REMOVED AS PART OF THIS PROJECT SHALL BE PALLETIZED AND RETURNED TO THE OFFICE OF GENERAL SERVICES.
- PLASTIC CONSTRUCTION DRUMS SHALL REMAIN THE PROPERTY OF THE CONTRACTOR & BE REMOVED FROM THE SITE UPON COMPLETION OF THEIR USE.



NOTES:

- DRUMS USED FOR ROAD USER WARNING OR CHANNELIZATION SHALL BE CONSTRUCTED OF LIGHTWEIGHT, DEFORMABLE MATERIALS. THEY SHALL BE A MINIMUM OF 36" IN HEIGHT AND HAVE AT LEAST AN 18" MINIMUM WIDTH REGARDLESS OF ORIENTATION. METAL DRUMS SHALL NOT BE USED. THE MARKINGS ON DRUMS SHALL BE HORIZONTAL, CIRCUMFERENTIAL, ALTERNATING ORANGE AND WHITE RETROREFLECTIVE STRIPES 4" TO 6" WIDE. EACH DRUM SHALL HAVE A MINIMUM OF TWO ORANGE AND TWO WHITE STRIPES WITH THE TOP STRIPE BEING ORANGE. ANY NON-RETROREFLECTORIZED SPACES BETWEEN THE HORIZONTAL ORANGE AND WHITE STRIPES SHALL NOT EXCEED 3" WIDE. DRUMS SHALL HAVE CLOSED TOPS THAT WILL NOT ALLOW COLLECTION OF CONSTRUCTION DEBRIS OR OTHER DEBRIS.
- DRUMS SHOULD NOT BE WEIGHTED WITH SAND, WATER, OR ANY MATERIAL TO THE EXTENT THAT WOULD MAKE THEM HAZARDOUS TO ROAD USERS OR WORKERS WHEN STRUCK.

STANDARD PLASTIC CONSTRUCTION DRUMS

PER MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.)

(NOT TO SCALE)

REVISED DRAWING
10/17/2024

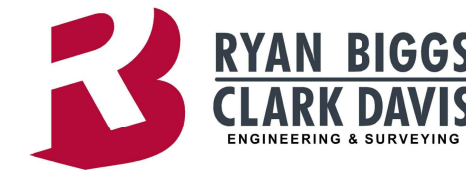
DESIGN & CONSTRUCTION

CONSULTANT

CERTIFICATE OF AUTHORIZATION #: 019598

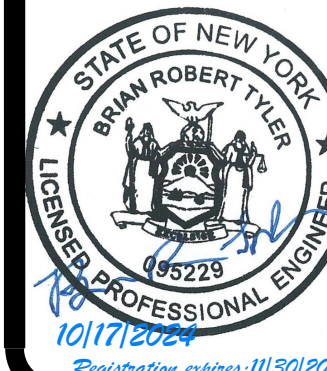


CERTIFICATE OF AUTHORIZATION #: 0018226



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CONTRACT:

CONSTRUCTION

TITLE:

REPLACE EXPANSION JOINTS,
EAST & WEST ARTERIAL ROADWAYS

LOCATION:

EMPIRE STATE PLAZA
ALBANY, NY

CLIENT:

OFFICE OF GENERAL SERVICES

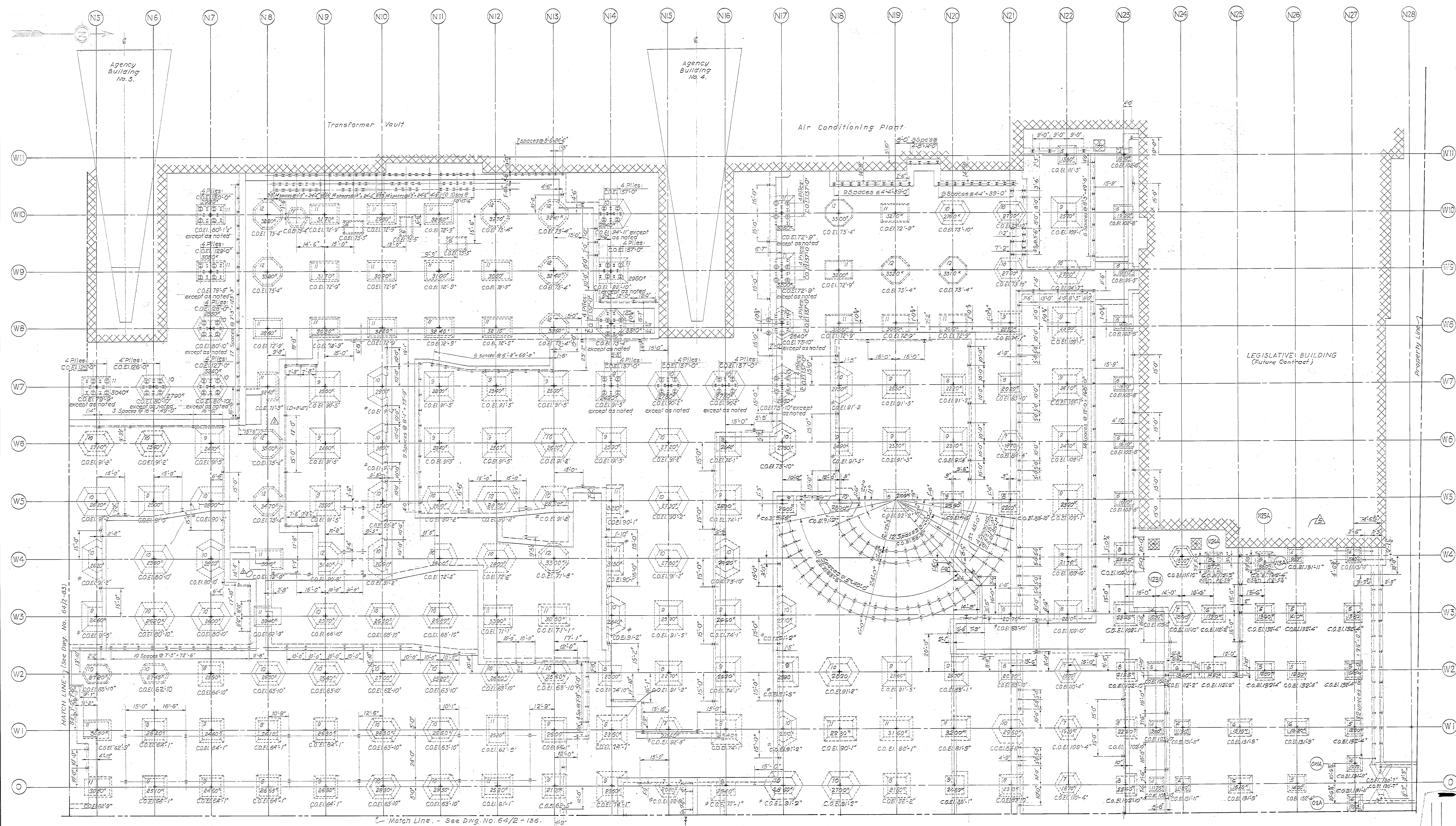
1	2024.10.17	ADDENDUM #1
	2024.08.20	BID DOCUMENTS
MARK	DATE	DESCRIPTION
PROJECT NUMBER:	45604-C	
DESIGNED BY:	CJM	
DRAWN BY:	ASM	
FIELD CHECK:		
APPROVED:		

WORK ZONE TRAFFIC CONTROL NOTES AND DETAILS

DRAWING NUMBER:

WZTN-01

SHEET 53 OF 98



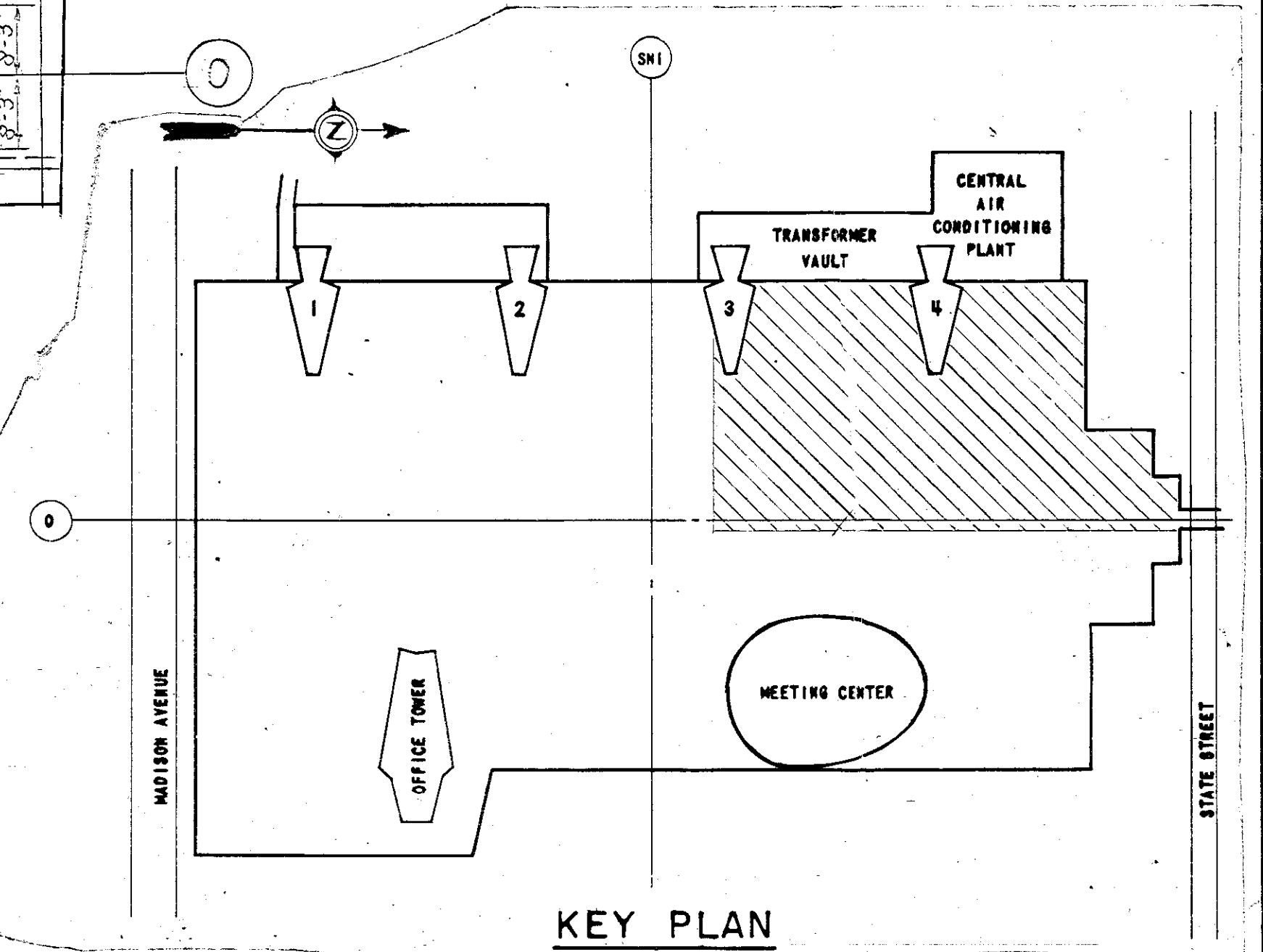
LEGEND

- 12 - 6 of billet plate and pile cap except where otherwise noted.
- 12 - Number of 14B29 piles.
- 210 - Total vertical gravity load (Column DL+LL, foundation DL+LL, no uplift).
- C.O.E. - Cut off elevation of piles.
- 3 - Split pile cap with a portion of cap piles to be cut off under wall.
- 9 - Piles used for Agency Bldg. form support towers; cut-offs as noted (See Note 5).

NOTES:

1. For typical pile cap details see Divg. No. 64/2-93.
2. All piles shall be 14B29 furnished and driven in accordance with Section 6F of the Specifications.
3. Pile design capacities are: 320k compression and 100k tension.
4. For wall piles C.O. Elevations see sections, unless otherwise noted.
5. Piles which are noted to be used for Agency Bldg. form supports shall be cut-off later at level of remaining piles in that cap.

PLAN
Scale 1/8"=1'-0"



KEY PLAN

MUESER • RUTLEDGE • WENTWORTH & JOHNSTON
CONSULTING ENGINEERS
415 MADISON AVE., NEW YORK 17, N. Y.



HARRISON AND ABRAMOVITZ
ARCHITECTS
630 FIFTH AVE. NEW YORK 20

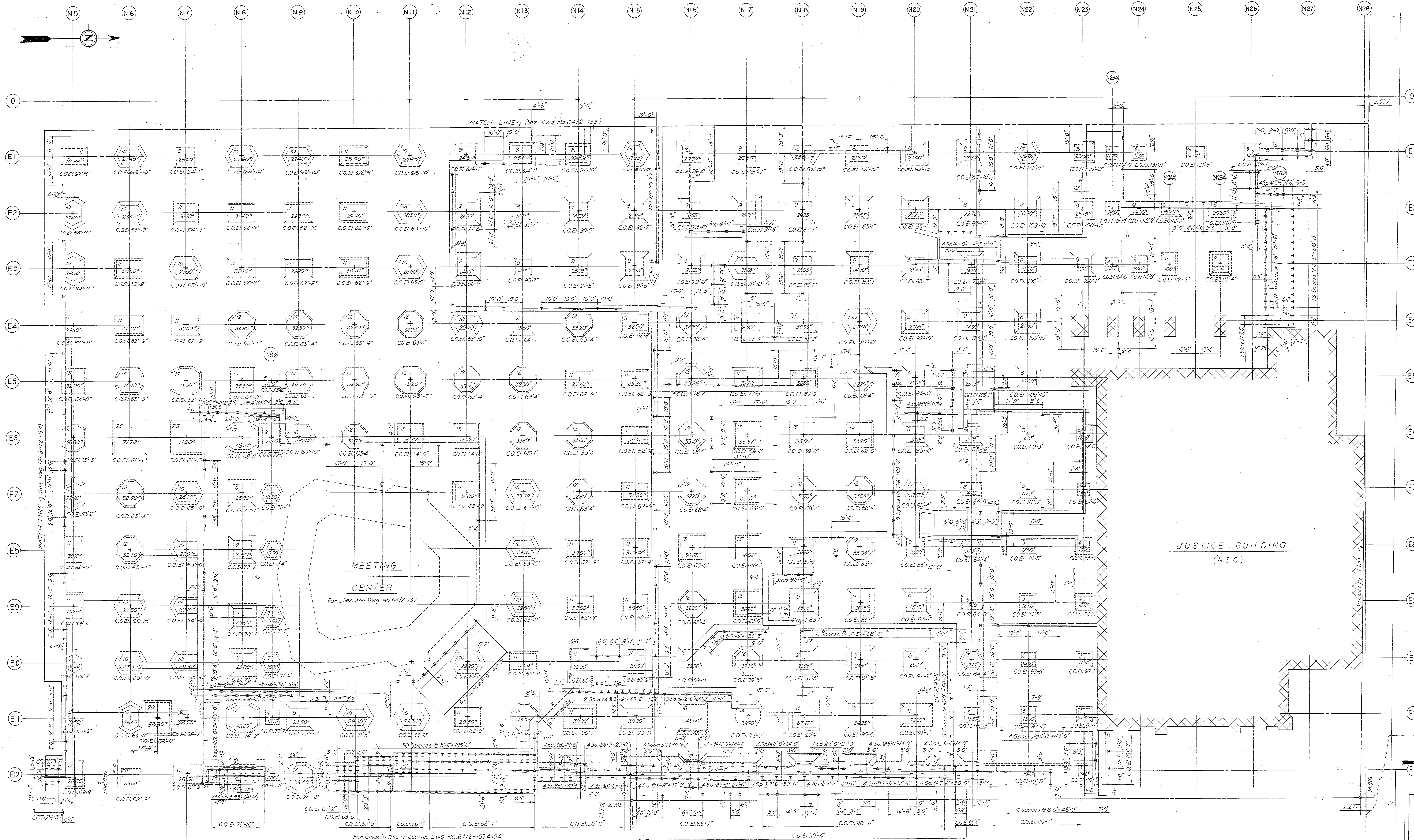
1. Revised pile caps & added pile caps.	
2. Revised pile caps.	
3. Revised cap on W140 lines. Added piles between W140 & W145 lines.	
4. Added pile cap locations.	
5. Revised location of wall along col. line W171.	

REV	DATE	ISSUED TO	REV	DATE	ISSUED TO

ALBANY, NEW YORK
ALBANY SOUTH MALL PROJECT
MAIN PLATFORM

DESIGNED BY V.H.A. L.G. & N.L.M.	PROJECT NO. 19533
CHECKED BY R.C.H. & N.N.	PROPORTION NO. 19533 C
SCALE 1/8" = 1'-0"	DATE JUNE 16, 1966
APPROVED BY [Signature]	DRAWING NO. 64/2-135
BY [Signature]	

STATE OF NEW YORK
OFFICE OF GENERAL SERVICES
CIVIL ENGINEER - COMMISSIONER
PUBLIC WORKS - J. S. HOGAN, SUPERINTENDENT
DIVISION OF ARCHITECTURE - G. S. KANEK, STATE ARCHITECT

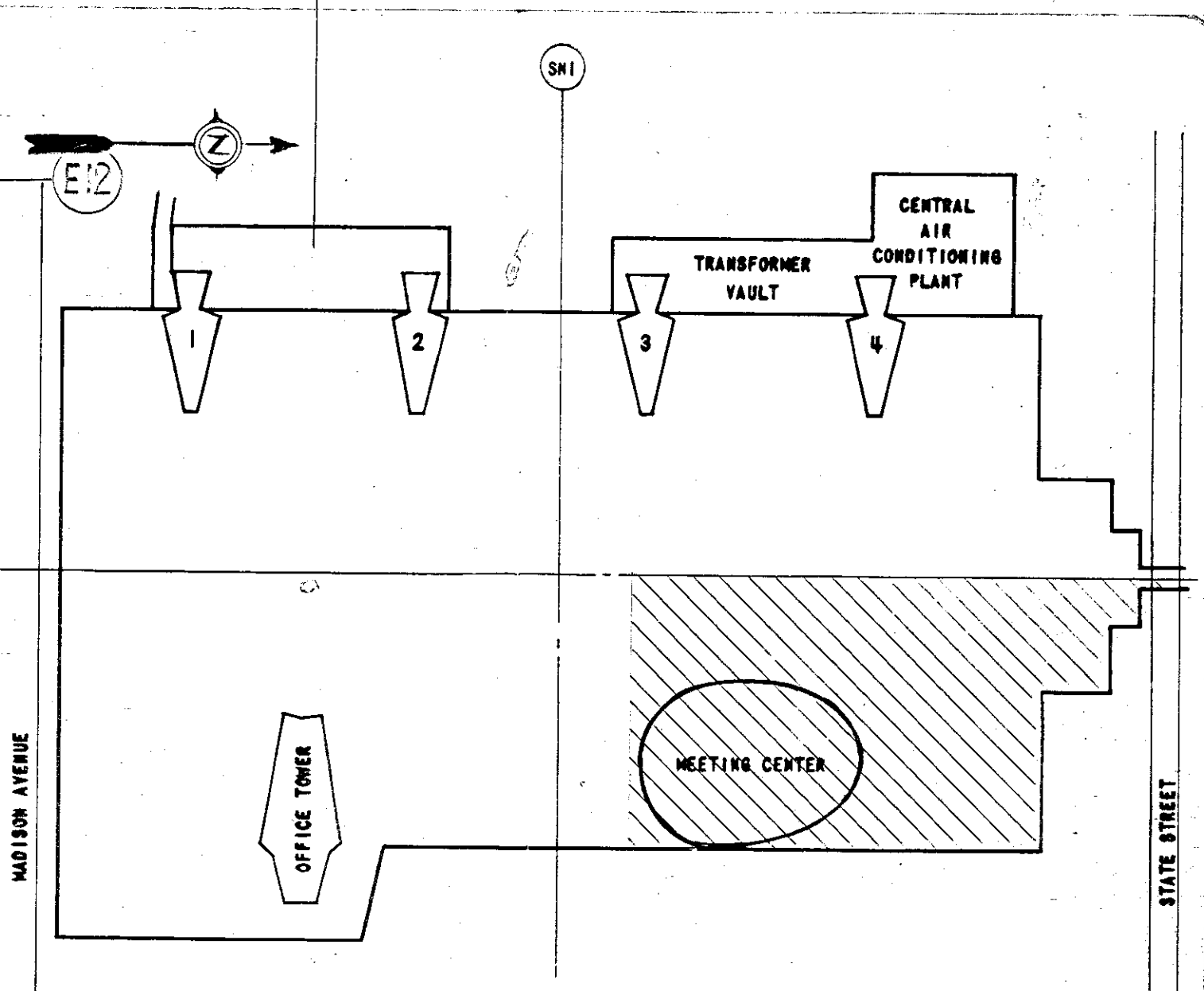


LEGEND

- + - 2" of billet plate and pile cap except where otherwise noted.
- 12 - Number of 14B89 piles.
- 210' - Total vertical gravity load (Column DL+LL, foundation DL+LL, no uplift).
- C.O.EI - Cut off elevation of piles.
- # - Split pile cap with a portion of cap piles to be cut off under wall.

NOTES:

- 1- For typical pile cap details see Dwg. No. 64/2-65 and 66.
- 2- All piles shall be 14B89 furnished and driven in accordance with Section 6F of the Specifications.
- 3- Pile design capacities are: 320' compression and 100' tension.
- 4- For wall piles C.O. Elevations see sections, unless otherwise noted.



KEY PLAN

MUESER • RUTLEDGE • WENTWORTH & JOHNSTON
CONSULTING ENGINEERS
415 MADISON AVE., NEW YORK 17, N.Y.



HARRISON AND ABRAMOVITZ
ARCHITECTS
630 FIFTH AVE. NEW YORK 20

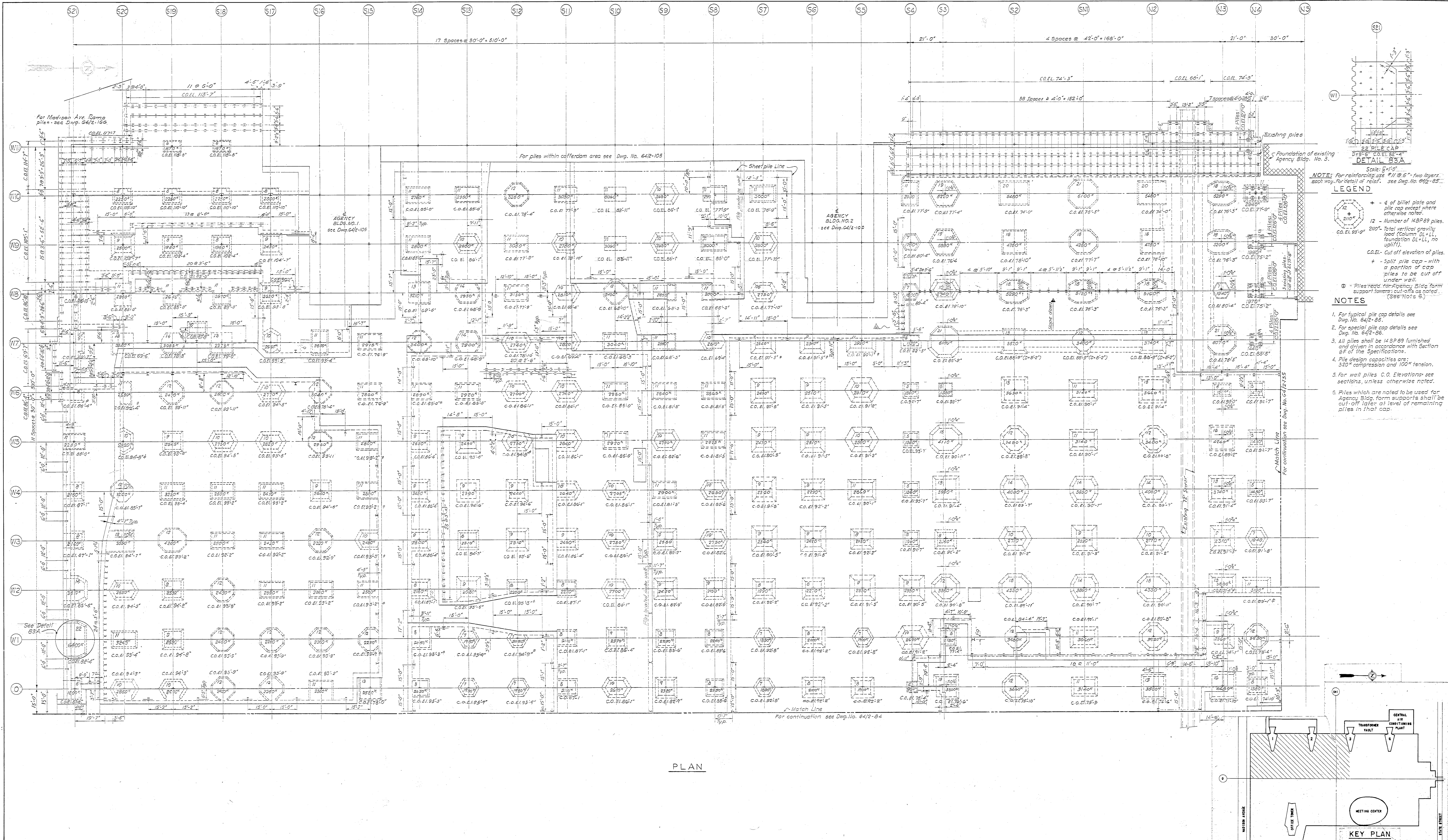
1-1	Revised pile caps & added pile caps.
1-2	Revised pile caps.
1-3	Revised C.O. on line E9 & E10-N5 to N7
1-4	Revised pile cap & added pile cap.
1-5	General Revision.
1-6	Revised loads and piles in Meeting Center Area: E5 to E12 and N5 to N13

