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ADDENDUM No. 5 to PIN: 072202001CPD
Powerhouse Boiler Feed Water Treatment System Upgrade

Dear Prospective Bidder:

Pursuant to section §3-04 of the Procurement Policy Board (PPB Rules, the Department of Correction (DOC) is issuing Addendum No. 5 to the solicitation for the services referenced above.

Be advised, this Addendum includes revisions to the contract documents as generally outlined herein. For detailed revisions please review all the attached documents

A. DESCRIPTION OF CHANGES:

1) The subject Addendum revisions are to include revisions to the contract documents to reflect scope of work as described herein and includes responses to contractors' questions.
2) All revisions to drawings are shown clouded with triangle number 1.
3) All specification revisions are shown bold.
4) Construction Duration is revised to 455 CCD. Revised Schedule A attached.

B. BID SHEET

Revised bid sheet is attached to include add alternate items.

C. SPECIFICATION CHANGES (ATTACHMENT I):

1) Spec Section 00 01 50 – Revised Drawing List.
2) Spec Section 08 33 00 –Added coil door specification.
3) Spec Section 08 71 00 – Included spec for door hardware.
4) Spec Section 22 10 00 – Added plumbing piping specification.
5) Spec Section 23 05 14 – Revised VFD enclosure rating.
6) Spec Section 23 22 16 – Steam and Condensate Heating Specialties

7) Spec Section 23 50 11 – Revised Spec for clarification.

D. DRAWING CHANGES (ATTACHMENT II):

1) T003.00 – Added add alternate No.2 in scope of work.

2) A101.00 – Revised floor plan.

3) M-002.00 – Revised general note 23.

4) M004.00 – Revised schedule and note for RO, water softener system, deaerator tank, surge tank and CIP.

5) M-005.00 – Revised pump schedule. Added exhaust fan schedule.

6) DM101.00 – Included removal of exhaust fans and ductwork, included location of existing water softener and existing booster pump.

7) DM102.00 – Revised part plan tag room removal tag note number 30 and HPC work.

8) DM103.00 – Revised part plan heater room removal work tag note #17. Revised plan to show existing city make up water to remain.

9) DM104.00 – Added General notes.

10) DM105.00 – Added General notes.

11) M201.00 – Revised tag notes and included existing water softener and pump.

12) M202.00 – Revised make up water location.

13) M203.00 – Revised general notes.

14) M204.00 – Revised tag notes. Revised RO and CIP location. Remove make up water piping for deaerator. Revised city water piping work.

15) M205.00 – Revised general notes.

16) M206.00 – Revised general notes.

17) M211.00 – Revised water piping location. Included existing water softeners and booster pump. Include abandoned piping removal in cellar.

18) M212.00 – Revised RO and CIP location. Revised make up water, soft water and soft permeated water piping location. Revised tag notes.

19) M213.00 – Revised general notes.

20) M214.00 – Revised RO and CIP location. Revised make up water, soft water and soft permeated water piping location. Revised tag notes.

21) M215.00 – Revised general notes.

22) M216.00 – Revised general notes.

23) M221.00 – Revised water piping location. Included existing water softeners and booster pump. Revised tag note.

24) M222.00 – Revised RO and CIP location. Revised make up water, soft water and soft permeated water piping location. Revised tag notes.

25) M223.00 – Revised general notes.

26) M224.00 – Revised RO and CIP location. Revised make up water, soft water and soft permeated water piping location. Revised tag notes.

27) M225.00 – Revised general notes.

28) M226.00 – Revised general notes.

29) M231.00 – Revised RO and CIP location. Revised make up water, soft water and soft permeated water piping location. Revised tag notes.

30) M232.00 – Revised RO and CIP location. Revised make up water, soft water and soft permeated water piping location. Revised tag notes.

31) M301.00 – Revised RO and CIP location. Revised make up water, soft water and soft permeated water piping location. Revised tag notes.

32) M302.00 – Revised RO and CIP location. Revised make up water, soft water and soft permeated water piping location. Revised tag notes.

33) M303.00 – Revised RO and CIP location. Revised make up water, soft water and soft permeated water piping location. Revised tag notes.

34) M304.00 – Revised general notes.

35) M305.00 – Revised general notes.

36) M401.00 – Revised existing make up water and soft water piping removal work. Included existing water softeners and booster pumps.

37) M402.00 – Revised RO and CIP location. Revised make up water, soft water and soft permeated water piping work.

38) M403.00 – Added CIP process flow diagram.

39) M502.00 – Revised detail 11 & 17.

40) M503.00 – Removed detail 19. Added PRV station details.

41) M504.00 – Revised details.

42) E001.00 – Revised power symbol list.

43) DE101.00 – Added fans removal, revised key note.

44) E201.00 – Added fan work, revised key notes.

45) E202.00 – Revised RO and CIP locations.

46) E203.00 – Revised RO and CIP location.

47) E401.00 – Revised single line diagram and feeder schedule.

48) E501.00 – Revised panel schedule.

49) E601.00 – Added details.

E. PHOTOS (ATTACHEMENT III):

1) See attachment for photos. These photos are for reference only. Contractor to examine contract drawings, specifications and attend pre-bid site visits to acclimatize about the site conditions prior to bidding.

F. LIST OF PLAN HOLDERS (ATTACHMENT IV):

1) In lieu of the pre-bid conference and site visit attendance sheets, the list of plan holders is provided for information purpose only.

G. RESPONSE TO CONTRACTORS' QUESTIONS:

1. We assume all work can be done during normal work hours please confirm.

   Response: Please see section I: Scope of Work – A. Construction Services.4. Daily work schedule.

2. We assume all phased work can be done during any season during the year please confirm.

   Response: Yes. All the work can be done during any season during the year.

3. Drawing SHT 8 indicates for the contractor to hire a commissioning agent this is usually taken care of by the owner please confirm this is your intent.

   Response: Contractor shall include hiring of a third-party commissioning agent in their bid. Commissioning agent shall report directly to DOC.

4. Please advise who the Controls Vendor is for the Powerhouse.

   Response: Control Associates is the existing control vendors.

5. The Control Specification talks about a DDC system please advise if the is a DDC or PLC system.

   Response: System to be PLC system.

6. Specification 230593-13 talks about vibration testing please advise if this is applicable for this project and if so what equipment would this apply to .

   Response: Vibration testing is not required.

7. Please advise if the Owner will be doing the field XRAY testing where applicable.

   Response: All testing shall be done by contractor.

8. Drawing SHT-5 Indicates to relocate a container box, Please confirm that contents will be removed by the house.

   Response: Contents of the container box will be removed by DOC.

9. Drawing SHT-8 seems to indicate that we can only use Scheduled equipment please advise.

   Response: All equipment can be provided with approved equal.

10. Is there any Vibration Isolation required for any of the equipment on this project?

    Response: All pumps would require isolators.

11. Please advise if it is your intention to water balance any system on this project.

    Response: Yes, water balancing is required for water systems including but not limited to make up water, condensate return, etc.

12. Drawing Sheet 48 Pump Detail indicates a Flow Meter. Is this for the Boiler Feed Pumps? Can we provide Circuit Setter type Balancing Valves with portable Meter in leu of Flow Meter?

    Response: Contractor to provide flow meter as indicated. It is required for boiler feed pumps, condensate pumps, RO system pumps and chemical feed pumps. Cicutir seeter with prtable meteris acceptable as long as it is approved equal type as defined under response to item #34. .

13. Drawing Sheet 49 calls for an Overflow Drainer please advise on a make and model# .

    Response: Overflow Drainer to be Warren 6" #313 or approved equal and furnished by Deaerator manufacturer.

14. I did not see an alternate price on the bid form associate with Alternate called for on Drawing SHT-42 please update bid form.

    Response: See updated bid sheet on addendum#5.

15. Drawing Sheet 48 shows a drain trough. Is this Existing? If new please provide detail.

    Response: The drain trough is existing. This detail is not applicable to the project and is deleted in addendum #5 - Drawings.

16. There is a specification 232223-5 on Steam Separators yet I could not locate them on the drawing we assume this is not applicable please confirm.

    Response: Steam Separators is not required for this project.

17. Will there be space to set up a field office?

    Response: Yes, Location to be coordinated between the awarded contractor & DOC-Construction Management Unit..

18. Please confirm the Guaranty requirements for this project the spec. conflicts between 1 & 2 Years .

    Response: Warranty/Guaranty (labor and material) shall be for two years unless longer warranty periods are specified on the specification book. In this case, the longer warranty period shall prevail.

19. Please refer to Drawing M002. General Note #33 states that the manufacturers to be used for the project shall be those listed in the drawing schedules only and all other

manufacturers mentioned in the specifications shall be used under special circumstances only such as lead time or discontinuation of the scheduled product. Based on this language it appears that certain products are to be sole sourced as indicated on the drawing schedules. Please clarify.

Response: General note #33 is clarified, please see addendum#5 - Drawings. Manufacturer on the schedule is used as a basis for design. As per specifications, contractor can use listed manufactures and/or approved equal and shall be subject for review prior to approval by DOC.

20. Please provide the attendance / sign-in sheet for the Pre-Bid Site Visit on 10/16/20.

    Response: See Attachment IV for the list of plan holders.

21. Drawing M002.00 phasing note 7 indicates "For all phasing work detail, see drawing M101.00. This is for reference only. Final phasing work shall be based upon DOC approval of a final plan and schedule." The drawings and specifications do not indicate which equipment, systems, or minimum capacities are to be maintained in service throughout the project. Based on conversations during the site walk thru, it appears that various systems and equipment do have specific work restrictions as is relates to service/shutdowns/etc. Please provide a detailed breakdown of the various work restrictions related to maintaining plant operations so the Contractor can develop its phasing plan.

    Response: Shutdown of service shall be maximum of eight (8) hours with minimum one (1) week of notice prior to any shut-down. Contractor shall coordinate shutdown with DOC and request written approval from DOC prior to any shut-down.

22. Spec section 22 67 00: Section 1.3; Par. C. calls for a Design Flow of 300 gpm. Per the Equipment Schedule on Drawing M004.00, the Specified Model is a 65 gpm R.O. Unit. Please clarify the correct Model and/or GPM required.

    Response: Design Flow shall be 300 GPM. See Addendum#5- drawing.

23. Please provide the engineer's estimate for the project.

    Response: Engineer's Estimate including add alternate items work is in the range of $9,000,000.00.

24. In order for the bid teams to provide the most competitive pricing, please provide a 360-degree view of each of the areas where work is to be performed including proposed access locations.

    Response: See photos included with addendum #5 – Attachment III.

25. Please advise can a staging area for contractors be available.

    Response: Stagging area can be available for contractors. Location will be coordinated between the awarded contractor & DOC-Construction Management Unit.

26. During walkthrough we saw a 20-yard storage container by the powerhouse where we are making an opening. Can this be moved by the facility **OR** it should be done by the contactor? Please advise

    Response: As shown on drawing A-101, Part Plan 3 "Deaerator Room Floor Plan – Demolition", the existing Container Box used as storage shall be relocated by contractor within 400 yards of its present location with NYCDOC determining its new location. The container box as shown is revised in addendum to show on Part Plan 1 "Pump Room Floor Plan Demolition.

27. As there will multiple tie-ins to the existing steam and condensate piping. What would be the down time for the tie-in work.

    Response: See response for Q# 21.

28. Please provide list of contractors bidding the job.

    Response: See response to Question #20.

29. Would there be any pictures available for the contractor showing the locations of the existing equipment?

    Response: Please see addendum#5 – Attachment III.

30. Please advise on working hours.

    Response: Please see response to Q#1.

31. How much time that we can anticipate for security checks daily for the workers to get in to the facility?

    Response: The process depends on the number of workers in-line at the time but usually takes less than 15 minutes. Please note that the DOC requires the Contractors to use an employee bus to transport their work crews to and from the work site at Rikers. Clearances will be accepted and processed monthly for long-term workers.

32. Can you send us the plan holders list or point me in the right direction? Do you happen to have a bidders list for this project?

    Response: See response to Question #20.

33. Drawing M-402 shows 4" boiler feed discharge and a 10" boiler feed suction however drawing M-201 indicates a 6" boiler feed discharge (tag #24) and 6" boiler feed suction (tag #21). Also drawing M-201 (tag #22) indicates a 6" suction manifold, which cannot be correct. Please revise the drawings and coordinate the desired sizes.

    Response: See revised sizes in drawings as part of Addendum 5.

34. Is Superior Boiler an accepted alternate manufacturer for the Deaerator & Surge Tank Units?

    Response: Manufacturer on the schedule is used as a basis for design. As per specifications, contractor can use listed manufactures and/or approved equal and shall be subject for review prior to approval for equivalency.DOC decision on equivalency shall be final and binding.

35. Is Johnston Boiler an accepted alternate manufacturer for the Deaerators & Surge Tank Units?

    Response: See response to item #34

36. The written specification Section 23 50 11 calls for a traditional carbon steel tank with stainless steel internals which is typical for the DA & Surge Tanks. The DA & Surge Tanks schedule on the drawings calls for SS tanks. Full SS tanks are unnecessary as the water that it sees is chemically treated and deoxygenated. Please clarify the construction.

    Response: Surge tanks shall be ASME constructed of Stainless Steel while Deaerator Tanks are constructed of Carbon Steel for 50# ASME @300 Degrees F and guaranteed level .005 level of deaeration.

37. If the DA & Surge Tanks are supposed to be SS, the post load heat treat called for in the spec would be unnecessary. This heat treat is meant for CS Tanks. Please confirm/clarify.

    Response: See response to item #36;

38. Is Grundfos and acceptable alternate to the Shipco pumps specified?

    Response: See response to item #34

39. Specification Section 23 50 11 Paragraph 2.01 calls for Spray Style DAs, but then calls for Tray Style in the same section. Please confirm which style is required.

    Response: Deaerator to be Spray Style which includes 304L Stainless Steel spray box with Trays. See revision to specification in Addendum #5.

40. Drawing M-503 (Detail 19) shows Schematic Automatic Boiler Surface Blowdown Piping. Is this part of the project? It is my understanding that the boilers are not part of this project and the existing boilers are water tube boilers so this would not apply. Please confirm.

    Response: Automatic Boiler Surface Blowdown Piping is not required. Detail deleted in Addendum #5drawing.

41. Drawing M-502 (Detail 17) shows Boiler Feed Water Assembly Detail. Is this part of the project? If so, what control valve is specified on the schedule?

    Response: See revisions to detail in addendum#5

42. Drawing M-502 (Detail 11) shows Boiler Feed Water (BFW) Pressure Regulating Valve Assembly. Is this part of the project? If so, what BPRV is specified on the schedule?

    Response: See revisions to detail in addendum#5

43. Drawing M004.00 calls out BACnet communication and note every DA and Surge Tank shall have its own control panel. Please confirm that each tank shall have its own control panel.

    Response: Each tank shall have its own control panel.

44. Drawing M005.00 calls out six (6) boiler feedwater pumps (75HP, 460VAC), and six (6) condensate pumps (20HP 460VAC). It also calls out isolation valves but does not call out type or brand.

    Response: Basis of design for the six (6) Boiler Feedwater Pumps are based on Goulds 66SV61NT4C66N R and the six (6) Condensate Pumps are based on Ship Co 132++D Horizontal DH. Isolation valves are based are to be based on specification. Approved equals shall be based upon equivalency as indicated in response to item #34.

45. Drawing M005.00 also calls out a total of forty (40) Vanessa steam shut off valves but I did not find the source of control for these valves. Are these valves controlled by a Plant Master or Boiler control not shown?

    Response: These steam shut off valves are manual valves to replace existing shutoff valves connected to existing HPS Header serving the existing boiler and no they are not controlled by boiler control.

46. Drawing M301.00 for the surge tank shows the single 6" modulating valve assembly we are controlling on each surge tank controller (total of two Surge tanks)

    Response: Correct. 6" modulating valve for each surge tank.

47. Drawing M303.00 for the Deaerator tank shows two (2) each 4" modulating valve assemblies on each DA tank controller (total of three DA tanks) but drawing M504.00 shows only one 6" modulating valve assembly on each DA tank.

    Response: Provide two 4" lines as shown on M303. See addendum #5 – Drawings for detail revision.

48. Drawing M403.00 calls out Modbus RS-485 while Drawing M004.00 calls out BACnet. Which is correct?

    Response: Control shall be Bacnet as shown on schedules. See addendum drawing M-403.

49. Spec 23 05 14 page 3, Variable Frequency Drives call out several popular brands "or approved equal". Would Danfoss be an acceptable alternate?

    Response: See response to item #34.

50. Spec 23 05 14 page 9 calls for a VFD communication chip without noting the protocol. Please specify.

    Response: Bacnet based protocol.

51. Spec 23 05 14 page 8 calls out NEMA 1 VFD drives satisfactory for indoor applications while Spec 23 50 11 page 9 calls out NEMA 4. Please clarify which it is to be.

    Response: Provide NEMA 4 enclosure-suitable for operation at -4 to 158 degrees F with 100% humidity.

52. Spec 23 05 19 page 3 mentions "Foxboro" as acceptable transmitter. Page 3 also describes a flow meter that could possibly be an orifice plate with DPT. Page 5 calls for turbine flow meters. We have found Foxboro Vortex transmitters superior in long term reliability and maintenance to turbine-type flow meter.

    Response: Any approved equal type shall be submitted as shop drawing for approval during construction. See response to item #34.

53. Spec 23 50 11 mention water level controls and modulating valves without enough information to quote. Please provide clarification so that we may provide the specified equipment.

    Response: Assembly consist of Siemens or approved equal Transmitter and Belimo or approved equal Stainless Valve and Stainless Wye Strainer.

54. Spec 23 09 93 page 2 mentions including two (2) DPT transmitters per "VFD pumping system". I assume the VFD pumping system to mean each individual tank controller, but it is not clear. Please confirm.

    Response: Per "VFD pumping system" refers to each "pump".

55. I would Like to Request you the Pictures of the whole project and the electronic copies of drawings and Signed in sheet.

    Response: Please see addendum#5 – Attachment III.

56. Regarding direct digital / automatic temperature controls please confirm new BMS system is not to tie-into any existing BMS system on this project.

    Response: New Controls shall tie into existing Emerson Delta V control system. All control system components installed in the project shall be capable of being fully compatible, connectable and communicable with the existing Emerson Delta V control system.

Contractor shall provide all programming codes and software of the system installed in the project to DOC prior to project completion.

57. Please confirm floor drains are existing and to be re-used.

    Response: Contractor to reuse existing floor drains unless shown otherwise on the drawings.

58. Please provide schedules / specification for soft water piping, RO / permeate water piping and chemical feed pipes.

    Response: See addendum #5 drawings and specifications.

59. Please confirm chemical feed metering pumps are typical for 8 as it is called for on M-402 flow diagram.

    Response: Please see addendum drawing#5 for clarification.

60. On drawing M502 detail No. 12, 13 and 14 show new drip traps at existing steam condensate risers, existing steam supply risers and existing horizontal end of steam main but we cannot find this scope on the mechanical plans. Could you please provide location on mechanical plans where detail No. 12, 13 and 14 applies?

    Response: See addendum #5 drawings for location of steam traps

61. Please clarify if detail #19 schematic automatic boiler surface blowdown piping on drawing M-503 is to be included as this scope is not indicated on mechanical plans.

    Response: Automatic boiler blowdown piping not part of scope and is deleted in Addendum #5 drawings.

62. I didn't notice a specification on plumbing piping and insulation please advise. *Response: See addendum #5 for plumbing piping and insulation.*

63. There are numerous Steam Regulating Valve see M402 please provide manufactures and model# information.
    Response: Steam modulating valves are as responded to item 53. See addendum #5 drawings for pressure reducing valves.

64. The pre-bid meeting is scheduled for 10-15-20. After the meeting, please provide a list of the companies that participated in the Pre-bid Meeting.
    Response: See response to Question #20.

65. The site tour visit is scheduled for 10-16-20. After the site tour meeting, please provide a list of the companies that participated in the Site Tour Visit.
    Response: See response to Question #20.

66. Please provide bidders with a list of plan holders for this project.

    Response: See response to Question #20.

67. Please consider extending the due date for RFI's to give bidders time to absorb the information from both the pre-bid and site tour meetings, and properly submit questions.
    Response: The bid due date has been extended to January 14, 2021 at 12PM. Refer to Addendum No. 4 for additional details.

68. As per drawing M-301.00 note 1 and 2, do you mean to use the word "Install" instead of "Installed" under "Scope of Work On this Drawing"? It is confusing as this sentence makes it seem as the items following that word have already been installed. We would like clarification as to the scope. The same could be asked for M-302.00 and M-303.00 Scope of Work Sections throughout the M drawings. M-301.00 was used as an example.

    Response: See Addendum #5 drawing revised to clarify.

69. As per drawing M301.00 part plan 3, there are aren't any symbols that explicitly dictate where the new work begins and ends. It seems to show only bolded valves and fittings are to be replaced. This is also true for drawing M-303.00 part plan 1. Can you please clarify.

    Response: New work are shown as darker color as indicated on the symbol list. Symbol of point of connection are shown to indicate where new work connects to existing.

70. Please refer to the bid book and the notice of solicitation. The bid book lists the bid submission time to be 11:00 A.M. while the notice of solicitation has a bid due time at 2:00 P.M. Please clarify.

    Response: Refer to Addendum No. 4 for the bid due date and time.

71. Please confirm 2nd tier participation (both subcontractors and vendors) will be able to counted towards MWBE participation on this project.

    Response: Yes, indirect (2nd tier) subcontractors can be counted towards M/WBE goals if proper documentation/payment vouchers are submitted to the agency.

72. The contract drawings do not indicate any approved staging and/or laydown areas for trailers, materials, equipment, dumpsters, etc. Please clarify.

    Response: Please see response to Q#25.

73. Please provide the specification section for the rollup doors.

    Response: See specification section 08 33 00 in Addendum#5.

74. Please refer to Article 9. Progress Schedules of the Standard Construction Contract. The section requires the contractor to submit a CPM schedule but there is no specification section with the detailed requirements such as software, resource loading, submission frequency etc. Please clarify

    Response: CPM schedule requirement will be coordinated between the awarded contractor & DOC-CMU. Contractor to submit copies of both pdf and original software file. Files to be updated monthly.

75. Please refer to Specification Section 07 25 00 Roof Flashing and Related Roof Repair Work. The drawings do not indicate that there is any contract work on the roof or penetrating the roof. Please clarify.

    Response: Spec. Section 07 25 00 is not required since there is no roofing work.

76. Please refer to the mechanical drawings, specifications, and the painting specification. Based on the referenced documents, it is unclear what mechanical piping and equipment is to be painted. Please provide a schedule indicating what piping and equipment is to be painted for this project.

    Response: All new piping work are to be painted. Any equipment paint damaged during installation shall be touched and finished..

77. The contract documents do not indicate that the contractor has to provide any temporary services for the resident engineer and/or owner such field offices/trailers, cleaning, furniture, equipment, etc. Please confirm these and any other similar services are not required

Response: These services are not required.

78. Drawing M004.00 – Pressurized Deaerator Tank Schedule: the DA tank operating weight on schedule says 18,000lbs. The DA tank at half full of water will weigh 35,000 lbs. Please note these deaerators will be close to 70,000 lbs operating.

Response: Operating weight clarified in addendum#5. The equipment is replacing existing equipment of comparable weight..

79. Drawing M004.00 – Pressurized Deaerator Tank and Surge Tank Schedule – Note 1: Please confirm materials of construction for the deaerators and surge tanks. Note 1 states stainless steel, but the specification (23 50 11 Paragraphs 2.01 D.1.b. and 2.02 C.2.) state carbon steel.

Response: See response to Q#36.

80. Drawing M004.00 – Pressurized Deaerator Tank and Surge Tank Schedule – Note 2: Please advise if there are any specific requirements for the PLC Controls? Is Allen Bradley acceptable?

Response: All products and equipment can be provided with approved equal. All substitutes will be subject to review for equivalency and compatibility. Also see response to item #34.

81. Specification 23 50 11 – Paragraph 2.01 C.: Please confirm 20 minutes storage on deaerators. This would equate to approximately 8400 gallons per tank, but the schedule lists 4430 gallons per tank.

Response: Tank capacity revised to 13,290 gallons in addendum#5 drawings.

82. Specification 23 50 11 – Paragraph 2.01 D.1.a.: Please confirm 150psig pressure rating on the deaerator? Typically a 50 psig pressure rating is provided for a tank with a working pressure of 3-5 psi.

Response: The Deaerator Tank is rated for 50PSIG at 300-degree F.

83. Specification 23 50 11 – Paragraph 2.01 D.2.-4.: Please confirm a spray deaerator is to be provided as described in Paragraph 2.01 A. and as depicted on the drawings. These paragraphs describe a tray type, packed column, and spray type deaerator.

Response: Spray deaerator shall be provided.

84. Specification 23 50 11 – Paragraph 2.02 C.3.: Please clarify surge tank design pressure, 25 psig or 50 psig.

Response: The design pressure of the Surge Tank shall be 50 PSIG.

85. Specification 23 50 11 – Paragraph 2.02 G.: Please confirm requirement of interior coating. We assume interior coating is not required if the surge tank construction is stainless steel (see RFI #2 above).

Response: Surge Tank is Stainless Steel and shall not require coating.

86. Specification 23 22 23 – Paragraph 2.01.: The specification calls for a mechanical type Spence Type ED steam pressure reducing valve, but the Steam Pressure Reducing Valve

Schedule on M005.00 calls for pneumatic Fisher Controls valves. Please clarify the required pressure reducing valve type.

Response: Steam Pressure Reducing Valve to be provided as shown on schedule or its approved equal. See response to items # 34 on equivalency. As a add alternate, provide a separate price for Fisher Controls Valve. See addendum documents.

87. During the walk through there was to be an addendum issued in order to address some questions about the bid and one in particular was that an Engineer's estimate was to be provided. Please provide this information. Thank you.

    Response: Please see response to Q#23.

88. Specification 00 01 50 – Section B provides a list of drawings that are not shown nor provided in the drawings set nor on its cover sheet. Furthermore, the drawing set lists and has drawings that are not listed in this spec section within the project manual. Please advise. List below shows the discrepancies:

    Response: See addendum#5 documents for clarification on the drawing list.

89. Drawings listed in Spec and NOT in the drawing set: M200, M207, M208, M210, M217, M218, M220, M227, M228, M230, M233, M234 & M235, respectively.

    Response: See response to item #88.

90. Drawings NOT listed in Spec and in the drawing set: M306, M403, S100, S200, S201, S300.

    Response: See response to item #88.

91. The equipment schedule on dwg M004.00 has a model number for the Reverse Osmosis Filtration System of MRO-94K-8H with required dimensions, HP, Membrane Qty, and weight; however, when reviewing this information on the Manufacturer's website for this particular model, the information is substantially different. Please clarify.

    Response: Reverse Osmosis Filtration System revised to clarify in addendum#5 drawing.

92. The equipment schedule on dwg M004.00 Note 1 states that the CIP Skid shall be shipped in piece and assembled in field. All components shall fit through existing service hatch down to tank level on barge. Please clarify.

    Response: Note 1 on drawing M 004.00 revised in addendum#5 to read "CIP shall be shipped in pieces and assembled on site/field. Contractor to verify location prior to delivery.

93. Please refer to Drawing A-101 and the Mechanical Phasing Drawings. The drawings show the removal of the existing exterior wall at both the pump room and deaerator room to facilitate construction and for the new roll up door. Please verify that this the only location where the contractor is to alter the structure to provide access to the powerhouse and any additional access openings will be treated as a change condition?

    Response: Please see architectural drawings for full scope. The scope includes removal of exterior wall to the Pump Room (Level 15'00") and Deaerator Room (Level 35'4"), provision of roll up doors at both locations, removal of existing partitions in Storage, provision of new door in that room wall, etc.as shown in A-101.00. See addendum#5 drawing for additional scope.

94. The drawings do not show any specific interior elements (walls, slabs, etc.) to be modified to create access within the Powerhouse. Please verify that it is the owner's intent that the Powerhouse structure should not be altered other than what is shown in the permanent condition and any such work required will be treated as a contract change as no as-built drawings/details etc. have been provided to accurately engineer any temporary measures.

    Response: See response on item #93.

95. Will silencers be required? If so please provide specifications.

    Response: No silencers required.

96. Some of the PRV's are set up to be two control valves in series, the first with 150 psig inlet and 70 psig outlet and that flows into the second from 70 psig to 10 psig. However please note that many of these do not have the same capacity in the schedule and this is impossible. For example, PRV-3 has a required capacity of 12,200 lb/hr and PRV-3A has a required capacity of 9,500 lb/hr. There are many others like this. This issue needs to be cleared up before ordering these valves as one of these capacities is not correct. Please clarify which is correct in each instance.

    Response: See addendum #5 drawings for PRV schedule.

97. We have looked through the drawings and found existing pipe sizes for the inlet and outlet of these PRV's and this also leads us to believe that some of the required capacities are incorrect. For example, PRV-10A has an outlet flow rate of 105,000 lb/hr. The calculated pipe size for this flow at 10 psig is 28". On the drawings it lists just a 14" pipe and this much steam will not flow in that size pipe. We have found other examples of this with both undersized and oversized inlet and outlet piping. Please correct these discrepancies.

    Response: See addendum#5 drawings for PRV schedule.

98. Please refer to Drawing A-101. The drawing shows multiple partitions and exterior walls to be removed. Please provide the following: As-built details of the exterior wall and various partitions so they can be priced accordingly (masonry, drywall, height, thickness, etc.) Photographs showing each of the locations to be demolished.

    Response: The existing construction where modifications are required are shown in structural drawings. Pictures will be provided for these areas.

99. Please refer to Architectural Drawings A-101 and A-102. Detail 4/A-101 states that the wall opening at the deaerator room is to have a roll down gate. Section Detail 4/A-102, however, shows the roll down gate only extending to the ceiling of the pump room and the area above to receive new CMU to close the opening at the deaerator room. Please verify if there is to be only one (1) roll down gate and Section Detail 4/A-102 is correct.

    Response: There will be two (2) new roll down gates; one (1) for the Pump Room (level 15'00") and one (1) for Deaerator Room Level 35'4"). See addendum#5 drawings.

100. Please refer to Drawing T003 and the Bid Form. Drawing T003 mentions Add Alternate #1 to provide new 4" boiler feed piping and connect to the existing boiler feed to co-gen plant but this is not addressed on the bid form / schedule of prices. Please clarify.

    Response: Add Alternate #1 to be added on bid form/schedule of prices. See revised bid sheet on addendum#5.

101. Please refer to Details 1 & 2 on Drawing A-101. The detail shows the installation of two new interior doors in existing walls but there is no door specification with the detailed specs. Please provide.

Response: Details and specification of two (2) new doors in existing walls is provided on drawing A-101. See addendum#5 drawings for clarification.

102. Is there an existing BMS/BAS? If so, please provide contact info.

Response: See response to item #56

Please note: The due date for Requests for Information (RFIs) has passed and no further questions will be accepted.

Please sign below in acknowledgment of this addendum and submit this addendum with your bid.

_____
Agency Chief Contracting Officer

I acknowledge receipt of this addendum.

_____
Bidder/Company Name (Print)

_____
Authorized Representative (Print Name)

_____
Authorized Representative (Signature) **Date**

PART A: INFORMATION FOR BIDDERS

DEPARTMENT OF CORRECTION

The pages in each Part of this document are numbered consecutively. Prospective Bidders must examine the documents carefully. Before bidding, prospective Bidders must notify the agency contact person listed in Section 7 below, in writing, if pages are missing and request that these missing pages be furnished to them.

1. DESCRIPTION OF PROCUREMENT

A. Name/Description of project: Powerhouse Boiler Feed Water Treatment System Upgrade

B. The term for this service is**: 455 Consecutive Calendar Days**

2. TIME AND PLACE FOR RECEIPT OF BIDS

A. The Department shall receive all sealed bids at the following location on or before the date and time set forth below:

Ava B. Rice, Assistance Commissioner
New York City Department of Correction
Central Office of Procurement
75-20 Astoria Blvd., Suite 160
East Elmhurst, New York 11370

DATE:
TIME: _____ (*bid opening*)

B. It is the Bidder's responsibility to assure that its bid is received at the bid location on or before the date and time of the scheduled bid opening and that the bid and all other documents requiring signature are signed and notarized.

C. The completed bid must be submitted in a sealed envelope on or before the time and at the place indicated above. The envelope must indicate:

(1) The name of the person, firm or corporation presenting the bid;
(2) The bid opening date;
(3) The PIN number; and
(4) The bid title.

D. Failure to comply with the instructions in this Section 2 may result in rejection of the bid.

3. PROCUREMENT POLICY BOARD RULES

PART E: GENERAL CONDITIONS

Schedule "A" (Bonding and Insurance Requirements, etc.)

Performance Bond Form, if applicable

Payment Bond Form, if applicable

SCHEDULE A

GENERAL CONDITIONS TO CONSTRUCTION CONTRACT
(INCLUDING GENERAL CONDITIONS RELATING TO ARTICLE 22 -- INSURANCE)

PART I. REQUIRED INFORMATION

INFORMATION FOR BIDDERS **BID BOND** The **Contractor** shall obtain a bid bond in the amount indicated to the right.	10 % of the total bid price
INFORMATION FOR BIDDERS **PERFORMANCE AND PAYMENT BONDS** The **Contractor** shall obtain performance and payment bonds in the amount indicated to the right.	100% of Total Price
CONTRACT ARTICLE 14. **DATE FOR SUBSTANTIAL COMPLETION** The **Contractor** shall substantially complete the **Work** in the number of calendar days indicated to the right.	**455** consecutive calendar days
CONTRACT ARTICLE 15. **LIQUIDATED DAMAGES** If the **Contractor** fails to substantially complete the **Work** within the time fixed for substantial completion plus authorized time extensions or if the **Contractor**, in the sole determination of the **Commissioner**, has abandoned the **Work**, the **Contractor** shall pay to the **City** the amount indicated to the right.	**$250.00/PER DAY** for each consecutive calendar day over substantial completion time See Specifications/Scope of Work for periods other than the period set forth in Article 15 of the Standard Construction Contract (Part D)

BID SHEET (Revised)
PIN 072202001CPD

Grand Total Price shall include all costs and expenses, including but not limited to labor, material, overhead and profit for all the Work described and shown in the Drawings and Specifications.

Item A. LUMP SUM PRICE TO PERFORM THE WORK

Provide a lump sum bid price for all labor and material to complete the Work required by the Specifications and the Drawings excluding Allowances,

Total Price for Labor	Total Price for Material	Total Price
$_____	$_____	$_____

Item B. ALLOWANCES: **$15,000.00**

LEAD PAINT ABATEMENT, AS DIRECTED BY DOC, THE CONTRACTOR SHALL OBTAIN THREE COMPETITIVE COST PROPOSALS SUBJECT TO DOC APPROVAL.

ADD ALTERNATE #1: Provide boiler feed water piping from pump room to service Co-Gen plant.

Provide a lump sum bid price for all labor and material to complete the Add Alternate #1 Work required by the Specifications and the Drawings.

Total Price for Labor	Total Price for Material	Total Price
$_____	$_____	$_____

ADD ALTERNATE #2: Provide Fisher Valves and Emerson Delta V Controls in lieu of base work valves and controls.

Contractor shall provide additional cost for labor and material (cost difference) between Fisher valves and Emerson Delta V Controls compare to base work valves and controls as per project documents. If DOC specifies to use the Fisher valves and Emerson Delta V controls as per this add alternate, the total additional cost of labor and material shall be added to the base bid.

Total additional cost for Labor	Total additional cost for Material	Total additional Cost (labor +material)

$**_____ **$_____ **$**_____

GRAND TOTAL BID PRICE in FIGURES (Item A + Item B + Add Alternate #1 + Add Alternate #2):

$_____.____.

GRAND TOTAL BID PRICE in words:

_____ DOLLARS and_____CENTS.

The Contract shall be awarded to the qualified Bidder who submits the lowest responsive **Grand Total Bid Price**, and who has been determined to be a responsible bidder.

Notes:

(1) The bidder shall not alter the bid format from that required herein. Any alterations to the bid format will result in a determination of the respondent being "nonresponsive."

(2) Inclusion of disclaimers which contradict the requirements of this Invitation to Bid will also result in a determination of the respondent being "nonresponsive."

Bidder's Company Name:

_____

Name of Bidder's Representative:

_____

Signature of Bidder's Representative:

_____

Date: _____

BID BREAKDOWN

SUBMISSION: Bidders are advised that the requirement to submit a Bid Breakdown applies to each contract for which an "X" is indicated before the word "Yes". If required, the bidder must submit, with its bid, a completed Bid Breakdown. Failure to provide a completed Bid Breakdown may result in rejection of the bid as non-responsive.

_____*X*___ YES _____ No

LIMITATIONS ON USE OF BID BREAKDOWN:

Bidders are advised that the Bid Breakdown shall be used for bid analysis purposes only and shall not be binding for any other purposes under the Contract, including, without limitation, for payment purposes or in connection with a contractor claim for extra work. If the form for the Bid Breakdown does not include an item of work required by the Contract Documents, such omission shall have no effect whatsoever, nor shall it be used by the contractor in connection with a claim for extra work (i.e., work for which the contractor is entitled to a change order).

INSTRUCTIONS FOR PREPARING BID BREAKDOWN:

A. The Bid Breakdown is set forth on the following pages and is in accordance with the Construction Specification Institute (CSI) format. For all items of work listed in the Bid Breakdown, the bidder must indicate the price for labor and the price for material.

B. In preparing its Bid Breakdown, the bidder shall submit prices that include all costs for overhead and profit. Overhead shall include, without limitation, all costs in connection with the following: administration, management, superintendence, small tools, insurance, bonds, and provision of services or items required by the General Conditions.

C. If an item is set forth in the Bid Breakdown, but is not included in the Contract Documents (Drawings, Specifications, General Conditions, and/or Addenda), the bidder is advised to leave the item blank and exclude the cost of the item from its grand total. **In an attachment to its Bid Breakdown, the bidder shall provide a list of all items left blank**.

D. If an item is not set forth in the Bid Breakdown, but is included in the Contract Documents (Drawings, Specifications, General Conditions, and/or Addenda), the bidder is advised to add the item to its Bid Breakdown and include the cost of the item in its grand total. **In an attachment to its Bid Breakdown, the bidder shall provide a list of all items added.**

PIN 072202001CPD

BID BREAKDOWN

Item A. LUMP SUM PRICE TO PERFORM THE WORK

CSI Number	Description	Total Cost of Material	Total Cost of Labor	Total Cost: Materials and Labor
DIV 03[i]	**CONCRETE**			
DIV 05	**METALS**			
DIV 07	**THERMAL & MOISTURE PROTECTION**			
DIV 08	**OPENINGS**			
DIV 09	**FINISHES**			
DIV 22	**PLUMBING**			
DIV 23	**MECHANICAL**			
DIV 26	**ELECTRICAL**			
	TOTAL ITEM A	$_____		

ADD ALTERNATE #1: Provide boiler feed water piping from pump room to service Co-Gen plant.

CSI Number	Description	Total Cost of Material	Total Cost of Labor	Total Cost: Materials and Labor
DIV 02*	EXISTING CONDITIONS			
DIV 23	MECHANICAL			
	TOTAL ADD ALTERNATE #1	$_____		

ADD ALTERNATE #2 : Provide Fisher Valves & Delta V Controls

CSI Number	Description	Total Cost of Material	Total Cost of Labor	Total Cost: Materials and Labor
DIV 23*	MECHANICAL			
	TOTAL ADD ALTERNATE #2	$_____		

*.Bidders are instructed to incorporate the costs of all pre-Division 02 specifications into their bid breakdown

Bid Breakdown Total **Item A + Add** **Alternate #1 + Add** **Alternate #2** **NOTE: This is not the bidder's bid price. This bid breakdown total is for bid analysis purposes only.**	$_____

Addendum No. 5

List of Items Left Blank in the Bid Breakdown (if any):

Addendum No. 5

List of Items Added to the Bid Breakdown (if any):

III. TECHNICAL SECTIONS

DIVISION 00

SECTION 00 01 50 – LIST OF DRAWINGS

LIST OF DRAWINGS

A. The Contract Drawings, which accompany this Part C (Specifications) and form a part of the Contract Documents, are listed on the Title Sheet of the Drawings.

B. List of drawings:

No.	Dwg No.	Drawing Title
1.	T001.00	Cover Sheet
2.	T002.00	Powerhouse Location Plan & Drawing List
3.	T003.00	Building Department Notes & Summary Of Works
4.	A001.00	Symbols, Abbreviations, Notes
5.	A100.00	Existing Main Floor Plan (South)
6.	A102.00	Details
7.	M001.00	HVAC Symbol List & Abbreviation List
8.	M002.00	HVAC General Notes Sheet 1 of 2
9.	M003.00	HVAC General Notes Sheet 2 of 2
10.	M004.00	HVAC Schedule Sheet 1 of 2
11.	M005.00	HVAC Schedule Sheet 2 of 2
12.	**DM101.00**	**HVAC Removal Work Part Plan Pump Room, Part Plan Cellar**
13.	**DM102.00**	**HVAC Removal Work Part Plan Chiller Room & Part Plan Tank Room**
14.	**DM103.00**	**HVAC Removal Work Part Plan Deaerator Room & Part Plan Heater Room**
15.	**DM104.00**	**HVAC Removal Work Part Plan Boiler Room Sheet 1 of 2**
16.	**DM105.00**	**HVAC Removal Work Part Plan Boiler Room Sheet 2 of 2**
17.	**M201.00**	**HVAC Phase 1 Pump Room Part Plan**
18.	**M202.00**	**HVAC Phase 1 Pump Room Part Plan & Tank Room Part Plan**
19.	**M203.00**	**HVAC Phase 1 Chiller Room Part Plan (Level 15'00")**

20.	**M204.00**	**HVAC Phase 1 Heater Rooms Part Plan**
21.	**M205.00**	**HVAC Phase 1 Boiler Room Part Plan Sheet 1 of 2**
22.	**M206.00**	**HVAC Phase 1 Boiler Room Part Plan Sheet 2 of 2**
23.	**M211.00**	**HVAC Phase 2 Cellar, Pump Room Part Plan**
24.	**M212.00**	**HVAC Phase 2 Pump Room Part Plan & Tank Room Part Plan**
25.	**M213.00**	**HVAC Phase 2 Chiller Room Part Plan**
26.	**M214.00**	**HVAC Phase 2 Deaerator Room & Heater Room Part Plan**
27.	**M215.00**	**HVAC Phase 2 Boiler Room Part Plan Sheet 1 of 2**
28.	**M216.00**	**HVAC Phase 2 Boiler Room Part Plan Sheet 2 of 2**
29.	**M221.00**	**HVAC Phase 3 Pump Room & Cellar Part Plan**
30.	**M222.00**	**HVAC Phase 3 Tank Room & Pump Room Part Plan**
31.	**M223.00**	**HVAC Phase 3 Chiller Room Part Plan**
32.	**M224.00**	**HVAC Phase 3 Deaerator Room Part Plan**
33.	**M225.00**	**HVAC Phase 3 Boiler Room Part Plan 1 of 2**
34.	**M226.00**	**HVAC Phase 3 Boiler Room Part Plan Sheet 2 of 2**
35.	**M231.00**	**HVAC Phase 4 Tank Room & Cellar Part Plan**
36.	**M232.00**	**HVAC Phase 4 Deaerator Room Part Plan**
37.	M301.00	**HVAC New Work Part Plan Tank Room and Part Plan Pump Room**
38.	M302.00	**HVAC New Work Part Plan Chiller Room and Part Plan Deaerator Room.**
39.	M303.00	**HVAC New Work Part Plan Deaerator and Part Plan Heater Room**
40.	M304.00	HVAC – New Work Boiler Room Part Plan 1 & 2
41.	M305.00	**HVAC New Work Part Plan Boiler Room**
42.	**M306.00**	**HVAC Add Alternate No.1 Boiler Room, Deaerator Room, Pump Room Part Plan**
43.	M401.00	HVAC Boiler Feed Water System Removal Diagram
44.	M402.00	HVAC Boiler Feed Water Treatment System – Flow Diagram
45.	**M403.00**	**HVAC Control System Diagram**
46.	M501.00	HVAC Details Sheet 1 of 4
47.	M502.00	HVAC Details Sheet 2 of 4

48.	M503.00	HVAC Details Sheet 3 of 4
49.	M504.00	HVAC Details Sheet 4 of 4
50.	E001.00	Electrical - Symbols, Abbreviations and General Notes
51.	E002.00	Electrical - Demolition Notes and Drawing List
52.	DE101.00	Electrical Removal Work Pump Room Part Plan
53.	DE102.00	Electrical Removal Work Storage Tank Room Part Plan
54.	E201.00	Electrical Power Part Plan Pump Room North
55.	E202.00	Electrical Condensate Tank Room Power Part Plan
56.	E203.00	Electrical Power Part Plan – Deaerator Room
57.	E204.00	Electrical Powerhouse Main Floor (South) Part Plan
58.	E401.00	Electrical Single Line Diagram
59.	E501.00	Electrical - Panel Schedules
60.	E601.00	Electrical Details
61.	**S100.00**	**General Notes and Design Criteria**
62.	**S200.00**	**Catwalk Framing and Foundation Plans**
63.	**S201.00**	**Catwalk Sections and Details**
64.	**S300.00**	**New and Enlarged Opening Elevations and Sections**

END OF SECTION 00 01 50

SECTION 08 33 00
COILING DOORS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Provide rolling doors as indicated on the Drawings and as specified herein, including but not limited to the following:

1. Rolling doors.

1.02 REFERENCES

A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

1. Aluminum Association (AA)

2. American Society for Testing and Materials (ASTM)

1.03 SUBMITTALS

A. Product Data

1. Catalog sheets, specifications, finishes, operators, and installation instructions for rolling door and grille assemblies.

B. Shop Drawings

1. Submit complete details showing specific project conditions. Show all adjacent materials, dimensions and construction.

C. Quality Control Submittals

1. Submit certification and listing by an Approved Agency in accordance with NYC Dept. of Buildings rules, indicating that the materials and assemblies as regulated by the NYC Building Code are acceptable for the intended use. When test methods are stipulated in the NYC Building Code, the tests utilized shall be stated in the certification. Prior MEA and BSA approvals are acceptable for materials conforming to current Code requirements. Fire rated counter shutters are regulated assemblies.

2. Thermal certification: Letter from manufacturer certifying that exterior rolling doors are insulated with R = min 4.75 or achieve a "U" Factor no greater than 0.5.

3. Air infiltration rate report: Manufacturer's statement that the door when subjected to air infiltration test in accordance with NFRC 400, the air infiltration did not exceed 0.40 cubic feet per minute per square foot of rolling door.

D. Maintenance Data

Deliver 2 copies of the following, covering the installed products, to the Authority:

1. Operation and maintenance data.

2. Replacement parts list.

E. Warranties in accordance with Article 1.07.

1.04 QUALITY ASSURANCE

A. Manufacturer

Minimum of five years successful experience in the manufacture of products of type specified.

B. Installer

Minimum of three years successful experience in the installation of products of type specified.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle the products of this Section as recommended by the Manufacturer, to protect from damage.

1.06 WARRANTIES

A. All coiling doors shall be furnished with a 5 year warranty against all defects in operation and finish.

PART 2 - PRODUCT

2.01 ACCEPTABLE MANUFACTURERS

A. Roll-up Grilles

1. Wayne Dalton Mt. Hope, OH.

2. Cornell Iron Works, Inc., Mountaintop, PA.

3. McKeon Door Co. Bellport, NY

4. Or Approved Equal.

B. Roll-up Shutters

1. Wayne Dalton, Mt Hope, OH.

2. The Cookson Company, Phoenix, AZ.

3. McKeon Door Co., Bellport, NY

4. Cornell Iron Works, Inc., Mountaintop, PA.

5. Or Approved Equal.

2.02 ROLLING GRILLES

A. Construction

1. Curtain: Shall be assembled of 14 gauge extruded aluminum interlocking slats. Slats shall have endlocks locking each end of all alternate slats to act as a wearing surface and maintain slat alignment. The void of the curtain slats shall be filled with foamed-in-place polyurethane insulation. Roll formed slats with snap-in back panels are not acceptable.

2. Slats: Shall be of a cross section not less than 2-1/2” wide by 1-1/8” deep.

3. Bottom Bar: Shall consist of two (2) angles, each not less than 2" x 2" x 1/8" aluminum formed to fit slats. Provide neoprene astragal to act s a weather seal against air infiltration and slide locks with hasps on both jambs to allow for locking.

4. Guides: Each guide assembly shall be fabricated of a minimum 3" x 3" steel support angle, a 2" x 3" inner guide aluminum angle and a 3" x 3" outer guide aluminum angle. Provide neoprene weather seals extending the full height of both guides.

5. Mounting Brackets: Fabricated of hot rolled 3/16” steel plate minimum, brackets shall be provided to house ends of the counterbalance barrel assembly.

6. Hood: Shall be provided to entirely enclose curtain and counterbalance barrel assembly. Hood shall be fabricated 18 gauge aluminum and designed to match brackets. Top and bottom shall be bent and reinforced for stiffness. Provide internal neoprene air baffle to minimize air infiltration at the head.

7. Counterbalance Assembly: Coiling insulated service door shall be counterbalanced by means of adjustable steel helical torsion springs attached to shaft enclosed in pipe with required mounting blocks or rings for attachment of curtain. Grease sealed bearings or self-lubricating graphite bearings shall be attached to the spring barrel which shall be fabricated of hot formed structural quality carbon steel seamless pipe.

8. Hand Chain Operator: Coiling insulated service door shall be provided with a gear reduction mechanism designed and built by the door manufacturer. The gear reduction mechanism shall not require more than 35 pounds of operational force to move the coiling insulated service door in either direction.

9. Finish: After completion of fabrication, clean all metal surfaces to remove dirt and chemically treat to provide for paint adhesion. All steel components shall receive a coat of prime paint finish and all exposed aluminum shall be of a clear anodized finish.

9. Locking Device:

   a. Padlock for manual push up grille. Provide accommodation for padlock.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verification of Conditions

Examine door openings for defects that will adversely affect the execution and quality of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.02 INSTALLATION

A. Install the Work of this Section in accordance with the manufacturer's printed instructions, except as shown or specified otherwise.

1. Field connections and fastening shall be as recommended by the door or grille manufacturer for the conditions, unless otherwise indicated.

2. Install bracing and supports as necessary to rigidly secure door operating equipment and appurtenances.

3. Connect motor operated devices, sensor edge and fire-rated assemblies to the building electrical and fire alarm systems as indicated. Connection of automatic operating devices under Electrical Section 16720.

3.03 FIELD QUALITY CONTROL

A. Tests

Test all functions and features of each rolling door or grille.

3.04 ADJUSTING

A. Adjust and lubricate doors, grilles and operating equipment to operate smoothly.

3.05 CLEANING

A. Clean doors, grilles and clean work area surfaces that have been soiled during performance of the Work.

END OF SECTION

* * *

LIST OF SUBMITTALS

SUBMITTAL	DATE SUBMITTED	DATE APPROVED
Product Data:	_____	_____
1. Catalog sheets, specifications, and installation instructions for rolling door and grille assemblies 2. Sensor edge data		
Shop Drawings:	_____	_____
1. Details, adjacent materials, dimensions and construction 2. Electric Motor: Wiring and power information		
Quality Control Submittals:	_____	_____
1. Certification and listing by an Approved Agency for fire rated assemblies 2. Thermal certification 3. Air infiltration rate report		
Maintenance Data:	_____	_____
1. Operation and maintenance data 2. Replacement parts list		
Warranties:	_____	_____
7 **Sustainability:**	_____	_____
1. Contractor's Sustainable Materials Form (see Section S01352) with materials cost information)		

* * *

SECTION 08 71 00 - DOOR HARDWARE

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Provide door hardware as indicated on Drawings, as specified herein and as needed for complete hardware requirements.

1.02 REFERENCES

A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.

1. American National Standards Institute (ANSI).
2. National Fire Protection Association (NFPA).
3. Door and Hardware Institute (DHI).
4. Underwriters Laboratories (UL).
5. Builders hardware Manufacturers Association (BHMA)

1.03 SUBMITTALS

A. Manufacturer's Technical Product Data: Submit for each hardware item type, including cuts, specifications and characteristics, instructions for installation, operation, and maintenance.

B. Samples: Prior to submittal of the final hardware schedule and prior to delivery of hardware, submit one (1) sample of each typical exposed lockset unit. The sample will be reviewed by DOC for design, color and texture only. Compliance with other requirements is the exclusive responsibility of the Contractor. Samples approved by DOC shall be turned over to DOC for attic stock.

C. Hardware Schedule

1. Locations of hardware, with cross-reference to schedules and other indications on Drawings.
2. Name, manufacturer, type, style, size, function, and finish.
3. Information for fastenings.
4. Mounting Locations.

5. Materials and sizes of doors and frames.

6. Explanation of abbreviations and symbols.

At time of submittal of Hardware Schedule, furnish hardware templates to fabricators of other factory-prepared work necessary for installation of hardware.

D. Templates

E. Key Schedule

1. Consult with DOC prior to preparing a keying schedule in order to confirm the required keying scheme.

2. Submit Hardware Key Schedule, prepared by hardware supplier, to DOC within forty-five (45) days after starting date of Contract.

3. Stamp top face of each key with letter and number using keyset symbols as set forth in the BHMA handbook. Tag each series of keys.

4. Stamp face of each cylinder with the same corresponding keyset symbols.

5. Locks shall be made up on combinations as specified.

F. Furnish schedule of keys in quadruple indicating keyset symbol of each key and number of rooms, cases, lockers, and other locations for which the keys are intended. Submit schedule for approval before making keys.

G. Deliver to DOC the required number of keys for each lock, properly marked

H. Key Cabinet Schedules

I. Key Machine, Key Blanks and Attic Stock

Furnish the following in accordance with Article 4.02E:

1. Automatic key cutting machine.

2. 300 of each manufacturer's cylinder key blanks.

3. 10% attic stock of manufacturer's cylinders with keys.

J. Warranties

Furnish Warranties as specified in Article 1.08

1.04 QUALITY ASSURANCE

A. Hardware Supplier

Finish hardware shall be furnished by those having a minimum 5 years of builders hardware experience and shall have in their employ at least one certified Architectural Hardware Consultants (AHC) to correctly interpret the plans, detailed drawings and specifications.

B. Manufacturer

1. Manufacturer shall have minimum of three (3) years successful experience manufacturing types and sizes of Hardware specified herein.

2. Obtain each hardware type from a single manufacturer.

C. Minimum Quality Requirements

1. The manufacturer shall certify that the Hardware items to be furnished shall be of quality specified herein, and meet the requirements of the applicable ANSI A156 Grade 1 standard for each item.

2. Manufacturers Certificate that closers meet the 5,000,000 cycle test requirement.

D. Fire-rated Openings

Provide hardware in compliance with NFPA Standard No. 80 and NYC Building Code requirements, tested and listed by UL for types and sizes of doors, and in compliance with requirements of door frame and door labels.

1.05 SHIPPING, STORAGE, AND HANDLING

A. Package and ship hardware to prevent damage. Properly identify and tag each item. Sort, package and mark hardware with set numbers.

B. Inventory hardware immediately upon delivery.

C. Provide secure (locked) storage area for hardware until installed.

1.06 PROJECT CONDITIONS

A. Coordinate hardware with other work. Tag each item or package separately, with identification related to the final hardware schedule and include basic installation instructions in the package. Furnish hardware items of proper design for use on doors and frames of the thickness, profile, swing, security and similar requirements indicated and as necessary for proper installation and functions. Deliver packaged hardware items to the proper locations for installation.

B. Furnish hardware templates to each fabricator of doors, frames and other work to be factory prepared for the installation of hardware.

1.07 CONSTRUCTION KEYING

A. All new buildings, additions or phased modernization projects must utilize a Construction Master Key System. This system is to insure the integrity of the keys and the security of the building. This system must be utilized throughout the construction period. Upon acceptance of DOC, the temporary construction cores must be removed and replaced with permanent cores before the 'Building Turnover'.

1.08 WARRANTIES

A. The hardware manufacturers shall provide full replacement warranty as listed below. Replacement warranty shall include material and labor cost.

-Exit Devices 3 years.
-Locksets, etc. 1 year.
-Hinges 1 year.
-Balance of hardware 1 year.

B. Closers shall be warranted to properly operate door, free from mechanical defects for ten years from date of substantial completion of the Work. Closers which fail to meet specified requirements shall be replaced or repaired and made to operate properly by Contractor without additional expense to DOC.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Butts

1. Stanley
2. McKinney
3. Hager
4. Bommer
5. Lawrence
6. Or approved Equal

B. Continuous Hinges

1. Markar
2. McKinney
3. Ives
4. Or approved Equal

C. Pulls

1. Rockwood
2. Ives

3. Or approved Equal

D. Door Closers (non-ADA)

1. LCN
2. Norton
3. Sargent
4. Yale
5. Dorma
6. Or approved Equal

E. Stop and Holder

1. Glynn Johnson
2. Architectural Builders Hardware (HD8000 Series)
3. Rixson (Heavy-Duty 8HD Series)
4. Or approved Equal

F. Security Locks/Lockset

1. Folger Adam
2. Yale
3. Securitech
4. Secur-A-Door, Inc.
5. Sargent
6. Or approved Equal

2.02 MATERIALS AND FABRICATION

A. General

1. Hardware: Heavy duty cast or forged (.080 min.) bronze with satin chromium finish BHMA 626, except as otherwise specified.

2. Interior Door Holders: Steel, satin chromium BHMA 626 finish.

3. Door closers: As specified herein.

4. Interior butts and horizontal releases: As hereinafter specified with chrome finish.

5. Surfaces of castings shall be true, smooth and free from burrs. Lock mechanism and accessory components in contact with or bear upon other parts shall be dressed to a true, smooth surface.

6. Items of cast iron shall be annealed.

7. Whenever weight is specified, it shall mean actual weight of casting without screws, washers and accessories.

8. Do not use products with manufacturer's name in an exposed location, except name on rim of lock cylinders.

9. Backset: 2-3/4" for locksets and latchsets unless indicated otherwise.

B. Screws

1. Secure hardware with suitable screws and bolts of same material and finish as hardware items unless otherwise specified. Screws for strike and face plates, hinges, transom hardware, half-mortise brass locks, pulls, coat and hat hooks, overhead door holders, and door checks and brackets for these items shall be flat-headed counter-sunk screws. Screws for other exposed hardware shall be oval-headed. Screws for butts for exterior aluminum doors shall be stainless steel. Screws for other entrance door butts, closers, and holders shall be machine screws. Screws shall be countersunk unless expressly specified otherwise. Provide Phillips head screws unless otherwise indicated.

2. Hardware for metal frames and doors shall be secured with suitable machine screws, mill screws and bolts.

3. Manufacturer of each hardware item shall provide the fastenings required for the installation of that item.

4. Self-tapping or TEK screws are <u>not</u> permitted.

5. Wood screws for securing door butts shall be at least two inches long to secure butts through jamb and into wood stud behind jamb and blocking.

C. Hubs

Hubs for lever spindles: Sintered steel, copper infiltrated.

2.03 GENERAL HARDWARE REQUIREMENTS

A. Hardware Schedule is intended to guide Contractor in preparing the Schedule for Work of this Section. It shall not relieve Contractor from the necessity of examining Specifications, Drawings and Details, and providing everything necessary to properly complete hardware installation.

B. Hardware used on hollow metal doors, transoms, sash or jambs, shall be made to templates and packed with machine screws or other fastenings recommended by the manufacturer for the particular application scheduled.

C. Hardware items not described shall be equal in grade, workmanship, and other particulars to similar items of hardware described.

2.04 FINISHES

A. All hardware finishes including the following shall comply with requirements of ANSI/BHMA standards:

BHMA Code	Description	Base material	U.S. Standards equivalent
605	Bright Brass	Brass	US3
625	Bright Chromium	Brass or Bronze	US26
626	Satin Chromium	Brass/Bronze base	US26D
629	Bright Stainless Steel	Stainless steel	US32
630	Satin Stainless Steel	Stainless steel	US32D

In addition, the following finish symbols are used for door closers:

AL - Manufacturer's standard aluminum lacquer
BL - Manufacturer's standard brown, bronze or gold lacquer

2.05 HARDWARE TYPE REQUIREMENTS:

A. Locks

1. Exterior and Interior Fence (Security Lockset):

   a. Type: Fence Gate Deadlock.

   b. Case: Corrosion Resistance.

2. Interior fire rated room (Security Lockset)

   a. Type: Deadlock or latch

3. Strikes:

   Strikes for latches shall project sufficiently to properly protect trim. Slots in strike plates shall not be more than 1/4" longer than bolts. Metal between slots for latch and bolt shall not be less than 1/4".

   Strikes used with hollow metal jambs shall be of box type with closed back.

4. Latch Bolts:

   Latch bolts shall be constructed so that they will not work loose. Where washer is riveted to latch spindle, rivet head shall be full and machine upset. Latch and lock bolts not otherwise specified shall be cast bronze.

B. Bolts and Catches

1. Extension Bolt for Large Double Interior Doors:

Face Plate: Cast bronze, not less than 1" x 6-3/4" x 1/8" (A.S.A.), recessed, with large thumb piece secured with 4 screws. For wood doors, set face plate flush. For hollow metal doors, set face plate on surface with edges rounded or beveled.

Bolt: 1/2" square, full 3/4" throw, bolt carriage smoothly fitted with strong guide posts and heavy spring.

Guide Plates: Heavily flanged

Strike: Composition or concrete floor shall have 3" deep strike with flange not less than 1/4" at top and well-grouted in position. For wood floor, strike shall be flanged back full 1/2" and secured with 2 screws.

2. Surface Bolts for Double Doors:

Surface bolts shall be Ives No. SB453, 8" long top and bottom of inactive leaf of double doors.

C. Door Pulls

1. Vestibule and Other Interior Doors without latching devices:

Standard, pattern cast-bronze pulls Rockwood 130 Pulls shall have lugs on underside to receive heavy machine screws running through door. Screws exposed on back of door shall be of brass, with countersunk brass washers not less than 1/2" diameter. Heads of screws concealed by push plates and other hardware items shall be round-headed steel machine screws with flat washers, let into door sufficiently to clear head.

NOTE: Where two pulls are specified for a door, the pull used on closet, space or room side of door shall be the same type of pull secured with three screws. Pulls shall be Rockwood 130.

For small access doors to pipe spaces, provide flush finger pulls, Rockwood 94P x 94L.

E. Door Closers

All surface closers shall exceed ANSI A156.4 Grade 1 requirements in all aspects as called for below. All closers shall have certification by an independent testing laboratory of 5,000,000 cycles without failure.

1. Door closers shall have cast iron or cast aluminum cases treated to overcome porosity, arms of malleable iron, and connecting rods of high carbon steel.

2. Door closers shall be full rack-and-pinion hydraulic type. Hydraulic fluid shall be non-gumming and non-freezing. Closer shall have multi-size spring power adjustment to permit setting of spring power. Closer shall have two non-critical valves, hex key adjusted to independently regulate sweep and latch speed. Closer shall have adjustable back-check controlled by a hex key adjusted valve.

3. Door closers shall be of size shown in the following schedule except where otherwise specified:

a.	Interior doors up to and including 32" wide	No. 2
b.	Other interior doors, except vestibule doors	No. 3
c.	Exterior and vestibule doors	No. 4
d.	Exterior and vestibule doors wider than 36"	No. 6
e.	Soundproof doors	No. 4

4. Closers described in Par. E.1 shall be equipped with valve control back check for opening.

5. Corner brackets are not permitted

6. Provide full plastic covers for closers. Slim line covers are not acceptable.

7. Provide no closers on Hollow Metal access doors, unless otherwise specified.

8. Closers on doors in entrance hall or lobby shall be on room side of doors.

9. All closers shall be of one manufacturer's products.

10. All closers shall be inspected after installation by a factory representative to insure proper adjustment and operation. A report shall be filed with the Architect after visit has been made.

11. Closers are not required on wardrobe and closet doors.

F. Butts and Hinges

1. Extra Heavy Wrought Bronze Butts: Ball bearing, self-lubricating butts, with inner edges of leaves beveled, three to each door unless otherwise

specified. Fast pin for outside doors and loose pin for inside doors. Fast pin butts shall have stainless steel pins, stainless steel set screw in barrel, stainless steel balls and raceways. 8”x6” butts shall be 0.203 gauge and 6" x 5" butts shall be 0.190 gauge with 8 or 10 screws each butt. Butts shall have flat button tips stamped with classification number and trade name or trademark of manufacturer.

2. Fast Pin Butts:

Fast Pin Wrought Bronze Butts shall be 3" x 2-1/2" and 3" x 3", 0.092 gage. Each hinge shall have 6 screws. Doors 5'-0" or over in height shall have 3 butts to each door.

3. Wrought Bronze Butts (Interior Doors):

a. Interior doors, unless otherwise specified, shall have wrought bronze butts, five knuckle, ball or oilite bearing. Full mortise type for hollow metal doors and half surface for wood doors 32” or wider.

b. Butts shall be of cold rolled bronze with inner edges of leaves beveled to form close fitting joints. Outer edges shall be true, corners square, surfaces finely finished and highly polished.

c. Pins shall be of cold drawn stainless steel wire grooved to hold lubricant.

d. Balls and raceways shall be stainless steel.

e. Tips shall be bronze of flat button type, with shoulders flush with barrels.

f. Butts shall have classification number and trade name or trademark of manufacturer stamped on tips.

g. Where wrought bronze butts as described in F.3 are specified in Hardware Schedule, Contractor may substitute ball or oilite bearing, flat button tip, wrought steel butts.

h. Each butt shall have two (2) permanently attached ball or oilite bearing washers, enclosed in solid bronze casing, consisting of hardened steel raceways and hardened tool steel balls.

i. Hollow metal steel doors shall be provided with full mortise loose-pin butts except open out doors to closets, storerooms and supply rooms shall have fast-pin butts. Fast-pin butts shall have pins fastened to knuckle by a set screw not accessible when door is closed.

4. Spring Butts: Two (2) single acting. McKinney 1502 4”x 4”.

5. Quantity of hinges shall be provided to conform to the following:

-Doors up to 60” in heights : 2 hinges
-Doors 60” to 90” in height : 3 hinges
-Doors over 90” in height : 1 hinge every 30” or part thereof

6. Full Mortise Anchor hinge set: Shall be of 0.190 gauge, steel or wrought bronze butts, five knuckle, ball or iolite bearing type. Right or left hand as specified.

7. Size of wrought steel or bronze butts shall be in accordance with the following schedule:

DOOR TYPE	BRONZE NO.	STEEL NO.	BUTT SIZE
Exterior Entrance Doors to 36” wide	Stanley FBB199 or McKinney T4B3386	(NONE)	6" x 5" 6" x 5"
FRP Entrance Doors		Markar FM300	Continuous
Sound Proof Doors	Stanley FBB199 or McKinney T4B3386	Stanley FBB168 or McKinney T4B3786	6" x 5" 6" x 5"
Doors to Stairs 1-3/4" thick up to 42” wide	Stanley FBB222	Stanley FBB212 or McKinney TA392 or McKinney TA792	5"x4-1/2" 5"x4-1/2"
1-3/4” thick HM doors Over 42” wide and subject to heavy use and abuse	Stanley FBB222	McKinney TA792 or McKinney TA392 or Stanley FBB212	5"x4-1/2" 5"x4-1/2"
Doors 1-7/8” to 2-1/4” thick up to 37” wide and for use in existing frame	McKinney T6B3386	McKinney T6B3786	8”x6”
1-3/4" thick to 37" wide HM	Stanley FBB191 Or McKinney TB2314	Stanley FBB179 or McKinney TB2714	4-1/2"x 4-1/2" 4-1/2"x 4-1/2"
1-3/4” wood Doors	Stanley FBB112 x Back plate	McKinney TA2772 x Back Plate Or Stanley FBB173 x Back plate	4-1/2"x 4-1/2" 4-1/2"x 4-1/2”

DOOR TYPE	BRONZE NO.	STEEL NO.	BUTT SIZE
Entrance vestibule doors (omit if flush transom panel above) Substitute extra heavy 5" x 4-1/2" butts	McKinney TA392	McKinney TA 792 (corner reinforcing butts)	5" x 4-1/2"
Wire mesh doors	Stanley BB191	Stanley BB171	4"x4"
H.M. Access doors	McKinney TB2314	McKinney TB2714	4"x4"

G. Continuous Hinges

1. Full height piano-type hinge providing full height door support.

2. Shall support weights up to 600 lbs. 4'-0" maximum door width.

3. Material shall be 14 gauge, 304 stainless steel.

4. Barrel Type: Exterior barrel diameter .438 (7/16), with .25 diameter 304 stainless steel pin.

5. Each knuckle shall be 2", including self-lubricated twin nylon bearing at each separation.

6. Hinges shall meet ANSI/BHMA Standard A156.26 Grade 2.

7. Fasteners: provide #10 x 1/2" self-drilling Tek screws, and #10 x 1" wood screws standard. If security fasteners are required, they must be specified.

8. Provide 1-3/8" Adjusta-Screw or Adjusta-Stud type fastener with 10-32 internal thread. Hex adjustment must be supplied.

9. Hinge Series:

   a. Markar: FM300

   b. Ives 700 series stainless steel pin and barrel hinges

   c. Mckinney MCK-FM300

I. Magnetic Catches:

For doors 3'-0" and under in height: Aluminum Case. Dual double pole with self-aligning magnets. Conform to ANSI 156.9 B43161. Ives Heavy Duty Magnetic Catch No. 326.

2.06 MISCELLANEOUS HARDWARE

A. Door Stops

Cast-bronze flange and rubber socket bumper with 1" diameter rubber secured with pin. Secured flange with 3 bronze screws to wood block. Ives No. 447, BHMA 626 satin chrome finish, weight 8 ounces and projection 3".

PART 3 - EXECUTION

3.01 INSTALLATION

A. Provide complete installation of finish hardware items as indicated on Drawings and as specified herein.

B. Mount hardware as recommended by respective manufacturer.

C. Mount door (room) hardware items at heights and locations on doors and frames in accordance with "Recommended Locations for Builders Hardware for Standard Steel Doors and Frames" by Door and Hardware Institute, except where specifically indicated otherwise.

D. Set hardware items plumb and level and secure with proper fasteners.

3.02 TRAINING

A. After delivery of, but before installation of the hardware, the General Contractor shall coordinate and schedule hardware installation training. The training will be conducted on the installation of locksets, door closers, exit devices, overhead stops and electromechanical hardware conducted by the manufacturer's representative for each of the product categories. The training shall be conducted on the job site with the installers of wood, hollow metal and aluminum doors in attendance. Any installer working with low voltage wiring of electromechanical hardware shall be in attendance.

3.03 APPLYING HARDWARE

A. Hardware specified in this Section shall be fitted, installed and adjusted.

B. Use screws and/or bolts furnished by the manufacturer of the hardware item and install in accordance with the manufacturer's instructions and templates and as required. Install full complement of screws and/or bolts.

C. Self-tapping or TEK screws are not permitted except when used for continuous hinges.

D. At completion of Project, leave hardware in perfect condition, free from stains, varnish, scratches and mars. Half-surface butts shall be bolted on doors with nuts on hinge side of doors.

E. Card holders shall be installed on doors as indicated on Drawings with bottom of holder 5' above floor.

F. No surface hardware, except butts and pivots, shall be installed before final coat of paint or varnish has been applied.

3.04 CLEANING AND ADJUSTING

A. Clean hardware items thoroughly and adjust for proper operation.

3.05 KEY OPERATION AND INSPECTION

A. Upon completion of the building and after locks have been secured in proper positions, keys belonging thereto shall be fitted and made to work freely in respective locks in the presence of an DOC's Representative. The required number of keys for each lock, properly marked, shall be delivered to DOC, who will give a receipt of such delivery.

3.06 EXISTING BUILDING MODIFICATION

A. Removals

1. Where doors are designated to be removed as part of Contract, locksets, knobs, closers, butts and other hardware shall be removed from the doors and shall remain the property of the DOC.

2. Where existing locksets are specified to be removed from existing doors to remain and replaced with new disabled locksets as part of Contract, locksets shall be removed from these doors and remain the property of the DOC.

3. Removed hardware shall be coordinated with Construction Managament Unit (CMU) and DOC for delivery or disposal:

B. Contractor shall furnish the DOC with an itemized breakdown of removed hardware. A signed receipt shall be obtained from DOC shall be submitted with request for final payment.

C. Unless otherwise specified, new locks for interior doors shall be masterkeyed in sets as hereinafter designated and grand masterkeyed for entire building.

D. Unless otherwise specified, all locks shall be provided with six (6) keys. Locks with double cylinders shall be provided with six sets of keys. (six keys for each cylinder). When record of existing keying is available, Keying for new locks shall be incorporated into keying system of the existing building.

E. Where rooms have two entrances from corridor or adjoining rooms, locks for these doors shall be keyed alike.

PART 4 – SCHEDULES AND KEYING

4.01 FINISH HARDWARE SCHEDULE

A. Provide hardware for each door, each pair of doors, and each set of doors, in compliance with "Hardware Set Numbers" indicated in Door Schedule on Drawings, and as specified herein.

Manufacturer's names and product designations for hardware types listed for establishing minimum requirements. Provide the product specified or comparable product of other manufacturers listed in Art. 2.01 for each hardware type.

B. All doorframes located in smoke partitions and fire-rated partitions shall be provided with continuous smoke seals at jambs and head, whether or not listed in Hardware Sets below. Manufacturer/model: Pemko S44D; McKinney S44D.

	Item	Quantity	Mfr. & Cat. No.
	SET 1 **Electric Room (Single Door)**		
	Each Door:		
1.	Butts	1-1/2 Pair 4-1/2"x 4-1/2"	4310 Bommer
2.	Surface Mounted Door Closer	1	LCN 4040XP
3.	Overhead Stop	1	Ives 406,407
4.	Smoke seal		Pemko S44D
5.	Lockset	1	Folger Adam 17-M Latch
	SET 2 **Electrical Room (Double Door)**		
1.	Butts	1-1/2 Pair 4-1/2"x	4310 Bommer

	Item	Quantity	Mfr. & Cat. No.
		4-1/2"	
2.	Surface Mounted Door Closer	2	LCN 4040XP
3.	Overhead Stop	2	70S, US26D Glynn-Johnson
4.	Smoke seal		Pemko S44D
5.	Lockset	1	Folger Adam 17-M Latch
	SET 3 Interior and Exterior Wire Mesh Fence (Door)		
1.	Lockset	1	Folger Adam FGM-80
	SET Storage Room		
1.	Butts	1-1/2 Pair 4-1/2"x 4-1/2"	4310 Bommer
2.	Lockset	1	Folger Adam 80 Deadlock
3.	Surface Mounted Door Closer	1	LCN 4040XP
4.	Overhead Stop	1	Ives 406,407

4.02 KEYING

A. General Keying Requirements

1. Unless otherwise specified, locks for exterior and interior doors shall be master keyed to a single exterior and interior door master and subject to a great grand master key only. Furnish six keys for each lock.

2. **For existing buildings, when record of existing keying is available, incorporate keying for new locks into existing keying system. When new keying system is required to be added to existing building, provide separate master keys and grand master keys.**

B. **Key Operation and Inspection:**

Upon completion of the building and after, locks belonging there to shall be fitted and made to work freely in respective locks in the presence of an DOC's Representative. The required number of keys for each lock, properly marked, shall be delivered to DOC, who will give a receipt thereof.

END OF SECTION

* * *

LIST OF SUBMITTALS

SUBMITTAL	DATE SUBMITTED	DATE APPROVED
Product Data:	_____	_____
Catalog cuts, specifications, characteristics, and instruction for installation, operation and maintenance of hardware		
Samples:	_____	_____
Submit sample of each type of lockset with Hardware Schedule		
Shop Drawings:	_____	_____
1. Hardware Schedule **2. Key Schedule** **3. Key Cabinet Schedules** **4. Templates**		
Quality Assurance:	_____	_____
Manufacturers Certificate that hardware is of quality specified and meets the ANSI A156 Grade 1 Standard		
Manufacturers Certificate that closers meet the 5,000,000 cycle test requirement.		
Required number of keys for each lock, properly marked	_____	_____
Key Machine, Key Blanks and Attic Stock	_____	_____
Keys for each lock	_____	_____

Warranties _____ _____

1. Surface
2. Exit Devices
3. Locksets, etc.
4. Hinges
5. Balance of hardware
6. Closers

*** * ***

SECTION 221000 -PLUMBING PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. Extent of plumbing piping work is indicated on Drawings and by the requirements of this Section including but is not limited to the following:

1. Pipe

2. Fittings

1.2 CODES AND STANDARDS

A. Comply with applicable portions of the Building Code of the City of New York. Where requirements for products, materials, equipment, methods and other portion of the work specified herein exceed minimum requirements of NYC Building Code, contractor shall comply with such requirements specified herein, unless specifically approved otherwise by the Authority.

B. Standards listed below are referenced in this section.

1. American Society for Testing and Materials (ASTM)

2. American Standards Association (ASA)

3. American National Standards Institute (ANSI)

4. United States of America Standards Institute (USASI)

5. Cast Iron Soil Pipe Institute (CISPI)

6. American Water Works Association (AWWA)

7. NSF International

C. Brazing: Certify brazing procedures and brazers.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Deliver pipe materials properly protected, and undamaged.

B. Properly protect all piping so as to prevent damage to the pipe or the introduction of foreign material into the pipe. For the purpose of protecting piping from pre-installation contamination, all piping shall be shipped to job site with suitable caps, sheet metal covers or plugs. Pipe caps shall not be removed until just before installation.

C. Examine all pipe and fittings before laying. Do not install any piece that is found to be defective.

1.4 SUBMITTALS

A. Product Data

1. Pipes & fittings

B. Submit Shop Drawings for all piping installations.

C. Pipe Schedule: Itemize pipe and fitting materials for each specified application.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Piping shall conform to the following:

1. Soften Water Distribution Piping:

Copper Tubing Type "L": Tubing shall be hard drawn seamless tubing manufactured in 20 foot lengths, in accordance with the Copper Development Association and ASTM B88, for above ground use only. Each tube shall be identified by means of color bars, blue, running full length of each tube.

2. Reverse Osmosis Distribution Piping:

Polypropylene Plastic Pipe:

a. Pipe shall be similar to a product manufactured by GF Piping Systems LLC “Pipe PN20”, Nibco Chem-Pure Natural Polypropylene, Orion Blueline or other approved pipe manufacturers, having flame retardant pattern, Schedule 40 polypropylene approved by New York City Materials and Equipment Acceptance Division. Materials shall be in accordance with ASTM D4101 and shall be flame retardant in accordance with ASTM D635. All piping shall be compatible with the Coil Fusion method. Each length of pipe shall be plainly marked with manufacturer’s name, pipe size, schedule, type and ASTM information. The marking may be stenciled or otherwise applied on the pipe so as to be clear and legible at the time of installation.

B. Fittings and Joints

1. Fittings for Type "L" copper tubing shall be wrought copper solder joint fittings suitable for soft-soldering and shall be in accordance with ASSE 1061; ASME/ANSI B16.15; ASME/ANSI B16.18; ASME/ANSI B16.22; ASME/ANSI B16.23; ASME/ANSI B16.26; ASME/ANSI B16.29. Type "K" and Type "L" fittings shall have a minimum working water pressure of 150 p.s.i. and shall be as manufactured by Nibco Inc., Stanley G. Flagg & Co., Smith-Cooper International or Elkhart Products Corporation.
Alternately, fittings for Type K or L may be press fittings (pressure-sealed joints) by Viega ProPress; Elkhart Xpress, Elkhart Products Corporation; NIBCO Press System; Tyco/Grinnell G-PRESS, Mueller Copper Press (or approved equal) up to and including 4 inches in diameter. O-rings for copper press-connect fittings shall be EPDM. Use special tools recommended and approved by the manufacturer.

   Solder shall be lead-free solder as per ASTM B32

   Mechanically formed extruded tee-branch outlet is permitted on copper tubing running overhead. Extruded-tee outlets shall be made according to ASTM F2014. All joints formed in this manner shall be brazed in compliance with Code and manufacturer's recommendations. Soft soldered joints shall not be permitted.

2. Fittings for polypropylene plastic pipe shall be flame retardant schedule 40 polypropylene fittings. Materials shall be in accordance with ASTM D4101 and shall be fire retardant in accordance to ASTM D635. Fittings shall be legibly marked with molded on letters showing manufacturer's trademark, pipe size of each socket, manufacturer's part number, and symbol PPFR. Joints and fittings shall be electric fusion made of the same material as the piping.

C. Pipe Nipples

1. All pipe nipples shall be of the same materials as the connecting piping.

2. The use of close nipples is prohibited

D. Unions

1. Unions 2" and smaller shall be threaded. Unions $2^1/_2$" and larger shall be flanged.

2. Threaded unions on copper or brass pipe shall be brass, ground joint suitable for 300 pounds W.S.P.

3. Unions shall be as manufactured by

Anvil International
NIBCO Inc.
Ward Manufacturing LLC
The Viking Corporation
Or Other Approved Equals

E. Dielectric Fittings/Unions

1. Unions shall be rated at 250 psi at 180°F and shall meet the requirements of ASME/ANSI B16.39. Pipe threads shall be in accordance with ASME/ ANSI B2.1 and solder ends shall be suitable for brazing.

