

**TOWN OF NEEDHAM
MASSACHUSETTS**



500 Dedham Avenue
Needham, MA 02492
781-455-7550

PLANNING BOARD

APPLICATION FOR SITE PLAN REVIEW

Project Determination: (circle one) Major Project Minor Project

This application must be completed, signed, and submitted with the filing fee by the applicant or his representative in accordance with the Planning Board's Rules as adopted under its jurisdiction as a Special Permit Granting Authority. Section 7.4 of the By-Laws.

Location of Property	<u>140 Kendrick Street</u>
Name of Applicant	<u>BP 140 Kendrick Street LLC c/o Boston Properties Limited Partnership</u>
Applicant's Address	<u>800 Boylston Street, Suite 1900, Boston, MA 02199</u>
Phone Number	<u>617-236-3333 and 617-512-0319 (cell)</u>

Applicant is: Owner X Tenant _____
Agent/Attorney _____ Purchaser _____

Property Owner's Name	<u>BP 140 Kendrick Street LLC c/o Boston Properties Limited Partnership</u>
Property Owner's Address	<u>800 Boylston Street, Suite 1900, Boston, MA 02199</u>
Telephone Number	<u>617-236-3333 and 617-512-0319 (cell)</u>

Characteristics of Property: Lot Area 621,402 sf Present Use Office
Map # 30 Parcel # 1,3 Zoning District New England Business Center

Description of Project for Site Plan Review under Section 7.4 of the Zoning By-Law:

The 140 Kendrick Street Project was originally approved and constructed pursuant to Special Permit/Site Plan Review issued by the Planning Board on June 15th, 1999. The Special Permit/Site Plan Review was amended by Amendment dated December 1, 2020 on Application No. 99-2. That Amendment approved the Owner's request to renovate the existing single tenant office space to allow multiple tenants to lease the buildings, including exterior improvements as shown on the Plans referred to in the Amendment consisting of adding entrance locations to the buildings, patio improvements, and accessible parking and landscape improvements at the new entrance locations. The Special Permit/Site Plan Review was further amended by Amendment to Decision dated July 12, 2022 for the construction and operation of a rooftop deck on the roof of the low rise building.

The current Application seeks an amendment to the Special Permit/Site Plan Review for the construction and operation of a solar garage roof on and above the existing parking garage, all as shown on the plans submitted herewith. The garage and roof meet all of the dimensional requirements of the Needham Zoning By-Law including, but not limited to, all height requirements and limitations. Concurrently herewith, the Applicant is filing an Application with the Needham Design Review Board for the Design Review Board's review and approval of this component of the Kendrick Street renovation.

Condition 2.5 of the existing Special Permit requires that 1,334 parking spaces shall be provided on the site. There are currently 1,334 existing parking spaces on the site. The operation of the solar roof system necessitates that three (3) existing parking spaces be utilized for solar battery equipment as shown on the Updated Parking Plan prepared

by VHB and filed with this Application (the "Updated Parking Plan"). The Updated Parking Plan also shows that these three (3) parking spaces will be relocated so that there shall continue to be 1,334 parking spaces on the site. Applicant also seeks an Amendment to the Special Permit/Site Plan Review for both (i) the use of three (3) spaces for battery storage equipment and (ii) the relocation of said three (3) parking spaces so that there shall continue to be 1,334 parking spaces on the site, all as shown on the Updated Parking Plan.

Boston Properties and its affiliated property owning entities including the Applicant named herein, BP 140 Kendrick Street LLC (collectively called "BXP") have been leaders in developing onsite renewable energy systems at our properties. To date we have completed 13 projects totaling 8 megawatts (MW) of onsite solar photovoltaic capacity on rooftops, garages and surface parking in Massachusetts and New Jersey. We are a pioneer in developing solar roofs over garages, and delivered our first solar roof over a parking garage in Waltham at Bay Colony. Since then, we've completed a second phase at Bay Colony and a third garage project at CityPoint in Waltham.

We are proposing to install a similar solar garage roof on/over the existing garage at 140 Kendrick Street. The purpose of the solar roof is to:

- Provide onsite generation of renewable energy that will result in net zero carbon operation of 140 Kendrick Street Building A. This is our first fully net zero project and will serve as a model project for net zero carbon office building design and redevelopment.
- Generate approximately 1,300 megawatt-hours (MWh) of renewable energy onsite from 2,900 405 watt (W) modules.
- Advance the transition to a low carbon economy by building a high quality distributed energy generation system with storage (336 kW). This project is emblematic of projects BXP is pursuing to achieve carbon neutral operations by 2025 and to meet our climate action goals, which include a science-based emissions reduction target for the company.

BXP has extensive experience with these projects and has assembled a team of expert designers to design, permit and execute an exemplary garage solar roof system. We look forward to working with the Town of Needham to complete this important project at 140 Kendrick Street.

BP 140 KENDRICK STREET LLC

Signature of Applicant (or representative)

By: 
Frederick J. DeAngelis, SVP & Senior Counsel

Address if not applicant

Telephone #

617-236-3333 and 617-512-0319 (cell)

Owner's permission if other than applicant

SUMMARY OF PLANNING BOARD ACTION

Received by Planning Board _____ Date _____
Hearing Date _____ Parties of Interest Notified of Public Hearing _____
Decision Required by _____ Decision/Notices of Decision sent _____
Granted _____
Denied _____ Fee Paid _____ Fee Waived _____
Withdrawn _____

NOTE: Reports on Minor Projects must be issues within 35 days of filing date.

FREDERICK J. DEANGELIS, ESQUIRE
Senior Vice President & Senior Counsel

September 20, 2022

VIA FEDERAL EXPRESS (Tracking No. 7779 8727 6338)
and

VIA EMAIL (aclee@needhamma.gov)

Needham Planning Board
Needham Town Hall
500 Dedham Avenue
Needham, MA 02492

Attn: Alexandra Clee
Assistant Town Planner

Boston

Los Angeles

New York

San Francisco

Washington, DC

RE: 140 Kendrick Street, Needham, Massachusetts
Application to Planning Board for Site Plan Review/Approval

Dear Members of the Board:

Boston Properties and its affiliated property owning entities including the Applicant named herein, BP 140 Kendrick Street LLC (collectively called "BXP") have been leaders in developing onsite renewable energy systems at our properties. To date we have completed 13 projects totaling 8 megawatts (MW) of onsite solar photovoltaic capacity on rooftops, garages and surface parking in Massachusetts and New Jersey. We are a pioneer in developing solar roofs over garages, and delivered our first solar roof over a parking garage in Waltham at Bay Colony. Since then, we've completed a second phase at Bay Colony and a third garage project at CityPoint in Waltham.

We are proposing to install a similar solar garage roof on/over the existing garage at 140 Kendrick Street. The purpose of the solar roof is to:

- Provide onsite generation of renewable energy that will result in net zero carbon operation of 140 Kendrick Street Building A. This is our first fully net zero project and will serve as a model project for net zero carbon office building design and redevelopment.
- Generate approximately 1,300 megawatt-hours (MWh) of renewable energy onsite from 2,900 405 watt (W) modules.
- Advance the transition to a low carbon economy by building a high quality distributed energy generation system with storage (336 kW). This project is emblematic of projects BXP is pursuing to achieve carbon neutral operations by 2025 and to meet our climate action goals, which include a science-based emissions reduction target for the company.

BXP has extensive experience with these projects and has assembled a team of expert designers to design, permit and execute an exemplary garage solar roof system. We look forward to working with the Town of Needham to complete this important project at 140 Kendrick Street.

I am submitting the following to the Planning Board, Planning Board Members, Planning Director and Assistant Planning Director:

1. (A) Two (2) hard copies of the originally signed Application from BP 140 Kendrick Street LLC, the Owner of the 140 Kendrick Street property and project. The Application requests site plan approval/special permit (i) for the construction and operation of a solar roof on/above the existing garage on the Property, all as shown on and in accordance with the Plans submitted herewith prepared by Parasol Structures and Sunwealth Power, Inc., and (ii) for the construction and operation of solar battery equipment in the area of three (3) parking spaces and the relocation of those three (3) parking spaces, as shown on the Updated Parking Plan prepared by VHB submitted herewith. Two (2) hard copies of all of the Plans are submitted herewith. The Applications and Plans are being sent by Federal Express.

(B) A \$1,000.00 check payable to the Town of Needham for the filing fee.
2. In addition to Item 1 above, I am sending by email a link to our folder containing all of the documents being sent regarding the Application and the Plans as requested by Alexandra Clee.
3. A set of the Plans (and the Application) are being sent to each Planning Board Member and to Lee Newman at the addresses previously provided by Alexandra Clee. I am sending these by Federal Express.

Please file and docket the enclosed and let me know when you can schedule the requested hearing. We will make ourselves available at your earliest convenience.

Also, we are sending by email and FedEx to the Design Review Board Attention: Elisa Litchman, an Application for Design Review, the Plans for the solar garage roof, the VHB Updated Parking Plan and a copy of the Application to the Planning Board for site plan review/approval. We anticipate that the Design Review Board will take up this matter at its October 3, 2022 meeting.

Lastly, please feel free to call me or email me with any questions or comments you may have.

Thank you for your cooperation.

Sincerely,

BP 140 KENDRICK STREET LLC

By 
Frederick J. DeAngelis
SVP & Senior Counsel

cc by Federal Express:

Paul Alpert (*Tracking No. 7779 8733 1254*)
116 Pine Street
Needham, MA 02492

Adam Block (*Tracking No. 7779 8736 4495*)
103 High Rock Street
Needham, MA 02492

Artie Crocker (*Tracking No. 7779 8740 3831*)
17 Fairlawn Street
Needham, MA 02492

Natasha Espada (*Tracking No. 7779 8743 5609*)
1681 Central Avenue
Needham, MA 02492

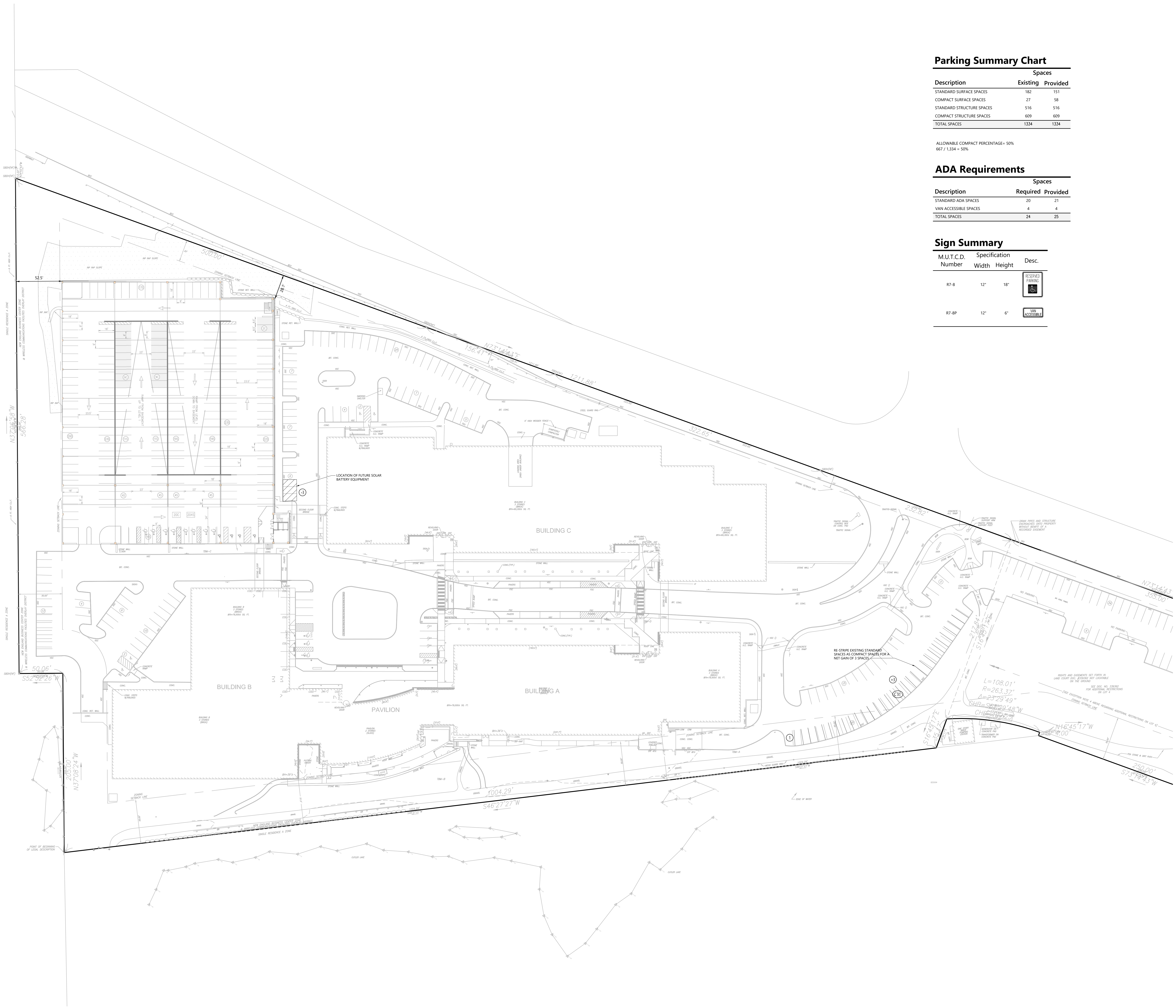
Jeanne McKnight (*Tracking No. 7779 8750 9020*)
100 Rosemary Way, Unit 336
Needham, MA 02492

cc by email and FedEx (Tracking No. 7779 8746 2885):

Lee Newman, Planning Director (lnewman@needhamma.gov)
123 Buttricks Hill Road
Concord, MA 01742

cc by email w/no encl.:

Elisa Litchman (elitchman@needham.ma.gov)
Christopher Hiserman (chiserman@bxp.com)
Ellesse Lunde (elunde@bxp.com)



Parking Summary Chart

Description	Spaces	
	Existing	Provided
STANDARD SURFACE SPACES	182	151
COMPACT SURFACE SPACES	27	58
STANDARD STRUCTURE SPACES	516	516
COMPACT STRUCTURE SPACES	609	609
TOTAL SPACES	1334	1334

ALLOWABLE COMPACT PERCENTAGE= 50%
667 / 1,334 = 50%

ADA Requirements

Description	Spaces	
	Required	Provided
STANDARD ADA SPACES	20	21
VAN ACCESSIBLE SPACES	4	4
TOTAL SPACES	24	25

Sign Summary

M.U.T.C.D. Number	Specification		Desc.
	Width	Height	
R7-B	12"	18"	
R7-BP	12"	6"	



140 Kendrick St

No.	Revision	Date	App'd.

Designed by
AP

Checked by
NS

Issued for

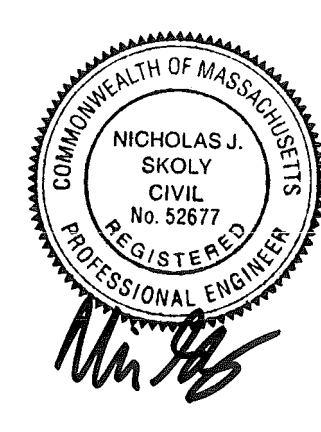
Date
9/12/22

Drawing Title
Parking Plan

Drawing Number
C 1.00

Sheet 1 of 1

Project Number
15060.00



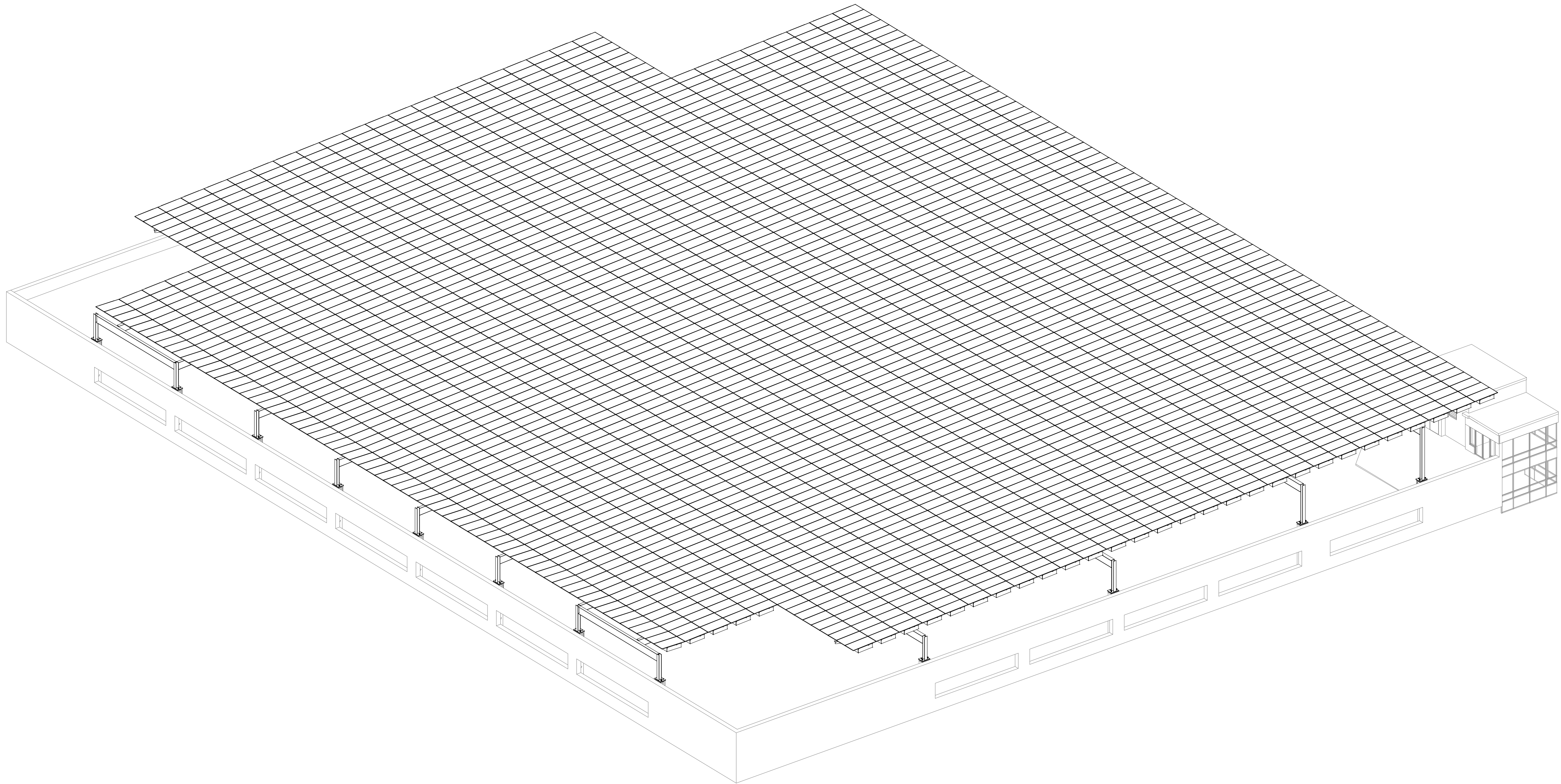
1. PRIOR TO THE START OF CONSTRUCTION, THE SITE CONTRACTOR SHALL VERIFY THE EXACT LOCATION, SIZE AND DIMENSION OF ALL UTILITIES IN AREA WHERE WORK IS TO BE PERFORMED. SUBCONTRACTOR AND/OR PARASOL ASSUMES NEITHER THE RESPONSIBILITY FOR THE LOCATION OF ENCASED AND/OR HIDDEN UTILITIES SHOWN NOR THE LACK THEREOF.
2. ANY DISCREPANCIES IN REFERENCE, COORDINATES, ELEVATIONS, EXISTING DIMENSIONS, AND DETAILS SHALL BE BROUGHT TO THE ATTENTION OF PARASOL AND/OR OWNER'S REPRESENTATIVES BEFORE PROCEEDING WITH WORK.
3. ALL WORK SHALL BE CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH THE MOST RECENT LOCAL AND NATIONAL CONSTRUCTION STANDARDS AND BUILDING CODES.
4. IN INSTANCES WHERE THE AHJ PROVIDES NO DETAILED SPECIFICATIONS, THE MATERIALS AND METHODS OF CONSTRUCTION SHALL MEET AND CONFORM TO THE REQUIREMENTS OF LOCAL CODES AND UFC REQUIREMENTS.
5. THE CONTRACTOR SHALL VERIFY ALL INFORMATION PERTAINING TO EXISTING CONDITIONS BY ACTUAL MEASUREMENT AND OBSERVATION AT THE SITE. ALL DISCREPANCIES BETWEEN ACTUAL CONDITIONS AND THOSE SHOWN IN THE CONTRACT DOCUMENTS SHALL BE REPORTED TO THE ENGINEER OF RECORD AND PARASOL PRIOR TO FABRICATION.

