PHOTO A

1600 Valley Road Roof

PHOTO B

Acoustical Structure Crosses Above Chillers

PHOTO C

Acoustical Structure Crosses Above Chillers

PHOTO D

Existing Dunnage

MISSION & SCOPE

Project Mission Statement

1. The Project Consists of the Replacement Of Three Rooftop Air Cooled Chiller Units That Have Exceeded Their Useful Life.

Project Description

1. The Project Consists Of Mechanical And Electrical Work At 1600 Valley Road Located On The William Paterson University Campus, Wayne, NJ.
2. Valley Road is a 5 Story Building (Ground-Fourth Floor) Enclosing Approximately ~160,000 Sq. Ft.

Scope

The Following Is A Brief Scope Of The Work For This Project (Not Intended To Be All Inclusive):

1. Replace Three Rooftop Chillers
2. Remove And Reinstall Screening. Any Damage To The Existing Screens Caused By The Contractor Shall Be Repaired Before The Project Is Considered Complete.
3. New Chillers To Be Connected To Existing Automated Logic Controls (ALC) BMS To Provide Control And Monitoring Of All Existing Points.
4. Provide ALC BMS Controls And Monitoring To Existing Exhaust Fans (EF-3, EF-4, and EF-5) To Provide On / Off Status And Scheduling Control.
5. Provide ALC BMS Monitoring For Emergency Generator, And Kitchen Hood For On / Off Status.

SPECIAL EMPHASIS CONCERNS AND LIMITATIONS

1. A Schedule Of Interruptions / Shutdowns Will Be Limited. Written Consent Shall Be Required Before Any Interruption Is Permitted.
2. Rigging Shall Not Occur When Building Is Occupied. Area Around Rigging Path Shall Be Empty Of All People Prior To Lifting Equipment To Building Roof.
3. The Building Will Be Occupied Throughout Construction, Coordinate All Disconnections And Interruptions Of HVAC, Electrical Service, Fire Alarm And Fire Protection.
4. Owner Requires New Chillers To Have A-Weighted Sound Pressure Level Ratings Less Than Or Equal To The Existing Chillers. Proposed Substitutions Must Meet The Specified Level Or Utilize Acoustical Dampening Methods To Reduce Noise.

DESIGN CRITERIA AND ADDITIONAL PROJECT REQUIRMENTS

Applicable Codes And References

The Entire Installation Shall Comply With All Local And State Codes, Including Amendments To Said Codes, And Other Authorities Having Jurisdiction.

1. International Building Code, 2015 Edition
2. International Mechanical Code, 2015 Edition
3. National Standard Plumbing Code, 2015 Edition
4. National Electrical Code, 2014 Edition
5. ASHRAE 90.1 Energy Standards, 2007 Edition

Design Conditions (+/- 3 Deg. Tolerance)

Summer Outdoor Design Conditions	Summer Indoor Design Conditions:
Dry Bulb: 95 Deg. F.	Dry Bulb: 75 Deg. F.
Wet Bulb: 75 Deg. F.	Relative Humidity 50%
Winter Outdoor Design Conditions	Winter Indoor Design Conditions
0 Deg. F. Dry Bulb	72 Deg. F. Dry Bulb

KEY PARTICIPANTS & THEIR ROLES

Owner
William Paterson University
300 Pompton Road
Wayne, NJ 07470
Richard Stromber

PME
DLB Associates Consulting Engineers, PC - NJ
265 Industrial Way West
Eatontown, NJ 07724
Scot Gowers - Project Manager
Phone: (732) 927-5145

DOCUMENT ORGANIZATION

Drawings Organization

1. General Information Sheets
2. Mechanical (M Series)
3. Electrical (E Series)
4. Structural (S Series)

G#V
- Building (Valley Road)
- Unique ID
- Drawing Trade G: General / M: Mechanical / E: Electrical

Drawing Sequence

Drawings Start With The General Information Sheet, The Planviews, Followed By All Other Pertinent Information. Where Effective, Supplemental Information Is Included Directly On The Planviews.

How Notes Are Used

1. General Notes - One Or More In List Form Which Are Not Indicated Specifically On A Plan, Section, Elevation, Or Detail.
2. Notes For This Drawing - General Notes Located Only On The Drawing That Applies.
3. Key Notes - Used In Lieu Of Standard Notes Where They Improve Readability, Key Notes Are Gathered Together And Listed Collectively On The Drawings On Which They Are Located.

Addenda & Revisions

1. Some Addenda And Revisions Are Identified On The Drawings Using A △1 . The Number In The Triangle Links To The Revision Block In The Title Block Section.
2. Sometimes The Most Recent Change Is Clouded To Provide Increased Clarity.

No.	Drawing Title	Issues / Revisions: CD: 100% Review Set 4/30/2016	Bid Set 5/9/2016				
GENERAL INFORMATION FOR ALL TRADES							
G1V	GENERAL INFORMATION SHEET - 1	X	X				
G2V	GENERAL INFORMATION SHEET - 2	X	X				
G3V	GENERAL INFORMATION SHEET - 3	X	X				
MECHANICAL							
M1V	ROOF PLAN	X	X				
M2V	SCHEDULES AND DETAILS	X	X				
M2V	BMS INTEGRATION	X	X				
ELECTRICAL							
E1V	ROOF PLAN	X	X				
STRUCTURAL							
S1V	STRUCTURAL PLAN AND DETAILS		X				
S2V	STRUCTURAL PHOTOS		X				

ITEM	DATE	ISSUE DESCRIPTION	ITEM	DATE	ISSUE DESCRIPTION

24x36

dlb associates
CONSULTING ENGINEERS, P.C.
265 Industrial Way West, Eatontown, N.J. 07724
Questions For DLB Call: Scot Gowers
DLB Project ID: 47403 Phone: 732-927-5145

project: VALLEY ROAD HVAC, 1600 VALLEY ROAD, WAYNE, NJ, 07470

title: GENERAL INFORMATION SHEET-1

scale	drawn by	checked by	date	filename
AS SHOWN	DR	SG	05/09/2016	47403G1V

dwg. no. G1V

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GENERAL PROJECT NOTES

General Requirements

1. General:
   - A. All General Notes Are To Be Read And Adhered To By Each Contractor. The Notes Are Loosely Categorized By Trade, But This Does Not Limit The Responsibility Of The Contractor To Any Single Category.
   - B. All Work Shall Be Performed In A Neat Workmanlike Manner.
   - C. "Furnish And Install" Or "Provide" Means To Supply, Erect, Install, And Connect Up To Complete For Readiness For Regular Operation, The Particular Work Referred To.
   - D. All Temporary Construction Services (Electric, Water, Etc.) Shall Be Determined / Arranged By The Contractor And Included In The Bid Price.
   - E. Prime Mechanical Contractor Shall Hire the Services Of All Required Licensed Subcontractors To Complete Project.
2. Coordination:
   - A. Contractors Shall Coordinate Their Work With The Work Of All Subcontractors And The Existing Field Conditions.
   - B. Contractor Shall Visit The Job Site And Verify Existing Field Conditions Prior To Submission Of Bid.
   - C. Contractor Shall Secure And Pay For All Required Permits And Shall Arrange All Required Inspections.
3. Installation / Demolition:
   - A. Contractor Shall Provide All Necessary Miscellaneous Steel For The Support Of All Equipment Suspended From Slab, Steel, Wall, Or Trusswork.
   - B. Proper Fire Protection Measures, Satisfactory To The Local Fire Department, Shall Be Taken When Welding Or Cutting With Torches Or Electric Arc. Provide Applicable Open Flame Permits As Required By The Authority Having Juristiction.
   - C. Contractor Shall Be Responsible For All Cutting And Patching Of Walls, Ceilings, Roofs, And Floors Required As A Result Of Their Work.
   - D. Piping, Conduit And Wiring Layouts Are Schematic Diagrams And Are Intended To Show General Arrangement, Size And Capacity And Do Not Indicate Which Pipe, Conduit Or Wire Is Above Or Below The Other. All Offsets Are Not Necessarily Shown, Contractor Shall Arrange And Coordinate The Work, Furnish Necessary Offsets, Valves, Vents And Fittings To Avoid Conflict With Other Mechanical And Electrical Services And Structural And Architectural Elements Without Additional Cost To The Owner. If Areas Of Conflict Are Encountered, The Engineer Shall Be Notified And Contractors Recommendations Shall Be Submitted To The Engineer For Approval Before Work Has Begun.