REV	DATE	ISSUED TO	REV	DATE	ISSUED TO

ALBANY, NEW YORK
ALBANY SOUTH MALL PROJECT
MAIN PLATFORM

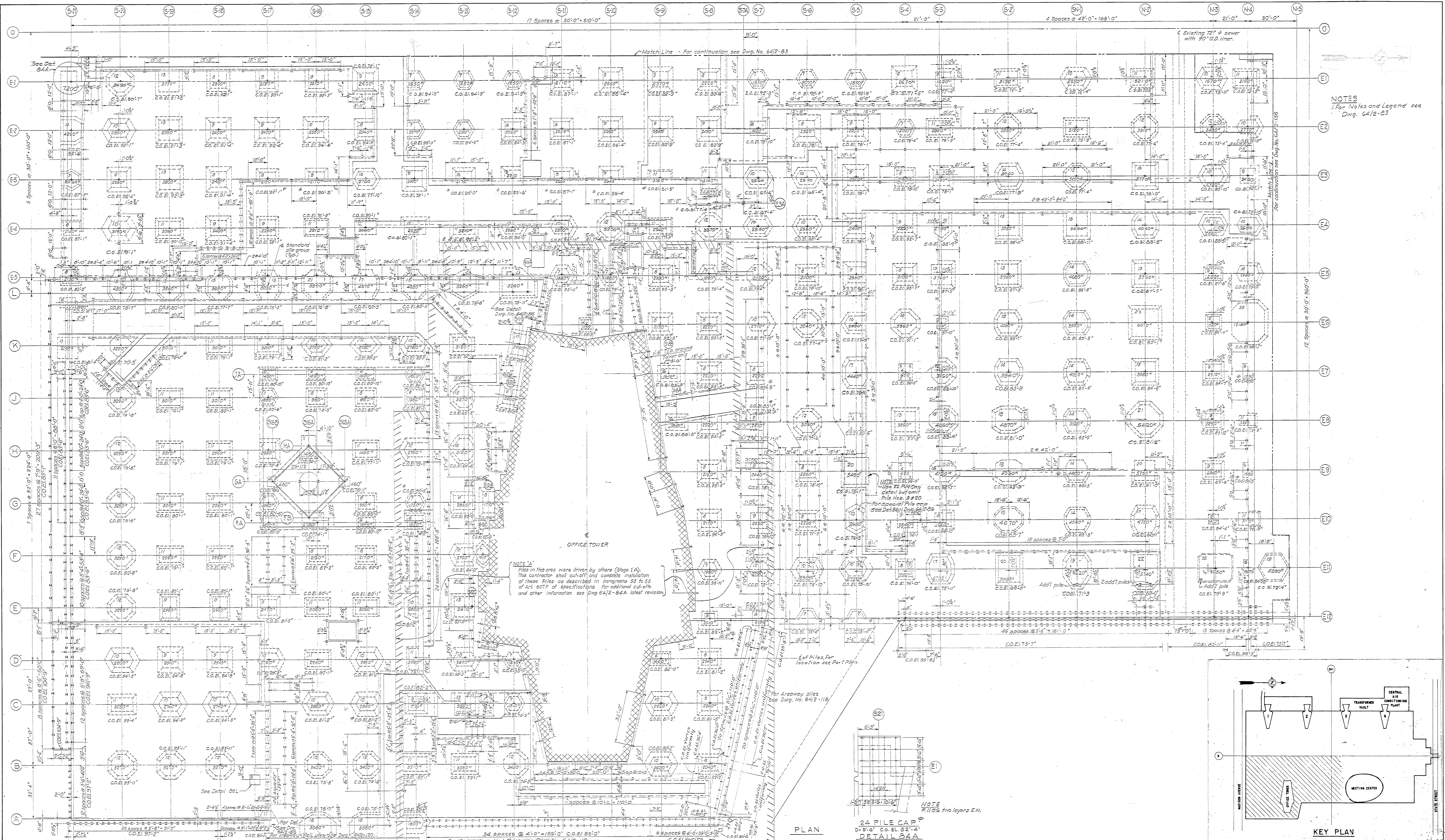
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CHECKED BY W.M.B.H.A.	FOUNDATION NO. 19533 C
DATE JUNE 16, 1966	DATE JUNE 16, 1966
APPROVED BY STATE OF NEW YORK OFFICE OF GENERAL SERVICES CIVIL ENGINEER - COMMISSIONER DIVISION OF ARCHITECTURE	APPROVED BY STATE OF NEW YORK OFFICE OF GENERAL SERVICES CIVIL ENGINEER - SUPERINTENDENT C. S. KANEVSKY, STATE ARCHITECT