1. PARASOL ANTICIPATES THAT THE TOPS OF ALL EXISTING CONCRETE PIERS AND WALLS SHALL BE AT ELEVATIONS SPECIFIED HEREIN.
2. INSTALLATION ERRORS IN PRECAST CONSTRUCTION ARE TO BE CORRECTED BY THE GENERAL CONTRACTOR PRIOR TO THE ARRIVAL OF THE ERECTION CREW AND PRIOR TO THE ERECTION OF THE STRUCTURE.
3. ANY EXISTING UTILITY FINDINGS THAT CONFLICT WITH THE RECORD OF KNOWN CONDITIONS SHALL BE REPORTED TO PARASOL AND/OR THE OWNER'S REPRESENTATIVE.

1. ALL STEEL FABRICATED FOR THIS PROJECT IS ARCHITECTURALLY EXPOSED STRUCTURAL STEEL (A.E.S.S.)
2. PURLINS ARE TO BE FINISHED AS FOLLOWS:
 - A. HOT DIP GALVANIZING G90 PER ASTM 653
3. COLUMNS AND CROSSBEAMS ARE TO BE FINISHED AS FOLLOWS:
 - A. HOT DIP GALVANIZING PER ASTM 123
4. NUTS, BOLTS & WASHERS
 - A. HOT DIP GALVANIZING PER ASTM 153
5. FOR TOUCH UP AND CLEANING
 - A. USE SOLVENTS OR MECHANICAL CLEANING METHODS THAT COMPLY WITH THE STEEL STRUCTURES PAINTING COULCIS (SSPC)
 - B. WIRE BRUSH CLEAN WITH SOLVENTS RECOMMENDED BY FINISH MANUFACTURER AND TOUCH-UP WITH SAME FINISH SYSTEMS DESCRIBED ABOVE

1. IN COLD WEATHER CONDITIONS PLEASE NOTE THAT COMPLETION OF SOME TEMPERATURE DEPENDENT WORK MAY BE DELAYED UNTIL TEMPERATURES REACH 45 DEGREES F AND RISING THIS WORK MAY INCLUDE:

- A. BASE PLATE GROUTING
- B. PARGING
- C. LINE STRIPING
- D. TOUCH-UP PAINTING



3 OVER
N.T.S.

SHEET NUMBER	SHEET NAME	06/08/2022 30% DESIGN SUBMISSION		06/08/2022 60% DESIGN SUBMISSION	
PV-000	PROJECT LOCATION & DRAWING LIST	•	•		
PV-001	GENERAL STRUCTURAL NOTES	•	•		
PV-005	MATERIAL SCHEDULE			•	•
PV-010	ISOMETRICS			•	•
PV-100	COLLUM LAYOUT PLAN			•	•
PV-101	HRS FRAMING LAYOUT PLAN (GIRDERS & BEAMS)			•	•
PV-102	CFS FRAMING LAYOUT PLAN (RAILS)			•	•
PV-103	PV UNIT LAYOUT PLAN			•	•
PV-104	WATER MANAGEMENT PLAN				
PV-300	CANOPY SECTIONS			•	•
PV-400	BASE CONNECTION - TYPE A				•
PV-401	BASE CONNECTION - TYPE B				•
PV-402	BASE CONNECTION - TYPE C				•
TOTAL: 13					



1 N.T.S.

MECHANICAL SPECIFICATION

Part No.	874-01 (1.5 x 1.5 x 1.5 mm)
Part No.	874-02 (1.5 x 1.5 x 2.0 mm)
Part No.	874-03 (1.5 x 1.5 x 2.5 mm)
Part No.	874-04 (1.5 x 1.5 x 3.0 mm)
Part No.	874-05 (1.5 x 1.5 x 3.5 mm)
Part No.	874-06 (1.5 x 1.5 x 4.0 mm)
Part No.	874-07 (1.5 x 1.5 x 4.5 mm)
Part No.	874-08 (1.5 x 1.5 x 5.0 mm)
Part No.	874-09 (1.5 x 1.5 x 5.5 mm)
Part No.	874-10 (1.5 x 1.5 x 6.0 mm)
Part No.	874-11 (1.5 x 1.5 x 6.5 mm)
Part No.	874-12 (1.5 x 1.5 x 7.0 mm)
Part No.	874-13 (1.5 x 1.5 x 7.5 mm)
Part No.	874-14 (1.5 x 1.5 x 8.0 mm)
Part No.	874-15 (1.5 x 1.5 x 8.5 mm)
Part No.	874-16 (1.5 x 1.5 x 9.0 mm)
Part No.	874-17 (1.5 x 1.5 x 9.5 mm)
Part No.	874-18 (1.5 x 1.5 x 10.0 mm)
Part No.	874-19 (1.5 x 1.5 x 10.5 mm)
Part No.	874-20 (1.5 x 1.5 x 11.0 mm)
Part No.	874-21 (1.5 x 1.5 x 11.5 mm)
Part No.	874-22 (1.5 x 1.5 x 12.0 mm)
Part No.	874-23 (1.5 x 1.5 x 12.5 mm)
Part No.	874-24 (1.5 x 1.5 x 13.0 mm)
Part No.	874-25 (1.5 x 1.5 x 13.5 mm)
Part No.	874-26 (1.5 x 1.5 x 14.0 mm)
Part No.	874-27 (1.5 x 1.5 x 14.5 mm)
Part No.	874-28 (1.5 x 1.5 x 15.0 mm)
Part No.	874-29 (1.5 x 1.5 x 15.5 mm)
Part No.	874-30 (1.5 x 1.5 x 16.0 mm)
Part No.	874-31 (1.5 x 1.5 x 16.5 mm)
Part No.	874-32 (1.5 x 1.5 x 17.0 mm)
Part No.	874-33 (1.5 x 1.5 x 17.5 mm)
Part No.	874-34 (1.5 x 1.5 x 18.0 mm)
Part No.	874-35 (1.5 x 1.5 x 18.5 mm)
Part No.	874-36 (1.5 x 1.5 x 19.0 mm)
Part No.	874-37 (1.5 x 1.5 x 19.5 mm)
Part No.	874-38 (1.5 x 1.5 x 20.0 mm)
Part No.	874-39 (1.5 x 1.5 x 20.5 mm)
Part No.	874-40 (1.5 x 1.5 x 21.0 mm)
Part No.	874-41 (1.5 x 1.5 x 21.5 mm)
Part No.	874-42 (1.5 x 1.5 x 22.0 mm)
Part No.	874-43 (1.5 x 1.5 x 22.5 mm)
Part No.	874-44 (1.5 x 1.5 x 23.0 mm)
Part No.	874-45 (1.5 x 1.5 x 23.5 mm)
Part No.	874-46 (1.5 x 1.5 x 24.0 mm)
Part No.	874-47 (1.5 x 1.5 x 24.5 mm)
Part No.	874-48 (1.5 x 1.5 x 25.0 mm)
Part No.	874-49 (1.5 x 1.5 x 25.5 mm)
Part No.	874-50 (1.5 x 1.5 x 26.0 mm)
Part No.	874-51 (1.5 x 1.5 x 26.5 mm)
Part No.	874-52 (1.5 x 1.5 x 27.0 mm)
Part No.	874-53 (1.5 x 1.5 x 27.5 mm)
Part No.	874-54 (1.5 x 1.5 x 28.0 mm)
Part No.	874-55 (1.5 x 1.5 x 28.5 mm)
Part No.	874-56 (1.5 x 1.5 x 29.0 mm)
Part No.	874-57 (1.5 x 1.5 x 29.5 mm)
Part No.	874-58 (1.5 x 1.5 x 30.0 mm)
Part No.	874-59 (1.5 x 1.5 x 30.5 mm)
Part No.	874-60 (1.5 x 1.5 x 31.0 mm)
Part No.	874-61 (1.5 x 1.5 x 31.5 mm)
Part No.	874-62 (1.5 x 1.5 x 32.0 mm)
Part No.	874-63 (1.5 x 1.5 x 32.5 mm)
Part No.	874-64 (1.5 x 1.5 x 33.0 mm)
Part No.	874-65 (1.5 x 1.5 x 33.5 mm)
Part No.	874-66 (1.5 x 1.5 x 34.0 mm)
Part No.	874-67 (1.5 x 1.5 x 34.5 mm)
Part No.	874-68 (1.5 x 1.5 x 35.0 mm)
Part No.	874-69 (1.5 x 1.5 x 35.5 mm)
Part No.	874-70 (1.5 x 1.5 x 36.0 mm)
Part No.	874-71 (1.5 x 1.5 x 36.5 mm)
Part No.	874-72 (1.5 x 1.5 x 37.0 mm)
Part No.	874-73 (1.5 x 1.5 x 37.5 mm)
Part No.	874-74 (1.5 x 1.5 x 38.0 mm)
Part No.	874-75 (1.5 x 1.5 x 38.5 mm)
Part No.	874-76 (1.5 x 1.5 x 39.0 mm)
Part No.	874-77 (1.5 x 1.5 x 39.5 mm)
Part No.	874-78 (1.5 x 1.5 x 40.0 mm)
Part No.	874-79 (1.5 x 1.5 x 40.5 mm)
Part No.	874-80 (1.5 x 1.5 x 41.0 mm)
Part No.	874-81 (1.5 x 1.5 x 41.5 mm)
Part No.	874-82 (1.5 x 1.5 x 42.0 mm)
Part No.	874-83 (1.5 x 1.5 x 42.5 mm)
Part No.	874-84 (1.5 x 1.5 x 43.0 mm)
Part No.	874-85 (1.5 x 1.5 x 43.5 mm)
Part No.	874-86 (1.5 x 1.5 x 44.0 mm)
Part No.	874-87 (1.5 x 1.5 x 44.5 mm)
Part No.	874-88 (1.5 x 1.5 x 45.0 mm)
Part No.	874-89 (1.5 x 1.5 x 45.5 mm)
Part No.	874-90 (1.5 x 1.5 x 46.0 mm)
Part No.	874-91 (1.5 x 1.5 x 46.5 mm)
Part No.	874-92 (1.5 x 1.5 x 47.0 mm)
Part No.	874-93 (1.5 x 1.5 x 47.5 mm)
Part No.	874-94 (1.5 x 1.5 x 48.0 mm)
Part No.	874-95 (1.5 x 1.5 x 48.5 mm)
Part No.	874-96 (1.5 x 1.5 x 49.0 mm)
Part No.	874-97 (1.5 x 1.5 x 49.5 mm)
Part No.	874-98 (1.5 x 1.5 x 50.0 mm)
Part No.	874-99 (1.5 x 1.5 x 50.5 mm)
Part No.	874-100 (1.5 x 1.5 x 51.0 mm)
Part No.	874-101 (1.5 x 1.5 x 51.5 mm)

DESIGN CRITERIA

CODE: 9th EDITION OF THE MA STATE BUILDING CODE (780 CMR) BASED ON THE 2015 IBC

GOVERNING JURISDICTION: NEEDHAM, MA

LIVE LOADS:

WIND ANALYSIS METHOD 2 - ANALYTICAL PROCEDURE
BASIC WIND SPEED V = 126 mph
IMPORTANCE FACTOR I_w = 1.0
WIND EXPOSURE C
OCCUPANCY CATEGORY II
GUST EFFECT FACTOR G = 0.85

SNOW DESIGN CRITERIA
P_s = 40 psf
I_s = 1.0
C_e = 1
P_f = 35 psf

SEISMIC ANALYSIS EQUIVALENT LATERAL FORCE PROCEDURE HAS BEEN USED:

SITE CLASSIFICATION = D
OCCUPANCY CATEGORY II
SEISMIC DESIGN CATEGORY B
IMPORTANCE FACTOR I_e = 1.0

S₁ = 0.252 g S_{0.1} = 0.289 g
S₁ = 0.063 g S_{0.1} = 0.191 g

SEISMIC LOAD RESISTING SYSTEM = OTHER MECHANICAL OR ELECTRIC COMPONENTS
RESPONSE MODIFICATION COEFFICIENT R_m = 1.5
COMPONENT AMPLIFICATION FACTOR a_m = 1.0
IMPORTANCE FACTOR I_p = 1.0
SEISMIC DESIGN FORCE F_p = 0.21 W

SCOPE OF WORK

1. SCOPE OF WORK INCLUDES THE DESIGN OF CANTILEVER STEEL SUPPORT STRUCTURES FOR PV PANELS AT AN EXISTING PARKING GARAGE.

GENERAL

1. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS PRIOR TO STARTING CONSTRUCTION. DO NOT SCALE THE DRAWINGS. THE ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCIES OR INCONSISTENCIES. IN CASE OF CONFLICT, MORE COSTLY REQUIREMENTS GOVERN FOR BIDDING. SUBMIT CLARIFICATION REQUEST PRIOR TO PROCEEDING WITH WORK.
2. ALL DRAWINGS ARE CONSIDERED TO BE A PART OF THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REVIEW AND COORDINATION OF ALL DRAWINGS AND SPECIFICATIONS PRIOR TO THE START OF CONSTRUCTION. ANY DISCREPANCIES THAT OCCUR SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO START OF CONSTRUCTION SO THAT A CLARIFICATION CAN BE ISSUED. ANY DEVIATION FROM THE APPROVED SET OF CONTRACT DOCUMENTS SHALL ONLY BE MADE AFTER WRITTEN APPROVAL BY THE ENGINEER OF RECORD. ANY WORK PERFORMED IN CONFLICT WITH THE CONTRACT DOCUMENTS OR ANY CODE REQUIREMENTS SHALL BE CORRECTED BY THE CONTRACTOR AT THEIR OWN EXPENSE.
3. NOTES AND DETAILS ON DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS. WHERE NO DETAILS ARE GIVEN, CONSTRUCTION SHALL BE AS SHOWN FOR SIMILAR WORK, UNLESS NOTED OTHERWISE. DETAILS IN STRUCTURAL DRAWINGS ARE TYPICAL AS INDICATED BY CUTS, REFERENCES OR TITLES.
4. ALL WORK SHALL CONFORM TO THE MINIMUM DIMENSIONS OF THE FOLLOWING: LOCAL BUILDING CODE, ANY OTHER REGULATING AGENCIES WHICH HAVE AUTHORITY OVER ANY PORTION OF THE WORK, AND THOSE CODES AND STANDARDS LISTED IN THESE NOTES AND SPECIFICATIONS.
5. THE CONTRACT STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE METHOD OF CONSTRUCTION THE CONTRACTOR SHALL PROVIDE. ALL MEASURES NECESSARY TO PROTECT THE STRUCTURE DURING CONSTRUCTION, SUCH MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, SHORING FOR LOADS DUE TO CONSTRUCTION EQUIPMENT, ETC. OBSERVATION VISITS TO THE SITE BY THE STRUCTURAL ENGINEER SHALL NOT INCLUDE INSPECTION OF THE ABOVE ITEMS.
6. ASTM SPECIFICATIONS ON THE DRAWINGS SHALL BE OF THE LATEST REVISION.
7. CONTRACTOR SHALL INVESTIGATE SITE DURING CLEARING AND EARTHWORK OPERATIONS FOR FILLED EXCAVATIONS OR BURIED STRUCTURES, SUCH AS CESSPOOLS, CISTERNS, FOUNDATIONS, ETC. IF ANY SUCH STRUCTURES ARE FOUND, STRUCTURAL ENGINEER SHALL BE NOTIFIED IMMEDIATELY.
8. CONTRACTOR TO PROVIDE A LIST OF ALL PROPOSED SUBSTITUTIONS, WITH APPLICABLE MANUFACTURER'S ICC REPORTS TO ARCHITECT, ENGINEER OF RECORD AND GOVERNING JURISDICTION FOR REVIEW AND APPROVAL BEFORE FABRICATION.
9. NOTICE TO THE APPLICANT / OWNER / OWNER'S AGENT / ARCHITECT: BY USING THIS PERMITTED CONSTRUCTION DRAWINGS FOR CONSTRUCTION / INSTALLATION OF THE WORK SPECIFIED HEREIN, YOU AGREE TO COMPLY WITH THE REQUIREMENTS OF THE GOVERNING JURISDICTION FOR SPECIAL INSPECTIONS, STRUCTURAL OBSERVATIONS, CONSTRUCTION MATERIAL TESTING, AND OFF-SITE FABRICATION OF BUILDING COMPONENTS CONTAINED IN THE STATEMENT OF SPECIAL INSPECTIONS AND AS REQUIRED BY THE GOVERNING BUILDING CODES.
10. NOTICE TO THE CONTRACTOR / BUILDER / INSTALLER / SUBCONTRACTOR / OWNER-BUILDER: BY USING THIS PERMITTED CONSTRUCTION DRAWINGS FOR CONSTRUCTION / INSTALLATION OF THE WORK SPECIFIED HEREIN, YOU ACKNOWLEDGE AND ARE AWARE OF THE REQUIREMENTS CONTAINED IN THE STATEMENT OF SPECIAL INSPECTIONS. YOU AGREE TO COMPLY WITH THE REQUIREMENTS OF THE GOVERNING JURISDICTION FOR SPECIAL INSPECTIONS, STRUCTURAL OBSERVATIONS, CONSTRUCTION MATERIAL TESTING, AND OFF-SITE FABRICATION OF BUILDING COMPONENTS CONTAINED IN THE STATEMENT OF SPECIAL INSPECTIONS AND AS REQUIRED BY THE GOVERNING BUILDING CODES.