2. Flange fittings shall have a minimum rating of 175 psi and shall conform to ASME/ANSI B16.24 (Bronze), ASME/B16.42 (Iron).

3. Manufacturers:

Mueller Industries
Capitol Mfg. Co.; Division of Harsco Copr.
Eclipse, Inc.
Perfection
Or Other Approved Equals

F. Gaskets: Gaskets for cold and hot water services shall be full face gaskets. The retaining gasket shall be made of 1175 fabric inserted rubber sheeting and shall be pre-cut at the factory for standard 125 pound cast iron flanges and fittings and for 150 pound raised face steel flanges and fittings.

G. Pipe Sleeves: Provide pipe sleeves of one of the following. Pipe sleeve must be appropriate type and thickness for the UL firestopping assembly selected:

1. Sleeves and materials for sealing sleeves for gas piping through exterior walls and floor slabs on earth shall be as specified and approved by the Gas Company.

2. Sheet-Metal: Fabricate from galvanized sheet metal; round tube closed with snaplock joint, welded spiral seams, or welded longitudinal joint. Fabricate from the following gauges: 3" and smaller, 20 gage minimum; 4" to 6", 16 gage minimum; over 6", 14 gage minimum.

3. Steel-Pipe: Fabricate from Schedule 40 galvanized steel pipe; remove burrs.

4. Iron-Pipe: Fabricate from cast-iron or ductile-iron pipe; remove burrs.

5. Firestop penetration materials for sealing sleeves shall be listed by Underwriters Laboratories and if not listed have MEA or OTCR approval. The materials shall be as specified in Section 07270. For pipes passing through fire-rated floor, cast-in place firestop device with Underwriters

Laboratories listing, and if not listed have MEA or OTCR approval, is permitted as an acceptable sleeve alternative to a metallic sleeve with firestopping material. The cast-in place device is a one-step firestopping process that does not require additional firestop penetration materials for sealing the sleeves. The device shall be installed where required for sleeving purposes. The cast-in place firestop device shall not be used for wall applications.

6. Material for sealing spaces between pipe and sleeve through foundation walls below grade shall be Link-Seal Type "C" as manufactured by Thunderline Corp; Belleville, Mich. Seals shall be modular mechanical type, consisting of interlocking synthetic rubber links shaped to continuously fill the annular space between the pipe and sleeve. Links shall be loosely assembled with bolts to form a continuous rubber bolt around the pipe with a pressure plate under each bolt head and nut. Link-Seal pressure plates shall be Type "C" (insulating type) to provide for electrical insulation and cathodic protection.

7. Materials for sealing space between each pipe and sleeve through non-fire rated exterior walls above grade shall be Non-shrinking cement. Materials for sealing space between each pipe and sleeve through non-rated interior walls shall consist of mineral wool and sealant.

8. Waterproof sleeves shall be Link-Seal Wall Sleeve as manufactured by Thunderline Corp, or MetraSeal wall sleeve by the Metraflex Co.

H. Pipe escutcheons shall have inside diameter closely fitting pipe outside diameter or outside of pipe insulation where pipe is insulated. Select outside diameter of escutcheon to completely cover pipe penetration hole in floors, walls, or ceilings; and pipe sleeve extension, if any. Escutcheon plate types shall be as follows:

1. Galvanized cast-iron with set screw as manufactured by Anvil International, Fig. No. 395 or Carpenter & Paterson, Inc. Submit manufacturer product technical data.

2. Chrome-plated cast or sheet brass, solid or split-hinged, with brass set screws as manufactured by Kohler, Zurn or McGuire Mfg. Co. Submit manufacturer product technical data.

3. Cast or sheet brass, solid or split-hinged, with brass set screws as manufactured by Kohler, Zurn or McGuire Mfg. Co. Submit manufacturer product technical data.

PART 3 - EXECUTION

3.1 PIPE AND FITTING SCHEDULE

A. Reverse Osmosis Water Piping

1. Inside the building:

a. Polypropylene plastic pipe and fittings, schedule 40

C. Soften Water Piping

1. Type L (blue color bar) copper tubing with wrought copper solder joint fittings suitable for soft soldering; Brass, seamless drawn pipe, regular weight with cast bronze fitting; Groove copper pipe and grooved fittings for 2" and above. Copper tubing for short branch connection to plumbing fixture. Mechanically formed tee fittings may be used in lieu of solder-joint tee fittings. Pressure-Seal fittings and Pressure-sealed joints in lieu of soldering are acceptable.

3.2 INSTALLATION

A. Piping (General)

1. The run and arrangements of all pipes shall be approximately as shown on drawings or specified and as directed during installation, and shall be as straight and direct as possible, forming right angles or parallel lines with building walls and other pipes, and neatly spaced. No pipe shall be installed where the headroom will be interfered with unless the conditions are such that it is unavoidable and permission is obtained from the Authority. Offsets will be permitted where walls reduce in thickness or beams interfere with direct runs; offsets shall be made at an angle of 45° to the vertical; in no case shall the space between the pipes, partitions, walls, etc., exceed 5". All exposed risers shall be erected plumb, standing free, close to and parallel with walls and other pipes and be uniformly spaced. All horizontal runs of piping hung from structural floor, slab or floor beams shall be erected as closely as possible to bottom of floor slabs, ceilings, or I-beams as the case may be. In no case shall the headroom, beneath the pipe, be less than (7'-0") where the pipe is installed more than (1'-0") from wall, partition, etc., except where piping is required to be installed in Boiler Room and Mechanical spaces above floor. Horizontal piping shall be so graded as to drain to the low points and water lines to drain bibbs. All piping installed in floor shall be painted with a heavy coat of asphaltum. All piping shall be installed with ample space for pipe covering. All exposed plumbing piping in the Kitchen Areas shall be chrome plated brass pipe except for gas line. Provide threaded fittings. Chrome (silver) paints will not be accepted.

2. Roughing under ground or concealed in the floor or wall construction shall be properly installed, tested and inspected before any of the roughing is covered up. Should any work be covered up before being inspected and tested, it shall be uncovered and recovered at the expense of the Contractor. Plugged fittings shall be installed when called for. Reducer fittings shall be used in making reductions in sizes of pipes; bushings will not be allowed.

Suitable air chambers or Water Hammers Arresters shall be provided as called for in other sections.

3. All lines of piping and branches for fixtures passing through or in connection with waterproofing shall be brought to the proper locations and levels so that fixtures and piping may be installed without disturbing the waterproofing.

4. For work in existing buildings the following addition requirements shall be adhered to:

   a. Piping shall run as straight as possible with the fewest number of changes in direction, with such variations from the layout shown on the Drawings as conditions at the premises may require, as approved by the Authority at no extra cost to the Authority. Provide piping without sharp bends, quick changes of sections, pockets or bushings.

   b. The locations of all existing piping which are indicated on the Drawings are approximate. The Contractor shall investigate and ascertain the exact locations of such piping and make whatever minor variations in runs of new piping that may be required at no extra cost to the Authority.

   c. Contractor shall consider the location of all equipment, ductwork, piping, electric conduits, supports, steel work, etc., and all new piping shall be installed without interference therewith.

   d. Wherever existing branch piping interfere with installation of new branch piping, the existing branch piping shall be removed and re-routed to accommodate the new work. The rerouted work shall be of new material.

   e. All new extensions and relocations of existing piping systems shall be concealed in existing or new walls, floors, ceilings, pipe chases or as otherwise specified.

   f. Unused dead ended soil, waste and vent piping shall be removed as far as each branch, main, stack, etc., and capped or plugged concealed in hung ceilings, below floors or behind walls.

B. Piping Joints

1. Joints in type "L" copper tubing and type "K" copper tubing shall be soft-soldered joint. All surplus flux shall be wiped off immediately after completion of the soldering.
   Contractor may use mechanically formed Tee connections in conjunction with copper piping. The maximum diameter of branches shall be $2^{1}/_{8}$".

Mechanically formed tee connection shall be formed by drilling a pilot hole and drawing out the tube surface to form a collar having a height of not less than three times the thickness of the branch wall. Forming procedures shall be in accordance with the tool manufacturer's recommendations. All joints shall be brazed.

Press Connect (Pressure Seal) Fittings: All connections shall be made in accordance with the manufacturer's installation instructions. Copper tubing shall be cut at right angles using displacement type cutter or fine-toothed saw. Burrs shall be removed from inside and outside of tubing to prevent cutting sealing element. Mark insertion depth according to manufacturer's insertion depth chart. Alignment shall be checked for correct fit. Only the manufacturer's sealing elements shall be used. Press fitting shall be slid onto tubing while turning slightly to the marked depth. Oils or lubricants shall not be used. Fitting connections shall be made with tools provided by the manufacturer.

For locations where there is insufficient access to accommodate the pressing tool (e.g. under plumbing fixtures), this type of joint is not allowed. Sufficient clearance must be left around each joint to allow room for the pressing tool and jaw to be attached without interference when repairing the system in the future.

2. Polypropylene piping:

   a. Polypropylene pipe and fittings shall be joined by use of electrical fusion coils, energized by a variable, low voltage power supply according to the manufacturer's recommendation. Piping systems made by different manufacturers are usually not compatible.

3. Unions shall be used to connect equipment (pumps, circulators, tanks, meters, etc.) to water lines. The union shall be installed as close to the equipment as practical. Where valves are adjacent to equipment, union shall be on down stream side of valves.

4. Dielectric fittings and unions shall be installed where ferrous piping joins copper tubing or brass piping.

C. Sleeves for Pipes

1. General: All plumbing pipes passing through floors, roofs, walls, partitions, furring, beams, trenches, and wherever else indicated on drawings shall be provided with sleeves installed and maintained by the Contractor. Core drilled holes shall be provided with sleeves. Where plumbing pipes pass through potentially wet floors that do not have membrane waterproofing such as toilet rooms, cafeteria kitchens, serving areas, dish washing room, janitor's sink closet, mechanical equipment rooms, pipe chases and areas that are provided with fire protection sprinkler systems, the Contractor shall

install sleeves of galvanized steel pipe with welded clips or equivalent at bottom ends for securing sleeves to form work and shall project one inch above finished floors, and shall be caulked watertight.

2. Sleeves for gas service piping through exterior walls below grade and floor slabs on earth shall be installed and sealed in accordance with the latest regulations of the Administrative Code of the City of New York. Sleeves for gas piping and gas vents through exterior walls shall be installed and sealed in accordance with the requirements of the serving utility. The space between each pipe and its sleeve through floor slabs on earth and exterior walls above grade for all other piping shall be sealed tightly with picked oakum and molten lead. The lead caulking shall finish flush with the face of the sleeve. The space between each pipe and its sleeve through exterior walls below grade for all other piping shall be sealed tightly with link seals.

3. For interior walls and floors and for pipes through roof, the space between each installed pipe and its sleeve shall be sealed with a three hour rated fire stop penetration material. Fire stop materials shall be installed in accordance with the instructions of the manufacturer.
For floors and for pipes and for pipes through roof and not in walls: Cast-in fire stop device with Underwriters Laboratories listing and Material and Equipment Acceptance (MEA) approval or Approved Agency Certification listed and/or label is permitted as an acceptable sleeve alternative to a metallic sleeve with fire rated sealing caulk. The cast-in device is a one-step fire stopping process that shall not require additional fire stop penetration materials for sealing the sleeves. The device shall be installed where required for sleeving purposes.

4. Sheet Metal Sleeves

   a. Sleeves for pipes passing through floors, partitions, hung or furred ceilings, shall be installed with 1/2" maximum clearance all around pipes. Each sleeve for a pipe passing through an interior floor slab shall be fitted with a one-inch flange, or equivalent, at the bottom end for the purpose of securing it to the form work or sheet metal deck.
   The sleeve shall finish flush with the top of the finished floor. Sleeves for pipes passing through partitions, hung or furred ceilings shall be of one-piece construction and shall finish flush with the finished surface.

   b. Sleeves installed for pipes passing through vent ducts shall be securely fastened, soldered and made airtight.

5. Pipe Sleeve: Install pipe sleeves for pipes passing through roofs, concrete beams, brick walls, foundation walls and floor slabs on earth. Sleeves shall be installed with 1/2" maximum clearance all around pipe and shall finish

flush with the surfaces penetrated. Pipe sleeves for pipes through roof shall be made of service weight cast iron only.

6. Sleeves through foundation walls below grade shall be provided under General Construction Work.

D. Escutcheon Plates

1. Install galvanized cast iron or brass escutcheon plates with set screw on concealed pipes passing through walls, partitions, floors and on exposed to view piping in unfinished rooms and spaces. Material shall be appropriate for the material to prevent galvanic reaction (i.e. brass or chrome plated brass escutcheon for copper pipe)

2. Install chrome-plated brass escutcheon plates with set screw at:

   a. All exposed to view pipes passing through walls, partitions, floors and ceilings, in finished rooms and spaces

   b. All exposed to view finished locations and within all cabinets on waste and water supply piping at all plumbing fixtures including lavatories, drinking fountains, cabinet sinks, wash sinks, etc.

3. Plates shall fit snugly around the pipes or insulation so escutcheon covers penetration hole, and is flush with adjoining surface.

END OF SECTION

LIST OF SUBMITTALS

SUBMITTAL	DATE SUBMITTED	DATE APPROVED
Product Data:		
1. Pipe & fittings	_____	_____
Certifications:		
1. Brazing	_____	_____

* * *

SECTION 23 05 14 – VARIABLE FREQUENCY DRIVES

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including other Division 1 Specification Sections, apply to this Section.

1.02 WORK INCLUDED

A. Furnish and install variable frequency drives (VFD's) for mechanical equipment as scheduled on the drawings and specified herein. The term VFD shall refer to the entire assembly including but not limited to the by-pass.

B. The VFD's shall comply with the latest applicable standards of ANSI, IEEE, NEMA, NEC, UL and City Test Lab. The controllers shall be rated as indicated. As a minimum, the full load output current of the drive shall be equal to the equivalent motor horsepower as listed by NEC Table 430-150.

C. Drive horsepowers shall be minimum size as indicated. Coordinate size with driven equipment manufacturer.

D. Provide UL listed, accessory reactors to be UL listed. Bypass panels shall be constructed of UL recognized components assembled in a UL listed enclosure in strict accordance with the NEC for electrical safety. In addition the assembly shall be UL listed.

1.03 RELATED SECTIONS

A. Examine all drawings and criteria sheets and all other Sections of the Specifications for requirements which affect work under this Section whether or not such work is specifically mentioned in this Section.

1.04 REFERENCES

A. Applicable provisions of the following Codes and Trade Standard Publications shall apply to the work of this Section, and are hereby incorporated into, and made a part of the Contract Documents.

B. Material standards shall be as specified or detailed hereinafter and as follows:

1. IEEE: Institute of Electrical and Electronic Engineers
2. NEMA: National electrical Manufacture's Association
3. MG 1-78: Motors and Generators
4. NEC: National Electrical Code

5. ANSI: American National Standards Institute

6. UL: Underwriter's Laboratories

1.05 SUBMITTALS

A. See Section 23 05 00 and 01 33 00.

B. Product Data: Provide product description and list of materials, including the following:

1. Harmonic calculations

a. List of all drives.

b. Simplified one line diagram indicating linear as well as drives, transformers and PCC.

c. Technical description of the program used for the calculations.

d. Description of all inputs and outputs from the program.

2. Complete drawings furnished and approved before proceeding with manufacture. Drawings shall consist of a specific bill of materials, connection diagrams and suitable outline drawings showing details necessary to locate conduit stub-ups and field wiring.

a. Details including all labeling.

b. Assembled panel short circuit rating and how it will be labeled.

c. Heat release of the drive.

3. Description of field testing.

a. Proposed schedule of testing indications coordination with occupancy.

4. Manufacturer's Instructions: Indicate installation procedures that ensure acceptable workmanship and installation standards will be achieved.

1.06 QUALITY ASSURANCE

A. Manufacturers must have more than ten (10) years of documents experience in the design, testing and manufacturing of specified or similar products.

B. Manufacturer must provide written certification that the products provided meet or exceed the specification requirements. An executive officer of the company must sign the written certification.

1.07 WARRANTY

A. Attention is directed to provisions of the General Conditions and Supplementary General Conditions regarding guarantees and warranties for work under this Contract.

B. Manufacturers shall provide guarantees for work under this Contract. However, such guarantees shall be in addition to and not in lieu of all other liabilities which the manufacturer and the Contractor may have by Law or by other provisions of the Contract Documents.

C. All materials, items of equipment and workmanship furnished under each Section shall carry the standard warranty against all defects in material and workmanship. Any fault due to defective or improper material, equipment, workmanship or design which may develop shall be made good, forthwith, by and at the expense of the Contractor including all other damage done to areas, materials and other systems resulting from this failure.

D. The Contractor shall guarantee that all elements of the systems provided under his Contract, are of sufficient capacity to meet the specified performance requirements as set forth herein or as indicated.

E. Upon receipt of notice from the DOC's representative of failure of any part of the systems or equipment during the warranty period, the affected part or parts shall be replaced by the Contractor, within three (3) working days, at no cost to DOC.

F. The Contractor shall furnish a written guarantee covering the above requirements before the final payment is made.

PART 2 – PRODUCTS

2.01 VARIABLE FREQUENCY DRIVES

A. General

1. Provide a complete variable frequency drive (VFD) (in a single enclosure) of capacity, quantity and characteristics as described in this specification and as shown and scheduled on the drawings. Acceptable manufacturers contingent on compliance with specifications are:

a. 30 HP and Larger **(18-Pulse or Greater Units Only)**

1) ABB

2) Halmar Robocon Group

3) Square D

4) General Electric

5) Yaskawa

6) Or approved equal.

Note: 6-pulse units will be rejected.

b. 25 HP and Less

1) ABB

2) Halmar Robocon Group

3) Square D

4) General Electric

5) Yaskawa

6) Or approved equal.

2. All VFDs (6 & 18 pulse) shall be of the same manufacturer.

3. Each drive and assembly shall be U.L. listed and labeled.

   a. Label shall include the AIC rating for the assembly which shall not be less then 100,000 AIC. Any unit shipped without such label shall be removed from the job with NO EXCEPTIONS. This also includes six pulse drives with or without bypasses.

4. Each drive shall be mounted with it's accessories in a single cabinet.

5. Installation and start-up services for the equipment shall be covered by this specification.

6. Input control signal shall be compatible with automatic controls and/or building automation control system. Submit written, signed off coordination with submittal.

7. Complete drawings shall be furnished and approved before proceeding with manufacture. Drawings shall consist of a specific bill of materials, connection diagrams and suitable outline drawings showing details necessary to locate conduit stub-ups and field wiring.

8. The VFD shall comply with the latest applicable standards of ANSI, IEEE and NEMA. The controllers shall be rated as shown in the drawings. As a minimum, the full load output current of the drive shall be equal to the equivalent motor horsepower as listed by NEC Table 430-150.

9. Drive horsepowers shall be minimum size as indicated. Coordinate size with driven equipment manufacturer.

10. The VFD manufacturer shall supply with submittal information, harmonic calculations made in accordance with IEEE 519-1992 Standards showing the specified THVD, line notching and the specified THCD limits are met. Calculations shall assume worst case system conditions. System 1-line, 480V

transformer data, standby generator data, and primary fault current data required to make these calculations are provided in the system short circuit study and can be obtained from the Electrical Contractor. The submittal shall include, as a minimum, the following information:

a. All input data and assumptions.

b. Explanation of method used to perform the analysis.

c. All calculations and computer printouts used in the analysis, including input documentation.

1) List all drives and accessories.

2) Explanation of all inputs

3) Explanation of all outputs.

d. A system impedance diagram based on the Electrical one-line diagrams. It shall be the drive manufactures responsibility to obtain all information required.

e. All calculations shall be in accordance with IEEE 519 with all drives at 100% speed. The point of common coupling shall be the secondary connection of the transformer supplying that group of devices. These calculations shall be done with the transformer loaded to no more than 70% of its nominal capacity. These calculations shall also be done with all 18-pulse or greater drives running as well as the smaller drives running.

f. Each point of common coupling shall be defined as the secondary side of the transformer that feeds that group of drives. At the point of common coupling, the following numbers shall meet with the maximum load on the transformer no greater than 70% of its nominal capacity.

1) **Total harmonic voltage distortion is less than 3%**

2) **Total harmonic current distortion is less than 5% and harmonic table requirements I_{SC} / I_L <20**

3) **<u>Note</u>: 6-pulse drives will not be accepted on 30 HP drives or larger, even if this calculation is met.**

g. A detailed description of the tests, procedures and supporting calculations required to substantiate the installed systems compliance with the specified THD limits.

1) The description shall include information on the proposed test equipment and test conditions.

2) Include the name and qualifications of the firm which will conduct the field tests.

h. **Submittals without calculations will not be reviewed**.

11. Drives shall be capable of the full rated motor horsepower at all carrier frequencies of that drive.

B. Construction

1. VFDs 30 HP and Larger

a. VFDs 30 HP and larger shall be 18-pulse (or greater) input. Provide data and calculations showing the drive harmonics do not exceed the following numbers at the power connection to the drive.

1) Total harmonic voltage distortion: Less than 3%

2) Total harmonic current distortion: Less than 5% and harmonic table requirements for $I_{SC}/I_L < 20$.

Note: These are the maximum harmonics that can be generated by each of these drives.

b. The use of the following devices is permitted:

1) A.C. Line reactors

2) DC chokes

3) KMP Transformers

4) KMP + XFMR Filter Transformers

c. The use of the following devices is not permitted:

1) Passive filters.

2) Broad band filters.

2. VFDs 25 HP and Less

a. VFDs 25 HP and less shall be 6-pulse (or greater) input. Provide data and calculations showing the drive harmonics.

b. 5% line reactors shall be provided on each drive as a minimum.

c. The use of the following devices is not permitted:

1) Passive filters.

2) Broad band filters.

d. The use of the following devices is permitted:

1) Changing additional drives to 18 pulse or greater.

3. Harmonic Table

I_{SC} / I_L	Harmonic Order (Odd Harmonics)					THD
	H<11	11<h17	17<h23	23<h35	35<h	
<20	4.0	2.0	1.5	0.6	0.3	5.0
20-50	7.0	3.5	2.5	1.0	0.5	8.0
50-100	10.0	4.5	4.0	1.5	0.7	12.0
100-1000	12.0	5.5	5.0	2.0	1.0	15.0
>1000	15.0	7.0	6.0	2.5	1.4	20.0

4. 18 Pulse Transformer

a. Auto transformer

1) Voltage 480.
2) Input variation less than 3%.
3) Insulation Class 220°C
4) Temperature rise 150°C
5) With 7.5% AC input line reactors for proper current balance.
6) Output Voltage unbalance less than 2% for each bridge
7) Output current shall be 1/3 of rated input

b. Isolation Transformer.

1) Voltage 480.
2) Input variation less than 3%.
3) Output Voltage unbalance less than 2% for each bridge
4) Output current shall be 1/3 of rated input

5. All Drives

a. The VFD shall be of the pulse width modulated (PWM) design converting the fixed utility voltage and frequency to a variable voltage and frequency output via a 2-step operation. VFDs utilizing a 3rd power section are not acceptable. Efficiency shall exceed 96% at 100% speed and load. Line side displacement power factor shall exceed (0.95) regardless of speed and load. The VFD shall be rated for 110% current for (1) minute for variable torque loads and 150% current for (1) minute for constant torque loads.

b. **All VFD housing/enclosure shall be NEMA 4 suitable for operation at -4 to 158 degrees F with 100% humidity..**

c. **NOT USED.**

d. Drives located other than outside (submit list of all drives individually indicating):

1) Space drive is located.

2) Space ventilation is adequate, space air conditioning is adequate or the size of the cooling provided in the drive.

3) Space heating is adequate or the size of the heater provided in the drive.

e. Standard operating conditions shall be:

1) Incoming 3-phase 480 VAC power, +5% or -10%, 60 Hz.

2) Humidity 0 to 95% (non-condensing and non-corrosive).

3) Altitude 0'-0" to 3,300'-0" above sea level.

4) Ambient temperature 0° to 40°C.

f. VFDs shall include the following system interfaces:

1) Speed reference interface with a differential amplifier or isolated input 0-10 VDC or 4-20 mADC signal.

2) Run relay with an isolated set of Form C contacts.

3) Minimum of 2 programmable contacts.

4) Trip contacts (Form C).

5) VFD will accept an external trip contact and indicate so on the display.

6) Dedicated terminal blocks for interface with maintained remote start contacts.

7) Output signal proportional to output frequency (0-10 VDC or 4-20 mADC).

8) Output signal proportional to output current (0-10 VDC or 4-20 mADC).

9) Provided with communications chip to provide complete interface with the ATC control and automation system.

g. The VFD shall include the following protective features:

1) Lockable Fused disconnect (or breaker) rated for 100,000 AIC.

2) Electronic instantaneous overcurrent protection.

3) DC bus undervoltage protection.

4) DC bus overvoltage protection.

5) Ability to withstand output line-to-line short circuits without component failure.

6) Status indication via an LED display of the following protective functions:

   a) DC Bus Undervoltage

   b) Overcurrent

   c) DC Bus Overvoltage

   d) Controller Overtemperature

   e) Overload

   f) Overload Warning

   g) Overfrequency and Phase Loss

   h) A single light to indicate a VFD trip is not acceptable.

7) Overload capability shall be 110% of the inverter rating for (1) minute.

8) Selectable auto restart.

9) VFD will catch a motor spinning in the forward or reverse direction upon starting.

10) Upon loss of the input signal (4-20 mA), the drive will stop or go to preset speed.

h. Standard adjustments shall include:

1) Minimum frequency (4-60 Hz)

2) Maximum frequency (40-120 Hz)

3) Minimum of three (3) preset speeds (4-120 Hz) initiated by contact closures

4) Minimum of three (3) acceleration times (2-300 seconds)

5) Minimum of three (3) deceleration times (2-300 seconds)

6) Minimum speed dwell time (0-18 seconds)

7) Voltage boost (0-40V) for starting torque control

8) Adjustable Carrier frequency 700-8,000 Hz for motor noise reduction or flexible switching technology. This adjustment shall be without derating the drive or motor.

9) Current limit (70-120%)

10) Critical frequency avoidance ([2] bands with 10 Hz adjustable widths)

i. Door mounted operator controls and status indication from the LED display shall include:

1) Run/stop selection and LED indication (keypad or remote)

2) Speed control selection and LED indication

3) Forward/Reverse selection

4) Manual speed adjustment

5) Frequency meter

6) Motor RPM

7) Ammeter

8) Output voltage

9) Elapsed time meter

j. The keypad shall have an LED display. The reverse button and the programming functions may be locked out if desired.

6. The following list of options shall be included:

a. Input lockable disconnect rated 100,000 AIC.

b. Thermal motor overcurrent relay.

c. Bypass which includes an output contactor electrically and mechanically interlocked with a bypass contactor, run relay including control logic, status lights and a thermal motor overcurrent relay. The complete bypass

system and Inverter/Off/Bypass selector switch shall be packaged in a single VFD enclosure. The bypass shall include a starter.

d. Electronics shall allow VFD to follow discrete increase speed and discrete decrease speed contact closures from a photohelic or similar device.

e. 120V control transformer and circuitry.

f. Output line reactors or output filters when the drive location and the motor are more then 100 feet apart.

g. Interior heaters shall be provided to maintain the minimum drive temperature when the drive is off.

h. A Customer Interlock Terminal Strip – provide a separate terminal strip for connection of fire, smoke, freeze contacts and external start command. All external interlocks and start/stop contacts shall function with drive in hand, auto or bypass.

1) Damper control circuit shall be operable in the hand, auto and bypass.

7. Service

a. The VFD manufacturer shall provide a start-up service package for all VFDs provided. Service shall include inspector for final adjustment, operational checks, and a final report for record purposes. The service package shall include a (1) year parts and labor warranty and 2 year parts warranty each from date of written acceptance and be performed by local factory trained service engineers. The service center must be permanently located within (200) miles of the job site and able to provide 24-hour service.

8. Protection

a. The VFD shall be protected against damage at all times. The drive shall be stored in a clean, dry environment with temperature and humidity within the range as specified by the drive manufacturer. Space heaters shall be energized controlled storage as recommended by the manufacturer. Storage space shall be environmentally controlled.

9. Factory Tests and Checks

a. VFD power semiconductors and diodes shall be 100% inspected and tested, including load testing.

b. Small signal semiconductors, resistors, capacitors and diodes shall be lot sampled. Testing shall include parameter, as well as functional characteristics.

c. All printed circuit boards shall be tested under a temperature cycling (0°C to +65°C) 24-hour load test and then functionally tested via fault finder bench equipment prior to unit installation.

d. All final assemblies shall be tested at full load with application of line-to-line and line-to-ground bolted faults. The VFD shall trip electronically without device failure.

e. After all tests have been performed, each VFD shall undergo a 24-hour burn-in test. The drive shall be burned-in at 100% inductive or motor load for (24) hours without an unscheduled shutdown.

10. A (1) day training course for DOC's personnel shall be presented by representatives of the manufacturer at the jobsite.

PART 3 – EXECUTION

3.01 VFD INSTALLATION

A. Install in accordance with manufacturer recommendations, Contract Drawings, and reviewed submittals.

B. Install to meet the Local and State Electrical Code and so as to ensure easy accessibility for service, removal, or replacement of all components.

C. Provide supplemental steel, support, rods and hangers necessary to hang or mount VFDs.

D. Receive and inspect VFDs to ensure they are without defect. Defective or damaged VFDs shall be returned to the manufacturer.

E. Protect equipment to prevent damage from water, dirt, or accident. Protection shall include, but not be limited to, temporary plastic wrap to maintain equipment in original factory condition.

F. Wiring installation and handling shall be in accordance with manufacturer's recommendations.

G. Provide field testing (as described in Paragraph F, of this above Section).

H. All VFDs shall be installed inside indoor inside mechanical rooms or as directed by DOC, whether the VFD locations are specifically shown on contract drawings or otherwise.

I. All VFDs shall be provided with 42" clear space in front of the unit and shall be mounted on structural mounts.

3.02 FIELD TESTS AND CHECKS

A. Testing, checkout and start-up of the VFD equipment shall be performed under the technical direction of the manufacturer's service engineer. Under no circumstances are any portions of the drive system to be energized without authorization from the manufacturer's representative.

B. The Contractor shall provide independent harmonic testing by an independent testing company. Provide readings with printouts of the harmonic current at each harmonic as well as the total voltage distortion. The following readings shall be provided:

1. At each point of common coupling:

   a. With all drives running with load

   b. With all drives off

2. At the power connection to each drive:

   a. With the drive running loaded

   b. With drive off

3. All the above data shall be submitted to the Engineer for review. If these tests shown that the drives are not in compliance with the Specifications, the drive manufacturer shall make all changes required to comply with the Specifications at no cost to DOC. If required, this could mean replacing the drives that are not in compliance.

4. A copy of all tests and checks performed in the field, complete with meter readings and recordings, where applicable, shall be submitted to DOC for this record.

END OF SECTION 23 05 14

SECTION 23 50 11- BOILER PLANT MECHANICAL EQUIPMENT

PART 1 - GENERAL

1.01 DESCRIPTION

A. Feedwater deaerator, condensate and boiler feed pumps, chemical treatment systems, and other equipment that supports the operation of the boilers.

1.02 RELATED WORK

A. Section 09 90 00, PAINTING.

B. Section 22 31 11, WATER SOFTENERS.

1.03 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only. Where conflicts occur these specifications and the VHA standard will govern.

B. American Society of Mechanical Engineers (ASME):

B16.9-2012 .....Factory-Made Wrought Buttwelding Fittings

B16.34-2013 .....Valves Flanged, Threaded and Welding End

PTC 12.3-1997.....Performance Test Code on Deaerators

ASME Boiler and Pressure Vessel Code – BPVC Section

VIII-2015 .....Rules for Construction of Pressure Vessels, Divisions 1 and 2

C. American Society for Testing and Materials (ASTM):

A53/A53M-2012.....Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless

A106/A106M-2015.....Standard Specification for Seamless Carbon Steel Pipe for High Temperature Service

A234/A234M-2015.....Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service

A285/A285M-2012.....Standard Specification for Pressure Vessel Plates, Carbon Steel, Low- and Intermediate–Tensile Strength

A414/A414M-2014.....Standard Specification for Steel, Sheet, Carbon, and High-Strength, Low-Alloy for Pressure Vessels

A515/A515M-2010 (R2015) .....Standard Specification for Pressure Vessel Plates, Carbon Steel, for Intermediate- and Higher-Temperature Service

A516/A516M-2010 (R2015) .....Standard Specification for Pressure Vessel Plates, Carbon Steel, for Moderate- and Lower-Temperature Service

D. Environmental Protection Agency (EPA):

CFR 40, 264.193-2014.....Containment and Detection of Releases

E. Department of Health and Human Services, Food and Drug Administration (FDA):

CFR 21, 175.300-2015.....Resinous and Polymeric Coatings

F. Society for Protective Coatings (SSPC):

SP 5-2007.....White Metal Blast Cleaning

G. Underwriters Laboratories (UL):

574-2003 (R2014).....Standard for Electric Oil Heaters

H. Department of Veterans Affairs (VA):

PG-18-10-2016 .....Physical Security and Resiliency Design Manual

VHA Boiler Plant Safety Devices Testing Manual, Third Edition

1.04 SUBMITTALS

A. Submittals, including number of required copies, shall be submitted in accordance with Section 01 33 00.

B. Information and material submitted under this section shall be marked “SUBMITTED UNDER SECTION 23 50 11, BOILER PLANT MECHANICAL EQUIPMENT”, with applicable paragraph identification.

C. Manufacturer's Literature and Data including: Full item description and optional features and accessories. Include dimensions, weights, materials, applications, standard compliance, model numbers, size, and capacity.

D. Feedwater Deaerator with Storage Tank and Accessories:

1. Drawings showing arrangement and overall dimensions of feedwater deaerator including storage tank. Show locations of tank-mounted devices. Show locations and sizes of pipe connections and access openings. Show design of all shell, head and nozzle welds. Show access platforms as required for all maintenance and inspection points.
2. Weight of entire assembly empty and flooded.
3. Catalog data, drawings and specification sheets showing design and construction of feedwater deaerator, storage tank, water flow control valves, safety valve, overflow control valve, water level and overflow control systems, vent orifice, vacuum breaker, alarm switches and all accessories.
4. Design flow capacity, oxygen removal rate, and other performance data and pressure and temperature limitations of feedwater deaerator, recycle pumps, water flow/level control valve and control system, safety valve, overflow control valve, vent orifice, vacuum breaker, alarm switches and all accessories, to include lockout/tagout points.
5. Catalog data on oxygen test kit.
6. Oxygen sample and chemical feed probe design.

7. Deaerator inlet pressure requirements - steam and water.
8. Feedwater deaerator/feedwater pump units: Boiler feedwater pump suction and discharge pipe sizing and arrangement. Design of support framework and access platforms. Pumps shall have a minimum of 762 mm (30 inches) center to center clearance and 1800 mm (6 foot) clearance above pumps. Any one pump/motor combination shall be removable without disassembly of any other pumps or components. Provide lifting attachments as required to rig pump assemblies out of frame of the assembly.
9. **Dearator shall be manufactured by ASME recognized and certified facility (no second party fabricator) which also is a UL listed and recognized manufacturer of Packaged pumping systems under UL Category QCZJ.**
10. **Manufacturer of Dearator shall guarantee the deaerator will provide rated level of deaeration of .005 cubic centimeters of oxygen per liter of feed water (7 ppb) with removal of all carbon dioxide and shall test unit after installation and start up.**
11. **The test shall be performed by a third party independent company, using calibrated test equipment, and witnessed by both engineer and facility representative with certified copy of results being furnished to the engineer and facility representative.**
12. **If the manufacturer cannot prove .005 (7ppb) level under all conditions (not only at steady state), the Deaerator will not be accepted by owner.**

E. Surge Tank and Accessories:

1. Drawings showing arrangement and overall dimensions of tank and supports. Show locations and sizes of all pipe connections and access openings. Access platforms as required for maintenance and inspections and operation of the equipment or parts thereof.
2. Weight of entire assembly empty and flooded.
3. Design and construction (including pressure and temperature limitations) of tank, continuous blowdown heat exchanger (if provided), control valves, water level control system, level alarm switches and all accessories, to include lockout/tagout points.
4. Performance data on control valves and continuous blowdown heat exchanger (if provided). Refer to drawings (Schedules) for requirements.
5. Interior Coating: Material specification, service limitations, instructions for application, experience record under the required service conditions.

F. Boiler Feed and Condensate Transfer Pumps:

1. Drawings with dimensions of assemblies of pumps and drivers.
2. Catalog data and specification sheets on design and construction of pumps, drivers and couplings (flexible-coupled units).
3. Motor efficiency and power factor at full load.

4. Performance curves showing discharge head, required flow plus recirculation, net positive suction head required, efficiency, driver power, impeller diameter to be furnished. Refer to drawings for requirements.
5. Pressure and temperature limitations of pump unit and accessories.
6. Size and capacity of recirculation orifice.
7. Data on variable frequency drive (VFD) units and pressure controllers (if VFD specified).

G. Chemical injection Systems:

1. Drawings with dimensions of entire unit which may be field installed or factory packaged prewired/pre-piped on skid. Include locations and sizes of tanks, pumps, control panels, all pipe connections, and injection nozzles.
2. Catalog data and specification sheets on the design and construction of injection quills, metering pumps, storage tanks, and controls.
3. Performance data on pump including head, flow, motor power.
4. Pressure and temperature limitations of unit and accessories.
5. Information on suitability of materials of construction for chemicals to be utilized.
6. Each boiler shall have a dedicated metering pump and injection quill for each chemical. No blending of chemical treatments is allowed. Chemicals are to be supplied individually and injected individually to each boiler and to each treatment point to include steam line and deaerators. Chemicals needed for chemical lay-up of the boilers such as an oxygen scavenger shall have one dedicated metering pump that can be valved to inject any boiler directly.

H. Water Softeners:

1. Drawings with dimensions of entire unit which may be field installed or factory package prewired/pre-piped on skid. Including locations and size of tanks, pumps, control panels, all pipie connections etc.
2. Catalog data and specification sheets on the design and construction of injection quills, metering pumps, storage tanks, and controls.
3. Performance data on pump including head, flow, motor power.
4. Pressure and temperature limitations of unit and accessories.
5. Information on suitability of materials of construction for chemicals to be utilized.

I. Reverse Osmosis System:

1. Drawings with dimensions of entire unit which may be field installed or factory package prewired/pre-piped on skid. Including locations and size of pumps, control panels, all pipie connections etc.
2. Catalog data and specification sheets on the design and construction of pumps and controls.
3. Performance data on pump including head, flow, motor power.
4. Pressure and temperature limitations of unit and accessories

1.05 AS-BUILT DOCUMENTATION

A. Submit manufacturer's literature and data updated to include submittal review comments and any equipment substitutions.

B. Submit operation and maintenance data updated to include submittal review comments, approved substitutions and construction revisions shall be in electronic version on CD or DVD inserted into a three-ring binder. All aspects of system operation and maintenance procedures, including applicable piping isometrics, wiring diagrams of all circuits, a written description of system design, control logic, and sequence of operation shall be included in the operation and maintenance manual. The operations and maintenance manual shall include troubleshooting techniques and procedures for emergency situations. Notes on all special systems or devices shall be included. A List of recommended spare parts (manufacturer, model number, and quantity) shall be furnished. Information explaining any special knowledge or tools the owner will be required to employ shall be inserted into the As-Built documentation.

C. The installing contractor shall maintain as-built drawings of each completed phase for verification; and, shall provide the complete set at the time of final systems certification testing. Should the installing contractor engage the testing company to provide as-built or any portion thereof, it shall not be deemed a conflict of interest or breach of the 'third party testing company' requirement. Provide record drawings as follows:

1. As-built drawings are to be provided, with a copy of them on AutoCAD version provided on CD or DVD. The CAD drawings shall use multiple line layers with a separate individual layer for each system.

D. The as-built drawings shall indicate the location and type of all lockout/tagout points for all energy sources for all equipment and pumps to include breaker location and numbers, valve tag numbers, etc. Coordinate lockout/tagout procedures and practices with local VA requirements.

E. Certification documentation shall be provided to COR 21 working days prior to submitting the request for final inspection. The documentation shall include all test results, the names of individuals performing work for the testing agency on this project, detailed procedures followed for all tests, and provide documentation/certification that all results of tests were within limits specified. Test results shall contain written sequence of test procedure with written test results annotated at each step along with the expected outcome or setpoint. The results shall include all readings, including but not limited to data on device (make, model and performance characteristics), normal pressures, switch

ranges, trip points, amp readings, and calibration data to include equipment serial numbers or individual identifications, etc.

PART 2 - PRODUCTS

GENERAL

Electric motor control cabinets/enclosures including VFDs in the boiler plant shall be minimum NEMA 4 or better. The design AE shall determine at the design stage based on the environmental condition and location. This shall also be indicated on the drawings.

2.01 FEEDWATER DEAERATOR WITH STORAGE TANK AND ACCESSORIES

A. Pressurized unit designed to heat and deaerate boiler feedwater by direct contact with high pressure steam. Spray type deaerating section. Horizontal feedwater storage tank. Provide recycle spray water pumps on spray-type units if necessary to obtain required performance. Provide accessories including vacuum breaker, safety valve, water inlet and overflow controls and control valves, water level indicators and alarms and other devices as specified and shown.

B. Performance and Operating Characteristics:

1. Oxygen Content of Feedwater Output: 7 ppb maximum over turndown range with minimum and normal feedwater input temperatures as listed.
2. Turndown: 20/1.
3. Required Maximum Feedwater Flow Output: 1265 GPM.
4. No carbon dioxide in feedwater output; maximum steam vent loss 1/2 percent of input steam at maximum load.
5. Feedwater Input Temperature: Minimum temperature is 15 degrees C (59 degrees F) and normal range is 60 to 82 degrees C (140 to 180 degrees F).
6. Water Pressure Loss Through Spray Valves: 48 kPa (7 psig) maximum.
7. Steam Pressure Loss in Unit: 6.9 kPa (1 psig) maximum.

C. Feedwater Storage Capacity to the Overflow Line: Sufficient for twenty minutes operation at maximum required feedwater output with no input water, unless shown otherwise on the drawings. Overflow line (elevation) shall be set by feedwater deaerator manufacturer so that there is no water hammer when water is at this level.

D. Construction:

1. Storage Tank and Deaerator Pressure Vessels:
   a. **Tank to be Carbon Steel for 50# ASME @300 Degrees F and guaranteed level .005 level of deaeration.**
   b. **NOT USED.**
   c. Post Weld Heat Treatment (PWHT) to stress-relieve pressure vessel to 620 degrees C (1148 degrees F) not to exceed ASME hold-time or temperature.

d. Provide 100 percent radiography of all longitudinal and circumferential welded seams. Test nozzle-to-shell welds by wet magnetic-particle method. Hydrostatically test final assembly at 1.3 times design pressure.

e. Furnish completed applicable ASME Forms U-1, U-1A or U-2.

f. Provide a sacrificial magnesium anode for cathodic protection against corrosion.

g. Provide a vacuum breaker.

2. **NOT USED.**

3. **NOT USED.**

4. Spray Valve Assemblies: Spring-loaded, guided stem, stainless steel and Monel, removable. Spring-loaded, guided stem types not required on spray-type units that operate with recycle pumps at constant flow rates through the spray valves.

5. All other parts in deaerator section exposed to undeaerated liquids or gases must be constructed of stainless steel, cupro-nickel or equivalent.

6. Provide two 300 mm (12 inches) x 406 mm (16 inches) elliptical manways in storage tank, located below the normal water level, but near the tank centerline, and away from the deaeration section or internal piping. Manway locations must allow unrestricted access to tank interior with no interference from internal equipment and piping and with easy access from outside the tank. Second manway is to facilitate the annual internal inspections. Provide permanent access platforms as required.

7. **Provide access openings in deaeration section to allow inspection and replacement of spray valve assemblies.**

8. Support: Steel saddles or legs welded to storage tank with minimum height to provide for the net positive suction head required of the pumps selected. Coordinate location with structural design of building.

9. Nameplates: Attach to bracket projecting beyond field-applied insulation. Provide all ASME pressure vessel nameplate information as required by the Code along with information identifying the designer and manufacturer of the storage tank and the deaeration section.

10. Pipe Connections:

a. Threaded for sizes 50 mm (2 inches) and under.

b. Flanged, 1035 kPa (150 psig) ASME, for sizes above 50 mm (2 inches).

c. Vortex breaker in boiler feedwater pump suction connection.

d. Overflow Pipe:

1) Overflow pipe inside tank terminating 150 mm (6 inches) below low-level alarm set point. Operation of overflow control system must not allow water level to fall to the level of the overflow pipe inlet.

2) Overflow pipe sizing, based on required maximum feedwater flow output of feedwater deaerator:

Feedwater Flow Rate (kg/sec)	Feedwater Flow Rate (klb/hr)	Overflow Pipe Minimum Size (mm)	Overflow Pipe Minimum Size (in)
0 to 3.8	0 to 30	75	3
3.9 to 7.6	31 to 60	100	4
7.7 to 12.6	61 to 100	150	6

E. Steam Safety Valve: Mount on feedwater deaerator pressure vessel. Set pressure 103 kPa (15 psig). Capacity as shown. If not shown, minimum capacity 0.11 kg/sec (900 lb/hr). For safety valve construction requirements, refer to Section 23 20 00, HVAC PIPING AND JOINTS.

F. Oxygen and Non-Condensable Gas Venting: Straight vertical pipe extending through roof from deaeration section. Provide gate valve in vent pipe, with hole drilled in wedge. Hole size selected by feedwater deaerator manufacturer for normal venting with gate valve closed.

G. Thermometers and Pressure Gauges: Refer to Section 23 09 50 for construction requirements. Provide thermometers on deaeration section and on storage tank. Provide compound gauge with shut-off valve and siphon on deaerator.

H. Vacuum Breaker: Sized by deaerator manufacturer to protect unit. Bronze body construction with bronze internal trim, chemical resistant silicone seat disc and an atmospheric vent, rated for 1035 kPa (150 psig).

I. Water Sample and Chemical Feed Probes: Type 304 or 316 stainless steel, multi-ported, minimum length 300 mm (1 foot), accessible for removal from exterior of tank.

J. Dissolved Oxygen Test Kit: Provide a colorimetric-comparator type kit, utilizing Rhodazine D methodology, for use during acceptance testing and for future use by the VAMC. The kit shall include self-filling ampoules, color comparator, oxygen-resistant tubing, sampling devices, sealed glass ampoules containing reagent, carrying case, all equipment necessary for complete test. Range 0-20 ppb of dissolved oxygen.

K. Cleaning and Painting: Remove all foreign material to bare metal. Coat exterior of pressure vessel with rust-preventative primer. Refer to Section 09 90 00, PAINTING. Do not coat interior of pressure vessel.

L. Insulation: Field-applied. Refer to Section 23 07 19, HVAC PIPING INSULATION.

M. Water Level Indicators:

1. Gauge Glasses: Red line type, overlapping glasses if multiple glasses are utilized. Provide automatic offset-type gauge valves that stop the flow if a glass is broken. Drain cock on lower gauge valve. Gauge glass protecting rods.
2. Vertical pipe type header shall be connected to top and bottom of storage tank with tank isolation valves and valved header drain. Viewable gauges shall cover entire diameter of tank.
3. Minimum rating 121 degrees C, 200 kPa (250 degrees F, 29 psig).

N. Low Level Alarm Switch: Float type unit with magnetically actuated switch. Locate external to tank on a vertical header with valved tank connections and valved drain. Switch elevation shall be at the tank centerline. Minimum rating 121 degrees C, 200 kPa (250 degrees F, 29 psig). Provide signals to computer workstation.

O. High Level Alarm Switch and Overflow Control Switch:

1. Conductivity probe type electronic level switches providing relay contacts for separate high-level alarm operation and overflow control valve operation completely separate from control system for inlet water flow control valves. Overflow control valve shall automatically open when the water level rises approximately 100 mm (4 inches) above the high-water alarm level. Provide high level and overflow signals to annunciator system.
2. The principle of operation shall be differential resistivity of steam and water at the operating temperatures and pressures. The system shall include electronics unit, electrodes, special cable between the electrodes and electronics unit, and electrode cover. The unit shall be designed to fail safe.
3. Electronics Unit:
    a. Each unit shall be capable for signal discrimination of two electrode channels.
    b. Each electrode and its associated circuitry shall be powered by an independent power source. Power distribution system within the electronics shall be separate for each channel with its own transformer and shall be electrically isolated from other channels.
    c. Input power 110 V, 60 Hz, single phase.
    d. All input power to each electrode shall be a low voltage, low frequency ac voltage. dc voltages are prohibited because this may cause electroplating at the electrodes.
    e. The signal discrimination and fault detection system for each electrode channel shall be independent of the other channel and any fault in the electronics circuitry of one channel shall not be transferred to the other channel.
    f. The system shall have a continuous on-line fault detection system. The following faults shall be detected: Electrode failure, contamination from dirt on electrodes, electrode open circuit failure, electrode cable short to ground, electrode cable ground sense failure, power source failure, any electronic component failure. Electronic circuitry not monitored by the

fault detection system shall be provide with triple redundancy, where the circuit shall continue to operate and provide contact output with up to two component failures.

g. Faults shall be annunciated through separate NO and NC contacts.

h. The front of the unit shall have a LED display for each electrode channel indicating steam or water and status of each electrode.

i. NEMA 4 or better enclosure suitable for operating temperature of -20 to 70 degrees C (-4 to 158 degrees F), with up to 100 percent relative humidity.

4. Electrodes:

a. Suitable for 121 degrees C, 200 kPa (250 degrees F, 29 psig) minimum. Material shall be stainless steel or better, smooth length threaded only allowed on end, and corrosion resistant.

b. Electrodes without gaskets are preferred.

c. Teflon insulator media.

d. Electrodes fitted into shrouded inserts which are directly welded onto the stand-pipe. Design to minimize faulty indication due to falling condensate into the electrodes.

5. Electrode Cable:

a. Pure nickel wires for at least the first two meters at the electrode end, with pure nickel crimps. PTFE insulation capable of withstanding up to 260 degrees C (500 degrees F).

b. Continuous cables from the electrodes to the electronic unit. No junction boxes allowed.

P. Overflow Water Control Valve and Controller: Open-shut electric or electronic actuated overflow control valve actuated by conductivity probe-type water level sensor and control system.

1. Performance: When water level reaches the overflow level as set by the feedwater deaerator manufacturer, automatically open the overflow control valve to reduce the water level. Automatically close the overflow valve when the water level has been lowered to a point 100 mm (4 inches) below the high-level alarm set point. Valve operational speed shall not exceed 30 seconds for 90-degree valve movement.

2. Controller: Automatic control shall be from the high-level alarm and overflow control switch system. Provide a manual/auto switch on the main instrument panel that indicates valve position. Communicate valve position with computer work station. Control valve shall fail open. A limit switch on the valve actuator shall initiate alarm on control station and in computer work station when valve is open.

3. Control Valve:

a. High performance butterfly valve, double offset design.

b. Carbon steel 17-4PH steel valve body conforming to ASME B16.34, Class 150, lug style, 316 stainless steel nitrided disc.

c. Self-energizing TFE seat providing bubble-tight shut off service on vacuum and low pressure and pressure sealed for high pressures. Bi-directional seating.

d. Packing adjustable, chevron design with TFE seals.

e. 7 kPa (1 psig) maximum pressure loss at maximum flow rate (120 percent of peak deaerator capacity if valve flow and pressure drop is not scheduled).

4. Valve Actuator:

a. Control module shall accept direct digital control input 4-20 mA or 2-10 VDC from controller. Module to provide 4-20 mA output for feedback, terminal strip, and conduit entries for power and control wiring.

b. Torque output range shall be appropriate for the differential pressure and pressure and temperature conditions. Duty cycle: 50 to 75 percent. Actuator to fail leaving valve in open position.

c. Electric Motors: Totally enclosed, non-ventilated, high starting torque, reversible induction type, and Class F insulation.

d. Electrical Characteristics: As required for the application.

e. Thermal Overload Motor Protection: Auto reset thermal switch embedded in the motor winding to trip when the maximum winding temperature is exceeded.

f. Resolution: 100 to 400 increments through 90-degree travel.

g. Power Gears: Alloy steel spur gears to final stage aluminum bronze worm sector gear.

h. Bearings: High quality alloy steel sleeve and ball bearings.

i. Housing: NEMA 4 or better, water tight, corrosion-resistant, robust aluminum die cast.

j. Equip with two SPDT auxiliary switches, visual position indicator, manual override handle or adjustable mechanical stops.

k. Ambient temperature range: -35 to 66 degrees C (-31 to 150 degrees F).

Q. Storage Tank Automatic Water Level Controls:

1. Separate electric or electronic actuated modulating water inlet flow control valves for normal condensate transfer water and for emergency soft water makeup. Actuated by dedicated electronic controller with input signals from water level transmitter. Manual/auto control capability.

2. Performance: Maintain a constant water level, plus or minus 25 mm (1 inch), in the feedwater deaerator storage tank by controlling the flow of condensate transfer water to the deaerator. Normal water level 200 mm (8 inches) below the overflow level. If water level falls to 100 mm (4 inches) below low water alarm

setpoint, automatically operate the emergency soft water makeup valve to bring the water level to 100 mm (4 inches) above low water alarm setpoint.

3. Water Level Transmitter and Controller: Transmitter shall have programmable electronics, sealed diaphragms, direct sensing electronics, no mechanical force or torque transfer devices, external span and zero adjustment. Controller shall have proportional plus reset control, adjustable proportional band, reset rate and level set points. Provide manual-automatic control station on main instrument panel. Control station shall indicate actual water level, normal and emergency level set points and valve positions. Provide same indicating and control features on computer workstation. If new boiler combustion controls are furnished as part of this contract, the water level controller shall be the same make and model as the combustion controls.

4. Condensate Transfer and Soft Water Flow Control Valves and Actuators:

   a. Electric or electronic actuated, globe style.

   b. Bronze or cast-iron bodies, threaded ends for pipe sizes 50 mm (2 inches) and under rated at 1725 kPa (250 psig), ASME flanged ends for pipe sizes over 50 mm (2 inches) rated at 850 kPa (123 psig) or 1035 kPa (150 psig).

   c. Replaceable Type 316 stainless steel plugs and seats. RTFE seal for bubble-tight shut off. Linear flow characteristics.

   d. Flow pressure loss 35 kPa (5 psig) maximum at maximum deaerator output.

   e. Electric or electronic type actuator that accepts input of 4-20 mA or 2-10 VDC signal from controller.

   f. Electronic positioner with 4–20 mA dc control output feedback. Mounted integral with actuator. Digital positioner with capability to self-calibrate. Maintenance diagnostic data retained in memory. Design for 121 degrees C (250 degrees F) continuous service.

2.02 SURGE TANK AND ACCESSORIES

A. Horizontal cylindrical welded steel tank, including accessory equipment, suitable for rigging into the available space. Comply with overall dimensions and arrangement of the tank and accessories shown on contract drawings. Accessories include make-up water controls and control valves, thermometer, water level gauge, and other devices as specified. Surge Tank is provided with high pressure steam for preheating.

B. Service: Receiving and storing steam condensate and make-up water. Vent the tank to the atmosphere. Contents of tank may vary in temperature from 4 to 100 degrees C (40 to 212 degrees F).

C. Construction:

1. **NOT USED**.

2. **Surge tank construction to be ASME constructed Stainless Steel.**

3. **Design tank for 345 kPa (50 psig)** working pressure with a minimum material thickness of 10 mm (3/8 inch). Thickness of head material at any point shall not vary more than 10 percent from the nominal thickness. If the deaerator overflow is piped to the condensate tank the condensate tank shall have a design pressure and ASME stamp pressure equal to or greater than the deaerator tank's pressure rating.
4. Tank joints shall be double-welded butt joints or single-welded butt joints with backing strips.
5. Provide 300 mm by 406 mm (12 inches by 16 inches) elliptical manway located as shown.
6. Provide nozzles for piping connections located as shown. Nozzles shall have threaded pipe connections for pipe sizes 50 mm (2 inches) and under, flanged connections for pipe sizes over 50 mm (2 inches). Flanged nozzles shall have 1035 kPa (150 psig) ASME flanges. Tank opening for pump suction pipes shall include vortex spoilers.
7. Furnish completed ASME Form U-1 or U-1A MANUFACTURERS' DATA REPORT FOR PRESSURE VESSELS. Hydrostatically test tank at 1-1/2 times the design pressure.
8. Horizontal tank shall be supported by steel saddles, supplied by the tank manufacturer, welded to tank and anchored to the concrete bases. Design saddles to support tank (full of water), accessories, and portions of connecting piping to first hanger.
9. Affix tank nameplate to bracket that projects beyond the field-applied tank insulation. Nameplate shall include ASME stamp and data to show compliance with design, construction and inspection requirements of the Code, and tank manufacturer information.

D. Provide overflow pipe inside tank with siphon breaker as shown.

E. Overflow and vent pipe sizing (minimums):

Boiler Plant Capacity* (kg/sec)	Boiler Plant Capacity* (klb/hr)	Overflow Pipe Size (mm)	Overflow Pipe Size (in)	Vent Pipe Size (mm)	Vent Pipe Size (in)
0 to 3.8	0 to 30	75	3	65	2.5
3.9 to 8.3	31 to 65	100	4	75	3
8.4 to 12.6	66 to 100	150	6	100	4
*"Boiler Plant Capacity" refers to one boiler on standby and all other boilers at high fire.					

F. Cleaning and Painting: Remove all foreign material to bare metal from interior and exterior of tank. In preparation for interior coating, sandblast interior to white metal in accordance with SSPC SP 5. Coat exterior of tank with rust-resisting primer. Refer to Section 09 90 00, PAINTING.

G. **NOT USED.**

H. Insulation: Field apply insulation as specified in Section 23 07 19, HVAC PIPING INSULATION.

I. Water Level Indicators:

1. //Gauge Glasses: Red line type, overlapping glasses if multiple glasses are utilized. Provide automatic offset-type gauge valves that stop the flow if a glass is broken. Drain cock on lower gauge valve. Gauge glass protecting rods.//

2. Vertical pipe type header shall be connected to top and bottom of storage tank with tank isolation valves and valved header drain. Viewable gauges shall cover entire diameter of tank.

3. Minimum rating 121 degrees C, 200 kPa (250 degrees F, 29 psig).

J. High and Low-Level Alarm Switches:

1. Low Level Alarm Switch: Integral unit consisting of float, float housing, hermetically sealed mercury switch. Locate external to tank on a vertical header with valved tank connections and valved drain. Switch elevation shall be 150 mm (6 inches) below the soft water make up level.

2. High Level Alarm Switch: Integral unit consisting of conductivity probes, probe housing. Float type not acceptable. Locate external to tank on a vertical header, along with the low-level switch, with valved tank connections and valved drain. High level alarm indication shall occur 100 mm (4 inches) below the overflow level. Probes shall be ac, not dc, stainless steel with virgin Teflon insulation.

3. Provide signals to computer workstation.

4. All devices exposed to tank service conditions, including sensing devices and transmitters shall be rated for 121 degrees C, 200 kPa (250 degrees F, 29 psig) minimum.

K. Automatic Water Level Controls:

1. Separate electric or electronic type modulating water inlet flow control valves for normal soft water make-up and for emergency city water makeup. Actuated by electronic controller with input signals from water level transmitter. Manual/auto control capability.

2. Performance: Maintain a minimum water level, plus or minus 25 mm (1 inch), in the tank by controlling the flow of soft water to the tank. Soft water makeup shall be activated if water level falls to 30 percent of tank diameter plus 300 mm (12 inches). If water level falls to 30 percent of tank diameter, automatically operate the emergency city water makeup valve to bring the water level up 150 mm (6 inches).

3. Water Level Transmitter: Programmable electronics, sealed diaphragms, direct sensing electronics, no mechanical force or torque transfer devices, external span and zero adjustment.

4. Controller: Proportional plus reset control, adjustable proportional band, reset rate and level set points. Provide manual-automatic control station on main instrument panel. Control station shall indicate actual water level, soft water and emergency city water level set points and valve positions. Provide same indicating and control features on computer workstation. If new boiler combustion controls are furnished as part of this contract, the water level controller and transmitter shall be the same makes and models as furnished for the combustion controls.

5. Water Flow Control Valves:

   a. Globe style, bronze or cast-iron bodies, threaded ends for pipe sizes 50 mm (2 inches) and under rated at 1725 kPa (250 psig), ASME flanged ends for pipe sizes over 50 mm (2 inches) rated at 850 kPa (123 psig) or 1035 kPa (150 psig).

   b. Replaceable Type 316 stainless steel plugs and seats. RTFE seal for bubble-tight shut off. Linear flow characteristics.

   c. Flow pressure loss 35 kPa (5 psig) maximum at maximum flow rating. Unless otherwise shown, maximum flow rate shall be equivalent to 50 percent make-up rate with plant at maximum load (2 boilers at high fire).

   d. Electric or electronic type actuator that accepts input of 4-20 mA or 2-10 VDC signal from controller.

   e. Electronic positioner with 4–20 mA dc control output feedback. Mounted integral with actuator. Digital positioner with capability to self-calibrate. Maintenance diagnostic data retained in memory. Design for 121 degrees C (250 degrees F) continuous service.

   f. For valve actuators, comply with Section 23 05 23.

2.03 CENTRIFUGAL MULTI-STAGE BOILER FEEDWATER PUMPS/CONDENSATE TRANSFER PUMPS

A. Type: Two or more stages, centrifugal diffuser type, direct-coupled, vertical shaft, in-line, base-mounted, motor-driven, arranged as shown.

B. Service: Design pumps and accessories for continuous service, 115 degrees C (240 degrees F) water, with flow rates ranging from maximum scheduled on the drawings (plus manufacturer's recommended recirculation) to 10 percent of maximum (plus manufacturer's recommended recirculation). Pumps shall be suitable for parallel operation without surging or hunting.

C. Performance: Refer to schedules on drawings. Pump head-flow performance curve shall slope continuously upward to shut-off.

D. Control – Boiler Feed: Flow rates will be controlled by automatic modulating feedwater valves on each boiler. Pumps shall be started and stopped manually. Pumps shall have

variable frequency drives controlled by boiler feed header pressure electronic control system which must be provided.

E. Control - Condensate Transfer: Constant speed operation. Flow rate will be controlled by automatic modulating water level control valve on condensate transfer inlet to deaerator.

F. Construction:

1. Rotating elements shall be designed and balanced to conform to sound and vibration limits.

2. Mechanical seals shall have sealing face materials of carbon and tungsten or silicon carbide.

3. Design bearings for two-year minimum life with continuous operation at maximum pump operating load. Bearings and shaft seals shall be water-cooled if recommended by pump manufacturer for the service.

4. Materials of Construction:

a. Chambers: Stainless steel

b. Impellers: Stainless steel

c. Diffusers: Stainless steel

d. Shaft: Stainless steel

e. Suction-Discharge Chamber: Cast iron or stainless steel

G. Recirculation Orifice: Provide stainless steel recirculation orifice selected by pump manufacturer to protect pump from overheating at shut-off and designed for low noise under the service conditions. Orifices must not exceed sound level limits in Section 23 05 13.

H. Spare Parts: Provide complete rotating assembly for each pump size and type suitable for field installation by plant personnel. Assembly shall include impellers, diffusers, chambers, shaft, seals, and bearings.

I. Shaft Couplings: Pump manufacturer’s standard. Provide coupling guard.

J. Electric Motors: High efficiency type, open drip proof. Select motor size so that the motor is not overloaded at any point on the pump head-flow performance curve. Design motor for 40 degrees C (104 degrees F) ambient temperature.

K. Interface with Computer Workstation: Provide devices to signal computer work station that motor is on or off.

2.04 CONDENSATE TRANSFER PUMPS, CLOSE-COUPLED, END SUCTION, CENTRIFUGAL

A. Type: Single stage, end suction, centrifugal with volute casing, horizontal shaft, close-coupled with impeller mounted on motor shaft, motor driven, and constant speed, arranged as shown.

B. Service: Design pumps and accessories for continuous condensate transfer service, 93 degrees C (199 degrees F) water, with flow rates ranging from maximum scheduled on drawings (plus manufacturer's recommended recirculation) to 10 percent of maximum

(plus manufacturer's recommended recirculation). Pumps shall be suitable for parallel operation without surging or hunting.

C. Performance: Refer to schedules on the drawings. Pump head-flow performance curve shall slope continuously upward to shutoff.

D. Pump Size: Shall be such that a minimum of 10 percent increase in head can be obtained at the maximum required flow rate by installing larger impellers.

E. Construction:

1. Mount pump casing on a frame attached to the motor housing. Casing shall have back pull-out feature or bolted front suction cover to allow access to impeller.
2. Frame on which pump is mounted shall provide easy access to seal.
3. Rotating elements shall be designed and balanced so that vibration is limited to the required standard.
4. Provide mechanical seals. Seal shall be exposed to pump suction pressure only.
5. Provide replaceable shaft sleeve, water slinger on shaft, vent cock and drain on casing. Provide casing wearing rings at all locations of tight clearances between casing and impeller.
6. Bearings: Rated for two year minimum life with continuous operation at maximum pump load.
7. Materials of Construction:
    a. Casing: Cast iron
    b. Impeller: Bronze
    c. Shaft: Carbon steel
    d. Shaft Sleeve: Bronze
    e. Casing Wear Rings: Bronze

F. Recirculation Orifice: Provide stainless steel recirculation orifice selected by pump manufacturer to protect pump from over-heating at shutoff.

G. Spare Parts: Provide sufficient types and quantities to allow complete replacement of all such parts in one pump at one time:

1. Casing wearing rings
2. Shaft sleeve
3. Motor bearings
4. Mechanical seal

H. Electric Motors: Joint NEMA-Hydraulic Institute Design Type JM or JP approved motors, high efficiency, open drip proof, designed specifically as close-coupled pump motors. Motor bearings shall be grease-lubricated designed to carry all radial and thrust loads of the pump and motor assemblies. Select motor size so that the motors are not overloaded at any point on the pump head-flow performance curve. Design motors for 40 degrees C (104 degrees F) ambient temperature.

I. Sound and Vibration: Each pump and motor assembly shall conform to sound and vibration limits specified in Section 23 05 13.

J. Interface with Computer Workstation: Provide devices to signal computer workstation that motor is on or off.

2.05 CHEMICAL FEED SYSTEMS

A. System may be field installed or factory packaged prewired/pre-piped on skid equipment.

B. Each boiler shall have a dedicated metering pump and injection quill for each chemical.

C. Metering pumps shall be positive displacement diaphragm pumps with adjustable flow rate, thermoplastic construction, continuous duty, fully enclosed electric motor and drive, and relief valve. Rated pump discharge pressure shall take into consideration the pressure drop through the chemical feed lines and injection nozzles and the maximum operating pressure at the point of injection. //Both stroke length and stroke frequency shall be adjustable to provide a usable control range of 10 to 100 percent of capacity.// //Pumps shall be capable of being set up for automatic adjustment of stroke frequency based on an external signal.//

D. Chemical Tanks: 190 liter (50 gallon) capacity, polyethylene, self-supporting, 20 liter (5 gallon) graduated markings, molded fiberglass cover and liquid level switch. Each tank shall be provided with molded polyethylene containment basin of volume that can contain liquid spill from a bottom tank leak. Basin shall be one piece, seamless construction, UV stabilized (for outdoor installation), chemical and impact resistance and comply with U.S. Environmental Protection Agency regulations as listed under Title 40, Chapter 1, Part 264.193.

E. Injection quills shall be of the appropriate length and capable of introducing medium to highly corrosive chemicals into a pipeline/equipment without damage to the side port or pipe wall at the point of injection and ensure that chemicals are evenly dispersed into the center of the pipeline/equipment. The materials of construction shall be suitable for use with the chemicals to be handled. The quills shall have flanged connections and rated for pressure at the point of injection. Do not locate quills immediately upstream of steam pipe bends to preclude pipe wall erosion.

F. Controls:

1. Feedback Control: Provide control system that automatically controls output of metering pump based on the degree of deviation of a continuously measured variable from a predetermined setpoint. Controller shall be microprocessor based or use industrial grade programmable logic controllers.

2. Liquid Level Switch: Polypropylene housing with integrally mounted PVC air trap, receptacles for connection to metering pump, and low-level alarm. Electrical characteristics shall be suitable for load served.

3. Conductivity Controller: Packaged monitor controller with solid-state circuiting, five percent accuracy, linear dial adjustment, built in calibration switch, on off switch and light, control function light, output to control circuit and recorder. Electrical characteristics shall be as indicated in Division 26 Electrical drawings and specifications.

4. Water Meter: Displacement type cold water meter with sealed, tamper proof magnetic drive, impulse contact register, single pole, and double throw dry contact switch. Electrical characteristics shall be suitable for use with connected equipment.
5. Solenoid Valves: Forged brass body globe pattern, normally open or closed as required, general purpose solenoid enclosure, and continuous duty coil. Electrical Characteristics shall be as indicated in Division 26 Electrical drawings and specifications.
6. Timers: Electronic timers, infinitely adjustable over full range, 150 second and 5-minute range, mounted together in cabinet with hands off automatic switches and status lights. Electrical characteristics shall be suitable for connected load. Refer to Division 26 Electrical drawings and specifications for power requirements.

G. Relief Valve: Rated for maximum pump capacity, set at 1200 kPa (175 psig).

PART 3 - EXECUTION

3.01 INSTALLATION

A. If an installation is unsatisfactory to the COR, the Contractor shall correct the installation at no additional cost or time to the Government.

B. Feedwater Deaerator with Storage Tank and Accessories, Condensate Storage Tank, Blowoff Tank, Flash Tank.

1. Coordinate location with structural requirements of the building.
2. Location shall permit access to and removal of all internal and external features without removing other items of equipment or piping.
3. Bolt to building as recommended by manufacturer or as shown. Arrange anchorage to allow thermal expansion of unit.
4. Clean interior of equipment before placing in service.
5. Deaerator vent pipes must extend vertically through roof. Horizontal runs are prohibited.
6. All controls, safeties, set points, etc. must conform to the VHA Boiler Plant Safety Devices Testing Manual.

C. Boiler Feed and Condensate Transfer Pumps:

1. For base-mounted horizontal-shaft pumps, connect base drain to 20 mm (3/4 inch) pipe. Extend pipe to nearest open sight or floor drain.
2. Align pumps and drivers at the factory. At job site, a millwright shall level, shim, bolt, and grout the base plates or base frames onto the concrete pads, and shall also check the alignments of flexible-coupled pumps and drivers and make corrections necessary. Check alignment when both pump and driver are at normal operating temperature.
3. Where packaged deaerator-feed pump unit is required, boiler feed pump base plates shall be welded or bolted to deaerator support frame.

4. If water-cooled bearings or quenched or flushed or water-cooled stuffing boxes are provided on pumps, contractor shall install on each pump valved 15 mm (1/2 inch) piping connections to cold water supply, and 15 mm (1/2 inch) drains to nearest open sight drain. Provide unions at all connections to pumps.

D. Mechanical Condensate Pump: Provide sufficient elevation difference between the receiver condensate inlet and outlet and the trap inlet to assure the required head for proper functioning and capacity. Steam supply line shall include gate valve and Y-type strainer.

E. Condensate Return Pump Units (Sump Type): Provide the exterior of new receiver tanks with two heavy coats of asphalt or bituminous waterproofing compound. Mounting into the floor shall include waterproofing gaskets and grouting that will prevent ground water from entering the building from around the receiver. Unit shall be level.

F. Fuel Oil Pumping Equipment and Fuel Oil Heaters and Accessories: Locate equipment to permit access to all valves and controls, and to permit removal and cleaning of heat exchanger tubes.

G. Compressed Air System: Pipe all drain connections individually to nearest floor drain. Use 15 mm (1/2 inch) piping. Provide union at each drain connection on the equipment.

H. Automatic Continuous Boiler Blowdown Control System: Locate controller on floor-supported angle at four feet above the floor at the boiler adjacent to the continuous blowdown valves. Keypad and indicator must face aisle.

3.02 TESTING AND BALANCING FEEDWATER DEAERATOR WITH STORAGE TANK AND ACCESSORIES

A. Demonstrate the ability of the deaerator to perform as specified in regard to oxygen removal and outlet temperature, over the required output flow range and input temperature range of unit. Test performance at 5 percent and 100 percent of capacity, and at two intermediate points to be selected by the COR. Repeat test two times at each load point.

B. Determine temperatures and pressures by calibrated thermometers and pressure gauges.

C. Utilize the specified colorimetric comparator type dissolved oxygen test kit. After completion of tests, clean the test kit apparatus, replace all ampoules used and parts missing or broken, and deliver the kit to the COR.

D. Various impurities in feed water can interfere with the colorimetric test. When impurities are present, the Contractor shall be prepared to test for dissolved oxygen using the titration test as described in ASME PTC 12.3. COR may permit other test methods.

E. This test shall be performed in conjunction with any boiler tests that are specified.

F. Prior to requesting final tests, pretest unit using method specified for final test. All final tests must include at the minimum the tests listed in the VHA Boiler Plant Safety Devices Testing Manual. Submit test data for review.

G. All permanent work platforms shall be in place before testing. The use of or need for step ladders to perform any inspection, test, or maintenance shall be considered a failure to install the equipment in accordance with specifications that require access to equipment.

The contractor shall correct at no additional cost or time to the Government before beneficial use can start.

3.03 STARTUP AND TESTING

A. Perform tests as recommended by product manufacturer and listed standards and under actual or simulated operating conditions and prove full compliance with design and specified requirements. Tests of the various items of equipment shall be performed simultaneously with the system of which each item is an integral part.

B. When any defects are detected, correct defects and repeat test at no additional cost or time to the Government.

C. The Commissioning Agent will observe startup and contractor testing of selected equipment. Coordinate the startup and contractor testing schedules with the COR and Commissioning Agent. Provide a minimum notice of 10 working days prior to startup and testing.

3.04 DEMONSTRATION AND TRAINING

A. Provide services of manufacturer's technical representative for 8 hours to instruct each VA personnel responsible in operation and maintenance of the system.

BUILDING DEPARTMENT NOTES:

THE FOLLOWING NOTES SHALL APPLY THROUGHOUT.

WORK SHALL BE EXECUTED IN FULL COMPLIANCE WITH THE APPLICABLE PROVISIONS OF ALL LAWS, BY-LAWS, STATUTES, ORDINANCES, CODES, RULES, REGULATIONS AND LAWFUL ORDERS OF PUBLIC AUTHORITIES BEARING ON THE PERFORMANCE AND EXECUTION OF THE WORK.

THIS APPLICATION IS FILED UNDER 2014 CODE FOR COMPLIANCE WITH CHAPTERS 1, 17 & 33 REGARDING ADMINISTRATION, INSPECTION AND SAFETY REQUIREMENTS.

AVAILABLE RECORDS INDICATE THAT THIS BUILDING WAS CONSTRUCTED APPROXIMATELY IN 1994.

1. ALTERATIONS ARE DONE IN ACCORDANCE WITH THE CODE APPLICABLE AT THE TIME THIS BUILDING WAS BUILT, THE 1968 CODE, WITH THE EXCEPTION THAT PORTIONS OF THE BUILDING REGULATED BY RETROACTIVE CODE PROVISION (MECHANICAL, ELECTRICAL AND PLUMBING) ARE DESIGNED TO COMPLY WITH THE 2014 CODE.

2. THE CONTRACTOR SHALL PROMPTLY NOTIFY THE OWNER OF ANY PORTIONS OF THE WORK, IN THE CONTRACT DOCUMENTS THAT ARE AT VARIANCE WITH THE ABOVE.ALL MATERIALS, ASSEMBLIES, FORMS METHODS OF CONSTRUCTION AND SERVICE EQUIPMENT SHALL MEET THE FOLLOWING REQUIREMENTS:
   a) THEY SHALL HAVE BEEN ACCEPTABLE PRIOR TO THE EFFECTIVE DATE OF THE CODE BY THE BOARD OF STANDARDS AND APPEALS.
   b) THEY SHALL HAVE BEEN ACCEPTED FOR THE USE UNDER THE PRESCRIBED TEST METHODS BY COMMISSIONER (OR)
   c) APPROVED BY THE OFFICE OF TECHNICAL CERTIFICATION AND RESEARCH (OTCR)

3. MATERIALS OR ASSEMBLIES REQUIRED TO HAVE A FIRE RESISTANCE RATING SHALL COMPLY WITH ONE OF THE FOLLOWING:

   a) THEY SHALL CONFORM WITH A.I.S.G. "FIRE RESISTANCE RATING", DATED 1985 (OR)
   b) THEY SHALL HAVE BEEN TESTED IN ACCORDANCE WITH ASTM E119, STANDARD METHODS OF FIRE TESTS OF BUILDING CONSTRUCTION AND MATERIALS AND ACCEPTED BY THE COMMISSIONER (OR)
   c) THEY SHALL HAVE BEEN ACCEPTABLE PRIOR TO THE EFFECTIVE DATE OF THE CODE. (OR)
   d) APPROVED BY OTCR.

4. THE FOLLOWING SHALL BE MADE UNDER SEPARATE APPLICATION BY THE CONTRACTOR'S LICENSED PROFESSIONAL IN ACCORDANCE WITH SECTION 28-104.2.6 OF TITLE 28:

BUREAU OF ELECTRICAL CONTROL	PRIOR TO PERMIT

5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLOSING OUT OF INSPECTIONS AND OBTAINING SIGN OFF FOR ALL APPLICATIONS LISTED IN 4 ABOVE.

6. THE FOLLOWING SHALL BE MADE UNDER SEPARATE APPLICATION BY THE LICENSED PROFESSIONAL ENGINEER OF RECORD IN ACCORDANCE WITH SECTION 28-104.2.6 OF TITLE 28:

   FIRE ALARM

7. THE CONTRACTOR'S LICENSED PROFESSIONAL IS RESPONSIBLE FOR FILING APPLICATION AND OBTAINING PERMITS FOR SCAFFOLDING, SIDEWALK, BRIDGING, ANY OTHER CONSTRUCTION EQUIPMENT OR PUBLIC PROTECTIVES REQUIRED TO ENSURE SAFETY OF OPERATION AND THE PUBLIC AS PER NYC BUILDING CODE, CHAPTER 33, SECTION BC 3307. THE CONTRACTOR IS ALSO RESPONSIBLE FOR OBTAINING LETTER OF COMPLETION. APPLICATION FOR CONSTRUCTION PERMITS SHALL BE PROCESSED THROUGH THE DOB. THE CONTRACTOR SHALL OBTAIN "CERTIFICATE OF COMPLIANCE" REQUIRED IN ACCORDANCE WITH CHAPTER 1 OF TITLE 28 OF THE ADMINISTRATIVE CODE, ARTICLE 116, 28-116.4.1. CERTIFICATE OF COMPLIANCE SHALL BE REQUIRED FOR THE USE AND OPERATION OF THE FOLLOWING TYPE OF SERVICE EQUIPMENT: AIR-CONDITIONING AND VENTILATING SYSTEMS.

8. THESE DRAWINGS HAVE BEEN PREPARED BY OR AT THE DIRECTION OF THE UNDERSIGNED AND TO THE BEST OF THE UNDERSIGNED'S KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGEMENT ARE IN COMPLIANCE WITH THE NYC CONSTRUCTION CODES, INCLUDING THE NEW YORK CITY ENERGY CONSERVATION CODE.

BUILDING DEPARTMENT NOTES (CONT'D.):

9. ALL WORK SHALL COMPLY WITH SECTION BC 1007 AND CHAPTER 11 "ACCESSIBILITY" OF THE NYC BUILDING CODE AND ICC A117.1 2003. 10. ALL NEW WORK SHALL COMPLY WITH THE 2014 NEW YORK CITY ENERGY CONSERVATION CODE.

10. ALL NEW INTERIOR FINISHES SHALL BE CONSTRUCTED OF MATERIALS MEETING SECTION 27-529 FOR FLAME SPREAD RATINGS.

11. ALL NEW WORK IS CONSTRUCTED MORE THAN 200'-0" FROM ANY MTA STRUCTURE.
    ALL PLUMBING FIXTURES INSTALLED UNDER THIS CONTRACT SHALL COMPLY WITH LOCAL LAW 29/89.

12. PANIC HARDWARE INSTALLED UNDER THIS CONTRACT SHALL BE AS PER SECTION 27-371(K).

13. STRUCTURAL STABILITY PLAN ALONG WITH TR-1, AND SITE SAFETY PLANS SHALL BE SUBMITTED BY THE CONTRACTOR AND APPROVED BY THE OWNER PRIOR TO APPLYING FOR CONSTRUCTION PERMITS.

14. FOLLOW CHAPTER 33 OF THE 2014 NYC BUILDING CODE PROTECTION OF THE PUBLIC AND ADJACENT PROPERTIES. REFERENCES IN THE SPECIFICATIONS AND THE DRAWINGS TO THE 1968 BUILDING CODE PARAGRAPHS REGARDING PROTECTION SHALL BE CONSIDERED TO BE THAT OF CHAPTER 33 OF THE BUILDING CODE.