64/2-136

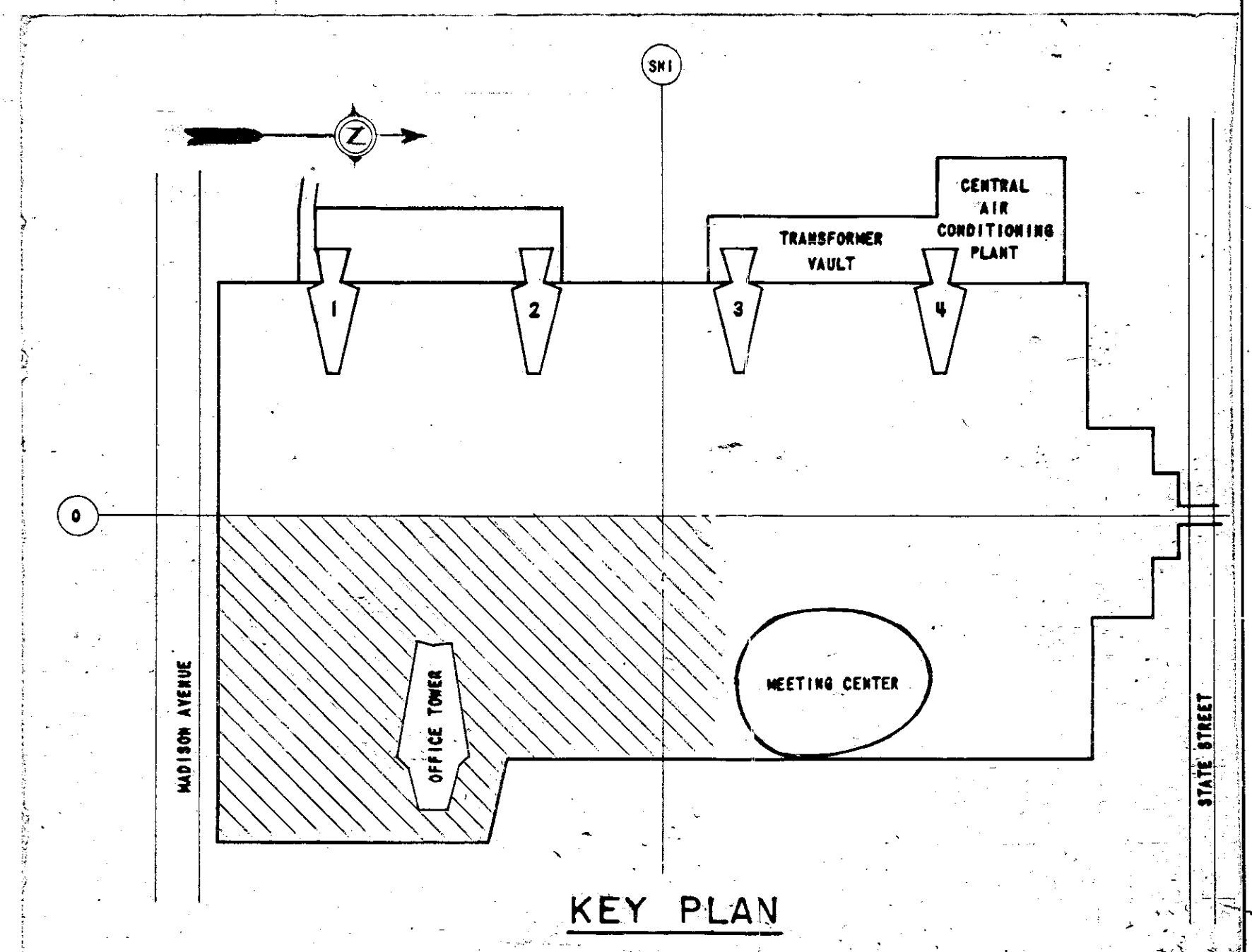


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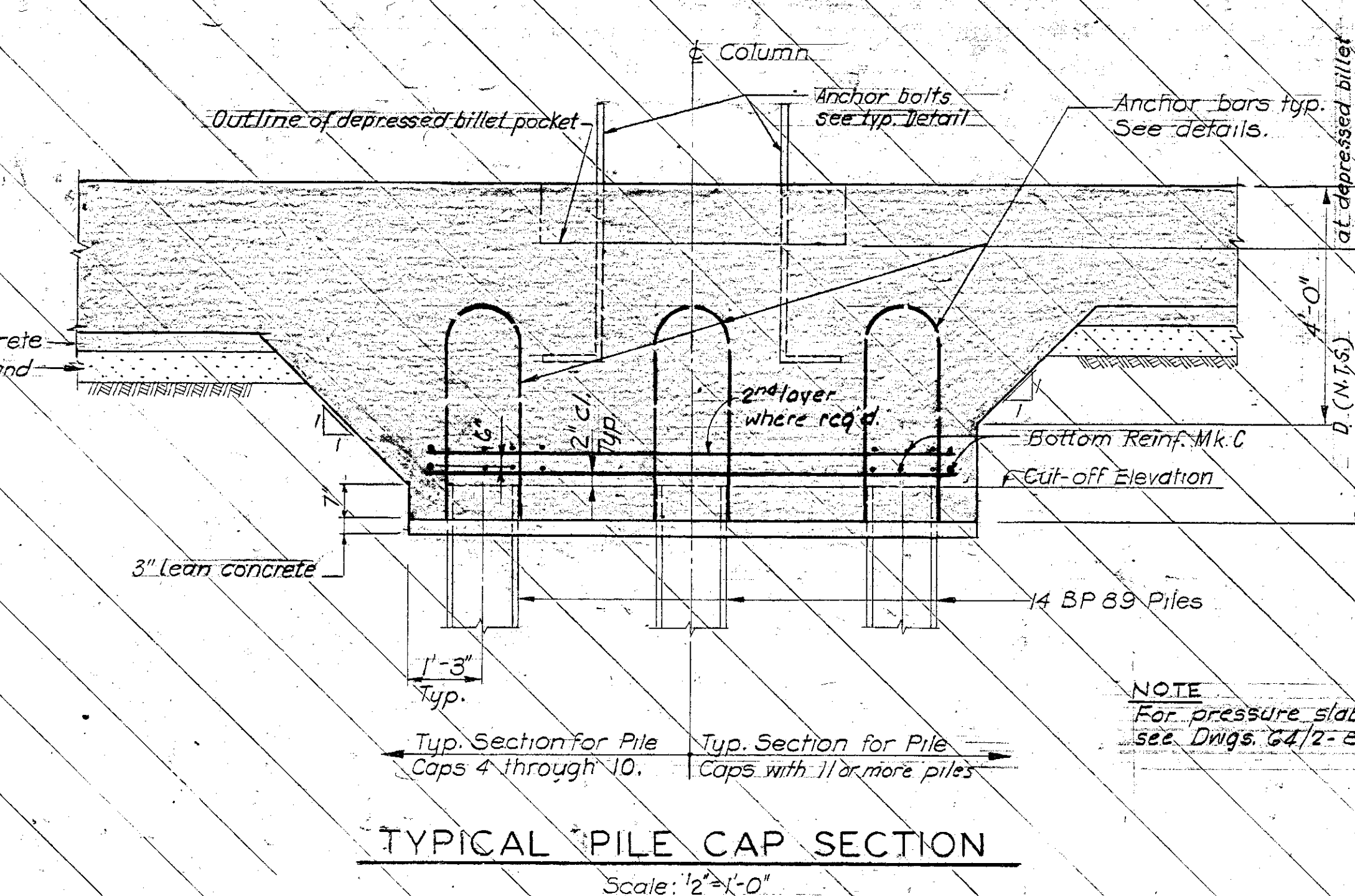
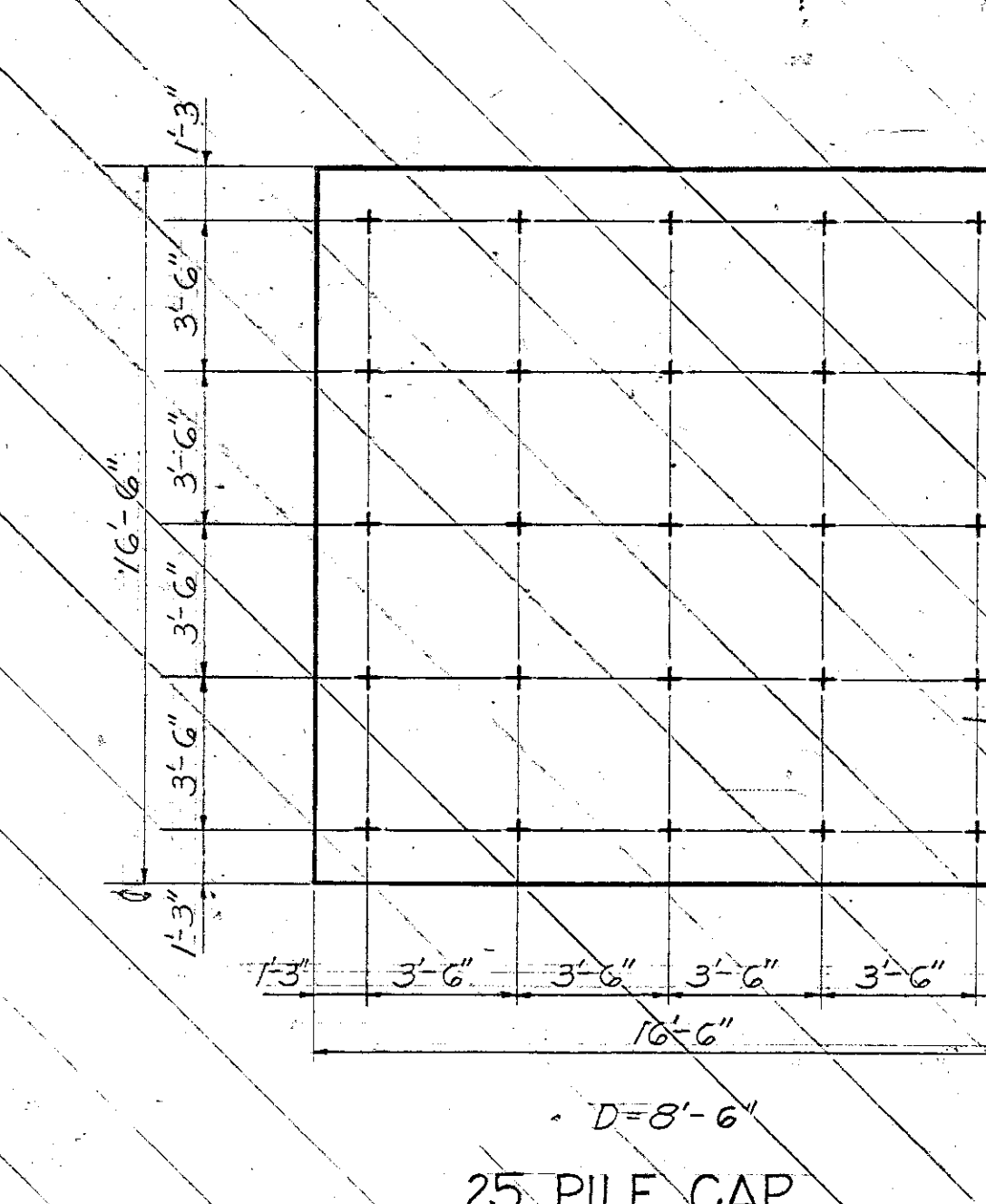
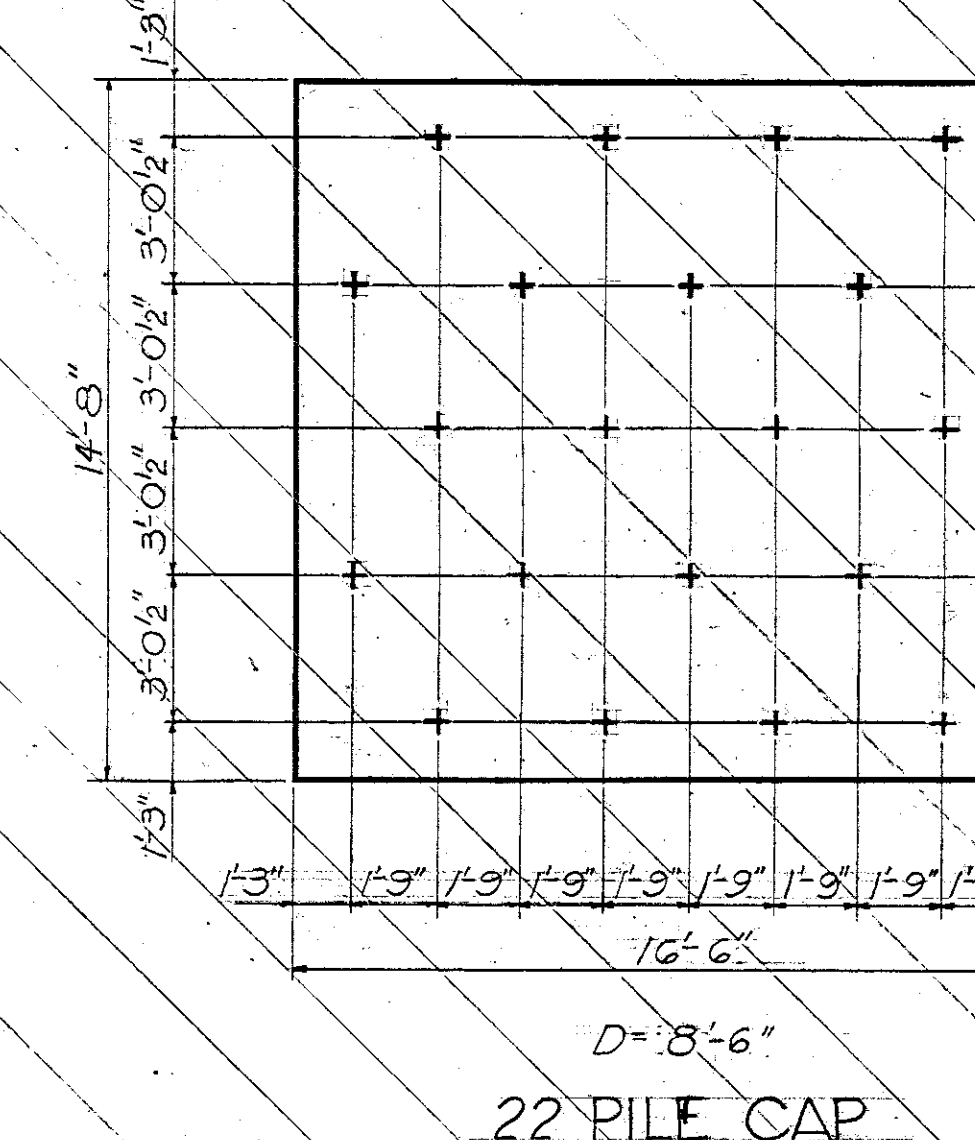
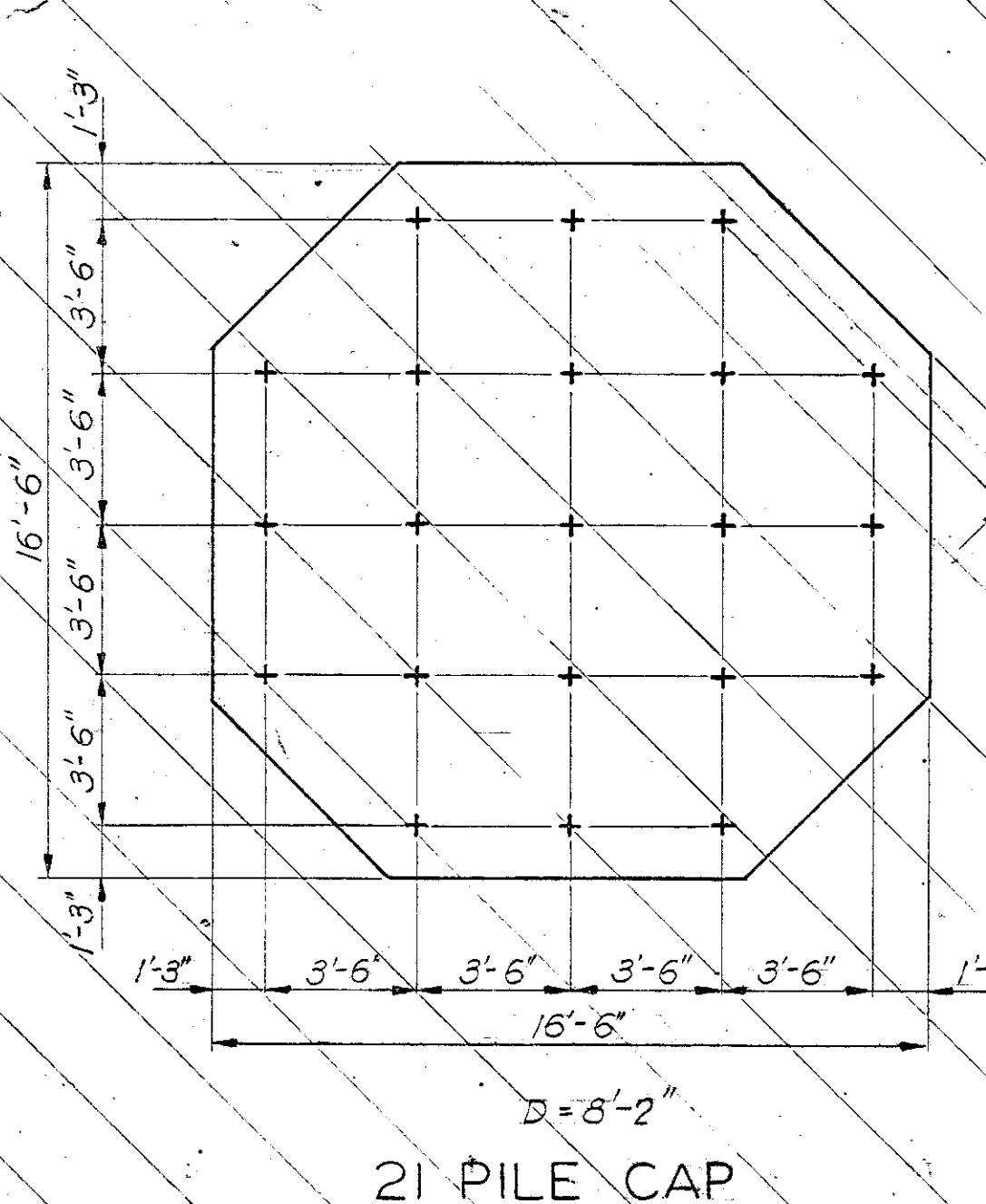
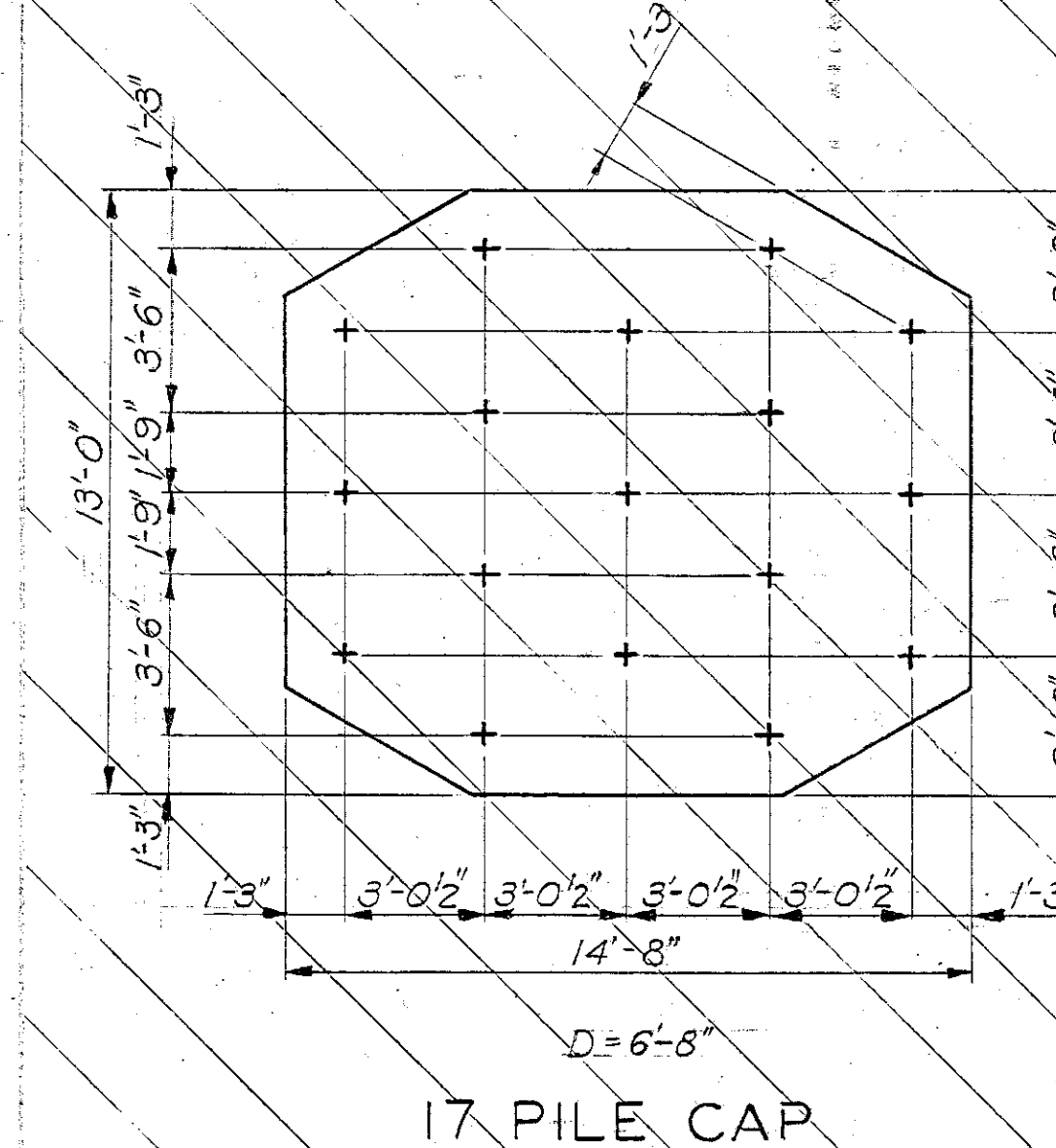
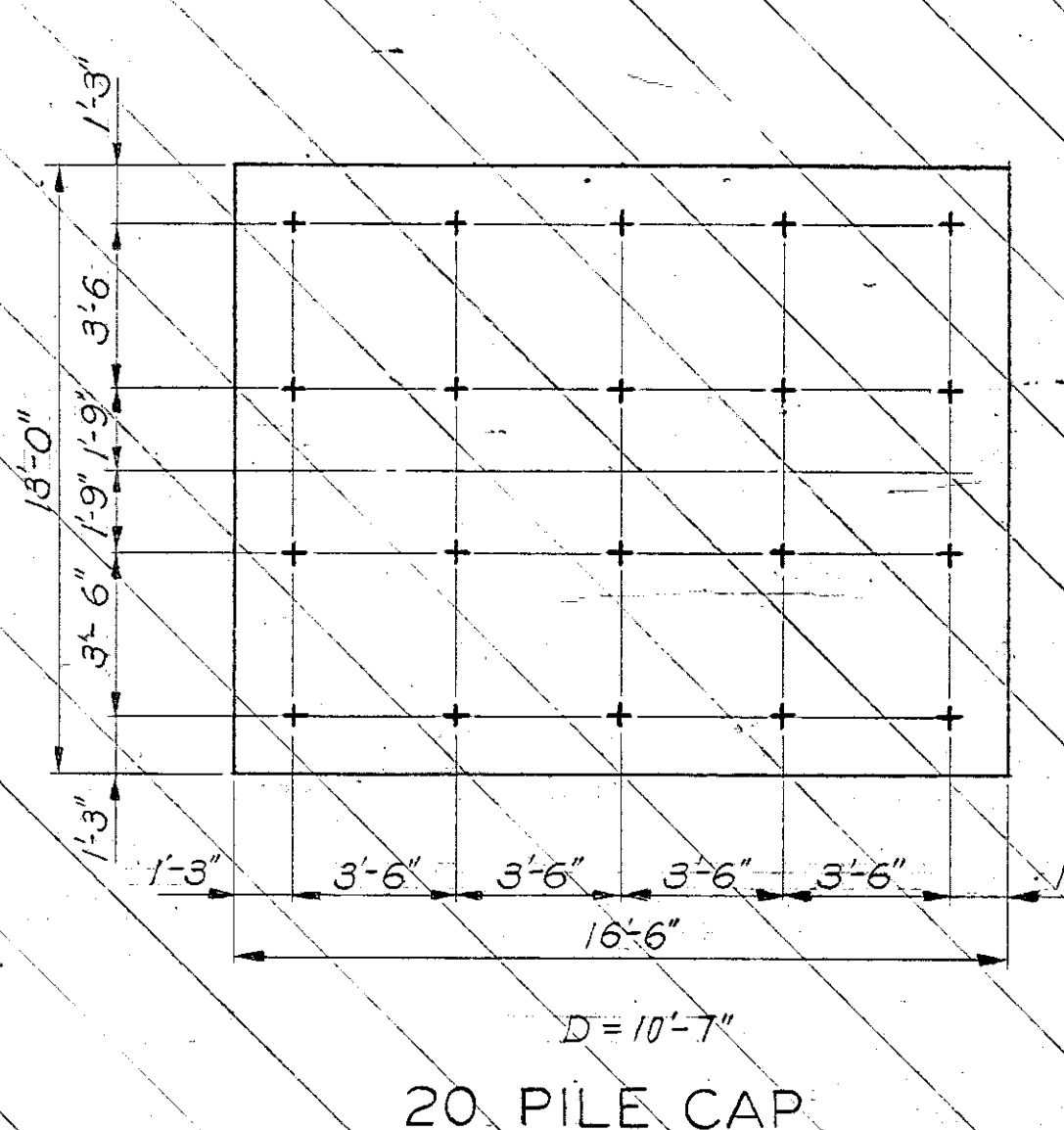
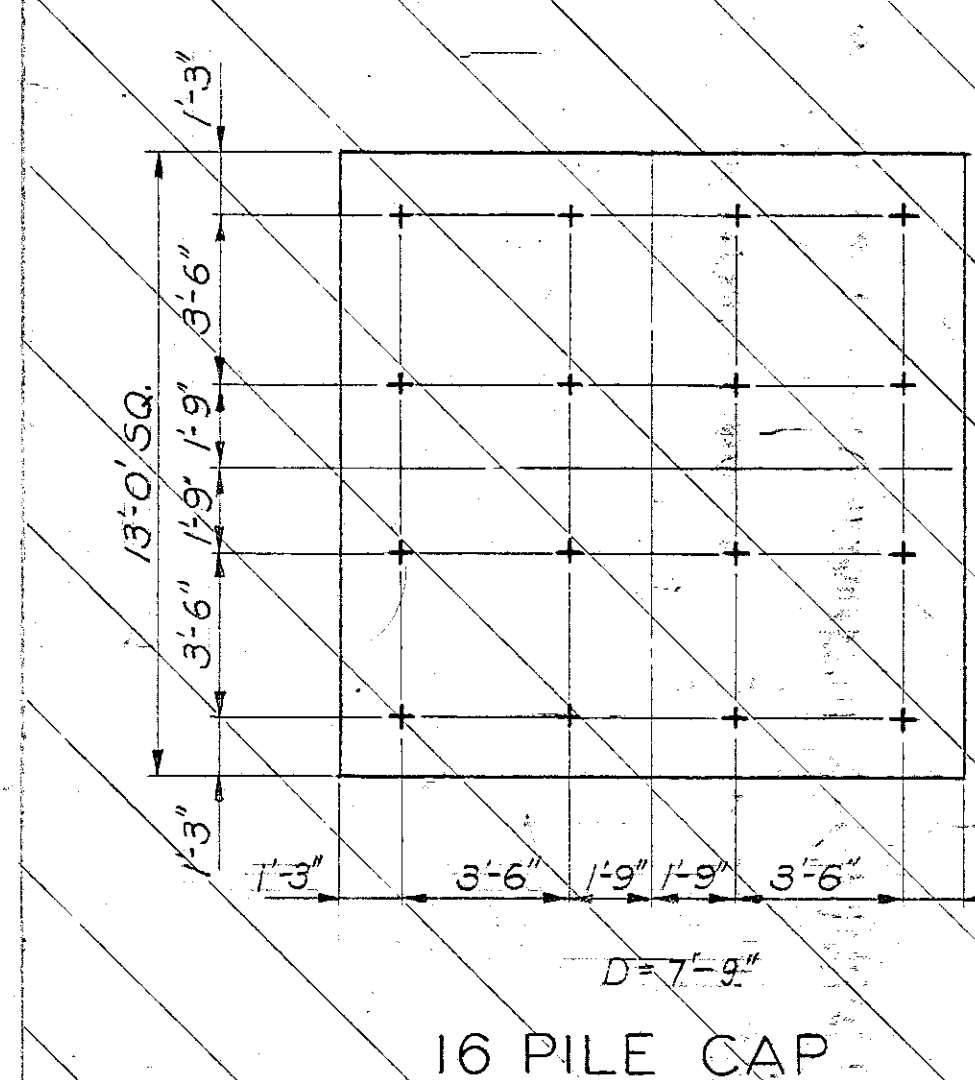
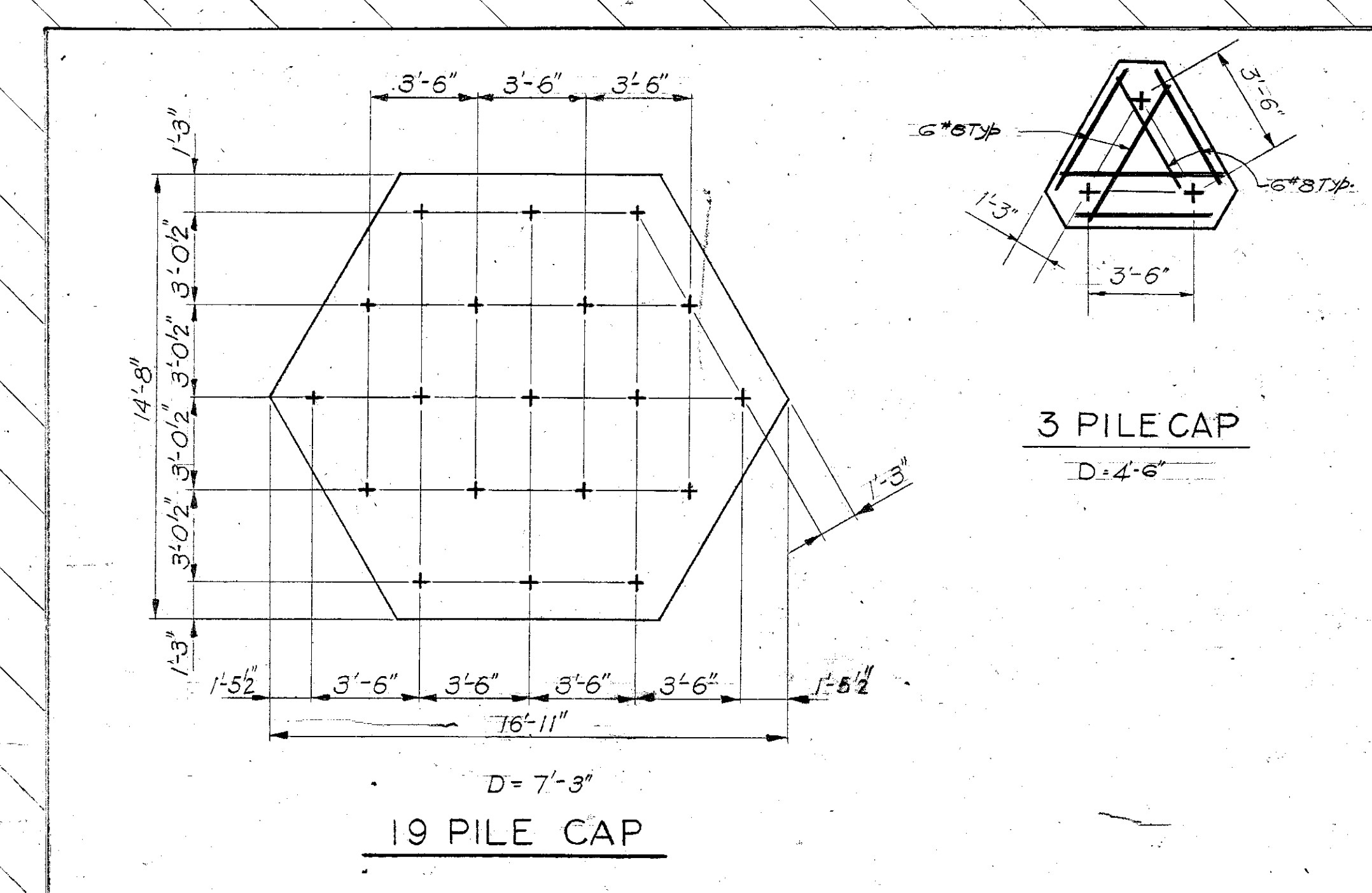
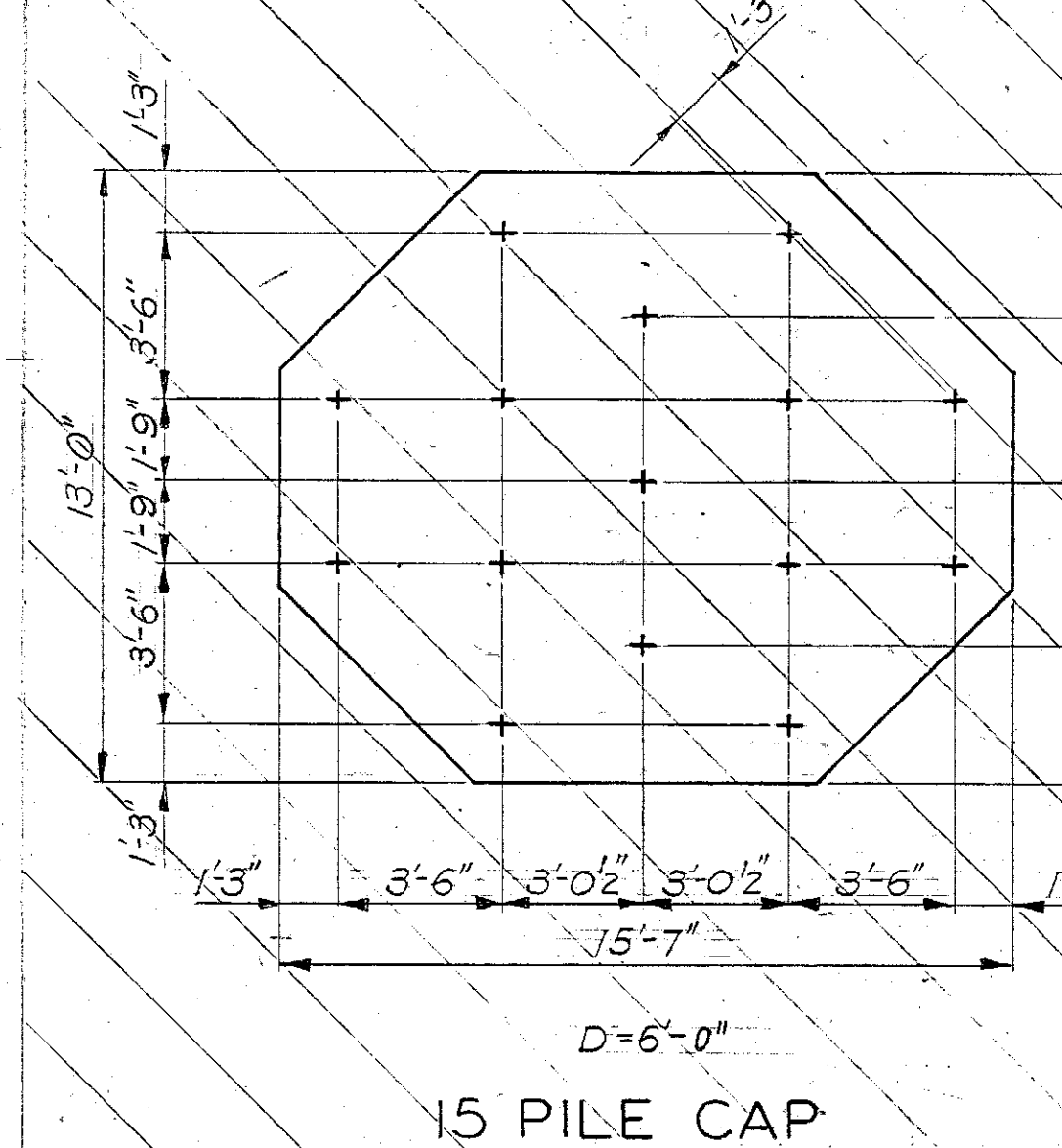
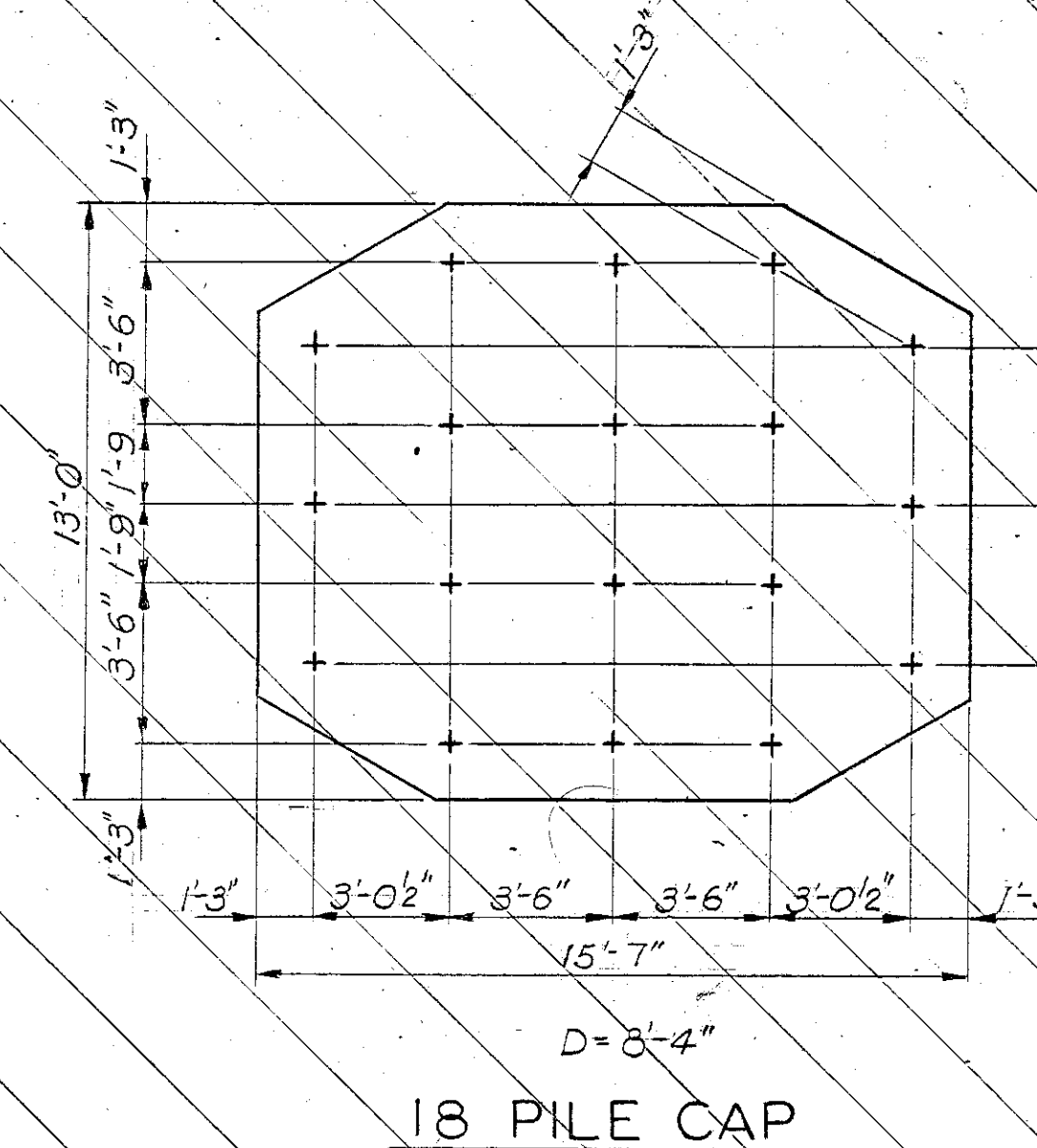
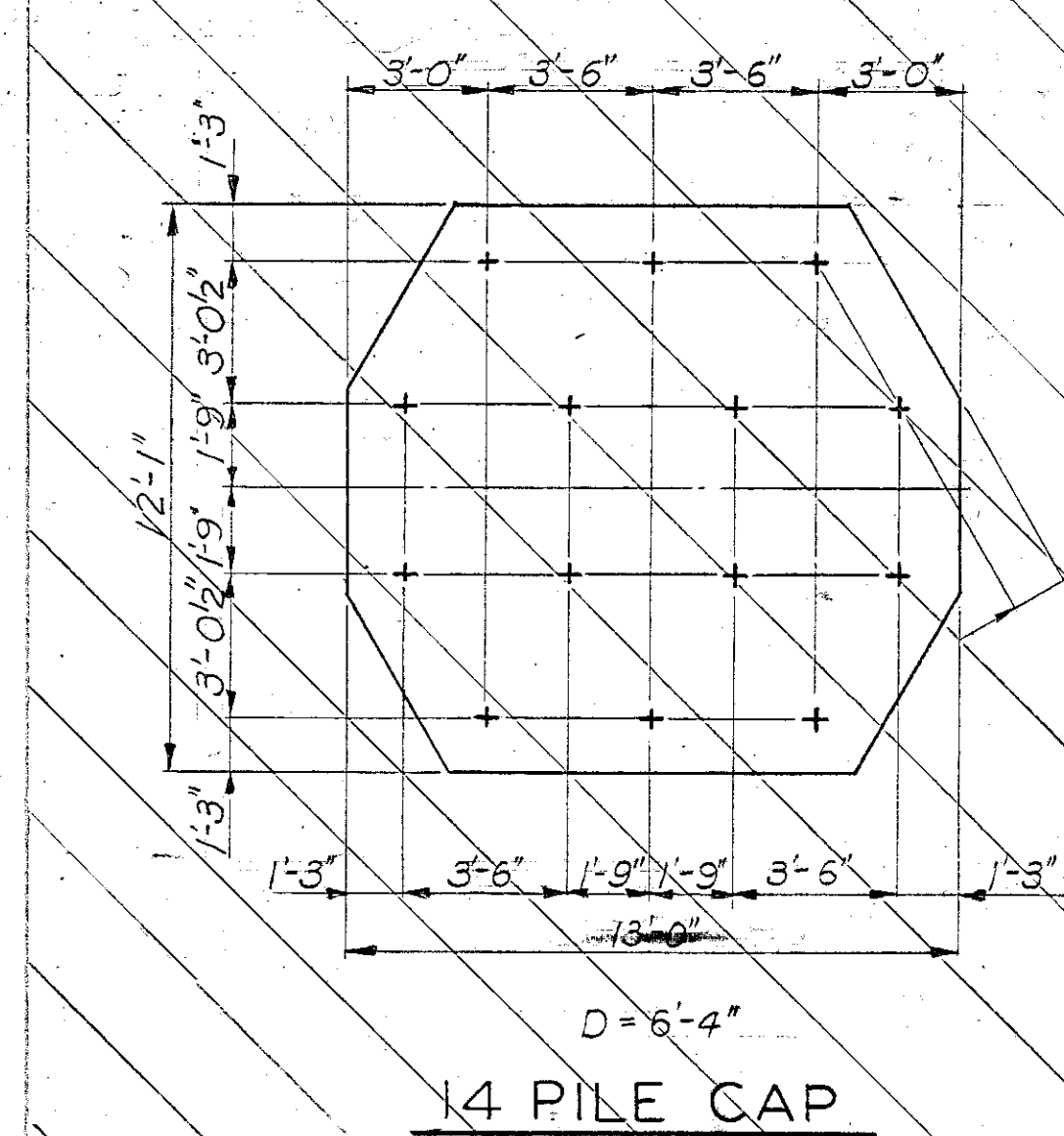
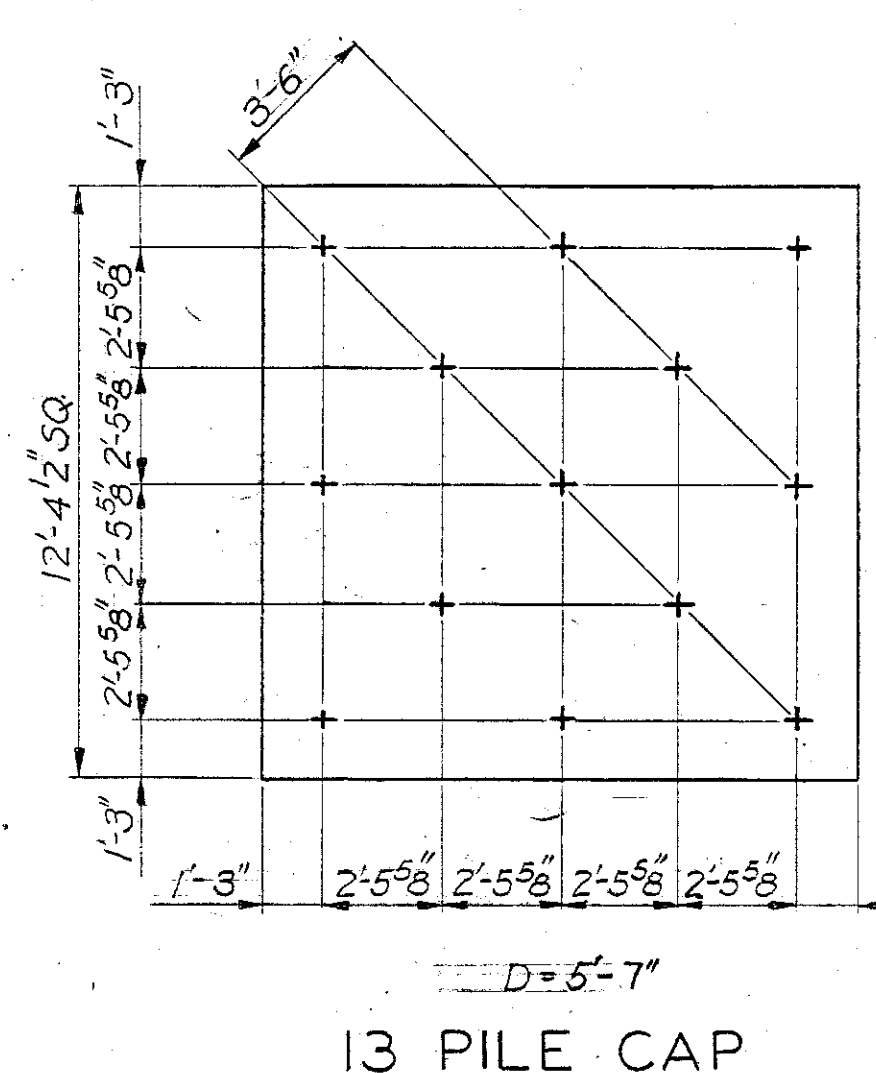
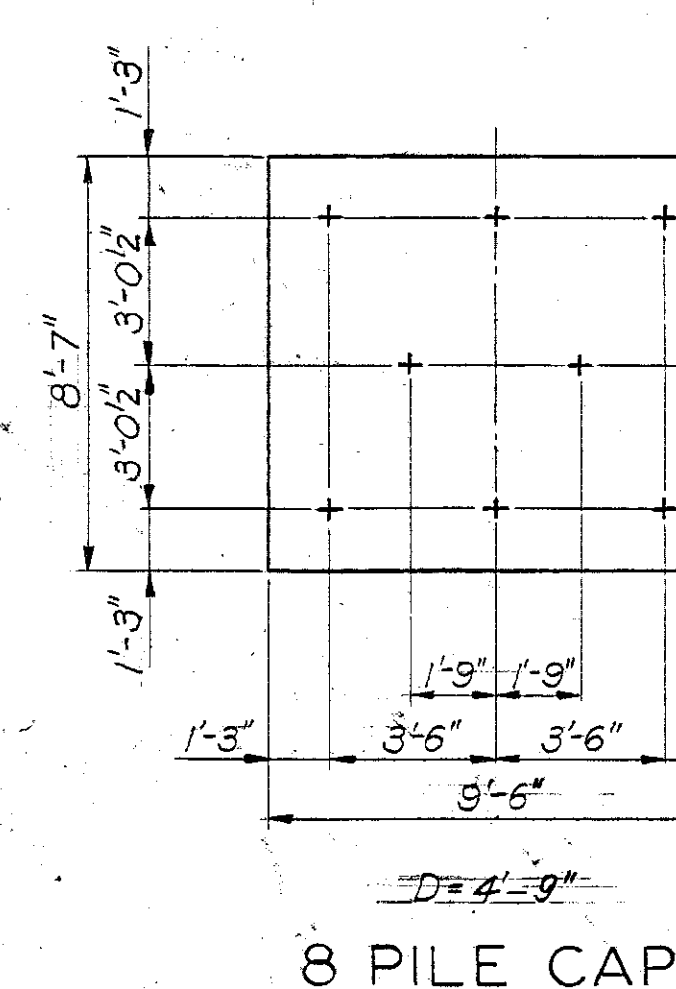
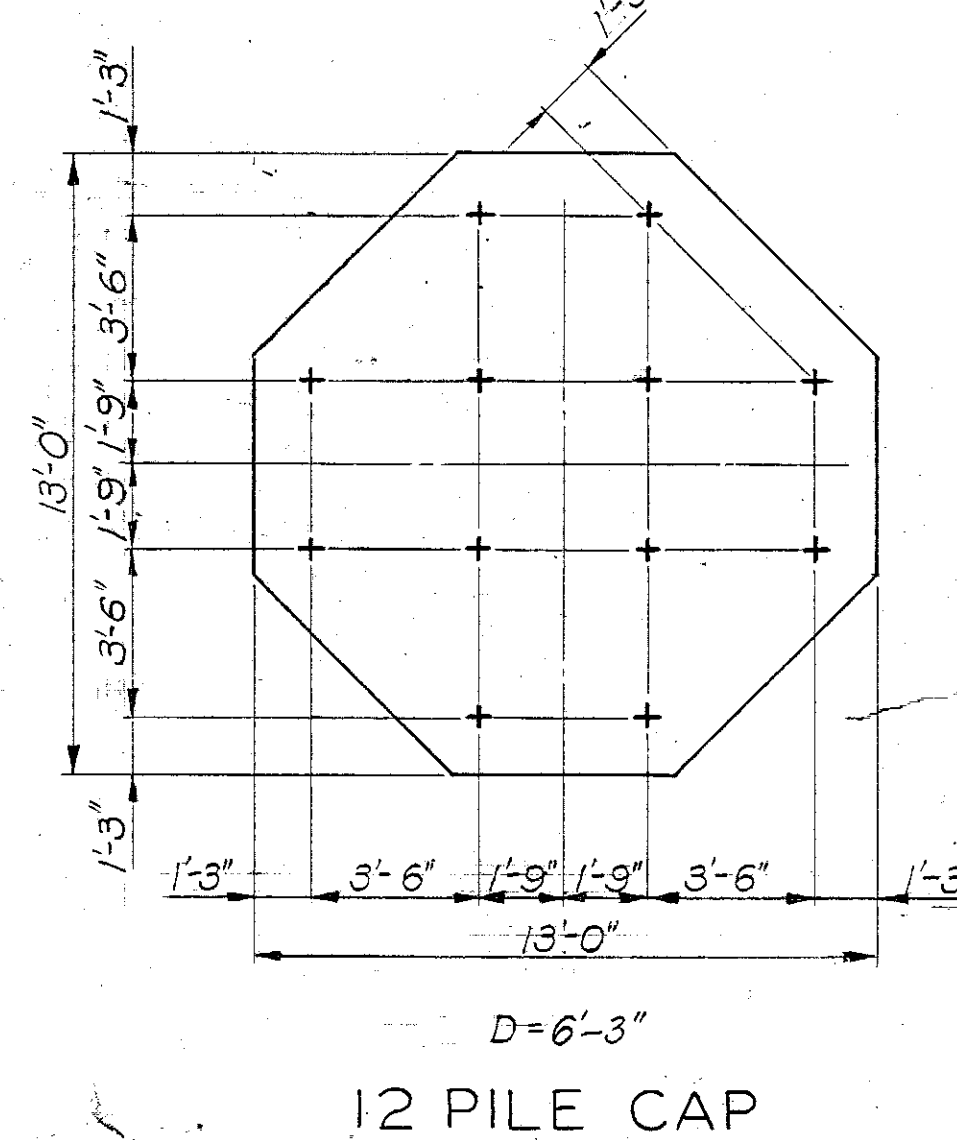
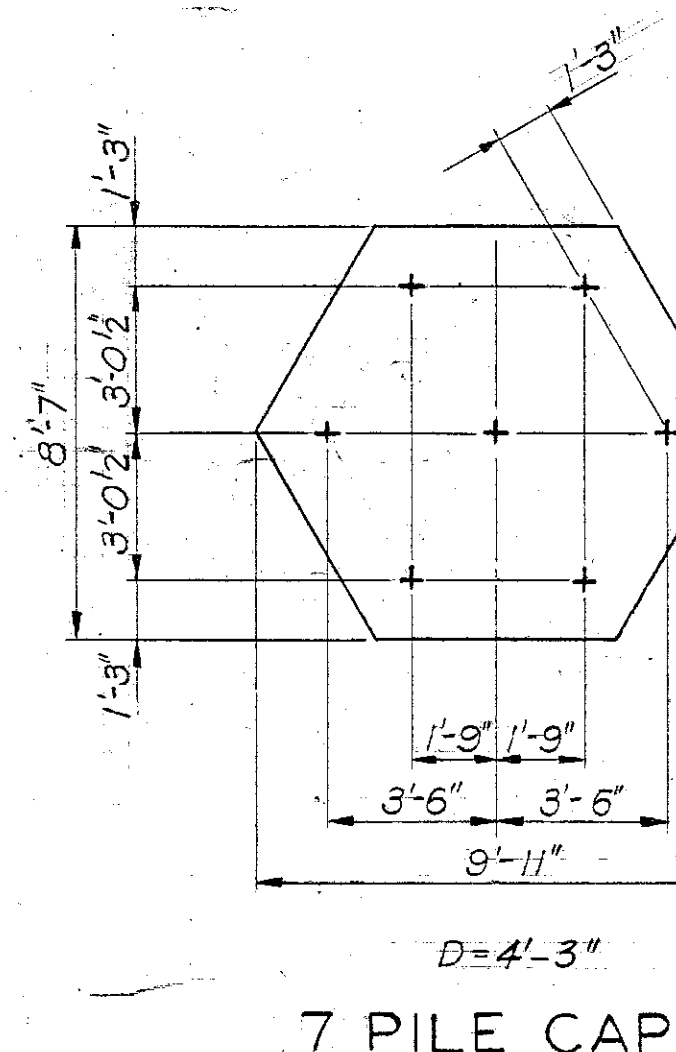
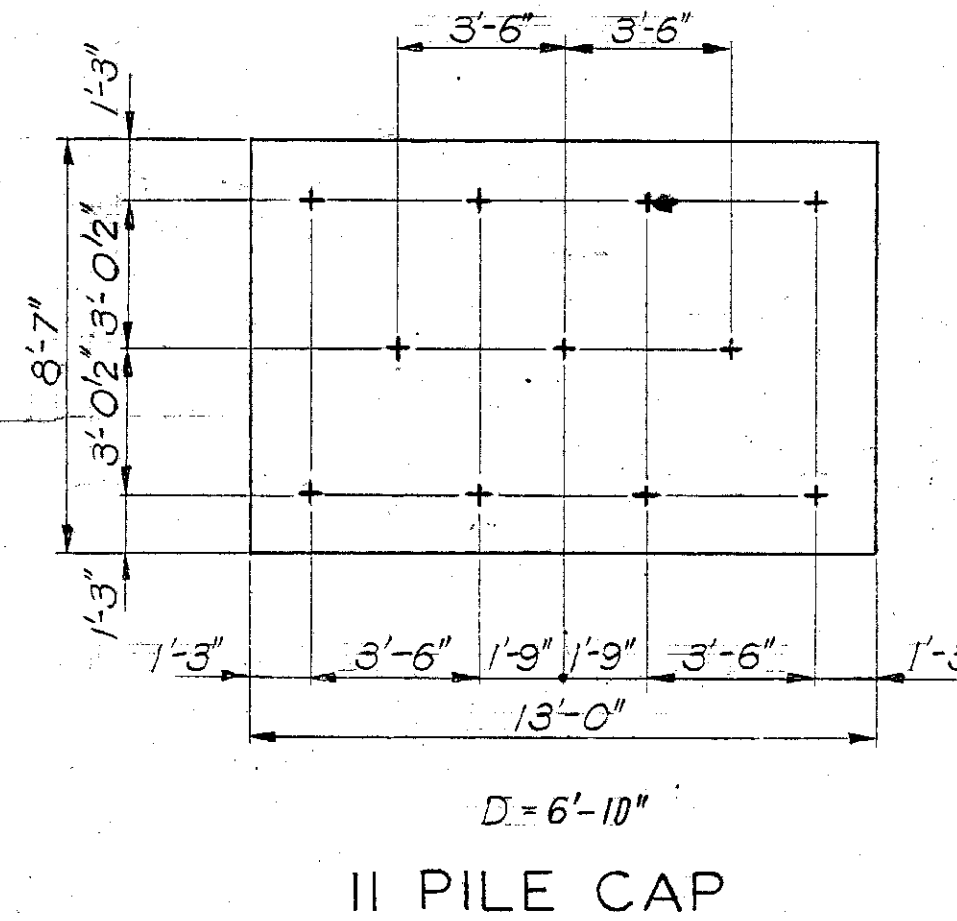
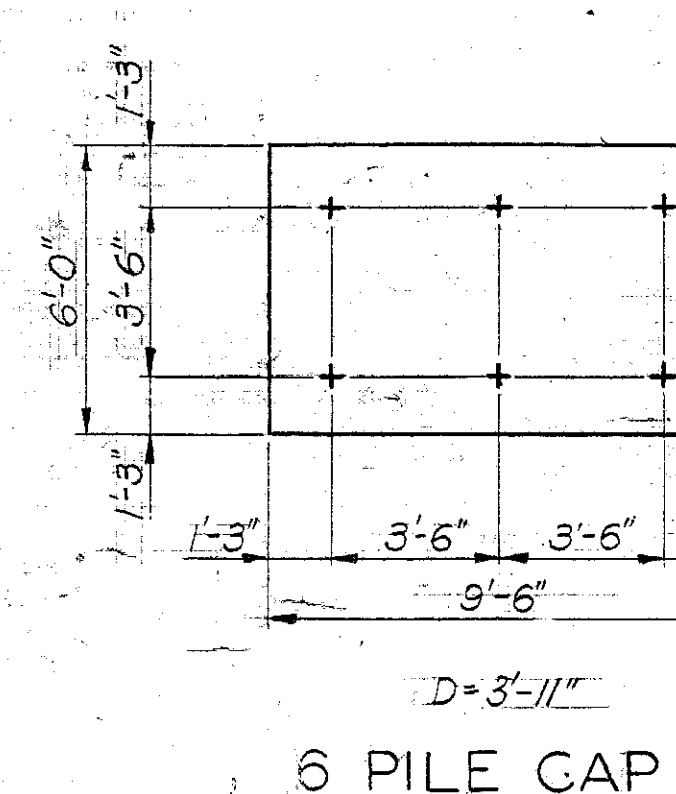
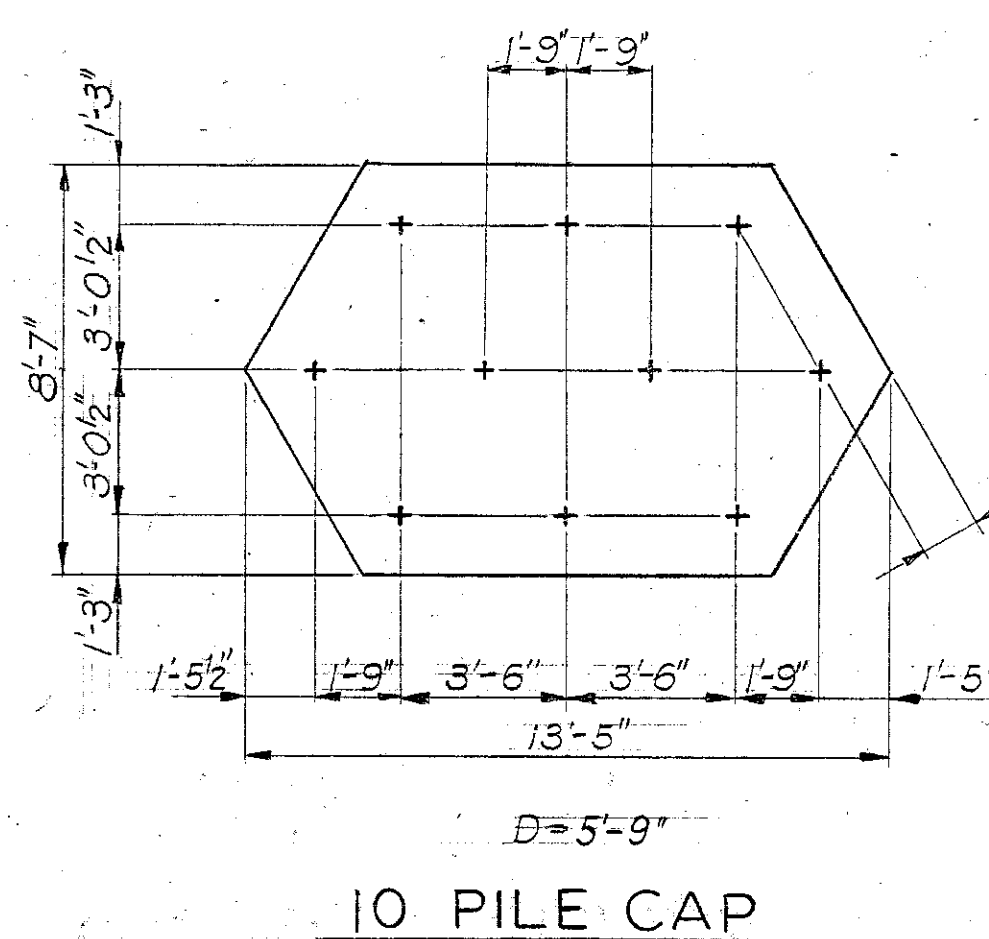
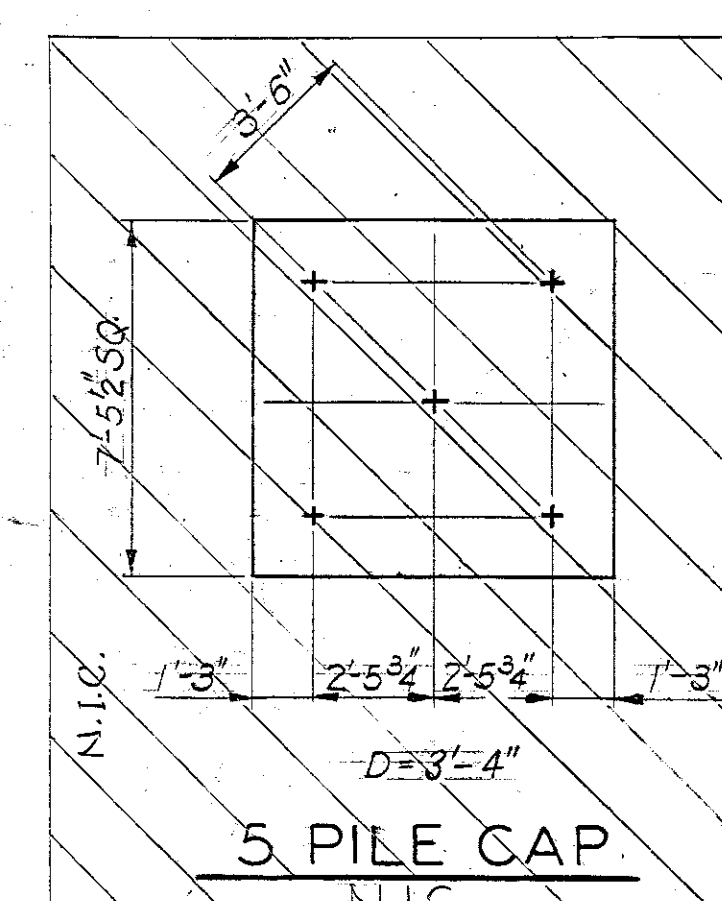
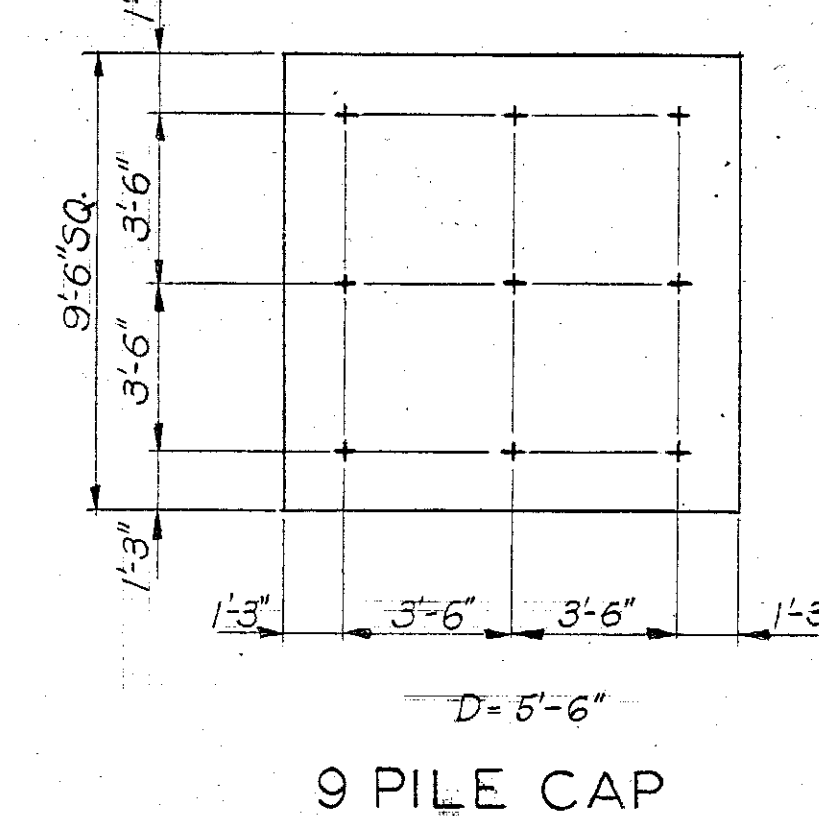
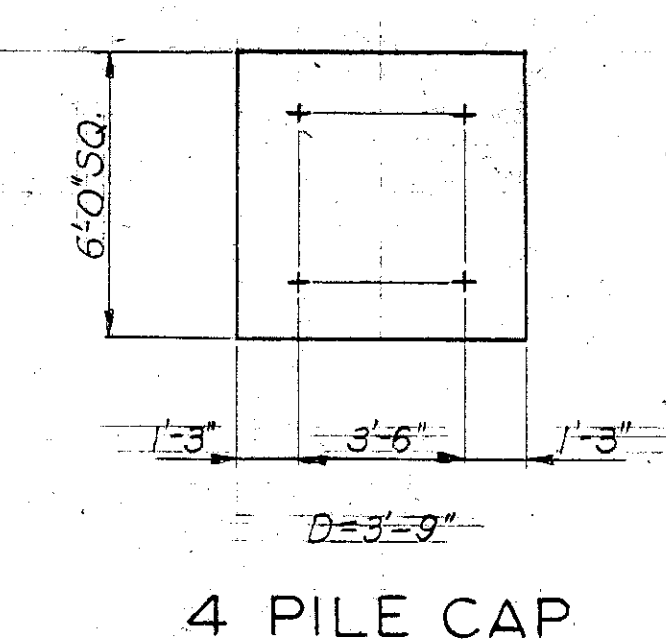
MUESER • RUTLEDGE • WENTWORTH & JOHNSTON CONSULTING ENGINEERS 415 MADISON AVE., NEW YORK 17, N. Y.		HARRISON AND ABRAMOVITZ ARCHITECTS 630 FIFTH AVE., NEW YORK 20.		ALBANY, NEW YORK ALBANY SOUTH MALL PROJECT MAIN PLATFORM		FOUNDATION PILES SW QUADRANT PLAN STATE OF NEW YORK OFFICE OF GENERAL SERVICES DIVISION OF ARCHITECTURE		KEY PLAN TRANSFORMER PLANT MEETING CENTER OFFICE BUILDING STATE STREET MADISON AVENUE	
M.R.W.S.J. FILE NO. 3010		11/27/64 Revised Piles along line 54 12/1/64 Revised 518 to 521 12/1/64 General Revision 12/1/64 Revised location of Spills betn. 55 & 57 12/1/64 Added pile cap locations 12/1/64 Revised Piles near Agency Bldg. #3 12/1/64 General Revision		ISSUED TO REV. DATE		ISSUED TO REV. DATE		ISSUED TO REV. DATE	