Mechanical / Electrical Coordination

1. All Scope Related To Installation Of New Air Cooled Chillers Shall Be The Responsibility Of The Prime Mechanical Contractor. Licensed Subcontractors Shall Be Hired As Needed To Complete The Project.
2. Scope Shall Include But Not Be Limited To:
   - A. Power Wiring
   - B. Control Wiring
   - C. Motor Controller, Starters, and Disconnects
3. Disconnect Switches Shall Be Heavy Duty Type With Lockable Handle.
   - A. One Manufacturer Shall Be Used Throughout The Project. Acceptable Manufacturers Are: Square D, General Electric, Siemens And Eaton.
4. Starters Shall Be NEMA Combination Magnetic Motor Starters Sized Per Motor HP, With Integral Red Run Pilot Light And H-O-A Switch. Acceptable Manufacturers Are: Square D, General Electric, Siemens And Eaton.
   - A. Coordinate Motor Starter Type And Features With The Requirements Of The Mechanical Equipment And The Control System.
   - B. Provide Overload, Under Voltage And Phase Loss Protection In All Starters.
   - C. Starters For Motors 50 HP And Larger Shall Be Reduced Voltage Autotransformer Type. One Manufacturer Shall Be Used Throughout The Project.

DEMOLITION GENERAL NOTES

General

1. Contractor Shall Provide Lawful Storage And Removal Of All Waste Material Used Or Generated During The Course Of Work. Debris Storage And Removal Methods And Locations Shall Be Designated And Approved By The Owner.
2. Piping, Fittings, Pipe Hangers, Valves, Insulation, Etc., Removed During The Demolition Phase Shall Not Be Reused.
3. Contractor Shall Verify Field Conditions Prior To Bid Submission. Sizing And Location Of Piping And Equipment Is Approximate And Shall Be Verified In The Field.
4. When Demolition Requires Interruption Of Existing Building Services, Contractor Shall Notify The Owner In Writing At Least 72 Hours Prior To Start. Notification Shall Include Description Of Systems Interrupted And An Estimate Of Approximate Downtime Such Interruptions Shall Be Kept As Short As Possible.
5. Contractor Shall Include Cost For Removal Of Construction Debris And Excess Materials In The Contract.
6. All Construction Material To Be Removed Under This Contract Shall Remain The Property Of The Owner. Construction Material Shall Be Disposed Of By The Contractor As Directed By The Owner.
7. Roof Shall Be Protected During All Demolition And Construction Activities. Plywood Shall Be Laid Down To Allow Storage Of Materials In Approved Areas. Materials Shall Be Separated Sufficiently To Not Cause Additional Structural Stress. Any Damage To The Roof Caused By Demolition Or Construction Activities Shall Be Repaired By The Contractor Using The Approved Roofing Vendor To Maintain The Warranty.

Electrical

1. The Contractor Shall Remove Any And All Obsolete, Unused Or Unnecessary Items In The Areas Being Renovated.
2. Any Existing Electrical Equipment That Must Be Relocated To Accommodate New Work Shall Be Accomplished By The Contractor, Provided It Is Done So At No Additional Expense To The Owner And After Written Permission Has Been Obtained From The Owner And Engineer.
3. All Electrical Equipment Including Light Fixture, Wiring Devices, Etc. And Associated Conduit And Wiring That Is Removed That Feeds Other Areas Of The Building Shall Have The Continuity Maintained And New Conduit And Wiring Furnished And Installed.
4. Any Item Indicated For Demolition Shall Be Removed, Inclusive Of Any Raceway, Boxes, Wiring, Etc, Back To Its Original Source. If Entire Circuits Are Removed, Panel Schedules Shall Be Updated And Breakers Placed In "Off".

ELECTRICAL GENERAL NOTES

Electrical Wiring

1. In General, Branch Circuit Wiring Is Not Shown On The Plan Drawings. Numerals Adjacent To Symbols For Lighting Fixtures, Receptacles, Motors, Appliances, Etc. Indicate The Panelboard And Circuit Number To Which The Item Is To Be Connected. Provide Branch Circuit Wiring For All Items Shown In Accordance With These General Notes And The Electrical Specifications.
2. Mechanical Equipment (Motors, HVAC Equipment, Etc.) Is Shown On Electrical Plan Drawings For Coordination And Are Only Approximate Locations. Refer To Mechanical Plans For Exact Locations.
3. The Minimum Branch Circuit Wiring Size Shall Be 2#12, #12 Ground In 3/4 Inch Conduit Unless Otherwise Noted.

Wiring Methods

1. General
   - A. Final Connections To Mechanical Equipment, Lighting Fixtures, Motors, Transformers, Instruments, And Control Devices Shall Be Flexible Conduit To Minimize Vibration Transmission.

Equipment Grounding

1. An Insulated (Green) Equipment Ground Conductor(s) Shall Be Provided In All Feeders And Branch Circuits. Utilizing The Conduit As The Equipment Grounding Conductor Is Not Acceptable.
2. Provide An Additional Separate Insulated (Green With Yellow Stripe) Ground Conductor(s) For Isolated Ground (IG) Where Indicated.

Electrical Enclosures And Terminations

1. Electrical Equipment Enclosures Shall Be Provided As Listed Below Unless Otherwise Noted.
2. Electrical Terminations (Lugs, Terminals, Etc.) On All Equipment Shall Be Rated For Use With 75 Degree Celsius Conductors.

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Questions For DLB Call: Scot Gowers
DLB Project ID: 47403 Phone: 732-927-5145

project
VALLEY ROAD HVAC
1600 VALLEY ROAD
WAYNE, NJ, 07470

title
GENERAL INFORMATION SHEET-2

scale	drawn by	checked by	date	filename
AS SHOWN	DR	SG	05/09/2016	47403G2V

dwg. no.
G2V

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MECHANICAL GENERAL NOTES

General

1. Existing Chillers, Pumps, And Portion Of Chilled Water System That Is Being Replaced Shall Be Prebalanced Prior To Starting Demolition. Equipment Shall Be Run To Determine Baseline Conditions. Reports Shall Be Submitted To Engineer For Record Prior To Start Of Demolition.

2. Test, Balance And Certify All Chilled Water Piping And Equipment On The Primary Side Of The System. Refer To Drawings For Flow Requirements.

3. Contractor Shall Drain And Refill All Piping As Required. System Shall Be Flushed, Cleaned, And Treated With Chemicals In Quantities Approved For New And Existing Equipment. Owner Shall Sign Off On All Procedures.

Equipment

1. Unless Otherwise Noted On The Drawings, All Mechanical Equipment Shall Be Mounted On Vibration Isolators To Prevent The Transmission Of Sound To The Building Structure. Vibration Isolators Shall Be In Accordance With The Specifications And On Actual Weight Distribution Of The Equipment Furnished. Deflections Shall Be As Noted On The Equipment Shop Drawing Submittals. The Vibration Isolation Requirements Shall Be Coordinated With The Seismic Controls.

2. Contractor Shall Ensure That All Mechanical Devices Will Be Installed In A Location Which Affords Accessibility For Maintenance And Repair. Coordinate Installation Among All Trades To Avoid Interferences, And Locate Equipment To Provide Clearances Which Exceed Those Recommended By The Equipment Manufacturer. Prior To Project Completion, Contractor Will Review Each Installation And Will Direct Changes Whenever Access Or Serviceability Is, In Their Opinion, Unacceptable.

3. Piping Insulation

   A. Material Shall Be Preformed, Heavy Density Pipe Insulation With All Service Jacket. Insulation Shall Be One Piece, Molded With A K Value Of 0.23 At 75 Deg. F.

   B. Hydronic Piping

      1) 35 Deg. - 75 Deg. F - 1" Insulation Up To 1" Pipe Size, 1-1/2" Insulation For 1-1/4" Pipe Size And Over. Provide Vapor Barrier.

   C. Fittings And Valves: All Fittings And Valves Shall Be Insulated With Preformed Fiberglass Fittings, Mitered Sections Of Pipe Insulation Or Fiberglass Blanket. Insulation Shall Be Of Equal Thickness To The Adjacent Pipe Insulation, Finished With PVC Fitting Cover.

3. Vibration Isolation

   A. All Motor Driven Equipment Shall Be Installed With Vibration Isolators. Unless Otherwise Noted, Suspended Equipment Shall Have Spring Isolator Hangers And Base Mounted Equipment Shall Have Double Deflection Neoprene Mountings.

   B. All Piping Connected To Vibrating Equipment Shall Be Isolated By Resilient Hangers Or Flexible Connectors.

Waterside Requirements

1. Balancing The Water Systems

   A. Test Reports Shall Be Certified By A Member Of The Balancing Firm Who Is Certified By AABC Or NEBB Or TABB. Balancing Reports Shall Be Submitted In Forms Approved By AABC / NEBB / Or TABB.

   B. Operate All Pumps And Systems For As Long As Necessary To Ensure Flow At All Pumps And Terminal Devices.

      1) Verify Impeller Size And Operate The Pump. Read And Record Pressure Differential Across The Pump.