15. LIST OF VIOLATIONS BEING ADDRESSED AS PART OF THIS APPLICATION: NONE

16. PROGRESS INSPECTIONS REQUIRED TO BE PERFORMED DURING CONSTRUCTION FOR ANY NEW BUILDING, ADDITION OR ALTERATION PROJECT ARE IDENTIFIED BY THE APPLICANT ACCORDING TO THE SCOPE OF WORK AND LISTED AND DESCRIBED IN THE DRAWING. IN ACCORDANCE WITH SECTION BC 109.9, WHERE AN INSPECTION OR TEST FAILS, THE CONSTRUCTION SHALL BE CORRECTED.

17. IN ACCORDANCE WITH ARTICLE 116 OF TITLE 28 AND SECTION BC 109, CONSTRUCTION SHALL BE SCHEDULED TO ALLOW REQUIRED PROGRESS INSPECTIONS TO TAKE PLACE, AND THAT ROOFS, CEILINGS, EXTERIOR WALLS, INTERIOR WALLS, FLOORS, FOUNDATIONS, BASEMENTS AND ANY OTHER CONSTRUCTION SHALL NOT BE COVERED OR ENCLOSED UNTIL REQUIRED PROGRESS INSPECTIONS ARE COMPLETED OR THE PROGRESS INSPECTOR INDICATES THAT SUCH COVERING OR ENCLOSURE MAY PROCEED AT EACH STAGE OF CONSTRUCTION, AS APPLICABLE.

SITE SAFETY AND PROTECTION NOTES:

1. SUBMIT TO THE OWNER FOR REVIEW A SITE SAFETY PLAN(S) PREPARED AND SIGNED BY A NEW YORK CITY LICENSED SITE SAFETY MANAGER. THE PLAN(S) SHALL BE COMPLETE, REFLECTING THE ENTIRE SITE AND SHALL SHOW ANY PHASED PROTECTION.

2. THE SITE SAFETY PLAN(S) SHALL INCLUDE NOTES THAT ADDRESS ANY ANY POTENTIAL INTERACTION BETWEEN THE BUILDING OCCUPANTS AND GENERAL PUBLIC AND EXPOSURE TO THE CONSTRUCTION PROCESS.

SPECIAL INSPECTIONS:

SPECIAL INSPECTIONS REQUIRED IN ACCORDANCE WITH CHAPTER 17 AND THE APPLICABLE SECTIONS OF THE NYC CONSTRUCTION CODE ARE LISTED IN THE FOLLOWING TABLES:

THE CONTRACTOR MUST NOTIFY THE ARCHITECT OR ENGINEER FOR SPECIAL INSPECTIONS AT LEAST 72 HOURS BEFORE THE SPECIFIC WORK COMMENCES.

THE "OWNER" SHALL BE RESPONSIBLE FOR THE FOLLOWING SPECIAL INSPECTIONS:

FIRE RESISTANC PENETRATIONS AND JOINTS	BC 1704.27
CONTRACTOR SHALL TEST FIRE ALARM SYSTEM IN THE PRESENCE BY FDNY REPRESENTATIVE	
FIRE ALARM TEST	BC 907, BC 1704.13

NOTE: REQUIRED INSPECTIONS AND TESTS OF MATERIALS DESIGNATED FOR "SPECIAL INSPECTION" BY THE CONTRACTOR SHALL BE MADE UNDER THE DIRECT SUPERVISION OF A LICENSED ARCHITECT OR ENGINEER RETAINED BY OR ON THE BEHALF OF THE CONTRACTOR WHO SHALL BE ACCEPTABLE TO THE ARCHITECT OR ENGINEER WHO SUPERVISED THE PREPARATION OF THE PLANS.

SUMMARY OF WORK

GENERAL:

THE FOLLOWING SUMMARY OF WORK PROVIDES A VERY GENERAL OVERVIEW OF THE SCOPE OF WORK. ALL SCOPE OF WORK SHALL BE AS INCLUDED IN THIS DESCRIPTION PLUS ALL OTHER WORK REQUIRED TO MEET THE INTENT OF THE CONTRACT DOCUMENTS INCLUDED AS PART OF THE PROJECT CONTRACT.

SCOPE OF WORK

GENERAL CONSTRUCTION WORK

1. PROVIDE TEMPORARY SUPPORTS ON STRUCTURES WHERE REQUIRED TO THE EXTENT SHOWN ON CONTRACT DOCUMENTS .
2. CUTTING, CORING OF WALLS AND CEILING FOR INSTALLATION OF COMPONENTS OF ALL TRADES TO THE EXTENT SHOWN ON CONTRACT DOCUMENTS.
3. PATCHING, REPAIR AND PAINTING OF ALL SURFACES UPON COMPLETION OF ALL TRADES WORK TO THE EXTENT SHOWN ON CONTRACT DOCUMENTS.
4. PROVIDE CONCRETE PAD FOR NEW EQUIPMENT SUCH AS PUMPS, WATER SOFTENER, REVERSE OSMOSIS.
5. PROVIDE FIRE STOPPING/SMOKE SEALS IN PENETRATIONS AFTER NEW CONDUITS AND SLEEVES INSTALLATION.
6. PROVIDE ACCESS PLATFORM STRUCTURE WITH LEADER TO THE EXTENT SHOWN ON CONTRACT DOCUMENTS.
7. REMOVE EXISTING CMU FOR NEW OPENING AND PROVIDE NEW ROLL UP GATES IN PUMP ROOM AND DEAERATOR ROOM.

HVAC WORK

8. REMOVE EXISTING (5) CONDENSATE PUMPS WITH ALL ASSOCIATED PIPING AND ACCESSORIES TO THE EXTENT SHOWN ON DRAWINGS.
9. REMOVE EXISTING (3) DEAERATOR TANKS WITH ALL ASSOCIATED PIPING AND ACCESSORIES TO THE EXTENT SHOWN ON DRAWINGS.
10. REMOVE EXISTING (2) CONDENSATE TANKS WITH ALL ASSOCIATED PIPING AND ACCESSORIES TO THE EXTENT SHOWN ON DRAWINGS.
11. REMOVE EXISTING (5) BOILER FEED PUMPS WITH ALL ASSOCIATED PIPING AND ACCESSORIES TO THE EXTENT SHOWN ON DRAWINGS.
12. REMOVE EXISTING PRV STATIONS AS SHOWN ON CONTRACT DOCUMENT WITH ALL PNEUMATIC TUBING, CONTROL PANELS, ETC.
13. REMOVE EXISTING PRESSURE RELIEF CONTROL VALVES AS SHOWN ON CONTRACT DOCUMENTS WITH ALL PNEUMATIC TUBING, CTONROL PANELS, ETC.
14. REMOVE EXISTING BOILER FEED PIPING TO THE EXTENT SHOWN ON DRAWINGS.
15. REMOVE EXISTING CONDENSATE RETURN FROM POWERHOUSE CELLAR.
16. REMOVE EXISTING VENT PIPING SERVING CONDENSATE TANK AND DEAERATORS.
17. REMOVE EXISTING LPS PIPING SERVING DEAERATOR TO THE EXTENT SHOWN ON CONTRACT DOCUMENTS.
18. REMOVE EXISTING ABANDONED HPS PIPING SERVING DEAERATOR TO THE EXTENT SHOWN ON CONTRACT DOCUMENTS.
19. REMOVE EXISTING CHEMICAL FEEDERS.
20. REMOVE EXISTING MAKE UP WATER PIPING TO THE EXTENT SHOWN ON DRAWINGS INCLUDING ALL MODULATING VALVES AND CONTROLS.
21. REMOVE EXISTING OVERFLOW PIPING FROM DEAERATORS TO CONDENSATE TANKS INCLUDING STRAINERS AND ALL ASSOCIATED VALVES.
22. REMOVE EXISTING HPS PIPING (A, B & C LINE) TO THE EXTENT SHOWN ON DRAWINGS.
23. REMOVE ALL ABANDONED PIPING TO THE EXTENT SHOWN ON DRAWINGS.
24. PROVIDE (6) CONDENSATE PUMPS WITH VFD, CONTROL PANEL, ALL ASSOCIATED PIPING AND ACCESSORIES.
25. PROVIDE (2) SURGE TANKS WITH CONTROL PANEL, ALL ASSOCIATED PIPING AND ACCESSORIES.
14. PROVIDE (6) BOILER FEED PUMPS WITH VFD, CONTROL PANEL, ALL ASSOCIATED PIPING AND ACCESSORIES.
15. PROVIDE (3) DEAERATOR TANKS WITH CONTROL PANEL, ALL ASSOCIATED PIPING AND ACCESSORIES.
16. PROVIDE NEW PRV WITH ALL PNEUMATIC TUBING, CONTROLS, VALVES, ETC.
17. PROVIDE NEW PRESSURE RELIEF CONTROL VALVE WITH ALL PNEUMATIC TUBING, CONTROLS, VALVES, ETC.
18. PROVIDE REVERSE OSMOSIS SYSTEM WITH ALL ASSOCIATED PIPING AND ACCESSORIES.
19. PROVIDE CLEAN IN PLACE SKID SERVING REVERSE OSMOSIS SYSTEM WITH ALL ASSOCIATED PIPING AND ACCESSORIES.
20. PROVIDE WATER SOFTENER TRIPLE TANK SYSTEM WITH ALL ASSOCIATED PIPING AND ACCESSORIES.
21. PROVIDE CHEMICAL FEEDER TANKS WITH ALL ASSOCIATED PIPING AND ACCESSORIES.
22. PROVIDE NEW 10" HPS PIPING FROM STEAM HEADER 1 AND STEAM HEADER 2 FOR DEAERATOR TANK.
23. PROVIDE NEW 18" BOILER FEED SUCTION HEADER.
24. PROVIDE NEW HPS PIPING (A, B & C LINE) TO THE EXTENT SHOWN ON DRAWINGS.
25. PROVIDE NEW HPS PIPING WITH STEAM REGULATOR ASSEMBLY AND ALL REQUIRED BYPASS FOR DEAERATOR AND SURGE TANKS.
26. PROVIDE NEW MAKE UP WATER PIPING WITH ALL MODULATING VALVES AND ASSOCIATED ACCESSORIES TO THE EXTENT SHOWN ON DRAWINGS.
27. PROVIDE NEW VENT PIPING TO THE EXTENT SHOWN ON DRAWINGS..

ELECTRICAL

28. DISCONNECT AND REMOVE CONDENSATE PUMPS, AND ASSOCIATED DISCONNECTS, POWER CONDUIT AND WIRING TO SOURCE. (TYP FOR 5)
29. DISCONNECT AND REMOVE BOILER FEED WATER PUMPS, AND ASSOCIATED VFD'S / DISCONNECTS POWER CONDUIT AND WIRING TO SOURCE. (TYP FOR 5)
30. PROVIDE NEW DISTRIBUTION PANELS DP-4, DP-5, TWO 100A PANELS AND TWO 15 KVA TRANSFORMERS.
31. PROVIDE POWER FOR NEW CONDENSATE PUMPS THROUGH VFD FROM NEW DISTRIBUTION PANEL (TYPICAL FOR 6)
32. PROVIDE POWER FOR NEW BOILER FEED PUMPS THROUGH VFD FROM NEW DISTRIBUTION PANEL (TYPICAL FOR 6)
33. PROVIDE POWER TO CONTROL PANELS FROM TWO 100A PANELS.
34. DISCONNECT, REMOVE, AND STORE EXISTING FLUORESCENT LIGHTING FIXTURES IN THE WAY OF NEW MECHANICAL EQUIPMENT AND PIPING AND REINSTALL AFTER NEW MECHANICAL EQUIPMENT AND PIPING IS INSTALLED.

ADD ALTERNATE NO.1

1. PROVIDE NEW 4" BOILER FEED PIPING AND CONNECT TO EXISTING BOILER FEED TO CO-GENE PLANT

ADD ALTERNATE NO.2

PROVIDE FISHER MAKE MODULATING VALVES, MOTORIZED VALVES, PRESSURE REDUCING VALVES FOR ALL REQUIRED VALVES.

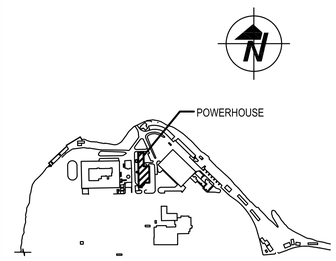
ALL CONTROLS PROVIDED IN THE PROJECT SHALL BE EMERSON DELTA V CONTROL SYSTEM MAKE WITH ROSEMOUNT 3051 TRANSMITTER FULLY INTEGRABLE WITH THE EXISTING EMERSON DELTA V CONTROL SYSTEM IN THE FACILITY.

CONTRACTOR SHALL PROVIDE ADDITIONAL COST FOR LABOR AND MATERIAL (COST DIFFERENCE) BETWEEN FISHER VALVES AND EMERSON DELTA V CONTROLS COMPARE TO BASE WORK VALVES AND CONTROLS AS PER PROJECT DOCUMENTS. IF DOC SPECIFIES TO USE THE FISHER VALVES AND EMERSON DELTA V CONTROLS AS PER THIS ADD ALTERNATE, THE TOTAL ADDITIONAL COST OF LABOR AND MATERIAL SHALL BE ADDED TO THE BASE BID.

CITY OF NEW YORK DEPARTMENT OF CORRECTION

THE CITY OF NEW YORK
DEPARTMENT OF CORRECTION

DIVISION OF CAPITAL POLICY
AND DEVELOPMENT
ENGINEERING UNIT



KEY PLAN
NTS

No.	Date	Revision
2	12/15/20	ADDENDUM 5
1	09/28/20	ISSUED FOR BID

NOTE: Drawing may be printed at reduced scale

IT IS A VIOLATION OF THE STATE EDUCATION LAW SECTION 7209 (2) FOR ANY PERSON TO ALTER AN ITEM IN ANY WAY UNLESS SUCH PERSON IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, AND THE ENGINEER STAMPS SUCH CHANGES

DESIGNED BY:

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Consulting Engineers
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Executive Director:	HARDEE SAINI
Project Manager:	BV
Project Engineer:	TS
Drawn By: DB	Checked By: SB
PIN # 072202001CPD	Date:

Project:
POWERHOUSE
BOILER FEED WATER
TREATMENT SYSTEM
UPGRADE
RIKERS ISLAND
EAST ELMHURST, NY 11370

Address:

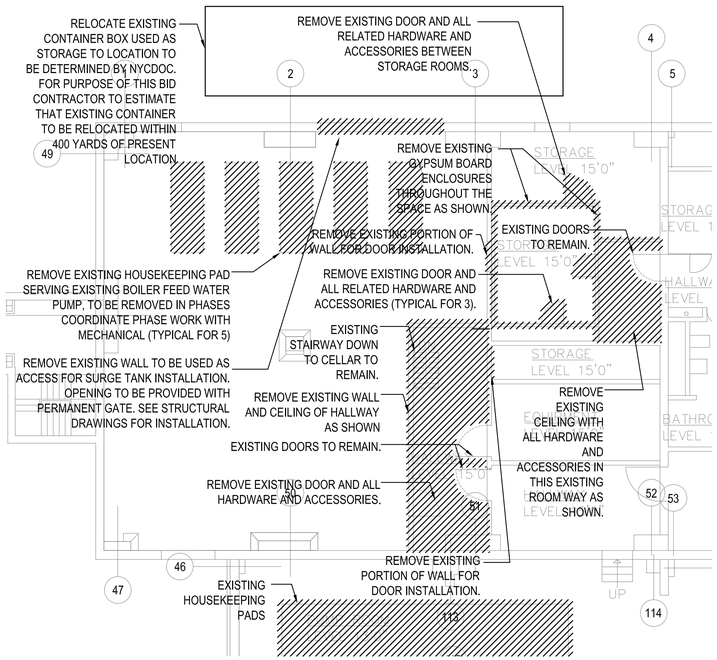
Drawing Title:
BUILDING DEPARTMENT NOTES & SUMMARY OF WORKS

Seal:

Drawing No.:
T003.00

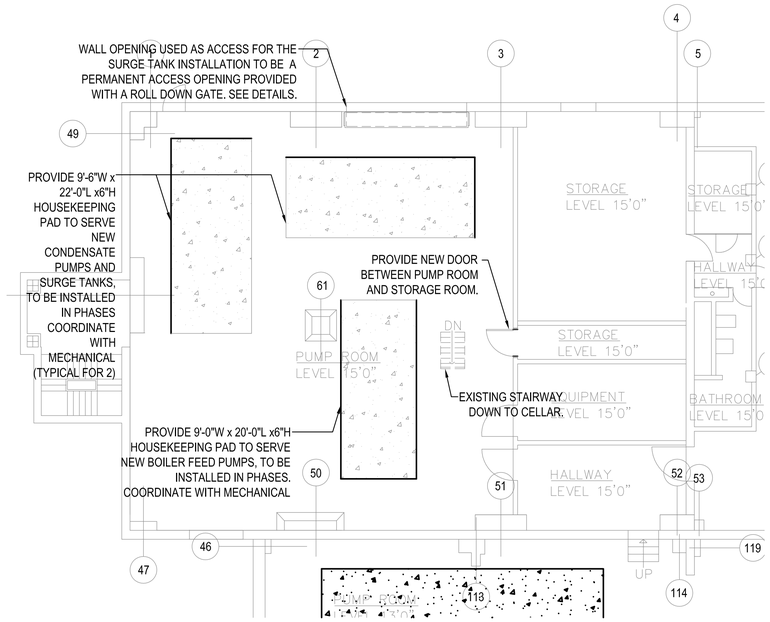
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Sheet: 3 of 64



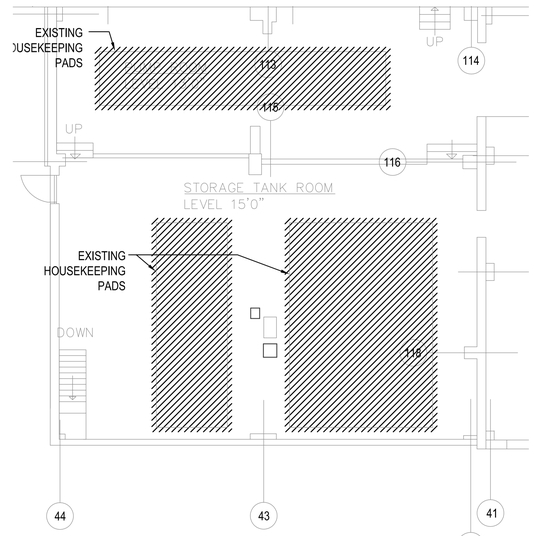
1 PUMP ROOM FLOOR PLAN (LEVEL 15'-0") - DEMOLITION

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



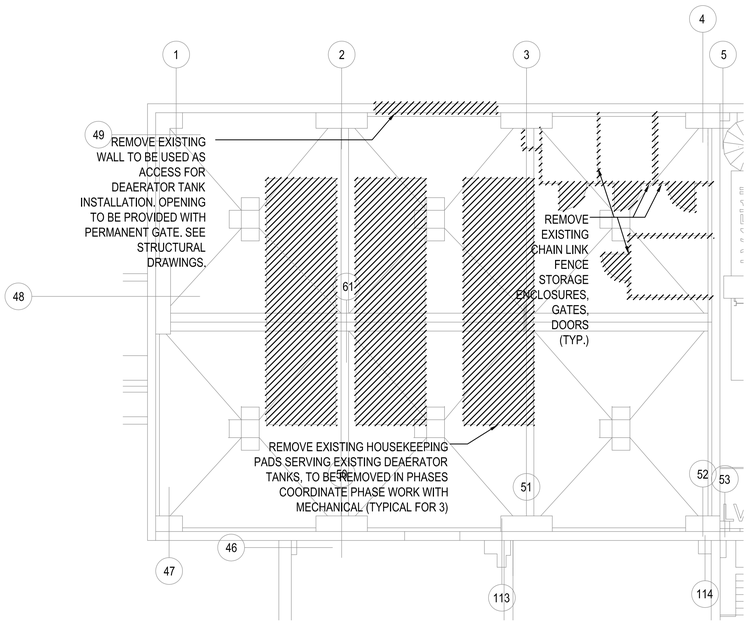
2 PUMP ROOM FLOOR PLAN (SOUTH) (LEVEL 15'-0") - CONSTRUCTION

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



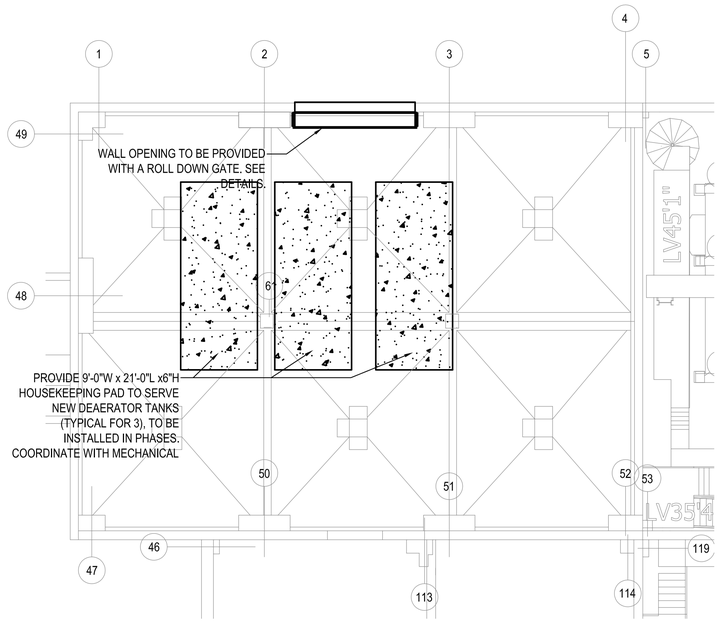
5 TANK ROOM FLOOR PLAN (LEVEL 15'-0") REMOVAL

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



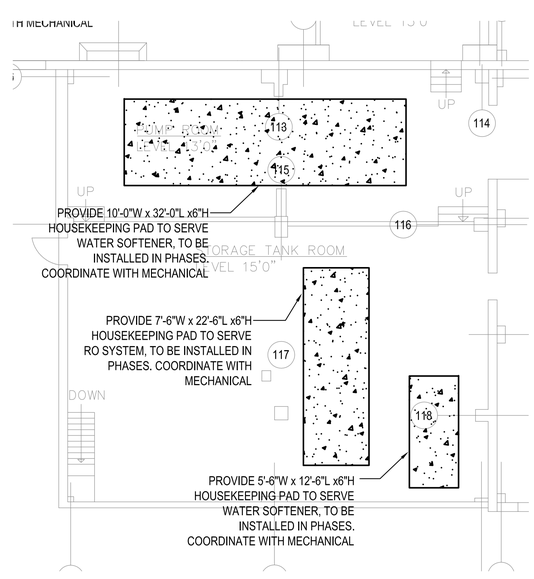
3 DEAERATOR ROOM FLOOR PLAN (LEVEL 35'-4") - DEMOLITION

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



4 DEAERATOR ROOM PLAN (LEVEL 35'-4") - CONSTRUCTION

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



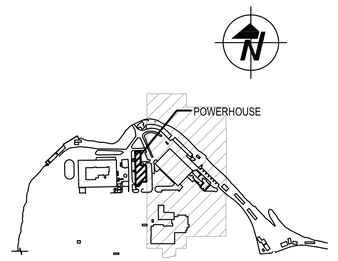
6 TANK ROOM FLOOR PLAN (LEVEL 15'-0") CONSTRUCTION

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

CITY OF NEW YORK DEPARTMENT OF CORRECTION

THE CITY OF NEW YORK
DEPARTMENT OF CORRECTION

DIVISION OF CAPITAL POLICY
AND DEVELOPMENT
ENGINEERING UNIT



KEY PLAN
NTS

No.	Date	Revision
1	09/28/20	ISSUED FOR BID
⚠	12/15/20	ADDENDUM 5

NOTE: Drawing may be printed at reduced scale

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Project:
POWERHOUSE
BOILER FEED WATER
TREATMENT SYSTEM
UPGRADE
RIKERS ISLAND
EAST ELMHURST, NY 11370

Address:

Drawing Title:
EXISTING MAIN FLOOR PLAN
(SOUTH)

Seal:

Drawing No.:
A101.00

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

Sheet: 5 of 64

HVAC GENERAL NOTES (APPLICABLE TO ALL DRAWINGS)

GENERAL

1. THE TERM "CONTRACTOR", "THIS CONTRACTOR", "HVAC CONTRACTOR" OR ANY TEXT AND DRAWINGS INCLUDED IN THIS CONTRACT DOCUMENT (WHICH INCLUDES DRAWINGS AND SPECIFICATIONS) SHALL BE MEANT AND DIRECTED TO THE CONTRACTOR PERFORMING THE HEATING, VENTILATING AND AIR CONDITIONING (HVAC) WORK IN THIS PROJECT.

2. THE ARCHITECT/ENGINEER FOR THE PROJECT WHO WILL ALSO BE REFERRED TO AS THE ARCHITECT/ENGINNEER OF RECORD WILL BE THE FIRM WHOSE NAME AND ADDRESS IS LISTED IN THE TITLE BLOCK OD THE DESIGN DOCUMENT.

3. ALL WORK SHOWN IN THE CONTRACT DRAWINGS AND INCLUDED IN THE SPECIFICATIONS SHALL BE CONSIDERED AS NEW WORK TO BE PROVIDED (DEFINED AS FURNISHED AND INSTALLED) BY THE HVAC CONTRACTOR. ONLY ITEM SPECIFICALLY INDICATED AS "EXISTING" OR "BY OTHERS" OR "BY OTHER TRADES" SHALL BE EXCLUDED FROM THE WORK PROVIDED BY THE HVAC CONTRACTOR. SYMBOL LIST SHOWING DIFFERENT LINE THICKNESS FOR EXISTING AND NEW COMPONENTS ARE MEANT ONLY FOR CLARITY. UNLESS SPECIFICALLY INDICATED AS "EXISTING" ALL COMPONENTS SHALL BE CONSIDERED TO BE NEW TO BE PROVIDED BY THE HVAC CONTRACTOR.

4. THE SCOPE OF WORK TO BE PROVIDED BY THE HVAC CONTRACTOR SHALL INCLUDE SCOPE OF WORK AS INDICATED IN THE CONTRACT DOCUMENTS. THE CONTRACT DOCUMENTS SHALL INCLUDE CONTRACT DRAWINGS, CONTRACT SPECIFICATIONS, CONTRACT ADDENDUMS, ANY OTHER WRITTEN DESCRIPTION OR MEETING MINUTES PROVIDED BY THE ARHCITECT/ENGINEER OF RECORD FOR THE PROJECT TAKEN TOGETHER. IN THE CONTRACT DRAWINGS, THE HVAC CONTRACTOR SHALL INCLUDE ALL WORK INDICATED IN INCLUDING BUT NOT LIMITED TO THE LEGENDS, SYMBOLS, ABBREVIATIONS, SPECIFIC AND GENERAL NOTES, INDEXES, FLOOR PLANS, SECTIONS AND ELEVATIONS, SCHEMATIC DIAGRAMS, RISER DIAGRAMS, FLOW DIAGRAMS, CONTROL DIAGRAMS, ONE LINE DIAGRAMS, SCHEDULE SHEETS, DETAILS, DRAWINGS SPECIFICATION SHEETS, PHASING PLANS, ETC. TAKEN TOGETHER.

5. IT SHALL BE EXPRESSEDLY UNDERSTOOD THAT ALL ITEMS INCLUDED IN THE CONTRACT DOCUMENTS ISSUED BY THE ARCHITECTS/ENGINEERS SHALL BE INCLUDED IN THE BID PRICE OF THE CONTRACTOR UNLESS OTHERWISE, SPECIFIC ADD ALTERNATES ARE LISTED BY THE ARCHITECT/ENGINEER IN THE DOCUMENTS.

6. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ASCERTAIN IN WRITING THAT HE HAS ALL THE CONTRACT DOCUMENTS FOR THE PROJECT FROM THE ARCHTIECT/ENGINEER. NO CLAIMS FOR ANY MISSING DOCUMENTATION WILL BE ACCEPTABLE.

7. WHERE INFORMATION IN DIFFERENT PARTS OF THE CONTRACT DOCUMENTS ARE INTERPRETED BY THE CONTRACTOR TO BE DUPLICATED, THE CONTRACTOR SHALL OBTAIN A WRITTEN APPROVAL OF HIS INTERPRETATION FROM THE OWNER BEFORE DELETING THE SCOPE OF WORK HE INTERPRETS AS BEING A DUPLICATION. IN THE ABSENCE OF SUCH WRITTEN APPROVAL, THE CONTRACTOR SHALL NOT EXCLUDE ANY ITEM SHOWN IN DIFFERENT PARTS OF THE CONTRACT.

8. FOR EITHER CONTRACTOR'S INTERPRETATION OF DUPLICATION OR CONTRADICTION AS INDICATED ABOVE, THE OWNER'S DETERMINATION SHALL BE FINAL AND SHALL NOT ENTITLE THE CONTRACTOR TO ANY ADDITIONAL COMPENSATION.

9. ALL WORK SHOWN ON THE CONTRACT DOCUMENTS ARE MEANT TO BE THE FINAL INTENT OF THE WORK. ANY WORK REQUIRED TO MEET THE FINAL INTENT OF THE DESIGN DOCUMENTS, INCLUDING BUT NOT LIMITED TO THE FOLLOWING SHALL BE PROVIDED BY THE HVAC CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER:
   a. CUTTING AND PATCHING OF WALLS, FLOORS, CEILING, ROOFS, PARTITIONS;
   b. REMOVAL AND REPLACEMENT OF SUSPENDED CEILINGS, ACCESS PANELS, ACCESS DOORS;
   c. REMOVAL AND REPLACEMENT OF EXISTING ARCHITECTURAL, STRUCTURAL, PLUMBING, ELECTRICAL, FIRE PROTECTION TRADES AND, TELECOMMUNICATION, COMPUTER, SECURITY, PUBLIC ADDRESS, INTERCOM SYSTEMS WHICH INTERFERE WITH THE FINAL INTENT OF THE HVAC WORK.

12. DETERMINE LOCATIONS OF SYSTEMS AND COMPONENTS IN FIELD. RELOCATE EXISTING WORK THAT INTERFERES WITH WORK OF THIS CONTRACT. UNLESS AND UNTIL SPECIFIC ITEMS ARE SHOWN IN OTHER TRADE DRAWINGS FOR REMOVAL AND REPLACEMENT FOR THE AREA WHERE THE FINAL HVAC DESIGN INTENT IS SHOWN, ALL WORK REQUIRED FOR OTHER TRADES TO PERFORM THEIR WORK TO ENABLE THE HVAC WORK SHOWN ON THESE DRAWINGS SHALL BE INCLUDED IN THE HVAC CONTRACTOR'S BID.

13. ALL WORK SHOWN ON THE CONTRACT PLANS INCLUDING SCALED DRAWINGS ARE SCHEMATIC AND ARE INTENDED TO CONVEY GENERAL INFORMATION ON THE MAGNITUDE OF WORK AND TO PROVIDE GENERAL ARRANGEMENT OF EQUIPMENT. THE CONTRACT DRAWINGS ARE NOT MEANT TO CONVEY ALL THE FIELD CONDITIONS, ALL BENDS, OFFSETS, ELEVATIONS ACCURATELY AND SHALL NOT BE USED AS THE BASIS TO ESTIMATE THE QUANTITY OF HVAC WORK. THE CONTRACTOR MAY MAKE CHANGES IN THE FORM OF SHOP DRAWINGS IF AND WHEN APPROVED IN WRITING BY THE ARCHITECT/ENGINEER AT NO ADDITIONAL COST TO THE OWNER.

14. THE CONTRACTOR SHALL SEEKING WRITTEN CLARIFICATIONS TO SCOPE OF WORK, VISIT AND CAREFULLY EXAMINE THE SITE OF THE PROPOSED WORK SO AS TO FAMILIARIZE HIMSELF OR HERSELF WITH EXISTING FIELD CONDITIONS, TO VERIFY DIMENSIONS AND TO VERIFY DIFFICULTIES THAT WILL BE ENCOUNTERED DURING THE EXECUTION OF THE WORK AND TO VERIFY EXACT EXTENT OF WORK REQUIRED, PRIOR TO SUBMITTING HIS PROPOSAL. ANY CHANGES RESULTING FROM CONDITIONS ARISING IN THE FIELD ARE TO BE MADE BY THIS CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.

15. NEITHER ACCURACY NOR COMPLETION OF SERVICES AND UTILITY LOCATIONS SHOWN ON DRAWINGS IS GUARANTEED. DETERMINE EXACT LOCATIONS OF EXISTING SERVICES AND UTILITIES IN FIELD, WHETHER OR NOT SHOWN ON DRAWINGS. EXERCISE CAUTION AND IDENTIFY LOCATIONS OF UNMARKED UTILITY LINES AS NECESSARY TO PERFORM WORK OF THIS SECTION.

16. MANUFACTURERS MODEL NUMBERS ARE SPECIFIED SOLELY TO ESTABLISH STANDARDS OF QUALITY FOR PERFORMANCE AND MATERIALS.

17. GENERAL NOTES, SYMBOL LIST AND DETAILS ARE APPLICABLE TO ALL HVAC/MECHANICAL DRAWINGS.

18. DIMENSIONS SHOWN ON PLAN ARE HORIZONTAL. DIMENSIONS SHOWN IN ELEVATION ARE VERTICAL EXCEPT IN WAY OF STRUCTURAL STEEL, DIMENSIONS ARE MEASURED PERPENDICULAR TO FLANGE.

19. WHEREVER THE REQUIREMENTS AND REGULATIONS OF FEDERAL OR MUNICIPAL AUTHORITIES ARE MORE STRINGENT THAN THE REQUIREMENTS INDICATED ON THE DRAWINGS OR SPECIFICATIONS. THEN THESE MORE STRINGENT REQUIREMENTS SHALL TAKE PRECEDENCE OVER THE DRAWINGS OR SPECIFICATIONS AND SHALL BE MADE PART OF THE CONTRACT AT NO ADDITIONAL COST TO THE OWNER. HOWEVER, WHERE THE DRAWING OR SPECIFICATIONS ARE MORE STRINGENT THAN FEDERAL OF LOCAL AUTHORITY REQUIREMENTS AND REGULATIONS, THE MORE STRINGENT SHALL APPLY AND THE WORK SHALL BE INCLUDED IN THE CONTRACT.

20. THE CONTRACTOR SHALL PROVIDE PROTECTION FOR THE GENERAL PUBLIC AND CONSTRUCTION WORKERS IN AND AROUND THE CONSTRUCTION AREA. ADEQUATE BARRIERS SHALL BE PROVIDED TO EXERCISE CONTROL OF SAFE INGRESS AND EGRESS OF PREMISES. FIRE EXITS SHALL AT NO TIME BE BLOCKED.

21. ALL EXISTING CONSTRUCTION AND EQUIPMENT SHALL BE PROTECTED BY EACH CONTRACTOR DURING THE ENTIRE PERFORMANCE OF THEIR WORK. EXISTING AREAS DISTURBED OR DAMAGED BY CONTRACTORS SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.

22. ALL UNUSED MATERIALS AND DEBRIS SHALL BE LEGALLY DISPOSED OF AWAY FROM THE PREMISES.

23. ALL COMPONENTS SHALL BE RUN AS HIGH AS POSSIBLE & AS CLOSE AS POSSIBLE TO EXISTING ROOF/ FLOOR STRUCTURE TO MAINTAIN EXISTING CEILING HEIGHTS SHOWN ON ARCHITECTURAL DRAWINGS AND TO MAINTAIN A MINIMUM OF 7'-6" HEADROOM IN ALL MECHANICAL EQUIPMENT ROOMS.

24. EQUIPMENT SIZE ARE BASED ON PRELIMINARY INFORMATION FROM THE SCHEDULED MANUFACTURER'S EQUIPMENT, VERIFICATION OF THIS SIZES WITH APPROVED SHOP DRAWINGS PRIOR TO INFORMING THE CONTRACTOR FOR GENERAL CONSTRUCTION OF THE FINAL PENETRATION SIZES AND BEFORE FABRICATING DUCTS.

25. HOUSEKEEPING PAD AND SPACE ALLOCATIONS FOR MECHANICAL EQUIPMENT ARE BASED ON THE SCHEDULED MANUFACTURER'S PHYSICAL EQUIPMENT SIZES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CHECKING ANY SUBSTITUTED EQUIPMENT SIZES FROM CERTIFIED MANUFACTURER'S DRAWINGS AND SHALL MAKE MODIFICATIONS AT NO ADDITIONAL COST TO THE OWNER. THIS CONTRACTOR SHALL COORDINATE EQUIPMENT SUPPLIED BY GENERAL CONTRACTOR.

26. ELECTRICAL POWER PROVISIONS FOR MECHANICAL EQUIPMENT ARE BASED ON PRELIMINARY INFORMATION FROM THE SCHEDULED MANUFACTURER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CHECKING ELECTRICAL RATING FROM APPROVED SHOP DRAWINGS & SHALL MAKE ANY CIRCUIT DISTRIBUTION MODIFICATION REQUIRED WITHOUT ANY ADDITIONAL COST TO THE OWNER FOR SUBSTITUTED EQUIPMENT. THE CONTRACTOR SHALL SUBMIT A SCHEDULE OF SUCH CHANGE FOR ACCEPTANCE BY THE ENGINEER. ALL ACCEPTED CHANGES SHALL BE RECORDED ON "AS-BUILTS" DRAWINGS.

27. HVAC AND MECHANICAL SYSTEMS/SERVICES SHALL BE MAINTAINED FULLY OPERATIONAL IN AREAS/SPACES OUTSIDE OF AREA OF WORK DURING CONSTRUCTION.

28. COORDINATE ACCESS DOOR LOCATIONS IN HUNG CEILINGS AND WALLS WITH THE OTHER TRADES. SEE ARCHITECTURAL DRAWINGS OR MECHANICAL SPECIFICATIONS FOR LOCATIONS REQUIRING FIRE RATED ACCESS IN SUCH PROVIDE 2 HR. RATED DOORS WITH MINIMUM 2" THICK FIRE RATED INSULATION.

29. COORDINATE ALL WORK WITH OTHER TRADES AND EXISTING CONDITIONS TO AVOID CONFLICTS.

30. WORK SHALL BE DONE IN ACCORDANCE WITH ALL APPLICABLE CODES INCLUDING THE CURRENT EDITION OF THE NEW YORK STATE CODES AND ALL LOCAL TOWNSHIP REQUIREMENTS.

31. SCHEDULE WORK OF THIS SECTION TO AVOID INTERFERING WITH EXISTING OPERATIONS IN THE FACILITY.

32. PROVIDE 36" CLEARANCE IN FRONT OF ALL ELECTRIC COMPONENTS SUCH AS PANELS, MOTORS, STARTERS, PULL BOXES, JUNCTION BOXES ETC. PER NATIONAL ELECTRIC CODE (NEC) AND MANUFACTURER REQUIREMENTS.

33. MANUFACTURER ON THE SCHEDULE IS USED AS A BASIS FOR DESIGN. AS PER SPECIFICATIONS, CONTRACTOR CAN USE LISTED MANUFACTURERS AND/OR APPROVED EQUAL AND SHALL BE SUBJECT FOR REVIEW PRIOR TO APPROVAL

34. THE CAPACITIES AND SIZES SHOWN ON SCHEDULES SHALL OVERRIDE ANY SUCH INFORMATION SHOWN ON SPECIFICATIONS.

35. MECHANICAL COUPLING SHALL NOT BE ALLOWED IN THE PIPING IN THE PROJECT.

36. ALL PIPING SERVING HIGH PRESSURE (25 PSI OR ABOVE) AND MEDIUM PRESSURE STEAM LINES (15-25 PSI SHALL USE WELED CONNECTIONS ONLY. ⚠1

PHASING

1. VERIFY AND CONFIRM WITH OWNER THE PHASING REQUIREMENTS OF THE PROJECT BEFORE BIDDING REGARDLESS OF WHETHER THE INFORMATION IS PRESENTED (OR OTHERWISE) IN THE CONTRACT DOCUMENTS.

2. ANY PHASING INFORMATION WHERE PROVIDED IN THE CONTRACT DOCUMENTS ARE TO PROVIDE THE INTENT OF PHASING WORK ONLY AND MAY NOT INCLUDE ALL INFORMATION REQUIRED TO MEET THE INTENT OF THE OWNERS REQUIREMENTS. IT IS THE CONTRACTORS RESPONSIBILITY TO VERIFY THE PHASING REQUIREMENTS, METHODOLOGY, SCHEDULE, COORDINATION WITH THE OWNER.

3. IN ALL ASPECTS OF PHASING WORK, ALL ITEMS SHALL BE IN FULL COMPLIANCE WITH THE CURRENT CODE AND STANDARDS.

4. ALL PHASES OF THE PROJECTS SHALL ENSURE STANDALONE FULLY FUNCTIONAL CODE COMPLIANT SYSTEM REQUIRED FOR AN OCCUPIED SPACE USE.

5. ALL PHASING COSTS SHALL BE INCLUDED IN THE PROJECT BID.

6. NYC DOC ANTICIPATES THE CONTRACTOR TO PREPARE A PHASING PLAN IN SUCH A WAY THAT IT AFFECTS ONLY HOUSING AREA IN AMKC BUILDINGS 1 TO 5. NYC DOC SHALL REQUIRE THAT THE CONTRACTOR COMPLETE EACH HOUSING AREA IN THREE (3) TO FOUR (4) MONTHS INCLUDING ONE (1) WEEK OF TRANSITION PERIOD TO OCCUPY THE COMPLETED INMATE HOUSING AREA AND ALLOCATING THE NEXT HOUSING AREA TO THE CONTRACTOR.

7. FOR ALL PHASING WORK DETAIL, SEE DRAWING M101.00. THIS IS FOR REFERENCE ONLY. FINAL PHASING WORK SHALL BE BASED UPON DOC APPROVAL OF A FINAL PLAN AND SCHEDULE

WATER SYSTEMS

1. PIPES SHALL BE RUN AS HIGH AS POSSIBLE & AS CLOSE AS POSSIBLE TO EXISTING ROOF/ FLOOR STRUCTURE TO MAINTAIN EXISTING CEILING HEIGHTS SHOWN ON ARCHITECTURAL DRAWINGS AND TO MAINTAIN A MINIMUM OF 7'-6" HEADROOM IN ALL MECHANICAL EQUIPMENT ROOMS.

2. ALL PIPING, CONDUITS AND TUBING SHALL BE RUN CONCEALED IN FINISHED AREAS. COORDINATE LOCATIONS WITH GENERAL CONSTRUCTION AND WITH EXISTING COMPONENTS. ALL RUNS SHALL BE APPROVED BY OWNER. ANY MODIFICATION REQUIRED BY OWNER DUE TO FIELD CONFLICTS SHALL BE DONE AT NO ADDITIONAL COST.

3. ALL GRAVITY FLOW LINES SHALL BE PITCHED AT 1/8" LINEAR FOOT OF PIPING IN THE DIRECTION OF RISERS, LOW POINT DRAINS, SERVICE SINKS, AND COOLING TOWER BASINS, AS APPLICABLE. ALL OTHER PIPING SHALL BE PITCHED 1" IN 20' IN DIRECTION OF FLOW, RISERS AND/OR LOW POINT DRAINS.

4. PROVIDE AUTOMATIC AIR VENTS WITH DRAIN PIPING TO THE NEAREST FLOOR DRAIN FOR ALL PIPE RISERS SERVING MORE THAN ONE FLOOR AND PROVIDE MINIMUM 1" DRAIN TAP WITH VALVE AND CAP AT THE BOTTOM OF ALL RISERS.

5. FOR ALL HOT WATER AND STEAM PIPING RUNNING MIN. 60 FT. HORIZONTALLY, PROVIDE EXPANSION LOOP OR EXPANSION JOINTS IF ALLOWED BY PROJECT ENGINEER AT THE MID POINT OF ALL SUCH RUNS.

6. PROVIDE THERMOMETERS AND PRESSURE GAGES AS PER SPECIFICATIONS IN ALL SUPPLY AND RETURN PIPING OF COILS, HEAT EXCHANGERS, CHILLERS, PUMPS WHETHER SPECIFICALLY INDICATED OR OTHERWISE.

CONTROL SYSTEMS

1. ALL CONTROL COMPONENTS SHALL BE PROVIDED FROM SINGLE SOURCE ONLY. CONTROLS WORK SHALL BE PERFORMED BY SPECIALIZED CONTRACTOR WHO SHALL SUBMIT ALL REQUIRED CONTROL COMPONENT SUBMITTALS, WIRING DIAGRAMS, LOGICS, SEQUENCE OF OPERATIONS TO ARCHITECT/ENGINEER FOR THEIR REVIEW AND COMMENT BEFORE PERFORMING ANY WORK.

2. DAMPER ACTUATORS SHALL BE ELECTRIC TYPE FOR 24 VOLT OPERATION UNLESS 120 VOLT POWER IS PROVIDED SPECIFICALLY BY THE ELECTRIC TRADE AND THE DAMPERS ARE ACCEPTED BY THE OWNER FOR 120 VOLT POWER.

3. ALL CONTROL COMPONENTS INCLUDING DAMPER MOTORS, VALVE ACTUATORS, AND ALL OTHER CONTROL COMPONENTS SHALL OPERATE ON 24 VOLT POWER, UNLESS 120 VOLT POWER IS PROVIDED SPECIFICALLY BY THE ELECTRIC TRADE, AND THE CONTROL COMPONENTS ARE ACCEPTED BY THE OWNER FOR 120 VOLT POWER. ANY AND ALL ITEMS NOT SHOWN ON ELECTRICAL DRAWINGS ON 120 VOLT POWER SHALL BE PROVIDED WITH 24 VOLT POWER COMPONENTS.

4. THE HVAC CONTRACTOR SHALL PROVIDE ALL REQUIRED STEP DOWN TRANSFORMERS AS REQUIRED BASED UPON ALLOWABLE VOLTAGE DROPS. OBTAIN POWER FOR THE CONTROL DEVICES FROM THE NEAREST ELECTRICAL PANEL IN THE ELECTRICAL CLOSET LOCATED IN THE PROJECT SCOPE AREA UNLESS SPECIFIC PANEL LOCATIONS ARE SHOWN ON ELECTRIC AL DRAWINGS

5. LOW VOLTAGE CONTROL WIRING SHALL BE MINIMUM 16 GAUGE, OR HEAVIER IF REQUIRED, TWISTED PAIR, 100% SHIELDED WITH PVC COVER BELDEN #9316 OR APPROVED EQUIVALENT PRODUCT OF OTHER MANUFACTURERS RUN IN CONDUIT WITH NO SPLICES, SEPARATE FROM ANY WIRING ABOVE 30 VOLTS.

COMMISSIONING

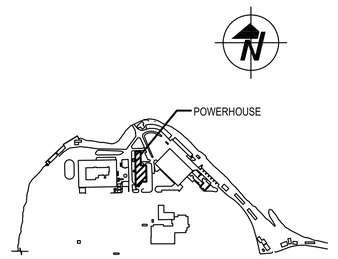
1. THE PROJECT WILL INCLUDE COMMISSIONING OF HVAC SYSTEM AS INDICATED IN REST OF THE CONTRACT DOCUMENTS.

2. THE CONTRACTOR SHALL ENGAGE THE SERVICES OF AN INDEPENDENT COMMISSIONING AGENT AS SPECIFIED IN THE SPECIFICATIONS AND OTHER CONTRACT DOCUMENTS. SELECTED COMMISSIONING AGENT TO REPORT DIRECTLY TO DOC.

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Project Manager:	BV
Project Engineer:	TS
Drawn By: DB	Checked By: SB
PIN # 072202001CPD	Date: _

Project:
POWERHOUSE
BOILER FEED WATER
TREATMENT SYSTEM
UPGRADE
RIKERS ISLAND
EAST ELMHURST, NY 11370

Address:

Drawing Title:
HVAC
GENERAL NOTES
SHEET 1 0F 2

Seal:

Drawing No.:
M002.00

Scale: NONE

Sheet: 8 of 64

REVERSE OSMOSIS (RO) FILTRATION SYSTEM

BASED ON MARLO

UNIT NO.	LOCATION	MODEL NO.	GPM @ 50°	NOMINAL OUTPUT (GPD))	FEED PRESSURE (PSI)	FEED PUMP					PREFILTER HOUSING TYPE	NO. OF REJECTION MEMBRANE	NO. OF FRP MEMBRANE HOUSING	MEMBRANE SIZE	OPERATING TEMPERATURE (F°)	PIPE CONNECTION SIZE			DIMENSIONS (IN.)			SHIPPING WEIGHT (LBS.)	OPERATING WEIGHT (LBS.)	REMARKS
						PUMP TYPE	NO. OF PUMP	HP	MOTOR V/Ph/Hz	MOTOR TYPE						INLET	OUTLET	REJECT	LENGTH	WIDTH	HEIGHT			
RO-1	STORAGE TANK ROOM	MRO-432-8H	300	432,000	30-100	304/316 SS - VERTICAL MULTISTAGE CENTRIFUGAL	2	100	460/3/60	TEFC	304 SS CARTRIDGE	72	12	8"x40"	45-85	6"	6"	3"	265	80	107	30,450	36,500	SEE ALL NOTES

NOTES:
1. PROVIDE ANTI SCALANT CHEMICAL FEEDER 24 GPD 55 GALLON TANK, WITH LMI ELECTRIC POSITIVE CHEMICAL INJECTION PUMP WITH PVC WETTED END, 120 VAC/1PH/60HZ PUMP MOUNTED ON SOLUTION TANK. 55 GALLONS DAYTANK WITH LOW LEVEL SENSOR/ALARM,, AND ELECTRICAL OUTLET ON THE RO SYSTEM FOR FEEDER CONTROL.
2. EQUIPMENT TO BE UL LISTED.
3. PROVIDE SODIUM BISULFITE CHEMICAL FEEDER SYSTEM 24 GPD 55 GALLON TANK AND MIXER, WITH LMI ELECTRIC POSITIVE CHEMICAL INJECTION PUMP WITH PVC WETTED END, SOLUTION TANK WITH 120 VAC/1PH/60HZ MIXER ASSEMBLY, 55 GALLONS CHEMICAL SOLUTION DAYTANK WITH LOW LEVEL SENSOR/ALARM, SIGNET ORP ELECTRODE AND TRANSMITTER, AND ELECTRICAL OUTLET ON THE RO SYSTEM FOR FEEDER CONTROL
4. R.O. MOUNTED ON MANUFACTURER EPOXY COATED STEEL SKID, PRE-PIPED, PRE-WIRED, DISCONNECT; EXCEPT FOR FLOOR MOUNTED BRINE TANK.
5. PROVIDE NEMA 4 PROGRAMMABLE LOGIC CONTROL PANEL, PANELVIEW 800-7 SERIES OPERATOR, WATER CONDUCTIVITY, REJECT FLOW TRANSMITTERS.
6. PROVIDE 316 SS PRESSURE GAUGES, CONCENTRATE/RECYCLE FLOW VALVES, MEMBRANE AUTO-FLUSH SYSTEM SHUTDOWN.
7. INSTALLATION AS PER MANUFACTURER RECOMMENDATION.
8. MANUFACTURER TO PROVIDE 42-MONTH MATERIALS AND WORKMSNSHIP WARRANTY OR 3-YEAR WARRANTY FROM INSTALLATION.
9. MANUFACTURER TO PROVIDE FOUR (4) DAYS OF ON SITE STARTUP ASSISTANCE AND TRAINING.
10. PROVIDE RO WITH ADDITIONAL STANDBY PUMP AS RO PACKAGE.

WATER SOFTENER (WS) SYSTEM

BASED ON MARLO

UNIT NO.	LOCATION	MODEL NO.	NO. OF TANKS SIZE (DIA. x H)	TANK AREA (FT²)	PUMP HP	PEAK FLOW RATE (GPM)	ELECTRICAL DATA (V/Ph/Hz)	FULL LOAD AMPS (FLA)	OPERATING PRESSURE (PSI)	OPERATING TEMPERATURE (F°)	PIPE CONNECTION SIZES (IN. NPT)			SHIPPING WEIGHT (LBS.)	NO. PRESSURE VESSELS (DIA.xH)	SHIPPING WEIGHT (LBS.)	OPERATING WEIGHT (LBS.)	DIMENSIONS (IN.)			REMARKS
											INLET	OUTLET	DRAIN					LENGTH	WIDTH	HEIGHT	
WS-1	STORAGE TANK ROOM	MHC-2400-4	3 - (66"x72")	23.76	100	1,250	120/1/60	0.32	30-100	35-110	6.0	6.0	3.0	10,600	3 (66"x72")	30,450	40,000	310	88	129	SEE ALL NOTES

NOTES:
1. PROVIDE EACH SOFTENER SCHEDULE 80 PVC INTERNAL DISTRIBUTION SYSTEM (HUB AND LATERAL DESIGN).
2. PROVIDE PROVIDE EACH SOFTENER PANEL 4" GALV. FACE PIPING WITH CAST IRON DIAPHRAGM CONTROL VALVES, ORIFICE TYPE BACKWASH CONTROLLERS (120GPM), INDIVIDUAL INLET/OUTLET PRESSURE GAUGES AND SAMPLING VALVES.
3. PROVIDE 80 CU.FT. SOFTENING PER VESSEL WITH WASHED GRAVEL SUBFILL.
4. PROVIDE (3) MARLO MX-III MICROPROCESSOR/DIGITAL DISPLAY CONTROLLERS WITH INDIVIDUAL STAGER CONTROLLER ASSEMBLIES IN NEMA-4 ELECTRICAL ENCLOSURES PROVIDING PROGRESSIVE FLOW CONTROL CONFIGURATION.
5. PROVIDE (3) PADDLE TYPE FLOW SENSORS.
6. PROVIDE POLYETHYLENE BRINE TANK WITH LEVEL CONTROL, BRINE INJECTOR.
7. WATER SOFTENER MOUNTED ON MANUFACTURER EPOXY COATED STEEL SKID, PRE-PIPED AND PRE-WIRED EXCEPT FOR FLOOR MOUNTED BRINE TANK.
8. PROVIDE PROVIDE 8"Ø FLANGED INLET/OUTLET SERVICE GALVANIZED STEEL HEADERS WITH INDIVIDUAL ISOLATION VALVES.
9. PROVIDE WATER HARDNESS TESTING KIT.
12. INSTALLATION AS PER MANUFACTURER RECOMMENDATION.
12. MANUFACTURER TO PROVIDE 42-MONTH MATERIALS AND WORKMSNSHIP WARRANTY OR 3-YEAR WARRANTY FROM INSTALLATION.
13. MANUFACTURER TO PROVIDE FOUR (4) DAYS OF ON SITE STARTUP ASSISTANCE AND TRAINING.
14. EQUIPMENT TO BE UL LISTED.

PRESSURIZED DEAERATOR TANK (DT) SCHEDULE

BASED ON SHIPCO

UNIT NO.	LOCATION	MODEL NO.	DEAERATOR TYPE	DEAERATOR RATING (LBS/HR)	DESIGN PRESSURE (PSIG)	DIRECT INJECTION (PSI WP)	TANK CAPACITY (GALS.)	HEATING CAPACITIY (GPM)	STEAM PRESSURE AT REGULATOR (PSIG)	FROM LO (°F)	TO HIGH (°F)	DIMENSIONS (IN.)			SHIPPING WEIGHT (LBS.)	OVERFLOW WEIGHT (LBS.)	OPERATING WEIGHT (LBS.)	REMARKS
												LENGTH	WIDTH	HEIGHT				
DA-1	DEAERATOR ROOM	.005 DA-ISTP-2T	HORIZONTAL TANK	210,785	150	3-5	13,290	422	125	180	227	308	105	114	16,000	500	64,000	SEE ALL NOTES
DA-2	DEAERATOR ROOM	.005 DA-ISTP-2T	HORIZONTAL TANK	210,785	150	3-5	13,290	422	125	180	227	308	105	114	16,000	500	64,000	SEE ALL NOTES
DA-3	DEAERATOR ROOM	.005 DA-ISTP-2T	HORIZONTA TANK	210,785	150	3-5	13,290	422	125	180	227	308	105	114	16,000	500	64,000	SEE ALL NOTES

NOTES:
1. EACH DA TANK PROVIDED W/ ELECTRIC MODULATING TRANSFER ASSEMBLY: SEIMENS LEVEL TRANSMITTER, 10" SLC CONTROLLER, BELIMO VALVE CLASS 6 & ACTUATOR W/ SCHEDULE 40 PIPE, 3 VALVE BYPASS & WYE STRAINER.
2. STEAM HEATING ASSEMBLY PACKAGE W/ STAINLESS STEEL STEAM DISPERSION TUBE, MAIN VALVES W/ PRESSURE PILOTS, HI/LOW WATER ALARM POINTS, CHEMICAL FEED QUILL W/ CHECK VALVES SULFATES, (2) 3" INLET, 4" PSIG RELEIF VALVE, PRESSURE & TEMPERATURE TRANSMITTER, LOW WATER CUTOFF POINT, ADDITIONAL LOW WATER CUTOFF EXTERNAL FLOAT, MOUNTED SAMPLING VALVE, DRAINER, 304 SS HI PRESSURE DIFFUSER TUBE, RED LINE GAUGE GLASS ASSEMBLIES, COMPOUND GAUGE, DA CHAMBER/RECEIVER, SPECIAL HEATER TUBE BELOW WATER LINE. FURNISH TWO (2) VTF PSI TRANSDUCERS TO CONTROL VFD, INSTALLED BY OTHERS.
3. CONTROL PANELS, PACKAGED, MOUNTED & WIRED (NEMA 4), LIQUID TIGHT CONDUIT, VFD STARTER, FUSED DISCONNECT SWITCHES, FUSED CONTROL 115V TRANSFORMER, CONTROL CIRCUIT DISCONNECT, AUXILIARY CONTACTS (FOR PUMP STATUS) W/ PLC TO CONTROL ALARM.
6. DEAERATOR PACKAGE SYSTEM TO BE INSTALLED AS PER MANUFACTURER'S RECOMMENDATION. DEAERATOR PROVIDED SHALL BE RATED LEVEL OF DEAERATION OF 0.005 CC (7 PPB) OF OXYGEN/LITER OF FEED WATER W/ REMOVAL OF CO2. UNIT TO BE TESTED AFTER INSTALLATION AND START UP. A CERTIFIED INDEPENDENT COMPANY TO PERFORM TEST AND SHALL BE WITNESSED BY DOC.
7. DOC TO BE PROVIDED CERTIFIED TEST REPORT.
7. MANUFACTURING SITE SHALL BE AT AN ASME RECOGNIZED/CERTIFIED FACILITY (NO SECOND PARTY FABRICATOR), UL LISTED/RECOGNIZED MANUFACTURER OF PACKAGED PUMPING SYSTEM UNDER UL CATEGORY QCZJ.
8. MATERIALS/WORKMANSHIP WARRANTY SHALL BE 42-MONTH OR 3-YEAR WARRANTY FROM INSTALLATION. PROVIDE TEN (10) DAYS OF ON SITE STARTUP ASSISTANCE AND TRAINING BY MANUFACTURER.

SURGE STORAGE TANK (SST) SCHEDULE

BASED ON SHIPCO

UNIT NO.	LOCATION	MODEL NO.	TANK			HEATING CAPACITY (GPM)	SUPPLY STEAM PRESSURE (PSI)	INLET TEMP. (F)	OUTLET TEMP. (F)	DIMENSIONS (IN.)			SHIPPING WEIGHT (LBS.)	OVERFLOW WEIGHT (LBS.)	OPERATING WEIGHT (LBS.)	REMARKS
			TYPE	DESIGN	CAPACITY					LENGTH	WIDTH	HEIGHT				
SST-1	EXISTING PUMP ROOM	SHEM/SURGE TANK	304 L STAINLESS STEEL PAINTED	HORIZONTAL CYLINDER TANK	6,825 GALS.	642	125	100	200	200	137	171	12,060	150	70,000	SEE ALL NOTES
SST-2	EXISTING PUMP ROOM	SHEM/SURGE TANK	304 L STAINLESS STEEL PAINTED	HORIZONTAL CYLINDER TANK	6,825 GALS.	642	125	100	200	200	137	171	12,060	150	70,000	SEE ALL NOTES

NOTES:
1. PACKAGED STAINLESS STEEL TANK WITH MANUFACTURER PROVIDED SUPPORTS, SKID.
2. PACKAGED EQUIPMENT CONTROL PANELS MOUNTED & WIRED (NEMA 4), LIQUID TIGHT CONDUIT, VFD STARTER, FUSED DISCONNECT SWITCHES, FUSED CONTROL 115V TRANSFORMER, CONTROL CIRCUIT DISCONNECT, AUXILIARY CONTACTS (PUMP STATUS), WITH PLC TO CONTROL ALARM; HI/LOW WATER POINTS FOR ALARM, INLET CASCADE BAFFLE, LIFTING EYES, GAUGE GLASS ASSEMBLY, LIQUID FILLED PSI GAUGE ASSEMBLY, LOW WATER CUT OF POINT, 18"Ø SS MANHOLE, 3" DIAL THERMOMETER W/ 12" STEM, LIQUID WATER CUTOFF POINT.
4. PROVIDE 8" EQUALIZING CONNECTION AT BOTTOM OF EACH TANK, STAINLESS CHEMICAL FEED QUILL (SULFATES ONLY), FEED PUMP (CONTINUOUSLY RUNNING), 8" SUCTION GATE VALVE W/ BLEED LINE BALL VALVE, TEMPERATURE TRANSMITTER.
5. EACH SURGE TANK SHALL BE PAINTED STAINLESS SS W/ DIRECT STEAM HEATING ASSEMBLY HEATER CTE 3" ASSEMBLY, SCHEDULE 80 MANIFOLD DISCHARGE PIPING W/ UNION, GLOBE (FOR BALANCING), SS SILENT CHECK VALVES & GATE (FOR ISOLATION) VALVES, TRANSDUCER & PANEL W/ TIME DELAY & HOLDING RELAY FEED WATER PUMP STANDBY W/ FAILURE ALARM/DRY CONTACTS.
6. FOR EACH SURGE TANK PROVIDE PLC-DI & RO WATER ELECTRIC MODULATING MAKEUP ASSEMBLY CONSISTING OF SEIMENS TRANSMITTER, BELIMO STAINLESS VALVE W/ STAINLESS BYPASS, STAINLESS WYE STRAINER.
7. INSTALL AS PER MANUFACTURER'S RECOMMENDATION.
7. DOC TO BE PROVIDED CERTIFIED TEST REPORT.
7. MANUFACTURING SITE SHALL BE AT AN ASME RECOGNIZED/CERTIFIED FACILITY (NO SECOND PARTY FABRICATOR), UL LISTED/RECOGNIZED MANUFACTURER OF PACKAGED PUMPING SYSTEM UNDER UL CATEGORY QCZJ.
8. MATERIALS/WORKMANSHIP WARRANTY SHALL BE 42-MONTH OR 3-YEAR WARRANTY FROM INSTALLATION. PROVIDE TEN (10) DAYS OF ON SITE STARTUP ASSISTANCE AND TRAINING BY MANUFACTURER.

CLEAN-IN-PLACE SKID (CIP) SCHEDULE

BASED ON MARLO

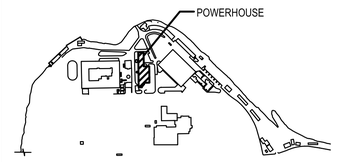
UNIT NO.	LOCATION	MODEL NO.	RO SYSTEM SERVED PRODUCT RANGE (GPM)	MAX CIP INLET FEED FLOW (GPM)	TANK CAPACITY (GALS.)	PUMP MOTOR		PRE-FILTER HOUSING		PIPE CONNECTION (INCHES NPT)		SKID DIMENSION (INCHES)			SHIPPING WEIGHT (LBS.)	OVERFLOW WEIGHT (LBS.)	OPERATING WEIGHT (LBS.)	REMARKS
						HP	V/PH/HZ	MATERIAL	SIZE (IN)	CIP FEED/ REJECT RETURN	PERMEATE RETURN	LENGTH	WIDTH	HEIGH				
CIP-1	TANK ROOM LEVEL 150"	CIP-1000	250-400	400	1000	20	460/3/60	304SS	2.5x40	4	2	150	66	120	3,100	300	14,000	SEE NOTES

NOTES:
1. PUMP TO BE SINGLE STAGE END SUCTION CENTRIFUGAL PUMP WITH , TEFC MOTOR WITH 304 STAINLESS STEEL WETTED-END.
2. PROVIDE NEMA 4, PRE-WIRED PUMP MOTOR PANEL WITH DISCONNECT.
3. CLEANING SOLUTION TANK TO BE POLYETHYLENE.
4. CIP TO BE MOUNTED ON MANUFACTURE PROVIDED EPOXY CARBON STEEL SKID WITH CASTER WHEELS, PRE-PIPED SCHEDULE 80 PVC INTERCONNECTING PIPING, HARDWARE AND FASTENERS TO BE STAINLESS STEEL, ISOLATION VALVES AND POLYETHYLENE FILTER HOUSING FOR CIP PUMP DISCHARGE LINE.
5. PROVIDE VARIABLE FREQUENCY DRIVES (VFD).
6. PROVIDE pH MONITOR AND IMMERSION HEAT WITH ADJUSTABLE THERMOSTAT.
7. INSTALLATION TO BE AS PER MANUFACTURER RECOMMENDATION.
8. MANUFACTURER TO PROVIDE 42-MONTH MATERIALS AND WORKMSNSHIP WARRANTY OR 3-YEAR WARRANTY FROM INSTALLATION.
9. MANUFACTURER TO PROVIDE FOUR (4) DAYS OF ON SITE STARTUP ASSISTANCE AND TRAINING.

CITY OF NEW YORK DEPARTMENT OF CORRECTION

THE CITY OF NEW YORK
DEPARTMENT OF CORRECTION

DIVISION OF CAPITAL POLICY
AND DEVELOPMENT
ENGINEERING UNIT



KEY PLAN
NTS

No.	Date	Revision
1	09/28/20	ISSUED FOR BID
1	12/15/20	ADDENDUM 5

NOTE: Drawing may be printed at reduced scale

IT IS A VIOLATION OF THE STATE EDUCATION LAW SECTION 7209 (2) FOR ANY PERSON TO ALTER AN ITEM IN ANY WAY UNLESS SUCH PERSON IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, AND THE ENGINEER STAMPS SUCH CHANGES

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Project:
POWERHOUSE
BOILER FEED WATER
TREATMENT SYSTEM
UPGRADE
RIKERS ISLAND
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Address:

Drawing Title:
HVAC
SCHEDULE
SHEET 1 OF 2

Seal:

Drawing No.:
M004.00

Scale: NONE

Sheet: 10 of 64

PUMPS SCHEDULE

UNIT NO.	LOCATION	MODEL NO.	PUMP TYPE	PUMP MOTOR FRAME	MANUFACTURER	PUMP DISCHARGE SIZE	PERFORMANCE DATA			MOTOR DATA						CONTROL DATA			REMARKS
							GPM	PUMP DISCH. PRESS (PSIG)	WATER TEMP. °F	VOLT	PH	AMP	HP	RPM	TYPE	VOLT	PH	AMP	
BFP-1	PUMP ROOM LEVEL 15	66SV61NT4C66N R	CENTRIFUGAL	286TSC	GOULD PUMPS	4"	220	275	180	460	3	60	75	3500	PREM. EFF. TEFC	115	1	60	SEE ALL NOTES
BFP-2	PUMP ROOM LEVEL 15	66SV61NT4C66N R	CENTRIFUGAL	286TSC	GOULD PUMPS	4"	220	275	180	460	3	60	75	3500	PREM. EFF. TEFC	115	1	60	SEE ALL NOTES
BFP-3	PUMP ROOM LEVEL 15	66SV61NT4C66N R	CENTRIFUGAL	286TSC	GOULD PUMPS	4"	220	275	180	460	3	60	75	3500	PREM. EFF. TEFC	115	1	60	SEE ALL NOTES
BFP-4	PUMP ROOM LEVEL 15	66SV61NT4C66N R	CENTRIFUGAL	286TSC	GOULD PUMPS	4"	220	275	180	460	3	60	75	3500	PREM. EFF. TEFC	115	1	60	SEE ALL NOTES
BFP-5	PUMP ROOM LEVEL 15	66SV61NT4C66N R	CENTRIFUGAL	286TSC	GOULD PUMPS	4"	220	275	180	460	3	60	75	3500	PREM. EFF. TEFC	115	1	60	SEE ALL NOTES
BFP-6	PUMP ROOM LEVEL 15	66SV61NT4C66N R	CENTRIFUGAL	286TSC	GOULD PUMPS	4"	220	275	180	460	3	60	75	3500	PREM. EFF. TEFC	115	1	60	SEE ALL NOTES
CP-1	PUMP ROOM LEVEL 15	132++D	HORIZONTAL - DH	256JM	SHIPCO PUMPS	4"	480	45	100	460	3	-	20	2100	PREM. EFF. TEFC	115	1	60	SEE ALL NOTES
CP-2	PUMP ROOM LEVEL 15	132++D	HORIZONTAL - DH	256JM	SHIPCO PUMPS	4"	480	45	100	460	3	-	20	2100	PREM. EFF. TEFC	115	1	60	SEE ALL NOTES
CP-3	PUMP ROOM LEVEL 15	132++D	HORIZONTAL - DH	256JM	SHIPCO PUMPS	4"	480	45	100	460	3	-	20	2100	PREM. EFF. TEFC	115	1	60	SEE ALL NOTES
CP-4	PUMP ROOM LEVEL 15	132++D	HORIZONTAL - DH	256JM	SHIPCO PUMPS	4"	480	45	100	460	3	-	20	2100	PREM. EFF. TEFC	115	1	60	SEE ALL NOTES
CP-5	PUMP ROOM LEVEL 15	132++D	HORIZONTAL - DH	256JM	SHIPCO PUMPS	4"	480	45	100	460	3	-	20	2100	PREM. EFF. TEFC	115	1	60	SEE ALL NOTES
CP-6	PUMP ROOM LEVEL 15	132++D	HORIZONTAL - DH	256JM	SHIPCO PUMPS	4"	480	45	100	460	3	-	20	2100	PREM. EFF. TEFC	115	1	60	SEE ALL NOTES

NOTES:
1. PROVIDE VARIABLE FREQUENCY DRIVES (VFD) FOR ALL PUMPS.
2. PROVIDE DISCONNECTS TO ALL PUMPS.
3. PROVIDE NEMA 4 CONTROL PANELS.

STEAM PRESSURE REDUCING VALVE (PRV)

BASIS OF SELECTION: SPIRAX SARCO

UNIT NO.	LOCATION	MANUFACTURER	VALVE SIZE	MODEL	STEAM PRESSURE		ACTUATOR MODEL	CONTROL SIGNAL	NOISE DIFFUSER SIZE	NOISE AFTER ATTENUATION (dBA)	CAPACITY (LBS/HR)	END CONNECTION	REMARKS
					INLET (PSIG)	OUTLET (PSIG)							
PRV-1A	DEAERATOR ROOM	SPIRAX SARCO	3"	KEA43	125	60	DCSXS	4-20mA	3"x6"	80	25,000	ANSI 300#	SEE NOTES 1, 2, 3, 4, 5, 6, 7
PRV-1B	DEAERATOR ROOM	SPIRAX SARCO	4"	KEA43	60	10	DCSXS	4-20mA	4"x10"	80	25,000	ANSI 300#	REFER TO NOTES 1, 2, 3, 4, 5, 6, 7
PRCV-1	HEATER ROOM	SPIRAX SARCO	6"	85S	125	60	DCSXS	4-20mA	NA	NA	80,000	ANSI 300#	REFER TO NOTES 1, 2, 3, 4, 5, 6, 7
PRCV-2	HEATER ROOM	SPIRAX SARCO	6"	85S	125	60	DCSXS	4-20mA	NA	NA	80,000	ANSI 300#	REFER TO NOTES 1, 2, 3, 4, 5, 6, 7
PRCV-3	HEATER ROOM	SPIRAX SARCO	6"	85S	125	60	DCSXS	4-20mA	NA	NA	80,000	ANSI 300#	REFER TO NOTES 1, 2, 3, 4, 5, 6, 7
PRCV-4	HEATER ROOM	SPIRAX SARCO	6"	85S	125	60	DCSXS	4-20mA	NA	NA	80,000	ANSI 300#	REFER TO NOTES 1, 2, 3, 4, 5, 6, 7
PRV-2	HEATER ROOM	SPIRAX SARCO	6"	85S	125	60	DCSXS	4-20mA	6"x10"	80	35,000	ANSI 300#	REFER TO NOTES 1, 2, 3, 4, 5, 6, 7
PRV-2A	HEATER ROOM	SPIRAX SARCO	8"	85S	60	10	DCSXS	4-20mA	8"x16"	80	35,000	ANSI 300#	REFER TO NOTES 1, 2, 3, 4, 5, 6, 7
PRV-3	HEATER ROOM	SPIRAX SARCO	3"	85S	125	60	DCSXS	4-20mA	3"x8"	80	25,000	ANSI 300#	REFER TO NOTES 1, 2, 3, 4, 5, 6, 7
PRV-3A	HEATER ROOM	SPIRAX SARCO	4"	85S	60	10	DCSXS	4-20mA	4"x14"	80	25,000	ANSI 300#	REFER TO NOTES 1, 2, 3, 4, 5, 6, 7
PRV-4	DEAERATOR ROOM	SPIRAX SARCO	4"	85S	125	60	DCSXS	4-20mA	4"x14"	80	25,000	ANSI 300#	REFER TO NOTES 1, 2, 3, 4, 5, 6, 7
PRV-7	TANK ROOM	SPIRAX SARCO	6"	85S	125	60	DCSXS	4-20mA	6"x16"	80	110,000	ANSI 300#	REFER TO NOTES 1, 2, 3, 4, 5, 6, 7
PRV-7A	TANK ROOM	SPIRAX SARCO	8"	85S	60	10	DCSXS	4-20mA	8"x24"	80	110,000	ANSI 300#	REFER TO NOTES 1, 2, 3, 4, 5, 6, 7
PRV-8	TANK ROOM	SPIRAX SARCO	4"	85S	125	60	DCSXS	4-20mA	4"x10"	80	40,000	ANSI 300#	REFER TO NOTES 1, 2, 3, 4, 5, 6, 7
PRV-8A	TANK ROOM	SPIRAX SARCO	6"	85S	60	10	DCSXS	4-20mA	6"x18"	80	40,000	ANSI 300#	REFER TO NOTES 1, 2, 3, 4, 5, 6, 7
PRV-9	CHILLER ROOM	SPIRAX SARCO	6"	85S	125	60	DCSXS	4-20mA	6"x10"	80	35,000	ANSI 300#	REFER TO NOTES 1, 2, 3, 4, 5, 6, 7
PRV-9A	CHILLER ROOM	SPIRAX SARCO	8"	85S	60	10	DCSXS	4-20mA	8"x16"	80	35,000	ANSI 300#	REFER TO NOTES 1, 2, 3, 4, 5, 6, 7
PRV-10	CHILLER ROOM	SPIRAX SARCO	3"	85S	125	60	DCSXS	4-20mA	3"x8"	80	25,000	ANSI 300#	REFER TO NOTES 1, 2, 3, 4, 5, 6, 7
PRV-10A	CHILLER ROOM	SPIRAX SARCO	4"	85S	60	10	DCSXS	4-20mA	4"x14"	80	25,000	ANSI 300#	REFER TO NOTES 1, 2, 3, 4, 5, 6, 7

NOTES:
1. CONTRACTOR SHALL VERIFY ALL EXISTING VALVE LOCATION IN THE FIELD.
2. ALL SCHEDULED VALVES & FITTINGS SHALL HAVE CARBON STEEL BODIES ANSI CLASS 300 PSIG MINIMUM PRESSURE RATING. CAST IRON WILL NOT BE CONSIDERED.
3. PRV VALVES SHALL BE GLOBE TYPE CONTROL VALVES WITH STAINLESS STEEL TRIM W/STELLITE FACING-ANSI CLASS IV SHUT-OFF..
4. FURNISH MANUAL HANDWHEEL OVERRIDE ON PRV FOR EMERGENCY OPERATION ON LOSS OF SIGNAL.
5. PROVIDE REMOVABLE BLANKETS FOR PRV VALVES.
6. PROVIDE PRV VALVES WITH FAIL-SAFE MECHANISM FOR SHUT OFF- MIN 300 PSIG.
7. ALL SHUT OFF VALVE IN PRV ASSEMBLY SHALL CORRESPOND OR MATCH WITH PRV MANUFACTURER SELECTION AND REQUIREMENT.
8. ADD ALTERNATE NO.2:
SEE ADD ALTERNATE NO.2 NOTES ON T002.00 FOR FISHER MADE VALVES AND DELTA V CONTROL.

FAN SCHEDULE

BASED ON GREENHECK

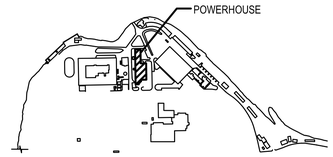
NO.	LOCATION	MODEL	PERFORMANCE DATA		SELECTION DATA			MOTOR DATA					REMARKS
			CFM	TOTAL SP INCH W.C.	MANUF AS STAND	TYPE	WHEEL DIAM. INCH	VOLT	PH	HP	BHP	R.P.M.	
EF-1	PUMP ROOM	AER-E20C-624-A	5080	0.52	GREENHECK	SIDEWALL DIRECT DRIVE	24	460	3	1.5	1.26	1750	SEE NOTES
EF-2	STORAGE ROOM	SE2-16-430-A	1096	0.77	GREENHECK	SIDEWALL DIRECT DRIVE	20	460	3	0.75	0.62	1750	SEE NOTES

NOTES:
1. PROVIDE EXHAUST FANS W/ VARIABLE FREQUENCY DRIVES (VFD).
2. ENCLOSURES/PANELS SERVICING EXHAUST FANS SHALL BE NEMA 4,
3. PROVIDE RUST RESISTANCE AND WEATHERPROOF FAN AND HOUSING.
4. EXHAUST FANS AND ASSOCIATED PARTS TO BE UL LISTED, W/ RUST RESISTANT/WEATHERPROOF FAN/HOUSING, PREMIUM EFFICIENCY MOTORS, DISCONNECT SWITCHES,WIRE MESH SCREEN.
5. INSTALL AS PER MANUFACTURER'S RECOMMENDATIONS; VERIFY VOLTAGE SERVING EXISTING EQUIPMENT.
6. REUSE EXISTING OPENING SERVING EXISTING FANS.