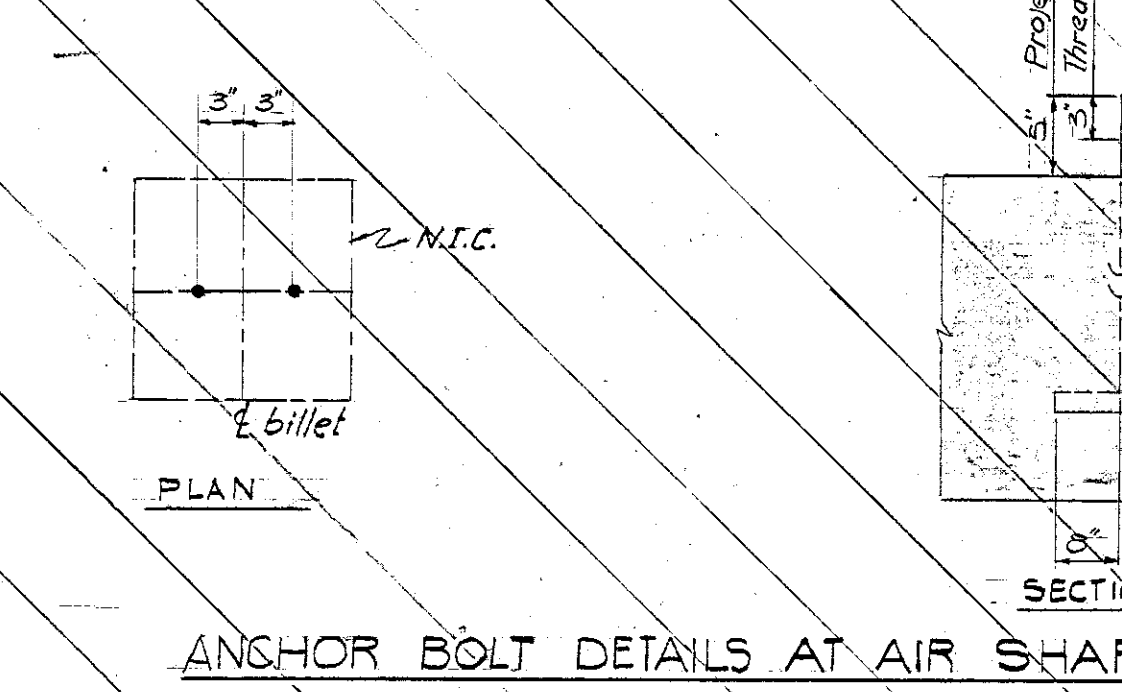
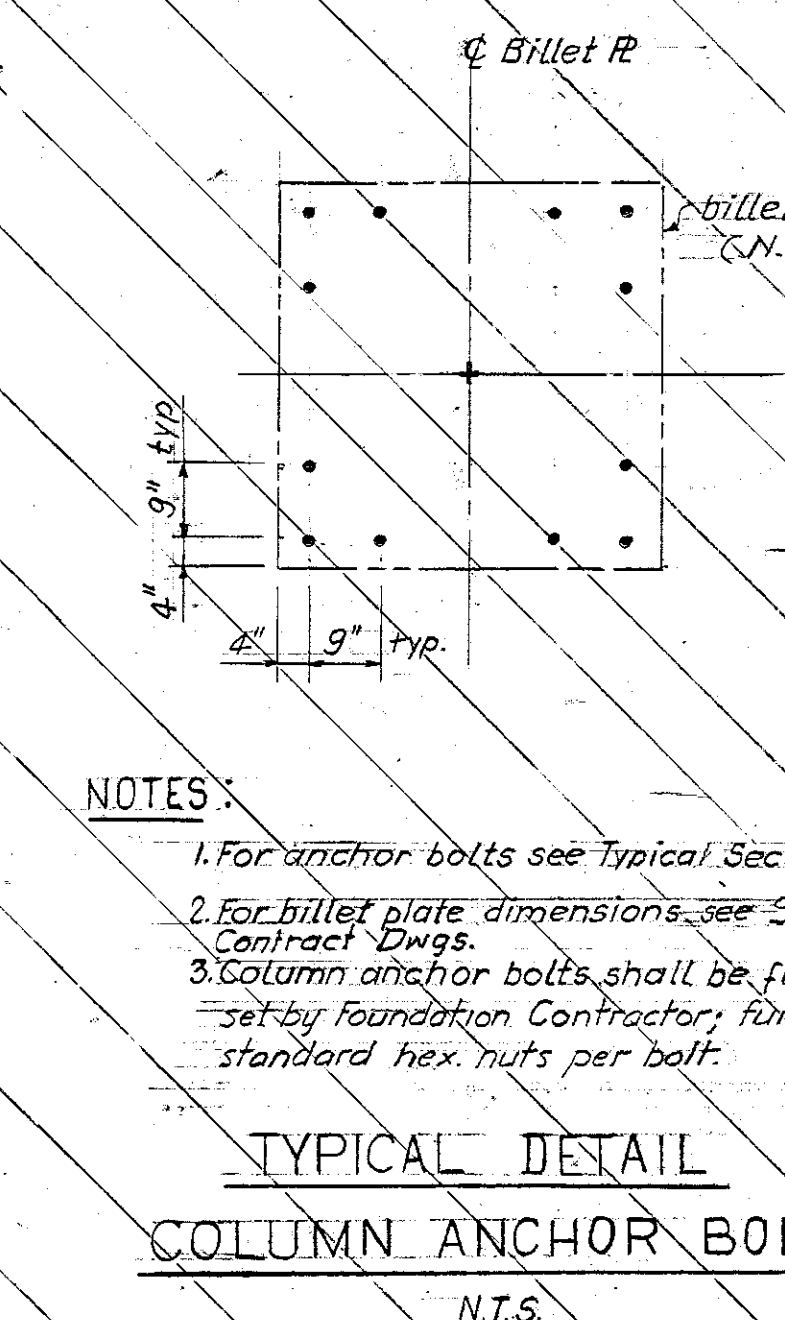
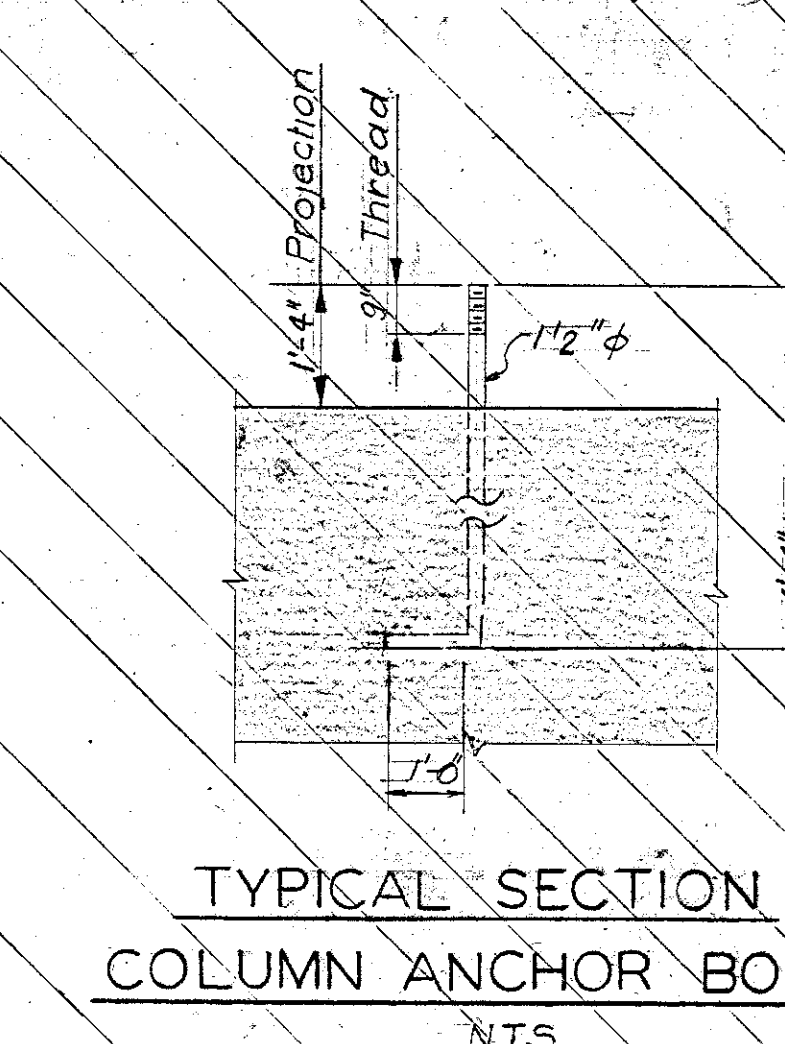
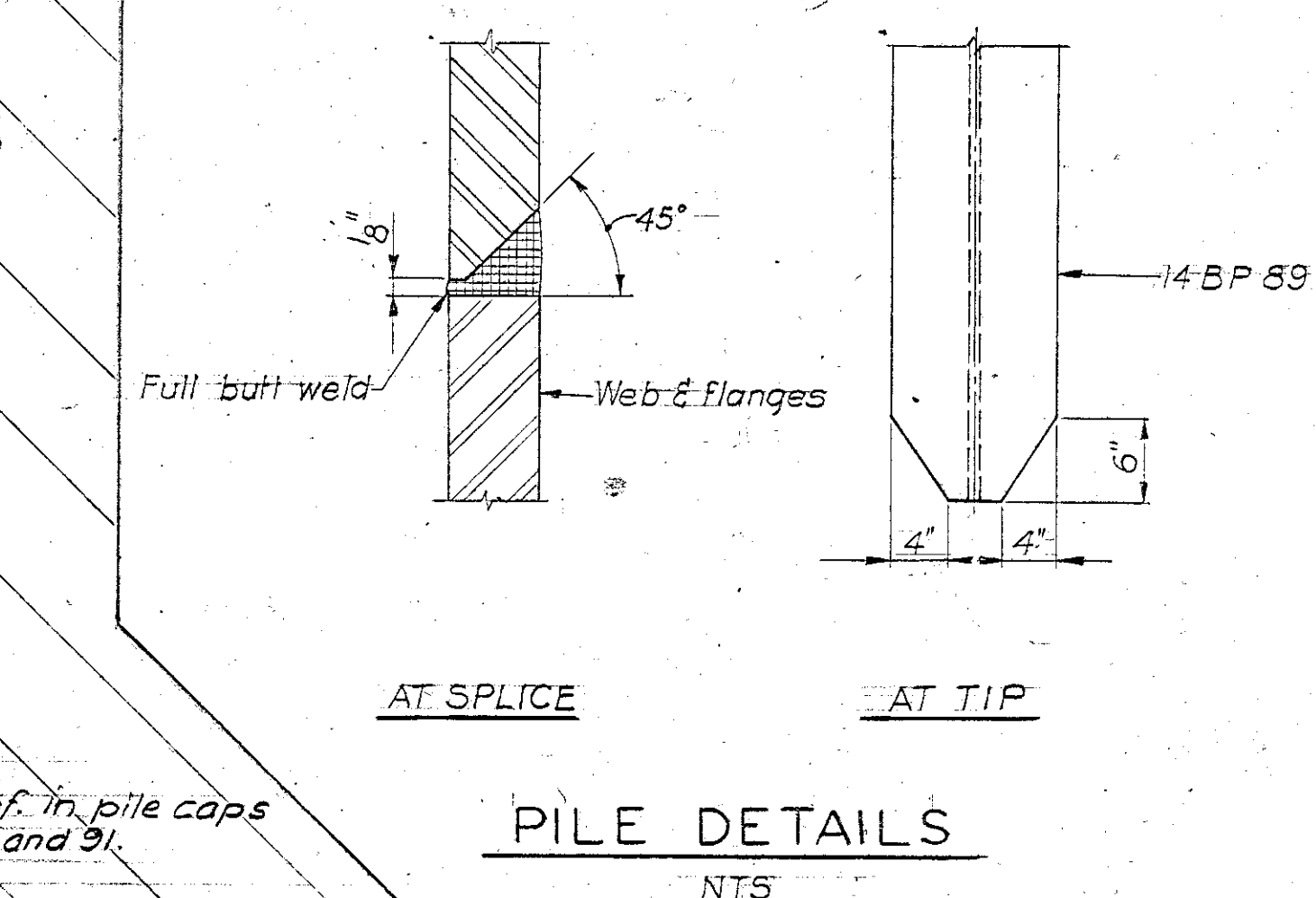
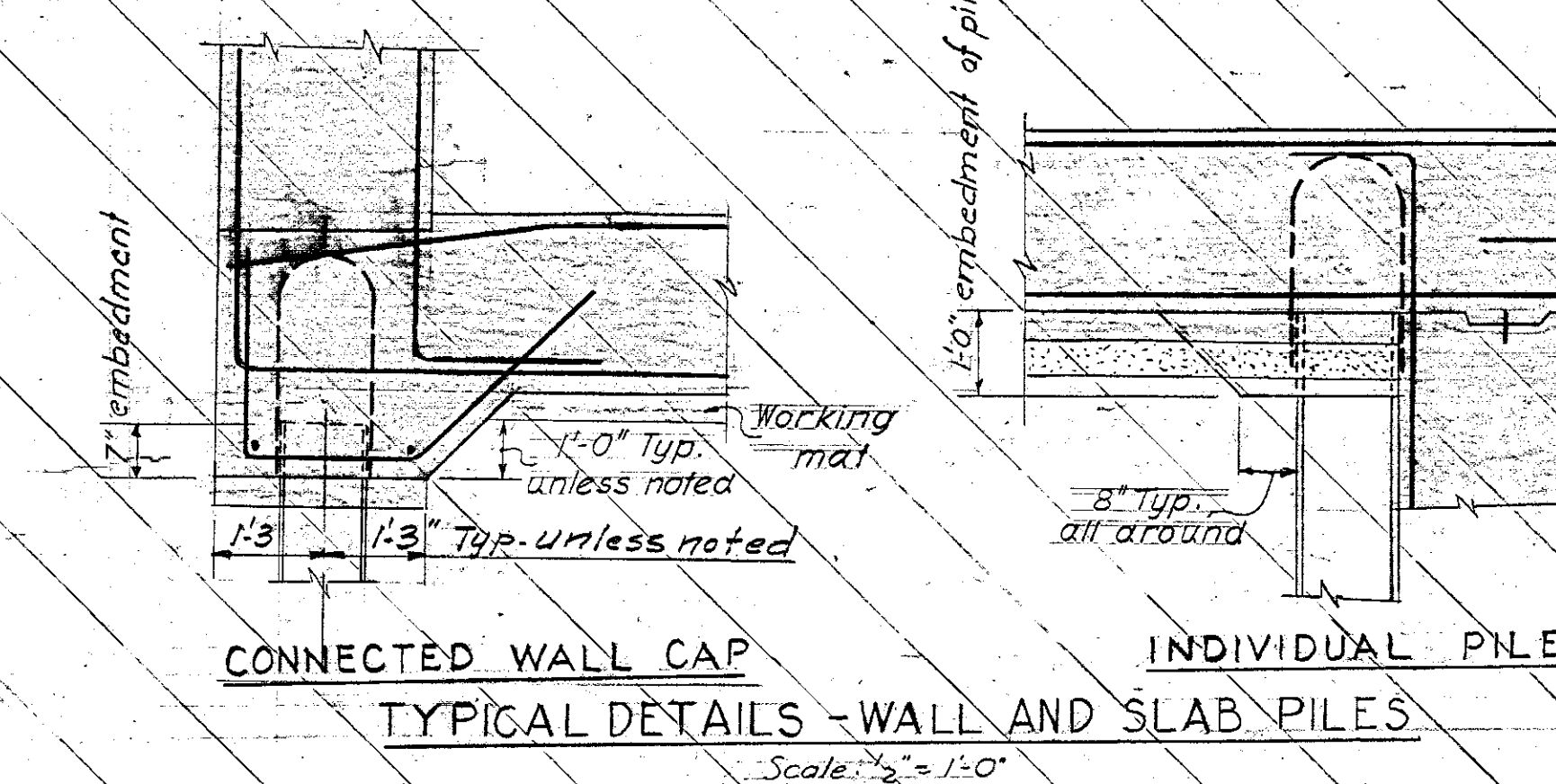
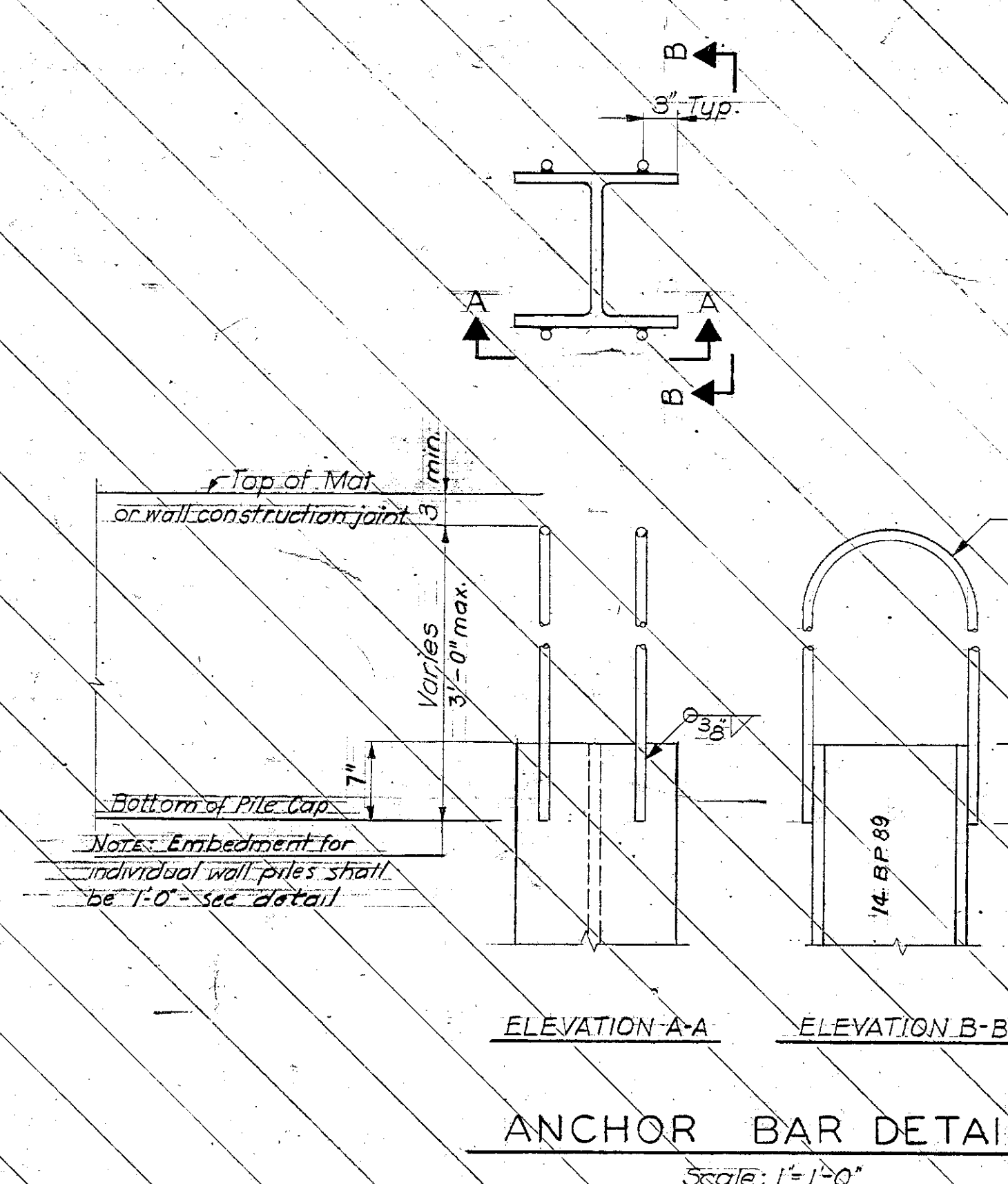
NOTES
1. For Notes and Legend see
Dwg. 64/2-83