      2) Check System Resistance With All Valves Open, Read Pressure Differential Across The Pump And Mark The Pump Manufacturer's Head-Capacity Curve.

      3) Adjust Pump Discharge Valve Until Design Water Flow Is Achieved. Verify Pump-Motor Brake Horsepower.

      4) Report Flow Rates That Are Not Within Plus Or Minus 5 Percent Of Design. Set Calibrated Balancing Valves, If Installed, At Calculated Settings.

      5) Measure Flow At All Stations And Adjust, Where Necessary, To Obtain First Balance. Adjust Balancing Stations To Within Specified Tolerances Of Design Flow Rate.

   C. Submit Four (4) Test Reports Showing All Pertinent Operating Data Such As GPM And Pressure Drop At Each Terminal And Heat Transfer Device.

   D. Motor RPM, Motor Current, Etc., Shall Be Submitted For Permanent Record.

   E. During The Adjusting Period, Make All Necessary Settings And Adjustments Of Temperature Regulating Equipment.

   F. Test Reports Shall Be Certified By A Licensed Professional Engineer Who Shall Be A Member Of The Balancing Firm.

   G. The Contractor Shall Verify All Pump Flow And Head Pressures And Note Them In Writing To The Engineer Prior To Work On Water Systems That Are To Be Modified.

2. Piping - AC Condensate Drain

   A. Exterior: Air Conditioning Condensate Drain Piping Shall Be Schedule 40 PVC With Glued Fittings. Each Outdoor AC Unit Shall Have A PVC Condensate Drain Trap With A Minimum Of 2" Water Seal And Cleanout With Removable Cap.

MECHANICAL GENERAL NOTES

   B. All Condensate Drain Lines Shall Comply With Listed Plumbing Code As To Acceptable Point Of Discharge (Roof Drain, Splash Block, Etc.).

   C. Provide Adequately Sized Trap At Unit For Proper Condensate Drainage Control. Allowance Shall Be Made For Positive Or Negative Pressures At Drain Pan Location.

3. Piping - Water Systems

   A. Copper Pipe:

      1) Type "L" Seamless Hard Drawn, Conforming To Standard Dimensions, Weight And Tolerances Of ASTM Specifications B-88, Wrought Copper Fittings Of Weights Corresponding To The Pipe To Which They Are Attached.

      2) Use Dielectric Fittings As Manufactured By Epco Or Lectric Pipe Line, Inc., Between Copper And Threaded Pipe Of Dissimilar Metal Of Any Kind.

   B. Black Steel Pipe:

      1) All Fittings Shall Be Welded Fittings. Install Air Vents At All High Points In The Hydronic Systems. Runoff Drains Shall Be Provided At Each Vent To Carry Possible Water Leakage To A Suitable Drain Line.

4. Cleaning And Flushing Of Piping System

   A. Provide Flushing, Cleaning And Chemical Treatment Programs For The Chilled Water Glycol System.

   B. All Cleaning Agents, Materials, And Procedure Shall Be Compatible With The Existing System. Confirm That Existing And New Mechanical Pipe Joints, Gaskets, Etc. Will Not Be Damaged By The Chemicals.

   C. When Connecting to Existing Piping Systems, The New Piping Shall Be Isolated From The Existing System And Shall Be Thoroughly Flushed And Cleaned And Pressure Tested Before The Existing Water Is Circulated Through It.

   D. Submittals

      1) Chemical Explanation, MSDS, Layouts Of Feeding Equipment, Equipment Detail Sheets. List Of Services Provided For All Systems.

      2) Complete Procedure To Commence Cleaning, Including Circulator Recirculation Rate And Chemicals To Be Used. Provide Report Example. A Copy Of This Submittal Shall Also Be Sent To The Manufacturer Of The Specified Heat Transfer Fluid. The Chemical Treatment Contractor Shall Not Begin Work Until A Signed Copy Of This Submittal Has Been Received Back From The Manufacturer Of The Specified Heat Transfer Fluid.

   E. Quality Assurance

      1) Retain A Chemical Treatment Contractor To Provide Water Treatment, Feed Equipment, Testing Equipment And Chemicals For The Systems As Defined Herein And As May Be Required To Maintain The Integrity Of The Piping Systems And Mechanical Equipment.

      2) The Vendor Shall Be A Recognized Specialist, Active In The Field Of Industrial Water Treatment For At Least Five (5) Years, Whose Major Business Is In The Field Of Water Treatment, And Who Has Full Time Service Personnel Within The Trading Area Of The Job Site. Laboratory Facilities Shall Be Available. Service Personnel Shall Be Degreed Specialists In The Fields Of Mechanical Or Chemical Engineering Or Chemistry.

      3) Furnish And Install All Equipment And Material On This Project In Accordance With The Requirements Of The Authority Having Jurisdiction, Suitable For Its Intended Use On This Project, Approved By The U. S. Environmental Protection Agency (EPA), And Local Department Of Environmental Protection, And So Certified By The Manufacturer.

      4) Analyze The Water From The Local Water Company To Be Used On The Project, Before Establishing Treatment Procedures.

      5) The Vendor's Representative That Services The Facility Shall Have A Current Certification For The Jurisdiction Of The Job Site. A Copy Of This Certification Shall Be Submitted With The Technical Proposal.

      6) The Vendor Shall Be Responsible For The Safe Cleanup Of Any Chemical Spills Relating To Products Supplied By The Vendor And Caused By Failure Or Malfunction Of The Chemical Feed Equipment Or Due To The Actions Of The Field Service Personnel. Cleanup Shall Be Performed In Accordance With All Current Government Regulations And Good Safety Practices. Vendor Shall Maintain A 24-hour Hot Line For Emergency Situations. Bidder Shall Provide The Phone Number And Procedure To Access The Hot Line Including Estimated Response Time In The Event Of An Emergency.

      7) Vendor Shall Be Responsible For Handling Of All Water Treatment Chemicals. All Chemical Deliveries Shall Be Made To The Point Of Use By The Vendor. The Vendor Shall Remove All Empty Chemical Containers. Vendor Shall Also Be Required To Remove Any Unused Chemical Inventory Following The End Of The Contract Period.

   F. Execution

      1) The Cleaning And Flushing Procedure Shall Be Approved In Writing By The Chemical Manufacturer And The Manufacturer Of The Specified Heat Transfer Fluid. The Chemical

MECHANICAL GENERAL NOTES

Manufacturer's Representative Shall Supervise And Certify In Writing The Cleaning And Flushing Of The Piping Systems.

      2) Provide Temporary Connections With Valves To Fill And Drain The Piping And Equipment After Completion Of The Chemical Cleaning Procedure.

      3) Provide Temporary Piping Connections, Bulbs, Strainers, Bypasses, And Blank Connections Where Required To Clean Systems.

      4) Fill And Vent System. Perform System Hydrostatic Testing At This Point.

      5) After Hydrostatic Leak Testing Procedure Is Complete, Thoroughly Clean The Piping And Flush As Follows:

         a. Add Chemical Pipe Cleaning Compound As Recommended By The Chemical Manufacturer's Representative To The System Simultaneously With The Filling Of The System. This Cleaning Compound Shall Also Meet The Requirements Of The Heat Transfer Fluid Manufacturer.

         b. Circulate The Cleaning Compounds In The System For A Minimum Of 4 Hours. Once Cleaning Is Completed, System Shall Remain Full Using Only The Specified Heat Transfer Fluid.

         c. Vendor Shall Introduce The Chemical Manufacturer's Recommended Concentration of Cleaning Solution Into The Condenser Water Piping System Based On The Systems Total Water Volume. The Chemical Vendor Shall Provide Documentation As To The Compatibility Of The Cleaning Agent And The Specified Heat Transfer Fluid. System Shall Be Topped Off With Water And Vented.

         d. Circulate Chemical Cleaning Agent For A Minimum Of 4 Hours.

         e. Open Temporary Blow Down Valves Until The Chemical Has Been Flushed Out Of The System. The Chemical Vendor Shall Be Responsible To Periodically Test The Blow Down For The Presence Of Cleaning Agent.

      6) Fill System With Pre Mixed Glycol At The Concentrations And Type As Outlined In The MEP Specification. Based On The Water Meter Readings Previously Collected, The Vendor Shall Adjust The Additional Glycol Concentration To Compensate For The Residual Water Trapped In The System.

      7) Test System PH At 30 Minute Intervals Until Conditions Stabilize (PH Shall Be Kept Between 6.5 And 8.5). Have Anti-foam Agent On-site To Prevent Pump Cavitation.

      8) Clean And Flush Circulator Pumps, Clean All Strainers And Suction Diffusers.

      9) Closeout System Flush And Fill By Writing A Report And Leaving The Area Clean.