CITY OF NEW YORK DEPARTMENT OF CORRECTION

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DIVISION OF CAPITAL POLICY
AND DEVELOPMENT
ENGINEERING UNIT



KEY PLAN
NTS

No.	Date	Revision
1	09/28/20	ISSUED FOR BID
2	12/15/20	ADDENDUM 5

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PIN # 072202001CPD	Date:

Project:
POWERHOUSE
BOILER FEED WATER
TREATMENT SYSTEM
UPGRADE
RIKERS ISLAND
EAST ELMHURST, NY 11370

Address:

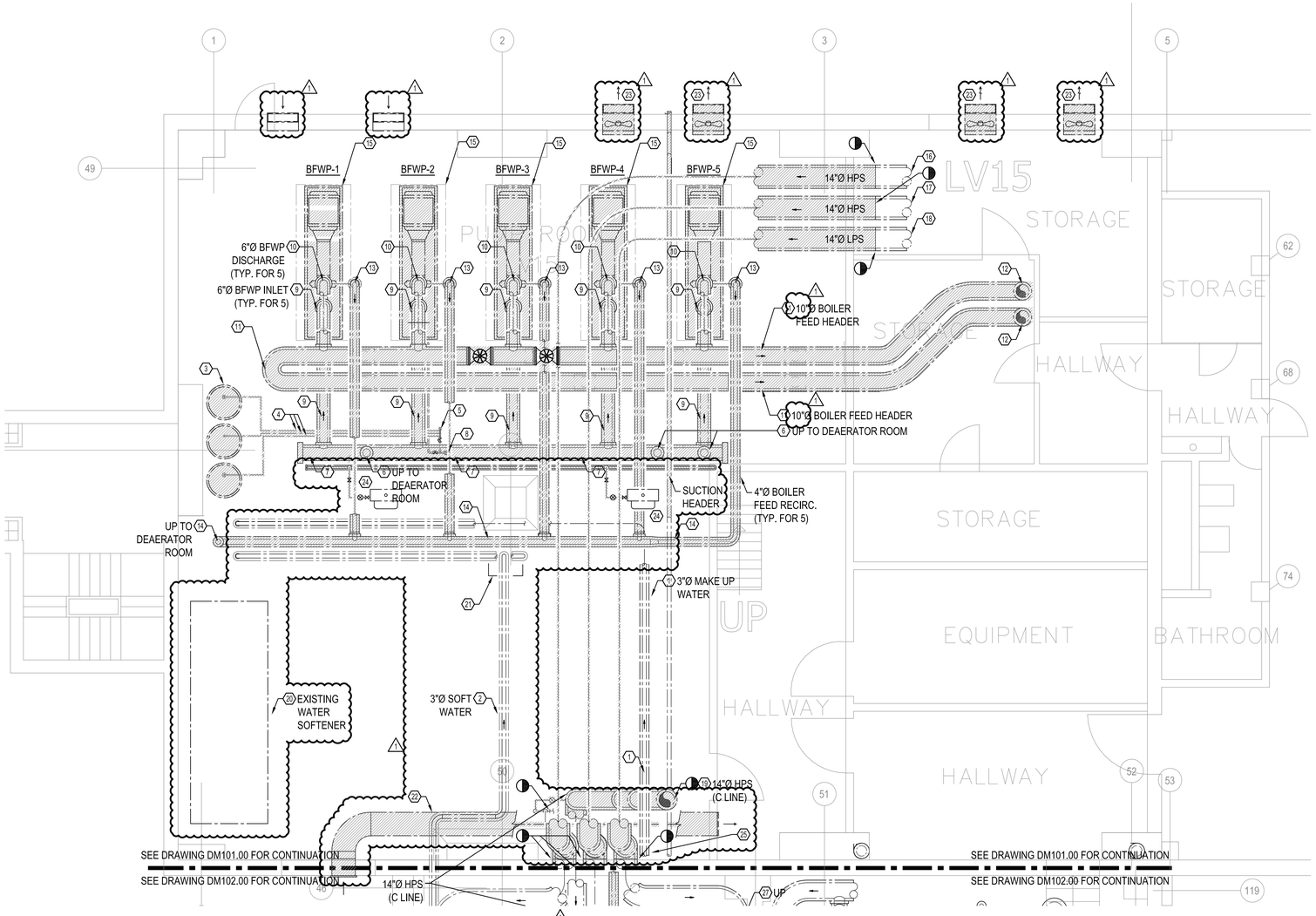
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HVAC
SCHEDULE
SHEET 2 OF 2

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Drawing No.:
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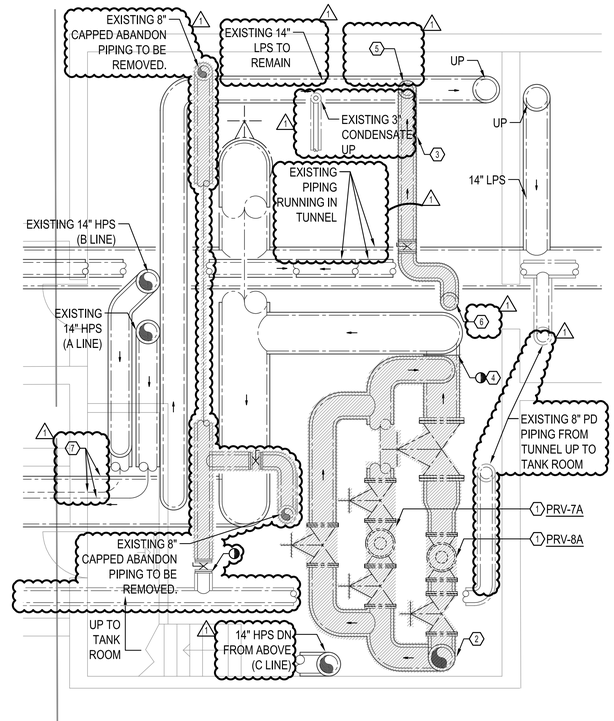
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Sheet: 11 of 64



1 PART PLAN PUMP ROOM PLAN - REMOVAL WORK (LEVEL 15'-0"

SCALE: 1/4"=1'-0"



2 PART PLAN CELLAR (LEVEL 3'-0") REMOVAL WORK

SCALE: 1/4"=1'-0"

PUMP ROOM REMOVAL TAG NOTES

1. EXISTING 3" CITY WATER PIPING FROM HEATER ROOM TO REMAIN.
2. EXISTING 3" SOFT WATER PIPING TO REMAIN.
3. DISCONNECT AND REMOVE EXISTING CHEMICAL TREATMENT INJECTION TANKS. TYPICAL FOR 3.
4. DISCONNECT AND REMOVE TEMPORARY HOSE CONNECTION FROM EXISTING WATER TREATMENT
5. DISCONNECT AND REMOVE EXISTING WATER TREATMENT MANIFOLD AND ASSOCIATED VALVES AND DRAIN.
6. DISCONNECT AND REMOVE EXISTING 6"Ø SUCTION LINE FROM DEAERATOR AT PUMP ROOM TIED IN TO SUCTION MANIFOLD.
7. DISCONNECT AND REMOVE EXISTING CONDENSATE SUCTION HEADER.
8. DISCONNECT AND REMOVE EXISTING 2"Ø WATER SOFTENER PIPING TAP.
9. DISCONNECT AND REMOVE EXISTING 6"Ø SUCTION PIPING AND ALL ASSOCIATED VALVES, ACCESSORIES, ETC.
10. DISCONNECT AND REMOVE EXISTING 4"Ø BOILER FEED WATER TO BOILER FEED HEADER.
11. DISCONNECT AND REMOVE EXISTING 10"Ø BOILER FEED WATER PIPING TO BOILERS.
12. DISCONNECT AND REMOVE EXISTING 10"Ø BOILER FEED WATER PIPING UP FLOOR ABOVE.
13. DISCONNECT AND REMOVE EXISTING 4"Ø RECIRCULATED WATER PIPING, ASSOCIATED VALVES AND ACCESSORIES FROM THIS POINT TO EXISTING BOILER FEED WATER PUMP.
14. DISCONNECT AND REMOVE EXISTING 4"Ø RECIRCULATED WATER PIPING, ASSOCIATED VALVES, ACCESSORIES TO DEARATOR ABOVE.
15. DISCONNECT AND REMOVE EXISTING BOILER FEED WATER PUMPS TO BE REMOVED (TYPICAL FOR 5).
16. DISCONNECT AND REMOVE EXISTING 14"Ø HPS PIPING (A-LINE).
17. DISCONNECT AND REMOVE EXISTING 14"Ø HPS PIPING (B-LINE).
18. DISCONNECT AND REMOVE EXISTING 14"Ø LPS PIPING.
19. DISCONNECT AND REMOVE EXISTING 10"Ø LPS PIPING (C-LINE).
20. EXISTING WATER SOFTENER TO REMAIN.
21. EXISTING BOOSTER PUMP TO REMAIN.
22. REMOVE EXISTING 18X18 DUCTWORK
23. REMOVE EXISTING PROPELLER FAN
24. TEMPORARILY REMOVE AND SAFETY STORE EXISTING STEAM UNIT HEATER. REINSTALL STEAM UNIT HEATER AFTER COMPLETION OF WORK.
25. EXISTING CITY WATER PIPING FROM HEATER ROOM. SEE DM103.00 HEATER ROOM PART PLAN FOR CONTINUATIONS.

PUMP ROOM REMOVAL TAG NOTES

1. REMOVE EXISTING MPS TO LPS PRV STATION WITH ALL ASSOCIATED VALVES AND ACCESSORIES.
2. EXISTING 14" MPS DN FROM TANK ROOM TO BE REMOVED.
3. EXISTING 10" CONDENSATE SUCTION PIPING TO BE REMOVED..
4. DISCONNECT EXISTING 24" LPS PIPING.
5. EXISTING 10" CONDENSATE PUMP SUCTION PIPING UP TO TANK ROOM. SEE DM102 FOR CONTINUATION.
6. EXISTING 10" CONDENSATE PUMP SUCTION PIPING DN FROM TANK ROOM. SEE DM 102 FOR CONTIUNATION.
7. EXISTING LPS & HPS RUNNING INTO EXISTING STEAM TUNNEL

GENERAL NOTES

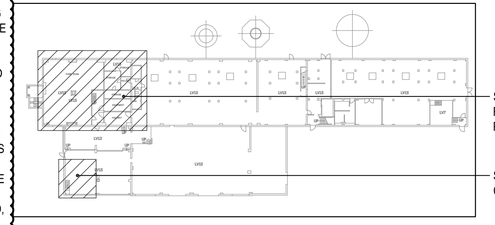
(APPLICABLE TO ALL SCOPE OF WORK ON THIS DRAWING):

1. THE TAG NOTES ONLY SHOW MAJOR EQUIPMENT AND PIPING RELATED WORK. THE SCOPE OF WORK SHALL INCLUDE ALL PIPING ALL EQUIPMENT, ALL WIRING, ALL CONTROLS, ALL PADS AND SUPPORTS TO BE REMOVED IN THEIR ENTIRETY WHETHER SHOWN SPECIFICALLY OR OTHERWISE, UNLESS OTHERWISE NOTED TO REMAIN.
2. UPON REMOVAL OF ALL COMPONENTS, ALL OPENINGS IN WALLS, FLOORS CEILINGS SHALL BE PLUGGED AND SEALED WITH MATERIAL MATCHING REST OF THE COMPONENT THAT WAS AROUND THE OPENING AND RESTORED TO ORIGINAL FINISHED CONDITION.
3. ALL UNREMOVED COMPONENTS TO REMAIN OR TO BE REUSED IN CONSTRUCTION SHALL BE PROVIDED WITH TEMPORARY CAPS TILL NEW CONSTRUCTION WORK IS COMPLETED.
4. ALL FLUID COMPONENTS SHALL BE DRAINED WITH TEMPORARY PIPE TERMINATION TO FLOOR DRAINS AT CODE ALLOWED TEMPERATURES PRIOR TO REMOVAL WORK. USE SHUTOFF VALVES FROM THE NEAREST UNREMOVED PORTION. WHERE SUCH SHUTOFF VALVES DO NOT EXIST OR DO NOT HOLD, PROVIDE TEMPORARY VALVES FOR SUCH ISOLATION.

SCOPE OF WORK IN THIS DWG

DESCRIPTION PROVIDED IS FOR GENERAL INFORMATION ONLY. ACTUAL SCOPE SHALL BE AS PER ITEMS INCLUDED IN ALL THE CONTRACT DOCUMENTS.

1. SCOPE OF REMOVAL OF EXISTING BOILER FEED WATER PUMPS, WATER SOFTENER EQUIPMENT, ACCESSORIES, CONTROLS, PIPING, INSULATION TO THE EXTENT SHOWN ON PLAN AFTER DRAINING OF SYSTEM TO THE EXTENT REQUIRED.



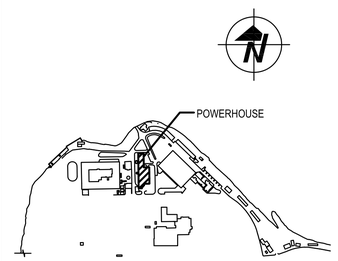
3 POWERHOUSE KEY PLAN

SCALE: NTS

CITY OF NEW YORK DEPARTMENT OF CORRECTION

THE CITY OF NEW YORK
DEPARTMENT OF CORRECTION

DIVISION OF CAPITAL POLICY
AND DEVELOPMENT
ENGINEERING UNIT



KEY PLAN
NTS

No.	Date	Revision
1	09/28/20	ISSUED FOR BID
1	12/15/20	ADDENDUM 5

NOTE: Drawing may be printed at reduced scale

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DESIGNED BY:

IAQ SYSTEMS INC
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555 8th Avenue, Suite 1502
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www.iaqsys.com

Executive Director:	HARDEE SAINI
Project Manager:	BV
Project Engineer:	TS
Drawn By: DB	Checked By: SB
PIN # 072202001CPD	Date: _

Project:
POWERHOUSE
BOILER FEED WATER
TREATMENT SYSTEM
UPGRADE
RIKERS ISLAND
EAST ELMHURST, NY 11370

Address:

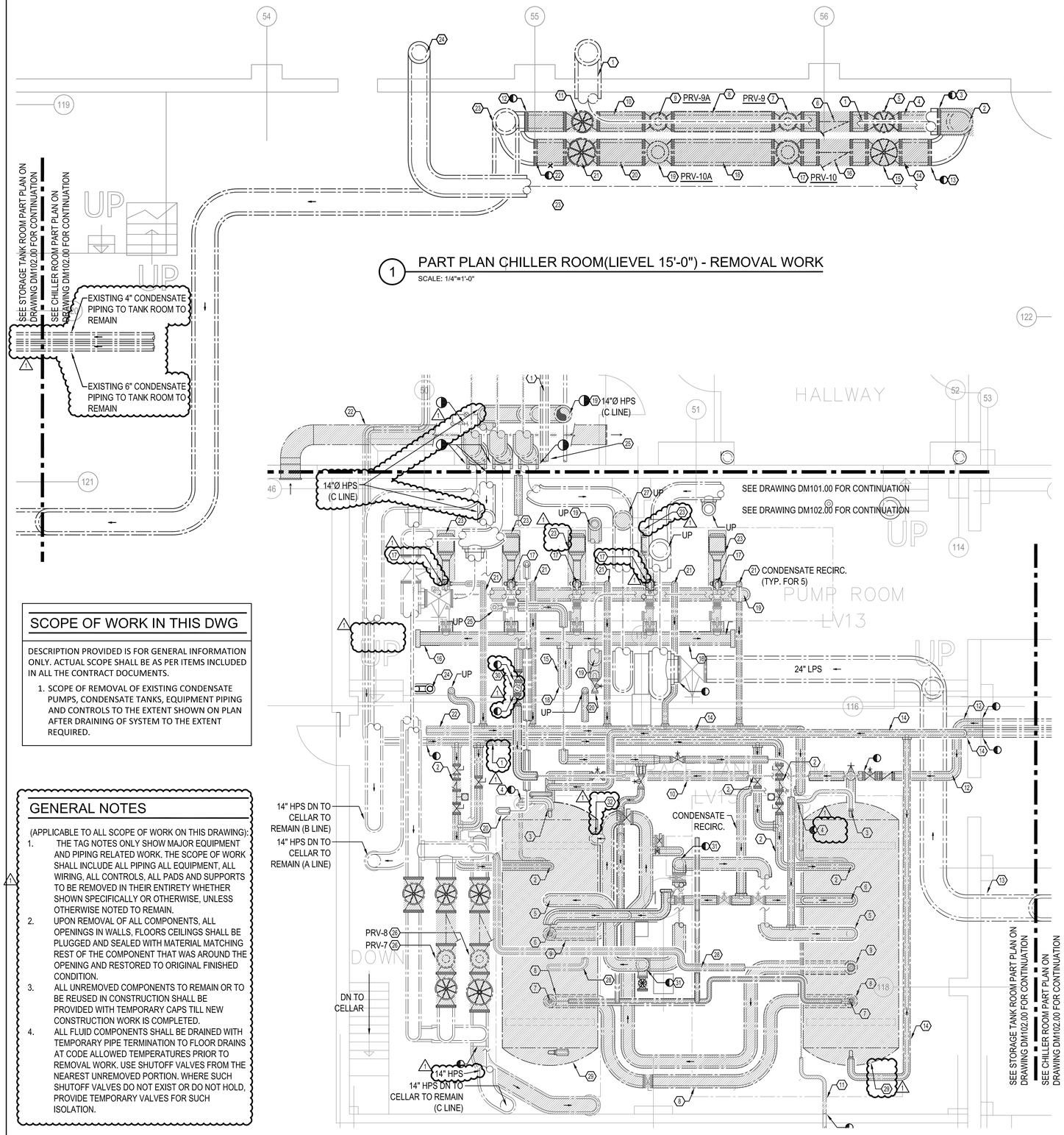
Drawing Title:
HVAC
REMOVAL WORK
PART PLAN PUMP ROOM,
PART PLAN CELLAR

Seal:

Drawing No.:
DM101.00

Scale: 1/4"=1'-0"

Sheet: 12 of 64



1 PART PLAN CHILLER ROOM(LIEVEL 15'-0") - REMOVAL WORK

SCALE: 1/4"=1'-0"

2 PART PLAN TANK ROOM (LEVEL 15'-0") - REMOVAL WORK

SCALE: 1/4" = 1 '- 0"

SCOPE OF WORK IN THIS DWG

DESCRIPTION PROVIDED IS FOR GENERAL INFORMATION ONLY. ACTUAL SCOPE SHALL BE AS PER ITEMS INCLUDED IN ALL THE CONTRACT DOCUMENTS.

1. SCOPE OF REMOVAL OF EXISTING CONDENSATE PUMPS, CONDENSATE TANKS, EQUIPMENT PIPING AND CONTROLS TO THE EXTENT SHOWN ON PLAN AFTER DRAINING OF SYSTEM TO THE EXTENT REQUIRED.

GENERAL NOTES

(APPLICABLE TO ALL SCOPE OF WORK ON THIS DRAWING):

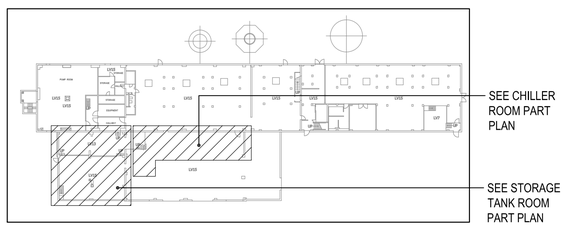
1. THE TAG NOTES ONLY SHOW MAJOR EQUIPMENT AND PIPING RELATED WORK. THE SCOPE OF WORK SHALL INCLUDE ALL PIPING ALL EQUIPMENT, ALL WIRING, ALL CONTROLS, ALL PADS AND SUPPORTS TO BE REMOVED IN THEIR ENTIRETY WHETHER SHOWN SPECIFICALLY OR OTHERWISE, UNLESS OTHERWISE NOTED TO REMAIN.
2. UPON REMOVAL OF ALL COMPONENTS, ALL OPENINGS IN WALLS, FLOORS CEILINGS SHALL BE PLUGGED AND SEALED WITH MATERIAL MATCHING REST OF THE COMPONENT THAT WAS AROUND THE OPENING AND RESTORED TO ORIGINAL FINISHED CONDITION.
3. ALL UNREMOVED COMPONENTS TO REMAIN OR TO BE REUSED IN CONSTRUCTION SHALL BE PROVIDED WITH TEMPORARY CAPS TILL NEW CONSTRUCTION WORK IS COMPLETED.
4. ALL FLUID COMPONENTS SHALL BE DRAINED WITH TEMPORARY PIPE TERMINATION TO FLOOR DRAINS AT CODE ALLOWED TEMPERATURES PRIOR TO REMOVAL WORK. USE SHUTOFF VALVES FROM THE NEAREST UNREMOVED PORTION. WHERE SUCH SHUTOFF VALVES DO NOT EXIST OR DO NOT HOLD, PROVIDE TEMPORARY VALVES FOR SUCH ISOLATION.

CHILLER ROOM REMOVAL TAG NOTES

1. EXISTING 8"Ø HPS PIPING SERVING PRV 9 & 10 FROM BOILER ROOM.
2. EXISTING 12"Ø HPS RISER PIPING TO BE REMOVED.
3. DISCONNECT AND REMOVE EXISTING 8"Ø HPS PIPING FROM BOILER ROOM. TEMPORARILY CAP 8"Ø HPS PIPING OPENING.
4. DISCONNECT AND REMOVE EXISTING 8"Ø HPS VALVE PIPING.
5. DISCONNECT AND REMOVE EXISTING 8"Ø HPS VALVE.
6. DISCONNECT AND REMOVE EXISTING 8"Ø HPS STRAINER AND ASSOCIATED PIPING SUCH AS DRIP LEG, TRAPS, ETC.
7. DISCONNECT AND REMOVE EXISTING HPS TO MPS PRESSURE REDUCING VALVE (PRV-9).
8. EXISTING 8"Ø MPS PIPING TO BE REMOVED.
9. DISCONNECT AND REMOVE EXISTING MPS TO LPS PRESSURE REDUCING VALVE (PRV-9A).
10. EXISTING 8"Ø LPS PIPING TO BE REMOVED.
11. DISCONNECT AND REMOVE EXISTING 8"Ø LPS VALVE.
12. DISCONNECT AND REMOVE EXISTING 8"Ø LPS PIPING AND TEMPORARILY CAP 8"Ø LPS PIPING OPENING AT RISER.
13. DISCONNECT AND REMOVE EXISTING 14"Ø HPS VALVE PIPING. TEMPORARILY CAP 14"Ø HPS PIPING OPENING.
14. REMOVE EXISTING 14"Ø HPS PIPING.
15. DISCONNECT AND REMOVE EXISTING 14"Ø HPS VALVE.
16. DISCONNECT AND REMOVE EXISTING 14"Ø HPS STRAINER AND ASSOCIATED PIPING SUCH AS DRIP LEG, TRAPS, ETC.
17. DISCONNECT AND REMOVE EXISTING HPS TO MPS PRESSURE REDUCING VALVE (PRV-10).
18. EXISTING 14"Ø MPS PIPING TO BE REMOVED.
19. DISCONNECT AND REMOVE EXISTING MPS TO LPS PRESSURE REDUCING VALVE (PRV-10A).
20. EXISTING 14"Ø LPS PIPING TO BE REMOVED.
21. DISCONNECT AND REMOVE EXISTING 14"Ø LPS VALVE.
22. DISCONNECT AND REMOVE EXISTING 14" LPS PIPING AND TEMPORARILY CAP 14"Ø LPS PIPING OPENING AT RISER.
23. EXISTING 24"Ø LPS RISER.
24. EXISTING HPS PIPING FROM BOILER ROOM SERVING STEAM TURBINE.

CONDENSATE TANK ROOM REMOVAL TAG NOTES

1. DISCONNECT AND REMOVE EXISTING 3"Ø SOFT WATER TO EXISTING CONDENSATE TANK.
2. DISCONNECT AND REMOVE 3"Ø SOFT WATER PIPING TO CONDENSATE TANKS, BYPASS PIPING, ALL ASSOCIATED CONTROL VALVES, PIPING ACCESSORIES, ETC.
3. DISCONNECT AND REMOVE EXISTING 3"Ø OVERFLOW PIPING AT FRONT CONNECTION AND BOTTOM CONNECTION OF TANK.
4. DISCONNECT EXISTING OVERFLOW CONNECTION AT SLAB IN CELLAR BELOW. TEMPORARILY CAP PIPE OPENING.
5. DISCONNECT AND REMOVE EXISTING 8"Ø CONDENSATE RETURN LINE AND ALL ASSOCIATED VALVES, ACCESSORIES, ETC.
6. DISCONNECT AND REMOVE EXISTING 4"Ø CONDENSATE RECIRCULATING PIPING AND ASSOCIATED PIPING, ACCESSORIES, ETC.
7. REMOVE AND DISCONNECT EXISTING 4"Ø CONDENSATE PIPING AND ASSOCIATED VALVES, ACCESSORIES, ETC..
8. DISCONNECT FROM BOTTOM CONNECTION OF TANKS AND REMOVE EXISTING 8"Ø NEUTRALIZING PIPING BETWEEN TANKS.
9. DISCONNECT AND REMOVE EXISTING 8"Ø CONDENSATE PUMP SUCTION PIPING.
10. DISCONNECT AND REMOVE EXISTING 4"Ø CONDENSATE AND ALL ASSOCIATED VALVES, ACCESSORIES, ETC.
11. DISCONNECT AND REMOVE EXISTING 3"Ø CONDENSATE DRAIN PIPING SERVING COOLING TOWER AND ALL ASSOCIATED VALVES, ACCESSORIES, ETC. PROVIDE TEMPORARY CONNECTION, FIELD COORDINATE.
12. DISCONNECT AND REMOVE EXISTING 4"Ø CONDENSATE PIPING FROM CHILLER ROOM AND ALL ASSOCIATED VALVES, ACCESSORIES, ETC.
13. EXISTING 24"Ø LOW PRESSURE STEAM PIPING FROM CHILLER ROOM TO REMAIN.
14. DISCONNECT AND REMOVE EXISTING 6"Ø CONDENSATE PIPING.
15. DISCONNECT AND REMOVE EXISTING 10"Ø CONDENSATE SUCTION PIPE FROM CELLAR LEVEL TO EXISTING CONDENSATE PUMP.
16. DISCONNECT AND REMOVE EXISTING 12"Ø CONDENSATE SUCTION HEADER SERVING EXISTING CONDENSATE PUMP.
17. DISCONNECT AND REMOVE EXISTING 3"Ø CONDENSATE DISCHARGE LINE.
18. REMOVE EXISTING 10"Ø CONDENSATE SUCTION PIPING UP FROM CELLAR. SEE POWER HOUSE CELLAR PLAN FOR CONTINUATION.
19. DISCONNECT AND REMOVE EXISTING 6"Ø CONDENSATE DISCHARGE HEADER TO DEARATORS TANK IN ITS ENTIRETY.
20. DISCONNECT AND REMOVE EXISTING CAPPED SHUT OFF VALVE ON CONDENSATE DISCHARGE HEADER.
21. DISCONNECT AND REMOVE EXISTING 3"Ø CONDENSATE RECIRCULATING PIPING.
22. DISCONNECT AND REMOVE EXISTING 4"Ø CONDENSATE RECIRCULATING HEADER.
23. DISCONNECT AND REMOVE EXISTING CONDENSATE PUMP AND ALL ASSOCIATED ACCESSORIES, VALVES, SPECIALTIES CONTROLS, PADS, SUPPORTS, ETC.
24. EXISTING CITY WATER TO REMAIN. PROVIDE TEMPORARY SUPPORTS
25. EXISTING 3"Ø OVERFLOW PIPING SERVING DEAERATOR TANK TO CONDENSATE TANK TO BE REMOVED.
26. EXISTING HPS TO MPS PRV STATION TO BE REMOVED WITH ALL ASSOCIATED VALVES, STRAINER AND CONTROLS.
27. EXISTING 14"Ø LPS SERVING DEAERATOR TANKS UP TO HEATER ROOM TO BE REMOVED. CAP PIPING ON TEE CONNECTION.
28. EXISTING 3"Ø VENT PIPING SERVING CONDENSATE TANK TO BE REMOVED.
29. EXISTING CONDENSATE TANK TO BE REMOVED IN ITS ENTIRETY ALONG WITH PADS, SUPPORTS. CONTRACTOR SHALL FIELD CUT TANK FOR REMOVAL.
30. EXISTING HPC DN TO CELLAR TO REMAIN.
31. DISCONNECT EXISTING 6"Ø CONDENSATE RETURN FROM STEAM TUNNEL AT FLOOR PENETRATION.
32. EXISTING 10" CONDENSATE PUMP SUCTION HEADER DN TO CELLAR. SEE DM101 FOR CONTINUATION.



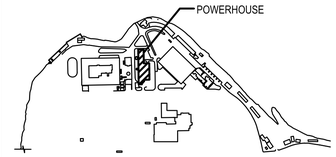
3 POWERHOUSE KEY PLAN

SCALE: NONE

CITY OF NEW YORK DEPARTMENT OF CORRECTION

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KEY PLAN
NTS

No.	Date	Revision
1	09/28/20	ISSUED FOR BID
1	12/15/20	ADDENDUM 5

NOTE: Drawing may be printed at reduced scale

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Executive Director:	HARDEE SAINI
Project Manager:	BV
Project Engineer:	TS
Drawn By: DB	Checked By: SB
PIN # 072202001CPD	Date: _

Project:
POWERHOUSE
BOILER FEED WATER
TREATMENT SYSTEM
UPGRADE
RIKERS ISLAND
EAST ELMHURST, NY 11370

Address:

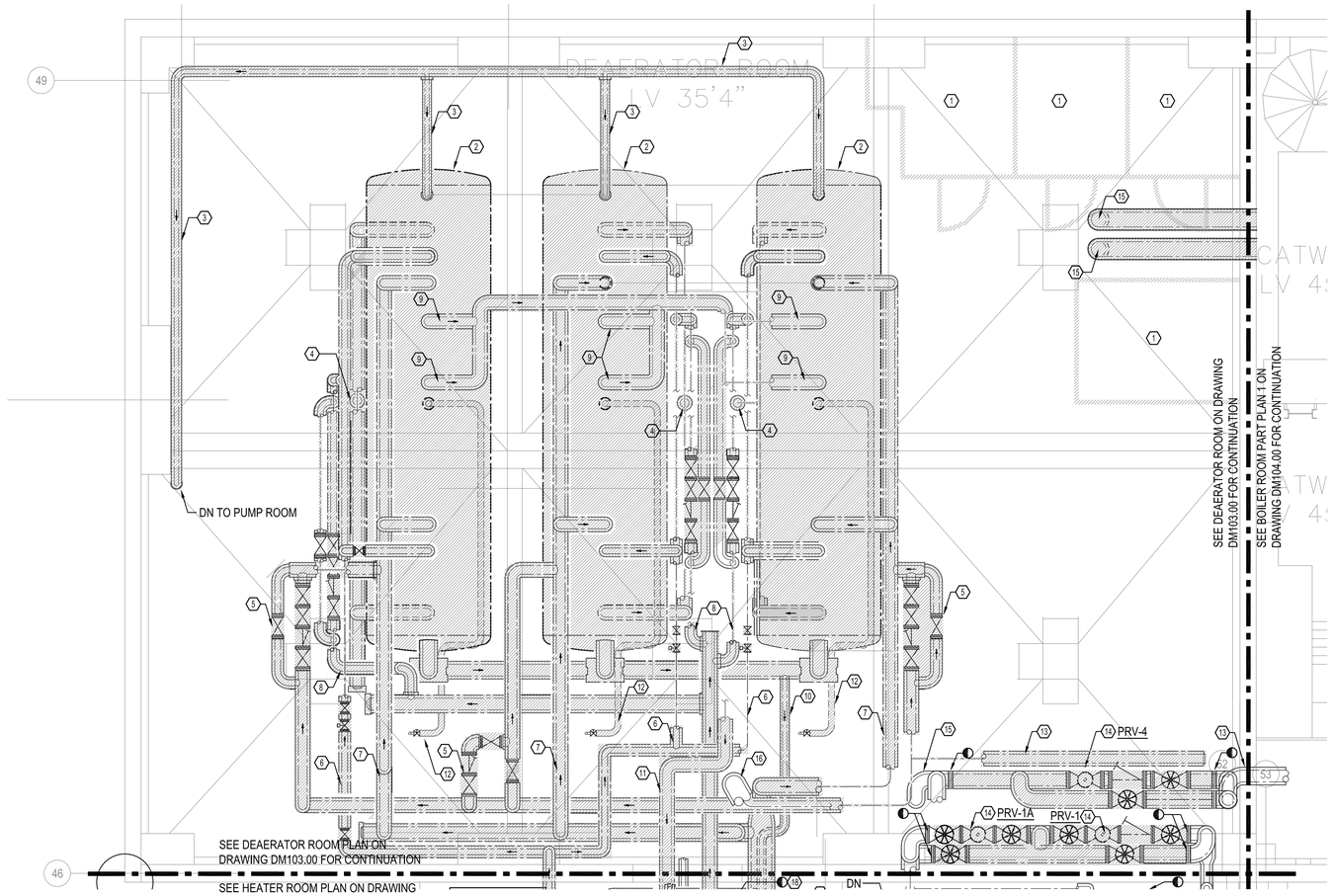
Drawing Title:
HVAC
REMOVAL WORK
PART PLAN CHILLER ROOM &
PART PLAN TANK ROOM

Seal:

Drawing No.:
DM102.00

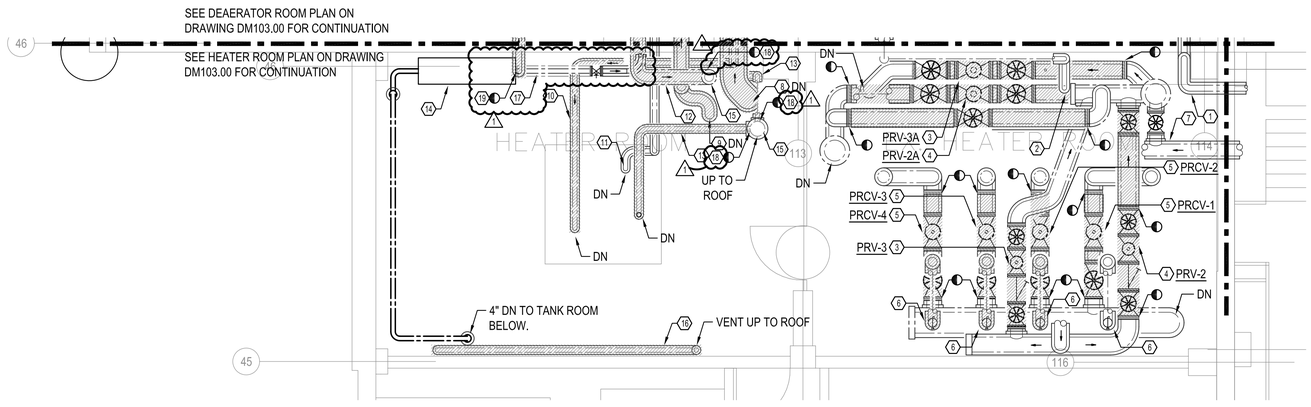
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Sheet: 13 of 64



1 PART PLAN DEAERATOR ROOM (LEVEL 35'-4") - REMOVAL WORK

SCALE: 1/4"=1'-0"

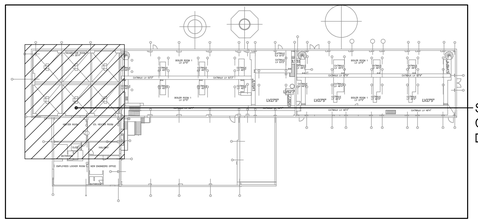


2 PART PLAN HEATER ROOM (LEVEL 28'-0") - REMOVAL WORK

SCALE: 1/4"=1'-0"

PART PLAN DEAERATOR TANK ROOM REMOVAL WORK TAG NOTE:

1. EXISTING METAL CAGE TO BE REMOVED IN TIS ENTIRETY INCLUDING GATES AND SUPPORTS.
2. EXISTING DEAERATOR TANKS TO BE REMOVED WITH PAD & SUPPORTS
3. EXISTING 4"Ø BOILER FEED RECIRCULATING PIPING TO BE REMOVED.
4. EXISTING 6"Ø BOILER FEED SUCTION LINE DOWN TO PUMP ROOM TO BE REMOVED.
5. EXISTING 4"Ø HPS PIPING WITH CONTROL VALVE ASSEMBLY TO BE REMOVED WILL ASSOCIATED VALVES AND ACCESSORIES
6. EXISTING 4"Ø RAW MAKE UP WATER TO BE REMOVED WITH ALL ASSOCIATED CONTROL VALVE AND ACCESSORIES.
7. EXISTING 8"Ø LPS SERVING EXISTING DEAERATOR TO BE REMOVE WITH ALL ASSOCIATED ACCESSORIES.
8. EXISTING 4"Ø CONDENSATE DISCHARGE PIPING TO DEAERATOR TO BE REMOVED WITH ALL CONTROL VALVE AND ACCESSORIES.
9. EXISTING 6"Ø VENT WITH SAFETY VALVE TO BE REMOVED WITH ASSOCIATED PIPING, ETC. AS SHOWN.
10. EXISTING 3"Ø OVERFLOW PIPING FROM DEAERATOR TANK TO CONDENSATE TANK TO BE REMOVED AS SHOWN.
11. EXISTING 10"Ø VENT HEADER TO BE REMOVED.
12. EXISTING 2"Ø DRAIN PIPE TO BE REMOVED AS SHOWN.
13. EXISTING 6"Ø CAPPED HPS PIPING TO BE REMOVED.
14. REMOVE EXISTING PRV STATION ALONG WITH ALL BYPASS, STRAINER, VALVE, ALL PNEUMATIC TUBING AND CONTROL ACCESSORIES SERVING PRV.
15. EXISTING 10" BOILER FEED WATER PIPING UP FROM PUMP ROOM TO BE REMOVED.
16. EXISTING 14" HPS (C LINE) FROM BOILER STEAM HEADER DN TO PUMP ROOM BELOW TO REMAIN.



3 POWERHOUSE KEY PLAN

SCALE: NONE

GENERAL NOTES

(APPLICABLE TO ALL SCOPE OF WORK ON THIS DRAWING):

1. THE TAG NOTES ONLY SHOW MAJOR EQUIPMENT AND PIPING RELATED WORK. THE SCOPE OF WORK SHALL INCLUDE ALL PIPING ALL EQUIPMENT, ALL WIRING, ALL CONTROLS, ALL PADS AND SUPPORTS TO BE REMOVED IN THEIR ENTIRETY WHETHER SHOWN SPECIFICALLY OR OTHERWISE, UNLESS OTHERWISE NOTED TO REMAIN.
2. UPON REMOVAL OF ALL COMPONENTS, ALL OPENINGS IN WALLS, FLOORS CEILINGS SHALL BE PLUGGED AND SEALED WITH MATERIAL MATCHING REST OF THE COMPONENT THAT WAS AROUND THE OPENING AND RESTORED TO ORIGINAL FINISHED CONDITION.
3. ALL UNREMOVED COMPONENTS TO REMAIN OR TO BE REUSED IN CONSTRUCTION SHALL BE PROVIDED WITH TEMPORARY CAPS TILL NEW CONSTRUCTION WORK IS COMPLETED.
4. ALL FLUID COMPONENTS SHALL BE DRAINED WITH TEMPORARY PIPE TERMINATION TO FLOOR DRAINS AT CODE ALLOWED TEMPERATURES PRIOR TO REMOVAL WORK. USE SHUTOFF VALVES FROM THE NEAREST UNREMOVED PORTION. WHERE SUCH SHUTOFF VALVES DO NOT EXIST OR DO NOT HOLD, PROVIDE TEMPORARY VALVES FOR SUCH ISOLATION.

PART PLAN HEATER ROOM REMOVAL WORK TAG NOTE

1. EXISTING 4"Ø HPS SERVING PRV-1 & PRV-1A.
2. EXISTING MPS FROM PRV-1 & PRV-1A.
3. EXIST 8"Ø MPS TO LPS PRV TO BE REMOVED.
4. EXIST 16"Ø MPS TO LPS PRV TO BE REMOVED.
5. EXIST 6"Ø PRESSURE RELIEF CONTROL VALVE SERVING LPS PIPING TO BE REMOVED WITH ASSOCIATED ACCESSORIES.
6. EXISTING 4"Ø SAFETY RELIEF VALVE TO BE REMOVED ALONG WITH ALL VENT AS SHOWN.
7. EXISTING 8"Ø HPS FROM BOILER STEAM HEADER TO REMAIN.
8. EXISTING 14"Ø LPS TO DEAERATOR TANKS UP FROM TANK ROOM TO BE REMOVED.
9. EXISTING 8"Ø CONDENSATE DISCHARGE PIPING TO DEAERATORS TO BE REMOVE AS SHOWN.
10. REMOVE EXISTING 3"Ø OVERFLOW PIPING FROM DEAERATOR TANK TO CONDENSATE TANK.
11. EXISTING 3"Ø HPS DOWN TO TANK ROOM.
12. EXISTING 6"Ø VENT TO BE DISCONNECTED AND REMOVED AT VENT HEADER BELOW ROOF LEVEL.
13. EXISTING 3"Ø ABANDONED VENT LINE TO BE REMOVED UP TO VENT HEADER BELOW ROOF LEVEL.
14. EXISTING RPZ.
15. EXISTING VENT HEADER UP TO ROOF TO REMAIN.
16. EXISTING 3"Ø VENT PIPING SERVING CONDENSATE TANK BELOW TO BE REMOVED INCLUDING VENT WEATHER CAP ABOVE ROOF LEVEL.
17. EXISTING 3"Ø CITY MAKE UP WATER TO PUMP ROOM TO REMAIN.
18. DISCONNECT AND REMOVE EXISTING VENT PIPING CONNECTED TO VENT HEADER.
19. DISCONNECT EXISTING 4" MAKE UP WATER BRANCH PIPING GOING TO DEAERATOR ROOM FROM EXISTING CITY WATER PIPING.

SCOPE OF WORK IN THIS DRAWING

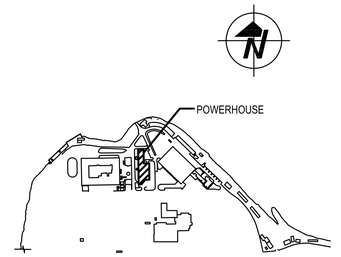
DESCRIPTION PROVIDED IS FOR GENERAL INFORMATION ONLY. ACTUAL SCOPE SHALL BE AS PER ITEMS INCLUDED IN ALL THE CONTRACT DOCUMENTS.

1. SCOPE OF REMOVAL OF EXISTING DEAERATOR TANKS, PRV STATIONS, EQUIPMENT PIPING AND CONTROLS TO THE EXTENT SHOWN ON PLAN AFTER DRAINING OF SYSTEM TO THE EXTENT REQUIRED.

CITY OF NEW YORK DEPARTMENT OF CORRECTION

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No.	Date	Revision
1	12/15/20	ADDENDUM 5
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Project Manager:	BV
Project Engineer:	TS
Drawn By: DB	Checked By: SB
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Project:
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BOILER FEED WATER
TREATMENT SYSTEM
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RIKERS ISLAND
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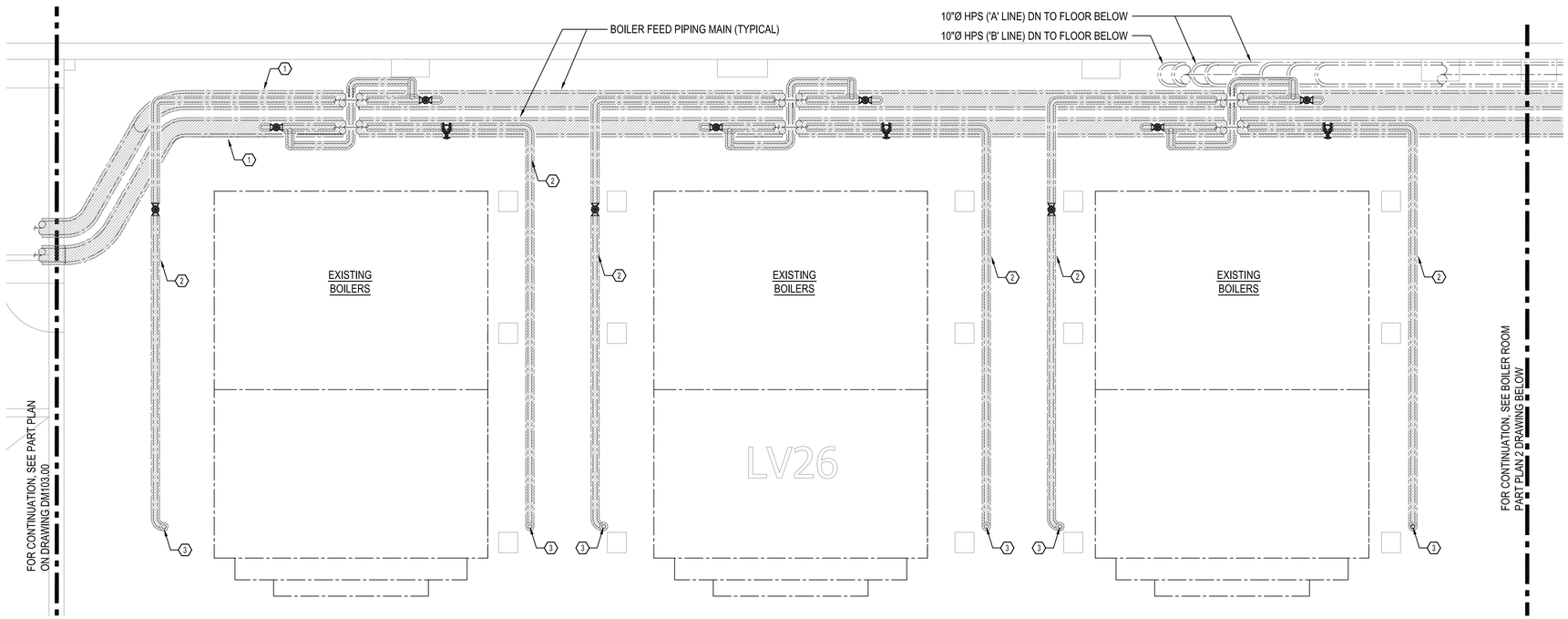
Drawing Title:
HVAC
REMOVAL WORK
PART PLAN DEAERATOR ROOM &
PART PLAN HEATER ROOM

Seal:

Drawing No.: DM103.00

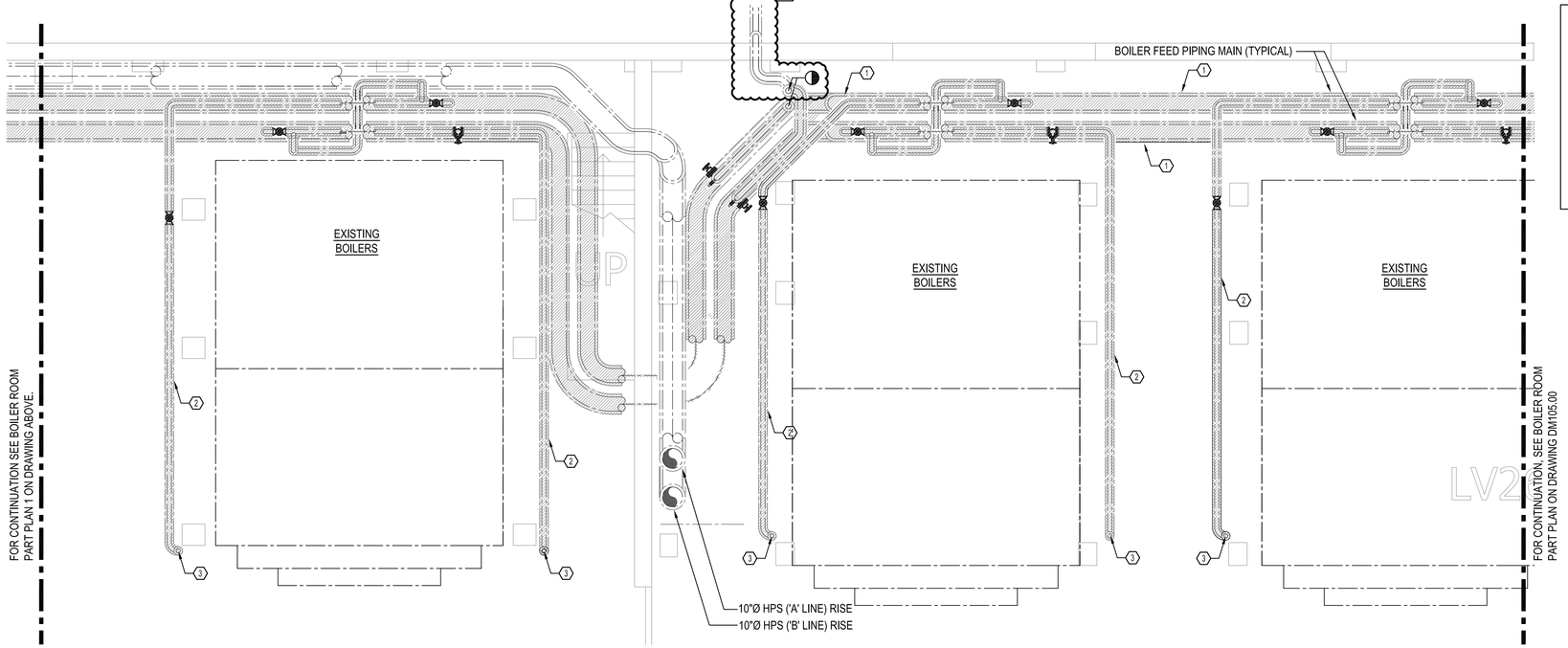
Scale: 1/4"=1'-0"

Sheet: 14 of 64



1 PART PLAN BOILER ROOM SECTOR 1 (LEVEL 26'-00") - REMOVAL WORK

SCALE: 1/4"=1'-0"



2 PART PLAN BOILER ROOM SECTOR 2 (LEVEL 26'-00") - REMOVAL WORK

SCALE: NTS

PART PLAN BOILER ROOM REMOVAL WORK TAG NOTES:

1. EXISTING 10" BOILER FEED HEADER TO BE REMOVED IN ITS ENTIRETY.
2. EXISTING 3" BOILER FEED WATER PIPING TO BOILER TO BE REMOVED IN ITS ENTIRETY.
3. DISCONNECT EXISTING 3" BOILER FEED WATER PIPING AT EXISTING SHUTOFF VALVE.

SCOPE OF WORK IN THIS DRAWING

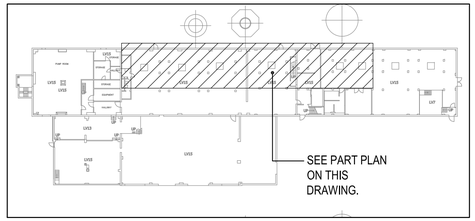
DESCRIPTION PROVIDED IS FOR GENERAL INFORMATION ONLY. ACTUAL SCOPE SHALL BE AS PER ITEMS INCLUDED IN ALL THE CONTRACT DOCUMENTS.

1. SCOPE OF REMOVAL OF EXISTING BOILER FEED PIPING AND CONTROLS TO THE EXTENT SHOWN ON PLAN AFTER DRAINING OF SYSTEM TO THE EXTENT REQUIRED.

GENERAL NOTES

(APPLICABLE TO ALL SCOPE OF WORK ON THIS DRAWING):

1. THE TAG NOTES ONLY SHOW MAJOR EQUIPMENT AND PIPING RELATED WORK. THE SCOPE OF WORK SHALL INCLUDE ALL PIPING ALL EQUIPMENT, ALL WIRING, ALL CONTROLS, ALL PADS AND SUPPORTS TO BE REMOVED IN THEIR ENTIRETY WHETHER SHOWN SPECIFICALLY OR OTHERWISE, UNLESS OTHERWISE NOTED TO REMAIN.
2. UPON REMOVAL OF ALL COMPONENTS, ALL OPENINGS IN WALLS, FLOORS CEILINGS SHALL BE PLUGGED AND SEALED WITH MATERIAL MATCHING REST OF THE COMPONENT THAT WAS AROUND THE OPENING AND RESTORED TO ORIGINAL FINISHED CONDITION.
3. ALL UNREMOVED COMPONENTS TO REMAIN OR TO BE REUSED IN CONSTRUCTION SHALL BE PROVIDED WITH TEMPORARY CAPS TILL NEW CONSTRUCTION WORK IS COMPLETED.
4. ALL FLUID COMPONENTS SHALL BE DRAINED WITH TEMPORARY PIPE TERMINATION TO FLOOR DRAINS AT CODE ALLOWED TEMPERATURES PRIOR TO REMOVAL WORK. USE SHUTOFF VALVES FROM THE NEAREST UNREMOVED PORTION. WHERE SUCH SHUTOFF VALVES DO NOT EXIST OR DO NOT HOLD, PROVIDE TEMPORARY VALVES FOR SUCH ISOLATION.



3 POWERHOUSE KEY PLAN

SCALE: 1/4"=1'-0"

SCOPE OF WORK IN THIS DRAWING:

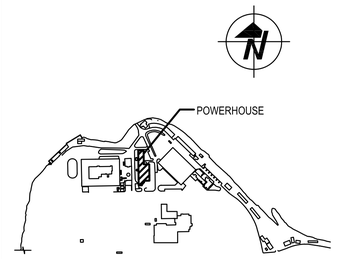
DESCRIPTION PROVIDED IS FOR GENERAL INFORMATION ONLY. ACTUAL SCOPE SHALL BE AS PER ITEMS INCLUDED IN ALL THE CONTRACT DOCUMENTS.

1. SCOPE OF REMOVAL OF EXISTING BOILER FEED PIPING AND CONTROLS TO THE EXTENT SHOWN ON PLAN AFTER DRAINING OF SYSTEM TO THE EXTENT REQUIRED.

CITY OF NEW YORK DEPARTMENT OF CORRECTION

THE CITY OF NEW YORK
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DIVISION OF CAPITAL POLICY
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ENGINEERING UNIT



KEY PLAN
NTS

No.	Date	Revision
1	09/28/20	ISSUED FOR BID
2	12/15/20	ADDENDUM 5

NOTE: Drawing may be printed at reduced scale

IT IS A VIOLATION OF THE STATE EDUCATION LAW SECTION 7209 (2) FOR ANY PERSON TO ALTER AN ITEM IN ANY WAY UNLESS SUCH PERSON IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, AND THE ENGINEER STAMPS SUCH CHANGES

DESIGNED BY:
IAQ SYSTEMS INC
Consulting Engineers
555 8th Avenue, Suite 1502
New York, New York 10018
Tel. 212.680.8945
www.iaqsys.com

Executive Director:	HARDEE SAINI
Project Manager:	BV
Project Engineer:	TS
Drawn By: DB	Checked By: SB
PIN # 072202001CPD	Date: _

Project:
POWERHOUSE
BOILER FEED WATER
TREATMENT SYSTEM
UPGRADE
RIKERS ISLAND
EAST ELMHURST, NY 11370

Address:

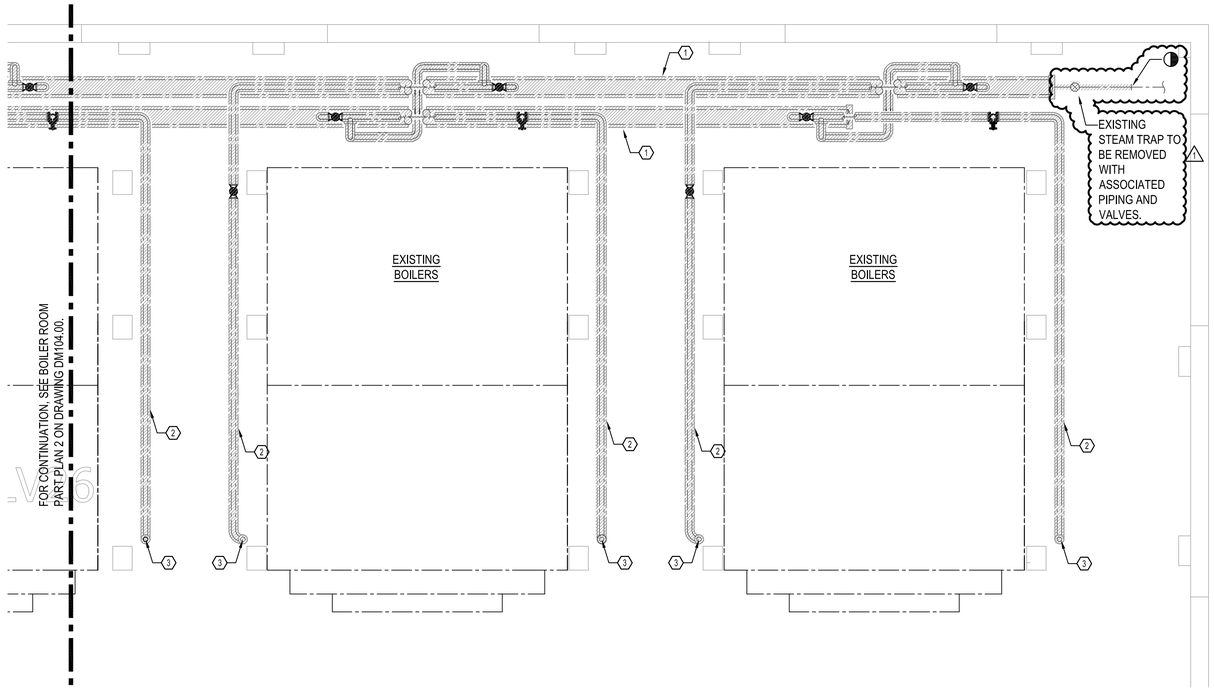
Drawing Title:
HVAC
REMOVAL WORK
PART PLAN BOILER ROOM
SECTOR 1 & 2

Seal:

Drawing No.: DM104.00

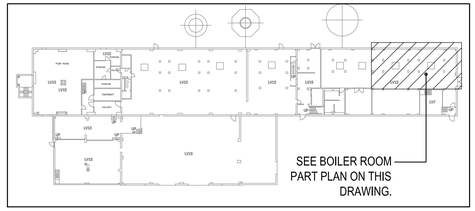
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Sheet: 15 of 64



1 PART PLAN BOILER ROOM SECTOR 3 (LEVEL 26'-0") - REMOVAL WORK

SCALE: 1/4" = 1'-0"



2 POWERHOUSE KEY PLAN

SCALE: NONE

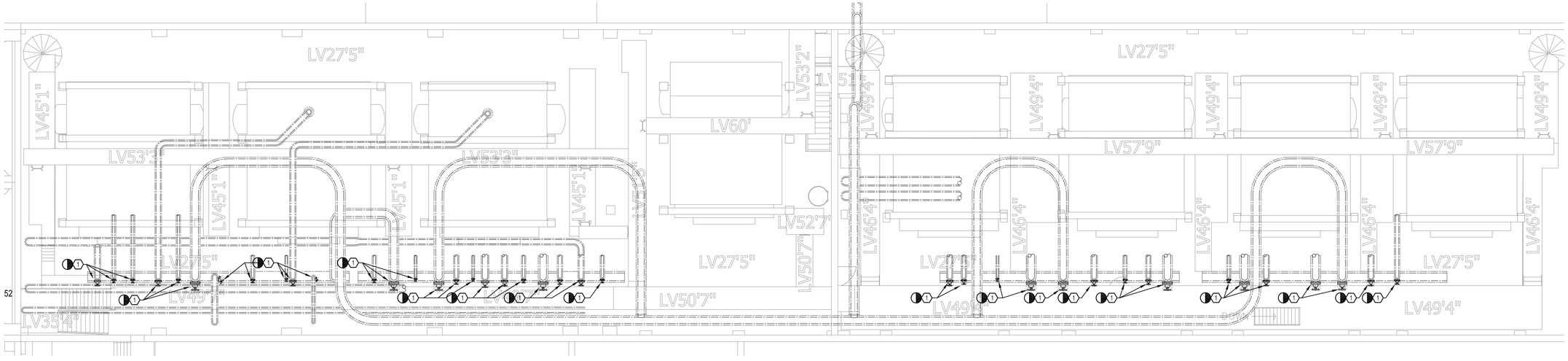
SCOPE OF WORK IN THIS DRAWING:

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1. REMOVAL OF EXISTING BOILER FEED PIPING BOILER FEED, VALVES, CONTROLS TO THE EXTENT SHOWN ON PLAN.
2. REMOVAL OF EXISTING SHUTOFF VALVES CONNECTED TO EXISTING HPS HEADERS IN BOILER ROOM.

PART PLAN BOILER ROOM SECTOR 3 REMOVAL WORK TAG NOTES:

1. EXISTING 10" BOILER FEED HEADER TO BE REMOVED IN ITS ENTIRETY.
2. EXISTING 3" BOILER FEED PIPING TO EXISTING BOILER TO BE REMOVED.
3. DISCONNECT EXISTING 3" BOILER FEED WATER PIPING AT EXISTING SHUTOFF VALVE.



3 BOILER ROOM UPPER LEVEL PLAN (CATWALK LEVEL 49'-4" & LEVEL 50'-7") - REMOVAL

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

BOILER UPPER LEVEL PLAN

1. EXISTING SHUT OFF VALVES SERVING ALL HPS PIPING TIED TO EXISTING HPS HEADER TO BE REMOVED.

GENERAL NOTES

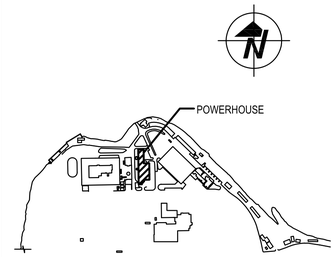
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2. UPON REMOVAL OF ALL COMPONENTS, ALL OPENINGS IN WALLS, FLOORS CEILINGS SHALL BE PLUGGED AND SEALED WITH MATERIAL MATCHING REST OF THE COMPONENT THAT WAS AROUND THE OPENING AND RESTORED TO ORIGINAL FINISHED CONDITION.
3. ALL UNREMOVED COMPONENTS TO REMAIN OR TO BE REUSED IN CONSTRUCTION SHALL BE PROVIDED WITH TEMPORARY CAPS TILL NEW CONSTRUCTION WORK IS COMPLETED.
4. ALL FLUID COMPONENTS SHALL BE DRAINED WITH TEMPORARY PIPE TERMINATION TO FLOOR DRAINS AT CODE ALLOWED TEMPERATURES PRIOR TO REMOVAL WORK. USE SHUTOFF VALVES FROM THE NEAREST UNREMOVED PORTION. WHERE SUCH SHUTOFF VALVES DO NOT EXIST OR DO NOT HOLD, PROVIDE TEMPORARY VALVES FOR SUCH ISOLATION.

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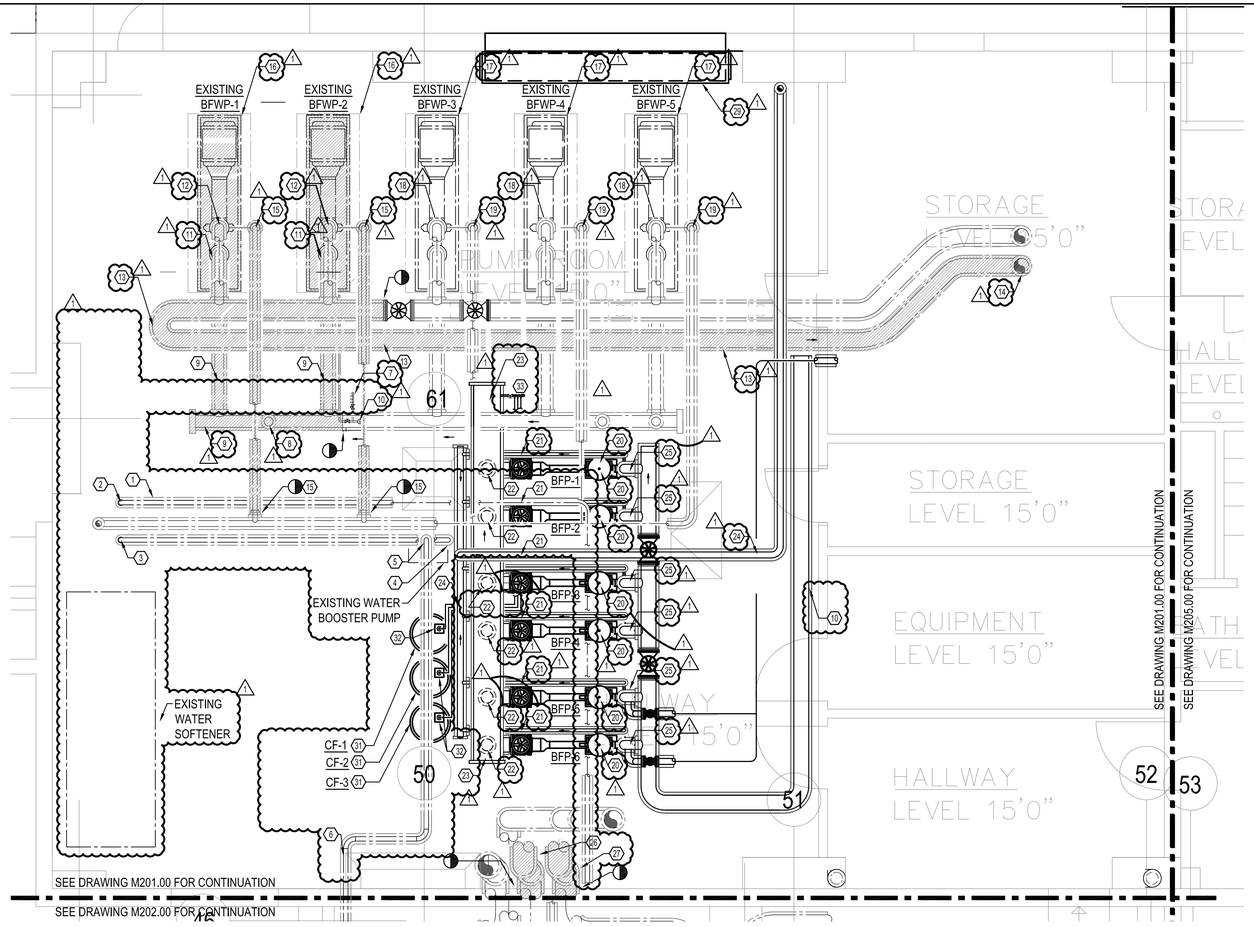
Drawing Title:
HVAC
REMOVAL WORK
PART PLAN BOILER ROOM
SECTOR 3

Seal:

Drawing No.:
DM105.00

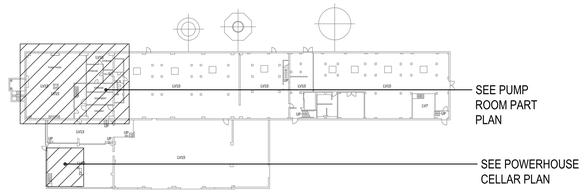
Scale: 1/4"=1'-0"

Sheet: 16 of 64



1 PUMP ROOM (LVL 15'00" TO 27'00") PART PLAN - PHASE 1

SCALE: 1/4"=1'-0"



2 POWERHOUSE KEY PLAN

SCALE: NONE

SCOPE OF WORK ON THIS DRAWING:

DESCRIPTION PROVIDED IS FOR GENERAL INFORMATION ONLY. ACTUAL SCOPE SHALL BE AS PER ITEMS INCLUDED IN ALL THE CONTRACT DOCUMENTS.

1. PHASED REPLACEMENT OF EXISTING BOILER FEED WATER PUMPS, WATER SOFTENER EQUIPMENT, ACCESSORIES, CONTROLS, PIPING, INSULATION TO THE EXTENT SHOWN ON PLAN AFTER DRAINING OF SYSTEM TO THE EXTENT REQUIRED.

GENERAL NOTES

1. PHASING PLAN INCLUDED IS PRELIMINARY AND SHOWS ONLY MAJOR MILESTONE & GENERAL INTENT. CONTRACTOR SHALL PROVIDE DETAILED PHASING PLAN INCLUDING SUB-PHASES WITH TIMELINES UPON AWARD OF WORK TO OWNER FOR THEIR REVIEW AND REVISIONS. ALL DECISION OF PHASING BY THE OWNER SHALL BE FINAL AND BINDING ON CONTRACTOR. NO ADDITIONAL COST SHALL BE PROVIDED TO CONTRACTOR FOR THIS WORK.
2. ANY PHASING PLAN DEVELOPED SHALL ENSURE THAT ALL THE BOILERS ARE CAPABLE OF OPERATING UNINTERRUPTED AT ALL TIMES IN CODE COMPLIANT MANNER.

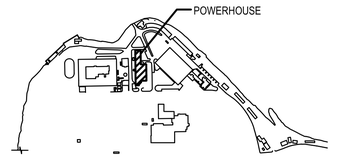
PUMP ROOM PHASE 1 TAG NOTES

1. EXISTING 3"Ø MAKE UP WATER (RAW WATER) PIPING.
2. EXISTING 3"Ø MAKE UP WATER (RAW WATER) PIPING DOWN TO EXISTING WATER SOFTENER.
3. EXISTING 3"Ø MAKE UP WATER (SOFT WATER) PIPING FROM TO EXISTING WATER SOFTENER.
4. EXISTING 3"Ø MAKE UP WATER (SOFT WATER) PIPING DOWN TO EXISTING WATER BOOSTER PUMPS.
5. EXISTING 3"Ø MAKE UP WATER (SOFT WATER) PIPING FROM TO EXISTING WATER BOOSTER PUMPS.
6. EXISTING 3"Ø MAKE UP WATER (SOFT WATER) PIPING FROM TO EXISTING WATER BOOSTER PUMPS TO TANK ROOM.
7. EXISTING WATER TREATMENT MANIFOLD AND ASSOCIATED VALVES AND DRAIN.
8. DISCONNECT AND REMOVE EXISTING 6"Ø SUCTION LINE FROM DEAERATOR AT PUMP ROOM TIED IN TO SUCTION MANIFOLD.
9. DISCONNECT AND REMOVE EXISTING CONDENSATE SUCTION HEADER TO THE EXTENT SHOWN. PROVIDE TEMPORARY CAP AT THE REMOVED SECTION END.
10. EXISTING 2"Ø WATER TREATMENT MANIFOLD PIPING TAPPED TO EXISTING CONDENSATE SUCTION HEADER.
11. DISCONNECT AND REMOVE EXISTING 6"Ø SUCTION PIPING AND ALL ASSOCIATED VALVES, ACCESSORIES, ETC.
12. DISCONNECT AND REMOVE EXISTING 4"Ø BOILER FEED WATER TO BOILER FEED HEADER.
13. DISCONNECT AND REMOVE EXISTING 10"Ø BOILER FEED WATER PIPING TO BOILERS TO THE EXTENT SHOWN ON DRAWING.
14. DISCONNECT AND REMOVE EXISTING 10"Ø BOILER FEED WATER PIPING UP TO FLOOR ABOVE.
15. DISCONNECT AND REMOVE EXISTING 4"Ø RECIRCULATED WATER PIPING, ASSOCIATED VALVES AND ACCESSORIES FROM THIS POINT TO EXISTING BOILER FEED WATER PUMP.
16. DISCONNECT AND REMOVE EXISTING BOILER FEED WATER PUMPS TO BE REMOVED (TYPICAL FOR 2).
17. EXISTING BOILER FEED WATER PUMPS TO REMAIN AND USED TEMPORARILY (TYPICAL FOR 3).
18. EXISTING 4"Ø BOILER FEED WATER TO BOILER FEED HEADER TO REMAIN AND USED TEMPORILY.
19. EXISTING 4"Ø RECIRCULATED WATER PIPING, ASSOCIATED VALVES AND ACCESSORIES TO EXISTING BOILER FEED WATER PUMP.
20. FURNISH AND INSTALL ALL BOILER FEED WATER PUMPS (BFP-1 THRU BFP-6) INLUDING ALL ASSOCIATED PIPING, SUPPORTS AND ACCESSORIES, ETC.
21. FURNISH AND INSTALL 2"Ø RECIRCULATED WATER PIPING, ASSOCIATED VALVES AND ACCESSORIES BETWEEN MANIFOLD TO BOILER FEED WATER PUMP.
22. FURNISH AND INSTALL 10" SUCTION LINE FROM DEAERATOR AT PUMP ROOM TIED IN TO SUCTION MANIFOLD.
23. FURNISH AND INSTALL 18" SUCTION SUCTION MANIFOLD.
24. FURNISH AND INSTALL 4"Ø RECIRCULATED WATER PIPING, ASSOCIATED VALVES AND ACCESSORIES BETWEEN MANIFOLD TO BOILER FEED WATER PUMP.
25. FURNISH AND INSTALL 6"Ø BOILER FEED WATER PIPING TO 10"Ø BOILER FEED WATER PIPING.
26. DISCONNECT AND REMOVE EXISTING 14"Ø HPS PIPING (B-LINE). SEE M202 FOR CONTINUATION OF REMOVAL OF PIPING.
27. DISCONNECT AND REMOVE EXISTING 14"Ø LPS PIPING. SEE M202 FOR CONTINUATION OF REMOVAL OF PIPING.
28. DISCONNECT AND REMOVE EXISTING 10"Ø LPS PIPING (C-LINE).
29. PROVIDE OPENING AND ROLL UP GATE. SEE ARCHITECTURAL DRAWINGS FOR DETAILS.
30. 10"Ø BOILER FEED HEADER TO BOILER ROOM
31. 150 GALLONS CHEMICAL FEED TANK WITH INJECTION PUMP (TYPICAL FOR 3) CHEMICAL FOR EACH TANK TO BE ASK FOLLOW: CF-1 : POLYMER, CF-2 : SULFITE, CF-3 : AMINE
32. INJECTION PUMP ON TOP OF CHEMICAL FEED TANK 120V/0.66A WITH FLEXIBLE PIPING TO WATER TREATMENT MANIFOLD.
33. WATER TREATMENT MANIFOLD WITH ASSOCIATED VALVES AND DRAIN.

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KEY PLAN
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Project Engineer:	TS
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PIN # 072202001CPD	Date:

Project:
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BOILER FEED WATER
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Address:

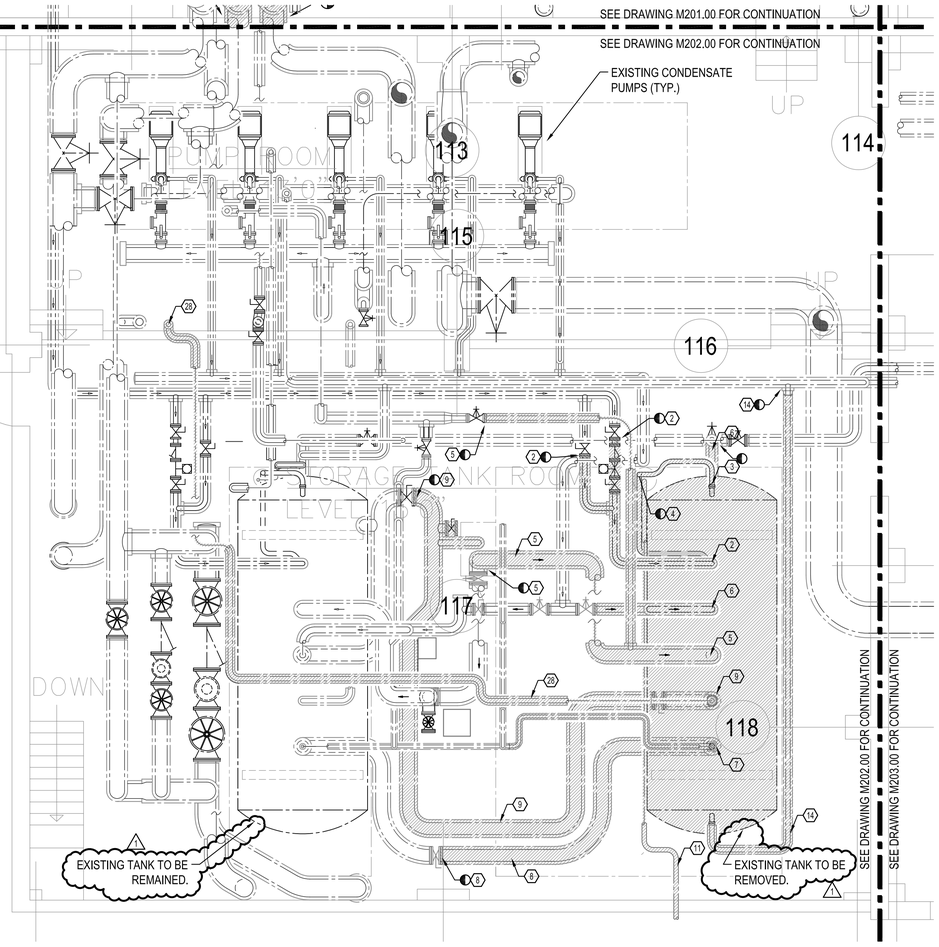
Drawing Title:
HVAC
PHASE 1
PUMP ROOM PART PLAN

Seal:

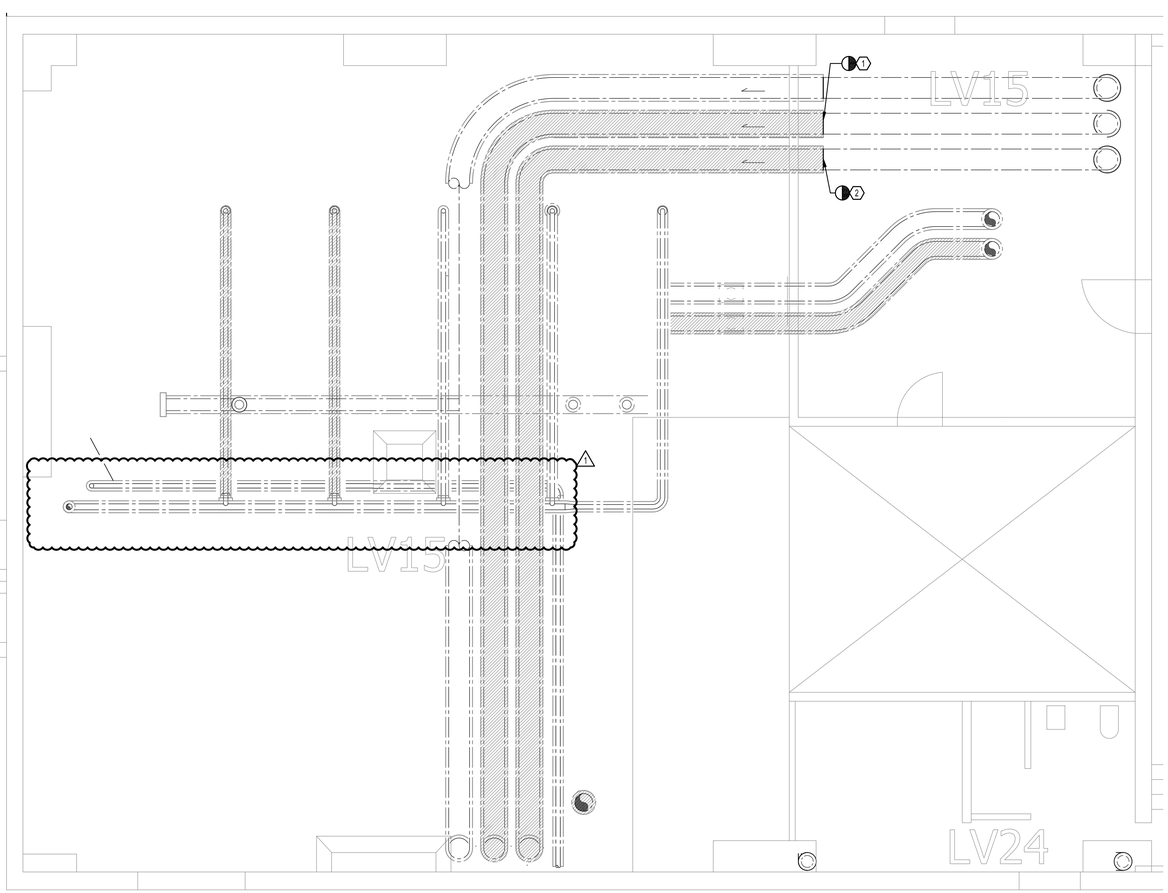
Drawing No.:
M201.00

Scale: AS NOTED

Sheet: 17 of 64



1 PUMP ROOM (LEVEL 13'00") AND TANK ROOM (LEVEL 15'00") - PHASE 1
SCALE: 1/4"=1'-0"



2 PART PLAN PUMP ROOM - LEVEL 27"00" - PHASE 1
SCALE: 1/4"=1'-0"

TANK ROOM PHASE 1 TAG NOTES

2. DISCONNECT AND REMOVE 3" SOFT WATER PIPING TO CONDENSATE TANKS, BYPASS PIPING, ALL ASSOCIATED CONTROL VALVES, PIPING ACCESSORIES, ETC.
3. DISCONNECT AND REMOVE EXISTING 3" OVERFLOW PIPING AT FRONT CONNECTION AND BOTTOM CONNECTION OF TANK.
4. DISCONNECT EXISTING OVERFLOW CONNECTION AT SLAB IN CELLAR BELOW. TEMPORARILY CAP PIPE OPENING
5. DISCONNECT AND REMOVE EXISTING 8"Ø, 3"COPØ CONDENSATE RETURN LINE,AND ALL ASSOCIATED VALVES, ACCESSORIES, ETC.
6. DISCONNECT AND REMOVE EXISTING 4"Ø CONDENSATE RECIRCULATING PIPING AND ASSOCIATED PIPING, ACCESSORIES, ETC.
7. REMOVE AND DISCONNECT EXISTING 4"Ø CONDENSATE PIPING AND ASSOCIATED VALVES, ACCESSORIES, ETC..
8. DISCONNECT FROM BOTTOM CONNECTION OF TANKS AND REMOVE EXISTING 8" NEUTRALIZING PIPING BETWEEN TANKS.
9. DISCONNECT AND REMOVE EXISTING 8"Ø CONDENSATE PUMP SUCTION PIPING.
11. DISCONNECT AND REMOVE EXISTING 3"Ø CONDENSATE DRAIN PIPING SERVING COOLING TOWER AND ALL ASSOCIATED VALVES, ACCESSORIES, ETC. PROVIDE TEMPORARY CONNECTION, FIELD COORDINATE.
13. EXISTING 24"Ø LOW PRESSURE STEAM PIPING FROM CHILLER ROOM TO REMAIN.
14. DISCONNECT AND REMOVE EXISTING 6"Ø CONDENSATE PIPING.
28. EXISTING 3" Ø VENT PIPING SERVING CONDENSTE TANK TO BE REMOVED.

PUMP ROOM PHASE 1 TAG NOTES

1. DISCONNECT AND REMOVE EXISTING 14"Ø HPS PIPING. PROVIDE TEMPORARY CAP AT THE REMOVED SECTION END.
2. DISCONNECT AND REMOVE EXISTING 14"Ø LPS PIPING. PROVIDE TEMPORARY CAP AT THE REMOVED SECTION END.

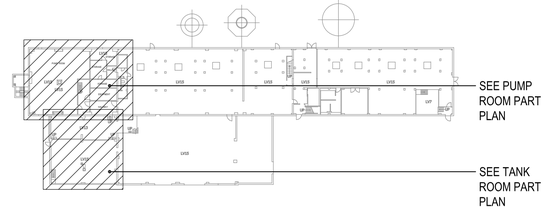
SCOPE OF WORK IN THIS DWG

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2. PHASED REMOVAL AND REPLACEMENT OF EXISTING CONDENSATE PUMPS, CONDENSATE TANKS, EQUIPMENT PIPING AND CONTROLS TO THE EXTENT SHOWN ON PLAN AFTER DRAINING OF SYSTEM TO THE EXTENT REQUIRED AFTER DRAINING OF SYSTEM TO THE EXTENT REQUIRED.