MUESER • RUTLEDGE • WENTWORTH & JOHNSTON CONSULTING ENGINEERS 415 MADISON AVE., NEW YORK 17, N. Y.		HARRISON AND ABRAMOVITZ ARCHITECTS 630 FIFTH AVE. NEW YORK 20		ALBANY, NEW YORK ALBANY SOUTH MALL PROJECT MAIN PLATFORM		FOUNDATIONS FOUNDATION PILES SE QUADRANT PLAN STATE OF NEW YORK OFFICE OF GENERAL SERVICES CIVIL ENGINEER - COMMISSIONER DEPARTMENT OF PUBLIC WORKS DIVISION OF ARCHITECTURE		PROJECT NO. 19533 EXPIRATION DATE 1953SC DATE 10, 1966 DRAWING NO. 64/2-84			
REVISIONS		REVISIONS		REVISIONS		REVISIONS		REVISIONS			
NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
1		Added individual piles	1		Added individual piles	1		Added individual piles	1		Added individual piles
2		Added pile cap locations	2		Added pile cap locations	2		Added pile cap locations	2		Added pile cap locations
3		General Revision	3		General Revision	3		General Revision	3		General Revision
4		Added Pile Cap Locations	4		Added Pile Cap Locations	4		Added Pile Cap Locations	4		Added Pile Cap Locations
5		General Revision	5		General Revision	5		General Revision	5		General Revision



PIPE CAP REINFORCING SCHEDULE			
No. of Pipes	Bottom	Reinf. Mk	Cap
	Long	Short	
3	21" * 9	21" * 9	21" * 9
4	21" * 9	21" * 9	21" * 9
5	21" * 9	21" * 9	21" * 9
6	21" * 9	21" * 9	21" * 9
7	21" * 9	21" * 9	21" * 9
8	21" * 9	21" * 9	21" * 9
9	21" * 9	21" * 9	21" * 9
10	21" * 9	21" * 9	21" * 9
11	21" * 9	21" * 9	21" * 9
12	21" * 9	21" * 9	21" * 9
13	21" * 9	21" * 9	21" * 9
14	21" * 9	21" * 9	21" * 9
15	21" * 9	21" * 9	21" * 9
16	21" * 9	21" * 9	21" * 9
17	21" * 9	21" * 9	21" * 9
18	21" * 9	21" * 9	21" * 9
19	21" * 9	21" * 9	21" * 9
20	21" * 9	21" * 9	21" * 9
21	21" * 9	21" * 9	21" * 9
22	21" * 9	21" * 9	21" * 9
23	21" * 9	21" * 9	21" * 9
24	21" * 9	21" * 9	21" * 9
25	21" * 9	21" * 9	21" * 9