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Questions For DLB Call: Scot Gowers
DLB Project ID: 47403 Phone: 732-927-5145

project: VALLEY ROAD HVAC, 1600 VALLEY ROAD, WAYNE, NJ, 07470

title: GENERAL INFORMATION SHEET-3

scale	drawn by	checked by	date	filename
AS SHOWN	DR	SG	05/09/2016	47403G3V

dwg. no. G3V

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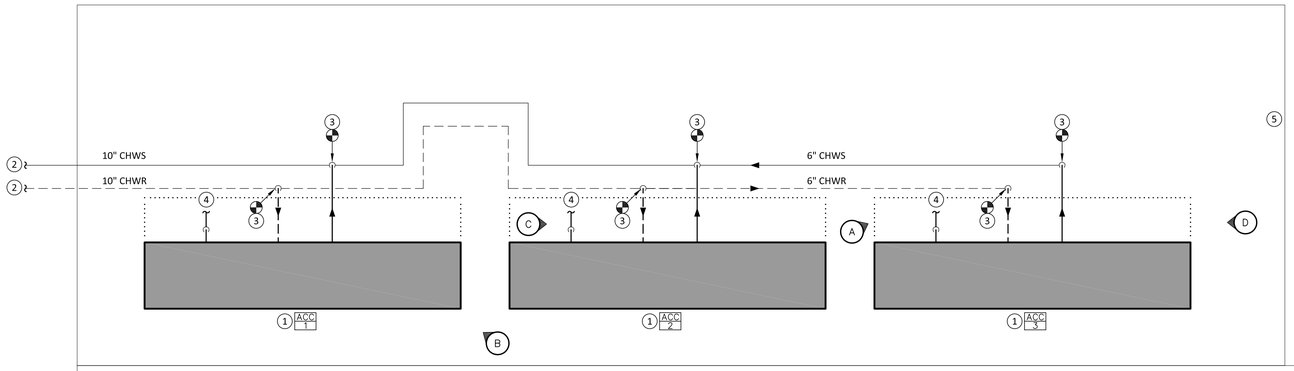


ROOF PLAN Scale: 1/8"=1'-0" (2' 4' 8' 16')

Drawing: **M1V**
Detail: **01**

KEY NOTES (SYMBOLS 1, 2, ETC.)

1. Remove Existing Air-Cooled Chiller, Dispose Of Properly, And Install New Packaged Air-Cooled Chiller With Integral Pump Package In Same Location. Coordinate Placement With Existing Dunnage And Structural Plans For Modifications To Existing Acoustical Panels.
2. Existing Roof Mounted Chilled Water Supply and Return Piping to Remain.
3. Modify Existing Roof Mounted Chilled Water Supply And Return Piping For Connection To New Equipment.
4. 3/4" PVC Drain Piping From Chiller To Be Routed To Nearest Roof Drain. Support Piping At 6'-0" Intervals And At All Changes In Direction.
5. Existing Acoustical Panels. See Structural Plans For Additional Information Modifications Required For Chiller Installation.

GENERAL NOTES

1. Coordinate New Equipment Locations And Installation With Existing Existing Piping And Existing Steel Dunnage.
2. Install Chiller Controls According To Manufacturer Requirements.
3. Clean Chilled Water Systems Upon Completion.
4. When Filling Chilled Water Systems After Project Completion, Provide Chemicals In Types And Quantities As Recommended By College Chemical Water Treatment Vendor.

PARTIAL SYMBOLS & ABBREVIATIONS

Identifier	Description
	Connect To Existing
	Existing Equipment
	New Equipment
XXX / XX	Equipment Type / Equipment Number
	Existing CHW Piping
	New CHW Piping
	Pipe Drop In Direction Of Flow
	Flow Direction

Identifier	Description
ACC	Air Cooled Chiller
CHWR	Chilled Water Return
CHWS	Chilled Water Supply

PHOTO A

Existing Chilled Water Piping To Remain

PHOTO B

Existing Air-Cooled Chiller To Be Removed

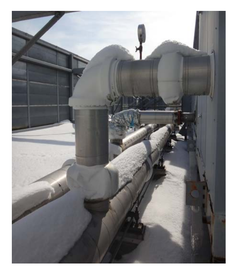


PHOTO C

Existing Chilled Water Piping Connections To Air-Cooled Chiller

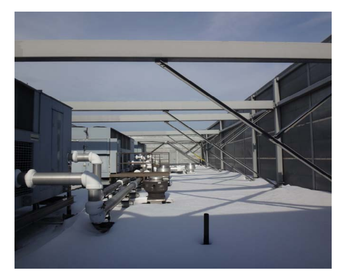
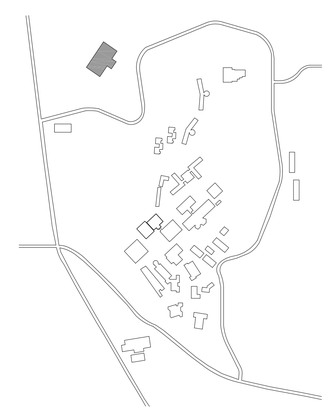


PHOTO D

Overview Of Existing Air-Cooled Chillers



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project
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title
ROOF PLAN

scale	drawn by	checked by	date	filename
AS SHOWN	DR	SG	05/09/2016	47403M1V

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M1V

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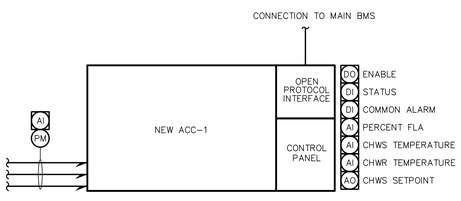
AIR COOLED CHILLER SCHEDULE

UNIT ID	MODEL NO.	TYPE	LOCATION	PERFORMANCE			EVAPORATOR					ELECTRICAL						NOTES
				CAPACITY (TONS)	NOM. CAPACITY (MBH)	EFFICIENCY IPLV (EER)	FLOW (GPM)	WPD (FT. W.G.)	EWT (°F)	LWT (°F)	EVAP FOULDING FACTOR (HR.SQ.FT.DEG/BTU	VOLTAGE (V)	PHASE (Ø)	FREQ (HZ)	MCA (A)	MOCP (A)	WEIGHT (LBS)	
ACC-1,2,3	30RB190	COMPRESSOR SCROLL CHILLER	ROOF	190	2,124.0	17.0	443.9	18.8	55	45	0.0001	480	3	60	425	450	13,000	1 THRU 17

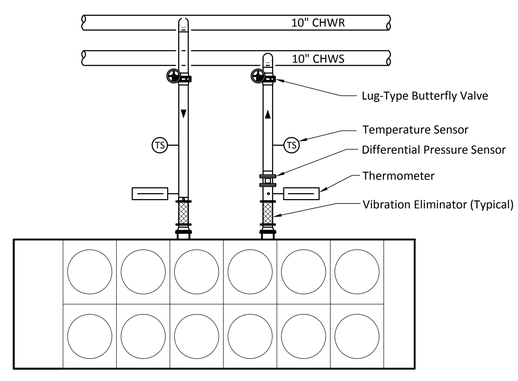
NOTES:
1. Selection Based On Equipment Manufactured By Carrier.
2. Provide Wye-Delta Chiller Starter With Single Point Power Connection To Chiller With Control Power Transformer And Disconnect.
3. Chiller Full-Load Sound Pressure Shall Not Exceed 74 dBA When Rated In Accordance With ARI Standard 575-94. Contractor Shall Be Responsible For Providing Proper Attenuation If Sound Pressure Levels Are Greater.
4. Chiller Shall Be Installed On Existing Dunnage On Roof.
5. Provide Factory Startup Services By Manufacturer. Chiller Ships With Nitrogen Charge. Manufacturer To Provide Sufficient Refrigerant And Charge System During Startup. Refrigerant Shall Be R134a.
6. Provide Neoprene Isolation.
7. Provide Scroll Chillers. Reciprocating, Rotary Screw, Or Stepped Screw Chillers Are Not Acceptable.
8. Provide Complete 5 Year Parts, Labor, And Refrigerant Warranty.
9. Provide IFM Efector Thermal Dispersion Proof Of Flow Switch Factory Installed In The Correct Location And Orientation To Provide Reliable Function And Chiller Protection.
10. Provide Factory Under/Over Voltage Protection.
11. Unit Shall Include Integral Pump Package.
12. Provde Factory Insulation Of All Cold Parts.
13. Chiller Shall Be Utilize 30% Propylene Glycol Solution.
14. Air-Cooled Condenser To Be Provided With Low Ambient Control To 15F. Chiller To Be Provided With Integral Controls To Operate Fixed Speed Fans And A Single Inverter-Driven Fan.
15. Size Refrigerant Piping And Specialties In Accordance With Manufacturer's Recommendations.
16. Chiller To Ship Shrink-Wrapped In Opaque Plastic With UV Protection And Rust Inhibitors Around The Entire Unit, In Order To Protect The Unit During Shipping And Rigging.
17. Chiller Manufacturer To Provide 1 Year Recommended Maintenance Contract To Include All Items Recommended In Operation And Maintenance Manuals, To Include At At Minimum:
    a. Qty-1 Comprehensive Annual Inspection Each Year, Including Refrigerant Leak Test, Oil Level Check, Check And Tighten All Electrical Connections
    b. Qty-1 Seasonal Cooling Startup Logging Pressure Drop On Evaporator
    c. Qty-2 Annual Operating Inspections , Including Recording Of Subcooling
    d. Qty-1 Annual Oil Analysis Including Acid Test (Per Circuit)