SPECIAL INSPECTION

THE FOLLOWING ELEMENTS OF CONSTRUCTION SHALL REQUIRE SPECIAL INSPECTION PER CHAPTER 17 OF THE CODE.

STEEL: SPECIAL INSPECTION TASK	CONTINUOUS	PERIODIC
1. MATERIAL VERIFICATION OF HIGH-STRENGTH BOLTS, NUTS AND WASHERS: A. IDENTIFICATION MARKINGS TO CONFORM TO ASTM STANDARDS. B. MANUFACTURER'S CERTIFICATE OF COMPLIANCE.	- -	X X
2. INSPECTION OF HIGH-STRENGTH BOLTING (SEE NOTES F & G): A. SNUG-TIGHT JOINTS B. PRETENSIONED AND SLIP-CRITICAL JOINTS CONFORMING TO 1704.3.3.2 C. PRETENSIONED AND SLIP-CRITICAL JOINTS NOT CONFORMING TO 1704.3.3.2	- - X	X X -
3. MATERIAL VERIFICATION OF STRUCTURAL STEEL AND COLD-FORMED STEEL DECK: A. FOR STRUCTURAL STEEL, IDENTIFICATION MARKINGS CONFORMING TO AISC 360, LATEST EDITION B. FOR OTHER STEEL, IDENTIFICATION MARKINGS TO CONFORM TO ASTM STANDARDS SPECIFIED IN THE APPROVED CONSTRUCTION DOCUMENTS. C. MANUFACTURERS' CERTIFIED TEST REPORTS.	- - -	X X X
4. MATERIAL VERIFICATION OF WELD FILLER MATERIALS: A. IDENTIFICATION MARKINGS TO CONFORM TO AWS SPECIFICATION IN THE APPROVED CONSTRUCTION B. MANUFACTURER'S CERTIFICATE OF COMPLIANCE.	- -	X X
5. INSPECTION OF WELDING: A. STRUCTURAL STEEL AND COLD-FORMED STEEL DECK: 1) COMPLETE AND PARTIAL PENETRATION GROOVE WELDS. 2) MULTIPASS FILLET WELDS 3) SINGLE-PASS FILLET WELDS > 5/16" 4) PLUG AND SLOT WELDS 5) SINGLE-PASS FILLET WELDS < 5/16" 6) VISUAL INSPECTION OF HSS SEAM WELDS. NON-DESTRUCTIVE TESTING OF SEAM WELDS MAY BE REQUIRED BY THE ENGINEER OF RECORD IF ANY OF THE SEAM WELDS APPEAR TO BE DEFECTIVE. 7) SHOP WELDING: SPECIAL INSPECTION IS NOT REQUIRED WHERE THE WORK IS DONE ON THE PREMISES OF A FABRICATOR REGISTERED AND APPROVED BY THE GOVERNING JURISDICTION.	X X X X - - X	- - - - X - -

STEEL: SPECIAL INSPECTION TASK	CONTINUOUS	PERIODIC
1. POST-INSTALLED ANCHORS IN HARDENED CONCRETE (SEE NOTE H).	-	X
2. HIGH STRENGTH GROUT UNDER COLUMN BASE PLATES.	-	X

1. THE SPECIAL INSPECTIONS IDENTIFIED ON PLANS ARE, IN ADDITION TO, AND NOT A SUBSTITUTE FOR, THOSE INSPECTIONS REQUIRED TO BE PERFORMED BY THE GOVERNING JURISDICTION, SPECIALLY INSPECTED WORK WHICH IS INSTALLED OR COVERED WITHOUT THE APPROVAL OF AN INSPECTOR FROM THE GOVERNING JURISDICTION IS SUBJECT TO REMOVAL OR EXPOSURE.
2. FOR CONTINUOUS INSPECTION, WHEN WORK IN MORE THAN ONE CATEGORY OF WORK REQUIRING SPECIAL INSPECTION IS TO BE PERFORMED SIMULTANEOUSLY, OR THE GEOGRAPHIC LOCATION OF THE WORK IS SUCH THAT IT CANNOT BE CONTINUOUSLY OBSERVED IN ACCORDANCE WITH THE PROVISIONS OF THE CODE, IT IS THE AGENT'S RESPONSIBILITY TO EMPLOY A SUFFICIENT NUMBER OF INSPECTORS TO ASSURE THAT ALL WORK IS INSPECTED IN ACCORDANCE WITH THOSE PROVISIONS.
3. THE SPECIAL INSPECTORS MUST BE CERTIFIED BY THE GOVERNING JURISDICTION IN THE CATEGORY OF WORK REQUIRED TO HAVE SPECIAL INSPECTION. EXCEPTIONS:
a. WHEN WAIVED BY THE GOVERNING JURISDICTION
4. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO INFORM THE SPECIAL INSPECTOR OR INSPECTION AGENCY AT LEAST ONE WORKING DAY PRIOR TO PERFORMING ANY WORK THAT REQUIRES SPECIAL INSPECTION. ALL WORK PERFORMED WITHOUT REQUIRED SPECIAL INSPECTION IS SUBJECT TO REMOVAL.
5. A CERTIFICATE OF SATISFACTORY COMPLETION OF WORK REQUIRING SPECIAL INSPECTION MUST BE COMPLETED AND SUBMITTED TO THE GOVERNING JURISDICTION AND ENGINEER OF RECORD.
6. PROVIDE SPECIAL INSPECTION FOR CONNECTIONS BOLTED WITH A325 AND A490 BOLTS. INSPECTIONS SHALL BE DONE PER APPROVED NATIONALLY RECOGNIZED STANDARDS AND THE REQUIREMENTS OF THE CODE AND THE GOVERNING JURISDICTION. WHILE THE WORK IS IN PROGRESS, THE SPECIAL INSPECTOR SHALL DETERMINE THE BOLTS, NUTS, WASHERS AND PAINT; BOLTED PARTS; AND INSTALLATION AND TIGHTENING MEET THE STANDARDS REQUIREMENTS.
7. THE SPECIAL INSPECTOR FOR HIGH STRENGTH BOLTED CONNECTIONS SHALL:
a. OBSERVE THE CALIBRATION PROCEDURES WHEN SUCH PROCEDURES ARE REQUIRED BY THE PLANS OR SPECIFICATIONS.
b. MONITOR THE INSTALLATION OF BOLTS TO DETERMINE THAT ALL PLIES OF CONNECTED MATERIALS HAVE BEEN DRAWN TOGETHER.
c. MONITOR THAT THE SELECTED PROCEDURE IS PROPERLY USED TO TIGHTEN ALL BOLTS.
8. THE SPECIAL INSPECTOR FOR EPOXY ANCHORS SHALL VERIFY THE DRILLING OF ANY HOLES, THE CLEANLINESS OF THE HOLE, THE MOISTURE IN THE HOLE, MIXING THE EPOXY, THE BRAND OF EPOXY, AND THE PROPER MATERIAL FOR ASSEMBLY.
9. THE SPECIAL INSPECTOR SHALL PROVIDE PERIODIC REPORTS AND A FINAL REPORT TO THE STRUCTURAL ENGINEER.
10. THE SPECIAL INSPECTOR SHALL ENSURE THAT ALL DEFICIENCIES NOTED BY THE STRUCTURAL ENGINEER IN STRUCTURAL OBSERVATION REPORTS ARE CORRECTED. SUCH COMPLIANCE SHALL BE REFERENCED IN SPECIAL INSPECTOR REPORT.
11. THE CONSTRUCTION MATERIALS TESTING LABORATORY MUST BE APPROVED BY THE GOVERNING JURISDICTION FOR TESTING OF MATERIALS, SYSTEMS, COMPONENTS AND, EQUIPMENTS.
12. A PROPERTY OWNER'S FINAL REPORT FORM FOR WORK REQUIRED TO HAVE SPECIAL INSPECTIONS, TESTING AND STRUCTURAL OBSERVATIONS MUST BE COMPLETED BY THE PROPERTY OWNERS AGENT OF RECORD, ARCHITECT OF RECORD OR, ENGINEER OF RECORD AND SUBMITTED TO THE GOVERNING JURISDICTION.
13. PERIODIC INSPECTION SHALL OCCUR FREQUENTLY ENOUGH TO INSPECT ALL OF THE INSTALLED ITEMS AND TO PERIODICALLY WITNESS THE INSTALLATION OF THE ITEMS

STRUCTURAL OBSERVATION

STRUCTURAL OBSERVATION PER THE REQUIRMENTS OF THE CODE IS REQUIRED. THE STRUCTURAL ENGINEER WILL VISIT THE PROJECT AT THE FOLLOWING STAGES OF CONSTRUCTION.

ITEM	STAGE
STRUCTURAL STEEL	AFTER ERECTION

- a. STRUCTURAL OBSERVATION DOES NOT INCLUDE OR WAIVE THE INSPECTIONS REQUIRED BY THE CODE.
- b. ALL OBSERVED DEFICIENCIES SHALL BE REPORTED IN WRITING TO THE OWNER'S REPRESENTATIVE, SPECIAL INSPECTOR, AND CONTRACTOR. THE STRUCTURAL OBSERVER SHALL SUBMIT A FINAL WRITTEN STATEMENT TO THE GOVERNING JURISDICTION THAT SITE VISITS HAVE BEEN MADE AND IDENTIFYING ANY REPORTED DEFICIENCIES THAT HAVE NOT BEEN RESOLVED. THE STRUCTURE WILL NOT BE IN COMPLIANCE UNTIL THE DESIGNER HAS NOTIFIED THE GOVERNING JURISDICTION THAT ALL DEFICIENCIES ARE RESOLVED.

SHOP DRAWINGS/SUBMITTALS

1. THE STRUCTURAL SHOP DRAWING REVIEW IS INTENDED TO HELP THE ENGINEER VERIFY THE DESIGN CONCEPT. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CHECK THEIR OWN SHOP DRAWINGS.
2. THE STRUCTURAL SHOP DRAWINGS WILL BE RETURNED FOR RESUBMITTAL IF A CURSORY REVIEW SHOWS MAJOR ERRORS WHICH SHOULD HAVE BEEN FOUND BY THE CONTRACTOR'S CHECKING.
3. THE FOLLOWING SHOP DRAWINGS ARE NOT REQUIRED FOR SUBMITTAL FOR STRUCTURAL REVIEW.
a. SHORING AND BRACING
b. STRUCTURAL STEEL MILL REPORTS
4. THE FOLLOWING SHOP DRAWINGS (AND CALCULATIONS WHEN APPLICABLE) ARE REQUIRED FOR SUBMITTAL FOR STRUCTURAL REVIEW.
a. GROUT MIX DESIGNS, INCLUDING STRENGTH AND SHRINKAGE TEST RESULTS
b. STRUCTURAL STEEL
c. WELDING PROCEDURE SPECIFICATIONS (SEE NOTE 9 BELOW)
d. PV PANEL CUTSHEET
5. ANY SUBMITTAL OF A DETAIL SHEET WITH ADDED INFORMATION NOT SHOWN ON PLANS SHALL BE ACCOMPANIED BY LOCATION PLAN IDENTIFYING THE MEMBERS INVOLVED AND CLOUDING AROUND ADDED INFORMATION.
6. ANY ENGINEERING SUBMITTED FOR REVIEW SHALL BE APPROPRIATELY SEALED. FULL RESPONSIBILITY OF SUCH ENGINEERING RESTS WITH THE PERSON SEALING THE DESIGN.
7. THE SHOP DRAWINGS SHALL REFERENCE THE DATE OF THE DESIGN USED TO PRODUCE THE SUBMITTAL.
8. CONTRACTOR/SUBCONTRACTOR TO PROVIDE A DIGITAL COPY (PDF) OF SHOP DRAWINGS FOR REVIEW BY THE ENGINEER OF RECORD. REDLINED DIGITAL SET WILL BE RETURNED TO THE CONTRACTOR WITH REDLINES FOR REPRODUCTION AND DISTRIBUTION.
9. WPS CHECK LIST

GENERAL

- a. SUPPORTING FOR NO.
b. PROCESS (SMAW, FCAW, ETC)

JOINT DESIGN & BASE MATERIAL

- a. JOINT TYPE (CORNER, BUTT, LAP, T)
b. MAX ROOT OPENING
c. BACKING (THICKNESS, MATERIAL TYPE)
d. GROOVE ANGLE
e. TOTAL # OF PASSES
f. BASE MATERIAL SPEC, GRADE & THICKNESS
g. WPS SHOULD INCLUDE FIGURE
h. MAX ROOT & FIL PASS THICKNESS

FILLER MATERIAL & SHIELDING

- a. ELECTRODE SPECIFICATION (AWS A5.1, A5.20, ETC)
b. ELECTRODE CLASSIFICATION (E7018, E71T-1, ETC)
c. ELECTRODE DIAMETER (5/32", 3/8", ETC) AND STICK-OUT (IF APPLICABLE)
d. SHIELDING GAS (IF APPLICABLE) (GAS COMPOSITION, FLOW RATE)
e. FLUX (IF APPLICABLE)
f. AS WELDED TOUGHNESS (SUCH AS 20 FT-LBS @ -20 DEGREES) PER FILLER SPECS

PREHEAT

- a. MIN & MAX PREHEAT TEMPERATURE
b. MIN & MAX INTERPASS TEMPERATURE

ELECTRICAL PARAMETERS

- a. POLARITY (AC, DC+, DC-)
b. WELDING CURRENT (AMPERAGE)/WIRE FEED SPEED (IPM)
c. ARC VOLTAGE (VOLTS)
d. TRAVEL SPEED (IPM) (FCAW/GMAW)

TECHNIQUE/MISC

- a. WEAVE/STRINGER, MULTIPASS/SINGLE PASS
b. PEENING
c. POSITION (F, H, V, O)
d. VERTICAL PROGRESSION (IF APPLICABLE)

NOTES:

1. THE ABOVE LIST SHOWS THE MINIMUM VARIABLES. OTHER VARIABLES MAY BE INCLUDED.
2. OTHER VARIABLES MAY BE REQUIRED PER STRUCTURAL PLANS OR SPECS. SEE D1.1 ANNEX IV, ANNEX E, AND TABLE 4.5 FOR QUALIFIED WPS. ANNEX H AND TABLE 3.67 FOR PREQUALIFIED WPS.

STRUCTURAL STEEL

1. STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED, AND ERECTED BY AN APPROVED AND LICENSED FABRICATOR IN ACCORDANCE WITH THE LATEST EDITION OF AISC 360 (EXCLUDING SECTION A4).
2. ALL STRUCTURAL STEEL SHALL CONFORM TO THE ASTM DESIGNATION AS INDICATED BELOW (U.N.O.):

DESCRIPTION	DESIGNATION
ALL BASE PLATES, CAP PLATES	A572, GRADE 50
ALL ANGLES AND CHANNELS	A36, U.N.O.
ALL WF SECTIONS	A992, GRADE 50
HSS SECTIONS	A500, GRADE B
HIGH STRENGTH BOLTS	A325
MACHINE BOLTS AND THREADED RODS	A307
MISC. PLATES	A572, GRADE 50
ANCHOR BOLTS	F1554, GRADE 105

3. THE STRUCTURAL STEEL FABRICATOR SHALL FURNISH SHOP DRAWINGS OF ALL STEEL FOR ARCHITECT'S AND STRUCTURAL ENGINEER'S REVIEW BEFORE FABRICATION.
4. HOLES IN STEEL SHALL BE AS FOLLOWS, UNLESS:
a. FOR NOMINAL BOLT SIZE LESS THAN 1", HOLE DIAMETER SHALL BE 1/16" LARGER.
b. FOR NOMINAL BOLT SIZE EQUAL TO OR LARGER THAN 1", HOLE DIAMETER SHALL BE 1/8" LARGER.
c. COLUMN BASE PLATE HOLES MAY BE OVERSIZED PER AISC MANUAL TB 14-2.
5. ALL STRUCTURAL STEEL SURFACES THAT ARE ENCASED IN CONCRETE, MASONRY, OR SPRAY ON FIREPROOFING, OR ARE ENCASED BY BUILDING FINISH, SHALL BE LEFT UNPAINTED.
6. ALL STRUCTURAL STEEL AND MISCELLANEOUS METAL EXPOSED TO THE WEATHER SHALL BE HOT DIP GALVANIZED AFTER FABRICATION. GALVANIZING AT FIELD WELDS SHALL BE REPAIRED WITH A GALVANIZING REPAIR PAINT ACCORDING TO ASTM A780.
7. PROVIDE BEVELED WASHERS PER ANSI B18.23.1 AS REQUIRED ON SLOPED SURFACES.
8. STRUCTURAL MEMBERS AND CONNECTIONS EXPOSED TO VIEW IN THE COMPLETED STRUCTURE SHALL BE DESIGNATED ARCHITECTURALLY EXPOSED STRUCTURAL STEEL (AESS) WHERE NOTED ON PLAN.
9. WELDING:
a. ALL WELDING IS TO BE DONE BY CERTIFIED WELDERS USING E70XX ELECTRODES (U.N.O.). ALL WELDS SHALL BE IN CONFORMITY WITH THE PROJECT SPECIFICATIONS AND THE CODE FOR WELDING IN BUILDING CONSTRUCTION (AWS D1.1 LATEST REVISION) OF THE AMERICAN WELDING SOCIETY. SEE SPECIAL INSPECTION SECTION FOR WELDING INSPECTION REQUIREMENTS.
b. WELD LENGTHS CALLED FOR ON PLANS ARE THE NET EFFECTIVE LENGTH REQUIRED, WHERE FILLET WELD SYMBOL IS GIVEN WITHOUT INDICATION OF SIZE, USE MINIMUM SIZE WELDS AS SPECIFIED IN AISC MANUAL OF STEEL CONSTRUCTION, LATEST EDITION.
c. WELDS TERMINATING AT ENDS OR SIDES, WHERE PRACTICAL, SHALL BE RETURNED CONTINUOUSLY AROUND CORNERS A DISTANCE 2 TIMES THE NOMINAL SIZE OF THE WELD PER AISC 360 SECTION J2.2B, U.N.O.
d. ALL FULL-PENETRATION FIELD WELDS SHALL BE ULTRASONICALLY TESTED.
e. ALL TWO-SIDED FILLET WELDS SHOWN SHALL BE WELDED WITH THE SAME (GIVEN) WELD SIZE ON BOTH SIDES.
f. ALL UNSIZED GROOVE OR BUTT WELDS SHOWN SHALL BE COMPLETE PENETRATION. ALL PROVISIONS OF AWS SHALL BE OBSERVED INCLUDING REQUIREMENTS FOR BACK-UP PLATES AND WELD TRANSITIONS WHETHER OR NOT THEY ARE SPECIFICALLY SHOWN.
g. A WRITTEN WELDING PROCEDURE SPECIFICATION SHALL BE SUBMITTED TO THE TESTING LABORATORY. IT SHALL INCLUDE ALL WELDING PROCEDURES TO BE USED AS DESCRIBED IN AWS, CHAPTER 4.
h. SPECIAL CONSIDERATION SHALL BE GIVEN TO WELDING TECHNIQUE AND SEQUENCE, PARTICULARLY WHERE THERE IS A POTENTIAL FOR LAMELLAR (THROUGH-THICKNESS) TEARING.
i. WHERE FIELD WELDING IS INDICATED, THE FIELD DESIGNATION IS GIVEN AS A RECOMMENDATION ONLY.
11. ALL ANCHOR BOLTS SHALL BE HEADED STUD BOLTS OR THREADED RODS WITH NUTS. J BOLTS ARE NOT ACCEPTABLE IN ANY APPLICATION.
12. GROUT OTHER THAN FOR MASONRY CELLS SHALL BE NON-SHRINK, NON-METALLIC GROUT, MEETING ASTM C-1107. MIXED AND INSTALLED PER MANUFACTURERS' SPECIFICATIONS. MINIMUM COMPRESSIVE STRENGTH SHALL BE 8,000 PSI IN 28 DAYS, UNLESS APPROVED BY THE STRUCTURAL ENGINEER.