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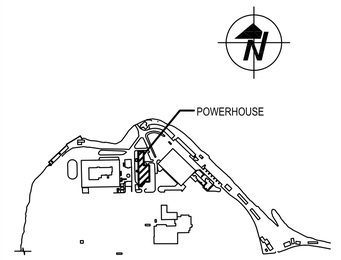


1 POWERHOUSE KEY PLAN
SCALE: NONE

CITY OF NEW YORK DEPARTMENT OF CORRECTION

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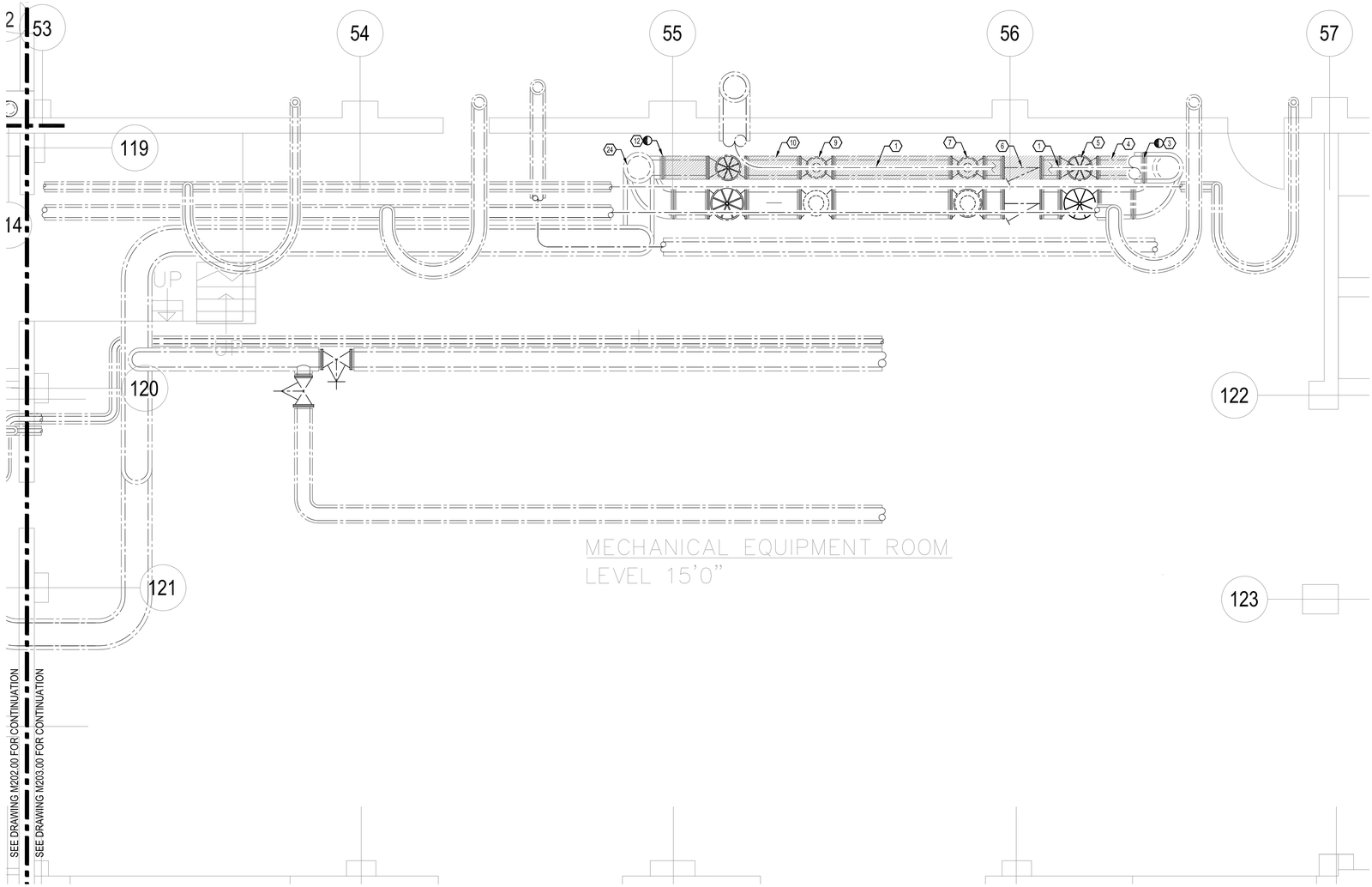
Drawing Title:
HVAC
PHASE 1
PUMP ROOM PART PLAN & TANK ROOM PART PLAN

Seal:

Drawing No.:
M202.00

Scale: AS NOTED

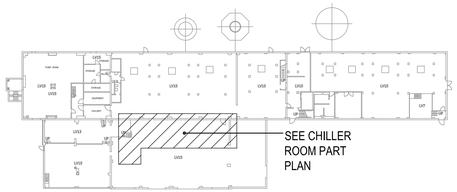
Sheet: 18 of 64



1 CHILLER ROOM PART PLAN (LEVEL 15'-0") - PHASE 1
SCALE: 1/4"=1'-0"

CHILLER ROOM PHASE 1 TAG NOTES

1. EXISTING 8" HPS PIPING SERVING PRV 9 & 10 FROM BOILER ROOM.
3. DISCONNECT AND REMOVE EXISTING 8" HPS PIPING FROM EXISTING 12" HPS RISER. TEMPORARILY CAP 8" HPS PIPING OPENING.
4. DISCONNECT AND REMOVE EXISTING 8" HPS VALVE PIPING.
5. DISCONNECT AND REMOVE EXISTING 8" HPS VALVE.
6. DISCONNECT AND REMOVE EXISTING 8" HPS STRAINER AND ASSOCIATED PIPING SUCH AS DRIP LEG, TRAPS, ETC.
7. DISCONNECT AND REMOVE EXISTING HPS TO MPS PRESSURE REDUCING VALVE (PRV-9).
8. EXISTING 8" MPS PIPING TO BE REMOVED.
9. DISCONNECT AND REMOVE EXISTING MPS TO LPS PRESSURE REDUCING VALVE (PRV-9A).
10. EXISTING 8" LPS PIPING TO BE REMOVED.
11. DISCONNECT AND REMOVE EXISTING 8" LPS VALVE.
12. DISCONNECT AND REMOVE EXISTING 8" LPS PIPING AND TEMPORARILY CAP 8" LPS PIPING OPENING AT RISER.
24. EXISTING 18" LPS RISER.



2 POWERHOUSE KEY PLAN
SCALE: NONE

GENERAL NOTES

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2. ANY PHASING PLAN DEVELOPED SHALL ENSURE THAT ALL THE BOILERS ARE CAPABLE OF OPERATING UNINTERRUPTED AT ALL TIMES IN CODE COMPLIANT MANNER.

SCOPE OF WORK ON THIS DRAWING:

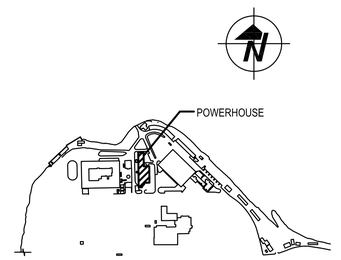
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1. PHASE 1 - REPLACEMENT OF EXISTING PRESSURE REDUCING VALVES, CONTROL VALVES, STRAINERS, ASSOCIATED ACCESSORIES, ETC. TO THE EXTENT SHOWN ON PLAN AFTER DRAINING OF SYSTEM TO THE EXTENT REQUIRED .

CITY OF NEW YORK DEPARTMENT OF CORRECTION

THE CITY OF NEW YORK
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ENGINEERING UNIT



KEY PLAN
NTS

No.	Date	Revision
1	09/28/20	ISSUED FOR BID
2	12/15/20	ADDENDUM 5

NOTE: Drawing may be printed at reduced scale

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DESIGNED BY:
IAQ SYSTEMS INC
Consulting Engineers
555 8th Avenue, Suite 1502
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Tel. 212.680.8945
www.iaqsys.com

Executive Director:	HARDEE SAINI
Project Manager:	BV
Project Engineer:	TS
Drawn By: DB	Checked By: SB
PIN # 072202001CPD	Date:

Project:
POWERHOUSE
BOILER FEED WATER
TREATMENT SYSTEM
UPGRADE
RIKERS ISLAND
EAST ELMHURST, NY 11370
Address:

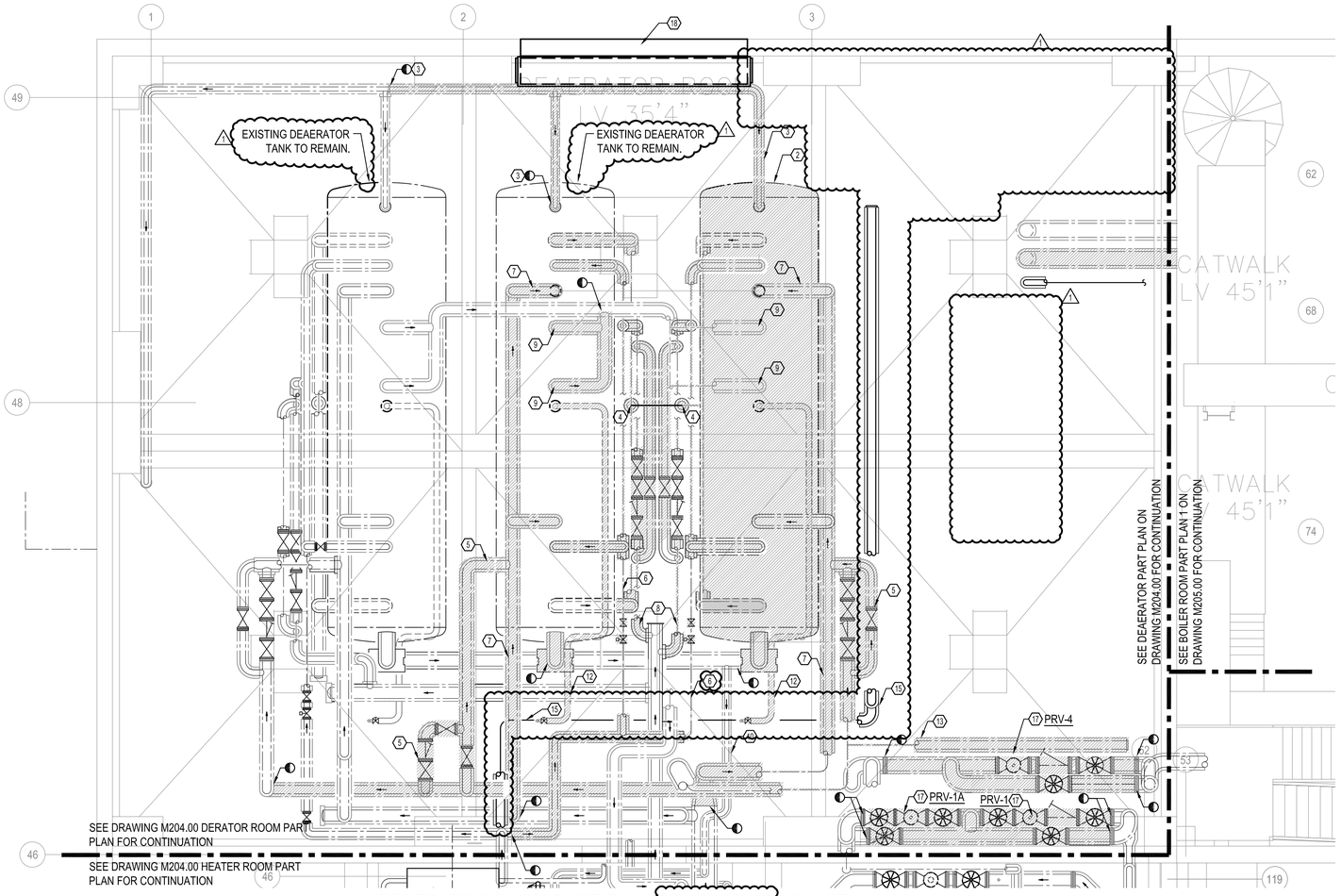
Drawing Title:
HVAC
PHASE 1
CHILLER ROOM PART PLAN
(LVL 15'00")

Seal:

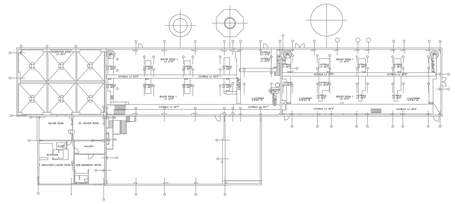
Drawing No.:
M203.00

Scale: AS NOTED

Sheet: 19 of 64



1 DEAERATOR ROOM PART PLAN (LEVEL 35'-4") - PHASE 1
SCALE: 1/4"=1'-0"



2 POWERHOUSE KEY PLAN
SCALE: NONE

SCOPE OF WORK ON THIS DRAWING:

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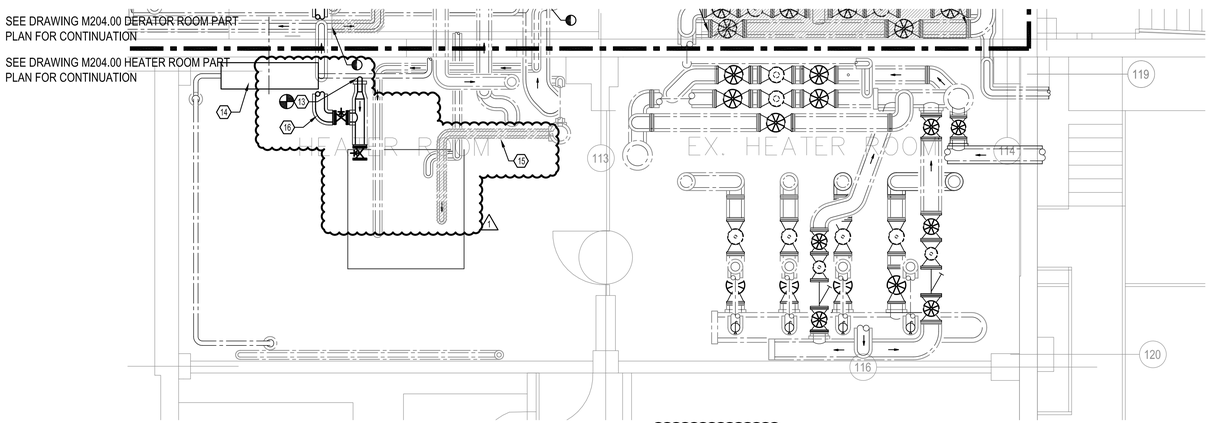
1. PHASE 1 - REMOVAL AND REPLACEMENT OF EXISTING DEAERATORS, REVERSE OSMOSIS, ASSOCIATED PIPING, CONTROLS IN DEAERATOR ROOM TO THE EXTENT SHOWN ON PLAN AFTER DRAINING OF SYSTEM TO THE EXTENT REQUIRED.
2. PHASE 1 - REPLACEMENT OF EXISTING PRESSURE REDUCING VALVES, CONTROL VALVES, STRAINERS, ASSOCIATED ACCESSORIES, ETC. TO THE EXTENT SHOWN ON PLAN AFTER DRAINING OF SYSTEM TO THE EXTENT REQUIRED.

GENERAL NOTES

1. PHASING PLAN INCLUDED IS PRELIMINARY AND SHOWS ONLY MAJOR MILESTONE & GENERAL INTENT. CONTRACTOR SHALL PROVIDE DETAILED PHASING PLAN INCLUDING SUB-PHASES WITH TIMELINES UPON AWARD OF WORK TO OWNER FOR THEIR REVIEW AND REVISIONS. ALL DECISION OF PHASING BY THE OWNER SHALL BE FINAL AND BINDING ON CONTRACTOR. NO ADDITIONAL COST SHALL BE PROVIDED TO CONTRACTOR FOR THIS WORK.
2. ANY PHASING PLAN DEVELOPED SHALL ENSURE THAT ALL THE BOILERS ARE CAPABLE OF OPERATING UNINTERRUPTED AT ALL TIMES IN CODE COMPLIANT MANNER.

DEAERATOR RM PHASE 1 TAG NOTES

2. EXISTING DEAERATOR TANKS TO BE REMOVED.
3. EXISTING 3" BOILER FEED RECIRCULATING PIPING TO BE REMOVED.
4. EXISTING 6" BOILER FEED SUCTION LINE DN TO PUMP ROOM TO BE REMOVE
5. EXISTING 4" HPS PIPING WITH CONTROL VALVE ASSEMBLY TO BE REMOVED IN ITS ENTIRETY.
6. EXISTING 4" RAW MAKE UP WATER TO BE REMOVE WITH ALL ASSOCIATED CONTROL VALVE AND ACCESSORIES.
7. EXISTING 8" LPS SERVING EXISTING DEAERATOR TO BE REMOVE WITH ALL ASSOCIATED ACCESSORIES.
8. EXISTING 4" CONDENSATE DISCHARGE PIPING TO DEAERATOR TO BE REMOVED WITH ALL CONTROL VALVE AND ACCESSORIES.
9. EXISTING 6" VENT WITH SAFETY VALVE TO BE REMOVED IN ITS ENTIRETY.
10. EXISTING 3" OVERFLOW PIPING FROM DEAERATOR TANK TO CONDENSATE TANK TO BE REMOVED IN ITS ENTIRETY.
11. NOT USED.
12. EXISTING 2" DRAIN PIPE TO BE REMOVE ITS ENTIRETY.
13. EXISTING 6" CAPPED HPS PIPING TO BE REMOVED.
14. NOT USED.
15. FURNISH AND INSTALL 6"Ø EMERGENCY CITY WATER PIPING HEADER FROM HEATER ROOM TO DEAERATOR ROOM.
16. NOT USED.
17. REMOVE EXISTING PRV STATION ALONG WITH ALL BYPASS, STRAINER AND VALVE. REMOVE ALL PNEUMATIC TUBING AND CONTROL ACCESSORIES SERVING PRV.
18. PROVIDE OPENING AND ROLL UP GATE. SEE ARCHITECTURAL DRAWINGS FOR DETAILS.



2 HEATER ROOM PART PLAN (LEVEL 28'-0") - PHASE 1
SCALE: 1/4"=1'-0"

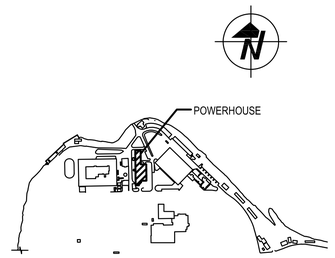
HEATER ROOM PHASE 1 TAG NOTES

13. PROVIDE CONNECTION TO EXISTING 3" CITY WATER PIPING.
14. EXISTING RPZ TO REMAIN.
15. EXISTING 3"Ø ABANDONED VENT LINE TO BE REMOVED UP TO VENT HEADER BELOW ROOF LEVEL.
16. 6" EMERGENCY CITY WATER UP TO DEAERATOR ROOM

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2	12/15/20	ADDENDUM 5
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Project Engineer:	TS
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PIN # 072202001CPD	Date:

Project:
POWERHOUSE
BOILER FEED WATER
TREATMENT SYSTEM
UPGRADE
RIKERS ISLAND
EAST ELMHURST, NY 11370
Address:

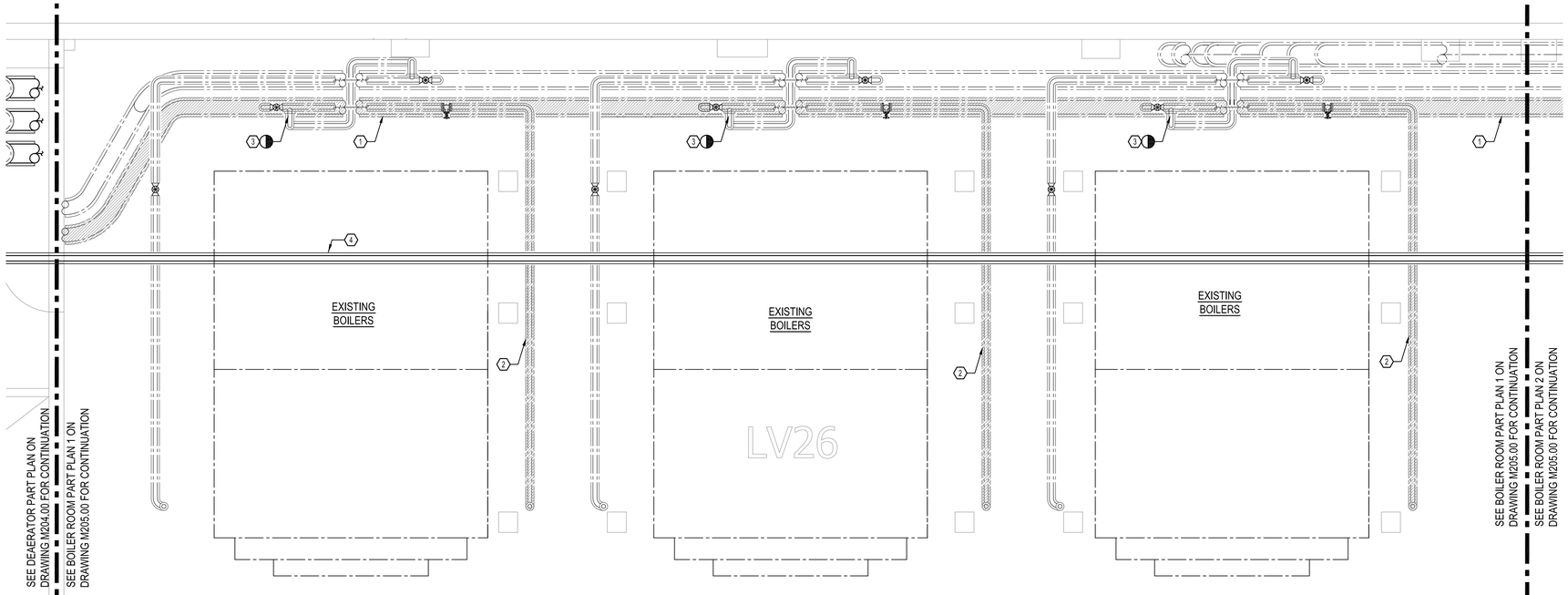
Drawing Title:
HVAC
PHASE 1
HEATER ROOMS PART PLAN

Seal:

Drawing No.: M204.00

Scale: AS NOTED

Sheet: 20 of 64

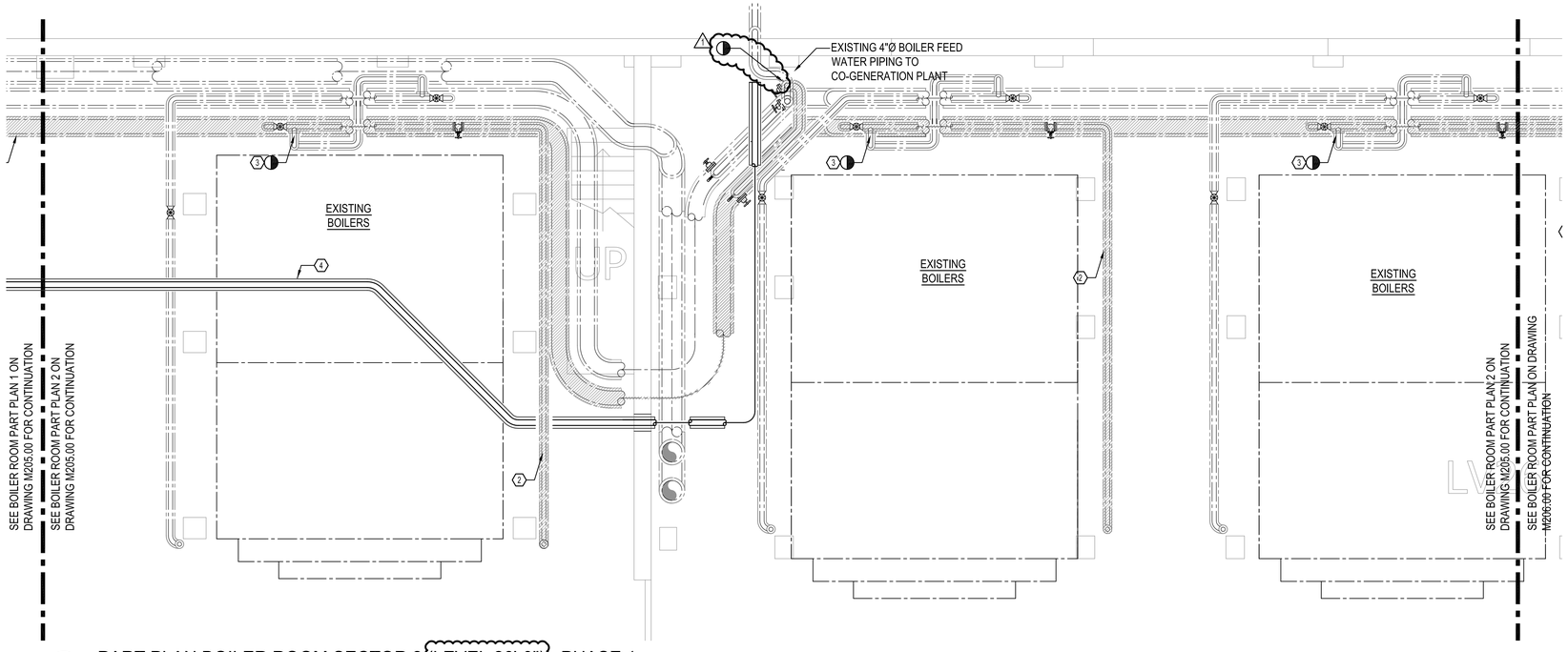


1 PART PLAN BOILER ROOM SECTOR 1 (LEVEL 26'-0") - PHASE 1

SCALE: 1/4"=1'-0"

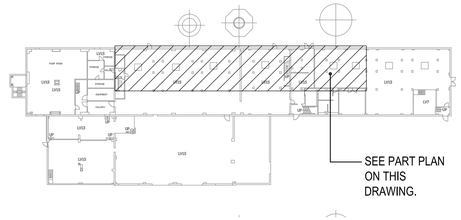
BOILER ROOM PHASE 1 TAG NOTES

1. EXISTING 10" BOILER FEED HEADER TO BE REMOVED IN ITS ENTIRETY.
2. EXISTING 3" BOILER FEED WATER PIPING TO BOILER TO BE REMOVED IN ITS ENTIRETY.
3. DISCONNECT EXISTING 3" BOILER FEED WATER PIPING.
4. 4" BOILER FEED WATER PIPING TO CO-GEN (ADD ALTERNATE NO.1) (1)



2 PART PLAN BOILER ROOM SECTOR 2 (LEVEL 26'-0") - PHASE 1

SCALE: 1/4"=1'-0"



3 POWERHOUSE KEY PLAN

SCALE: NONE

SCOPE OF WORK ON THIS DRAWING

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1. PHASED REPLACEMENT OWITH NEW SURGE SYSTEM, BOILER FEED WATER PUMPS, CONDENATE TRANSFER PUMPS, SUPPORT EQUIPMENT, ACCESSORIES, CONTROLS, PIPING, INSULATION TO THE EXTENT SHOWN ON PLAN AFTER DRAINING OF SYSTEM TO THE EXTENT REQUIRED.

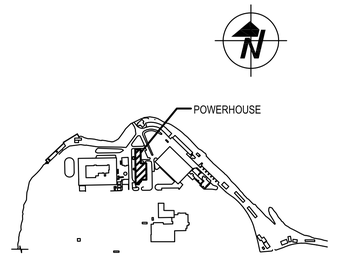
GENERAL NOTES

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KEY PLAN
NTS

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TREATMENT SYSTEM
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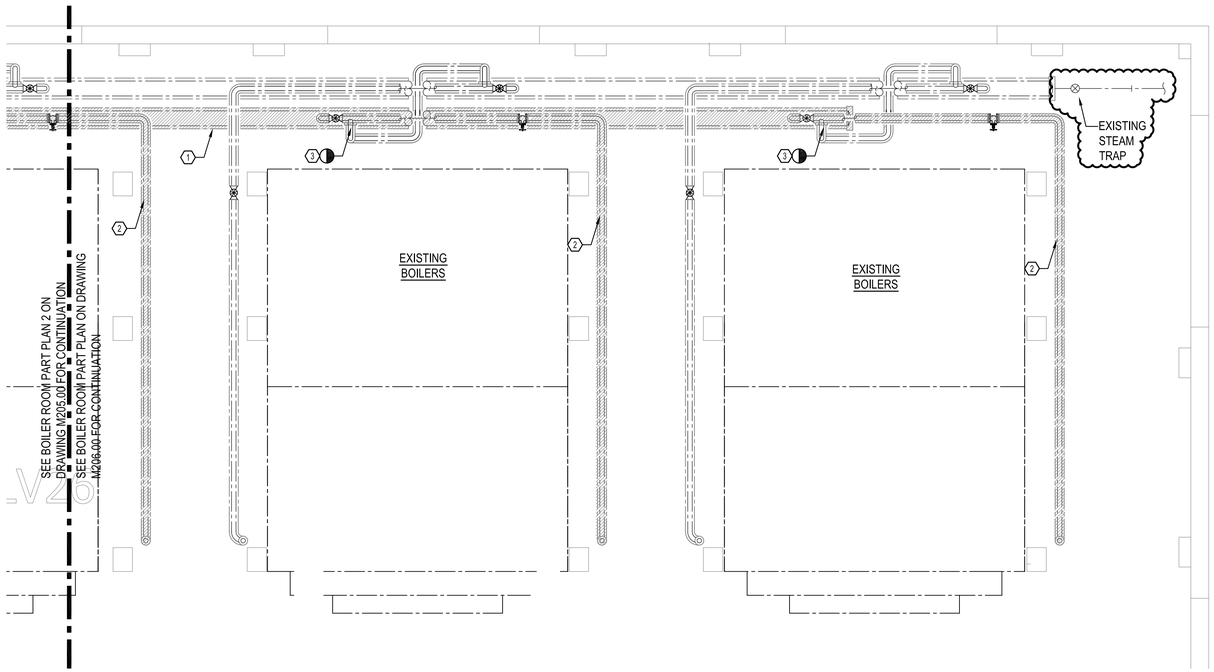
Drawing Title:
HVAC
PHASE 1
BOILER ROOM PART PLAN
SHEET 1 OF 2

Seal:

Drawing No.: M205.00

Scale: AS NOTED

Sheet: 21 of 64

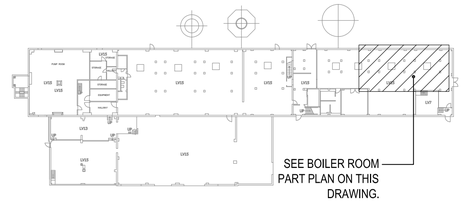


1 PART PLAN BOILER ROOM SECTOR 3 (LEVEL 26'-0") - PHASE 1

SCALE: 1/4"=1'-0"

BOILER ROOM PHASE 1 TAG NOTES

1. EXISTING 10" BOILER FEED HEADER TO BE REMOVED IN ITS ENTIRETY.
2. EXISTING 3" BOILER FEED WATER PIPING TO BOILER TO BE REMOVED IN ITS ENTIRETY.
3. DISCONNECT EXISTING 3" BOILER FEED WATER PIPING.



2 POWERHOUSE KEY PLAN

SCALE: NONE

SCOPE OF WORK ON THIS DWG

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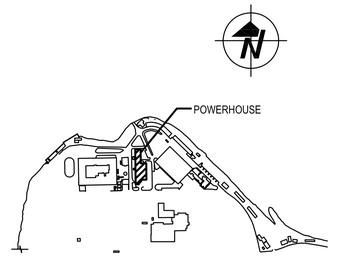
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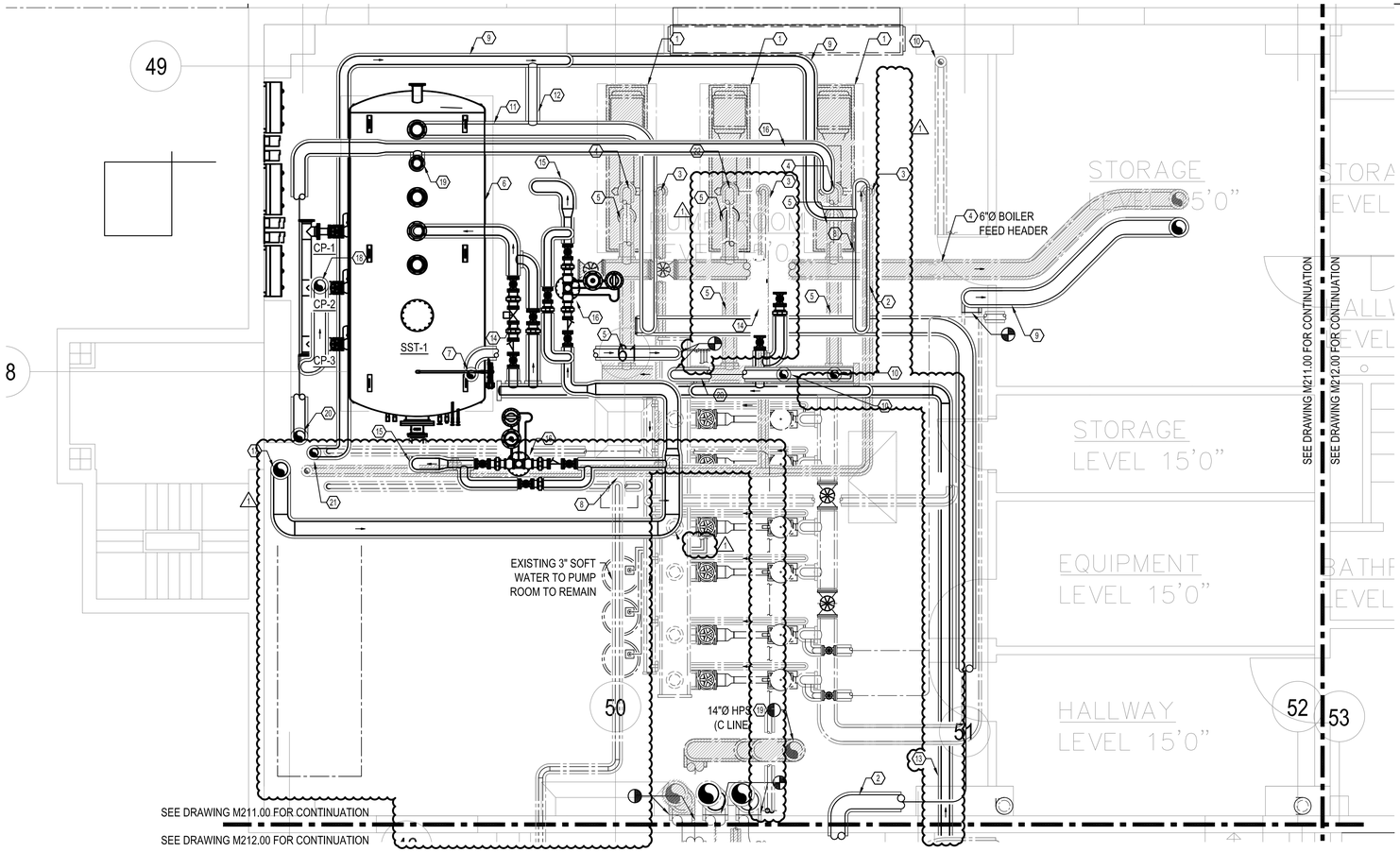
Drawing Title:
HVAC
PHASE 1
BOILER ROOM PART PLAN
SHEET 2 OF 2

Seal:

Drawing No.: M206.00

Scale: AS NOTED

Sheet: 22 of 64



1 PUMP ROOM - LEVEL 15 - FLOOR TO 12 FT ELEVATION - PHASE 2

SCALE: 1/4"=1'-0"

PUMP ROOM PHASE 2 TAG NOTES

1. DISCONNECT AND REMOVE EXISTING BOILER FEED WATER PUMPS (TYPICAL FOR 3).
2. DISCONNECT AND REMOVE EXISTING 4"Ø RECIRCULATED WATER PIPING, ASSOCIATED VALVES, ACCESSORIES TO DEARATOR ABOVE.
3. DISCONNECT AND REMOVE EXISTING 4"Ø RECIRCULATED WATER PIPING, ASSOCIATED VALVES AND ACCESSORIES FROM THIS POINT TO EXISTING BOILER FEED WATER PUMP.
4. DISCONNECT AND REMOVE EXISTING 4"Ø BOILER FEED WATER TO BOILER FEED HEADER.
5. DISCONNECT AND REMOVE EXISTING 6"Ø SUCTION PIPING AND ALL ASSOCIATED VALVES, ACCESSORIES, ETC.
6. SURGE TANK WITH CONDENSATE PUMP SET ON SKID ON 4" HOUSE KEEPING PAD.
7. DISCONNECT AND REMOVE EXISTING CONDENSATE SUCTION HEADER TO REMAIN.
8. 10" CONDENSATE RETURN PIPING FROM CELLAR OF TUNNEL.
9. 10" BOILER FEED HEADER TO BOILER ROOM
10. 6" BOILER FEED SUCTION PIPING DN FROM DEAERATORS
11. 8" CONDENSATE RETURN PIPING TO SURGE TANK.
12. 6" OVERFLOW PIPING TO BE CONNECTED TO CONDENSATE RETURN PIPING SERVING SURGE TANK.
13. 6" STAINLESS STEEL PIPING FOR SOFT PERMEATE MAKE UP WATER FROM RO SYSTEM IN TANK ROOM. (1)
14. 6" MODULATING VALVE ASSEMBLY WITH BYPASS SERVING MAKE UP WATER FOR SURGE TANK.
15. 8" HPS PIPING SERVING SURGE TANK.
16. STEAM REGULATOR ASSEMBLY WITH BYPASS SERVING HPS PIPING.
17. 10" HPS PIPING DN FROM DEAERATOR ROOM. PROVIDE NEW PENETRATION ON FLOOR SLAB.
18. 8" CONDENSATE PUMP DISCHARGE PIPING UP TO DEAERATOR ROOM
19. 6" VENT PIPING SERVING SURGE TANK.
20. 8" VENT PIPING UP TO DEAERATOR ROOM. PROVIDE NEW PENETRATION ON FLOOR SLAB.
21. 6" OVERFLOW PIPING DN FROM DEAERATOR ROOM. PROVIDE NEW PENETRATION ON THE FLOOR SLAB.

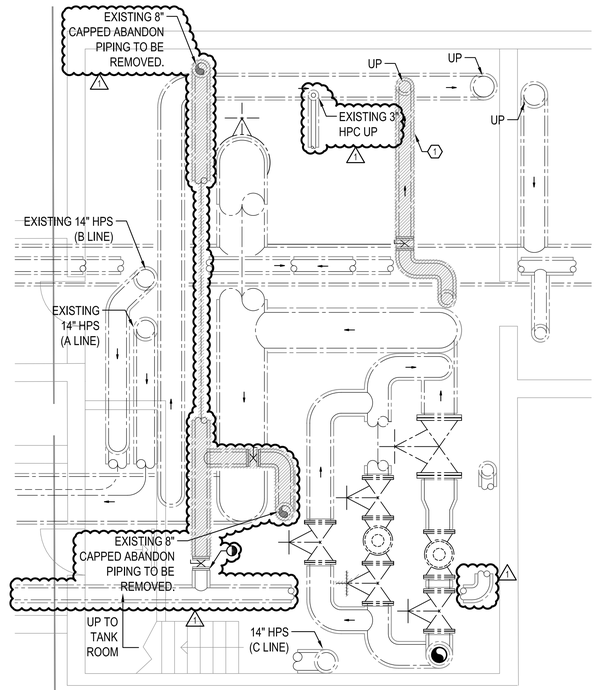
SCOPE OF WORK ON THIS DRAWING

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1. PHASED REPLACEMENT WITH NEW BOILER FEED WATER PUMPS, SUPPORT EQUIPMENT, ACCESSORIES, CONTROLS, PIPING, INSULATION TO THE EXTENT SHOWN ON PLAN AFTER DRAINING OF SYSTEM TO THE EXTENT REQUIRED.

GENERAL NOTES

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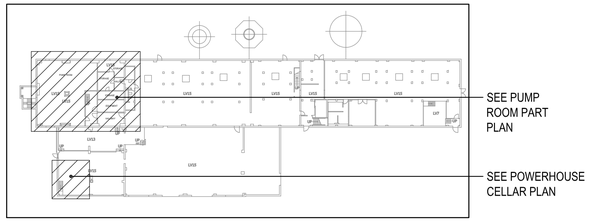


2 PART PLAN CELLAR - PHASE 2

SCALE: 1/4"=1'-0"

PUMP ROOM PHASE 2 TAG NOTES

1. EXISTING 10" CONDENSATE SUCTION PIPING TO BE REMOVED..



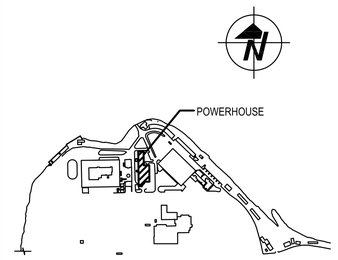
2 POWERHOUSE KEY PLAN

SCALE: NONE

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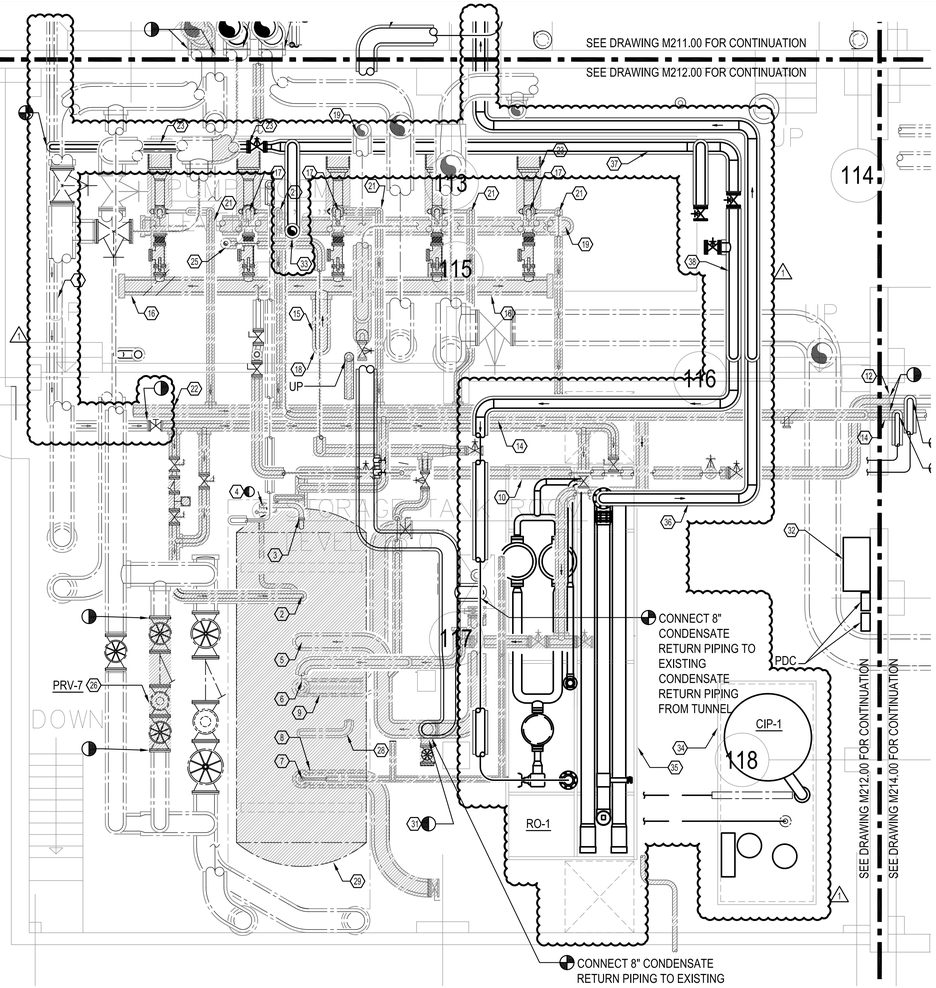
Drawing Title:
HVAC
PHASE 2
CELLAR, PUMP ROOM PART PLAN

Seal:

Drawing No.: M211.00

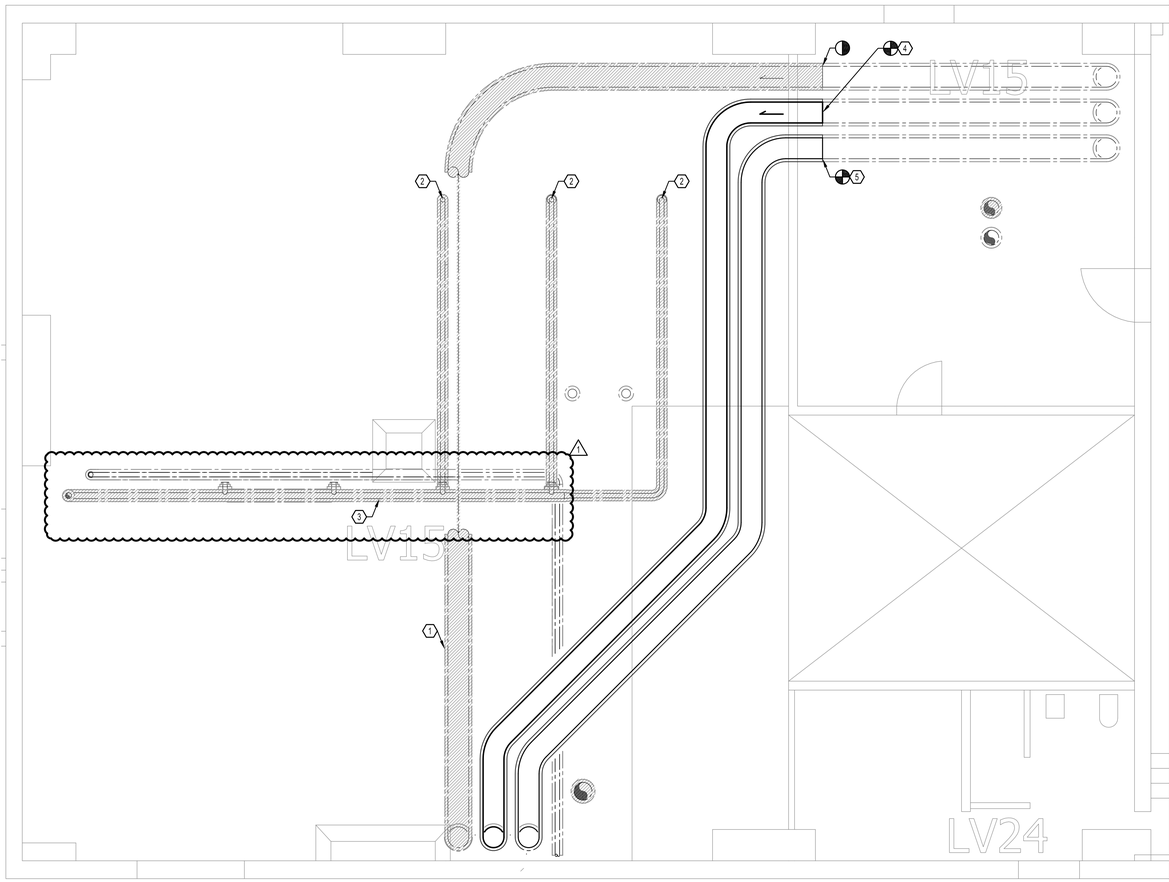
Scale: AS NOTED

Sheet: 23 of 64



1 PART PLAN TANK ROOM - LEVEL 15 AND TANK ROOM - LEVEL 13 - PHASE 2

SCALE: 1/4"=1'-0"



2 PUMP ROOM - LEVEL 15 - 12 FT. A.F.F. ELEVATIONTO SLAB - PHASE 2

SCALE: 1/4"=1'-0"

CONDENSATE TANK ROOM REMOVAL TAG NOTES

1. DISCONNECT AND REMOVE EXISTING 3" SOFT WATER TO EXISTING CONDENSATE TANK.
2. DISCONNECT AND REMOVE 3" SOFT WATER PIPING TO CONDENSATE TANKS, BYPASS PIPING, ALL ASSOCIATED CONTROL VALVES, PIPING ACCESSORIES, ETC.
3. DISCONNECT AND REMOVE EXISTING 3" OVERFLOW PIPING AT FRONT CONNECTION AND BOTTOM CONNECTION OF TANK.
4. DISCONNECT EXISTING OVERFLOW CONNECTION AT SLAB IN CELLAR BELOW. TEMPORARILY CAP PIPE OPENING
5. DISCONNECT AND REMOVE EXISTING 8"Ø CONDENSATE RETURN LINE AND ALL ASSOCIATED VALVES, ACCESSORIES, ETC.
6. DISCONNECT AND REMOVE EXISTING 4"Ø CONDENSATE RECIRCULATING PIPING AND ASSOCIATED PIPING, ACCESSORIES, ETC.
7. REMOVE AND DISCONNECT EXISTING 4"Ø CONDENSATE PIPING AND ASSOCIATED VALVES, ACCESSORIES, ETC..
8. DISCONNECT FROM BOTTOM CONNECTION OF TANKS AND REMOVE EXISTING 8" NEUTRALIZING PIPING BETWEEN TANKS.
9. DISCONNECT AND REMOVE EXISTING 8"Ø CONDENSATE PUMP SUCTION PIPING.
10. DISCONNECT AND REMOVE EXISTING 4"Ø CONDENSATE AND ALL ASSOCIATED VALVES, ACCESSORIES, ETC.
12. DISCONNECT AND REMOVE EXISTING 4"Ø CONDENSATE PIPING FROM CHILLER ROOM AND ALL ASSOCIATED VALVES, ACCESSORIES, ETC.
14. DISCONNECT AND REMOVE EXISTING 6"Ø CONDENSATE PIPING.
15. DISCONNECT AND REMOVE EXISTING 10"Ø CONDENSATE SUCTION PIPE FROM CELLAR LEVEL TO EXISTING CONDENSATE PUMP.
16. DISCONNECT AND REMOVE EXISTING 12"Ø CONDENSATE SUCTION HEADER SERVING EXISTING CONDENSATE PUMP.
17. DISCONNECT AND REMOVE EXISTING 3"Ø CONDENSATE DISCHARGE LINE.
18. REMOVE EXISTING 10"Ø CONDENSATE SUCTION PIPING RUNNING IN CELLAR. SEE POWER HOUSE CELLAR PLAN FOR CONTINUATION.
19. DISCONNECT AND REMOVE EXISTING 6"Ø CONDENSATE DISCHARGE HEADER TO DEARATORS TANK.
21. DISCONNECT AND REMOVE EXISTING 3"Ø CONDENSATE RECIRCULATING PIPING.
22. DISCONNECT AND REMOVE EXISTING 4"Ø CONDENSATE RECIRCULATING HEADER.
23. DISCONNECT AND REMOVE EXISTING CONDENSATE PUMP AND ALL ASSOCIATED ACCESSORIES, VALVES, SPECIALTIES CONTROLS, ETC.
25. EXISTING 3" OVERFLOW PIPING SERVING DEAERATOR TANK TO CONDENSATE TANK TO BE REMOVED.
26. EXISTING HPS TO MPS PRV STATION TO BE REMOVED IN ITS ENTIRETY WITH ALL ASSOCIATED VALVES, STRAINER AND CONTROLS.
28. EXISTING 3" VENT PIPING SERVING CONDENSATE TANK TO BE REMOVED.
29. EXISTING CONDENSATE TANK TO BE REMOVED IN ITS ENTIRETY. CONTRACTOR SHALL FIELD CUT TANK FOR REMOVAL.
31. DISCONNECT EXISTING 6" CONDENSATE RETURN FROM STEAM TUNNEL AT FLOOR PENETRATION.
32. INSTALL MAIN CONTROL PANEL.
33. 6" CITY WATER DN FROM HEATER ROOM
34. CIP ON SKID
35. PROVIDE RO-1 ON SKID.
36. 6" STAINLESS STEEL PIPING FOR SOFT PERMEATE MAKE UP WATER FROM RO SYSTEM TO SURGE TANKS.
37. 6" MAKE UP CITY WATER TO WATER SOFTENER.
38. 6" SOFT WATER FROM WATER SOFTENER TO RO.

PUMP ROOM PHASE 2 TAG NOTES

1. REMOVE EXISTING 14" HPS PIPING.
2. DISCONNECT AND REMOVE EXISTING 4"Ø RECIRCULATED WATER PIPING, ASSOCIATED VALVES AND ACCESSORIES FROM THIS POINT TO EXISTING BOILER FEED WATER PUMP.
3. DISCONNECT AND REMOVE EXISTING 4"Ø RECIRCULATED WATER PIPING, ASSOCIATED VALVES, ACCESSORIES TO DEARATOR ABOVE.
4. CONNECT 14" HPS PIPING TO EXISTING.
5. CONNECT 14" LPS PIPING TO EXISTING.

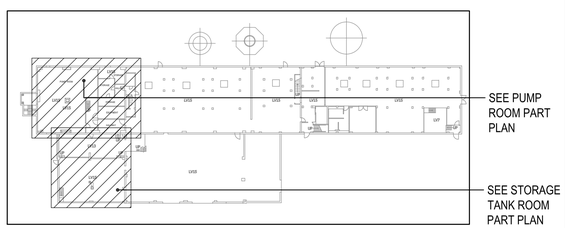
SCOPE OF WORK IN THIS DWG

DESCRIPTION PROVIDED IS FOR GENERAL INFORMATION ONLY. ACTUAL SCOPE SHALL BE AS PER ITEMS INCLUDED IN ALL THE CONTRACT DOCUMENTS.

1. PHASED REPLACEMENT OF EXISTING DEAERATOR TANKS, EQUIPMENT PIPING AND CONTROLS TO THE EXTENT SHOWN ON PLAN AFTER DRAINING OF SYSTEM TO THE EXTENT REQUIRED AFTER DRAINING OF SYSTEM TO THE EXTENT REQUIRED.

GENERAL NOTES

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2. ANY PHASING PLAN DEVELOPED SHALL ENSURE THAT ALL THE BOILERS ARE CAPABLE OF OPERATING UNINTERRUPTED AT ALL TIMES IN CODE COMPLIANT MANNER.



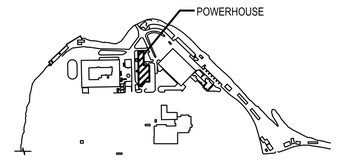
3 POWERHOUSE KEY PLAN

SCALE: NONE

CITY OF NEW YORK DEPARTMENT OF CORRECTION

THE CITY OF NEW YORK
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DIVISION OF CAPITAL POLICY
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KEY PLAN
NTS

No.	Date	Revision
1	09/28/20	ISSUED FOR BID
2	12/15/20	ADDENDUM 5

NOTE: Drawing may be printed at reduced scale

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www.iaqsys.com

Executive Director:	HARDEE SAINI
Project Manager:	BV
Project Engineer:	TS
Drawn By: DB	Checked By: SB
PIN # 072202001CPD	Date: _

Project:
POWERHOUSE
BOILER FEED WATER
TREATMENT SYSTEM
UPGRADE
RIKERS ISLAND
EAST ELMHURST, NY 11370

Address:

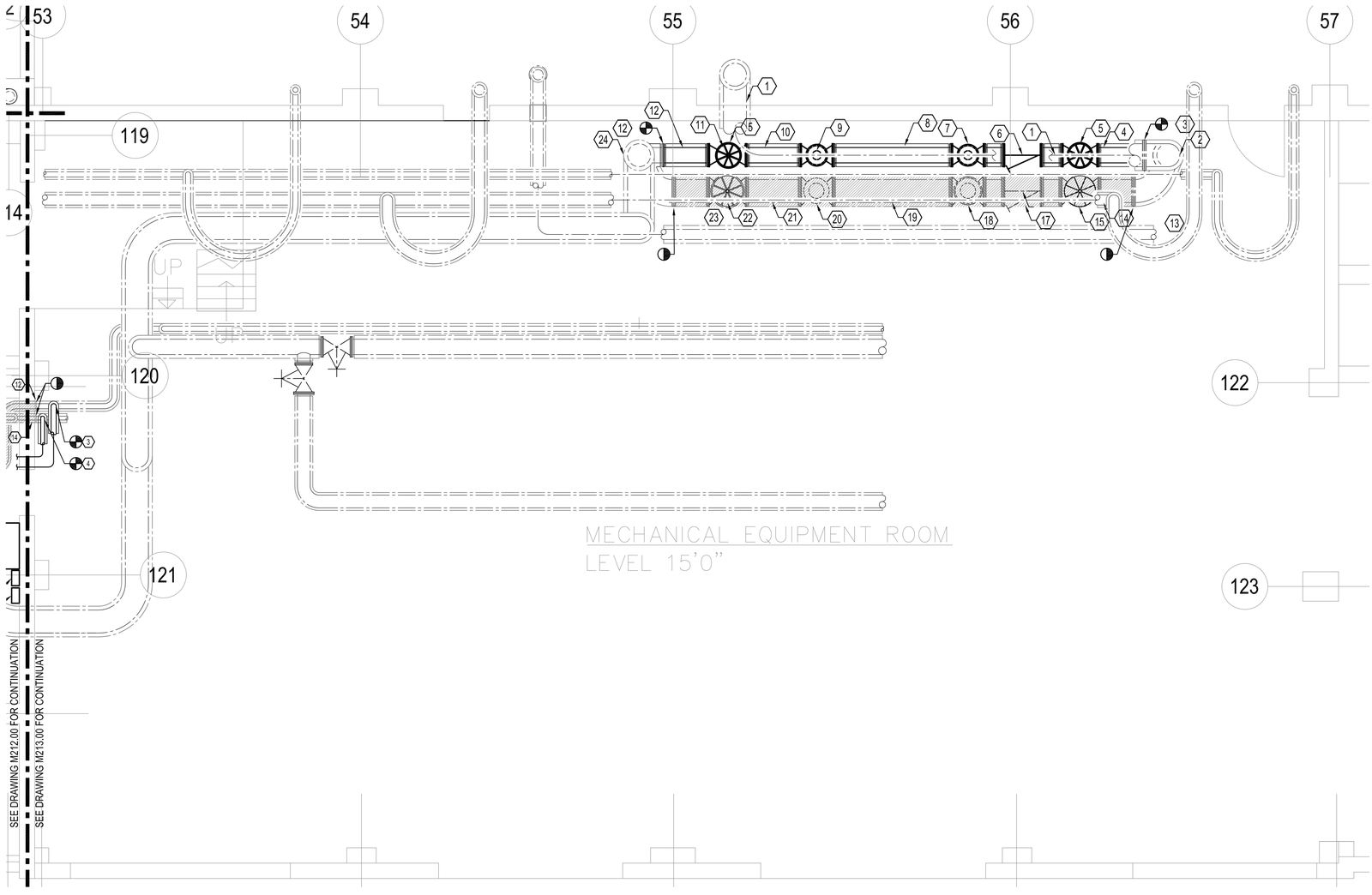
Drawing Title:
HVAC
PHASE 2
PUMP ROOM PART PLAN & TANK ROOM PART PLAN

Seal:

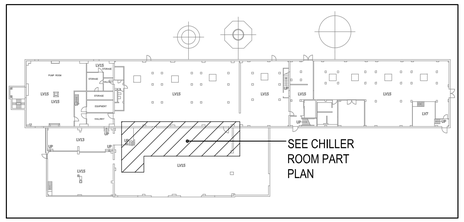
Drawing No.:
M212.00

Scale: AS NOTED

Sheet: 24 of 64



1 CHILLER ROOM PART PLAN (LEVEL 15'-0") - PHASE 2
SCALE: 1/4"=1'-0"



2 POWERHOUSE KEY PLAN
SCALE: NONE

SCOPE OF WORK 0N THIS DRAWING:

DESCRIPTION PROVIDED IS FOR GENERAL INFORMATION ONLY. ACTUAL SCOPE SHALL BE AS PER ITEMS INCLUDED IN ALL THE CONTRACT DOCUMENTS.

1. PHASE 2 - REPLACEMENT OF EXISTING PRESSURE REDUCING VALVES, CONTROL VALVES, STRAINERS, ASSOCIATED ACCESSORIES, ETC. TO THE EXTENT SHOWN ON PLAN AFTER DRAINING OF SYSTEM TO THE EXTENT REQUIRED .

GENERAL NOTES

1. PHASING PLAN INCLUDED IS PRELIMINARY AND SHOWS ONLY MAJOR MILESTONE & GENERAL INTENT. CONTRACTOR SHALL PROVIDE DETAILED PHASING PLAN INCLUDING SUB-PHASES WITH TIMELINES UPON AWARD OF WORK TO OWNER FOR THEIR REVIEW AND REVISIONS. ALL DECISION OF PHASING BY THE OWNER SHALL BE FINAL AND BINDING ON CONTRACTOR. NO ADDITIONAL COST SHALL BE PROVIDED TO CONTRACTOR FOR THIS WORK.
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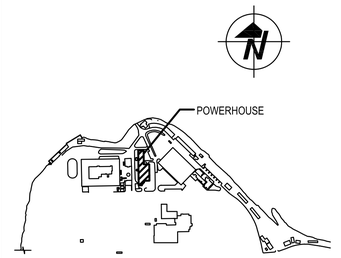
CHILLER ROOM PHASE 2 TAG NOTES

1. EXISTING 8" HPS PIPING SERVING PRV 9 & 10 FROM BOILER ROOM.
2. EXISTING 12" HPS RISER PIPING.
3. FURNISH AND INSTALL 8" HPS PIPING FROM EXISTING 12" HPS RISER. TEMPORARILY CAP 8" HPS PIPING OPENING.
4. FURNISH 8" HPS VALVE PIPING.
5. FURNISH AND INSTALL 8" HPS VALVE.
6. FURNISH AND INSTALL 8" HPS STRAINER AND ASSOCIATED PIPING SUCH AS DRIP LEG, TRAPS, ETC.
7. FURNISH ANDINSTALL HPS TO MPS PRESSURE REDUCING VALVE (PRV-9).
8. FURNISH AND INSTALL 8" MPS PIPING AND ALL ASSOCIATED ACCESSORIES.
9. FURNISH AND INSTALL EXISTING MPS TO LPS PRESSURE REDUCING VALVE (PRV-9A).
10. FURNISH AND INSTALL 8" LPS PIPING.
11. FURNISH EXISTING 8" LPS VALVE.
12. REMOVE TEMPORARY CAP AT EXISTING 8" LPS CONNECTED TO EXISTING 18" RISER, THEN FURNISH, INSTALL AND CONNECT 8" LPS PIPING TO EXISTING 18" RISER.
13. DISCONNECT AND REMOVE EXISTING 14" HPS PIPING FROM EXISTING 14' HPS RISER. TEMPORARILY CAP 14' HPS PIPE OPENING
14. DISCONNECT AND REMOVE EXISTING 14" HPS PIPING.
15. DISCONNECT AND REMOVE EXISTING 14" HPS VALVE.
16. DISCONNECT AND REMOVE EXISTING 14" HPS STRAINER AND ASSOCIATED PIPING SUCH AS DRIP LEG, TRAPS, ETC.
17. DISCONNECT AND REMOVE EXISTING HPS TO MPS PRESSURE REDUCING VALVE (PRV-10).
18. DISCONNECT AND REMOVE EXISTING 14" MPS PIPING AND ASSOCIATED ACCESSORIES.
19. DISCONNECT AND REMOVE EXISTING MPS TO LPS PRESSURE REDUCING VALVE (PRV-10A).
20. DISCONNECT AND REMOVE EXISTING 14" LPS PIPING.
21. DISCONNECT AND REMOVE EXISTING 14" LPS VALVE.
22. EXISTING 16" LPS PIPING CONNECTION TO 18" EXISTING LPS RISER.
23. EXISTING 18" LPS RISER.
24. EXISTING HPS PIPING FROM BOILER ROOM SERVING STEAM TURBINE.

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Executive Director:	HARDEE SAINI
Project Manager:	BV
Project Engineer:	TS
Drawn By: DB	Checked By: SB
PIN # 072202001CPD	Date: _

Project:
POWERHOUSE
BOILER FEED WATER
TREATMENT SYSTEM
UPGRADE
RIKERS ISLAND
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Address:

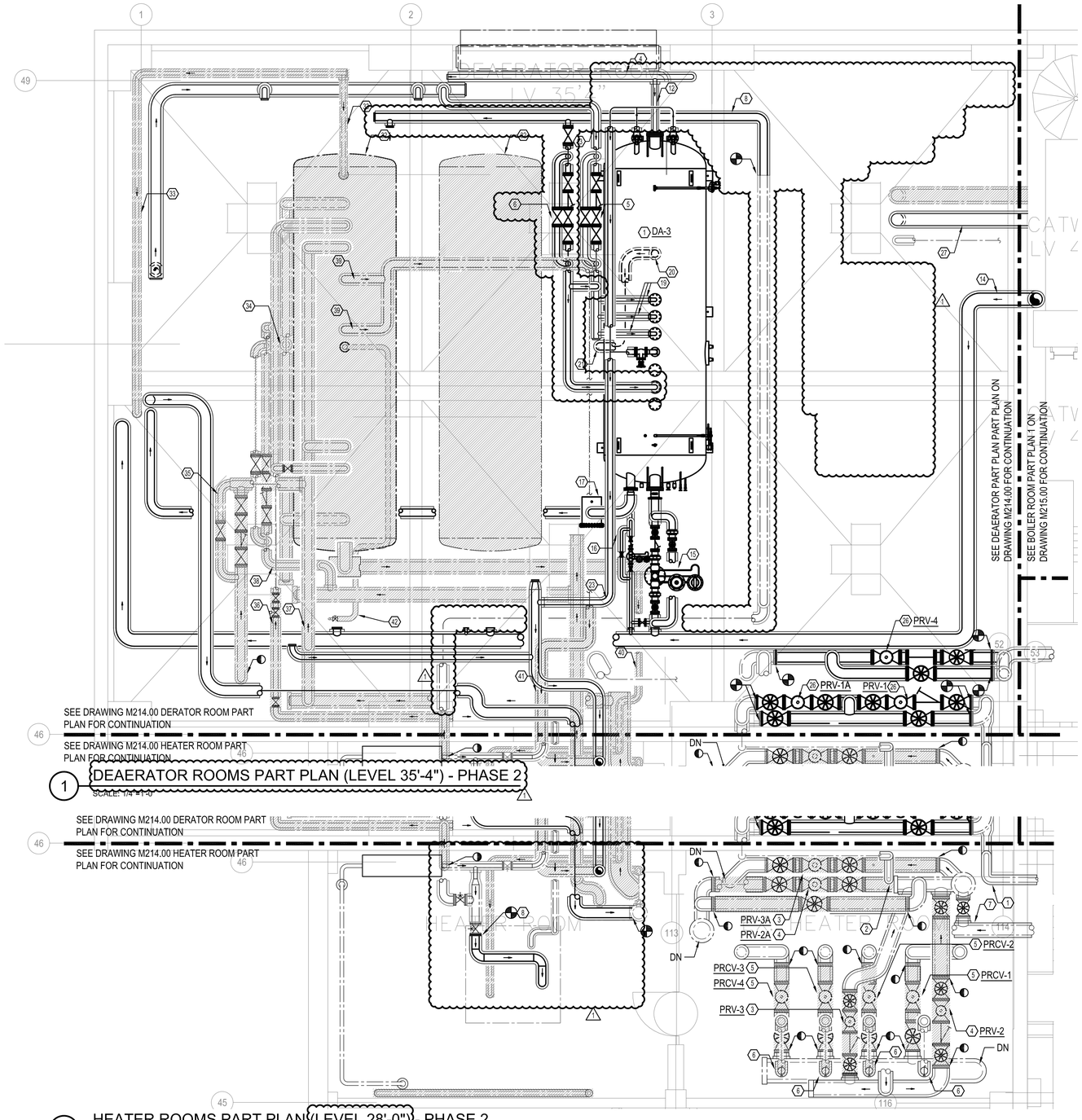
Drawing Title:
HVAC
PHASE 2
CHILLER ROOM PART PLAN

Seal:

Drawing No.:
M213.00

Scale: AS NOTED

Sheet: 25 of 64



1 DEAERATOR ROOMS PART PLAN (LEVEL 35'-4") - PHASE 2

SCALE: 1/4"=1'-0"

2 HEATER ROOMS PART PLAN (LEVEL 28'-0") - PHASE 2

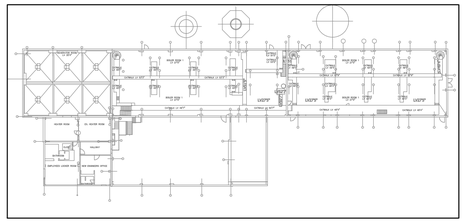
SCALE: 1/4"=1'-0"

PART PLAN HEATER ROOM REMOVAL WORK TAG NOTE

1. EXISTING 4" HPS SERVING PRV-1 & PRV-1A TO REMAIN.
2. EXISTING MPS FROM PRV-1 & PRV-1A TO REMAIN.
3. EXIST 8" MPS TO LPS PRV TO BE REMOVED IN ITS ENTIRETY.
4. EXIST 16" MPS TO LPS PRV TO BE REMOVED IN ITS ENTIRETY.
5. EXIST 6" PRESSURE RELIEF CONTROL VALVE SERVING LPS PIPING TO BE REMOVED IN ITS ENTIRETY WITH ASSOCIATED ACCESSORIES.
6. EXISTING 4" SAFETY RELIEF VALVE TO BE REMOVED ALONG WITH ALL VENT PIPING UP TO ROOF.
7. EXISTING 8" HPS FROM BOILER STEAM HEADER TO REMAIN.
8. CONNECT 6" CITY WATER PIPING TO WATER SOFTENER IN TANK ROOM BELOW. (1)

DEAERATOR RM PHASE 2 TAG NOTES

1. DEAERATOR TANK
4. 4" BOILER FEED RE-CIRCULATION HEADER.
5. 4" MODULATING VALVE ASSEMBLY SERVING CONDENSATE DISCHARGE TO DEAERATOR TANK.
6. 4" MODULATING VALVE ASSEMBLY FOR SOFT PERMEATE WATER TO DEAERATOR TANK.
8. PROVIDE 6" EMERGENCY MAKE UP WATER PIPING HEADER SERVING DEAERATORS. (1)
12. 3" BOILER FEED RE-CIRCULATION PIPING TO DEAERATOR TANK.
13. 4" CONDENSATE DISCHARGE TO MODULATING VALVE ASSEMBLY..
14. 10" HPS PIPING SERVING SURGE TANK AND DEAERATOR TANK FROM BOILER STEAM HEADER 1 AND 2.
15. 6" STEAM REGULATOR SERVING 6" HPS PIPING TO DEAERATOR
16. 2" STEAM REGULATOR SERVING 2" HPS PIPING TO DEAERATOR
17. 6" OVERFLOW PIPING WITH STRAINER FROM DEAERATOR TO SURGE TANK.
19. 2-1/2" CONDENSATE PUMP DISCHARGE PIPING TO DEAERATOR.
20. 6" BOILER FEED SUCTION ON BOTTOM OF TANK
23. 4" VENT PIPING SERVING DEAERATOR TANK.
26. HPS TO MPS PRV STATION WITH BYPASS.
27. 10" BOILER FEED HEADER
32. EXISTING DEAERATOR TO BE REMOVED. (1)
33. EXISTING 3" BOILER FEED RECIRCULATING PIPING TO BE REMOVED.
34. EXISTING 6" BOILER FEED SUCTION LINE DN TO PUMP ROOM TO BE REMOVE
35. EXISTING 4" HPS PIPING WITH CONTROL VALVE ASSEMBLY TO BE REMOVED IN ITS ENTIRETY.
36. EXISTING 4" RAW MAKE UP WATER TO BE REMOVE WITH ALL ASSOCIATED CONTROL VALVE AND ACCESSORIES.
37. EXISTING 8" LPS SERVING EXISTING DEAERATOR TO BE REMOVE WITH ALL ASSOCIATED ACCESSORIES.
38. EXISTING 4" CONDENSATE DISCHARGE PIPING TO DEAERATOR TO BE REMOVED WITH ALL CONTROL VALVE AND ACCESSORIES.
39. EXISTING 6" VENT WITH SAFETY VALVE TO BE REMOVED IN ITS ENTIRETY.
40. EXISTING 3" OVERFLOW PIPING FROM DEAERATOR TANK TO CONDENSATE TANK TO BE REMOVED IN ITS ENTIRETY.
41. EXISTING 10" VENT HEADER REMOVED.
42. EXISTING 2" DRAIN PIPE TO BE REMOVE ITS ENTIRETY.



3 POWERHOUSE KEY PLAN

SCALE: NONE

SCOPE OF WORK 0N THIS DRAWING:

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1. REMOVAL AND REPLACEMENT OF EXISTING DEAERATORS, REVERSE OSMOSIS, ASSOCIATED PIPING, CONTROLS IN DEAERATOR ROOM TO THE EXTENT SHOWN ON PLAN AFTER DRAINING OF SYSTEM TO THE EXTENT REQUIRED.
2. REPLACEMENT OF EXISTING PRESSURE REDUCING VALVES, CONTROL VALVES, STRAINERS, ASSOCIATED ACCESSORIES, ETC. TO THE EXTENT SHOWN ON PLAN AFTER DRAINING OF SYSTEM TO THE EXTENT REQUIRED.

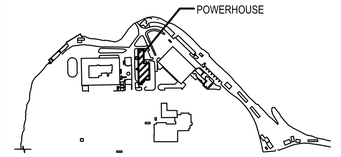
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KEY PLAN
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1	09/28/20	ISSUED FOR BID
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Executive Director:	HARDEE SAINI
Project Manager:	BV
Project Engineer:	TS
Drawn By: DB	Checked By: SB
PIN # 072202001CPD	Date: _

Project:
POWERHOUSE
BOILER FEED WATER
TREATMENT SYSTEM
UPGRADE
RIKERS ISLAND
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Address:

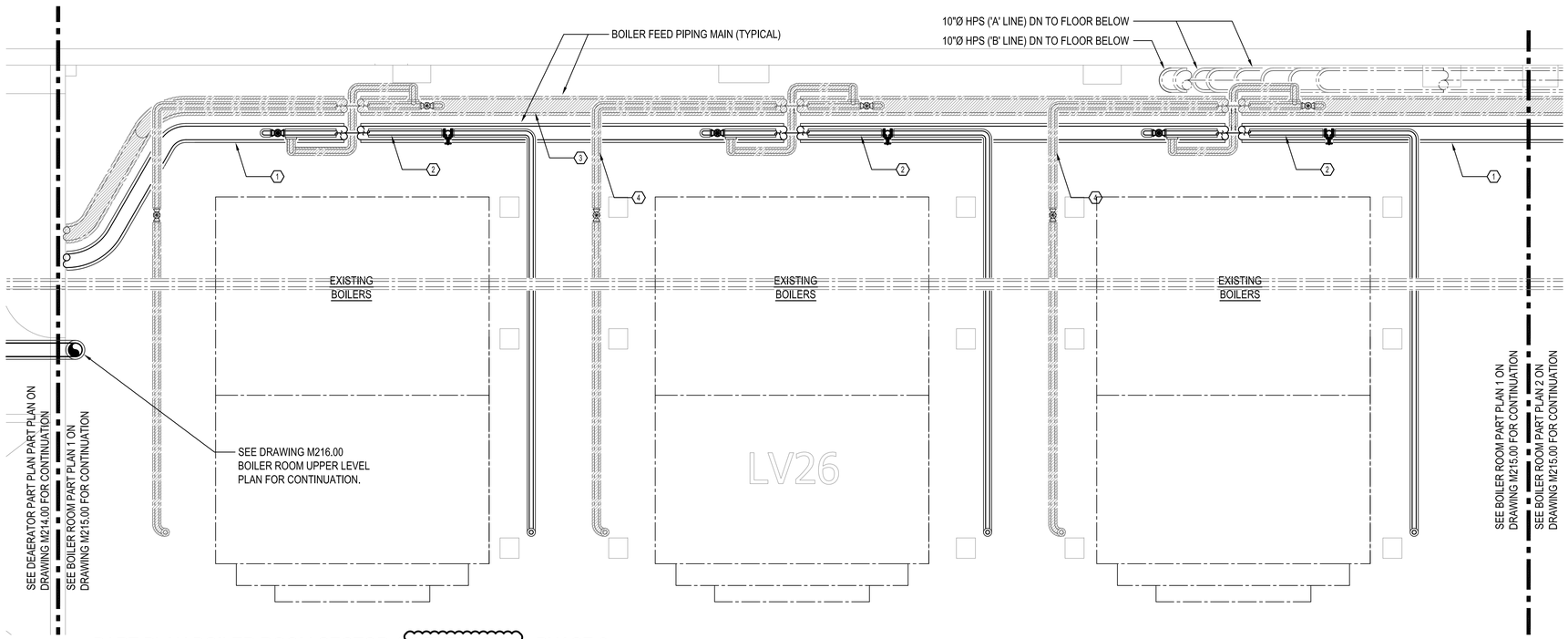
Drawing Title:
HVAC
PHASE 2
DEAERATOR ROOM & HEATER ROOM
PART PLAN

Seal:

Drawing No.:
M214.00

Scale: AS NOTED

Sheet: 26 of 64

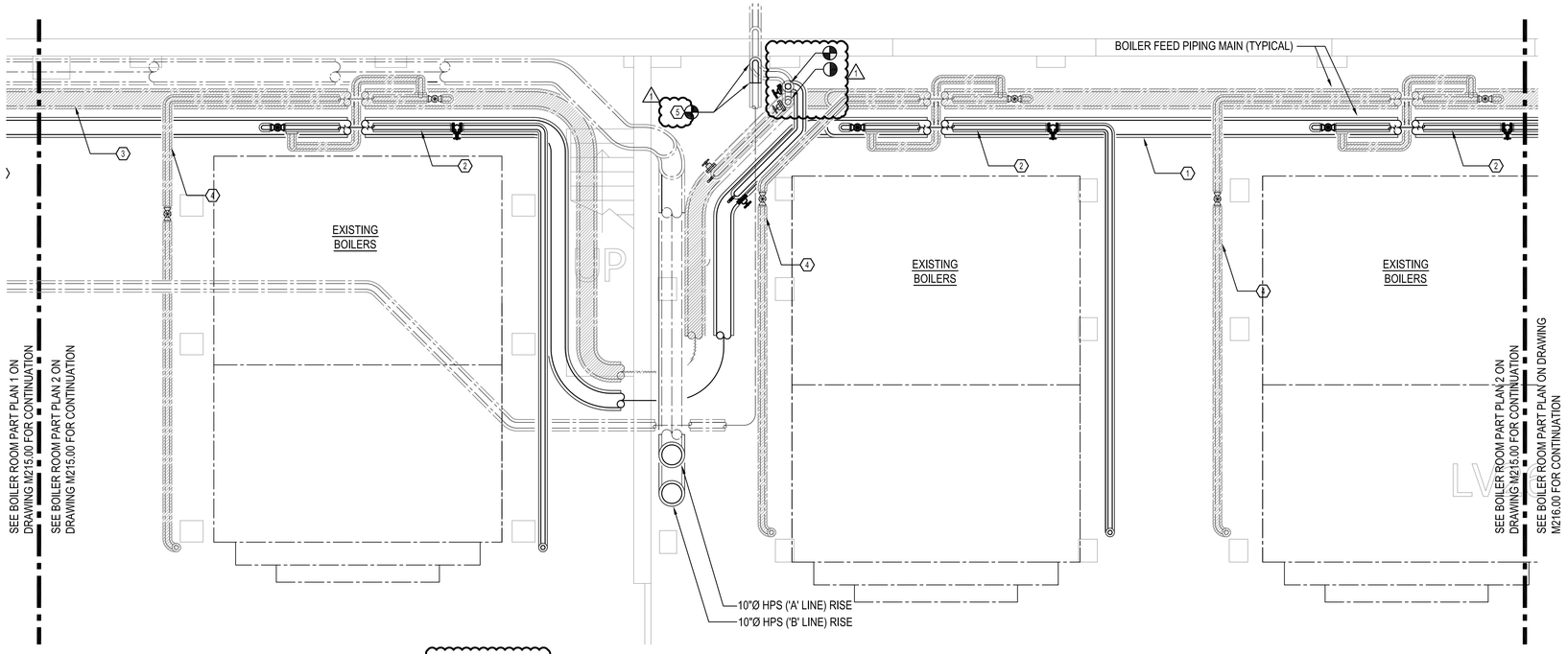


1 PART PLAN BOILER ROOM SECTOR 1 (LEVEL 26'-0") - PHASE 2

SCALE: 1/4"=1'-0"

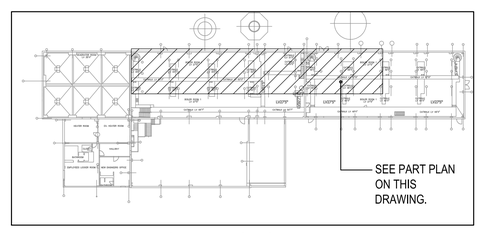
BOILER ROOM PHASE 2 TAG NOTES

1. 10" BOILER FEED HEADER
2. 3" BOILER FEED WATER PIPING TO BOILER
3. EXISTING 10" BOILER FEED HEADER TO BE REMOVED IN ITS ENTIRETY.
4. EXISTING 3" BOILER FEED WATER PIPING TO BOILER TO BE REMOVED IN ITS ENTIRETY.
5. TIE IN 4" BOILER FEED WATER TO EXISTING 4" BOILER FEED WATER TO CO-GEN (ADD ALTERNATE NO.1)



2 PART PLAN BOILER ROOM SECTOR 2 (LEVEL 26'-0") - PHASE 2

SCALE: 1/4"=1'-0"



3 POWERHOUSE KEY PLAN

SCALE: NTS

SCOPE OF WORK ON THIS DRAWING

DESCRIPTION PROVIDED IS FOR GENERAL INFORMATION ONLY. ACTUAL SCOPE SHALL BE AS PER ITEMS INCLUDED IN ALL THE CONTRACT DOCUMENTS.