DI New DDC System Digital Input
DO New DDC System Digital Output
AI New DDC System Analog Input
AO New DDC System Analog Output



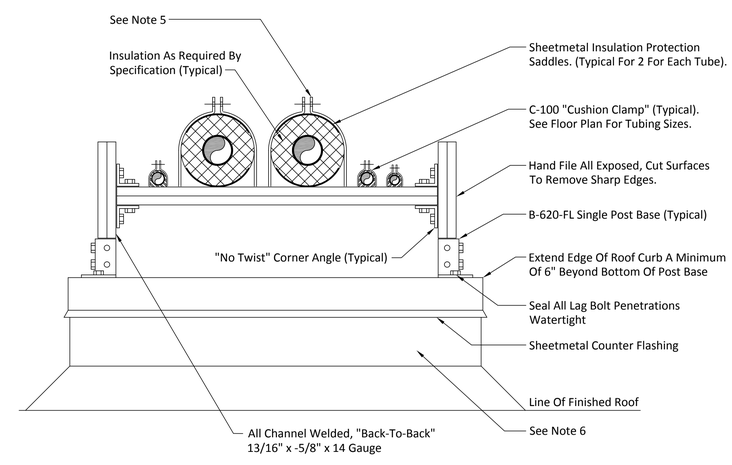
NOTES:
1. Contractor Shall Hire Automated Logic Controls For All Work Related To Controls.

AIR COOLED CHILLER ACC-1 CONTROLS (ECM C1) | Scale: NTS | Drawing: M2V | Detail: 01



NOTES:
1. Shut-Off Valves Should Not Be Closed With Cold Water In The Chiller.
2. Provide Air Vent At High Point In System And Drain At Low Point In System.

CHILLER PIPING DETAIL | Scale: NTS | Drawing: M2V | Detail: 02



NOTES:
1. All Model Numbers Are Based On Items Available From The Haydon Corporation.
2. All Materials, Fasteners, Etc., Used For A Roof Mounted Application Shall Be Galvanized.
3. All Piping Shall Pitch Down In The Direction Of The Suction Line Flow.
4. Roof Curbs Shall Be Fastened To The Building Structure To Resist All Gravity, Seismic And Wind Loads.
5. C-1101 Tubing Clamp (Typical). Clamp Shall Be Sized To Accommodate The Required Insulation And Sheetmetal Saddles. See Floor Plan For Tubing Sizes.
6. 12" High (Above Finished Roof) Piping Support Curb With Nominal 2 Inch "Nailer". Coordinate Curb Configuration (Overall Height, Cant, Roof Structure Attachment Method, Etc.) With General Contractor.

ROOF MOUNTED PIPING SUPPORT DETAIL | Scale: NTS | Drawing: M2V | Detail: 03

24x36

ITEM	DATE	ISSUE DESCRIPTION	ITEM	DATE	ISSUE DESCRIPTION

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DLB Project ID: 47403 Phone: 732-927-5145

project: VALLEY ROAD HVAC, 1600 VALLEY ROAD, WAYNE, NJ, 07470

title: SCHEDULES AND DETAILS

scale	drawn by	checked by	date	filename
AS SHOWN	DR	SG	05/09/2016	47403M2V

dwg. no. M2V

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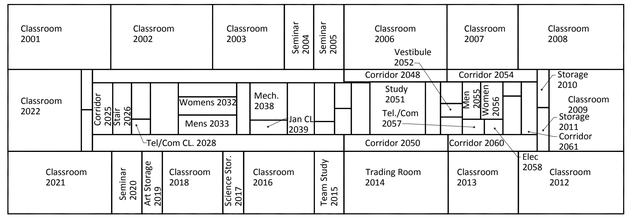
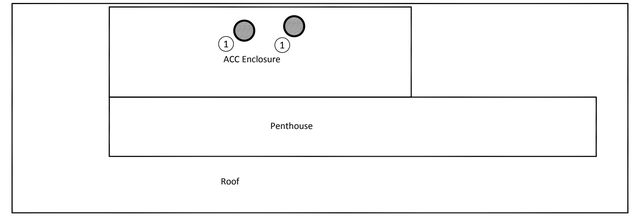
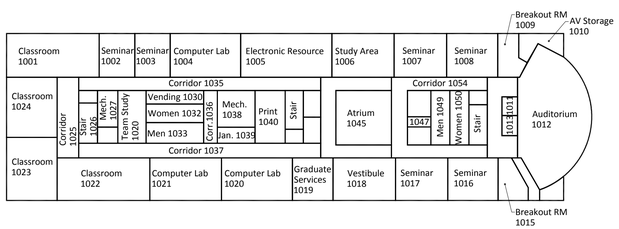


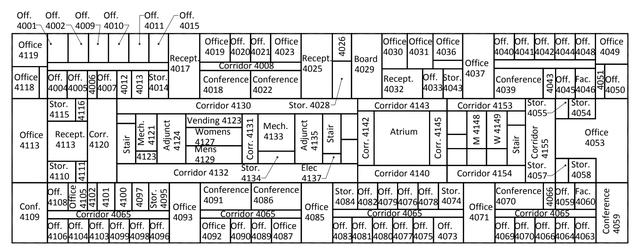
2ND FLOOR



ROOF



1ST FLOOR



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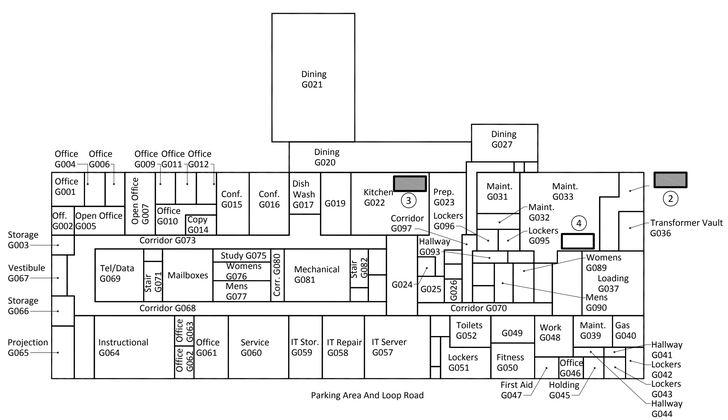
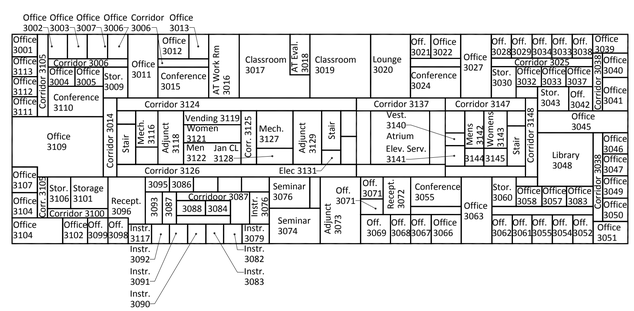


GROUND FLOOR



3RD FLOOR

KEY NOTES (SYMBOLS 1, 2, ETC.)

1. Provide ALC BMS Controls And Monitoring To Existing Exhaust Fans (EF-3, EF-4, and EF-5) To Provide On / Off Status And Scheduling Control.
2. Provide ALC BMS Monitoring For Emergency Generator For On / Off Status
3. Provide ALC BMS Monitoring For Kitchen Hood For On / Off Status. .
4. ALC BMS Front End Location, Contractor To Confirm In the Field.

GENERAL NOTES

1. Coordinate Controls Upgrade With Field Conditions, Owner, Engineer And Other Trades
2. Contractor To Coordinate Shut Down Of Existing Systems With Owners Operation Requirements. The Work May Need To Occur During A Specific Time Period To Minimize Impact Upon Building Occupancy.
3. Contractor Shall Field Verify Each Existing Interface Upgrade To Facilitate Limited Shut Down Time During Replacement.
4. All Mechanical Equipment Represented On This Plan Is Existing.
5. Upgrade To Include Required Interface Modules Required To Integrate With Existing BMS System.