COLD-FORMED STEEL

1. GENERAL

- A. ALL COLD-FORMED METAL FRAMING CONSTRUCTION SHALL BE IN ACCORDANCE WITH AISI "SPECIFICATIONS FOR DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS," CURRENT EDITION.
- B. ALL COLD-FORMED STRUCTURAL MEMBERS SHALL BE PER ICC ECR-3064P.
- C. ALL COLD-FORMED STEEL SHALL CONFORM TO THE FOLLOWING:

43 MIL AND LIGHTER	ASTM A653 GR 33
54 MIL AND HEAVIER	ASTM A653 GR 55

- D. ALL COLD-FORMED STEEL SHALL HAVE A MINIMUM COATING CONFORMING TO THE FOLLOWING:

LOAD-BEARING AND EXTERIOR STRUCTURAL MEMBERS	COATING PROTECTION G90 PLUS AN APPROVED COATING PER CURRENT ASTM C655
--	---

- E. WELDING IS NOT PERMITTED UNLESS SPECIFICALLY APPROVED BY ENGINEER OF RECORD.

- F. ALL APPROVED WELDING SHALL BE PERFORMED BY WELDERS CERTIFIED FOR ALL APPROPRIATE DIRECTIONS COMPLYING WITH AWS D1.3. WELDING RODS SHALL CONFORM TO THE FOLLOWING:

43 MIL AND LIGHTER	E60XX
54 MIL AND HEAVIER	E70XX OR E6013
COLD-FORMED TO STRUCTURAL STEEL	E70XX LOW HYDROGEN

- G. WIRE TYING OF FRAMING COMPONENTS SHALL NOT BE PERMITTED.

- H. TEMPORARY BRACING REQUIREMENTS ARE THE RESPONSIBILITY OF THE CONTRACTOR.

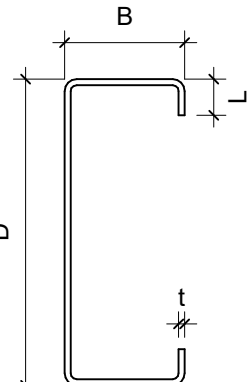
- I. ALL SCREWS SHALL BE FULLY DRIVEN AND PROTRUDE THE LARGER OF 3 THREADS OR 1/4" THROUGH THE LAST MATERIAL JOINED. THERE SHALL BE NO SPACE BETWEEN JOINING MEMBERS AT THE SCREW LOCATION.

2. LOAD-BEARING AND EXTERIOR STRUCTURAL MEMBERS

- A. FIELD CUTS THROUGH FLANGES OF STUD OR TRACK SHALL NOT BE PERMITTED UNLESS SPECIFICALLY APPROVED BY THE ENGINEER OF RECORD.
- B. ALL FIELD CUTTING OF MEMBERS SHALL BE BY SAWING OR SHEARING. TORCH OR PLASMA CUTTING OF MEMBERS SHALL NOT BE PERMITTED.
- C. ALL FRAMING COMPONENTS SHALL BE CUT SQUARELY FOR ATTACHMENT TO PERPENDICULAR MEMBERS OR AS REQUIRED ON AN ANGULAR FIT AGAINST ABUTTING MEMBERS. MEMBERS SHALL BE HELD POSITIVELY IN PLACE UNTIL PROPERLY FASTENED.
- D. SPLICING OF STUDS, JOISTS, OR OTHER LOAD CARRYING MEMBERS SHALL NOT BE PERMITTED UNLESS SPECIFICALLY APPROVED BY THE ENGINEER OF RECORD.
- E. IF ADDITIONAL HOLES ARE REQUIRED IN LOAD CARRYING MEMBERS, CONTACT THE ENGINEER OF RECORD FOR GUIDANCE BEFORE CUTTING HOLES.
- F. WHEN CLIP ANGLES ARE USED TO ATTACH A COMPONENT TO THE PRIMARY STRUCTURE, THE CLIP ANGLE SHALL BE FASTENED TO THE PRIMARY STRUCTURE FIRST, THEN THE COMPONENT SHALL BE BROUGHT TO BEAR ON THE STRUCTURE AND FASTENED TO THE CLIP ANGLE.
- G. EACH FRAMING MEMBER AND BUNDLES OF LIKE MEMBERS SHALL BE IDENTIFIED WITH THE MANUFACTURER'S NAME, YIELD STRENGTH, MINIMUM UNCOATED BASE METAL THICKNESS, PROTECTIVE COATING WEIGHT AND STUD SIZE EMBOSSED OR STAMPED ON THE WEB OF EACH SECTION AT A MAXIMUM OF 48" O.C. STUD MUST BE DESIGNED TO MEET THE REQUIREMENTS OF CODE SECTION 2209.

3. ALL CALCULATED MEMBER PROPERTIES PER AISI SPECIFICATIONS ARE BASED ON THE FOLLOWING THICKNESSES:

MINIMUM THICKNESS	REFERENCE GAUGE	DESIGN THICKNESS
33 MIL	20 GA	0.0346"
43 MIL	18 GA	0.0451"
54 MIL	16 GA	0.0566"
68 MIL	14 GA	0.0713"
97 MIL	12 GA	0.1017"
118 MIL	10 GA	0.1242"



MINIMUM SECTION PROPERTIES FOR CEE SHAPES								
SHAPE	D (in)	B (in)	L (in)	t (in)	A (in ²)	Wt (ppl)	I _x (in ⁴)	I _y (in ⁴)
12" x 4" x 10 GA	12	4	1.0	0.1242	2.61	8.88	56.38	5.32



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ENGINEER'S STAMP

PROJECT TITLE
140 KENDRICK
PROJECT ADDRESS
140 KENDRICK STREET
NEEDHAM, MA 02464
SHEET TITLE
GENERAL STRUCTURAL NOTES

DATE	DESCRIPTION	ISSUED SET / REVISIONS
08/01/2022	001. DESIGN SUBMISSION	
08/01/2022	002. DESIGN SUBMISSION	
DESIGNED BY	PARASOL	
DRAWN BY	NB	
CHECKED BY	KPPF	
APPROVED BY	KPPF	
ORIGINAL SHEET SIZE	42" x 36"	
SCALE	0 1/2" = 1"	
DWG. NO.	PV-001	
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MATERIAL SCHEDULE						
PIECE MARK	NAME	MATERIAL	UNIT DIMENSIONS	QUANTITY	FINISH	COLOR
PV PANEL						
PV-1	PV PANEL	Q.PEAK - DUO XL-G10.3/BFG (480W)	87.2" W. x 39.4" L.	2643	N/A	N/A
FOUNDATIONS						
G-16	GROUT	2" TH. (MAX.) HIGH STRENGTH GROUT	SEE PV-400 SERIES DRAWINGS	47	N/A	N/A
ANCHOR RODS & ASSOCIATED PARTS						
AR-12.12.055	ANCHOR ROD	F1554 GR. 55	1-1/2" DIA. x 12" L.	88	HOT DIP GALVANIZED	N/A
AR-12.18.055	ANCHOR ROD	F1554 GR. 55	1-1/2" DIA. x 18" L.	84	HOT DIP GALVANIZED	N/A
AR-12.32.105	ANCHOR ROD	F1554 GR. 105	1-1/2" DIA. x 32" L.	60	HOT DIP GALVANIZED	N/A
SW-12	WASHER (STRUCTURAL)	F436	1-1/2" DIA.	120	HOT DIP GALVANIZED	N/A
HHN-12	HEAVY HEX NUT	A563	1-1/2" DIA.	120	HOT DIP GALVANIZED	N/A
JN-12	JAM NUT	A563	1-1/2" DIA.	60	HOT DIP GALVANIZED	N/A
STRUCTURAL STEEL (EARLY RELEASE)						
BBRP-08	BASE BRACKET REAR PLATE	1" PL. A572 GR.50	SEE PV-400 SERIES DRAWINGS	64	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES
BBTP-08	BASE BRACKET TOP PLATE	1" PL. A572 GR.50	SEE PV-400 SERIES DRAWINGS	64	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES
Bbsp-04	BASE BRACKET STIFFENER PLATE	1/2" PL. A572 GR.50	SEE PV-400 SERIES DRAWINGS	192	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES
STRUCTURAL STEEL						
BP-12	BASE PLATE	1-1/2" PL. A572 GR.50	SEE PV-400 SERIES DRAWINGS	47	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES
C-08.048	COLUMN	W8x48 A992 GR. 50	SEE PV-100, PV-300 & PV-400 SERIES	30	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES
C-10.049	COLUMN	W10x49 A992 GR. 50	SEE PV-100, PV-300 & PV-400 SERIES	47	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES
CCP-06	COLUMN CAP PLATE	3/4" PL. A572 GR.50	SEE PV-400 SERIES DRAWINGS	8	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES
CCP-08	COLUMN CAP PLATE	1" PL. A572 GR.50	SEE PV-400 SERIES DRAWINGS	1	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES
CCP-12	COLUMN CAP PLATE	1-1/2" PL. A572 GR.50	SEE PV-400 SERIES DRAWINGS	54	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES
G-24.068	GIRDER	W24x68 A992 GR. 50	SEE PV-100, PV-300 & PV-400 SERIES	13	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES
G-24.084	GIRDER	W24x84 A992 GR. 50	SEE PV-100, PV-300 & PV-400 SERIES	6	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES
G-24.104	GIRDER	W24x104 A992 GR. 50	SEE PV-100, PV-300 & PV-400 SERIES	11	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES
G-24.117	GIRDER	W24x117 A992 GR. 50	SEE PV-100, PV-300 & PV-400 SERIES	4	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES
GSPB-08	GIRDER SPLICE BOTTOM PLATE	1" PL. A572 GR.50	SEE PV-400 SERIES DRAWINGS	28	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES
GSSP-00	GIRDER SPLICE SHIM PLATE	PL. A572 GR.50 (THICKNESS AS NEEDED)	SEE PV-400 SERIES DRAWINGS	14	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES
GSVP-04	GIRDER SPLICE VERTICAL PLATE	1/2" PL. A572 GR. 50	SEE PV-400 SERIES DRAWINGS	56	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES
GSP-04	GIRDER STIFFENER PLATE	1/2" PL. A572 GR. 50	SEE PV-400 SERIES DRAWINGS	100	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES
GSTP-08	GIRDER SPLICE TOP PLATE	1" PL. A572 GR.50	SEE PV-400 SERIES DRAWINGS	28	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES
B-24.068	BEAM	W24x68 A992 GR. 50	SEE PV-100, PV-300 & PV-400 SERIES	51	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES
B-24.084	BEAM	W24x84 A992 GR. 50	SEE PV-100, PV-300 & PV-400 SERIES	13	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES
B-24.094	BEAM	W24x94 A992 GR. 50	SEE PV-100, PV-300 & PV-400 SERIES	7	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES
B-24.104	BEAM	W24x104 A992 GR. 50	SEE PV-100, PV-300 & PV-400 SERIES	5	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES
B-24.117	BEAM	W24x117 A992 GR. 50	SEE PV-100, PV-300 & PV-400 SERIES	8	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES
BSP-04	BEAM STIFFENER PLATE	1/2" PL. A572 GR. 50	SEE PV-400 SERIES DRAWINGS	356	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES
BSPB-08	BEAM SPLICE BOTTOM PLATE	1" PL. A572 GR.50	SEE PV-400 SERIES DRAWINGS	73	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES
BSSP-00	BEAM SPLICE SHIM PLATE	PL. A572 GR.50 (THICKNESS AS NEEDED)	SEE PV-400 SERIES DRAWINGS	55	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES
BSVP-04	BEAM SPLICE VERTICAL PLATE	1/2" PL. A572 GR. 50	SEE PV-400 SERIES DRAWINGS	146	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES
BSTP-08	BEAM SPLICE TOP PLATE	1" PL. A572 GR.50	SEE PV-400 SERIES DRAWINGS	73	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES
BR-02	BRACE ANGLE	L3x3x1/4 A36	SEE PV-400 SERIES DRAWINGS	72	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES
GBA-02	GIRDER BRACE ANGLE	L3x3x1/4 A36	SEE PV-400 SERIES DRAWINGS	60	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES
RCBP-03.12.05	RAIL CONNECTION BENT PLATE	3/8" PL. A572 GR. 50	SEE PV-400 SERIES DRAWINGS	608	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES
RSPS-03.12	RAIL SPLICE PLATE (SINGLE TILT)	3/8" PL. A572 GR. 50	SEE PV-400 SERIES DRAWINGS	492	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES
COLD-FORMED STEEL						
R-07A	RAIL	12 GA. A653 55 KSI	12" H. x 3.15" W. x 1" R. x 24'-3" L.	40	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES
R-07B	RAIL	12 GA. A653 55 KSI	12" H. x 3.15" W. x 1" R. x 24'-3" L.	56	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES
R-08	RAIL	12 GA. A653 55 KSI	12" H. x 3.15" W. x 1" R. x 27'-10 5/8" L.	10	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES
R-09A	RAIL	12 GA. A653 55 KSI	12" H. x 3.15" W. x 1" R. x 31'-2 9/32" L.	66	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES
R-09B	RAIL	12 GA. A653 55 KSI	12" H. x 3.15" W. x 1" R. x 31'-2 9/32" L.	66	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES
R-10A	RAIL	12 GA. A653 55 KSI	12" H. x 3.15" W. x 1" R. x 34'-7 29/32" L.	66	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES
R-10B	RAIL	12 GA. A653 55 KSI	12" H. x 3.15" W. x 1" R. x 34'-7 29/32" L.	66	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES
R-10C	RAIL	12 GA. A653 55 KSI	12" H. x 3.15" W. x 1" R. x 34'-7 29/32" L.	66	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES
R-10D	RAIL	12 GA. A653 55 KSI	12" H. x 3.15" W. x 1" R. x 34'-9 29/32" L.	56	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES
R-11	RAIL	12 GA. A653 55 KSI	12" H. x 3.15" W. x 1" R. x 38'-3 9/16" L.	26	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES
R-13	RAIL	12 GA. A653 55 KSI	12" H. x 3.15" W. x 1" R. x 45'-2 27/32" L.	40	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES
RB-12	RAIL BLOCKING	18 GA. A653 GR. 33	9" H. x 2" W.	492	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES
RF-12	RAIL FASCIA	18 GA. A653 GR. 33	12 1/4" H. x 2" W.	66	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES	SEE PV-000 STRUCTURAL STEEL FABRICATION NOTES
BOLTS & FASTENERS						
SW-05	WASHER (STRUCTURAL)	F436	5/8" DIA.	6368	HOT DIP GALVANIZED	N/A
SW-06	WASHER (STRUCTURAL)	F436	3/4" DIA.	1070	HOT DIP GALVANIZED	N/A
SW-07	WASHER (STRUCTURAL)	F436	7/8" DIA.	216	HOT DIP GALVANIZED	N/A
SW-08	WASHER (STRUCTURAL)	F436	1" DIA.	2676	HOT DIP GALVANIZED	N/A
SW-10	WASHER (STRUCTURAL)	F436	1-1/4" DIA.	128	HOT DIP GALVANIZED	N/A
SW-12	WASHER (STRUCTURAL)	F436	1-1/2" DIA.	256	HOT DIP GALVANIZED	N/A
HHN-05	HEAVY HEX NUT	A563	5/8" DIA.	6368	HOT DIP GALVANIZED	N/A
HHN-06	HEAVY HEX NUT	A563	3/4" DIA.	1070	HOT DIP GALVANIZED	N/A
HHN-07	HEAVY HEX NUT	A563	7/8" DIA.	216	HOT DIP GALVANIZED	N/A
HHN-08	HEAVY HEX NUT	A563	1" DIA.	2676	HOT DIP GALVANIZED	N/A
HHN-10	HEAVY HEX NUT	A563	1-1/4" DIA.	128	HOT DIP GALVANIZED	N/A
HHN-12	HEAVY HEX NUT	A563	1-1/2" DIA.	256	HOT DIP GALVANIZED	N/A
FB-05.10	FIELD BOLT	A325	5/8" DIA. x 1-1/4" L.	1968	HOT DIP GALVANIZED	N/A
FB-05.12	FIELD BOLT	A325	5/8" DIA. x 1-1/2" L.	3184	HOT DIP GALVANIZED	N/A
FB-05.16	FIELD BOLT	A325	5/8" DIA. x 2" L.	1216	HOT DIP GALVANIZED	N/A
FB-06.18	FIELD BOLT	A325	3/4" DIA. x 2-1/4" L.	60	HOT DIP GALVANIZED	N/A
FB-06.22	FIELD BOLT	A325	3/4" DIA. x 2-3/4" L.	1010	HOT DIP GALVANIZED	N/A
FB-07.16	FIELD BOLT	A325	7/8" DIA. x 2" L.	216	HOT DIP GALVANIZED	N/A
FB-08.24	FIELD BOLT	A325	1" DIA. x 3" L.	512	HOT DIP GALVANIZED	N/A
FB-08.26	FIELD BOLT	A325	1" DIA. x 3-1/4" L.	96	HOT DIP GALVANIZED	N/A
FB-08.28	FIELD BOLT	A325	1" DIA. x 3-1/2" L.	1852	HOT DIP GALVANIZED	N/A
FB-08.32	FIELD BOLT	A325	1" DIA. x 4" L.	216	HOT DIP GALVANIZED	N/A
FB-10.36	FIELD BOLT	A325	1-1/4" DIA. x 4-1/2" L.	128	HOT DIP GALVANIZED	N/A
MB-2.5x06	MOUNTING BOLT (PV PANEL)	GR. 304 STAINLESS	5/16" DIA. (M8) x 3/4" L.	10836	PASSIVATE	N/A
MN-2.5	MOUNTING NUT (PV PANEL)	GR. 304 STAINLESS	5/16" DIA. (M8)	10836	PASSIVATE	N/A