1. REPLACEMENT OF NEW BOILER FEED WATER MAINS, PIPING, INSULATION TO EXISTING BOILER TO THE EXTENT SHOWN ON PLAN AFTER DRAINING OF SYSTEM TO THE EXTENT REQUIRED.

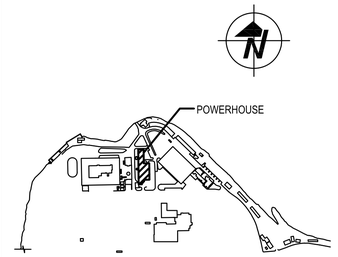
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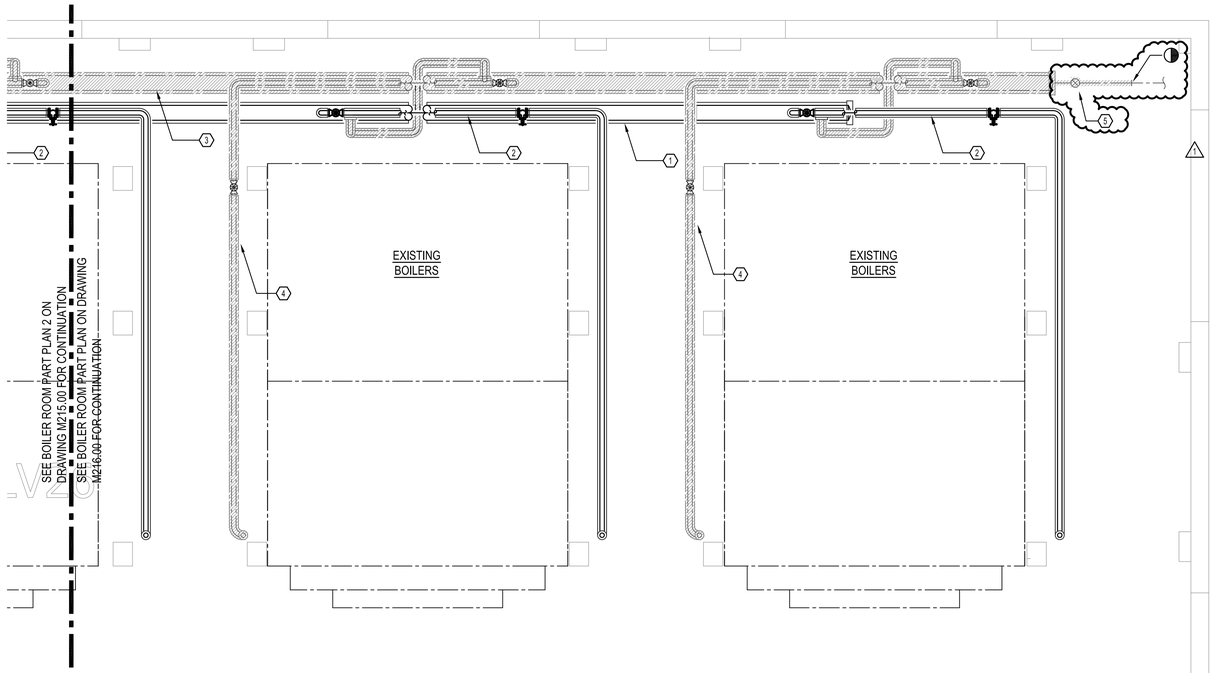
Drawing Title:
HVAC
PHASE 2
BOILER ROOM PART PLAN
SHEET 1 OF 2

Seal:

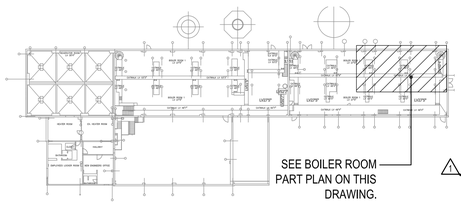
Drawing No.:
M215.00

Scale: 1/4"=1'-0"

Sheet: 27 of 64



1 PART PLAN BOILER ROOM SECTOR 3 (LEVEL 26'-0") - PHASE 2
SCALE: 1/4"=1'-0"



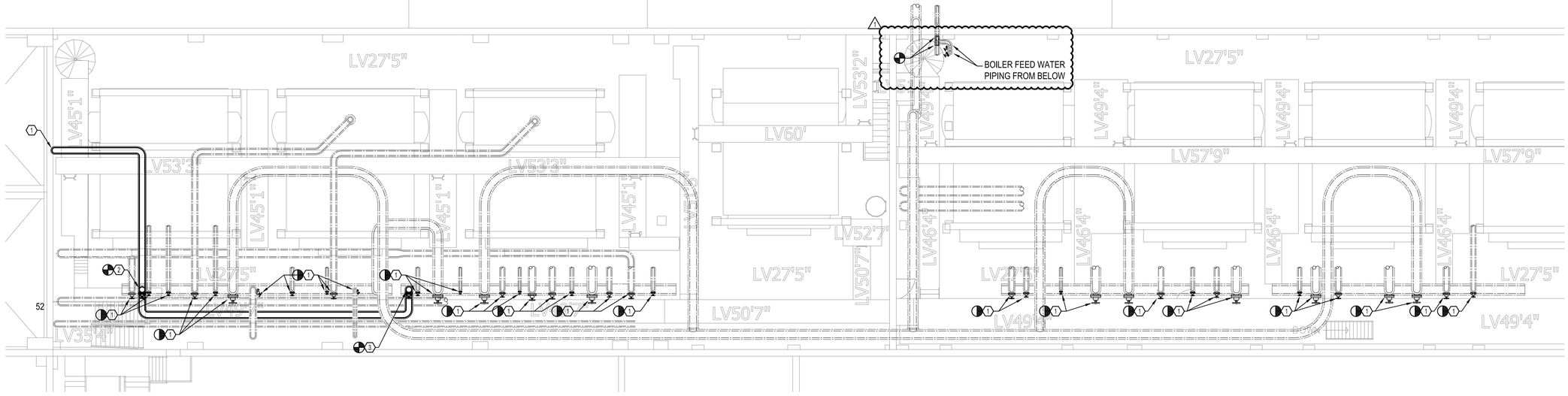
2 POWERHOUSE KEY PLAN
SCALE: NTS

GENERAL NOTES

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2. ANY PHASING PLAN DEVELOPED SHALL ENSURE THAT ALL THE BOILERS ARE CAPABLE OF OPERATING UNINTERRUPTED AT ALL TIMES IN CODE COMPLIANT MANNER.

BOILER ROOM PHASE 2 TAG NOTES

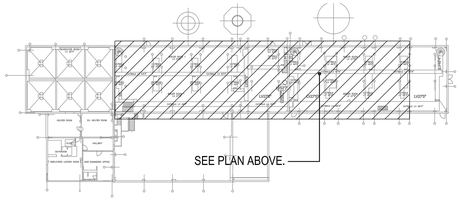
1. 10" BOILER FEED HEADER
2. 3" BOILER FEED WATER PIPING TO BOILER
3. EXISTING 10" BOILER FEED HEADER TO BE REMOVED IN ITS ENTIRETY.
4. EXISTING 3" BOILER FEED WATER PIPING TO BOILER TO BE REMOVED IN ITS ENTIRETY.
5. EXISTING STEAM TRAP TO BE REMOVED WITH ASSOCIATED PIPING AND VALVES.



3 BOILER ROOM UPPER LEVEL PLAN - PHASE 2
SCALE: 1/8"=1'-0"

BOILER ROOM UPPER LEVEL PHASE 2 TAG NOTES

1. EXISTING SHUT OFF VALVE TO BE REMOVED. (TYPICAL)
2. CONNECT NEW 10" HPS TO EXISTING STEAM HEADER 1. PROVIDE GATE VALVE ABOVE HEADER.
3. CONNECT NEW 10" HPS TO EXISTING STEAM HEADER 2. PROVIDE GATE VALVE ABOVE HEADER.

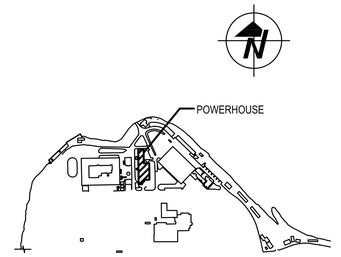


4 POWERHOUSE BOILER ROOM UPPER LEVEL KEY PLAN
SCALE: 1/4"=1'-0"

CITY OF NEW YORK DEPARTMENT OF CORRECTION

THE CITY OF NEW YORK
DEPARTMENT OF CORRECTION

DIVISION OF CAPITAL POLICY
AND DEVELOPMENT
ENGINEERING UNIT



KEY PLAN
NTS

No.	Date	Revision
1	09/28/20	ISSUED FOR BID
2	12/15/20	ADDENDUM 5

NOTE: Drawing may be printed at reduced scale

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DESIGNED BY:

IAQ SYSTEMS INC
Consulting Engineers
555 8th Avenue, Suite 1502
New York, New York 10018
Tel. 212.680.8945
www.iaqsys.com

Executive Director:	HARDEE SAINI
Project Manager:	BV
Project Engineer:	TS
Drawn By: DB	Checked By: SB
PIN # 072202001CPD	Date: _

Project:
POWERHOUSE
BOILER FEED WATER
TREATMENT SYSTEM
UPGRADE
RIKERS ISLAND
EAST ELMHURST, NY 11370

Address:

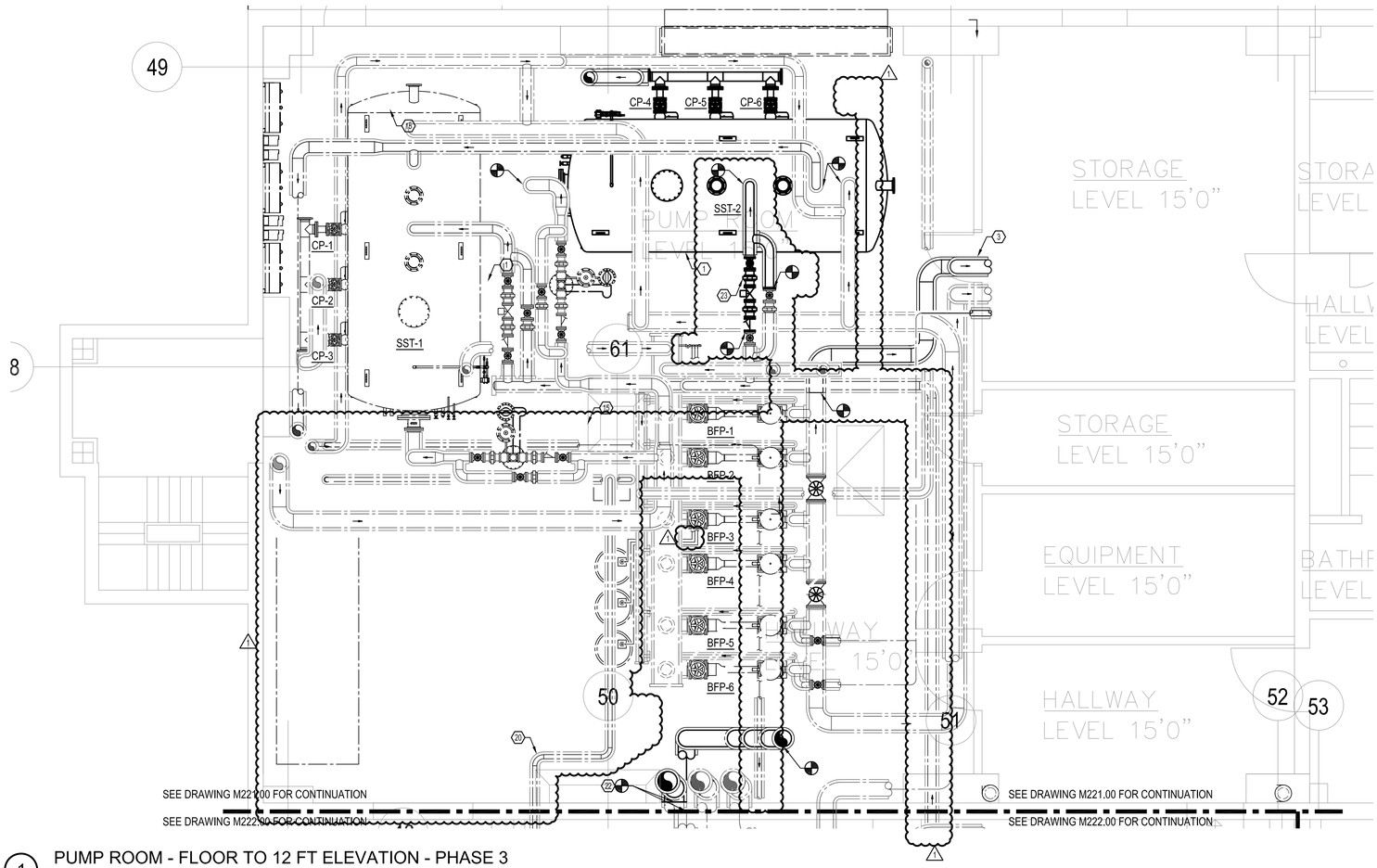
Drawing Title:
HVAC
PHASE 2
BOILER ROOM PART PLAN
SHEET 2 OF 2

Seal:

Drawing No.: M216.00

Scale: 1/4"=1'-0"

Sheet: 28 of 64

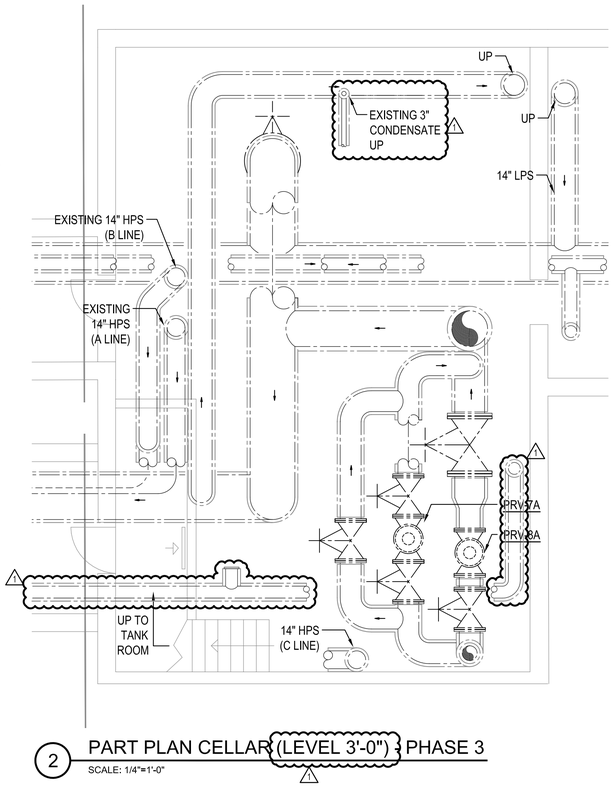


1 PUMP ROOM - FLOOR TO 12 FT ELEVATION - PHASE 3

SCALE: 1/4"=1'-0"

PUMP ROOM PHASE 3 TAG NOTES

1. SURGE TANK WITH CONDENSATE PUMP SET ON SKID.
3. 10" BOILER FEED HEADER TO BOILER ROOM
15. 8" CONDENSATE PUMP DISCHARGE PIPING UP TO DEAERATOR ROOM
20. 4" SOFT WATER FROM TANK ROOM TO HEATER ROOM.
22. CONNECT 14" HPS PIPING TO EXISTING 14" HPS PIPING
23. 6" MODULATING VALVE ASSEMBLY WITH BYPASS SERVING MAKE UP WATER FOR SURGE TANK CONNECT TO 6" STAINLESS STEEL PIPING. (1)



2 PART PLAN CELLAR (LEVEL 3'-0") - PHASE 3

SCALE: 1/4"=1'-0"

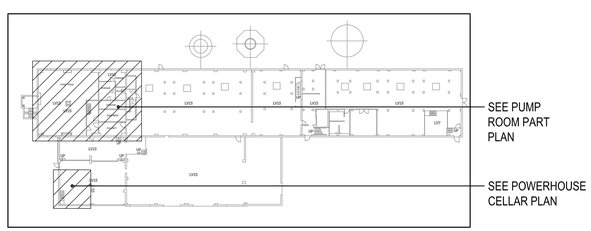
SCOPE OF WORK ON THIS DRAWING:

DESCRIPTION PROVIDED IS FOR GENERAL INFORMATION ONLY. ACTUAL SCOPE SHALL BE AS PER ITEMS INCLUDED IN ALL THE CONTRACT DOCUMENTS.

1. PHASED REPLACEMENT OF EXISTING BOILER FEED WATER PUMPS, WATER SOFTENER EQUIPMENT, ACCESSORIES, CONTROLS, PIPING, INSULATION TO THE EXTENT SHOWN ON PLAN AFTER DRAINING OF SYSTEM TO THE EXTENT REQUIRED.

GENERAL NOTES

1. PHASING PLAN INCLUDED IS PRELIMINARY AND SHOWS ONLY MAJOR MILESTONE & GENERAL INTENT. CONTRACTOR SHALL PROVIDE DETAILED PHASING PLAN INCLUDING SUB-PHASES WITH TIMELINES UPON AWARD OF WORK TO OWNER FOR THEIR REVIEW AND REVISIONS. ALL DECISION OF PHASING BY THE OWNER SHALL BE FINAL AND BINDING ON CONTRACTOR. NO ADDITIONAL COST SHALL BE PROVIDED TO CONTRACTOR FOR THIS WORK. (1)
2. ANY PHASING PLAN DEVELOPED SHALL ENSURE THAT ALL THE BOILERS ARE CAPABLE OF OPERATING UNINTERRUPTED AT ALL TIMES IN CODE COMPLIANT MANNER.



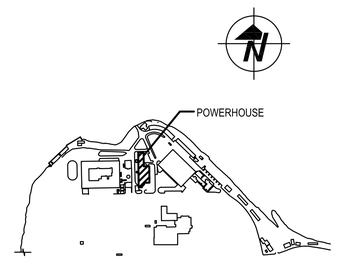
3 POWERHOUSE KEY PLAN

SCALE: 1/4"=1'-0"

CITY OF NEW YORK DEPARTMENT OF CORRECTION

THE CITY OF NEW YORK
DEPARTMENT OF CORRECTION

DIVISION OF CAPITAL POLICY
AND DEVELOPMENT
ENGINEERING UNIT



No.	Date	Revision
1	09/28/20	ISSUED FOR BID
(1)	12/15/20	ADDENDUM 5

NOTE: Drawing may be printed at reduced scale

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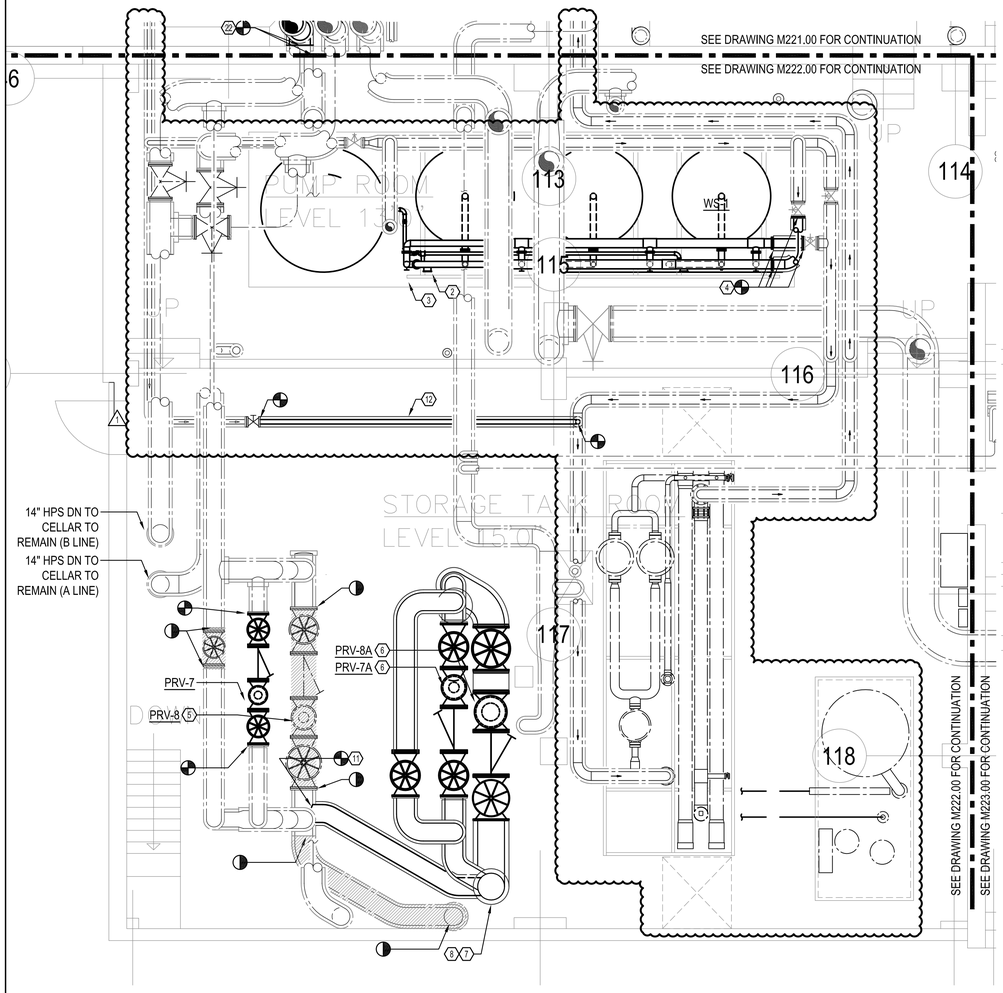
Drawing Title:
HVAC
PHASE 3
PUMP ROOM & CELLAR PART PLAN

Seal:

Drawing No.: M221.00

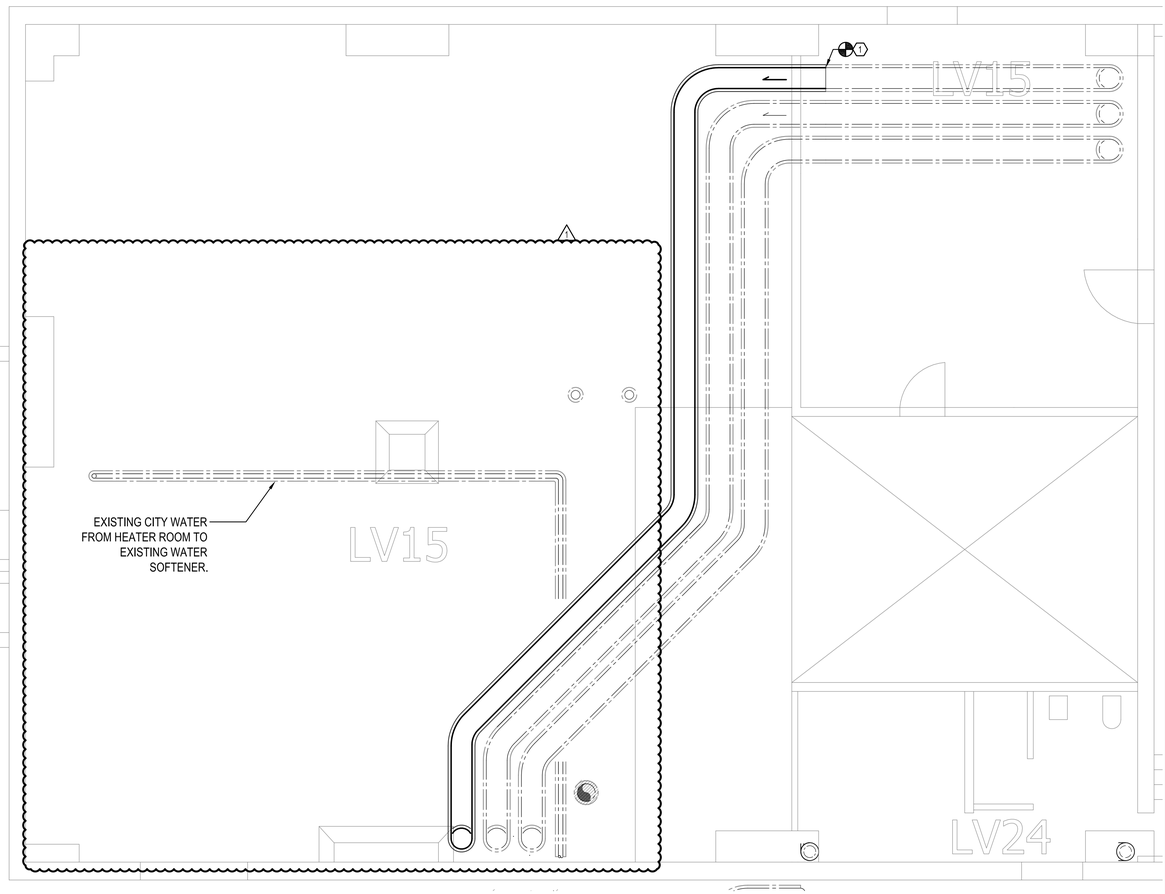
Scale: 1/4"=1'-0"

Sheet: 29 of 64



2 PART PLAN TANK ROOM - LEVEL 15 AND TANK ROOM - LEVEL 13 - PHASE 3

SCALE: 1/4"=1'-0"



1 PART PLAN PUMP ROOM @ LEVEL 15'00" (12 FT. A.F.F. ELEVATIONTO SLAB) PHASE 3

SCALE: 1/4"=1'-0"

TANK ROOM PHASE 3 TAG NOTES

2. WATER SOFTENER SYSTEM ASSEMBLY ON SKID
3. PROVIDE 6" HIGH CONCRETE PAD FOR WATER SOFTENER SYSTEM.
4. CONNECT WATER SOFTENER TO PIPING. (1)
5. HPS TO MPS PRV STATION WITH ALL ASSOCIATED VALVES, STRAINER AND CONTROLS.
6. MPS TO LPS PRV STATION WITH ALL ASSOCIATED VALVES, STRAINER AND CONTROLS.
7. REMOVE EXISTING HPS TO MPS PRV STATION WITH ALL ASSOCIATED ACCESSORIES.
8. REMOVE EXISTING BYPASS VALVE.
11. CONNECT 12" MPS PIPING TO EXISTING 12" MPS PIPING.
12. 3" SOFT WATER PIPING.

PUMP ROOM PHASE 3 TAG NOTES

1. CONNECT 14" HPS TO EXISTING.

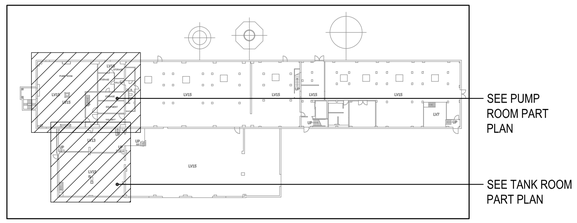
GENERAL NOTES

1. PHASING PLAN INCLUDED IS PRELIMINARY AND SHOWS ONLY MAJOR MILESTONE & GENERAL INTENT. CONTRACTOR SHALL PROVIDE DETAILED PHASING PLAN INCLUDING SUB-PHASES WITH TIMELINES UPON AWARD OF WORK TO OWNER FOR THEIR REVIEW AND REVISIONS. ALL DECISION OF PHASING BY THE OWNER SHALL BE FINAL AND BINDING ON CONTRACTOR. NO ADDITIONAL COST SHALL BE PROVIDED TO CONTRACTOR FOR THIS WORK.
2. ANY PHASING PLAN DEVELOPED SHALL ENSURE THAT ALL THE BOILERS ARE CAPABLE OF OPERATING UNINTERRUPTED AT ALL TIMES IN CODE COMPLIANT MANNER.

SCOPE OF WORK IN THIS DRAWING:

DESCRIPTION PROVIDED IS FOR GENERAL INFORMATION ONLY. ACTUAL SCOPE SHALL BE AS PER ITEMS INCLUDED IN ALL THE CONTRACT DOCUMENTS.

1. SHOWS REMOVED AND INSTALLED PRV VALVES, ASSOCIATED VALVES, ACCESSORIES, PIPING IN TANK ROOM.
2. SHOWS INSTALLED PRV VALVES, ASSOCIATED VALVES, ACCESSORIES, PIPING PUMP ROOM.



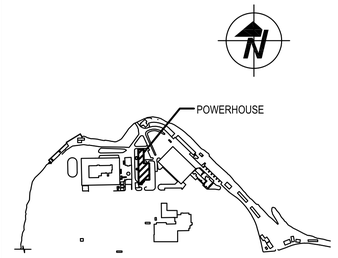
3 POWERHOUSE KEY PLAN

SCALE: 1/4"=1'-0"

CITY OF NEW YORK DEPARTMENT OF CORRECTION

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KEY PLAN
NTS

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Project Manager:	BV
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PIN # 072202001CPD	Date:

Project:
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BOILER FEED WATER
TREATMENT SYSTEM
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RIKERS ISLAND
EAST ELMHURST, NY 11370

Address:

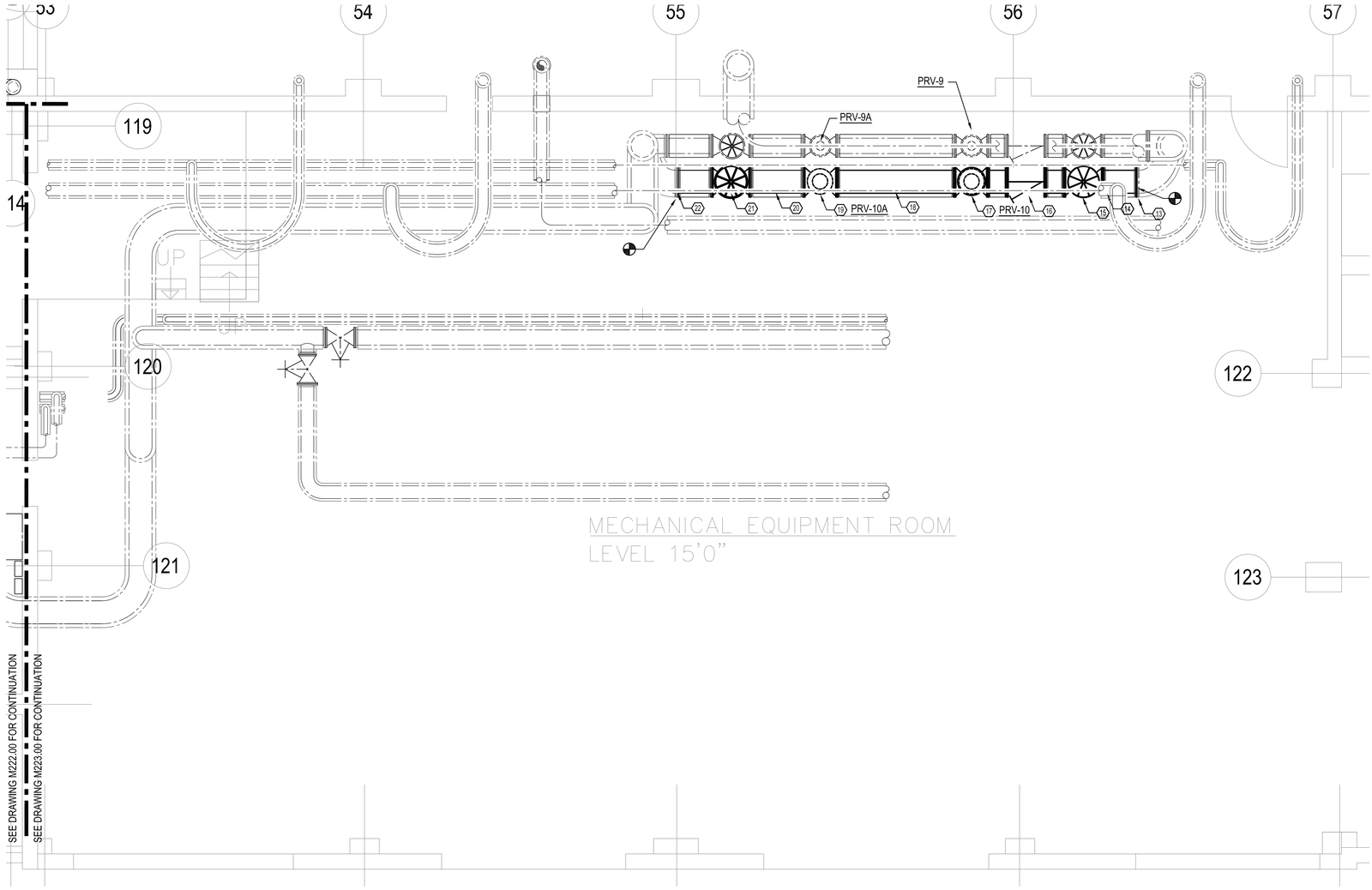
Drawing Title:
HVAC
PHASE 3
TANK ROOM & PUMP
ROOM PART PLAN

Seal:

Drawing No.: M222.00

Scale: 1/4"=1'-0"

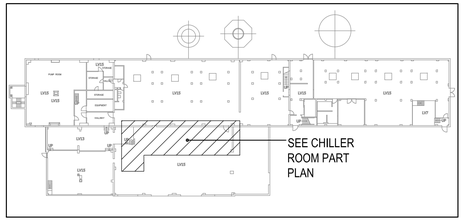
Sheet: 30 of 64



1 CHILLER ROOM PART PLAN (LEVEL 15'-0") - PHASE 3
SCALE: 1/4"=1'-0"

CHILLER ROOM PHASE 3 TAG NOTES

13. FURNISH AND INSTALL 14" HPS PIPING FROM EXISTING 14' HPS RISER. TEMPORARILY CAP 14' HPS PIPE OPENING
14. FURNISH AND INSTALL 14" HPS PIPING.
15. FURNISH AND INSTALL 14" HPS VALVE.
16. FURNISH AND INSTALL 14" HPS STRAINER AND ASSOCIATED PIPING SUCH AS DRIP LEG, TRAPS, ETC.
17. FURNISH AND INSTALL HPS TO MPS PRESSURE REDUCING VALVE (PRV-10).
18. FURNISH AND INSTALL 14" MPS PIPING AND ASSOCIATED ACCESSORIES.
19. 20. FURNISH AND INSTALL MPS TO LPS PRESSURE REDUCING VALVE (PRV-10A).
21. FURNISH AND INSTALL 14" LPS PIPING.
22. FURNISH AND INSTALL 14" LPS VALVE.



2 POWERHOUSE KEY PLAN
SCALE: NONE

SCOPE OF WORK IN THIS DRAWING:

DESCRIPTION PROVIDED IS FOR GENERAL INFORMATION ONLY. ACTUAL SCOPE SHALL BE AS PER ITEMS INCLUDED IN ALL THE CONTRACT DOCUMENTS.

1. REPLACEMENT OF EXISTING PRESSURE REDUCING VALVES, CONTROL VALVES, STRAINERS, ASSOCIATED ACCESSORIES, ETC. TO THE EXTENT SHOWN ON PLAN AFTER DRAINING OF SYSTEM TO THE EXTENT REQUIRED .

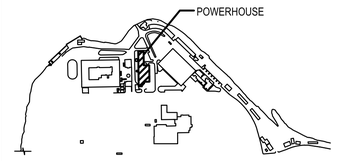
GENERAL NOTES

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KEY PLAN
NTS

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Project:
POWERHOUSE
BOILER FEED WATER
TREATMENT SYSTEM
UPGRADE
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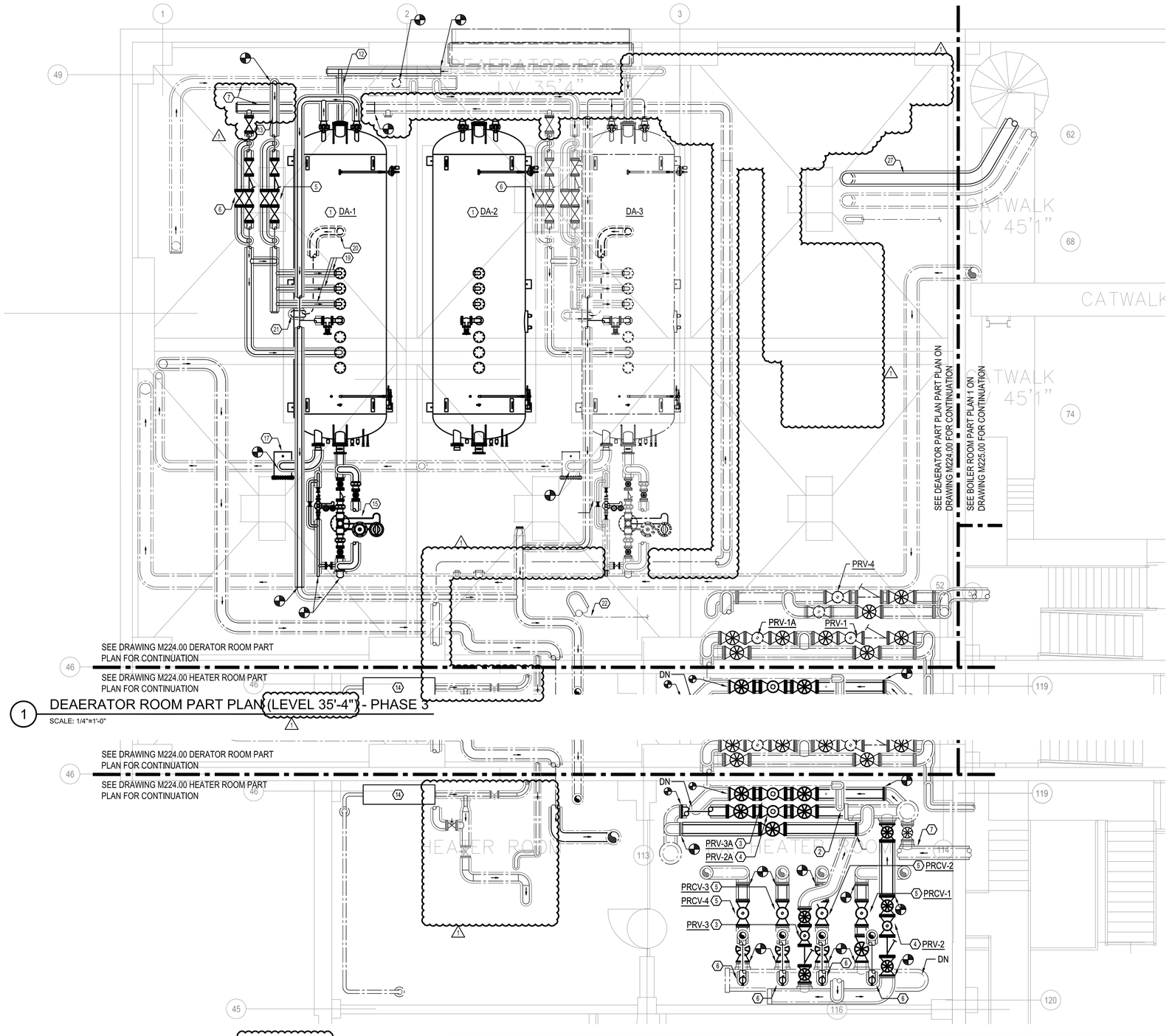
Drawing Title:
HVAC
PHASE 3
CHILLER ROOM PART PLAN

Seal:

Drawing No.:
M223.00

Scale: AS NOTED

Sheet: 31 of 64



1 DEAERATOR ROOM PART PLAN (LEVEL 35'-4") - PHASE 3

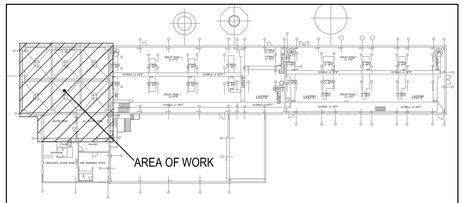
SCALE: 1/4"=1'-0"

1 HEATER ROOMS PART PLAN (LEVEL 28'-0") - PHASE 3

SCALE: 1/4"=1'-0"

DEAERATOR TANK ROOM PHASE 3 TAG NOTE

1. DEAERATOR TANK
2. 8" CONDENSATE PUMP DISCHARGE UP FROM PUMP ROOM AND CONNECT TO CONDENSATE PUMP DISCHARGE HEADER.
5. 4" MODULATING VALVE ASSEMBLY SERVING CONDENSATE DISCHARGE TO DEAERATOR TANK.
6. 4" MODULATING VALVE ASSEMBLY FOR EMERGENCY CITY WATER TO DEAERATOR TANK.
7. 6" EMERGENCY CITY WATER HEADER PIPING SERVING DEAERATOR.
12. 3" BOILER FEED RE-CIRCULATION PIPING TO DEAERATOR TANK.
13. 4" CONDENSATE DISCHARGE TO MODULATING VALVE ASSEMBLY..
15. 6" STEAM REGULATOR SERVING 6" HPS PIPING TO DEAERATOR
17. 6" OVERFLOW PIPING WITH STRAINER FROM DEAERATOR TO SURGE TANK.
19. 2-1/2" CONDENSATE PUMP DISCHARGE PIPING TO DEAERATOR.
20. 6" BOILER FEED SUCTION ON BOTTOM OF TANK
21. 6" BOILER FEED SUCTION DN TO PUMP ROOM. REUSED EXISTING FLOOR SLAB PENETRATION.
22. EXISTING HPS PIPING TO REMAIN.
27. 10" BOILER FEED HEADER



2 POWERHOUSE KEY PLAN

SCALE: NONE

SCOPE OF WORK 0N THIS DRAWING:

DESCRIPTION PROVIDED IS FOR GENERAL INFORMATION ONLY. ACTUAL SCOPE SHALL BE AS PER ITEMS INCLUDED IN ALL THE CONTRACT DOCUMENTS.

1. REMOVAL AND REPLACEMENT OF EXISTING DEAERATORS, REVERSE OSMOSIS, ASSOCIATED PIPING, CONTROLS IN DEAERATOR ROOM TO THE EXTENT SHOWN ON PLAN AFTER DRAINING OF SYSTEM TO THE EXTENT REQUIRED.
2. REPLACEMENT OF EXISTING PRESSURE REDUCING VALVES, CONTROL VALVES, STRAINERS, ASSOCIATED ACCESSORIES, ETC. TO THE EXTENT SHOWN ON PLAN AFTER DRAINING OF SYSTEM TO THE EXTENT REQUIRED.

GENERAL NOTES

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2. ANY PHASING PLAN DEVELOPED SHALL ENSURE THAT ALL THE BOILERS ARE CAPABLE OF OPERATING UNINTERRUPTED AT ALL TIMES IN CODE COMPLIANT MANNER.

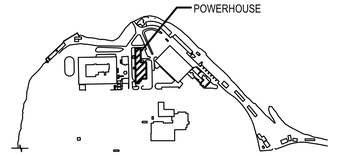
HEATER ROOM CONSTRUCTION TAG NOTE

1. EXISTING 4" HPS SERVING PRV-1 & PRV-1A TO REMAIN.
2. EXISTING MPS FROM PRV-1 & PRV-1A TO REMAIN.
3. 8" MPS TO LPS PRV
4. 16" MPS TO LPS PRV
5. 6" PRESSURE RELIEF CONTROL VALVE SERVING LPS PIPING TO BE
8. 4" SAFETY RELIEF VALVE
7. EXISTING 8" HPS FROM BOILER STEAM HEADER TO REMAIN.
8. 8" VENT PIPING SERVING SURGE TANK TO BE CONNECTED TO EXISTING VENT HEADER.
9. 6" VENT PIPING SERVING DEAERATOR TO BE CONNECTED TO EXISTING VENT HEADER.
10. EXISTING HPS FROM DEAERATOR ROOM AND DN TO TANK ROOM TO REMAIN.
11. NOT USED.
12. NOT USED.

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PIN # 072202001CPD	Date: _

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BOILER FEED WATER
TREATMENT SYSTEM
UPGRADE
RIKERS ISLAND
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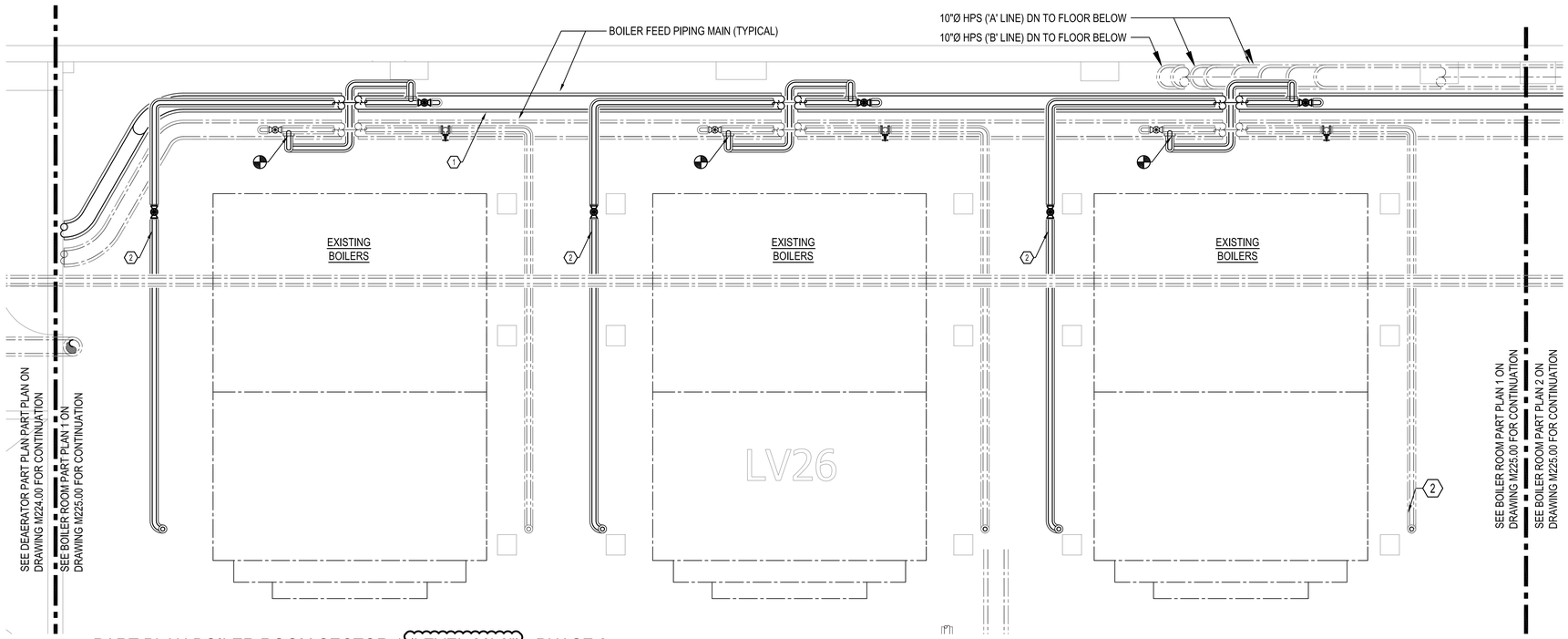
Drawing Title:
HVAC
PHASE 3
DEAERATOR ROOM
PART PLAN

Seal:

Drawing No.:
M224.00

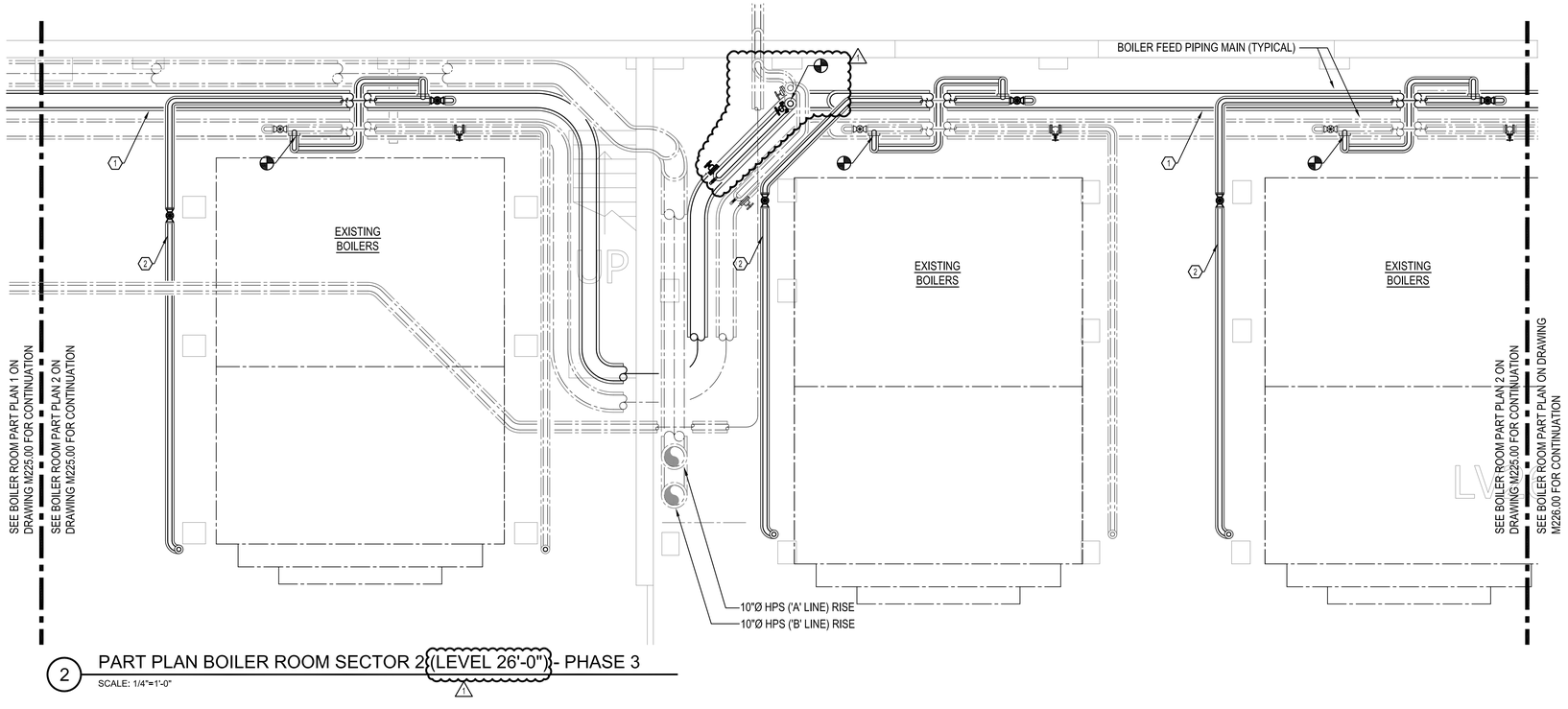
Scale: 1/4"=1'-0"

Sheet: 32 of 64



1 PART PLAN BOILER ROOM SECTOR 1 (LEVEL 26'-0") - PHASE 3

SCALE: 1/4"=1'-0"

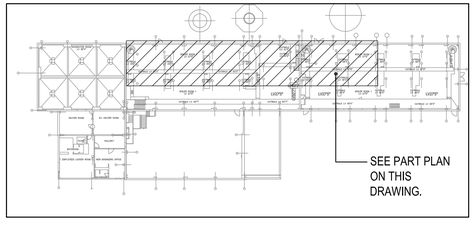


2 PART PLAN BOILER ROOM SECTOR 2 (LEVEL 26'-0") - PHASE 3

SCALE: 1/4"=1'-0"

BOILER ROOM PHASE 3 TAG NOTES

1. 10" BOILER FEED HEADER
2. 3" BOILER FEED WATER PIPING TO BOILER



3 POWERHOUSE KEY PLAN

SCALE: NONE

SCOPE OF WORK ON THIS DRAWING:

DESCRIPTION PROVIDED IS FOR GENERAL INFORMATION ONLY. ACTUAL SCOPE SHALL BE AS PER ITEMS INCLUDED IN ALL THE CONTRACT DOCUMENTS.

1. PHASED REPLACEMENT OF EXISTING BOILER FEED WATER PUMPS, WATER SOFTENER EQUIPMENT, ACCESSORIES, CONTROLS, PIPING, INSULATION TO THE EXTENT SHOWN ON PLAN AFTER DRAINING OF SYSTEM TO THE EXTENT REQUIRED.

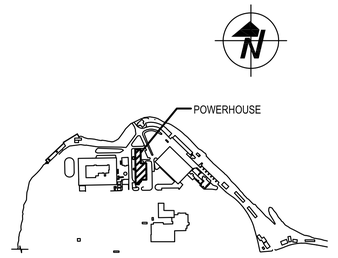
GENERAL NOTES

1. PHASING PLAN INCLUDED IS PRELIMINARY AND SHOWS ONLY MAJOR MILESTONE & GENERAL INTENT. CONTRACTOR SHALL PROVIDE DETAILED PHASING PLAN INCLUDING SUB-PHASES WITH TIMELINES UPON AWARD OF WORK TO OWNER FOR THEIR REVIEW AND REVISIONS. ALL DECISION OF PHASING BY THE OWNER SHALL BE FINAL AND BINDING ON CONTRACTOR, NO ADDITIONAL COST SHALL BE PROVIDED TO CONTRACTOR FOR THIS WORK.
2. ANY PHASING PLAN DEVELOPED SHALL ENSURE THAT ALL THE BOILERS ARE CAPABLE OF OPERATING UNINTERRUPTED AT ALL TIMES IN CODE COMPLIANT MANNER.

CITY OF NEW YORK DEPARTMENT OF CORRECTION

THE CITY OF NEW YORK
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DIVISION OF CAPITAL POLICY
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ENGINEERING UNIT



KEY PLAN
NTS

No.	Date	Revision
2	12/15/20	ADDENDUM 5
1	09/28/20	ISSUED FOR BID

NOTE: Drawing may be printed at reduced scale

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DESIGNED BY:

IAQ SYSTEMS INC
Consulting Engineers
555 8th Avenue, Suite 1502
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Tel. 212.680.8945
www.iaqsys.com

Executive Director:	HARDEE SAINI
Project Manager:	BV
Project Engineer:	TS
Drawn By: DB	Checked By: SB
PIN # 072202001CPD	Date: _

Project:
POWERHOUSE
BOILER FEED WATER
TREATMENT SYSTEM
UPGRADE
RIKERS ISLAND
EAST ELMHURST, NY 11370

Address:

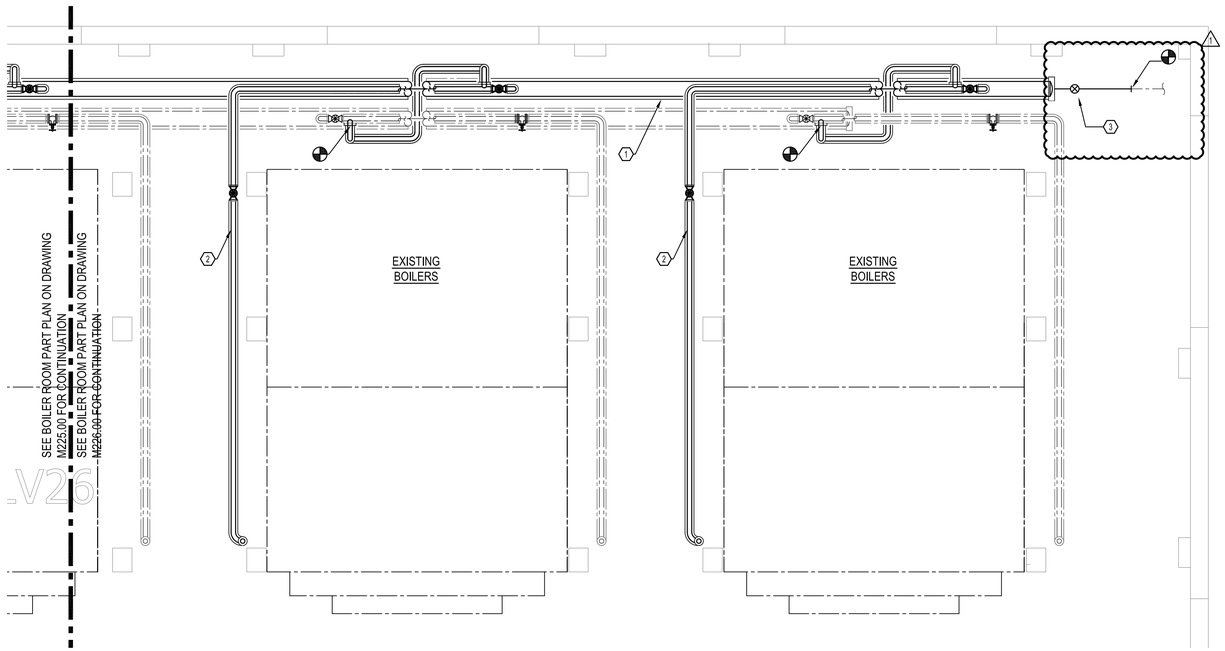
Drawing Title:
HVAC
PHASE 3
BOILER ROOM PART PLAN 1 OF 2

Seal:

Drawing No.:
M225.00

Scale: 1/4"=1'-0"

Sheet: 33 of 64



1 PART PLAN BOILER ROOM SECTOR 3 (LEVEL 26'-0") - PHASE 3
SCALE: 1/4"=1'-0"

BOILER ROOM PHASE 3 TAG NOTES

1. 10" BOILER FEED HEADER
2. 3" BOILER FEED WATER PIPING TO BOILER
3. PROVIDE STEAM TRAP W/ 2" PIPING AND CONNECT TO EXISTING.

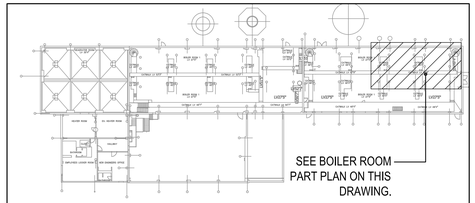
SCOPE OF WORK IN THIS DRAWING:

DESCRIPTION PROVIDED IS FOR GENERAL INFORMATION ONLY. ACTUAL SCOPE SHALL BE AS PER ITEMS INCLUDED IN ALL THE CONTRACT DOCUMENTS.

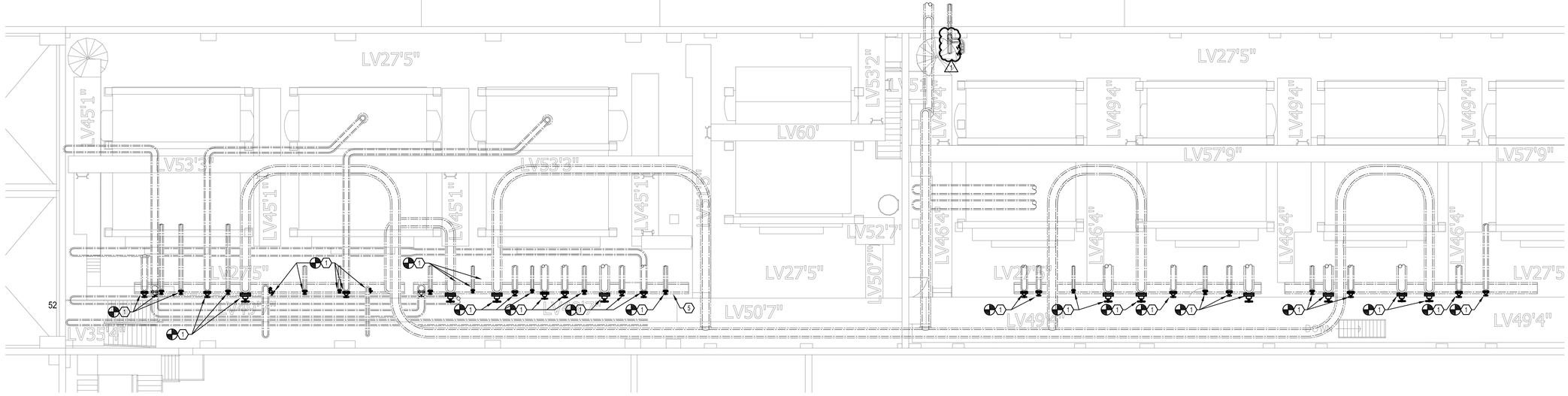
1. SCOPE OF NEW BOILER FEED PIPING BOILER FEED, VALVES, CONTROLS TO THE EXTENT SHOWN ON PLAN.
2. SHOWS ALL THE NEW SHUTOFF VALVES CONNECTED TO EXISTING HPS HEADERS IN BOILER ROOM

GENERAL NOTES

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2. ANY PHASING PLAN DEVELOPED SHALL ENSURE THAT ALL THE BOILERS ARE CAPABLE OF OPERATING UNINTERRUPTED AT ALL TIMES IN CODE COMPLIANT MANNER.



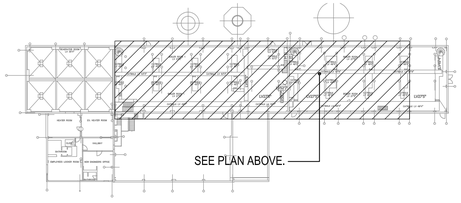
2 POWERHOUSE KEY PLAN
SCALE: NTS



3 BOILER ROOM UPPER LEVEL PLAN - PHASE 3
SCALE: 1/8"=1'-0"

BOILER UPPER LEVEL PHASE 3 TAG NOTES

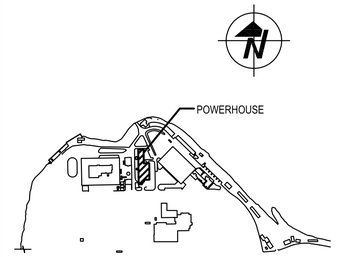
1. PROVIDE STEAM SHUT OFF VALVE TO MATCH EXISTING SIZE. THE FOLLOWING IS THE BREAKDOWN OF VALVE SIZES TO BE REPLACED:
   FIVE (5) - 3" SHUTOFF VALVES;
   NINE (9) - 4" SHUTOFF VALVES;
   FIVE (5) - 6" SHUTOFF VALVES;
   TEN (10) - 8" SHUTOFF VALVES;
   ONE (1) - 10" SHUTOFF VALVES;
   TEN (10) - 12" SHUTOFF VALVES.



4 POWERHOUSE BOILER ROOM UPPER LEVEL KEY PLAN
SCALE: 1/4"=1'-0"

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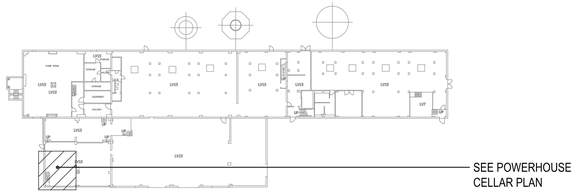
Drawing Title:
HVAC
PHASE 3
BOILER ROOM PART PLAN
SHEET 2 OF 2

Seal:

Drawing No.: M226.00

Scale: 1/4"=1'-0"

Sheet: 34 of 64



2 POWERHOUSE KEY PLAN
SCALE: NONE

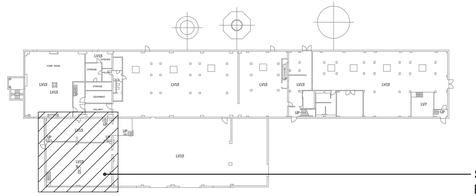
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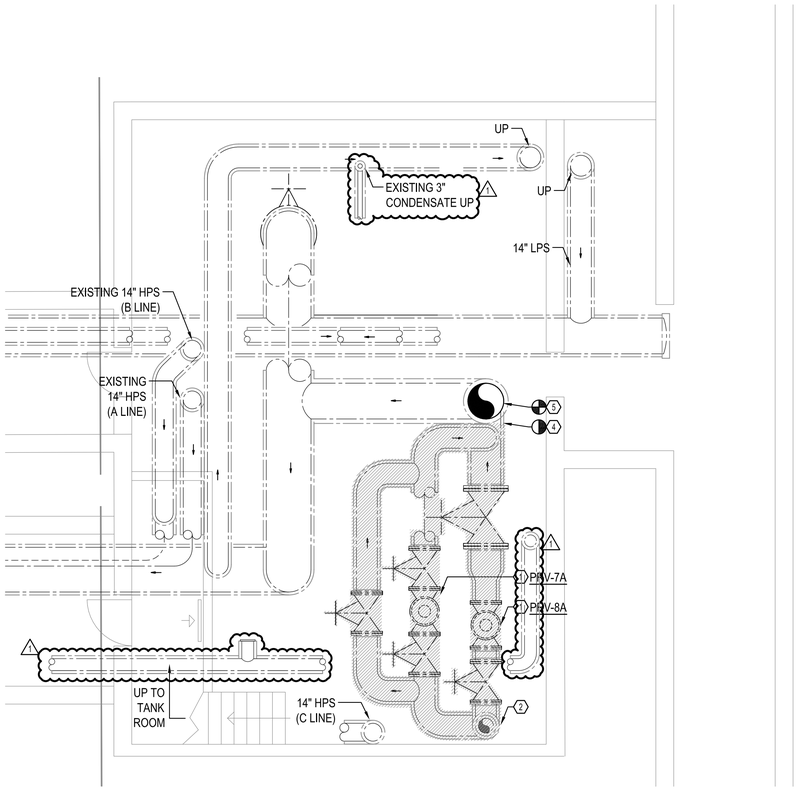
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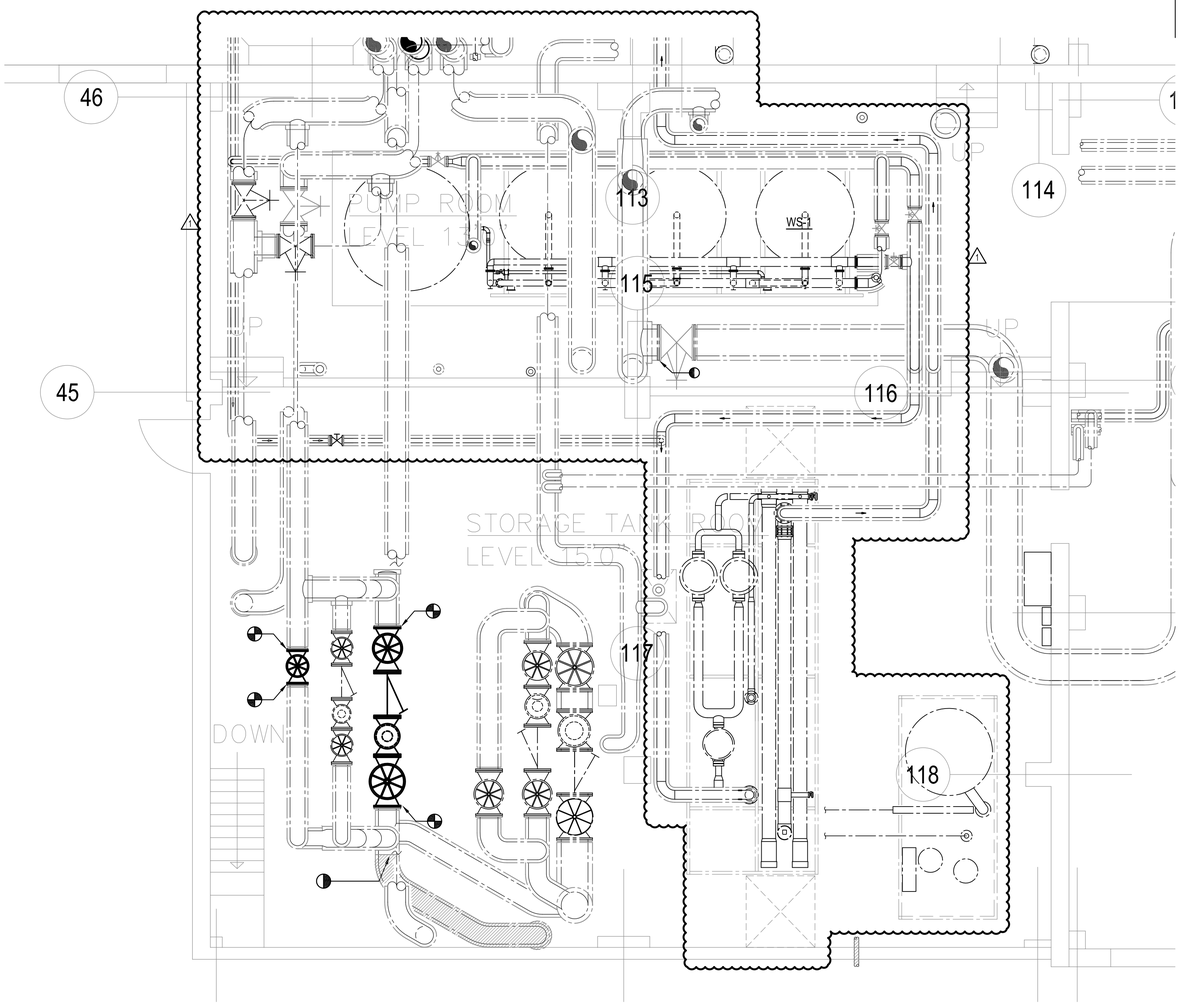
2 POWERHOUSE KEY PLAN
SCALE: NONE



1 PART PLAN CELLAR (LEVEL 3'-0") - PHASE 4
SCALE: 1/4"=1'-0"

PUMP ROOM PHASE 4 TAG NOTES

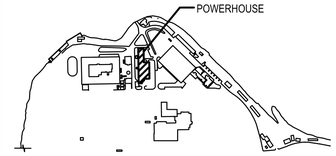
1. REMOVE EXISTING MPS TO LPS PRV STATION WITH ALL ASSOCIATED VALVES AND ACCESSORIES.
2. EXISTING 14" MPS DN FROM TANK ROOM TO BE REMOVED.
4. DISCONNECT EXISTING 24" LPS PIPING.
5. CONNECT 24" LPS PIPING FROM ABOVE TO EXISTING 24" LPS PIPING.



1 PART PLAN PUMP (LEVEL 13'0") AND TANK ROOM (LEVEL 15'0") PART PLAN - PHASE 4
SCALE: 1/4"=1'-0"

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Project Engineer:	TS
Drawn By: DB	Checked By: SB
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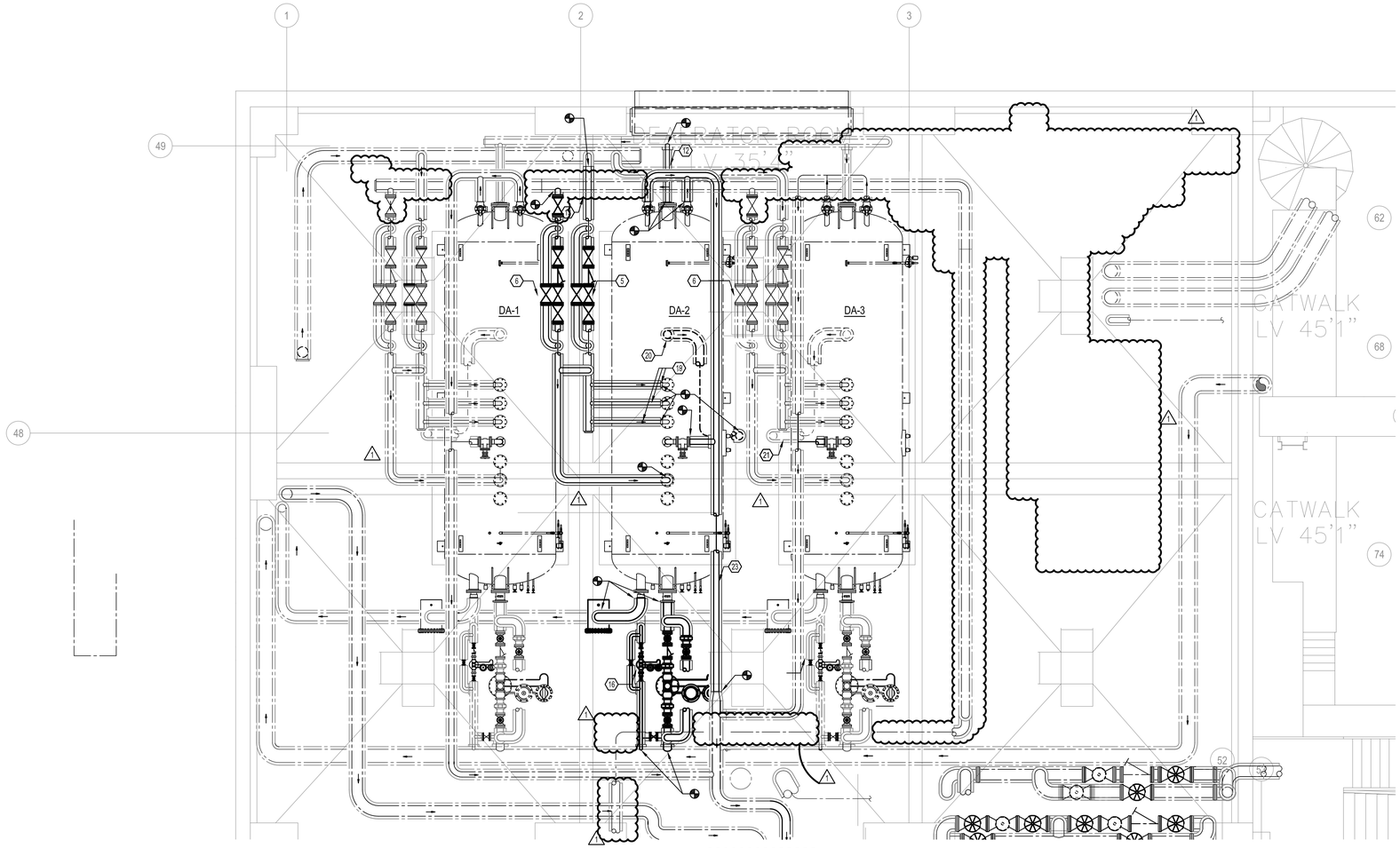
Drawing Title:
HVAC
PHASE 4
TANK ROOM & CELLAR
PART PLAN

Seal:

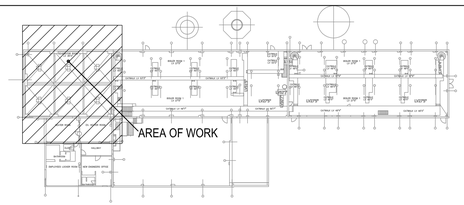
Drawing No.:
M231.00

Scale: 1/4"=1'-0"

Sheet: 35 of 64



1 DEAERATOR ROOM PART PLAN (LEVEL 35'-4") - PHASE 4
SCALE: 1/4" = 1'-0"



2 POWERHOUSE KEY PLAN
SCALE: NONE

SCOPE OF WORK 0N THIS DRAWING:

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1. PHASE 4 - REMOVAL AND REPLACEMENT OF EXISTING DEAERATORS, REVERSE OSMOSIS, ASSOCIATED PIPING, CONTROLS IN DEAERATOR ROOM TO THE EXTENT SHOWN ON PLAN AFTER DRAINING OF SYSTEM TO THE EXTENT REQUIRED.
2. PHASE 4 - REPLACEMENT OF EXISTING PRESSURE REDUCING VALVES, CONTROL VALVES, STRAINERS, ASSOCIATED ACCESSORIES, ETC. IN DEAERATOR ROOM TO THE EXTENT SHOWN ON PLAN AFTER DRAINING OF SYSTEM TO THE EXTENT REQUIRED.

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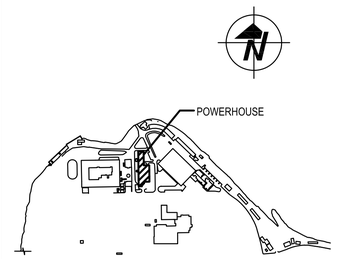
DEAERATOR RM PHASE 4 TAG NOTES

5. 4" MODULATING VALVE ASSEMBLY SERVING CONDENSATE DISCHARGE TO DEAERATOR TANK.
8. 4" MODULATING VALVE ASSEMBLY FOR EMERGENCY CITY WATER TO DEAERATOR TANK. (1)
12. 3" BOILER FEED RE-CIRCULATION PIPING TO DEAERATOR TANK.
13. 4" CONDENSATE DISCHARGE TO MODULATING VALVE ASSEMBLY..
16. 2" STEAM REGULATOR SERVING 2" HPS PIPING TO DEAERATOR
19. 2-1/2" CONDENSATE PUMP DISCHARGE PIPING TO DEAERATOR.
20. 6" BOILER FEED SUCTION ON BOTTOM OF TANK
21. 6" BOILER FEED SUCTION DN TO PUMP ROOM. REUSED EXISTING FLOOR SLAB PENETRATION.
23. 4" VENT PIPING SERVING DEAERATOR TANK.

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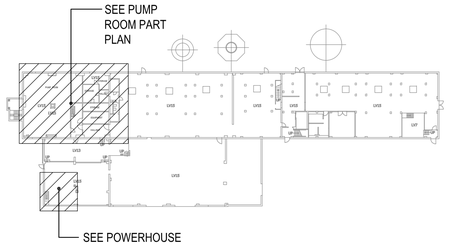
Drawing Title:
HVAC
PHASE 4
DEAERATOR ROOM
PART PLAN

Seal:

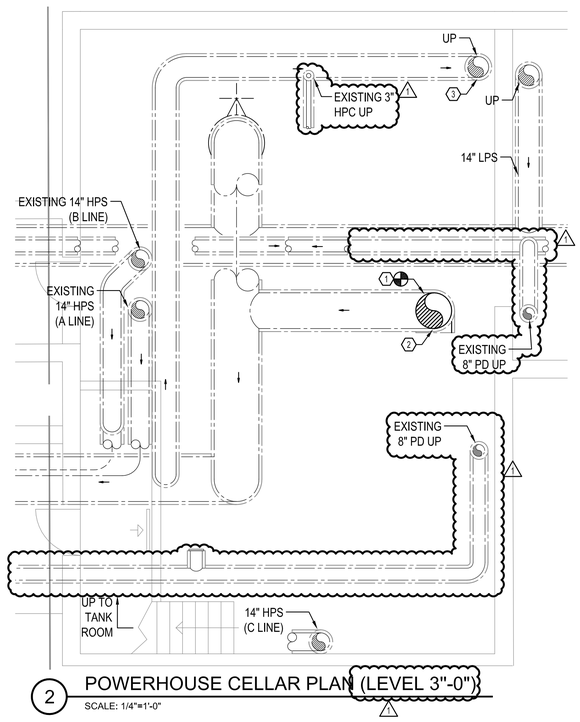
Drawing No.:
M232.00

Scale: 1/4"=1'-0"

Sheet: 36 of 64



1 POWERHOUSE KEY PLAN
SCALE: NTS



2 POWERHOUSE CELLAR PLAN (LEVEL 3"-0")
SCALE: 1/4"=1'-0"

PUMP ROOM CONSTRUCTION TAG NOTES

1. CONNECT 24" LPS PIPING TO EXISTING 24" LPS PIPING.
2. 24" LPS PIPING DN FROM PRV-7 & PRV-8.
3. CAP EXISTING LPS PIPING AT FLOOR PENETRATION.