PARTIAL SYMBOLS & ABBREVIATIONS

Identifier	Description
	Existing Equipment

Identifier	Description
BMS	Building Management System

OVERVIEW PLAN

Scale: 1/32"=1'-0"

8' 16' 32' 64'

Drawing: M3V
Detail: 01

24x36

ITEM	DATE	ISSUE DESCRIPTION	ITEM	DATE	ISSUE DESCRIPTION

dlb associates
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project
VALLEY ROAD HVAC
1600 VALLEY ROAD
WAYNE, NJ, 07470

title
BMS Integration

scale	drawn by	checked by	date	filename
AS SHOWN	SG	DR	05/09/2016	47403M3V

dwg. no.
M3V

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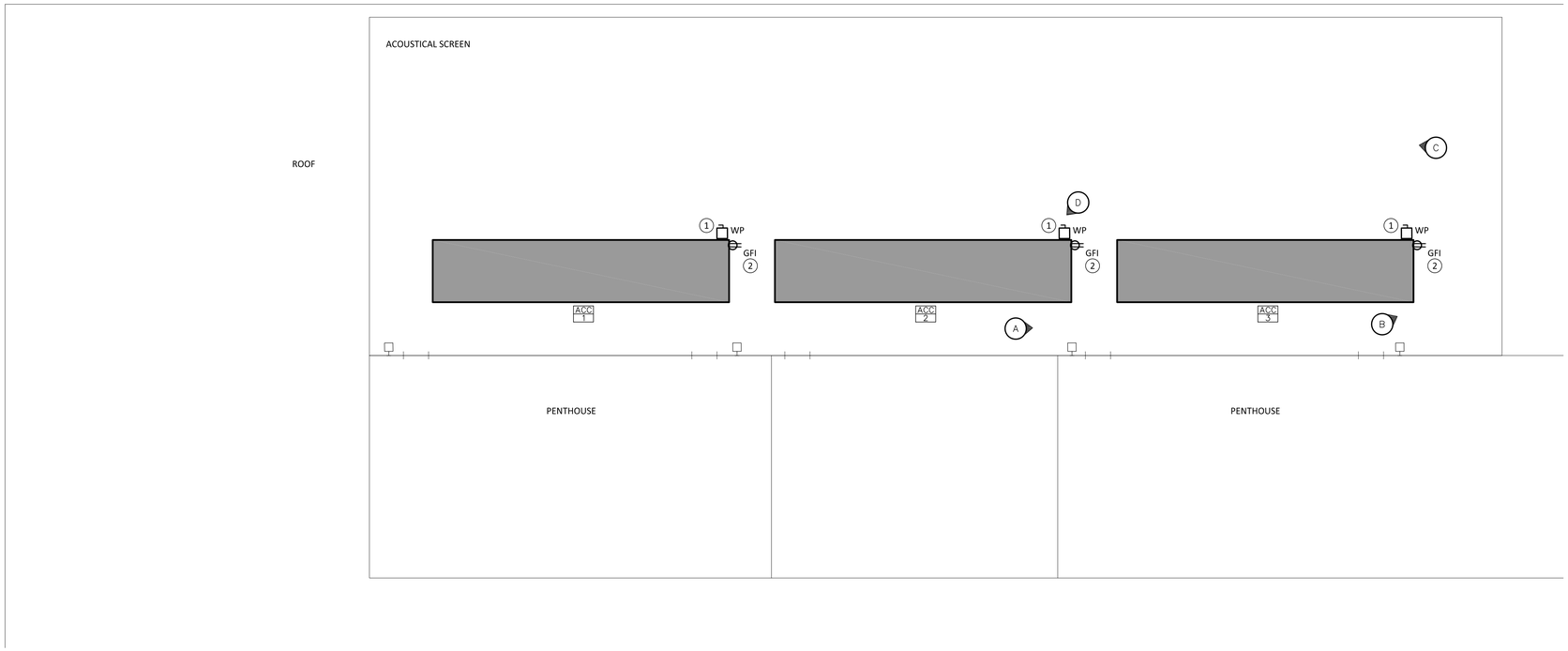


ROOF PLAN Scale: 1/8"=1'-0" (2' 4' 8' 16')

Drawing: **E1V**
Detail: **01**

KEY NOTES (SYMBOLS 1, 2, ETC.)

1. Disconnect Existing Air Cooled Chiller And Remove Fused Switch And Outlet To Allow For Replacement Of ACC. After New ACC Is Installed, Install Junction, Extend Feeder (Match Conduit And Wire Size) To New Power Entry Point And Furnish And Install New 450A Weatherproof Fused Disconnect Switch With Fuses And 2 Sets Of 4/0 Feeders To New ACC.
2. Remove Existing Receptacle From ACC. Install New Weather Proof Receptacle At ACC (Extend Conduit And Wiring As Required).

GENERAL NOTES

1. Coordinate Exact Device Locations With Mechanical Contractor Prior To Installation.
2. Coordinate The Exact Location Of Mechanical Equipment With Their Respective Trades.
3. Provide Electrical Disconnecting Means And Final Power Terminations For ACC Equipment As Required By The Equipment Manufacturer And Applicable Codes. Some Equipment Has Been Specified With Integral Electrical Disconnecting Means And Weatherproof, GFCI Convenience Receptacle. Confirm That The Equipment Has Been Properly Manufactured As Such And Provide Final Connections As Required.
4. The Contractor Shall Megger Test And Check For Continuity Of The Existing Electrical Feeders To The New ACC Units. In Addition Contractor To Confirm Proper Operation Of The Existing Circuit Breaker In The Main Distribution Panel Located On The Ground Floor. Provide Test Reports To Engineer For Review.

PARTIAL SYMBOLS & ABBREVIATIONS

Identifier	Description
GFI	Ground Fault Interrupting Receptacle, 20A, 120V
	Fused Safety Switch - Sized Per Equipment Requirements
A	Photo Location

Identifier	Description
ACC	Air Cooled Chiller
GFI, GFCI	Ground Fault Circuit Interrupter
NEC	National Electrical Code
WP	Weatherproof

PHOTO A

Existing Building Lights And Dunnage To Remain

PHOTO C

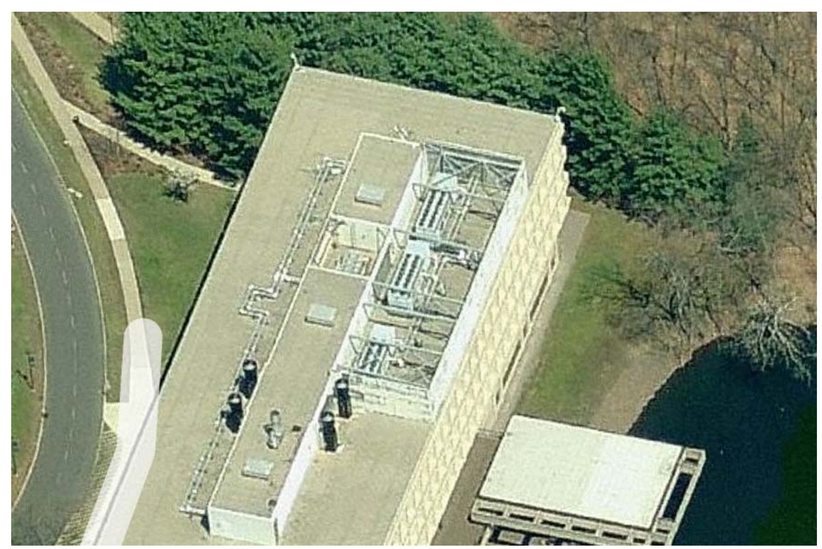
Disconnects To Be Removed.

PHOTO B

Existing WP Outlets To Be Removed. New Water Proof Outlets To Be Installed On New Chillers.