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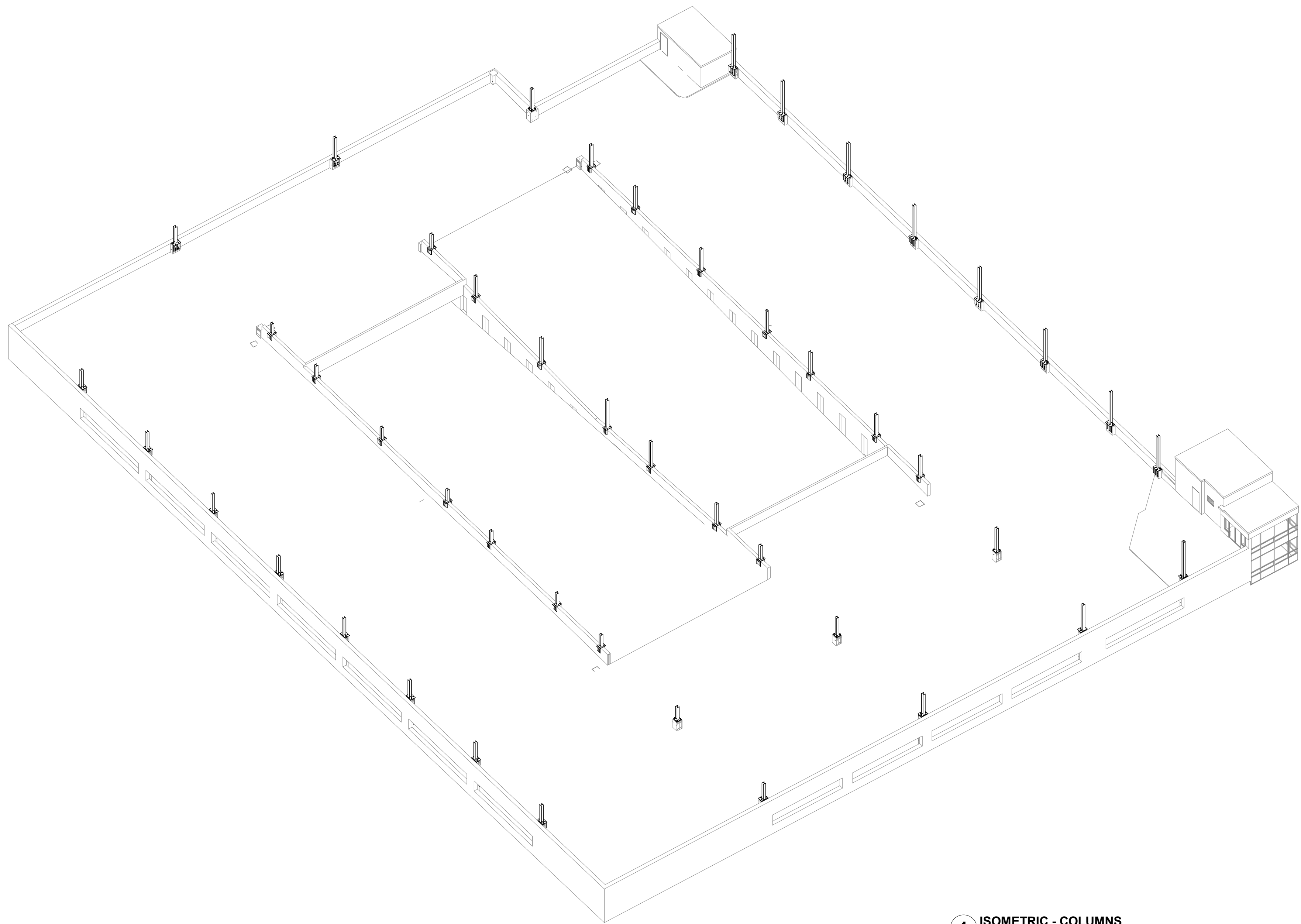
KPFF Job # : 2000519

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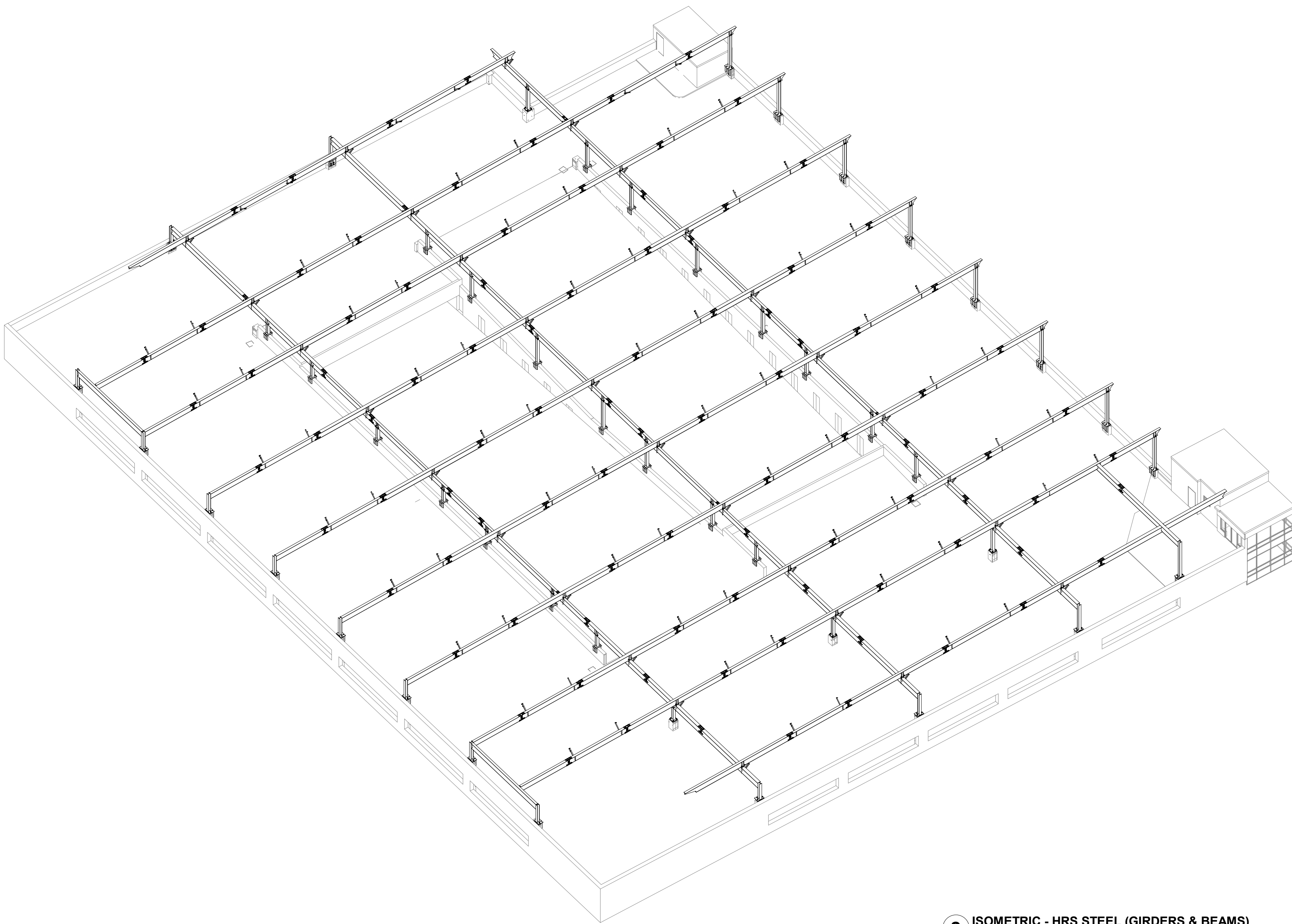
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140 KENDRICK
PROJECT ADDRESS
140 KENDRICK STREET
NEEDHAM, MA 02464
SHEET TITLE
MATERIAL SCHEDULE

ISSUED SET / REVISIONS
SYN
DATE
DESCRIPTION
30% DESIGN SUBMISSION
60% DESIGN SUBMISSION

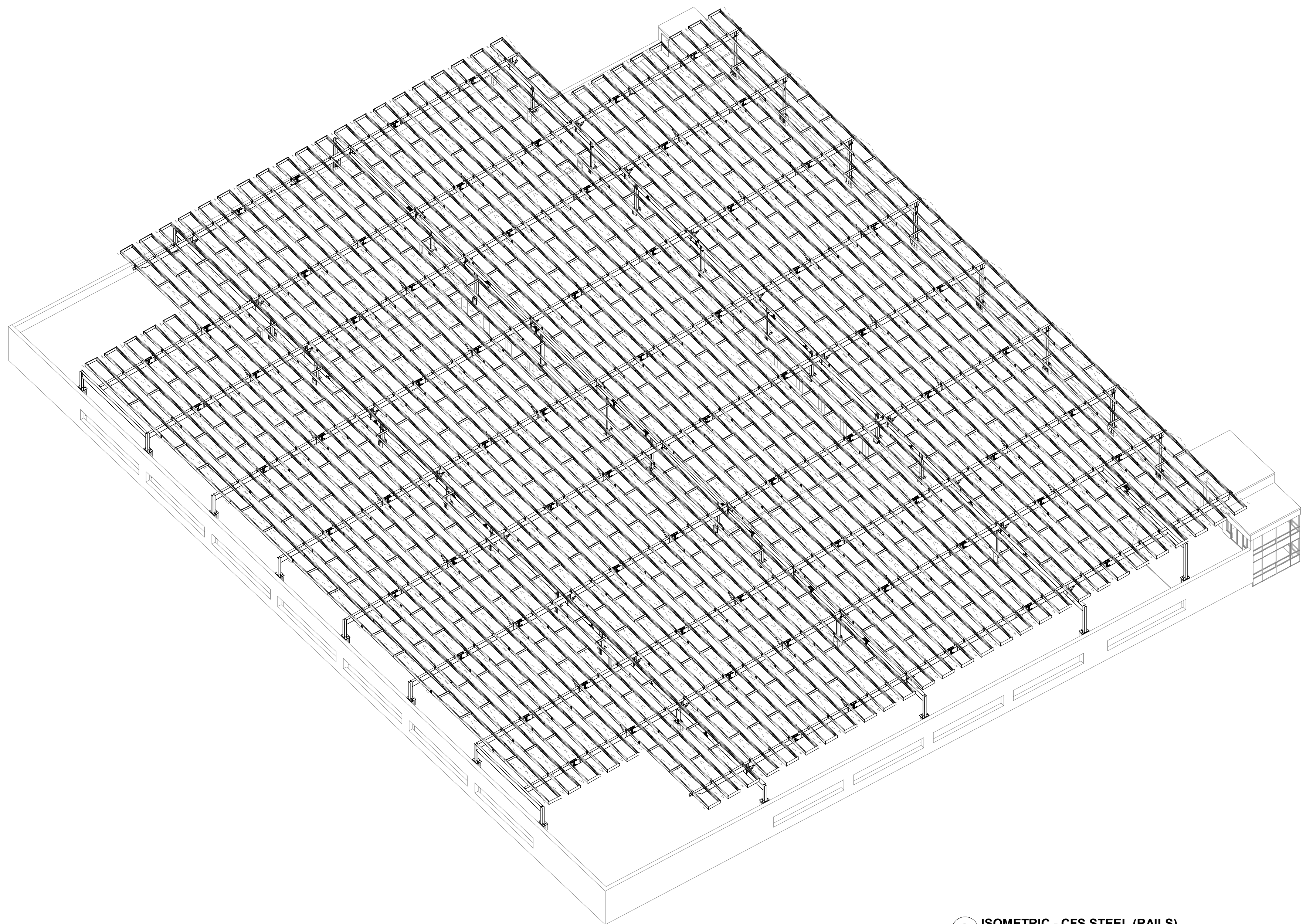
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DRAWN BY : NB
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APPROVED BY : KPFF
ORIGINAL SHEET SIZE: 42" x 30"
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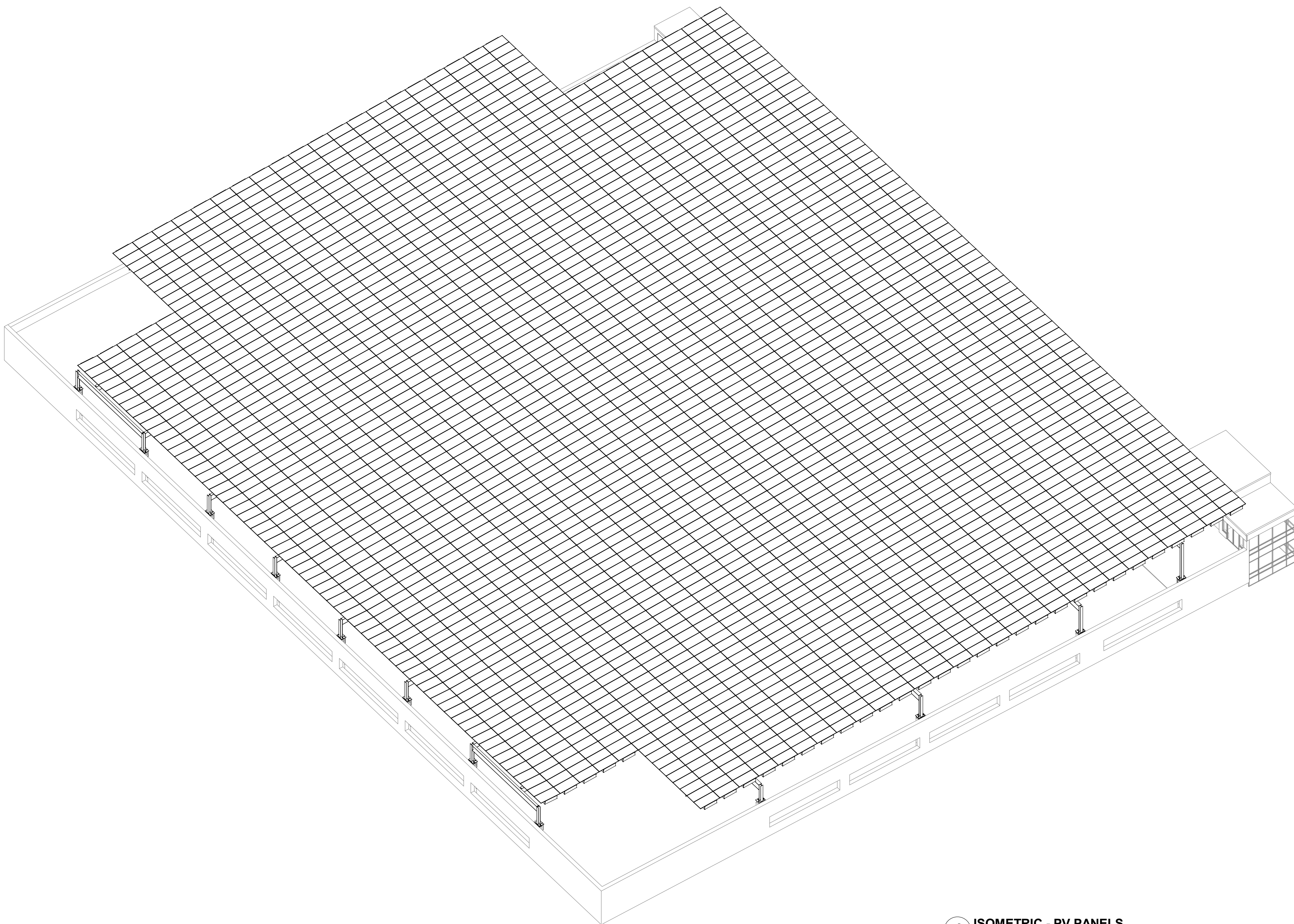
1 ISOMETRIC - COLUMNS
N.T.S.