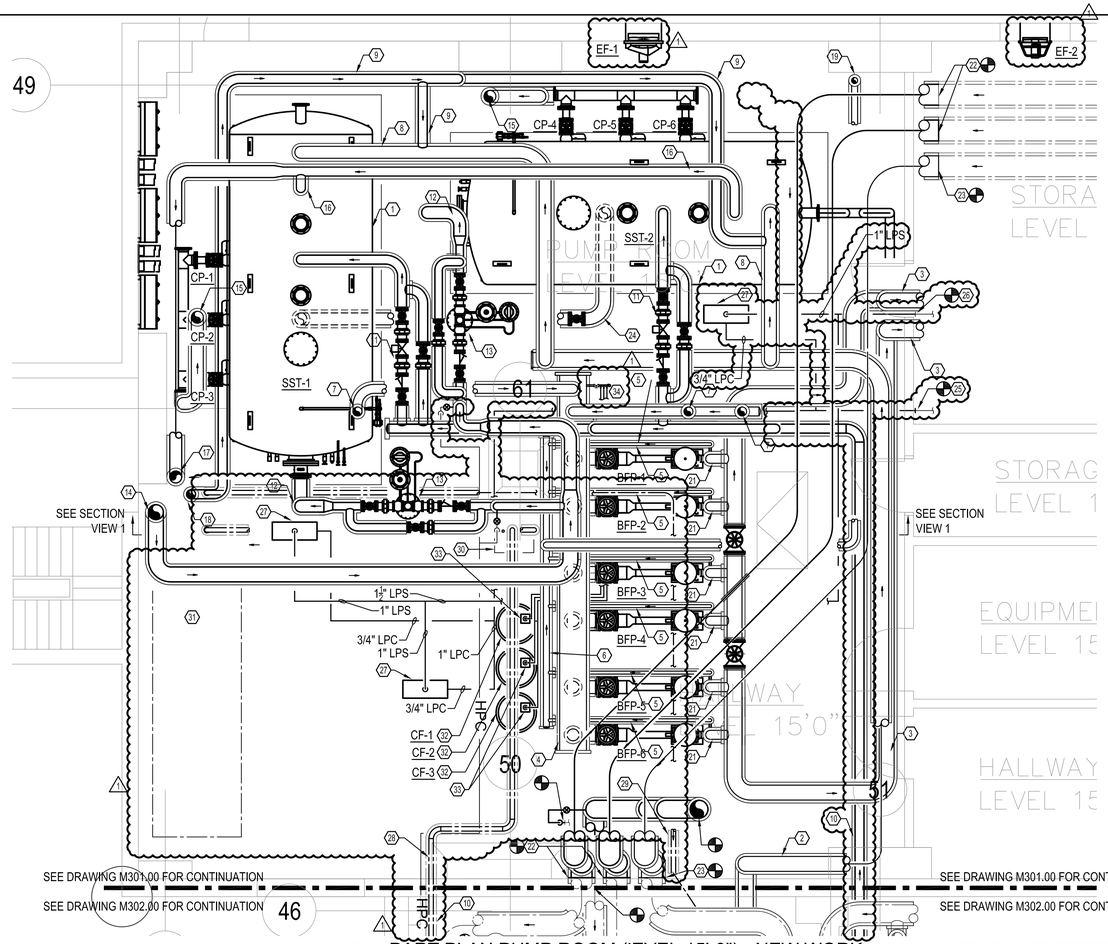
GENERAL NOTE

1. FOR ALL VERTICAL PIPING PENETRATING UP THROUGH THE FINISH FLOOR ABOVE 8-0", PROVIDE METAL JACKET SURROUNDING PIPING.

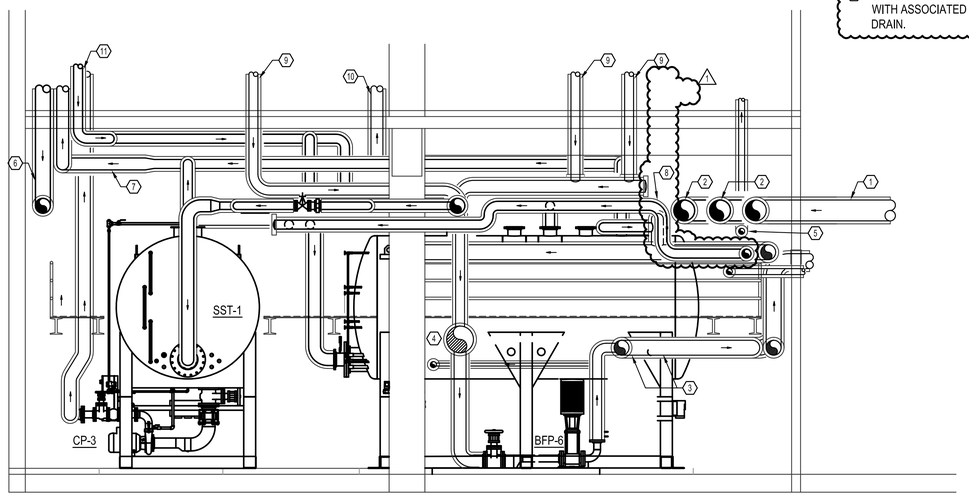
SCOPE OF WORK IN THIS DRAWING:

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1. PROVIDE SURGE TANKS ASSOCIATED PIPING, REGULATORS, ASSOCIATED VALVES, ACCESSORIES, ETC., IN CHILLER ROOM.
2. PROVIDE PIPING IN CELLAR LEVEL UNDER TANKS ROOM.



3 PART PLAN PUMP ROOM (IEVEL 15'-0") - NEW WORK
SCALE: 1/4"=1'-0"



4 PART PLAN PUMP ROOM - SECTION "1-1"
SCALE: 1/4"=1'-0"

PUMP ROOM CONSTRUCTION TAG NOTES

1. SURGE TANK WITH CONDENSATE PUMP SET ON SKID.
2. 10"Ø CONDENSATE RETURN PIPING
3. 10"Ø BOILER FEED HEADER TO BOILER ROOM
4. 18"Ø BOILER FEED SUCTION HEADER SERVING BOILER FEED PUMP.
5. 2"Ø BOILER FEED RE-CIRCULATION LINE SERVING EACH BOILER FEED PUMP.
6. 4"Ø BOILER FEED RE-CIRCULATION HEADER RUNNING UP TO DEAERATOR ROOM.
7. 6"Ø BOILER FEED SUCTION PIPING DN FROM DEAERATORS
8. 8"Ø CONDENSATE RETURN PIPING TO SURGE TANK.
9. 6"Ø OVERFLOW PIPING TO BE CONNECTED TO CONDENSATE RETURN PIPING SERVING SURGE TANK.
10. 6"Ø STAINLESS STEEL PIPING FOR SOFT PERMEATE MAKE UP WATER FROM RO SYSTEM
11. 6"Ø MODULATING VALVE ASSEMBLY WITH BYPASS SERVING MAKE UP WATER FOR SURGE TANK.
12. 8"Ø HPS PIPING SERVING SURGE TANK.
13. STEAM REGULATOR ASSEMBLY WITH BYPASS SERVING HPS PIPING.
14. 10"Ø HPS PIPING DN FROM DEAERATOR ROOM. PROVIDE NEW PENETRATION ON FLOOR SLAB.
15. 8"Ø CONDENSATE PUMP DISCHARGE PIPING UP TO DEAERATOR ROOM
16. 6"Ø VENT PIPING SERVING SURGE TANK.
17. 8"Ø VENT PIPING UP TO DEAERATOR ROOM.
18. 6"Ø OVERFLOW PIPING DN FROM DEAERATOR ROOM. PROVIDE NEW PENETRATION ON THE FLOOR SLAB.
19. 4"Ø BOILER FEED OVERFLOW PIPING UP TO DEAERATOR ROOM.
20. NOT USED.
21. 6"Ø BOILER FEED PUMP DISCHARGE TO BOILER FEED HEADER.
22. 14"Ø HPS PIPING TO EXISTING 14"Ø HPS PIPING.
23. 14"Ø LPS PIPING TO EXISTING 14"Ø LPS PIPING.
24. 8" NEUTRALIZING PIPING
25. RECONNECT EXISTING 1" LPC TO EXISTING
26. RECONNECT EXISTING 1-1/2" LPS TO EXISTING
27. REINSTALL AND RELOCATE EXISTING STEAM UNIT HEATER
28. EXISTING 3" SOFT WATER PIPING TO REMAIN.
29. EXISTING 3" CITY WATER PIPING TO REMAIN.
30. EXISTING BOOSTER PUMP TO REMAIN.
31. EXISTING WATER SOFTENER TO REMAIN.
32. 150 GALLONS CHEMICAL FEED TANK WITH INJECTION PUMP (TYPICAL FOR 3) CHEMICAL FOR EACH TANK TO BE ASK FOLLOW: CF-1 : POLYMER, CF-2 : SULFITE, CF-3 : AMINE
33. INJECTION PUMP ON TOP OF CHEMICAL FEED TANK 120V/0.66A WITH FLEXIBLE PIPING TO WATER TREATMENT MANIFOLD.
34. WATER TREATMENT MANIFOLD WITH ASSOCIATED VALVES AND DRAIN.

SECTION VIEW CONSTRUCTION TAG NOTES

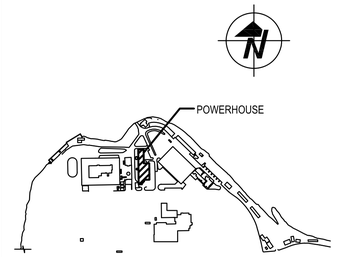
1. 14"Ø LPS PIPING
2. 14"Ø HPS PIPING
3. 10"Ø BOILER FEED HEADER TO BOILER ROOM
4. 18"Ø BOILER FEED SUCTION HEADER SERVING BOILER FEED PUMP.
5. 4"Ø BOILER FEED RECIRCULATION PIPING UP TO DEAERATOR ROOM.
6. 10"Ø HPS PIPING DN FROM DEAERATOR ROOM. PROVIDE NEW PENETRATION ON FLOOR SLAB.
7. 8"Ø VENT PIPING UP TO DEAERATOR ROOM. PROVIDE NEW PENETRATION ON FLOOR SLAB.
8. 6"Ø SOFT PERMEATE MAKE UP WATER FROM RO SYSTEM.
9. 6"Ø BOILER FEED SUCTION PIPING DN FROM DEAERATORS
10. 8"Ø CONDENSATE PUMP DISCHARGE PIPING UP TO DEAERATOR ROOM
11. 6"Ø OVERFLOW PIPING DN FROM DEAERATOR ROOM.

4"Ø BOILER FEED TO BE CONNECTED TO EXISTING DEDICATED CO-GEN BOILER FEED PIPING. (THIS WORK SHALL BE CONSIDERED ADD ALTERNATE NO.1)

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Consulting Engineers
555 8th Avenue, Suite 1502
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Tel. 212.680.8945
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Executive Director:	HARDEE SAINI
Project Manager:	BV
Project Engineer:	TS
Drawn By: DB	Checked By: SB
PIN # 072202001CPD	Date:

Project:
POWERHOUSE
BOILER FEED WATER
TREATMENT SYSTEM
UPGRADE
RIKERS ISLAND
EAST ELMHURST, NY 11370

Address:

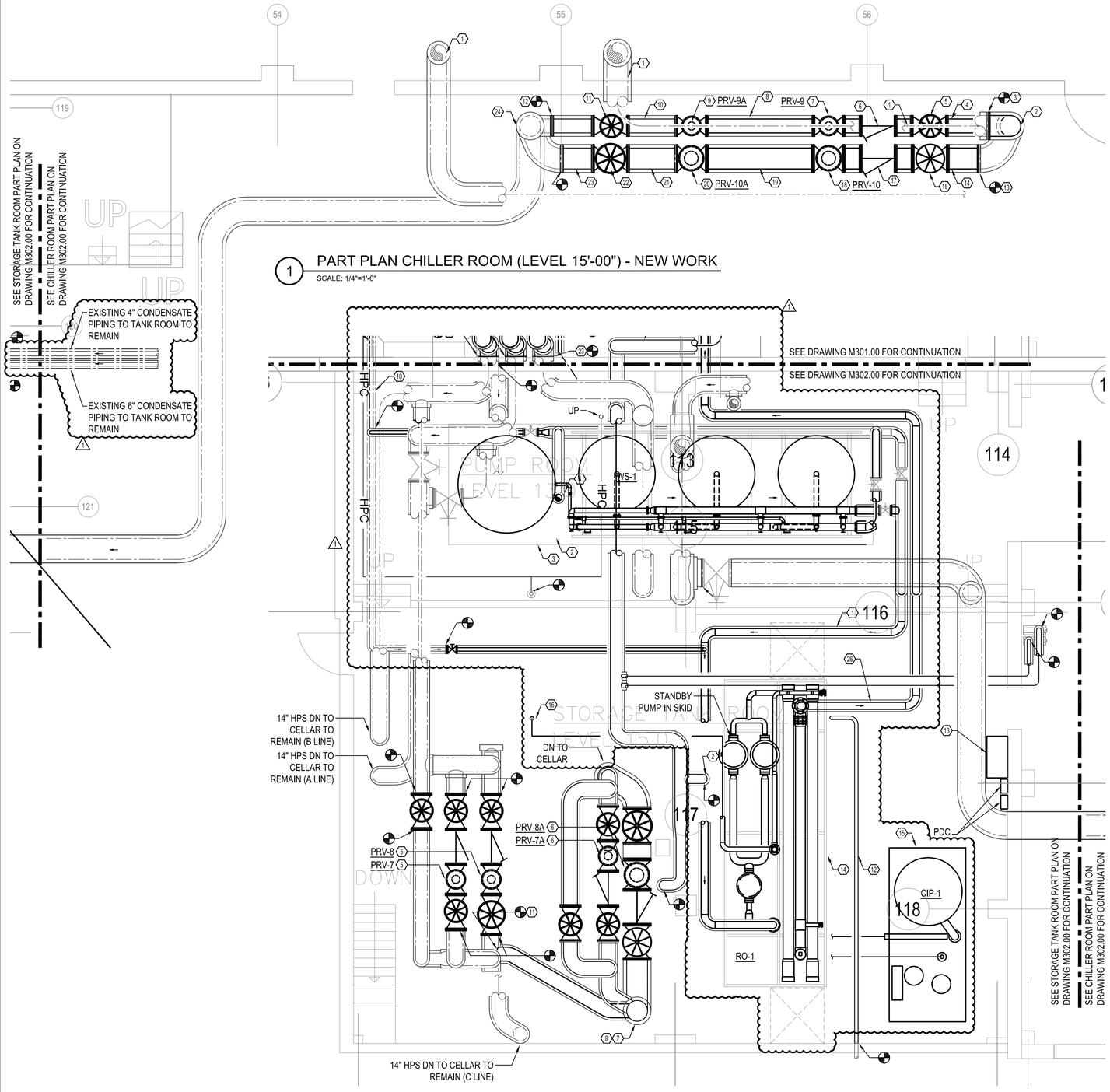
Drawing Title:
HVAC
NEW WORK
PART PLAN TANK ROOM AND
PART PLAN PUMP ROOM

Seal:

Drawing No.:
M301.00

Scale: 1/4"=1'-0"

Sheet: 37 of 64



1 PART PLAN CHILLER ROOM (LEVEL 15'-00") - NEW WORK
SCALE: 1/4"=1'-0"

2 PART PLAN TANK ROOM (LEVEL 15'-00") - NEW WORK
SCALE: 1/4"=1'-0"

CHILLER ROOM CONSTRUCTION TAG NOTES

1. EXISTING 8" HPS PIPING SERVING PRV 9 & 10 FROM BOILER ROOM TO REMAIN.
2. 12"Ø HPS RISER PIPING
3. 8"Ø HPS PIPING FROM BOILER ROOM. TEMPORARILY CAP 8" HPS PIPING OPENING.
4. 8"Ø HPS PIPING.
5. 8"Ø HPS VALVE.
6. 8"Ø HPS STRAINER
7. HPS TO MPS PRESSURE REDUCING VALVE (PRV-9).
8. 8"Ø MPS PIPING
9. MPS TO LPS PRESSURE REDUCING VALVE (PRV-9A).
10. 8"Ø LPS PIPING.
11. 8"Ø LPS VALVE.
12. CONNECT 8"Ø LPS PIPING TO EXISTING LPS RISER.
13. CONNECT 14"Ø HPS VALVE PIPING TO EXISTING HPS PIPING.
14. 14"Ø HPS PIPING
15. 14"Ø HPS VALVE PIPING.
16. -
17. 14"Ø HPS STRAINER
18. HPS TO MPS PRESSURE REDUCING VALVE (PRV-10).
19. 14"Ø MPS PIPING
20. MPS TO LPS PRESSURE REDUCING VALVE (PRV-10A).
21. 14"Ø LPS PIPING
22. 14"Ø LPS VALVE.
23. CONNECT 14"Ø LPS PIPING TO EXISTING LPS PIPING.
24. EXISTING 14"Ø LPS RISER.
25. EXISTING HPS PIPING FROM BOILER ROOM SERVING STEAM TURBINE TO REMAIN.
26. 6"Ø STAINLESS STEEL PIPING FOR SOFT PERMEATE MAKE UP WATER FROM RO SYSTEM TO SURGE TANKS. △

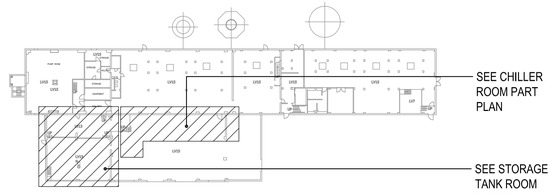
GENERAL NOTE

1. FOR ALL VERTICAL PIPING PENETRATING UP THROUGH THE FINISH FLOOR ABOVE 8-0", PROVIDE METAL JACKET SURROUNDING PIPING.

SCOPE OF WORK IN THIS DRAWING:

DESCRIPTION PROVIDED IS FOR GENERAL INFORMATION ONLY. ACTUAL SCOPE SHALL BE AS PER ITEMS INCLUDED IN ALL THE CONTRACT DOCUMENTS.

1. PROVIDE PRV VALVES, ASSOCIATED VALVES, ACCESSORIES, PIPING IN CHILLER ROOM.
2. PROVIDE RO, CIP, WATER PIPING, PRV VALVES, ASSOCIATED VALVES, ACCESSORIES, PIPING TANK ROOM. △



3 POWERHOUSE KEY PLAN
SCALE: NTS

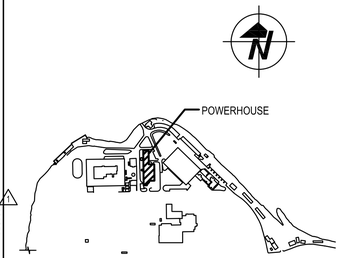
CONDENSATE TANK ROOM CONSTRUCTION TAG NOTES

1. 4"Ø SOFT WATER FROM WATER SOFTENER TO RO. △
2. WATER SOFTENER SYSTEM ASSEMBLY ON SKID. △
3. 6"Ø HIGH CONCRETE PAD FOR WATER SOFTENER SYSTEM.
4. 6" CITY WATER DN FROM HEATER ROOM
5. HPS TO MPS PRV STATION WITH ALL ASSOCIATED VALVES, STRAINER AND CONTROLS. △
6. MPS TO LPS PRV STATION WITH ALL ASSOCIATED VALVES, STRAINER AND CONTROLS.
7. PATCHED EXISTING FLOOR OPENING DN TO CELLAR.
8. 18"Ø MPS PIPING HEADER.
9. 18"Ø MPS PIPING HEADER. △
10. EXISTING 3" MAKE UP WATER FROM PUMP ROOM
11. CONNECT 12"Ø MPS PIPING TO EXISTING 12"Ø MPS PIPING.
12. 3"Ø CONDENSATE DRAIN PIPING SERVING COOLING TOWER
13. MAIN CONTROL PANEL EMERSON CTO 252 PANEL BY OTHER.
14. REVERSE OSMOSIS (RO) SYSTEM ON SKID
15. CIP ON SKID.
16. 3" RO REJECT DN TO EXISTING FLOOR DRAIN. △

CITY OF NEW YORK DEPARTMENT OF CORRECTION

THE CITY OF NEW YORK
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DIVISION OF CAPITAL POLICY
AND DEVELOPMENT
ENGINEERING UNIT



KEY PLAN
NTS

No.	Date	Revision
△	12/15/20	ADDENDUM 5
1	09/28/20	ISSUED FOR BID

NOTE: Drawing may be printed at reduced scale

IT IS A VIOLATION OF THE STATE EDUCATION LAW SECTION 7209 (2) FOR ANY PERSON TO ALTER AN ITEM IN ANY WAY UNLESS SUCH PERSON IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, AND THE ENGINEER STAMPS SUCH CHANGES

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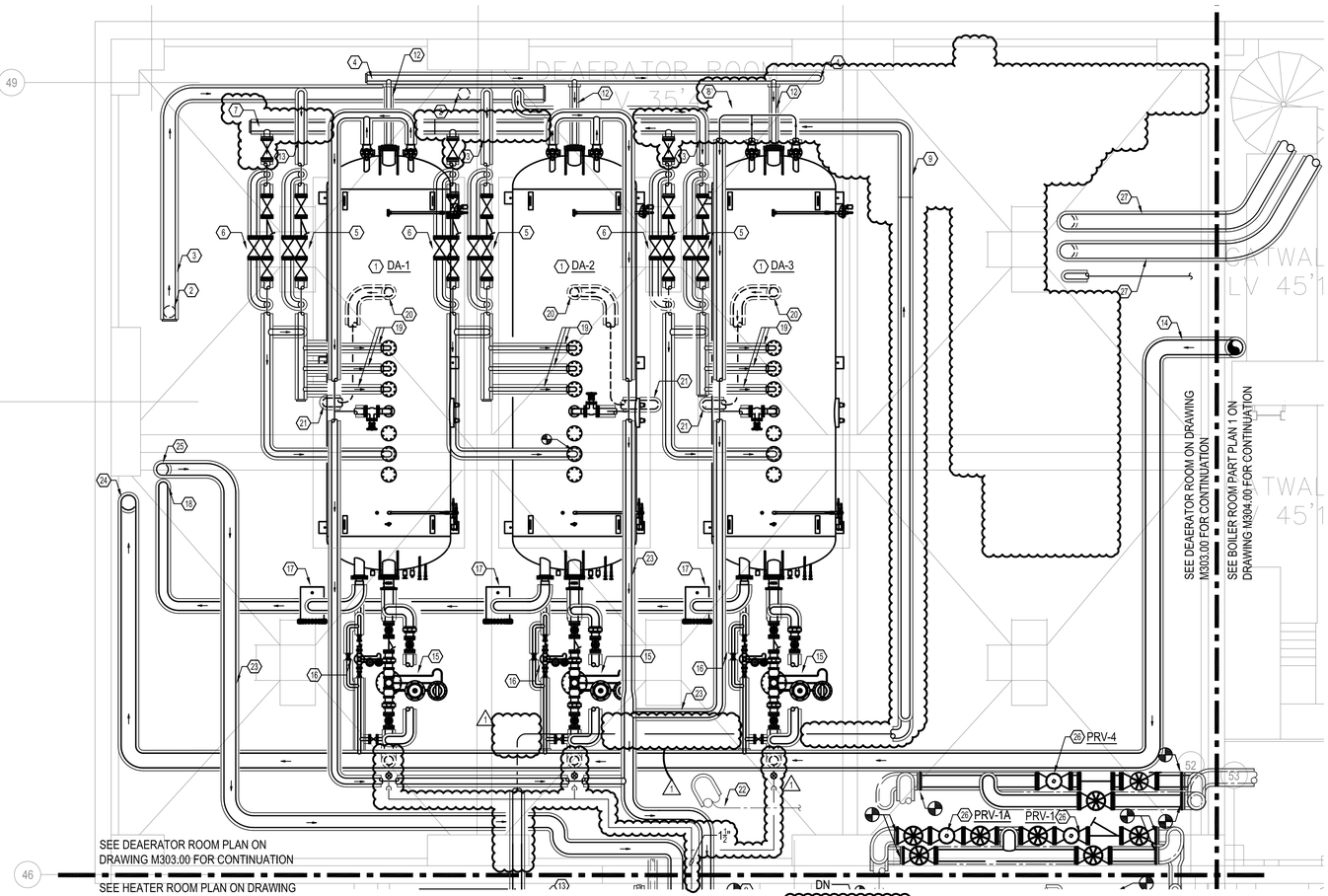
Drawing Title:
HVAC
NEW WORK
PART PLAN CHILLER ROOM AND
PART PLAN DEAERATOR ROOM

Seal:

Drawing No.:
M302.00

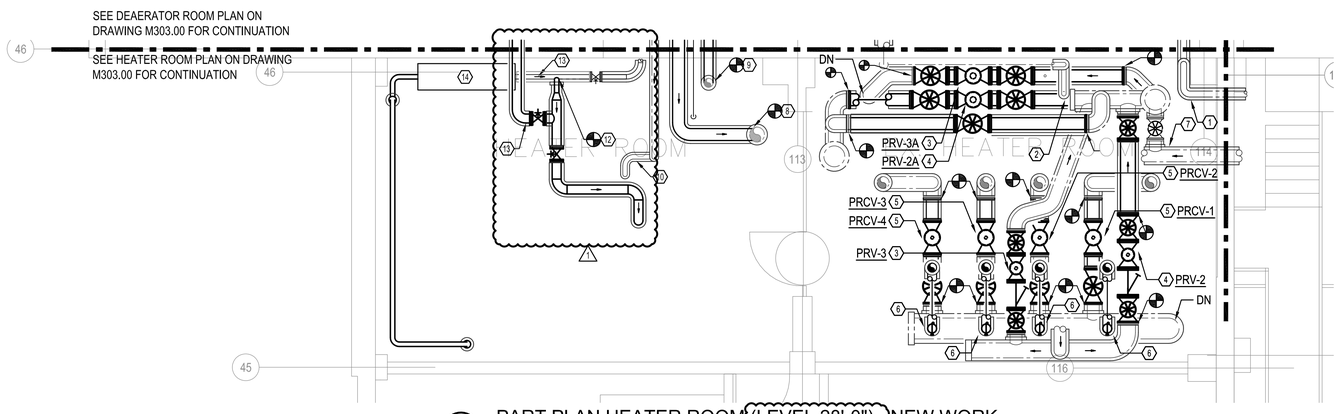
Scale: 1/4"=1'-0"

Sheet: 38 of 64



1 PART PLAN DEAERATOR ROOM (LEVEL 35'-4") - NEW WORK

SCALE: 1/4"=1'-0"



2 PART PLAN HEATER ROOM (LEVEL 28'-0") - NEW WORK

SCALE: 1/4"=1'-0"

HEATER ROOM CONSTRUCTION PLAN TAG NOTE

1. EXISTING 4"Ø HPS SERVING PRV-1 & PRV-1A TO DEAERATOR ROOM.
2. EXISTING MPS FROM PRV-1 & PRV-1A FROM DEAERATOR ROOM.
3. 8"Ø MPS TO LPS WITH PRV-3A, ASSOCIATED VALVES, PIPNG, ETC.
4. 16"Ø MPS TO LPS WITH PRV-2A, ASSOCIATED VALVES, PIPING, ETC.
5. 6"Ø PRESSURE RELIEF CONTROL VALVE (PRCV-1, PRCV-2, PRCV-3, PRCV-4) SERVING LPS PIPING AND ASSOCIATED VALVES, PIPING, ETC.
6. 4"Ø DSAFETY RELIEF VALVE
7. EXISTING 8"Ø HPS FROM BOILER STEAM HEADER.
8. 8"Ø VENT PIPING SERVING SURGE TANK CONNECTED TO EXISTING VENT HEADER.
9. 6"Ø VENT PIPING SERVING DEAERATOR CONNECTED TO EXISTING VENT HEADER.
10. EXISTING HPS FROM DEAERATOR ROOM AND DN TO TANK ROOM.

△1
11. EXISTING 3" CITY WATER SUPPLY PIPING TO REMAIN.
12. PROVIDE CONNECTION TO EXISTING CITY WATER PIPING.
13. 6" EMERGENCY CITY WATER HEADER PIPING UP TO DEAERATOR ROOM.

14. EXISTING RPZ.

DEAERATOR ROOM CONSTRUCTION PLAN TAG NOTE

1. DEAERATOR TANK INSTALLED IN DEAERATOR ROOM
2. 8"Ø CONDENSATE DISCHARGE PIPING DN TO PUMP ROOM BELOW PUMP ROOM.
3. 8"Ø CONDENSATE PUMP DISCHARGE PIPING HEADER TO DEAERATOR TANKS.
4. 4"Ø BOILER FEED RE-CIRCULATION PIPING FROM PUMP ROOM TO DEAERATOR TANK FROM PUMPP ROOM BELOW.
5. 4"Ø MODULATING VALVE ASSEMBLY SERVING CONDENSATE DISCHARGE TO DEAERATOR TANK.

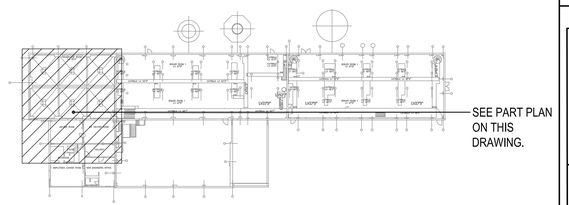
△1
6. 4" MODULATING VALVE ASSEMBLY FOR EMERGENCY CITY WATER SUPPLY TO DEAERATOR TANKS.
7. NOT USED.
8. NOT USED.
9. 6" EMERGENCY CITY WATER HEAD PIPING FROM HEATER ROOM SERVING DEAERATOR.
10. NOT USED.
11. NOT USED.

12. 3"Ø BOILER FEED RE-CIRCULATION PIPING TO DEAERATOR TANK.
13. 4"Ø CONDENSATE DISCHARGE TO MODULATING VALVE ASSEMBLY..
14. 10"Ø HPS PIPING SERVING SURGE TANK AND DEAERATOR TANK FROM BOILER STEAM HEADER 1 AND 2.
15. 6"Ø STEAM REGULATOR SERVING 6" HPS PIPING TO DEAERATOR.
16. 2"Ø STEAM REGULATOR SERVING 2" HPS PIPING TO DEAERATOR.
17. 6"Ø OVERFLOW PIPING WITH STRAINER FROM DEAERATOR TO SURGE TANK.
18. 6"Ø OVERFLOW PIPING DN TO SURGE TANK IN PUMP ROOM.
19. 2-1/2"Ø CONDENSATE PUMP DISCHARGE PIPING TO DEAERATOR.
20. 6"Ø BOILER FEED SUCTION ON BOTTOM OF TANK.
21. 6"Ø BOILER FEED SUCTION DN TO PUMP ROOM. REUSED EXISTING FLOOR SLAB PENETRATION.
22. EXISTING HPS PIPING TO REMAIN.
23. 4"Ø VENT PIPING SERVING DEAERATOR TANK.
24. 10"Ø HPS PIPING SERVING SURGE TANK DN TO PUMP ROOM.
25. 8"Ø VENT PIPING SERVING SURGE TANK UP FROM PUMP ROOM.
26. HPS TO MPS PRV STATION WITH BYPASS.
27. 10"Ø BOILER FEED HEADER

SCOPE OF WORK IN THIS DRAWING:

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△1
1. PROVIDE DEAERATOR TANKS, INCLUDING ALL ASSOCIATED PIPING VALVES VALVES, CONTROLS, ETC. TO THE EXTENT SHOWN ON PLAN IN DEAERATOR ROOM.
2. PROVIDE HPS PIPING, MPS PIPING, LPS PIPING, ASSOCIATED RELIEF VALVES, IN DEAERATOR ROOM AND HEATER ROOMS.



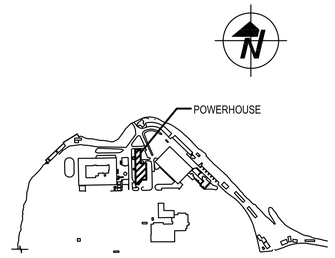
3 POWERHOUSE KEY PLAN

SCALE: NTS

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No.	Date	Revision
△1	12/15/20	ADDENDUM 5
1	09/28/20	ISSUED FOR BID

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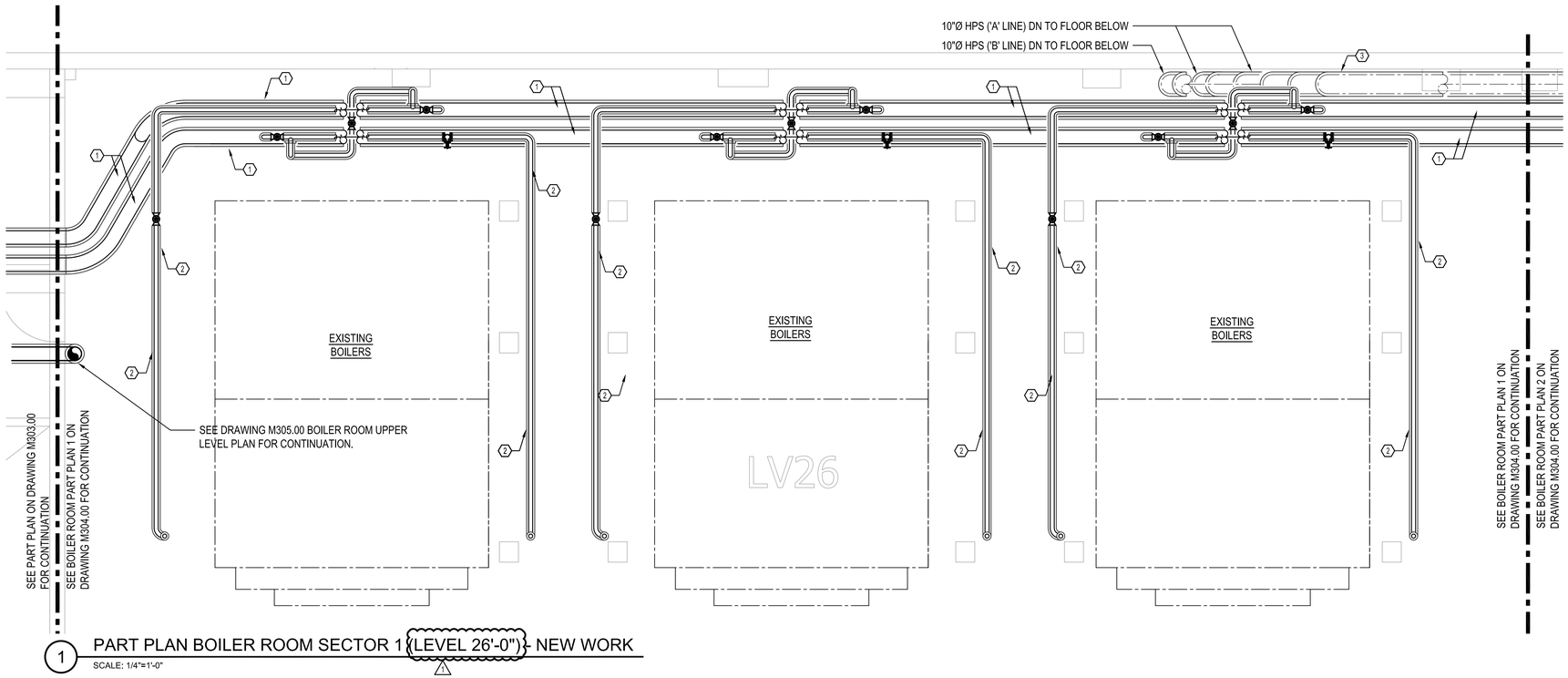
Drawing Title:
HVAC
NEW WORK
PART PLAN DEAERATOR AND
PART PLAN HEATER ROOM

Seal:

Drawing No.:
M303.00

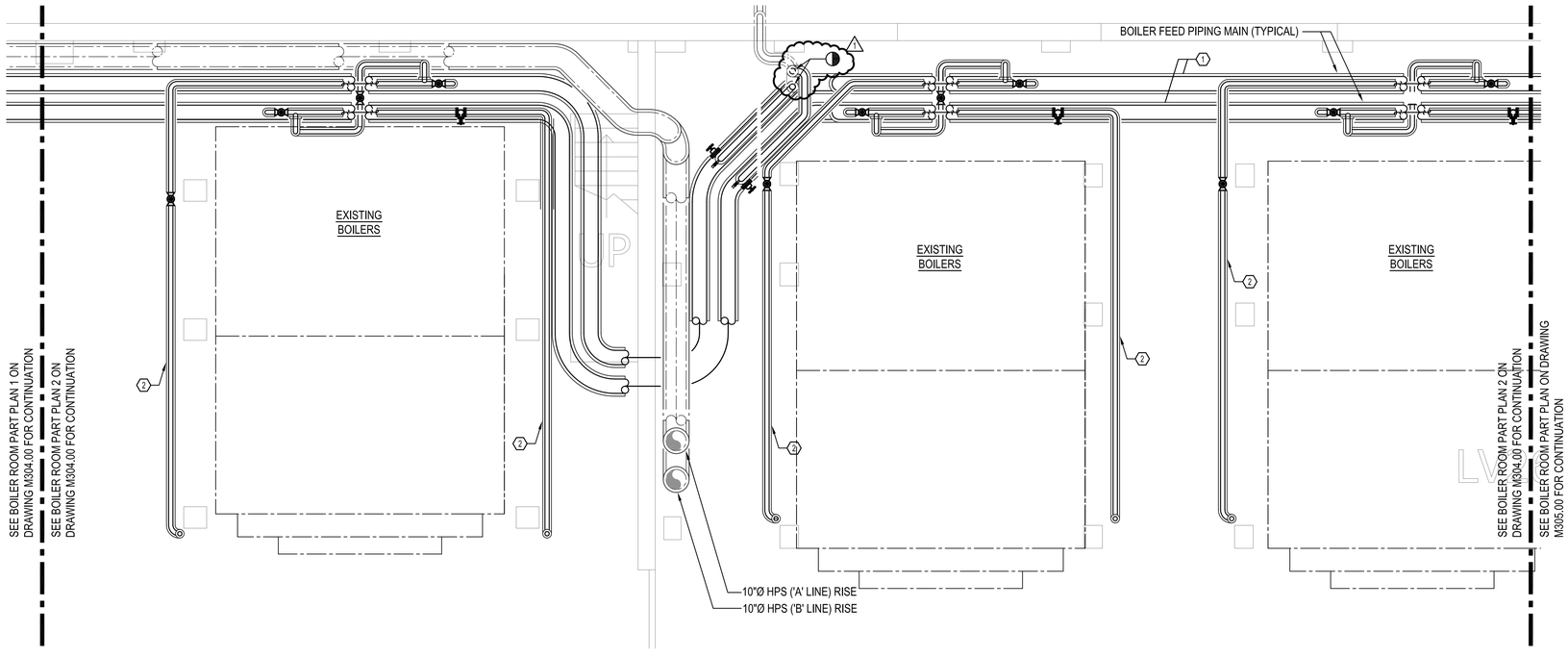
Scale: 1/4"=1'-0"

Sheet: 39 of 64



1 PART PLAN BOILER ROOM SECTOR 1 (LEVEL 26'-0") - NEW WORK

SCALE: 1/4"=1'-0"



2 PART PLAN BOILER ROOM SECTOR 2 (LEVEL 00'-00") - NEW WORK

SCALE: 1/4"=1'-0"

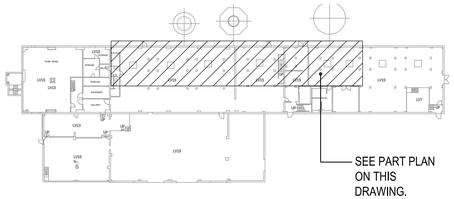
SCOPE OF WORK IN THIS DRAWING:

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1. PROVIDE BOILER FEED PIPING BOILER FEED, VALVES, CONTROLS TO THE EXTENT SHOWN ON PLAN.
2. PROVIDE SHUTOFF VALVES CONNECTED TO EXISTING HPS HEADERS IN BOILER ROOM.

CONSTRUCTION TAG NOTES

1. 10" INSULATED BOILER FEED MAIN FROM PUMP ROOM.
2. INSULATED 3"Ø BOILER FEED PIPING TO BOILERS FROM MAIN.
3. EXISTING 10'Ø HPS PIPING MAIN FROM BOILERS.
4. NOT USED.



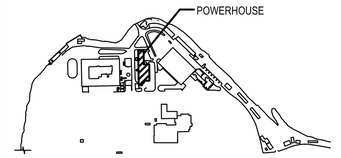
3 POWERHOUSE KEY PLAN

SCALE: 1/4"=1'-0"

CITY OF NEW YORK DEPARTMENT OF CORRECTION

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KEY PLAN
NTS

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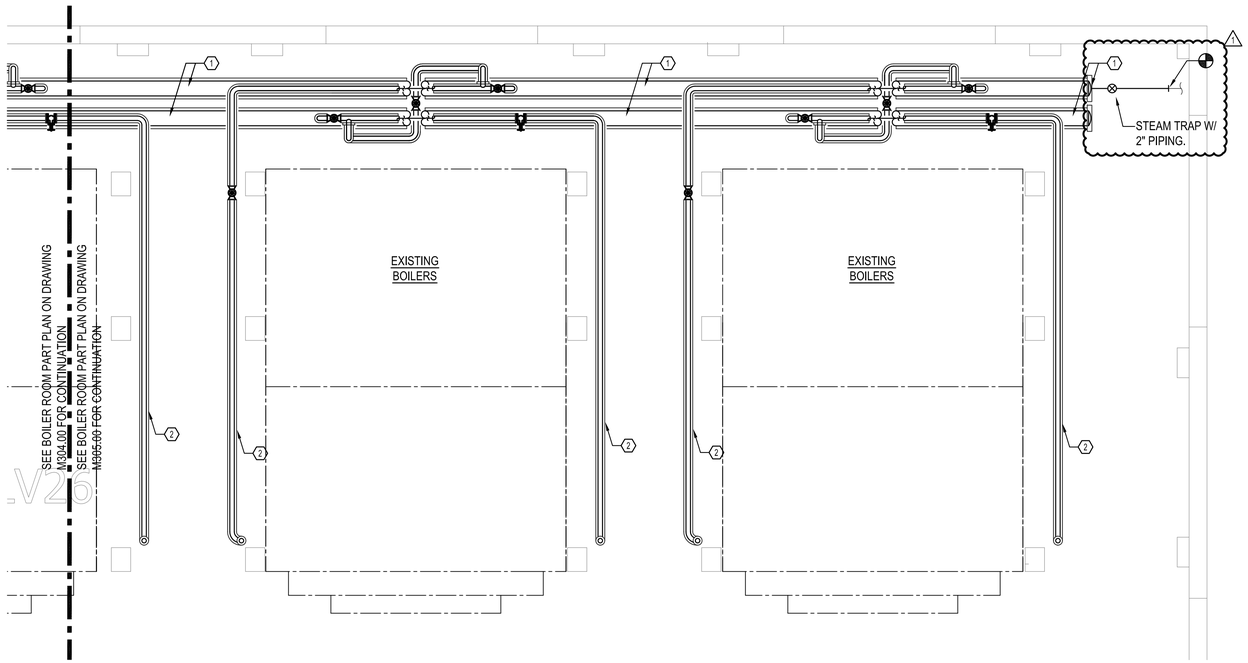
Drawing Title:
HVAC - NEW WORK
BOILER ROOM
PART PLAN 1 & 2

Seal:

Drawing No.: M304.00

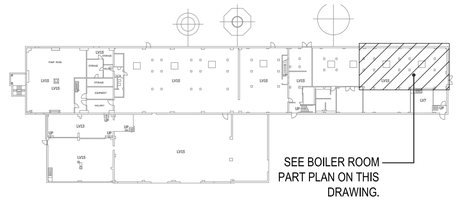
Scale: 1/4"=1'-0"

Sheet: 40 of 64



1 PART PLAN BOILER ROOM SECTOR 3 (LEVEL 26'-00") - NEW WORK

SCALE: 1/4"=1'-0"



2 POWERHOUSE KEY PLAN

SCALE: NTS

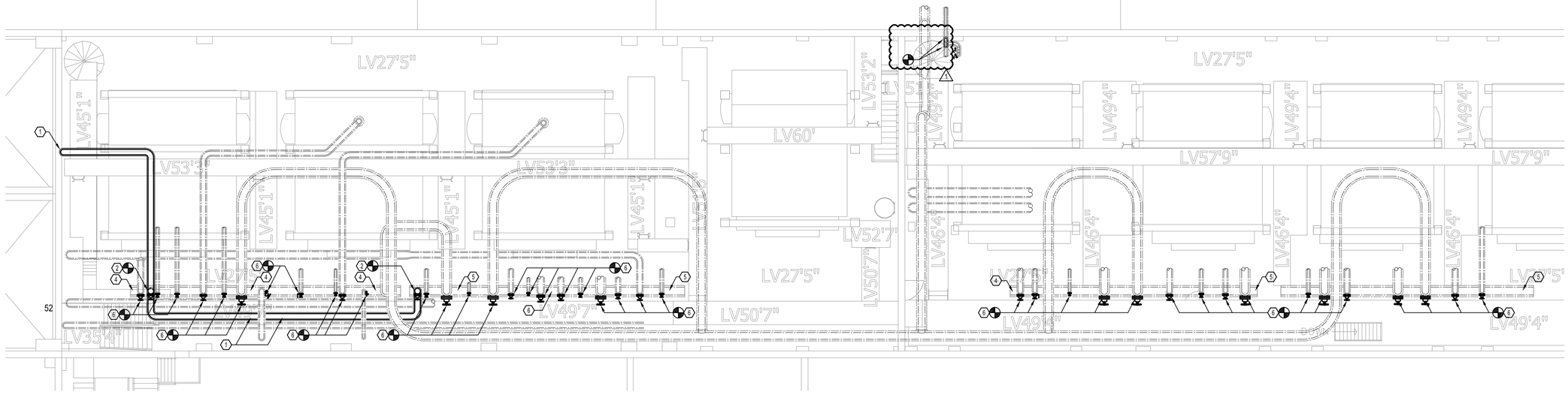
BOILER ROOM CONSTRUCTION TAG NOTES

1. 10"Ø BOILER FEED INSULATED HEADER FROM PUMP ROOM.
2. 3" BOILER FEED INSULATED PIPING INCLUDING ALL ASSOCIATED VALVES, ETC. FROM 10"Ø BOILER INSULATED HEADER.

SCOPE OF WORK IN THIS DRAWING:

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1. PROVIDE BOILER FEED PIPING BOILER FEED, VALVES, CONTROLS TO THE EXTENT SHOWN ON PLAN.
2. PROVIDE SHUTOFF VALVES CONNECTED TO EXISTING HPS HEADERS IN BOILER ROOM

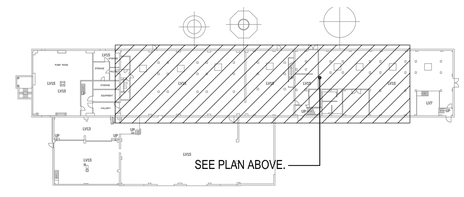


3 BOILER ROOM UPPER LEVEL PLAN (CATWALK LEVEL 49'-4" & LEVEL 50'-7") - NEW WORK

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

BOILER UPPER LEVEL CONSTRUCTION TAG NOTES

1. PROVIDE 10"Ø HPS SERVING DEAERATORS AND SURGE TANK.
2. CONNECT NEW 10" HPS TO EXISTING STEAM HEADER 1. PROVIDE GATE VALVE ABOVE HEADER.
3. CONNECT NEW 10" HPS TO EXISTING STEAM HEADER 2. PROVIDE GATE VALVE ABOVE HEADER.
4. EXISTING STEAM HEADER 1
5. EXISTING STEAM HEADER 2
6. PROVIDE VALVE STEAM SHUT OFF VALVE TO MATCH EXISTING SIZE. SEE SPECIFICATION. THE FOLLOWING IS THE BREAKDOWN OF VALVE SIZES TO BE REPLACED:
   FIVE (5) - 3" SHUTOFF VALVES;
   NINE (9) - 4" SHUTOFF VALVES;
   FIVE (5) - 6" SHUTOFF VALVES;
   TEN (10) - 8" SHUTOFF VALVES;
   ONE (1) - 10" SHUTOFF VALVES;
   TEN (10) - 12" SHUTOFF VALVES.



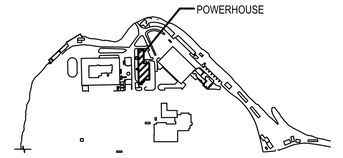
4 POWERHOUSE BOILER ROOM UPPER LEVEL KEY PLAN

SCALE: 1/4"=1'-0"

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KEY PLAN
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PART PLAN BOILER ROOM

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Drawing No.: M305.00

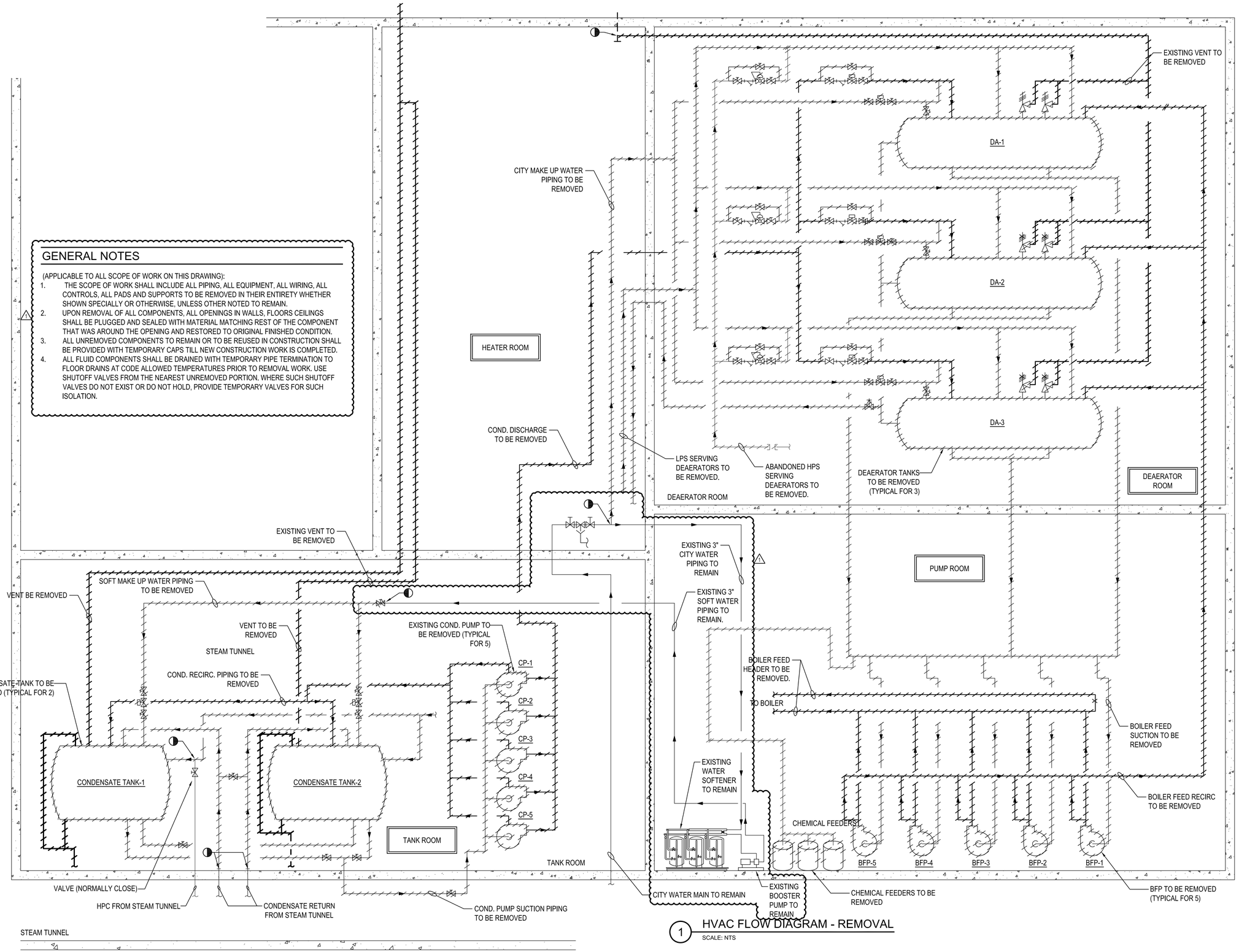
Scale: SEE SCALE

Sheet: 41 of 64

GENERAL NOTES

(APPLICABLE TO ALL SCOPE OF WORK ON THIS DRAWING):

1. THE SCOPE OF WORK SHALL INCLUDE ALL PIPING, ALL EQUIPMENT, ALL WIRING, ALL CONTROLS, ALL PADS AND SUPPORTS TO BE REMOVED IN THEIR ENTIRETY WHETHER SHOWN SPECIALLY OR OTHERWISE, UNLESS OTHER NOTED TO REMAIN.
2. UPON REMOVAL OF ALL COMPONENTS, ALL OPENINGS IN WALLS, FLOORS CEILINGS SHALL BE PLUGGED AND SEALED WITH MATERIAL MATCHING REST OF THE COMPONENT THAT WAS AROUND THE OPENING AND RESTORED TO ORIGINAL FINISHED CONDITION.
3. ALL UNREMOVED COMPONENTS TO REMAIN OR TO BE REUSED IN CONSTRUCTION SHALL BE PROVIDED WITH TEMPORARY CAPS TILL NEW CONSTRUCTION WORK IS COMPLETED.
4. ALL FLUID COMPONENTS SHALL BE DRAINED WITH TEMPORARY PIPE TERMINATION TO FLOOR DRAINS AT CODE ALLOWED TEMPERATURES PRIOR TO REMOVAL WORK. USE SHUTOFF VALVES FROM THE NEAREST UNREMOVED PORTION. WHERE SUCH SHUTOFF VALVES DO NOT EXIST OR DO NOT HOLD, PROVIDE TEMPORARY VALVES FOR SUCH ISOLATION.

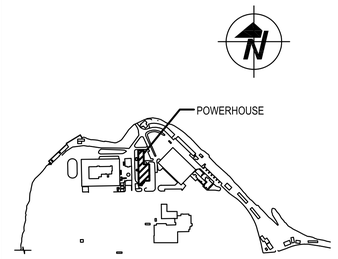


1 HVAC FLOW DIAGRAM - REMOVAL
SCALE: NTS

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2	12/15/20	ADDENDUM 5

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DESIGNED BY:

IAQ SYSTEMS INC
Consulting Engineers
555 8th Avenue, Suite 1502
New York, New York 10018
Tel. 212.680.8945
www.iaqsys.com

Executive Director:	HARDEE SAINI
Project Manager:	BV
Project Engineer:	TS
Drawn By: DB	Checked By: SB
PIN # 072202001CPD	Date:

Project:
POWERHOUSE
BOILER FEED WATER
TREATMENT SYSTEM
UPGRADE
RIKERS ISLAND
EAST ELMHURST, NY 11370

Address:

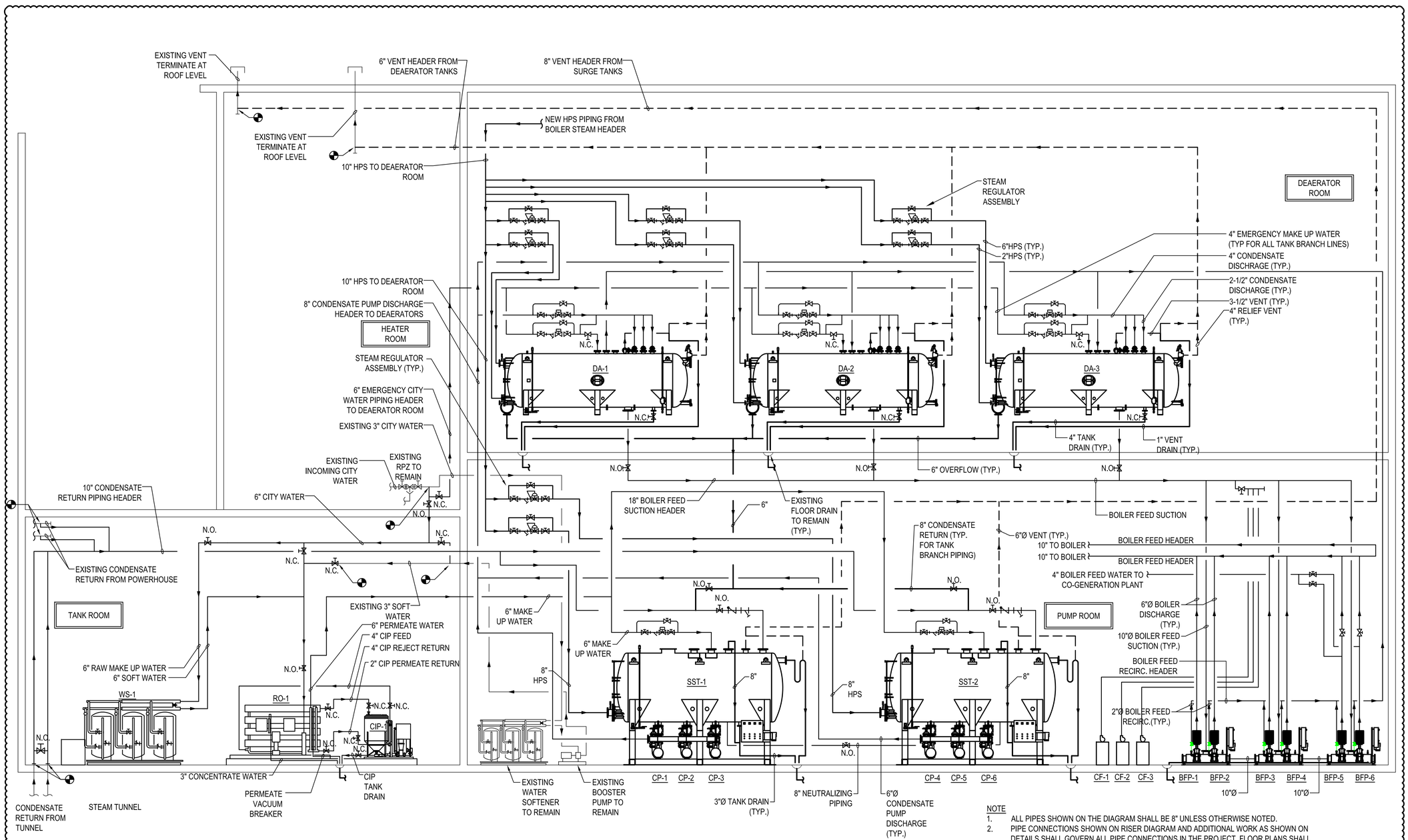
Drawing Title:
HVAC
BOILER FEED WATER SYSTEM
REMOVAL DIAGRAM

Seal:

Drawing No.:
M 401.00

Scale: NONE

Sheet: 43 of 64



NOTE

1. ALL PIPES SHOWN ON THE DIAGRAM SHALL BE 8" UNLESS OTHERWISE NOTED.
2. PIPE CONNECTIONS SHOWN ON RISER DIAGRAM AND ADDITIONAL WORK AS SHOWN ON DETAILS SHALL GOVERN ALL PIPE CONNECTIONS IN THE PROJECT. FLOOR PLANS SHALL BE USED FOR LOCATION OF EQUIPMENT AND PIPE ROUTING PURPOSES.
3. ALL PIPING, VALVES, FITTINGS, SPECIALTIES, CONTROLS FOR PIPING FROM THE BOILER FEED PUMPS TO THE BOILERS SHALL BE RATED FOR 250 PSIG MINIMUM OPERATING PRESSURE.

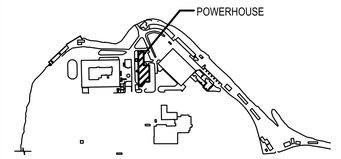
1 HVAC FLOW DIAGRAM - CONSTRUCTION

SCALE: NTS

CITY OF NEW YORK DEPARTMENT OF CORRECTION

THE CITY OF NEW YORK
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DIVISION OF CAPITAL POLICY
AND DEVELOPMENT
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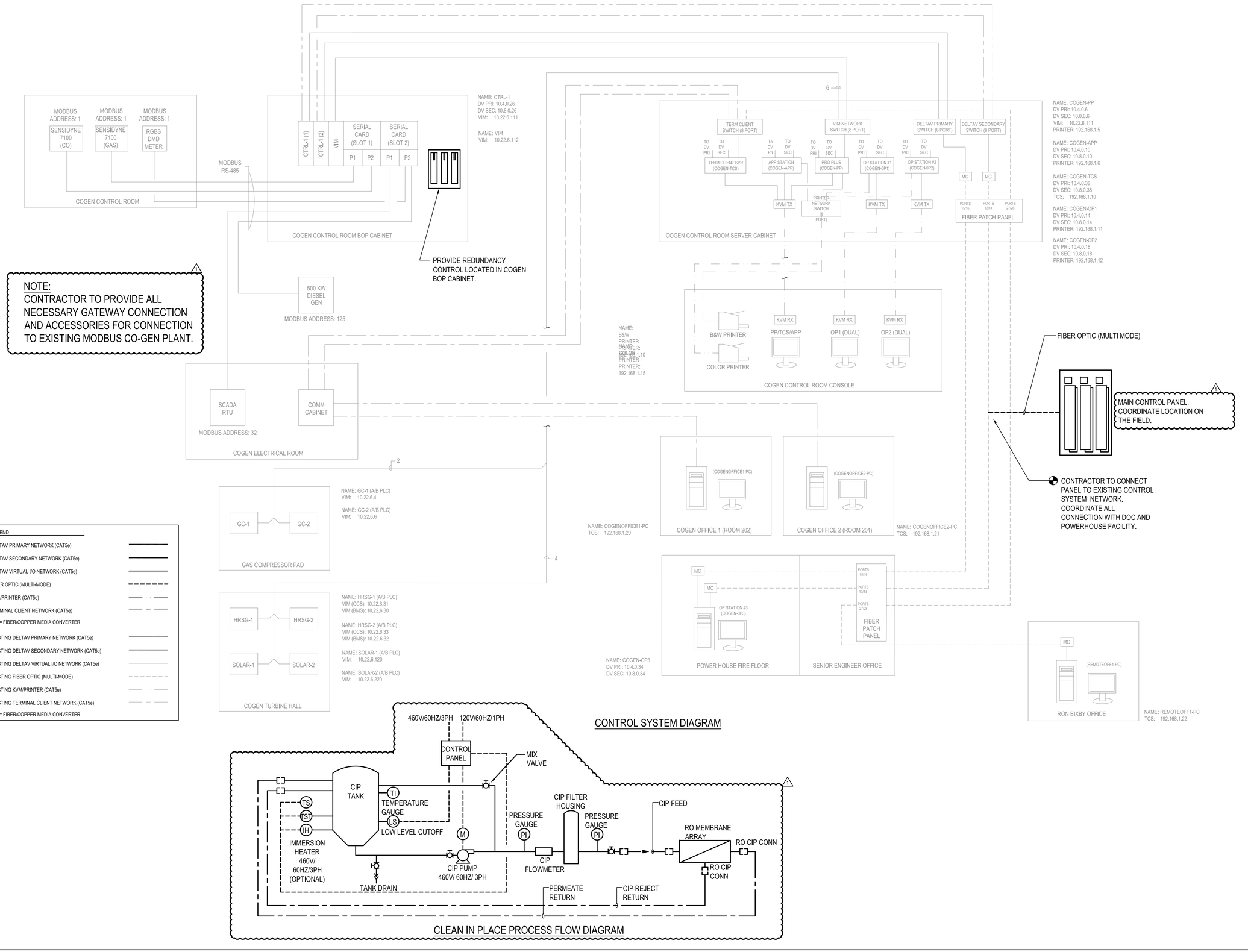
Drawing Title:
HVAC
BOILER FEED WATER TREATMENT
SYSTEM - FLOW DIAGRAM

Seal:

Drawing No.:
M402.00

Scale: NONE

Sheet: 44 of 64



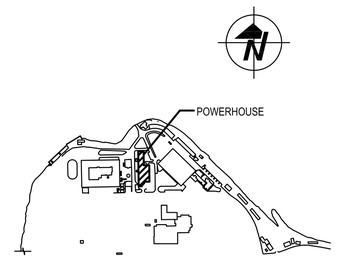
CONTROL SYSTEM DIAGRAM

CLEAN IN PLACE PROCESS FLOW DIAGRAM

CITY OF NEW YORK DEPARTMENT OF CORRECTION

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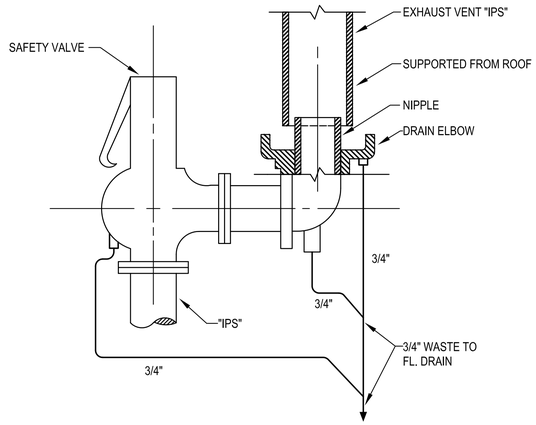
Drawing Title:
HVAC
CONTROL SYSTEM DIAGRAM

Seal:

Drawing No.:
M403.00

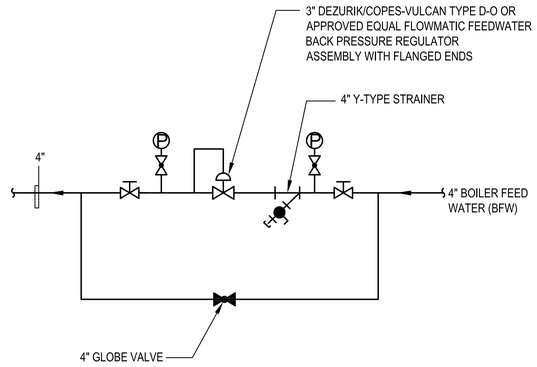
Scale: NONE

Sheet: 45 of 64



(10) SCALE: NONE

TYPICAL SAFETY VALVE DETAIL

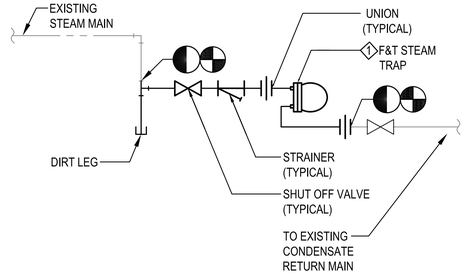


(11) SCALE: NONE

BOILER FEED WATER (BFW) PRESSURE REGULATING VALVE ASSEMBLY

TAGGED NOTES:

1. REMOVE AND REPLACE MIN. 15'-0" OF PIPING OR GREATER, UNLESS OTHERWISE NOTED. SEE PLANS FOR LOCATION AND SIZES.

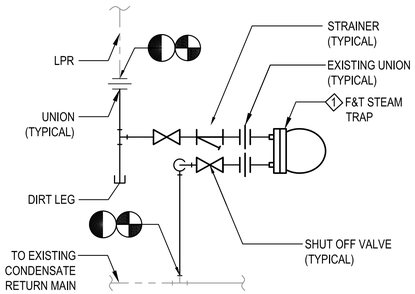


(12) SCALE: NONE

HORIZONTAL END OF MAIN DRIP TRAP VALVE ASSEMBLY

TAGGED NOTES:

1. REMOVE AND REPLACE MIN. 15'-0" OF PIPING OR GREATER, UNLESS OTHERWISE NOTED. SEE PLANS FOR LOCATION AND SIZES.

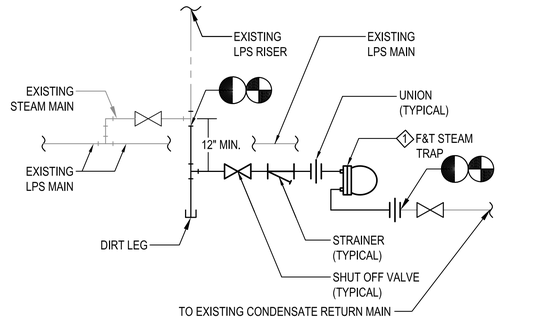


(13) SCALE: NONE

CONDENSATE RISER BOTTOM DRIP LEG DETAIL

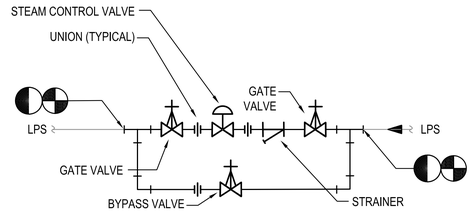
TAGGED NOTES:

1. REMOVE AND REPLACE MIN. 6'-0" OF PIPING OR GREATER, UNLESS OTHERWISE NOTED. SEE PLANS FOR LOCATION AND SIZES.



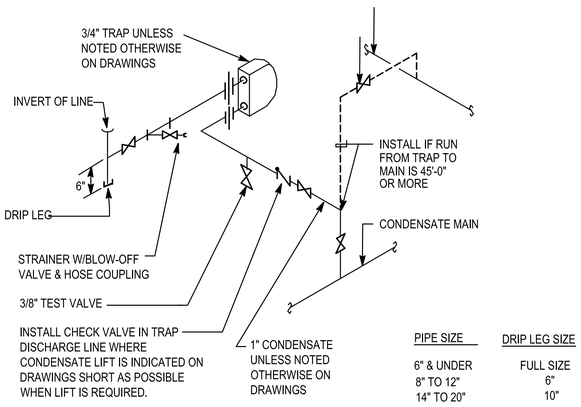
(14) SCALE: NONE

STEAM SUPPLY RISER BOTTOM DRIP LEG DETAIL



(15) SCALE: NONE

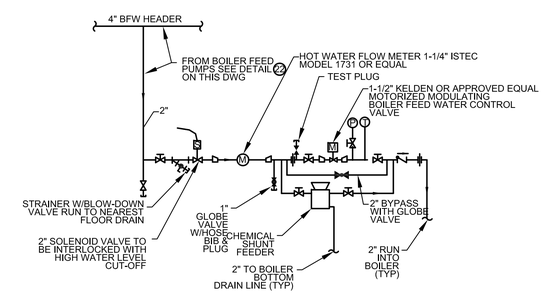
STEAM CONTROL VALVE STATION DETAIL



PIPE SIZE	DRIP LEG SIZE
6" & UNDER	FULL SIZE
8" TO 12"	6"
14" TO 20"	10"

(16) SCALE: NONE

LOW AND MEDIUM PRESSURE STEAM LINE DRIP AND TRAP STATION



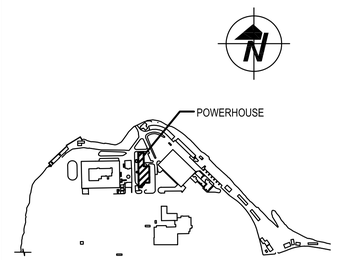
(17) SCALE: NONE

BOILER FEED WATER ASSEMBLY DETAIL

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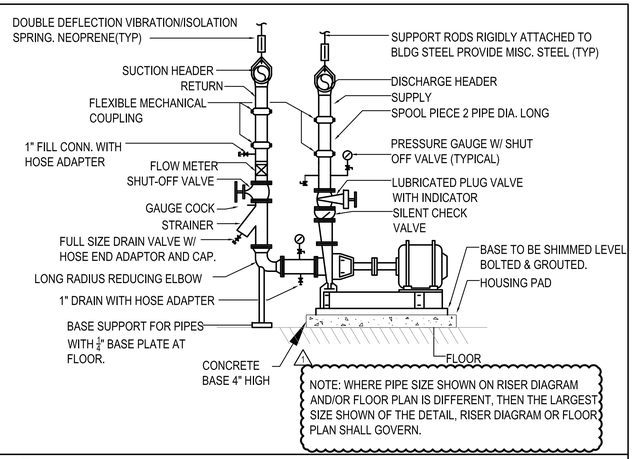
Drawing Title:
HVAC
DETAILS SHEET
2 OF 4

Seal:

Drawing No.:
M 502.00

Scale: NONE

Sheet: 47 of 64

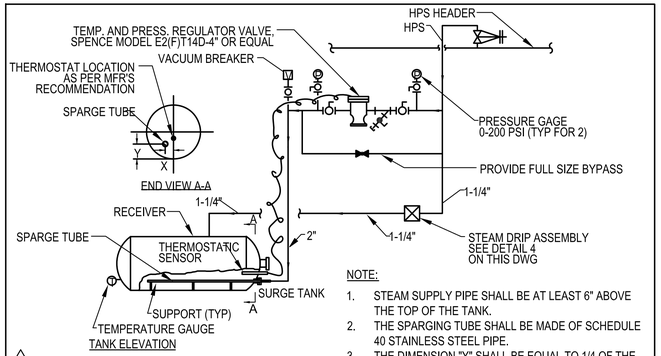


18
SCALE: NONE

END SUCTION PUMP

19
SCALE: NONE

NOT USED

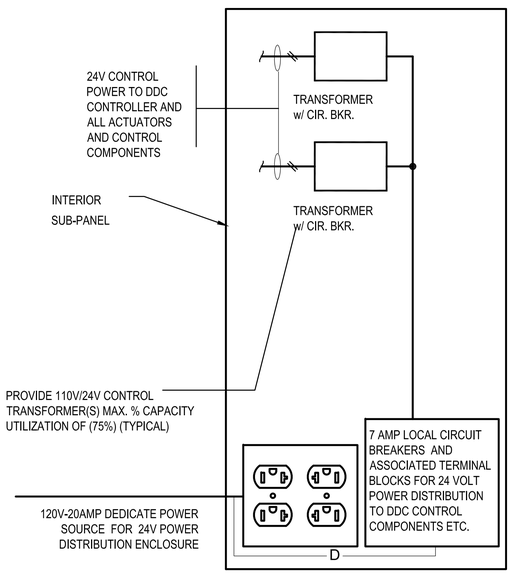


20
SCALE: NONE

STEAM REGULATOR ASSEMBLY

NOTE:

1. THE CONTRACTOR SHALL PROVIDE 24VAC TO THOSE MISC., CONTROL DEVICES WHICH ARE NOT POWERED DIRECTLY FROM A UNITARY HVAC SYSTEM. CONTRACTOR TO COORDINATE WITH MECHANICAL CONTRACTOR AND EQUIPMENT VENDORS FOR CONTROL DEVICE POWER.



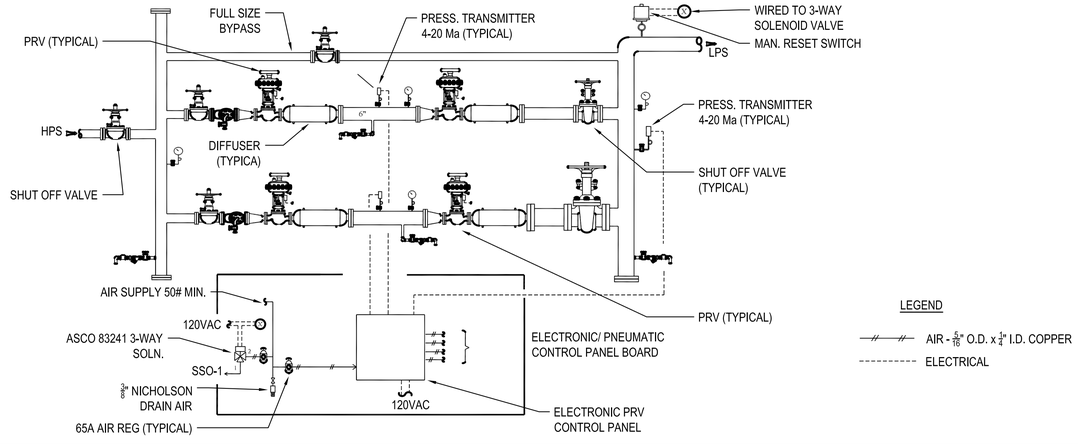
NOTE: 24 VOLT POWER DISTRIBUTION CABINET PROVIDED BY HVAC CONTRACTOR

24 V POWER DISTRIBUTION CABINET (INSIDE VIEW OF PANEL) NOT TO SCALE

11 POWER DISTRIBUTION CABINET DETAIL
SCALE: NONE

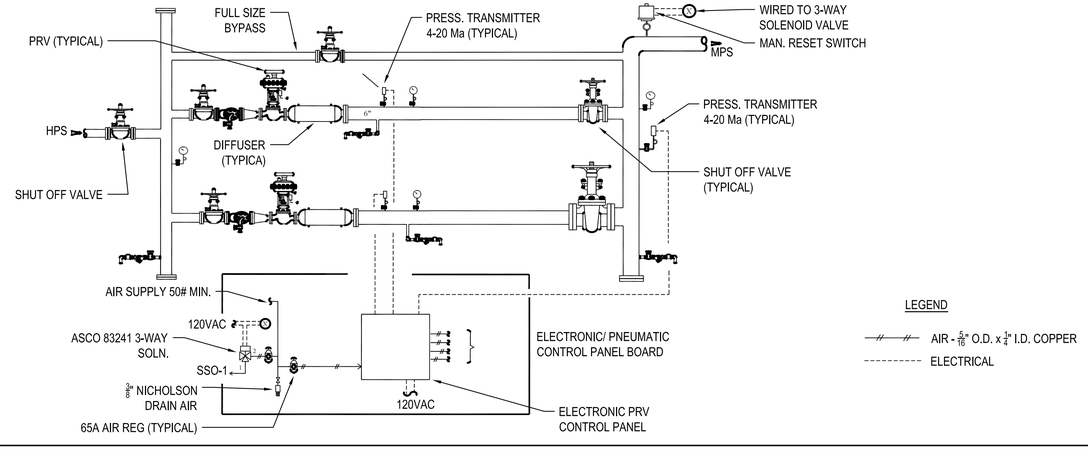
21
SCALE: NONE

NOT USED



21A
SCALE: NONE

PRESSURE REDUCING VALVE STATION (HPS TO LPS) DETAIL



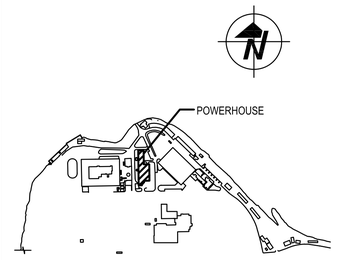
21B
SCALE: NONE

PRESSURE REDUCING VALVE STATION (HPS TO MPS) DETAIL

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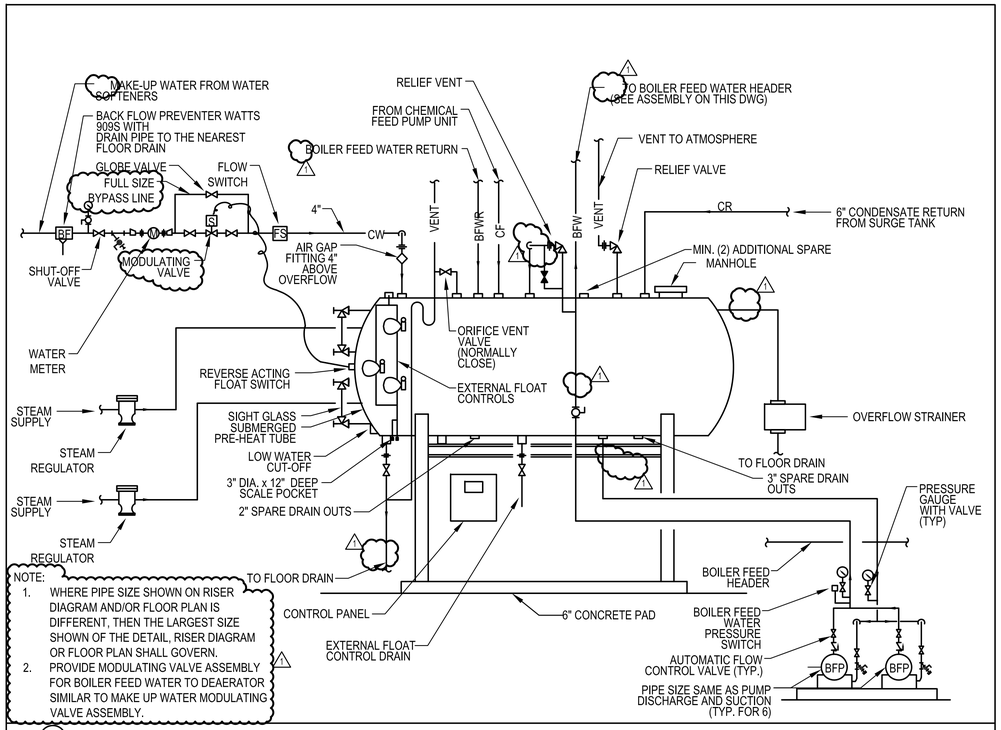
Drawing Title:
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DETAILS SHEET
3 OF 4

Seal:

Drawing No.:
M 503.00

Scale: NONE

Sheet: 48 of 64

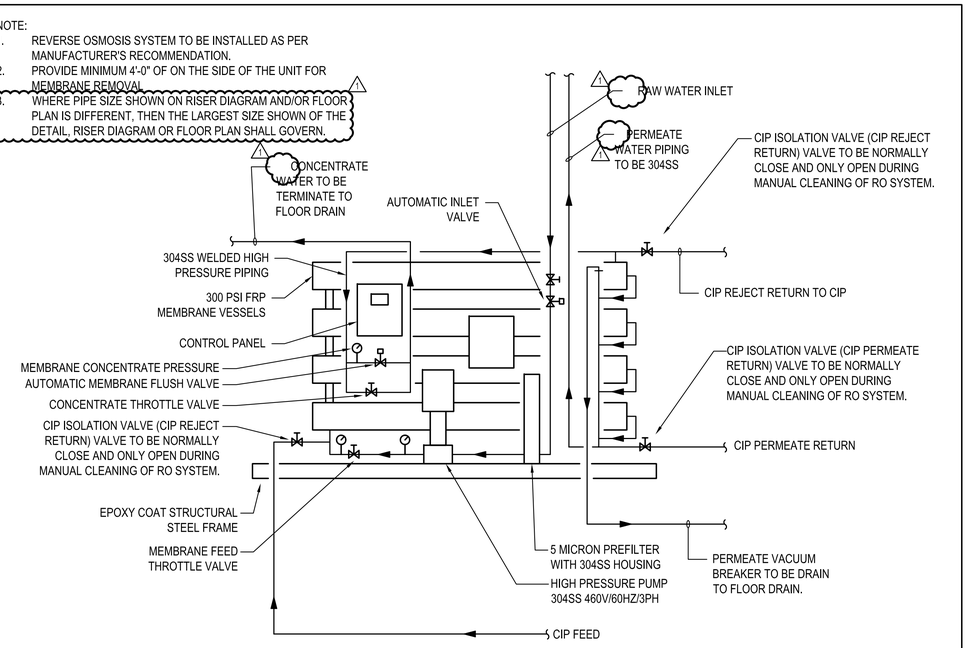


22

SCALE: NONE

DEAERATOR TANK DETAIL

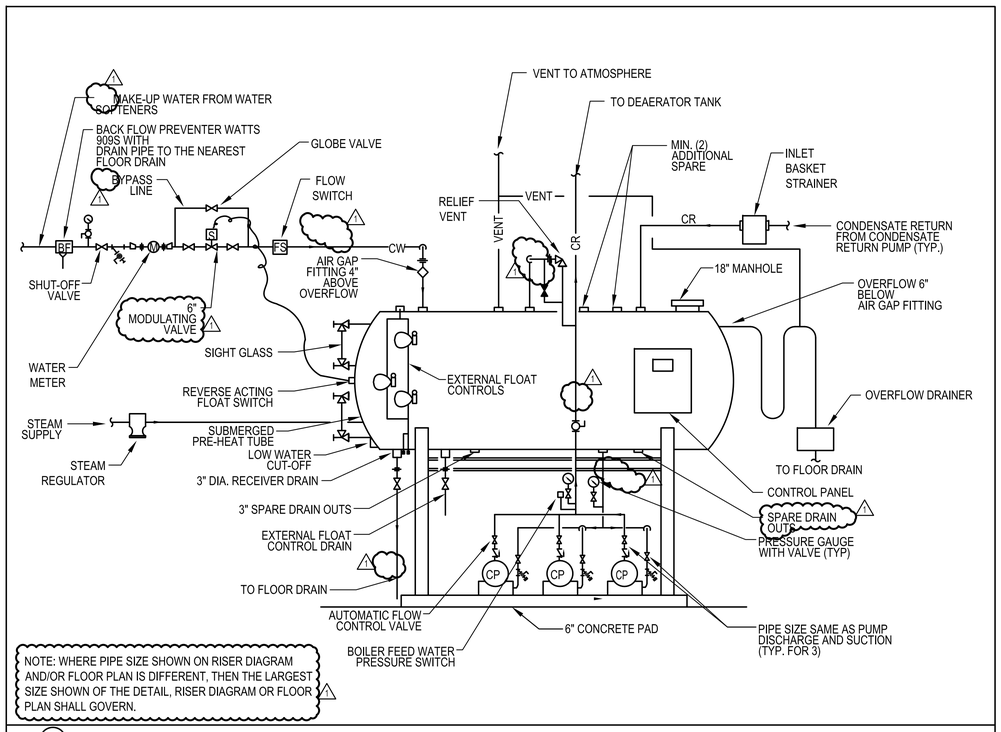
NOTE:
1. REVERSE OSMOSIS SYSTEM TO BE INSTALLED AS PER MANUFACTURER'S RECOMMENDATION.
2. PROVIDE MINIMUM 4'-0" OF ON THE SIDE OF THE UNIT FOR MEMBRANE REMOVAL
3. WHERE PIPE SIZE SHOWN ON RISER DIAGRAM AND/OR FLOOR PLAN IS DIFFERENT, THEN THE LARGEST SIZE SHOWN OF THE DETAIL, RISER DIAGRAM OR FLOOR PLAN SHALL GOVERN.