PHOTO D

Existing Disconnects To Be Removed



PHOTO

Overview

ALTERNATE PRICE

1. Contractor To Provide Alternate Price In The Event That The Existing Feeder Does Not Pass Testing. The Existing Feeder Shall Be Removed And New Feeder Pulled In Utilizing Existing Conduits. Replacement Feeder Will Be 300' With 2 Sets Of 3#4/0,#2G Utilizing Existing Conduits. Existing Main Breaker Would Also Need To Be Replaced With A 450A Breaker.
2. Contractor Also To Provide Unit Pricing For Feeder, Pulling In Existing Conduit (100' of 3-#4/0, #2G)

ITEM	DATE	ISSUE DESCRIPTION	ITEM	DATE	ISSUE DESCRIPTION

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project
VALLEY ROAD HVAC
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WAYNE, NJ, 07470

title
ROOF PLAN

scale	drawn by	checked by	date	filename
AS SHOWN	SG		05/09/2016	47403E1V

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E1V

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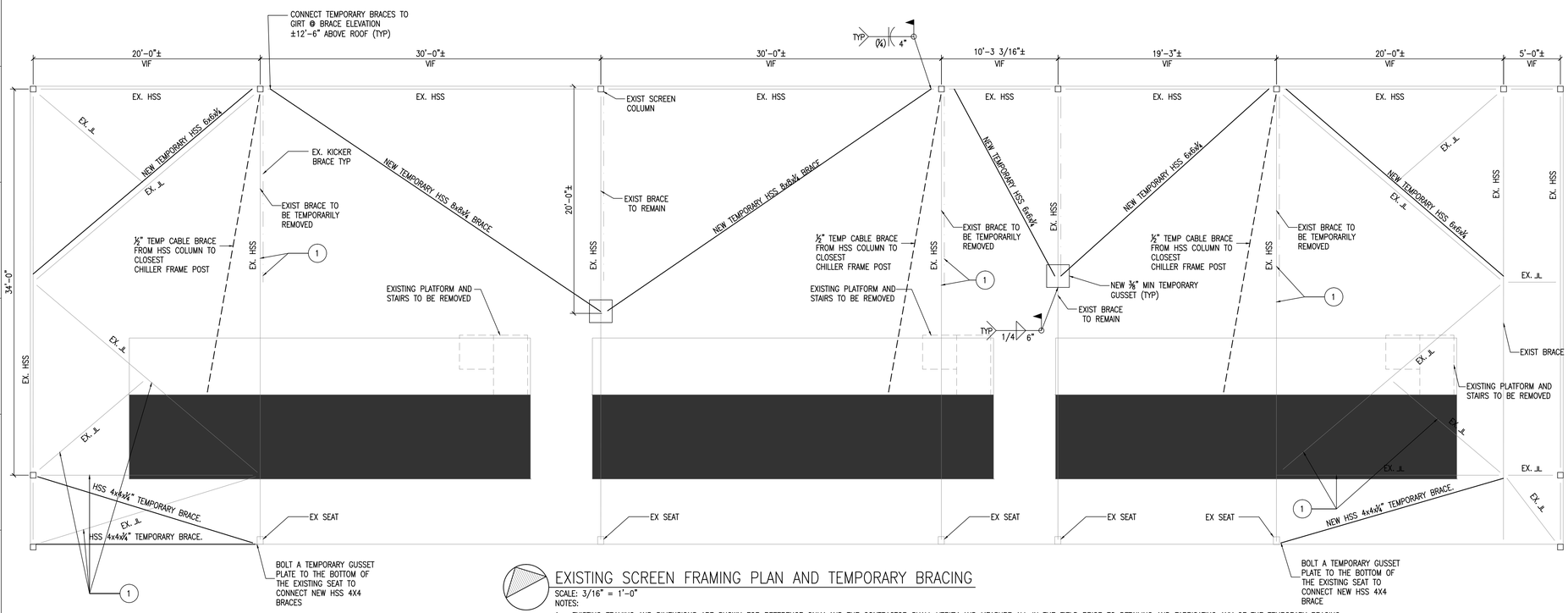


KEY NOTES:

1. EXISTING BRACE TO BE TEMPORARILY REMOVED. ADD TEMPORARY BRACES SHOWN PRIOR TO REMOVING OF BRACE

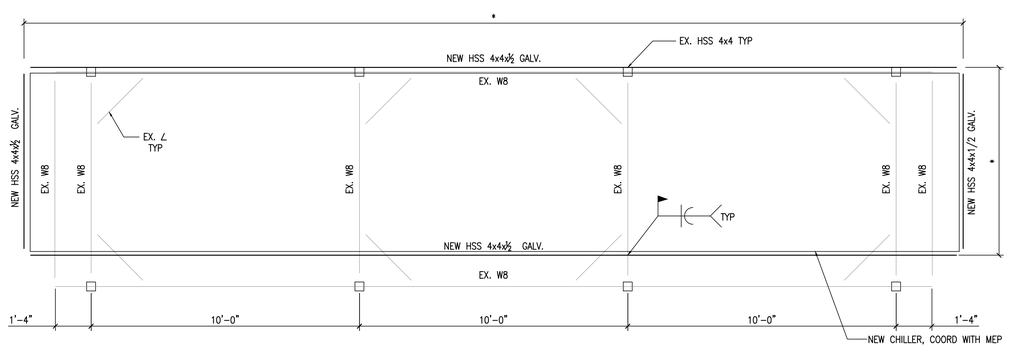
EXISTING SCREEN FRAMING PLAN AND TEMPORARY BRACING

SCALE: 3/16" = 1'-0"

(DO NOT SCALE PLAN)

NOTES:

1. EXISTING FRAMING AND DIMENSIONS ARE SHOWN FOR REFERENCE ONLY AND THE CONTRACTOR SHALL VERIFY AND MEASURE ALL IN THE FIELD PRIOR TO DETAILING AND FABRICATING ANY OF THE TEMPORARY BRACING.
2. THE CONTRACTOR SHALL PREPARE AN ERECTION PLAN OF THE EXISTING SCREEN AND BRACES AND MARK ALL PIECES TO BE DISASSEMBLED PRIOR TO REMOVAL OF ANY MEMBERS.
3. CONTRACTOR SHALL COORDINATE THE BRACE REMOVAL WITH WEATHER CONDITIONS AND SCHEDULE IT SO WIND SPEEDS DO NOT EXCEED 60 MPH AT ANY TIME WHILE THE PERMANENT BRACES ARE REMOVED. IF DUE TO SCHEDULING OR OTHER FAULT OF THE CONTRACTOR, THE SCREEN IS GOING TO BE EXPOSED TO WIND SPEEDS GREATER THAN 60 MPH, AND WITHOUT ALL PERMANENT BRACES IN PLACE, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE ADDITIONAL TEMPORARY BRACING TO THAT SHOWN AS NEEDED TO SUPPORT THE SCREEN.
4. THE CONTRACTOR SHALL SUBMIT A WRITTEN CONSTRUCTION SEQUENCE PLAN PRIOR TO REMOVAL OF ANY BRACING. ALL NEW TEMPORARY BRACES SHALL BE IN PLACE PRIOR TO REMOVAL OF ANY EXISTING MEMBERS.
5. ALL EXISTING MEMBERS BEING TEMPORARILY REMOVED SHALL BE STORED AND PROTECTED FROM DAMAGE.
6. UPON COMPLETION OF EXISTING CHILLERS REMOVAL AND RIGGING OF NEW CHILLERS, THE CONTRACTOR SHALL REINSTALL ALL TEMPORARILY REMOVED MEMBERS. ALL CONNECTIONS SHALL MATCH PRE-EXISTING CONDITIONS. PROVIDE NEW GALVANIZED BOLTS, NUTS AND WASHERS, WHERE EXISTING HAVE BEEN DAMAGED OR MARRED.
7. ONCE PERMANENT BRACES HAVE BEEN REINSTALLED, THE TEMPORARY BRACES SHALL BE REMOVED. ANY WELDS SHALL BE CUT AND GROUND SMOOTH AND SURFACES PAINTED WITH GAVANIZING REPAIR PAINT. DO NOT USE TORCHES NEAR ANY OF THE EXISTING MEMBERS TO REMAIN.
8. SEE PHOTOS ON S2V FOR REPRESENTATIVE EXISTING CONDITIONS.



TYPICAL EXISTING CHILLER ROOF TOP FRAME PLAN (TYP OF 3)

SCALE: 3/8" = 1'-0"

(DO NOT SCALE PLAN)

NOTES:

* – COORDINATE EXACT DIMENSIONS WITH EQUIPMENT CUT SHEETS

GENERAL STRUCTURAL AND CONSTRUCTION NOTES

1.0 GENERAL

1. ALL WORK SHALL CONFORM TO THE "2015 INTERNATIONAL BUILDING CODE" AND TO ALL OTHER APPLICABLE FEDERAL, STATE, AND LOCAL REGULATIONS.
2. IN CASE OF CONFLICT BETWEEN THE GENERAL NOTES, SPECIFICATIONS, AND DETAILS, THE MOST RIGID REQUIREMENTS SHALL GOVERN.
3. WORK NOT INDICATED ON A PART OF THE DRAWINGS BUT REASONABLY IMPLIED TO BE SIMILAR TO THAT SHOWN AT CORRESPONDING PLACES SHALL BE REPEATED.
4. JOB SITE SAFETY AND CONSTRUCTION PROCEDURES ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
5. IF THE EXISTING FIELD CONDITIONS DO NOT PERMIT THE INSTALLATION OF THE WORK IN ACCORDANCE WITH THE DETAILS SHOWN, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY AND PROVIDE A SKETCH OF THE CONDITION WITH HIS PROPOSED MODIFICATION OF THE DETAILS GIVEN ON THE CONTRACT DOCUMENTS. DO NOT COMMENCE WORK UNTIL CONDITION IS RESOLVED AND MODIFICATION IS APPROVED BY THE ENGINEER.
6. SHOP DRAWINGS FOR ALL STRUCTURAL MATERIALS TO BE SUBMITTED TO ENGINEER FOR REVIEW PRIOR TO THE START OF FABRICATION OR COMMENCEMENT OF WORK. REVIEW PERIOD SHALL BE A MINIMUM OF TWO (2) WEEKS.
7. ALL MATERIALS SHALL BE STORED TO PROTECT THEM FROM EXPOSURE TO THE ELEMENTS.
8. CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTION OF ALL EXISTING ROOF SURFACES DURING CONSTRUCTION.