2 ISOMETRIC - HRS STEEL (GIRDERS & BEAMS)
N.T.S.



3 ISOMETRIC - CFS STEEL (RAILS)
N.T.S.



4 ISOMETRIC - PV PANELS
N.T.S.



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Consulting Engineers

377 WEST 10TH STREET, 10TH FLOOR
NEW YORK, NY 10014-2001

KPFF Job # : 2000519

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PROJECT TITLE
140 KENDRICK
PROJECT ADDRESS
140 KENDRICK STREET
NEEDHAM, MA 02464
SHEET TITLE
ISOMETRICS

DATE
08/08/2022
BY
08/08/2022

ISSUED SET / REVISIONS
DESCRIPTION
30% DESIGN SUBMISSION
60% DESIGN SUBMISSION

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PARASOL

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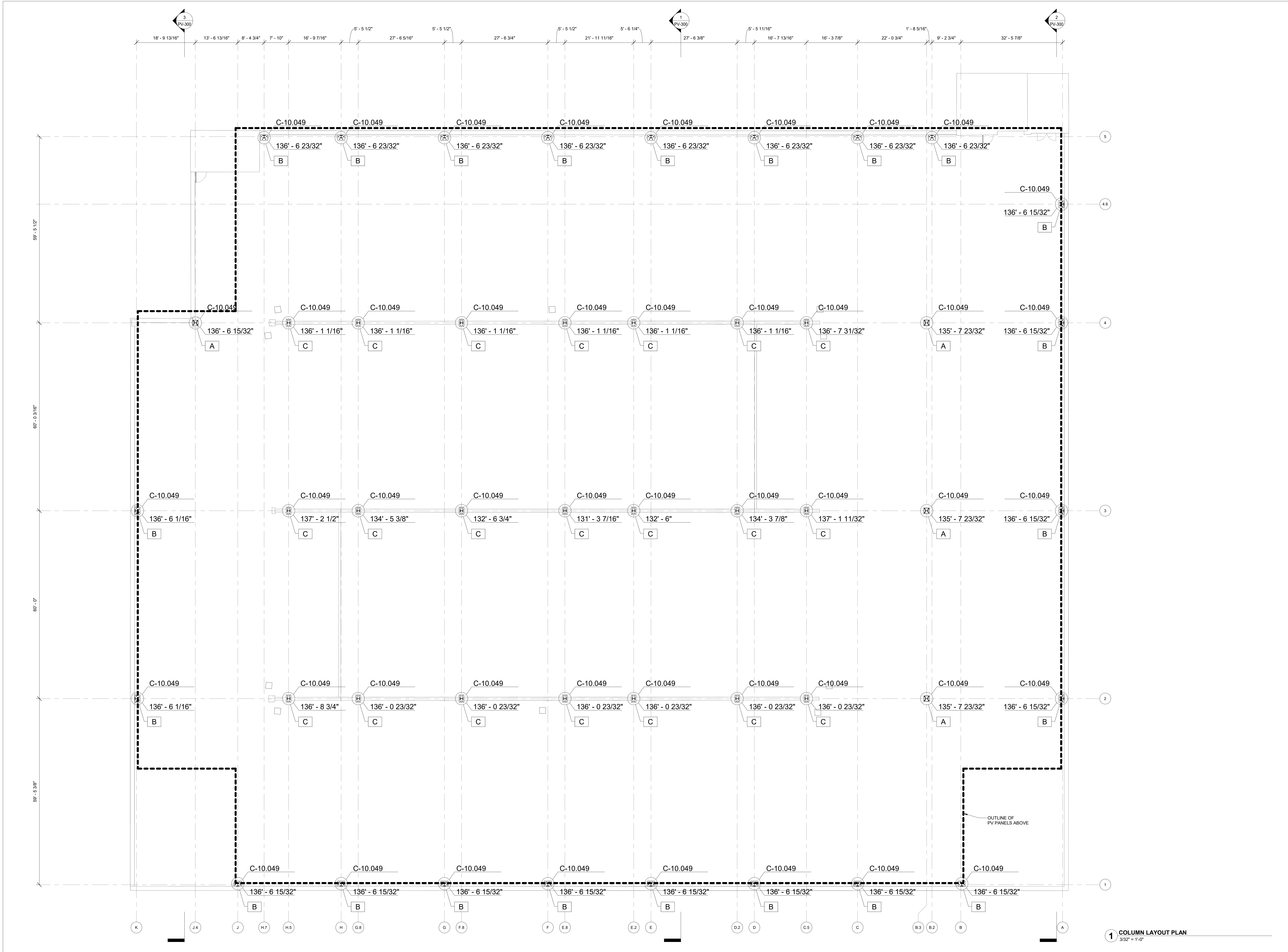
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ORIGINAL SHEET SIZE: 42" x 30"

SCALE
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DATE
08/08/2022

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1 COLUMN LAYOUT PLAN
3/32" = 1'-0"



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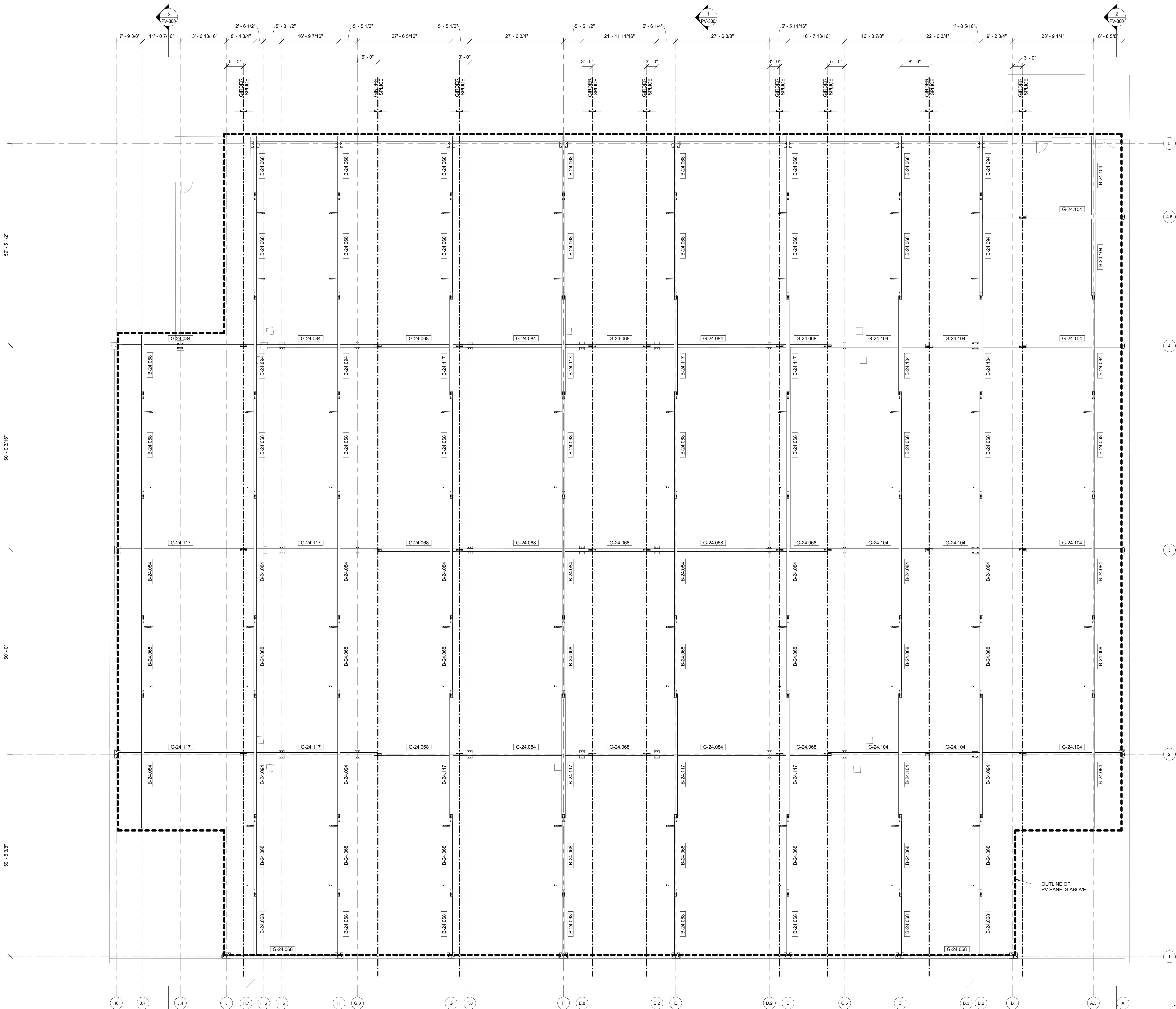
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140 KENDRICK
PROJECT ADDRESS
140 KENDRICK STREET
NEEDHAM, MA 02464
SHEET TITLE
COLUMN LAYOUT PLAN

ISSUED SET / REVISIONS	DATE	DESCRIPTION
SYM	08/08/2022	30% DESIGN SUBMISSION
	08/08/2022	60% DESIGN SUBMISSION

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DRAWN BY: NB
CHECKED BY: KPFF
APPROVED BY: KPFF
ORIGINAL SHEET SIZE: 42" x 30"
SCALE
0 1/2" 1"
DATE: 10/27/2022

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1 HRS FRAMING LAYOUT PLAN (GIRDERS & BEAMS)
3/32" = 1'-0"



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100 WEST 10TH STREET, 10TH FLOOR
NEW YORK, NY 10011-3603

KPFF Job # : 2000519

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PROJECT TITLE
140 KENDRICK
PROJECT ADDRESS
140 KENDRICK STREET
NEEDHAM, MA 02464
SHEET TITLE
HRS FRAMING LAYOUT PLAN (GIRDERS & BEAMS)

ISSUED SET / REVISIONS
DATE
DESCRIPTION
30% DESIGN SUBMISSION
60% DESIGN SUBMISSION

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ORIGINAL SHEET SIZE: 42" x 30"

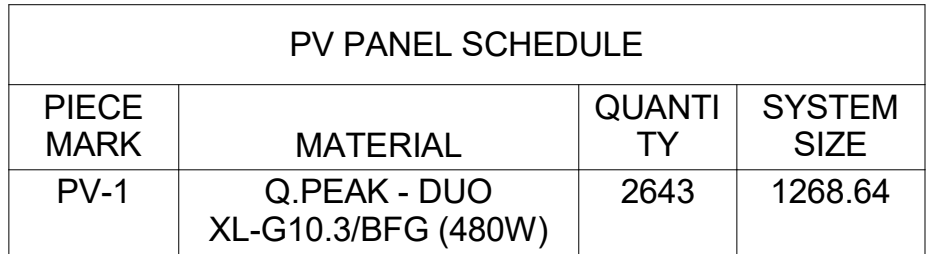
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140 KENDRICK
PROJECT ADDRESS
140 KENDRICK STREET
NEEDHAM, MA 02461
SHEET TITLE
PPV UNIT LAYOUT

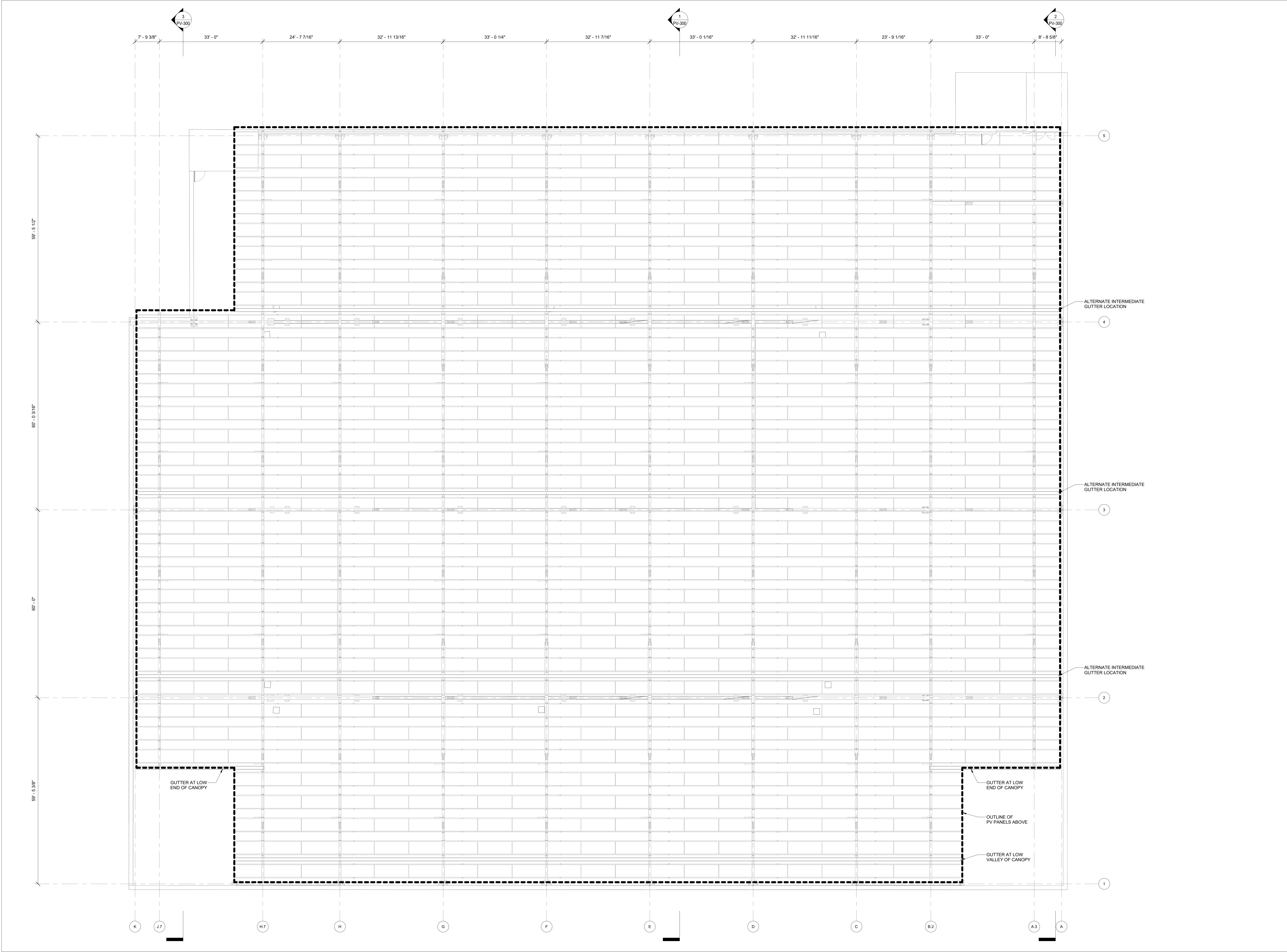
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SCALE
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1 PV UNIT LAYOUT PLAN





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100 WEST 10TH STREET, 10TH FLOOR
NEW YORK, NY 10011-1001

KPFF Job # : 2000519

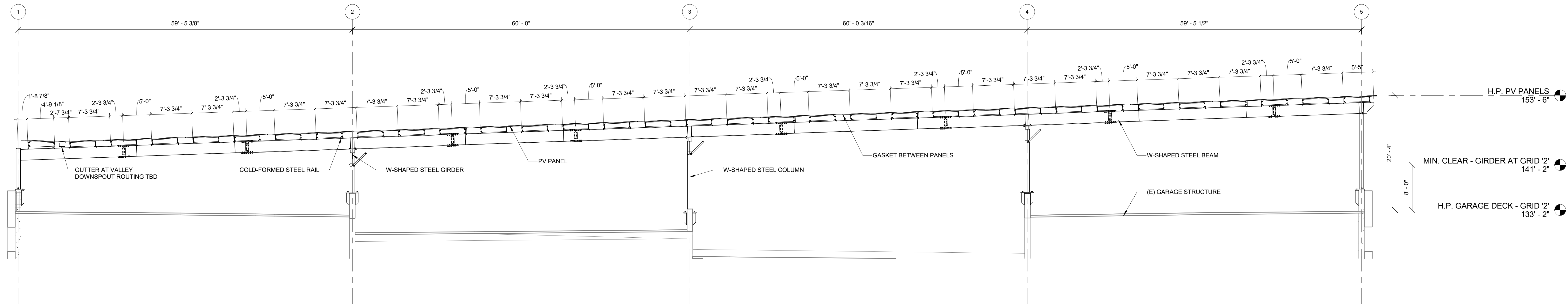
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PROJECT TITLE	140 KENDRICK
PROJECT ADDRESS	140 KENDRICK STREET NEEDHAM, MA 02464
SHEET TITLE	WATER MANAGEMENT PLAN

ISSUED SET / REVISIONS	DATE
DESCRIPTION	DATE
80% DESIGN SUBMISSION	08/08/2022
SYM	

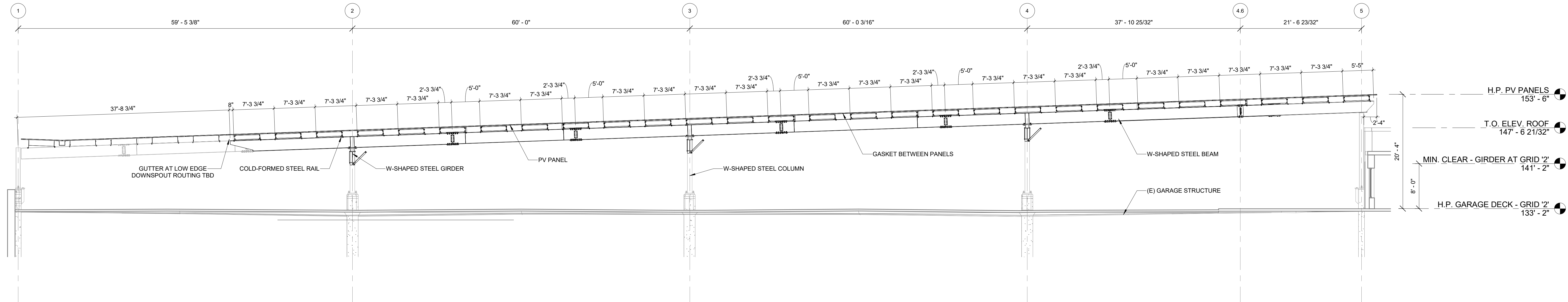
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APPROVED BY	KPFF
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CANOPY SLOPE = -2 DEG. / 2 DEG.



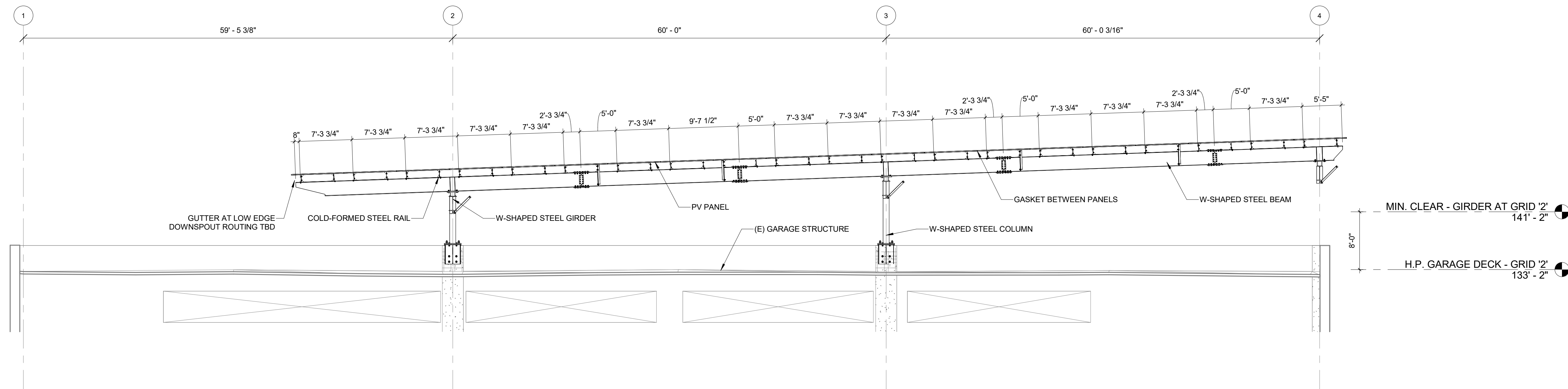
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1/8" = 1'-0"

CANOPY SLOPE = -2 DEG. / 2 DEG.