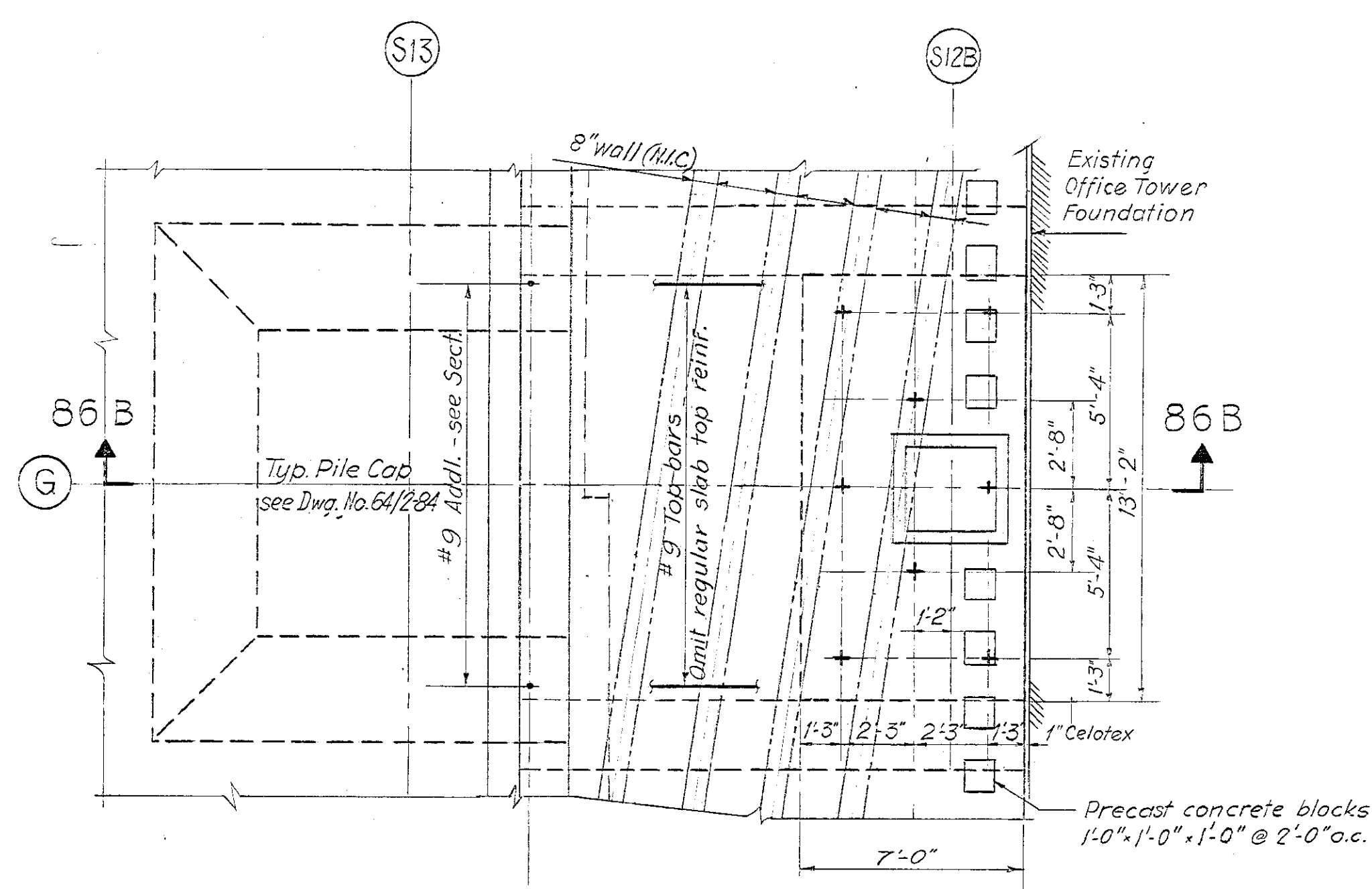


FOUNDATION STAGE 1A

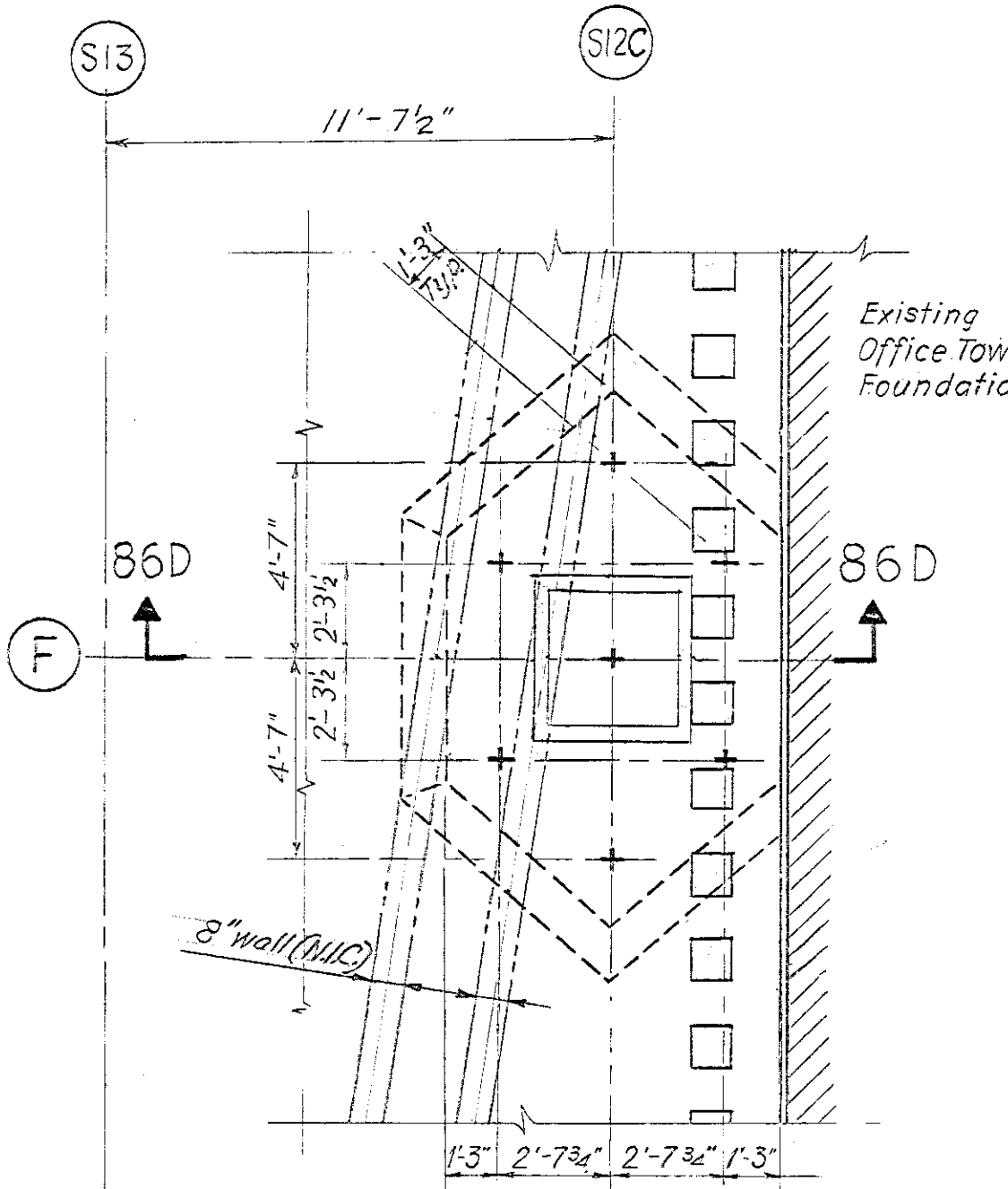
ALBANY, NEW YORK

ALBANY SOUTH MALL PROJECT

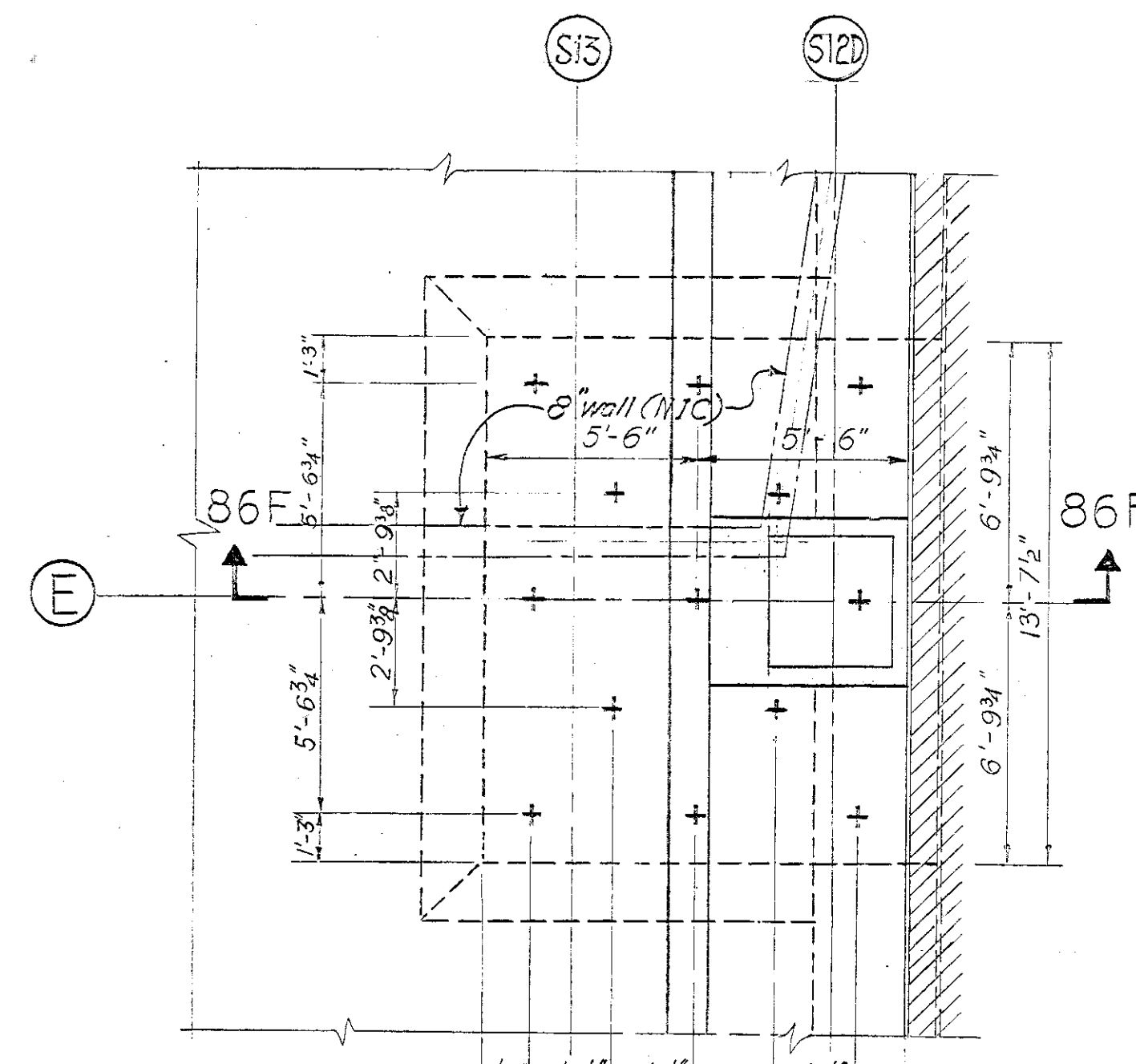
MAIN PLATFORM



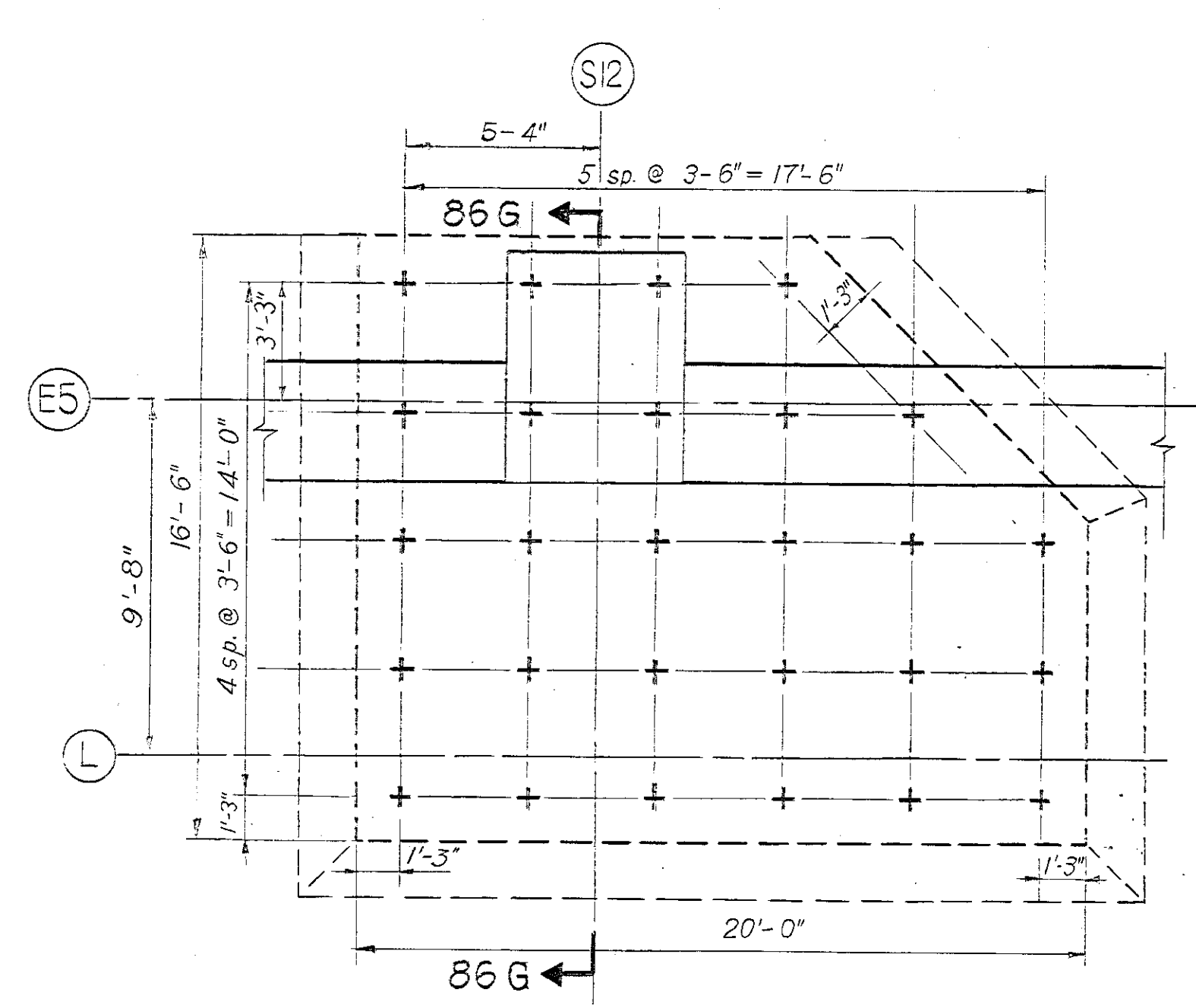
DETAIL 86A
PLAN @ EL. 86'-4"



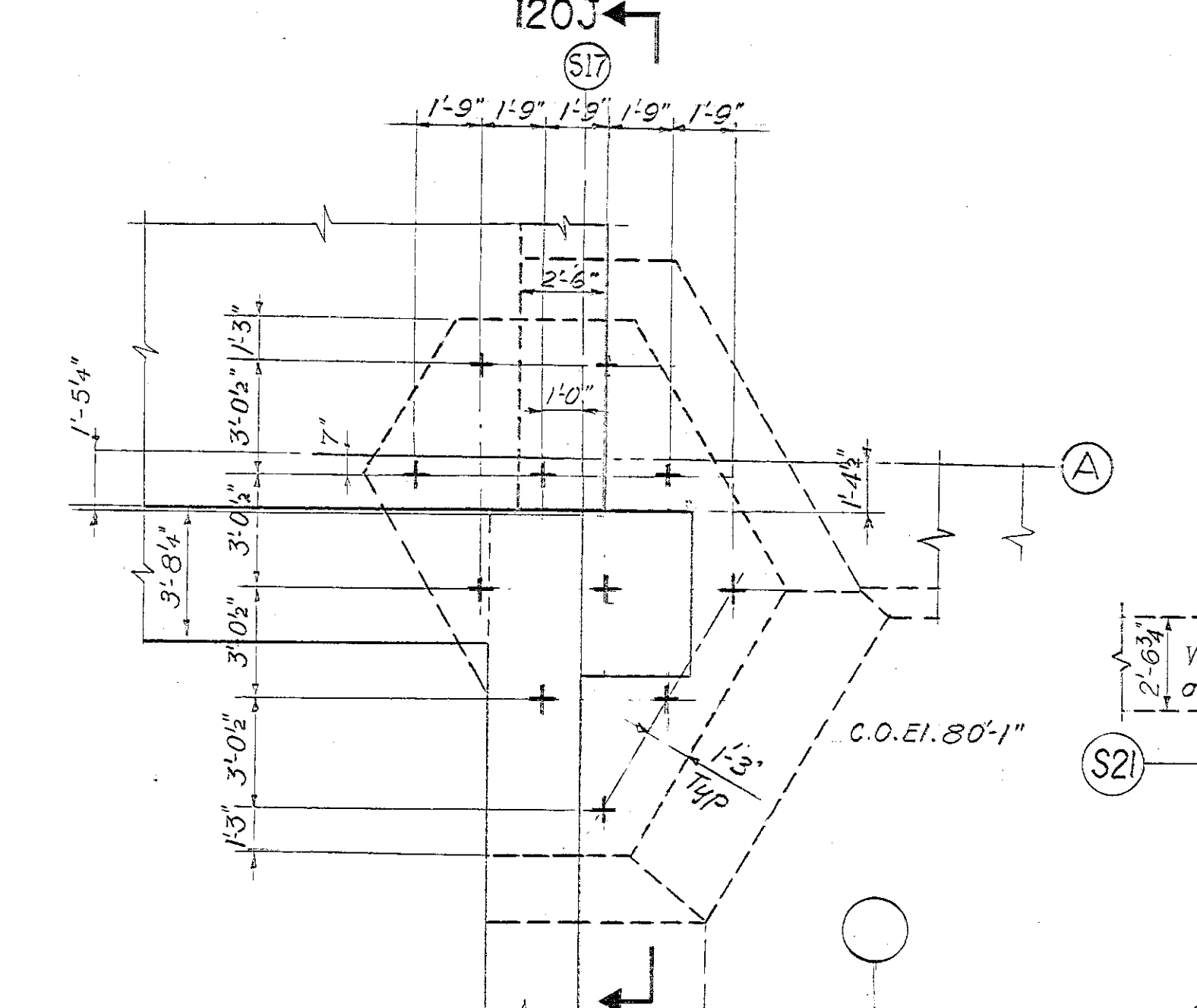
DETAIL 86C
PLAN @ EL. 86'-4"



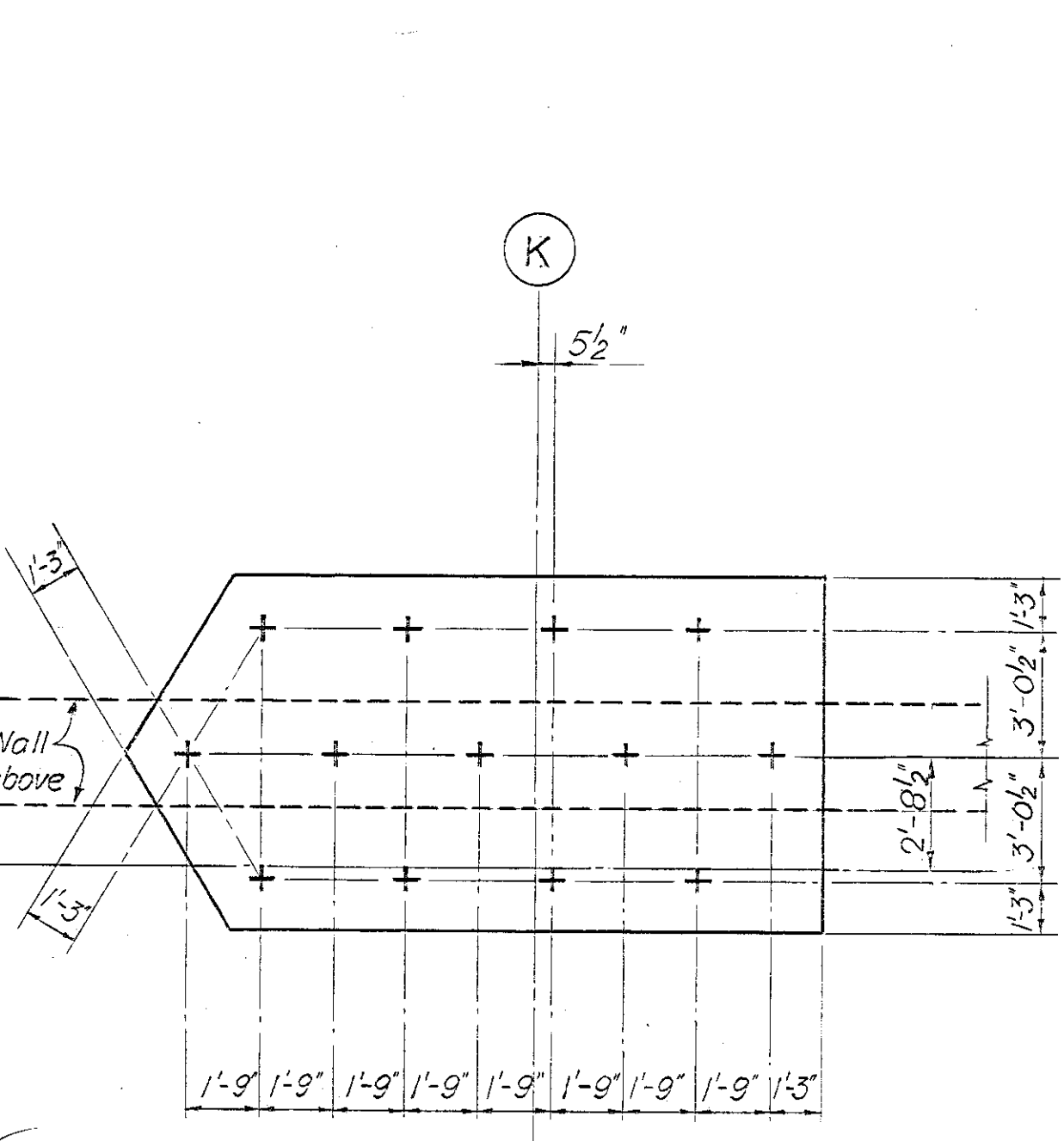
DETAIL 86E
PLAN @ EL. 86'-4"



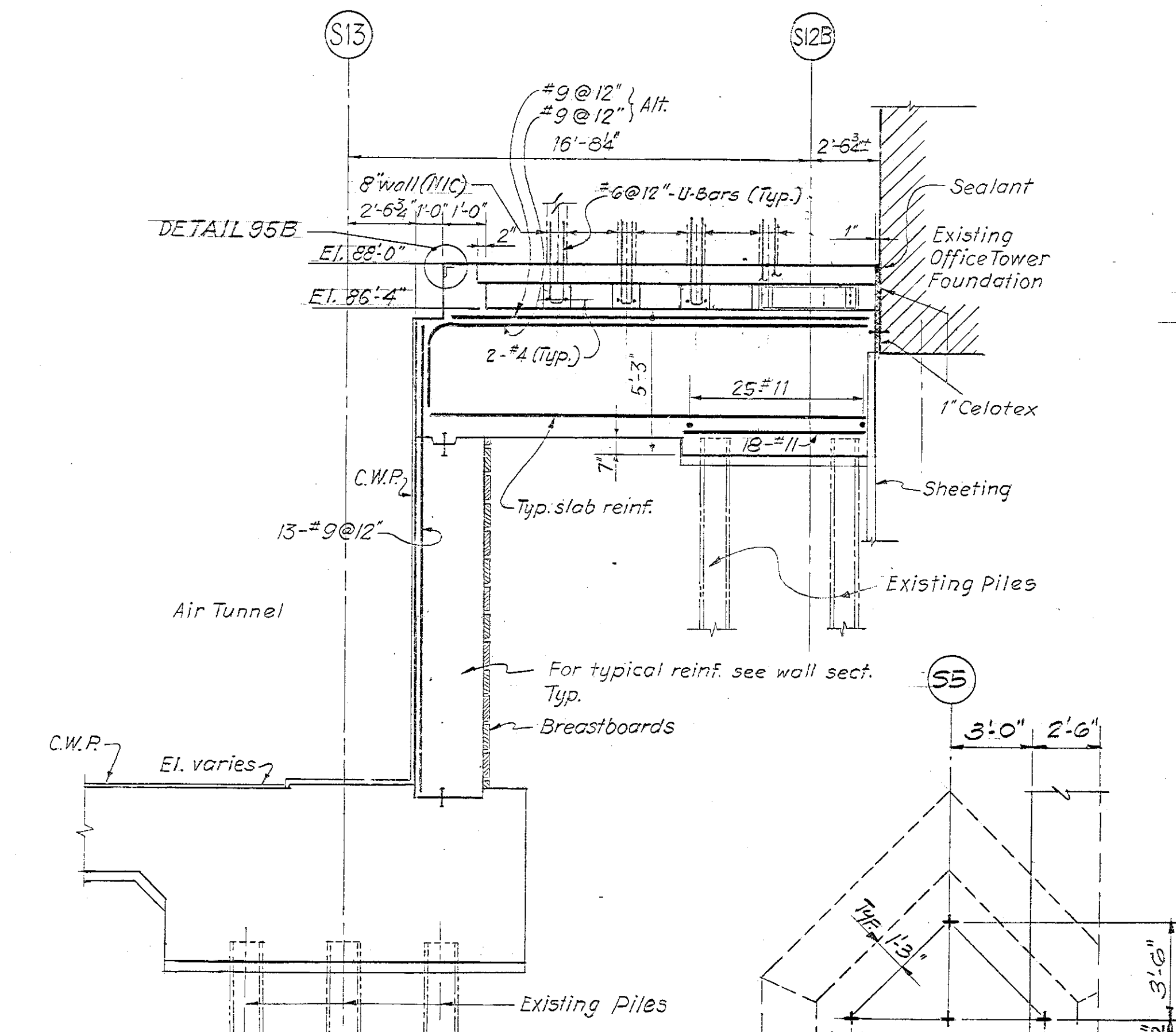
DETAIL 86H
PLAN @ EL. 86'-4"



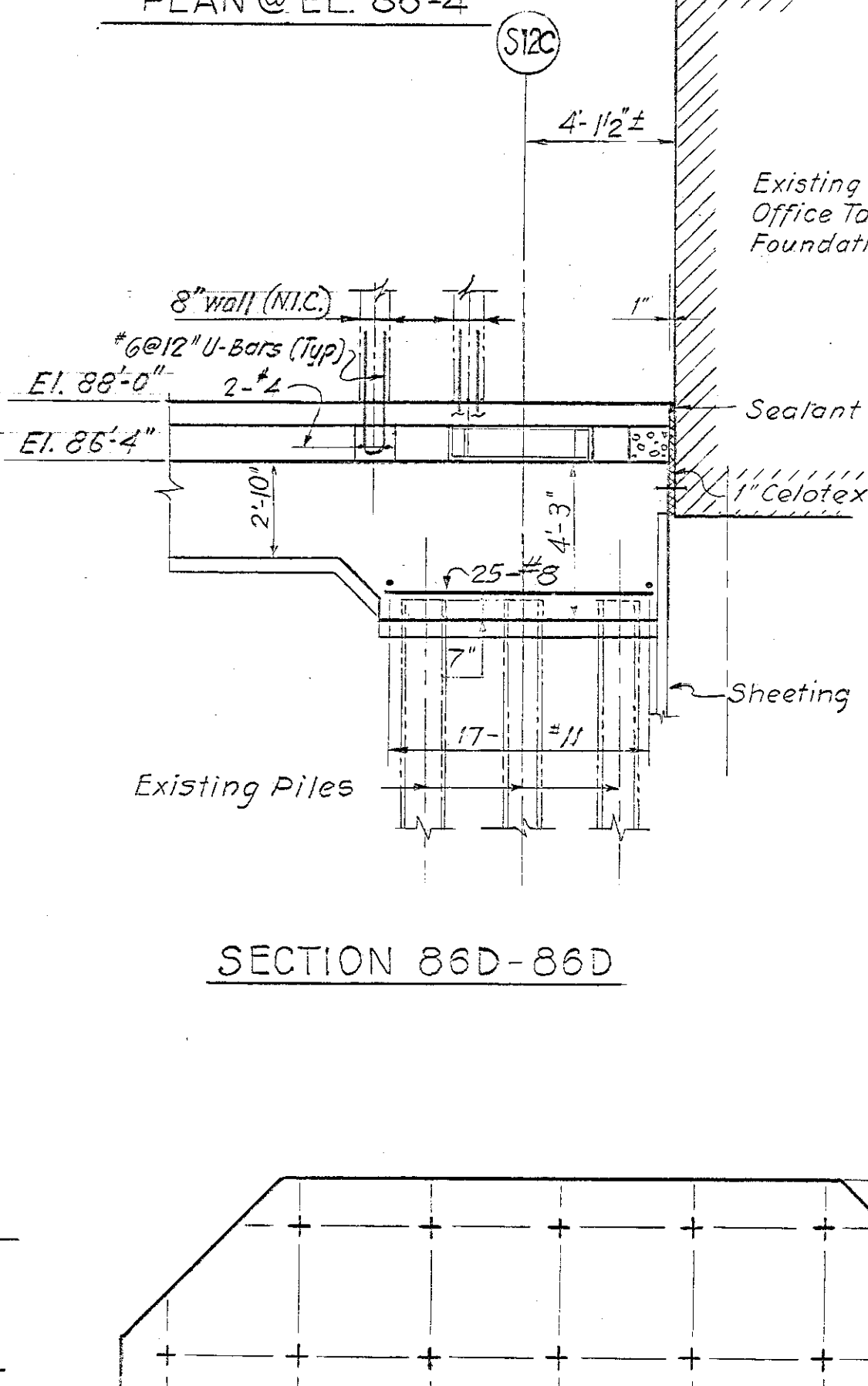
DETAIL 86J
PLAN @ EL. 86'-4"