23

SCALE: NONE

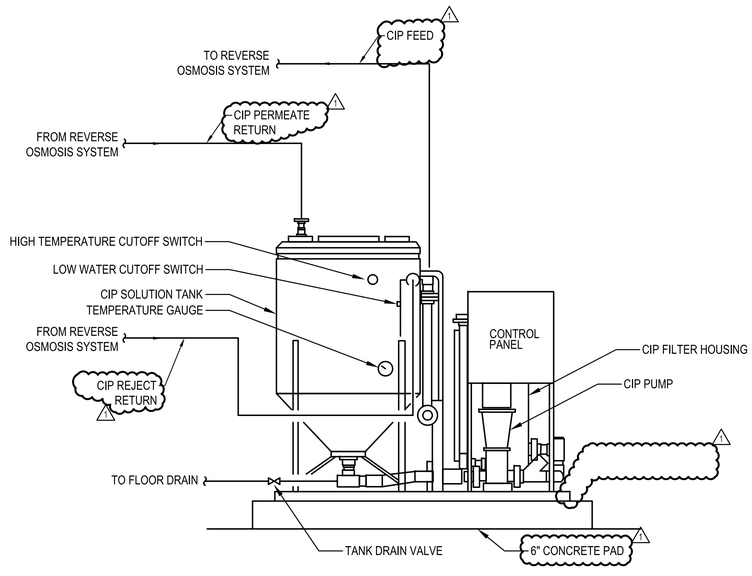
REVERSE OSMOSIS SYSTEM DETAIL



24

SCALE: NONE

SURGE TANK DETAIL



NOTE: WHERE PIPE SIZE SHOWN ON RISER DIAGRAM AND/OR FLOOR PLAN IS DIFFERENT, THEN THE LARGEST SIZE SHOWN OF THE DETAIL, RISER DIAGRAM OR FLOOR PLAN SHALL GOVERN.

25

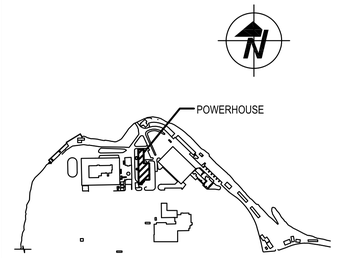
SCALE: NONE

CLEAN IN PLACE (CIP) SKID DETAIL

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4 OF 4

Seal:

Drawing No.:
M 504.00

Scale: NONE

Sheet: 59 of 64

POWER SYMBOLS

SYMBOL	DESCRIPTION
———	SYMBOLS SHOWN WITH DARK SOLID LINES - INDICATES NEW WORK IN CONTRACT
———	SYMBOLS SHOWN WITH LIGHT LINES - INDICATES EXISTING TO REMAIN
—x—x—	SYMBOLS SHOWN WITH CROSS LINES - INDICATES EXISTING TO BE REMOVED
LP/1	CONCEALED HOME RUN. NOTATION INDICATES PANEL AND CIRCUIT NUMBER, No. OF ARROWS DENOTES No. OF CIRCUITS. GROUND WIRE IS NOT SHOWN BUT MUST BE PROVIDED FOR ALL BRANCH CIRCUITS. PROVIDE SHARED NEUTRAL (MIN #12) FOR EACH CIRCUIT AND GROUND WIRE FOR EACH HOMERUN. GROUND WIRE MIN. #12, U.O.N. (1,3) DENOTES 2 POLE CIRCUIT (1,3,5) DENOTE 3 POLE CIRCUIT
	CONTINUATION OF WIRING AND CONDUIT. (CONCEALED IN CEILING, WALL, OR FLOOR)
	RISER CONDUIT UP - WITH WIRING (PROVIDE CORE DRILLING IF REQUIRED)
	RISER CONDUIT DOWN - WITH WIRING (PROVIDE CORE DRILLING IF REQUIRED)
J J	JUNCTION BOX AND FINAL CONNECTION TO EQUIPMENT
2	WALL MOUNTED DUPLEX THREE WIRE GROUNDED RECEPTACLE, 20A, 125V. 18"AFF, UNLESS OTHERWISE NOTED. 2-DENOTES CIRCUIT # (TYP. ALL RECEPTACLES)
GFI	DUPLEX RECEPTACLE WALL MOUNTED IN A SINGLE GANG OUTLET BOX. 20-AMP, 125-VOLT, 2-POLE, 3-WIRE. WITH CLASS 'A' GROUND FAULT CIRCUIT INTERRUPTER.
GFI	QUAD RECEPTACLE WALL MOUNTED IN A DOUBLE GANG OUTLET BOX. 20-AMP, 125-VOLT, 2-POLE, 3-WIRE. WITH CLASS 'A' GROUND FAULT CIRCUIT INTERRUPTER.
	SURFACE OR RECESSED MOUNTED PANELBOARD. 120/208V OR 277/480V. 3ϕ, 4W, OR AS INDICATED ON THE DRAWINGS. DASHED LINES INDICATE REQUIRED CLEARANCE.
	EXISTING PANELBOARD
	DISTRIBUTION PANEL
	CIRCUIT BREAKER. RATING AS INDICATED ON DRAWINGS
	FUSED DISCONNECT SWITCH. RATING AS INDICATED ON THE DRAWINGS.
	UNFUSED DISCONNECT SWITCH. RATING AS INDICATED ON THE DRAWINGS. 30/3 DENOTES 30 AMP, 3 POLE 30A/3P, U.O.N.
	FUSED DISCONNECT SWITCH. RATING AS INDICATED ON THE DRAWINGS. 60/40/3 DENOTES 60 AMP, 40 A FUSE, 3 POLE
	MAGNETIC MOTOR STARTER
	COMBINATION DISCONNECT SWITCH / MAGNETIC MOTOR STARTER
#	MOTOR, NUMBER INDICATES HORSE POWER RATING
	CONNECTION TO GROUND ELECTRODE
VFD	VARIABLE FREQUENCY DRIVE WITH DISCONNECT SWITCH, FURNISHED BY MECH. CONTRACTOR, INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR.
	EXISTING 3 POLE DRAWOUT TYPE LOW VOLTAGE POWER CIRCUIT BREAKER. RATING AS INDICATED ON DRAWINGS
T	TRANSFORMER
PDC	POWER DISTRIBUTION CABINET (BY MECHANICAL CONTRACTOR), WIRED BY ELECTRICAL CONTRACTOR

DEMOLITION SYMBOLS

(U.O.N. EACH DEMOLITION SYMBOL DENOTES DISCONNECTION AND REMOVAL OF DEVICE AND ASSOCIATED CONDUIT AND WIRING BACK TO SOURCE)

SYMBOL	DESCRIPTION
	EXISTING MECH EQUIPMENT TO BE REMOVED BY MECH. CONTRACTOR. REMOVE ASSOCIATED DISCONNECT, CONDUIT AND WIRING TO SOURCE.
	REMOVE EXISTING DISCONNECT SWITCH AND ASSOCIATED CONDUIT AND WIRING BACK TO SOURCE
	REMOVE EXISTING STARTER AND ASSOCIATED CONDUIT AND WIRING BACK TO SOURCE
VFD	REMOVE EXISTING VFD/DISC. SWITCH AND ASSOCIATED CONDUIT AND WIRING BACK TO SOURCE
CP	REMOVE CONTROL PANEL AND ASSOCIATED CONDUIT AND WIRING BACK TO SOURCE
	REMOVE COMBINATION STARTER/FUSED DISC. AND ASSOCIATED CONDUIT AND WIRING BACK TO SOURCE

ABBREVIATIONS

SYMBOL	DESCRIPTION
A, AMP	AMPERE
AC	ALTERNATING CURRENT
AIC	AMPERES INTERRUPTING CAPACITY
AF/AT	AMPERE FRAME/AMPERE TRIP
AFF	ABOVE FINISHED FLOOR
AFI	ARC FAULT INTERRUPTER
ARCH	ARCHITECTURAL
AS/AF	AMPERE SWITCH/AMPERE FUSE
A/V	AUDIO/VISUAL
AWG	AMERICAN WIRE GAUGE
BLDG.	BUILDING
BLR	BOILER
BMS	BUILDING MANAGEMENT SYSTEM
BR	BEDROOM
BTH	BATHROOM
C, CDT	CONDUIT
CB	CIRCUIT BREAKER
CELL	CELLAR
CKT(S)	CIRCUIT(S)
CL	CLOSET
CLG	CEILING
CO	CERTIFICATE OF OCCUPANCY, CARBON MONOXIDE
C/T	CURRENT TRANSFORMER
CU	COPPER
DISC	DISCONNECT
DIST	DISTRIBUTION
DWG	DRAWING
DN	DOWN
EC	EMPTY CONDUIT
ELEC	ELECTRIC
ELEV	ELEVATOR
EM	EMERGENCY
EMT	ELECTRIC METALLIC TUBING
EQUIP	EQUIPMENT
ETC	ETCETERA
EXIST	EXISTING
FA	FIRE ALARM
FMC	FLEXIBLE METALLIC TUBING
FL	FLOOR
G, GND	GROUND

ABBREVIATIONS

SYMBOL	DESCRIPTION
GA	GAUGE
GFI	GROUND FAULT INTERRUPTER
GWB	GYPSUM WALL BOARD
HP	HORSE-POWER
JB	JUNCTION BOX
K	x 1000
KIT	KITCHEN
KN	KEY NOTE
KVA	KILOVOLT AMPERE
KW	KILOWATT
KWH	KILOWATT HOUR
L	LINE
LR	LOCKER ROOM
LTG	LIGHTING
MACH	MACHINE
MECH	MECHANICAL
MCB	MAIN CIRCUIT BREAKER
MIN	MINIMUM
MLO	MAIN LUGS ONLY
MTD	MOUNTED
NEC	NATIONAL ELECTRICAL CODE
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
N	NEUTRAL
No	NUMBER
NTS	NOT TO SCALE
NYC	NEW YORK CITY
OCPD	OVER CURRENT PROTECTION DEVICE
P	POLE(S)
PB	PULL BOX
PWR	POWER
PNL	PANEL
REC	RECEPTACLES
REF	REFRIGERATOR
RGS	RIGID GALVANIZED STEEL CONDUIT
RM	ROOM
RP	RECEPTACLE PANEL
S	SMOKE DETECTOR
SCH	SCHEDULE
SMK	SMOKE
SP	SPARE
STD	STANDARD
STOR	STORAGE
STV	STOVE GAS
SW	SWITCH
TCO	TEMPORARY CERTIFICATE OF OCCUPANCY
TEL	TELEPHONE
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
V	VOLT
VA	VOLT-AMPERE
VDC	DIRECT CURRENT VOLTAGE
W	WATT, WIRE, WIDTH
W/	WITH
WP	WEATHERPROOF

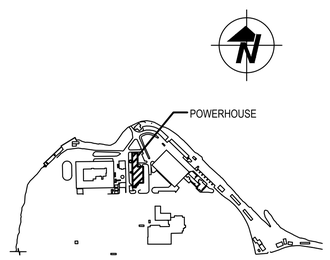
GENERAL NOTES

1. ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH THE REQUIREMENTS OF THE 2011 NYC ELECTRICAL CODE AND THE NYC AMENDMENTS TO THE NEC-2008, THE APPLICABLE SECTIONS OF THE NFPA, THE 2014 NYC BUILDING CODE, DOC STANDARDS AND ALL GOVERNING LOCAL CODES, LAWS, AND REGULATIONS.
2. PROVIDE A COMPLETE OPERABLE SYSTEM IN A WORKMANLIKE MANNER. OUTLINE DESCRIPTION AND EQUIPMENT DO NOT LIMIT CONTRACTOR'S LIABILITY FOR THE INSTALLATION OF A COMPLETE OPERABLE SYSTEM.
3. ALL ELECTRICAL EQUIPMENT SHALL BE THE LATEST OF THE CURRENT YEAR IN DESIGN, MATERIAL AND WORKMANSHIP, AND SHALL BE THE TYPE OR MODEL CALLED FOR IN THESE DRAWINGS AND SPECIFICATIONS
4. CONTRACTOR TO BE RESPONSIBLE FOR REVIEWING THE FULL SET OF BID DOCUMENTS TO BE AWARE OF THE TOTAL SCOPE PRIOR TO SUBMITTING BID. ALL WORK SHOWN ON THE DRAWINGS NOT SPECIFICALLY CALLED OUT AS EXISTING SHALL BE CONSIDERED WORK TO BE PERFORMED UNDER THIS CONTRACT.
5. BIDDERS, BEFORE SUBMITTING A PROPOSAL, SHALL VISIT AND CAREFULLY EXAMINE THE SITE TO BECOME FAMILIAR WITH THE EXISTING CONDITIONS AND WITH THE DIFFICULTIES THAT WILL AFFECT THE EXECUTION OF THIS WORK. SUBMISSION OF A PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT SUCH EXAMINATION HAS BEEN MADE. LATER CLAIMS WILL NOT BE RECOGNIZED FOR EXTRA LABOR, EQUIPMENT OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED. NO ALLOWANCE WILL SUBSEQUENTLY BE MADE TO THE CONTRACTOR BY REASON OF ANY ERROR DUE TO THE CONTRACTOR'S NEGLECT TO COMPLY WITH THIS REQUIREMENT. REPORT ANY DISCREPANCIES BETWEEN DRAWINGS AND FIELD CONDITIONS TO THE ENGINEER.
6. BEFORE COMMENCING WORK, THE CONTRACTOR SHALL FILE ALL REQUIRED CERTIFICATES OF INSURANCE WITH THE BUILDING DEPARTMENT. OBTAIN ALL REQUIRED PERMITS, TEST REPORTS, CERTIFICATIONS FOR T.C.O. AND C.O. AND PAY ALL FEES REQUIRED..
7. ELECTRICAL CONTRACTOR SHALL TAKE DELIVERY AND RESPONSIBILITY FOR ALL EQUIPMENT PRE-PURCHASED BY THE OWNER FOR THIS PROJECT. WORK SHALL INCLUDE RECEIVING EQUIPMENT AT STREET-SIDE, MOVING IT TO INTERIM ONSITE SECURE STORAGE LOCATION, PROTECTING EQUIPMENT FROM DAMAGE, MOVING THE EQUIPMENT FROM STORAGE TO ITS FINAL POSITION, SETTING IN PLACE, AND COMPLETION OF ALL INSTALLATION, TESTING AND COMMISSIONING PROCEDURES REQUIRED FOR APPLICABLE EQUIPMENT.
8. UPON COMPLETION OF ALL ELECTRICAL WORK, ELECTRICAL CONTRACTOR SHALL ADJUST AND TEST ALL CIRCUITS, WIRING DEVICES AND ANY OTHER ELECTRICAL ITEMS INSTALLED. ANY DEFECTIVE ITEMS SHALL BE IMMEDIATELY REPAIRED OR REPLACED WITH NEW EQUIPMENT OR MATERIALS AND THAT PORTION OF THE SYSTEM SHALL BE RETESTED. ALL SUCH REMEDIAL WORK SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.
9. ALL NOTATIONS OF "SCALE" ARE INTENDED AS APPROXIMATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE TO ASCERTAIN THE EXACT DIMENSIONS IN FIELD.
10. ELECTRICAL DRAWINGS ARE DIAGRAMMATIC, SIZES AND LOCATION OF EQUIPMENT AND WIRING ARE SHOWN TO SCALE WHERE POSSIBLE, BUT MAY BE DISTORTED FOR CLARITY ON THE DRAWINGS.
11. UNLESS OTHERWISE NOTED, ELECTRICAL EQUIPMENT INCLUDING BUT NOT LIMITED TO PULL BOXES, JUNCTION BOXES, WIRING DEVICES, PANELBOARDS, LOW VOLTAGE SYSTEMS DEVICES, ETC WHERE INDICATED ON DRAWINGS, SHALL BE CONSIDERED SHOWN AT THEIR APPROXIMATE LOCATION. THE CONTRACTOR SHALL LOCATE THESE ITEMS AS FIELD CONDITIONS DICTATE AND AS APPROVED BY THE ARCHITECT OR HIS REPRESENTATIVE. .
12. ALL CONDUIT RUNS, WHEN SHOWN ON THE DRAWINGS, ARE SHOWN DIAGRAMMATICALLY TO OUTLINE THE GENERAL ROUTING OF MAJOR FEEDERS AND BRANCH WIRING. IT IS NOT WITHIN THE SCOPE OF THESE DRAWINGS TO SHOW ALL NECESSARY BENDS, OFFSETS, PULL BOXES AND OBSTRUCTIONS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO INSTALL HIS WORK TO CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE.
13. ADDITIONAL PULL AND JUNCTION BOXES NOT SHOWN ON DRAWINGS SHALL BE PROVIDED WHERE REQUIRED BY APPLICABLE CODE REQUIREMENTS OR WHERE CALLED FOR BY FIELD CONDITIONS. PULL AND JUNCTION BOXES SHALL BE SURFACE TYPE IN UNFINISHED AREAS AND FLUSH TYPE IN FINISHED AREAS.
14. CONDUIT RUNS SHALL CLEAR ALL ARCHITECTURAL FEATURES (DOORS, WINDOWS, ETC) AND STRUCTURAL MEMBERS. CONDUIT INSTALLATION SHALL ALSO BE MADE TO AVOID INTERFERENCE WITH PIPES, DUCTS, OR OTHER EQUIPMENT CORRESPONDING TO OTHER TRADES, INCLUDING BUT NOT LIMITED TO MECHANICAL, PLUMBING AND FIRE PROTECTION. SHALL ANY OF THIS ELEMENTS PREVENT THE INSTALLATION OF RACEWAY AS DELINEATED ON THE CONTRACT DOCUMENTS, DEVIATION MUST BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION. ANY VARIATION DUE TO FIELD CONDITIONS SHALL NOT REPRESENT AN ADDITIONAL COST TO OWNER.
15. IN UNFINISHED PORTIONS OF BUILDING SUCH MECH ROOMS, FAN ROOMS, PIPE SPACES, ETC., LOCATIONS OF CONDUIT AND OUTLETS ARE APPROXIMATE AND SHALL CLEAR PIPING AND ALL OTHER CONSTRUCTION. ALL OUTLETS MUST BE UNOBSTRUCTED AND EXTENDED AS DIRECTED TO CLEAR ANY INTERFERENCE WITH FIXTURES, PIPING EQUIPMENT, ETC.
16. MINIMUM SIZE OF CONDUITS SHALL BE 3/4", UNLESS OTHERWISE NOTED.

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1	09/28/20	ISSUED FOR BID
⚠	12/15/20	ADDENDUM 5

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Executive Director:	HARDEE SAINI
Project Manager:	BV
Project Engineer:	TS
Drawn By: DB	Checked By: SB
PIN # 072202001CPD	Date: _

Project:
POWERHOUSE
BOILER FEED WATER
TREATMENT SYSTEM
UPGRADE
RIKERS ISLAND
EAST ELMHURST, NY 11370

Address:

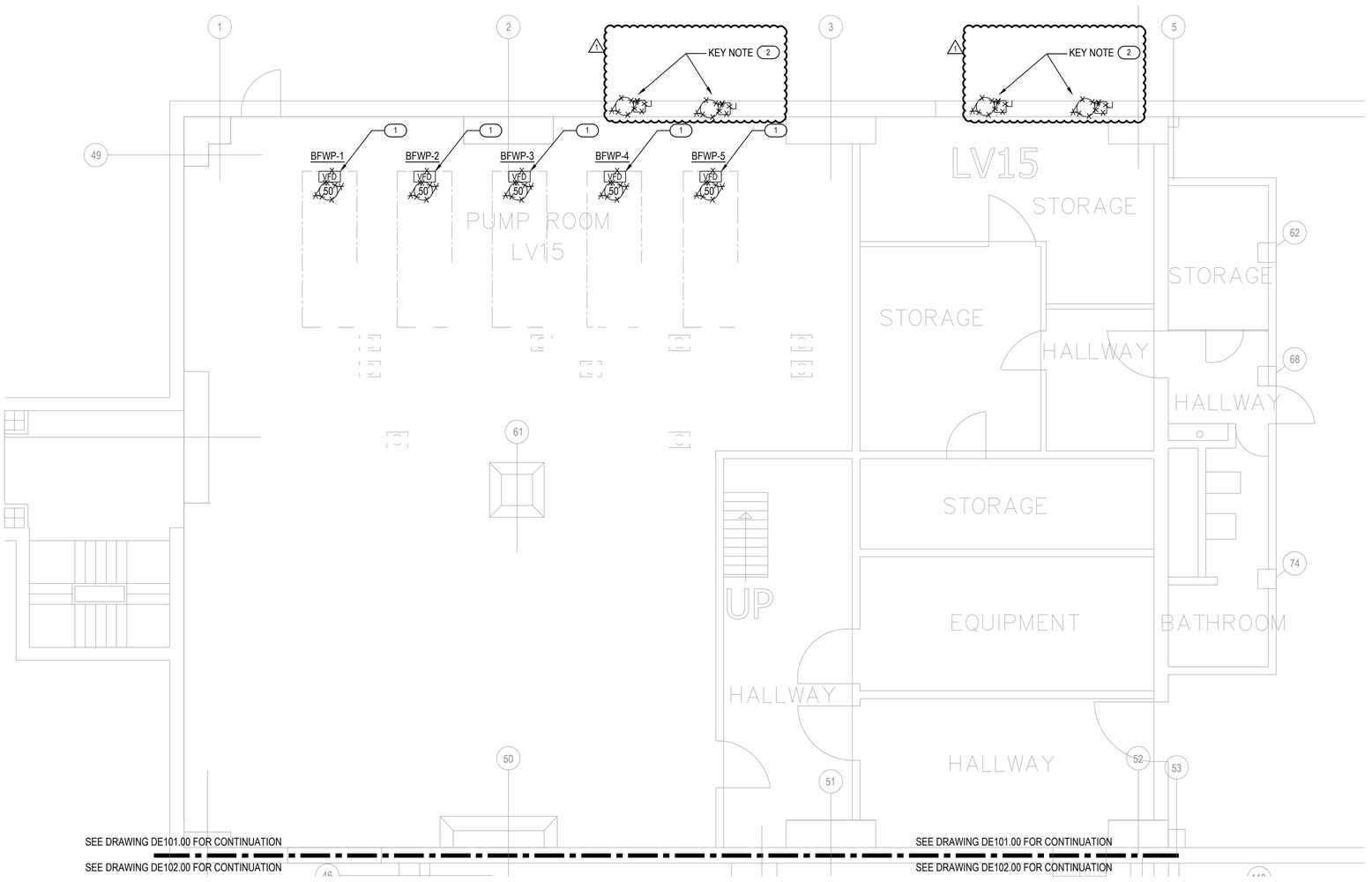
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ELECTRICAL - SYMBOLS, ABBREVIATIONS AND GENERAL NOTES

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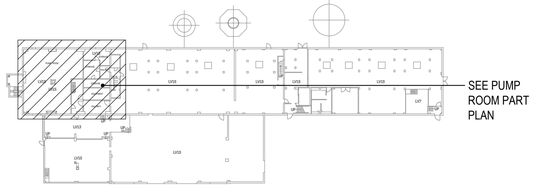
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E001.00

Scale: NONE

Sheet: 50 of 64



1 PUMP ROOM PART PLAN ELECTRICAL REMOVAL
SCALE: 1/4"=1'-0"



2 POWERHOUSE KEY PLAN
SCALE: 1/4"=1'-0"

NOTES

1. FOR GENERAL NOTES, DEMOLITION NOTES, ABBREVIATIONS AND SYMBOL LIST, REFER TO DRAWING E001.00 AND E002.00
2. DEMOLITION SHALL INCLUDE REMOVAL OF ALL WIRING AND EXPOSED CONDUIT UP TO SOURCE OF CONNECTION. CONTRACTOR SHALL SET SPARE BREAKERS TO THE "OFF" POSITION AND SHALL UPDATE ALL DIRECTORIES OR LABELING ON THE MOTOR CONTROL CENTER AFFECTED BY THE DEMOLITION.
3. WHEREVER MECHANICAL EQUIPMENT IS REMOVED. REMOVE ALL STARTERS. DISCONNECTS AND ASSOCIATED WIRING AND CONDUIT TO SOURCE.
4. ALL FIRE ALARM DEVICES SHALL REMAIN DURING CONSTRUCTION.
5. SEE PHASING PLAN ON MECHANICAL DRAWINGS. CONTRACTOR SHALL COORDINATE PHASING WITH MECHANICAL CONTRACTOR.

KEY NOTES

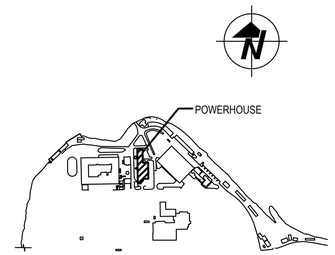
(1) DISCONNECT AND REMOVE EXISTING BOILER FEED PUMP BFWP (50 HP, 480V, 3PH), ASSOCIATED VFD AND DISCONNECT SWITCH, AND ASSOCIATED POWER CONDUIT AND WIRING TO MOTOR CONTROL CENTER MCC-B. (TYPICAL FOR 5 BFWP PUMPS)

(2) DISCONNECT AND REMOVE EXISTING STARTER / DISCONNECT AND ASSOCIATED CONDUIT AND WIRING TO SOURCE FOR EXISTING EXHAUST FAN TO BE REMOVED.

GRAPHIC SCALE
0 2' 4' 6' 8' 12' 16' 24' 32'

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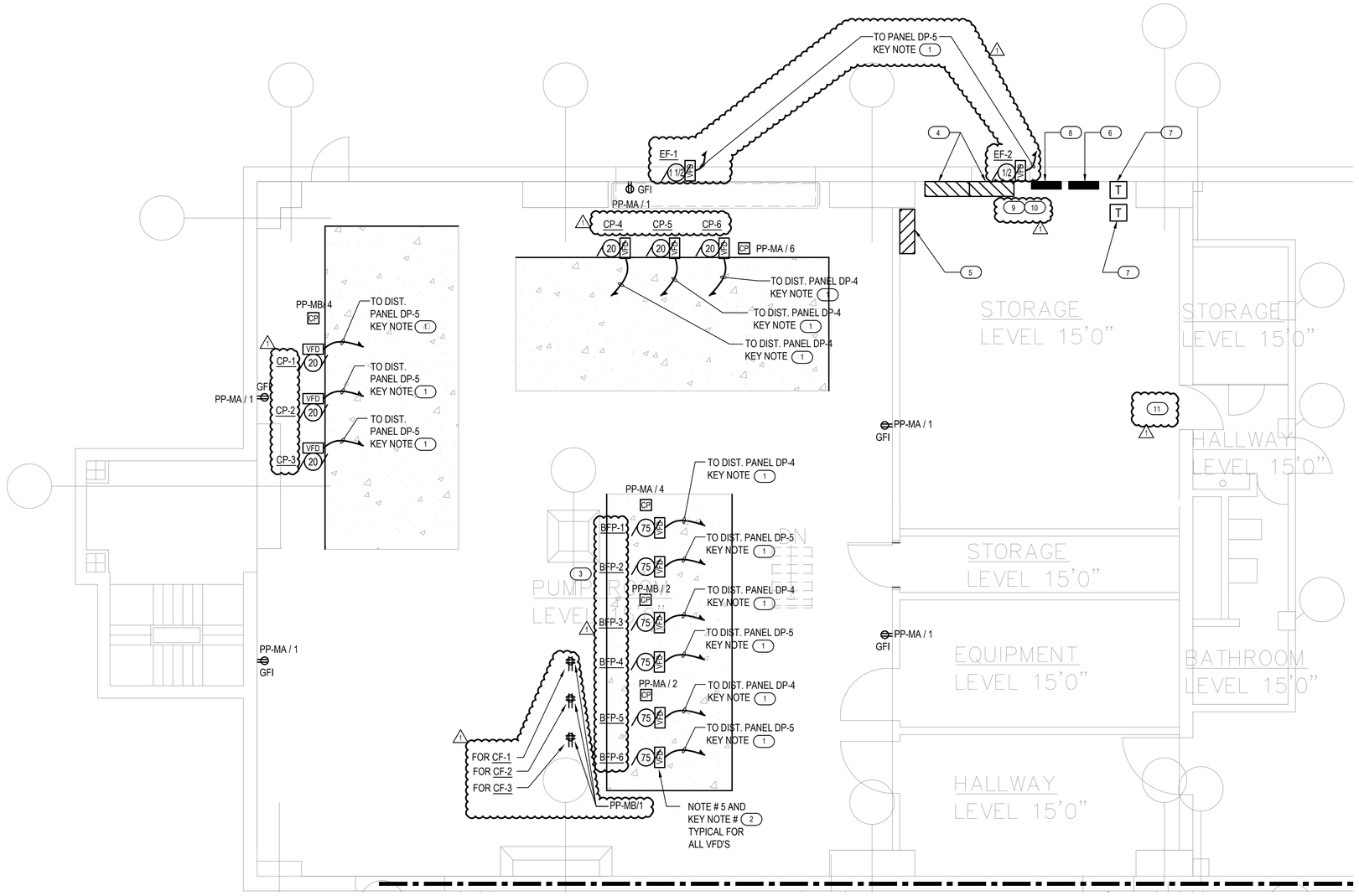
Drawing Title:
ELECTRICAL
REMOVAL WORK
PUMP ROOM PART PLAN

Seal:

Drawing No.: DE101.00

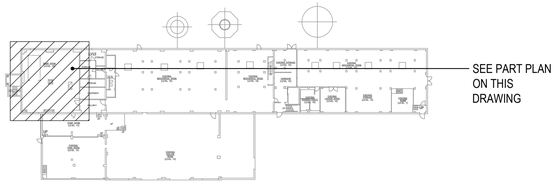
Scale: 1/4"=1'-0"

Sheet: 51 of 64



1 MAIN FLOOR PART PLAN PUMP ROOM NORTH POWER

SCALE: 1/4"=1'-0"



2 POWERHOUSE KEY PLAN

SCALE: 1/4"=1'-0"

NOTES

1. FOR GENERAL NOTES, ABBREVIATIONS AND SYMBOL LIST, REFER TO DRAWING E001.00
2. REFER TO E400 SERIES DRAWINGS FOR THE ELECTRICAL SINGLE LINE DIAGRAM.
3. REFER TO E600 SERIES DRAWINGS FOR CONDUIT INSTALLATION DETAILS AND FIRE PROOFING METHODS.
4. UNLESS OTHERWISE NOTED ON THE DRAWING, CONDUIT USAGE SHALL BE AS FOLLOWS:
   - ALL UNDERGROUND OUTDOOR AND EXPOSED CONDUIT - RGS.
   - FURRED OR SUSPENDED CEILING AND IN WALLS - EMT.
   - FOR MOTORS AND VIBRATING EQUIPMENT - LIQUID TIGHT FLEXIBLE METAL CONDUIT (MAX. 6' IN LENGTH)
5. SEE MECHANICAL DRAWINGS FOR EXACT LOCATION OF ALL EQUIPMENT AND STARTER/VFD'S LOCATIONS. WHEREVER STARTERS/VFD'S ARE REMOTELY MOUNTED, ELECTRICAL CONTRACTOR SHALL WIRE THROUGH STARTER/VFD'S.
6. ALL 3 POLE DISCONNECT SWITCHES ARE RATED AT 480V, U.O.N.
7. SEE DWG E204.00 FOR LOCATION OF PANELS.

KEY NOTES

(1) SEE SINGLE LINE DIAGRAM ON DRAWING E401.00 FOR FEEDER SIZE TO DISTRIBUTION PANEL DP-4 OR DP-5.

(2) REFER TO MECHANICAL DRAWINGS FOR LOCATION OF VFD'S. PROVIDE UNISTRUT SUPPORTS FOR MOUNTING OF VFD FROM FLOOR OR WALL AS REQUIRED. ALL VFD'S SHALL BE RATED FOR 480V AND SHALL BE PROVIDED WITH DISCONNECT SWITCH.

(3) DISCONNECT, REMOVE, AND STORE EXISTING FLUORESCENT LIGHTING FIXTURES IN THE WAY OF NEW MECHANICAL EQUIPMENT AND PIPING AND REINSTALL AFTER NEW MECHANICAL EQUIPMENT AND PIPING IS INSTALLED.

(4) NEW DISTRIBUTIONAL PANEL DP-4. MOUNT ON 4" HIGH CONCRETE PAD.

(5) NEW DISTRIBUTIONAL PANEL DP-5. MOUNT ON 4" HIGH CONCRETE PAD.

(6) PANEL PP-MA.

(7) 15 KVA TRANSFORMER. MOUNT ON 4" HIGH CONCRETE PAD.

(8) PANEL PP-MB.

(9) INSTALL PANELS WITH 3 FEET CLEARANCE IN THE FRONT. PROVIDE 4" PAD IF PANEL IS TO BE FLOOR MOUNTED. IF ANY PANEL IS INSTALLED UNDER PIPING AND/OR DUCTWORK, PROVIDE GALVANIZED STEEL PAN ABOVE. IN ALL CIRCUMSTANCES THE PANEL INSTALLATION SHALL COMPLY WITH NYC CODES. INCLUDE 10 LF OF STEEL PAN ABOVE THE ELECTRICAL PANEL. SEE DWG E601.00 FOR PAN DETAIL.

(10) SEE CONCRETE PAD DETAIL ON DWG E601.00

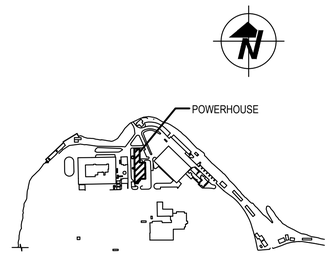
(11) THE ELECTRICAL ROOM DOOR WILL SWING TO OUTSIDE. PROVIDE PRESSURE PLATES TO OPEN THE DOOR TO OUTSIDE.

GRAPHIC SCALE 0 2' 4' 6' 8' 12' 16' 24' 32'

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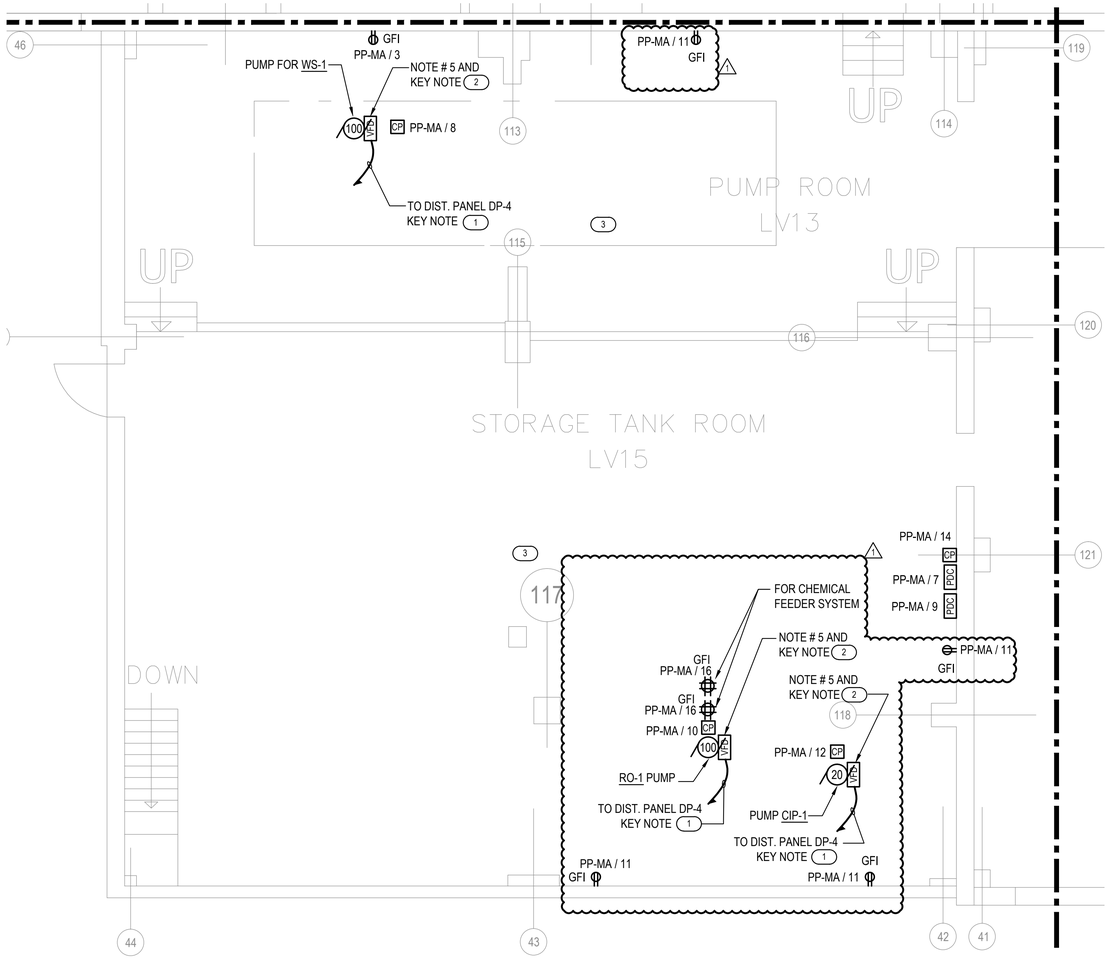
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ELECTRICAL POWER
PART PLAN PUMP ROOM NORTH

Seal:

Drawing No.: E201.00

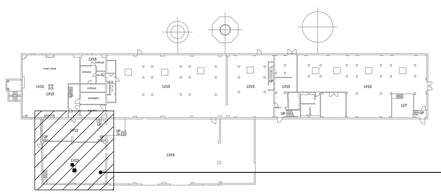
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Sheet: 54 of 64



1 CONDENSATE TANK ROOM POWER PART PLAN

SCALE: 1/4"=1'-0"



2 POWERHOUSE KEY PLAN

SCALE: 1/4"=1'-0"

NOTES

1. FOR GENERAL NOTES, ABBREVIATIONS AND SYMBOL LIST, REFER TO DRAWING E001.00
2. REFER TO E400 SERIES DRAWINGS FOR THE ELECTRICAL SINGLE LINE DIAGRAM.
3. REFER TO E600 SERIES DRAWINGS FOR CONDUIT INSTALLATION DETAILS AND FIRE PROOFING METHODS.
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   - FOR MOTORS AND VIBRATING EQUIPMENT - LIQUID TIGHT FLEXIBLE METAL CONDUIT (MAX. 6' IN LENGTH)
5. SEE MECHANICAL DRAWINGS FOR EXACT LOCATION OF ALL EQUIPMENT AND STARTER/VFD'S LOCATIONS. WHEREVER STARTERS/VFD'S ARE REMOTELY MOUNTED, ELECTRICAL CONTRACTOR SHALL WIRE THROUGH STARTER/VFD'S.
6. ALL 3 POLE DISCONNECT SWITCHES ARE RATED AT 480V, U.O.N.
7. SEE DWG E204.00 FOR LOCATION OF PANELS.

KEY NOTES

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(3) DISCONNECT, REMOVE, AND STORE EXISTING FLUORESCENT LIGHTING FIXTURES IN THE WAY OF NEW MECHANICAL EQUIPMENT AND PIPING AND REINSTALL AFTER NEW MECHANICAL EQUIPMENT AND PIPING IS INSTALLED.

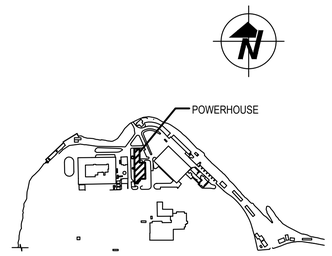
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GRAPHIC SCALE

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KEY PLAN
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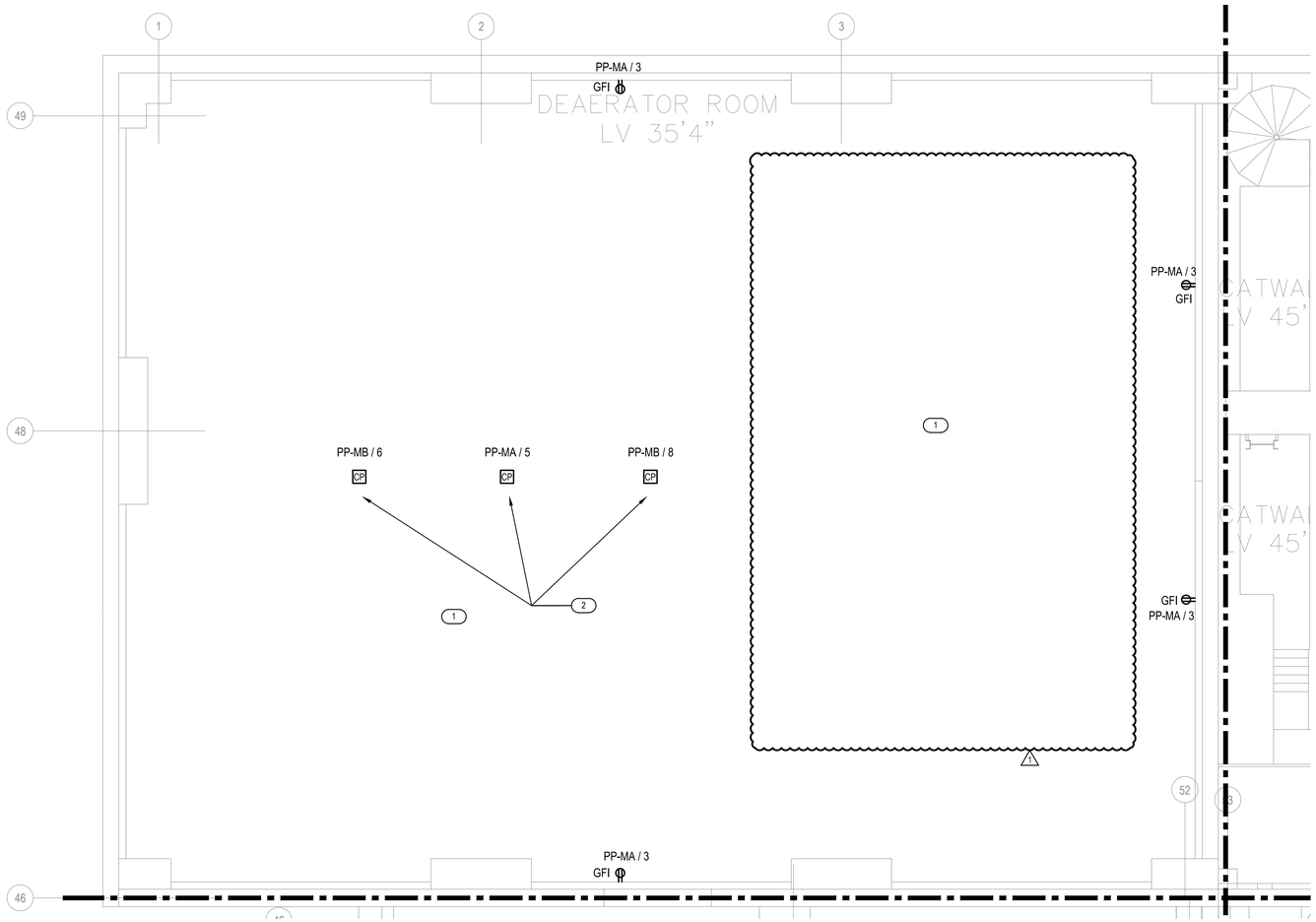
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ELECTRICAL
CONDENSATE TANK ROOM
POWER PART PLAN

Seal:

Drawing No.:
E202.00

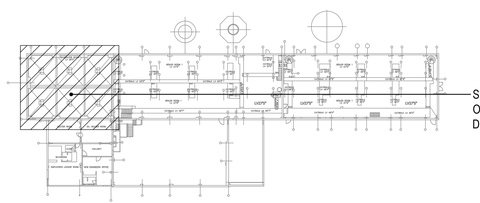
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Sheet: 55 of 64



1 PART PLAN - DEAERATOR ROOM

SCALE: 1/4"=1'-0"



SEE PART PLAN ON THIS DRAWING

2 POWERHOUSE KEY PLAN

SCALE: 1/4"=1'-0"

NOTES

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   - FURRED OR SUSPENDED CEILING AND IN WALLS - EMT.
   - FOR MOTORS AND VIBRATING EQUIPMENT - LIQUID TIGHT FLEXIBLE METAL CONDUIT (MAX. 6' IN LENGTH)
5. SEE MECHANICAL DRAWINGS FOR EXACT LOCATION OF ALL EQUIPMENT AND STARTER/VFD'S LOCATIONS. WHEREVER STARTERS/VFD'S ARE REMOTELY MOUNTED, ELECTRICAL CONTRACTOR SHALL WIRE THROUGH STARTER/VFD'S.
6. ALL 3 POLE DISCONNECT SWITCHES ARE RATED AT 480V, U.O.N.
7. SEE DWG E204.00 FOR LOCATION OF PANELS.

KEY NOTES

(1) DISCONNECT, REMOVE, AND STORE EXISTING FLUORESCENT LIGHTING FIXTURES IN THE WAY OF NEW MECHANICAL EQUIPMENT AND PIPING AND REINSTALL AFTER NEW MECHANICAL EQUIPMENT AND PIPING IS INSTALLED.

(2) FOR DEAERATOR TANK DA-1 CONTROL PANEL. SEE EXACT LOCATION ON MECHANICAL DRAWINGS.

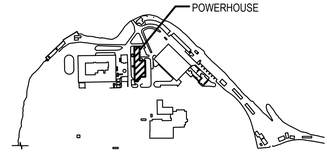
0 2' 4' 6' 8' 12' 16' 24' 32'

GRAPHIC SCALE

CITY OF NEW YORK DEPARTMENT OF CORRECTION

THE CITY OF NEW YORK
DEPARTMENT OF CORRECTION

DIVISION OF CAPITAL POLICY
AND DEVELOPMENT
ENGINEERING UNIT



KEY PLAN
NTS

No.	Date	Revision
1	09/28/20	ISSUED FOR BID
2	12/15/20	ADDENDUM 5

NOTE: Drawing may be printed at reduced scale

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DESIGNED BY:

IAQ SYSTEMS INC
Consulting Engineers
555 8th Avenue, Suite 1502
New York, New York 10018
Tel. 212.680.8945
www.iaqsys.com

Executive Director:	HARDEE SAINI
Project Manager:	BV
Project Engineer:	TS
Drawn By: DB	Checked By: SB
PIN # 072202001CPD	Date: _

Project:
POWERHOUSE
BOILER FEED WATER
TREATMENT SYSTEM
UPGRADE
RIKERS ISLAND
EAST ELMHURST, NY 11370

Address:

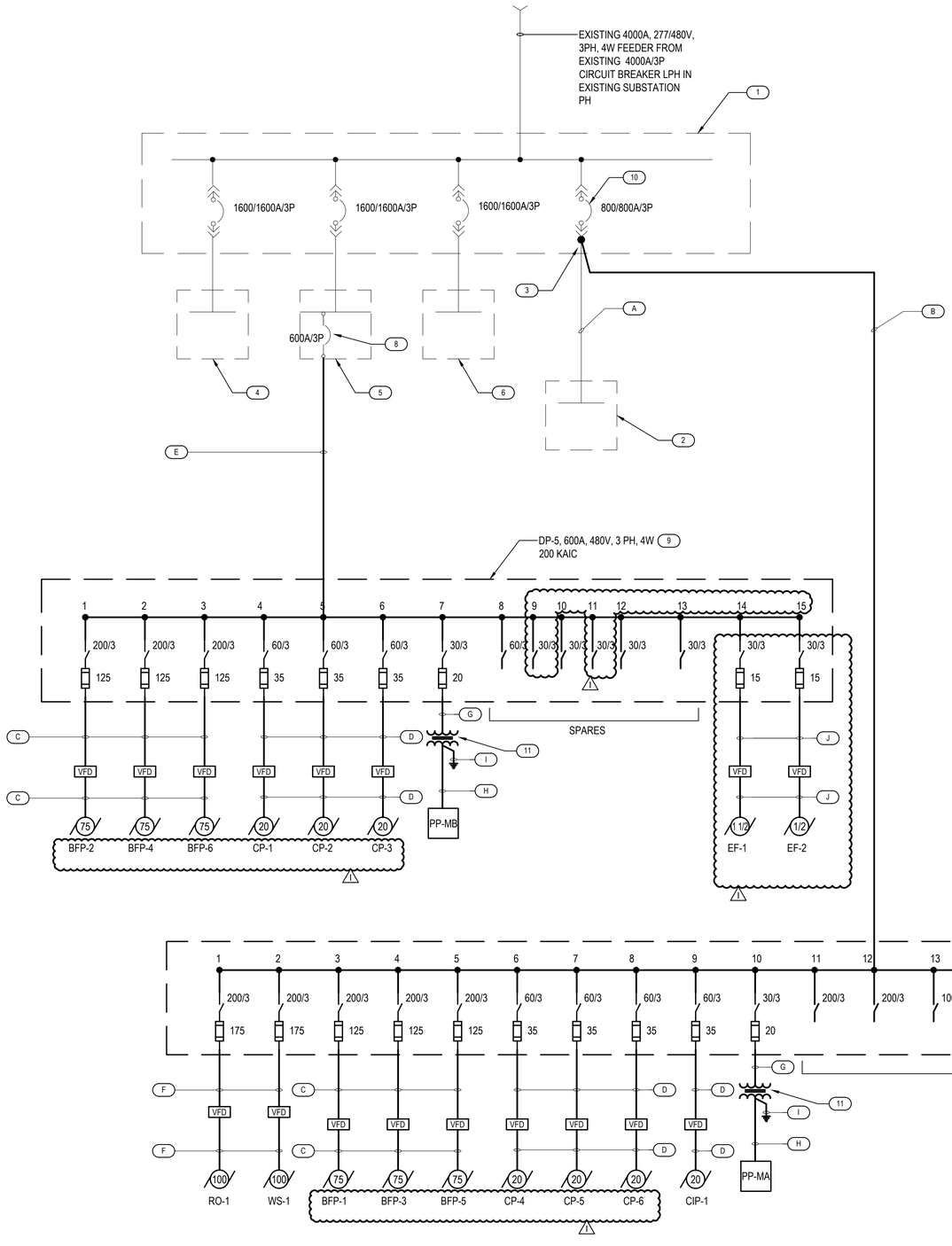
Drawing Title:
ELECTRICAL POWER
PART PLAN - DEAERATOR ROOM

Seal:

Drawing No.:
E203.00

Scale: 1/4"=1'-0"

Sheet: 56 of 64



1 ELECTRICAL SINGLE LINE DIAGRAM

SCALE: NTS

NOTES

1. FOR GENERAL NOTES, ABBREVIATIONS AND SYMBOL LIST, REFER TO DRAWING E001.00
2. IN EXISTING DISTRIBUTION PANELS SWITCHBOARD, ALL EXISTING CIRCUIT OR BREAKERS IN THE DISTRIBUTION PANEL OR SWITCHBOARD ARE NOT SHOWN.
3. ALL FUSES SHALL BE CLASS RK1 DUAL ELEMENT TIME DELAY TYPE.

KEY NOTES

(1) EXISTING 4000A 480/277V, 3PH, 4W POWER PLANT SWITCHGEAR S1. SEE NOTE 2.

(2) EXISTING MOTOR CONTROL CENTER MCC-B 800A, 277/480V, 3PH, 4W. SEE NOTE 2.

(3) CONNECT NEW FEEDER TO LOAD SIDE OF EXISTING 800/800A/3P CIRCUIT BREAKER FEEDING EXISTING MCC-B. PROVIDE ADDITIONAL LUGS AS REQUIRED FOR NEW FEEDER.

(4) EXISTING DISTRIBUTION PANEL DP-1, 1600A, 480V, 3PH, 4W. SEE NOTE 2.

(5) EXISTING DISTRIBUTION PANEL DP-2, 1600A, 480V, 3PH, 4W. SEE NOTE 2.

(6) EXISTING DISTRIBUTION PANEL DP-3, 1600A, 480V, 3PH, 4W. SEE NOTE 2.

(7) NEW DISTRIBUTION PANEL DP-4, 800A, 480V, 3PH, 4W.

(8) CONNECT TO EXISTING 600A/3P SPARE CIRCUIT BREAKER (CUTLER-HAMMER ADJUSTABLE TRIP DIGITRIP 310) IN EXISTING DISTRIBUTION PANEL DP-2.

(9) NEW DISTRIBUTION PANEL DP-5, 600A, 480V, 3PH, 4W.

(10) EXIST 800A/3P LOW VOLTAGE POWER DRAWOUT TYPE CIRCUIT BREAKER.

(11) 15 KVA TRANSFORMER 480-120/208V Δ-Y_N

FEEDER SCHEDULE

(A) EXISTING 2 SETS OF 4 - 600MCM + 1 # 3/0G - 4"C

(B) 2 SETS OF 4 - 600MCM + 1 # 3/0G - 4"C

(C) 3 # 1 + 1 # 6G - 1 1/2"C

(D) 3 # 8 + 1 # 10G - 3/4"C

(E) 2 SETS OF 4 - 350MCM + 1 # 1G - 3"C

(F) 3 # 2/0 + 1 # 6G - 2"C

(G) 3 # 12 + 1 # 12G - 3/4"C

(H) 4 # 6 + 1 # 10G - 1"C

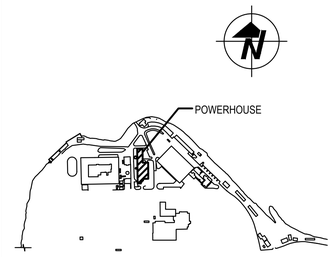
(I) 1 # 8G TO BUILDING STEEL

(J) 3 # 12 + 1 # 12G - 3/4"C

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Project:
POWERHOUSE
BOILER FEED WATER
TREATMENT SYSTEM
UPGRADE
RIKERS ISLAND
EAST ELMHURST, NY 11370

Address:

Drawing Title:
ELECTRICAL
SINGLE LINE DIAGRAM

Seal:

Drawing No.:
E401.00

Scale: NONE

Sheet: 58 of 64

PANEL: PP-MA

MAIN RATING:

SERVICE VOLTAGE: 120/208V, 3PH, 4W
MAIN BUS RATING: 100A
AIC RATING: 10k
PANEL FEEDER: SEE ONE LINE DIAGRAM

ENCLOSURE: NEMA-1
MOUNTING: SURFACE
LOCATION: PUMP ROOM FED FROM DP-4

[X] MCB: 50A / 3P
[ ] MLO:

OPTIONS:

[X] BONDED GROUND BUS
[ ] ISOLATED GROUND BUS
[ ] 200% NEUTRAL BUS
[ ] FEED THROUGH LUGS
[ ] SUB FEED LUGS
[ ] DOOR-IN-DOOR TRIM
[ ] INTEGRAL TVSS DEVICE
[ ] INTEGRAL RC SWITCH
[ ] INTEGRAL METERING DEVICE

BRANCH FEEDER	LOAD DESCRIPTION	BRANCH DEVICE POLE (No)	FRAME (AMP)	TRIP (AMP)	CKT.
2 # 12 + 1 # 12G - 3/4"C	RECEPT	1	100	20	1
2 # 12 + 1 # 12G - 3/4"C	RECEPT	1	100	20	3
2 # 12 + 1 # 12G - 3/4"C	CONTROL PANEL	1	100	20	5
2 # 12 + 1 # 12G - 3/4"C	PDC	1	100	20	7
2 # 12 + 1 # 12G - 3/4"C	PDC	1	100	20	9
2 # 12 + 1 # 12G - 3/4"C	RECEPT	1	100	20	11
⚠1	SPARE	1	100	20	13
	SPARE	1	100	20	15
	SPARE	1	100	20	17

N | PHASE A B C | G

CKT.	BRANCH DEVICE POLE (No)	FRAME (AMP)	TRIP (AMP)	LOAD DESCRIPTION	BRANCH FEEDER
2	1	100	20	CONTROL PANEL	2 # 12 + 1 # 12G - 3/4"C
4	1	100	20	CONTROL PANEL	2 # 12 + 1 # 12G - 3/4"C
6	1	100	20	CONTROL PANEL	2 # 12 + 1 # 12G - 3/4"C
8	1	100	20	CONTROL PANEL	2 # 12 + 1 # 12G - 3/4"C
10	1	100	20	CONTROL PANEL	2 # 12 + 1 # 12G - 3/4"C
12	1	100	20	CONTROL PANEL	2 # 12 + 1 # 12G - 3/4"C
14	1	100	20	CONTROL PANEL	2 # 12 + 1 # 12G - 3/4"C
16	1	100	20	CHEMICAL FEED SYSTEM	2 # 12 + 1 # 12G - 3/4"C
18	1	100	20	SPARE ⚠1	

REMARKS: SEE PANEL SCHEDULE NOTES.

PANEL: PP-MB

MAIN RATING:

SERVICE VOLTAGE: 120/208V, 3PH, 4W
MAIN BUS RATING: 100A
AIC RATING: 10k
PANEL FEEDER: SEE ONE LINE DIAGRAM

ENCLOSURE: NEMA-1
MOUNTING: SURFACE
LOCATION: PUMP ROOM FED FROM DP-5

[X] MCB: 50A / 3P
[ ] MLO:

OPTIONS:

[X] BONDED GROUND BUS
[ ] ISOLATED GROUND BUS
[ ] 200% NEUTRAL BUS
[ ] FEED THROUGH LUGS
[ ] SUB FEED LUGS
[ ] DOOR-IN-DOOR TRIM
[ ] INTEGRAL TVSS DEVICE
[ ] INTEGRAL RC SWITCH
[ ] INTEGRAL METERING DEVICE

BRANCH FEEDER	LOAD DESCRIPTION	BRANCH DEVICE POLE (No)	FRAME (AMP)	TRIP (AMP)	CKT.
2 # 12 + 1 # 12G - 3/4"C	CHEMICAL FEED PUMPS	1	100	20	1
⚠1	SPARE	1	100	20	3
	SPARE	1	100	20	5
	SPARE	1	100	20	7
	SPARE	1	100	20	9
	SPARE	1	100	20	11
	SPARE	1	100	20	13
	SPARE	1	100	20	15
	SPARE	1	100	20	17

N | PHASE A B C | G

CKT.	BRANCH DEVICE POLE (No)	FRAME (AMP)	TRIP (AMP)	LOAD DESCRIPTION	BRANCH FEEDER
2	1	100	20	CONTROL PANEL	2 # 12 + 1 # 12G - 3/4"C
4	1	100	20	CONTROL PANEL	2 # 12 + 1 # 12G - 3/4"C
6	1	100	20	CONTROL PANEL	2 # 12 + 1 # 12G - 3/4"C
8	1	100	20	CONTROL PANEL	2 # 12 + 1 # 12G - 3/4"C
10	1	100	20	SPARE	
12	1	100	20	SPARE	
14	1	100	20	SPARE	
16	1	100	20	SPARE	
18	1	100	20	SPARE	

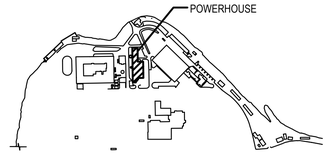
REMARKS: SEE PANEL SCHEDULE NOTES.

PANEL SCHEDULE NOTES

1. BRANCH CIRCUIT WIRING FOR LIGHTING AND RECEPTACLE CIRCUITS SHALL BE 2 # 12 + 1 # 12 - ¾"C AS SPECIFIED, U.O.N.
2. CIRCUIT NUMBERS ARE INDICATED FOR IDENTIFICATION ONLY. BALANCE LOAD EQUALLY ON EACH BUS OF THE PANEL.
3. MINIMUM INTERRUPTING RATING OF PANELS SHALL BE 10000 AMPS, U.O.N.
4. PROVIDE NEUTRAL AND GROUND TERMINALS IN ALL PANELS.
5. CONTRACTOR SHALL INDICATE THE EQUIPMENT BEING SERVED FOR EACH CIRCUIT IN THE PANEL CIRCUIT DIRECTORY.

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Address:

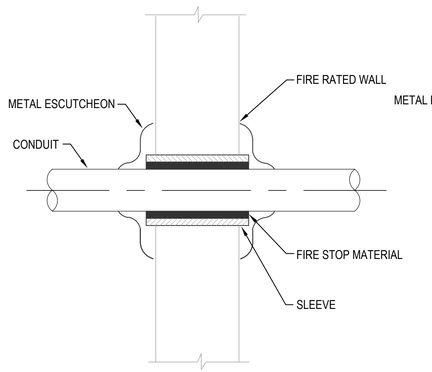
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ELECTRICAL - PANEL
SCHEDULES

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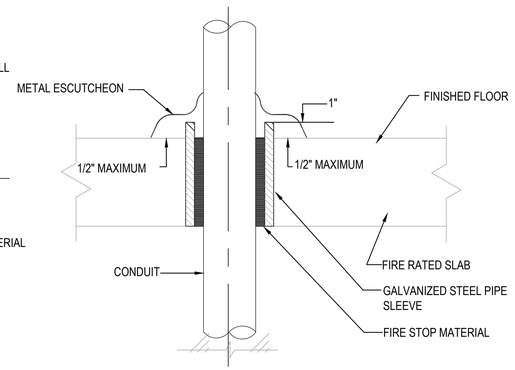
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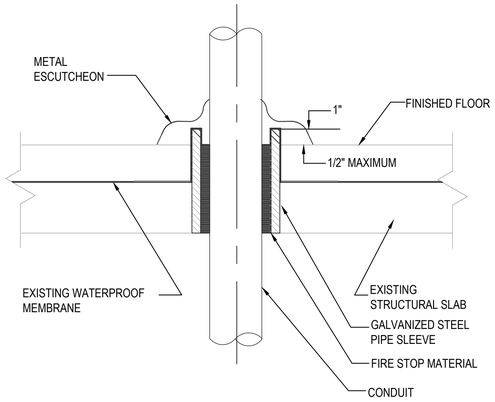
Sheet: 59 of 64



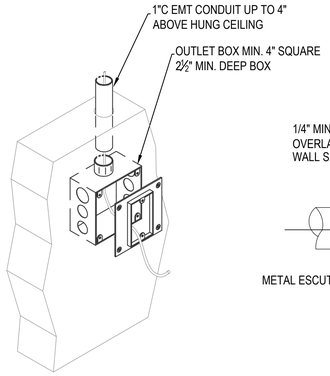
1 CONDUIT PENETRATION DETAIL THRU FIRE RATED SOLID WALL
SCALE: NTS



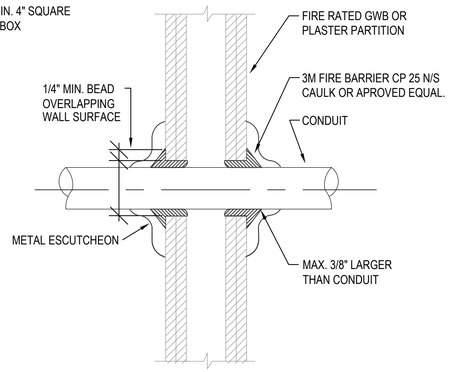
2 CONDUIT PENETRATION DETAIL THRU FIRE RATED SLAB
SCALE: NTS



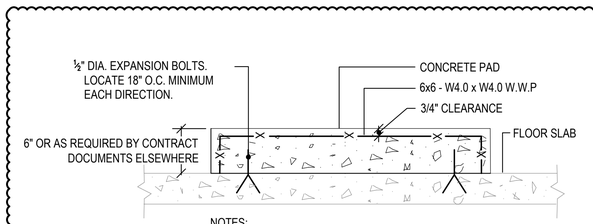
3 CONDUIT PENETRATION DETAIL THRU WATERPROOF SLAB
SCALE: NTS



4 WALL MOUNTED DOUBLE-GANG BOX FOR LOW VOLTAGE SYSTEM
SCALE: NTS

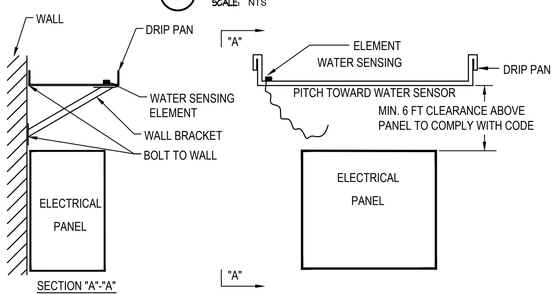


5 CONDUIT PENETRATION DETAIL THRU FIRE RATED GWB OR PLASTER PARTITION
SCALE: NTS



NOTES:
1. CONCRETE STRENGTH AND WEIGHT AT 21 DAYS: 3000 PSI AND 145 PCF.
2. EXTEND PAD A MINIMUM OF 6" BEYOND EQUIPMENT ON ALL SIDES.
3. PROVIDE CONCRETE PAD FOR NEW AND RELOCATED EQUIPMENT.

8 CONCRETE PAD
SCALE: NTS

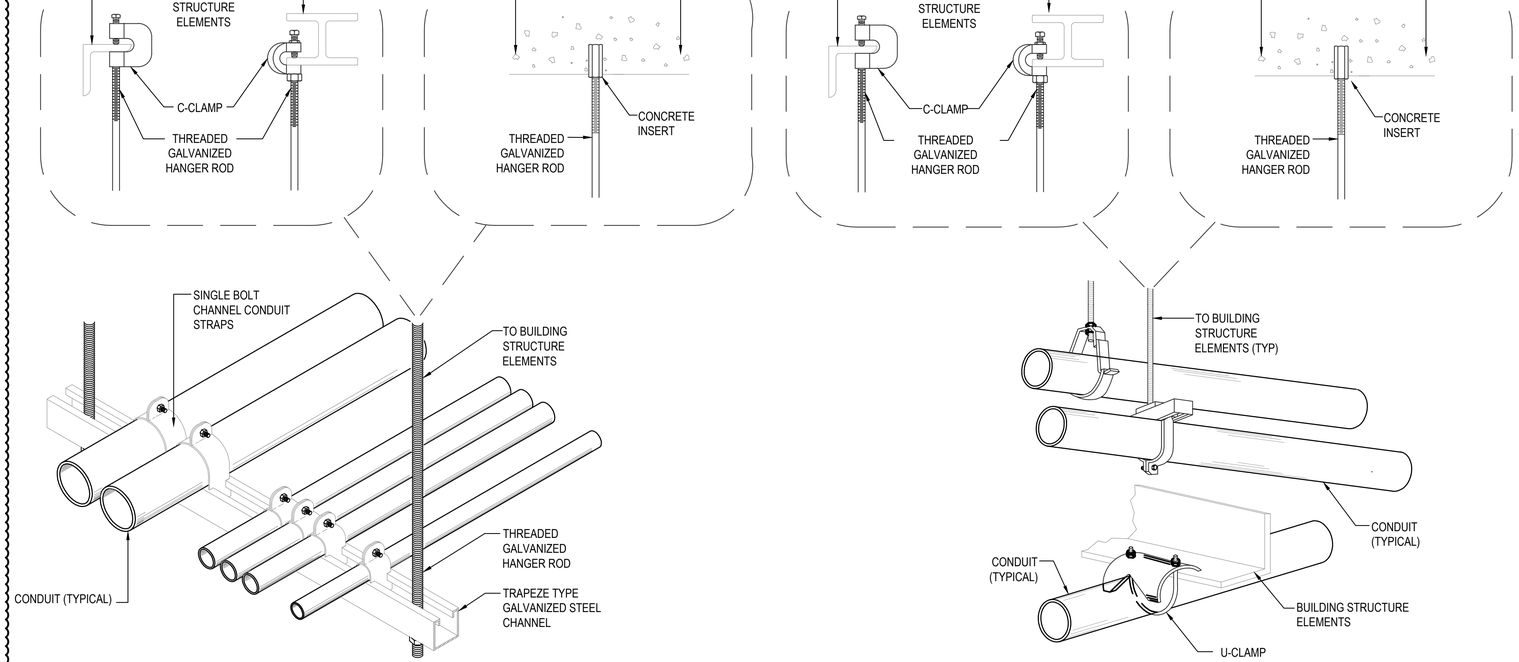


SECTION "A"-"A"

PAN CONSTRUCTION
1. PAN 6" LARGER THAN ELECTRICAL PANEL.
2. 4" MIN LIP FOR PAN ON ALL SIDES.
3. FABRICATE PAN OF 10 GAUGE ALUMINUM WITH SOLDERED CORNERS WATERTIGHT.
4. SUPPORT PAN INDEPENDENT OF ELECTRICAL PANEL FROM STRUCTURE.

ALARM REQUIREMENTS:
1. REMOTE WATER DETECTOR MONITOR PROVIDE WITH 24 VAC TRANSFORMER.
2. WATER SENSING ELEMENT SHALL TRIGGER AUDIBLE ALARM.
3. CONTRACTOR SHALL PROVIDE SILENT BUTTON FOR ALARM.

9 DRIP PAN
SCALE: NTS

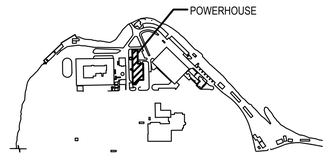


6 CONDUIT SUPPORT DETAILS SUSPENDED - MULTIPLE CONDUITS
SCALE: NTS

7 CONDUIT SUPPORT DETAILS SUSPENDED - SINGLE CONDUIT
SCALE: NTS

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Drawn By: DB	Checked By: SB
PIN # 072202001CPD	Date: _

Project:
POWERHOUSE
BOILER FEED WATER TREATMENT SYSTEM UPGRADE
RIKERS ISLAND
EAST ELMHURST, NY 11370
Address:

Drawing Title:
ELECTRICAL DETAILS

Seal:

Drawing No.: E601.00

Scale: NONE

Sheet: 60 of 64


RECIRCULATED
MARLO





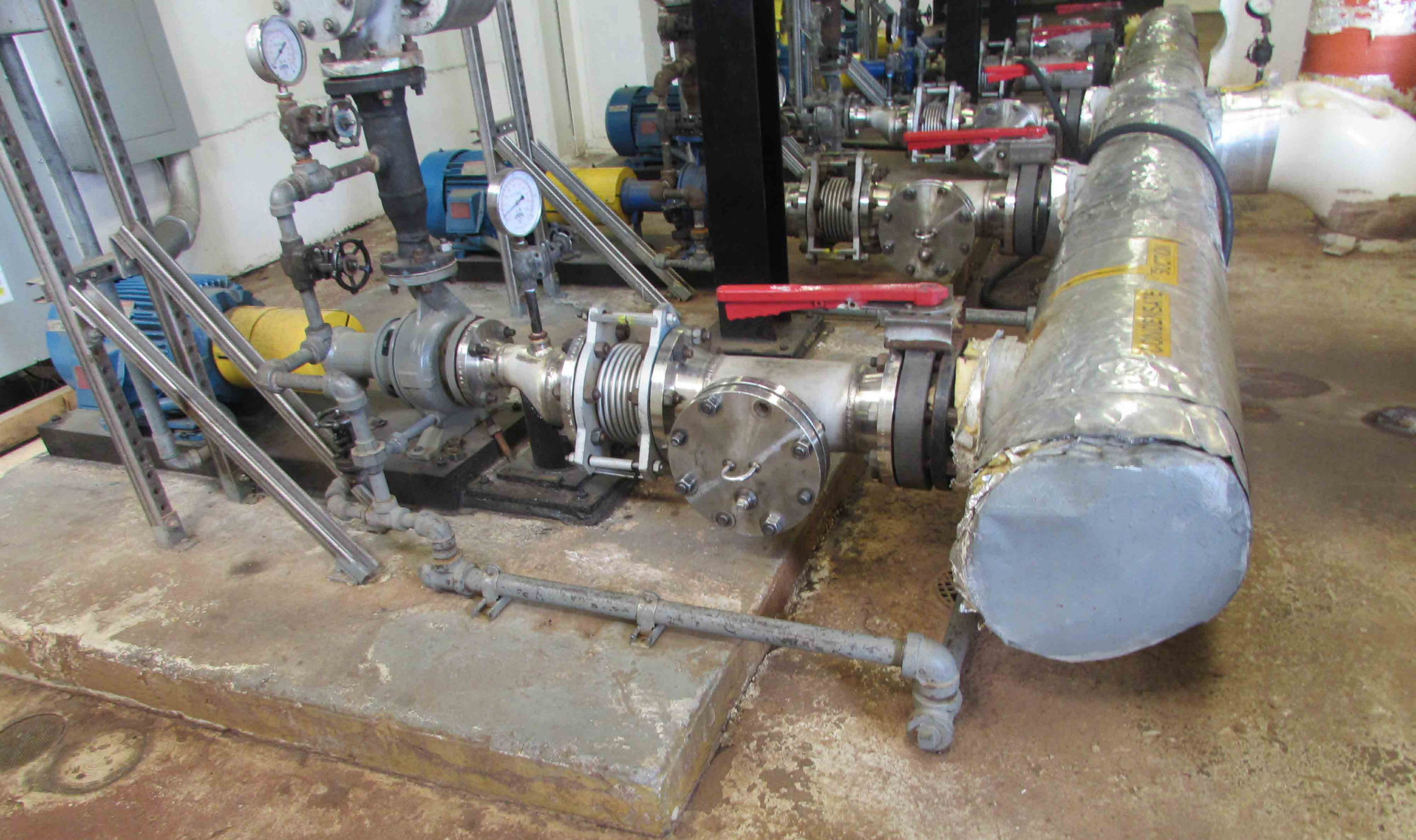

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08/08/2018 11:29


08/08/2018 11:29


08/21/2018 10:59


DANGER
RESTRICTED
AREA
08/21/2018 12:04


08/21/2018 12:06


MEDIUM PRESSURE STEAM
12/12/2018 13:48



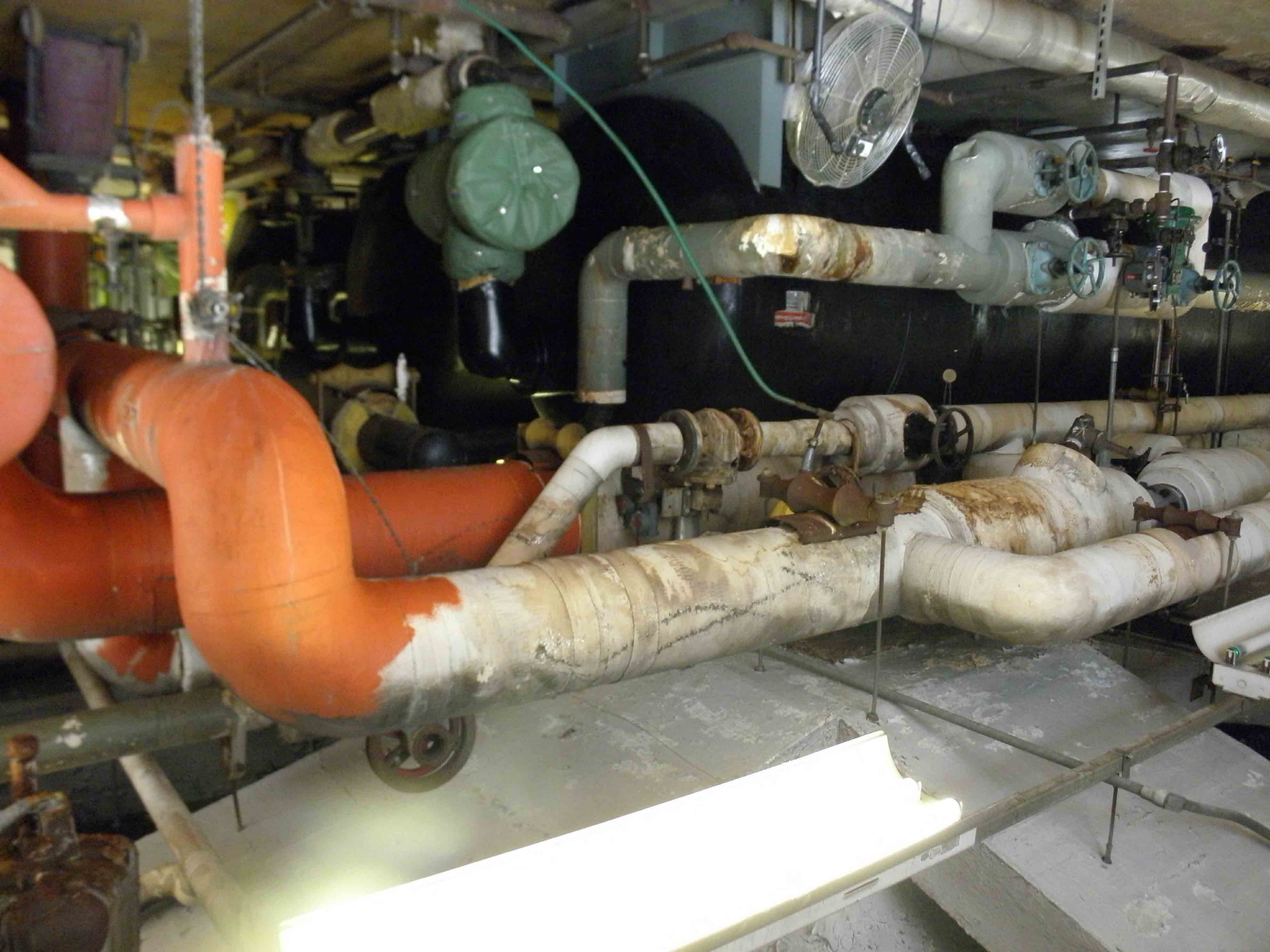

















MARLO
MARLO


RECIRCULATED







Addendum No. 3 - Attachment IV

NYC DEPARTMENT OF CORRECTION

Agency PIN: 072202001CPD

Project Description: Powerhouse Boiler Feed Water Treatment System Upgrade

PLAN HOLDERS LIST

	Company Name	Email Address
1	Analytical & Combustion Systems	rbohn@acs-ny.com
2	Approved Electrical Contractors, Inc.	info@approvedec.com
3	C.D.E Air Conditioning Co., Inc.	mitchellm@cdeair.com
4	Dynamic US	UBhattarai@DynamicUSInc.com
5	Framan Mechanical	DManginelli@framanmechanical.com
6	MaricPH	eugenmaric@maricph.com
7	Marcic Mechanical	asimunovic@maricmechanical.com
8	Rocon Corp.	lmedasani@roconcorporation.com
9	Technico Construction Services, Inc.	gpipergias@technico-csi.com
10	WDF	WReyes@wdfinc.net
11	Skanska USA	Edward.Kamintzky@skanska.com
12	Infinty Contracting Services, Corp.	pwarshaw@infinitycsc.com