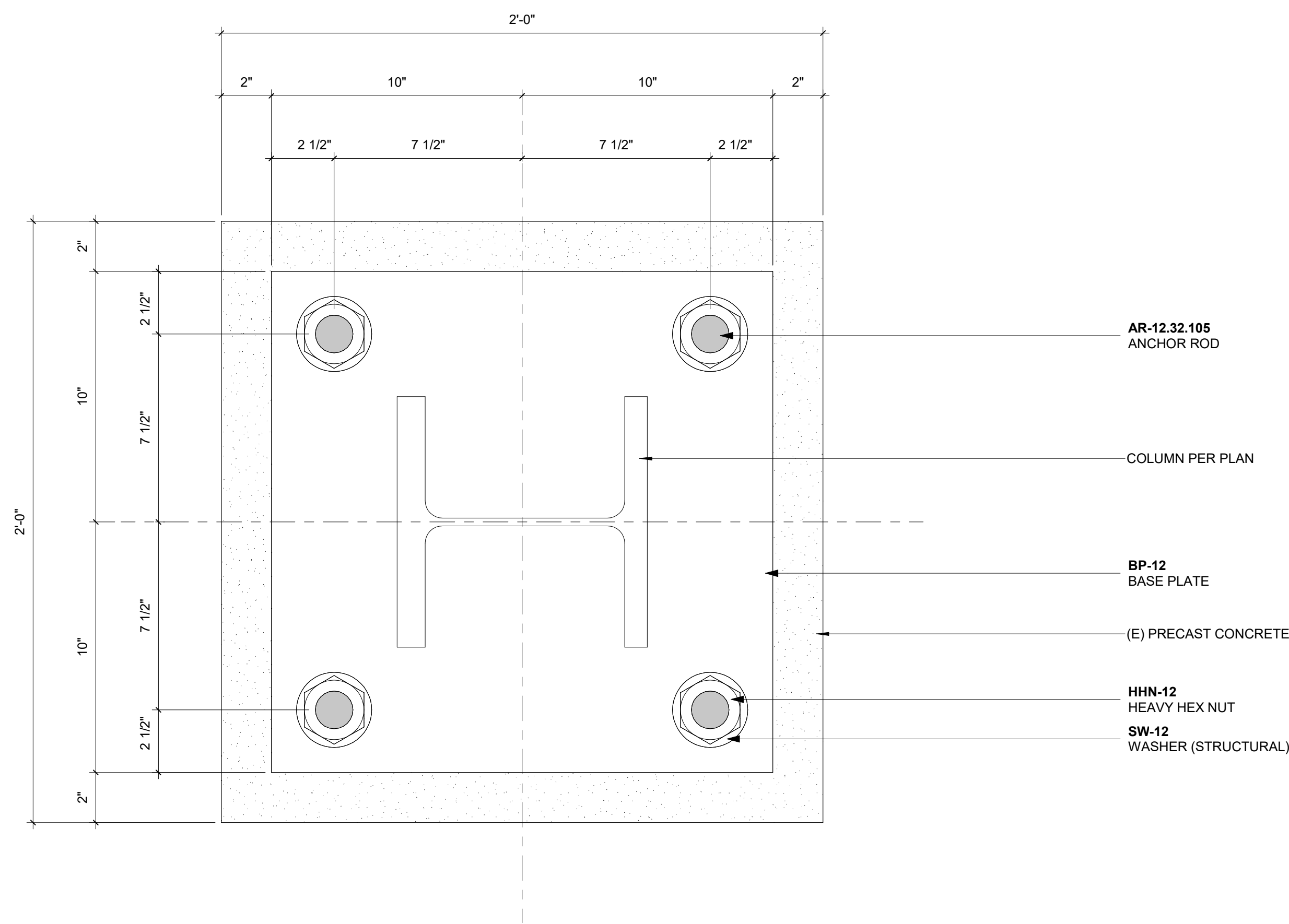


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1/8" = 1'-0"

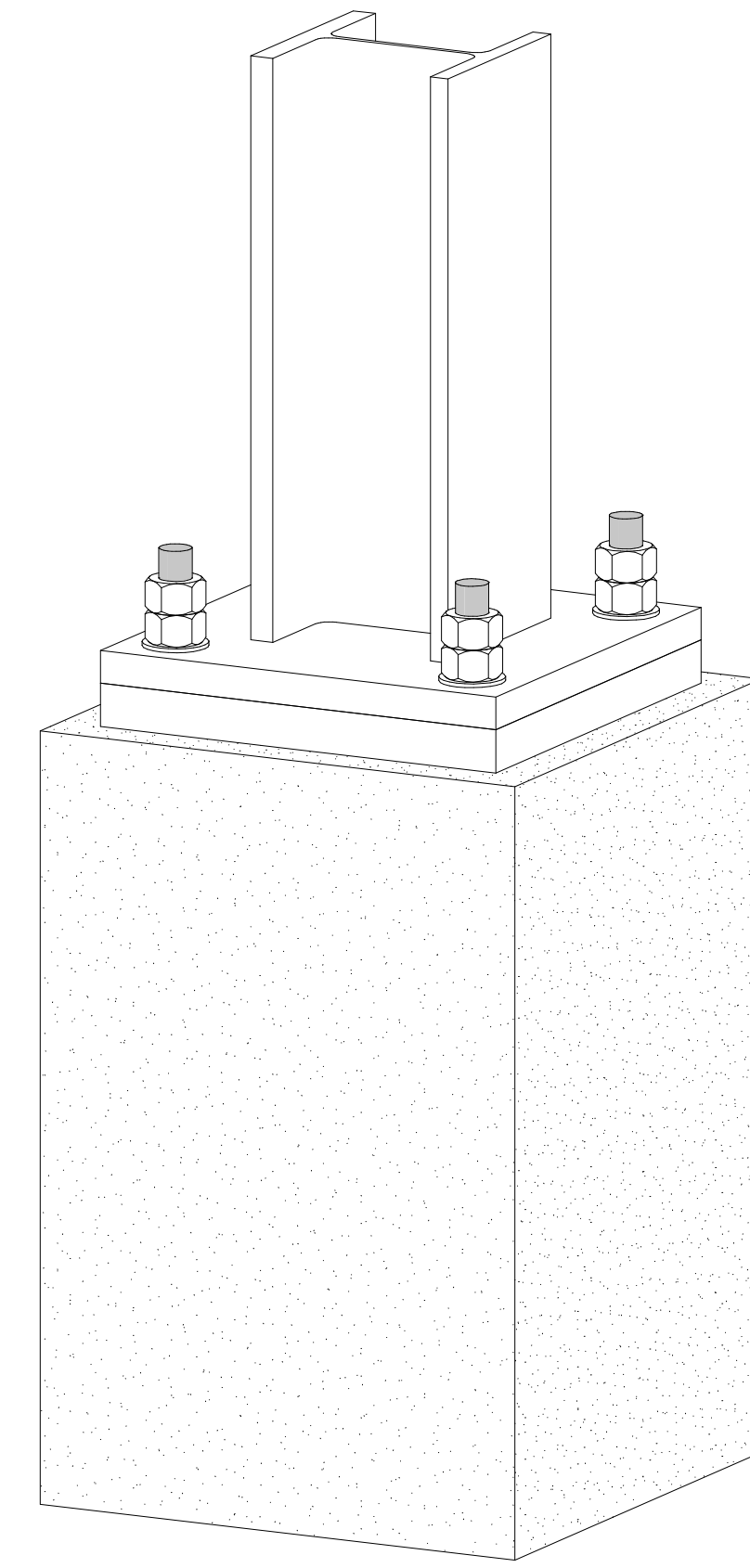
CANOPY SLOPE = -2 DEG. / 2 DEG.



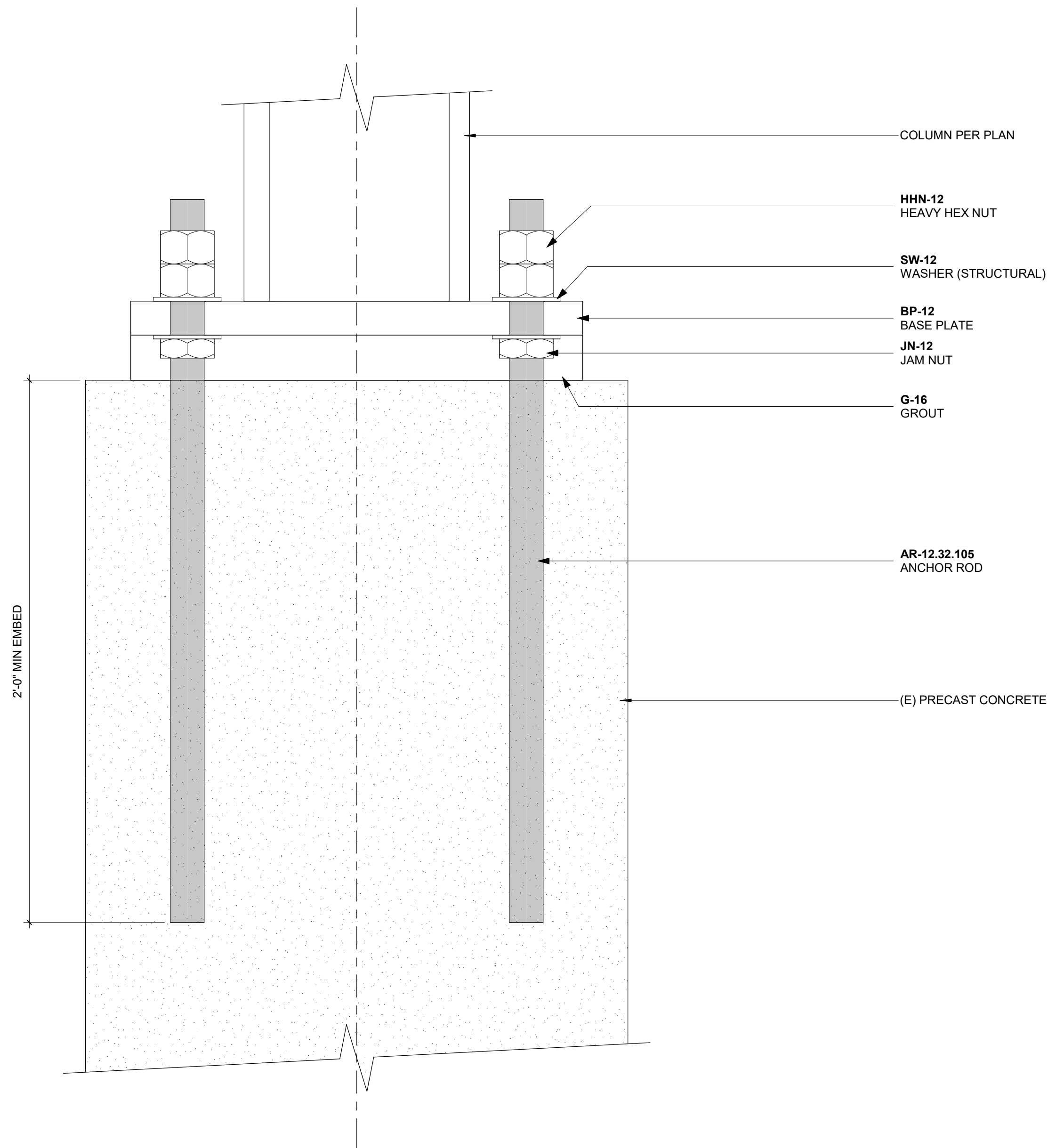
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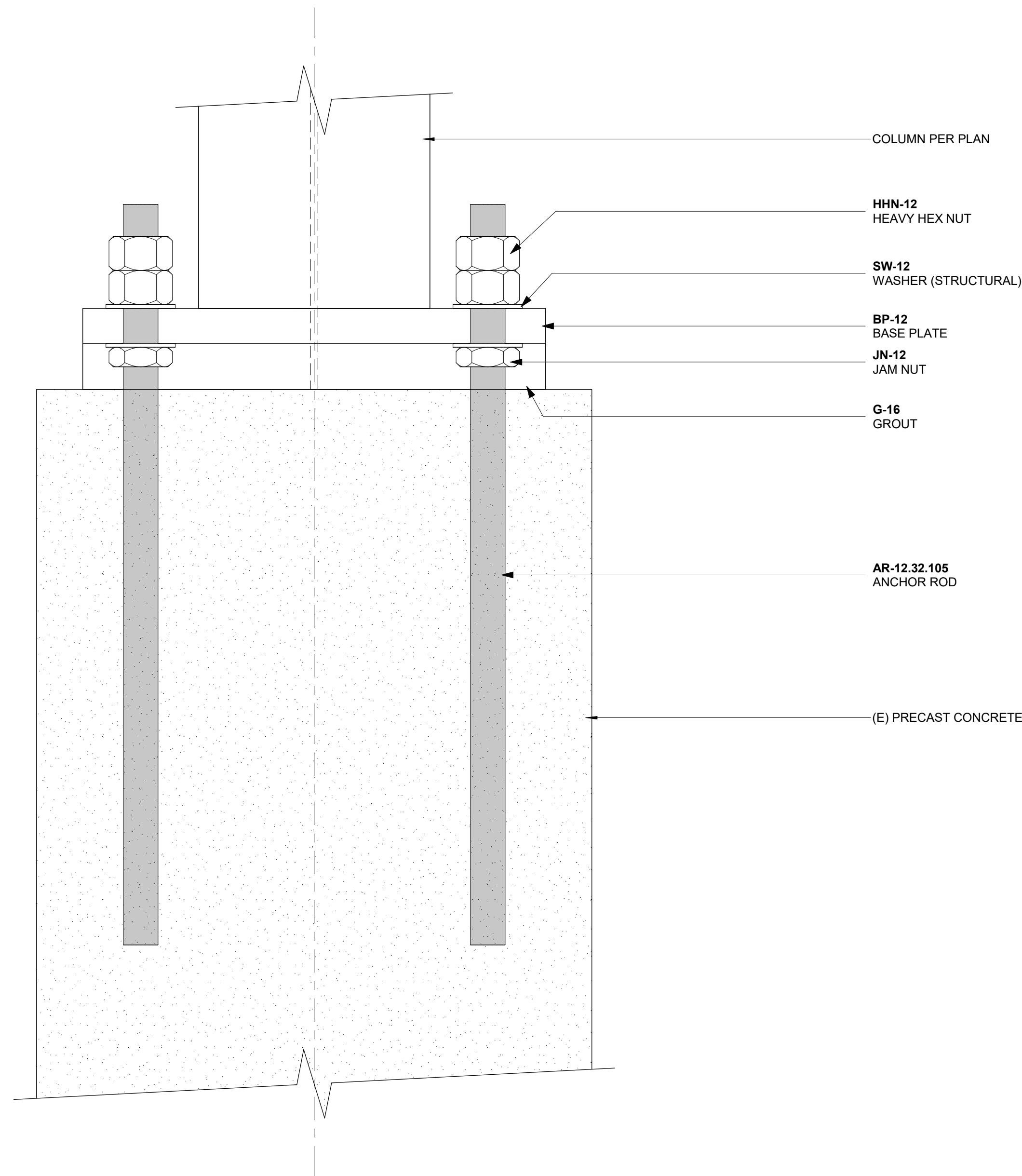
2 BASE CONNECTION TYPE A - PLAN
3" = 1'-0"



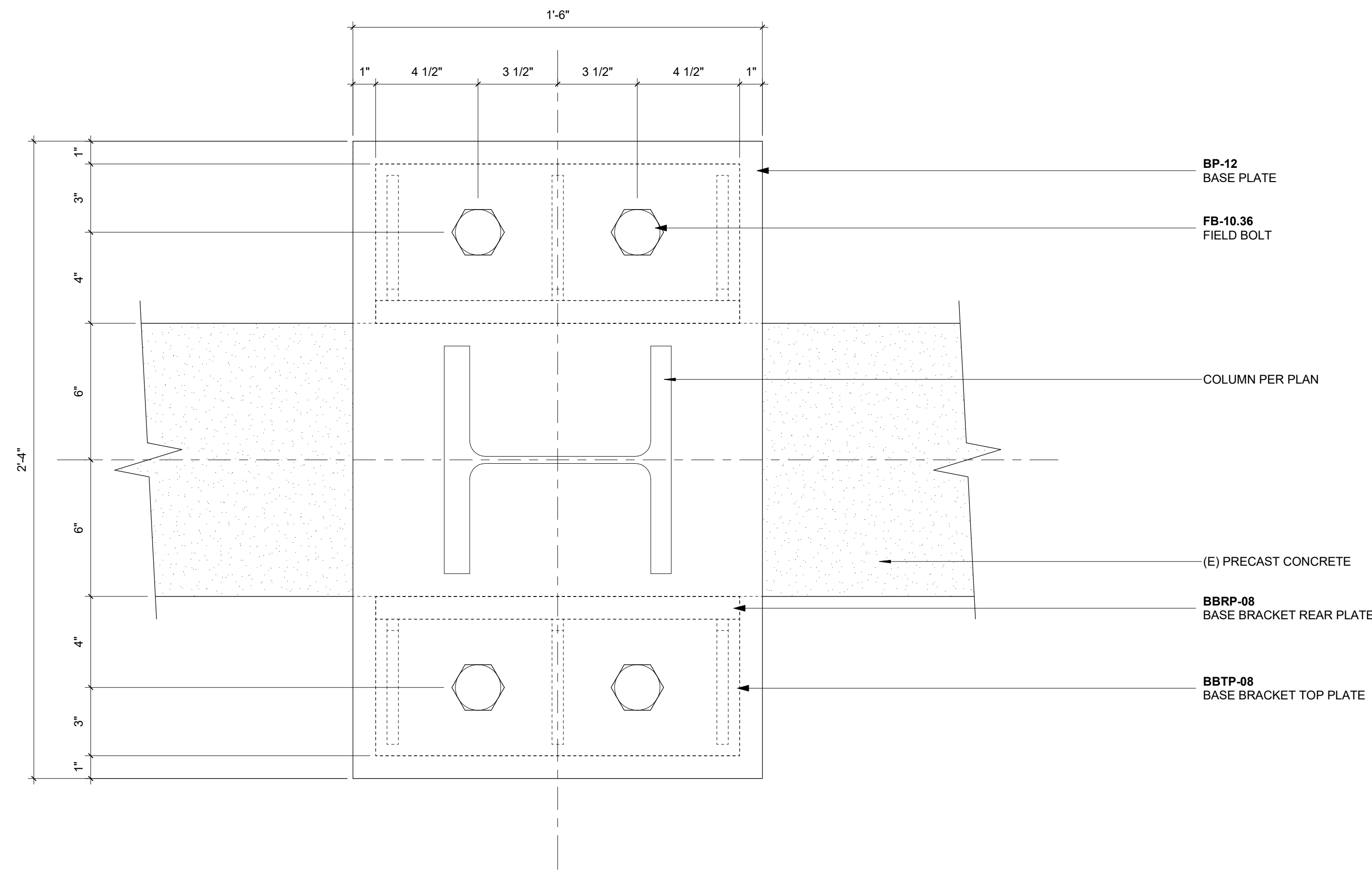
1 BASE CONNECTION TYPE A - ISOMETRIC
N.T.S.