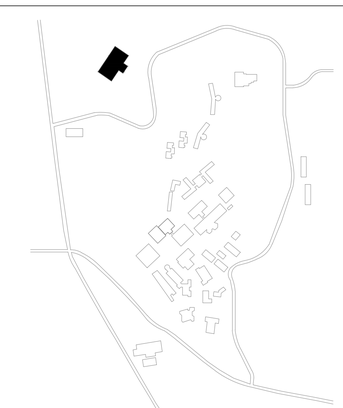
2.0 STRUCTURAL STEEL

1. FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO THE "STEEL CONSTRUCTION MANUAL", THIRTEENTH EDITION, 2005, AMERICAN INSTITUTE OF STEEL CONSTRUCTION INCLUDING SPECIFICATIONS FOR STRUCTURAL STEEL BUILDINGS, SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS, AND AISC CODE OF STANDARD PRACTICE EXCEPT SECTIONS 4.2 AND 7.9 WHICH SHALL NOT BE APPLICABLE TO THIS PROJECT.
2. ALL WELDING SHALL BE PERFORMED BY CERTIFIED WELDERS AND SHALL CONFORM TO "STRUCTURAL WELDING CODE ANSI/AWS D1.1-92", AMERICAN WELDING SOCIETY.
3. STRUCTURAL SHAPES & PLATES: ASTM A36, A572 OR A992.
4. STEEL TUBING (SQUARE, RECT. OR ROUND): ASTM A500, GRADE B.
5. GALVANIZED STRUCTURAL STEEL:
   A. STRUCTURAL SHAPES AND RODS ASTM A123.
   B. BOLTS, FASTENERS AND HARDWARE ASTM A153.
6. WELDING ELECTRODES SHALL BE E70XX FOR MANUAL ARC WELDING AND F7X-EXXX FOR SUBMERGED ARC WELDING. ALL WELDERS SHALL BE CERTIFIED BY THE AWS. MINIMUM WELD SIZE SHALL BE 3/16" UNLESS NOTED OTHERWISE.
7. SUBMIT SHOP DRAWINGS FOR FABRICATION AND ERECTION OF STRUCTURAL STEEL.
8. STEEL MEMBERS SHOWN ON PLAN SHALL BE EQUALLY SPACED UNLESS NOTED OTHERWISE.
9. ALTERNATE CONNECTION DETAILS MAY BE USED IF SUCH DETAILS ARE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL. HOWEVER, THE ENGINEER SHALL BE THE SOLE JUDGE OF ACCEPTANCE AND THE CONTRACTOR'S BID SHALL ANTICIPATE THE USE OF THOSE DETAILS SHOWN ON THE DRAWINGS. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN OF SUCH ALTERNATE DETAILS WHICH HE PROPOSES.
10. ALL STEEL SHALL BE PAINTED WITH SHOP STANDARD PRIMER UNLESS NOTED OTHERWISE.
11. ALL EXTERIOR EXPOSED STRUCTURAL STEEL SHALL BE HOT-DIPPED GALVANIZED PER ASTM A123 UNLESS NOTED OTHERWISE.
12. FIELD WELDED SURFACES WITHIN FOUR (4) INCHES OF WELD SHALL BE CLEANED AND GROUND SMOOTH. AFTER WELDING COAT THE EXPOSED AREA WITH APPROPRIATE PRIMER/PAINTS AS SPECIFIED.
13. FIELD WELDED SURFACES WITHIN FOUR (4) INCHES OF WELD SHALL BE CLEANED AND GROUND SMOOTH. AFTER WELDING COAT THE EXPOSED AREA WITH GALVANIZING REPAIR PAINT. GALVANIZING REPAIR PAINT SHALL BE A HIGH ZINC DUST CONTENT PAINT COMPLYING WITH FEDERAL SPECIFICATIONS DOD-P-21035A OR SSPC-PAINT-20, COLD GALVANIZING COMPOUND BY ZRC PRODUCTS CO. OR EQUAL.
14. GUYS AND OTHER BRACING REQUIRED TO PROVIDE LATERAL STABILITY TO STEEL FRAME SHALL BE ADEQUATELY SIZED AND ANCHORED. THIS BRACING SHALL REMAIN UNTIL PERMANENT BRACING ELEMENTS AND ATTACHED CONSTRUCTION IS INSTALLED.
15. ALL STEEL SHALL BE THOROUGHLY CLEANED BY POWER TOOL CLEANING PRIOR TO PAINTING.

3.0 DESIGN DATA

1. GOVERNING CODE: INTERNATIONAL BUILDING CODE 2015
2. ROOF LIVE LOAD: N/A
3. WIND LOAD:
   A. BASIC WIND SPEED.....115 MPH
   B. I (WIND IMPORTANCE FACTOR).....1.0
   C. WIND EXPOSURE.....B
   D. COMPONENTS & CLADDING WIND PRESSURE: AS PER THE CODE
4. EARTHQUAKE DESIGN DATA: N/A

SITE LOCATION



ITEM	DATE	ISSUE DESCRIPTION	ITEM	DATE	ISSUE DESCRIPTION
	05/09/2016	BID SET			

24x36

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34 S Main St
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Phone: (609) 489-5511

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265 Industrial Way West, Eatontown, N.J. 07724
Questions For DLB Call: Scot Gowers
DLB Project ID: 15-18 Phone: 732-927-5145

DAN DYER, P.E.
LIC. #
Date: Month Day, Year

project
WILLIAM PATTERSON UNIVERSITY
1600 VALLEY ROAD
WAYNE, NJ, 07470

title
STRUCTURAL PLAN AND DETAILS

scale	drawn by	checked by	date	filename
AS NOTED	MPP	DGP	05/09/2016	S1V

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S1V

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PHOTO 1: TYPICAL BRACE SEATED CONNECTION

PHOTO 2: TYPICAL BRACE CORNER BRACING

PHOTO 3: TYPICAL STRUT AND DIAGONAL BRACES

PHOTO 4: TYPICAL BRACE AND STRUT STRUT CONNECTIONS AT SCREEN POST

PHOTO 5: TYPICAL STRUT STRUT CONNECTION AT SCREEN POST

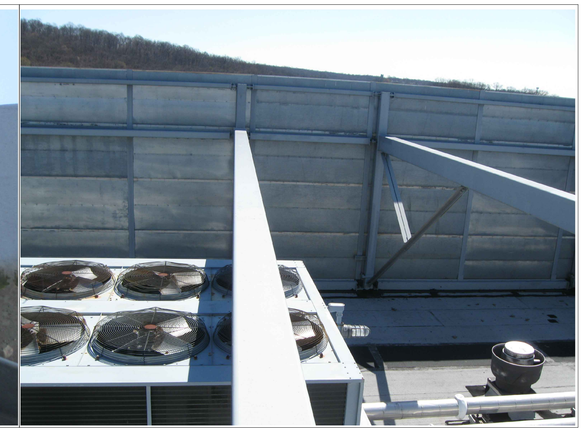
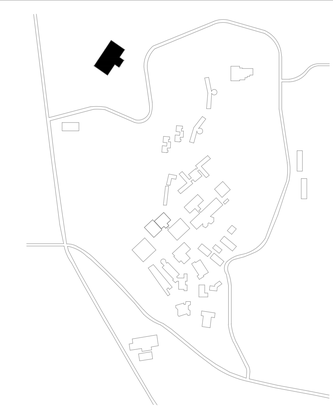


PHOTO 6: TYPICAL STRUT AND DIAGONAL BRACES

SITE LOCATION



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DAN DYER, P.E.
LIC. #
Date: Month Day, Year

project
WILLIAM PATTERSON UNIVERSITY
1600 VALLEY ROAD
WAYNE, NJ, 07470

title
PHOTOS

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S2V