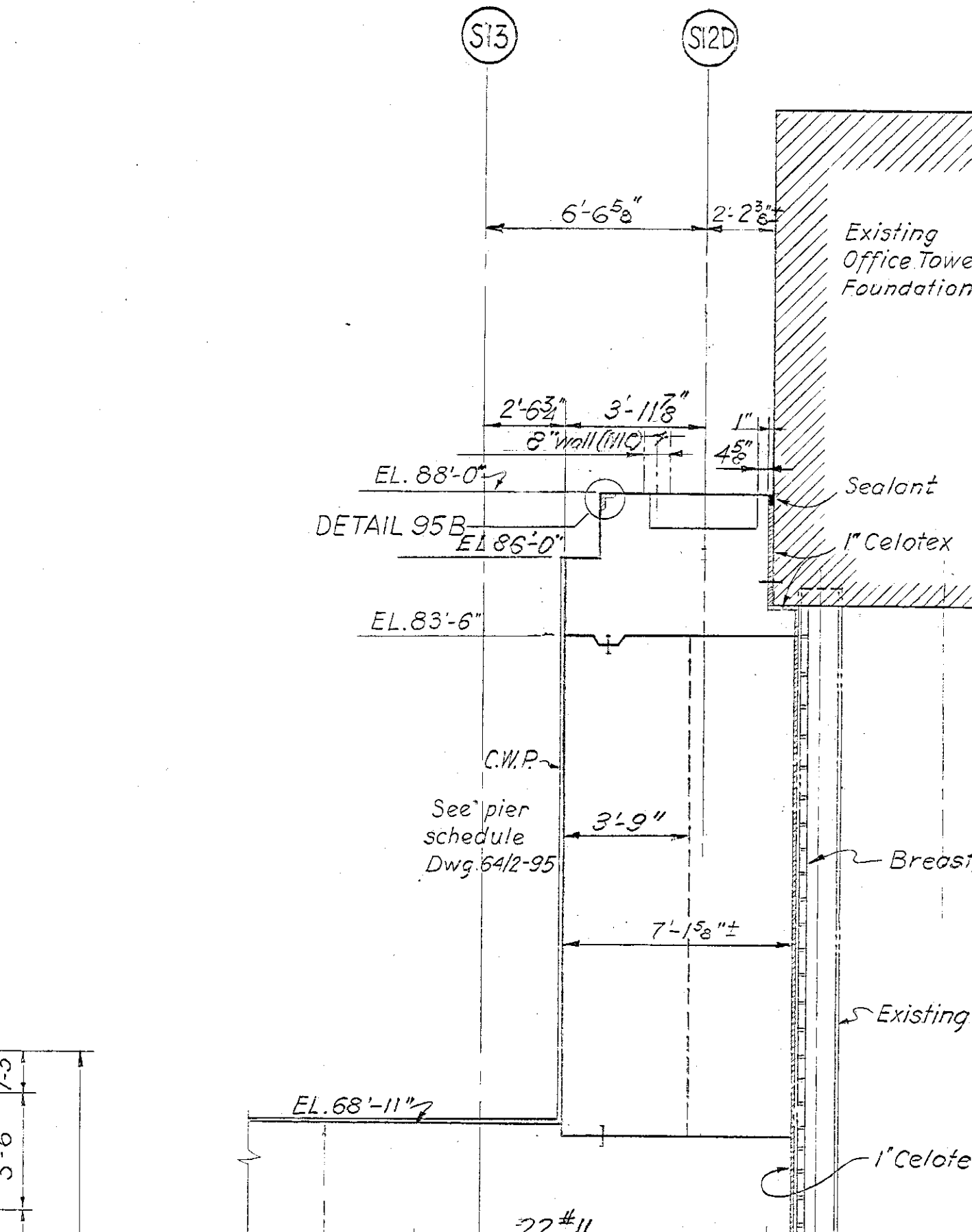
DETAIL 86K
PLAN @ EL. 86'-4"