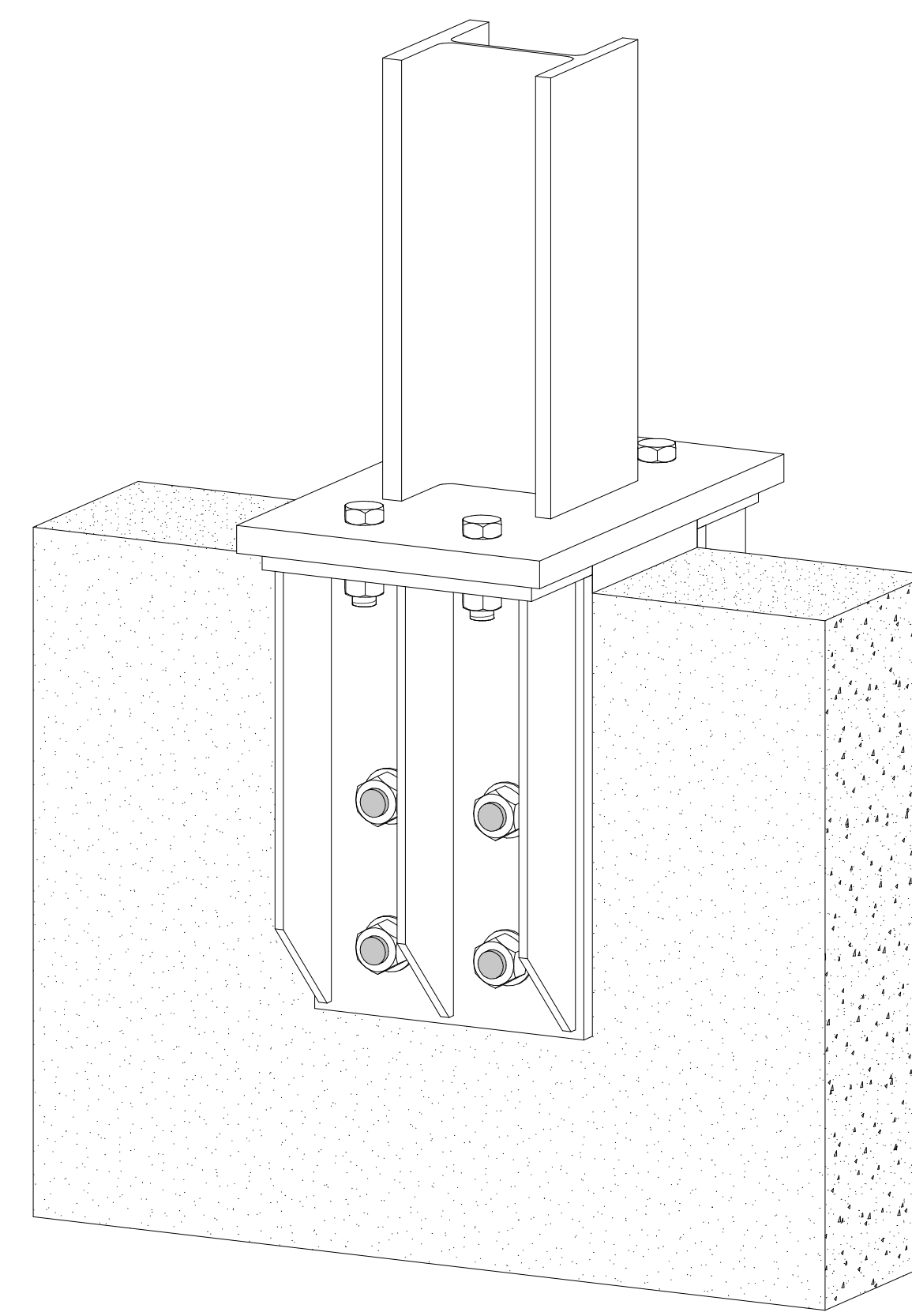
4 BASE CONNECTION TYPE A - FRONT
3" = 1'-0"



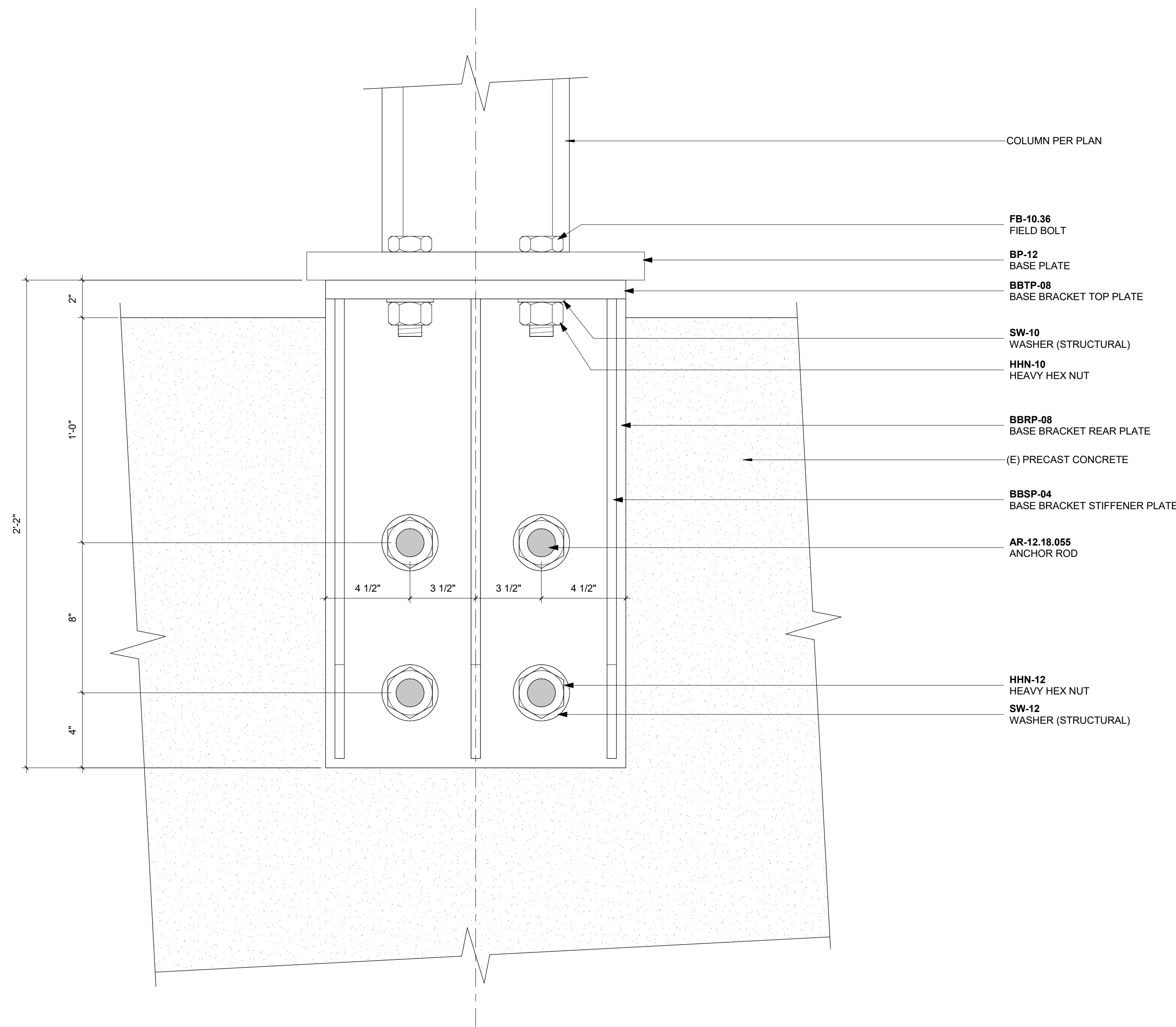
3 BASE CONNECTION TYPE A - SIDE
3" = 1'-0"



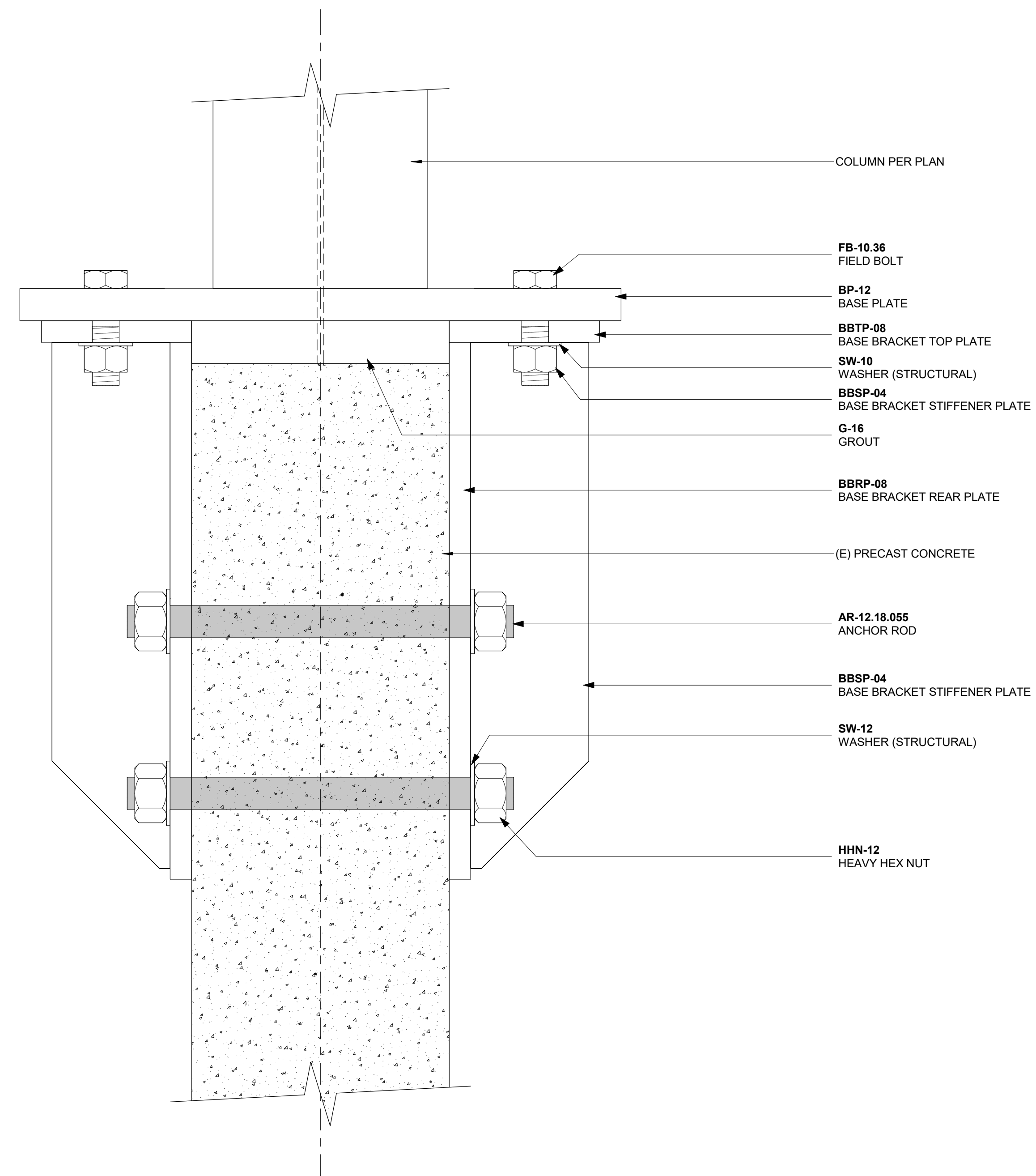
2 BASE CONNECTION TYPE C - PLAN
3" = 1'-0"



1 BASE CONNECTION TYPE C - ISOMETRIC
N.T.S.



4 BASE CONNECTION TYPE C - FRONT
3" = 1'-0"



3 BASE CONNECTION TYPE C - SIDE
3" = 1'-0"

PARASOL
STRUCTURES



sunwealth

Boston Properties

140 Kendrick St

Needham Heights, MA 02494

Francois Attal

August 16, 2022

Single Tilt 2°
System Size – 1,263.84 kWp DC

PARASOL
STRUCTURES



CLIENT: SUNWEALTH
CARPORT: PARASOL SOLFLEX

LOCATION: BOSTON PROPERTIES
140 KENDRICK ST
NEEDHAM HEIGHTS, MA 02494

PANELS: HANWHA G11.3 480WW
DATE: AUGUST 16, 2022



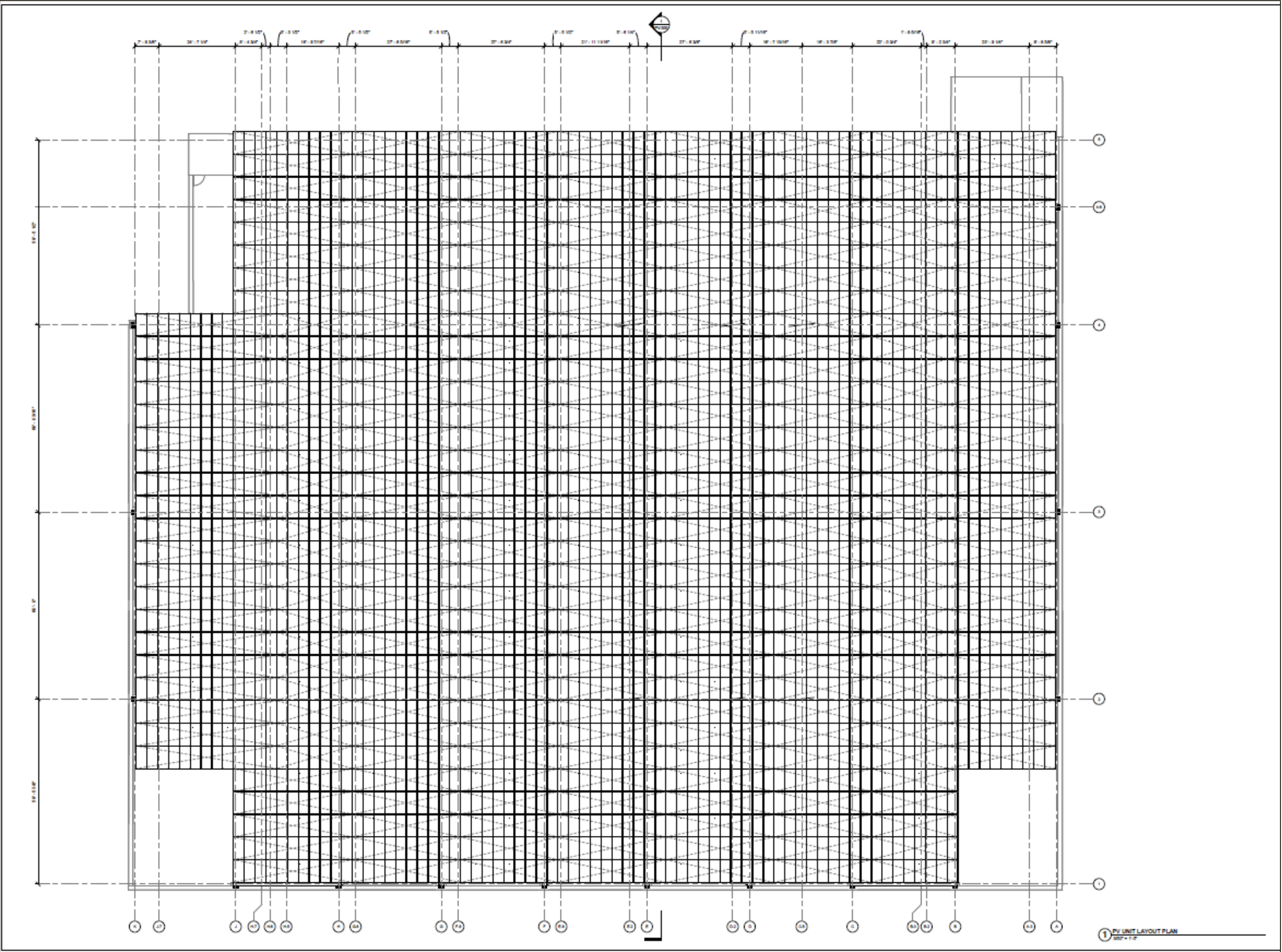
GENERAL NOTES:

1. Result of easement reports and underground utilities may affect final placement of solar arrays.
2. Conflicting trees and other obstructions will have to be removed, trimmed, or relocated
3. Detailed analysis of the effect of shade on arrays has not been performed.
4. Soil analysis has not been performed
5. It is assumed that the site is not in a flood plain.
6. Structural Analysis of the Garage has not been performed

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From: [Rick DeAngelis](#)
To: [Alexandra Clee](#); [Lee Newman](#); [Elisa Litchman](#); [David Roche](#)
Cc: nskoly@vhb.com; [Marcel Rodgers](#); [Ellesse Lunde](#); [Christopher Hiserman](#); [Madeleine Timin](#); [Roxane Argueta](#)
Subject: 140 Kendrick Street- Solar Roof Drainage
Date: Monday, September 26, 2022 8:55:48 AM
Attachments: [image001.png](#)
[image002.png](#)
[image003.png](#)
[image004.png](#)
[image005.png](#)
[C2.0_DRAIN.pdf](#)

All

Attached is a plan prepared by VHB detailing the new HDPE drainage pipe and downspout connections which will replace the existing concrete drainage pipe .

This replacement pipe will have the roof tied into it and the pipe will collect the same volume of water as previously collected from the top deck/ story of the garage which in the past fell to the pavement and went into ground level drains.

The new pipe and system will collect the water from the solar canopy and avoid water falling onto the garage surface. This in turn will prevent grit/sand/oils from entering the drainage system by avoiding contact with that surface.

This plan is submitted in response to David Roche's questions as to how we are handling storm water drainage from the new roof.

Please add this plan to both our Design Review Board submission and to our Planning Board submission.

Please do not hesitate to call or email with any questions you may have.

Rick DeAngelis

627-512-0319

Nicholas Skoly, P.E.

Project Manager

Land Development

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