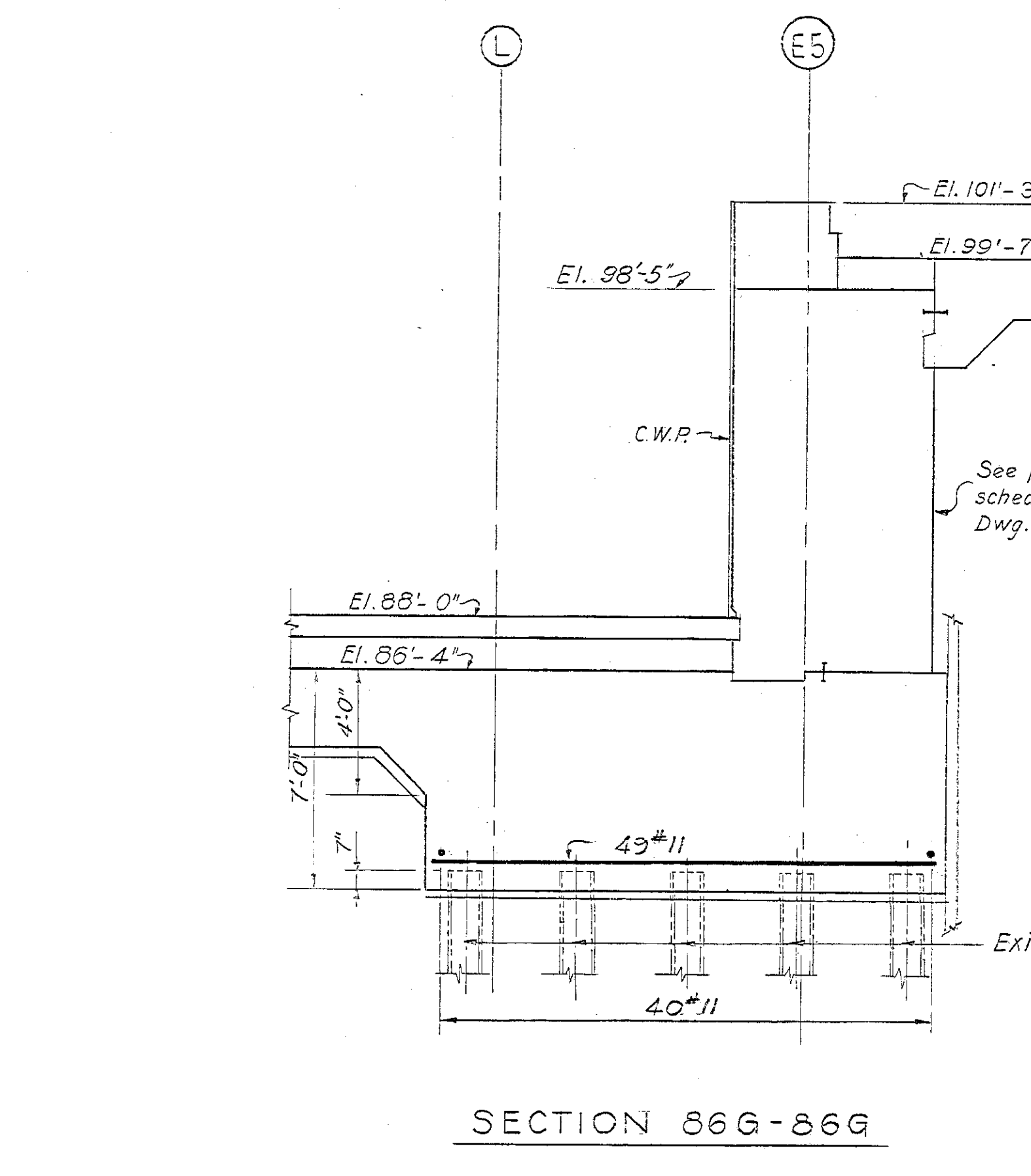
DETAIL 86B
SECTION 86B-86B



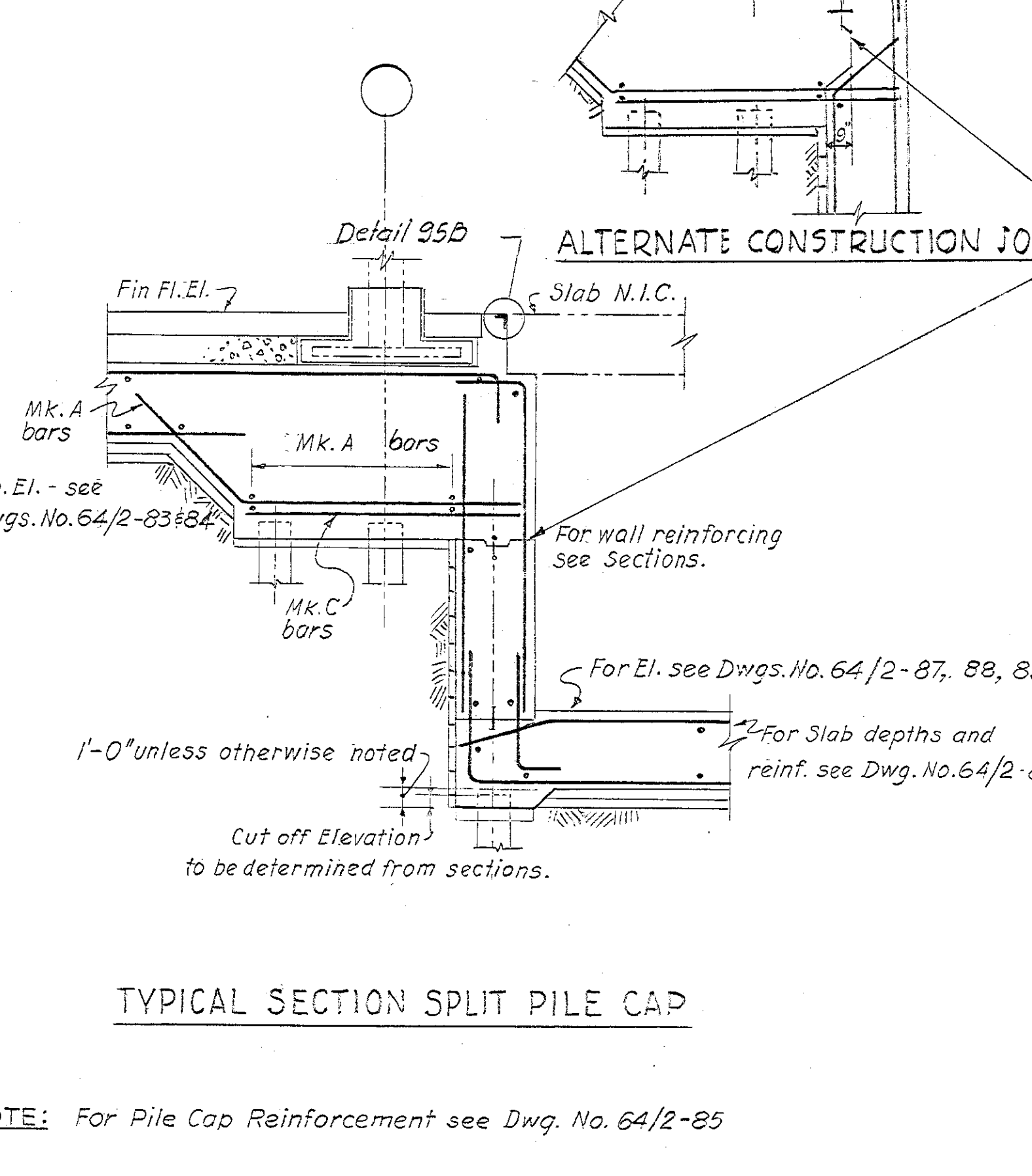
DETAIL 86D
SECTION 86D-86D



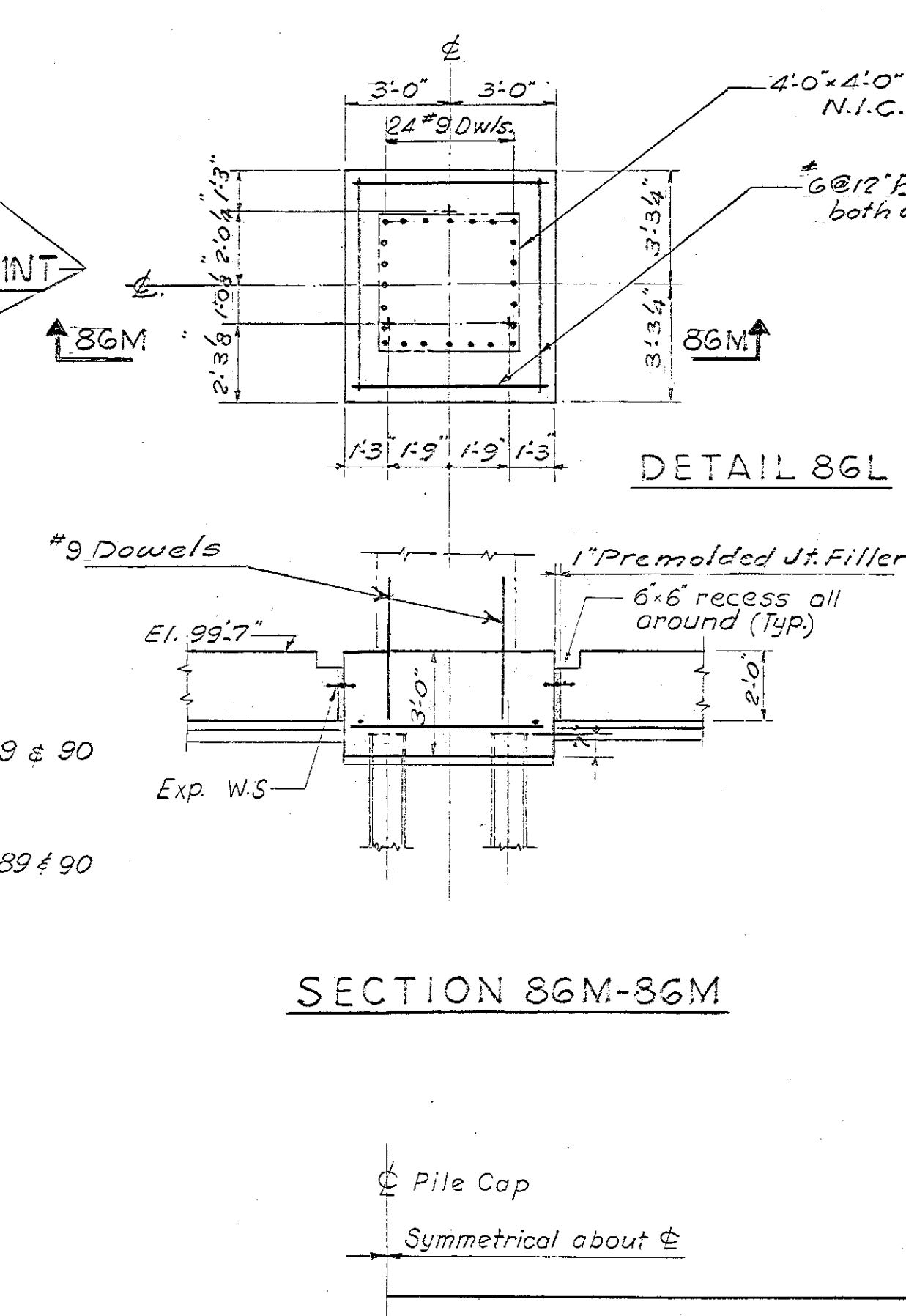
DETAIL 86F
SECTION 86F-86F



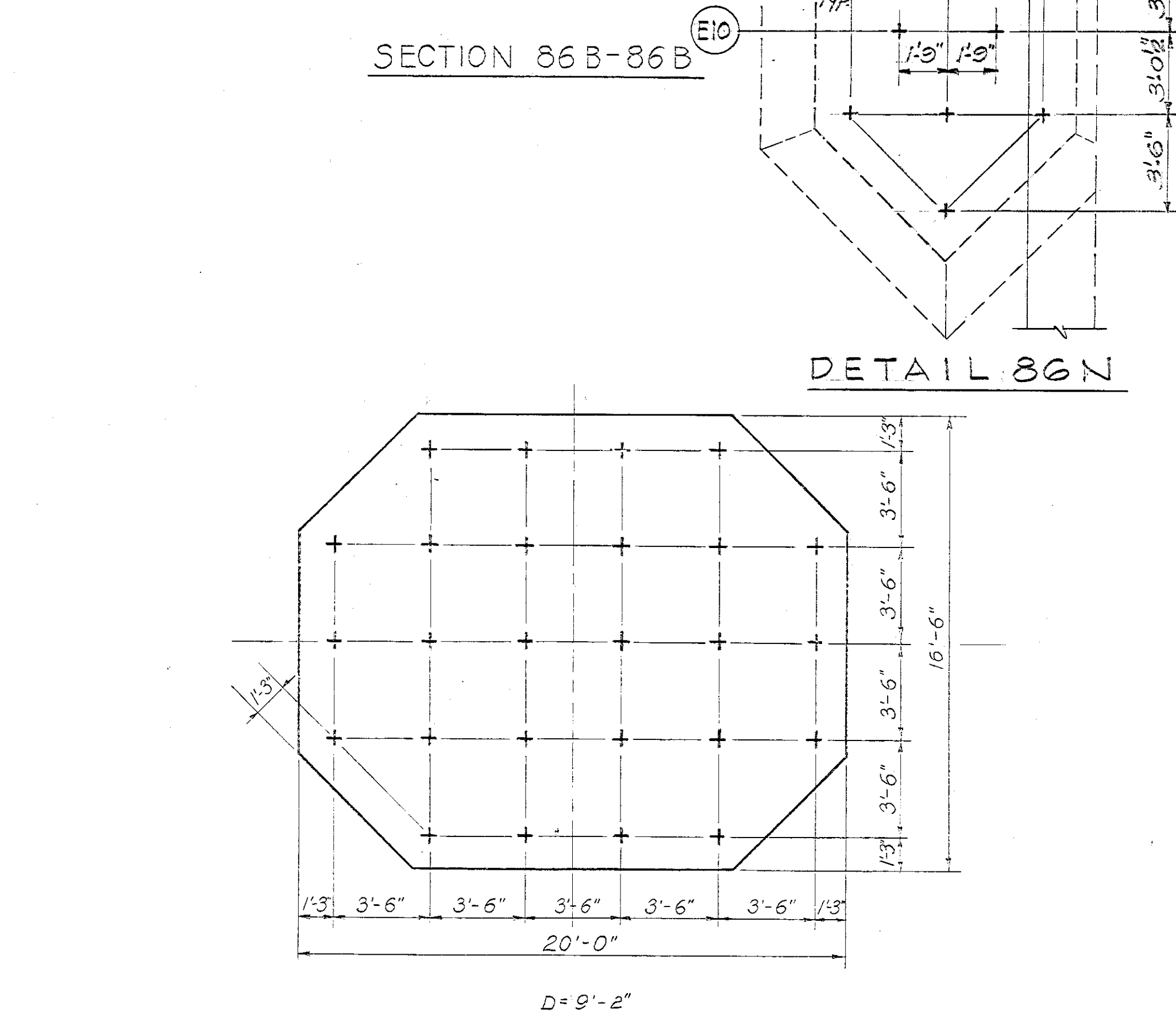
DETAIL 86G
SECTION 86G-86G



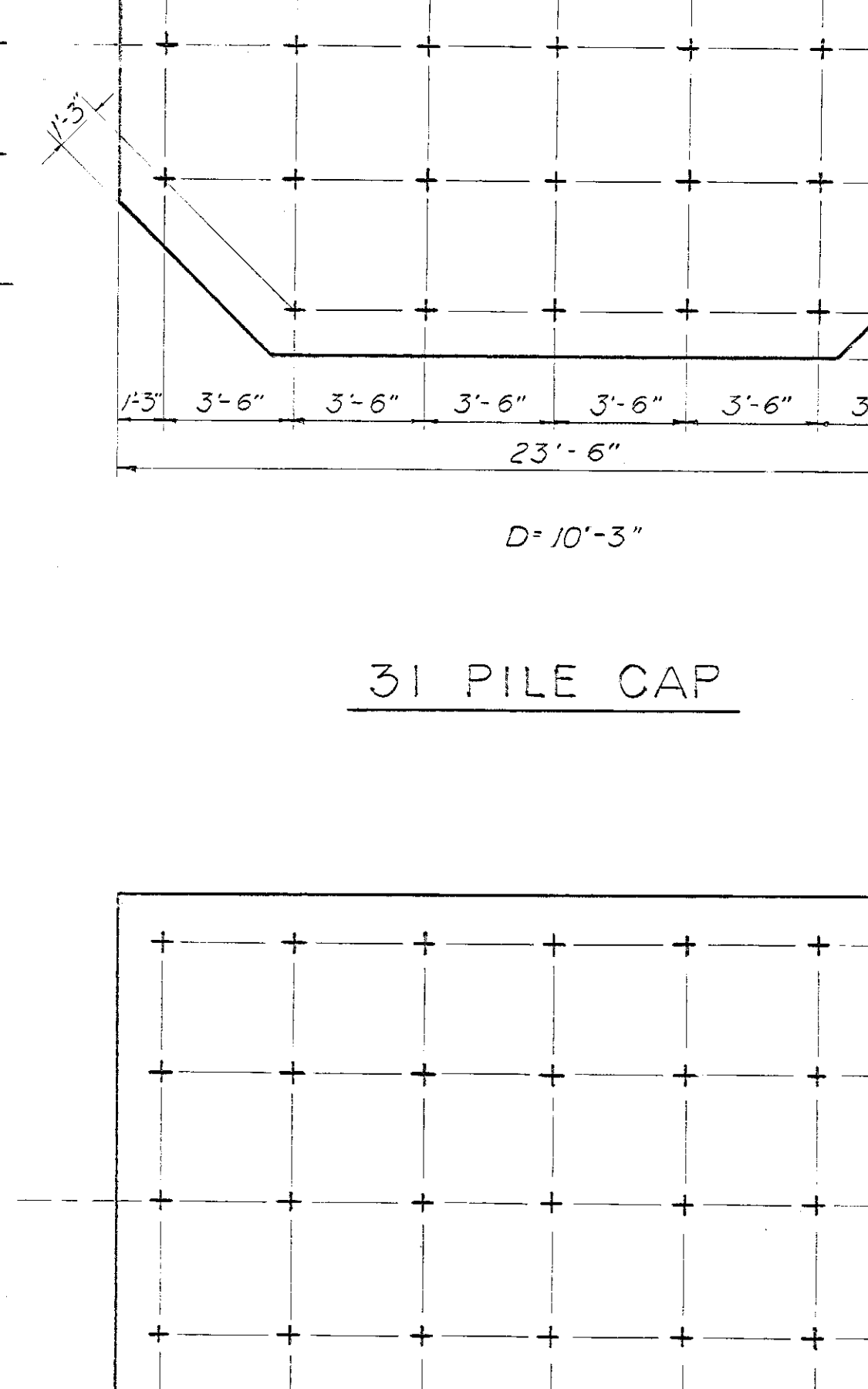
DETAIL 86L
SECTION 86L-86L



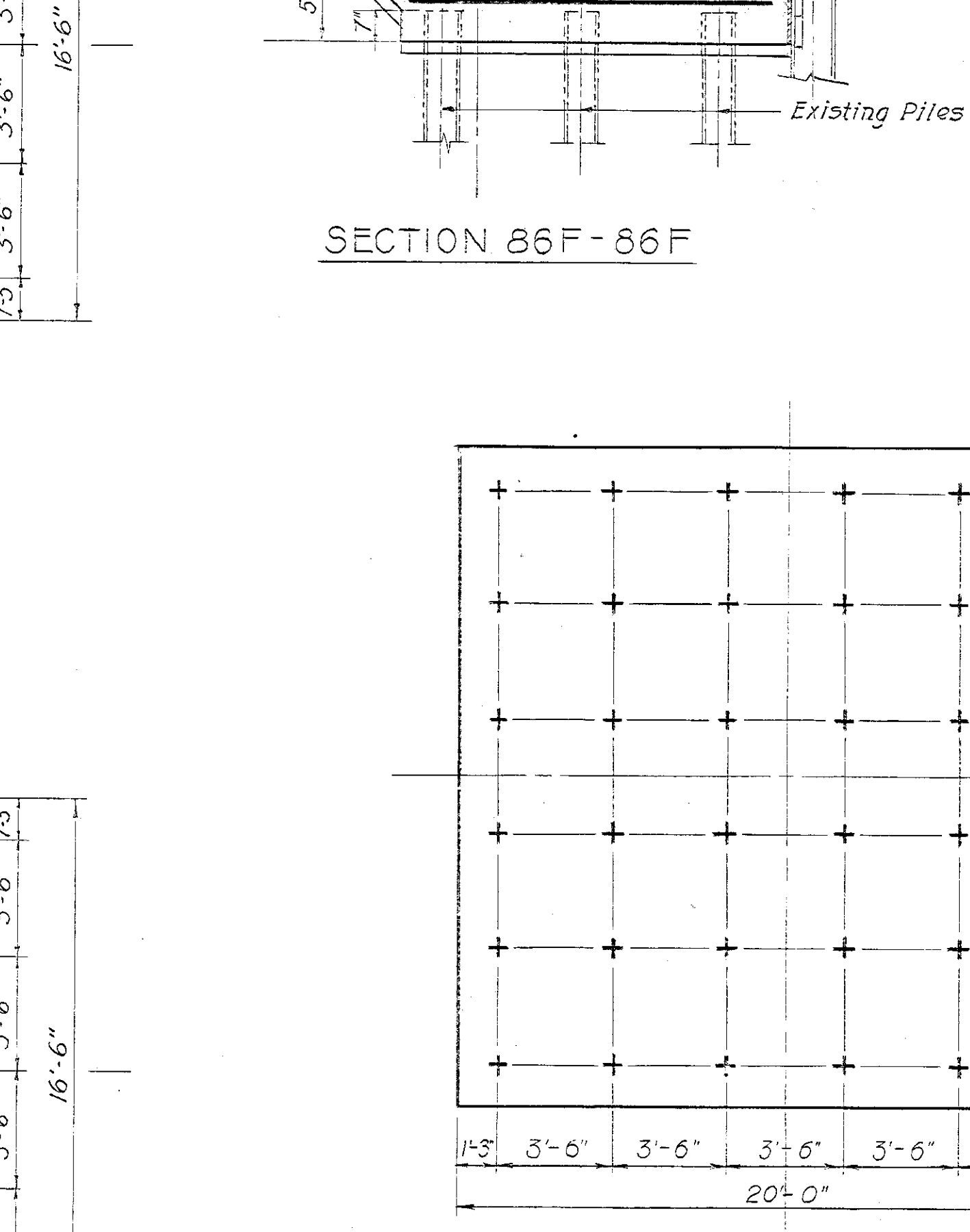
DETAIL 86M
SECTION 86M-86M



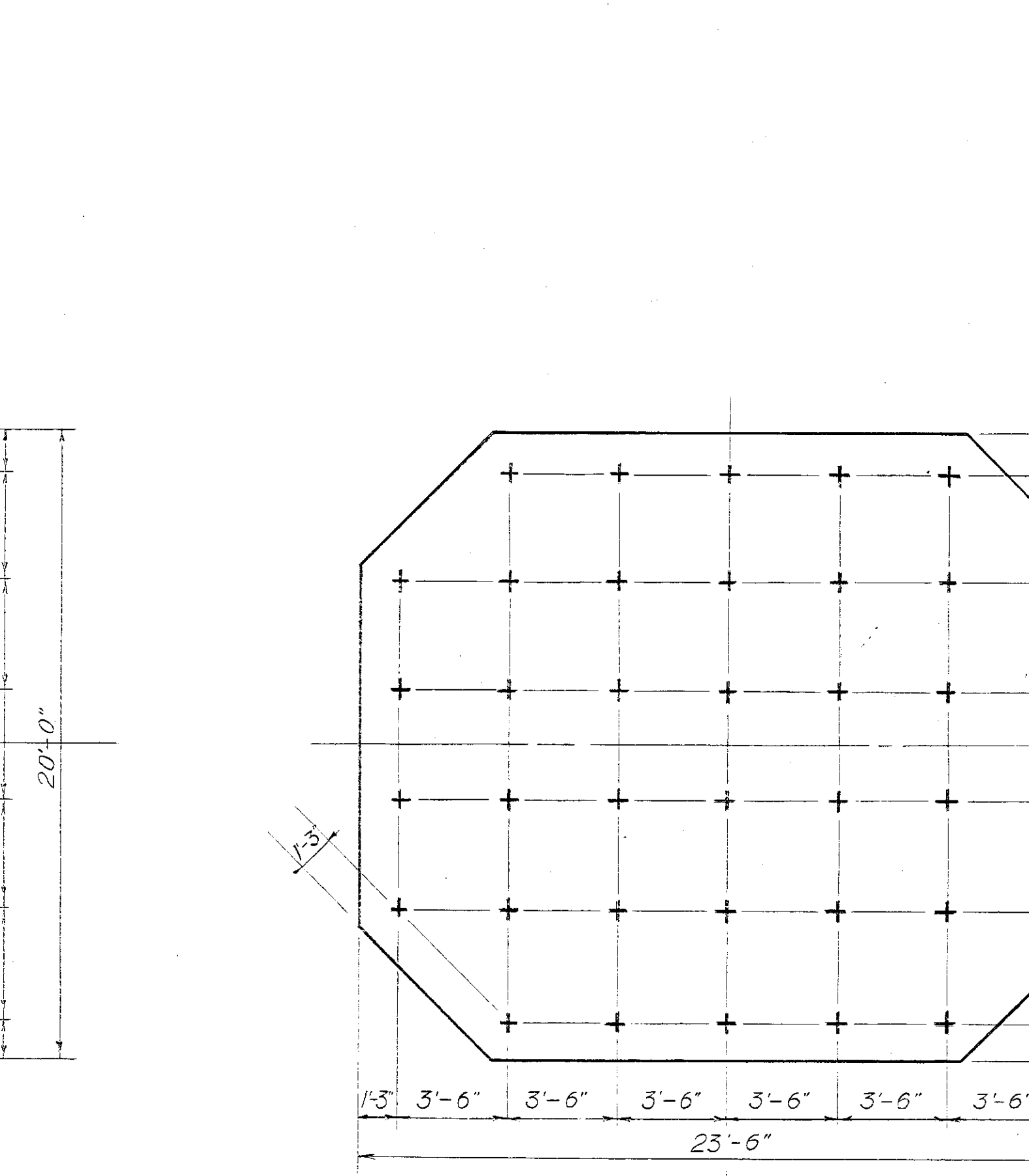
DETAIL 86N
SECTION 86N-86N



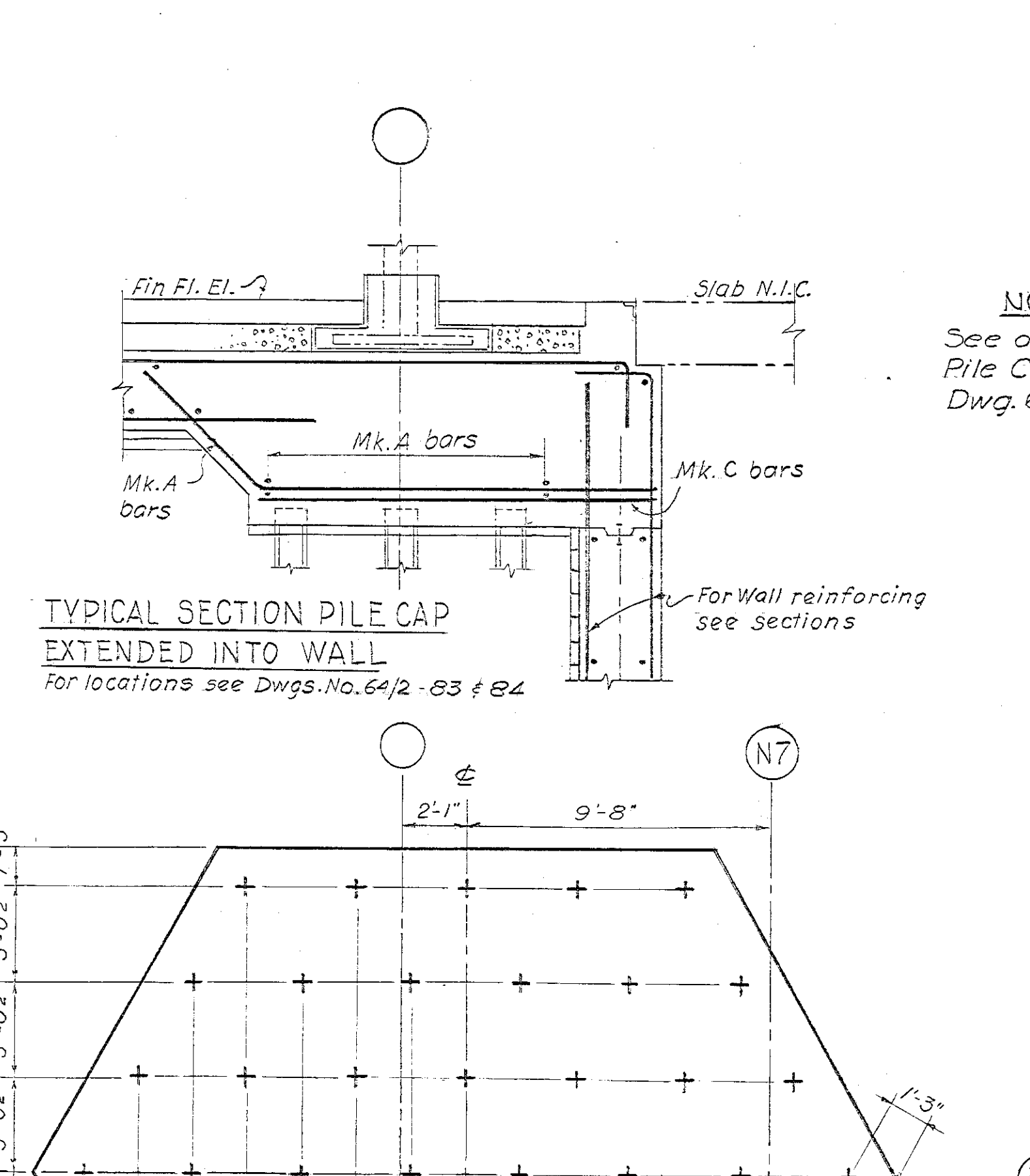
DETAIL 86P
SECTION 86P-86P



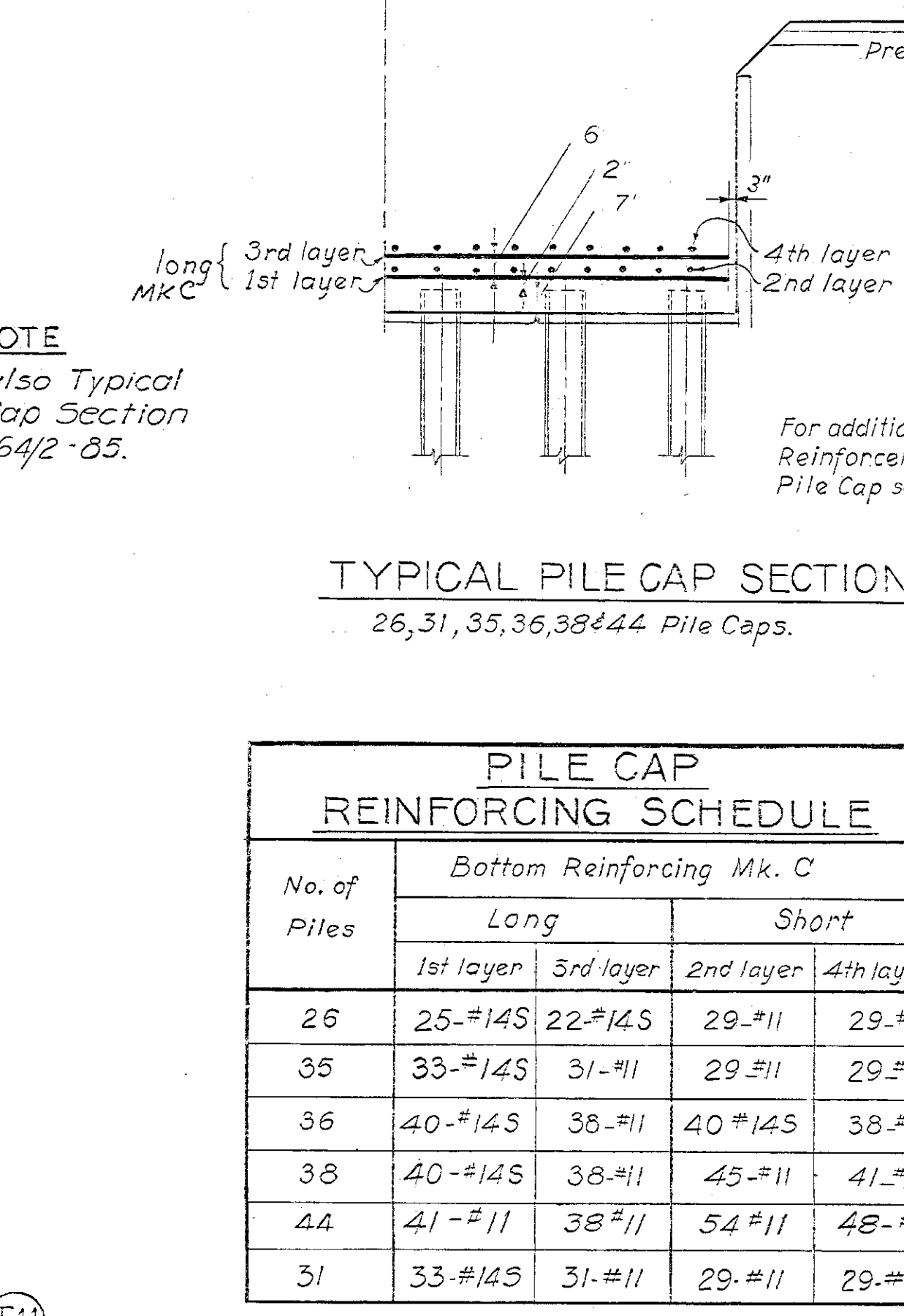
DETAIL 86Q
SECTION 86Q-86Q



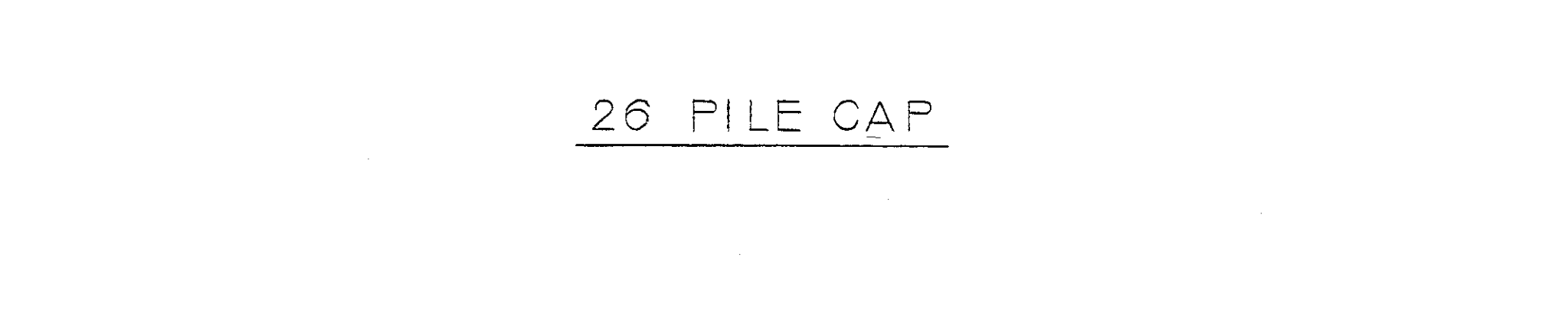
DETAIL 86R
SECTION 86R-86R



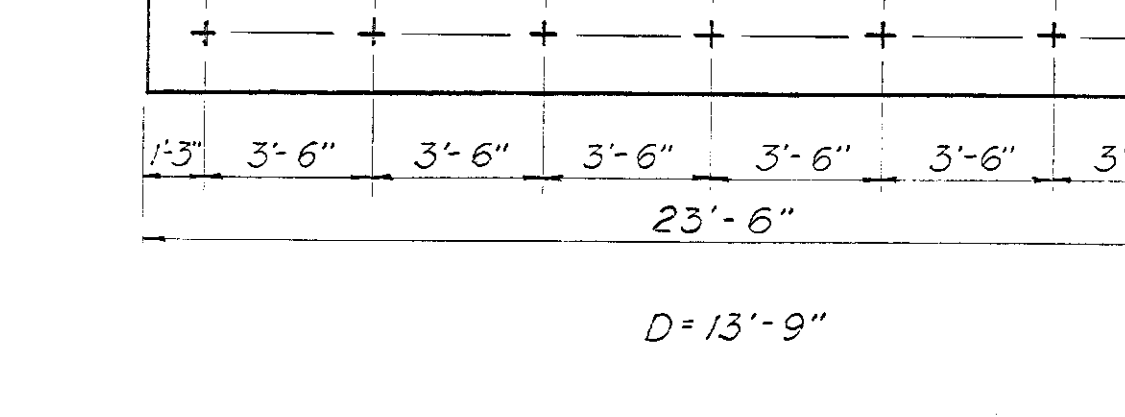
DETAIL 86S
SECTION 86S-86S



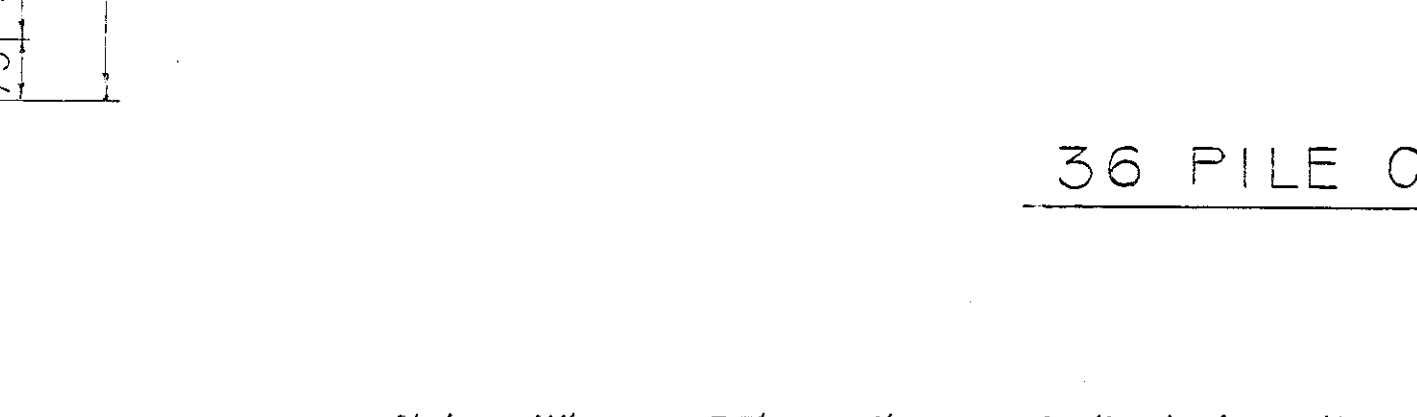
DETAIL 86T
SECTION 86T-86T



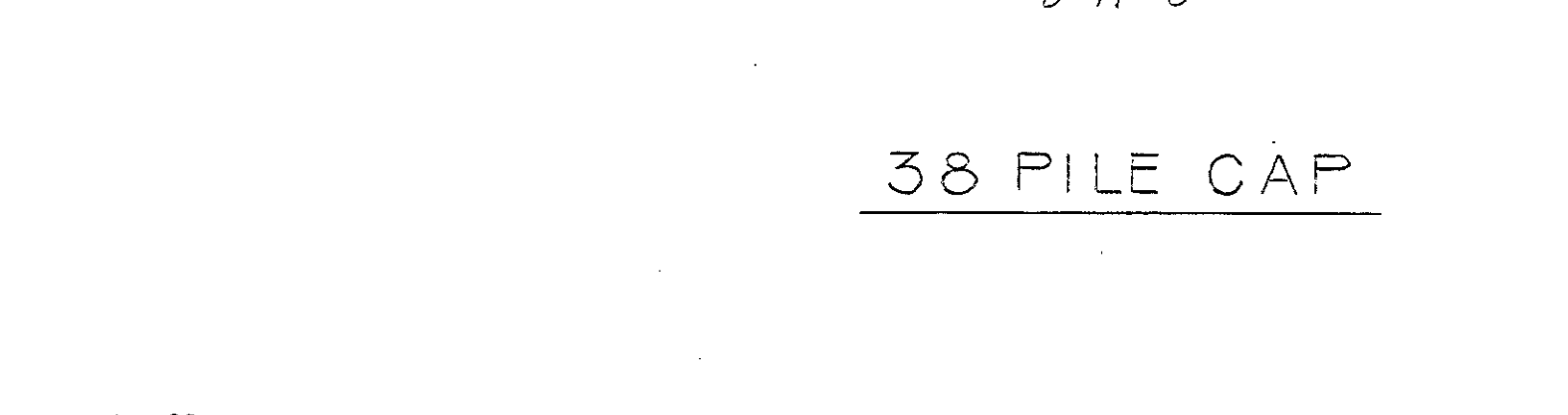
DETAIL 86U
SECTION 86U-86U



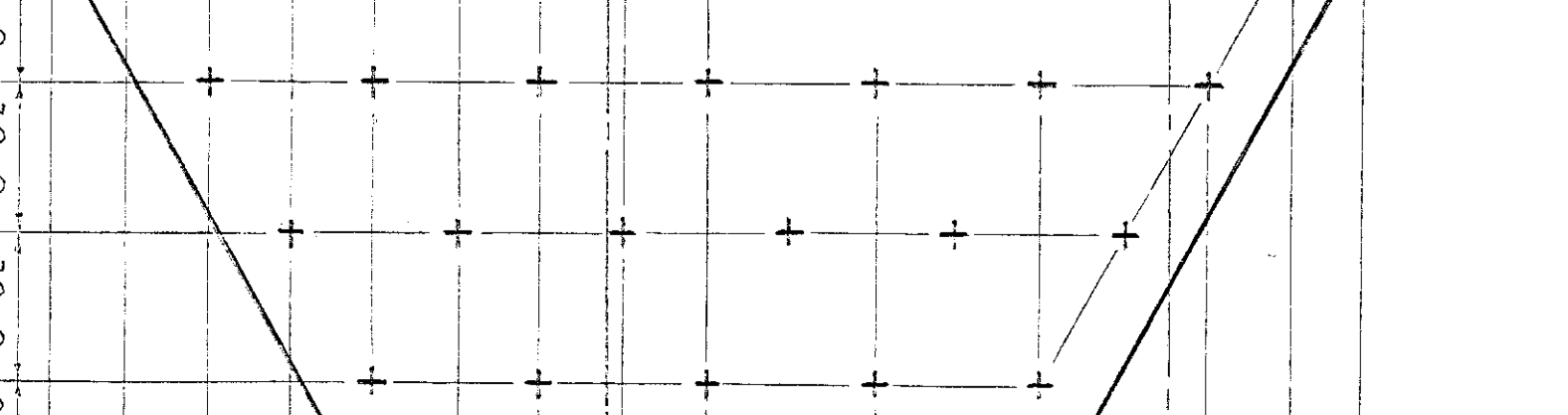
DETAIL 86V
SECTION 86V-86V



DETAIL 86W
SECTION 86W-86W



DETAIL 86X
SECTION 86X-86X



DETAIL 86Y
SECTION 86Y-86Y



DETAIL 86Z
SECTION 86Z-86Z

TYPICAL SECTION SPLIT PILE CAP

NOTE: For Pile Cap Reinforcement see Dwg. No. 64/2-85

TYPICAL SECTION PILE CAP EXTENDED INTO WALL

For locations see Dwg. No. 64/2-83 & 84

NOTE

See also Typical Pile Cap Section Dwg. 64/2-85.

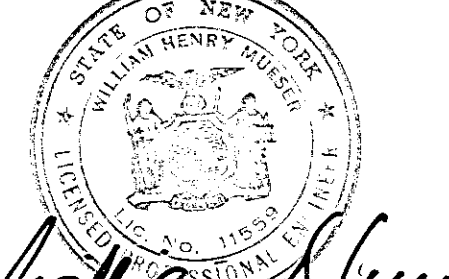
TYPICAL PILE CAP SECTION

26, 31, 35, 36, 38 & 44 Pile Caps.

PILE CAP REINFORCING SCHEDULE				
No. of Piles	Bottom Reinforcing Mk. C			
	Long	Short	Long	Short
26	25-#14S	22-#14S	29-#11	29-#11
35	33-#14S	31-#11	29-#11	29-#11
36	40-#14S	38-#11	40-#14S	38-#11
38	40-#14S	38-#11	45-#11	41-#11
44	41-#11	38-#11	54-#11	48-#11
51	33-#14S	31-#11	29-#11	29-#11

Note: Where existing piles are indicated on this Dwg. they shall be cut-off, etc., as described in par's 53 to 55 of Art. 607F of specifications.

MUESER • RUTLEDGE • WENTWORTH & JOHNSTON
CONSULTING ENGINEERS
415 MADISON AVE., NEW YORK 17, N. Y.



HARRISON AND ABRAMOVITZ
ARCHITECTS
630 FIFTH AVE. NEW YORK 20

REV	DATE	DESCRIPTION
1	10/21/66	Revised Section 86B, 86D, 86F, 86H, 86J, 86L, 86N, 86P, 86R, 86T, 86V, 86X, 86Z, 86B, 86D, 86F, 86H, 86J, 86L, 86N, 86P, 86R, 86T, 86V, 86X, 86Z
2	11/1/66	Added Detail 86N - Revised Cold Dimensions
3	11/1/66	Revised Detail 86L, sect. 86M split cap.
4	11/1/66	Added 31 Pile Caps, Details 86L and 86M, revised sections as noted.
5	11/1/66	Added 44 Pile Cap.

ISSUED TO	REV	DATE	ISSUED TO	REV	DATE	ISSUED TO	REV	DATE	ISSUED TO	REV	DATE

ALBANY, NEW YORK
ALBANY SOUTH MALL PROJECT
MAIN PLATFORM

DESIGNED BY V.A.	FOUNDATIONS	PROJECT NO. 19533
DRAWN BY J.W.	SPECIAL PILE CAPS SECTIONS & DETAILS	PROVISIONAL NO. 19533C
CHECKED BY J.W.	STATE OF NEW YORK OFFICE OF GENERAL SERVICES	DATE MAR. 10, 1966
APPROVED BY J.W.	CIVIL ENGINEER - COMMISSIONER DEPARTMENT OF PUBLIC WORKS	DRAWING NO. 64/2-86
	DIVISION OF ARCHITECTURE	

